A construction site with workers and equipment. In the foreground, there's a tripod-mounted surveying instrument. In the background, several workers in hard hats are working on a concrete slab. A crane is visible on the left side. The scene is outdoors with trees and a fence in the distance.

# Innovative Tools for the Job

Presented by the I-96 Field Office

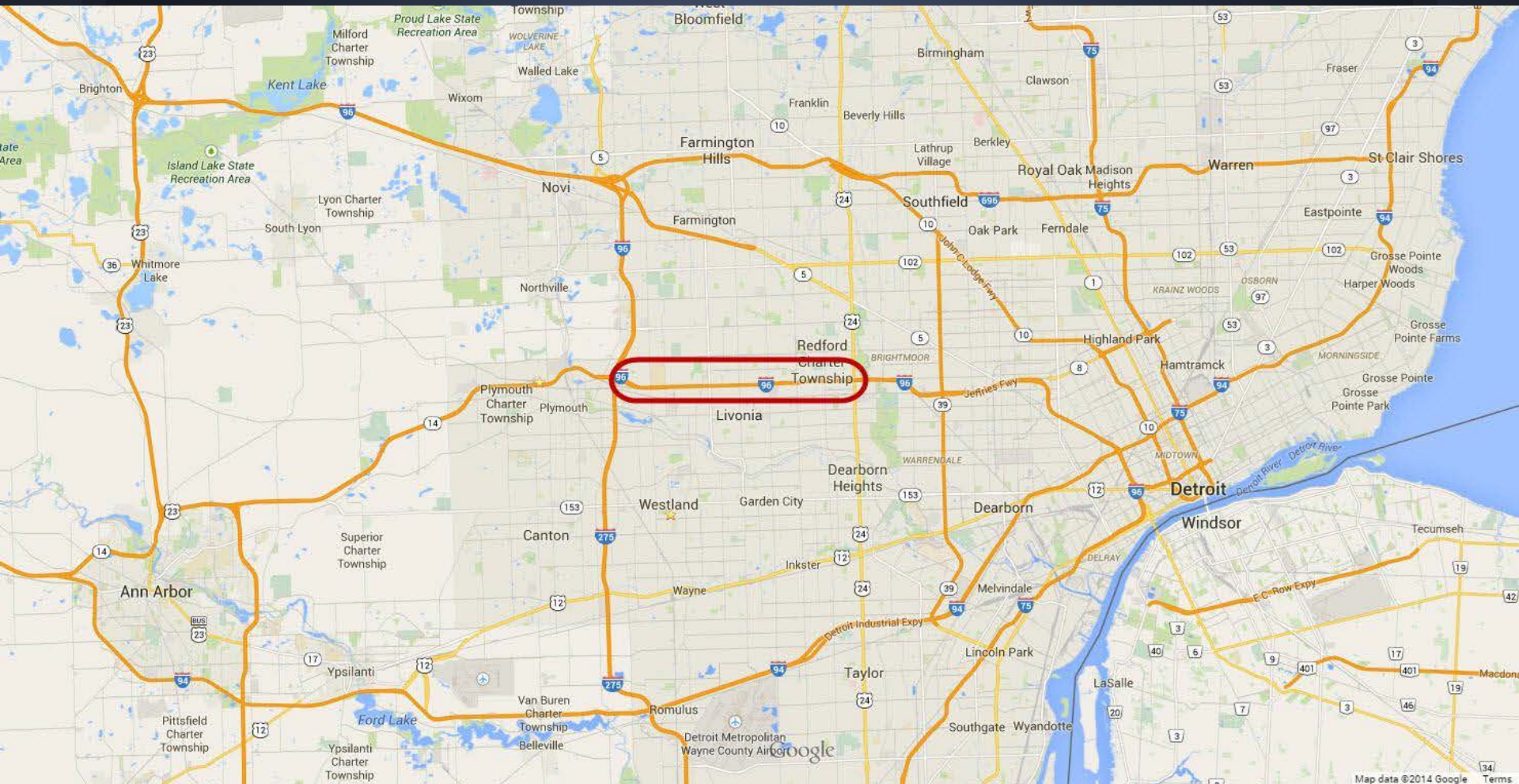
# Topics:

- 1) I-96 Project
- 2) Use of Technology
- 3) The cloud
- 4) Adobe editing applications
- 5) Other collaborative tools
- 6) E-Construction



**fix** A stylized logo for "fix" where the word "fix" is in a bold, blue, lowercase sans-serif font. To the right of the word is a green silhouette map of the state of Michigan, which is partially overlaid by a blue circular shape that resembles a globe or a stylized letter 'o'.

<https://www.facebook.com/96fix/>  
[www.96fix.com](http://www.96fix.com)



# I-96 - Telegraph to Newburgh

- 7 mi. freeway reconstruction(58 lane miles)
- 37 bridges (2 full replacements)
- 15+ miles of sewer installed
- 700,000 sq yds of new concrete pavement
- 800,000 tons of aggregate
- 800,000 yds of earth excavated
- \$148 million contract
- 167 days

# I-96 Project Personnel

- Dan's Excavating - Prime Contractor

## Approximately:

- 53 Contractors
- 56 MDOT Employees
- 33 Consultant Employees
- 8 Testers
- Assistance from various other resources

# E-Construction



# MDOT is Going From This...





**E-Construction?**



**Piece of Cake**

# Concerns from I-96 Team

- 1) A+B schedule
- 2) Document volume and document tracking
- 3) Personnel roles
- 4) Learning curve

# I-96 Team

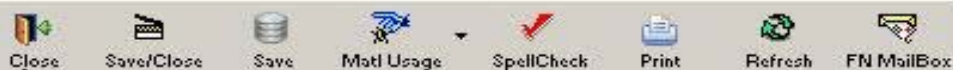
- 1 Documentation person
- 3 Office techs
- 1 Payroll tech (LCP Tracker and B2GNOW)
- 70+ inspectors (MDOT, Co-ops, Consultants)

# Document Volume

- 250+ Shop drawings
- 91 RFI's
- 100+ MSL's
- 500+ Certs
- 5,830 IDR's
- Daily reports, submittals and correspondence

# Naming and Sequence #s

- Follow Standard Naming Convention and add sequence #s to docs as they come in
  - Shop Drawings, RFI's, Certs, MSL's, correspondence and more
- Reference sequence #s in Field Manager
- Don't create more folders than necessary



## Change Item (Item: Bearing, Elastomeric, 1 3/4...) (Contract: 82122-89095)

General

Documentation

Materials

Breakdowns

Contractors

Item: 7070015, Bearing, Elastomeric, 1 3/4 inch

Prop. Ln: 3770

Unit: Sin

Auth. Qty: 17,280.000

Auth. Amt: \$13,132.80

Type: Original

Unit Price: \$0.760

Qty. Placed: 17,280.000

Pending Chgs: 0.000

Qty. Paid: 17,280.000

## Item Materials

Material Description	Unit	Usage Factor	Total Qty Approved	Total Qty Used	Total Qty Available	Qual/Cert Product
Bearing Pad, Elastomeric	Sin	0.0000	0.00	21,525.00	0.00	Yes

