Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064 Telephone (904) 488-8541

Thomas E. Drawdy
Secretary

MEMORANDUM

DATE: January 1, 1986

TO: All Structural Designers and Consultants Doing Structural Design Work For The Florida Department of Transportation

FROM: Henry T. Bollmann, P. E., Chief, Bureau of Structures Design HTB

COPIES: William Ventry, Wallace Giddens, Jack Roberts and Bobby Buser

SUBJECT: STRUCTURES DIRECTIVES

(A) Please discard all Structures Directives (Memo to designers, etc.) you have gathered to date.

(B) Place the enclosed current and newly indexed Structures Directives in a three ring binder for future reference. (The Directives are identified by Topic Index, displayed upper right corner, and date).

(C) As new Directives are issued, you will be sent:

(1) new Directive to add or replace existing Directive

(2) new Topic Index and Table of Contents as appropriate.

(D) Once we finalize our new Detailing Design Guidelines and Procedures Manual we expect to reduce the volume of these Directives substantially and you will be notified which Directives to discard. Every time we update the Detailing Design Guidelines and Procedures Manual, the accumulated Directives will be reduced in number.

(E) Please familiarize yourself with the most current Directives, all dated 1986.

TOPIC	DATE
19	01/02/86
19	01/01/86
02	01/01/86
01	01/01/86
13	01/01/86
02	01/02/86

HTB/lw

VOID
For Historical Information Only

January 1, 1986

FDOT - STRUCTURES DIRECTIVES
TOPIC INDEX

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January 1, 1986

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Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488 8772

TOM WEBB, JR.
SECRETARY

April 30, 1976

M E M O R A N D U M

TO: All Designers and Consultants

FROM: T. Alberdi, Jr. TA
Deputy Design Engineer (Structures)

SUBJECT: Concrete Surface Finishes

Attached is a drawing depicting the areas that are to receive a "Class 5 Applied Finish Coating". This is a concrete textured coating that the Department has decided to utilize as a final concrete finish on all structures. Please add the appropriate notes and sketches to all existing plans and plans prepared in the future that will implement the intent of the attached sketch.

TA:s

Attachment

cc: Mr. Jerry L. Potter (FHWA)
Mr. Fred Allred
Mr. R. Mestre

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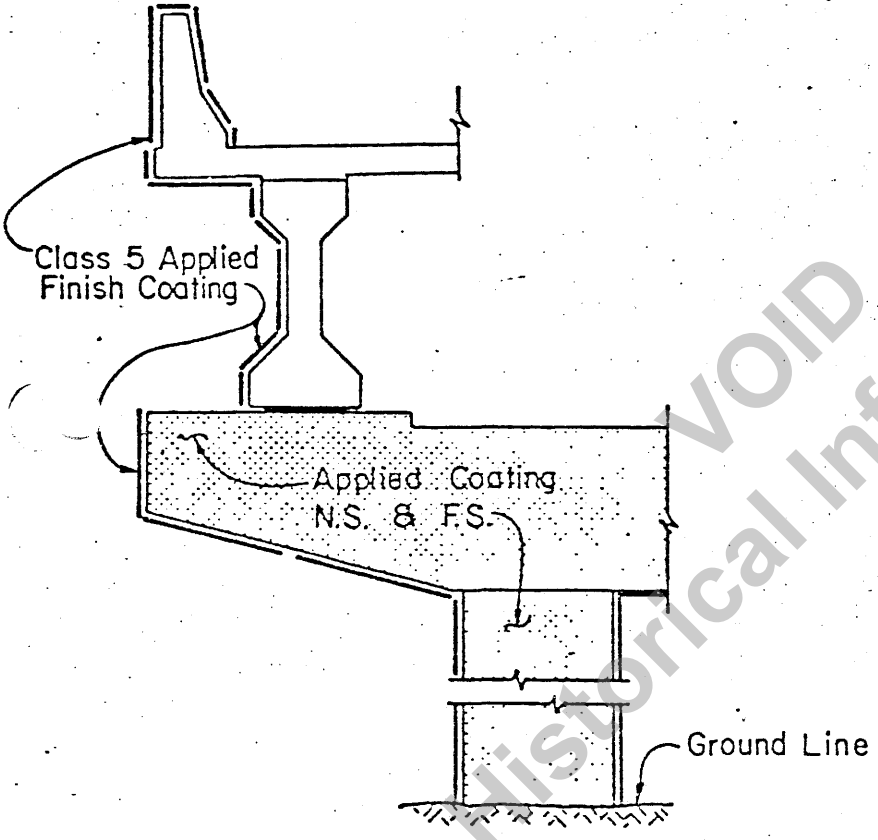
CONCRETE FINISHES

GRADE SEPARATION STRUCTURES:

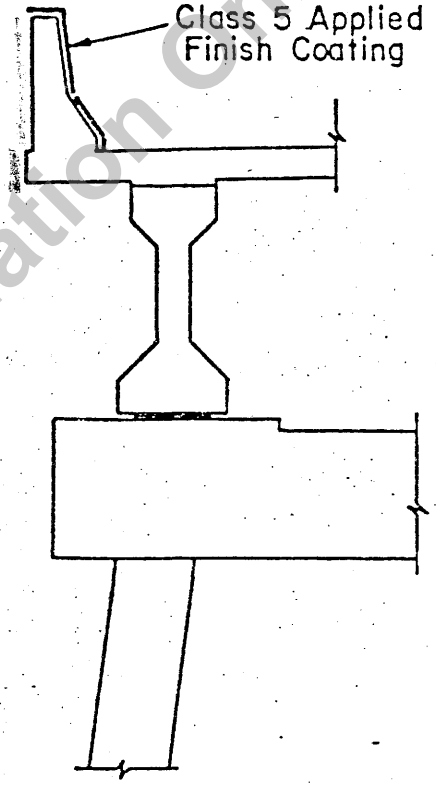
NOTE 1 : All exposed surfaces as seen in Elevation, see detail below, and the following; exposed surfaces of end bent wingwalls and all exposed surfaces of piers above ground line except tops of caps shall receive a " Class 5 Applied Finish Coating".

WATERWAY CROSSINGS AND RAILROAD SEPARATION STRUCTURES:

NOTE 2 : All exposed top and inside surfaces of end bent wingwalls, the inside face and top of concrete barrier handrails, see detail below, shall receive a " Class 5 Applied Finish Coating"



GRADE SEPARATION STRUCTURES



WATERWAY CROSSINGS AND R.R. SEPARATION STRUCTURES

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NOTE 3 : Exposed surfaces of retaining walls shall receive a "Class 5 Applied Finish Coating" when called for on the plans.

NOTE 4 : It is the intent of the notes above to coat the surfaces seen by the motoring public utilizing the facility. Judgement shall be used in determining surfaces to be coated on Waterway and Railroad Structures in urban areas.

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Ms. 33

Florida Department of Transportation

BOB GRAHAM
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JACOB D. VARN
SECRETARY

[redacted]

M E M O R A N D U M

DATE: June 8, 1981

TO: Messrs. P.J. White, H.E. Cowger, C.R. Miller, T.E. Alberdi, R.E. Magahey, D.F. Turnbull, E.M. Salley, FHWA, District Engineers, Corps of Engineers and Consultants

FROM: R. R. Churchill, State Design Engineer

SUBJECT: Design Criteria Related to Highway Safety
Category C-1

Attached are copies of revised design criteria related to highway safety dated June 5, 1981, and typical sections depicting new roadway slope criteria. This criteria supersedes our transmittal of February 22, 1979. The most significant changes have been in the roadway slope criteria. Other changes have been made for clarification.

Even though we have the general concurrence of the Federal Highway Administration in the use of this chart, it is suggested that projects which are to be constructed with Federal participation be discussed with the FHWA in the early stages of planning in order to assure their concurrence in the final design.

The new slope criteria is to be implemented on future projects for which final cross sections have not been plotted. Our previous slope criteria (shown on the 1979 chart) will continue to be used for projects that are complete or advanced to such a stage that changing to the new criteria would be impractical.

The attached partial cross sections for various types of facilities depict the new slope criteria and its relationship to our previous criteria. Methods of treatment at guardrail locations are also shown on these sheets. The 1982 Standard Index Drawings will be revised to show this change in guardrail treatment.

Grassing treatment for the 3:1 slopes will be determined on a project-by-project basis depending on the type of soil. Strip sodding in conjunction with seeding and mulching may be necessary for some projects.

RRC:B:j

Attachments

JUN 9 1981

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FLORIDA DEPARTMENT OF TRANSPORTATION
DESIGN CRITERIA RELATED TO HIGHWAY SAFETY

June 5, 1981

TYPE OF FACILITY	INTERSTATE, OTHER LIMITED ACCESS, OR DIVIDED (4 OR MORE LANES) DESIGN SPEED OF 50 MPH OR GREATER	UNDIVIDED - DESIGN SPEED OF 50 MPH OR GREATER AND PROJECTED ADT (20 YR) OF 1,600 OR GREATER	UNDIVIDED - DESIGN SPEED OF 50 MPH OR GREATER AND PROJECTED ADT (20 YR) LESS THAN 1,600	DIVIDED OR UNDIVIDED - DESIGN SPEED OF 35-45 MPH	MUNICIPAL - DESIGN SPEED OF 45 MPH OR LESS (CURB AND GUTTER)
EMBANKMENT SLOPE	Fill Ht. 0'-5' 6:1 5'-10' 6:1 to edge of CRA & 4:1 10'-20' 6:1 to edge of CRA & 3:1 >20' 2:1 R/W cost must be considered in urban areas in using these slopes	Fill Ht. 0'-5' 6:1 5'-10' 6:1 to edge of CRA & 4:1 10'-20' 6:1 to edge of CRA & 3:1 >20' 2:1	Fill Ht. 0'-5' 6:1 except where R/W is insufficient then 6:1 to edge of CRA & 3:1 will be permitted. 5'-20' 6:1 to edge of CRA & 3:1 except where R/W is insufficient then 2:1 with guardrail will be permitted.	Fill Ht. 0'-5' 6:1 except where R/W is insufficient then 6:1 to edge of CRA & 3:1 will be permitted. 5'-20' 6:1 to edge of CRA & 3:1 except where R/W is insufficient then 2:1 with guardrail will be permitted.	2:1 or to suit property owner, not flatter than 6:1. R/W cost must be considered for high fill sections in urban areas.
CLEAR WIDTHS FOR BRIDGES	Travel lanes plus 10' Rt. and 6' Lt. 10' Lt. for 6 or more lanes.	Travel lanes plus approach shoulder widths.	Travel lanes plus approach shoulder widths.	Divided - Travel lanes plus approach shoulder width Rt. and 6' Lt. unless full median section is carried across structure. Undivided - Travel lanes plus approach shoulder widths.	Full section (face to face of curb) plus clearance to bridge rail.
BACKSLOPES	4:1 (Normal)	4:1 (Normal)	4:1 where R/W permits or 3:1.	4:1 where R/W permits or 3:1.	2:1 or to suit property owner, not flatter than 6:1
CLEAR RECOVERY AREA (CRA)	30' min. from edge of travel lane, 18' min. from edge of auxiliary lane. Shoulder width plus 2' to face of guardrail (at shoulder line when shoulder width is 12').	30' min. from edge of travel lane, 18' min. from edge of auxiliary lane. Shoulder width plus 2' to face of guardrail.	20' min. from edge of travel lane, 14' min. from edge of auxiliary lane. Shoulder width plus 2' to face of guardrail (8' min.). For projected ADT (20 yr.) less than 750 14' min. from edge of both travel and auxiliary lanes.	18' where R/W permits or 14' min. from edge of both travel and auxiliary lanes. Shoulder width plus 2' to face of guardrail (8' min.).	4' from face of curb Ø Bridge piers normally will be 16' min from edge of travel lane. *
SIGNS	Not generally in median. Outside clear recovery area or behind barrier that is justified for other reasons. Cantilever signs may be located inside recovery area protected by barrier. Frangible single column signs to be located in accordance with Traffic Operations Standards Index No. 17302. All supports are breakaway or frangible except overhead cantilever or truss signs.	Outside clear recovery area or behind barrier that is justified for other reasons. Cantilever signs may be located inside recovery area protected by barrier. Frangible single column signs to be located in accordance with Traffic Operations Standards Index No. 17302. All supports are breakaway or frangible except overhead cantilever or truss signs.	Outside clear recovery area or behind barrier that is justified for other reasons. Cantilever signs may be located inside recovery area protected by barrier. Frangible single column signs to be located in accordance with Traffic Operations Standards Index No. 17302. All supports are breakaway or frangible except overhead cantilever or truss signs.	Outside clear recovery area or behind barrier than is justified for other reasons. Cantilever signs may be located inside recovery area protected by barrier. Frangible single column signs to be located in accordance with Traffic Operations Standards Index No. 17302. All supports are breakaway or frangible except overhead cantilever or truss signs.	2' min. from face of curb to inside edge of sign panel. Sign placement shall not block sidewalk
LIGHT POLES.	Not generally in median. Outside clear recovery area or frangible base 20' from edge of travel lanes and 14' min. from edge of auxiliary lane or behind approved barrier that is justified for other reasons	Outside clear recovery area or frangible base 20' from edge of travel lanes and 14' min. from edge of auxiliary lane or behind approved barrier that is justified for other reasons.	Outside clear recovery area for both frangible and non-frangible bases. Desirable 20' from edge of travel lanes and 14' min. from edge of auxiliary lane or behind approved barrier that is justified for other reasons.	18' from edge of travel lanes or 14' from edge of auxiliary lane for both frangible and non-frangible bases or behind approved barrier that is jushfied for other reasons.	4' min. from face of curb. Ø
UTILITY POLES, FIRE HYDRANTS, ETC.	Not in median. Not within R/W of the main travel way of interstate or other limited access facilities. For other facilities outside the clear recovery area. Normally 6.5' inside R/W when beyond clear recovery area otherwise as close as practical to R/W line.	Outside clear recovery area. Normally 6.5' inside R/W when beyond clear recovery area otherwise as close as practical to R/W line.	Outside clear recovery area. Normally 6.5' inside R/W when beyond clear recovery area otherwise as close as practical to R/W line.	Not in median. 18' from travel lane or 14' from auxiliary lane. Normally 6.5' inside R/W when beyond clear recovery area. Otherwise as close as practical to R/W line.	Not in median 4' min. from face of curb Ø
RAILROAD CROSSING DEVICES	Not on interstate or expressway. 10' min. from edge of driving lane to near edge of device. No guardrail.	10' min. from edge of driving lane to near edge of device. No guardrail.	10' min. from edge of driving lane to near edge of device. No guardrail.	10' min. from edge of driving lane to near edge of device. No guardrail.	2.5' min. from face of curb to near edge of device.
MEDIAN WIDTHS	Interstate or limited access facilities. 60' min. - 60 mph and over 40' min. - under 60 mph Other divided highways 40' min. - 55 mph and over 22' min. - under 55 mph				19.5' min - 45 mph 15.5' min. - 40 mph or less (greater widths desirable) For reconstruction projects the min. painted median width with provision for left turn is 10' (greater widths desirable)

Design speed to be established using realistic anticipated operating speed (Assume 55 mph limits to be non-existent).

Preferred ditch cross sections are shown on pages 25, 26 & 27 of the AASHTO Guide For Selecting, Locating And Designing Traffic Barriers

Consideration should be given to maintaining greater than the above specified clearances and/or flatter slopes where feasible and practical.

Ø On projects where the 4' min offset would place the utility or other obstruction in substantial conflict with the sidewalk or when utility poles would create an unreasonable conflict with requirements of the National Safety Codes and other alternatives are deemed impractical the minimum may be reduced to 2.5' from face of curb - each case where this deviation is proposed must be supported on an individual basis.

* At locations where immediately adjacent development such as buildings, etc. provide less clearance, bridge piers can be placed to provide clearance less than 16'.

Values shown above shall be used on all new construction and on reconstruction projects to the extent that economic and environmental considerations and R/W limitations will allow. For definitions of new construction and reconstruction see "Manual Of Uniform Minimum Standards For Design, Construction And Maintenance For Streets And Highways".

Driving lane is any traffic lane, travel or auxiliary.

An auxiliary lane is the portion of the roadway adjoining the traveled way for parking, speed changes, turning, storage for turning, weaving, truck climbing or for other purposes supplementary to through traffic movement.

Traveled way (travel lanes) is the portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

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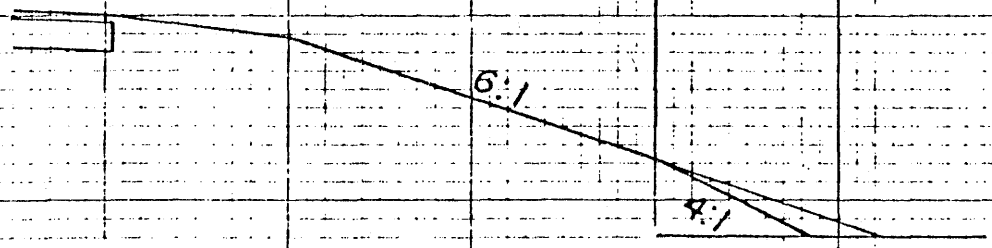
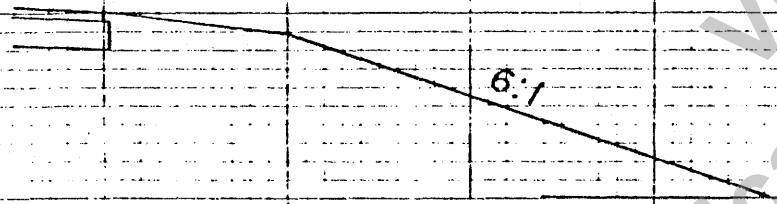


6' Fill



5' Fill

6:1 Fills To 5'
6:1 & 4:1 Fills 5'-10'
6:1 & 3:1 Fills 10'-20'
2:1 Fills Over 20'

RURAL HIGHWAY
Design Speed 50 MPH Or Greater
30' Clear Recovery Area
Paved And Unpaved Shoulders
10' Shoulder Shown

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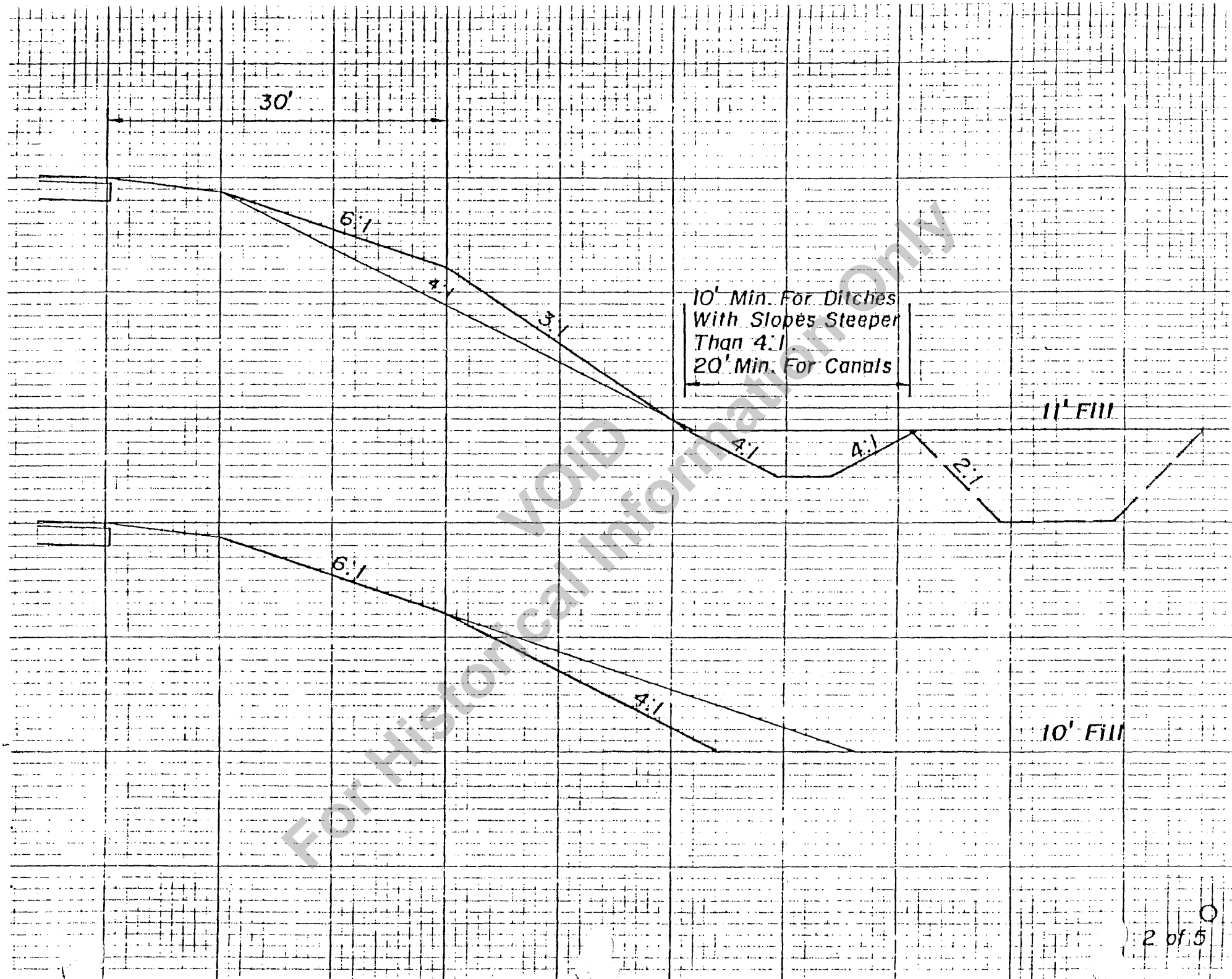

