

SWT – SAME Workshop

Tulsa District HSS (Gates & Bulkheads)

Christopher Strunk, PE, CWI

Sr. Structural Engineer - SME

Tulsa District – Civil Design

18 Oct. 2016



US Army Corps of Engineers
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WHERE WE ARE — U.S. ARMY CORPS OF ENGINEERS



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- ★ Engineering Research and Development Centers (ERDC)
- ★ Engineering Centers of Expertise (MCX)
- ★ Institute for Water Resources



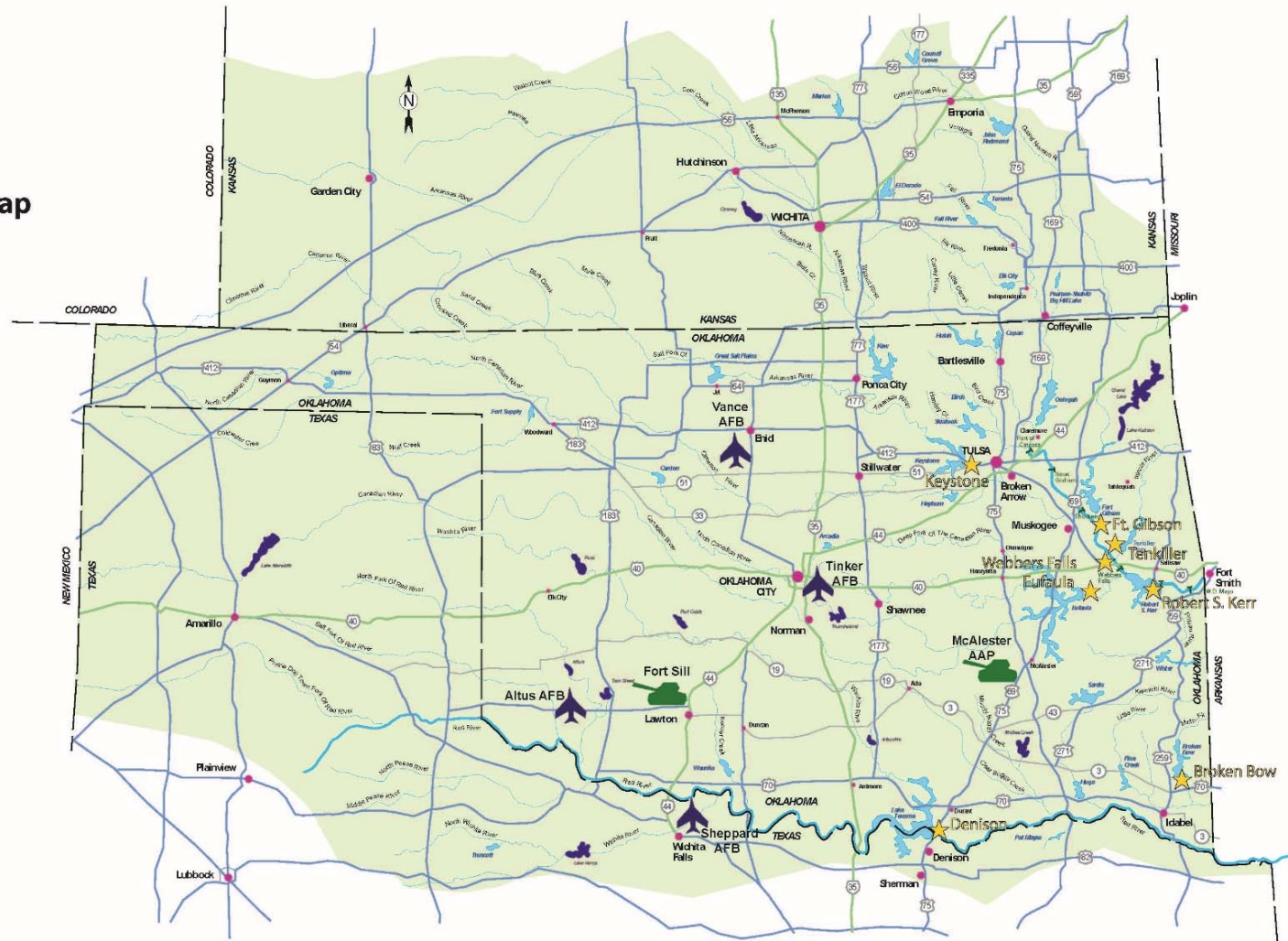
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Tulsa District Project Location Map

-  Corps Operated Lakes
-  Lakes Operated By Others
-  Power Plants
-  Air Force Base
-  Army Base

