



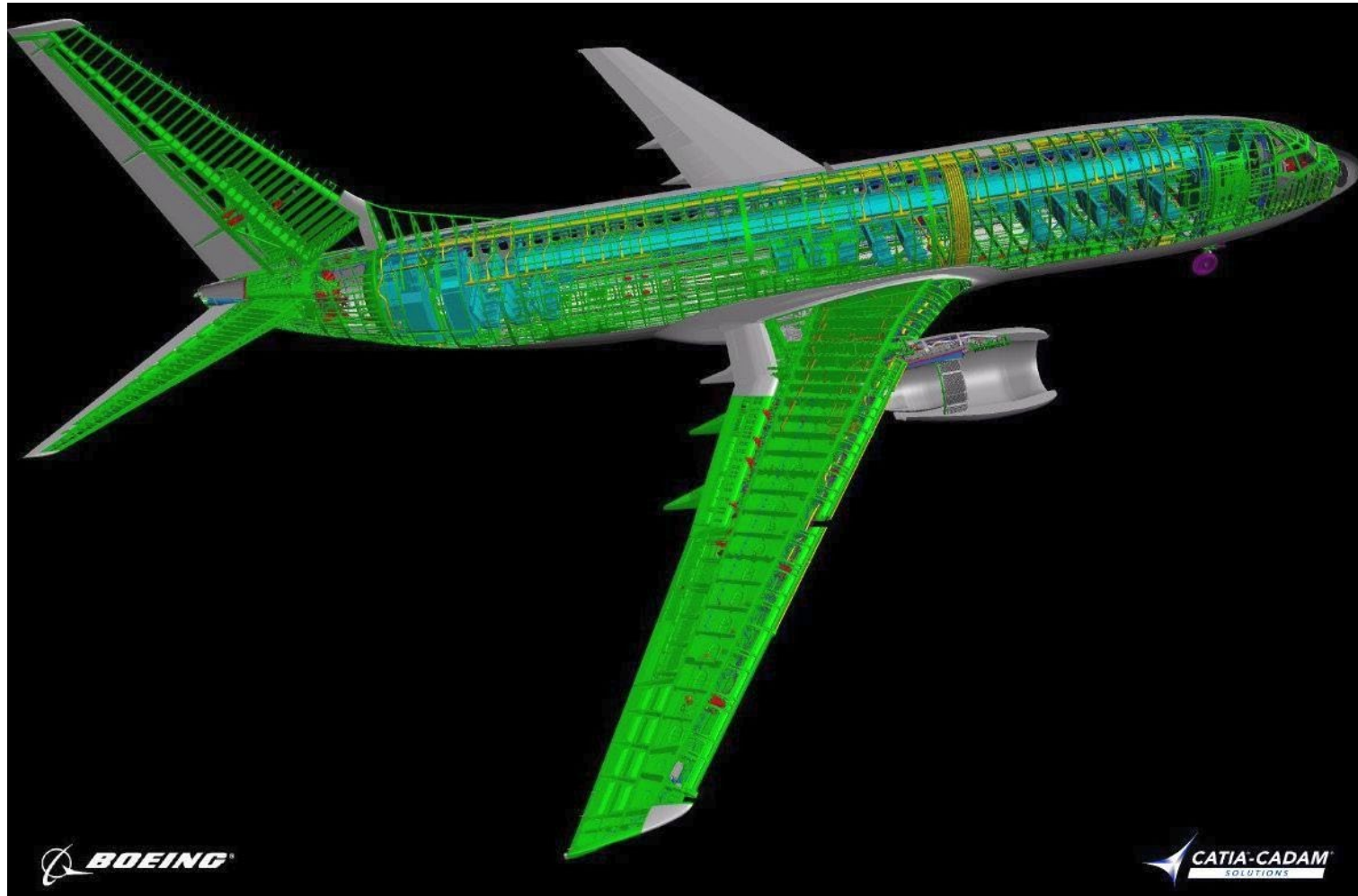
Iowa Pilot Project IA 210 over I-35

Mark Maresko

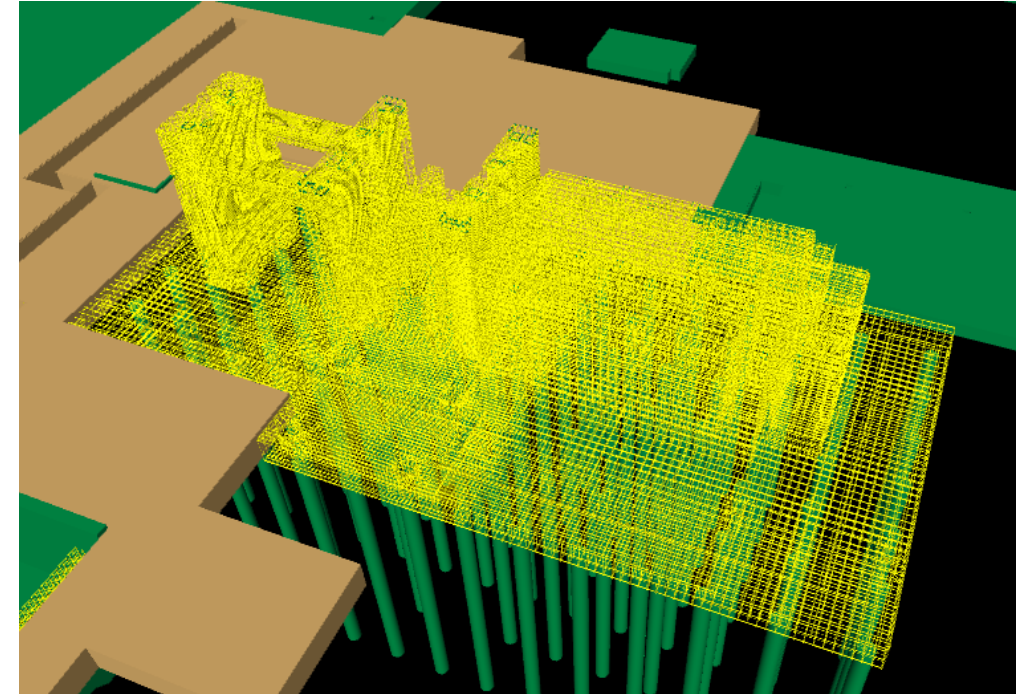
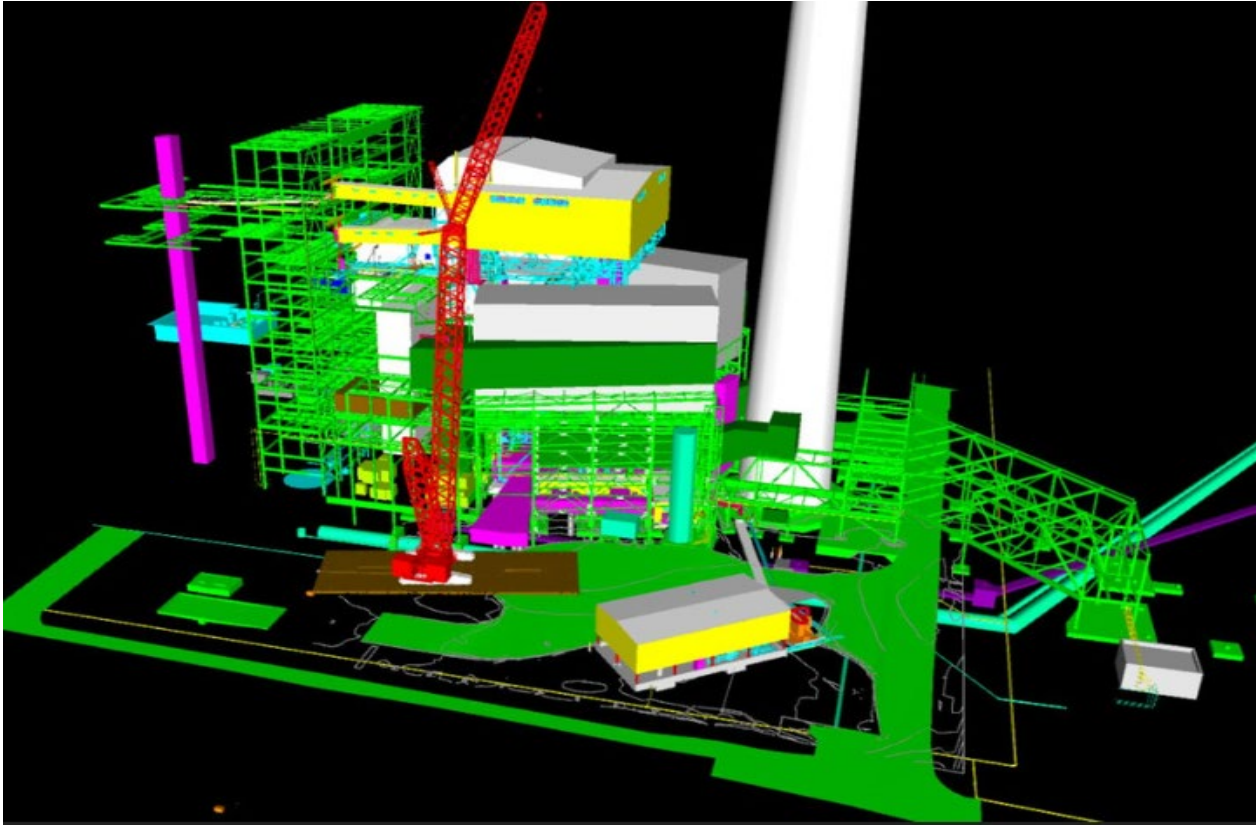


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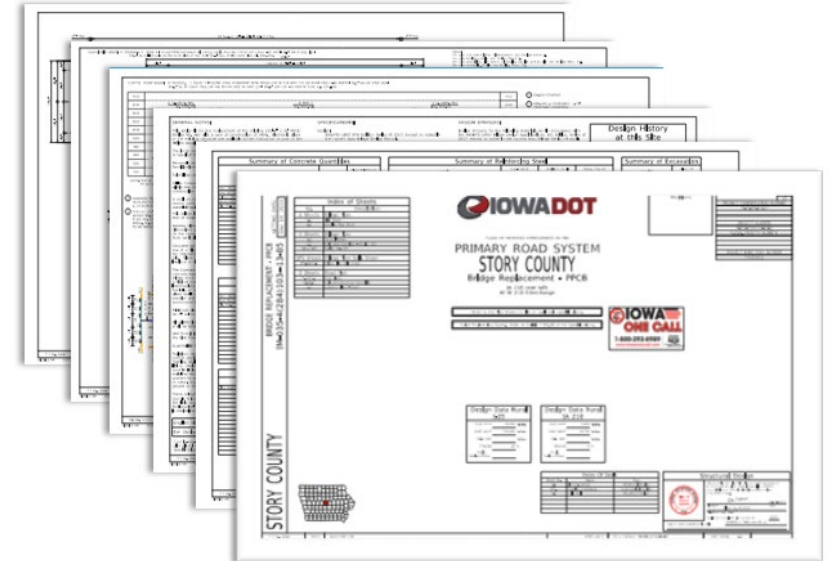
Iowa Pilot Project IA 210 over I-35

