

Change Orders

2012 Construction Conference

Why a presentation on Change Orders?





- Wide variety of issues
- May require some negotiation
- Usually time is of the essence
- Significant costs involved

2011 Change Orders

- \$559M in contractor payments made
- 612 Change Orders issued
- \$32,812,669 Change Order total
- 5.9% Increase due to Change Orders

2011 Change Orders by Approval Level

| Change Order Amount | Approval Level | State and Federal | County | Total |
|-----------------------|--|-------------------|-----------|------------|
| \$0 to \$10,000 | Project Engineer | 344 | 10 | 354(58%) |
| \$10,001 to \$50,000 | District Engineer | 153 | 5 | 158(26%) |
| \$50,001 to \$100,000 | Office of Operations | 34 | 0 | 34(5%) |
| > \$100,000 | Office of Operations/FHWA ¹ | 63 | 3 | 66(11%) |
| Total | | 594 | 18 | 612 |

¹ FHWA approval on Full Involvement Projects . Typically NHS projects > \$5,000,000

2011 Change Orders by Classification

| Class | State | City | County | Total |
|---------------------------------|---------------------|--------------------|-------------------|---------------------|
| Design Changes | \$ 14,747,116 | \$ 890,789 | \$ 510,482 | \$ 16,148,387 |
| Major Changes in Project Limits | \$ -2,424,728 | \$ 0 | \$ 0 | \$ -2,424,728 |
| Changes in Specifications | \$ 128,182 | \$ 78,374 | \$ 0 | \$ 206,556 |
| Emergency Relief | \$ 16,880,714 | \$ 0 | \$ 0 | \$ 16,880,714 |
| Environmental Commitments | \$ 1,286,380 | \$ 1,985 | \$ 0 | \$ 1,288,365 |
| Structural Design Changes | \$ 76,351 | \$ 637,024 | \$ 0 | \$ 713,375 |
| Total | \$30,694,015 | \$1,608,172 | \$ 510,482 | \$32,812,669 |

Pricing out the Change Order



Spec 104.03

- Unit Bid Prices
- PS-1 Shedule Price
- Negotiated Price
- Force Account – Spec 109.04

Negotiating

- What are you negotiating?
 - Cost
 - Time
 - Quality

Preparing for a negotiation

- Understand the issue
- Develop your position
- Research cost/time

Do your homework

Preparing for a negotiation

- What questions will we ask?
- How will we establish our position?
- How will they challenge our position?
- How will we respond to their challenges?

During the negotiation

- Ask for price breakdowns
- Ask for supplier quotes
- Take good notes of what was agreed upon
- Be patient

Do you feel like contractors
always have you over a barrel?



- Competition
- Future work
- Department pays quickly
- Uniformity

- Act professional
- Treat with respect
- Win-Win

Change Order Definition

- **Spec Book 104.03**
- “The Engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as necessary to satisfactorily complete the project.... A change order will be executed to cover the changes within the scope of the Contract....”
- “The contractor shall perform any extra work at unit bid prices...
 - 1) Use unit bid prices
 - 2) PS-1 price schedule
 - 3) Negotiated unit price
 - 4) Force Account according to 109.04

Change Order Definition

- **Construction Records Manual – Section 5**
- A contract change order is a written supplemental agreement executed between the contractor and the NDDOT which provides for the performance of modifications to the contract such as changes in plans, specifications, special provisions or plan quantities. A contract change order would also be created for change in the construction of the project necessary to satisfactorily complete the work.



Change Order - CARS

Construction Records Manual – Section 5-8

Change Order Selection

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Construction Automated Records System

[Project:](#) SER-2-026(009)005 [Search Documents](#) [Add Documents](#)

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[SubProject:](#) 1 - BOX CULVERT & SCOUR HOLE EMERGENCY REPAIRS, RIPRAP

Change Order Selection <<

Subproject: 1 - BOX CULVERT & SCOUR HOLE EMERGENCY REPAIRS, RIPRAP, CHANNEL CLEANING, SPALL REPAIRS & INCIDENTALS

[Add Change Order](#)



| No. | Date | Reason | Classification | Approval | Documentation |
|-------------------|------------|---------------------------|--|------------------------------|------------------------|
| 1 | 02/15/2012 | Changes in Specifications | Change Approved In Field by Prof. Eng. | Not Approved | Report |