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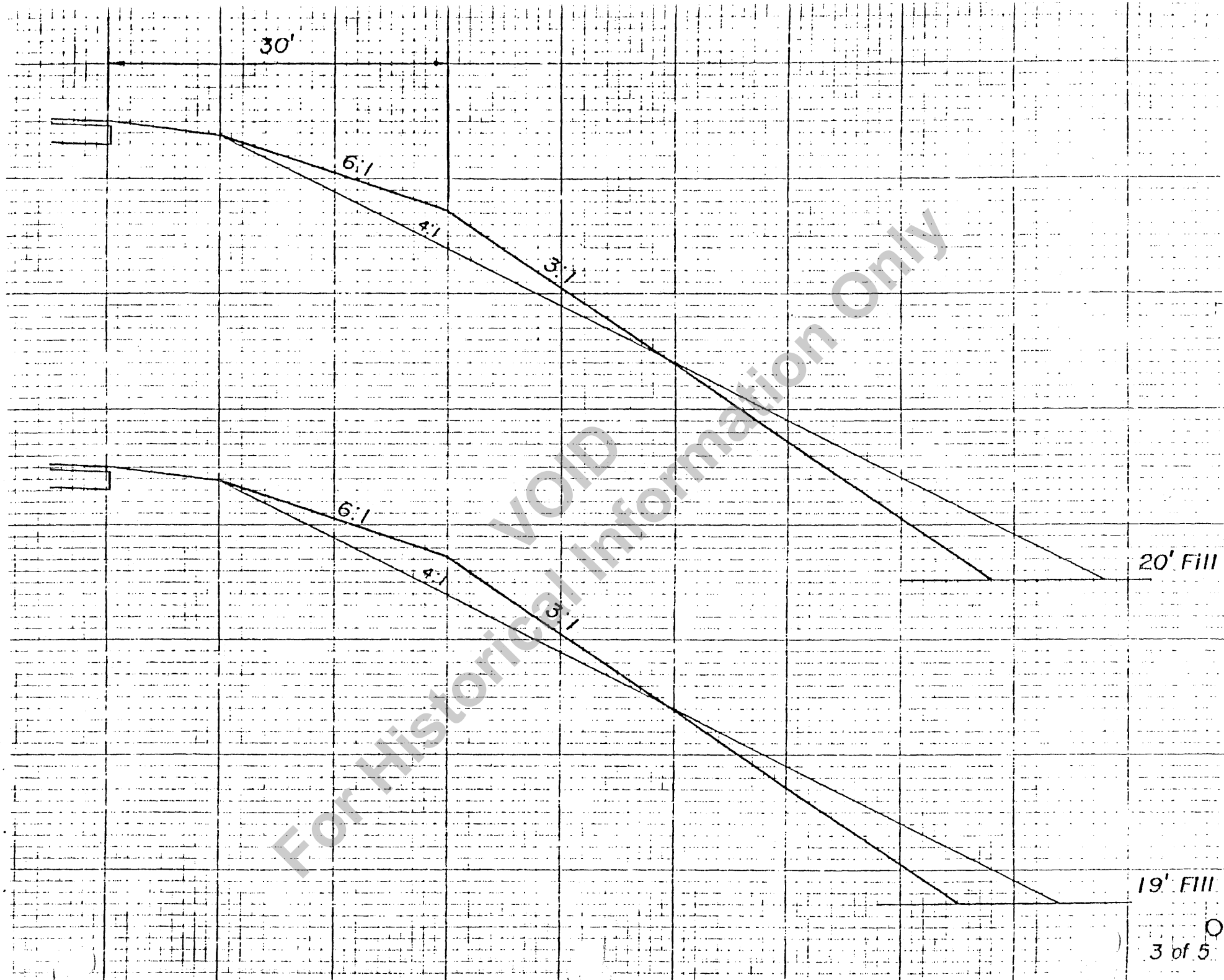

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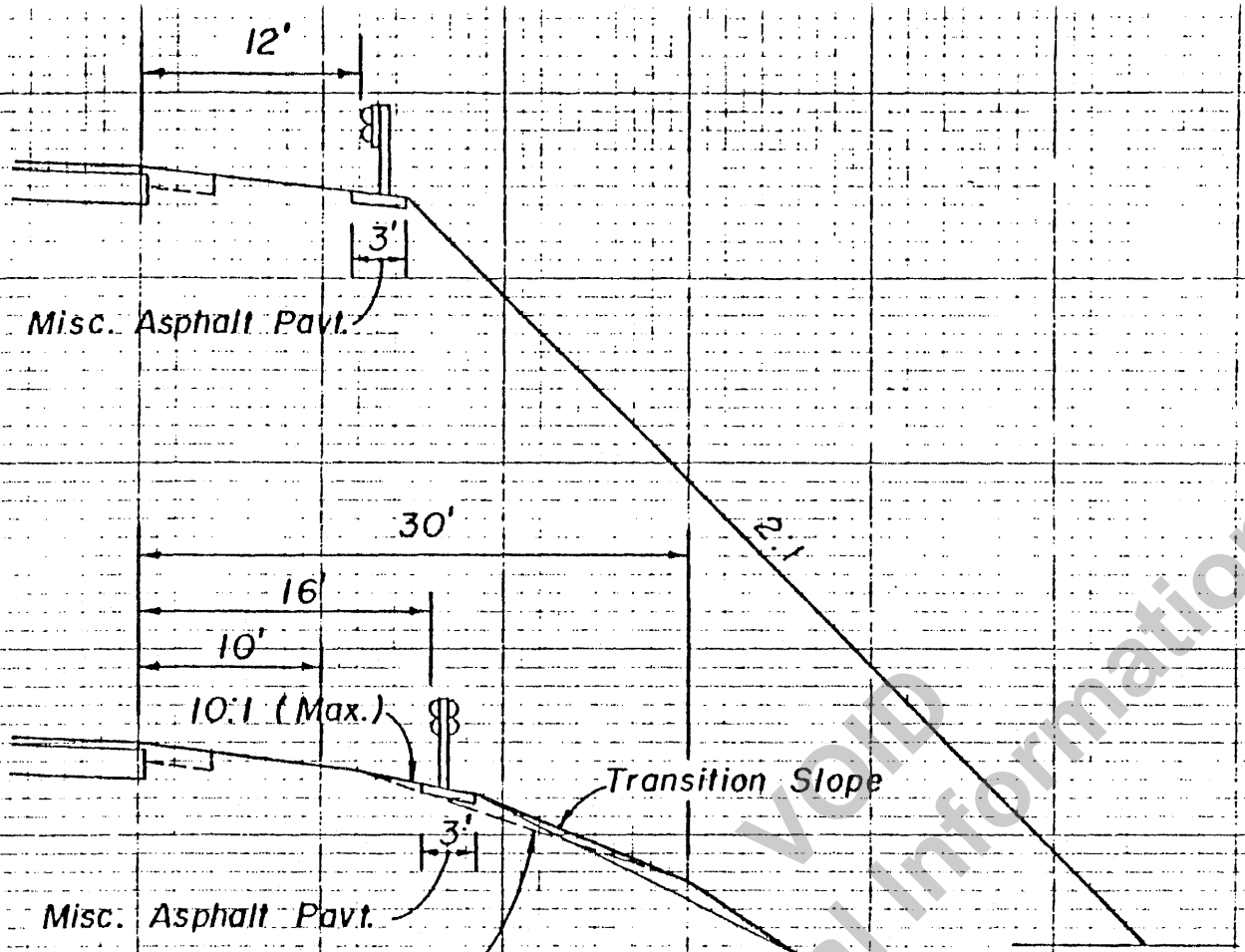
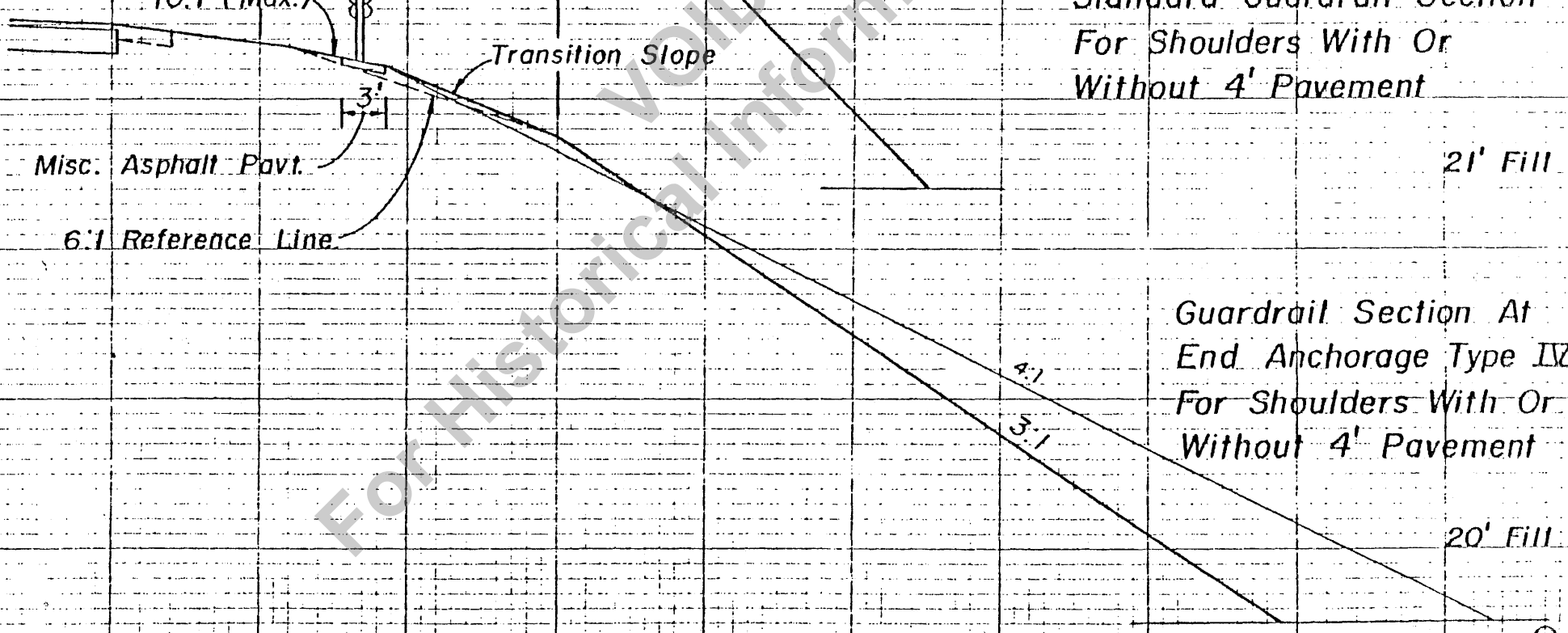


Standard Guardrail Section
For Shoulders With Or
Without 4' Pavement

21' Fill



Guardrail Section At
End Anchorage Type IV
For Shoulders With Or
Without 4' Pavement

20' Fill

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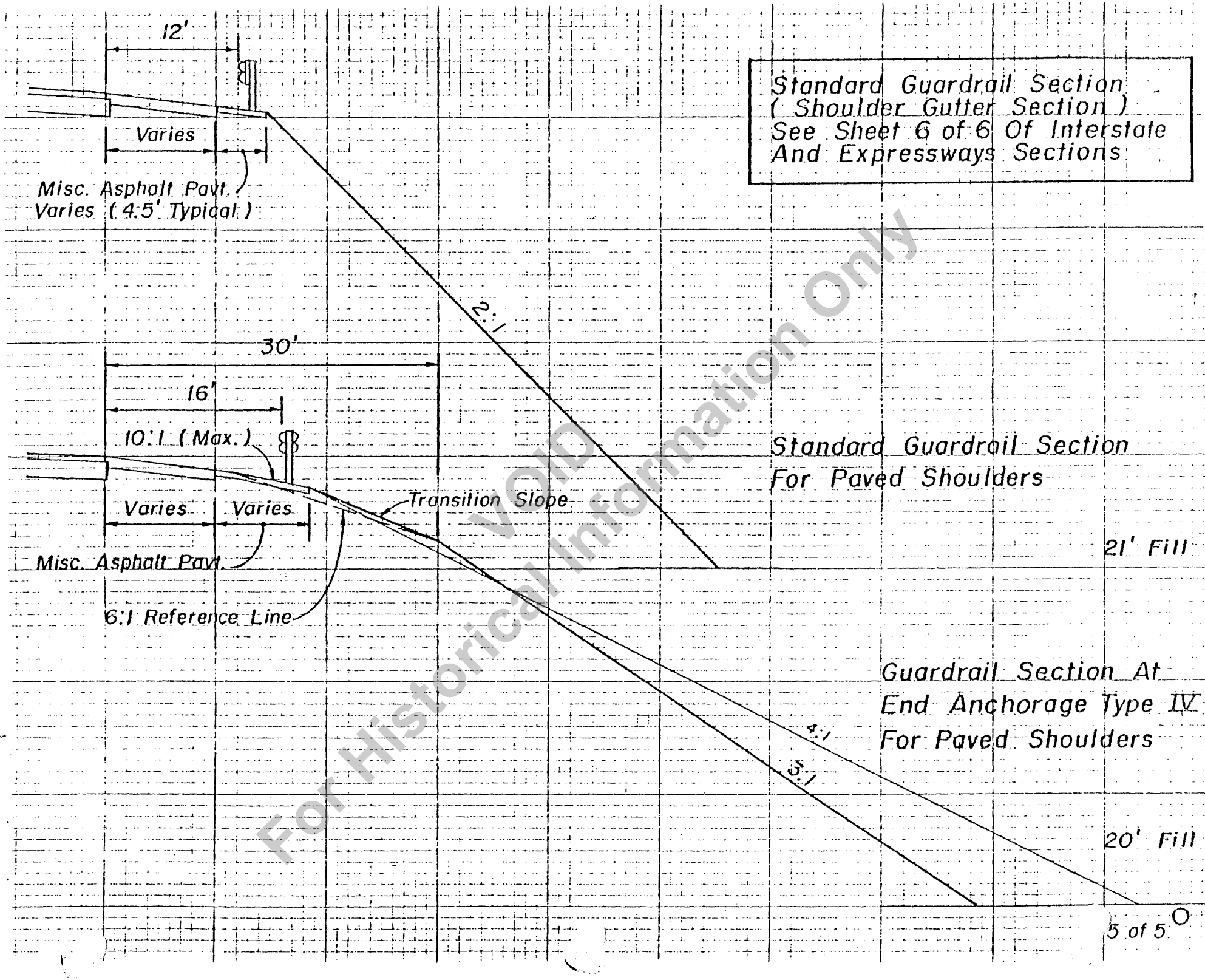

Standard Guardrail Section
(Shoulder Gutter Section)
See Sheet 6 of 6 Of Interstate
And Expressways Sections

Standard Guardrail Section
For Paved Shoulders

21' Fill

Guardrail Section At
End Anchorage Type IV
For Paved Shoulders

20' Fill

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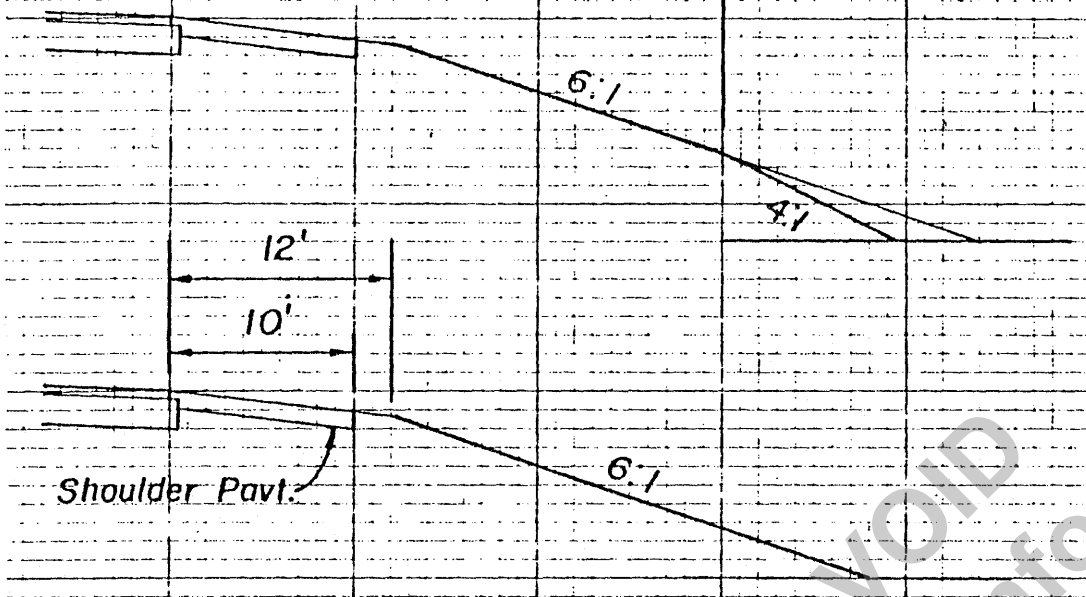

6' Fill

5' Fill

6:1 Fills To 5'
6:1 & 4:1 Fills 5'-10'
6:1 & 3:1 Fills 10'-20'
2:1 Fills Over 20'

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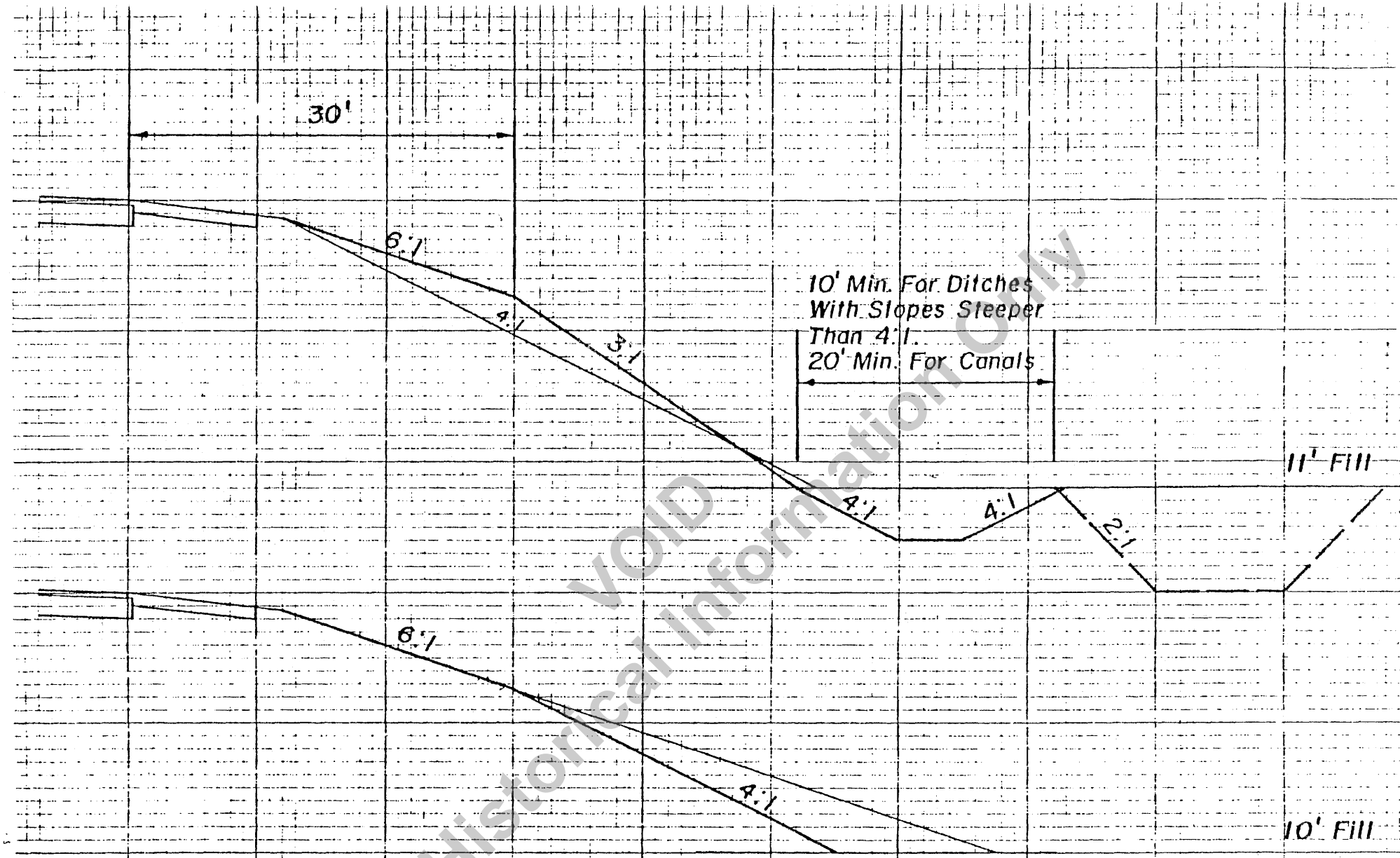
INTERSTATE & EXPRESSWAYS
Design Speed 50 MPH Or Greater
30' Clear Recovery Ared
12' Shoulders Shown