- Digital Delivery and BIM



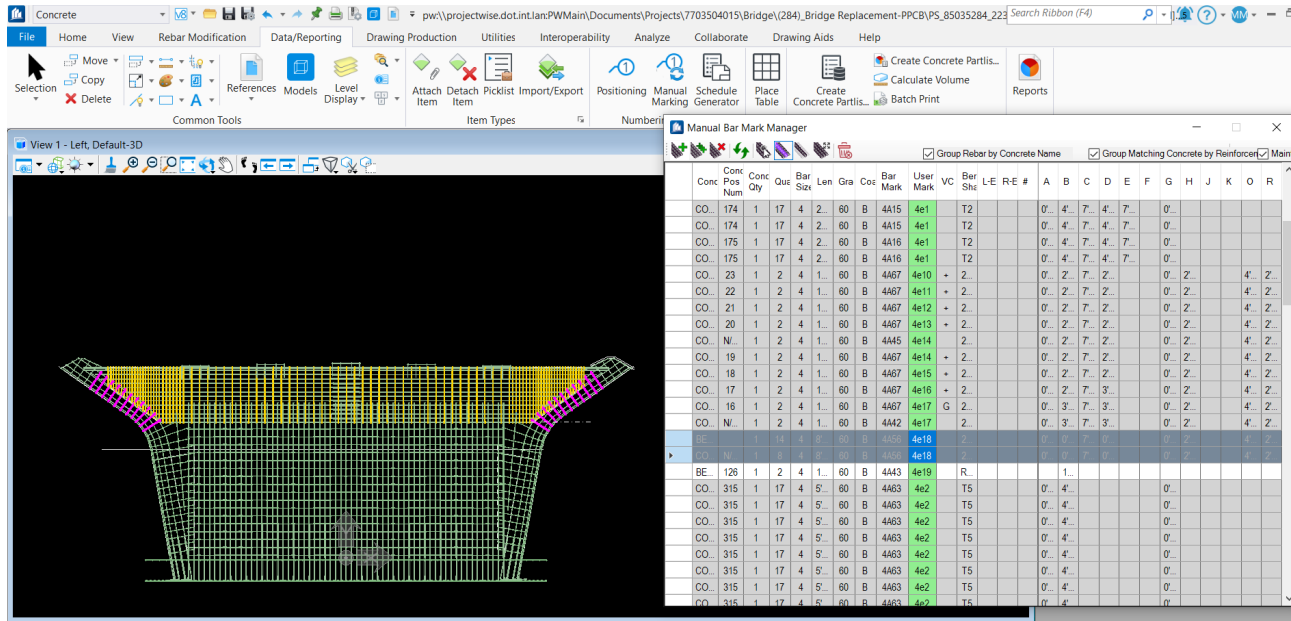
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- Digital Delivery and BIM



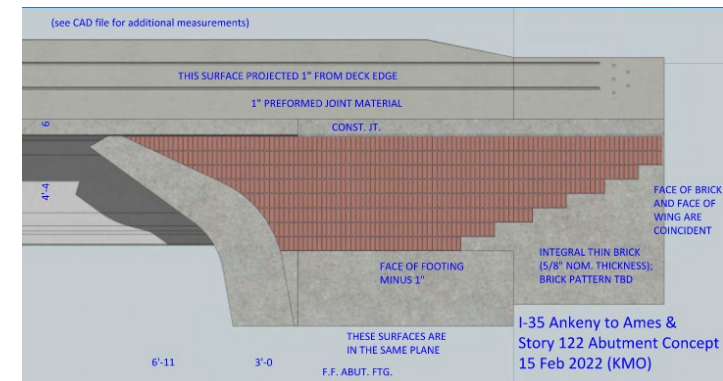
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- Digital Delivery and BIM



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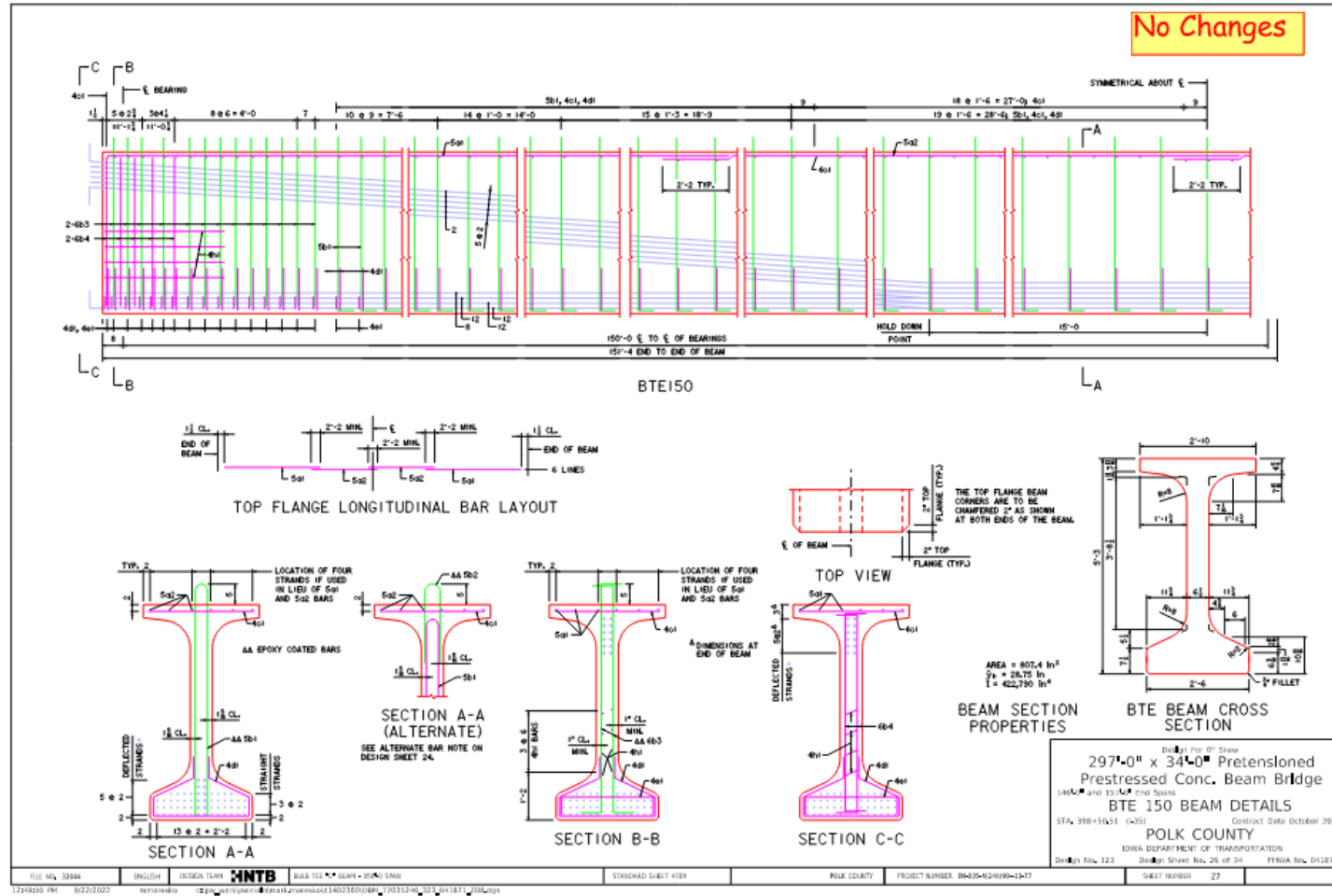
- IA 210 over I-35
- 2 Spans, Pretensioned Prestressed Concrete Beams
- 282' Long.



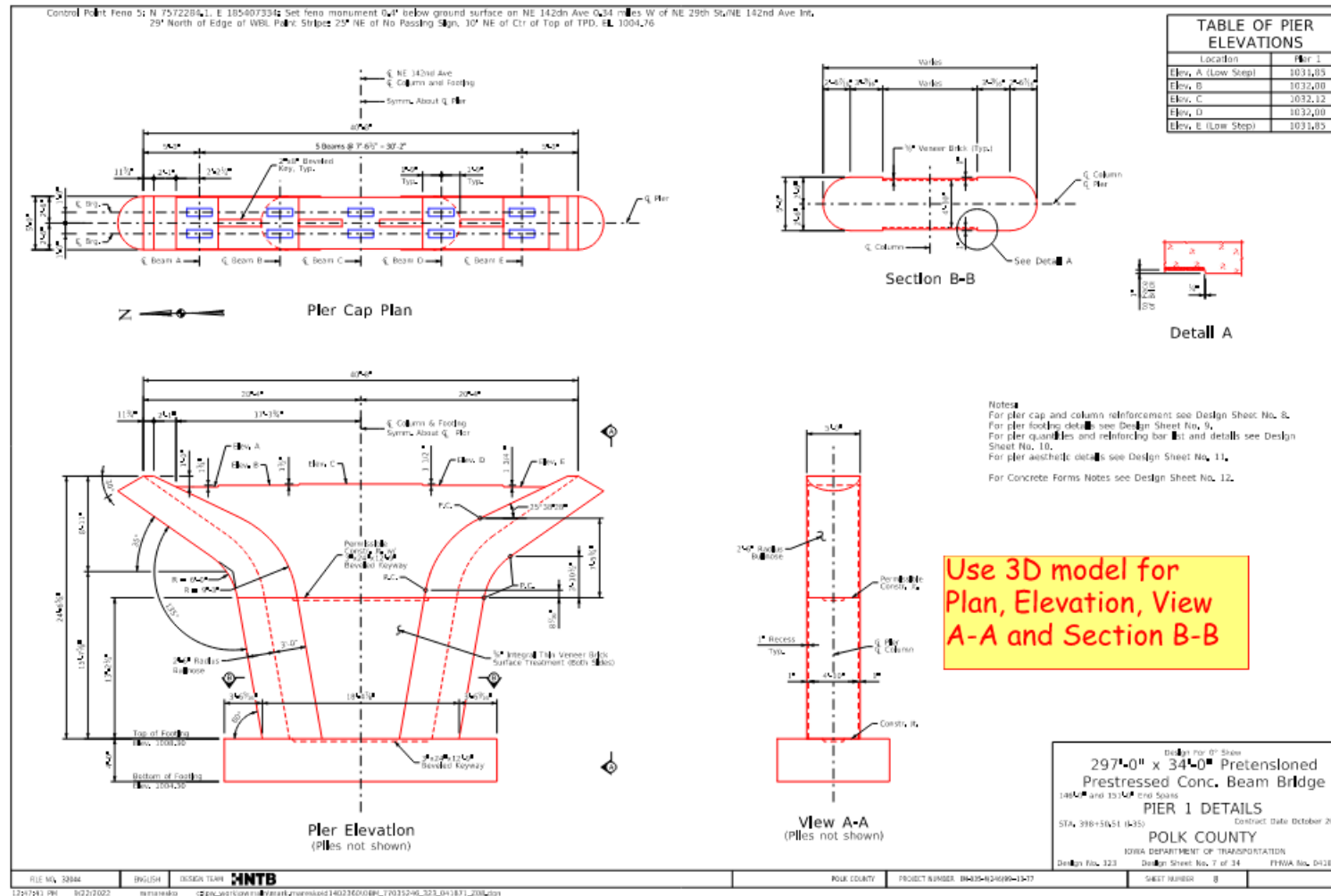
Iowa Pilot Project IA 210 over I-35

- Project Purpose and Scope
 - Model Bridge using Bentley OpenBridge Modeler (OBM)
 - Make Drawings from 3D Model
 - Model Pier and Abutment Rebar in 3D using ProStructures
 - Use ProStructures to Create Drawings and Schedules.

