


 June 19 - 20, 2025
 Hollywood, FL

**TRANSPORTATION
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Drainage Plans in an 11x17 World

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James Worley

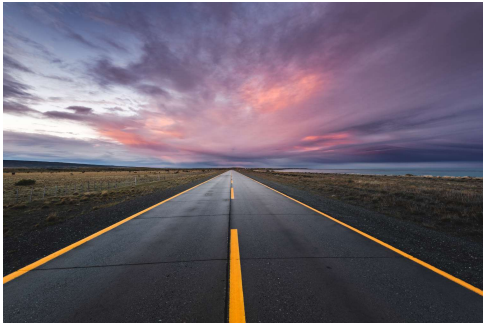
Transportation Symposium
Website


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Outline

- The good old days
- Introduction of large format sheets
- The transition back to 11x17
- The future...



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GEOPAK to Open Road Designer

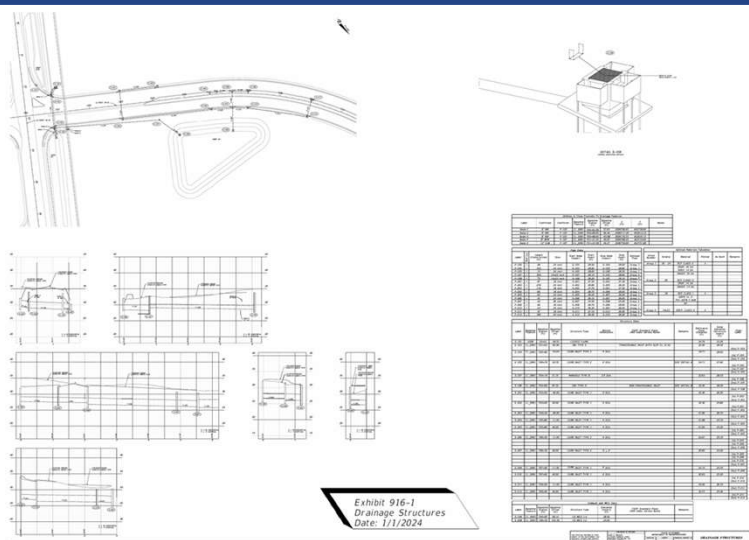
- ORD Software was coming and we were unable to opt out
- ORD Software didn't work the same as GEOPAK Software
- Options were limited to make the output look like GEOPAK Software output
- An 'All In One' approach was settled on to solve most functional issues

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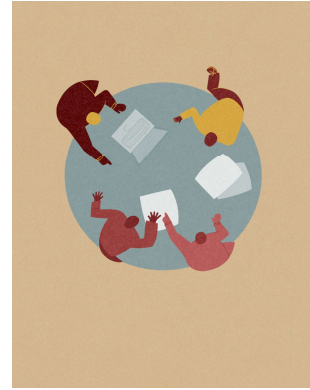
Large Format Plans



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The Plan

- Simple
- Minimal impact (if any) on staff hours
- As much automation as possible
- Understand software limitations
- Coordination
 - Industry
 - District Drainage Staff
 - Drainage Technical Advisory Committee

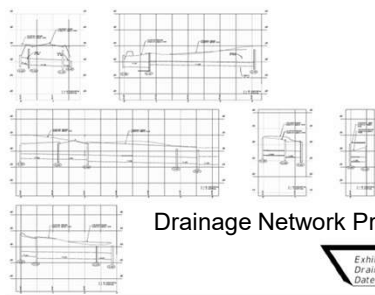
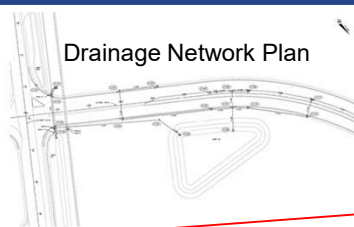


