



Bridge & Culvert Structures Inspection

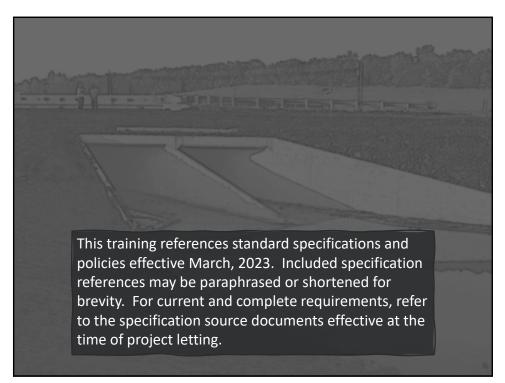


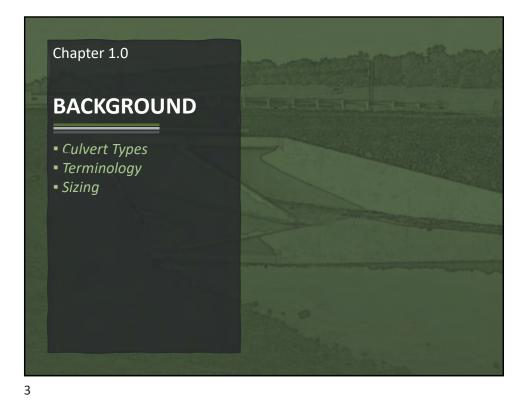


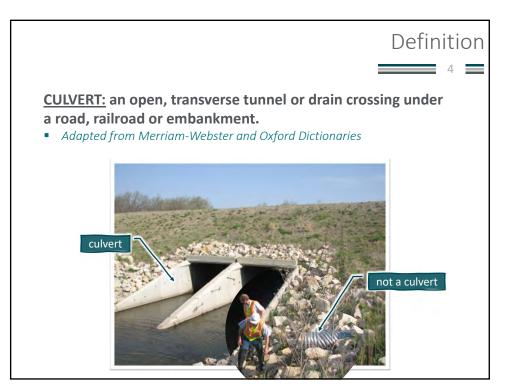
INTRODUCTION

CULVERTS

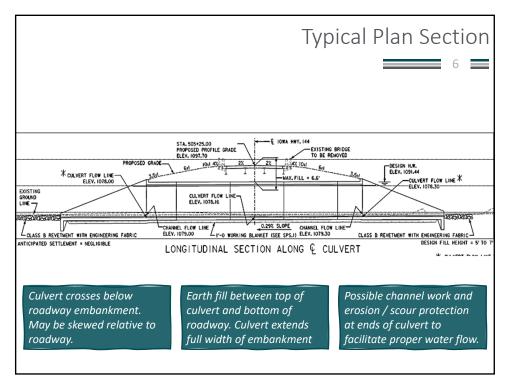


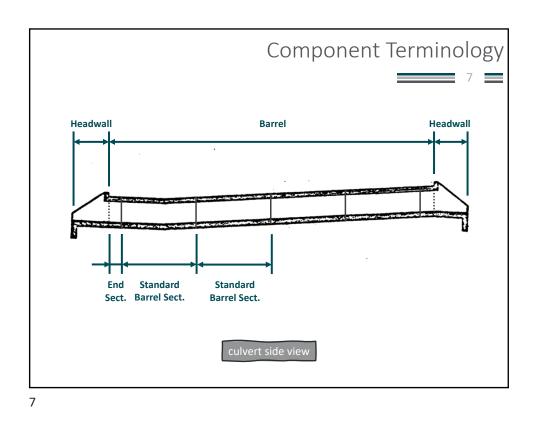


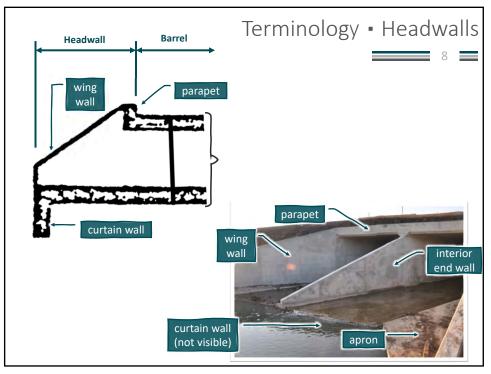


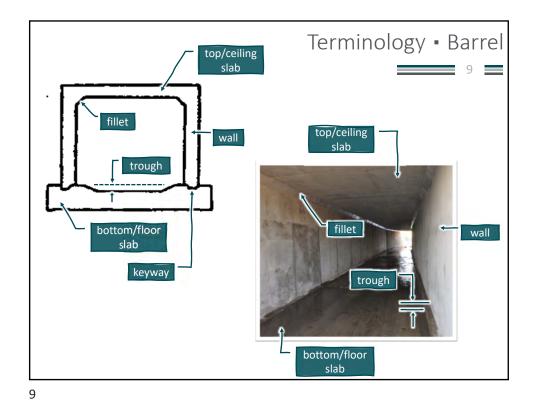


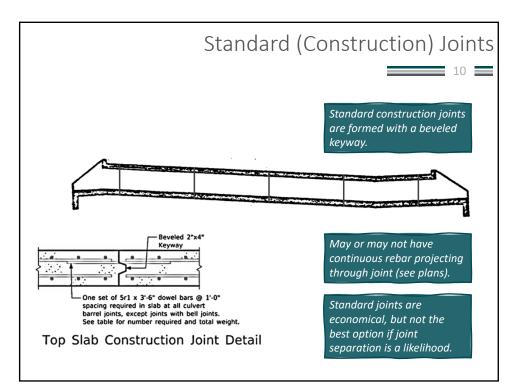


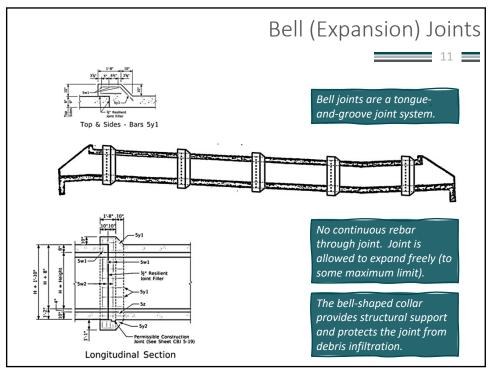


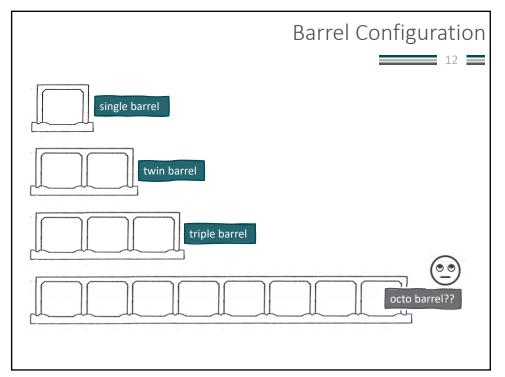


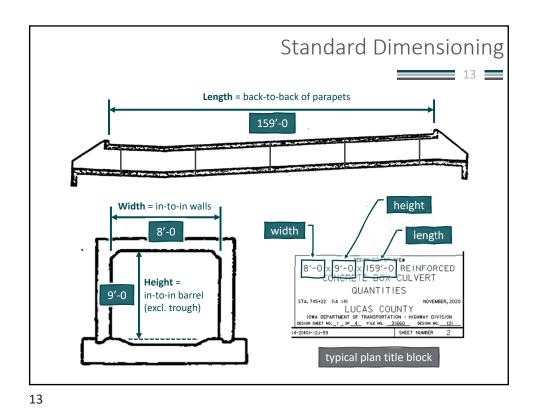


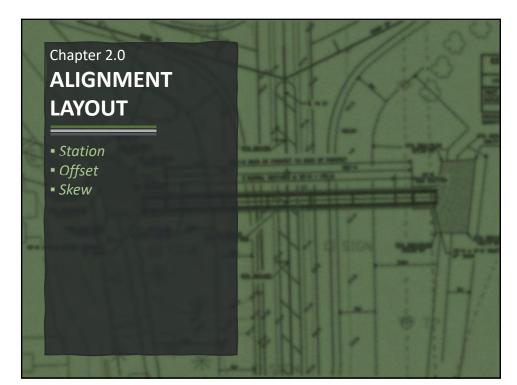


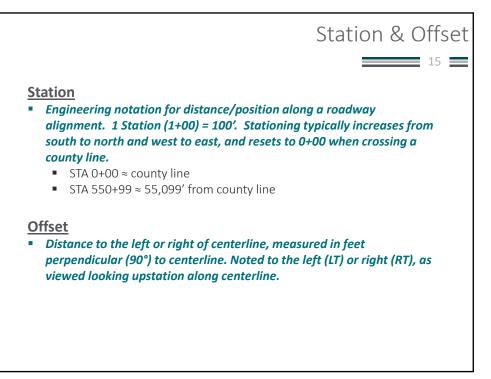


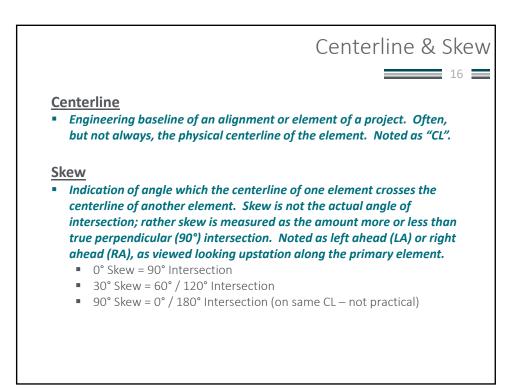


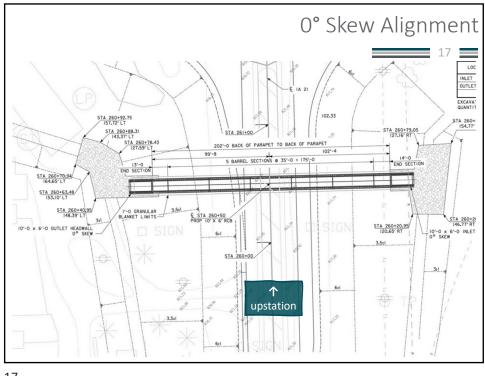




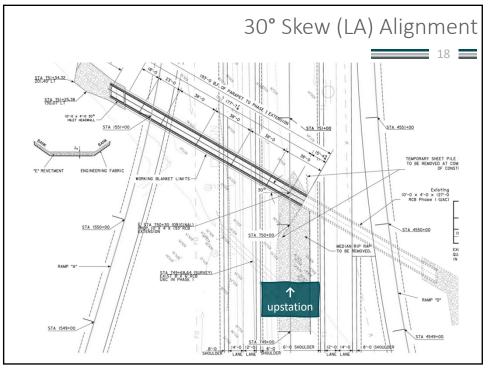


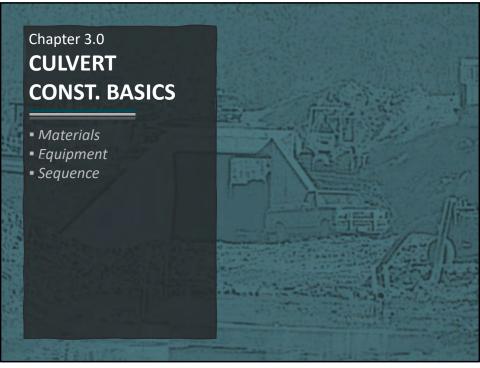










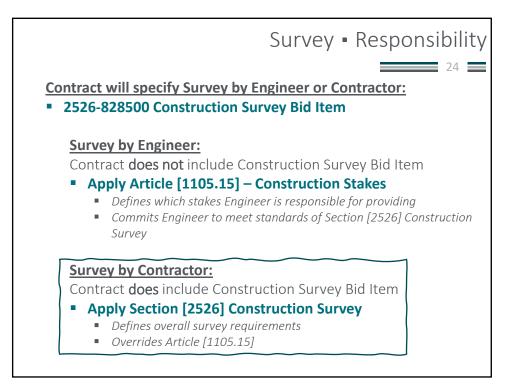


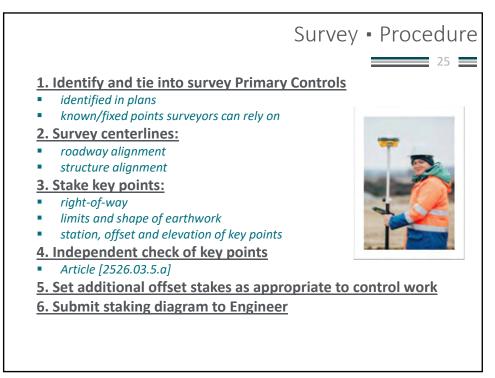


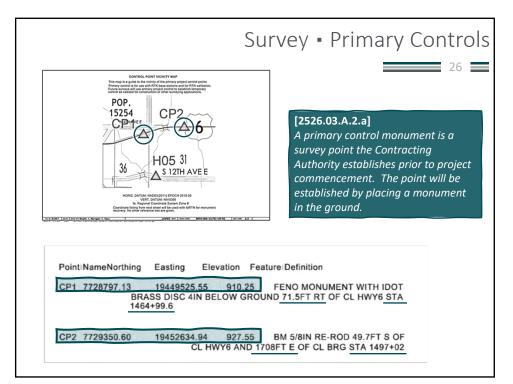


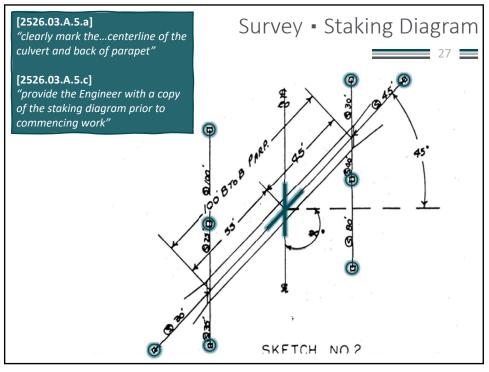


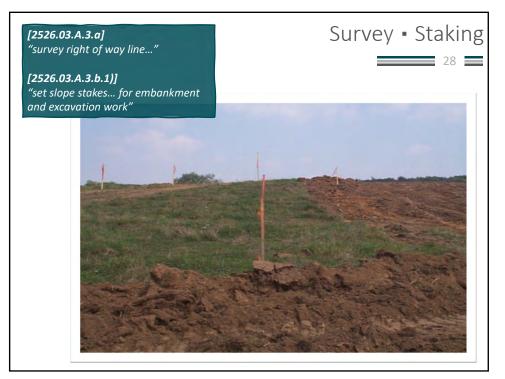


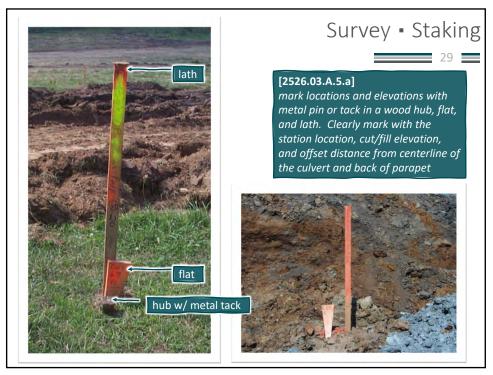


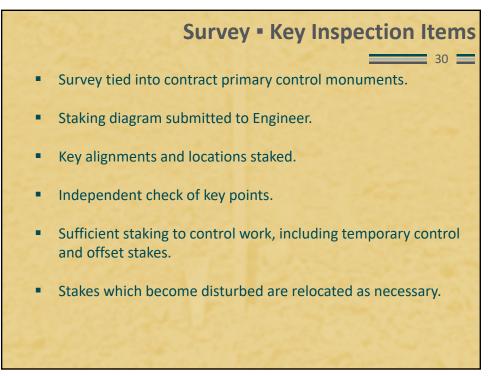








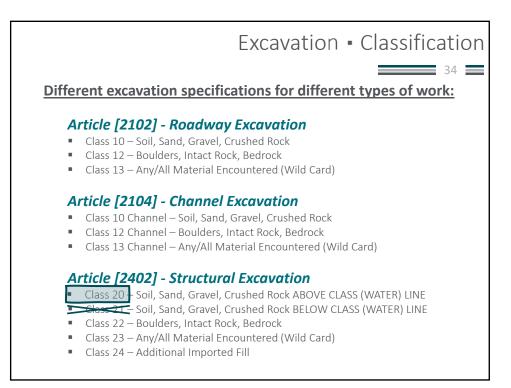


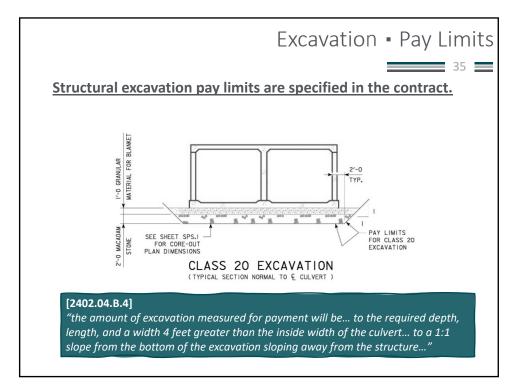


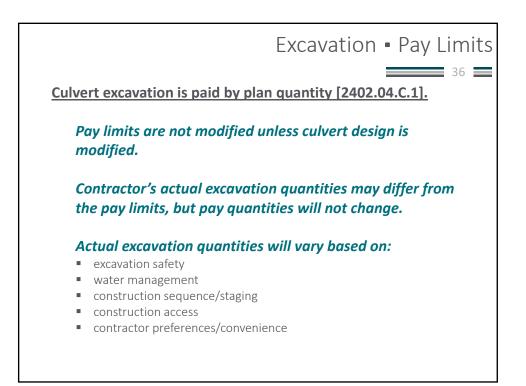


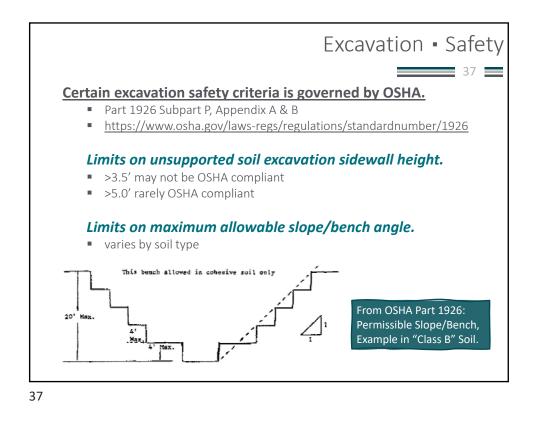


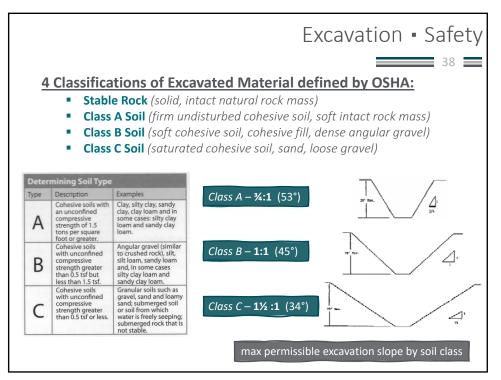






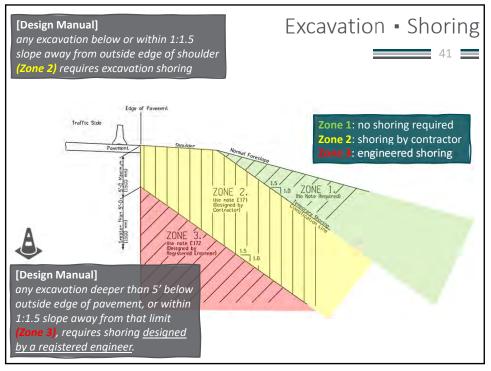


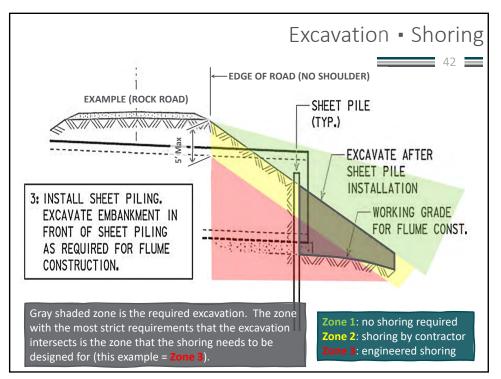


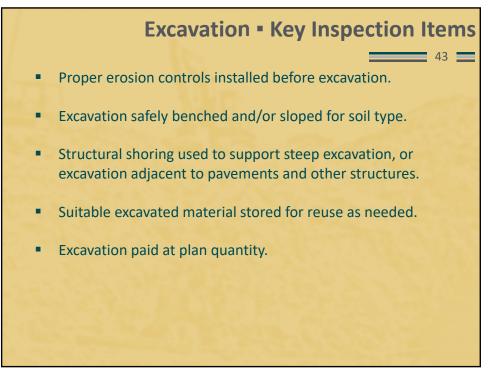
















[2402.03.C.1]

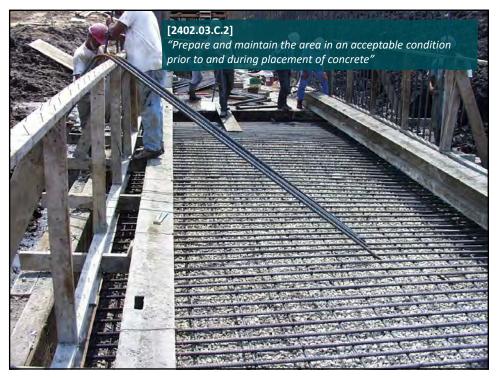
...the footing shall rest on firm earth... take special care not to disturb the bottom of the excavation..."

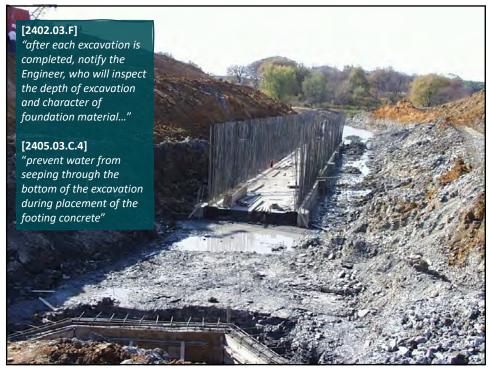
[2402.03.C.2]

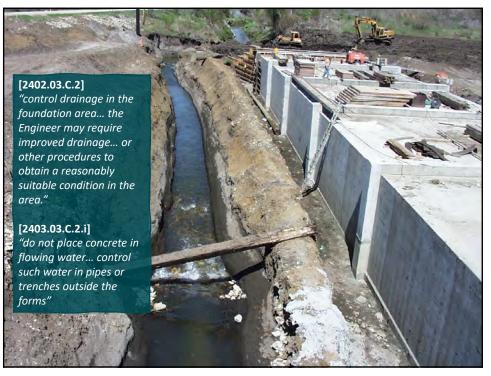
"…reduce moisture and mud problems to a practical minimum... The Engineer may require... removal of mud, filling with suitable material, or other procedures..."

