Ohio Department of Transportation

Geotechnical Engineering Design Checklists

The Need

- What does ODOT want/expect

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- Process & design guidance

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- Reduce inefficiencies & oversights

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- Process & design guidance
- Reduce inefficiencies & oversights
- Provide consistency across ODOT designs

The Creation

- Early 2002

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- FHWA documents & checklists; other DOT manuals

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- Develop lists for each geotechnical facet of roadway projects

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- January 1, 2003 distribution & posting on DRRC

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III.B. Embankments Checklist

C-R-S: PID: Reviewer: Date:

If you do not have an embankment on the project, you do not have to fill out this checklist.

Settlement

Y N X 1 If soil conditions and project requirements warrant, have settlement issues been addressed?

If not applicable (X), go to Question 14

Y N X 2 Have consolidation properties of the foundation soils been determined by laboratory consolidation tests?

Y N X 3 Have calculations been performed to estimate the total expected embankment settlement and the time of consolidation?

Check method used:

☐ EMBANK or equivalent software ☐ hand calculations

Y N X 4 If differing foundation soil and/or loading conditions occur throughout the embankment area, have sufficient analyses been completed to evaluate consolidation at locations representative of the most critical conditions?

Y N X 5 Have the total settlement and the time of consolidation analyses indicated acceptable values at all locations for the scope of the embankment work?

Y N X 6 If total settlement or time of consolidation is unacceptable, have the stations and lateral extent of the problem areas been defined?

Y N X 7 Has a method been chosen as a solution to the settlement issues?

Check methods used:

☐ waiting periods with monitoring

☐ removal and replacement of weak soil

☐ drainage blanket and wick drains

☐ lowering proposed grade / change alignment

☐ surcharge (preloading)

☐ lightweight fill

☐ other

Y N X 8 Based on accepted design practices, and where applicable, adhering to published guidelines and design recommendations from FHWA, have calculations been performed to evaluate the effectiveness of the chosen solution(s)?

Y N X 9 Has an economic analysis been performed to evaluate the cost benefits of the recommended solution compared to others?

Y N X 10 Have all necessary notes, specifications, and details for the chosen solution been determined?

Y N X 11 Have the need, locations, type, plan notes, and reading schedule for settlement platforms been determined?

Y N X 12 Have the effects of the predicted settlement and the chosen solution been determined and accounted for on the construction schedule?

Y N X 13 Has the effect of any foundation soil consolidation (including differential settlement) been evaluated with regard to adjacent structures (e.g., bridges, buildings, culverts, utilities) which will also undergo settlement and be subject to stresses induced by the consolidation of the surrounding soil?

Use of the Checklists

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- Scoping

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- Different parts of same checklist at different times
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- Guideline for what information to submit

Use of the Checklists

- Filled out checklists included with submissions

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- OGE using checklist as review letter

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- District personnel – when to request assistance from specialist

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Use of the Checklists

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- OGE needs input