

ROADWAY DESIGN UNIT

MAR 03 2008

<input type="checkbox"/> ALLEN	<input checked="" type="checkbox"/> J. H. IS	<input checked="" type="checkbox"/> SYKES
<input checked="" type="checkbox"/> BREW	<input checked="" type="checkbox"/> C. HOUSER	<input checked="" type="checkbox"/> T. HOUSER
<input checked="" type="checkbox"/> COVERING	<input checked="" type="checkbox"/> D. TAYLOR	<input checked="" type="checkbox"/> GOODNIGHT
<input checked="" type="checkbox"/> J. MOORE	<input checked="" type="checkbox"/> C. HAIRE	<input checked="" type="checkbox"/> SPEER
<input checked="" type="checkbox"/> B. MOORE	<input checked="" type="checkbox"/> MICHAEL F. EAST	<input checked="" type="checkbox"/> THOMAS
<input checked="" type="checkbox"/> HUMFORD	<input type="checkbox"/> GOVERNOR	<input checked="" type="checkbox"/> WALLS
	<input type="checkbox"/> STEPHENSON	

PREPARE REPLY FOR _____ SIGNATURE
 FYI
 REVIEW/DISCUSS WITH _____



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Highway Design
HIGHWAY DESIGN BRAN

FEB 29 2008

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<input checked="" type="checkbox"/> Geo	<input checked="" type="checkbox"/> Photo	<input type="checkbox"/> Se

LYNDO TIPPETT
SECRETARY

AMC

FYI
 Take appropriate Action
 Prepare reply for _____

February 27, 2008

cc:
[Handwritten initials]

MEMORANDUM TO:

Steve Varndoe, P.E., Chief Engineer-Operations
 Jon Nance, P.E., Director of Field Operations
 Lacy Love, P.E., Director of Asset Management
 Debbie Barbour, P.E., Director of Preconstruction
 Art McMillan, P.E., State Highway Design Engineer
 Division Engineers

MAR 06 08

COPIES SENT

FROM:

William F. Rosser
 William F. Rosser, P.E.
 State Highway Administrator

SUBJECT:

NCDOT Guidelines for Median Separations at
 Highway/Railway At-Grade Crossings

Attached are completed Guidelines for Median Separation at Highway/Railway At-Grade Crossings. These guidelines have been developed thru efforts of Rail Division – Engineering and Safety Branch with review by many Units/Divisions within our Department.

This is to request these guidelines be distributed within your respective organizations to be implemented consistently and uniformly to improve the safety of our rail crossings.

If I may be of further assistance, please advise.

WFR/sg

Attachment

cc: Lyndo Tippett, Secretary of Transportation
 Dan DeVane, Chief Deputy Secretary
 John Sullivan, P.E., FHWA Division Administrator
 Kevin Lacy, P.E., State Traffic Engineer
 Paul Worley, CPM, Director of Engineering and Safety
 Patrick Simmons, Director of the Rail Division

MAILING ADDRESS:
 NC DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATOR
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WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
 TRANSPORTATION BUILDING
 1 SOUTH WILMINGTON STREET
 RALEIGH NC



Nance
Love
Barbour

Received
FEB 18 2008
State Highway
Administrator's Office

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

February 12, 2008

Memorandum

To: W. F. (Bill) Rosser, PE
State Highway Administrator

From: Paul C. Worley, CPM
Director – Engineering & Safety

Subject: NCDOT Guidelines for Median Separators at
Highway/Railway At- Grade Crossings

Attached is a copy of the completed Guidelines for Median Separation at Highway/Railway At-Grade Crossings that are ready for implementation by the various NCDOT units.

The guidelines were developed with the assistance of Kathy Lassiter and Glenda Gibson of Gibson Engineers in order to provide consistent guidance for a median separation at highway-railway at-grade crossings where it is determined to be the appropriate safety improvement for the crossing. Once implemented, these guidelines should enable the treatments to be constructed in a more consistent and uniform manner across the state.

A brief outline of the steps followed in the development of these guidelines is as follows:

- Guidelines were written under the direction of the Rail Division engineers.
- A committee was formed with preconstruction and division personnel to review and further develop the guidelines.
- The committee's comments were incorporated into the guidelines.
- A second review was conducted by the committee and comments were incorporated.
- Staff met with Traffic Operations to refine guidelines.
- The committee was convened for a third review.
- Debbie Barbour and Steve Varnedoe reviewed.
- Guidelines were distributed to the Division Engineers for review.
- Guidelines were presented at the Operations Staff Meeting.