Docu



Contractors



IDRs



Diaries



Items



Materials



Stockpiles



Estimates



Cont Mods



Misc Rpts



Inquiries



## Change Item (Item Inquiry)

## General

Item: 7070015,  
Prop. Ln: 3770  
Type: Original



Material Approvals by Material Inquiry

## Bearing Pad, Elastic, 1 3/4 inch (Contract: 82122-89095)

## Materials

## Breakdowns

## Contractors

1 3/4 inch

Auth. Qty: 17,280.000

Auth. Amt: \$13,132.80

Unit Price: \$0.760

Qty. Placed: 17,280.000

Pending Chgs: 0.000

Qty. Paid: 17,280.000

## Item Materials

Material	Unit	Usage Factor	Total Qty Approved	Total Qty Used	Total Qty Available	Qual/Cert Product
Bearing Pad, Elastic	sq ft	0.0000	0.00	21,525.00	0.00	Yes



# Material Approvals by Material

Michigan Department of Transportation

Contract: 82122-89095, Road Reconstruction

Material Description: Bearing Pad, Elastomeric

Qual/Cert Product: Yes

Unit: Sin

Qty. Approved: N/A

Qty. Used: 21,525.00

Qty. Available: N/A

Form Date	File/Form/Seq. No	Quantity Approved	Source	Lot No.	Remarks
1/23/2014	E300/501/15	N/A	D.S.BROWN	201-022 S14 201-023 S15 201-159 (S07 and S10) 201-174 (S05)	Test Data Certification TDC in file 307-053 (S14 and S15) Show test results for shear modulus ASTM D4014 V'l'd and accepted on IDR MC1 6/6/2014

MSL location  
File 300/Seq Num 15

Shop  
Drawing  
location  
File 201/Seq Num 022

Cert location  
File 307/Seq Num 053



- Construction
  - Contractor In Box
  - MDOT In Box
  - 000- Plans and Proposal
  - 100- Administration
  - 200- Field Records
    - 200-1-Photographs and Videos
    - 200-Inspectors Daily Reports
    - 201-1-Request for Information (RFI)
    - 201-2-Survey
    - 201-3 Punch List
    - 201-Shop Drawings and Submittals**
      - Approved
      - Deck Grades
      - Rejected
      - Review in Process
    - 202-1-NPDES and SESC Reports
    - 202-Earthwork
    - 203-Aggregate
    - 204-Drainage
    - 205-Hot Mix Asphalt (HMA)
    - 206-Concrete
    - 207-Structure
    - 208-Miscellaneous
  - 300- Materials Testing
  - 400- Internal Use Only
  - Copies of Microstation Files
  - Field Services
- Environmental
- Geotechnical
- HMA
- Real Estate
- RFP
- Road

File Name

- 007 SD S05 2014-01-30 S05 P&H-CAH.pdf
- 008 SD S05 2014-01-24 Beam & Diaphragms.- CAH.pdf
- 009 SD S06 2014-01-30 S06 P&H-CAH.pdf
- 010 SD S06 Welding Procedures-CAH.pdf
- 011 SD S07 2014-01-24 S07 Anchor Bolts & Masonry Plates-...
- 012 SD S07 2014-01-30 S07 P&H-CAH.pdf
- 013 SD S07 2014-01-24 S07 Brookfield SIP Metal Deck - CA...
- 014 SD S38 S39 S08 Welding Procedures-CAH.pdf
- 015 SD S09 2014-01-30 S09 P&H-CAH.pdf
- 016 SD S10 2014-01-24 S10 Anchor Bolts- CAH.pdf
- 017 SD S10 2014-01-30 S10 P&H-CAH.pdf
- 018 SD S10 2014-01-24 S10 Warner Ct SIP Metal Deck - CAH...
- 019 SD S12 2014-01-30 S12 P&H-CAH.pdf
- 020 SD S12 Race Track SIP Metal Deck Forms - CAH.pdf
- 021 SD S13 2014-01-24 S13 Diaphragm-CAH.pdf
- 022 SD S14 and S15 2014-01-28 Elastomeric Bearing.pdf**
- 023 SD S14 and S15 2014-01-28 Elastomeric Bearing.pdf**
- 024 SD S15 Structural Steel Retrofit.pdf
- 025 SD S16 Beech Daly SIP Metal Deck Forms - CAH.pdf
- 026 SD S17 & S18 of 82122 Approved Crossframe Shop Plan...
- 027 SD S17 Garfield U-Turn SIP Metal Deck Forms - CAH.pdf
- 028 SD S18 2014-01-24 S18 Fenton SIP Metal Deck - CAH.pdf
- 029 SD S17 & S18 of 82122 Approved Crossframe Shop Plan...
- 030 SD S18 Welding Procedures-CAH.pdf
- 031 SD S19-5 2014-01-24 S19-5 NB Telegraph Service Dr SIP...
- 032 SD S19-6 2014-01-24 S19-6 SB Telegraph Service Dr SIP ...
- 033 SD S26 2014-01-24 S26 Berwyn SIP Metal Deck - CAH.pdf
- 034 SD S27 2014-01-24 S27 Beam & Diaphragm-CAH.pdf
- 035 SD S27 2014-01-24 S27 W Merriman U Turn SIP Metal D...
- 036 SD S28 2014-01-24 S28 Beam & Diaphragm- CAH .pdf
- 037 SD S28 2014-01-30 S28 P&H-CAH.pdf

# Shop Drawings and RFI's

- One point of contact
- Make corrections and comments in PW
- Create a sortable tracking spreadsheet, but also utilize ProjectWise workflows
- Sequence drawings as they come in
- Encourage questions to come in as RFI's

# Material Source Lists

- Contractor needs to submit early
- Link into Field Manager
- MDOT to review and comment in PDF
- Corrections and approvals much faster

## MATERIAL SOURCE LIST

INSTRUCTIONS: Use the "Material Source Guide" for material name and specification number. Enter "SP" for MDOT SPEC # for materials specified by special provision. To avoid delays, submit as soon as possible. No testing of materials will be conducted until forms are received. Submit to Construction/Project Engineer. Construction/Project Engineer to forward to Region Materials Supervisor. (Please Print or Type all Fields)

