



CITY OF DURHAM

Public Works Department

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REQUEST FOR INFORMATION (RFI): NO. 3
CONTRACT: SD-2012-01
PROJECT: UNIVERSITY DRIVE CULVERT REPLACEMENT

Date: June 6, 2012

1. Please clarify the Contract requirements regarding temporary shoring and protecting the existing building(s) and utilities both within the North Carolina Department of Transportation (NCDOT) right-of-way and on private property. In Section 5.02, Temporary Shoring, of the Report of Subsurface Exploration and Geotechnical Engineering Analysis (September 7, 2011) it is recommended that construction slopes be no steeper than 1.5 horizontal to 1 vertical. With this requirement, the proximity of the proposed culvert to the existing building, and the Limits of Disturbance it appears the Contractor will need to provide for temporary shoring. Can you describe how the Contractor should protect the existing building(s) and utilities during construction? Also, can you describe NCDOT requirements for temporary shoring within their right-of-way?
 - a. *The Contractor is responsible for remaining within the identified Limits of Disturbance and protecting the existing building(s) and utilities. The Contractor is responsible for the means and methods for accomplishing this so long as the necessary approvals are obtained.*
 - b. *Any temporary shoring plans shall be designed and sealed by a licensed North Carolina Professional Engineer. Temporary shoring within the NCDOT right-of-way shall be reviewed and approved by NCDOT. Temporary shoring on private property shall be reviewed by the Engineer.*
 - c. *NCDOT has typical temporary shoring details, special provisions, a typical shoring requirement, and a Positive Shoring NCDOT Encroachment Criteria Checklist (see links below). The Contractor is not required to follow these requirements for temporary shoring on private property.*
 - i. *NCDOT Typical Temporary Shoring Details:*
<http://www.ncdot.gov/doh/preconstruct/highway/geotech/formdet/2006/>
 - ii. *NCDOT Standard Specifications, Special Provisions (SP11 R02 Temporary Shoring, July 2012):*
<http://www.ncdot.gov/doh/preconstruct/ps/specifications/2012provisions.pdf>
 - iii. *Typical Shoring Requirement (attached to this RFI)*
 - iv. *Positive Shoring NCDOT Encroachment Criteria Checklist (attached to this RFI)*
 - d. *There is no separate pay item for temporary shoring in this Contract. Any costs associated with providing temporary shoring shall be included in the unit price for Box Culvert Excavation.*
 - e. *The Contractor may request to alter the Limits of Disturbance within NCDOT right-of-way, specifically between station 2+19 and 3+93, east and south of the proposed culvert, in order to perform the Work. Any additional cost as a result of altering the Limits of Disturbance shall be the Contractor's responsibility.*

Informational for file 9063 -

Central Raleigh Encroachments Engineering Section's typical shoring requirement:

The excavation shall be outside the theoretical 1:1 slope from the edge of pavement to the bottom of the nearest excavation wall. When this is not possible, excavations inside the theoretical 1:1 slope from the existing edge of pavement to the bottom of the nearest excavation wall shall be made in accordance with the following conditions:

- a) Positive excavation shoring, such as sheet piling, shall be installed. The design of the shoring shall include the effects of traffic loads. The shoring system shall be designed and sealed by a licensed North Carolina Professional Engineer. Shoring plans and design calculations shall be submitted to the Division Engineer for review and approval prior to construction. **Trench boxes shall not be accepted as positive shoring.**
- b) The trench backfill material shall meet the Statewide Borrow Criteria. The trench shall be backfilled in accordance with Section 300-7 of the 2012 *NCDOT Standard Specifications for Roads and Structures*, which basically requires the backfill material to be placed in layers not to exceed 6 inches loose and compacted to at least 95% of the density obtained by compacting a sample in accordance with AASHTO T99 as modified by NCDOT.
- c) A qualified NCDOT inspector should be on the site at all times during construction. The encroaching party shall reimburse NCDOT for the cost of providing the inspector. If NCDOT cannot supply an inspector, the encroaching party (not the utility contractor) shall make arrangements to have a qualified inspector, under the supervision of a licensed North Carolina Professional Engineer, on the site at all times. The Professional Engineer shall certify that the utility was installed in accordance with the encroachment agreement and that the backfill material meets the Statewide Borrow Criteria.
- d) All trench excavation inside the limits of the theoretical one-to-one slope, as defined by the policy, shall be completely backfilled and compacted at the end of each construction day. No portion of the trench may be left open overnight.
- e) An appropriate performance bond should be posted for a period of two (2) to five (5) years to cover any long term pavement repairs which may be required as a result of the installation.

