

0007

OHIO DEPARTMENT OF TRANSPORTATION

INTEROFFICE COMMUNICATION

DATE: August 22, 1990

TO: Fred J. Hempel, Division Administrator, FHWA

FROM: D.K. Huhman, P.E., Engineer of Location and Design

SUBJECT: Design Exceptions (Revised - Replaces submission dated Aug 7, 1990)

Project COY-237-S.59

PID No. 8566

Federal Project No. M-1A27( )

Functional Classification ~~Expressway~~ Freeway/Arterial

Urban  Rural

This office has reviewed the design features of the above project and hereby request exceptions to the minimum standards for the following design elements:

- |                                   |                                     |                         |       |
|-----------------------------------|-------------------------------------|-------------------------|-------|
| Lane Width                        | _____                               | Grades                  | _____ |
| Shoulder Width                    | <input checked="" type="checkbox"/> | Stopping Sight Distance | _____ |
| Bridge Width                      | <input checked="" type="checkbox"/> | Cross Slopes            | _____ |
| Structural Capacity               | _____                               | Superelevation          | _____ |
| Horizontal Alignment              | _____                               | Horizontal Clearance    | _____ |
| Vertical Alignment                | _____                               | Vertical Clearance      | _____ |
| Bridge Parapet/Curb Configuration | _____                               |                         |       |

*Ellis*  
**LOCATION AND DESIGN**  
*R. RAMSAY*  
 SEP 06 1990  
 9-7-90  
 ADM  P&S  PR  
 DES  S&G  AE  
 HYD  EST  PP  
 Review  *CS*

We have attached the required justification material. Your approval is requested.

cc: R.J. BARNICK, P-12

DKH  
DKH:nlb

Attachment

cc: District 12  
Area Engineer w/attachments  
Exceptions File w/attachments  
Reading file  
File w/attachments

APPROVED Date SEP 4 1990  
*Thomas M. Wahlen*  
 FOR THE DIVISION ADMR. FHWA

Request For Design Exception

Co. Cuyahoga Rt. S.R. 237 Section: 5.59

PID = No. 8566 Functional Classification State: Freeway/Arterial

1. Existing Conditions

Mainline

Design Speed: 60 mph Pavement Width: Variable, 24'-0" to 48'-0";

Pavement Type: 9" Reinforced or 9" Plain Concrete with 2" to 5" Asphalt Overlay

Shoulder Width Left: No shoulder between Sheldon Road and Eastland Road; 4'-0" from Eastland Road to the beginning of Airport Freeway; variable 6'-9" to 0'-0" from Brook Park Road Ramp to the bridge over Brook Park Road

Shoulder Width Right: 8'-0" Sheldon Road to the beginning of Airport Freeway; 10'-0" from Brook Park Road Ramp to I-480 Ramp; 6'-0" to 1'-10" with concrete curb from I-480 Ramp to bridge over Brook Park Road

Graded Shoulder Width Left: No graded shoulder between Sheldon Road and Eastland Road; 9'-0" to 15'-0" from Eastland Road to the beginning of the Airport Freeway; No graded shoulder North of Brook Park Road Ramp

Graded Shoulder Width Right: 12'-0" Sheldon Road to the beginning of Airport Freeway; 15'-0" Brook Park Road Exit to bridge over Brook Park Road

Note: Shoulder narrows at existing bridge structures

Posted Speed Limit: 50 mph

Current Traffic Volume: 46,000 K.: 10% D.: 60% T.: 3%

Traffic Signals: Sheldon Road and Eastland Road

Railroad and Type of Protection: Single track Crossing 1,000' south of Eastland Road, Flashers without gates

Ramps

Pavement Width: 16' Normal; 24' to 36' at Intersection with Brook Park Road

Pavement Type: 9" Plain Concrete with Asphalt Overlay

Shoulder Width Left: 4'-0"

Shoulder Width Right: 4'-0"

Traffic Signals: Ramp Intersection at Brook Park Road

Railroad and Type of Protection: No at Grade Crossings

Bridges

Bridge No.: CUY-237-0600 over I-X Center Drive

Pavement Lane Width: 24'-6"