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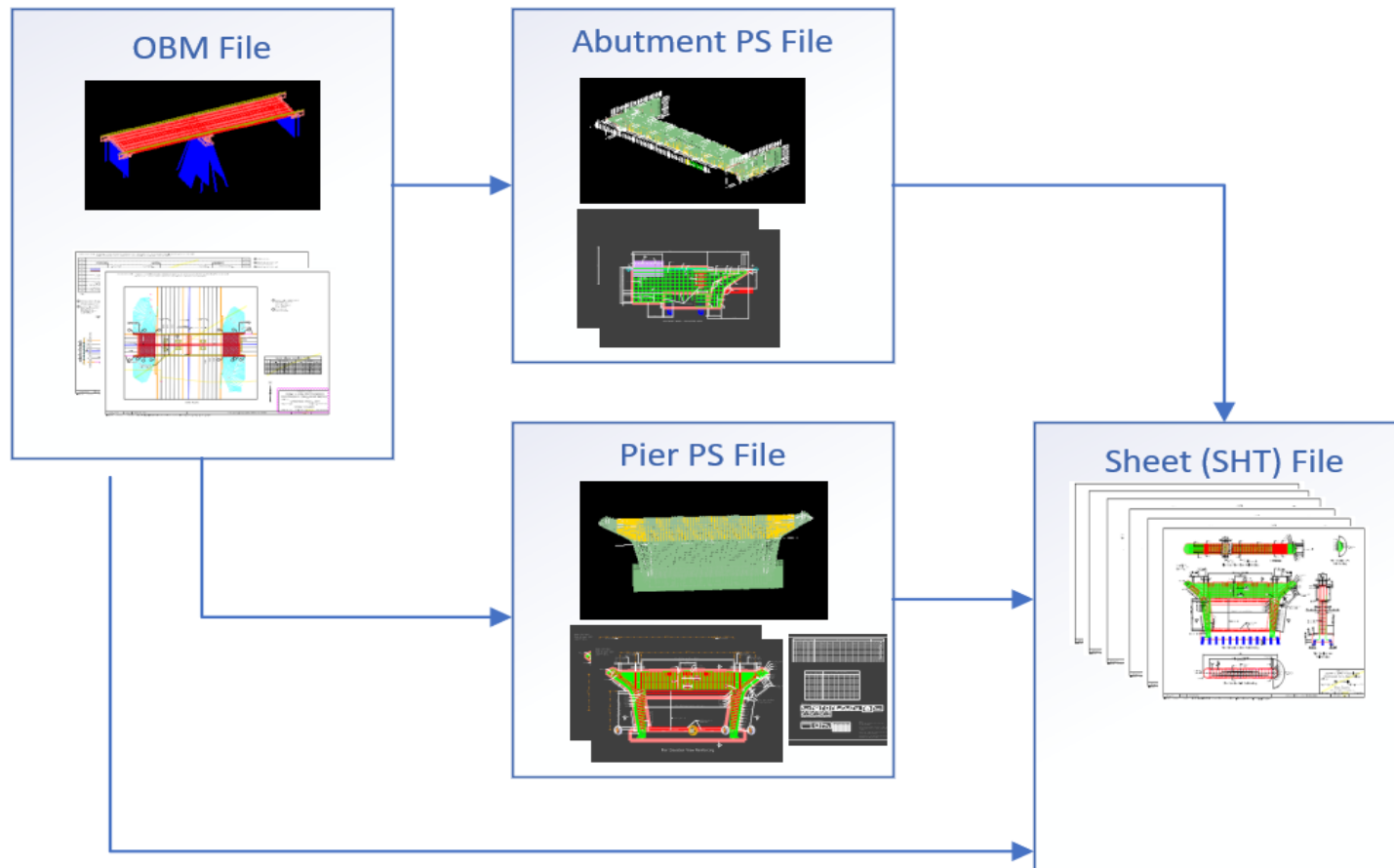


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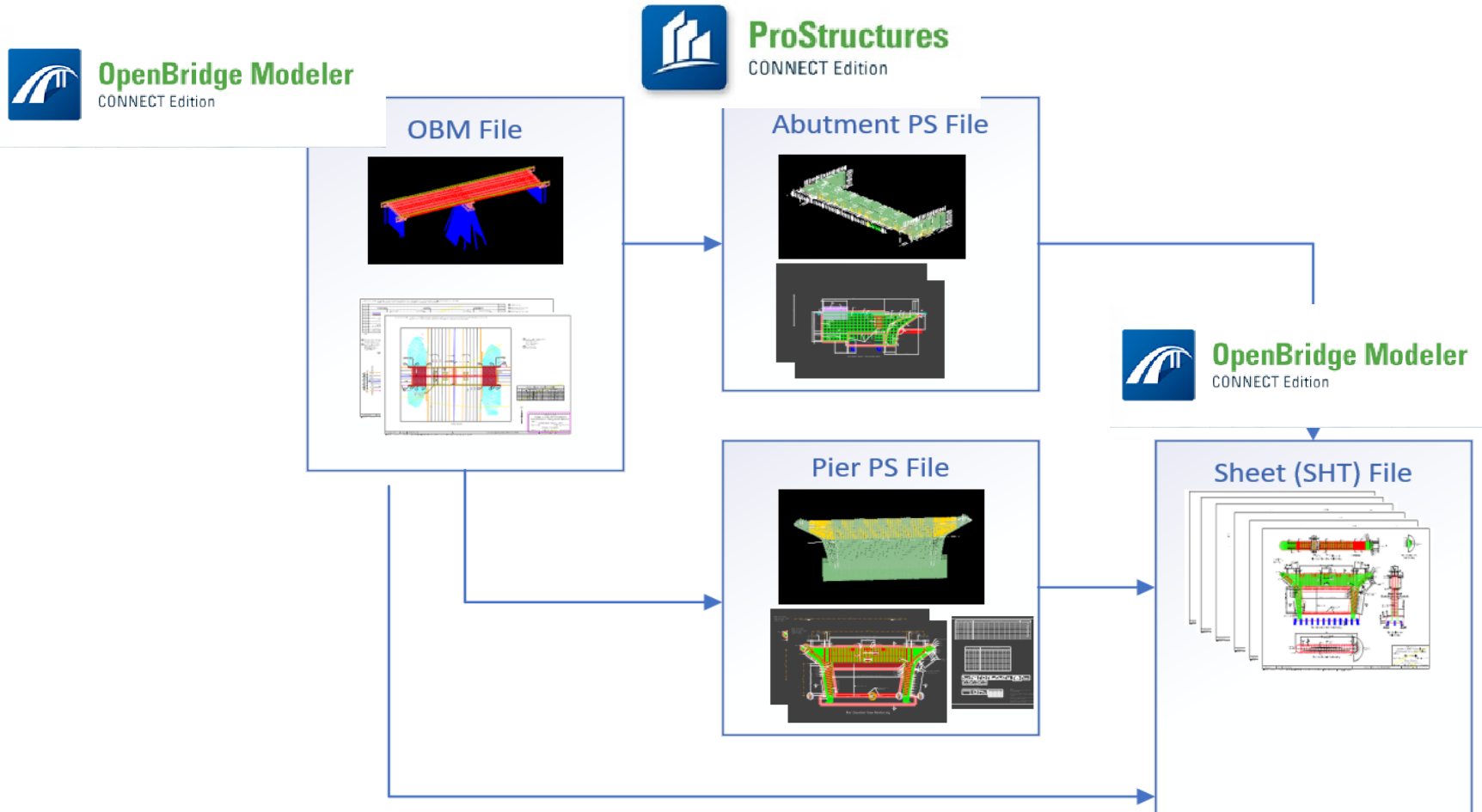
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- Project and File Setup