## CONTROL SECTION

82122

## JOB NUMBER

89095

CONSTRUCTION/PROJECT ENGINEER

## CONTRACTOR

Dan's Excavating, Inc

## PROJECT LOCATION:

I-96 FROM NEWBURGH TO US-24 - LIVONIA &amp; DETROIT, WAYNE COUNTY

## FOR OFFICE USE ONLY (Owner Agency)

## BASIS OF ACCEPTANCE

MDOT SPEC #	MDOT MATERIAL/PRODUCT NAME	TYPE / SIZE or CLASS	APPRX. QTY.	SOURCE OF MATERIAL (NAME, ADDRESS, LOCATION, PIT #)	BASIS OF ACCEPTANCE					REMARKS/OTHER	
					TEST	T.S.	V.I.	QPL	CERTS		
913.06	manhole drainage structure	24"	18 ea	Co-Pipe Products, Inc.						X	Approved Manufacturer*
913.06	manhole drainage structure	48"	1131 ea	20501 Goddard Rd						↓	
913.06	manhole drainage structure	60"	25 ea	Taylor, MI 48180							
913.06	manhole drainage structure	72"	2 ea								
913.06	manhole drainage structure	96"	1 ea								
913.06	RCP CL IV Premium joint	12"	49958 ft							X	* General certification to be sent to Construction Field services,
913.06	RCP CL III Premium joint	15"	10338 ft							↓	
913.06	RCP CL IV Premium joint	18"	107 ft								
913.06	RCP CL III Premium joint	18"	5321 ft								
913.06	RCP CL III Premium joint	24"	2469 ft								
913.06	RCP CL II Premium joint	30"	67 ft								
913.07	sump 24"x2"x0"x6"		as needed							X	Approved Manufacturer*
913.07	24"x3"x2" integral base & riser	c/w 20"o	as needed							↓	
913.07	24" x 4' 0" integral base & riser	c/w 20"op	as needed								
913.07	24" x 5' 0" integral base & riser	c/w 20"op	as needed								
913.07	24" x 3' 0" x 3" Detroit Catchbasin		as needed								
913.07	24" x 4'x 0" x 3" Detroit Catchbasin		as needed								
913.07	24" x 5'x0" x3" Detroit Catchbasin		as needed								

Check here if there are any revisions. Mark any revisions with an asterisk.

## CONTRACTOR'S SIGNATURE

*Joseph Goodall*  
OWNER AGENCY (Rep. Signature)

Mike  
Clever

Digitally signed by Mike Cleaver  
DN: cn=Mike Cleaver, o=MDOT,  
ou=Construction,  
email=cleaverm@michigan.gov,  
c=US  
Date: 2014.02.27 09:51:47 -05'00'

## PRINT NAME

Joseph Goodall, Project Manager

## PRINT NAME

## TELEPHONE NUMBER

586-254-2040

## TELEPHONE NUMBER

## DATE SUBMITTED

1/23/2014

## DATE RECEIVED

TeachoutM2  
6/4/2014 10:54:04AM

CO-pipe providing class V pipe but being billed to contractor as requested class. Hence, different class types

# Co-Pipe Products

Sequence 001R1

Attn: Mr. Mike Cleaver  
MDOT

Re: Job# 82122-89095

Dear Sir:

With regard to the 12", 15" and 18" Reinforced Concrete Pipe supplied to the project listed above, Co-Pipe Products Inc. only manufactures and supplies class 5 pipe. The pipe is invoiced at the class that is specified in the specifications of the job, but class 5 is always delivered. Due to the minimal difference in the required steel area for these sizes of pipe we have decided not to stock class 3 and 4 pipe. When a contractor calls for 12", 15" and 18" class 3 or 4 pipes they are quoted and billed for that respective class. We feel that by supplying only class 5 pipes for these sizes it offers our customers a superior strength pipe at the cost of the lower strength pipe.

If you have any questions or concerns please do not hesitate to contact me.

Best Regards,



Wesley Bailey  
Co-Pipe Products Inc.  
20501 Goddard Rd.  
Taylor, Michigan 48180

# Certs

- Sequence numbers and naming convention
- Link into Field Manager
- Contractor separates certs if necessary
- Have contractor identify pay item(s) the cert correlates to



# Bill of Lading

Bill of Lading #: 260832 - 1

Date Shipped: 03/31/2014

**National Strength. Local Service.**

AMBASSADOR STEEL FABRICATION, LLC  
1501 EAST JOLLY ROAD  
LANSING, MI 48910  
517-393-2780

307-004

**File and Sequence #**

<b>Contract Information:</b>	
Contract #	07614013
Customer P.O. #	
Estimate #	53214059

<b>Ship To</b>	
Job Name:	MDOT-ITEM #801 CONTRACT #82122-89095
Customer:	C A HULL COMPANY INC
Address:	I96
City State Zip:	LIVONIA, MI 48150
Jobsite Phone:	

<b>Carrier</b>	
Name: William McCoy	Pro Number:
SCAC:	Trailer Number:

<b>Delivery Date:</b>	03/31/2014	<b>Time:</b>	
<b>Special Instructions:</b> BILL			

<b>Freight Charge Terms</b>	
<input checked="" type="checkbox"/> Prepaid	
<input type="checkbox"/> Collect	
<input type="checkbox"/> 3rd Part	

<b>Load Information</b>					
Barlist #	Description	Color/Symbol		Weight	
0162E	S30 - PRJ RESTEEL - C A HULL	Brown	C	62	870 Lbs.
0163E	S11 - PRJ RESTEEL - C A HULL	Blue	A	63	2377 Lbs.
0164E	S31 - PRJ RESTEEL - C A HULL	Maroon	J	64	870 Lbs.
0165E	S12 - PRJ RESTEEL - C A HULL	Green	B	65	1806 Lbs.
0166E	S32 - PRJ RESTEEL - C A HULL	LtGreen	E	66	996 Lbs.
0167E	S33 - PRJ RESTEEL - C A HULL	Orange	J	67	870 Lbs.
0168E	S26 - PRJ RESTEEL - C A HULL	Pink	M	68	1206 Lbs.
0169E	S34 - PRJ RESTEEL - C A HULL	Purple	H	69	768 Lbs.
0170E	S16 - PRJ RESTEEL - C A HULL	Red	L	70	2153 Lbs.
0171E	S35 - PRJ RESTEEL - C A HULL	Tan	T	71	718 Lbs.
0172E	S17 - PRJ RESTEEL - C A HULL	White	X	72	1934 Lbs.
0173E	S18 - PRJ RESTEEL - C A HULL	Yellow	N	73	1231 Lbs.

<b>Mill Certs Attached?</b>	No
<small>Note: Liability limitation for loss or damage in this shipment may be Applicable. See 49 USC-14706(c)(1)(A) and (B)</small>	
<small>Truckload or Non-NMFC LTL: Carriers Received, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper on request, and to all applicable state and federal regulations.</small>	

<b>Shipper Signature/Date</b>	
Name:	Ambassador Steel Fabrication, LLC
Date:	

<b>Carrier Signature/Pickup Date</b>	
Name:	
Date:	

<b>Arrival/Departure Times:</b>	
Arrive:	
Depart:	

<b>Customer Signature/Pickup Date</b>	
Name:	
Date:	





# IDR's

- Senior inspector will check IDR in PDF and E-sign
- No sequence numbers - sorted by date and inspector initials
- Attachments - Pictures of forms or drawings, fillable forms, marked up pdf plans

