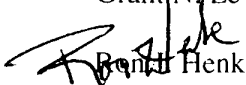


MEMORANDUM

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PROJECT TIED TO			
ORIGIN		DATE	
ITEM #			

To: Grant N. Levi, P.E. – Deputy Director for Engineering

From:  Ron J. Henke, P.E. – Program Manager

Date: March 23, 2005

Subject: PROPOSED CHANGES TO THE CHANGE ORDER PROCESS DUE TO REVISED PROFESSIONAL ENGINEER ADMINISTRATIVE RULES

I. Background:

The North Dakota State Board of Registration for Professional Engineers and Land Surveyors has made revisions to NDAC Title 28. The new rules went into effect on October 1, 2004. Therefore, Phillip Murdoff and I were assigned the task of organizing a team to review how the new rules affect plan changes. The team comprised of the following individuals:

- Ron J. Henke, Design – Team Co-Chair
- Phillip L. Murdoff, Construction – Team Co-Chair
- Robert R. Rayhorn, Dickinson District
- Kevin Gorder, Fargo District
- Leo Boyle, Devils Lake District
- Doug Fercho, Bismarck District
- Jay Praska, Valley City District
- Steven Sink, Minot District
- Barry Schuchard, Kadmas Lee & Jackson – Representing NDCEC

We were assigned the task of reviewing the Title 28 revisions and how these revisions will specifically affect change orders, the change order process and the plan revisions process. Chapter 28-02.1-08-03 titled "Use of Seals" #6 specifically addresses changes made to final plans, specifications, drawings, reports, or other documents after final revision and sealing and signing by a registrant. The follow is that section:

- a. Any **changes** made to the final plans, specifications, drawings, reports or other documents after final revision and sealing by the registrant are prohibited by any person other than the registrant. In the event the **original registrant** is not able to authorize any changes, the registrant's employer may authorize another duly registered individual to make changes to final sealed documents.

- i. Such changes to final sealed documents may be made only by a duly registered individual.
- ii. A duly registered individual making changes to final sealed documents must assume responsible charge and re-seal the directly related final documents.
- iii. If construction phase revisions are made to the plans, they must be made by a duly registered individual, provided the change does not affect the functional design requirements.

II. Definitions:

original registrant “not able” – The original registrant will have up to 3 full working days to respond, as to what needs to be done. Additional time may be needed to review the change and prepare revisions. “In the event the **original registrant** is not able to authorize any changes, the registrant’s employer may authorize another duly registered individual to make changes to final sealed documents.” If the original registrant is “not able” his/her supervisor should be contacted or the registrant that is sealing and signing as the coordinator will be contacted. In the event that neither have responded within 3 full working days they would be considered “not able” and the registrant in the field can authorize the construction phase revision.

construction phase revision – is a revision that is made to the final plans after the project has been bid. This can be in form of a change order or any field change made during construction.

addendums – these revisions are made prior to the final plans being bid.

inherent variability – should not be construed to exceed the fundamental design standards, but is the range of normal contracting and field engineering accuracy and ability.

III. Discussion:

The team reviewed three possible options for addressing change orders:

- A. Option 1: Seal and Sign all change orders.
- B. Option 2: Identify which change orders do not need to be sealed and signed and have all other change orders sealed and signed by the original registrant.
- C. Option 3: Identify which change orders do not need to be sealed and signed, which change orders can be sealed and signed by a registrant other than the original registrant that sealed and signed the final plans, and which change

orders need to be sealed and signed by the original registrant who sealed and signed the final plans.

The team evaluated the above three options and recommends option 3. It is the opinion of the team that a large percentage of the construction phase revisions that are processed may be a functional design change and need to go back to the original registrant. The team felt that Option 3 follows the intent of NDAC Chapter 28 and will result in the fewest changes possible that need to go back to the original registrant. The team also felt that the more changes that could be at the field level, the smoother the process would be. Several of the team members indicated that this is already being done and the new rules will just formalize the process.