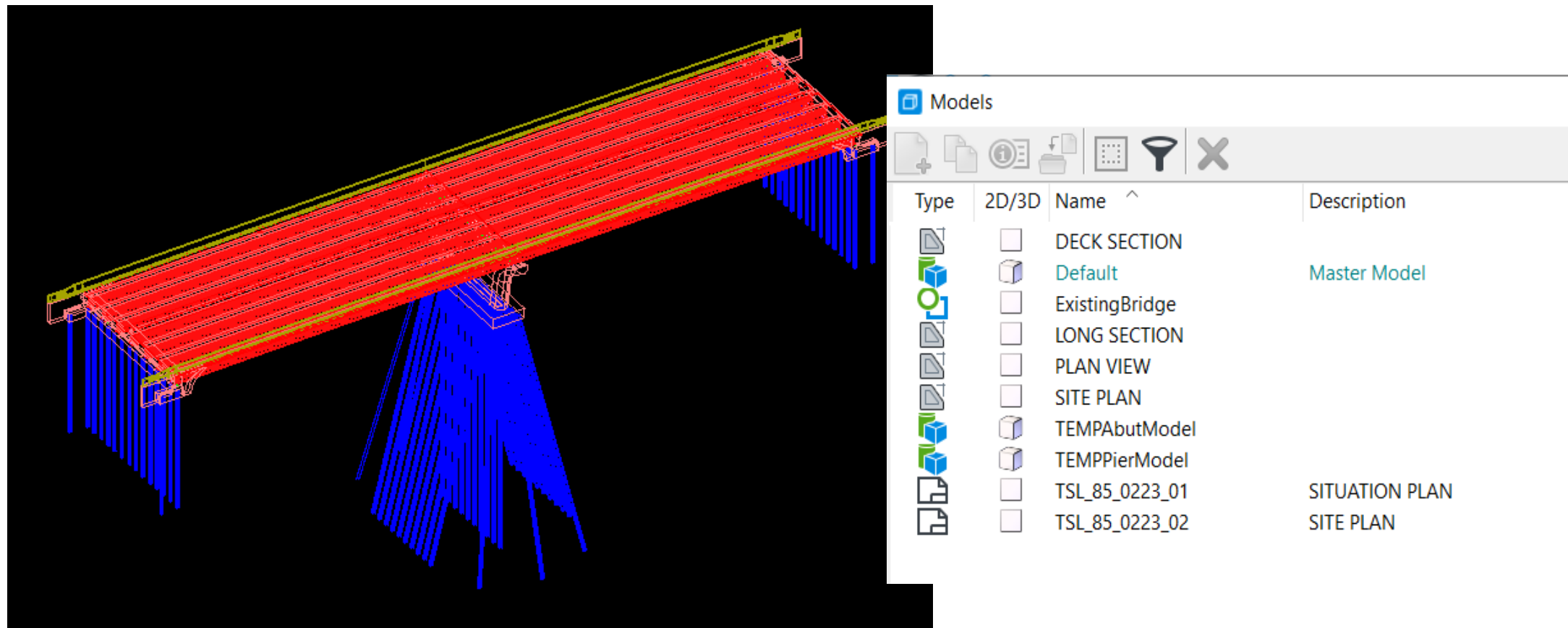


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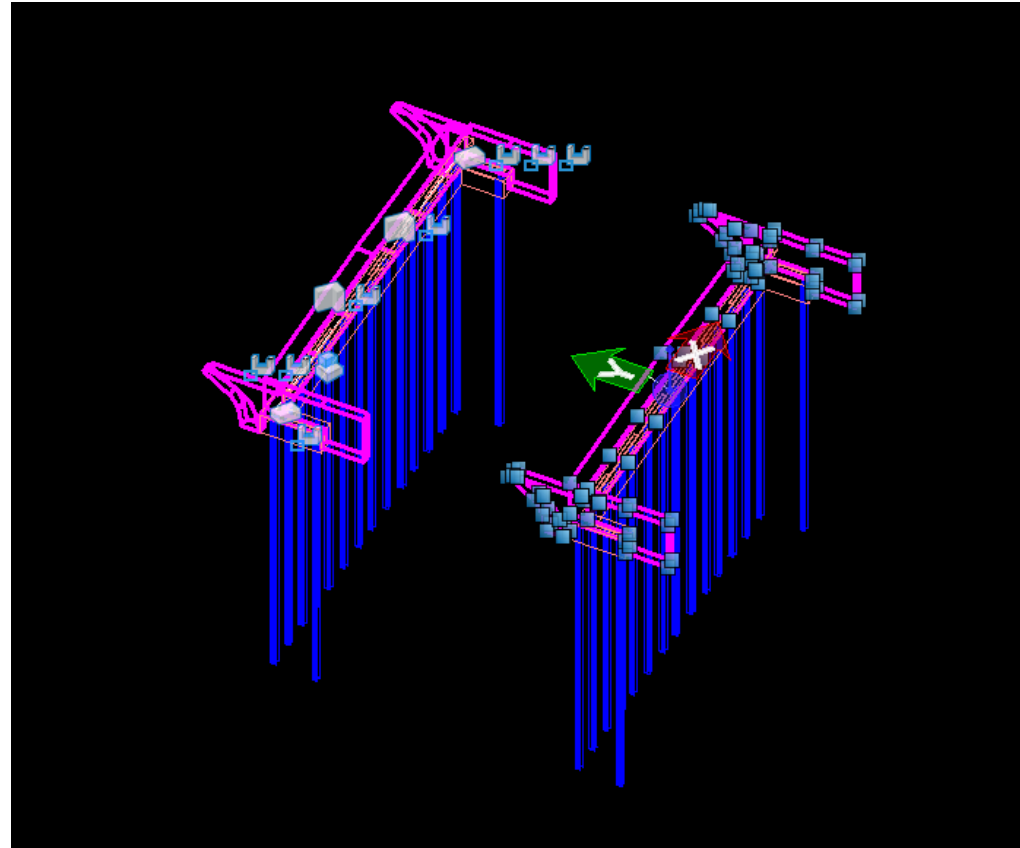
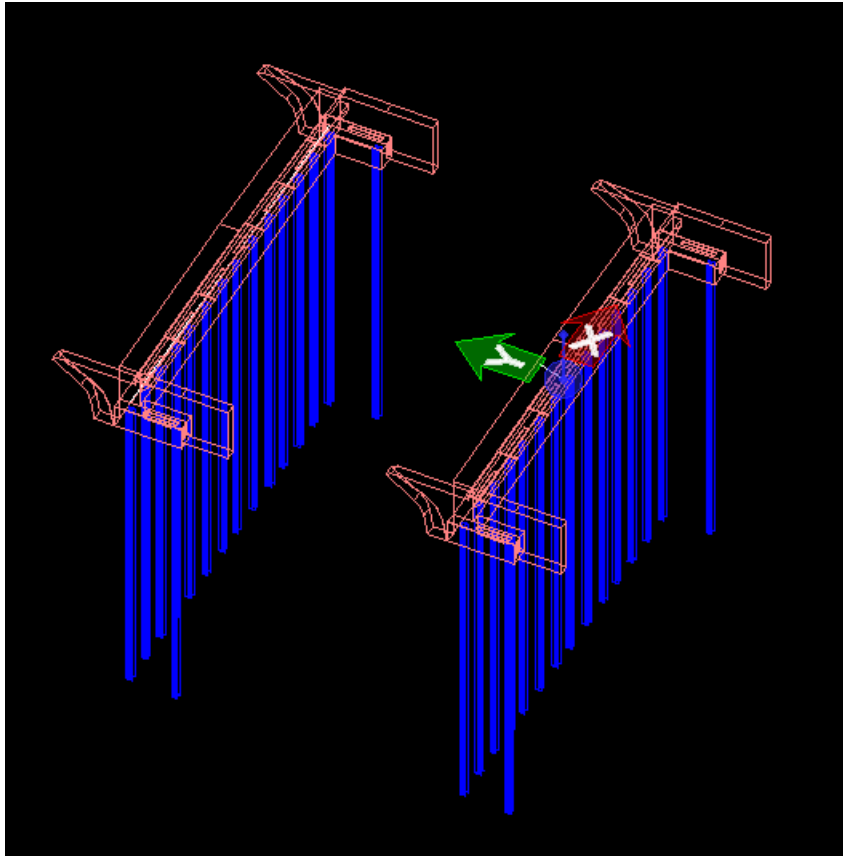
- Project and File Setup