**Item Postings**

Item/Material Description	Item Code	Prop. Line	Project	Category	Quantity	Unit	Location	Brkdwn ID	Att
Light Std, Frangible Transformer Base	8190281	2335	103335A	0001	2.000	Ea	NE / SE quadrant of S35 of 82122 (East Beech Daly U turn bridge)	1293	
<p>Contractor: Dan's Excavating, Inc.                      Item Remarks: 1939+08 WBD                      1939+11 EBD</p>									
Frangible Transformer Base								2.00	Ea
Material Remarks: V'ed and accepted.									
Valmont									
High Strength Bolts, 1 1/4 inch (T-Base)								8.00	Ea
Material Remarks: V'ed and accepted.									
Valmont									
TS, One Way Bracket Arm Mtd (LED)	8200333	2745	106714A	0001	1.000	Ea	Inkster Road bridge (S14 of 82122)		
<p>Contractor: Dan's Excavating, Inc.                      Item Remarks: breakdown 1024</p>									
NW quadrant on existing steel strain pole.									
Note: Pay item on plans show TS as Pedestal Mtd, but there is no Pedestal in quadrant. Directed contractor to attached to existing steel strain pole hence changing pay item									
Traffic Signal								1.00	Ea
Material Remarks: V'ed and accepted									
Carrier and Gable									
TS from Siemens									
TS, Three Way Span Wire Mtd (LED)	8200325	2740	106709A	0001	2.000	Ea	Inkster Road bridge (S14 of 82122)	1024	
<p>Contractor: Dan's Excavating, Inc.                      Item Remarks: (1) On Eastbound Service Drive (Schoolcraft) OH span wire                      (1) On Westbound Service Drive (Schoolcraft) OH span wire</p>									
Traffic Signal								2.00	Ea
Material Remarks: V'ed and accepted.									
Carrier and Gable									
TS from Siennes									

Arnold P. Beller  
 Digitally signed by Arnold P. Beller  
 DN: cn=Arnold P. Beller, o=MDOT, ou=IT/A,  
 email=beller@emichigan.gov, c=US  
 Date: 2014.08.25 09:42:08 -0400

Reviewed By:

(Signature)

(Date)

82122  
Sheet: 1259

107201A

Wai Kit Chan 8/23/14



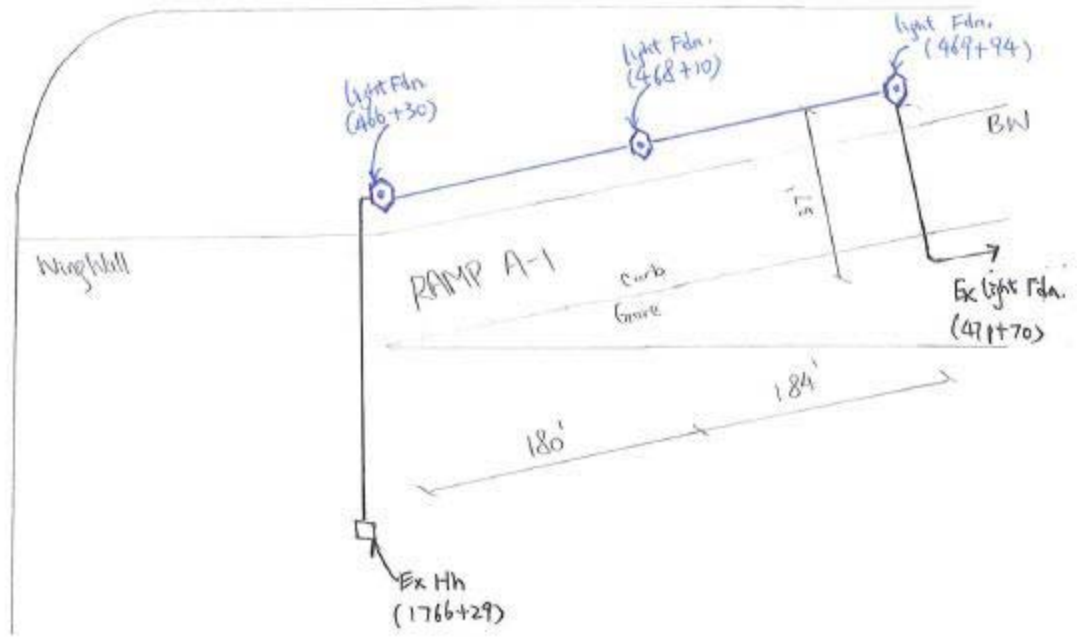
A. Beller 8/25/14

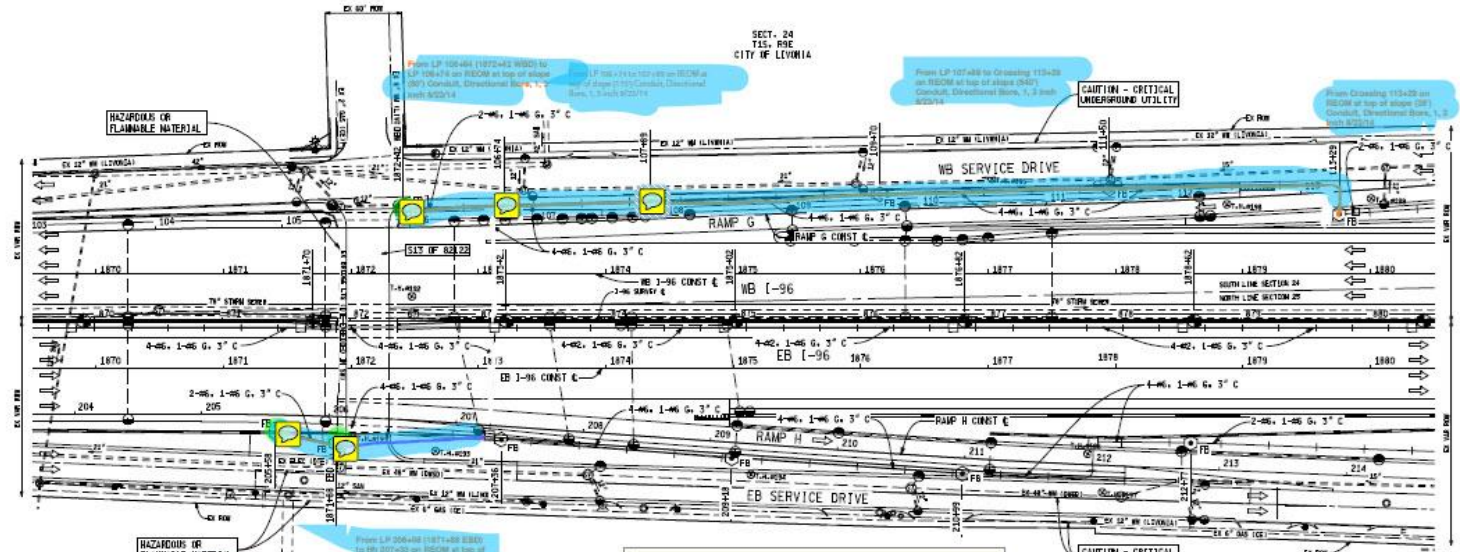


WB Service Dr.

Berwick

SOS  
of  
82122





8/24/2014 7:52:04AM

(1) Light Std Fdn 8/23/14

- NOTES:
1. LIGHTS IN THE MEDIAN ARE STATIONED OFF THE PROPOSED EB I-96 CONST G. LIGHTS ON RAMP ARE STATIONED OFF THE RAMP CONST G. ALL OTHER LIGHTS ARE STATIONED AS INDICATED ON THE PLANS.
  2. VERIFY LOCATION OF EXISTING AND PROPOSED BANK DRAINS PRIOR TO CONSTRUCTING LIGHT STANDARD FOUNDATIONS.