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CAPITAL YARD
862 CAPITAL BOULEVARD
RALEIGH, NC 27603

- Further comments were incorporated.

We greatly appreciate the input and assistance of various engineers in the Division of Highways to develop these guidelines. We believe that we now have a better process and design that will make our crossings safer while lasting longer. If you have any questions, please give me a call.

Attachment

PW/kl

cc: Roberto Canales, PE, Deputy Secretary for Transit
Patrick Simmons, Rail Division Director

Guidelines for Median Separation at Highway-Railway At-Grade Crossing

To protect the safety of the traveling public and the security and integrity of critical rail-highway at-grade junctures every effort should be made to discourage at grade rail crossings. The addition of travel lanes to existing at grade crossings should be avoided unless recommended by an engineering study. However, if after coordinating with the Rail Division, it is determined an at-grade crossing cannot be avoided or eliminated, and a median separation is deemed necessary and appropriate, the following guide should be used.

The intent of this guide is to establish the desirable conditions for the uniform and consistent layout and construction of median separations where it has been determined that a median separation is appropriate. This guide/design tool should be utilized with sound engineering judgment, sound design, and attention to costs.

The NCDOT Rail Division should be included in negotiations and decisions regarding at grade rail crossings. Decisions made regarding railroad crossings shall protect the traveling public, will be sensitive to the needs of the railroad and should be based on the best information and practices available.

Projects programmed in the Transportation Improvement Program (TIP) which may result in creating a new highway-railway at-grade crossing or affecting an existing crossing shall be coordinated with the Rail Division in the early project planning process. The Rail Division will be actively involved in all scoping meetings held by the Planning and Environmental Branch that have the potential to involve or affect an existing or proposed railroad crossing.

Division and local projects involving a railroad crossing will be coordinated with the Rail Division. It will be the responsibility of the Division Engineer to initiate contact and advise the Rail Division early in the process to determine the appropriate crossing treatment for the site conditions.

When an at grade railroad crossing is involved, it will be the responsibility of the Rail Division to research and obtain pertinent information from the railroad company such as number of trains, speed, and contact information for further coordination and provide it to the requesting party. It will also be the responsibility of the Rail Division to keep the appropriate Division Engineer informed of any railroad work being planned in their area even if it does not involve a TIP project. Within the limits of a TIP project, the Rail Division will assist the appropriate railroad company in making decisions concerning the appropriate improvements to the rail crossing.