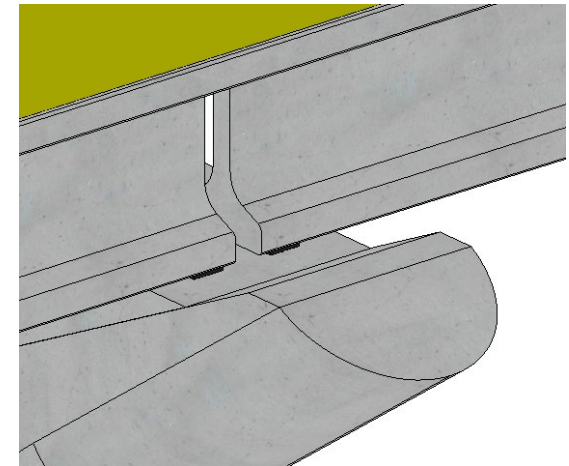
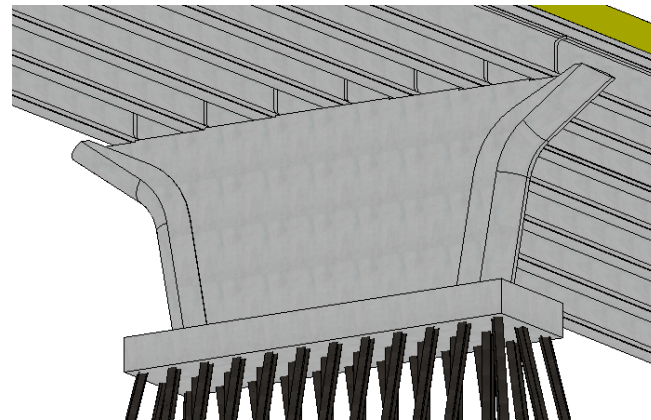
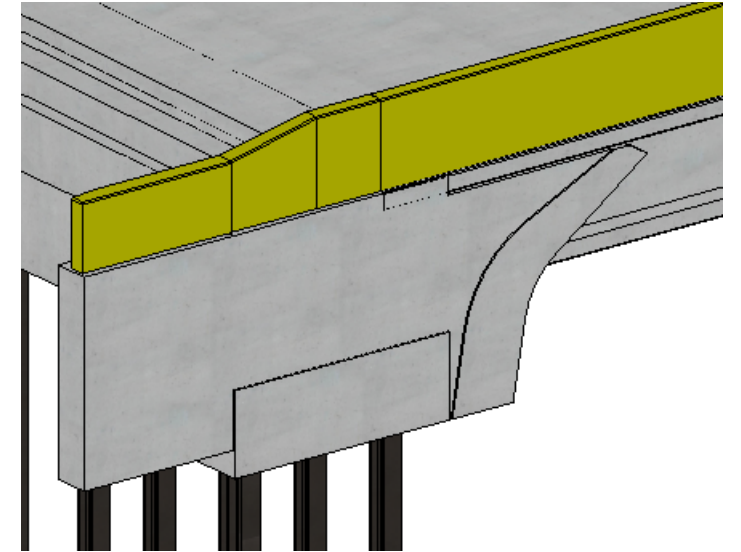
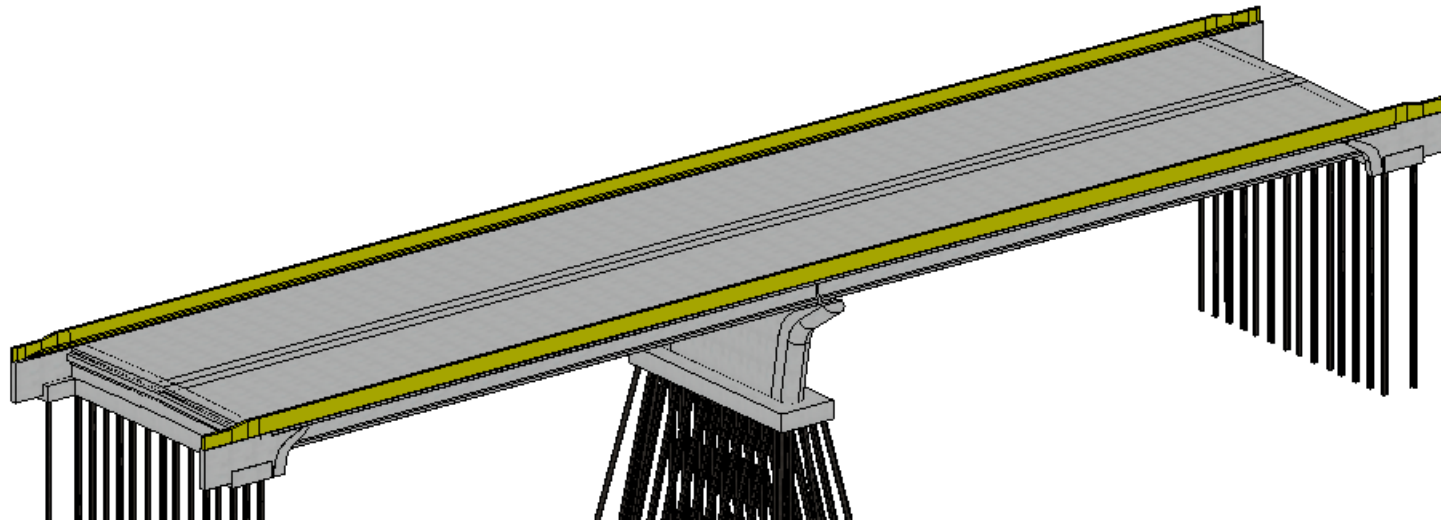
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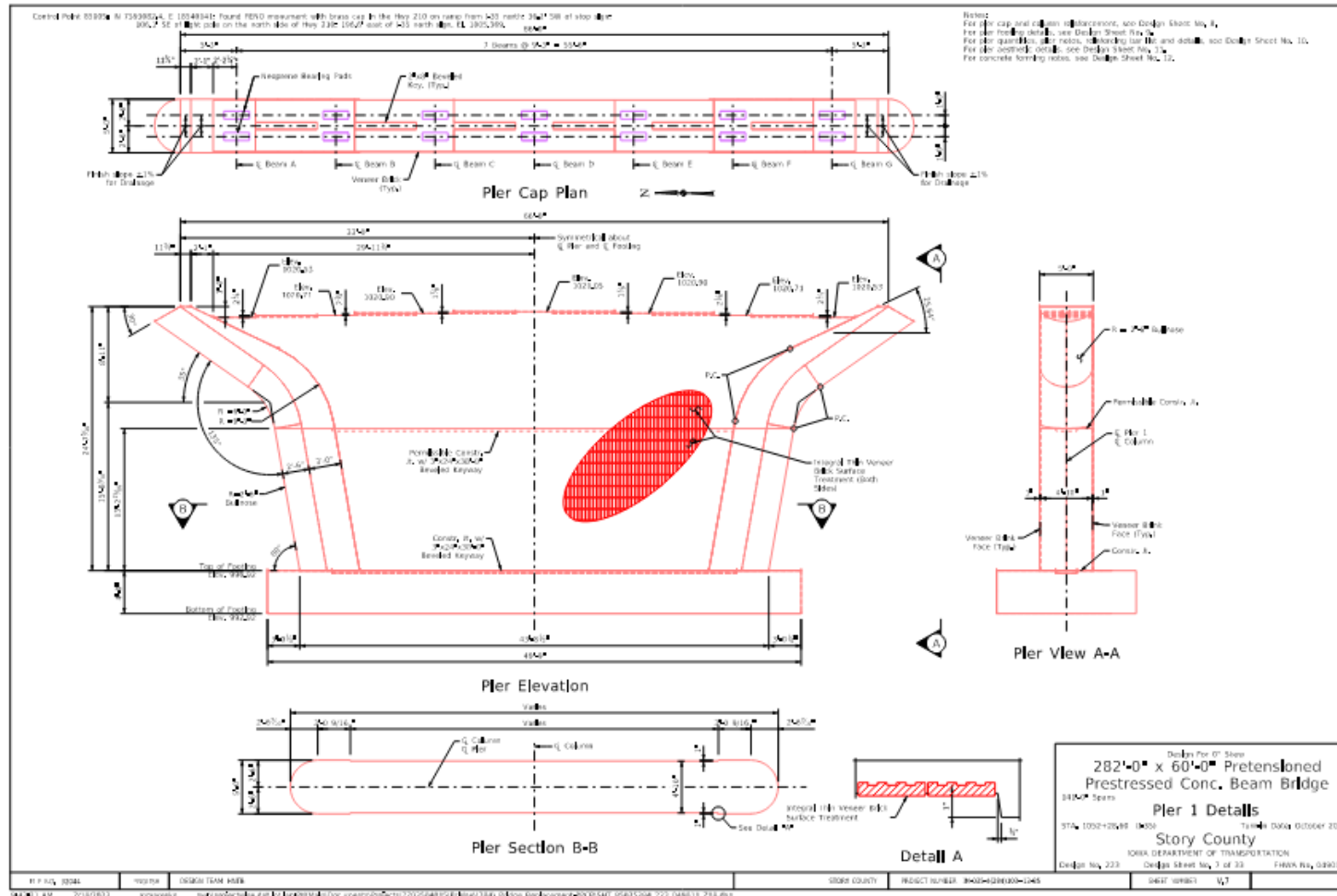
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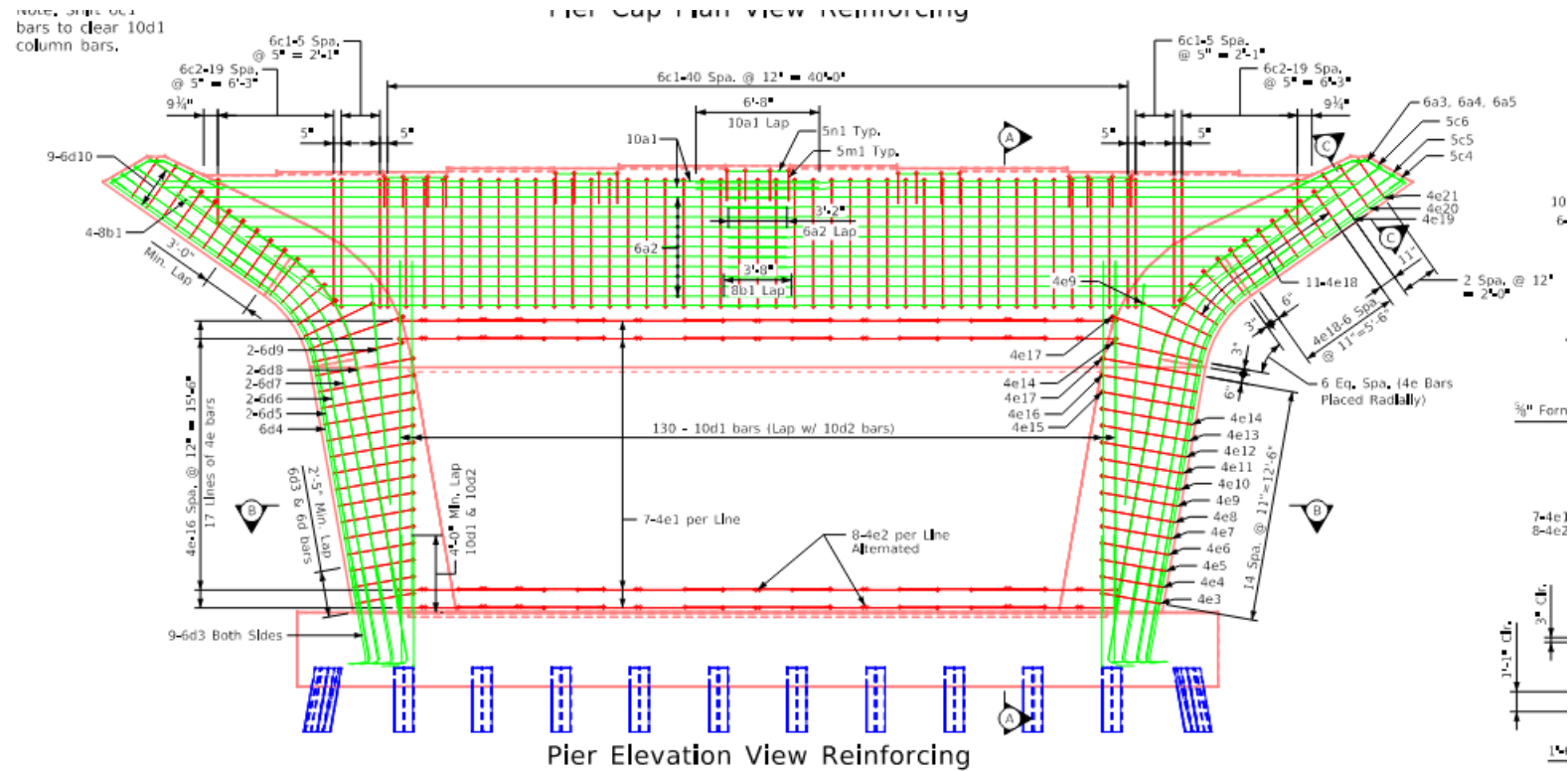
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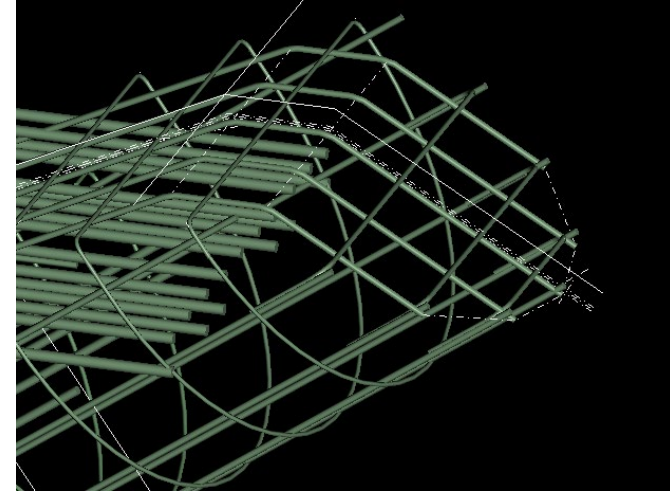
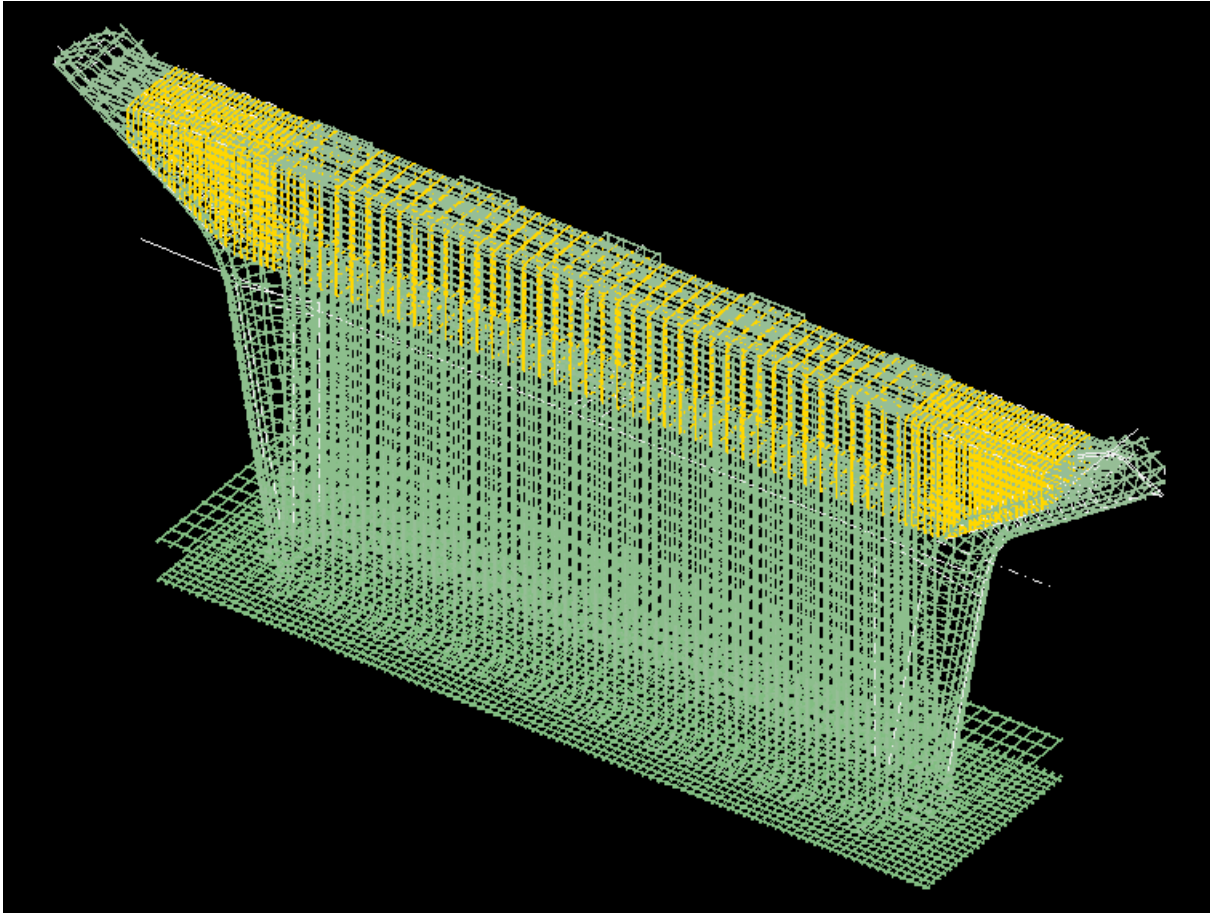