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The Plan



Drainage Network Profile

Exhibit 916-1
Drainage Structures
Date: 1/1/2024



Station	Structure	Material	Notes	Remarks
1+00	10'x10' Box Culvert	Concrete	Standard	
1+20	10'x10' Box Culvert	Concrete	Standard	
1+40	10'x10' Box Culvert	Concrete	Standard	
1+60	10'x10' Box Culvert	Concrete	Standard	
1+80	10'x10' Box Culvert	Concrete	Standard	
2+00	10'x10' Box Culvert	Concrete	Standard	
2+20	10'x10' Box Culvert	Concrete	Standard	
2+40	10'x10' Box Culvert	Concrete	Standard	
2+60	10'x10' Box Culvert	Concrete	Standard	
2+80	10'x10' Box Culvert	Concrete	Standard	
3+00	10'x10' Box Culvert	Concrete	Standard	
3+20	10'x10' Box Culvert	Concrete	Standard	
3+40	10'x10' Box Culvert	Concrete	Standard	
3+60	10'x10' Box Culvert	Concrete	Standard	
3+80	10'x10' Box Culvert	Concrete	Standard	
4+00	10'x10' Box Culvert	Concrete	Standard	
4+20	10'x10' Box Culvert	Concrete	Standard	
4+40	10'x10' Box Culvert	Concrete	Standard	
4+60	10'x10' Box Culvert	Concrete	Standard	
4+80	10'x10' Box Culvert	Concrete	Standard	
5+00	10'x10' Box Culvert	Concrete	Standard	
5+20	10'x10' Box Culvert	Concrete	Standard	
5+40	10'x10' Box Culvert	Concrete	Standard	
5+60	10'x10' Box Culvert	Concrete	Standard	
5+80	10'x10' Box Culvert	Concrete	Standard	
6+00	10'x10' Box Culvert	Concrete	Standard	
6+20	10'x10' Box Culvert	Concrete	Standard	
6+40	10'x10' Box Culvert	Concrete	Standard	
6+60	10'x10' Box Culvert	Concrete	Standard	
6+80	10'x10' Box Culvert	Concrete	Standard	
7+00	10'x10' Box Culvert	Concrete	Standard	
7+20	10'x10' Box Culvert	Concrete	Standard	
7+40	10'x10' Box Culvert	Concrete	Standard	
7+60	10'x10' Box Culvert	Concrete	Standard	
7+80	10'x10' Box Culvert	Concrete	Standard	
8+00	10'x10' Box Culvert	Concrete	Standard	
8+20	10'x10' Box Culvert	Concrete	Standard	
8+40	10'x10' Box Culvert	Concrete	Standard	
8+60	10'x10' Box Culvert	Concrete	Standard	
8+80	10'x10' Box Culvert	Concrete	Standard	
9+00	10'x10' Box Culvert	Concrete	Standard	
9+20	10'x10' Box Culvert	Concrete	Standard	
9+40	10'x10' Box Culvert	Concrete	Standard	
9+60	10'x10' Box Culvert	Concrete	Standard	
9+80	10'x10' Box Culvert	Concrete	Standard	
10+00	10'x10' Box Culvert	Concrete	Standard	

Data moved to:

- Drainage Network Plan
- Drainage Network Profile
- Drainage Network Cross Sections
- Optional Materials Tabulation

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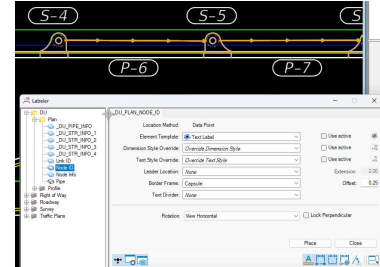
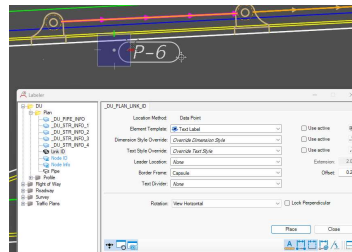
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Drainage Network Plan Sheet

- Structure and Pipe labels as well as Structure Paragraph all with one tool
- New Drainage Structure Paragraph
- Placement is a semi-automated “Pick and Place” process

S-6
STA. 705+50.00 (40.00 LT)
CONST. CURB INLET TYPE 4
INDEX NO. 425-020
ELEV. 33.91
FL 29.88 (P-3)
FL 32.10 (P-7)
FL 30.91 (P-5)