[2402.03.C.3]

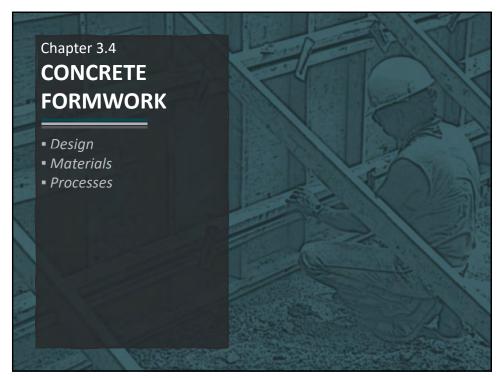
"If the foundation material is unsuitable, the Engineer may direct that the foundation be over excavated and backfilled ... "

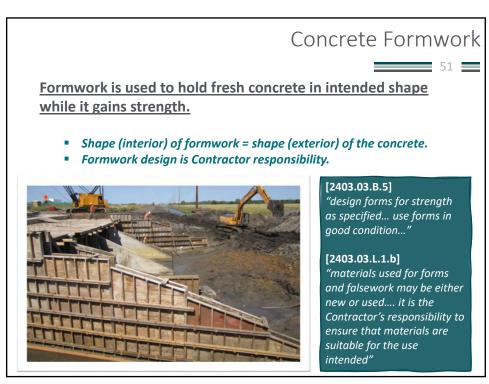




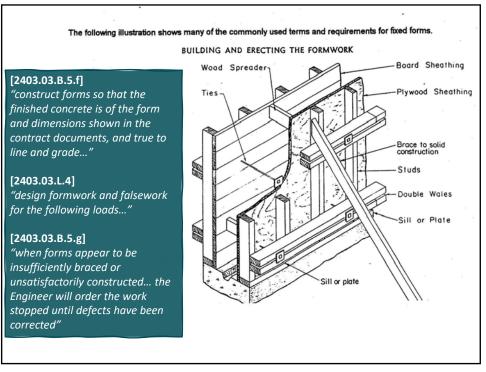


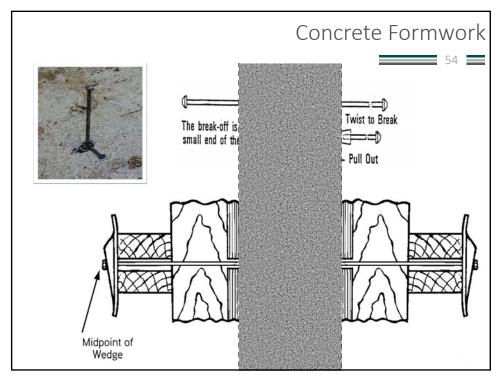














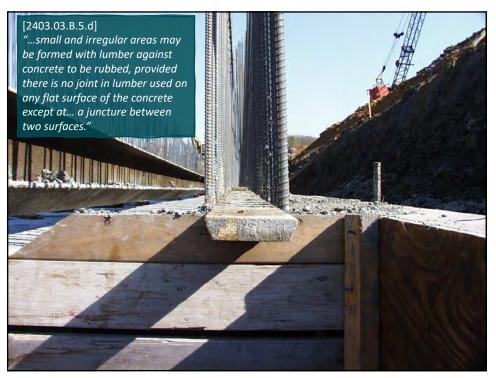








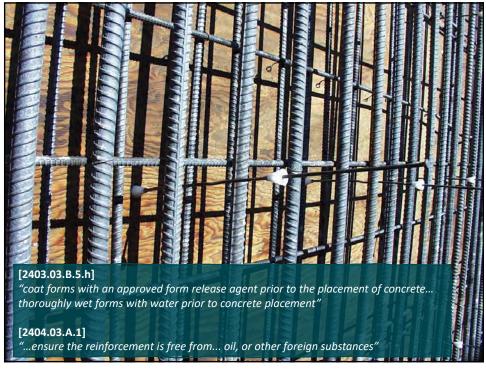












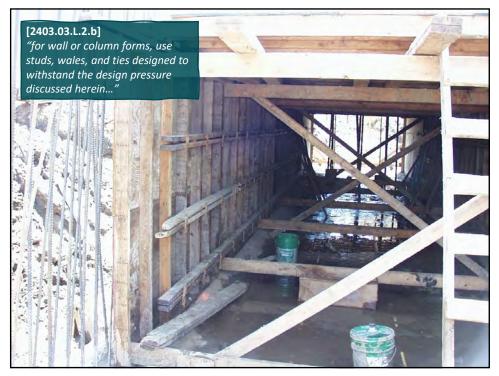


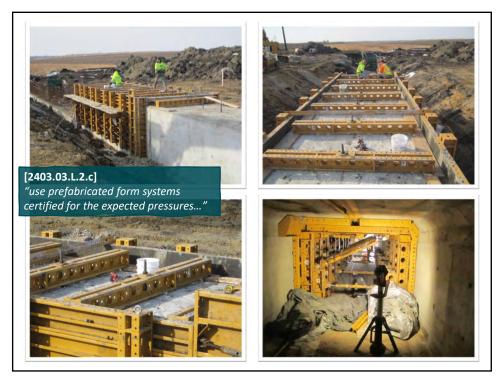


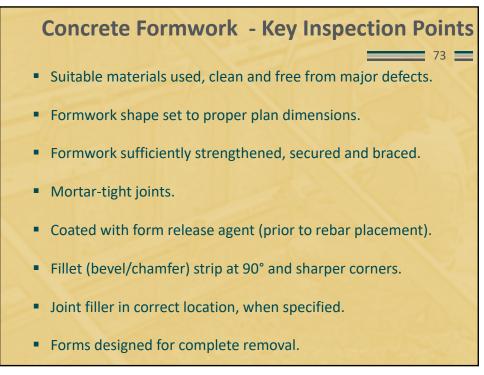




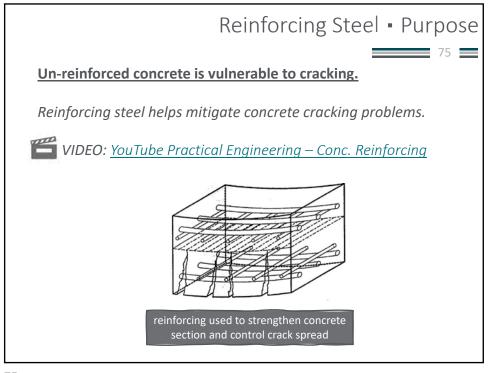


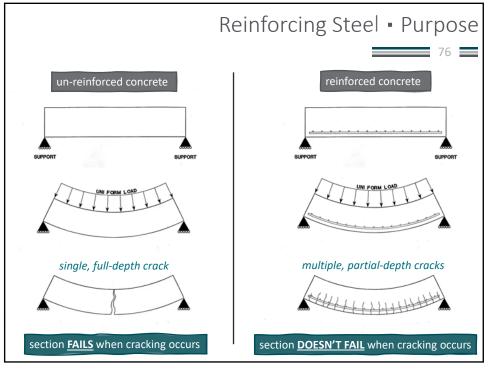


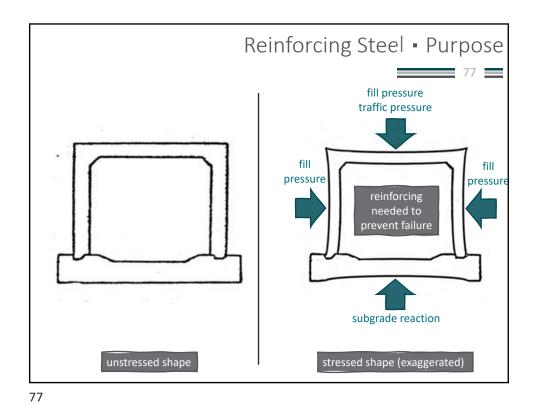




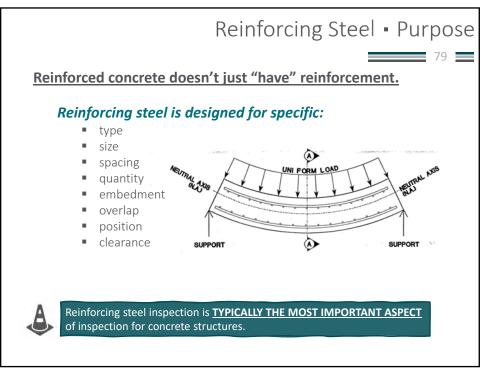


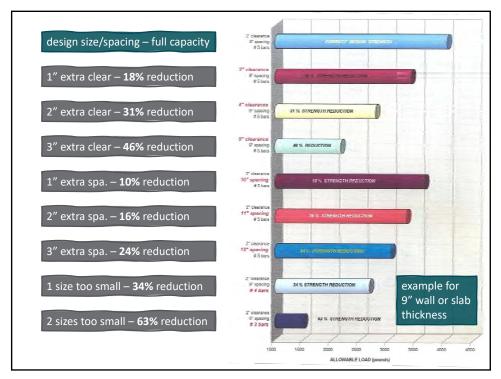


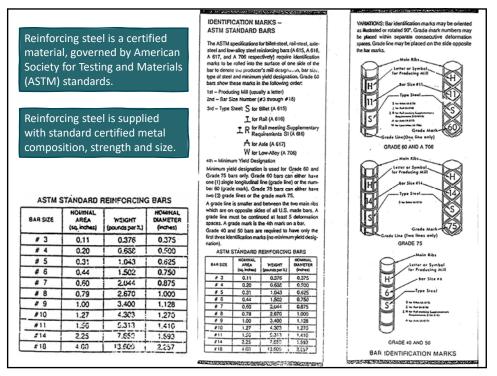




Reinforcing Steel • Purpose 78 Reinforced concrete is a composite material. Concrete economical, durable strong in compression . weak in tension (cracks easily) **Reinforcing Steel** . much more expensive per weight/volume less durable (corrosion) very strong in compression very strong in tension (stretches w/o cracking) **Reinforced Concrete:** steel adds strength to system steel alleviates/controls concrete cracking н. concrete provides corrosion protection to steel











[2404.03.D.5]

"in floors of culverts and in other footings without piling, suspend reinforcement from cross wales above the tops of the forms... or on chairs"

[2404.03.E.3]

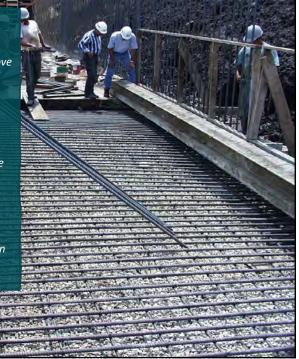
"do not use concrete block inserts, bricks, stones, wood blocks, wood stakes, and similar materials to support reinforcement if by their use they may become embedded in the concrete"

[2404.03.E.5]

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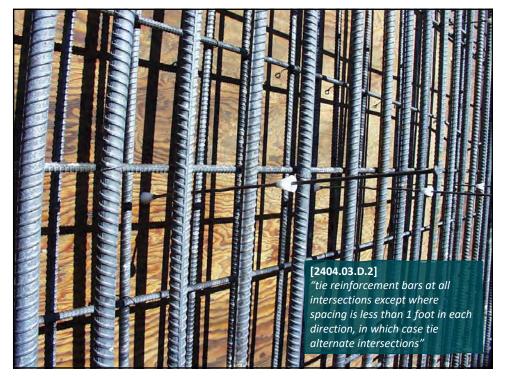
"use a support system with spacing not to exceed 4 feet in each direction for bolsters... and 3 feet in each direction for individual bar chairs"