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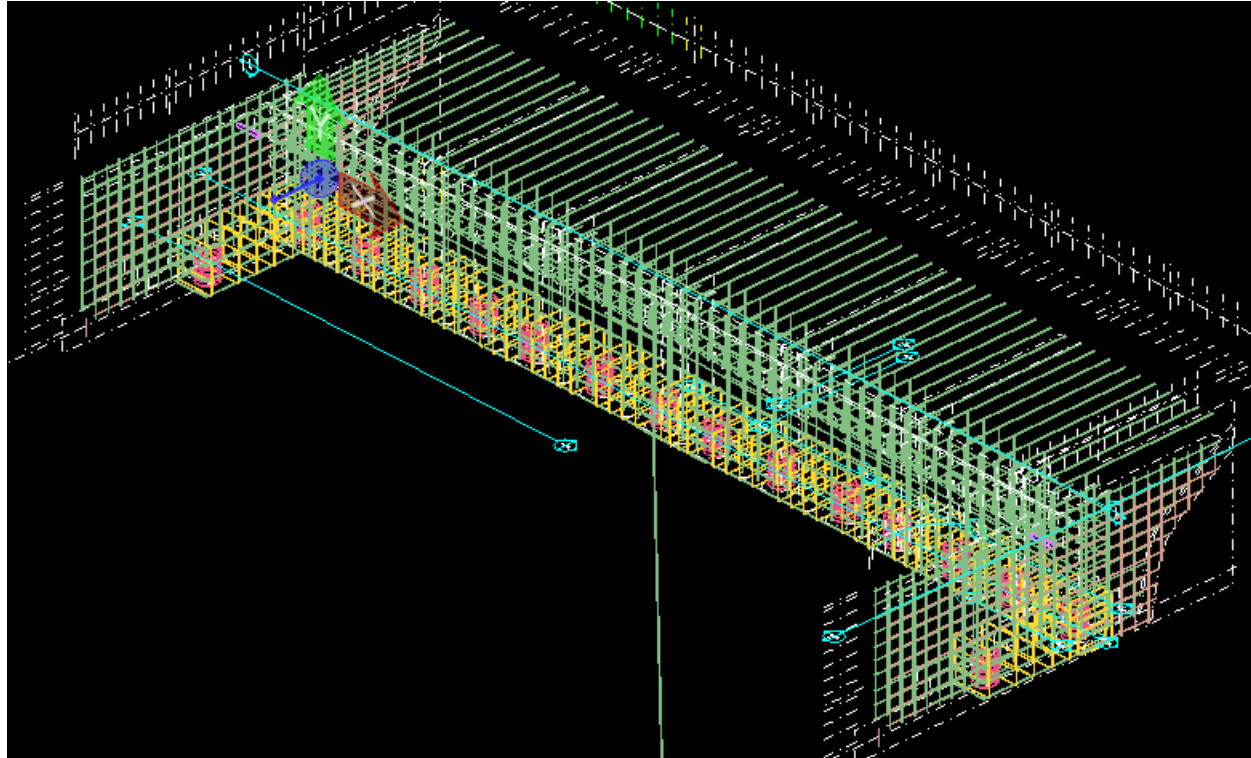
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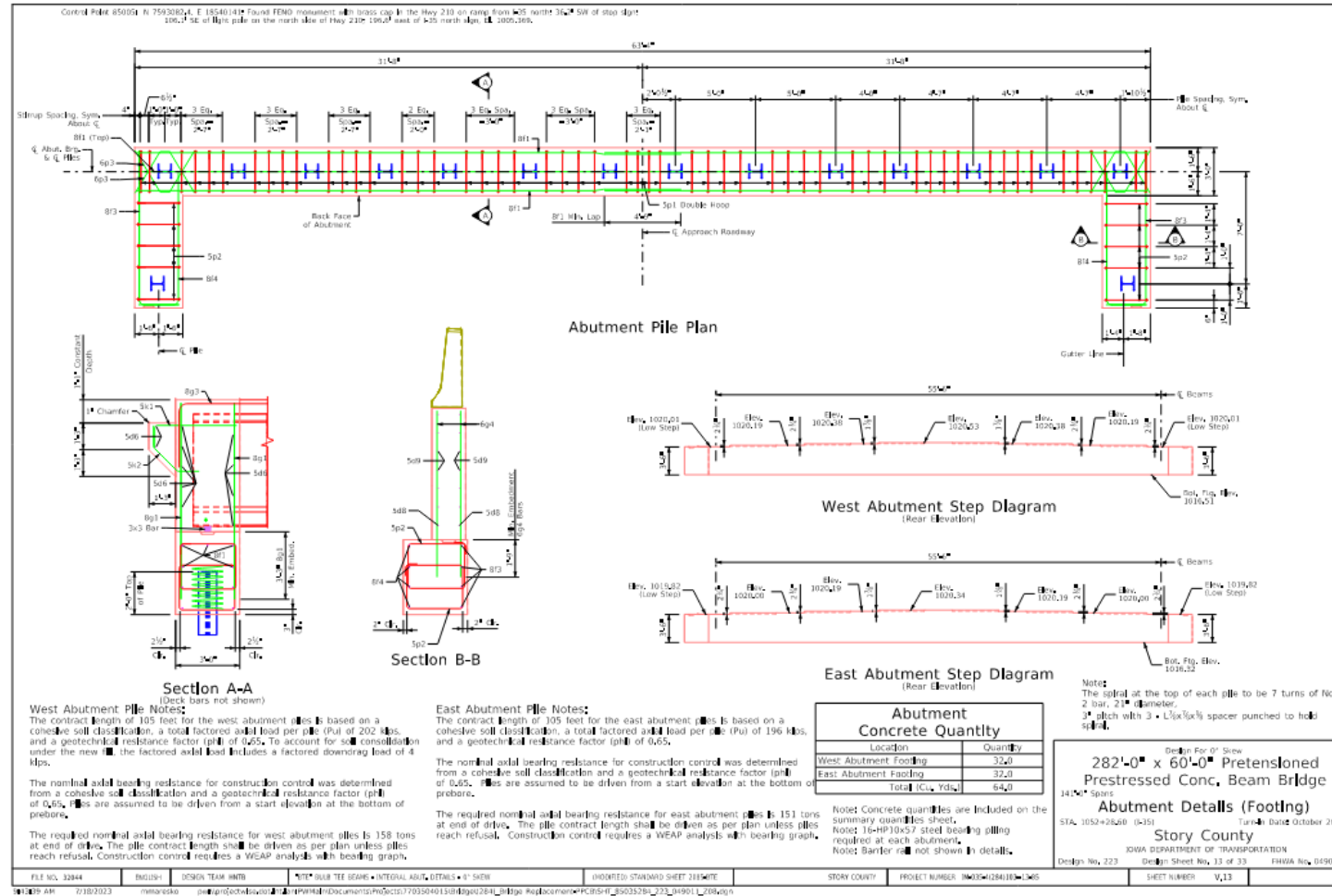
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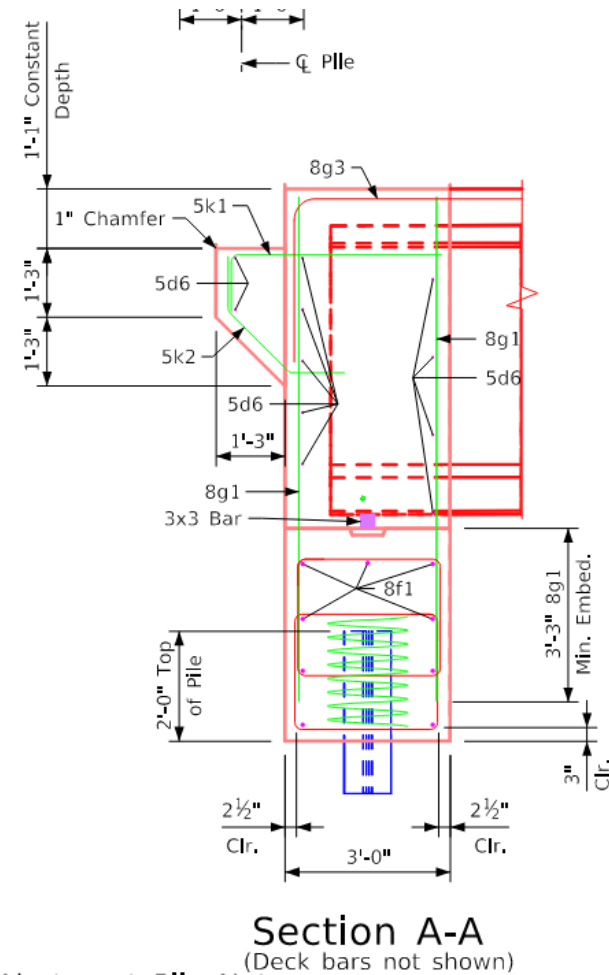
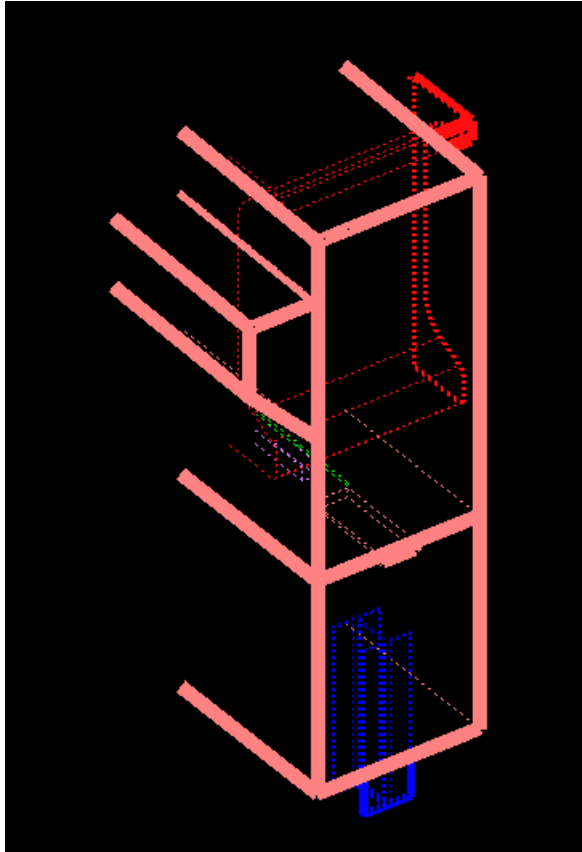
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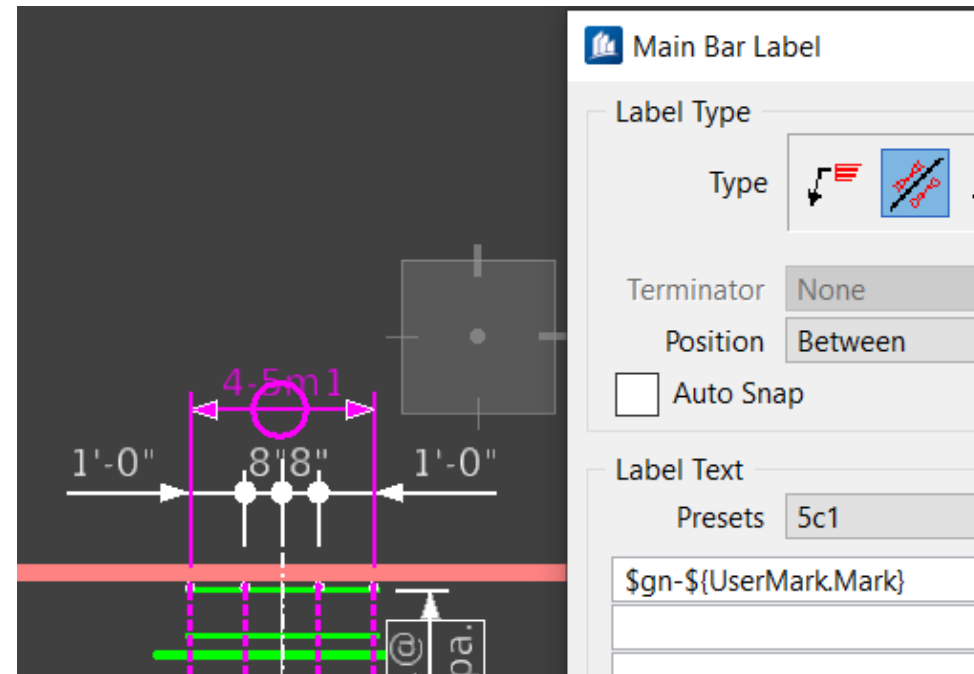
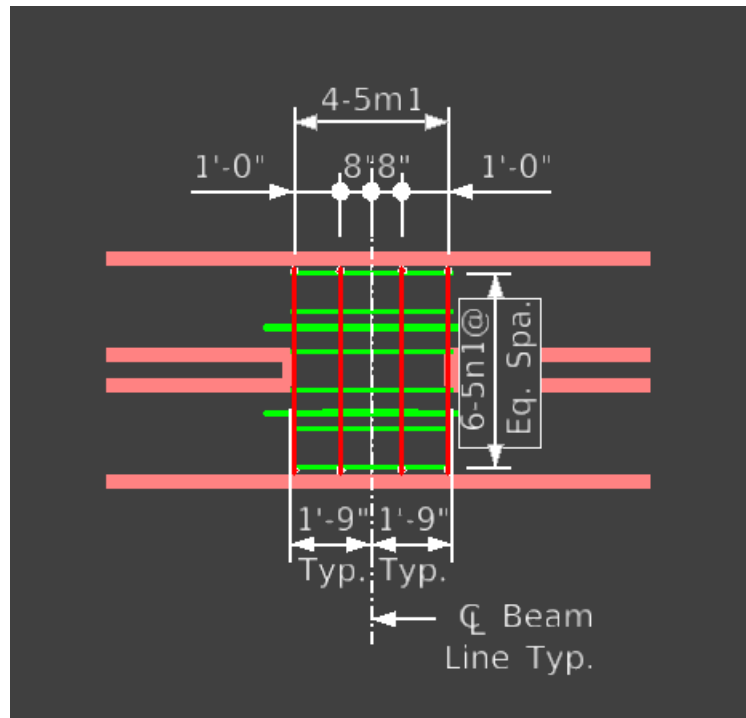
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Committee on Design, Electronic Engineering Standards