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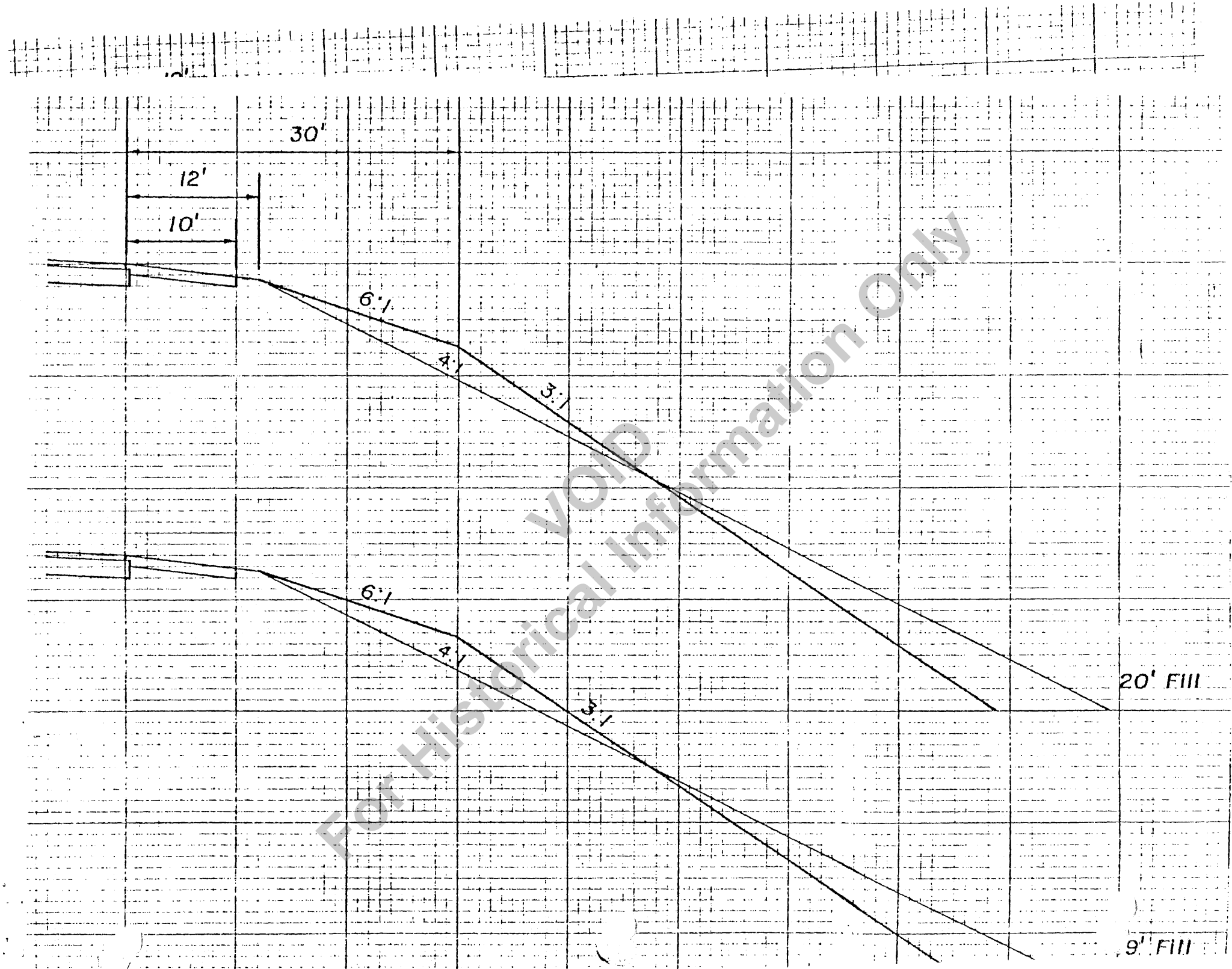

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Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

Thomas E. Drawdy
Secretary

STRUCTURES DIRECTIVE

DATE: January 1, 1986

TO: All Structural Designers and Consultants Doing Structural Design Work For the Florida Department of Transportation

FROM: Henry T. Bollmann, P. E., Chief, Bureau of Structures Design HTB

COPIES: William Ventry, Wallace Giddens, Jack Roberts and Bobby Buser

SUBJECT: Construction Materials, Mass Concrete

The designer shall be responsible for indicating which portions of the concrete in a structure shall be included as Mass Concrete.

Mass Concrete is defined as "Any large volume of cast-in-place concrete with dimensions large enough to require that measures be taken to cope with the generation of heat and attendant volume change to minimize cracking".

When the minimum dimensions of the concrete exceeds two (2) feet and the volume of concrete to the surface area ratio is greater than one (1) then mass concrete shall be required. (The surface area for this ratio shall include the summation of all the surface areas of the concrete component being considered, including the full underside "bottom" surface of footings, caps, etc.).

For the purpose of estimated bridge quantities, mass concrete quantities shall be separated into Mass Concrete (Seal) and Mass Concrete (Substructure).

The designer shall also be responsible for taking precautionary measures to reduce the likelihood of cracking of the concrete.

These precautionary measures are especially needed in the design of bascule bridge piers and other structural components requiring the casting of large volumes of concrete.

In the construction of the Bascule Piers of the Miami Avenue Bridge over the Miami River, for example, an eight foot concrete lift for a bascule pier, consisting of about 200 cubic yards, was cast just above the footings. This generated large increases in temperature of the concrete during curing that may have caused cracking at various points in the pier walls.

Some design considerations, such as more steel reinforcement and the judicious placing of construction joints as well as other methods as outlined in ACI 207, ACI 244 and ACI 308 to control cracking should be taken in all future designs involving mass concrete.

HTB/lw

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FLORIDA STATE ROAD DEPARTMENT

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February 17, 1969

M E M O R A N D U M

TA

TO: Bridge Designers and Consultants

FROM: T. Alberdi, Jr., Engr. of Structures

SUBJECT: DIMENSIONS OF REINFORCING STEEL

On all future bridge projects the practice of using equal spaces in lieu of actual dimensions is to be discontinued. Location of steel bars shall be shown by dimension, in particular through sections of caps and superstructures.

TA:c

cc: Mr. R. A. Wakeman

VOID
For Historical Information Only

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MICHAEL O. O'NEIL, SECRETARY
TALLAHASSEE, FLORIDA 32304

October 7, 1969

TO: All Consultants

FROM: T. Alberdi, Jr.
Engineer of Structures

SUBJECT: INSTRUCTIONS FOR COMPUTING THE VOLUME OF CONCRETE IN BUILD-UPS OVER PRESTRESSED CONCRETE BEAMS

Enclosed is a revised sketch that supersedes our sketch of October 3, 1969, on the above subject.

T. A.

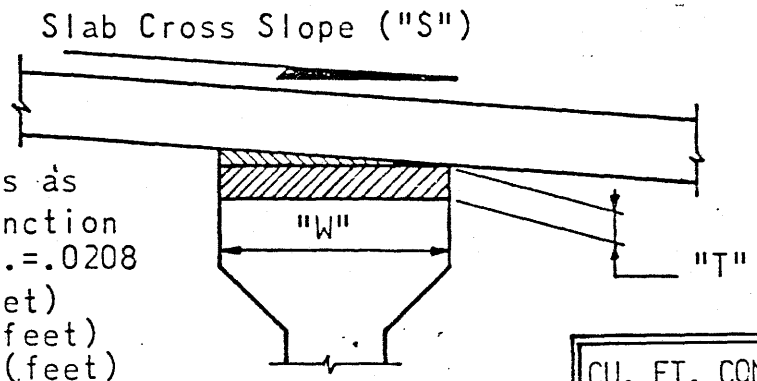
TA:s

Enclosure

VOID
For Historical Information Only

INSTRUCTIONS FOR COMPUTING THE VOLUME OF CONCRETE IN BUILD-UPS OVER PRESTRESSED CONCRETE BEAMS

NOTE: The volume of concrete in the build-ups shall be included in the Concrete Quantities on the Superstructure Detail Sheets.



SLOPE = "S" express as tangent function i.e. $\frac{1}{4}$"/FT.=.0208

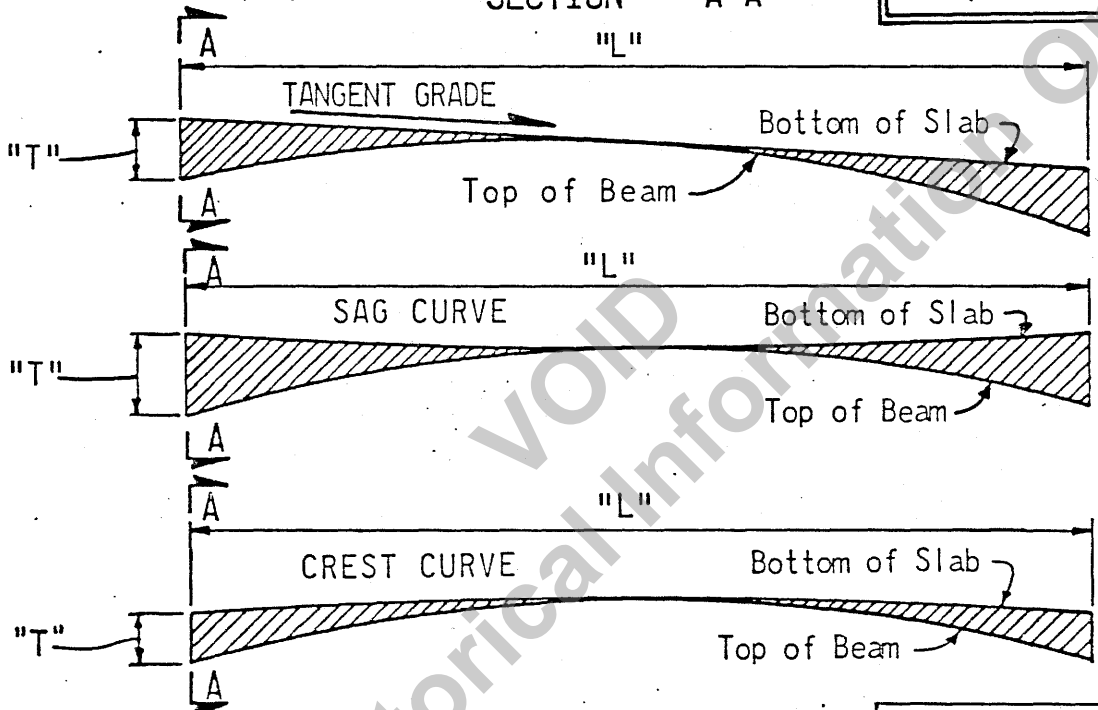
BUILD-UP = "T" (feet)

BEAM WIDTH = "W" (feet)

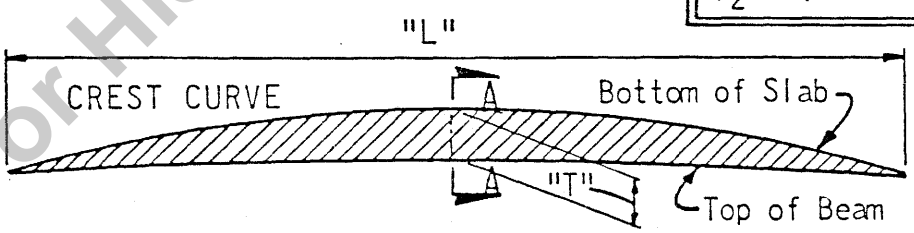
SLAB LENGTH = "L" (feet)

SECTION "A-A"

CU. FT. CONC. (Case 1,2 & 3)
$V1 = (3SW^2 + 2WT)\ L/6$



CU. FT. CONC. (Case 4)
$V_2 = (3SW^2+4WT)\ L/6$



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CASE 1, 2 & 3

TYPE II V1= $(\frac{1}{2}S+\frac{1}{3}T)$ L

III V1= (.8888S+.4444T) L

IV V1= (1.3889S+.5556T) L

I & VII V1= (6.1250S+1.6667T) L

CASE 4

TYPE II V2= $(\frac{1}{2}S+\frac{2}{3}T)$ L

III V2= (.8888 S+.8888T) L

IV V2= (1.3889 S+.1.1111T) L

V & VI V2= (6.1250S+2.3333T) L

NOTE: The depth of diaphragms shall include the dimension "T" when Computin Concrete Volumes.

Revised 10-6-69

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
Tallahassee, Florida 32304
CLAUDE R. KIRK Jr.
GOVERNOR
Telephone (904) 599-6321

November 24, 1970

TO: All Designers

FROM: T. Alberdi, Jr. T.A.

SUBJECT: Note Pertaining to Hook Bars

A note shall be added to the plans pertaining to the hook bars in the superstructure slabs. The note shall read as follows:

Bar ____ shall be tilted to obtain minimum cover.

TA:s

cc: Mr. R.A. Wakeman

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For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772
TOM WEBB, JR.
SECRETARY

June 17, 1976

M E M O R A N D U M

TO: All Designers and Consultants

FROM: T. Alberdi, Jr.
Deputy Design Engineer (Structures)

SUBJECT: Reinforcing Steel for Bridge Median Barriers

Attached is a sketch showing the reinforcing details that shall be utilized for all future median barriers on bridges without longitudinal deck joints.

TA:s

Attachment

cc: Mr. Jerry L. Potter
Mr. Larry Sessions
Mr. R. Mestre
Mr. S.F. Allred

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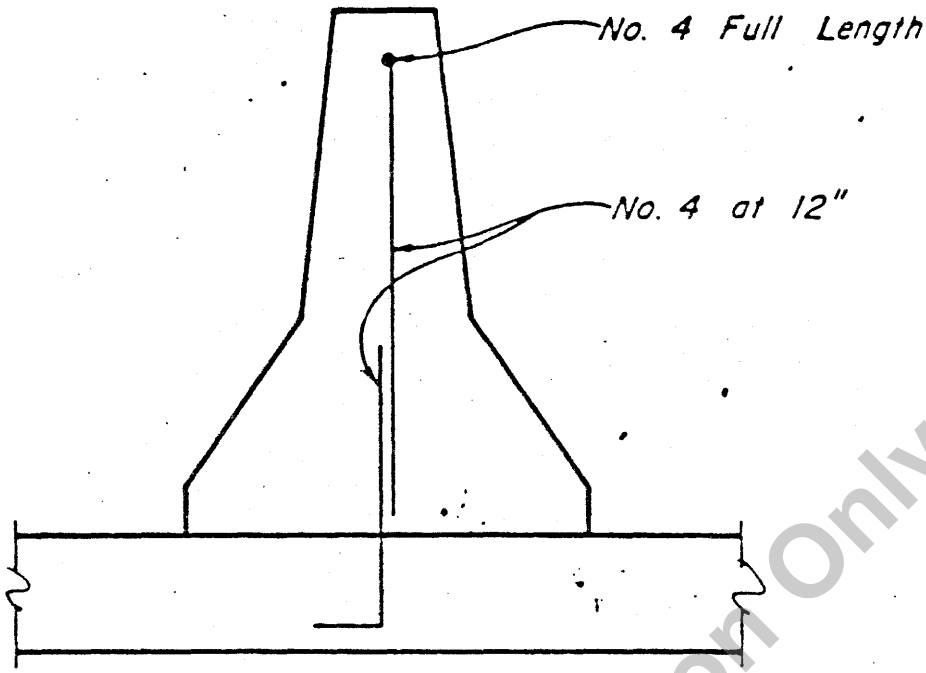

DECK WITHOUT JOINT

MEDIAN BARRIER DETAIL

VOID
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March 28, 1978

M E M O R A N D U M

To: All Consultants

From: T. Alberdi, Jr., P.E. TA
Deputy Design Engineer (Structures)

Subject: Summary of Estimated Quantities

On all bridge plans for which the Summary Sheet has not already been completed and on future bridge projects, please omit the Summary of Estimated Bridge Quantities from the plans and send us the Summary of Estimated Bridge Quantities separate from the plans in legible form on legal size or larger paper.

TA:mfs

cc: Mr. J.L. Potter (FHWA)
Mr. R. Mestre

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For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304
TOM WEBB, JR.
SECRETARY

December 1, 1978

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., Deputy Design Engineer (Structures) TA

Subject: Spacing of Reinforcing Steel

In all future designs utilizing poured-in-place concrete, the top longitudinal steel shall be spaced at 12 inches (12") in lieu of the eighteen inches (18") presently being utilized. This shall apply to jobs on which the detailing has not commenced. It is the intent of this memorandum not to change any completed plans.

TA:s

cc: Mr. J.L. Potter and Mr. R. Mestre

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For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301, Telephone (904) 488-8541
WILLIAM N. ROSE
SECRETARY

January 4, 1980

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., P.E.
Deputy Design Engineer (Structures)

Subject: Reinforcing Steel - Coatings - Test Piles

1. For all future projects, the design of bridge decks shall utilize only straight reinforcing steel bars. Multiple truss bent bars shall not be utilized. This requirement is applicable to all designs on which the detailing has not commenced.

2. In the future, plans shall include a note stating the following: A Class 5 Applied Finish Coating shall be applied to the following exposed surfaces, the inside, backside and top of Concrete Barrier Handrails and End Bent Wingwalls and the coping areas below Handrails.

3. Unless unusual subsurface conditions exist, the practice of requiring test piles in the end bents shall be discontinued.

TA:s

cc: Mr. J.L. Potter (FHWA)
Mr. S.F. Allred
Mr. Carlos Stone
Mr. R. Mestre

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Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301 Telephone (904) 488-8541
WILLIAM N. ROSE
SECRETARY

January 26, 1981

M E M O R A N D U M

TO: All Consultants and Designers

FROM: T. Alberdi, Jr. T.A.
Deputy Design Engineer (Structures)

SUBJECT: Design Details

Enclosed are two revised design details which should be incorporated in all new bridge designs.

(1) Revised Slope Pavement Details

These details should provide for better drainage for the backfill behind the slope pavement.

(2) ~~Revised Slab Details Pertaining to the Reinforcing Steel Associated with the Concrete Barrier Rail~~

~~The placement of the two longitudinal bars in the corners of the barrier rail steel will facilitate construction problems.~~

TA:s

Enclosures

cc: Mr. S.F. Allred
Mr. J.L. Potter
Mr. R. Mestre

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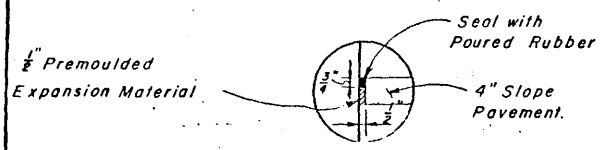
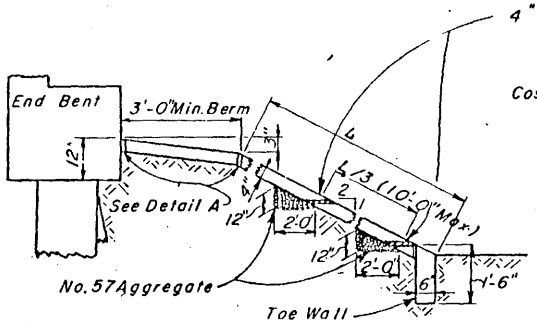
Slope Pavement shall be tooled with a double $\frac{1}{4}$" radius tool at 2 ft.± intervals along the slope at 4 ft.± across the slope. Construction joints will be permitted at joints as directed by the Engineer.

I-22-81



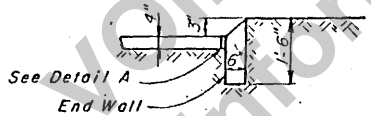
DETAIL A

..... showing Joint Details at End Bent, applies at all contacting surfaces of Slope Pavement at End Bents, End Walls, Toe Walls and both edges of Berm.

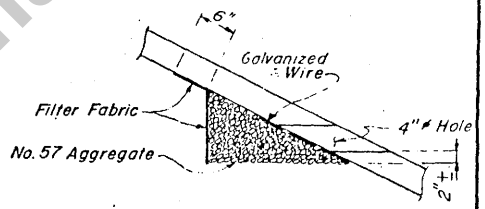


SECTION THRU FORWARD SLOPE

4" ϕ Holes at 8'-0" centers (staggered) shall be covered with galvanized wire with $\frac{1}{4}$" openings and shall be backed with a continuous layer of No. 57 Aggregate and filter fabric as shown. Cost of Holes, Wire, Filter fabric, and Aggregate to be included in the cost of Concrete Slope Pavement (4" thick).