REGULAR PART (0001)  
FREEWAY LIGHTING QUANTITIES - THIS SHEET

5	Eq	Light Std Fdn, Cone Barrier
2880	Ft	Conduit, DG, 1.3 inch
2760	Ft	DE Cable, In Conduit, 600V, 1/2"
8240	Ft	DE Cable, In Conduit, 600V, 1/2"
2880	Ft	Cable, Equipment Grounding Strs, 1/2"
10	Eq	Hh, Heavy Duty Cover
32	Eq	Light Std Fdn
32	Eq	Light Std, Frangible Transformer Base
6	Eq	Light Std Short, 31 foot to 40 foot
11	Eq	Light Std Short, 41 foot to 50 foot
1	Eq	Luminaire, Bridge
2	Eq	Luminaire, Bridge Approach
4	Eq	Luminaire, Median
10	Eq	Luminaire, Ramp



106 WATTS


**BXSPA2PPA-VS**

BXSPA2PPA-VS

06261411 #1

X3 - Bridge App

Visit below website for patents that cover these products:  
Patent <http://www.cree.com/patents>

**CREE** 

9201 WASHINGTON AVE. RACINE, WI 53406

1-800-236-6800

[WWW.CREE.COM](http://WWW.CREE.COM)

W/O: 633

DATE: 06/27/14



HAND

## Material Approvals by Material

11/25/2014 3:12 PM

FieldManager 5.0b

Contract: 82122-89095, Road Reconstruction

Material Description: Luminaire, Bridge Approach

Qual/Cert Product: Yes

Unit: Ea      Qty. Approved: N/A      Qty. Used: 70.00      Qty. Available: N/A

Form Date	File/Form/Seq. No	Quantity Approved	Source	Lot No.	Remarks	Entry Date
1/24/2014	E300/501/7	N/A	Cree Lighting	201-071	Approved shop drawings in file 201-071 SP page 702. Model #XSP2-BXSPA02/G Vi'd and accepted on IDR _____ 918.09	2/11/2014

**Shop Drawing File  
and Sequence #**

# CREE

BXSPA2PPAA-VS  
1" X 3" Bridge Approach

## XSP Series

### LED Street and Area Light

Includes: XSP1™ and XSP2™ Luminaires

#### IMPORTANT SAFEGUARDS

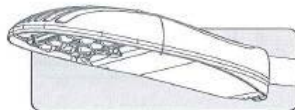
When using electrical equipment, basic safety precautions should always be followed including the following:

#### READ AND FOLLOW ALL SAFETY INSTRUCTIONS

1. To reduce the risk of electrical shock, turn off power supply before installation or servicing.
2. This luminaire must be installed in accordance with the NEC or your local electrical code. If you are not familiar with these codes and requirements, consult a qualified electrician.
3. If NEMA photo control is installed refer to NEMA Receptacle section for instructions.
4. If mounting bolts are completely removed in the field they should be hand threaded (prior to use of power tools) to ensure proper engagement of the thread when re-installing. Failure to pre-start threads may result in cross-threading or stripping of the bolts during reinstallation.

#### SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

#### INSTALLATION INSTRUCTIONS



#### TO INSTALL:

#### LUMINAIRE INSTALLATION

##### STEP 1:

**DO NOT** remove splashguard from fixture. If mounting fixture to 1.25 IP pipe (1.86 O.D.), there is no need to modify the splashguard. If mounting fixture onto 2.0 IP pipe (2.38 O.D.), remove the knockout of the splashguard thru the rear opening of the fixture while the fixture is closed. See **Figure 1**.

##### STEP 2:

To open cover, hold fixture and loosen the captive D-ring and allow the cover to swing open. Splashguard may dislodge from fixture, but should be repositioned once ready to mount. See **Figure 1**.

##### STEP 3:

Slide fixture on to pole through opening on the rear of housing and through splashguard. See **Figure 2**.

##### STEP 4:

To level fixture, use bubble level located inside housing. Adjust leveling of fixture from side to side. To level from front to back, slide pole to different step in upper housing. Each step changes the angle in 2.5° degree increments.

##### STEP 5:

Once desired position is achieved, tighten mounting bolts to the appropriate torque values specified in **TORQUE VALUES** table to the left. See **Figure 2** (use 9/16" socket wrench).

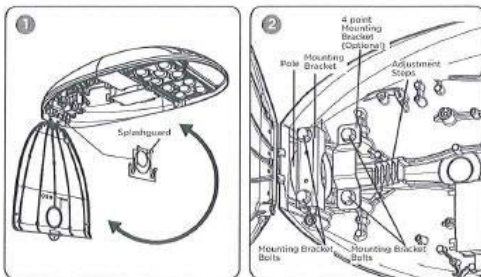
**NOTE:** Luminaires with 4 point mount will have (2) mounting brackets and (4) mounting bolts. See **Figure 2**.

##### STEP 6:

**IMPORTANT - DO NOT** exceed these torque levels on the mount bolts. Exceeding recommended torque value resulting in excessive deformation of mounting bracket will cause stripping of mount hardware which could lead to an unsafe mounting condition.

##### STEP 7:

Reference **Electrical Connections** section for completing electrical connections.



TORQUE VALUES			
Pipe Size	Pipe Position	Bolt Torque Required (In-lbs)	Bolt Torque Required (N-m)
1.66 in O.D.	+5.0 degrees tilt	200	22
	+2.5 degrees tilt	200	22
	0 degrees (no tilt)	200	22
	-2.5 degrees tilt	200	22
	-5.0 degrees tilt	200	22
2.38 in O.D.	+5.0 degrees tilt	200	22
	+2.5 degrees tilt	200	22
	0 degrees (no tilt)	200	22
	-2.5 degrees tilt	200	22
	-5.0 degrees tilt	200	22

# Pros of I-96 E-Construction

- Review turnarounds (Especially with A+B)
- Transparency
- Organization
- Space saved
  - 17,601 documents      42.5 GB
- Helpful statewide support



# Challenges of I-96 E-Construction

- At mercy of network connection
- PW, Field Manager, Outlook all separate
- Field documents into ProjectWise
- Still have paper tickets, ride quality, etc.
- Learning curve
- Work behind the scenes

# Recommendations

- On-site server w/ battery backup and high speed internet lines
- Become familiar with E-construction before job starts and stay ahead
- Submittals- the sooner the better
- Set precedence w/ contractors
- Stay consistent with filing, naming and sequence numbers