Design Interface Council, Digital project delivery



TG 15 - Data Modeling for Interoperability

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Detailing Corner

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NOVEMBER 2008

Constraints on Reinforcing Bar Modeling

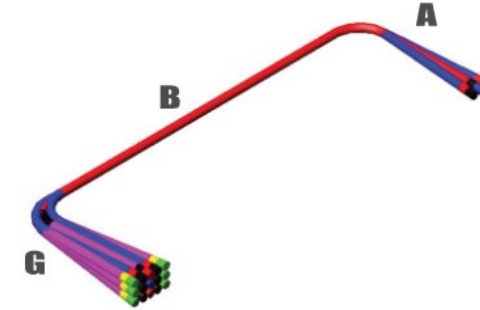


Fig. 3: Tolerances applied to the hooked bar from Fig. 2: ± 1 in. (± 25 mm) tolerance envelope on Sides A, B, and G; ± 2.5 degree in-plane angular tolerance envelope at Sides A and G; and ± 2.5 degree out-of-plane angular tolerance envelope at Side G (from Reference 4)

- Sheared length:
 - No. 3 to No. 11 = ± 1 in.;
 - (No. 10 to No. 36 = ± 25 mm);
 - No. 14 and No. 18 = ± 2 in.;
 - (No. 43 and No. 57 = ± 50 mm);
- Overall length of bars bent at each end:
 - No. 3 to No. 11 = ± 1 in.;
 - (No. 10 to No. 36 = ± 25 mm);
 - No. 14 = ± 2.5 in.;
 - (No. 43 = ± 65 mm);
 - No. 18 = ± 3.5 in.;
 - (No. 57 = ± 90 mm); and
- Angular deviation on 90-degree bends:
 - ± 2.5 degrees.

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Concrete

pw:\projectwise.dot.int.lan:PWMain\Documents\Projects\7703504015\Bridge\284_Bridge Replacement-PPCB\PS_85035284_223 Search Ribbon (F4)

File Home View Rebar Modification Data/Reporting Drawing Production Utilities Interoperability Analyze Collaborate Drawing Aids Help

Selection Move Copy Delete References Models Level Display Attach Item Detach Item Picklist Import/Export Positioning Manual Marking Schedule Generator Place Table Create Concrete Partis... Create Concrete Partis... Batch Print Reports

Common Tools Item Types Numbering

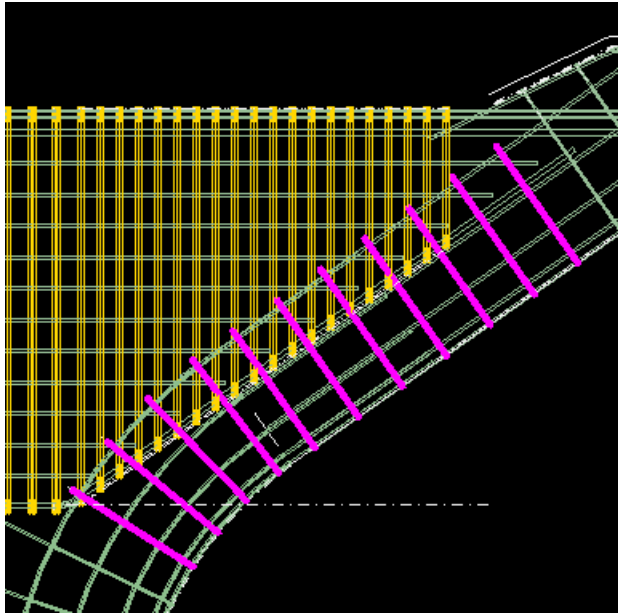
View 1 - Left, Default-3D

Manual Bar Mark Manager

☒ Group Rebar by Concrete Name ☒ Group Matching Concrete by Reinforcer ☒ Maintenance

	Conc	Conc Pos Num	Conc Qty	Que	Bar Size	Len	Gra	Co	Bar Mark	User Mark	VC	Bar She	L-E	R-E	#	A	B	C	D	E	F	G	H	J	K	O	R
	CO...	174	1	17	4	2...	60	B	4A15	4e1	T2					0'...	4'...	7'...	4'...	7'...		0'...					
	CO...	174	1	17	4	2...	60	B	4A15	4e1	T2					0'...	4'...	7'...	4'...	7'...		0'...					
	CO...	175	1	17	4	2...	60	B	4A16	4e1	T2					0'...	4'...	7'...	4'...	7'...		0'...					
	CO...	175	1	17	4	2...	60	B	4A16	4e1	T2					0'...	4'...	7'...	4'...	7'...		0'...					
	CO...	23	1	2	4	1...	60	B	4A67	4e10	+	2...				0'...	2'...	7'...	2'...			0'...	2'...		4'...	2'...	
	CO...	22	1	2	4	1...	60	B	4A67	4e11	+	2...				0'...	2'...	7'...	2'...			0'...	2'...		4'...	2'...	
	CO...	21	1	2	4	1...	60	B	4A67	4e12	+	2...				0'...	2'...	7'...	2'...			0'...	2'...		4'...	2'...	
	CO...	20	1	2	4	1...	60	B	4A67	4e13	+	2...				0'...	2'...	7'...	2'...			0'...	2'...		4'...	2'...	
	CO...	N/...	1	2	4	1...	60	B	4A45	4e14		2...				0'...	2'...	7'...	2'...			0'...	2'...		4'...	2'...	
	CO...	19	1	2	4	1...	60	B	4A67	4e14	+	2...				0'...	2'...	7'...	2'...			0'...	2'...		4'...	2'...	
	CO...	18	1	2	4	1...	60	B	4A67	4e15	+	2...				0'...	2'...	7'...	2'...			0'...	2'...		4'...	2'...	
	CO...	17	1	2	4	1...	60	B	4A67	4e16	+	2...				0'...	2'...	7'...	3'...			0'...	2'...		4'...	2'...	
	CO...	16	1	2	4	1...	60	B	4A67	4e17	G	2...				0'...	3'...	7'...	3'...			0'...	2'...		4'...	2'...	
	CO...	N/...	1	2	4	1...	60	B	4A42	4e17		2...				0'...	3'...	7'...	3'...			0'...	2'...		4'...	2'...	
	BE...		1	14	4	8'	60	B	4A56	4e18		2...				0'...	0'...	7'...	0'...			0'...	2'...		4'...	2'...	
	CO...	N/...	1	8	4	8'	60	B	4A56	4e18		2...				0'...	0'...	7'...	0'...			0'...	2'...		4'...	2'...	
	BE...	126	1	2	4	1...	60	B	4A43	4e19	R...					1...											
	CO...	315	1	17	4	5'...	60	B	4A63	4e2	T5					0'...	4'...					0'...					
	CO...	315	1	17	4	5'...	60	B	4A63	4e2	T5					0'...	4'...					0'...					
	CO...	315	1	17	4	5'...	60	B	4A63	4e2	T5					0'...	4'...					0'...					
	CO...	315	1	17	4	5'...	60	B	4A63	4e2	T5					0'...	4'...					0'...					
	CO...	315	1	17	4	5'...	60	B	4A63	4e2	T5					0'...	4'...					0'...					
	CO...	315	1	17	4	5'...	60	B	4A63	4e2	T5					0'...	4'...					0'...					
	CO...	315	1	17	4	5'...	60	B	4A63	4e2	T5					0'...	4'...					0'...					
	CO...	315	1	17	4	5'...	60	B	4A63	4e2	T5					0'...	4'...					0'...					
	CO...	315	1	17	4	5'...	60	B	4A63	4e2	T5					0'...	4'...					0'...					