The team is concerned about the availability of the original registrants and the timeliness of responses. Some changes may need to be made to address this issue.

The team discussed the procedures the department currently has in place for approving federal aid on change orders from non-NDDOT (ie. city and county) projects. A question raised to the team was if the department approval of federal aid on non-NDDOT project change orders also insured that the changes conformed to NDAC Title 28. The majority of the team felt the Department could approve change orders on these types of projects for federal aid eligibility, without taking on liability that the change was or was not administered according to NDAC Title 28. The majority of the team felt that it was the project owners (ie. city or county) responsibility to follow Title 28 and not the NDDOT's position to monitor this activity.

An exercise was performed by the team members, where each member was give a random sample of 7 change orders and were ask to evaluate each change order according to recommendation #2. Each team member was ask to identify which change orders did not need a seal and signature, which change orders they felt would be considered a "functional design" change and would need to be sealed and signed by the original registrant and which change orders could be sealed and signed by another registrant. The results of that exercise were that 6 of the 7 change orders were agreed on by all team members.

IV. Recommendations:

Recommendation #1: That no plan revision will be made without prior approval from the original registrant, unless original registrant is "not able" prior to contract award. That construction phase revision will not be made without prior approval, if need, as identified in Recommendation #2.

Recommendation #2: The team recommends OPTION 3: Identify which construction phase revisions do not need to be sealed and signed, which construction phase revisions can be sealed and signed by a registrant other than the original registrant that sealed and signed the final plans, and which

construction phase revisions need to be sealed and signed by the original registrant who sealed and signed the final plans.

Following is a break down of possible construction phase revisions, and who will seal and sign the construction phase revisions that need to be. By recommending Option 3, the team needed to define what a “functional design” construction phase revisions would be, because “functional design” construction phase revisions were identified as changes that need to go back to the original registrant. It was decided to define a “functional design” change by looking at the 13 design criteria element that were used in Design Memorandum 03-2003, and adding additional items that fall in this category. Following is a break down of construction phase revisions that do not need to be sealed and signed and those that would need to be sealed and signed by the original registrant.

1. Construction phase revisions that **do not** need to be sealed and signed. These are administrative changes that do not affect either the design or physical features of the projects. Examples include such items as:
 - a. Changes regarding contract time/liquidated damages.
 - b. Changes concerning, field offices, partnering, personnel, etc...
 - c. Adding quantities because of funding source
 - i. Example: A project has quantities broken out into several different funding sources and during construction it was determined that an item should be paid for under funding source B instead of funding source A.
 - d. Any construction phase revisions that follow existing standards.
 - i. Example: Light standard details which are shown on a standard drawing this would not have to be approved. The location of where the light standard would be placed would need to be sealed and signed.
2. The following list consists of construction phase revisions that need to be sealed and signed by the original registrant, unless the original registrant is “not able”. (see definition of “not able”) These changes are classified as construction phase revisions that are more likely to result in a change to the “functional design”. It is the goal of the NDDOT to have construction phase revisions identified as early as possible and to process the construction phase revisions as quickly as possible.
 - a. Structural changes
 - i. Example: Bridges, box culverts, etc.
 - b. Lane width
 - c. Shoulder width
 - d. Bike path or sidewalk width
 - e. Specifications changes
 - f. Signals

- g.** Construction material changes
- h.** Stopping sight distance
- i.** Lighting
- j.** Guardrail
 - i. Example: Changes in design details (length, height, post spacing and location) as shown in the plans or on standard drawings.
- k.** Superelevation
- l.** End treatments at Barriers

The following items need to be sealed and signed by the original registrant if the construction phase revision is outside what is considered inherent variability from design in normal construction practices. If the construction phase revision is within the inherent variability of normal construction practices the registrant in responsible charge of the construction project can seal and sign the construction phase revision.