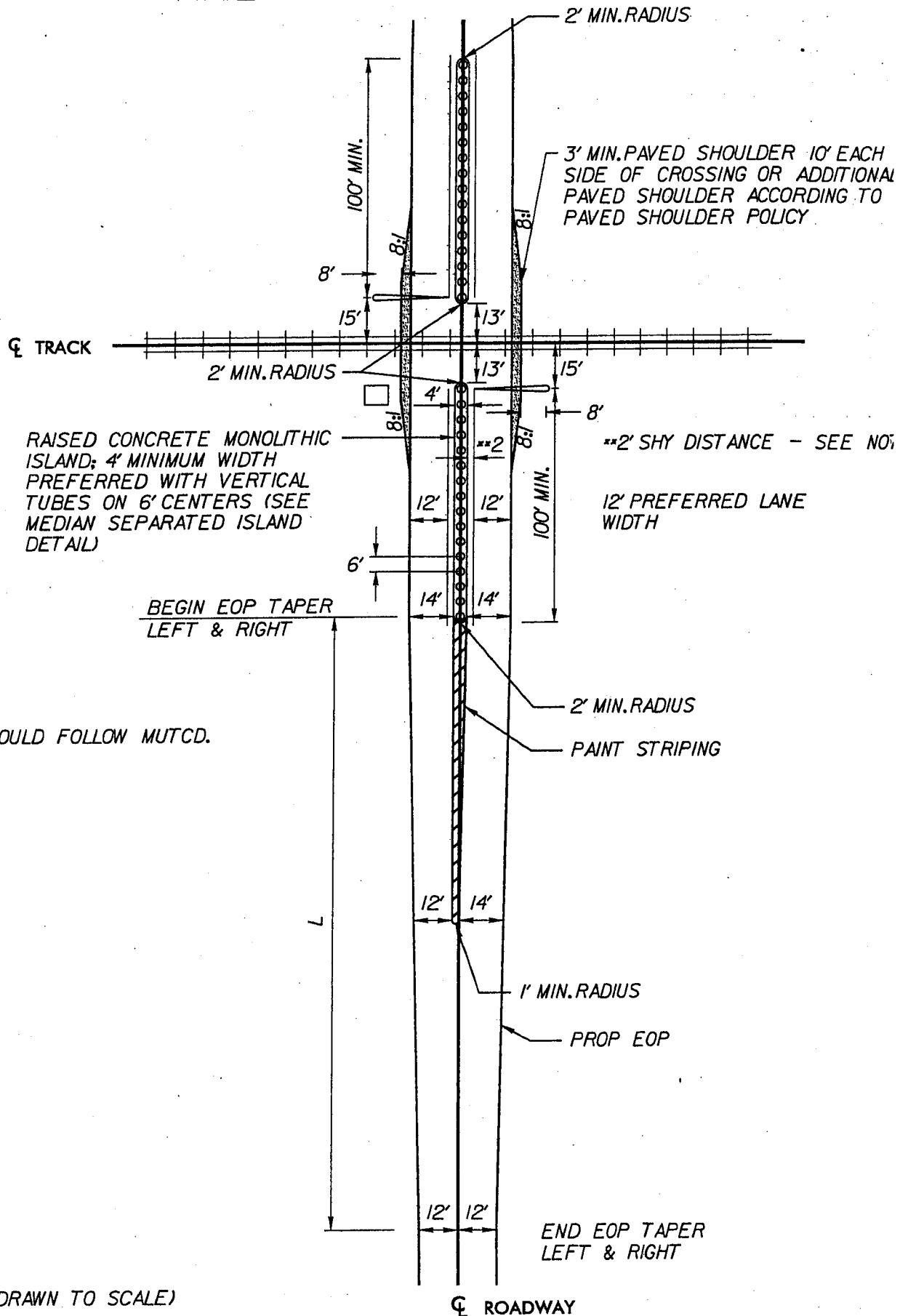
Median separations can be used to physically discourage drivers from driving around crossing gates when it has been determined a median separator is the appropriate treatment based on an engineering evaluation.

- After the decision is made to add a median separation, the following details should be used/referenced as a guide for the consistent design layout and construction of the median separation treatment.

- The detail for median separation should be used in conjunction with the appropriate The American Railway Engineering and Maintenance of Way Association (AREMA) and The American Association of State Highway Transportation Officials (AASHTO) guidelines and standards for new construction on TIP projects or when additional improvements are warranted, recommended and justified (within program and site constraints).
- If speeds exceed 40 mph, an advisory speed of 40 mph should be posted on the advance warning sign as deemed necessary and recommended by the Division Traffic Engineer. Cases involving speeds greater than 40 mph should be handled on a case by case basis and design features and advisories developed through coordination with appropriate Regional and Division Traffic Engineers.
- Shy distances should be increased beyond the minimal 2 foot offsets when variations in alignment (vertical/horizontal) introduce more navigational factors to the operators.
- Minimum Design Criteria should only be utilized when conditions physically restrict the use of recommended/preferred design criteria