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Change Order - CARS

Project: SER-2-026(009)005

[Main Menu](#)

SubProject: 1 - BOX CULVERT & SCOUR HOLE EMERGENCY REPAIRS, RIPRAP

Change Order Maintenance <<

Change Order No: 2

Date:  (mm/dd/yyyy)

Reason:

Classification:

Revise plan sheets:

Contract Time Change:

Calendar Days Increased/Decreased:

Remarks:

Explanation of Change of Plan:

User: PCN:18423

Change Order - CARS

Change Order Spec/Code List - Windows Internet Explorer

http://auth.apps.state.nd.us/dot/cnst/cars/co/changeOrderMaintenance.do

Convert Select

http://www.dot.nd.g... Change Order S...

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Construction Automated Records System

Project: SER-2-026(009)005 [Main Menu](#)

SubProject: 1 - BOX CULVERT & SCOUR HOLE EMERGENCY REPAIRS, RIPRAP

Change Order Spec/Code List <<

Change Order No: 2

Date: 2/29/2012

Days Inc/Dec:

Reason: Design Changes

Contract Time Change: No Change

Subproject Participating Type: PARTICIPATING

| Spec/Code | Previous Quantity | Quantity | Unit Price | Increase/Decrease Amount | Part |
|-----------|-------------------|----------|-------------------|--------------------------|------|
| | | | Total | | |
| | | | Non-Participating | | |
| | | | Participating | | |

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WS: WAAW AA Bobby

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Change Order Spec/Code Maintenance - Windows Internet Explorer

http://auth.apps.state.nd.us/dot/cnst/cars/co/changeOrderSpecCodeSelection.do

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Project: SER-2-026(009)005 [Main Menu](#)

SubProject: 1 - BOX CULVERT & SCOUR HOLE EMERGENCY REPAIRS, RIPRAP

Change Order Spec/Code Maintenance <<

Change Order No: 2

Date: 2/29/2012

Days Inc/Dec:

Reason: Design Changes

Contract Time Change: No Change

Subproject Participating Type: PARTICIPATING

Spec: Code: [Annual Average Bid Price Report](#)

Unit Price:

Quantity:

Participating: Yes No

Category:

Sub-Category:

Other:

****Note: If item is not a valid Spec and Code, enter fields below.****

Description:

Unit:

Spec/Code Group:

User: PCN:18423

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Change Order - CARS

- Print a hard copy of the change order.
- Send out to contractor to get signatures. Project engineer should not sign until the contractor has signed it.
- Project Engineer will sign and forward it on according to Change Order Approval Procedures.



Change Order Approval Process

- **Construction Records Manual – Section 5-3**
- The change order approval authority is determined by the monetary amount of the change order and/or the reason for the change order.
- See the Change Order Approval Process Chart.

Located in **Construction Records Manual, Section 5-7**



CHANGE ORDER APPROVAL PROCESS CHART

North Dakota Department of Transportation (NDDOT)

| REASON FOR CHANGE ORDER | CHANGE ORDER PARAMETERS | FINAL APPROVAL AUTHORITY ⁴ |
|---|--|---|
| A-1. Non-Major Change and Non-Major Extra Work <ul style="list-style-type: none"> • Changes in contract documents. • Extra work within the scope of the contract. • For establishing the basis of payment or time adjustments for work affected by the changes. <p>Does not include the reasons listed below in items B through E. Costs over \$100,000¹ fall under A-2.</p> | Costs up to \$10,000. ¹ Time extensions up to 5 working days. ² | Project Engineer |
| | Costs over \$10,000 up to \$50,000. ¹ Time extensions over 5 working days up to 15 working days. ² | NDDOT District Engineer |
| | Costs over \$50,000 up to \$100,000. ¹ Time extensions over 15 working days up to 30 working days. ² | Director of Office of Operations |
| | Time extensions over 15 working days and Full Involvement. ² | Federal Highway Administration ³ |
| A-2. Major Change and Major Extra Work A major change is a project change that will significantly affect the cost of the project, character, or scope of work. | Costs over \$100,000. ¹ Time extensions over 30 working days. ² | Director of Office of Operations or Deputy Director for Engineering |
| | Costs over \$100,000 and Full Involvement. ¹ Time extensions over 15 working days and Full Involvement. ² | Federal Highway Administration ³ |
| B. Structural Design Changes. | All | Director of Office of Operations |
| | Costs over \$100,000 and Full Involvement. ¹ | Federal Highway Administration ³ |
| C. Changes in specifications, including materials specifications. | All | Director of Office of Operations |
| | Changes affecting major items of work as defined in 104.03 B and Full Involvement. ¹ | Federal Highway Administration ³ |
| D. Changes that affect the “Environmental Commitments”, alter the project termini, or impact the environment to where the environmental action needs to be reassessed. | All | Federal Highway Administration ³ |
| E. Emergency Relief (ER)-Changes to ER-funded projects that affect ER Participation or eligibility of added work. | All | Federal Highway Administration ³ |