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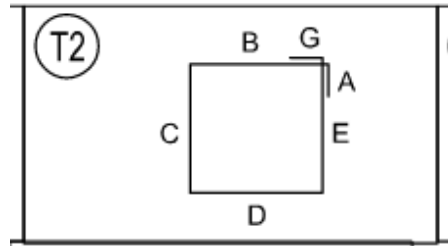
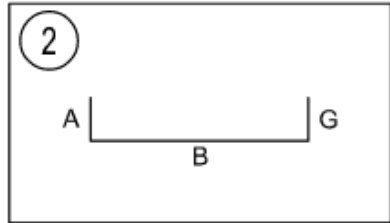


Manual Bar Mark Manager

☒ Group Rebar

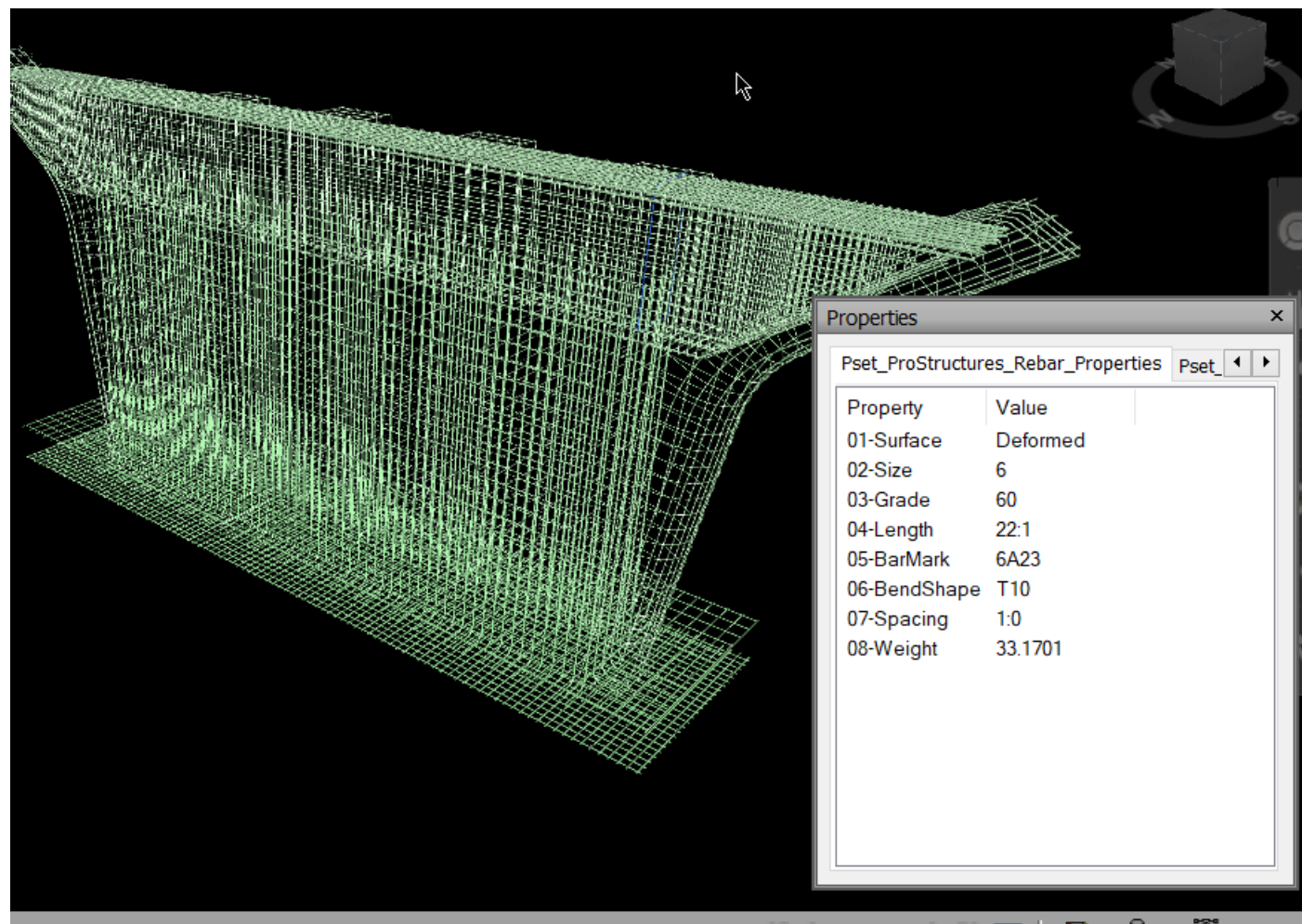
	Conc	Conc Pos Num	Conc Qty	Que	Bar Size	Len	Gra	Coef	Bar Mark	User Mark	VC	Bar Share	
	CO...	N/...	1	2	4	1...	60	B	4A42	4e17		2...	
	BE...		1	14	4	8'...	60	B	4A56	4e18		2...	
▶	CO...	N/...	1	8	4	8'...	60	B	4A56	4e18		2...	
	BE...	126	1	2	4	1...	60	B	4A43	4e19		R...	
	CO...	245	4	47	4	5'...	60	B	4A42	4e17		2...	

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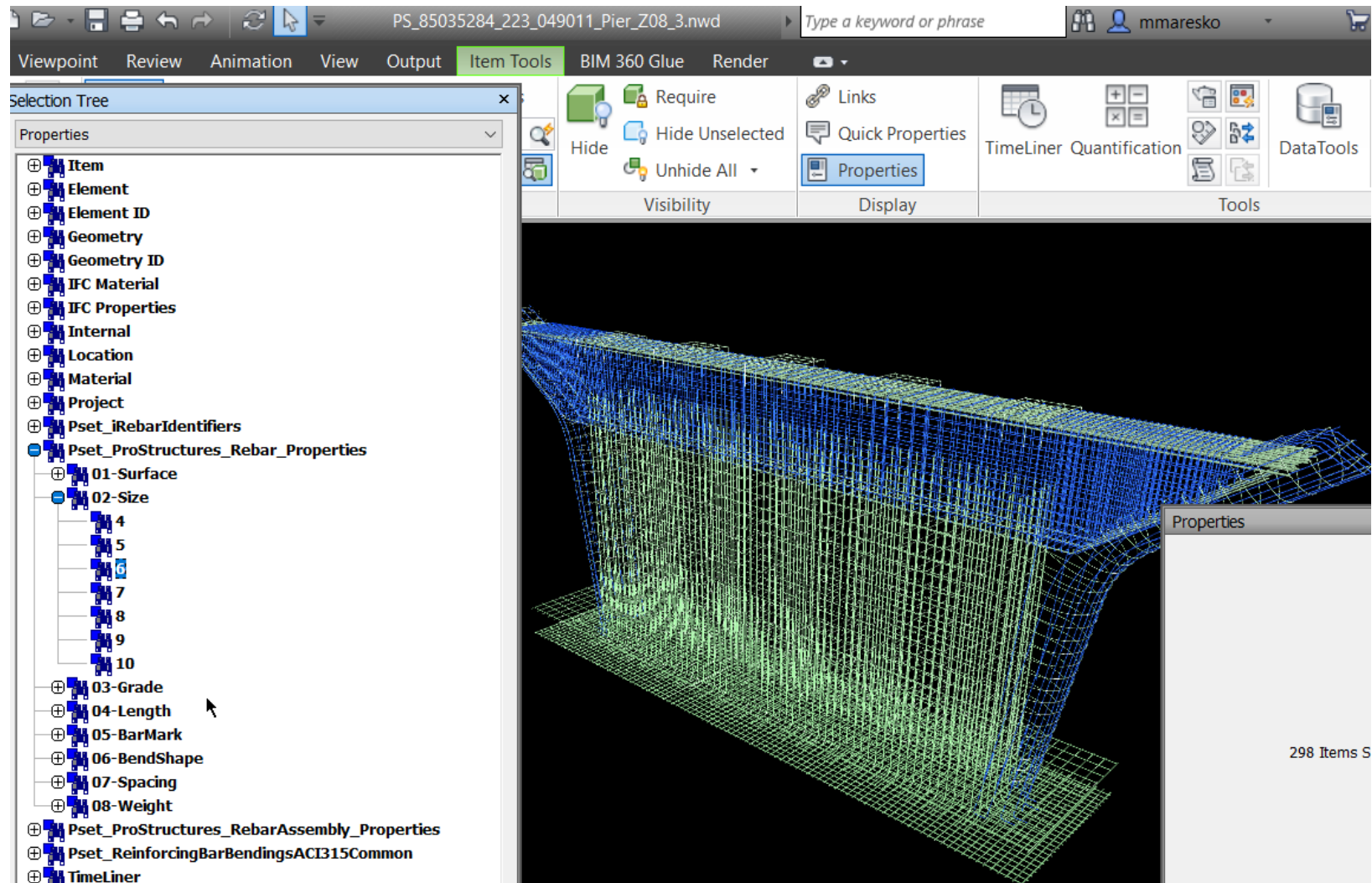


SIZE	LGTH	BAR MARK	VC	BND SHP	#	Bending Dimensions									Remarks
						A	B	C	D	E	G	H	J	K	
10	8'-10"	10d2		2		1'-10"	7'-0"								Pin Dia.=10 ³ / ₄ "
8	36'-8"	8b1		19			10'-7 ¹ / ₄ "	26'-0 ³ / ₄ "				6'-1 ¹ / ₂ "		8'-8 ¹ / ₄ "	Pin Dia.=6"
6	22'-2"	6c1		T2		1'-0"	7'-0"	3'-1"	7'-0"	3'-1"	1'-0"				Pin Dia.=4 ¹ / ₂ "
6	6'-0"	6a3		C1		10"	1'-8"								Pin Dia.=4 ¹ / ₂ "
6	6'-7"	6a4		C1		1'-1"	2'-3"								Pin Dia.=4 ¹ / ₂ "
6	6'-9"	6a5		C1		1'-2"	2'-5"								Pin Dia.=4 ¹ / ₂ "
6	6'-6"	6d3		30			1'-0"	5'-6"				1'-0 ³ / ₄ "		0'-1 ¹ / ₄ "	Pin Dia.=4 ¹ / ₂ "
5	7'-8"	5m1		S10			1'-8"	4'-4"	1'-8"						Pin Dia.=2 ¹ / ₂ "
5	5'-11"	5c6		2		0'-10"	4'-2 ³ / ₄ "				0'-10"				Pin Dia.=2 ¹ / ₂ "
5	4'-11"	5c5		2		0'-10"	3'-3 ¹ / ₂ "				0'-10"				Pin Dia.=2 ¹ / ₂ "
5	3'-6"	5c4		2		0'-10"	1'-10 ¹ / ₄ "				0'-10"				Pin Dia.=2 ¹ / ₂ "
4	25'-6"	4e1		T2		0'-4 ¹ / ₂ "	4'-5"	7'-11 ³ / ₄ "	4'-5"	7'-11 ³ / ₄ "	0'-4 ¹ / ₂ "				Pin Dia.=2"
4	5'-7"	4e2		T5		0'-6"	4'-5"				0'-8"		0'-4"		Pin Dia.=2"

Iowa Pilot Project IA 210 over I-35



Iowa Pilot Project IA 210 over I-35



Iowa Pilot Project IA 210 over I-35

- Things that went well
 - Pier modeling
 - Abutment modeling
 - OBM components
 - Deck modeling
 - Civil labeler

Iowa Pilot Project IA 210 over I-35

- Challenges Opportunities for Improvement
 - Haunch thickness report
 - Cambering
 - Feature symbology.
 - Deck report, Bentley was responsive to our needs.

Iowa Pilot Project IA 210 over I-35

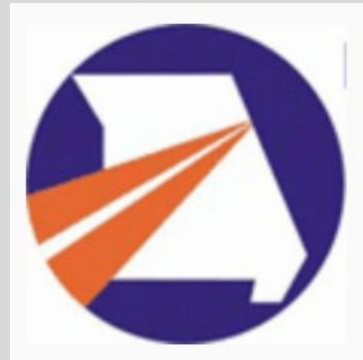
- The Future
 - Working with data
 - Win-win path for adoption
 - Reduced rework and RFIs.
 - Potential for Automation
 - Shortened schedules, accommodating changes later in design.





Questions?

Mark Maresko
mmaresko@hntb.com



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