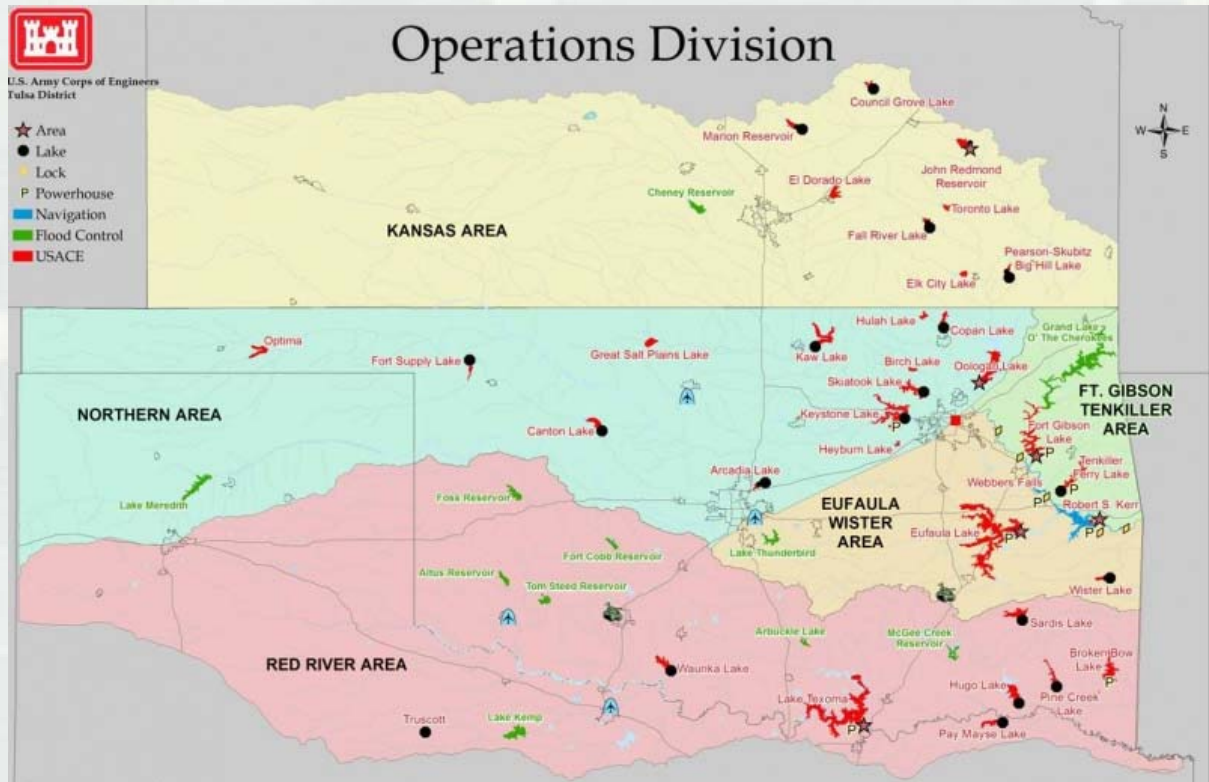


**US Army Corps
of Engineers** ®
Tulsa District

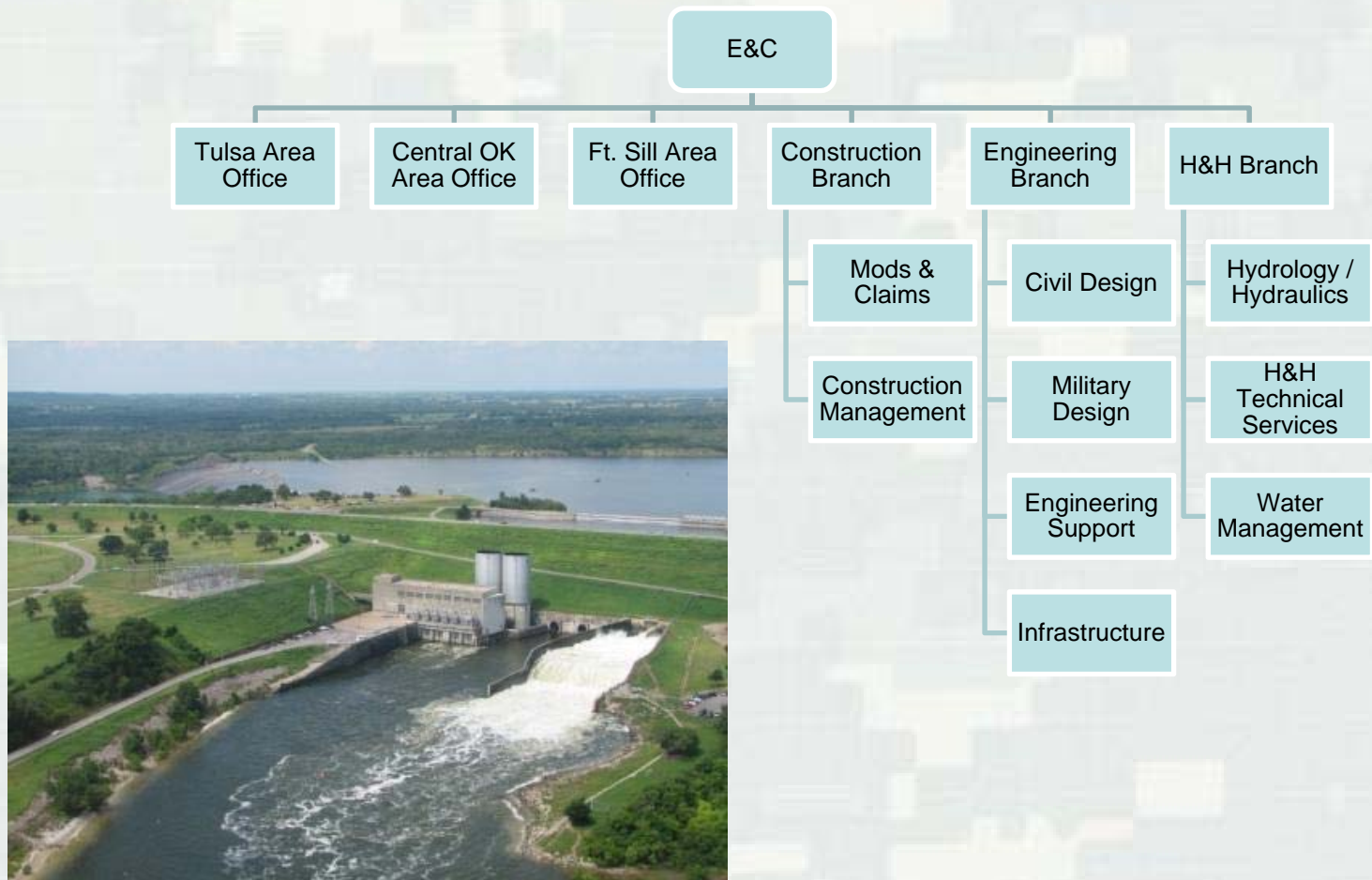
<http://www.swt.usace.army.mil>



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Civil Works & Infrastructure - SWT

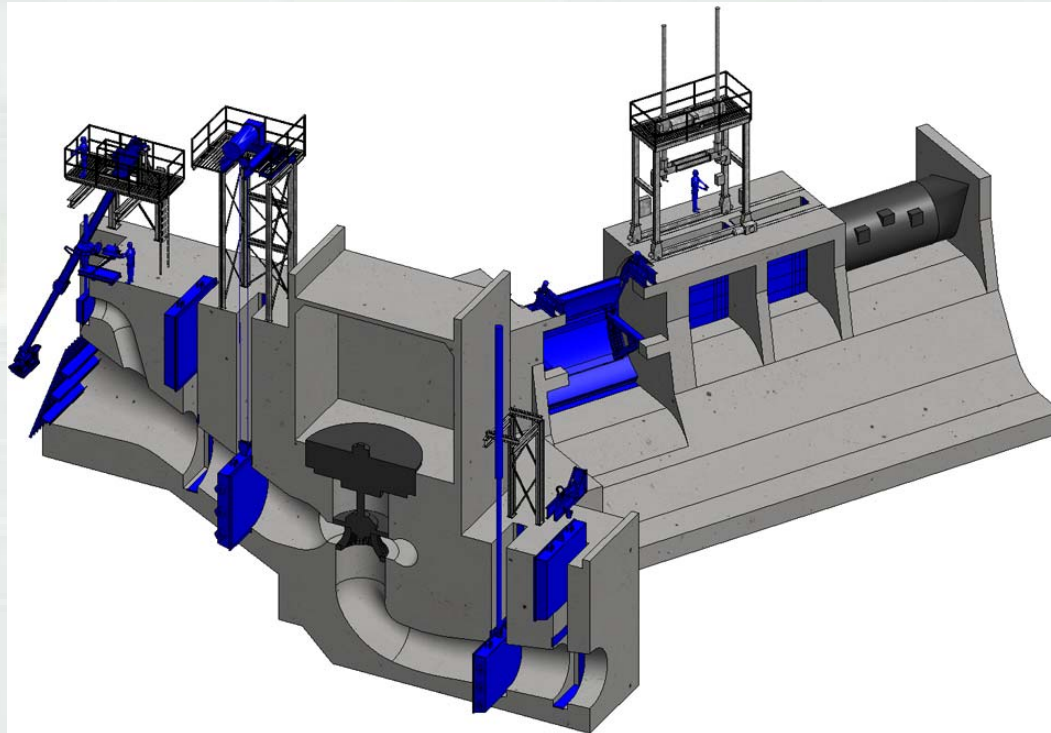
- Infrastructure Section
Dam Safety Program / Levee Safety Program / Bridge Safety Program*
Annual Inspections (some but not all are lead by assigned Project Engineers from this section, others are lead by Operations Personnel) this includes the PI&PA programs.
- Civil Works Section
Civil works design for O&M and M&M generally with assistance or under the guidelines of the required MCX (DSPC / HDC / INDC). Districts HSS Program is also overseen in this section.