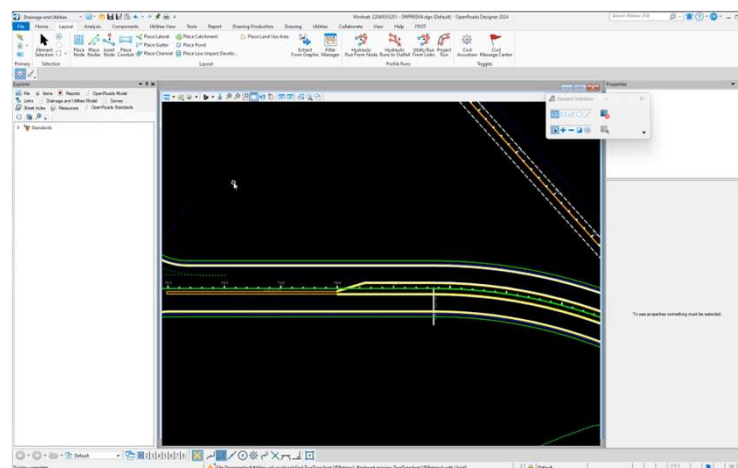


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Drainage Network Plan Sheet



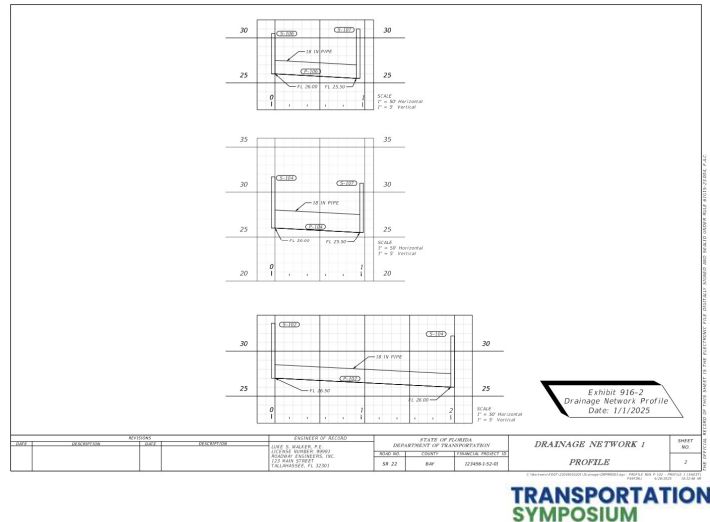
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Drainage Network Profile Sheet

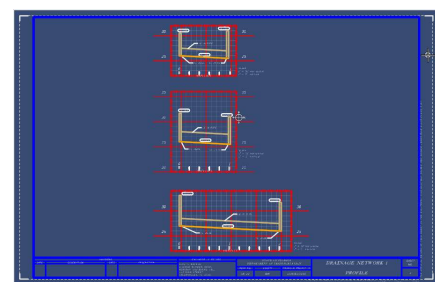
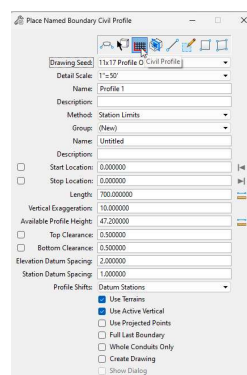
- Structures will be shown as rectangles
- Flow line information will be provided
- Only show the pipes not shown in cross section views.
- Utilities



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Drainage Network Profile Sheet

- Use standard automated tools to create the Drainage Network Profile Sheets
- Use a single tool to create and place annotation for the Drainage Network Profile
- Currently the annotation process is semi-automated

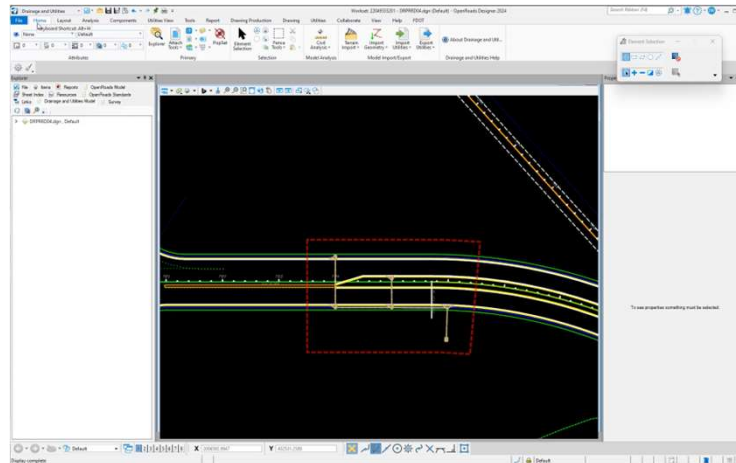


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Drainage Network Profile Sheet