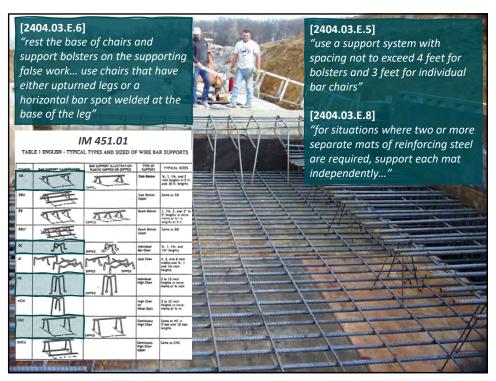


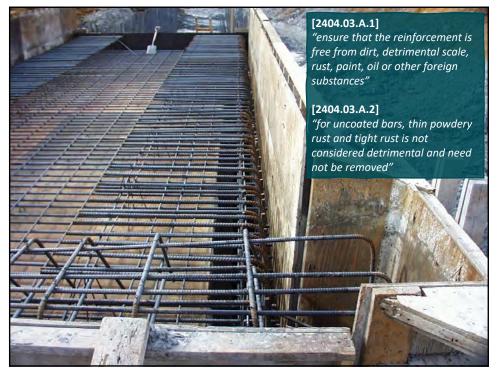


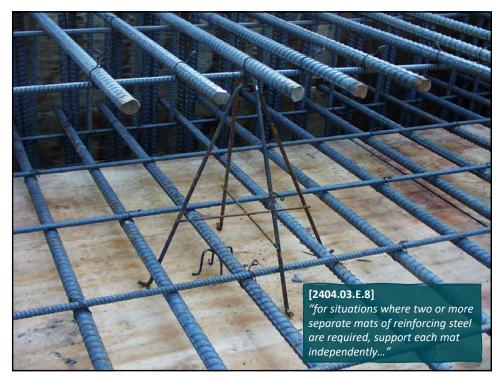


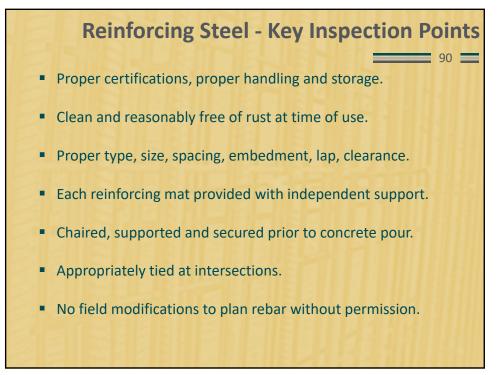




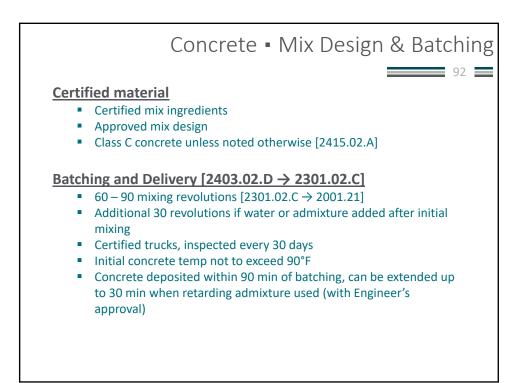


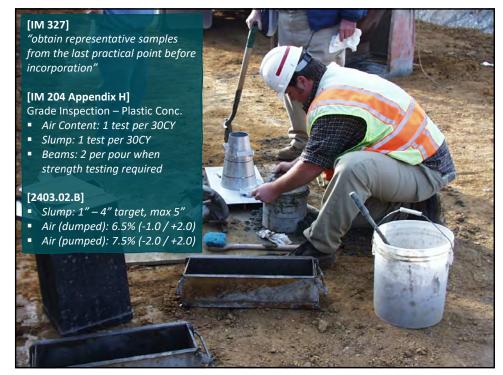










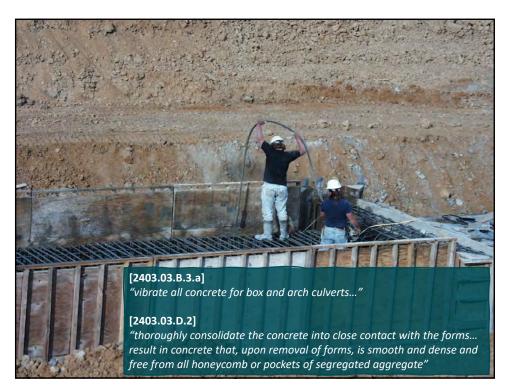


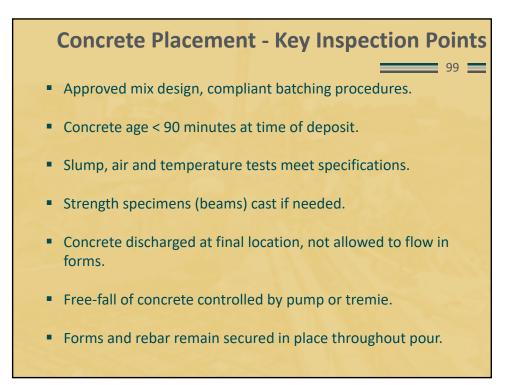


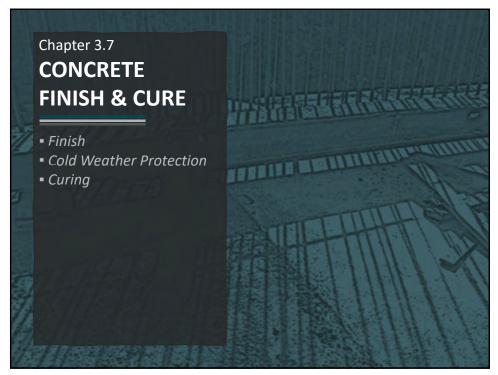




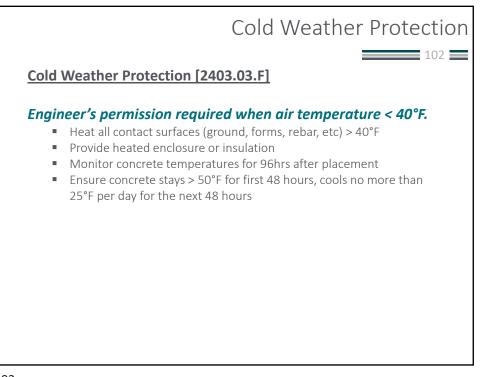


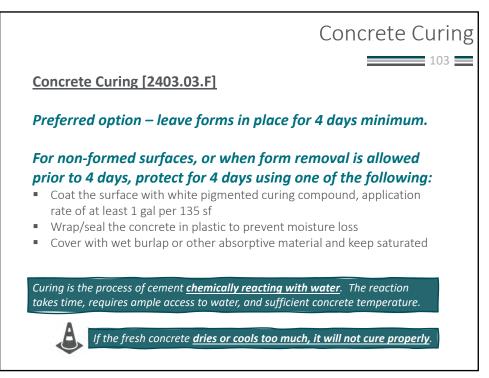






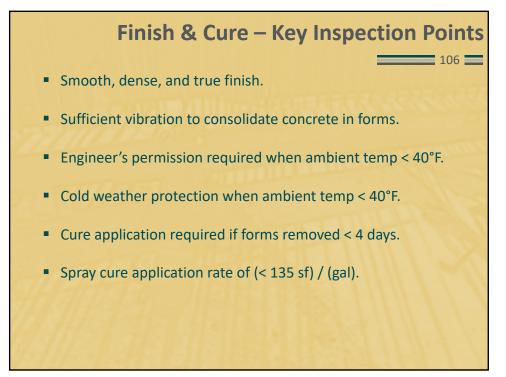




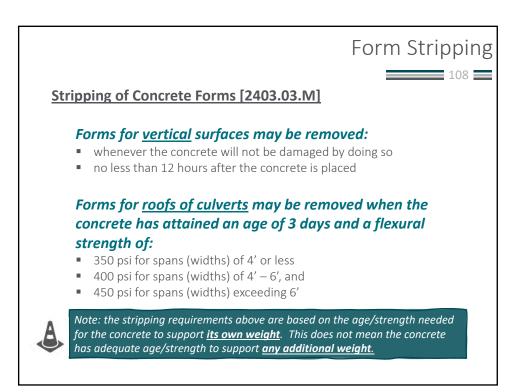


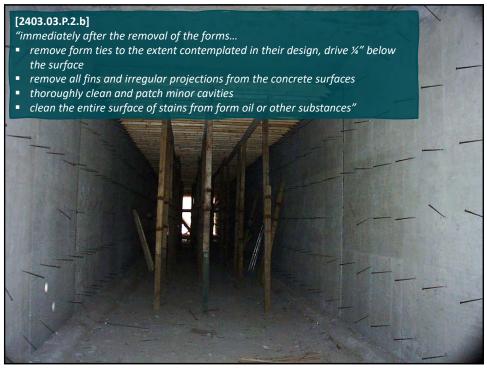




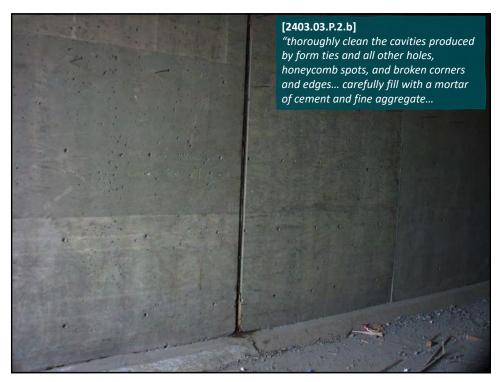


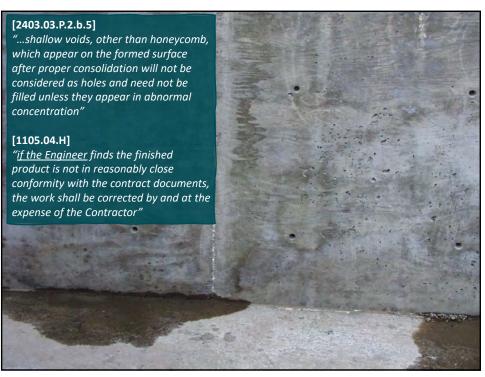




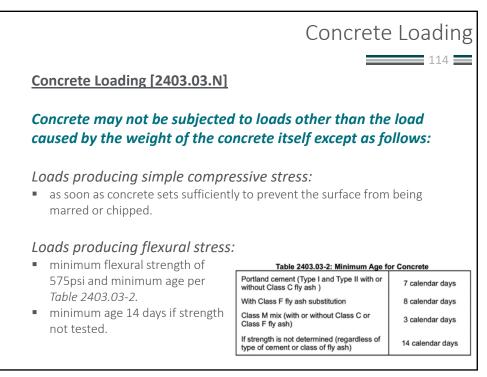






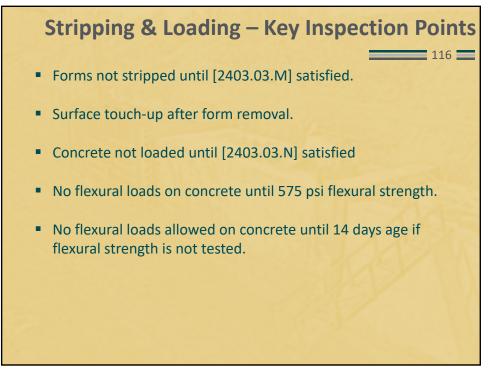


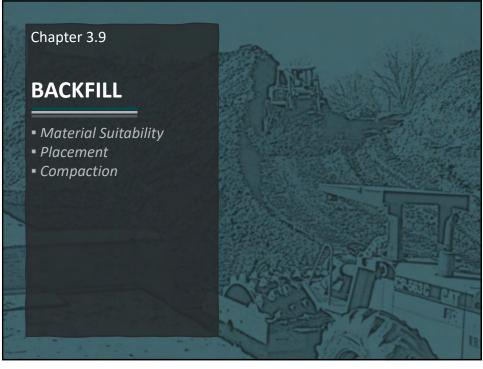


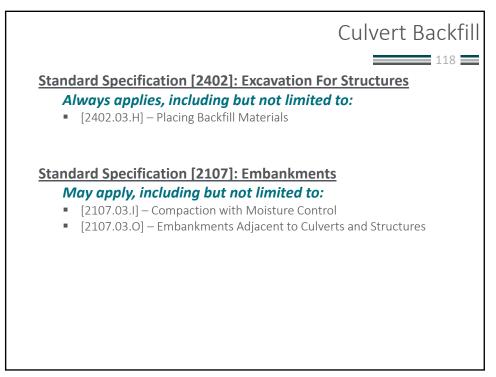


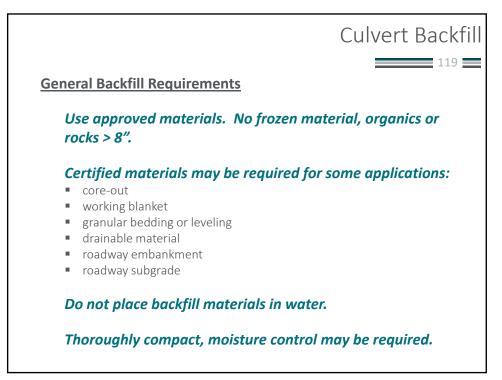


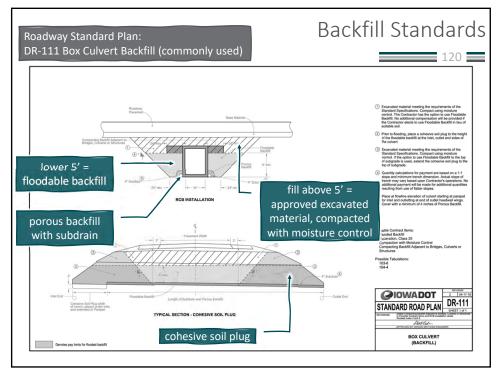
















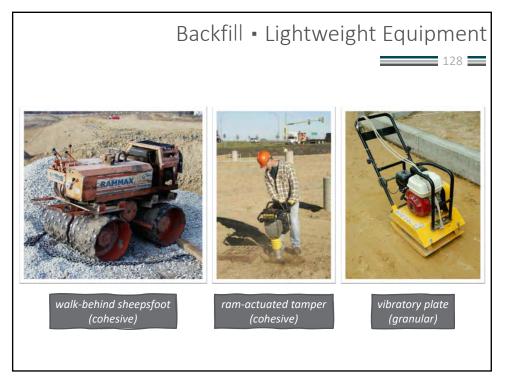










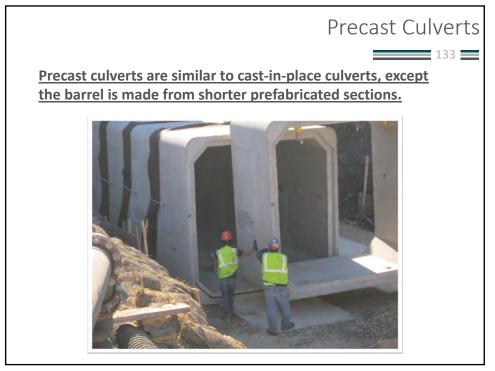


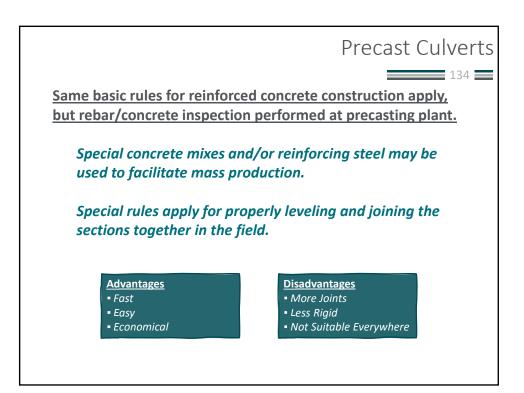




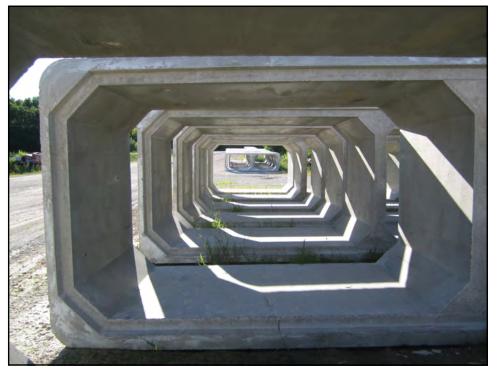








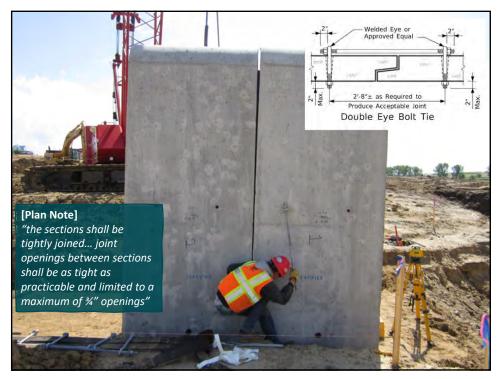


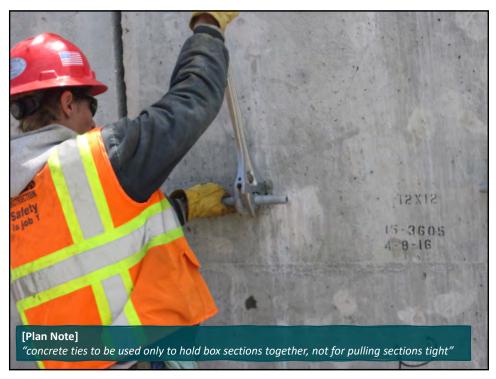






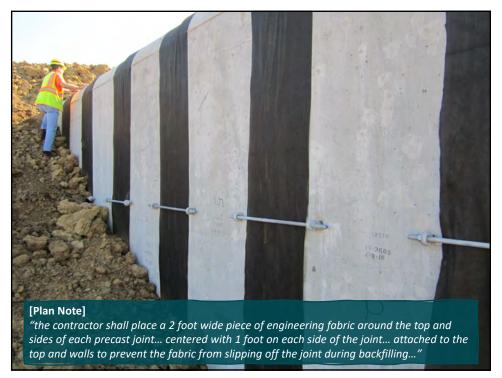










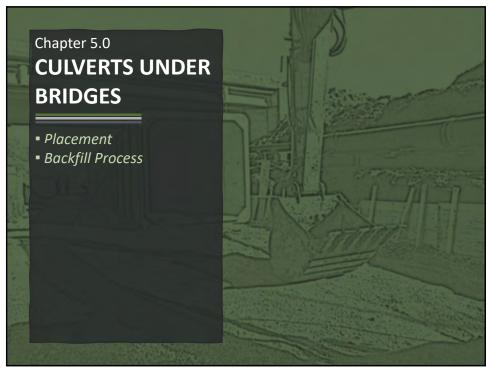




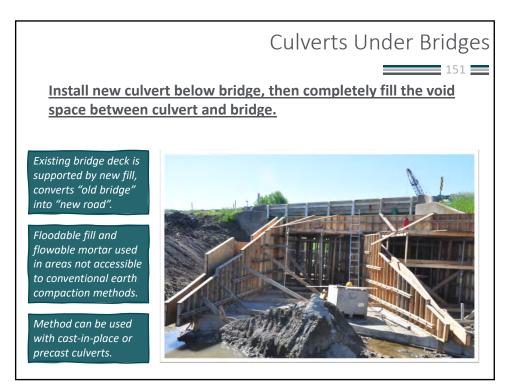












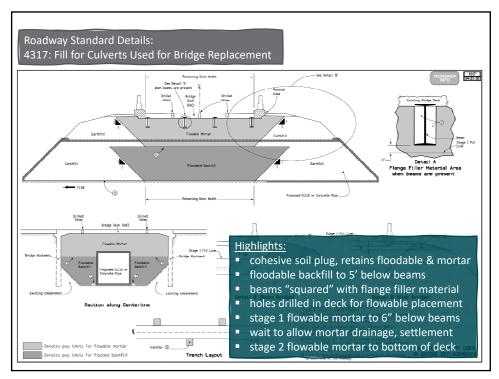




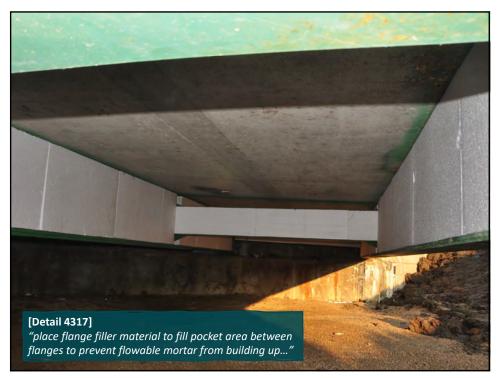
















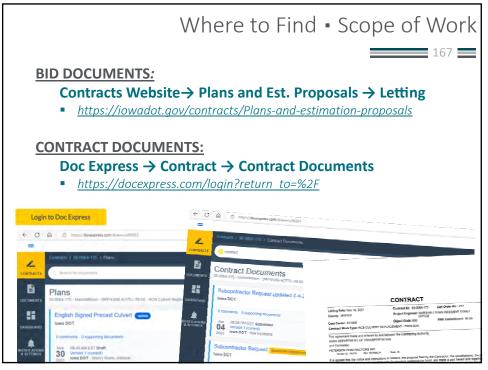


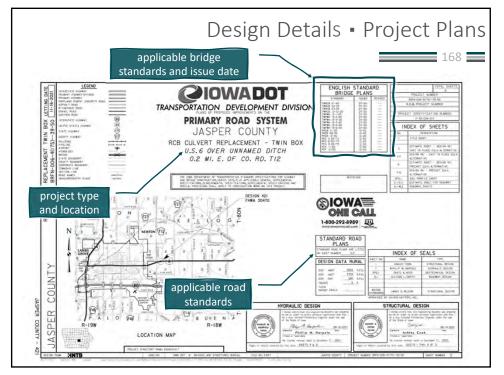


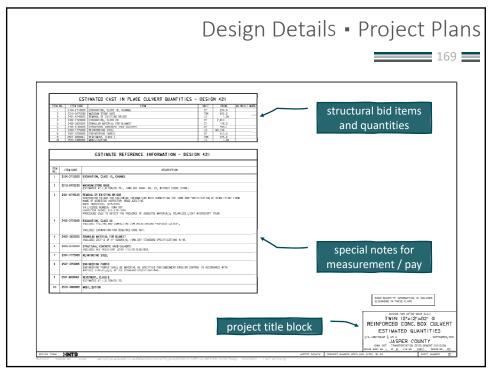


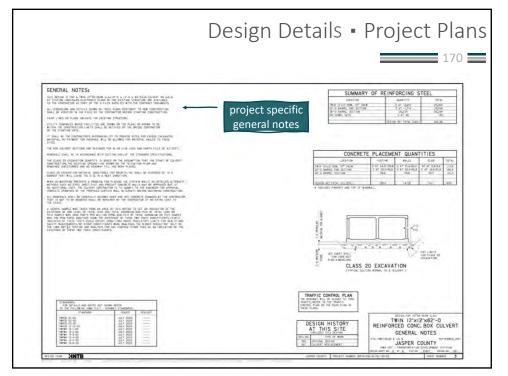


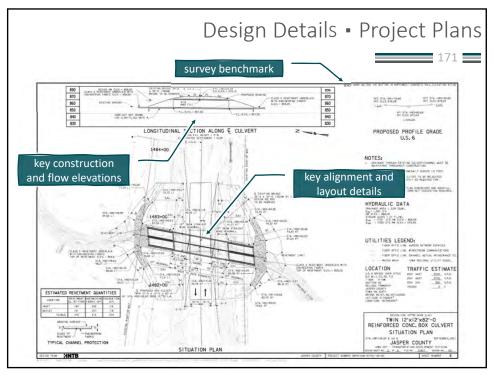


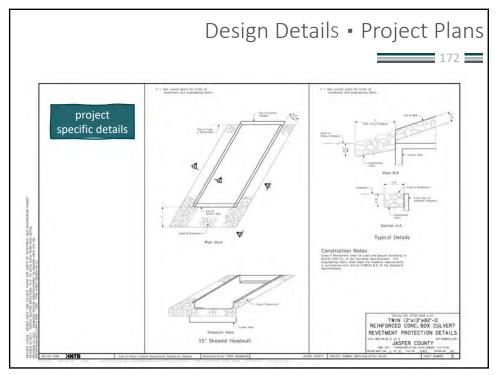


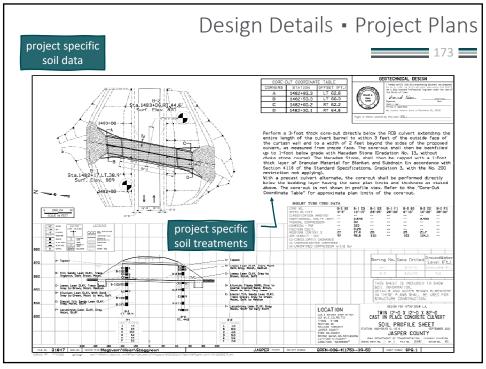


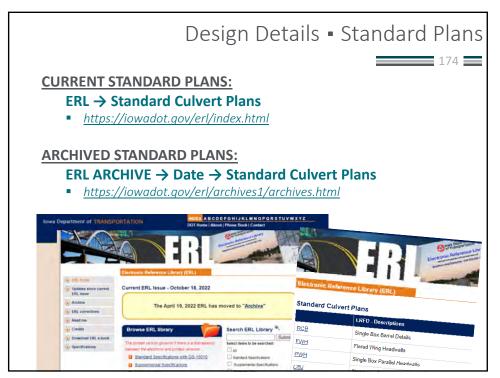


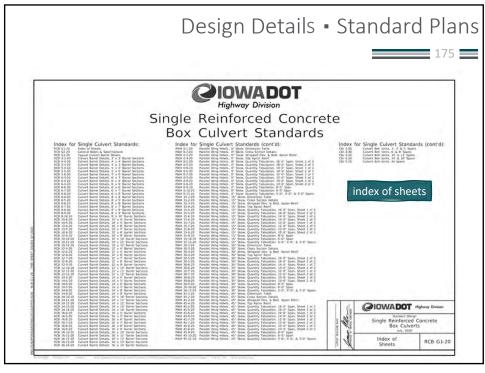


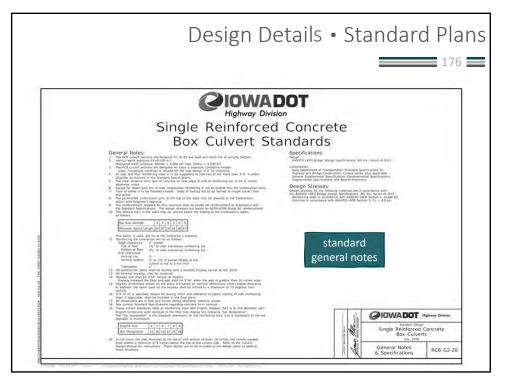


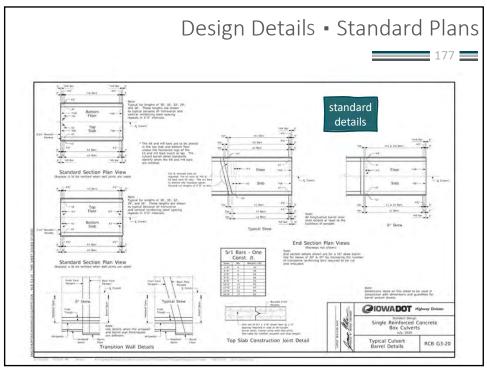


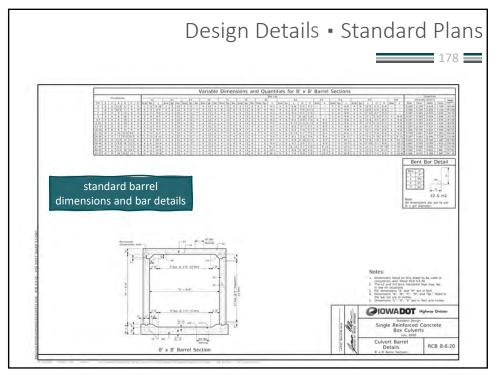


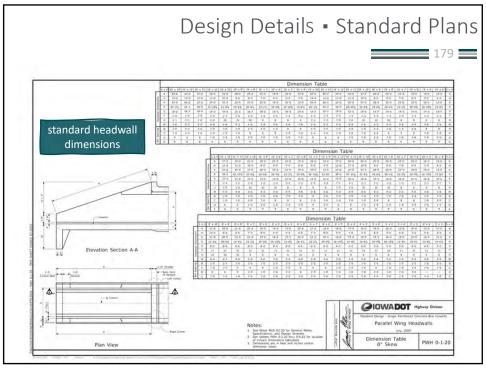


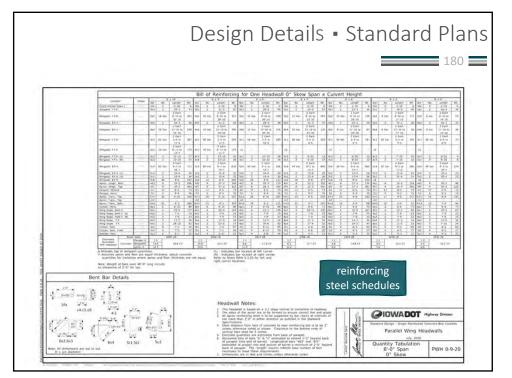


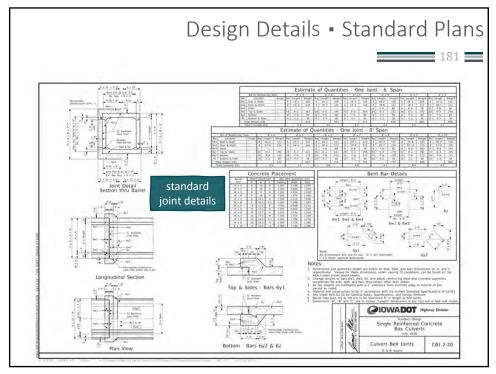


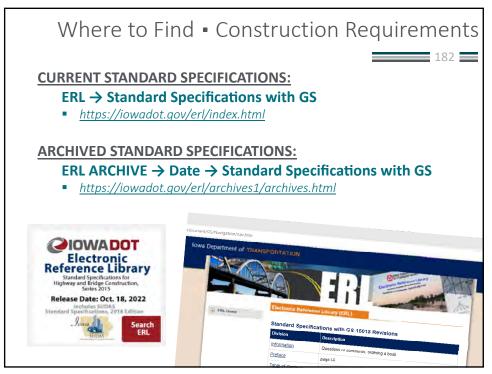


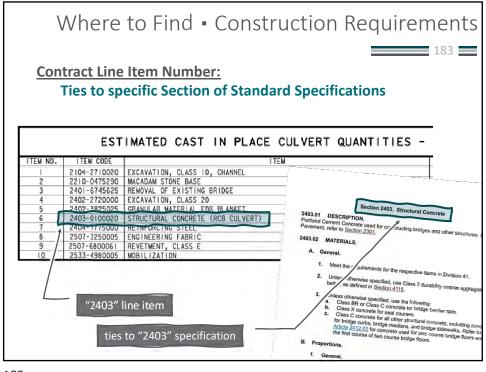


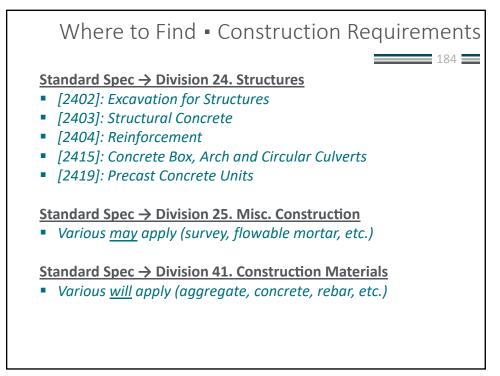


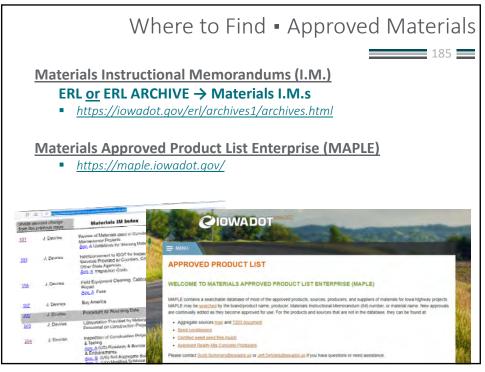


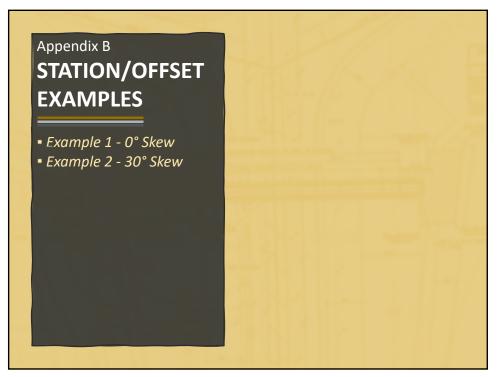


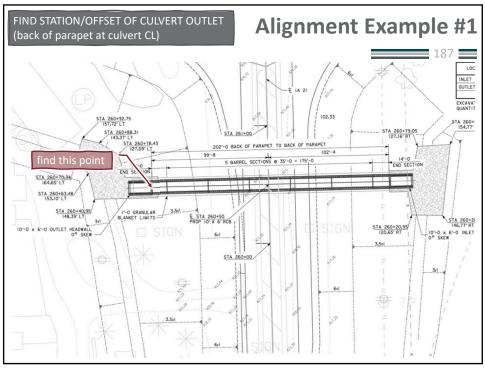


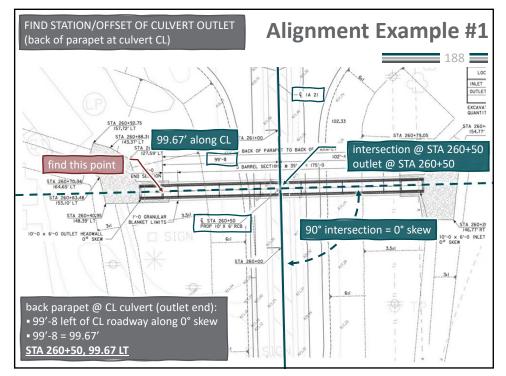


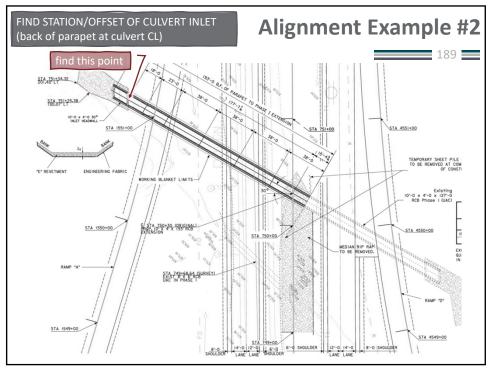


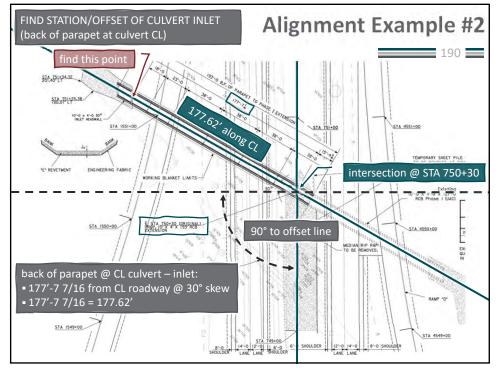


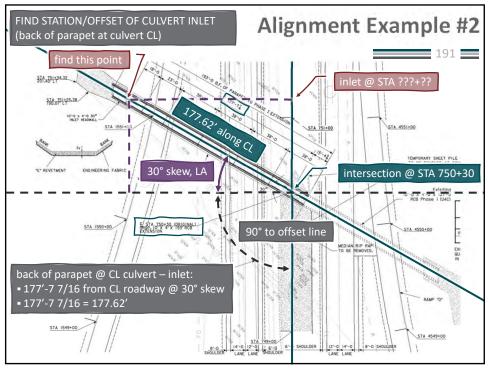


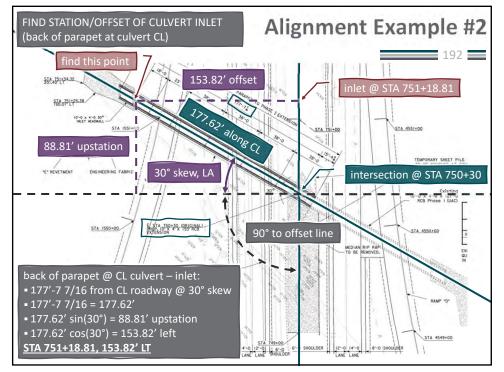




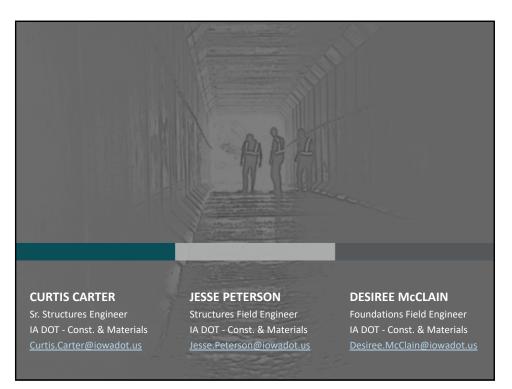












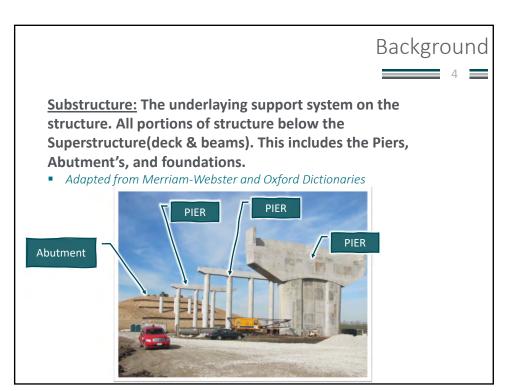
SUBSTRUCTURE





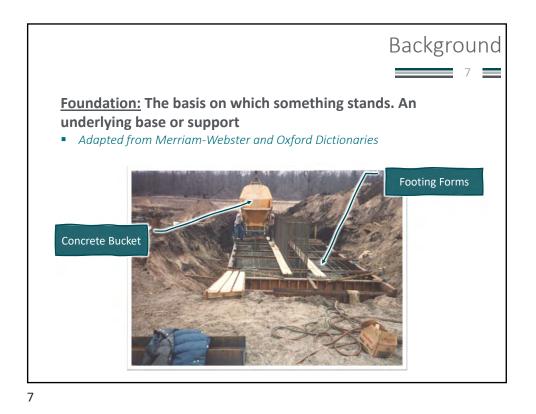


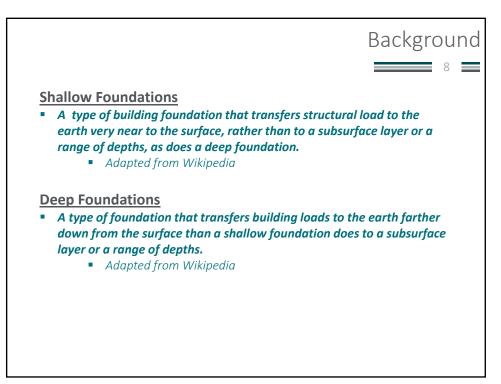


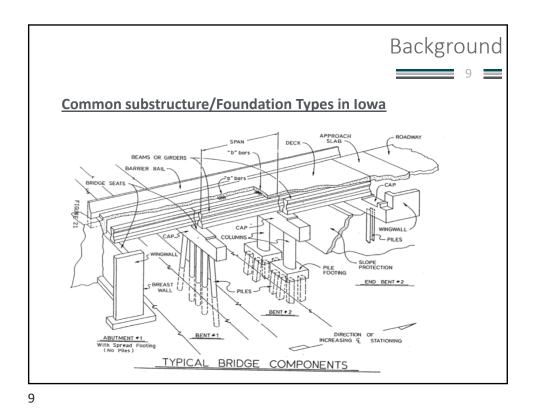