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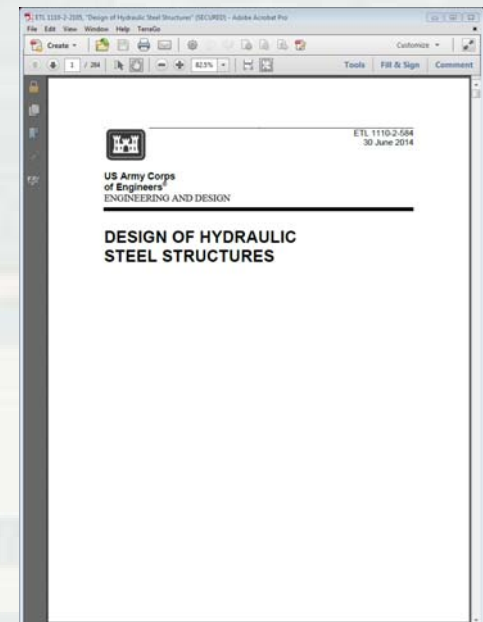
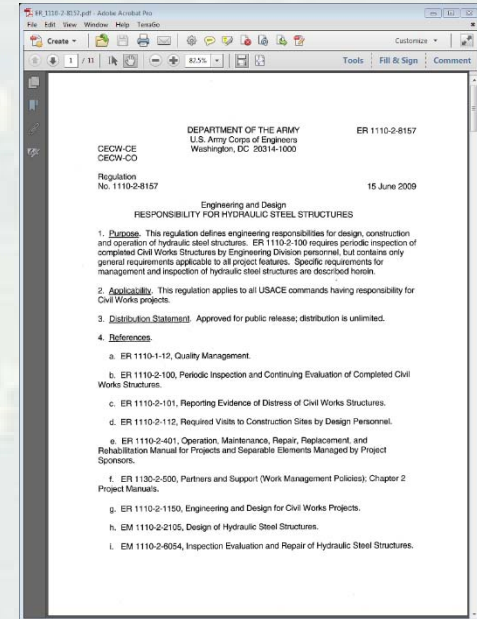
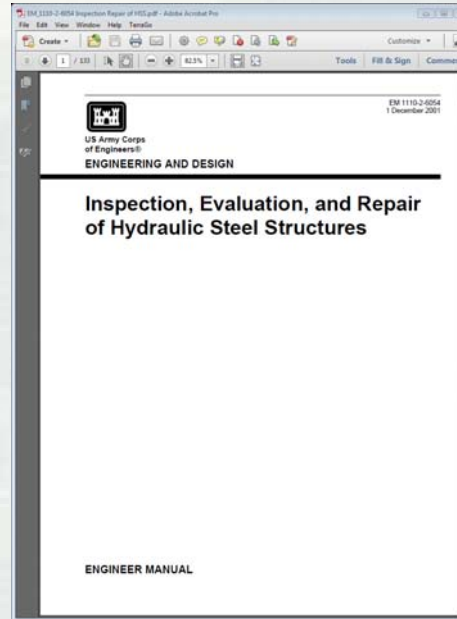
- Hydraulic Steel Structures (Gates): Tainter Gates / Miter Gates / Sluice Gates / Service Gates / Intake Gates / Emergency Gates / Stoplogs / Bulkheads / Associated Lifting Devices.
- June 2014 – Existing Designs are no longer allowed to be replicated without 1st conforming to ETL 1110-2-584.



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USACE Requirements

- ER 1110-2-1150
“Engineering and Design For Civil Works Projects”, 31 Aug 1999
- ER 1110-2-8157
“Responsibility for Hydraulic Steel Structures”, 15 June 2009
- EM 1110-2-6054
“Inspection Evaluation and Repair of Hydraulic Steel Structures”, 01 Dec. 2001
- ETL 1110-2-584
“Design of Hydraulic Steel Structures”, 30 June 2014



<http://www.publications.usace.army.mil>



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Challenges:

- Projects are aging, District is 75-yrs old. Our projects are beginning to show some age and larger and more complex components are needing to be replaced.
- Large Inventory, 38 Lake Projects / 2,000 HSS Components / 1,528 Buildings / 48 Bridges.
- Changing Conditions: Environmental Cycles / Seismic Activity.
- Resourcing Components: Cast Steel / Semi-Cast / Bronze Alloys / etc.
- Design Standards; USACE and other Code Standards are rapidly changing.
- Changing Contracting Requirements



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Large Inventory, 38 Lake Projects / 2,000 HSS Components / 1,528 Buildings / 48 Bridges.