Bridge Deck: Reinforced Concrete Arch

Shoulder Width Left: None

Shoulder Width Right: 2'-0" with a 3'-0" Concrete Walk

Bridges (Continued)

Bridge No.: CUY-237-0695 over Snow Road

Pavement Lane Width: 24'-0"

Bridge Deck: Prestressed Non-Composite Box Beam with 2-1/2" Minimum Asphalt  
Surface Course

Shoulder Width Left: 6'-9"

Shoulder Width Right: 9'-5"

Bridge No.: CUY-237-0720; Airport Exit Ramp over S.R. 237

Pavement Lane Width: 24'-0"

Bridge Deck: 8 1/2" Reinforced Concrete Slab

Shoulder Width Left: 3'-5"

Shoulder Width Right: 7'-5"

Bridge No.: CUY-237-0748; Airport Exit Ramp over S.R. 237

Pavement Lane Width: 16'-0"

Bridge Deck: 8 1/2" Reinforced Concrete Slab including Monolithic Wearing  
Surface Course

Shoulder Width Left: 3'-5"

Shoulder Width Right: 7'-5"

2. Proposed Improvement

Mainline

Design Speed: 60 mph Pavement Width: Variable, 24'-0" to 36'-0";

Pavement Type: Reinforced or Concrete Base with Asphalt Overlay

Shoulder Width Left: No shoulder between Sheldon Road and Eastland Road; 9'-0" or 10'-0" from Eastland Road to the beginning of the Airport Freeway; 6'-9" from Brook Park Road Ramp to I-480 Exit; Variable, 6'-9" to 0'-0" from I-480 Exit to bridge over Brook Park Road

Shoulder Width Right: 10'-0" Sheldon Road to the beginning of Airport Freeway with 8'-0" shoulders along deceleration lanes; 10'-0" from Brook Park Road Ramp to I-480 Ramp; 6'-0" to 1'-10" with concrete curb from I-480 Ramp to the bridge over Brook Park Road

Graded Shoulder Width Left: No shoulder between Sheldon Road and Eastland Road; 9'-0" to 15'-0" from Eastland Road to the beginning of Airport Freeway; N/A North of Brook Park Road Ramp

Graded Shoulder Width Right: 12'-0" Sheldon Road to the beginning of Airport Freeway; 15'-0" Brook Park Road Exit to bridge over Brook Park Road

Posted Speed Limit: 50 mph

Design Traffic Volume: 52,500 K.: 10% D.: 60% T.: 3%

Proposed Traffic Controls: N/A

Treatment of Railroad: None

Ramps

Pavement Width: 16' Normal; 24' to 36' at Intersections

Pavement Type: 9" Concrete Base with Asphalt Overlay

Shoulder Width Left: 4'-0"

Shoulder Width Right: 6'-0" with 16' lane and 8'-0" with 3-12' lanes at intersection

Proposed Traffic Controls: N/A

Treatment of Railroad: N/A

Bridges

Bridge No.: CUY-237-0600 over I-X Center Drive

Pavement Width: 24'-6"

Bridge Deck: Reinforced Concrete Arch

Shoulder Width Left: None

Shoulder Width Right: 5'-0" with safety shape parapet

Bridge No.: CUY-237-0695 over Snow Road

Pavement Width: No changes to pavement or shoulder widths are proposed. The only proposed improvement is the repair and sealing of concrete surfaces

Bridge No.: CUY-237-0720 & CUY-237-0748; Airport Exit & Entrance Ramps over S.R. 237

Pavement Lane Width: No change will be made to the pavement and shoulder widths of these two bridges. Repair and sealing concrete surfaces, wearing surface treatments and structural steel cleaning and coating, where required, are the only proposed improvements

3. Deviations

Identify Deviations from Standards and indicate source of Standards.

Deviations - The following existing shoulder conditions will not be upgraded:

(a) There is no existing shoulder on the left side of pavement. The northbound and Southbound lanes between Sheldon Road and Eastland Road are separated by a 3'-0" wide concrete median. The current standard for curbed shoulder on the left side is 4'-0", as shown in Table 401-4, Urban Roadway Criteria dated March 1987.

