INDOT Replacement In Kind Policy

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Agenda

- Purpose of replacement in kind policy
- Comparison of standard existing structure replacement policy
- Criteria for replacement in kind
- Additional information about the policy
Purpose

- To reduce structure sizes, where structure is functioning hydraulically.
- Results of JTRP study SPR-3405, “Analysis of INDOT’s Current Hydraulic Policies.”
- Released as Design Memo 13-05 in March.
- IDM 203-2.02(02)
Policy Comparison

- Existing structure replacement policy:
  - If existing structure creates backwater > 1.0 ft., the proposed structure must have backwater equal to or less than 1.0 ft.
  - If existing structure creates backwater < 1.0 ft., the proposed structure must be equal to or less than existing backwater except...
Existing structure replacement policy:

- If existing structure creates backwater < 0.14 ft., the proposed structure may have backwater up to 0.14 ft.
- For new road alignment, the proposed structure must have surcharge no greater than 0.14 ft.
Definition

- Proposed structure must have the same span and rise from flow line to low structure elevation.
- May not be smaller than existing.
- Current policy requirements still apply.
Site Criteria

- Which structures qualify?
  - Site criteria
  - Hydraulic parameters
Site Criteria

- Structure is in a rural area, as defined by Indiana DNR.
Site Criteria

- Existing structure meets or exceeds minimum pipe size for facility.

<table>
<thead>
<tr>
<th>Structure Application</th>
<th>Minimum Circular-Pipe Size</th>
<th>Minimum Deformed-Pipe Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive</td>
<td>15 in.</td>
<td>1.1 ft²</td>
</tr>
<tr>
<td>Mainline or Public-Road Approach (2 lanes)</td>
<td>15 in.</td>
<td>1.1 ft²</td>
</tr>
<tr>
<td>Mainline or Public-Road Approach (≥ 3 Lanes)</td>
<td>36 in.</td>
<td>6.7 ft²</td>
</tr>
</tbody>
</table>
Site Criteria

- No flooding complaints at location.
Site Criteria

- No history of road overtopping at the required roadway serviceability, per INDOT Maintenance.
Site Criteria

- No evidence of scour.
Site Criteria

- No known debris problems.
Hydraulic modeling is required.
Hydraulic Parameters

- Existing backwater depth is less than 3 ft.
- Headwater elevation does not affect finished floor elevations upstream.
Hydraulic Parameters

- Proposed backwater depth matches or improves existing.
- If greater than 6.5 ft/s, outlet velocity may not be more than 150% of natural velocity.
Additional Information

- If site criteria is met but hydraulic parameters aren’t, proposed structure can be sized to fit replacement in kind.
- Least restrictive policy should be followed.
- All structures should be designed for the correct design storm frequency.
Conclusion

- Less restrictive than the existing structure replacement policy.
- Site criteria and hydraulics parameters need to be met to qualify.
- Least restrictive policy should be used.
Questions?