Copan

Dam & Spillway

HSS ID	Description	FCM	Initial Inspection	Last Inspection	Next Inspection	Service Status	Deficiency	Recommendation
88. COP-SP-SL-1	Copan - Stoplog 1	Y		4/27/2011	4/1/2016	IN-SERVICE		
89. COP-SP-SL-1B	Copan - Bottom Stoplog 1	Y		4/27/2011	4/1/2016	IN-SERVICE		
90. COP-SP-SL-2	Copan - Stoplog 2	Y		4/27/2011	4/1/2016	IN-SERVICE		
91. COP-SP-SL-3	Copan - Stoplog 3	Y		4/27/2011	4/1/2016	IN-SERVICE		
92. COP-SP-TG-1	Copan - Tainter Gate 1	Y		4/27/2011	4/1/2016	IN-SERVICE		
93. COP-SP-TG-2	Copan - Tainter Gate 2	Y		4/27/2011	4/1/2016	IN-SERVICE		
94. COP-SP-TG-3	Copan - Tainter Gate 3	Y		4/27/2011	4/1/2016	IN-SERVICE		
95. COP-SP-TG-4	Copan - Tainter Gate 4	Y		4/27/2011	4/1/2016	IN-SERVICE		

Flood Damage Reduction Facilities

HSS ID	Description	FCM	Initial Inspection	Last Inspection	Next Inspection	Service Status
96. COP-LV-FG-1	Copan - Caney Levee Flap Gate 1	Y		4/27/2011	4/1/2016	IN-SERVICE
97. COP-LV-FG-2	Copan - Caney Levee Flap Gate 2	Y		4/27/2011	4/1/2016	IN-SERVICE
98. COP-LV-SG-1	Copan - Caney Levee Slide Gate 1	Y		4/27/2011	4/1/2016	IN-SERVICE
99. COP-LV-SG-2	Copan - Caney Levee Slide Gate 2	Y		4/27/2011	4/1/2016	IN-SERVICE

Council Grove

Service Tower

HSS ID	Description	FCM	Initial Inspection	Last Inspection	Next Inspection	Service Status
100. CGR-OW-EM-1	Council Grove - Emergency Gate 1	Y		5/30/2012	5/1/2017	IN-SERVICE
101. CGR-OW-SG-1	Council Grove - Service Gate 1	Y		5/30/2012	5/1/2017	IN-SERVICE
102. CGR-OW-SG-2	Council Grove - Service Gate 2	Y		5/30/2012	5/1/2017	IN-SERVICE
103. CGR-OW-SL-1	Council Grove - Stop Log 1	Y		5/30/2012	5/1/2017	IN-SERVICE
104. CGR-OW-SL-2	Council Grove - Stop Log 2	Y		5/30/2012	5/1/2017	IN-SERVICE

El Dorado

HSS Engineering Inspection Tracking

Home | Inspections | Scheduling | Queries | User List

HSS METRICS Export: [Icon]