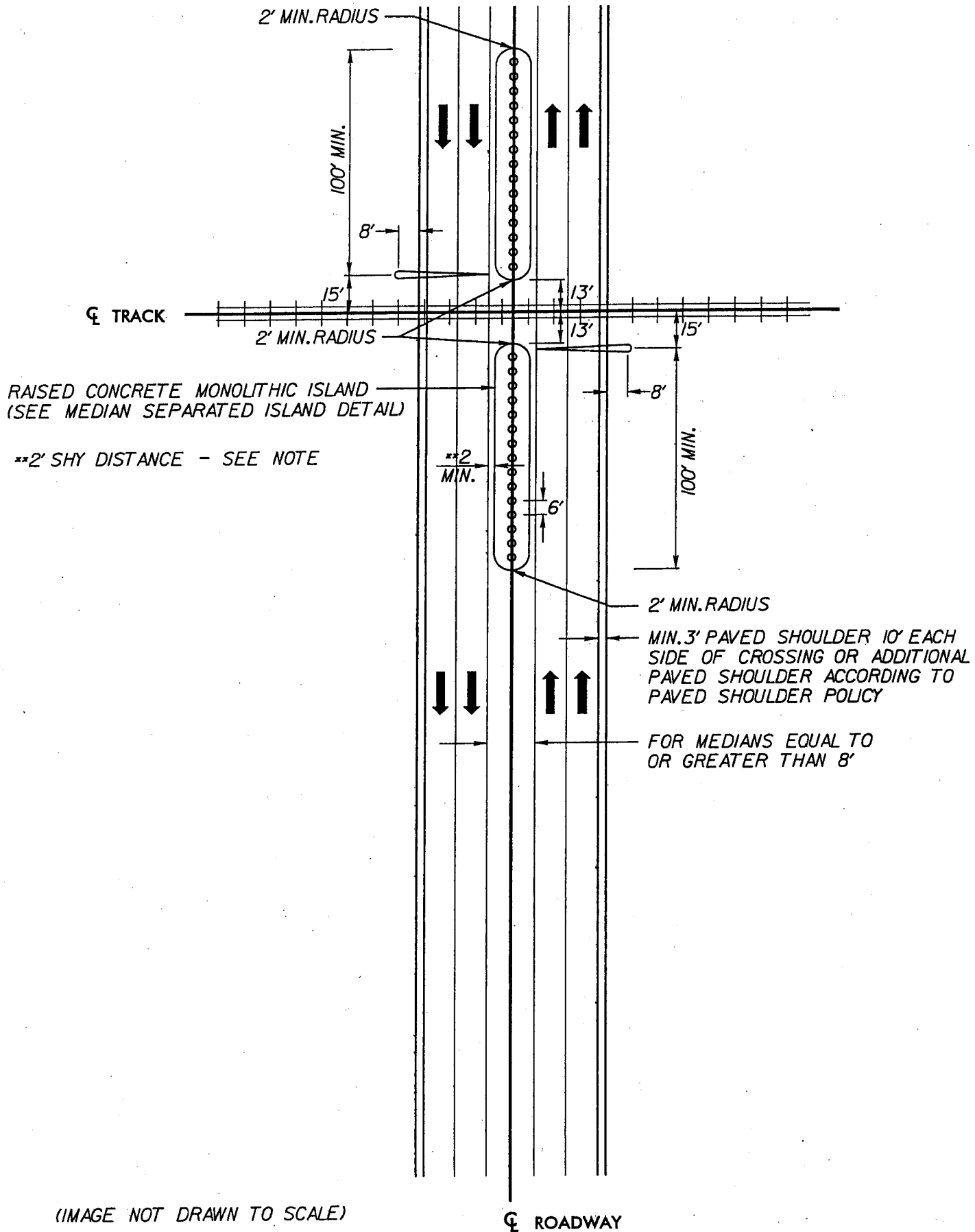
Please refer to the Rail Division's website <http://www.bytrain.org/safety> for additional information.