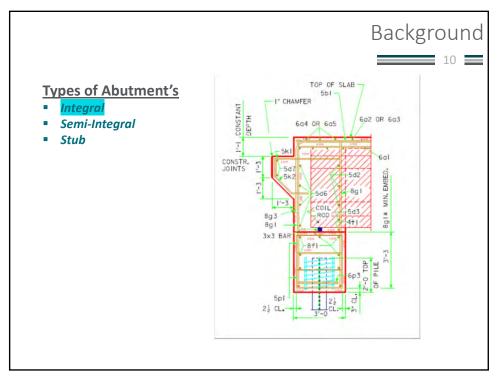




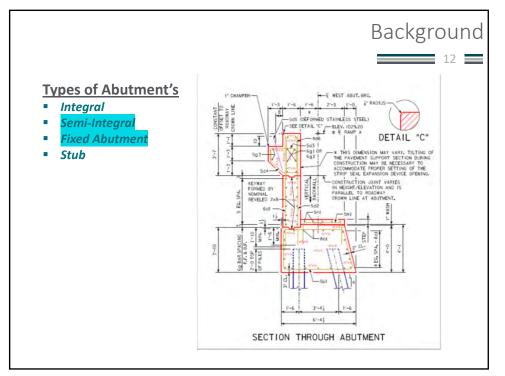


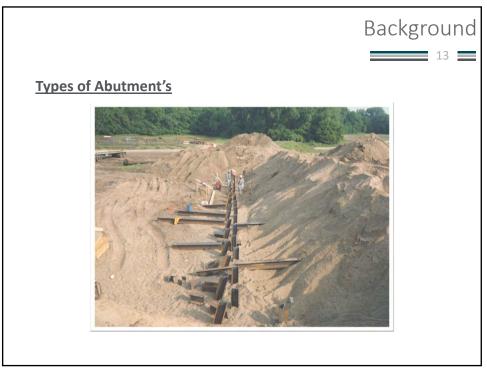




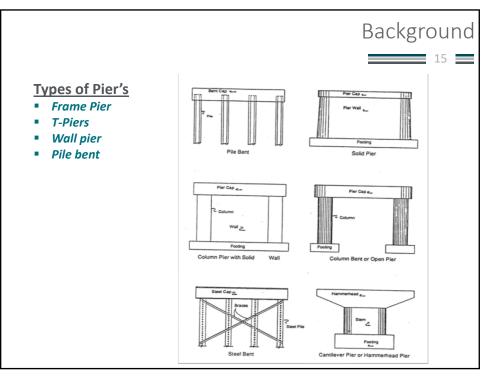


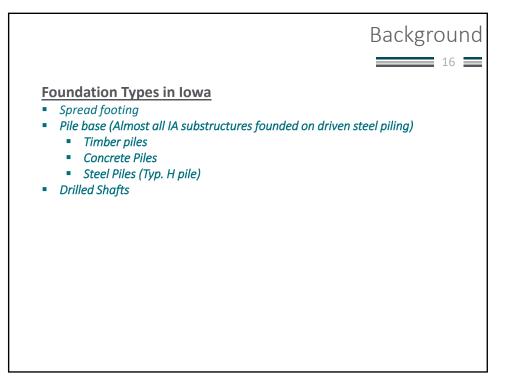


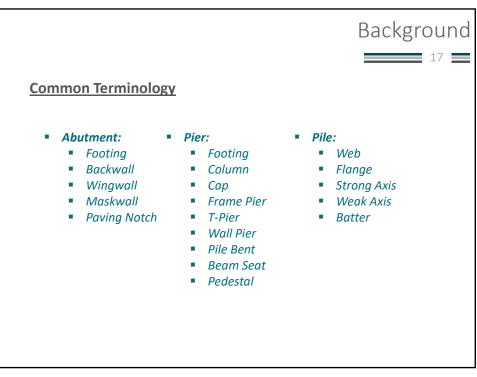


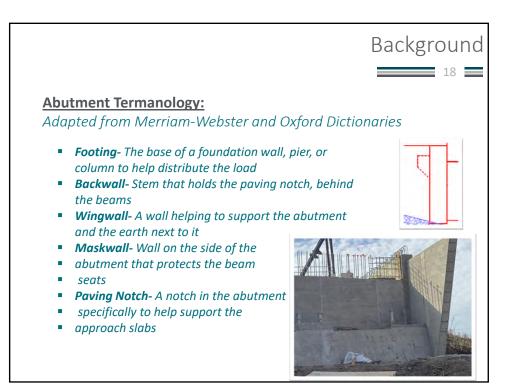


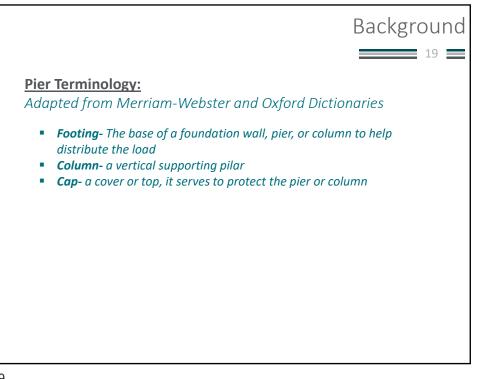


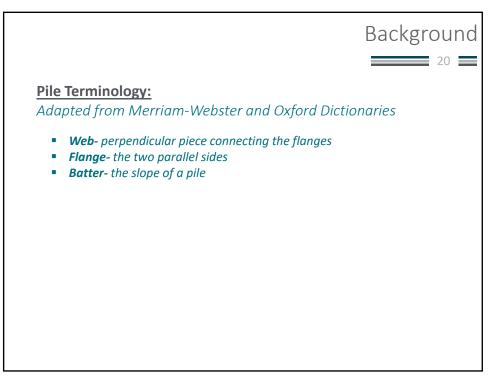


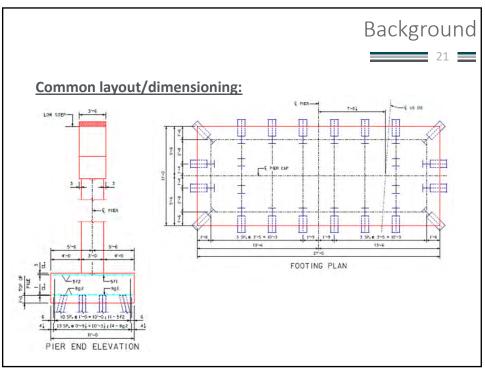


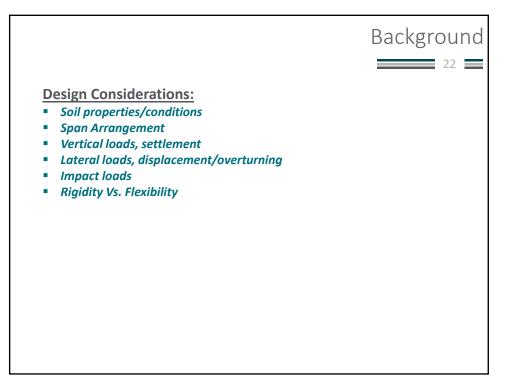


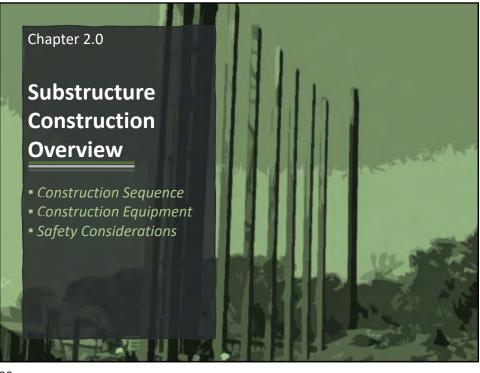








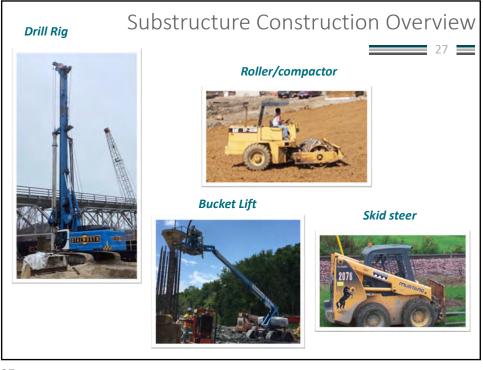


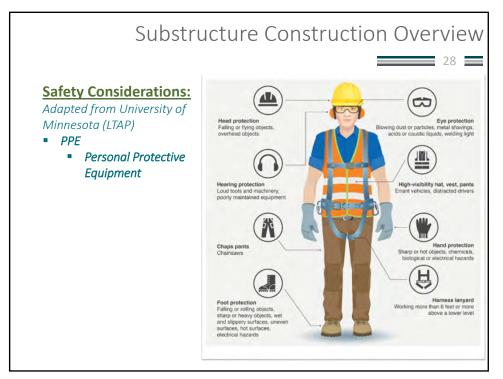




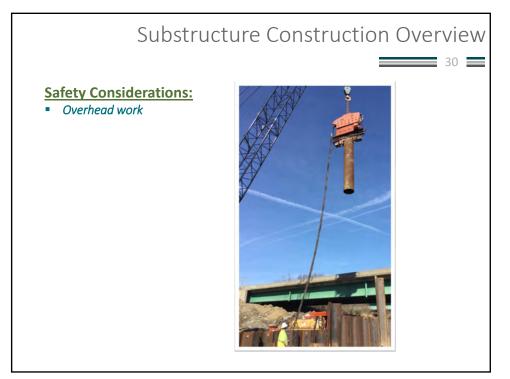








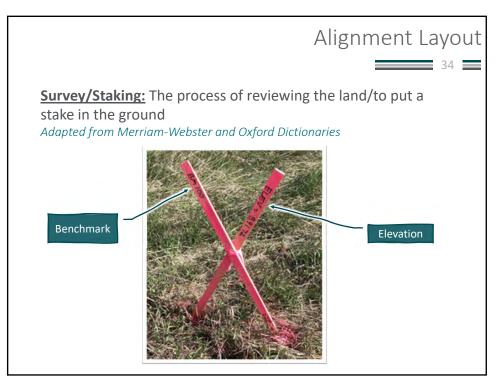


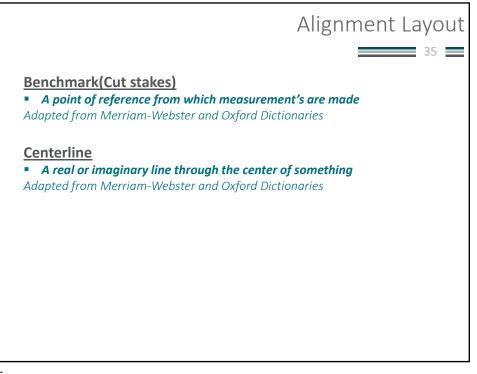


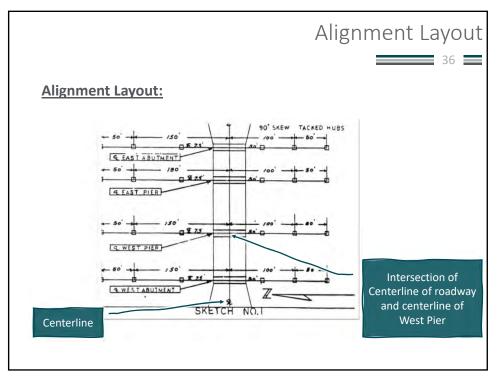


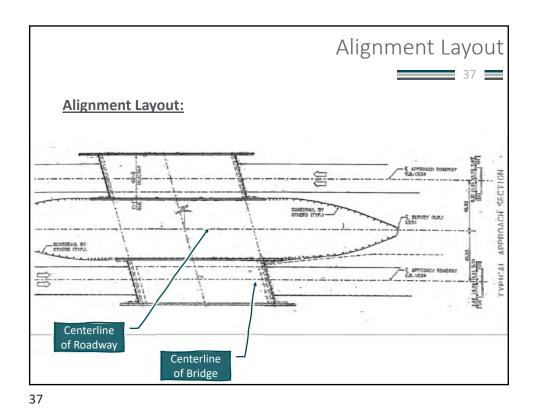


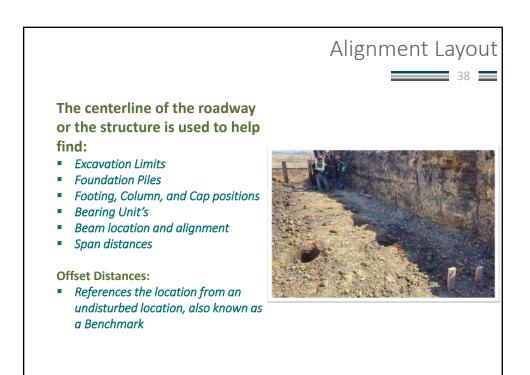


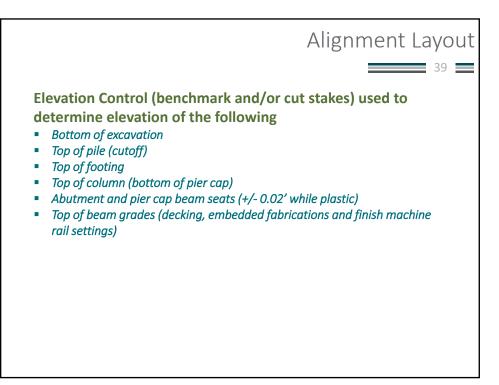


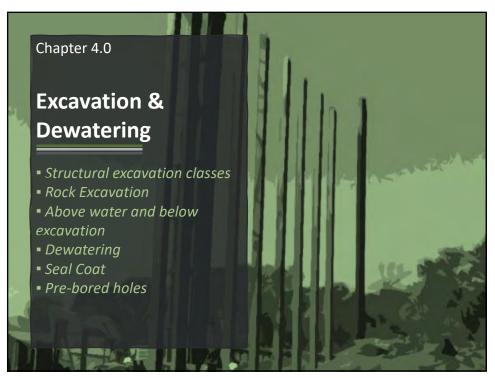




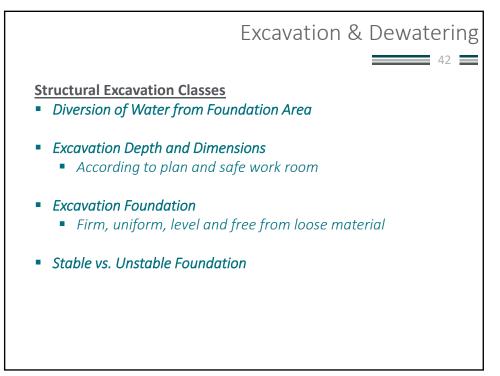


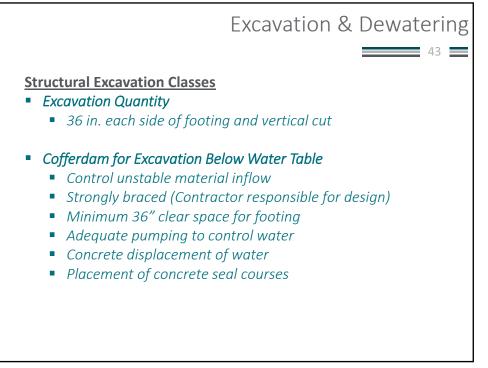


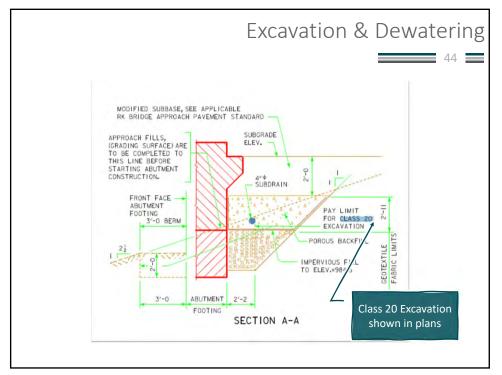


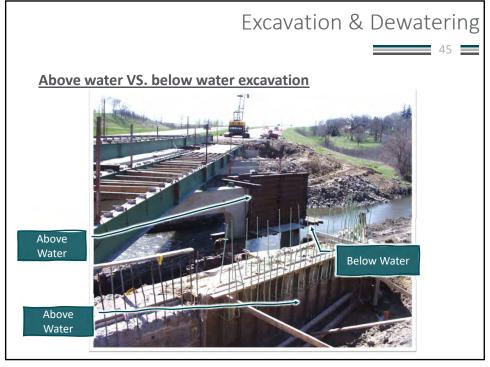




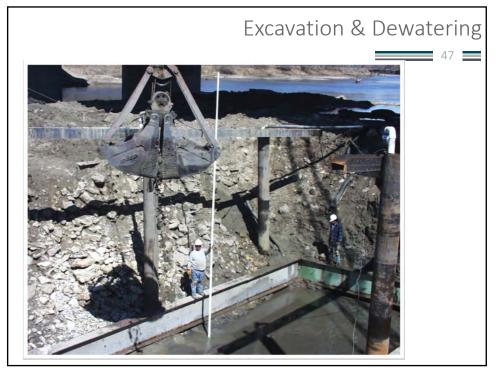






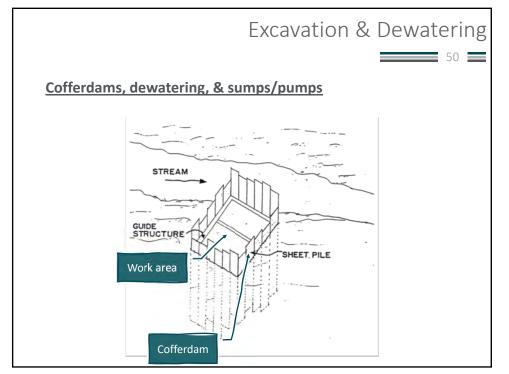


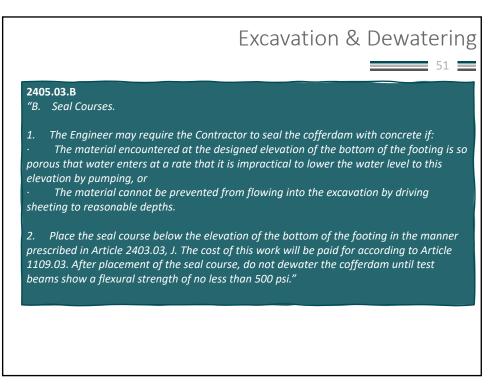


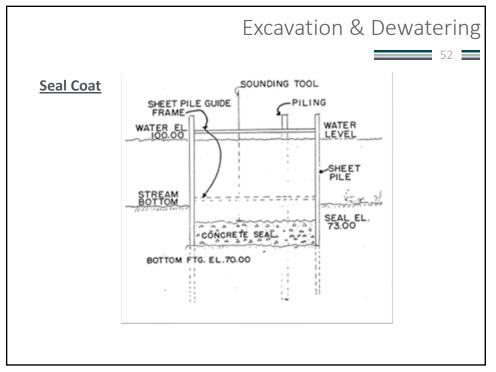














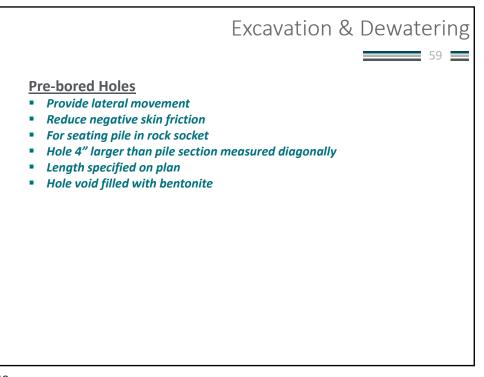








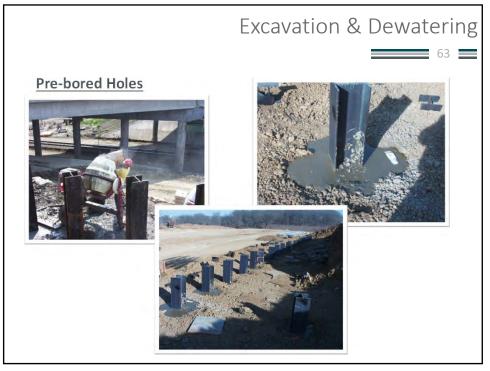


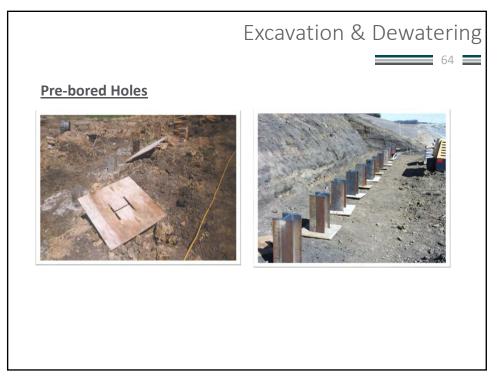








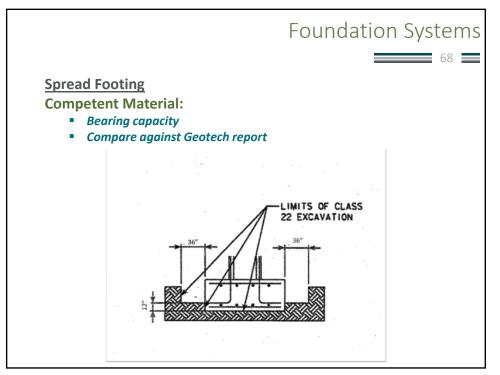




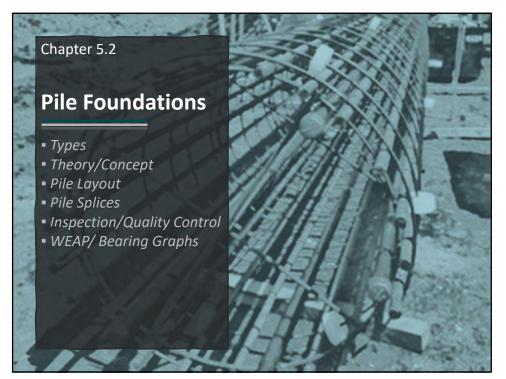


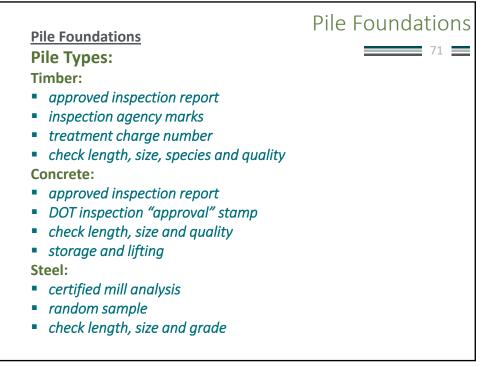


























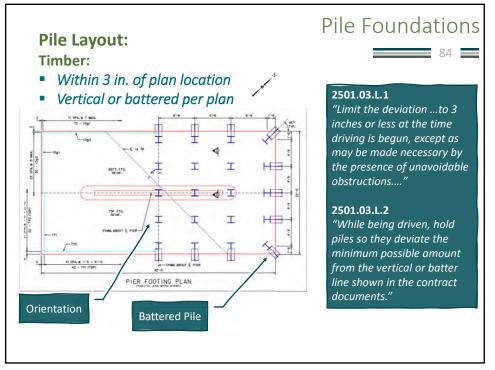


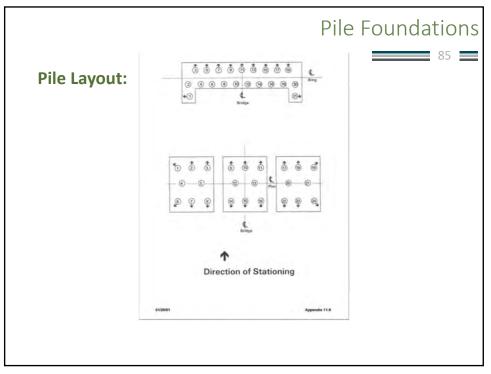


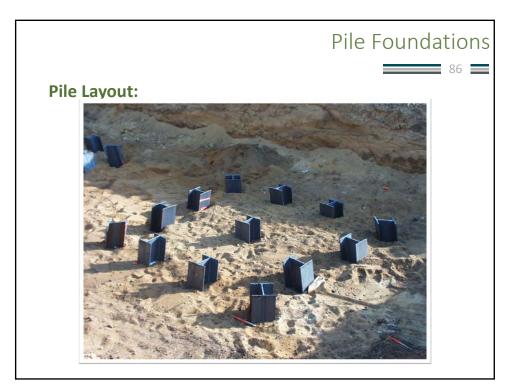








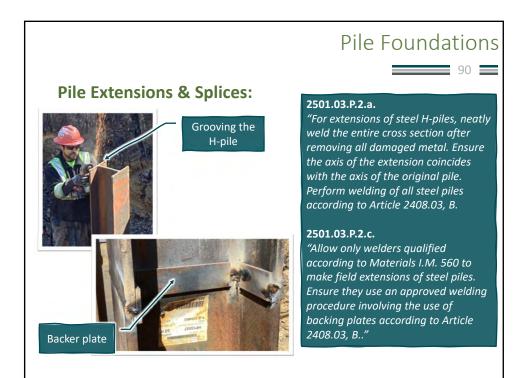


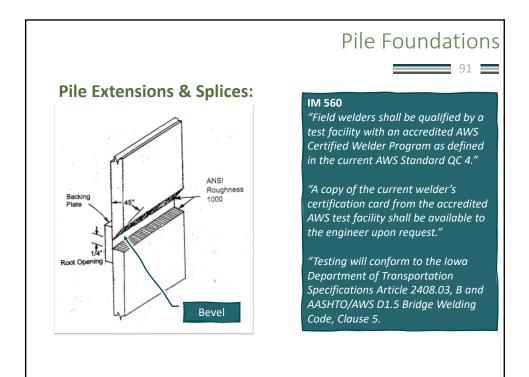








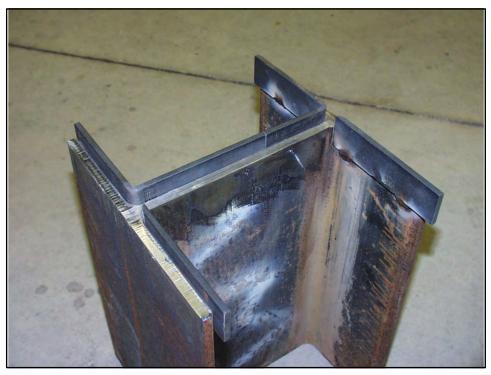










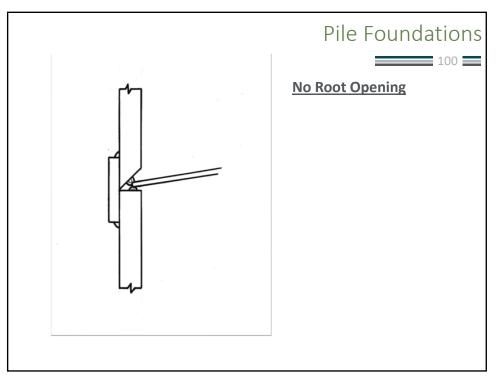


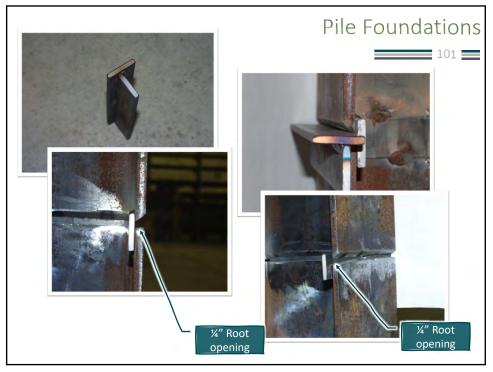


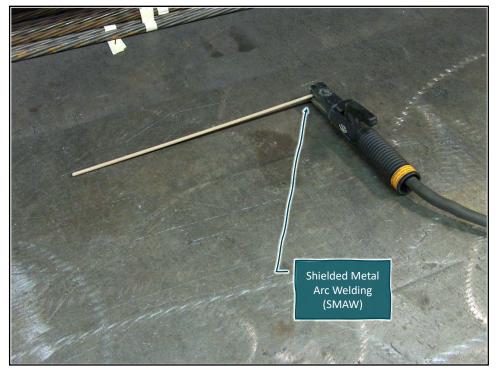






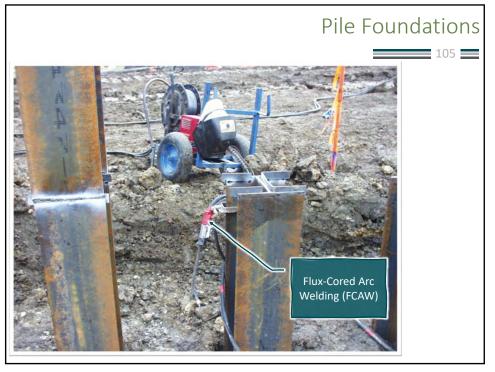


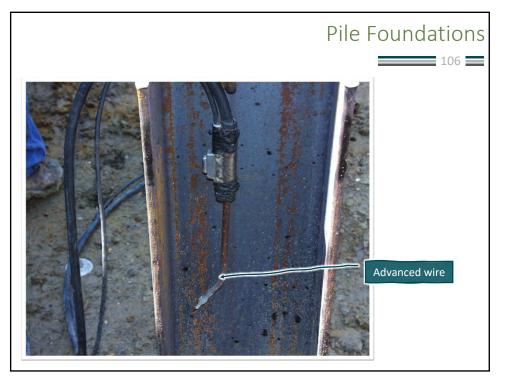


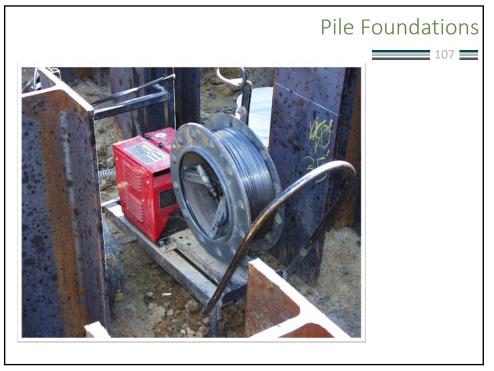


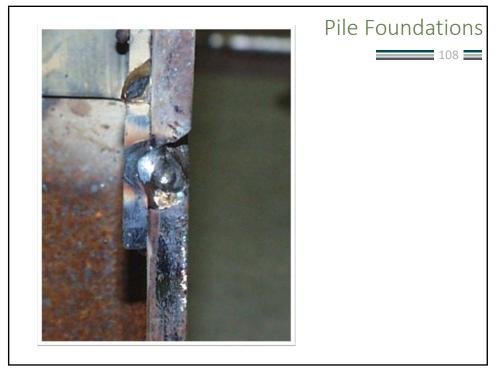






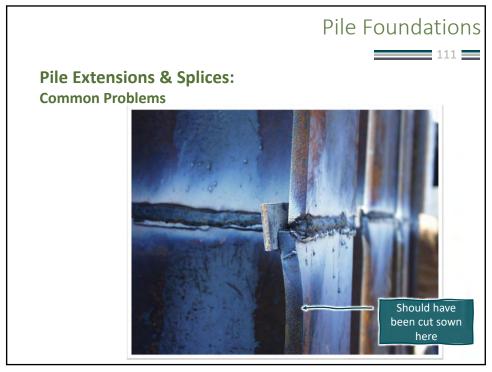


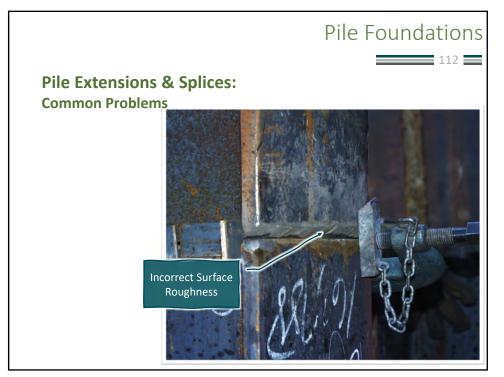








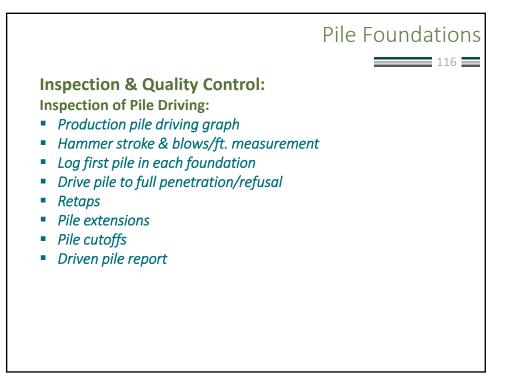


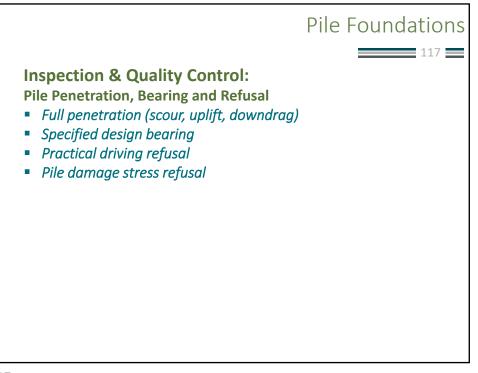


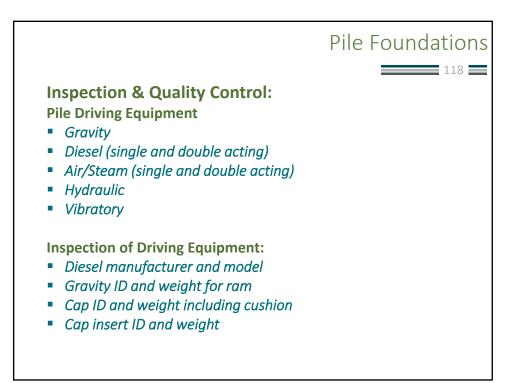




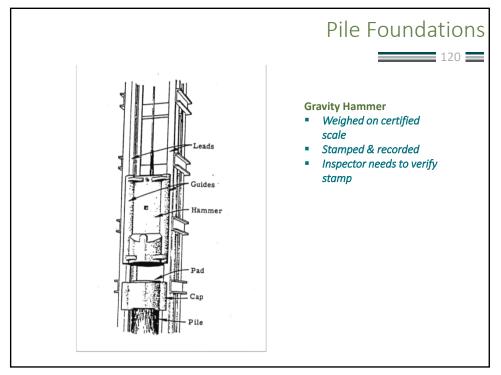




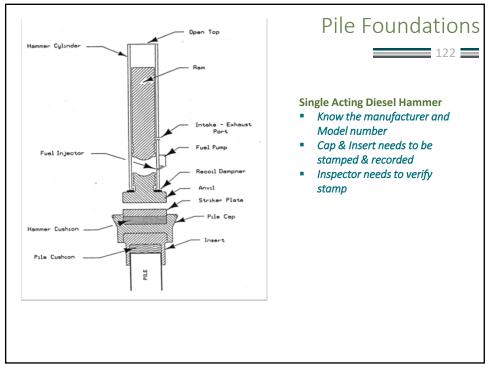


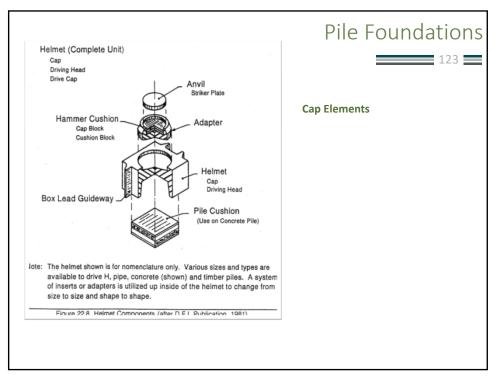




















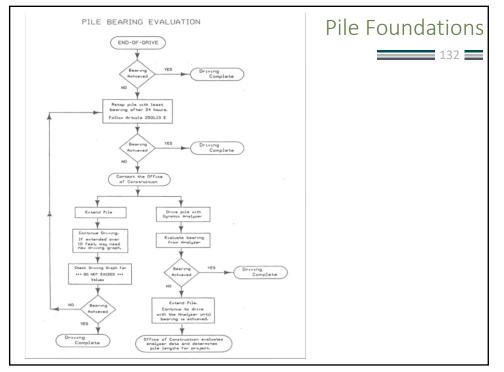


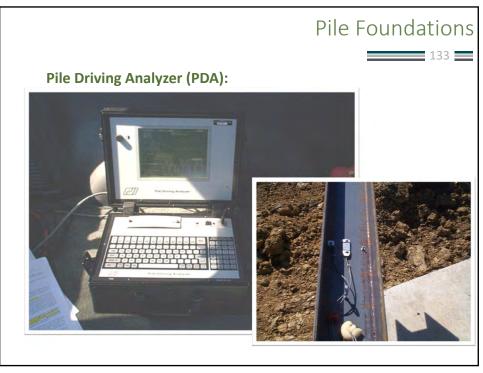


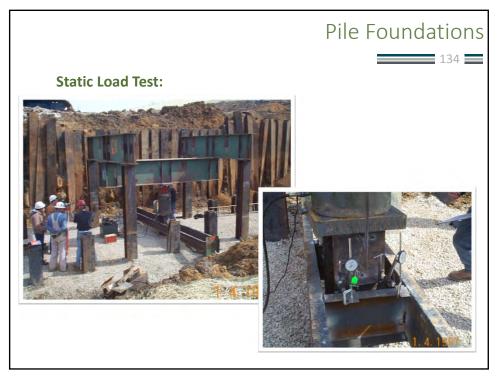


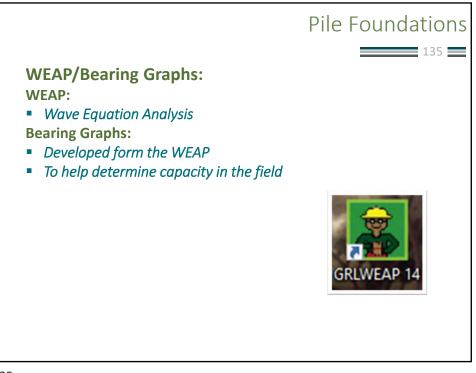




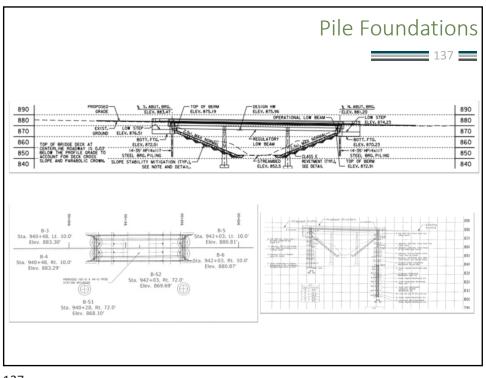


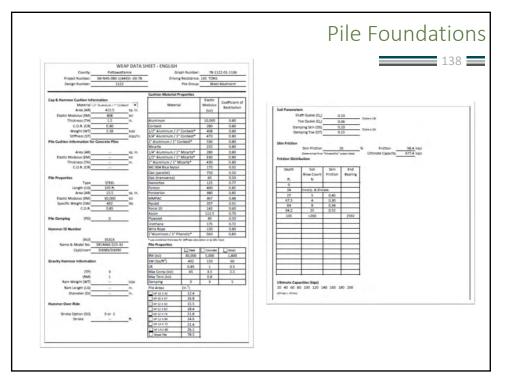


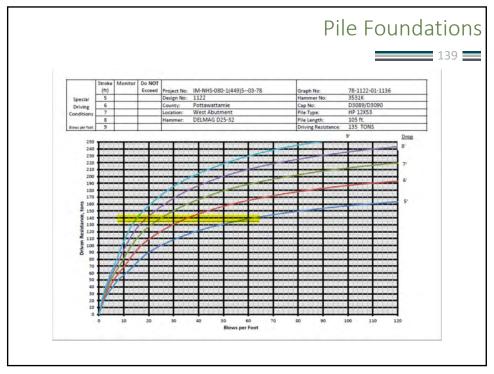




	POW				136
	1000	ER HAMM	ER	"WAVE EQUATION"	
