THE INTERSECTION OF ROADS AND LEVEES: CHALLENGES OF MANAGING DUAL INFRASTRUCTURE

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OUTLINE

USACE Levee Safety Program
Section 408 Overview
Levees and Road Embankments Examples

Reasons You Might Need to CoLocate Roads and Levees
Design Considerations
  – Placement of Levee Within Embankment
  – Drainage Considerations
  – Federal Levee Requirements
    • Analyses
    • Section 408 Submittal
    • Operations/Maintenance Considerations
    • Post-Construction Considerations
  – Example Projects
Presentation summary and take aways
Questions
USACE OMAHA DISTRICT
LEVEE SAFETY PROGRAM

Key Activities

• Conduct Inspections and risk assessment that identify and describe levee-related flood risk associated with a levee system.

• Increase Flood Awareness among elected officials and risk managers so they may most effectively reduce and manage risk.

• Build understanding among residents, business, and stakeholders that levees do not eliminate flood risk and that levee-related flood risk can change over time.
USACE OMAHA DISTRICT LEVEE SAFETY PROGRAM

Guiding Principles

• Hold Life Safety Paramount
• Corporately Manage Risk
• Ensure Open and Transparent Engagement
• Learn and Adapt
OPPORTUNITIES TO INTERSECT

Omaha District Levee Safety Program Numbers

- Levees in 8 States
- 176 Levee Segments
- 677 linear miles of levees/channels
- 89 Levee Sponsor
NATIONAL LEVEE DATABASE

Website: https://levees.sec.usace.army.mil/
LEVEES IN NEBRASKA

https://levees.sec.usace.army.mil/
**Technical Reviews** are conducted for proposed projects outside of the ROW but within the Critical Area, defined as 500 ft landward and 300 ft riverward of the centerline. ROW extents vary along each project.
GUIDANCE ON EXISTING LEVEE SYSTEMS


1) Impair the Usefulness of the Project Determination. The objective of this determination is to ensure that the proposed alteration will not limit the ability of the project to function as authorized and will not compromise or change any authorized project conditions, purposes or outputs.

2) Injurious to the Public Interest Determination. Proposed alterations will be reviewed to determine the probable impacts, including cumulative impacts, on the public interest. The decision whether to approve an alteration will be determined by the consideration of whether benefits are commensurate with risks.
COMMON USACE QUESTIONS IF PROPOSING DUAL INFRASTRUCTURE

Does the modification meet current USACE Levee Design Criteria?

How will the Levee Sponsor complete the required Operation and Maintenance activities? This can be accomplished through a 3rd party agreement but USACE will work directly with the levee sponsor.

Were there any design considerations should future modifications be warranted?

Does it address safety concerns for both functions of the embankment?

Is there an emergency action plan for both during construction and one completed?
EXAMPLES OF LEVEES AND ROADS

Levee tied into road and road incorporated into the project

Access road constructed on levee crest
EXAMPLES OF LEVEES AND ROADS

Road raised and incorporated into the project
EXAMPLES OF LEVEES AND ROADS

TYPICAL LEVEE SECTION SHOWING
ZONING OF MATERIALS

(Section shown taken from Sta. S 14+35.00)
THE INTERSECTION OF ROADS AND LEVEES: CHALLENGE OF MANAGING DUAL INFRASTRUCTURE
Why might you Co-Locate a levee and road?

Combined Levee and Road Design Considerations

Post-Construction Requirements

Summary
REASONS TO COLLOCATE LEVEES AND ROADS

- Floodway/Floodplain
- Environmental Constraints
- Right of Way
- Cost
Design Considerations
LEVEE PLACEMENT

- Riverward Versus Landward Versus Center
- Geotechnical Considerations
- O&M Considerations
WHERE DOES THE WATER GO?

- Drainage Considerations
- Landward
- Riverward
- Conveyance
LANDWARD DITCHES – YES OR NO?

- Depends on subsurface profile
- Check with your Geotechnical Engineers
POST CONSTRUCTION CONSIDERATIONS
OPERATION & MAINTENANCE CONSIDERATIONS

- Dividing O&M Responsibilities
- Roadway Maintenance and Permission Requirements
- Levee O&M and Roadway Impacts
- Memorializing Levee Features
- Get It In Writing
POST-CONSTRUCTION

- Flood Fighting
- USACE Access and Inspections
- Levee Modifications
WHERE IS THIS HAPPENING?
EXAMPLE PROJECTS

- Levee Through Highway Embankment
  - Council Bluffs, Iowa at I-29/I-80 Interchange
- <Existing in California>
- Road Serves as Primary Line of Protection Along Lower Heart River
- Local Projects
  - EIS for NDOT US 275
  - USACE 205 Study at Missouri Valley, Iowa
QUESTIONS?

For additional questions, please contact:
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