(b) The proposed shoulder on Bridge No. CUY-237-0600 will be 5'-0". This is an increase in width of 3' from the existing 2' shoulder width. The current standard for this shoulder is to match the approach shoulder width of 10'-0". Table 401-7 Design Criteria - New and Reconstructed Bridges shows that 10' is the minimum shoulder width.

(c) The existing graded shoulder width on the right side will not be upgraded between Sheldon Road and the beginning of the Airport Freeway (1,500' North of Eastland Road). The existing graded shoulder width is 15'-0" which is shown in Table 401-3 Urban Roadway Design Criteria dated March 1987.

4. Deviation Justification

Explain the necessity for deviation from Standard and explain what items are being provided to alleviate the condition, why the deviation from Standard will not cause operational problems and/or other reasons why this deviation will not cause operational problems.

(a) Widening the left shoulders to meet the standard width of 4'-0" would require reconstruction of the existing lanes and right shoulders, and moving existing light poles and sign poles. Deviation from the standard shoulder width will not cause additional operational problems since the existing pavement width is not being reduced.

(b) Widening the existing shoulder on Bridge No. CUY-237-0600 an additional 5' would require widening the existing bridge deck before replacing the parapets. This deviation should not cause any additional problems since the shoulder width is being widened from the existing 2' width and safety shaped parapets are also being added.

(c) Widening the existing graded shoulder on the right side from 12'-0" to 15'-0" would require moving existing light and sign poles and purchasing additional right-of-way for new slope limits, or providing a steeper foreslope.

5. Accident data

No. of Accidents, three years: 153 Rate: 1.87/annual million vehicle miles  
Accidents occurring at Night: 42 Daylight: 111  
Pavement: Wet 33 Dry 97 Snow 13 Ice 10  
Type of Accident: Head On 5 Rear End 62 Sideswipe-Meeting 10  
Sideswipe-passing 23 Angle 24 Parked Vehicle 1 Train 2  
Fixed-Object 20 Overturning 1 Other 5

Discuss the effect the deviation from the Design Standard is expected to have on the accident history, also, discuss effect the project as a whole is expected to have on the accident history.

The graded shoulder width will remain the same as the existing shoulder width therefore it should not have any adverse effects. The existing paved shoulder will be widened from 8' to 10', which should improve the accident rate between Sheldon Road and the airport freeway.

The project includes upgrading of the signing, widening of the right paved shoulders, and new pavement markings which should improve the accident rate of the highway.

6. Local Standards

List applicable local standards and deviations or compliance.

Local Standards are the same as ODOT Criteria

7. Right-of-Way

Discuss affected items in relation to adjacent property such as drives, walks, acquisition of property, existing R/W width, proposed R/W width, buildings damaged or acquired, commercial or residential property, trends in property development, etc.

State Route 237 is bounded by Conrail railroad tracks to the East and Cleveland Hopkins International Airport to the West. Commercial and residential property also border right-of-way and/or limited access lines. Widening the graded shoulder width would require relocation of the limited access line to beyond the new slope limits in some areas. No additional right-of-way will be required if the project is constructed as proposed.

3. Future Improvements

Discuss status of adjoining sections of this road and future plans, indicate the type of operation such as in (1 Existing Conditions).

The portion of S.R. 237 north of Eastland Road in front of the Cleveland Hopkins Airport (the Airport Freeway) was completely rebuilt in 1985. No improvements are planned for this section, except as discussed in Section 2 of this report.

State Route 237 south of Sheldon Road located in Berea is a 2 lane uncurbed roadway. At the intersection with Sheldon Road S.R. 237 is 4 lanes wide with a concrete median and curbs. The speed limit south of Sheldon Road is 35 mph.

North of Brook Park Road, S.R. 237 is a 4 lane highway divided by a 6' wide concrete median with barrier guardrail. S.R. 237 ends at I-71.

There are no improvements planned for S.R. 237 south of Sheldon Road or north of Brookpark Road.