SEPARATION FOR TWO LANE RAILROAD CROSSING



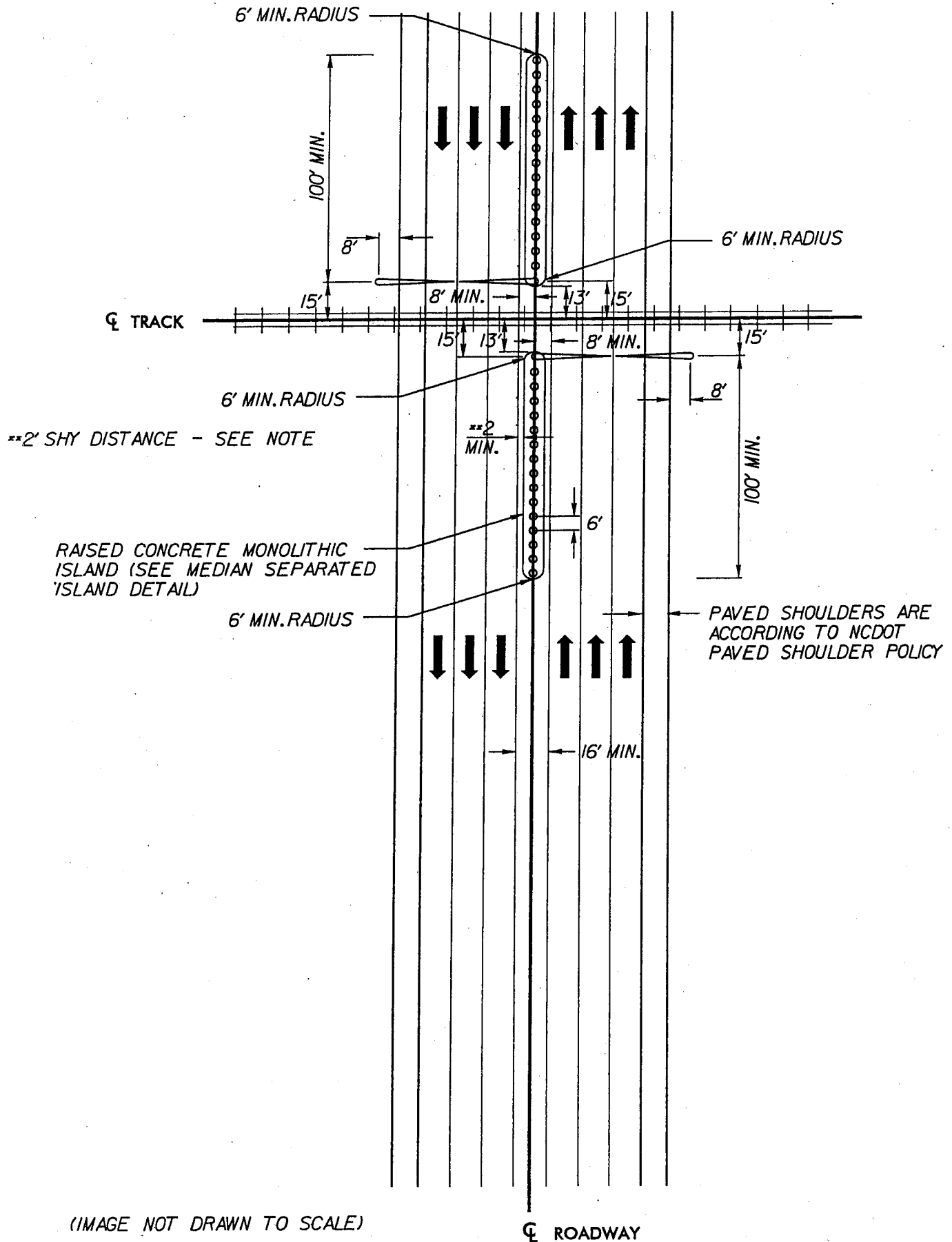
(IMAGE NOT DRAWN TO SCALE)

SEPARATION FOR FOUR/FIVE LANE RAILROAD CROSSING



(IMAGE NOT DRAWN TO SCALE)

