

# Concrete Paving Field Inspection Inspector's Workshop

National Concrete Pavement  
Technology Center



IOWA STATE UNIVERSITY

Institute for Transportation

[www.cptechcenter.org](http://www.cptechcenter.org)



# PCC Paving Field Inspection

- Why are we here?
- How do we achieve quality for PCC paving?
- **Got a project....Now what?**
- What is concrete?
- What kinds of equipment are used?
- What happens before you start paving?
- What happens when you're finally paving?
- What is the inspector's role?
- What about all of the other road building stuff?
- What do you look for in urban paving?
- What paperwork?

# Instructor



Gordon L. Smith, P.E.  
glsmith@iastate.edu  
515-964-2020

Associate Director  
National Concrete Pavement Technology Center

[www.cptechcenter.org](http://www.cptechcenter.org)

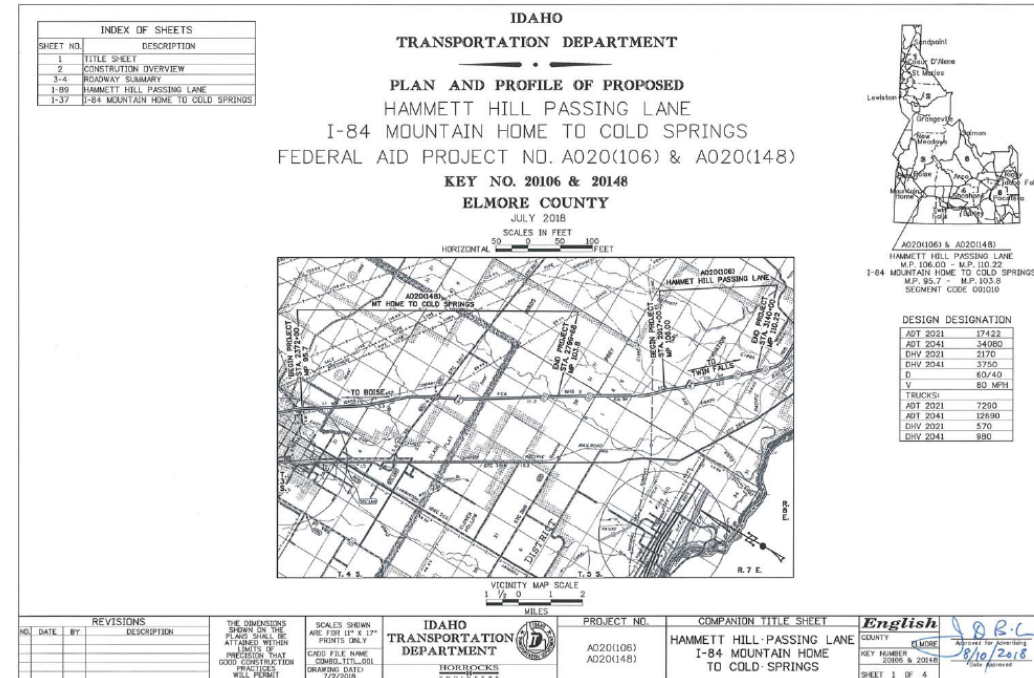
**Q: I'VE GOT A PROJECT, NOW WHAT?**

# Preparation



# General Instructions

- Review plans, special provisions, appropriate manuals, standard specifications, and supplemental specifications
- Discuss your responsibility and authority with the project engineer
- Review format and required content of your inspection diary
- Review required Schedule of Materials Control, testing procedures, and forms
- Discuss notification, changes, corrections, delays, rejections, tolerances, and checks with the project engineer



# General Instructions

- Attend and/or coordinate a pre-paving/pre-construction meeting with the Engineer and Contractor
- Know the contractor's key site contact and who the materials supplier(s) will be.
- Make sure testing devices are calibrated and correlated prior to the day's pour.
- Contact District Materials Engineer to schedule appropriate independent assurance sampling and testing at applicable work intervals.
- Review utility requirements.
- Review documentation of pay item quantities.