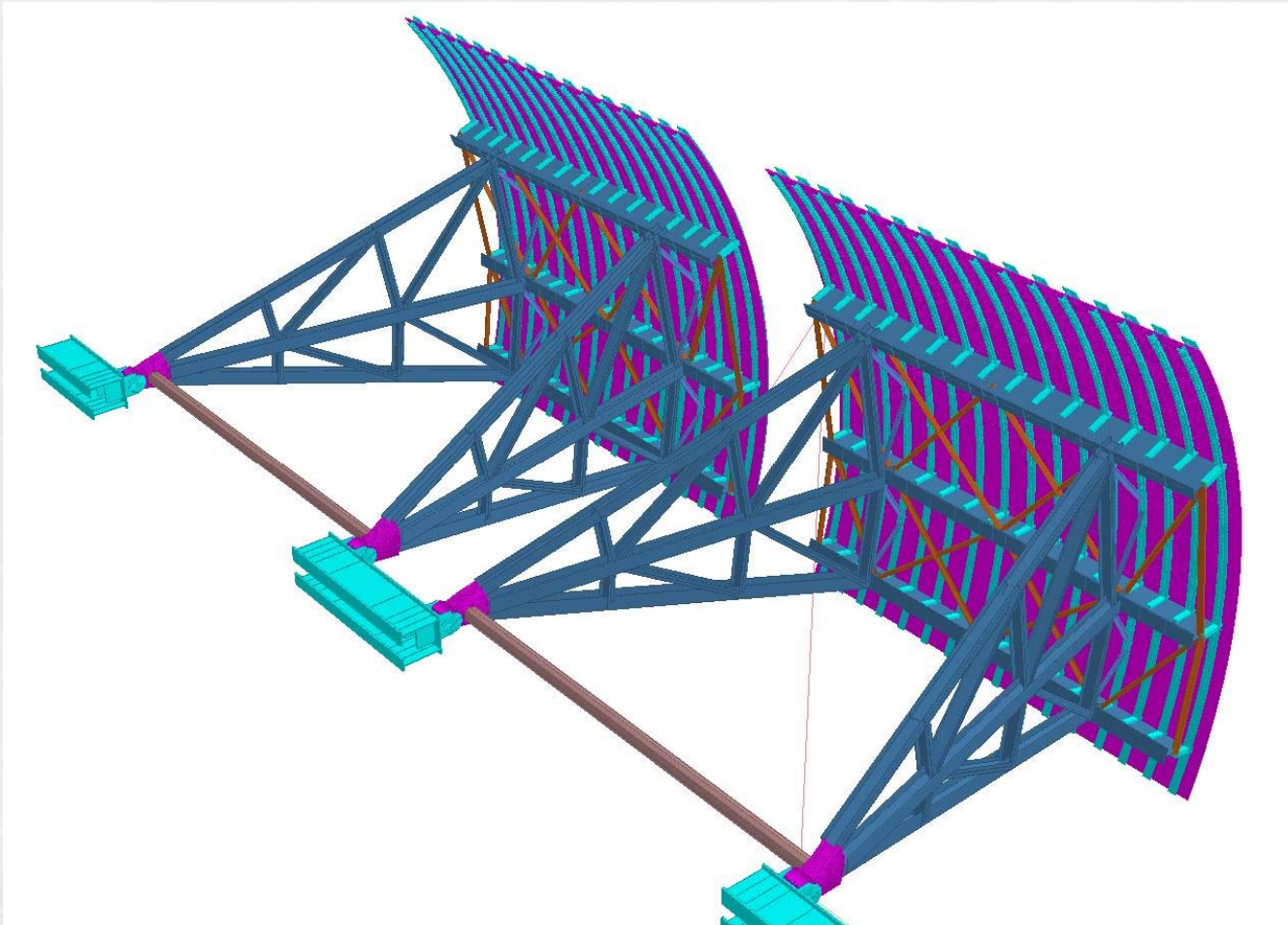
HSS Metrics	SWT
HSS Inventory:	524
1 Removed From Service	
Removed From Service	2
2 Limited Service	
Limited Service	1
3 Completed Inspections	
Inspected:	268
% Complete:	51%
4 Initial Fracture Critical Member (FCM) Inspection Reports Completed	
Known Non-FCM in Inventory:	1
Known FCM in Inventory:	244
FCM Status Unknown:	279
Potential FCM (Includes Known and Unknown):	523
FCM Reports Complete:	243
% FCM Reports Complete:	46%

Logged in As: Strunk, Christopher - - [SWT]



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Design Standards; USACE and other Code Standards are rapidly changing.



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Location of Steel Fabricators – who have built HSS structures for Tulsa District