NHS-080-1(314)5-03	3-78 County	Pottawattamie	Design No	1222	
kins Construction Ca	ompany	Date Repo	rted 2/2/2024		
Type of Piling	Plan Pile Length	Design Bearing (End of Drive)	Design Bearing (Retap)	Graph No. For Office Use	
HP 12x53	110	127			
HP 12x53	110	105			
HP 14x89		244			
			-		
HP 14x59	60	24/			
ibs.	IDOT ID No. Weight	INSERT			
cushion and striker plate	2				
1 (for Hammer)	CUSH (Between C	IION #2 (for File) ap & Pile – If applicable)		STRIKER PLATE	
23" DIA	Surface Area			CUSHION #1	
8-12 MM	Thickness		_		
#1 ALUMINUM	Composition		_	thickness	
		terial #2 1" If dimensional lumber is used for cushion, indicate wood grain			
				CUSHION IN2	
	Type of Piling HP 12:53 HP 12:53 HP 14:69 HP 14:69 HP 14:69 IP 14:69 DELMAG D25- L/HR 38 PL-Kips Ra by, cubicn and striker plat 1 (for Hammer) 23° D(A	Akins Construction Company Type of Piling Plan Pile Length Length HP 12-53 110 HP 12-53 110 HP 12-53 110 HP 14-80 85 HP 14-80 85 O DELMAG D25-32 L/HR L/HR Hammer Type BS FL-Kips Ram Rise 126- Pan LOOT ID No. Key It (for Hammer) CUSH Between C 23 Lift of Hammer) CUSH Between C 23	Aline Construction Company Date Report Type of Piling Plan Pile Length Design Bearing (End of Cirve) HP 12:53 110 127 HP 12:53 110 106 HP 12:53 150 106 HP 14:89 70 251 HR Hammer Type SINGLE ACTION D B8 PL-Kips Ram Rise 126-150 Weight of RAM IDOT ID NESERT IDOT ID NESERT Ibor. Ibor. Dob mod striker place Weight Ibs. Ibs. (Between Cap & Pile – If applicable) (Between Cap & Pile – If applicable) 2 2 DIA Surface Area 2	Alms Construction Company Date Reported 2/2/2024 Type of Piling Plan Pile Design Bearing Design Bearing Design Bearing HP 12x53 110 127 Iter 127 Iter 127 Iter 127 HP 12x53 110 106 Iter 127 Iter 127 Iter 127 HP 12x53 110 106 Iter 127 Iter 127 Iter 127 HP 12x53 110 106 Iter 127 Iter 127 Iter 127 HP 14x59 70 251 Iter 127 Iter 127 Iter 127 HP 14x69 85 247 Iter 127 Iter 127 Iter 127 HP 14x69 70 251 Iter 127 Iter 127 Iter 127 Iter 127 Iter 127 251 Iter 127 Iter 127 Iter 127 Iter 127 Iter 127 Iter 127 251 Iter 127 <	Akins Construction Company Date Reported 2/2/2024 Type of Piling Plan Pile Design Bearing Caraph No. Length (End of Dire) (Relap) For Office Use HP 12x53 110 102 Image: Company Company HP 12x53 110 106 Image: Company Company Company HP 12x53 110 106 Image: Company Company Company Company HP 14x53 110 106 Image: Company Company Company Company Company HP 14x69 79 251 Image: Company </td

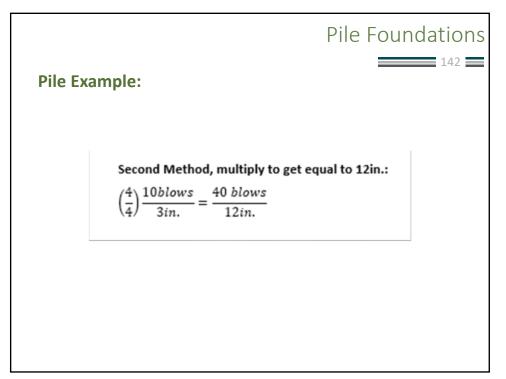


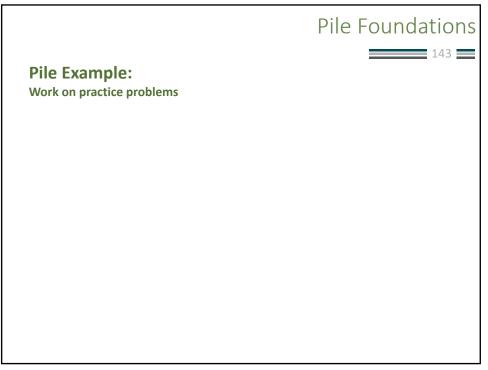






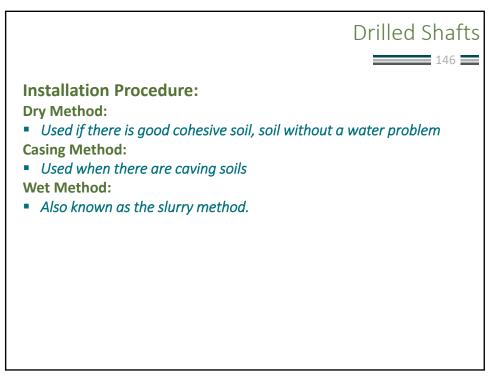
	Pile Foundations
Pile Example	141 —
	Pile Example:Convert from Penetration in 10 blows (Found in field) to blows per footFirst Method, Cross Multiplication: $\frac{10blows}{3in.} = \frac{? blows}{12in.}$ $3in. \times ? blows = 12in. \times 10blows$ $3in. \times ? blows = 120$ $? blows = \frac{120}{3in.}$? blows = 40 Blows per foot