# Preparation

Things you will need:

- Plans
- Proposal/Contract
- Specifications
- Standard Details
- Documentation Tools
- Testing Equipment
- Storm Water Plan
- Safety Review
- Traffic Control Items





# Preparation - Plans

## Title Sheet(s)


- Location
- Project Description
- Project Length(s)
- Vehicle Counts
- Index of Sheets
- Begin/End Stations of Project/Divisions

LETTING DATE  
NOV. 17, 2009

PCC PAVEMENT GRADE AND REPLACE  
BR-810-0(93)--7A-85

STORY COUNTY

This project is covered by the Iowa Department of Natural Resources NPDES General Permit No. 2. The Contractor shall carry out the terms and conditions of General Permit No. 2 and the storm water pollution prevention plan which is a part of these contract documents. Refer to Section 2602 of the Iowa DOT Standard Specifications for additional information.



**Iowa Department of Transportation**  
**Highway Division**

PLANS OF PROPOSED IMPROVEMENT ON THE  
**INSTITUTIONAL ROAD SYSTEM**  
**STORY COUNTY**  
**PCC PAVEMENT GRADE AND REPLACE**  
Activity ID 06 - 2009 - 003  
Morrill Road Reconstruction  
from Union Drive to Osborn Drive  
SCALE: As Shown

REVISIONS

NO.	DATE	DESCRIPTION	TOTAL
			63

As-built January 2011 by AMW


PROJECT IDENTIFICATION NUMBER

PROJECT NUMBER	BR-810-0(93)--7A-85
R.O.W. PROJECT NUMBER	

Project Constructed April-September 2010  
by Concrete Technologies, Inc.

RECORD DRAWINGS  
THESE PLANS HAVE BEEN REVISED AFTER CONSTRUCTION TO CONFIRM WITH INFORMATION FURNISHED BY THE CONTRACTOR AND CONSTRUCTION REVIEWER AND TO REFLECT MEASUREMENTS MADE FOR THE PREPARATION OF FINAL ESTIMATES OF QUANTITIES.

PCC PAVEMENT GRADE AND REPLACE  
BR-810-0(93)--7A-85



CITY OF AMES, IOWA  
NOT TO SCALE


The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, seven 2004, and applicable Supplemental Specifications, Developmental Specifications, and Special Provisions, shall apply to construction on this project.


Value Engineering Items. Refer to Article 1105.15 of the Specifications.

MILEAGE SUMMARY

Div.	Location	Ln. Ft.	Miles
	MORRILL ROAD STA 9499.0 - 26+27.23	1628	0.3
TOTAL		1628	0.3

STORY COUNTY





I hereby certify that this Engineer's Document was prepared by me or under my direct personal supervision and that I am a duly Licensed Professional Engineer Under the Laws of the State of Iowa.

**JEROD P. GROSS**  
16018

Jerod P. Gross, P.E. Date  
License Number 16018  
My License Renewal Date Is December 31, 2009

Pages or sheets covered by this seal:  
A.01-A.02, B.01-B.09, C.01-C.07, D.01-D.03,  
G.01, J.01-J.09, L.01-L.12, M.01, P.01-P.04,  
W.01-W.15

INDEX OF SHEETS


NO.	TITLE SHEET	DESCRIPTION
A.01	TITLE SHEET	
A.02	LEGEND SHEET	
B.01-B.09	TYPICAL SECTIONS AND DETAILS	
C.01-C.05	GENERAL NOTES AND QUANTITIES	
C.06-C.07	POLLUTION PREVENTION PLAN	
D.01-D.04	PLAN AND PROFILE	
G.01	CONTROL INFORMATION	
J.01-J.02	STAGING	
J.03-J.05	TRAFFIC CONTROL	
L.06-L.09	PAVEMENT MARKINGS	
L.01-L.14	GEOMETRIC STAKING AND JOINTING LAYOUT	
M.01	STORM SEWER	
P.01-P.05	LIGHTING AND ELECTRICAL	
W.01-W.15	CROSS SECTIONS	