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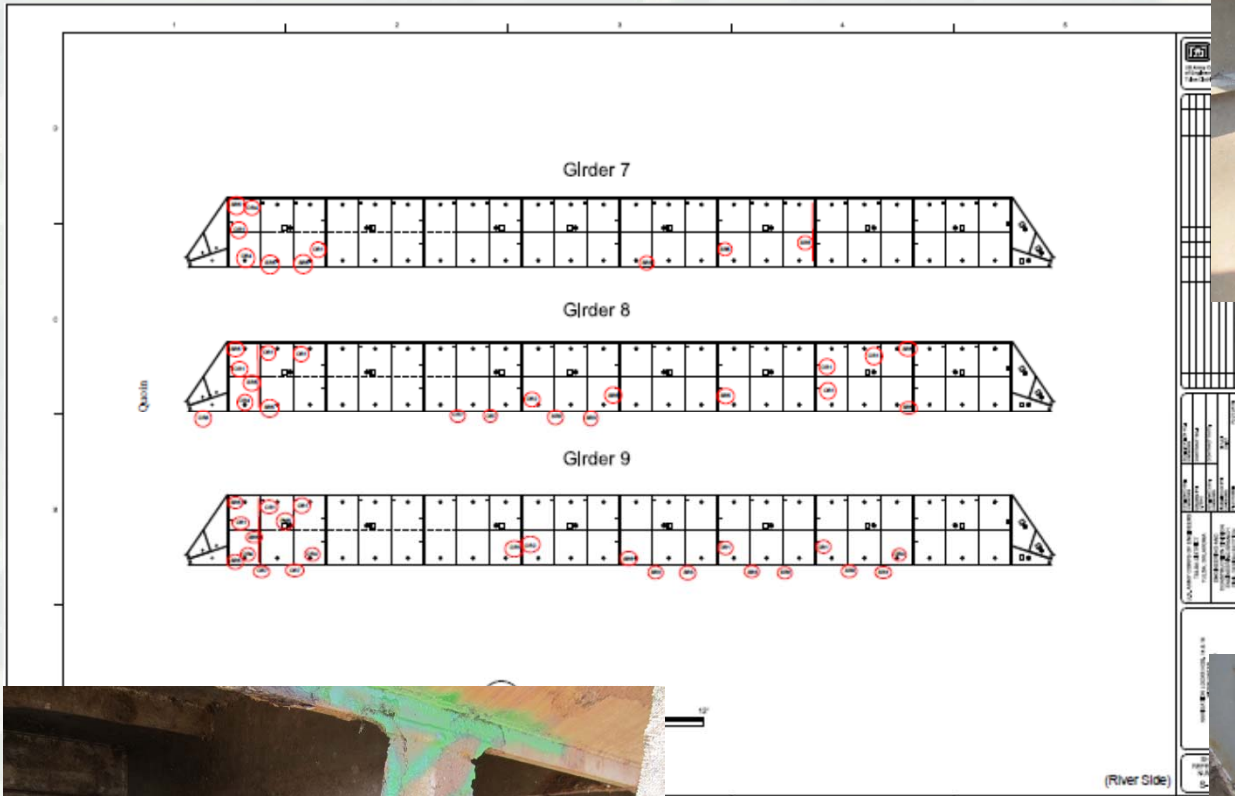
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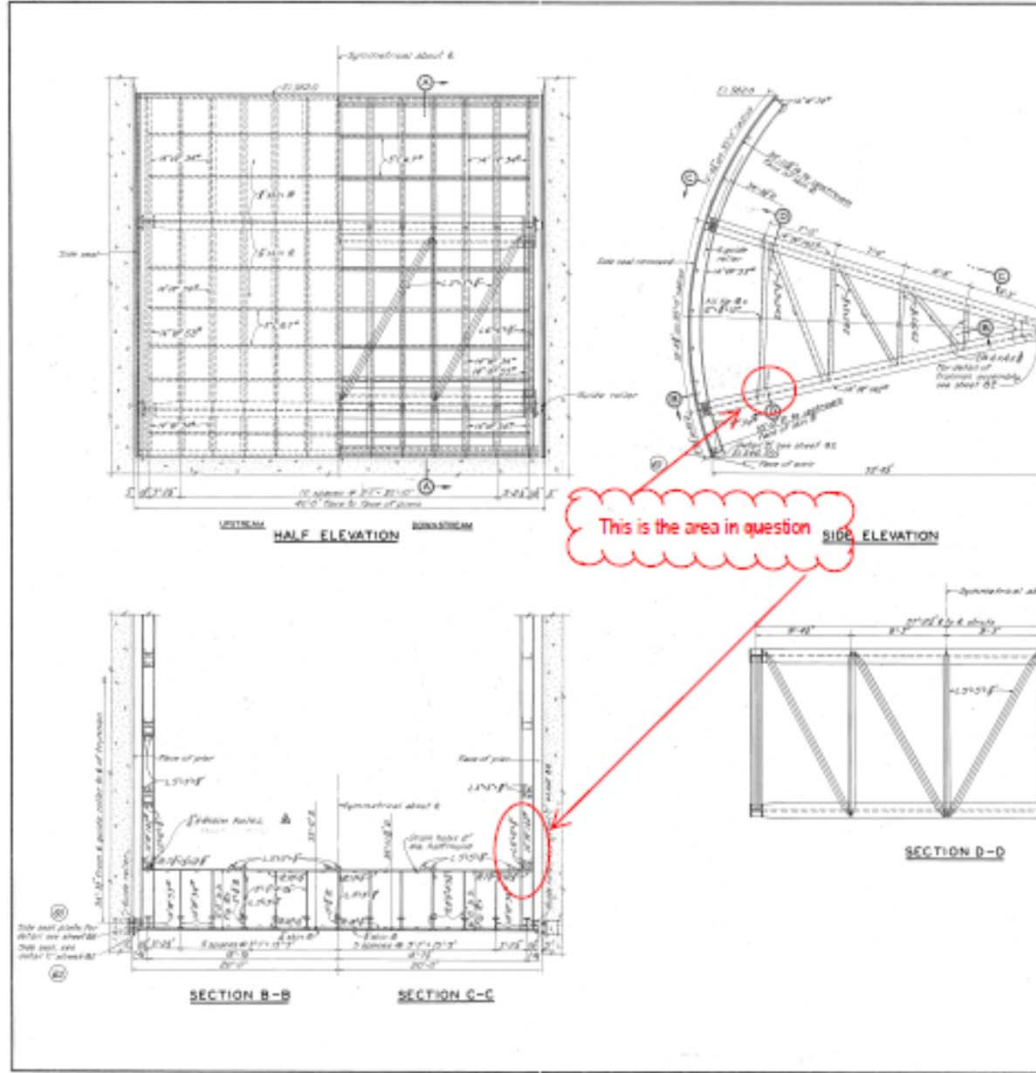
Examples