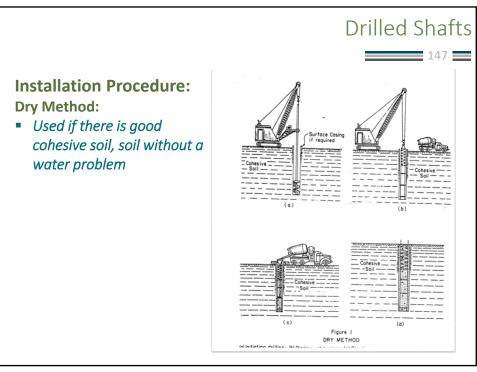


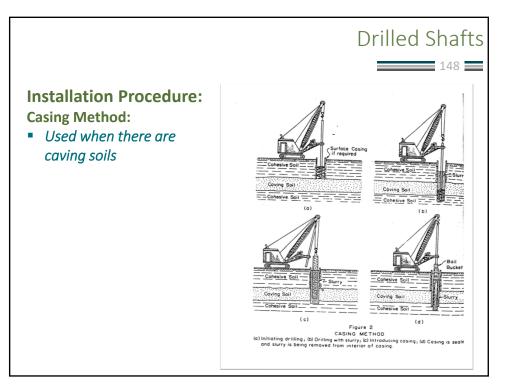


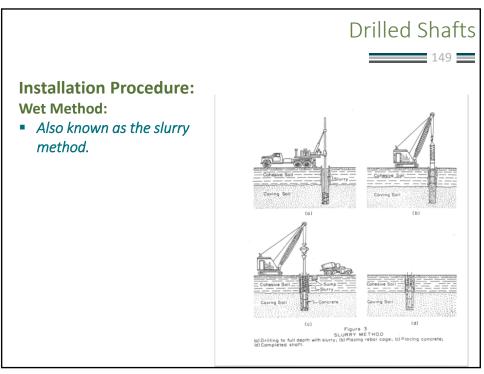


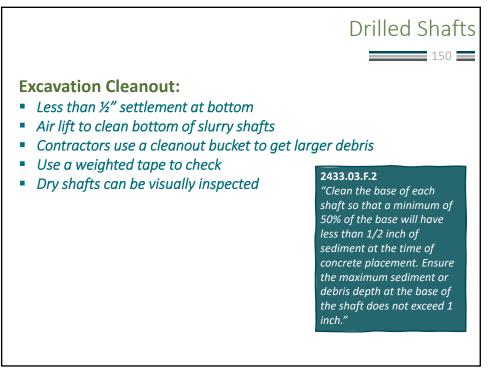


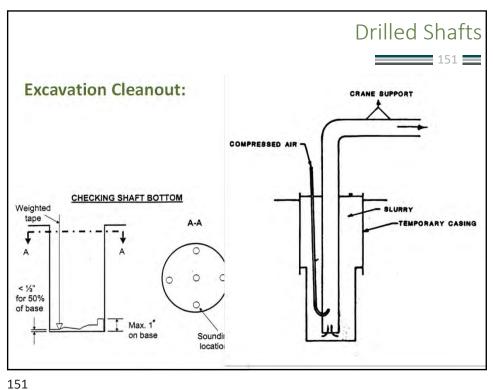






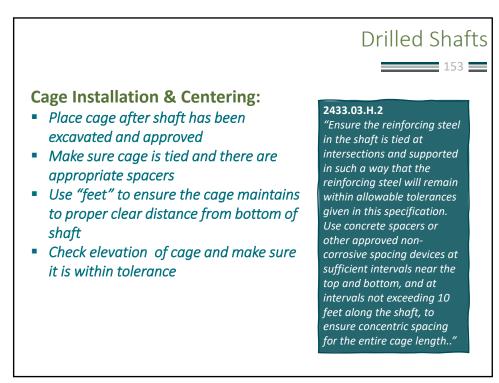




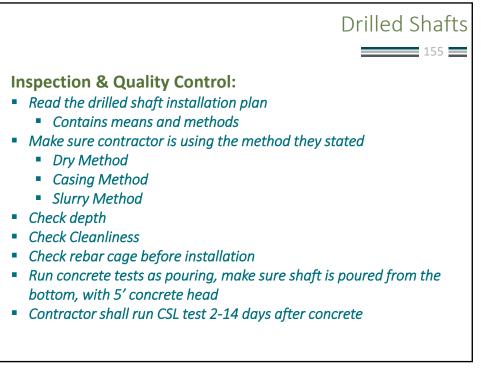


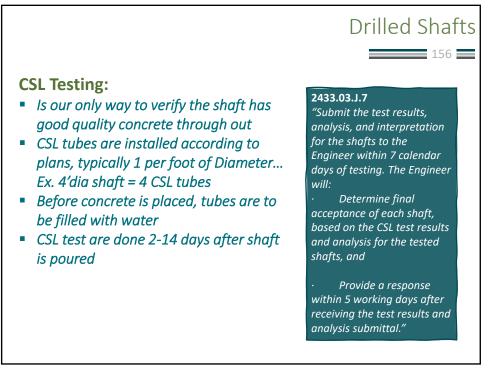


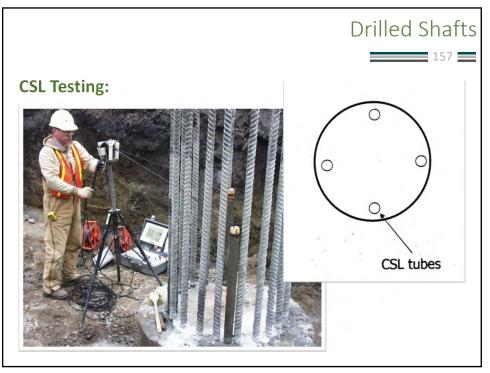






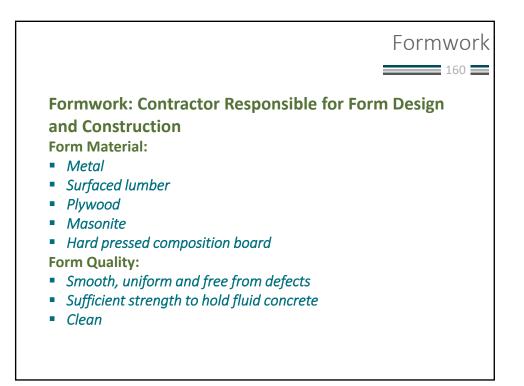


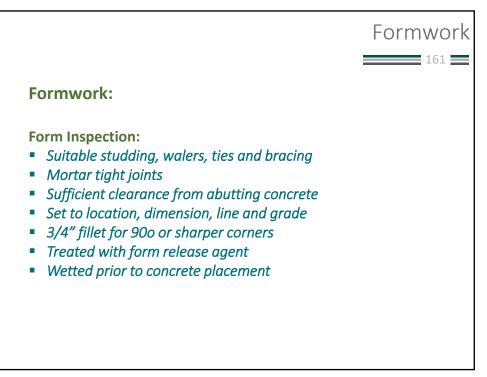










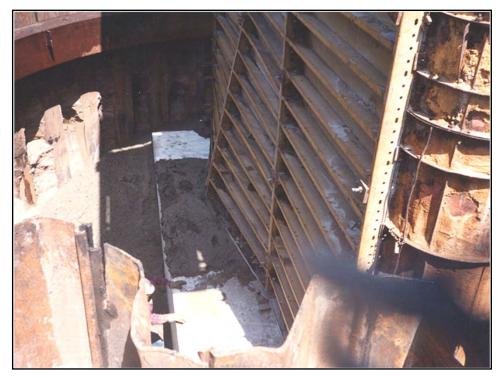










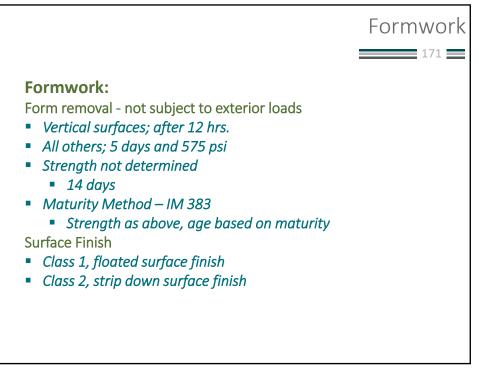




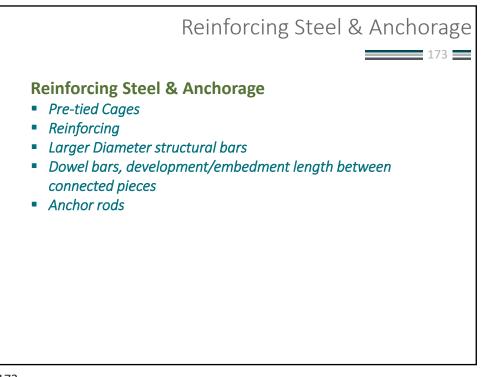




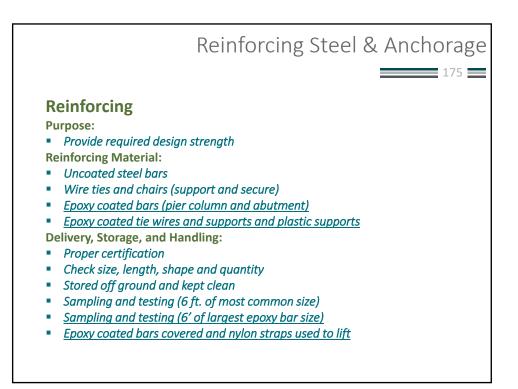


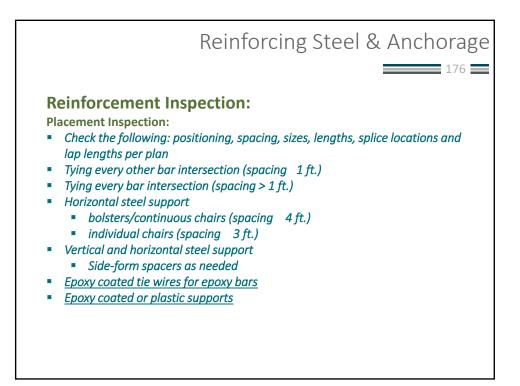


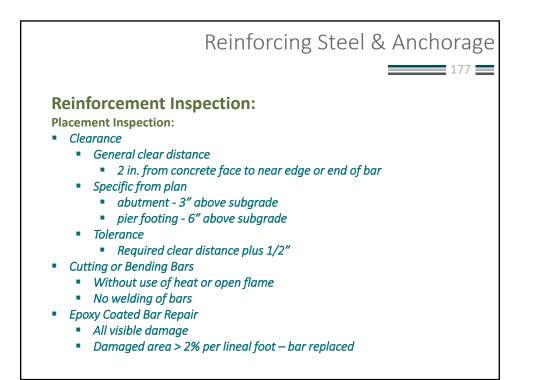




















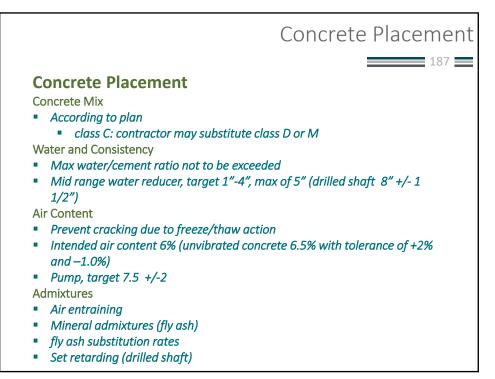


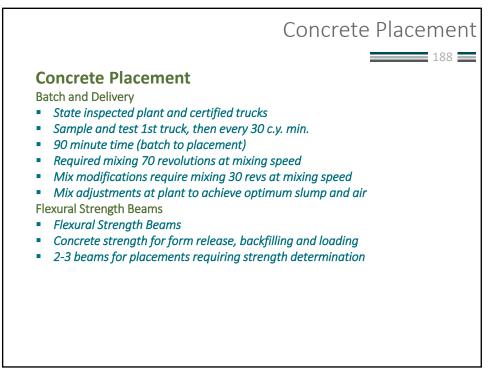


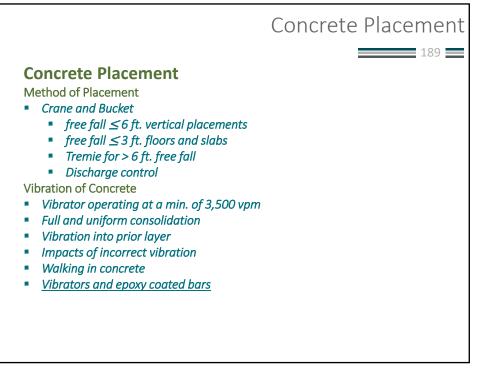


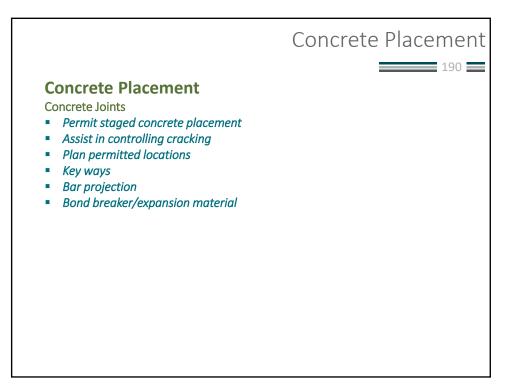








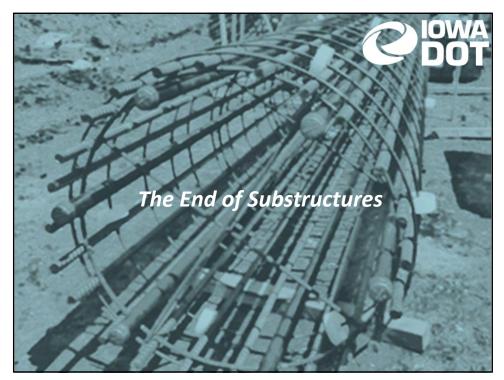


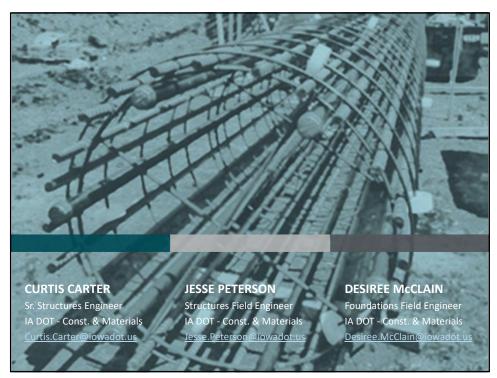




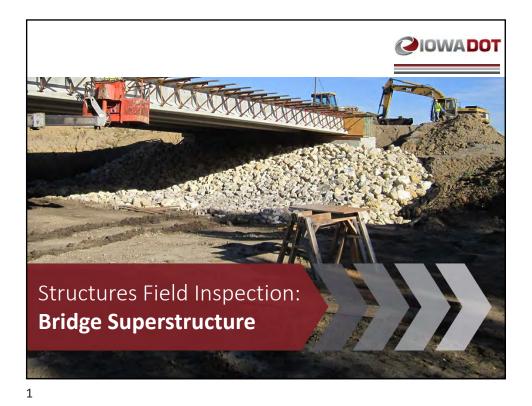






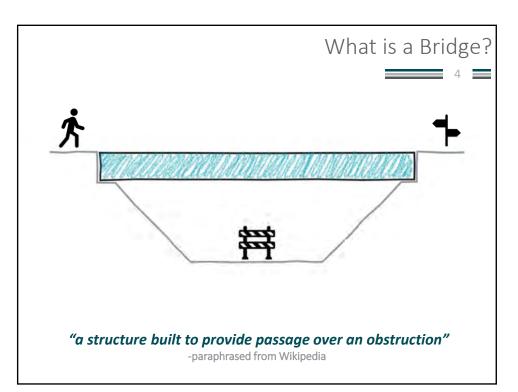


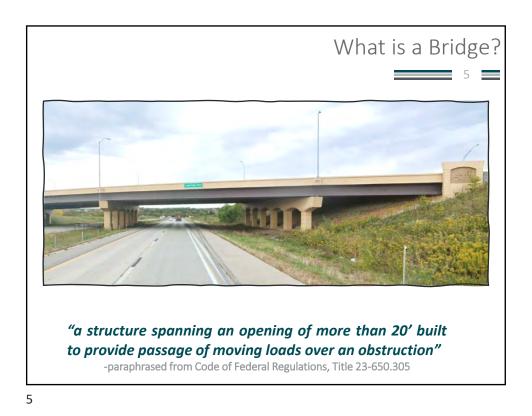
SUPERSTRUCTURE

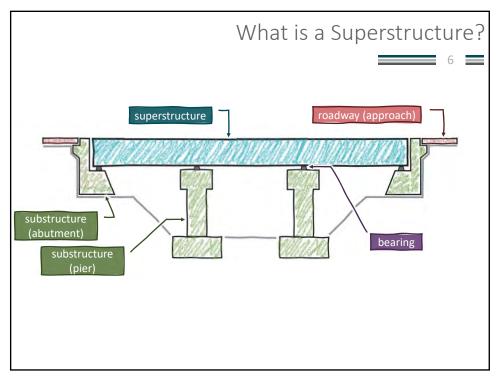


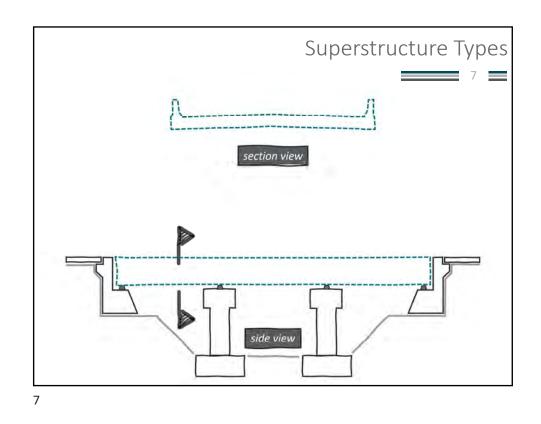


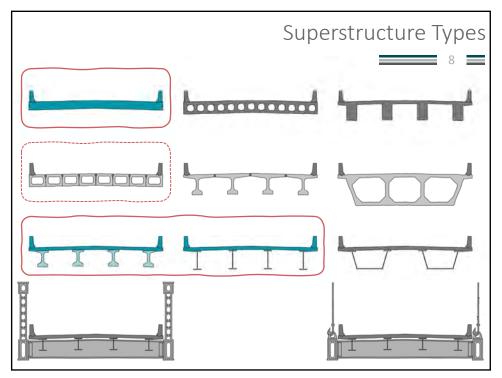


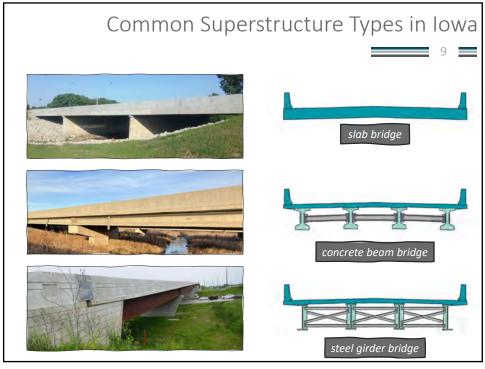


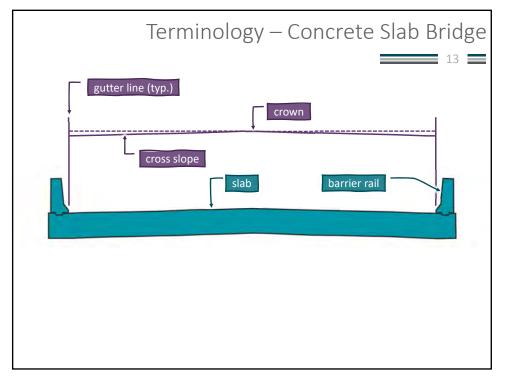


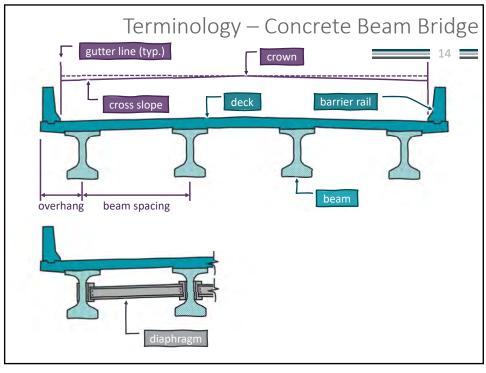


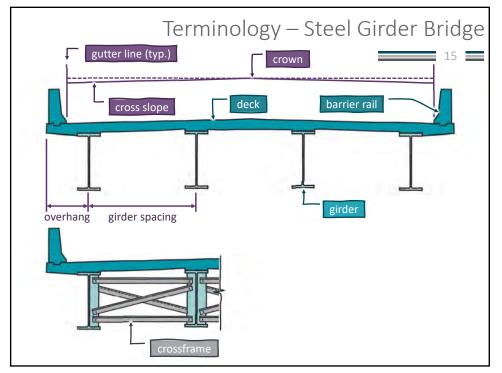


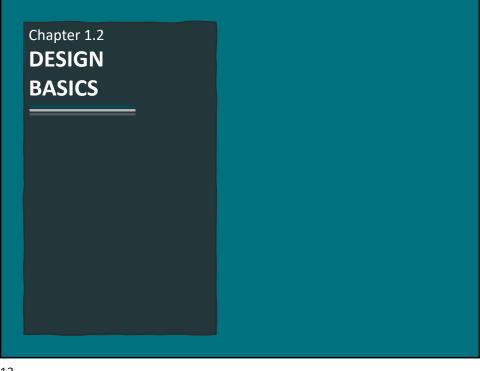


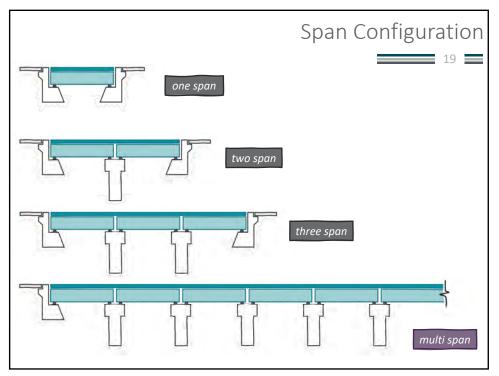


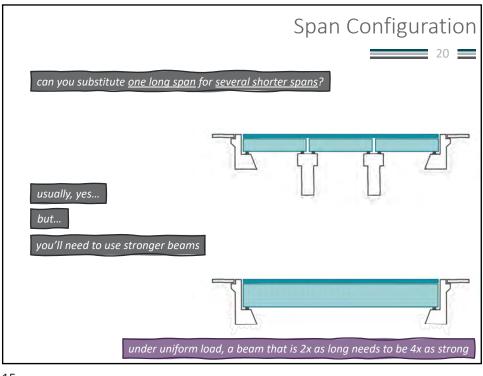


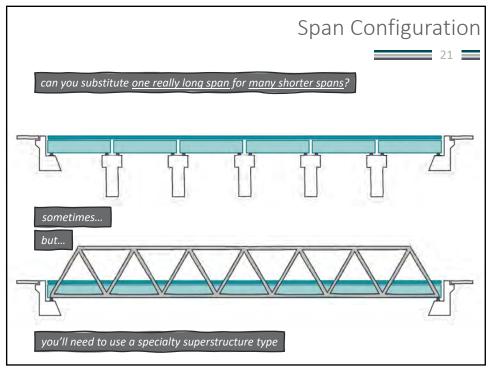


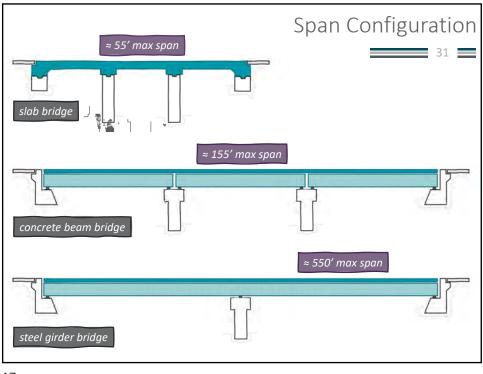


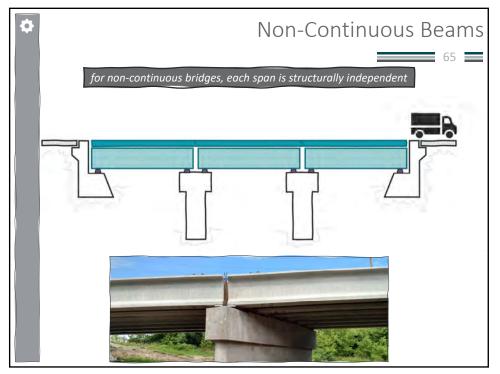


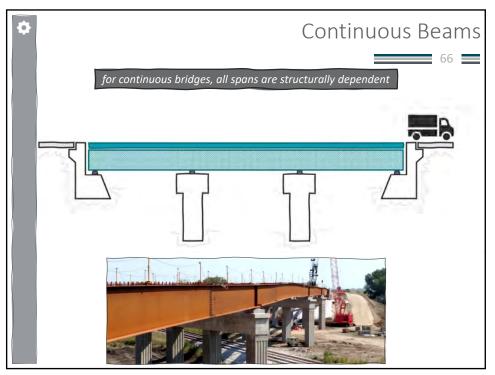


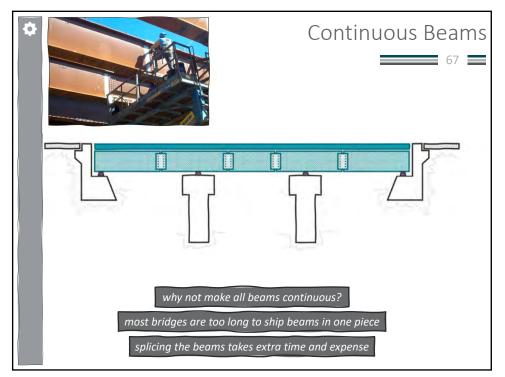


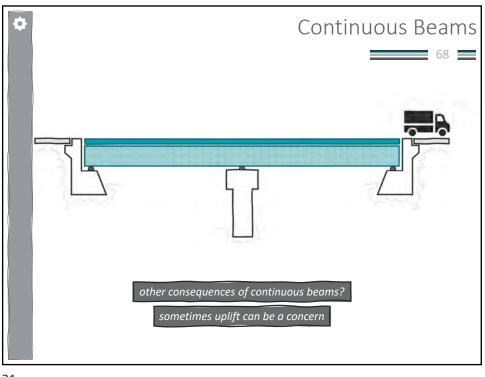


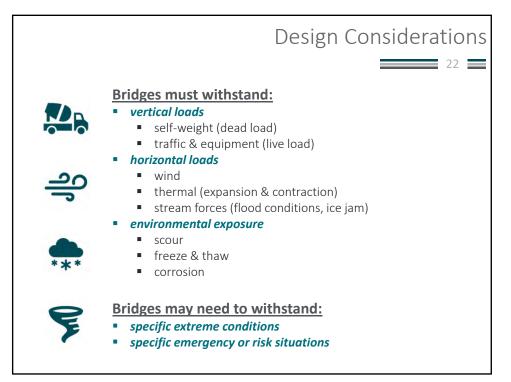


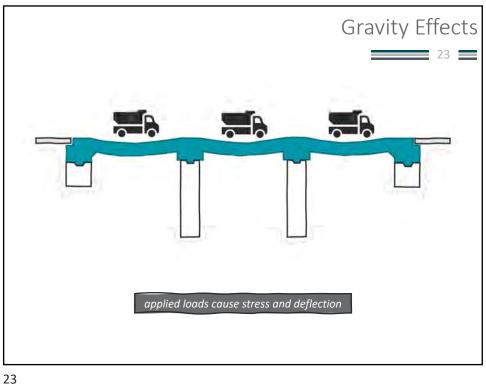


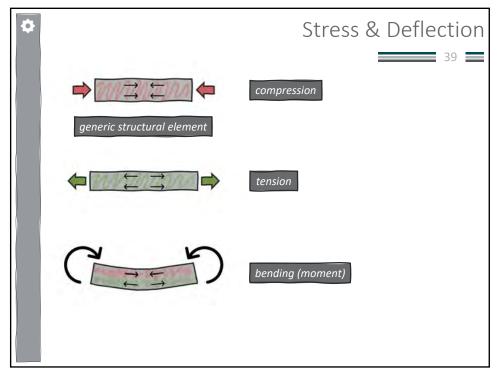


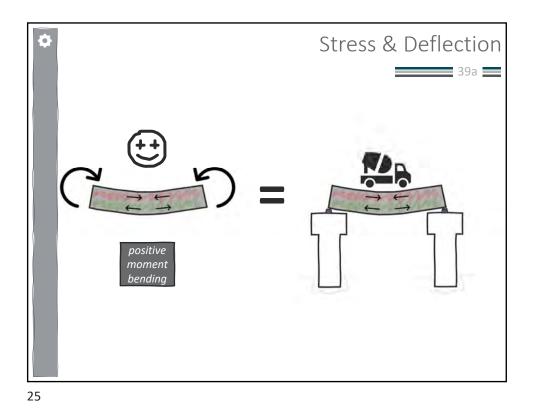


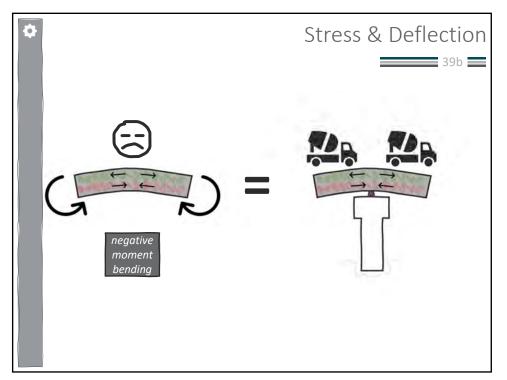


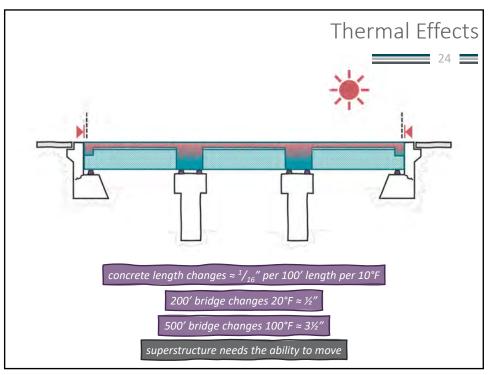


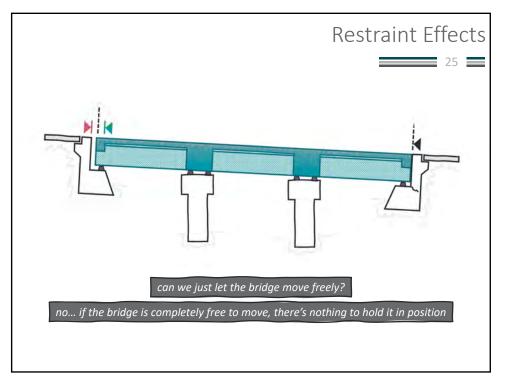


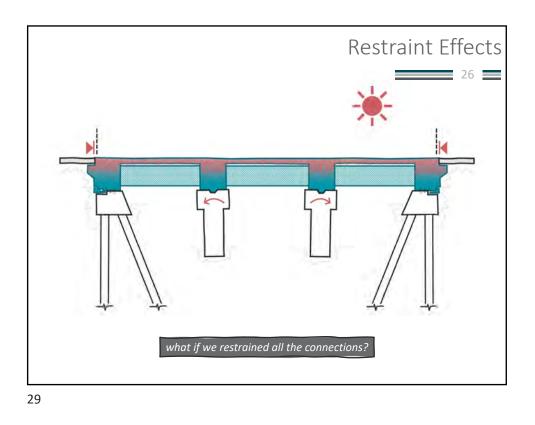


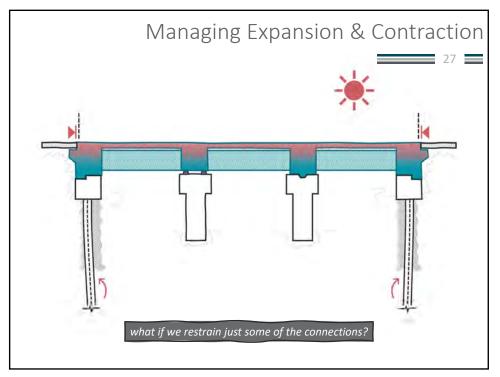


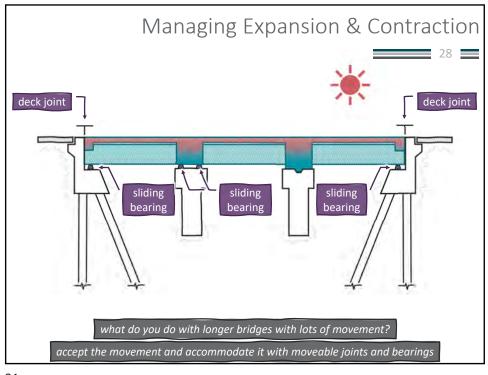




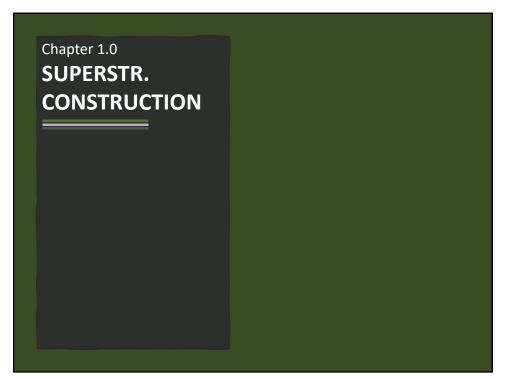




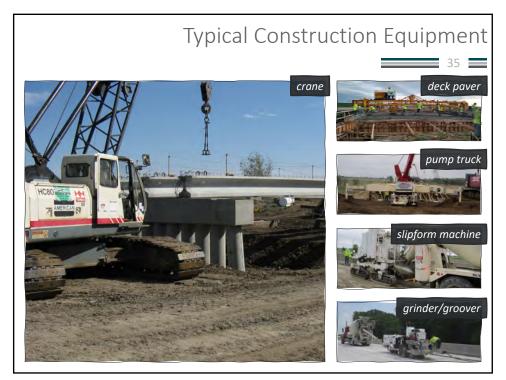








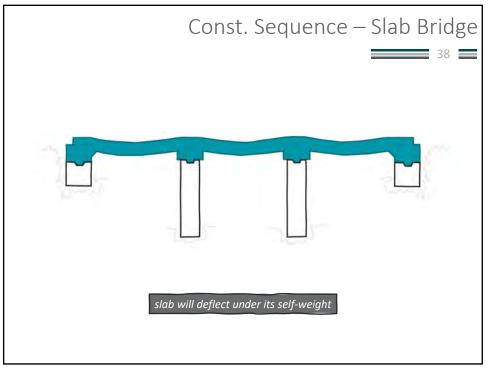


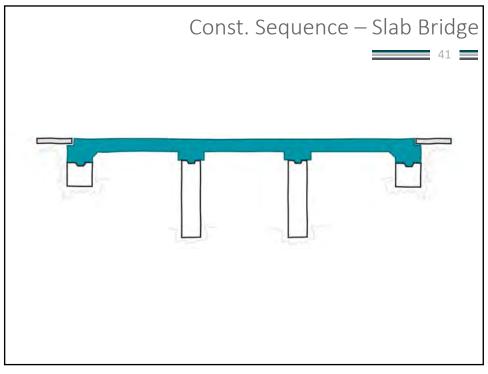




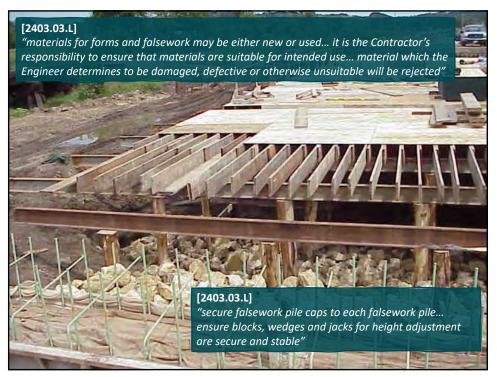




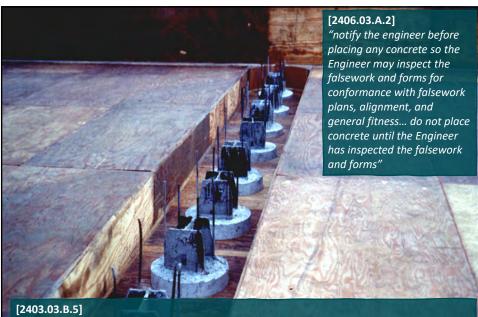




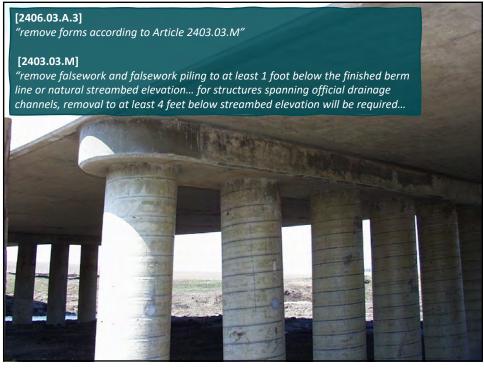


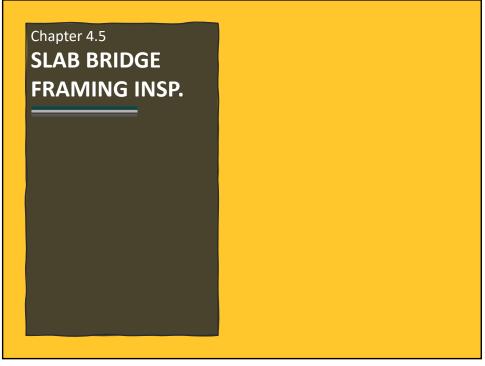


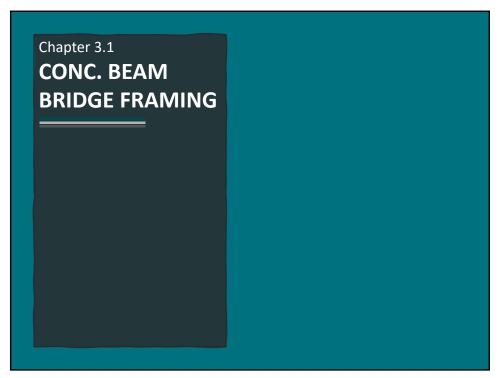




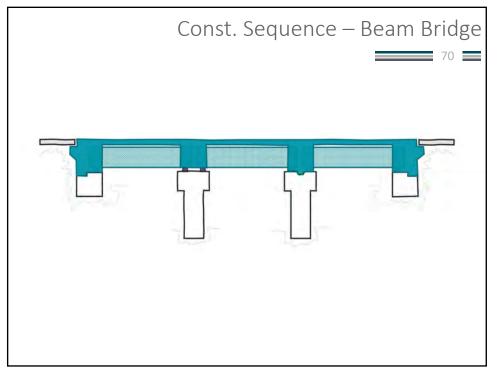
"construct forms so that the finished concrete is of the form and dimensions shown in the contract documents... coat forms with an approved form release agent prior to the placement of concrete... thoroughly wet forms with water immediately prior to concrete placment