SECTION THRU END WALL



DRAIN DETAIL

SLOPE PAVEMENT DETAILS

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Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

May 16, 1983

M E M O R A N D U M

To: All Consulting Engineers

From: Henry T. Bollmann, P.E., Chief
Bureau of Structures Design

Subject: Plans Endorsement

The memorandum dated April 12, 1983, on the above subject is herein superceded by the attached memorandum dated May 16, 1983.

HTB:gc
Attach.

VOID
For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

May 16, 1983

M E M O R A N D U M

TO: All Consulting Engineers

FROM: Henry T. Bollmann, P.E., Chief HTB
Bureau of Structures Design

Subject: Plans Endorsement

The Bureau of Structures has been directed to require consultants to endorse (seal/signature as appropriate) their final work product.

Therefore, in order to implement the above directive, the following procedures shall be followed for all Structural work.

All tracings shall include the following:

1. Firm's Logo or Consultant's name.

2. Each portion of the title block is to be appropriately filled in.

3. The first sheet of the structural plans' package must be signed and sealed by a registered principal representative of the firm.

4. A record set of prints with all sheets properly endorsed and sealed in accordance with the rules of the profession shall also be furnished with the tracings.

Tracings already transmitted to Tallahassee for projects that have not been advertised will be returned to the designer for the above endorsements.

We are attaching herewith a print of a drawing showing an acceptable title block for your guidance. If you have any questions, please advise.

HTB:gc
Attach.

VOID
For Historical Information Only

NOTES:

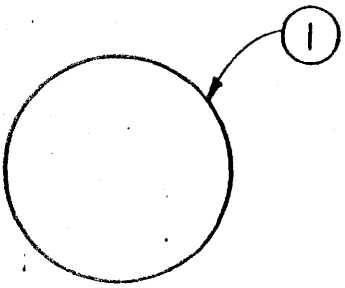
* (1) Seal and Signature of Principal of Firm (First Sheet Only)

(2) Alternate Location of Logo or Consultant's Name

(3) Inital and Date (Use dash if not applicable)

* (4) Signature of Professional with Primary Responsibility for the Project

* Note Signatures for (1) and (4) may be the same



(2)

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES

REVISIONS	
Dates	Descriptions

ROAD NO.	COUNTY	PROJECT NO.

	Names	Dates
Designed by	(3)	(3)
Checked by	(3)	(3)
Quantities by	(3)	(3)
Checked by	(3)	(3)
Supervised by	(3)	

APPROVED BY

(4)

Drawing No.	Index No.

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For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

October 19, 1984

M E M O R A N D U M

TO: All Designers and Consultants

FROM: H. T. Bollmann, P.E., Chief, Bu. of Structures Design
By: R. C. Burnett, Jr., P.E., State Structures Design Engr.

SUBJECT: General Notes on Bridge Plans

The General Notes for all future bridge plans and those presently being prepared shall include all the design information that is necessary for load rating the bridge. The information required depending upon the type construction, shall include but not be limited to the following:

Specifications (Edition Dates):
Design: AASHTO, if other identify
Construction: FDOT and AASHTO when referenced

Design Loading:
Live Load, pile loads and sizes
Wearing surface
Wind, if not AASHTO

Design Method:
Identify the components designed load
Factor and those designed service load.

Environment:
Coastal (Saltwater or brackish water)
Inland (Extremely Aggressive)
Inland (Slightly or moderately Aggressive)

Superseded by 1/1/86 memo.

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Materials:

Reinforcing Steel; Grade and Allowable Stress
Prestressed Strands; Low relaxation stabilized or stress relieved, size and stress per strand
Post-tension steel; strands, parallel wires or bars. Modulus of elasticity, friction and wobble coefficients, jacking and anchoring stresses plus relaxation.

Concrete:

28 day cylinder strengths, allowable tension and compressive stresses. (For post-tensioned bridges) Modulus of Elasticity, creep, shrinkage, method of analysis if not AASHTO, thermal gradiant and range.

Structural Steel:

ASTM Designations and Allowable stresses.

Structural Steel Connections:

Describe, if high strength bolts show ASTM designation and size.

HTB:bc
cc: Mr. Jerry Potter, (FHWA)

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Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

THOMAS E. DRAWDY
SECRETARY

STRUCTURES DIRECTIVE

DATE: January 1, 1986

TO: All Structural Designers and Consultants Doing Structural Design Work For the Florida Department of Transportation

FROM: Henry T. Bollmann, P. E., Chief, Bureau of Structures Design

COPIES: State Materials and Research Engineer and District Materials Engineers

SUBJECT: Plans Preparation - Environmental Class

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For Historical Information Only

1) Regardless of where a bridge site is located, all proposed bridge sites are to be tested at the site by the District Materials Engineer, in conjunction with the Bureau of Materials and Research, before the bridge is designed. The District Materials Engineer will test the site to determine in which Environmental Class the proposed superstructure and substructure is located.

2) The bridge plan general notes for projects let under the revised 345 Specification will be refined to show the environment description and the location as follows:

ENVIRONMENT:

A. DESCRIPTION (One of the following as applicable)
   1. Non-Corrosive (slightly aggressive)
   2. Non-Corrosive (moderately aggressive)
   3. Corrosive (extremely aggressive)

B. LOCATION (One or more of the following as applicable)
   1. Coastal (saltwater or brackish water)
   2. Inland

For example, a proposed bridge located in a swampy area in Suwannee County where the substructure is tested to be in an extremely aggressive environment and the superstructure in a slightly aggressive environment, the note on the bridge plans would be as follows:

ENVIRONMENT:

Description: Substructure: Corrosive (extremely aggressive)

Superstructure: Non-Corrosive (slightly aggressive)

Location: Inland

2

Accordingly, all structural designers are directed to notify the FDOT District Materials Engineer (in the event this information has not already been furnished) to test the bridge site to determine in which Environmental Class the proposed superstructure and substructure is located before the bridge is designed. Upon receiving the test report from the District Materials Engineer, the descriptions shall be entered in the Bridge Plan General Notes under the title of Environment with the above format of description and location.

HTB/lw

VOID
For Historical Information Only

Florida Department of Transportation

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

BOB GRAHAM
GOVERNOR

THOMAS E. DRAWDY
SECRETARY

STRUCTURES DIRECTIVE

DATE: January 2, 1986

TO: All Structural Designers and Consultants Doing Structural Design Work For the Florida Department of Transportation

FROM: Henry T. Bollmann, P. E., Chief, Bureau of Structures Design

COPIES: Mr. Jerry Potter, P. E., FHWA

SUBJECT: Plans Preparation and Details, Concrete Cover and Reinforcing Bar Detailing

Concrete cover shown on the bridge plan details will provide minimum cover to the reinforcing bars after consideration for placement and fabrication tolerances. The minimum concrete covers to be provided will be listed in the bridge plan general notes.

All new projects that are under design shall have the reinforcing bars detailed in accordance with this Directive.

As examples, several typical sections showing the cover and bar lengths in a slightly aggressive (inland) environment are included in this Directive. The General Notes on the bridge plan general notes for this environment would read as follows:

MINIMUM CONCRETE COVER

Pier on Bent Cap:	2" Minimum Clearance
Column:	2" Minimum Clearance
Slab:	2" Minimum Clearance (Horizontal)
Footing:	3" Minimum Clearance

Minimum Clearance plus Tolerance for Fabrication and Placement equals cover shown on Plans.

For Placement Tolerances see Standard Specifications; for Fabrication Tolerances see CRSI Manual of Standard Practice.

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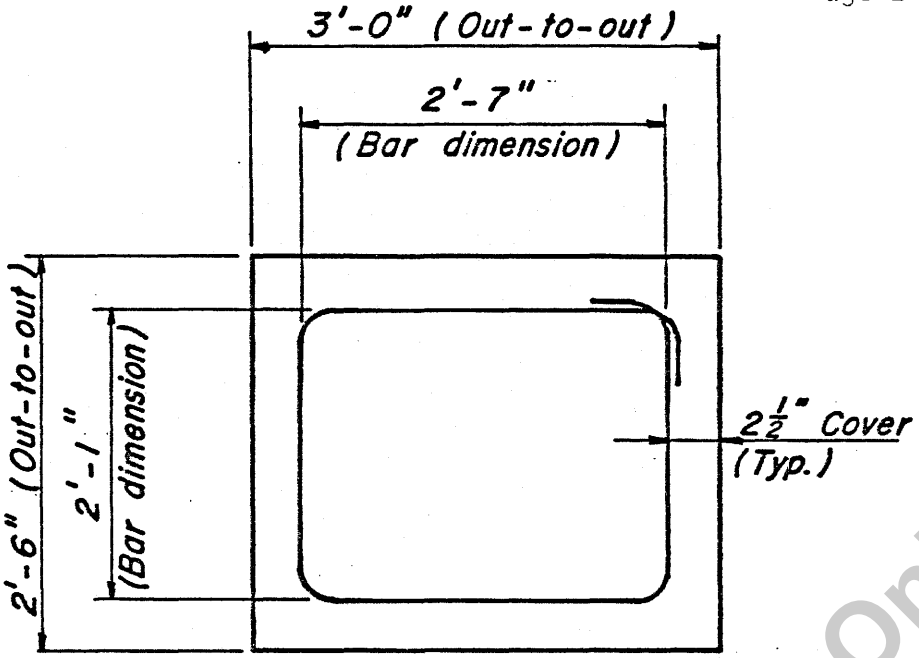

PIER OR BENT CAP

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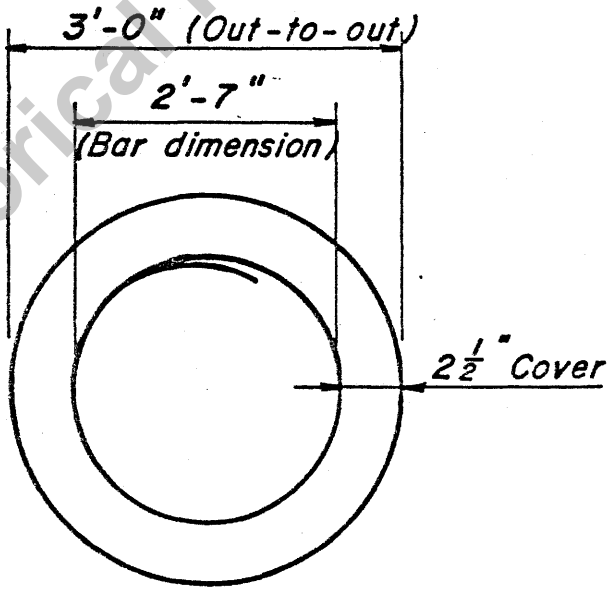
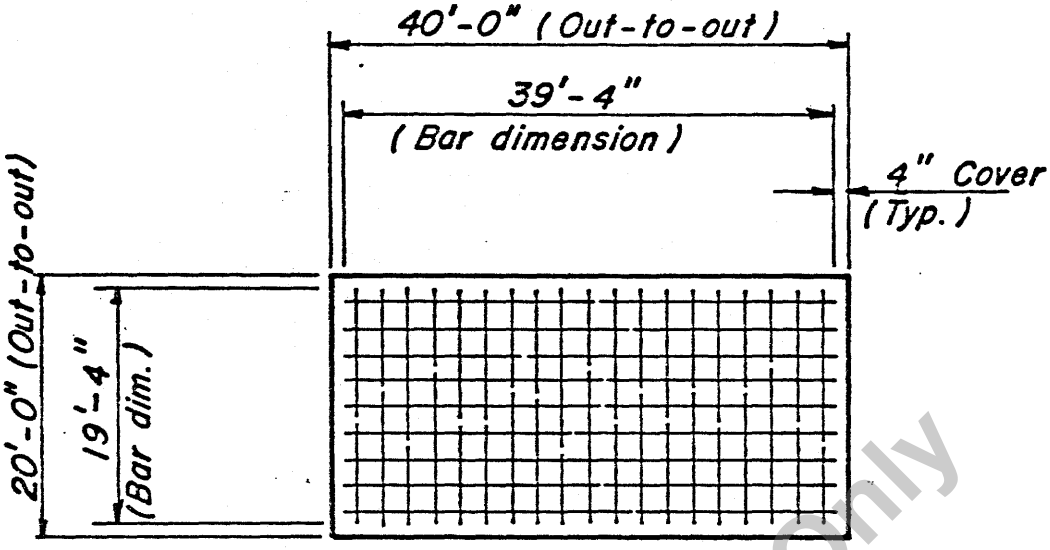


COLUMN



FOOTING

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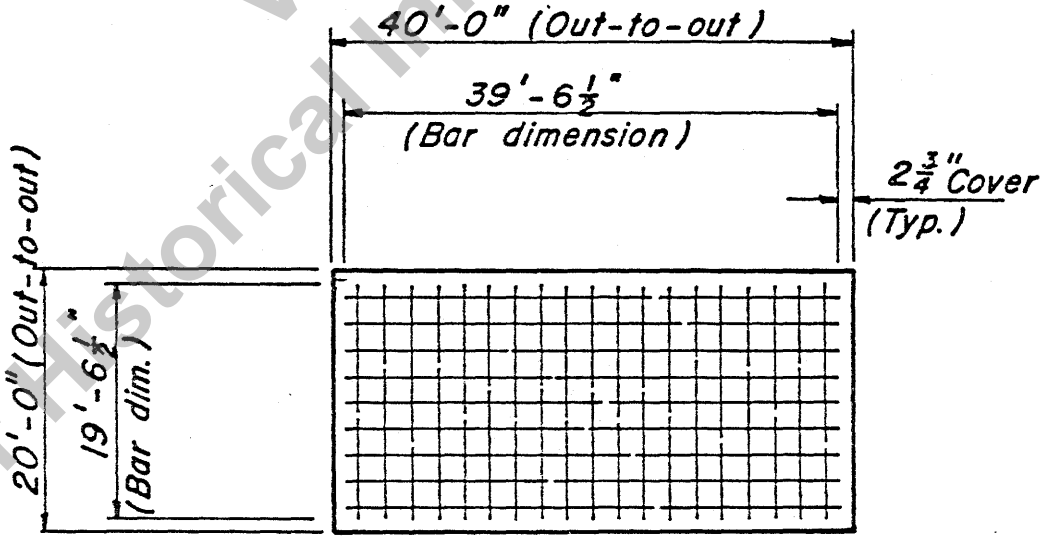

SLAB

The following minimum concrete cover (inches) is required:

CONCRETE COVER (INCHES)

Item	Slightly Aggressive Environment	Moderately and Extremely Aggressive Environment
Superstructure (Precast)		
External Surfaces	1-1/2"	2"
Internal Surfaces & Soffits	1-1/4"	1-3/4"
Top Surface Riding Surface	1-1/2"	2"
Prestressed Beam	1-1/4"	1-3/4"
Superstructure (C.I.P.)		
Slab (Over Beams) Top Surface	1-1/2"	2"
Bottom Surface	1-1/4"	2"
Cast-in-place Slab Top Surface	1-1/2"	2"*
Bottom Surface	1-1/2"	2"*

*In order to decrease stress concentrations, increase bonding strength and decrease corrosion potential, steel reinforcement shall be implemented using the smallest practical bar size.

Substructure (C.I.P.)		
External Surface Cast Against Earth	3"	4"**
External Surfaces in Water	3"	4"**
External Surfaces Formed	2"	3"
Internal Surfaces	2"	3"

**In special situations, where bars greater than #11 are used, increased cover requirements should be detailed in the bridge plans.

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Item	Slightly Aggressive Environment	Moderately and Extremely Aggressive Environment
Substructure (Precast)	2"	2-3/4"
Prestressed Piling	2-3/4"	2-3/4"
Drilled Shafts	6"	6"
Retaining Walls	2"	3"
Culverts (C.I.P.)	2"	3"
Bulkheads	3"	4"

When the proposed bridge substructure or superstructure has been determined to be located in a moderately or extremely aggressive environment, then those portions of the structure in such an environment shall use Class IV concrete reinforced with epoxy coated reinforcing steel.

A Class 5 Applied Finish Coating shall be applied to the following exposed surfaces: the inside, backside and top of Concrete Barrier Handrails and End Bent Wingwalls and the coping areas below Handrails.

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For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301, Telephone (904) 488-8541
WILLIAM N. ROSE
SECRETARY

January 4, 1980

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., P.E.
Deputy Design Engineer (Structures)

Subject: Reinforcing Steel - Coatings - Test Piles

1. For all future projects, the design of bridge decks shall utilize only straight reinforcing steel bars. Multiple truss bent bars shall not be utilized. This requirement is applicable to all designs on which the detailing has not commenced.

2. In the future, plans shall include a note stating the following: A Class 5 Applied Finish Coating shall be applied to the following exposed surfaces, the inside, backside and top of Concrete Barrier Handrails and End Bent Wingwalls and the coping areas below Handrails.

3. Unless unusual subsurface conditions exist, the practice of requiring test piles in the end bents shall be discontinued.

TA:s

cc: Mr. J.L. Potter (FHWA)
Mr. S.F. Allred
Mr. Carlos Stone
Mr. R. Mestre

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For Historical Information Only

FLORIDA STATE ROAD DEPARTMENT

JAY W. BROWN
COMMISSIONER

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JAMES LEE — CRESTVIEW

TALLAHASSEE
March 27, 1969

TO: All Designers and Consultants

FROM: T. Alberdi, Jr., Engr. of Structures

SUBJECT: BORING INFORMATION

We would like the following information shown on the boring data sheet for all of the bridge plans:

(1) Date borings were made.

(2) By whom borings were taken.

Please add this information to all plans in your office and all plans prepared in the future.

TA:s

cc: Mr. R.A. Wakeman

VOID
For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772

TOM WEBB, JR.
SECRETARY

January 19, 1976

M E M O R A N D U M

TO: All Designers

FROM: T. Alberdi, Jr.

SUBJECT: Payment for Pile Jackets

On all future jobs that have concrete pile jackets a note shall be added to the plans specifying that the pay quantities for jackets shall be based on the square jacket section. If a round jacket is used by the contractor, the additional concrete shall be furnished at the contractor's expense. This will clarify some confusion that has recently occurred on projects where pile jacket concrete is being paid on a cubic yard basis.

TA:s

cc: Mr. Tom Drawdy

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For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

TOM WEBB, JR.
SECRETARY

March 16, 1978

M E M O R A N D U M

To: All Consultants and Designers

From: T. Alberdi, Jr.
Deputy Design Engineer (Structures)

Subject: Test Loads

On all plans prepared in the future, test loads will be restricted to sites where the soils conditions indicate that a test load could be utilized for the determination of the pile lengths and their ability to sustain the design loads. The past practice of indicating test loads as a contingency item on all contract plans is terminated. When the test load is called for on the contract plans, it is not to be indicated as a contingency item.

TA:s

cc: Mr. Jerry L. Potter (FHWA)
Mr. R. Mestre

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For Historical Information Only

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
MICHAEL O. O'NEIL, SECRETARY
TALLAHASSEE, FLORIDA 32304

November 4, 1969

TO: Designers and Consultants

FROM: T. A. T. Alberdi, Jr., Engineer of Structures

SUBJECT: Data Required for Bridge Submittal

The attached list represents the data required by the Department and Bureau of Public Roads on Bridge Submittals.

Please include all the requested information when submitting plans for review.

Your continued cooperation will be appreciated.

TA:jc
Encl.

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PRELIMINARY DESIGN DATA FOR BRIDGES

I. Preliminary Layout

The following data are needed, as a minimum, to provide sufficient information for a knowledgeable study of the proposed design:

1. Plan, Elevation and Cross-Section Views of the structure drawn to a scale sufficiently large to clearly show the salient details, including location of expansion and fixed bearings.

2. Plan, Profile and Cross-Sections covering details of the roadway approaches showing details of roadways; curb or sidewalk width; approach pavement width; shoulder width.

3. Controlling horizontal and vertical clearances of all facilities crossed.

4. Traffic data (for each facility if grade separation), present and design year; percentage of trucks.

5. Drainage data; normal water; annual high water; design high water; extreme high water, together with year of occurrence and recurrence frequency; low water (where available); drift; nature of stream; drainage area. (Drainage Data Sheet).

6. Soundings; borings; soils analysis; watertable elevation; location of borings as well as logs should be shown on the drawing and date and by whom work was done.

7. Maximum foundation pressures; pile loads; type of piling.

8. Design loading; allowable unit stresses; specification references.

9. Location of guardrail on bridge approaches.

10. In cases where a structure is to be widened, the submission should include a copy of the inspection report covering the condition of the existing structure, especially the condition of the substructure units and foundation piling, if accessible for inspection.

II. Structural Drawings

The following procedure will enable expeditious review and clearance of the structural plans.

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1. Submission of structural drawings for review. In the case of complex structures, the plans should be submitted when plans are between 50% to 75% complete.

2. Submission of special provisions, for advance review, reflecting any revisions to the standard specifications or those pertaining specifically to a particular structure or project.

3. Submission of completed structural drawings and special provisions carrying the previously requested modifications.

III. General

1. Bridges over Navigable Waterways.

   If a structure is to be provided over a navigable waterway under jurisdiction of the U. S. Coast Guard, permit application sketches must be submitted to the Bureau of Public Roads for examination in advance of formal application to the Coast Guard.