1. Cost thresholds can be an increase or decrease to the original cost.
2. Calendar to working days conversion: [working days =(calendar days requested)×(working days specified to be charged per week)÷7].
3. Verbal approval is required prior to the start of change order work.
4. If not authorized to sign as final approval authority, need to sign “Approval Recommended” before going to the next authority.

Change Order Approval

- Project engineer should sign **original**, hard copy of change order and forward to the district.
- The district will review and sign, if needed, and forward to Construction Services.
- Construction Services will forward to Office of Operations, if needed, and FHWA, if needed, for review and signature.
- Construction Services will place approved change order in FileNet.
- Project engineer needs to wait for proper approvals to be completed before they 'approve' the change order in CARS.

Change Order - CARS

Change Order Approval - Windows Internet Explorer

http://auth.apps.state.nd.us/dot/cnst/cars/co/changeOrderSelection.do

Convert Select

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Construction Automated Records System

Project: SER-2-026(009)005 [Main Menu](#)

SubProject: 1 - BOX CULVERT & SCOUR HOLE EMERGENCY REPAIRS, RIPRAP

Change Order Approval <<

Change Order No: 1

- Date: 02/15/2012
- Reason: Changes in Specifications
- Recommended Approval Personnel: Project Eng
- District Eng
- Highway Operations
- FHWA

Approve Change Order:

User: PCN:18423

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WS: WALKER WICKLE & AA Bobby

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Change Order Explanations

- Why is a good explanation important?

The change order becomes part of the contract.

- It needs to be clear for both the contractor and the owner.

The change order needs to stand up to scrutiny from the district level, Office of Operations, and FHWA.

Somebody not involved with the project should be able to read the explanation and completely understand the change order.

Change Order Explanation

- What should a good explanation contain?
 - Needs to contain the why, what, and where.
 - Why is this change needed? Why are we changing from the design or plans?
 - What extra or added work is needed?
 - What is the cost of this added work?
 - Where will this added work take place?
 - Needs to contain all the facts of the change order, not your opinions.

Change Order Explanation

- Needs to contain any special conditions or special contract requirements that were included with the added work.
- Needs to contain any special contract requirements that were included with the added work.
- Need to attach all correspondence with contractor and supporting documentation to the change order.

Price Justification

- Why is the Price Justification important?

The price justification needs to stand up to scrutiny from the district level, Office of Operations, and FHWA.

The contractor needs to provide sufficient information or cost breakdowns to justify the change order bid prices.



Price Justification

- How is a Price Justification completed?
- Various Methods:
 - **Use Average Bid Prices**
 - Compare the NDDOT average annual bid prices to the change order bid price.
 - State the NDDOT average bid price is \$xx/each and the contractors change order bid price is \$yy/each. Are they close? Is there a reason for slight increase over average bid price? List your reasons.
 - Be sure to list the NDDOT average bid price in the price justification.

Price Justification

- **Complete an Engineer's estimate**
 - Based on the contractor's labor, equipment, and materials to complete the added work. Similar to Force Account, Spec 109.04
 - The inspection staff should keep detailed records of time, equipment, and materials to complete the added work.
 - Use contractor payrolls or davis-bacon wage rates to determine labor costs. Use appropriate markup.
 - Use blue book rates from Construction Services to determine the hourly rate for the equipment used. Send email with details to Eric Molbert, Construction Services.

Price Justification

- **Engineer's estimate**

- Use actual invoices to determine material costs. Use appropriate markup.
- Show a breakdown and total of your estimate and see how it compares to contractor's change order bid price.

Use Bid Prices on Similar Project

- Compare the bid prices from a similar type of project or adjacent project.

Price Justification

- The price justification should be detailed on a separate sheet from the change order explanation.
 - Do not include the engineer's price justification when submitting the change order to the contractor for signatures.
 - The contractor does not need to know how we are justifying the cost, especially if we feel the contractor's bid price is lower than we expected.