# Use of Technology

TESTDRIVEN

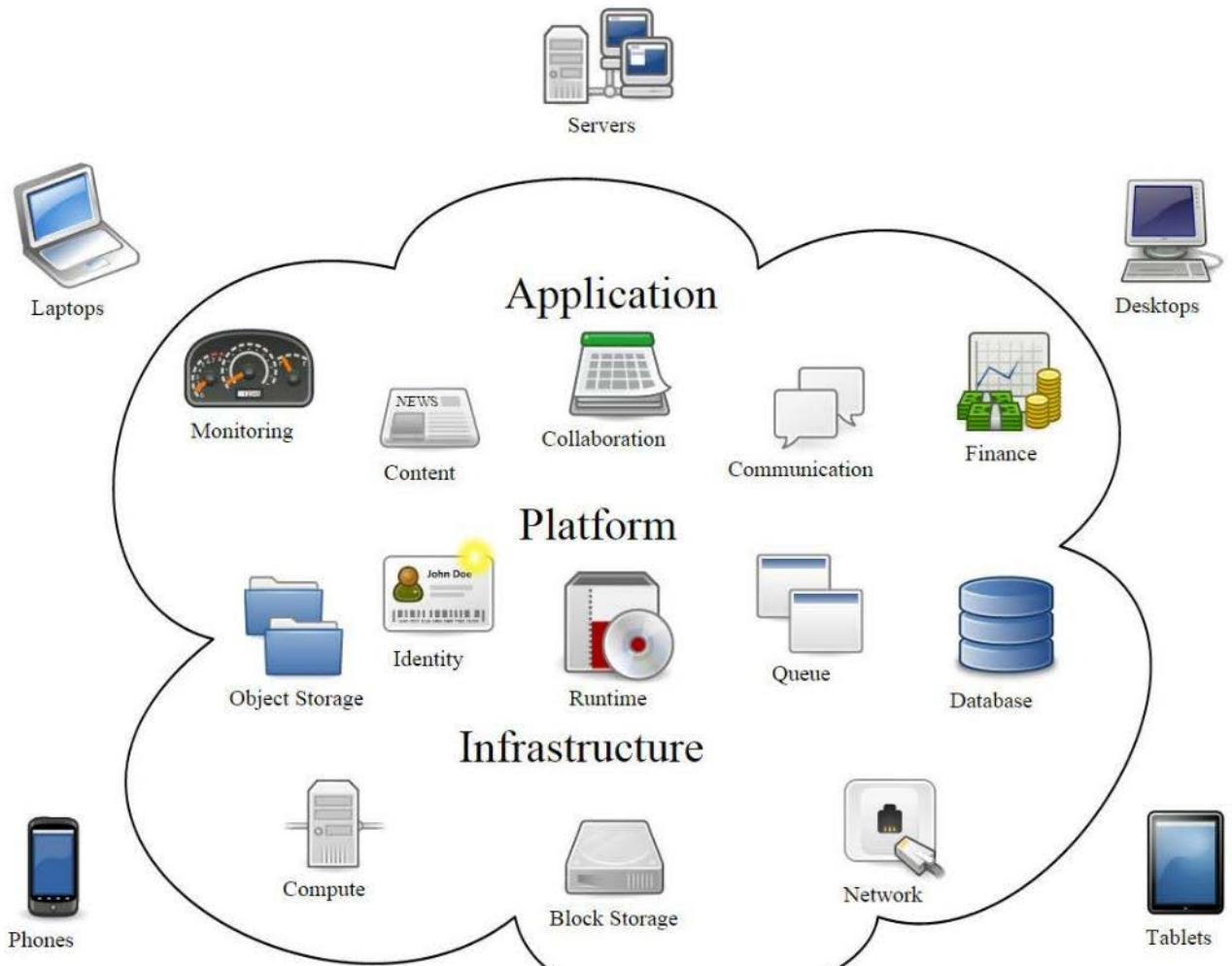


# The Cloud

What is it?

In basic terms it is a central place you can keep all of your files and access from anywhere.





# Obsolete?

- Thumb Drives
- Portable Hard Drives
- Disc Drives (CD/DVD)



# Pros of the Cloud

- Ending the need to “back up” or “save to” hard drives and flash drives
- Share any size file without bogging down email
- Collaboration
- Files are always available
- Endless possibilities



# Cloud Challenges

- Keeping up with technology
- Balancing security with flexibility
- Not a one size fits all solution
- The learning curve
- Internet/Cell service

# Google Drive

Access your files...

at the  
office



on the  
go



from your  
home



from any  
device



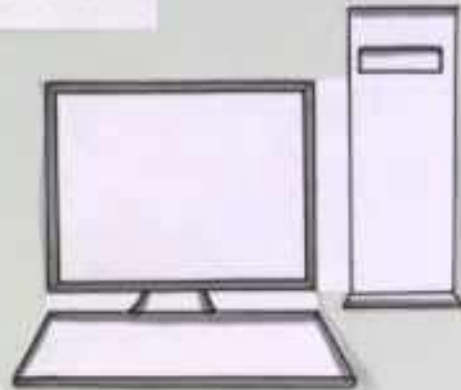
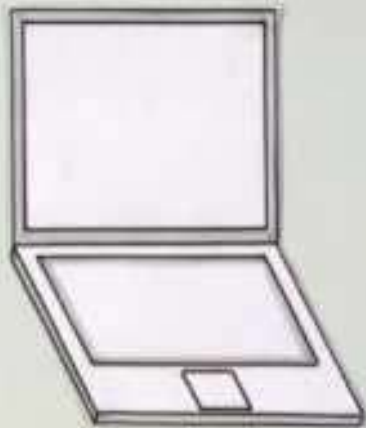
# Pros of Google Drive

- Google sheets and Google docs have simultaneous collaboration
- Works across all platforms and devices
- They have a government business model
- Integrated into many apps and programs

# Challenges of Google Drive

- DTMB does not allow it to be downloaded to your computer
- Investment needed for long term use