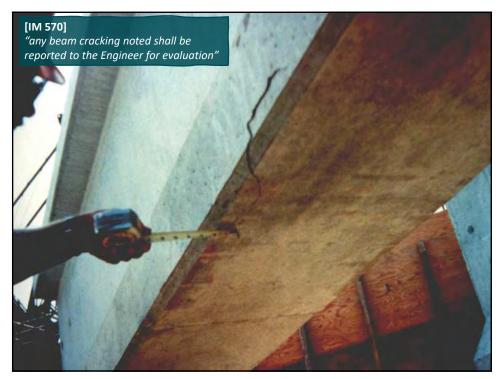




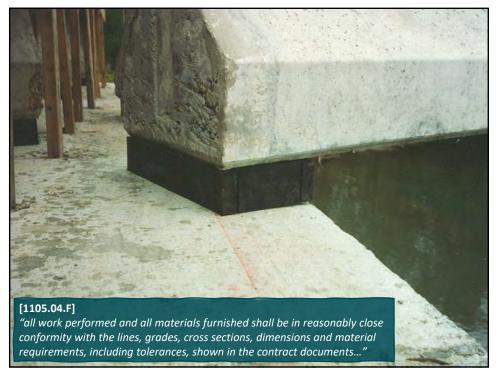














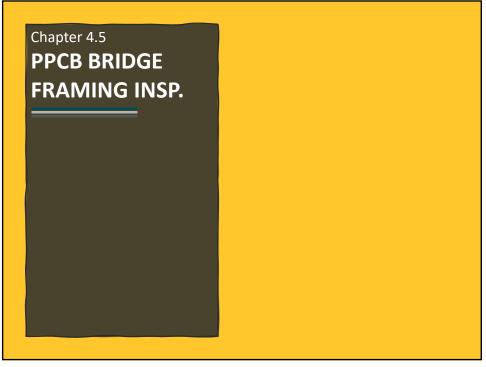






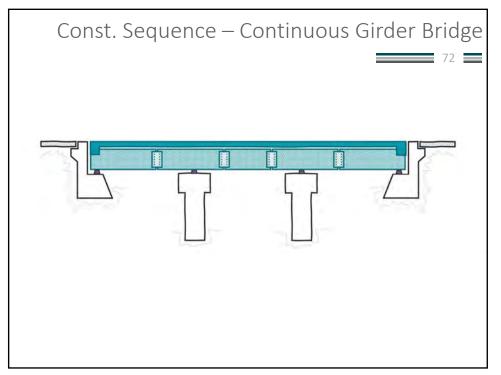
















[2408.03.R]

"support splice joints of continuous beams and girders using adequate falsework... adjust as closely as possible to the required position before bolting is started..."

[2408.03.L]

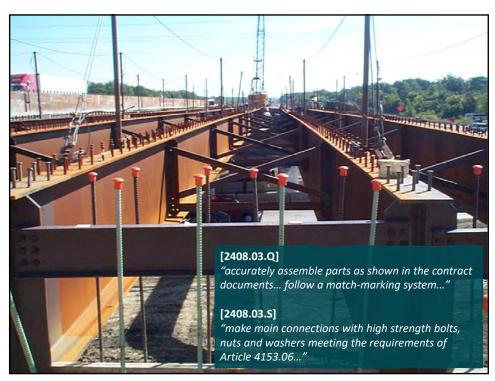
"provide detailed plans for falsework... have the Engineer review and check the adequacy of falsework before erecting the structure... design falsework to carry, without appreciable settlement or deformation, the full load coming upon it. Use either full length pile bents or framed bents supported by piles or spread footings..."

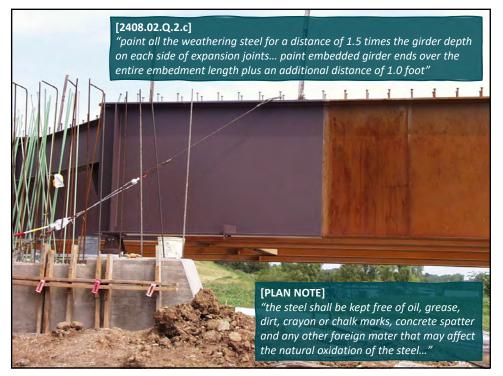


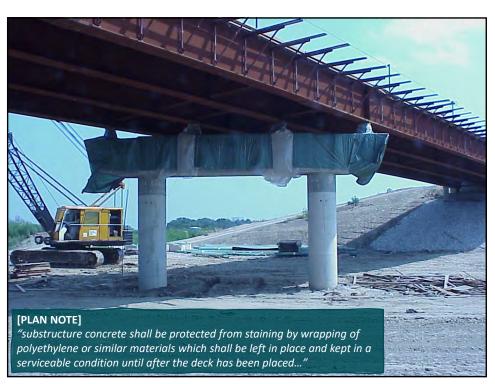
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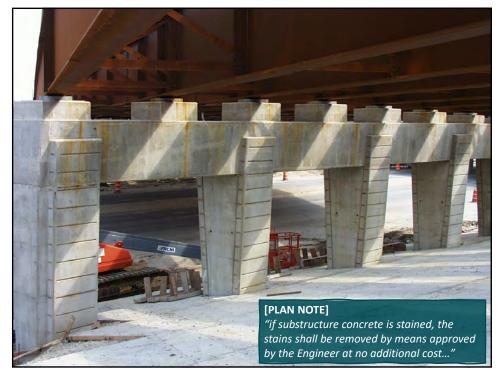


"ensure connections have at least 25% of the holes on each side of the connection filled with drift pins, and another 25% of the holes on each side filled with bolts drawn up snugly before the temporary support is removed..."