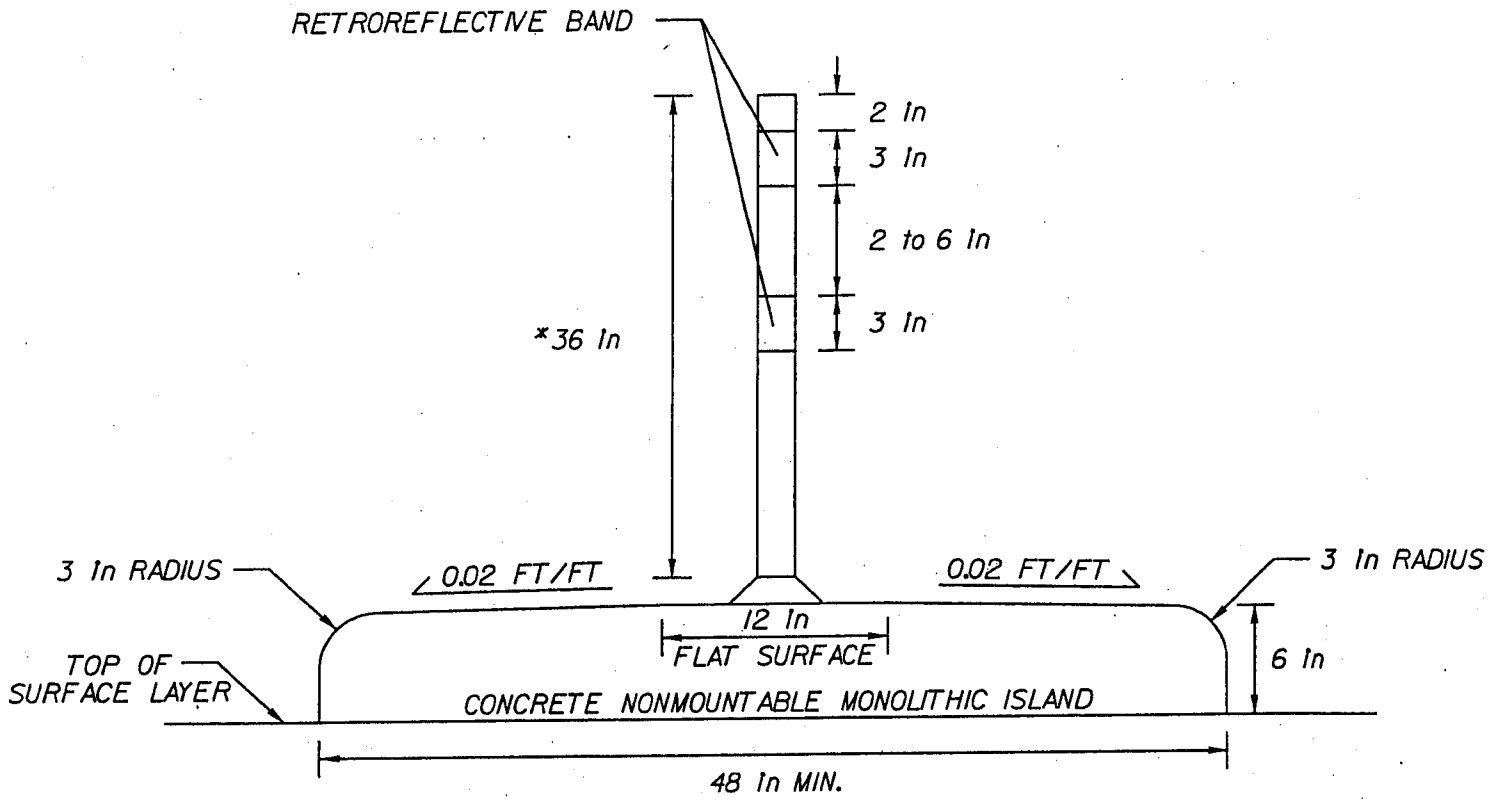
TYPICAL MEDIAN SEPARATION WITH MAST AND GATE



(IMAGE NOT DRAWN TO SCALE)

6' ROADWAY

TYPICAL TUBULAR MARKER



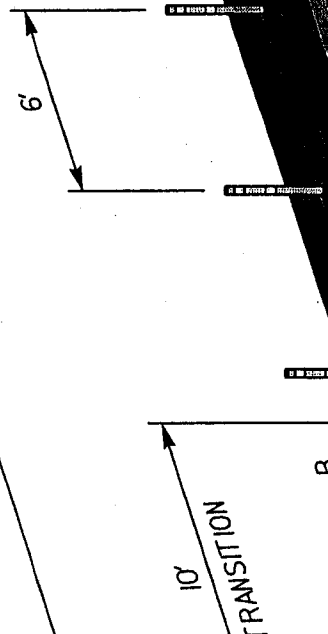
**36 In height may be reduced upon further coordination with the Rail Division if the crossing has a lot of use by oversized vehicles.*

(IMAGE NOT DRAWN TO SCALE)

TYPICAL MEDIAN SEPARATED ISLAND DETAIL

100' MIN. RECOMMENDED

RAILROAD CROSSING
2' MIN. RADIUS



VARIABLE (4' MIN.)

2' FLAT SURFACE

.02

SECTION B

3' RADIUS

NON-MOUNTABLE 5" MONOLITHIC CONCRETE ISLAND

NOTES: THE APPROACH END OF THE ISLAND (MOUNTABLE SECTION) SHOULD BE LOCATED A MINIMUM OF 100' FROM THE GATE ARM. (SEE NOTE) THE MOUNTABLE SECTION OF THE

VARIABLE (4' MIN.)

2' FLAT SURFACE

.02

SECTION A

2' RADIUS
1.75" RADIUS

MOUNTABLE 5" MONOLITHIC CONCRETE ISLAND