# Dropbox



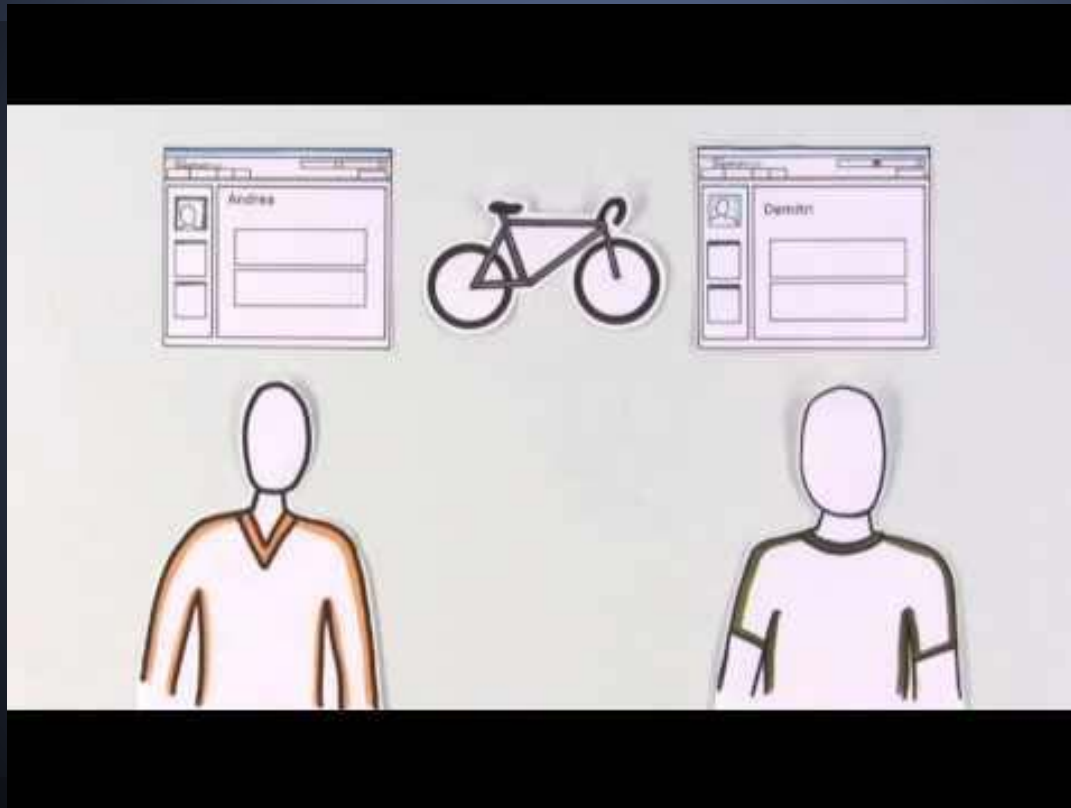
# Cons of Dropbox

- There really aren't any cons other than cost

# Pros of DropBox

- Easy to use!
- Documents update and sync automatically
- Integrated into many apps and programs

# Sharepoint





# Pros of Sharepoint

- Project oriented features
- Integrates with other microsoft applications such as Lync, Outlook, Word, Excel, etc.
- DTMB is okay with it
- Robust and capable of being developed to meet specific user needs

# Challenges of Sharepoint

- Its complex
- DTMB does not allow it to sync with apps on Ipad
- Doesn't integrate well with non-microsoft products
- Automatic backup of pictures has to be done with a workaround

# Use of Tech Tools

It doesn't matter how many "resources" you have.



If you don't know how to use them,  
it will never be enough.

# Use of Tech Tools

- PDF Generating
  - Adobe, PDF Expert, Genius Scan
- Document Managing
  - ProjectWise, FieldManager, SharePoint, Notability, PDF Expert.
- Survey Technology
  - GPS, Total Station, Model Data
- Collaborative
  - SharePoint, Cloud Based Solutions

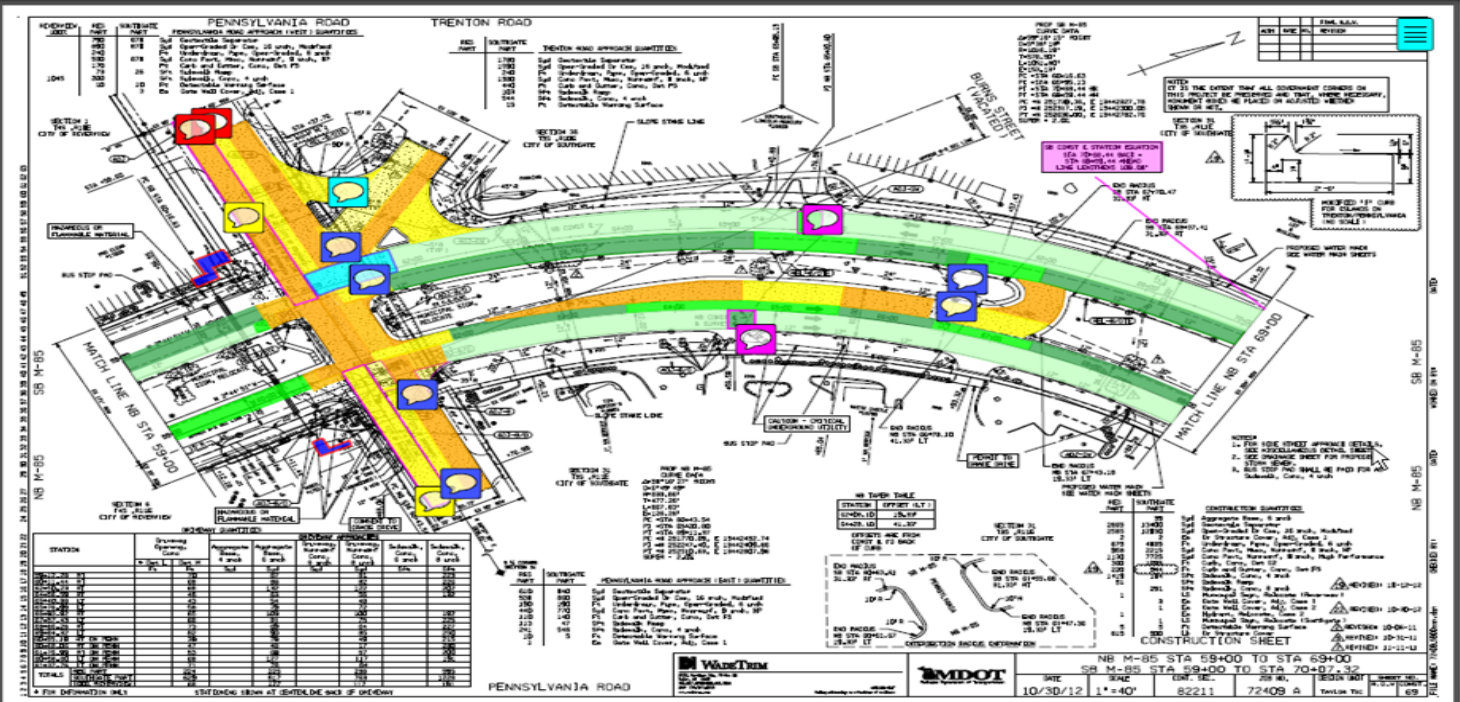
# Demo

- PDF creation / Adobe / Master Log of Production
- SharePoint
- Survey Technology
- Cloud Collaboration
  - Google Sheets Real-Time Collaboration (MicroSoft offers this as well)

# Adobe

- WHAT IS IT?
  - Software package developed by Adobe Systems Inc.
  - Creative collaborative software used for creating/viewing/managing PDFs
  - Available to MDOT
    - Nuance (Consultant Staff)
  - Helps us to function in our new paperless environment.
  - PDF Expert iPad App