ENGLISH IOWA DOT DESIGN TEAM

**SNYDER & ASSOCIATES**

STORY COUNTY PROJECT NUMBER BR-810-0(93)--7A-85

SHEET NUMBER A.01

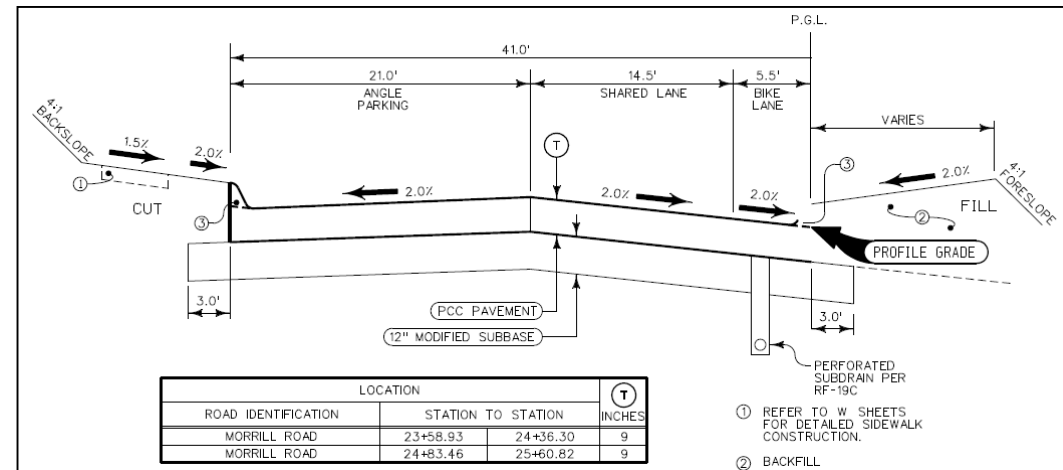
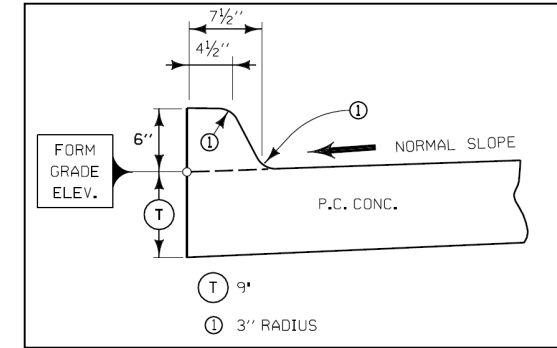


9

# Preparation – Plans

## Typical Cross Sections

- Provide standard dimensions and other important information
- Separated by location
- Can be multiple on one project
  - Mainline
  - Superelevations
  - Curbs
  - Ramp Grading & Paving
  - Shoulder Details



LOCATION			(T)
ROAD IDENTIFICATION	STATION TO STATION		INCHES
MORRILL ROAD	23+58.93	24+36.30	9
MORRILL ROAD	24+83.46	25+60.82	9

# Preparation – Plans

## Estimate of Quantities and Item Description

- Design quantities
- Reference notes for individual items
- References to standard details

<b>ESTIMATED ROADWAY QUANTITIES</b>					
					<b>100-0A</b>
					<b>MODIFIED</b>
Item No.	Item Code	Item	Unit	Quantity	As-built Quantity
1	2101-0850002	CLEARING AND GRUBBING	UNIT	<del>201</del> 215	<b>215</b>
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	3,669	<b>4094</b>
3	2102-2710080	EXCAVATION, CLASS 10, UNSUITABLE OR UNSTABLE MATERIAL	CY	149	<b>375.1</b>
4	2105-8425015	TOPSOIL, STRIP, SALVAGE, AND SPREAD	CY	<del>503</del> 733	<b>733</b>
5	2115-0100000	MODIFIED SUBBASE	CY	2,055	<b>2470.79</b>
6	2123-7450000	EARTH SHOULDER CONSTRUCTION	STA	32	<b>32</b>
7	2201-0505050	BASE, STD OR SLIP FORM PCC PVMT, 5 IN.	SY	287	<b>277.8</b>
8	2214-5145150	PAVEMENT SCARIFICATION	SY	<del>956</del> 978	<b>812</b>
9	2301-1033090	STD OR SLIP FORM PCC PVMT, CLS C, CLS 3 DURABILITY, 9 IN.	SY	4,457	<b>4311.8</b>
10	2301-6911722	PORTLAND CEMENT CONCRETE PAVEMENT SAMPLE	LS	1	<b>1</b>
11	2303-0033500	HMA (1M ESAL) SUPER 1 1/2" NO. EPIC	TON	<del>88</del> 82	<b>82</b>