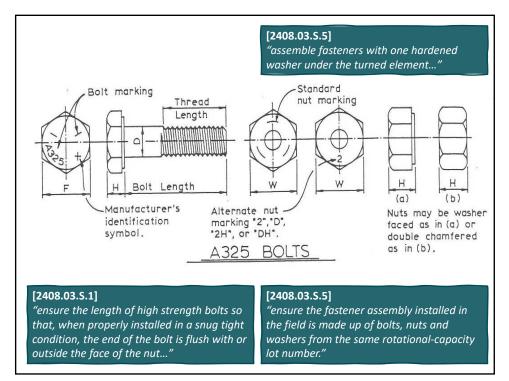


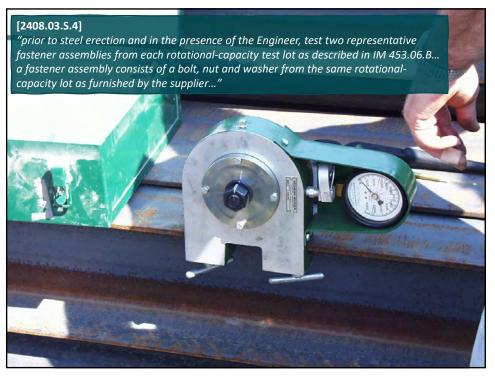


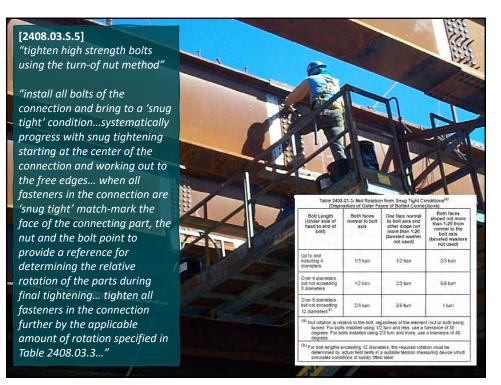


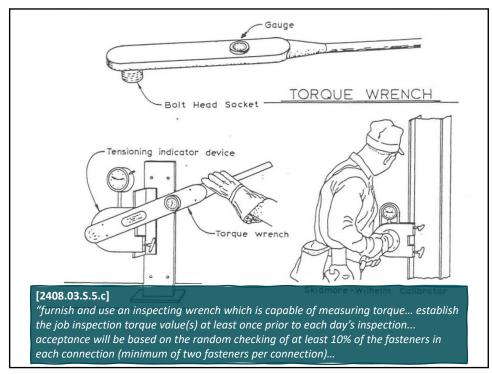










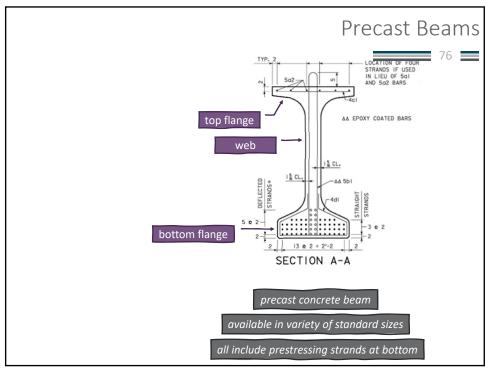


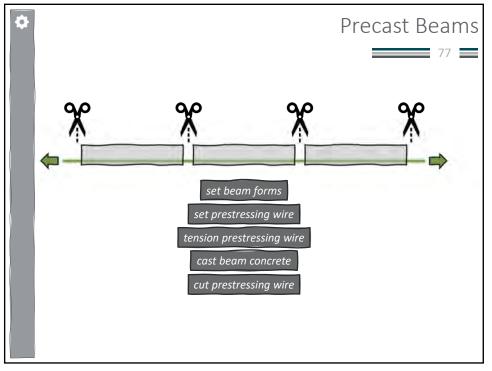


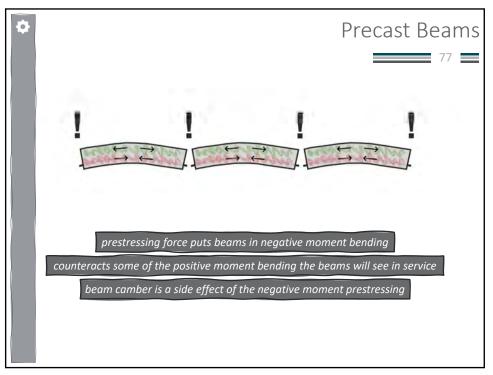
















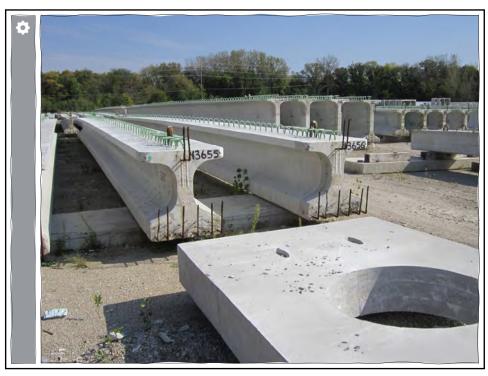






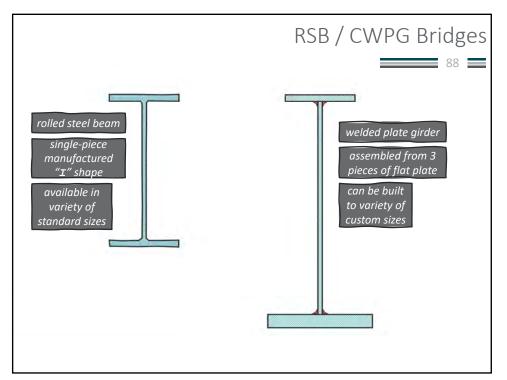


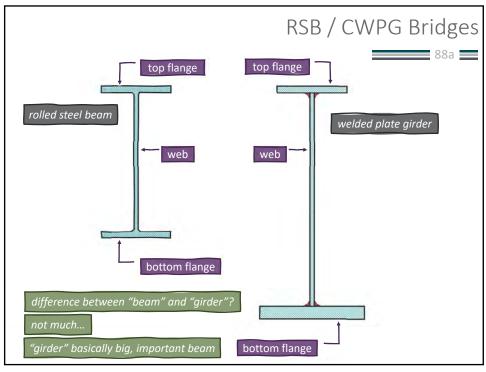








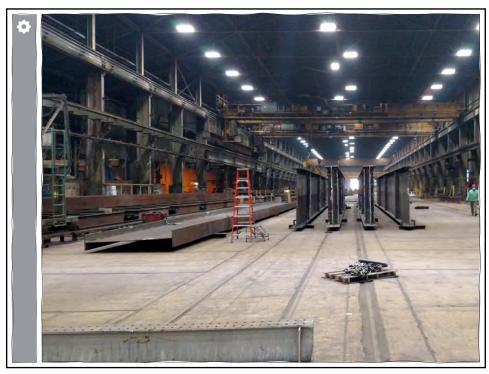




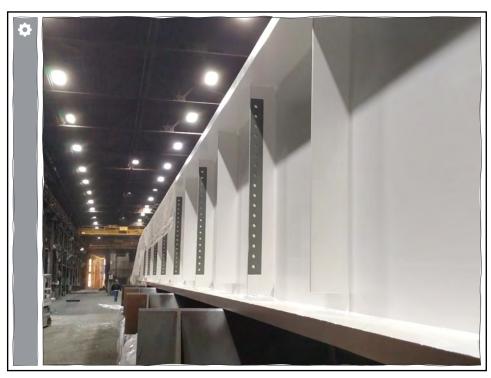






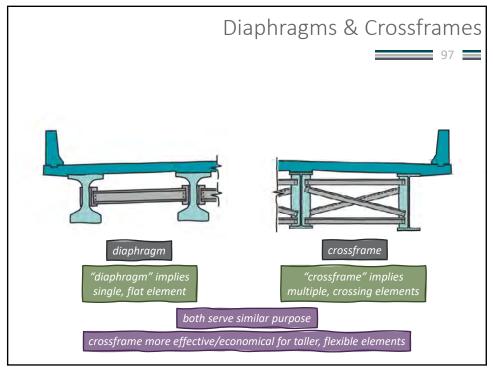


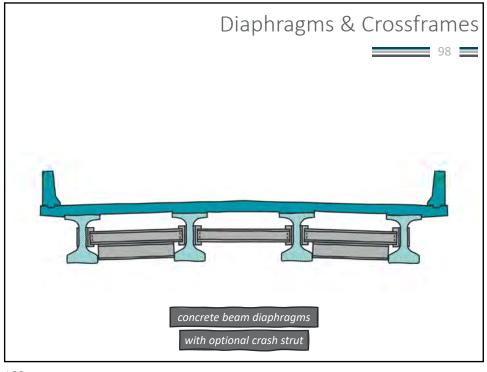


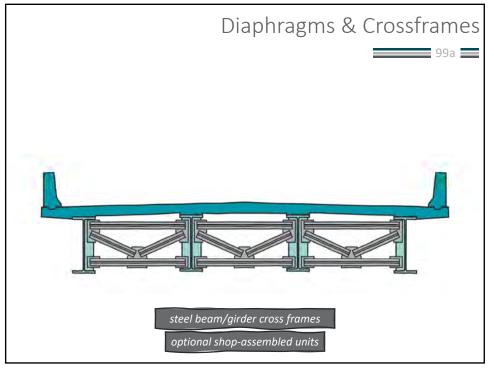






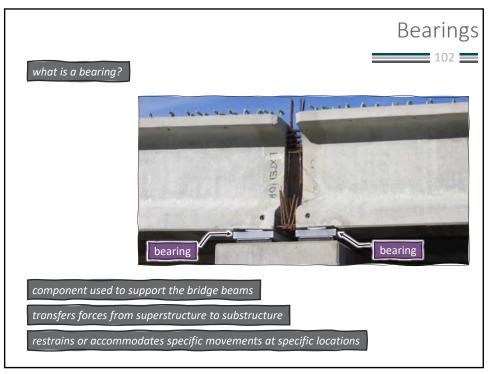


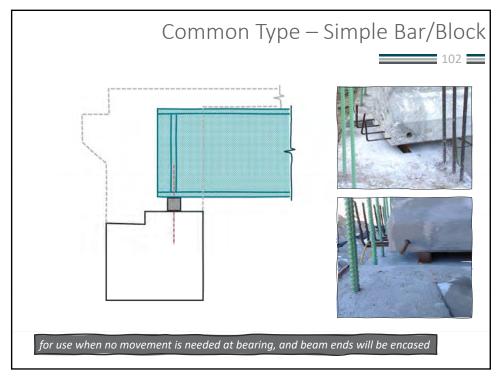


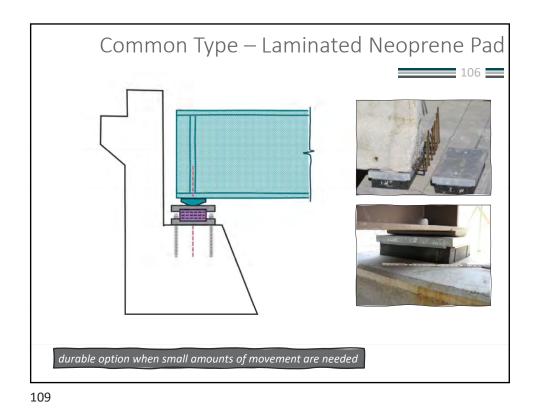


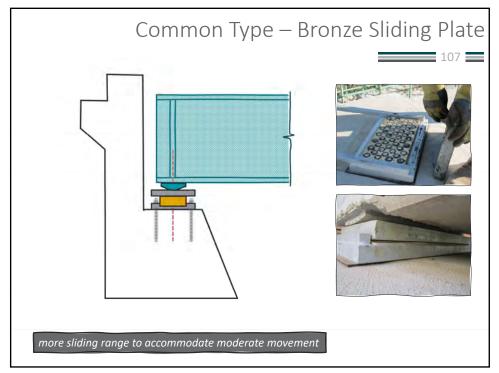


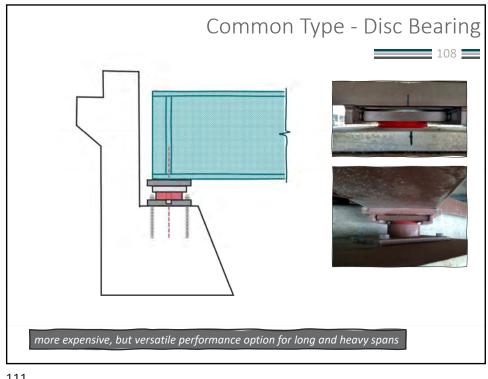


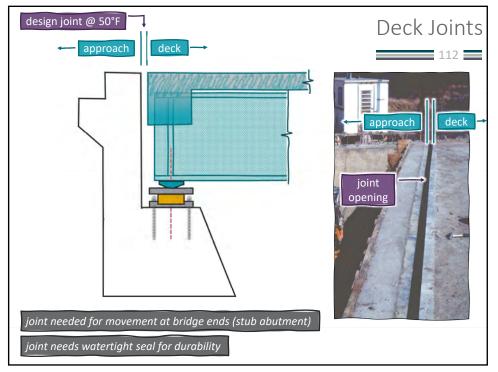


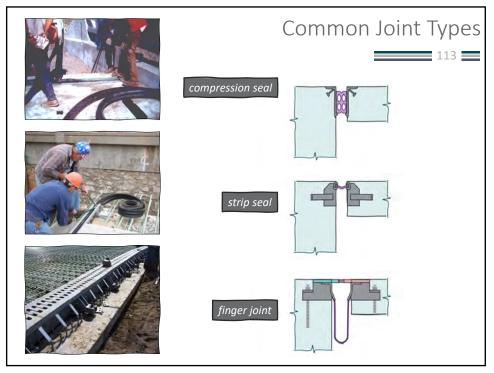


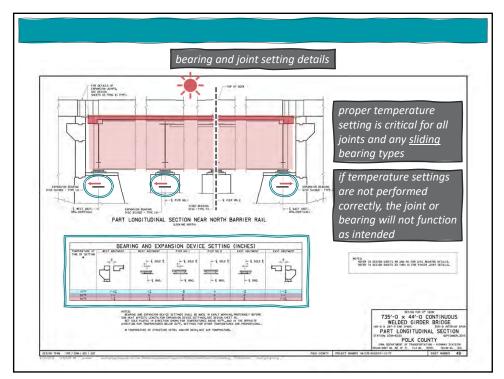


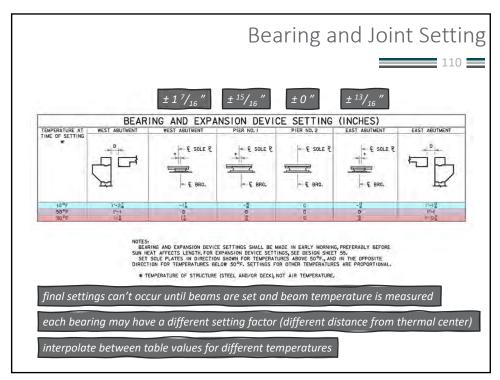
















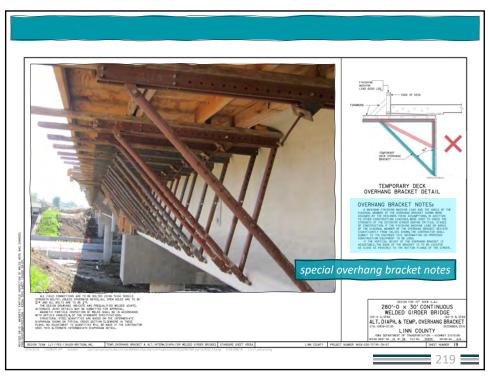


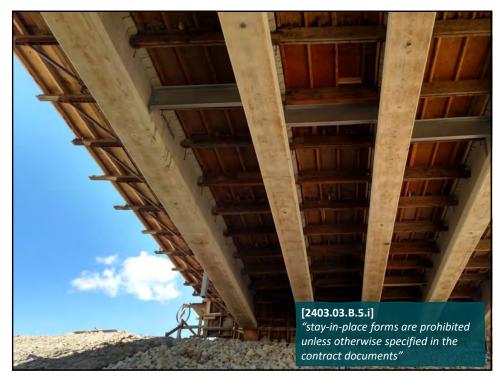




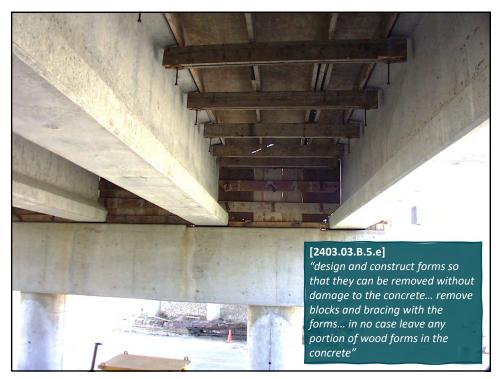




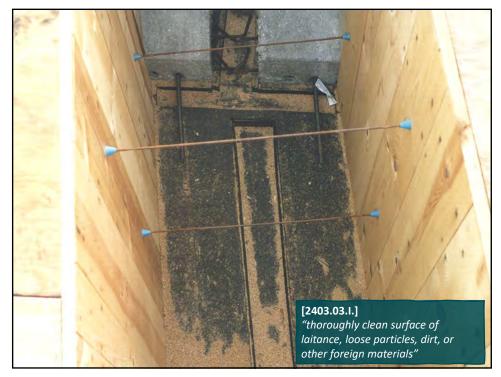


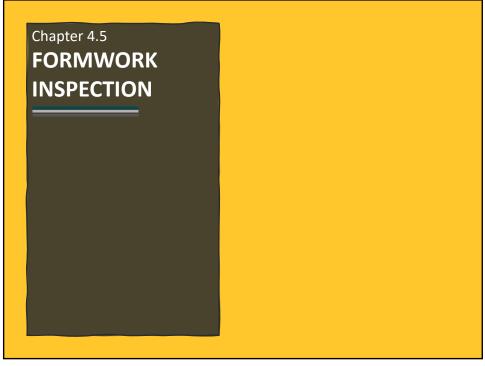




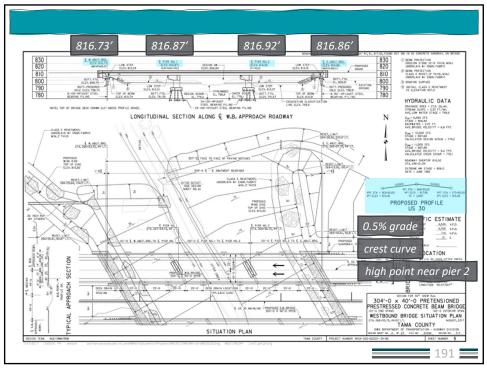


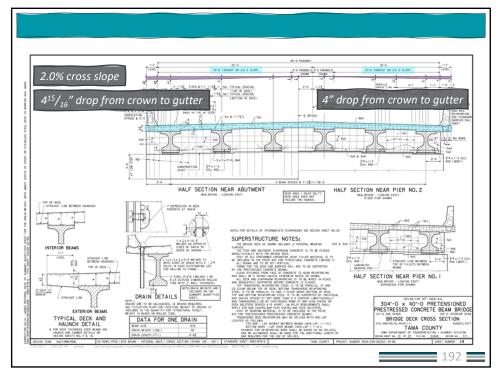


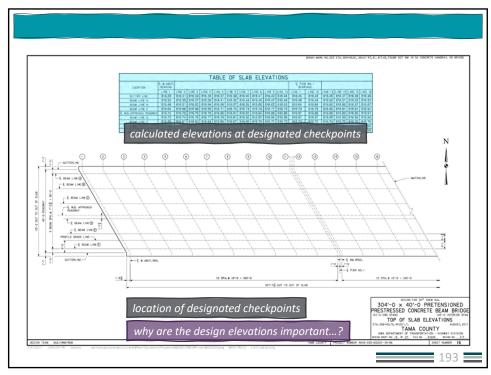


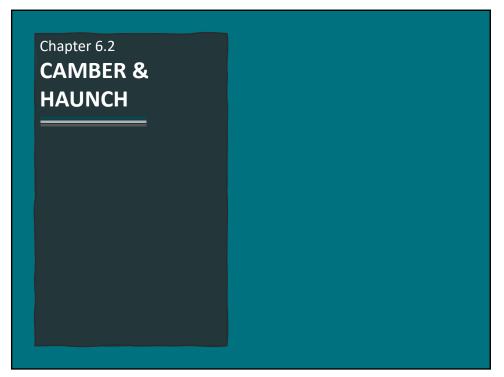


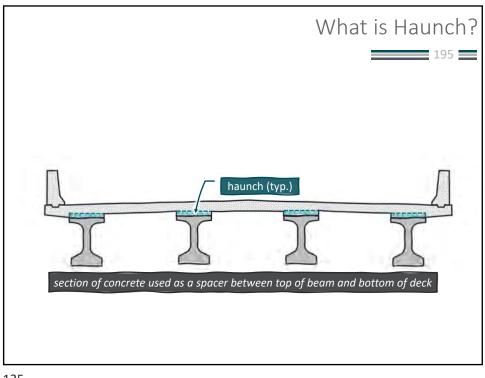


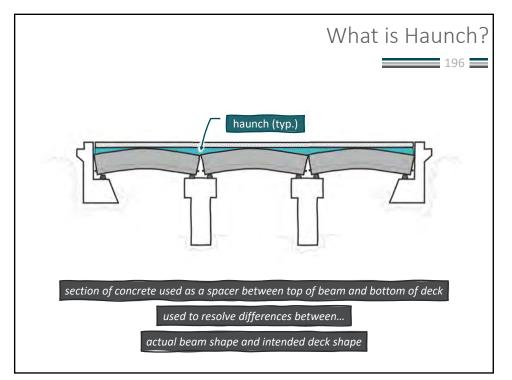


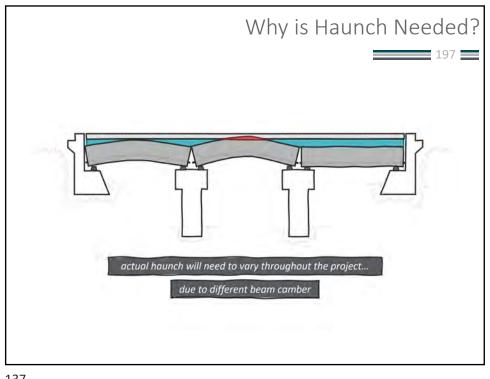


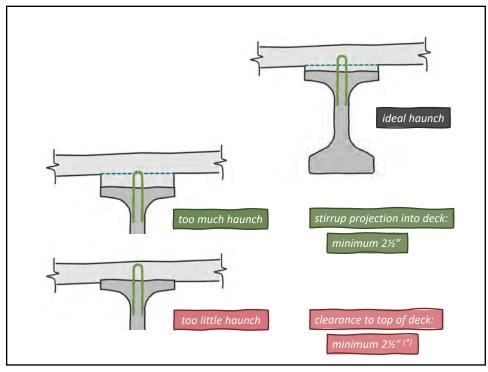










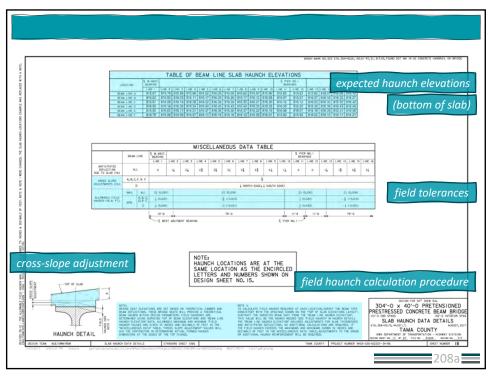


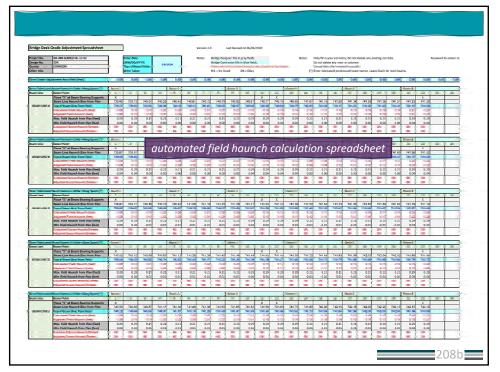
[2526.03.4]

"take elevations of beams as erected... develop proposed final deck grades for review by the Engineer... for determination of required deck grade adjustments and approval of final deck grades for deck construction... locations for determining beam elevations are to be according to the plans..."









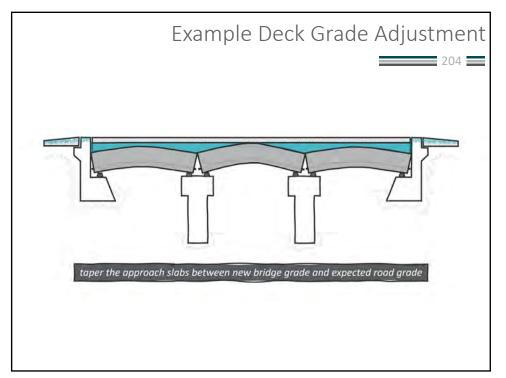


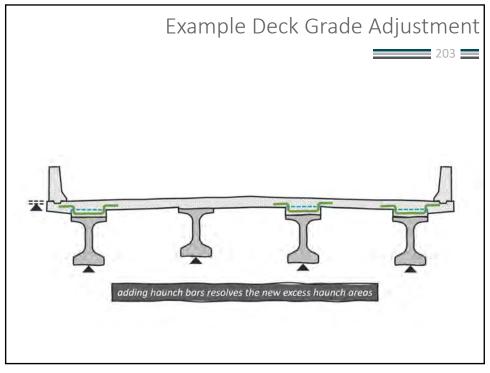


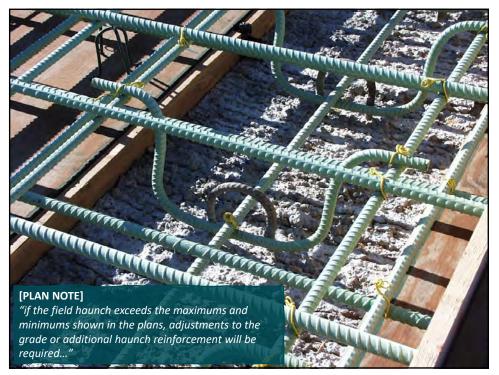


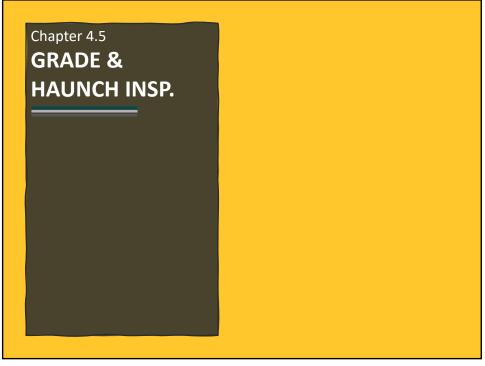


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-	Place "X" at Beam Bearing Supports Seam Line Hausch Elev from Plan	X MIN	740.42	740.69	740.80	741 (1	14128	741.39	741.45	761.47	741.65	Ж 71143	X 761.44	741 58	741.72	741 84	100	-	1.000.00	1	742.02	100	X Tes Sal		
	Max Field Haunch from Plan (Feet) Min, Field Haunch from Plan (Feet)	02		0.2	0.21 -0.51	0.21	0.21	4.21	0.2	0.25	0.25	0.29	12	129	0.21	0.25	021	0.21		0.2 0.2		019			
		11	1.1	-			NG NG	NG NG	NG NO	21	13	0.0	21		1	N N	0.0			1.1	-				
un pe : 1	in the second	1	21	T (-	2	* 0			trun 1	10.0	2.7	= 1	2	2.0	-		Reset.				2	-		-
-	Place "X" at Beam Bearing Supports Deam Line Hearth Electron Plac Top of Roam Set: New Pertil	X Market	740.00	242,42	74140	741.50	141.83	NA. 52	749.00	141.05	741.60	X Xee So	Х. 7.61.20	249.75	741.00	242.00	742.45	742.50	0.0401	742.2		342.85	X 742.10		
	Calculated Table Baseries (Net)	1 -	0.29	0.21	0.21	0.21	0.21	0.21	0.11	0.25	0.25	0.29	0.20	0.29	0.22	0.25	0.31	0.22	0.21	0.2	0.25	0.25	0.20		-





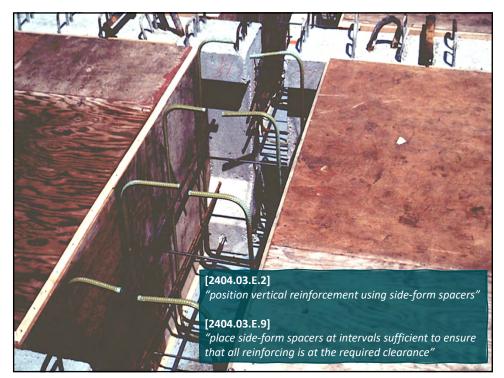


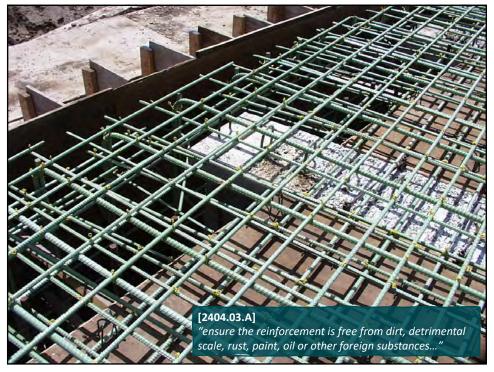


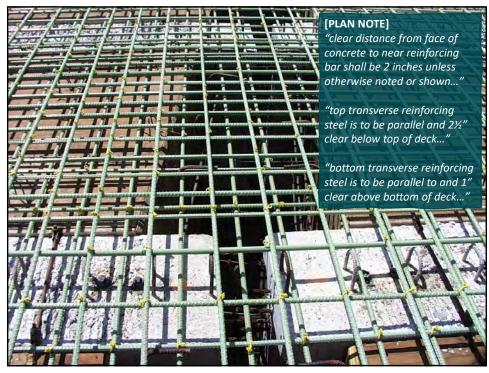




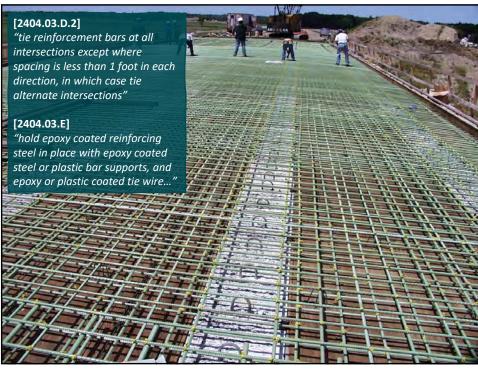












[2404.03.F]

"splice reinforcement only at points shown in the contract documents... place bars in close contact and wire tightly in a manner that the specified clear distance to the surface of the concrete is maintained... lap reinforcing steel for the minimum length specified..."

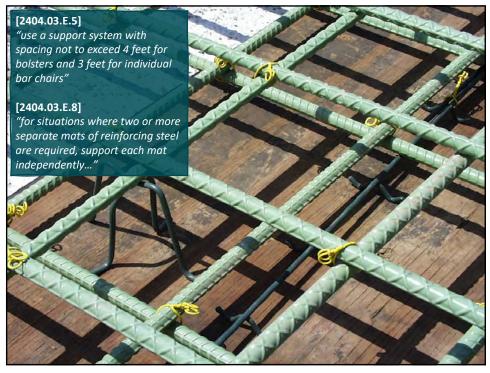
[2404.03.D]

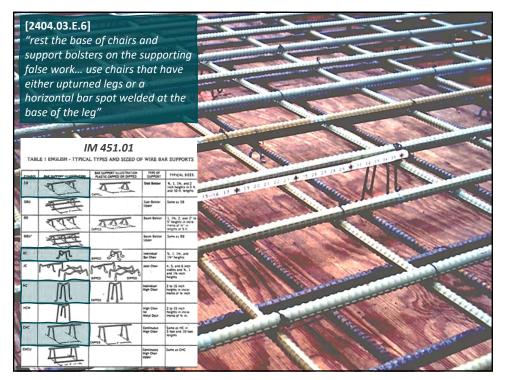
"when field cutting is permitted, cut using mechanical methods... do not flame cut...

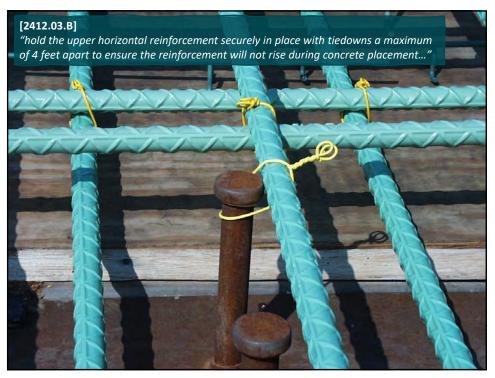
[4151.03.C]

"ensure cut ends have adequate coating and are repaired and/or coated with the same patching material used for repairing damaged coating... repair damage to the coating caused by shipment, storage, and/or placement at the job site...

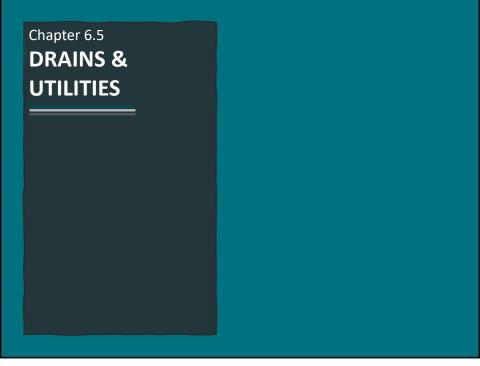


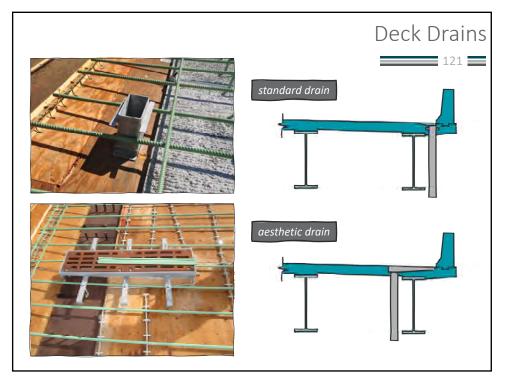






















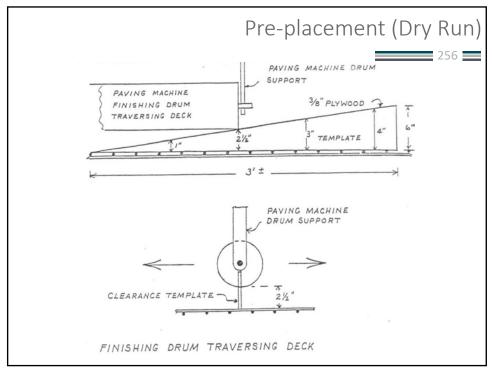


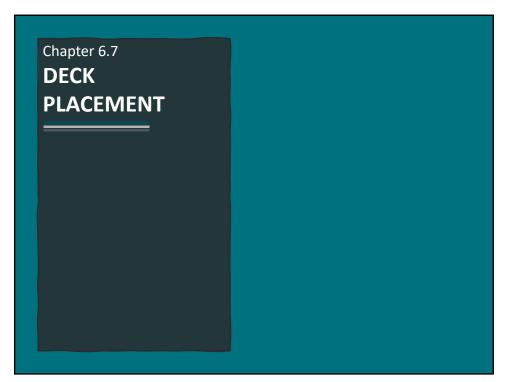


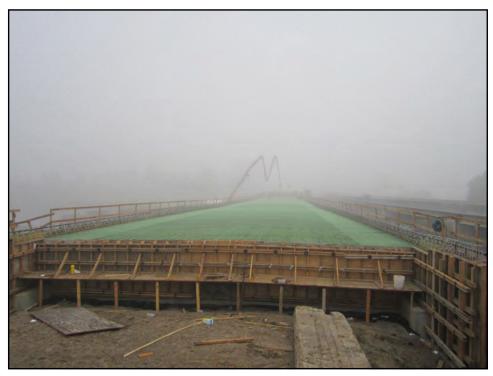


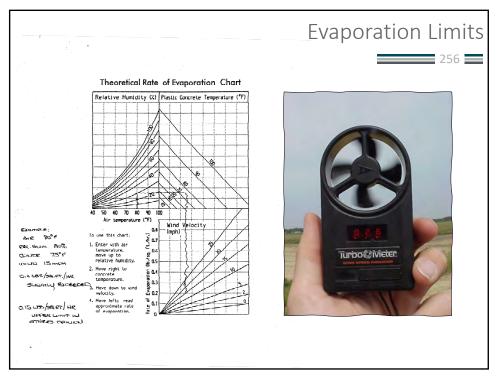














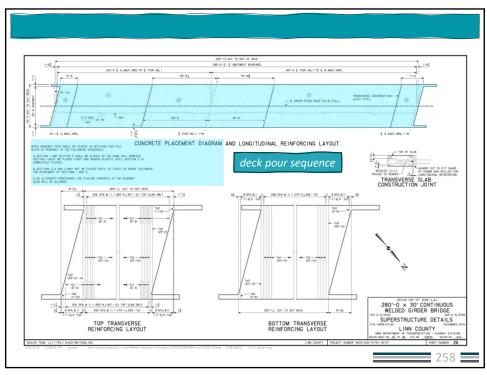


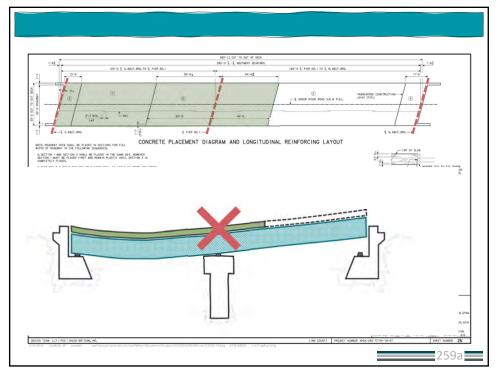


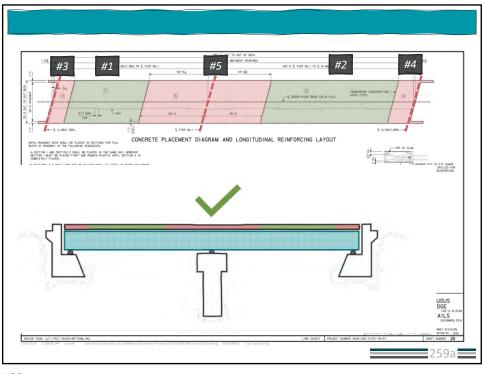




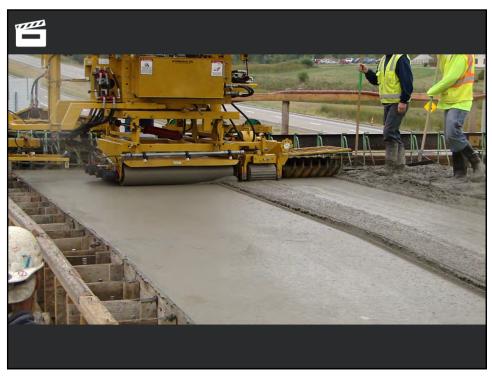




















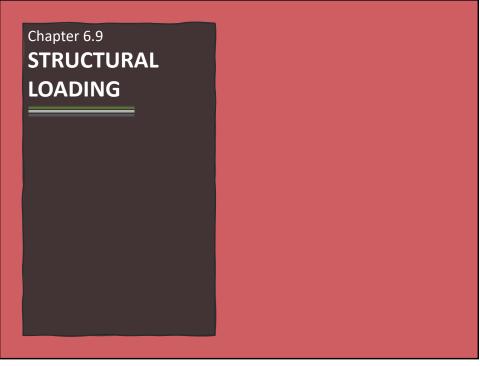


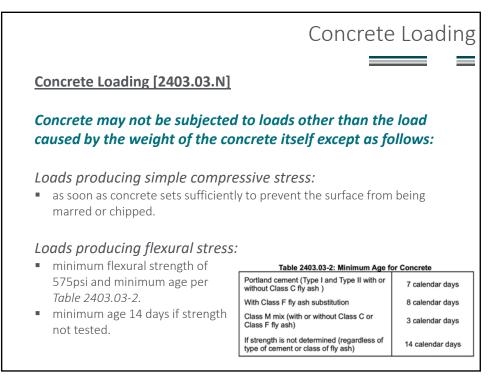






























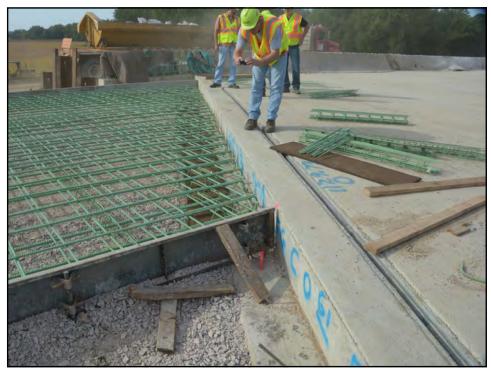




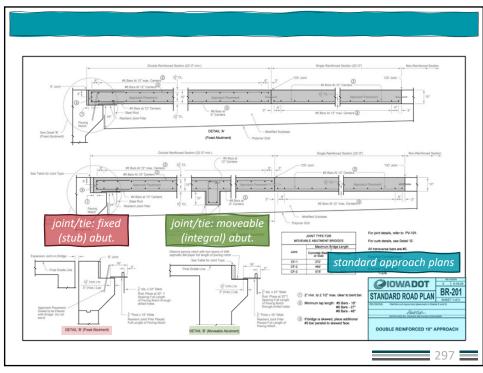


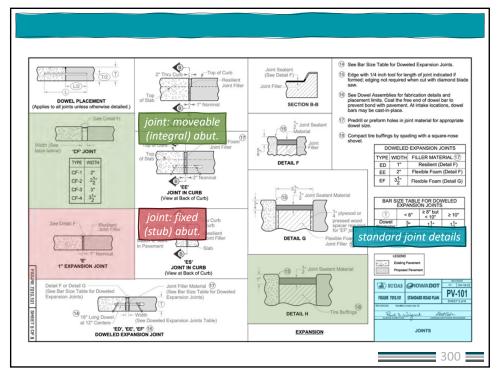














































WORKSHEETS