# Adobe



**Annotations**

**Drawing Markups**

**Review**

**Comments List (164)**

Find

**McGowanR**  
Page 1 2/4/2013 3:20:56PM  
Critical Items  
Removed and Replaced etc.  
Additional Qty (Area extended)

**McGowanR**  
Page 1 2/1/2013 11:59:28AM  
Critical Items  
Removed and Replaced etc.

**McGowanR**  
Page 1 3/1/2013 10:39:56AM  
**REVIEW/ADJUSTMENT COMPLETE**

**McGowanR**  
Page 1 4/17/2013 3:59:22PM

# SharePoint



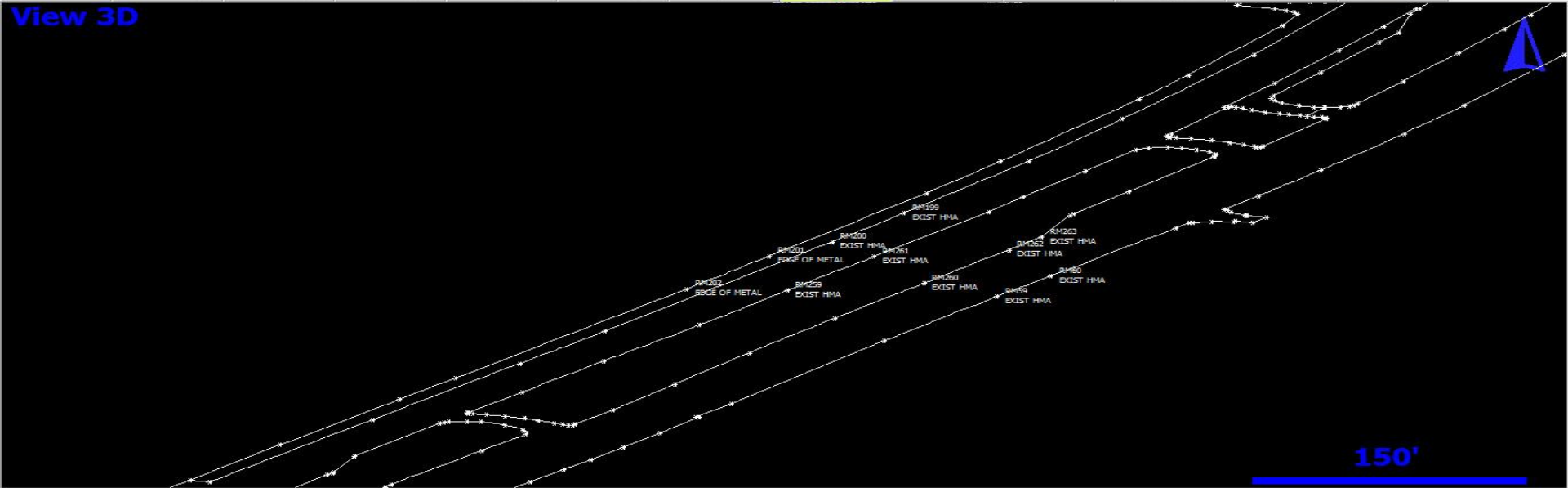
# Cloud Collaboration

# Survey Technology

US-24 CPM - FieldGenius



View 3D



150'

				<No Line>
	Next ID			<No Desc>
	RM683			

# Challenges for Tech Tools

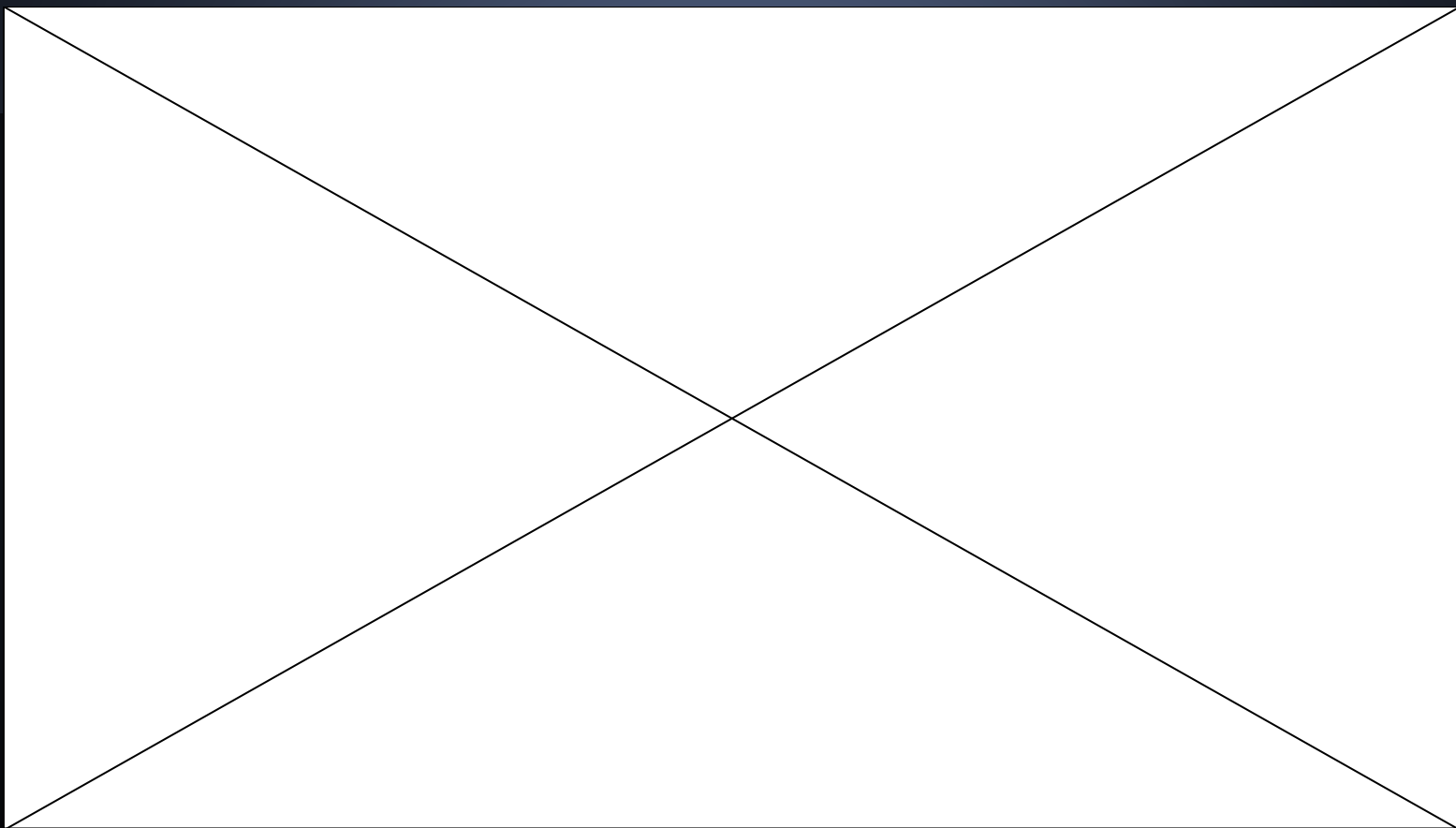
- No Silver Bullet Solution
- Technology Constantly Evolving
- Control of Content
- Aligning objectives and creating a unified approach
- Naysayers

# Challenges for Tech Tools

- No Silver Bullet Solution
- Technology Constantly Evolving
- Control of Content
- Aligning objectives and creating a unified approach

# Ideas and Suggestion for the Future

- BlueBeam (<https://www.youtube.com/watch?v=-nYO7SiaPTI>)
- Integration of Survey Technology to help automate the approach to gathering field quantities and reporting pay items.
- QR Code/Ticket Database (Demo)



We all hold a piece to the puzzle...



It doesn't matter how many "resources" you have.



If you don't know how to use them,  
it will never be enough.





**Questions?**



**Call  
1-800-E-CLEAVE**