# Preparation – Plans

## Estimate of Quantities and Item Description

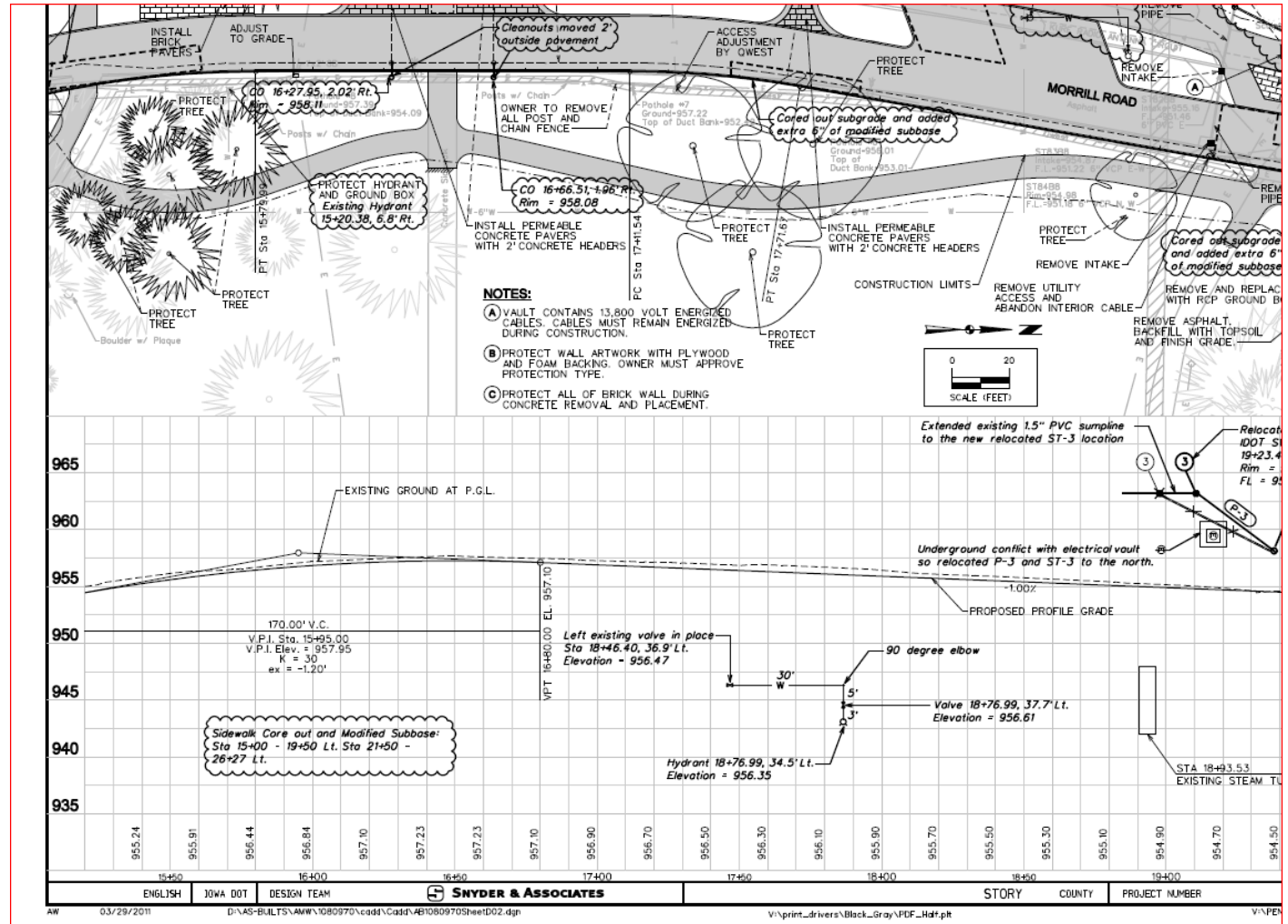
- Design quantities
- Reference notes for individual items
- References to standard details