- m.** Horizontal curvature
 - i. Example: Changes to Curb and Gutter radii or other Curb and Gutter alignment, changes to bike paths or sidewalk, changes to roadway curvature.
- n.** Vertical curvature
 - i. Example: Changes to Curb and Gutter radii or other Curb and Gutter alignment, changes to bike paths or sidewalk, changes to roadway curvature.
- o.** Any change in grades
 - i. Example: Changes to roadway grades, sidewalk grades pipe grades, etc.
- p.** Cross-slopes
 - i. Example: Change to mainline, shoulder, sidewalk, etc. and shoulder sloughs.
- q.** Horizontal clearances
 - i. Example: Any changes that are made to permanent features above ground, when you cannot follow standards.
- r.** Vertical clearances
 - i. Example: Signing, Lighting, Signals, at structures, etc.
- s.** Pavement marking
- t.** Ditch width if narrowed to less than 12 feet
- u.** Inslopes
- v.** Drainage item or patterns
- w.** Pavement and Base thickness
 - i. This does not included subcuts that will be lengthened or if additional depth is needed.
- x.** Construction signing changes
 - i. This is any change made to construction signing where the minimum or maximums are not met if defined by a standard or plans. Consideration should be made when developing

construction signing plan sheets to build in as much flexibility as possible.

3. All other construction phase revisions will be sealed and signed by the District Engineer or another registered professional engineer that the District Engineer assigns.

Recommendation #3: That the title sheet of all plans identifies the clearzone required for the project.

Recommendation #4: That change orders at a minimum include a description of why the change is being made and supporting data (i.e. pictures, sealed and signed plan sheet(s) or memorandum that has been sealed and signed).

Recommendation #5: That no changes are needed to the fiscal approval levels identified for change order administration in the current Construction Records Manual.

Recommendation #6: That Construction Services division monitor change orders for a construction season to determine how many changes needed to be stamped and who stamped them.

Recommendation #7: That recommendation 1 thru 6 is reviewed in 1 year.

Recommendation #8: Those future contracts entered into between a consultant and the NDDOT, for the consultant contracted to do a design will include a provision to keep the services of that consultant thru the construction phase to address construction phase revisions.

Recommendation #9: That all addendums, plan revisions and construction phase revision made after April 15, 2005 follow the recommendations that have been approved in this document.

V. Decision Items:

The following are the recommendation of the team for your consideration.

1. Recommendation #1: That no plan revision will be made without prior approval from the original registrant, unless original registrant is “not able” prior to contract award. That construction phase revision will not be made without prior approval, if need, as identified in Recommendation #2.

Yes No

Comment: _____

2. Recommendation #2: The team recommends OPTION 3. This option identifies which construction phase revisions do not need to be sealed and signed, which construction phase revisions can be sealed and signed by a registrant other than the original registrant that sealed and signed the final plans, and which construction phase revisions need to be sealed and signed by the original registrant who sealed and signed the final plans.

Yes No

Comment: _____

3. Recommendation #3: That the title sheet of all plans identifies the clearzone required for the project.

Yes No

Comment: _____

4. Recommendation #4: That change orders at a minimum include a description of why the change is being made and supporting data (i.e. pictures, sealed and signed plan sheet(s) or memorandum that has been sealed and signed).

Yes No

Comment: _____

5. Recommendation #5: That no changes are needed to the fiscal approval levels identified for change order administration in the current Construction Records Manual.

Yes No

Comment: _____

6. Recommendation #6: That Construction division keep a record of all change orders for a construction season to determine how many changes needed to be stamped and who stamped them.

Yes No

Comment: _____

7. Recommendation #7: That recommendation 1 thru 6 is reviewed in 1 year.

Yes No

Comment: _____

8. Recommendation #8: Those future contracts entered into between a consultant and the NDDOT, for the consultant contracted to do a design will include a provision to keep the services of that consultant thru the construction phase to address construction phase revisions.

Yes

No

Comment: _____

9. Recommendation #9: That all addendums, plan revisions and construction plan revision made after April 15, 2005 follow the recommendations that have been approved in this document.

Yes

No

Comment: _____

Final Comments:



Grant N. Levi, PE – Deputy Director for Engineering

3/22/05
Date