2. The Federal-Aid project number and a small scale vicinity map should be included to identify and locate the proposed structure. This may be accomplished by showing roughly to scale the bridge location in relation to two or more towns appearing on the latest official State map, or if in an urban area, the relation of the bridge location to local streets appearing on the approved urban area map. (Key Map)

3. The submission should contain information regarding alternate design studies or reasons why alternate designs were not studied, if appropriate.

4. It is requested that scheduling of projects be arranged to permit ample time for making our examinations at the various stages of bridge plan development. For structures estimated to cost $1,000,000 or more or having unusual features, scheduling should take into account the additional lead-time required by the BPR for review at the Regional and Washington Office levels.

For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772

WALTER L. REVELL
SECRETARY

May 8, 1974

M E M O R A N D U M

TO: All Designers and Consultants

FROM: T. Alberdi, Jr., P.E.
Deputy Design Engineer (Structures)

SUBJECT: PRELIMINARY REVIEW OF STRUCTURAL PLANS BY FEDERAL HIGHWAY ADMINISTRATION

The Federal Highway Administration has agreed to review structural plans without soils information for certain types of structures. These structures are the ones for which the span arragement and superstructure design are not controlled by soils information (such as overpasses, railroad crossings and possibly minor stream locations). The FHWA will review and comment on the preliminary layout so that the consultant can proceed with the final design without experiencing lengthy delays. The soils information must be acquired before the final plans review is made and approval is given by FHWA.

Where foundation data may affect span arrangements, the preliminary plans cannot be submitted to FHWA without foundation information. However, the Department will review and comment on the general features of the layout so as to resolve any major problems prior to the acquisition of the subsoils information. Neither the Department nor the FHWA will give final approval of preliminary plans where foundation data could have an effect on the type of structure and span arrangement to be utilized.

Every effort should be made to secure foundation data at the earliest possible time so as not to delay the development of the construction drawings.

TA:s

cc: Mr. R. Mestre

T. Alberdi, Jr.

VOID
For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772

TOM WEBB, JR.
SECRETARY

June 4, 1975

M E M O R A N D U M

TO: All Designers and Consultants

FROM: T. Alberdi, Jr.
Deputy Design Engineer (Structures)

SUBJECT: CURB HEIGHTS ON BRIDGES

For all future bridges that utilize curbs, the height of the curb shall match the curb height on the roadway approaches. This condition will only exist on structures which utilize sidewalks. The curb height will normally be 6" in height. All future jobs on which the design-details have not commenced should have this feature incorporated into the construction plans.

TA:s

cc: Mr. Jerry Potter (FHWA)
Mr. R.R. Churchill
Mr. R. Mestre

VOID
For historical information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772

TOM WEBB, JR.
SECRETARY

July 2, 1975

M E M O R A N D U M

TO: All Designers and Consultants
Mr. Jerry L. Potter (FHWA)
Mr. R. Mestre

FROM: T. Alberdi, Jr.

SUBJECT: Pilaster Details for Roadway Light

Attached is a sketch showing standard details to be used in designing structures that will require light standards. All new design should reflect the details as shown on this attachment.

TA:s

Attachment

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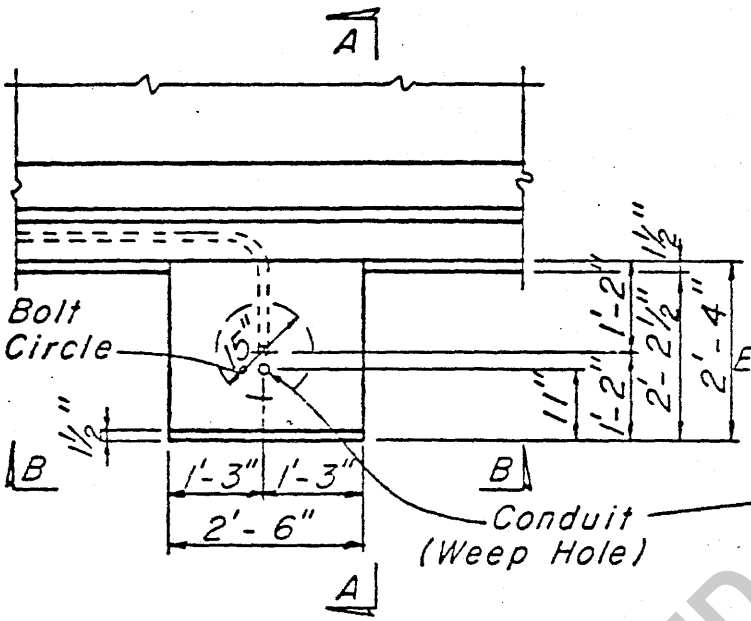
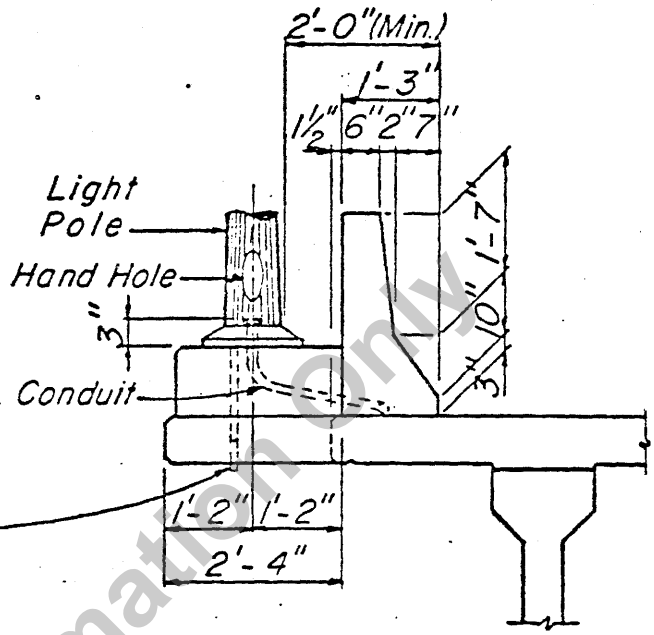
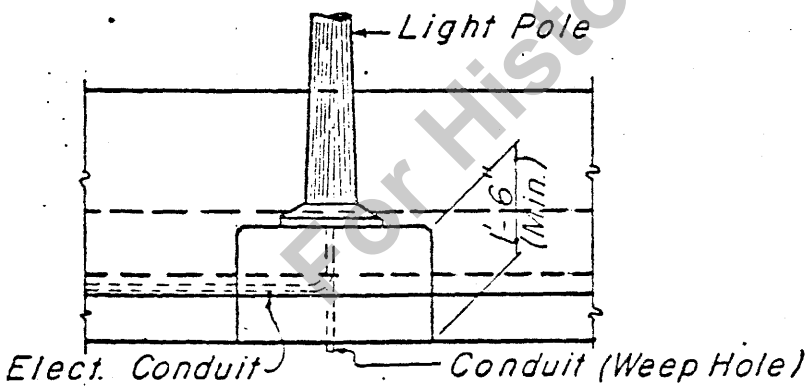


PLAN



SECTION A-A



VIEW B-B

PILASTER DETAILS FOR ROADWAY LIGHT

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Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772

TOM WEBB, JR.
SECRETARY

October 7, 1975

TO: All Designers and Consultants

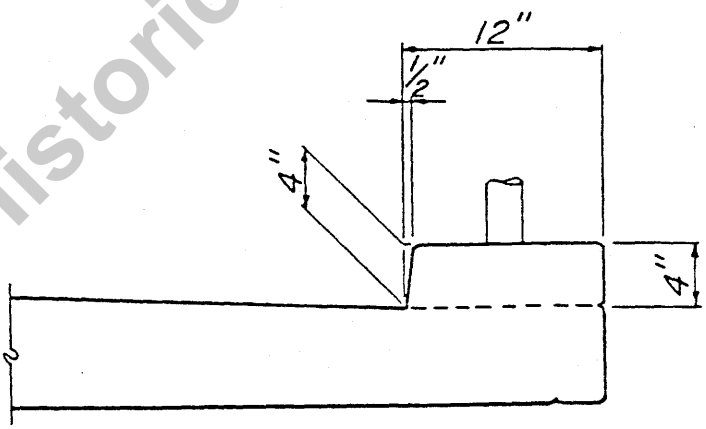
FROM: T. Alberdi, Jr.
Deputy Design Engineer (Structures)

SUBJECT: Curb Widths and Heights for Pedestrian Overpasses

For all future pedestrian overpasses the curb widths and heights are to be in accordance with the sketch below.

TA:s

cc: Mr. J.L. Potter (FHWA)
Mr. R. Mestre



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Florida Department of Transportation

D. ROBERT GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8541
TOM WEBB, JR.
SECRETARY

February 7, 1979

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., Deputy Design Engineer (Structures)

Subject: Intermediate Diaphragms for Prestressed I-Girder Construction

The following criteria shall apply to all future structures:

(1) The design and details for structures funded 100 percent with state funds shall omit all intermediate diaphragms.

(2) For structures funded with Federal funds, the following criteria shall apply:

(A) The girder design shall include the dead load of one intermediate diaphragm position at mid-span, but the detail drawings shall be prepared with no intermediate diaphragms. This design procedure will provide for approximately 5 percent increase in the live load capacity of the girder, and also will eliminate the intermediate diaphragm from the construction drawings.

(B) For structures with skews greater than 35° and funded with Federal funds, one intermediate diaphragm shall be utilized for spans greater than 40 feet located at mid-span.

TA:s T. A.

cc: Mr. Jerry L. Potter
Mr. R. (Bob) Mestre
Mr. S. Fred Allred

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Florida Department of Transportation

D. ROBERT GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8541
TOM WEBB, JR.
SECRETARY

February 26, 1979

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., P.E. T.A.
Deputy Design Engineer (Structures)

Subject: Details of Construction Joints at Intermediate Supports for Prestressed Beam and Slab Construction

Attached is a revised sketch of the above subject. The revision consists of adding the following note to the sketch:

"On joints where saw cuts are made, the saw cut shall be made no later than the day following concrete placement."

This note should appear on all drawings in the future requiring this detail.

TA:s

cc: Mr. J.L. Potter
Mr. S.F. Allred
Mr. R. Mestre

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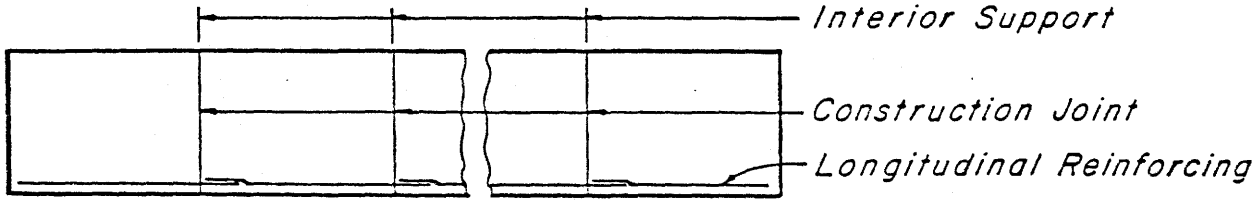
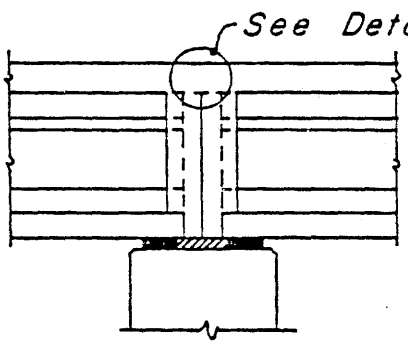
Revised 2-26-79

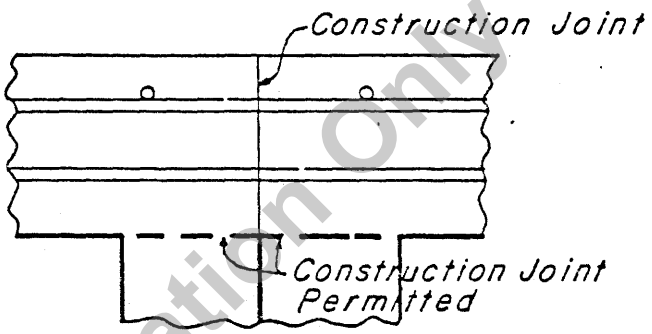


PLAN SHOWING CONSTRUCTION JOINT LOCATIONS AT INTERIOR SUPPORTS

NOTE: Decks on structures having more than one unit shall be placed as follows. After pouring the first unit succeeding pours shall begin at the end away from and proceed toward the previously placed unit.

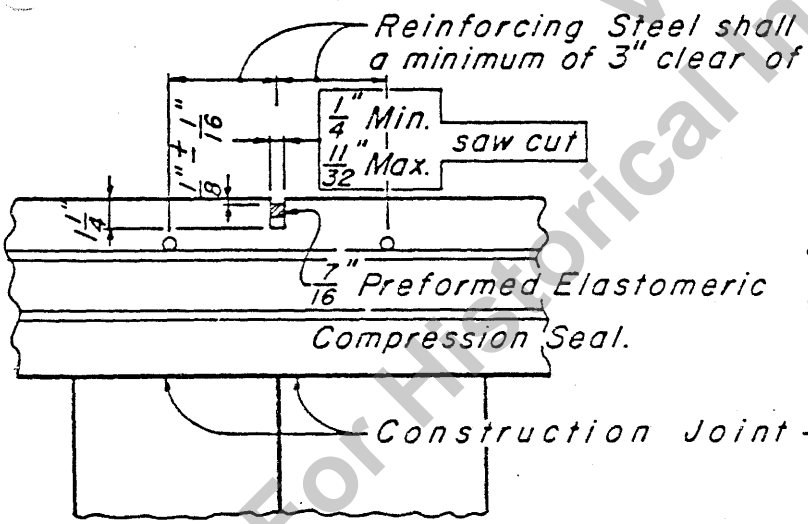


SECTION AT INTERIOR SUPPORT

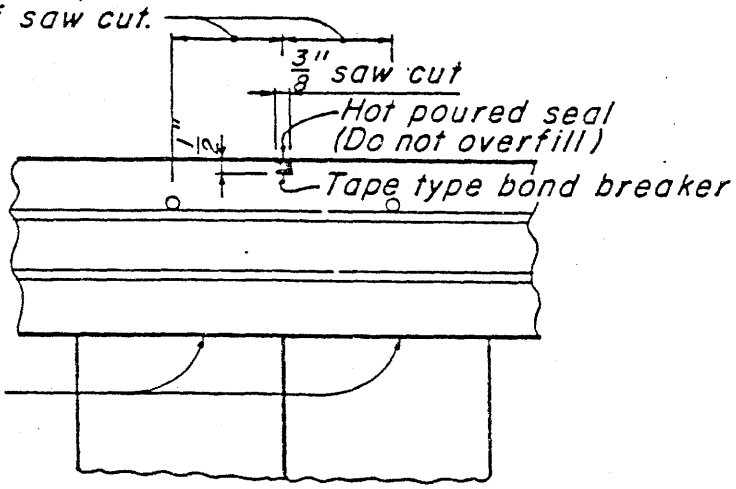


DETAIL A1

NOTE: Detail A1 shall apply where a pour terminates at an Intermediate Support.



ALTERNATE DETAIL A2



ALTERNATE DETAIL A3

NOTE: At the option of the Contractor either Alternate Detail A2 or Alternate Detail A3 may be used when slab pours are continuous over intermediate supports. The cost of constructing Alternate Joints at intermediate supports shall be at the Contractors expense. On Joints where saw cuts are made, the saw cut shall be made no later than the day following Concrete Placement.

DETAILS OF CONSTRUCTION JOINTS AT INTERMEDIATE SUPPORTS FOR PRESTRESSED BEAM AND SLAB CONSTRUCTION

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Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8541

WILLIAM N. ROSE, SECRETARY

May 17, 1979

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., Deputy Design Engineer (Structures) TA

Subject: Approach Slabs

On all future jobs that require epoxy coated reinforcing steel for approach slabs, please add a note to the plans stating that the reinforcing steel in the approach slabs is to be epoxy coated.

TA:s

cc: Mr. J.L. Potter
Mr. S.F. Allred
Mr. R. Mestre

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Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301, Telephone (904) 488-8541
WILLIAM N. ROSE
SECRETARY

January 4, 1980

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., P.E.
Deputy Design Engineer (Structures)

Subject: Reinforcing Steel - Coatings - Test Piles

1. For all future projects, the design of bridge decks shall utilize only straight reinforcing steel bars. Multiple truss bent bars shall not be utilized. This requirement is applicable to all designs on which the detailing has not commenced.

2. In the future, plans shall include a note stating the following: A Class 5 Applied Finish Coating shall be applied to the following exposed surfaces, the inside, backside and top of Concrete Barrier Handrails and End Bent Wingwalls and the coping areas below Handrails.

3. Unless unusual subsurface conditions exist, the practice of requiring test piles in the end bents shall be discontinued.

TA:s

cc: Mr. J.L. Potter (FHWA)
Mr. S.F. Allred
Mr. Carlos Stone
Mr. R. Mestre

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Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

January 29, 1985

M E M O R A N D U M

TO: All Designers and Consultants Designing Bridges for the State of Florida

FROM: Henry T. Bollmann
By: R. C. Burnett, Jr.

COPIES: Mr. Jerry Potter
Mr. Ben Revell

SUBJECT: Grooving Bridge Floors

Beginning with the May 29, 1985, letting, all contracts for Bridges that include the construction of Bridge floors shall include the following item in the Summary of Bridge Pay Items.

Item No. 400-7 - Bridge Floor Grooving - Sq. Yd.

The area of Bridge Floor Grooving shall be determined by measurement of the area bounded by the gutter lines (at barrier rails, curbs and median dividers) and the beginning and end of the bridge or the ends of approach slabs that will not receive an asphaltic concrete surface.

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HTB:bc

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

August 5, 1985

M E M O R A N D U M

TO: All Structural Designers and Consultants Doing Work For the Florida Department of Transportation

FROM: Henry T. Bollmann, P.E., Chief
Bureau of Structures Design

By: Angelo J. Garcia, P.E.
State Structures Design Engineer

SUBJECT: Bridge Widening

VOID
For Historical Information Only

In order to minimize changing the characteristics of the deck slab supports and/or unduly affect maintenance and aesthetics, the following must be adhered to during the preparation of plans for bridge widening:

1. Mixing of concrete and steel beams in the same span should be avoided.

2. Same type of beams as existing is preferred; however, if the existing beams are cast-in-place concrete, the widened deck should be supported on precast prestressed beams.

3. Vertical clearance may be maintained by decreasing the standard beam depth.

Generally, the transverse reinforcement in the new deck should be spaced to match the existing spacing. Different bar size may be used if necessary.

HTB/Gb

cc: Mr. Jerry L. Potter
Mr. Bob Mestre

Florida Department of Transportation

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

BOB MARTINEZ
GOVERNOR

KAYE N. HENDERSON
SECRETARY

July 28, 1987

Gentlemen:

RE: Bridge Railing (Interim Design)

By letter of July 13, 1987, the FHWA has granted the FDOT a limited time extension to implement exclusive use of a crash-tested bridge railing.

One of the conditions of the time extension is that the FDOT upgrade and implement the current barrier standard by:

- including one additional #4 longitudinal bar near the top outside face, and

- increase the minimum top dimension from 6" to 7".

Attached is a print of the new barrier standard for your use. Because there are projects in numerous stages of development and/or completion, the following general rules will be implemented:

1. No change, use existing standard: This can only be granted on a project by project basis if the project is tracing ready in our office and would require a letting date change to implement. To my knowledge, all such projects have been dealt with.

2. Encroachment into the shoulders: The necessary extra one inch of width would be taken up in the shoulder width. The new standard will be used but only some dimensional changes to the drawings is anticipated. This would apply also on an individual basis and to those projects with final remarks now being returned or tracing ready and not yet submitted with a letting date not in danger of being missed.

3. Use of interim barrier: no encroachment on shoulder - requires wider deck. This will apply to all projects not covered above.

The above rules will apply to State as well as Federally funded projects.

Please note that this is a temporary situation. At this time we do not know when a final barrier standard will be approved. We shall advise you promptly of future developments.

Sincerely,

Henry T Bollmann

Henry T. Bollmann, P.E., Chief
Bureau of Structures Design

AMG/nbh

cc: In-house Designers
Mr. Dave Bullard

VOID
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Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

August 2, 1985

M E M O R A N D U M

To: All Structural Designers and Consultants Doing Work For The Florida Department of Transportation

From: Henry T. Bollmann, P.E., Chief, Bureau of Structures Design
By: Arthur G. Maylan, P.E., Engineer of Structural Design

Subject: Wing Post and Anchor Post for Guardrail Attachment

There have been incidents of conflict between the reinforcing steel and anchor bolts for both the wing post and the anchor post on the wingwalls of bridges.

In order to avoid conflict, it is suggested that the reinforcement be spaced and sized as shown in the attached sketches.