ESTIMATE REFERENCE INFORMATION		
		100-4A 10-29-02
Item No.	Item Code	Description
1	2101-0850002	CLEARING AND GRUBBING Refer to D sheets and tabulation on Sheet C.03. Clearing and Grubbing areas shall be marked out and approved by the Engineer prior to beginning of clearing operations. Contractor shall take care to protect all trees and other plant material to remain.
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW Quantity includes 4,097 CY cut and 328 CY fill + 30% shrink. Quantity includes excavation for sidewalk per cross sections. Surplus material shall become property of the Contractor. Payment will be per specifications. Excavation to remove unsuitable soils will be measured separately and paid as additional Class 10 excavation. No additional payment will be made to provide and place suitable backfill soil that is available on site to replace the excavated unsuitable material.
3	2102-2710080	EXCAVATION, CLASS 10, UNSUITABLE OR UNSTABLE MATERIAL Item includes preparation of poor subgrade. Payment will be per specifications. One inch nominal clean crushed limestone may be used as new subgrade if existing soil has excessive moisture or is unstable. Payment for the crushed limestone will be for the contract quantity.
4	2105-8425015	TOPSOIL, STRIP, SALVAGE, AND SPREAD Quantity is based on 6 inch depth of respread over all disturbed seeding areas.
5	2115-0100000	MODIFIED SUBBASE Construct under Morrill Road Roadway and Driveways.
6	2123-7450000	EARTH SHOULDER CONSTRUCTION Payment will be per the Specifications.
7	2201-0505050	BASE, STD OR SLIP FORM PCC PVMT, 5 IN. Quantity is based on brick paver areas. Construction measurement and payment shall be according to section 2201 of the Specifications.
8	2214-5145150	PAVEMENT SCARIFICATION Includes removal of 2 inches of existing HMA surface from Union Drive to Station 12+20 to match the existing cross section. Refer to Sheet D.01 for the limits of pavement scarification.
9	2301-1033090	STD OR SLIP FORM PCC PVMT, CLS C, CLS 3 DURABILITY, 9 IN. Iowa Department of Transportation Standard Specification Section 2316 Schedule B Smoothness shall apply to all mainline paving. Microtexture shall be applied to all finished concrete surfacing with artificial turf or coarse carpet.