Explanations and Price Justification Examples

- Examples of Change Orders that could be improved!
 - “...The price submitted includes all labor, equipment, and material costs along with prime contractor’s allowance for this work. **This price is fair and reasonable....**”
 - Fair and reasonable to who?
 - Need to provide documentation to support this statement.
 - “During construction it was determined that the field drainage could not be maintained with a trench drain through the sidewalk. The city requested the contractor install an inlet in the field behind the sidewalk to allow the field to drain.”
 - Does not include a cost breakdown or price justification.

Explanations and Price Justification Examples

- “Purchase of video monitor.”
 - No change order explanation and no price justification.
- “...the quote provided by the contractor is reasonable based on the average bid prices for the type of work...”
 - States they used average bid prices but did not show the average bid prices in the explanation or price justification.

Explanations and Price Justification Examples

Mobilization

The Contractor had to obtain additional speed limits for the project from Bismarck. The Contractor requested \$200/trip to deliver the signs to Dickinson. Based on \$32/hr from payrolls for labor (\$19+70%) and \$20/hr rental rate for a pickup truck and 3hr/trip, the Contractors price is reasonable.

Tubular Markers

Tubular markers were omitted in the plans for the project. Tubular markers are needed whenever uneven lanes exist. The Contractors' price for this item including mobilization is \$13.20/tube (200 tubes) and the 2011 price on an adjacent project SS-5-012(040)009 is \$9.45. The Contractor delivered the tubes to Marmarth, approximately 3 hrs from Bismarck (6 hrs two ways). Using two labors at \$64 per crew and \$20/hr for a pickup truck, the Contractor should have spent $64 \times 20 \times 6 = \768 compared to $13.20 - 9.45 = \$3.75/\text{tube} \times 200 \text{ tubes} = \750 in mobilization. The Contractors price is justified.

Field Laboratory – Type C

Field laboratories were also omitted in the plans for the project. Since this is a QC/QA project, 2 field laboratories are required. The Contractor submitted a price of \$3,650 for the lab, which is slightly lower than the 2011 average bid price of \$3,731.

SS1H OR CSSIH OR MS1 Emulsified Asphalt

The hot bituminous pavement fog seal designed in the plans shall be eliminated. The Dickinson District has decided not to fog seal all hot bituminous pavements in the District beginning with the 2011 construction season.

Explanation and Price Justification Examples

202 -9998 Removal of Butte

The butte near 540+00 Rt was beginning to slide after the ditch was cut in this area. To prevent this hill from sliding into our ditch it was decided that it should be sloped back from nearly vertical to a 3:1 +/- . A temporary easement was acquired by the NDDOT and the work was agreed to be done by force account.

The equipment and hours to slope this butte are as follows:

Kobelco SK 330 LC Excavator – 13 hrs @ 143.33 = 1863.29

Cat D6R LGP Dozer – 7 hrs @ 122.07 = 854.49

Cat 637G Scraper – 2 hrs @ 405.32 = 810.64

Operator – 22 hrs @ 21.30+12.65(fringe)+70%(OH&P) = 1269.73

Total = 4798.15

See attached email from construction services for equipment rates.

Explanation and Price Justification Examples

302 – 9997 Rock – Class 43 Underdrain

Class 43 rock was used to backfill the drain trench. This rock was quoted by Fisher Sand and Gravel at \$15.00 per ton. End dump trucks were used to truck the material to the site. It took one half hour for a truck to make a round averaging 13 tons per load. Figuring \$78.00 per hour for a truck plus operator ($21.89+9.95=31.84$) = 109.84 per hour. $109.84/13/2$ tons = 4.22 per ton. See letter from Fisher (attached) for material quotes to Foothills Contracting.

Total = $15.00+4.22 = \$19.22$ per ton

302 – 9998 Rock – 4in Minus

This rock was quoted at \$7.00 per ton by Fisher S&G. This rock was also used in Change Order 3 at the same price.

Total = $7.00 + 6.87$ trucking = \$13.87

Time Justification

On July 7, 2011 one day was lost removing coal from the roadway. During this time period the dirt work items were critical in the project schedule. Due to this extra work 1 day was added to the contract completion date. The coal excavation was paid for as common excavation on the original contract.

Change Order

- Any Questions??