HTB:Ms

Attachments

cc: Mr. Jerry Potter
Mr. R. Mestre

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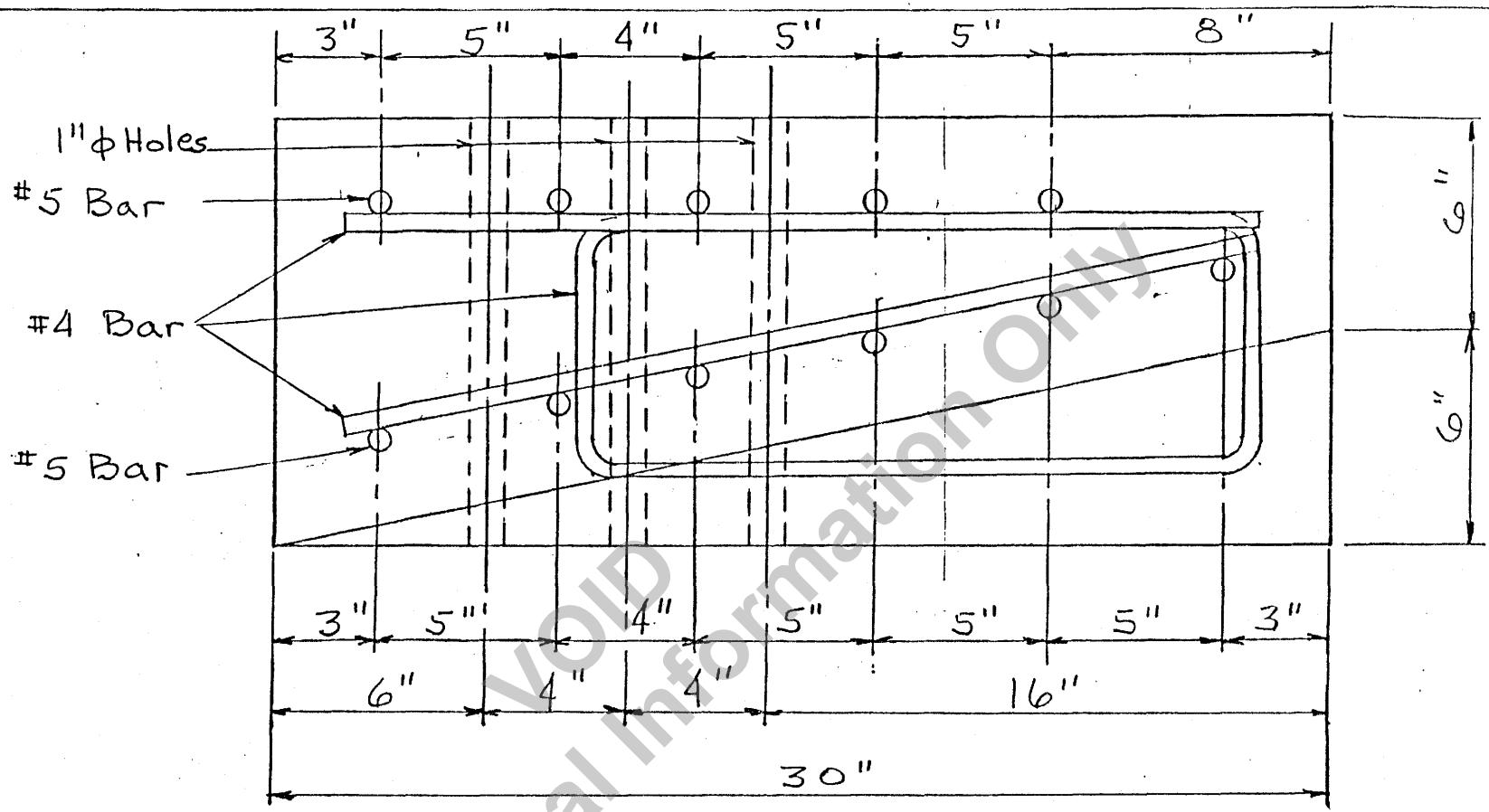
Relocate Bolts in End Posts for G.R. 1/2



PLAN

VOID
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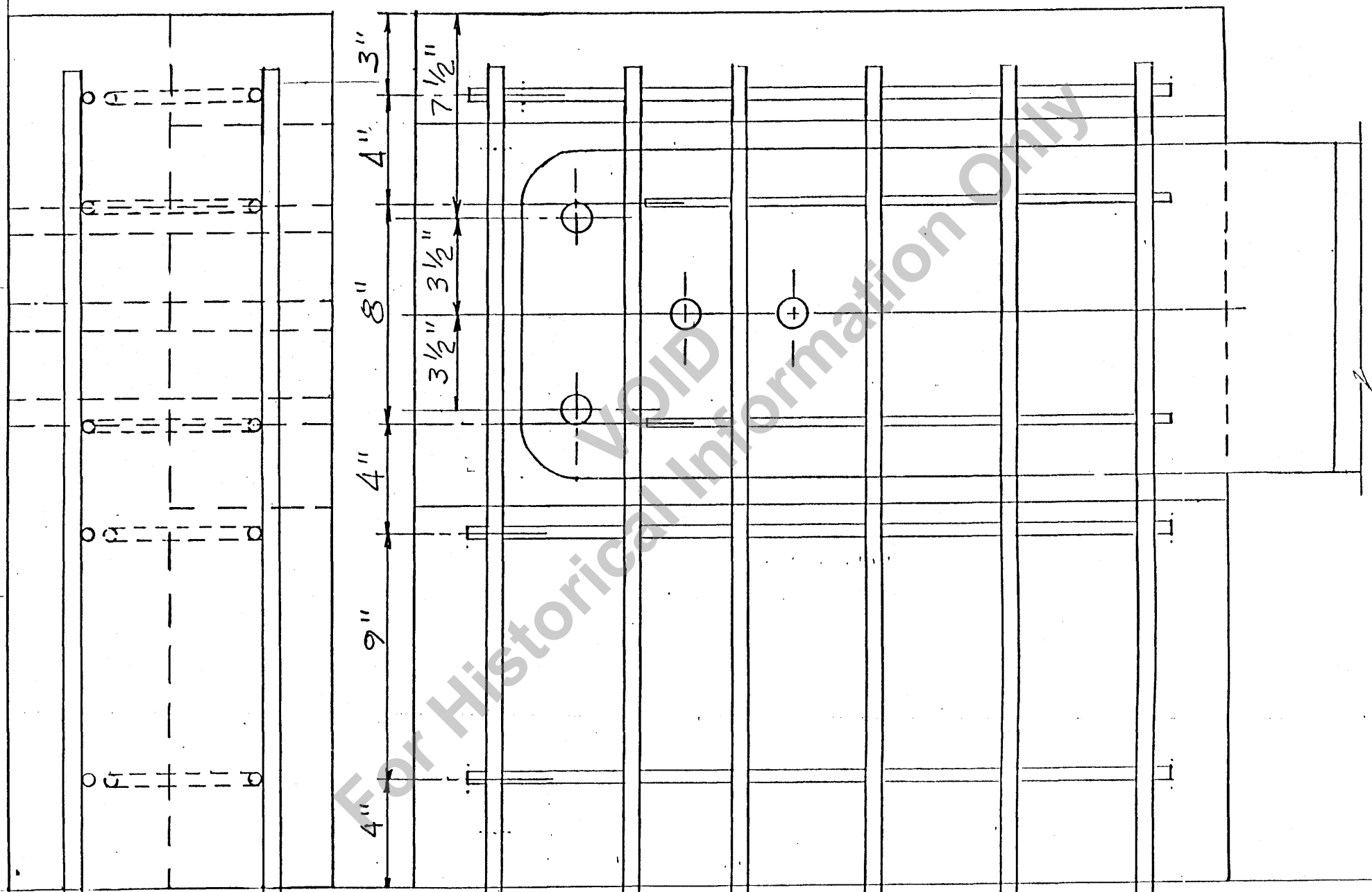
NATIONAL
42-381 50 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE

2/2



END SECTION

ELEVATION

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NATIONAL
42-381 50 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772

TOM WEBB, JR.
SECRETARY

October 23, 1975

M E M O R A N D U M

TO: All Designers and Consultants

FROM: T. Alberdi, Jr., P.E. TA
Deputy DEsign Engineer (Structures)

SUBJECT: Welding Details for Stiffeners and Gusset Plates

Attached is an up-to-date sketch for detailing gusset plates and stiffeners on all future structural steel projects. Please incorporate these details in all jobs presently being designed in your office.

TA:s

Attachment

cc: Mr. Jerry L. Potter
Mr. R. Mestre

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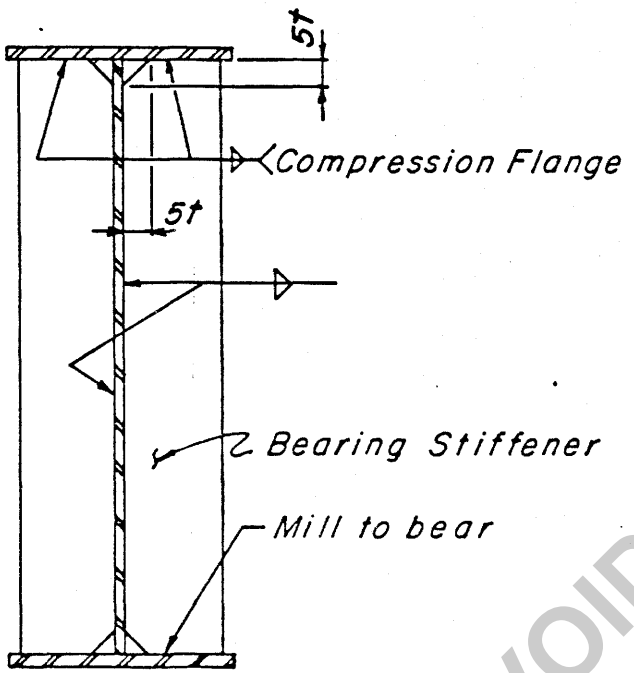
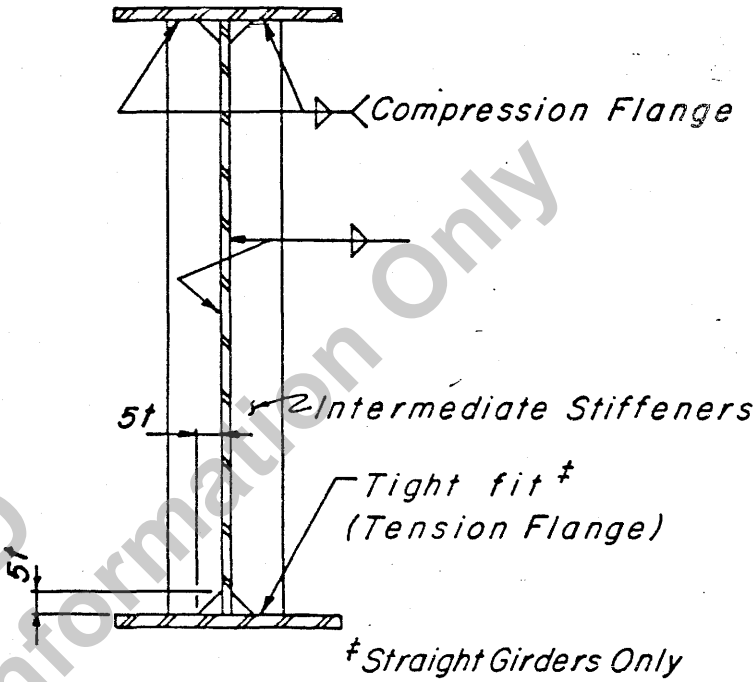
NOTE: All Stiffener Plates at junction of flanges and web, and all Gusset Plates at junction of stiffeners and web shall have a triangle cut as shown below.



DETAIL AT BEARING



DETAIL AT INTERMEDIATE PANEL POINT

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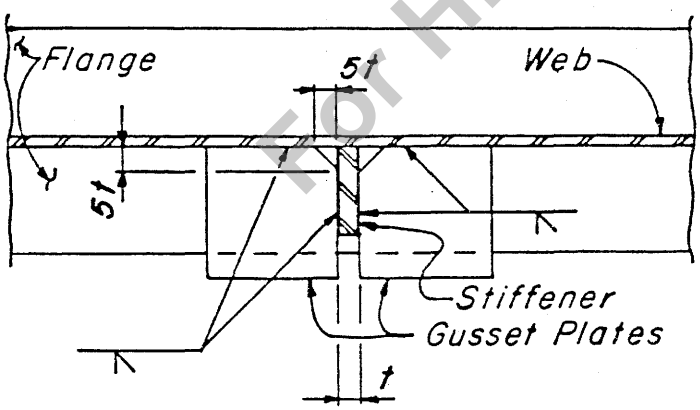
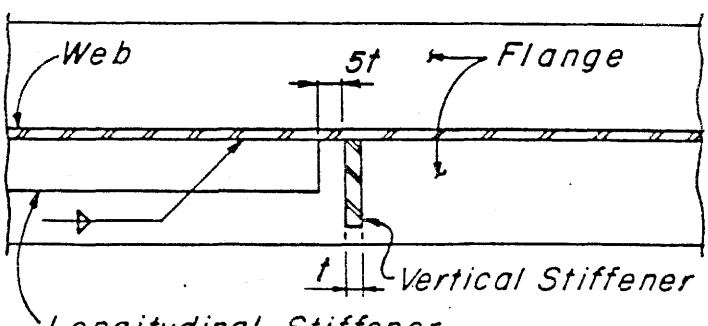
CONNECTION DETAILS FOR STIFFENERS



DETAIL OF GUSSET PLATE CONNECTION



NOTE: Longitudinal Stiffeners shall stop clear of Vertical Stiffeners as shown above.

DETAIL OF LONGITUDINAL STIFFENER CONNECTION

Revised: 10-22-75

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772
TOM WEBB, JR.
SECRETARY

August 26, 1977

M E M O R A N D U M

To: All Consulting Engineers and Mr. R. Mestre

From: T. Alberdi, Jr.
Deputy Design Engineer (Structures)

Subject: Recommendation Concerning Steel Thicknesses

Enclosed is a copy of a Federal Highway Administration Notice pertaining to the above subject. The intent of the notice is that when designers are selecting plate thicknesses consideration shall be given to keeping the thickness of the plate in the range of two inches (2").

If you have any questions on this matter, please contact this office.

TA:s

Enclosure

VOID
For Historical Information Only

U. S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

SUBJECT	FHWA NOTICE
Recommendations Concerning Steel Thickness	N 5040.27 August 17, 1977

1. PURPOSE: FHWA Notice 5040.23 dated February 16, 1977, restricted the use of electro-slag welding and suggested avoidance of main member tension material in excess of 2-inch thickness. Because of inquiries on the thickness mentioned, further explanation is believed necessary.

2. COMMENTS: The suggested thickness limitation was not a mandatory requirement. It was and continues to be a suggestion in order that alternate designs be considered which can provide more structural redundancy and reduce the necessity for welding thick steel plates. Also, since rolling generally increases the toughness of plate, it follows that thicker material may be more sensitive to fracture than thinner material of identical composition. Therefore, the thinner plates of a given heat can provide more assurance of minimizing the potential for fracture.

   The current toughness requirements and a fracture control plan are under consideration at this time for non-redundant fracture critical tension members, and are not as yet resolved.

   Until such time as these matters are resolved, efforts to minimize fracture and the potential for catastrophic collapse should be undertaken in design of bridge structures as outlined above.

   Higher strength steel can be used instead of thicker plates of lower strength steel, but the added complications attendant with welding higher strength steel will also need to be carefully evaluated, along with the fact that an increased redundancy may not necessarily be accomplished by the use of higher strength steel.

for H. A. Lindberg
Associate Administrator for
Engineering and Traffic Operations

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DISTRIBUTION: H-WDM-3; H-M(SH)-4

OPI: HNG-32

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

TOM WEBB, JR.
SECRETARY

August 24, 1978

MEMORANDUM

To: All Consulting Engineers

From: T. Alberdi, Jr., P.E. TA
Deputy Design Engineer (Structures)

Subject: Design Details - Tie Plate Connections

Enclosed is a copy of a Federal Highway Administration memorandum (FHWA Technical Advisory No. T 5040.4) pertaining to tie plate connection details. Please adhere to the recommendations in the memorandum.

TA:s

Enclosure

VOID
For Historical Information Only

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SUBJECT	FHWA TECHNICAL ADVISORY
Design Details - Tie Plate Connections	T 5040.4 August 23, 1978

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Par. 1. Purpose
2. Background
3. Discussion
4. Recommendations

1. PURPOSE. To alert personnel of Federal Highway Administration and State highway agencies of a detail area to be avoided in new designs for structural steel bridges, and to point out the need for examination of this detail in bridge inspections.

2. BACKGROUND. Some bridges in Pennsylvania have experienced fatigue cracking of the top tie plate of floor beam brackets which are cantilevered from the main longitudinal girders. Research by Lehigh University has defined and evaluated the nature of this distress under Fritz Engineering Laboratory Report 386.4 and a digest of the results is contained in the Transportation Research Board Record 607, page 56.

3. DISCUSSION

a. The tie plate for the floor beam bracket is normally bolted or riveted to both the floor beam bracket and the interior floor beam to transmit the moment capacity of the bracket back to the floor beam. In the instances of distress, this tie plate has also been bolted or riveted to the top flange of the longitudinal girder.

b. Due to the cumulative effect of the compression stress in the top flange of the longitudinal girder, a shortening of this flange occurs. This shortening is not shared by the exterior stringers which rest on the top flange of the floor beam bracket and, as a result, a longitudinal displacement occurs in the end of the floor beam bracket relative to the part of the tie plate which is riveted or bolted to the longitudinal girder.

DISTRIBUTION: OPI: HNG-32

H-W(EO/RD)-1; H-W(DV/HO/NG/RS/TO)-3
H-DM-1; H-D(BR/CM/FH/RP/WB)-3
H-M(BR/EC/FO/RP)-3; H-M(SH)-4

c. This relative displacement sets up inplane bending stresses of a repetitive nature under live load which are sufficient to fatigue the tie plate to the point of fracture.

d. This problem is not in evidence in situations where the stringers frame into the floor beam bracket and the flange of the bracket is in contact with the bottom of the concrete slab.

4. RECOMMENDATIONS

a. Designs on future projects which utilize this type of detail should avoid bolting the tie plate to the longitudinal girder.

b. Existing structures which have this detail should be carefully examined for evidence of cracking and the need for repairs. It is recommended that the bolts or rivets which connect the tie plate to the longitudinal girder be removed, and that the holes be protected against corrosion through use of smaller bolts and suitable washers or plates.

W. J. Wilkes, Director
Office of Engineering

VOID
For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

June 14, 1982

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., P.E.
State Design Engineer - Structures

T.A.

Copies: Mr. J.L. Potter, Mr. S.F. Allred, Mr. R. Mestre

Subject: Nondestructive Testing Locations for Structural Steel Inspection

For all projects now under design, it is recommended that the plans clearly identify tension members or elements and members of elements subject to stress reversal. This will enable the inspection personnel to identify the type and extent of testing that is necessary in accordance with the welding specifications. Also, it will be helpful in assuring the correct testing has been performed if all shop drawings clearly identify tension members or elements and members subject to stress reversal.

TA:s

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Florida Department of Transportation

BOB GRAHAM
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PAUL N. PAPPAS
SECRETARY

August 2, 1985

M E M O R A N D U M

To: All Designers and Consultants Doing Work For The Florida Department of Transportation

From: Henry T. Bollmann, P.E., Chief, Bureau of Structures Design
By: Robert E. Nichols, P.E., Engineer of Structures Design R.E.N.

Subject: Nondestructive Testing Locations for Structural Steel Inspection

Because of inconsistencies noted in recent plans regarding the requirement for Charpy V-notch impact testing of Fracture Critical Bridge Members, this memorandum is issued to clarify the initial memorandum dated June 14, 1982 (copy attached) and as a reminder to clearly identify on the plans all members subject to CVN testing.

Members and member components requiring CVN testing include tension flanges, webs and associated splice plates of main girders; however, it is the responsibility of the designer to identify on the plans these and any other FCM's as stipulated in the AASHTO Specifications for CVN testing.

HTB:Ns HTB

Attachment

cc: Mr. Jerry Potter
Mr. R. Mestre

VOID
For Historical Information Only

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MICHAEL O. O'NEIL, SECRETARY
TALLAHASSEE, FLORIDA 32304

November 18, 1969

M E M O R A N D U M

TO: All Designers and Consultants

FROM: T. Alberdi, Jr., Engineer of Structures TA

SUBJECT: TIMBER PILING - DUAL TREATMENT

The use of dual treated piles shall be specified on the plans for use in salt water installations. This type of piling shall offer greater protection from marine borers; service tests on this piling have proven very successful in resisting attacks by teredo and limnoria.

The pay item for this piling shall be "Treated Timber Piling [Dual Treatment]".