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Drainage Network Cross Section Sheet

- Structures will be shown as true cross-section
- Structure Number and Flow Line elevations will be labeled
- Only show the pipes not shown in profile views
- Utilities

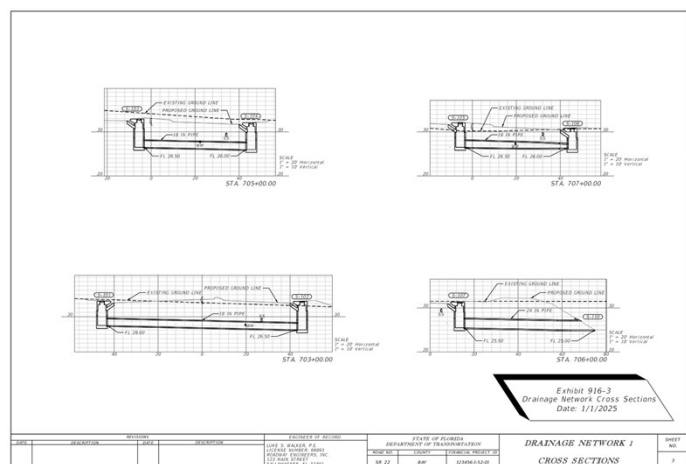


Exhibit 916-3
Drainage Network Cross Sections
Date: 1/1/2025

DATE	DESCRIPTION	REVISION	APPROVED BY	DATE	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	PROJECT NO.	SHEET NO.
01/01/2025	DRAINAGE NETWORK 1				FL 02	1000000000	1

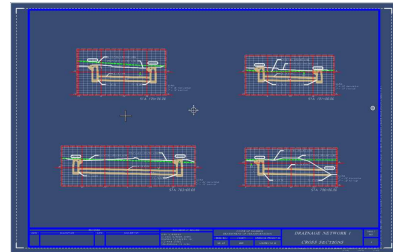
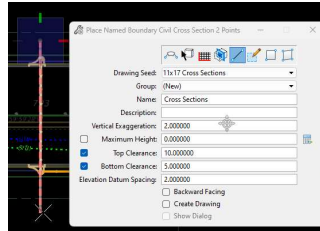
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Drainage Network Cross Section Sheet

- Use standard automated tools to create the Drainage Network Cross Section Sheets
- Use a single tool to create and place annotation for the Drainage Network Cross Sections
- Currently the annotation process is semi-automated

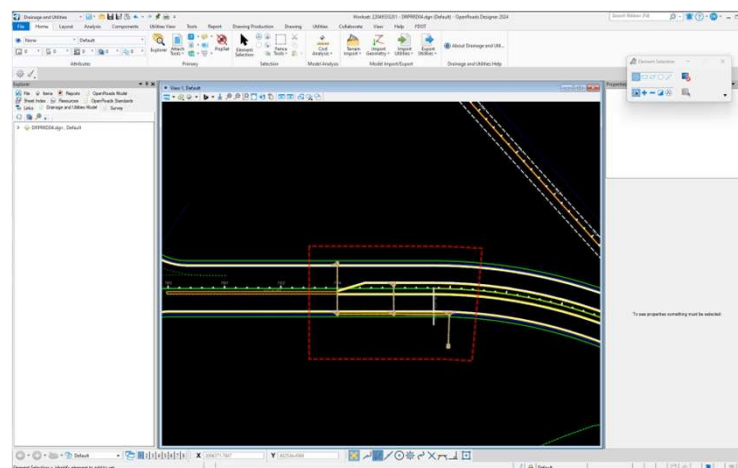


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Drainage Network Cross Section Sheet