# Preparation – Plans

## Plan & Profile Sheets

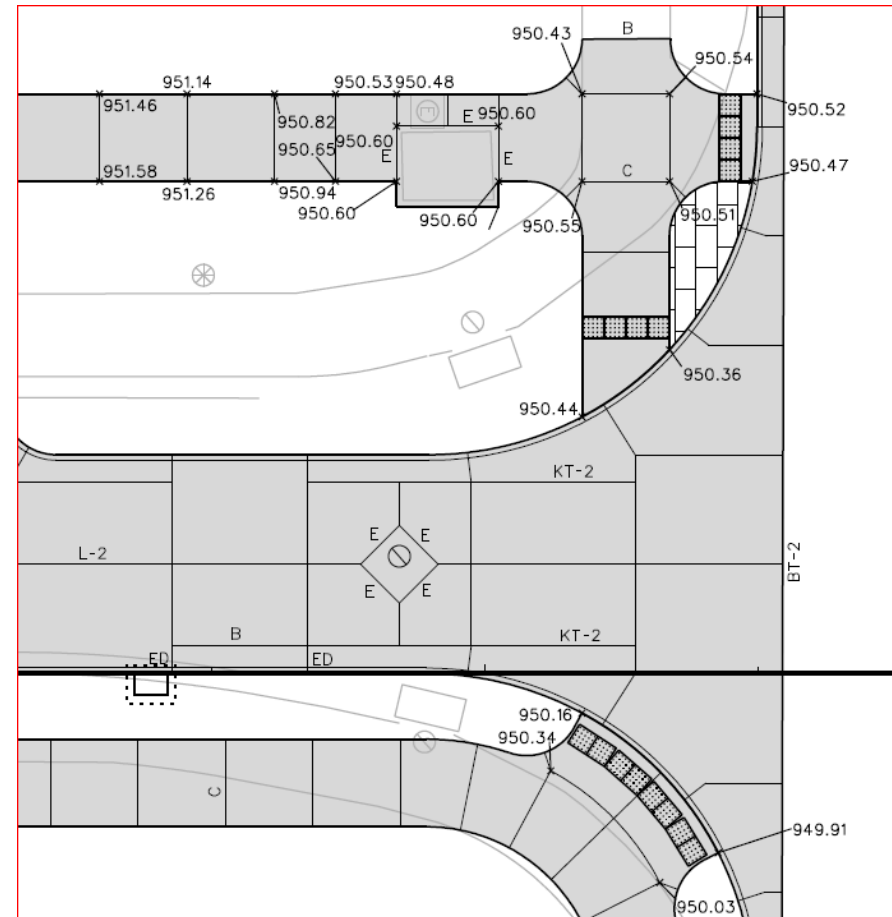
- Give plan & profile view
  - Entire project
  - Side Roads
  - Ramps
  
- Show new and existing features
  - Drainage structures
  - Entrances
  - Ditch Cuts



# Preparation – Plans

## Geometrics Sheets

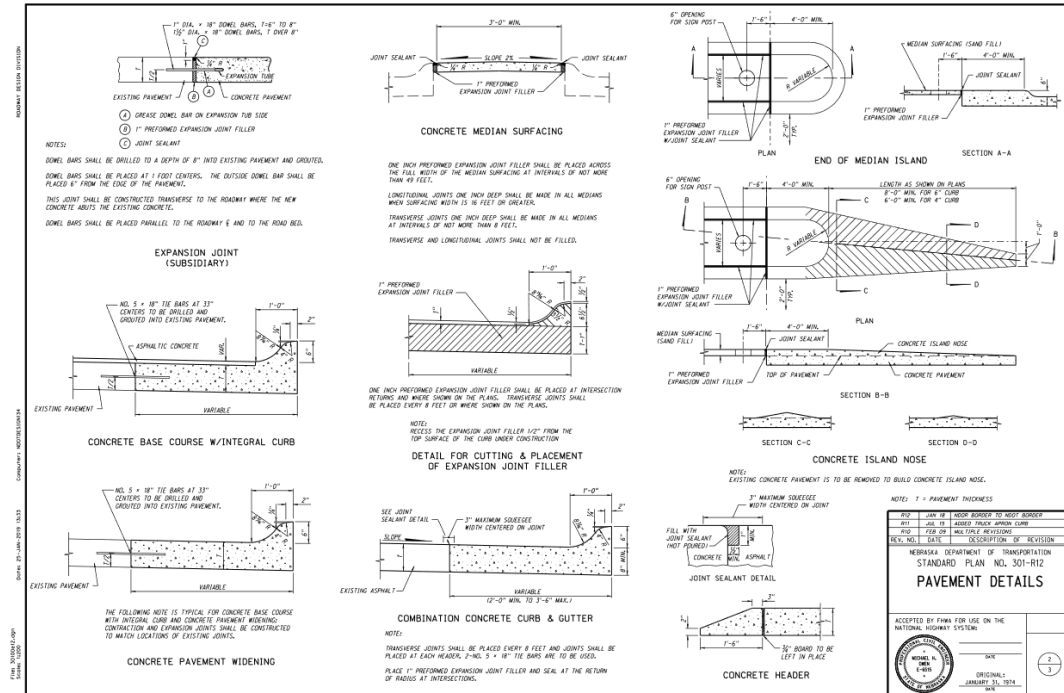
- Staking
- Jointing
- Edge profiles
- Intersections