TA:s

cc: Mr. R.A. Wakeman
Mr. W.G. Bristol
Mr. Harry Wisner

VOID
For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772

TOM WEBB, JR.
SECRETARY

May 11, 1976

To: All Designers and Consultants

From: T. Alberdi, Jr.
Deputy Design Engineer (Structures)

Subject: Details for Concrete Fender Systems

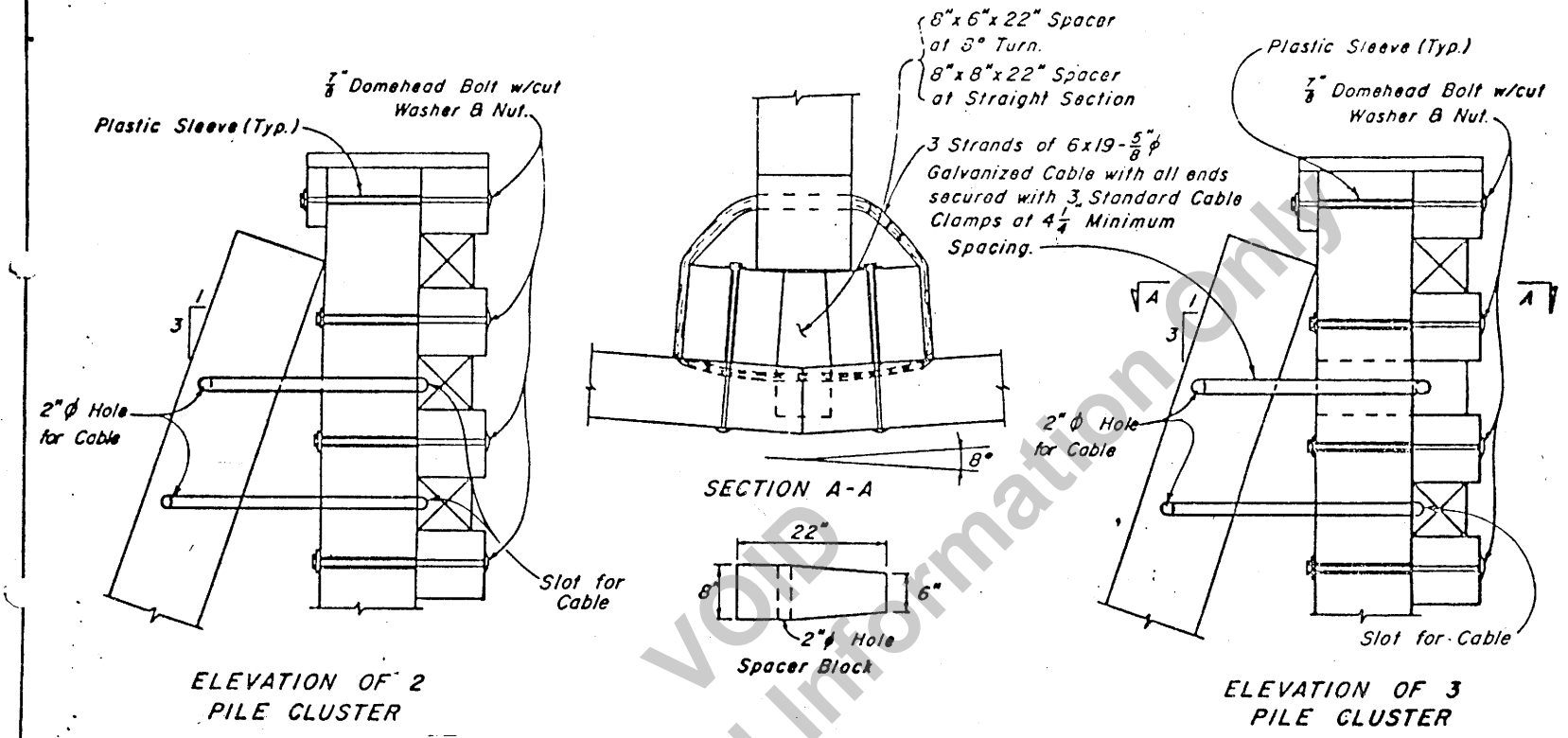
Attached are sketches for revised details for concrete fender systems that should be utilized on all future jobs requiring concrete fender systems.

TA:s

Attachment

cc: Mr. R. Mestre
Mr. Jerry L. Potter (FHWA)
Mr. S.F. Allred

VOID
For Historical Information Only



Note: All hardware shall be Galvanized in accordance with A.S.T.M.-123.

CONNECTION DETAILS FOR CONCRETE PILE FENDER SYSTEM

Revised 4- -76

VOID For Historical Information Only

Form 281-10

MEMORANDUM

State of Florida Department of Transportation

DATE October 14, 1983

TO All Structural Designers and Consultants doing Structural Design work for F.D.O.T. and Maintenance.

FROM Henry T. Bollmann, P.E., Chief Bureau of Structures Design HTB

COPIES TO

SUBJECT Fender Pile Clusters.

On fender pile clusters specify that the pile clusters are to be wraped with polypropylene impregnation wire rope. All ends of the cable shall be covered with manufacture's plastic boot.

The use of this cable with the coating should substantially reduce the number of cable replacements on pile clusters due to corrosion.

HTB:hd

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For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772
TOM WEBB, JR.
SECRETARY

December 6, 1977

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr.
Deputy Design Engineer (Structures)

Subject: Item Numbers to Identify Epoxy Coated Reinforcing Steel

In order to provide Item Numbers that will identify bridge components that will contain epoxy coated reinforcing steel, please add the digit "9" in front of the Item Number of the component containing epoxy coated reinforcing steel. Also, add a note below or near the Summary stating "The number 9 that precedes Item Numbers indicates that Epoxy Coated Reinforcing Steel is used in the Item."

Example: 9400-5-4 Concrete Handrail (Barrier) L.F.

TA:s

cc: Mr. R. Mestre
Mr. Fred Allred
Mr. J.D. Gammage

VOID
For Historical Information Only

March 28, 1978

M E M O R A N D U M

To: All Consultants

From: T. Alberdi, Jr., P.E. TA
Deputy Design Engineer (Structures)

Subject: Summary of Estimated Quantities

On all bridge plans for which the Summary Sheet has not already been completed and on future bridge projects, please omit the Summary of Estimated Bridge Quantities from the plans and send us the Summary of Estimated Bridge Quantities separate from the plans in legible form on legal size or larger paper.

TA:mfs

cc: Mr. J.L. Potter (FHWA)
Mr. R. Mestre

VOID
For Historical Information Only

Florida Department of Transportation

ROB GRAHAM
OVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

May 10, 1984

TO: All Designers and Consultants Designing
Bridges for the State of Florida

FROM: Henry T. Bollmann, P.E., Chief Bu. of Structures Design
By: A. J. Haywood, P.E., Engr. of Structural Design

cc: Mr. Jerry Potter

Subject: Revisions to AASHTO Article 1.7.17 - 1.7.42
Diaphragms, Cross Frames and Lateral Bracings

VOID
For Historical Information Only

Revise Article 1.7.17 - Diaphragms, Cross Frames and Lateral Bracings by adding after the sixth sentence the following:

> "Vertical connection plates such as transverse stiffeners which connect diaphragms or cross frames to the beam or girder shall be rigidly connected to both top and bottom flanges."

Commentary: Fatigue cracking at the juncture of the flange and web due to out-of-plane distortion caused by the action of diaphragms or cross frames is currently one of the most serious fatigue problems evident on existing structures. To eliminate this type of fatigue failure, it is recommended that vertical connection plates used for connecting the diaphragm or cross frame to the beam or girder be rigidly attached to both top and bottom flanges. Such attachment will eliminate the high stress ranges experienced at this location due to differential deflection between adjacent beams.

This revision shall be used on all current projects being designed and all future projects.

Note: Weld top & bottom of all connection P's & Intermediate stiffeners - Bearing stiffeners shall be welded to compression flg. & mill to bear against 8-16-84

HTB:hc

Florida Department of Transportation

GRAHAM
GNOR

Haydon Burns Building 605 Suwannee Street Tallahassee Florida 32301-8064 Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

October 19, 1984

M E M O R A N D U M

TO: All Designers and Consultants

FROM: H. T. Bollmann, P.E., Chief, Bu. of Structures Design
By: R. C. Burnett, Jr., P.E., State Structures Design Engr.

SUBJECT: General Notes on Bridge Plans

The General Notes for all future bridge plans and those presently being prepared shall include all the design information that is necessary for load rating the bridge. The information required depending upon the type construction, shall include but not be limited to the following:

Specifications (Edition Dates):
Design: AASHTO, if other identify
Construction: FDOT and AASHTO when referenced

Design Loading:
Live Load, pile loads and sizes
Wearing surface
Wind, if not AASHTO

Design Method:
Identify the components designed load
Factor and those designed service load.

Environment:
Coastal (Saltwater or brackish water)
Inland (Extremely Aggressive)
Inland (Slightly or moderately Aggressive)

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Materials:

Reinforcing Steel; Grade and Allowable Stress
Prestressed Strands; Low relaxation stabilized or stress relieved, size and stress per strand
Post-tension steel; strands, parallel wires or bars. Modulus of elasticity, friction and wobble coefficients, jacking and anchoring stresses plus relaxation.

Concrete:

28 day cylinder strengths, allowable tension and compressive stresses. (For post-tensioned bridges) Modulus of Elasticity, creep, shrinkage, method of analysis if not AASHTO, thermal gradiant and range.

Structural Steel:

ASTM Designations and Allowable stresses.

Structural Steel Connections:

Describe, if high strength bolts show ASTM designation and size.

HTB:bc
cc: Mr. Jerry Potter, (FHWA)

VOID
For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

April 23, 1985

M E M O R A N D U M

To: All Structural Designers and Consultants Doing Work For the Florida Department of Transportation

From: Henry T. Bollmann, P.E., Chief HTB
Bureau of Structures Design

Subject: Design for Ship Impact

All new bridges over navigable waters will include in their design consideration for possible vessel collision with supporting members (generally applicable to barges and ocean-going ships).

Until further notice the Department will proceed in the following manner to achieve such design:

(A) District Florida Department of Transportation Offices furnish our Bureau of Structures Design: Characteristics of the waterway, characteristics of the vessels and traffic and accident history.

(B) Utilizing techniques and data presented in a manual "Criteria For: The Design of Bridge Piers With Respect to Vessel Collision in Louisiana Waterways", our Bureau of Structures Design will develop the equivalent static loads representing ship collisions for the various piers in the proposed bridge structure.

These equivalent static loads will be furnished to the bridge designer as design criteria.

(C) In addition to utilizing the general design recommendations presented in Chapter VI of the above-mentioned manual, the bridge designer shall use the following design methodology:

(1) Unless otherwise specified by the Department, the equivalent static load shall be applied centrally on the pier at mean high water elevation. The load shall be applied parallel to the navigation channel and at a skew of 30° to the navigation channel.

(2) One iteration of secondary effects in columns shall be included, i.e., axial load times the initial lateral deflection.

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(3) The analysis must include the effect on adjacent piers from the transfer of lateral forces up to the superstructure. Only positive (steel or concrete) connections of the superstructure to the substructure shall be considered in the analysis for transfer of lateral force up to the superstructure. Analysis of force transfer through mechanisms at the superstructure/substructure interface shall be evaluated using generally accepted practice.

(4) Ultimate strength analysis methods shall be used for the ship impact load case. The load case shall be dead load plus ship impact with a load factor and material factor = 1.0. Plastic hinges may be utilized in the analysis to account for redistribution effects.

(5) Ultimate capacity of axial pile loads shall be limited to twice the design allowable for both compression and tension. Plastic flow of the soil for the purpose of force redistribution effects shall not be used to determine the foundation capacity. That is, the foundation capacity shall be taken as the value obtained by elastic analysis when the ultimate load is first obtained.

(6) Location of plastic hinges formed in piles due to lateral bending below the ground or mudline shall be determined by elastic concepts utilizing a subgrade modulus provided or approved by the Department.

(7) The path of impact distribution shall be checked so that all members and their connections remain within their ultimate capacity.

HTB:s

VDOT For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8541

WILLIAM N. ROSE SECRETARY

March 22, 1979

M E M O R A N D U M

To: All Consultants and Designers

From: T. Alberdi, Jr.
Deputy Design Engineer (Structures)

Subject: Prestressed Slab Units

On all plans prepared in the future using Prestressed Slab Units add the following note:

"At the option of the contractor wider prestressed slab units may be used provided that the same prestress force per foot of width is maintained".

TA:mb T.A.

cc: Mr. Jerry L. Potter (FHWA)
Mr. R. Mestre

VOID
For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

November 9, 1984

M E M O R A N D U M

To: Consultants and Precasters
Designers - Bureau of Structures Design
Value Engineering Staff

From: Henry T. Bollmann, P.E. HTB
Chief, Bureau of Structures Design

Subject: Precast Prestressed Slab Units

Over the past years we have utilized a prestressed precast slab superstructure system as depicted on Index 12669 and Index 12670 of our Structures Standards. We have modified this system several times to reduce the occurrence of cracks generated through the topping at the precast slab interfaces without satisfactory results.

Please discontinue using the precast prestressed slab units in the structural configuration shown on these Index sheets.

We are currently trying to develop a new system of utilizing these or similar slab units which will eliminate crack development and force the slab units to act as a continuous unit in carrying live load.

A current design we are developing in-house utilizes additional post-tensioning in conjunction with a cast-in-place concrete topping to achieve the desired results.

We will be receptive to working with other structural designers in the development of a new precast deck system and encourage your input.

HTB:s

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For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

THOMAS E. DRAWDY
SECRETARY

STRUCTURES DIRECTIVE

DATE: January 1, 1986

TO: All Designers
Consultants Designing Bridges for the State of Florida

FROM: Henry T. Bollmann - By: R.C. Burnett, Jr.

COPIES: Federal Highway Administration
Mr. Fred L. McGee and Precasters

SUBJECT: PRESTRESSED COMPONENTS, BEAM DESIGN AND CONSTRUCTION

VOID
For Historical Information Only

The application of 270K low-relaxation straight strands are preferred for the prestressed beams for all-future bridges and those under design. The standard center to center spacing for 1/2" Ø or smaller strands is 2 inches and for 9/16" and 0.6" Ø strands 2-1/4 inches.

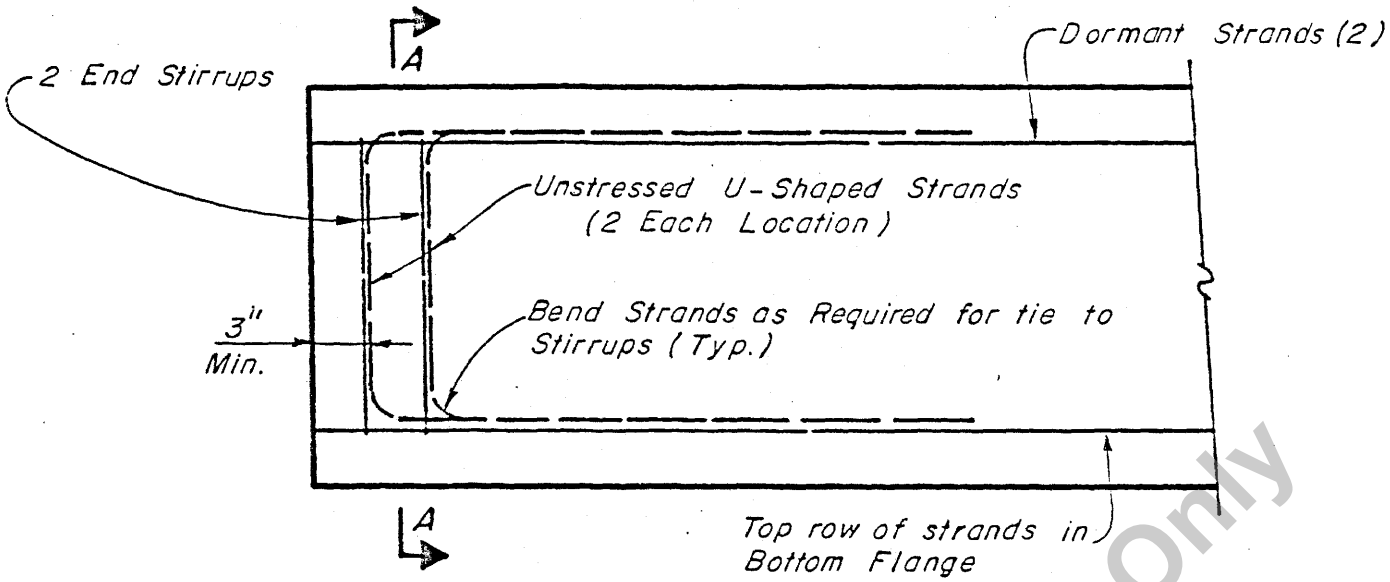
At the beam ends 25 percent of the strands may be debonded to reduce stresses to allowable limits. The top fiber stresses due to prestressing may be assumed to be varying linearly between the line of bearing (zero) and the length at a distance of 75 percent of the beam height (maximum). The maximum permissible axial tensile stress shall be limited to $12\sqrt{f'c}$ at the 75 percent beam height location. The f'c value is the concrete release strength.

A minimum of four 1/2" Ø unstressed strands, shaped as a lazy U shall be placed at the ends of the beam. The horizontal legs shall be 10-foot long and after being tied in place the concrete cover shall be 3 inches minimum. The four strands shall be placed and tied on the top of the top four strands in the bottom flange stranding and to the first two stirrups at the beam ends. Additionally they shall be tied to the two dormant strands in the top flange (strands with 5,000 lbs. pretension, see Detail "A").

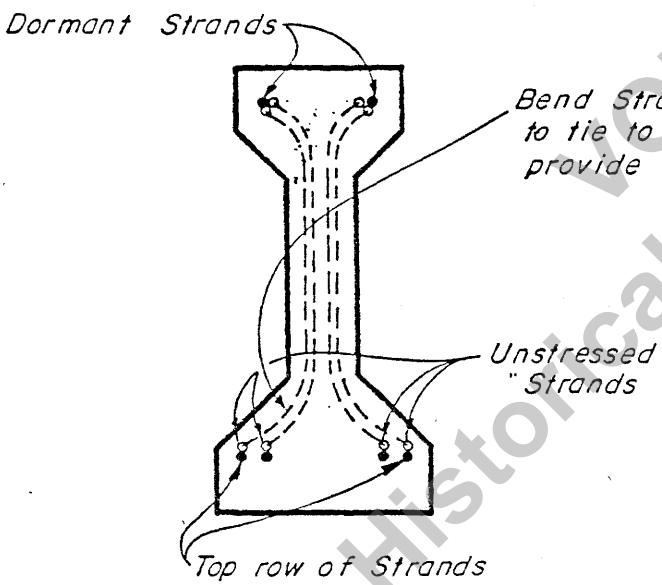
The strands in the bottom flange shall be confined for a distance that extends from the beam end equal to the depth of the beam. The confinement shall be provided by the application of a W4.9 wire spiral (fy = 80,000 psi.) with a 3 inch pitch (see Detail "B").

The use of "L" shaped longitudinal bars, in the webs and flanges in the end zone areas, is optional.

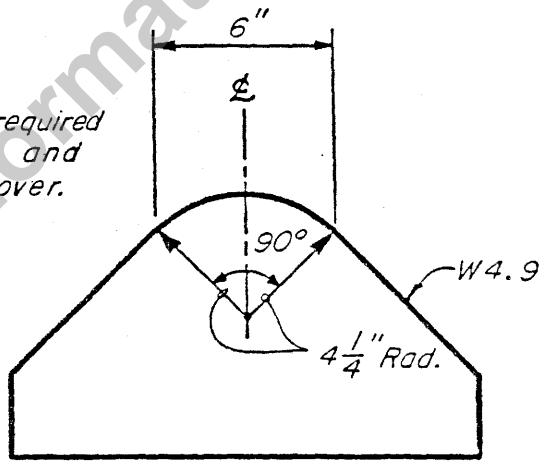
Structures Directive
Prestressed Components, Beam Design and Construction
Page Two



DETAIL "A"
(At Beam Ends)



SECTION A-A



DETAIL "B"
(Spiral)

VOID
For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772
TOM WEBB, JR.
SECRETARY

December 16, 1977

M E M O R A N D U M

TO: Designers and Consultants

FROM: T. Alberdi, Jr. T.A.
Deputy Design Engineer (Structures)

For all projects under design at present and those designed in the future, we would like to have the following:

(1) All structural steel utilizing high strength bolts, the plans shall call for the bolts to be galvanized.

(2) All bascule bridges that utilize open steel grating, the plans shall call for the grating to be galvanized.

TA:s

cc: Mr. J.L. Potter
Mr. S.F. Allred
Mr. R. Mestre

VOID
For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8541

TOM WEBB, JR.
SECRETARY

February 24, 1978

To: All Designers

From: Tom Alberdi TA

Subject: Epoxy Coated Rebars

All jobs that have any epoxy rebars, regardless of the type of construction including pile jackets, must be identified and paid for per pound. The reason for this requirement is due to the inspection procedures agreed to with the Federal Highway Administration.

TA:s

VOID For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301, Telephone (904) 488-8541
WILLIAM N. ROSE
SECRETARY

January 4, 1980

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., P.E.
Deputy Design Engineer (Structures)

Subject: Reinforcing Steel - Coatings - Test Piles

1. For all future projects, the design of bridge decks shall utilize only straight reinforcing steel bars. Multiple truss bent bars shall not be utilized. This requirement is applicable to all designs on which the detailing has not commenced.