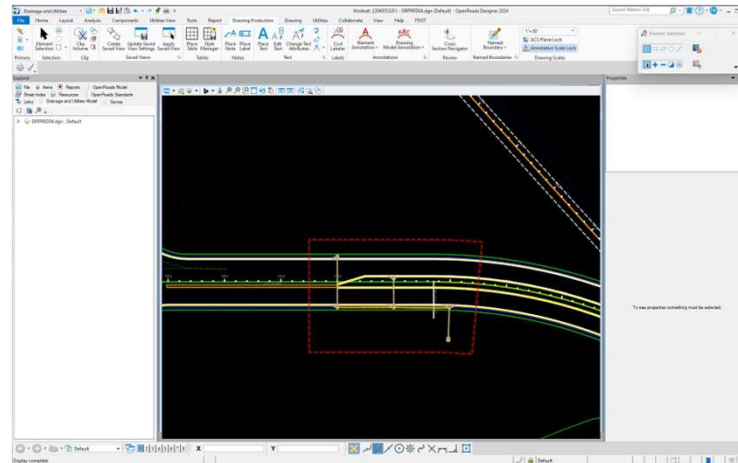


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What if... Structure Number Changes

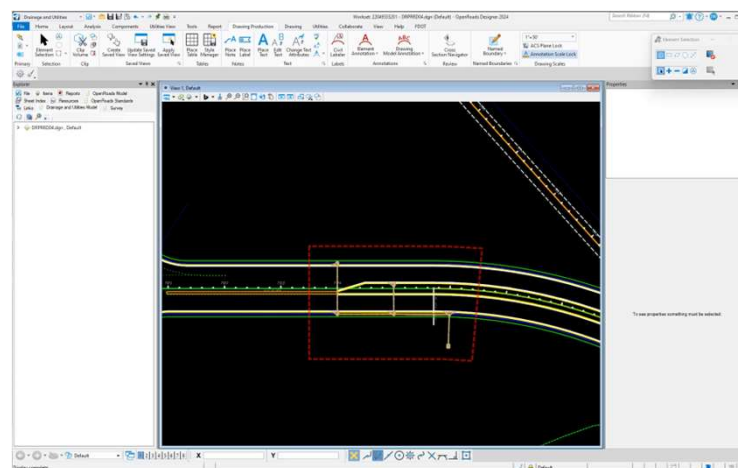


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What if... Structure Depth Changes

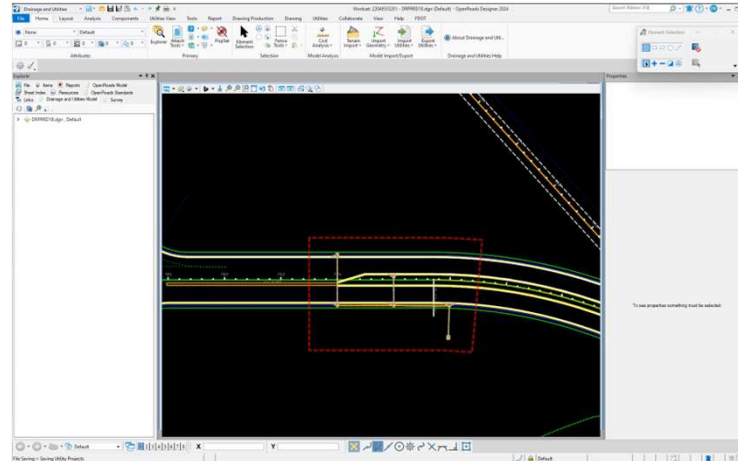


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What if... Cross Section is skewed



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Optional Materials Tabulation Sheet

Optional Materials Tabulation					
Group Number	Size(s)	Material	Plotted	As Built	Remarks
Group 1	18 - 24	RCP CLASS II	X		
		SRAP, 16 GA.			
		SRASP, 14 GA.			
Group 2	30	RCP CLASS II			
		SRAP, 14 GA.			
		SRASP, 14 GA.			
Group 3	18	RCP CLASS I	X		
		HDPE CL II			
		PVC ASTM F-949			
		PP			
Group 4	14x23	ERCP, CLASS II	X		