# Preparation – Standard Details

## Standard Details

- Show you how to construct something according to agency standard
- Provides uniformity
- Ensure you have the current version associated with project letting
- Print out the ones specifically for the project
- Use a computer (if you can) for the entirety





# Preparation – Proposal/Contract Documents

## Proposal/Contract

- Quantities
- Contract Period
- Utility Attachments
- Other Requirements



# Preparation – Proposal/Contract

## Contract

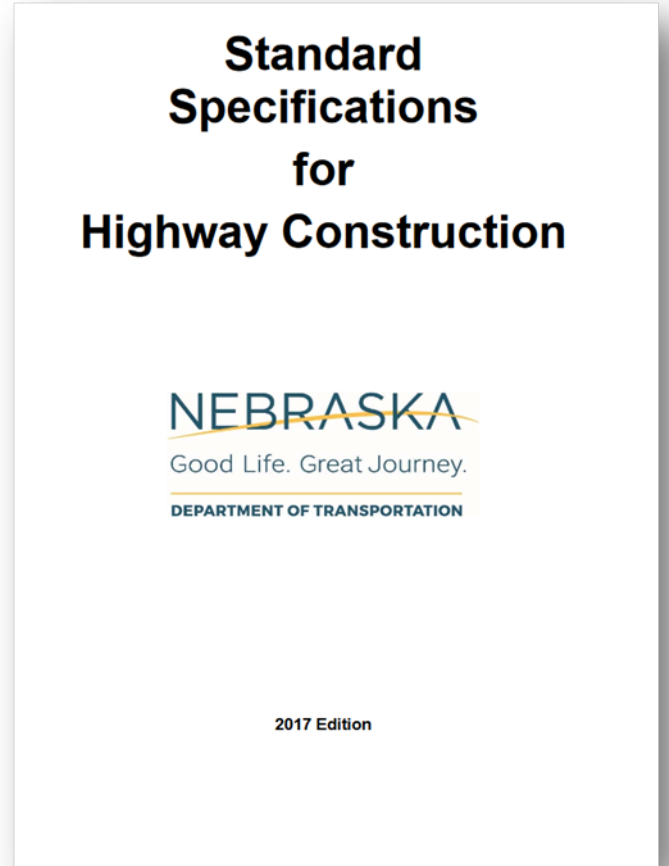
- Unit Prices
  - Familiarize
  - What's an overrun cost?
- Addendums
- Plan Revisions
- Letting Date
  - Dictates specification version



# Preparation - Specifications

## Specifications

- Standard
  - Correct (UPDATED) Version
- Supplemental
- Special Provisions
- Supplemental Agreement



# Preparation – Documentation Tools

## Documentation Tools

- Computer
- Fieldbook
  - Electronic
  - Paper
- Camera (Smart phones work well)
- Paper
- Writing Utensils
- Blank Forms



# Preparation – Testing Equipment

- Ruler
- 4' Level
- Thermometer
- Shovel
- Measuring Wheel
- Air Meter
- Rubber Mallet
- Brush
- Slump Cone
- Scale
- Spray Paint
- Tire Tread Depth Gauge
- Hammer
- Bucket
- Stamps (station location)
- Vibrator Checker
- Beam Boxes/Molds





# Preparation – Storm Water Plan

- Regulations
- Inspections
- Be aware of construction runoff!
- Best Management Practices



# Preparation – Safety Review

- Backing hazards  $\Rightarrow$  congested work areas
- Overhead power lines





# Preparation – Traffic Control Items

Inspect and adjust as needed each morning and evening.

- Reflectance of signage and delineators
- Arrow boards and message boards
- Barrier wall and attenuators
- Condition of detour pavement



# Got a project?



The key to success is preparation and cooperation.