2. In the future, plans shall include a note stating the following: A Class 5 Applied Finish Coating shall be applied to the following exposed surfaces, the inside, backside and top of Concrete Barrier Handrails and End Bent Wingwalls and the coping areas below Handrails.

3. Unless unusual subsurface conditions exist, the practice of requiring test piles in the end bents shall be discontinued.

TA:s

cc: Mr. J.L. Potter (FHWA)
Mr. S.F. Allred
Mr. Carlos Stone
Mr. R. Mestre

VOID
For Historical Information Only

Florida Department of Transportation

REUBIN O'D. ASKEW
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32304, Telephone (904) 488-8772
TOM WEBB, JR.
SECRETARY

July 15, 1976

M E M O R A N D U M

To: All Designers and Consultants

From: T. Alberdi, Jr., P.E.
Deputy Design Engineer (Structures)

Subject: Coast Guard Navigational Permits

In the future a list of the names and addresses of the adjacent property owners will have to be furnished with the permit application to the Coast Guard. This is a new requirement of that agency. The reason for the requirement is to make it possible for the Coast Guard to furnish copies of the Public Notices to the adjacent property owners.

TA:s

cc: Mr. Jerry L. Potter
Mr. R. Mestre

VOID
For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301, Telephone (904) 488-8541
WILLIAM N. ROSE
SECRETARY

January 2, 1980

M E M O R A N D U M

To: All Designers - Structural Design Office

From: T. Alberdi, Jr.

Subject: Coast Guard Bridge Permits

Attached is a copy of a letter from the United States Coast Guard dated December 21, 1979, requesting that certain flood plain information be shown on all future Coast Guard permits. The information requested by the Coast Guard is available in our Central Office Drainage Design Section. Please assure that this request is complied with on all future projects.

TA:s

Attachment

T. Alberdi, Jr.

VOID
For Historical Information Only

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Address reply to:
COMMANDER (oan)
Seventh Coast Guard District
51 S.W. 1st Avenue
Miami, Fla. 33130
Phone: (305) 350-4108

16591/
Serial: 2843
21 December 1979

Mr. T. Alberdi, Jr.
Deputy Design Engineer (Structures)
Florida Department of Transportation
Haydon Burns Building
605 Suwannee Street
Tallahassee, Florida 32304

Dear Mr. Alberdi:

In order to insure that this office is in full compliance with applicable rules and regulations relative to floodplain management, it is requested that drawings submitted with future applications for Coast Guard bridge permits clearly show the limits of the base floodplain (defined as that area which would be inundated by a flood having a one percent chance of being exceeded during a given year).

Your cooperation in this matter will be appreciated.

Sincerely,

A. C. DEMPSEY
Captain, U. S. Coast Guard
Chief, Aids to Navigation Branch
Seventh Coast Guard District
By direction of the District Commander

Copy: Mr. C. J. Allen, Tallahassee
Dist. Eng., Dist.-1
Dist. Eng., Dist.-2
Dist. Eng., Dist.-4
Dist. Eng., Dist.-5
Dist. Eng., dist.-6

For Historical Information Only

DEC 28 1979

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

October 9, 1984

M E M O R A N D U M

TO: All Designers and Consultants

FROM: H. T. Bollmann, P.E., Chief, Bu. of Structures Design
By: R. C. Burnett, Jr., P.E., State Structures Design Engr.

SUBJECT: Joints on Bridge Widening Projects

RCB

VOID
For Historical Information Only

Existing Type Bridge Joints

Group 1: Compression seals, open joints, poured rubber and copper water stop.

Group 2: Sliding Plate, finger joint, patented or proprietary systems.

Treatment of Joints

Group 1: Install compression seals that are continuous from gutter to gutter on the widened bridge. Provision for seal installation shall be made as required by saw-cutting the existing decks.

Group 2: The joints in this group that are in good condition shall remain in place and the same type joints shall be used in the bridge widening.

The joints in this group that are not in good condition shall be inspected by the designer to determine the corrective action necessary to fix the joints. The type joints used shall extend from gutter to gutter of the widened bridge.

HTB:Bc
cc: Mr. Jerry Potter (FHWA)

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

February 4, 1985

M E M O R A N D U M

To: All Structural Designers and Consultants Doing Work For the Florida Department of Transportation

From: Henry T. Bollmann, P.E., Chief HTB
Bureau of Structures Design

Subject: Expansion and Contraction Devices in Bridge Structures

VOID
For Historical Information Only

General Policy

Bridge structures must be designed to accommodate movements produced by such factors as temperature, elastic shortening, creep and shrinkage. Bridge designers should not accommodate these movements by using unnecessary bridge deck expansion joints. This solution creates more problems than it solves. Structural deterioration due to leaking expansion joints and expansion bearings incapable of movement constitute major bridge maintenace problems.

We have a preference for structural continuity of superstructure and when possible pinned or fixed connections of substructure to superstructure. Our policy is to design and construct bridges with continuous superstructure slabs, fixed or integral bearings at the piers and end bents without any bridge deck expansion joints unless absolutely necessary. When expansion joints are necessary, attempt to limit these to the bridge ends only.

Some Design Guidelines

The following guidelines are taken from a State of Tennessee Structures Memorandum and attempt to give some guidance for joint selection. These guidelines reflect our own thinking and are presented for your consideration and adaptation when possible. Certainly structural analysis must indicate that substructure components are flexible enough to accommodate these movements.

When the total anticipated movement at an abutment or end bent is less than two inches (2") and the abutment or end bent is partially restrained against movement, no joint will be required

and the superstructure and abutment or end bent beam will be constructed integrally. A construction joint shall be provided between the abutment or end bent backwall and the approach slab. A partially restrained abutment or end bent is one that can accommodate some rotation and translation such as an end bent on one row of vertical piles.

When the total anticipated movement at an abutment or end bent is less than one-fourth inch (¼") the abutment or end bent may be constructed integral with the superstructure regardless of the support conditions.

When the total movement is more than one-fourth inch (¼") and the abutment or end bent is restrained against movement and rotation, an expansion joint will be required.

When the total movement is greater than two inches (2"), a fabricated expansion dam is required.

The Ideal Expansion Joint

The ideal expansion joint is no joint at all. However, when a joint is required we would prefer that it satisfy as many of these criteria listed as possible:

(1) Accommodate the full range of structure movements without exceeding the manufacturer's recommended clear span at deck surface level when at maximum opening.

(2) Provide proper anchorage and structural capacity to resist the anticipated loads.

(3) Have good riding qualities.

(4) Not impart undue stresses to the structure due to structure expansion and contraction.

(5) Be reasonably silent and free of vibration.

(6) Facilitate maintenance repair.

(7) Be leakproof with the sealing element continuous for the entire structure width.

An open joint with provision for handling the water without damage to the bridge bearings is also acceptable.

VOID
For Historical Information Only

Although many expansion devices appear satisfactory on paper, the real test is their performance under field conditions. In recent years, many expansion devices have proved unsatisfactory. We are still searching for a device that will meet all of the above requirements.

Use of Stacked Neoprene Bearing Pads

As of this date, the use of stacked standard neoprene bearing pads to create a bearing to adjust for a movement that is more than can be accomplished through one neoprene bearing pad is prohibited. All neoprene bearing pads shall be manufactured to accommodate the movement for which they are designed without stacking of the standard pads. Such pads will be designed and detailed for contractor to bid. (Standard pads are those we traditionally use for our standard AASHTO beams. The Department stockpiles these and furnishes them to the contractor.)

HTB:mcs

cc: Mr. W.F. Ventry
Mr. T.E. Drawdy
Mr. J.W. Roberts
Mr. J.L. Potter (FHWA)
Bureau of Structures Design Staff

VOID
For Historical Information Only

Florida Department of Transportation

BOB GRAHAM
GOVERNOR

Haydon Burns Building, 605 Suwannee Street, Tallahassee, Florida 32301-8064, Telephone (904) 488-8541

PAUL N. PAPPAS
SECRETARY

18

September 25, 1984

TO ALL CONSULTANTS

Subject: Segmental I-Girder Superstructure Design

Gentlemen:

Superstructures built in our state utilizing the subject type of girders, are experiencing camber growth due to the post-tensioning, well in excess of apparent design considerations.

The Department is currently in the process of studying this problem and will in the near future develop design guidelines to correct or minimize it.

However, in the interim, please review any existing designs prepared by your firm to ascertain that adequate camber considerations have been made.

I am attaching for your information a print of a letter dated August 29, 1984, from FHWA, on this subject.

Yours very truly,

Angelo J. Garcia, P.E.,
State Structures Design Engineer

AJG/mb
Attachment
cc: Mr. Jerry L. Potter

VOID
For Historical Information Only

August 29, 1984

HBR-FL

Division of Preconstruction and Design
Florida Department of Transportation
Tallahassee, Florida

Attention: Mr. Henry T. Bollmann

Gentlemen:

Subject: Florida - Segmental I-Girder Superstructure Design

During the past few years, the subject concept has been used for various bridges constructed within the state and for several designs that are underway or completed. We have been informed of a problem with the completed profile when the design concept has been used. We have observed some of the bridges and it is evident that the segmental I-girder spans have a profile higher than intended in the center of the spans. It appears that the designers have not adequately considered the increase in camber due to the post-tensioning.

The existing designs that have not been constructed and designs now underway must be reviewed and revised, as necessary, to assure the final profile of the bridges is satisfactory. We ask that you initiate action to revise the designs in advance of proposed letting dates.

Sincerely yours,

P. E. Carpenter
Division Administrator

JERRY L. POTTER

Jerry L. Potter
Division Bridge Engineer
For the Division Administrator

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Florida Department of Transportation

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STRUCTURES DIRECTIVE

DATE: January 2, 1986

TO: All Structural Designers and Consultants Doing Structural Design Work For the Florida Department of Transportation

FROM: Henry T. Bollmann, P. E., Chief, Bureau of Structures Design HTB

COPIES: William Ventry, Wallace Giddens, Jack Roberts and Bobby Buser

SUBJECT: Maintainability Requirements - Bearings

Bridge bearings shall be accessible for inspection and maintenance and shall be replaceable without damage to the structure and without removing anchorages permanently attached to the structure.

Provisions for bearing replacement must be made in the design and shown on the bridge plans. (ie. jacking locations, jacking sequence, jack load).

For our conventional concrete girder structures, bearing replacement has been relatively simple as one can jack between diaphragm and bent cap. For these bridges, a simple note may describe the bearing replacement procedure.

For other structure types, a separate drawing and description may be required.

HTB/lw

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THOMAS E. DRAWDY
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Jan. 1, 1986
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Structures Directive

TO: All Structural Designers and Consultants Doing Structural And/Or Mechanical/Electrical Work For the Florida Department of Transportation

FROM: Henry T. Bollmann, P.E., Chief, Bureau of Structures Design, By L.W. Biwer, P.E.

COPIES; William Ventry, Wallace Giddens, Bob Buser, Jack Roberts

SUBJECT: DESIGN GUIDE --- BASCULE BRIDGE MAINTAINABILITY

The technical policy of the Department is to incorporate maintainability features in the design of bascule bridges consistent with application of sound engineering principles and reasonable application of engineering judgment.

This policy is being implemented through the following Design Guide for Maintainability of Bascule Bridges. This policy is applicable to both new bridges and rehabilitation plans for existing bridges on which construction has not been initiated.

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1. Trunnion Bearings

Trunnion bearings shall be designed so that replacement of bushings can be accomplished with the span jacked 1/2 inch and in a horizontal position. Suitable jacking holes or puller grooves are to be provided in bushings to permit extraction; jacking holes shall utilize standard bolts driving against the housing which supports the bushing.

Trunnion bushings and housings shall be of a split configuration; the bearing cap and upper half bushing (if an upper half bushing is required) shall be removable without span jacking or removal of other components.

2. Span Jacking

NOTE: the following definitions describe elements of the span jacking system shown on the attached sketch, Figure A:

a) Span jacking surface -- an area on the bottom surface of the bascule girder.

b) Span stabilizing connector point (forward) -- an area adjacent to the live load shoe point of impact on the bottom surface of the bascule girder.

c) Span stabilizing connector point (aft) -- an area at

the rear end of the counterweight on the lower surface of the counterweight girder. (Note: for bascule bridges having tail locks, the span stabilizing connector point may be located on the bottom surface of the lockbar receiver located in the counterweight.)

d) Stationary jacking surfaces -- these surfaces are located on the bascule pier under the span jacking surfaces. The stationary jacking surfaces provide an area against which to jack for lifting the span.

e) Stationary stabilizing connector points are located on the bascule pier. These points provide a stationary support for stabilizing the span, by connection to the span stabilizing connector points.

One set of span jacking surfaces shall be located under the trunnions (normally, this will be on the bottom surface of the bascule girder); a second set shall be located on the lower surface at the rear end of the counterweight, as shown on the attached sketch, Figure A.

Span stabilizing connector points shall be located on the bascule girder forward and aft of the span jacking surfaces, as shown on the attached sketch, Figure A. Stationary stabilizing connector points shall be located on the bascule pier below the span stabilizing connector points. Connector points shall be designed to attach stabilizing structural steel components. (Note: Stationary jacking surfaces, located under the span jacking surfaces, shall be positioned at an elevation as high as practical so that standard hydraulic jacks can be installed. The maximum elevation of the stationary jacking surfaces shall be determined based upon required operating clearance between the fully opened span and stationary jacking surface.

3. Trunnion alignment features

Center holes shall be installed in trunnion shafting to measure and inspect trunnion alignment; span structural components shall not interfere with complete visibility through the trunnion center hole. Trunnions shall be individually adjustable for alignment.

A permanent walkway or ladder with work platform shall be installed to permit trunnion adjustment. Special tooling, such as trunnion adjust wrenches, shall be permanently stored for accessibility to maintenance personnel.

4. Lock systems

Center locks are to be accessible from the bridge sidewalk through a suitable hatch or access door. Under the deck, and in the region around the centerlocks, a work platform suitable for servicing of the lockbars shall be provided.

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Lock systems shall be designed so that an individual lock may be disabled for maintenance or replacement without interfering with operation of other lockbars on the bascule leaf.

Tail locks shall be designed so that the lockbar mechanism is accessible for repair without raising the leaf. The lockbar drive mechanism shall be accessible from a permanently installed platform within the bridge structure. The lockbar mechanism shall drive in a direction parallel to the trunnion axis.

Lockbar clearances shall be adjustable for wear compensation.

5. Machinery drive systems

All machinery drive assemblies shall be individually removable from the drive system without removal of other major components of the drive system. For example, a speed reducer assembly shall be removable by breaking flexible couplings at the power input and output ends of the speed reducer.

6. Lubrication provisions

Bridge system components requiring lubrication shall be accessible without use of temporary ladders or platforms. Permanent walkways and stairwells will be installed to permit free access to regions requiring lubrication.

Lubrication fittings shall be visible, clearly marked and easily reached by maintenance personnel.

If specified by the Department, automatic lubrication systems shall be provided for bearings and gears. Designs for automatic lubrication systems shall provide for storage of not less than 3 months supply of lubricant without refilling. Refill will be accomplished within a period of 15 minutes through a vandal-proof connection box located on the bridge sidewalk clear of the roadway; blockage of one traffic lane during this period is permitted.

If specified by the Department, self-lubricating bushings will be incorporated in bridge designs.

7. Drive system bushings

All bearing housings and bushings in open machinery drive and lock systems shall utilize split bearing housings and bushings and shall be individually removable and replaceable without affecting adjacent assemblies.

8. Local Switching

"Hand-Off-Automatic" switching capability shall be provided for maintenance operations on traffic gate controllers and brakes and

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motors for center and tail lock systems.

"On-Off" switching capability shall be provided for maintenance operations on span motor and machinery brakes, motor controller panels and span motors.

Remote switches shall be lockable for security against vandalism.

9. Service Accessibility

A service area not less than 30 inches wide shall be provided around system drive components.

10. Service Lighting

Machinery and electrical rooms will be lighted as necessary to assure adequate lighting for maintenance of equipment. Switching shall be provided so that personnel may obtain adequate lighting without leaving the work area for switching; master switching shall be provided from the control tower.

Each work area shall be provided with receptacles for supplementary lighting and power tools such as drills, soldering and welding equipment.

11. Communications

(a) Intercommunications - Permanent communications equipment shall be provided between the control tower and areas requiring routine maintenance (machinery drive areas, power and control panels locations).

(b) Marine Communications - A marine radio/telephone transceiver shall be provided in a location convenient to the bridge tender; location on the control console is preferred.

12. Wiring Diagrams

Wiring diagrams shall be provided for each electrical panel inside the panel door. Diagrams shall be enclosed in glass or plastic of optical quality.

13. Diagnostic Reference Guide for Maintenance

Diagnostic instrumentation and system fault displays will be installed for mechanical and electrical systems. Malfunction information will be presented on control system monitors located in the bridge control house. Data will be automatically recorded. System descriptive information, such as ladder diagrams and wiring data, will be available on the system memory to enable corrective actions on system malfunctions and to identify areas requiring preventative maintenance.

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14. Automatic Lamp Changers (Navigation Lights)

Automatic lamp changers will be installed on fenders and center of channel positions to reduce effort required for maintenance of navigation lights.

15. Working Conditions for Improved Maintainability

When specified by the Department, new and rehabilitated bascule bridge designs will call for enclosed machinery and electrical equipment areas. Enclosed areas may be air conditioned.

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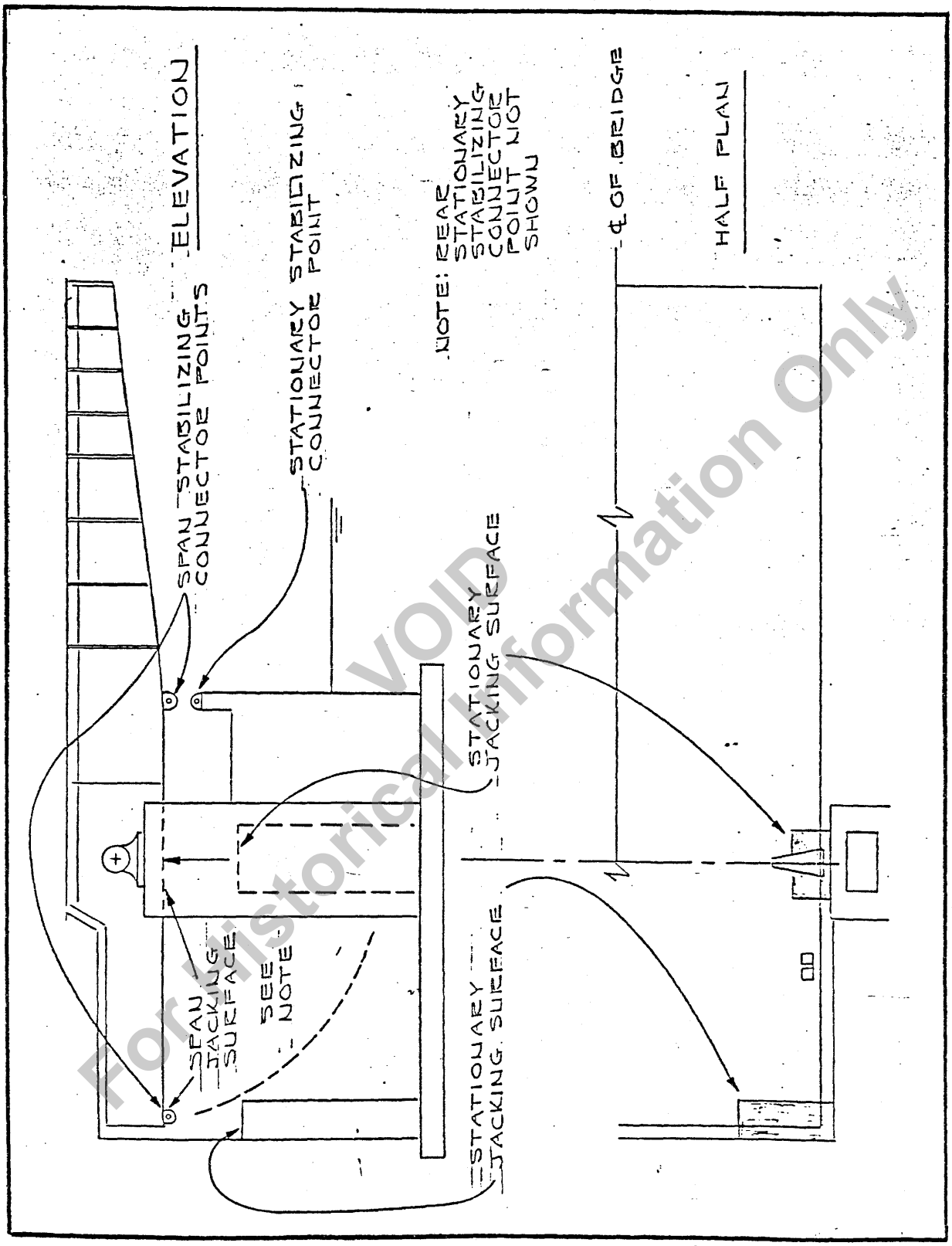

SPAN JACKING
FIGURE A

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