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Pipe Data								
Label	Barrels	Length (Construction) (ft)	Size	Start Node (Upper)	Start Invert (ft)	Stop Node (Lower)	Stop Invert (ft)	Optional Pipe
P-103	1	28	24 inch	S-103	29.50	S-104	29.00	Group 1
P-104	1	103	24 inch	S-104	29.00	S-105	28.60	Group 1
P-105	1	15	24 inch	S-105	28.60	S-106	28.50	Group 1
P-107	1	334	14x23 inch	S-107	29.10	S-105	28.60	Group 4
P-108	1	70	14x23 inch	S-108	29.20	S-107	29.10	Group 4
P-201	1	87	18 inch	S-201	27.50	S-202	27.30	Group 1
P-202	1	276	24 inch	S-202	26.80	S-205	26.20	Group 1
P-203	1	116	18 inch	S-203	27.70	S-201	27.50	Group 1
P-204	1	66	18 inch	S-204	26.70	S-206	26.60	Group 1
P-205	1	62	24 inch	S-205	26.20	S-207	26.00	Group 1
P-206	1	47	24 inch	S-206	26.10	S-207	26.00	Group 1
P-207	1	42	30 inch	S-207	25.50	S-208	25.00	Group 2
P-209	1	46	18 inch	S-209	26.70	S-206	26.60	Group 1
P-210	1	43	24 inch	S-210	26.20	S-207	26.00	Group 1
P-211	1	47	18 inch	S-211	27.10	S-212	26.90	Group 3
P-212	1	185	24 inch	S-212	26.40	S-210	26.20	Group 3

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Optional Materials Tabulation Sheet

Optional Materials Tabulation					
Group Number	Size(s)	Material	Plotted	As-Built	Remarks
Group 1	18-24	RCP Class II	X		
		SRAP, 16 GA.			
		SRSP, 14 GA.			
Group 2	30	RCP Class IV	X		
		SRAP, 14 GA.			
Group 3	18	RCP Class I	X		
		HDPE Class II			
		PVC ASTM F-949			
		PP			
Group 4	14x23	ERCPC, Class II	X		

Pipe Data			
Label	Barrels	Size	Optional Pipe
P-101	1	18	Group 1
P-102	1	18	Group 1
P-103	1	18	Group 3
P-104	1	18	Group 1
P-105	1	18	Group 3
P-106	1	18	Group 3
P-107	1	24	Group 1
P-201	1	14x23	Group 4
P-207	1	30	Group 2

Exhibit 916-4
 Optional Materials Tabulation
 Date: 1/1/2025

PROJECT: _____		REVISION: _____		EXEMPTED BY: _____	
DATE: _____		LOCATION: _____		PROJECT: _____	
SHEET NO. _____		TOTAL SHEETS: _____		PROJECT NO. _____	

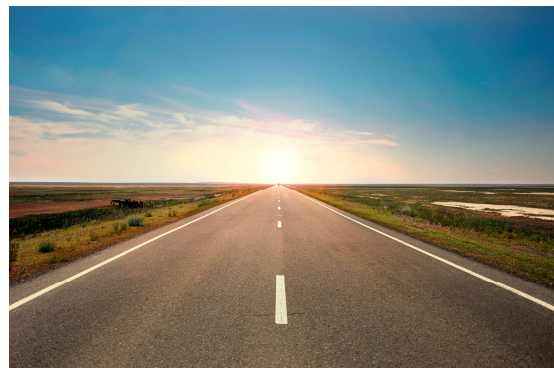
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On the horizon

- Continuing to work with Bentley
 - Offsets where insertion point and location reference point do not match
- Full automation
 - Labels automatically created when sheets are created.



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Safety Message

Turn Around.....

12 inches of fast-moving water can carry away a small car.

6 inches of fast-moving water can knock over and carry away an adult.

**WHEN FLOODED
TURN AROUND
DON'T DROWN**

**Do You Really Know
How Deep the Water is?**

18-24 inches of fast-moving water can carry away most large SUVs, vans and trucks.

..... Don't Drown!

NOAA

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Contact Us

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 June 19 - 20, 2025
 Hollywood, FL





Please be sure to **certify your attendance** before leaving this event or no later than **Monday, June 30**, in order to receive PDH/CEC. Detailed instructions are available on the Transportation Symposium website.

Transportation Symposium Website



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