Note: The slope of 1:1 is adjustable depending on site specific conditions and installation process.

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Encroachment Review

PRELIMINARY



NCDOT ENCROACHMENT CRITERIA CHECKLIST

Positive Shoring

11/23/2011

Notes:

Allow 4-8 weeks minimum processing/review time

This checklist is not all inclusive of the requirements for other agencies. The Applicant shall comply with all applicable local, state, and federal environmental regulations, and shall obtain all necessary local, state, and federal environmental permits associated with this installation.

Intent:

To facilitate and manage the relocation, adjustment, removal, and addition of utilities along NCDOT highways and rights of way while maintaining the integrity of the highways system and ensuring the safety of its users and the public. The goal is to not cause damage to any NCDOT facility or cause settlement of roadways/walkways due to open cut installation along NCDOT state roadways.

GENERAL

- Submit Extra Set of Plans (scaled)
- Be specific on description of encroachment item(s)
- If outside the right of way or if it could potentially affect our facility, submit for review, i.e. retaining wall
- Provide adequate plans for a proper review
- Attach to an existing encroachment agreement
- All excavations shall be backfilled overnight
- NC PE Certifications need to apply to the protection of the roadway facilities. Disclaimers that limit the design to only the protection of workers are not acceptable.

REPORTS

- Name of Project, Preparer Information/Contact, Owner Information provided
- Cover sheet NC PE certified and bear the name, address and license number of the licensee's firm
- NC PE certification and required notation per 21 NCAC 56.1106 required for all standard design plans used
- Procedure for progression, dewatering, and stabilization of the installation process
 - Address the modified procedure for any utility crossings
 - Explain shoring stability at the bottom of the excavation, i.e. depth of penetration, walers, etc.
 - Address any annular space remaining from removal of the structure and impacts to surrounding soil
 - Explain procedure if structure fails, e.g. how to stabilize and repair (use independent Geotech Engineer)
 - Timeline for installation cycle
 - Groundwater determination/evaluation/procedure
 - Provisions/Modifications if encounter rock
 - Backfilling Procedure/Type of backfill
 - Procedure for stabilization of the unsupported ends of excavation
- Site specific geotechnical data certified by a NC Professional Engineer, e.g. in vicinity of the excavations
 - Note: NCDOT may waive this requirement depending on the amount of risk associated with construction activity.
 - Borings showing depths, soil changes, groundwater
 - Explain shoring stability at the bottom of the excavation, i.e. depth of penetration, walers, etc.

Calculations:

- Full set of calculations for proposed new structure, NC PE Certification per sheet
- Calculation basis shall be provided, i.e. LRFD, ASD, ACI, AISC, etc.
- The surcharge shall be at least 250psf with traffic unless the loading provided can be justified, but any loading should be verified with site specific conditions. No equipment adjacent to shoring. unless information and calculations are provided that include those loads
- Any maximum deflection shall be calculated and shown. Show soil stabilization if deflection is over 1.0".

PLANS

General:

[See General Checklist](#)

Location/Vicinity Map:

[See General Checklist](#)

Encroachment Review

PRELIMINARY



NCDOT ENCROACHMENT CRITERIA CHECKLIST

Positive Shoring

11/23/2011

General Plan View:

See General Checklist except for the following:

- | | |
|------------------------------------------------------|--------------------------------------------------------------------------------|
| <input type="checkbox"/> Shoring Locations shown | <input type="checkbox"/> Topography shown at least 30' each side of excavation |
| <input type="checkbox"/> Note intersecting utilities | <input type="checkbox"/> Plans sealed, signed & dated by NC PE (certified) |

General Profile Overview:

See General Checklist except for the following:

- | | |
|----------------------------------------------------------------------------|------------------------------------------------------|
| <input type="checkbox"/> Plans sealed, signed & dated by NC PE (certified) | <input type="checkbox"/> Depths of Excavations shown |
|----------------------------------------------------------------------------|------------------------------------------------------|

General Structural Details:

- | | |
|----------------------------------------------------------------------------|----------------------------------------------------------|
| <input type="checkbox"/> Plans sealed, signed & dated by NC PE (certified) | <input type="checkbox"/> All structural components shown |
|----------------------------------------------------------------------------|----------------------------------------------------------|

General Design Checks:

See General Checklist

Other requirements

See General Checklist

Provide concurring Signature, that the applicant has, to the best of his/her abilities and belief, provided complete and factual representations of the information requested above:

Applicant or Applicant's Agent

Date

*** Note to all applicants or agents.** This transmittal check list and necessary accompanying information shall be submitted to the **District Office**.