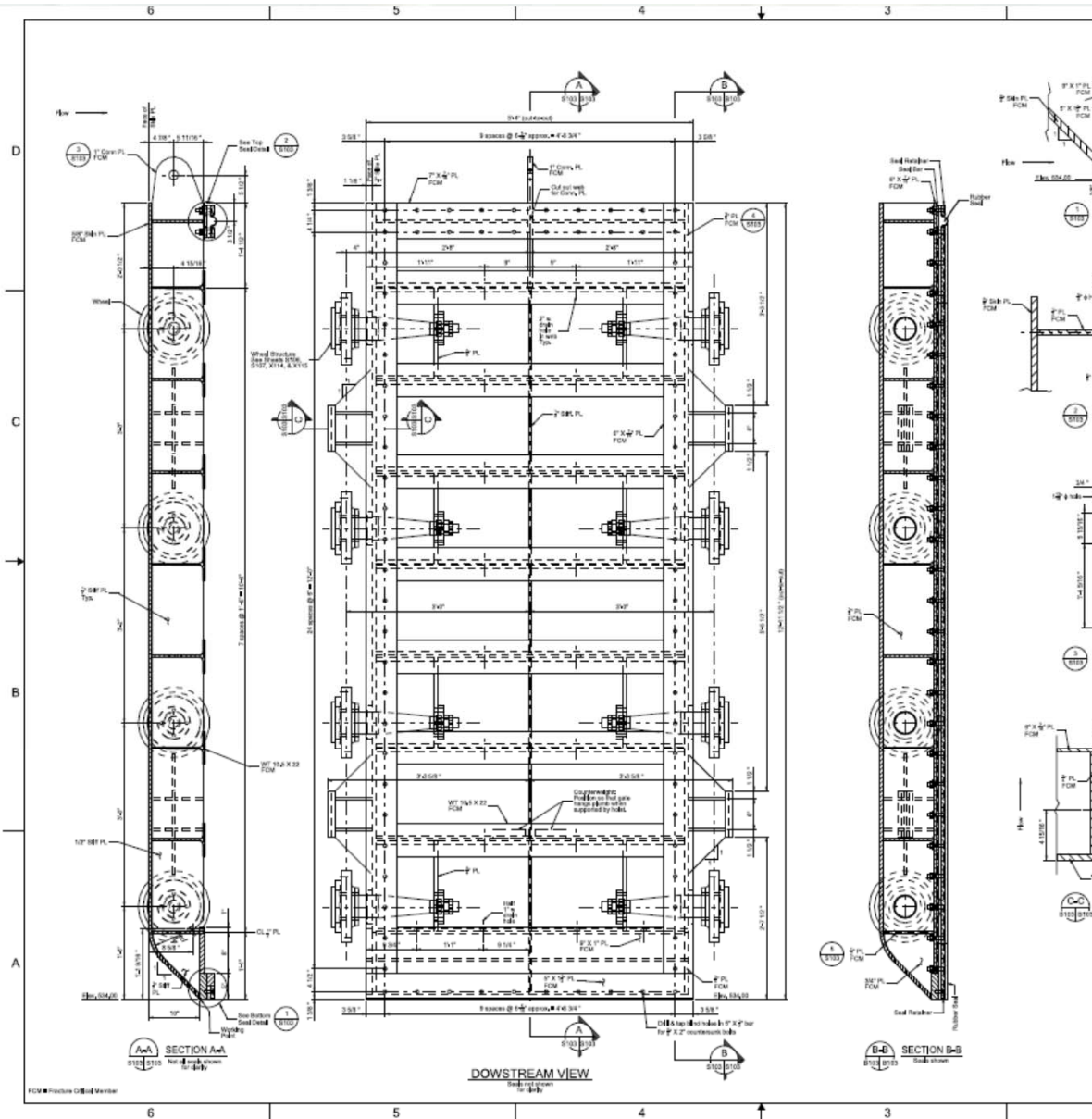


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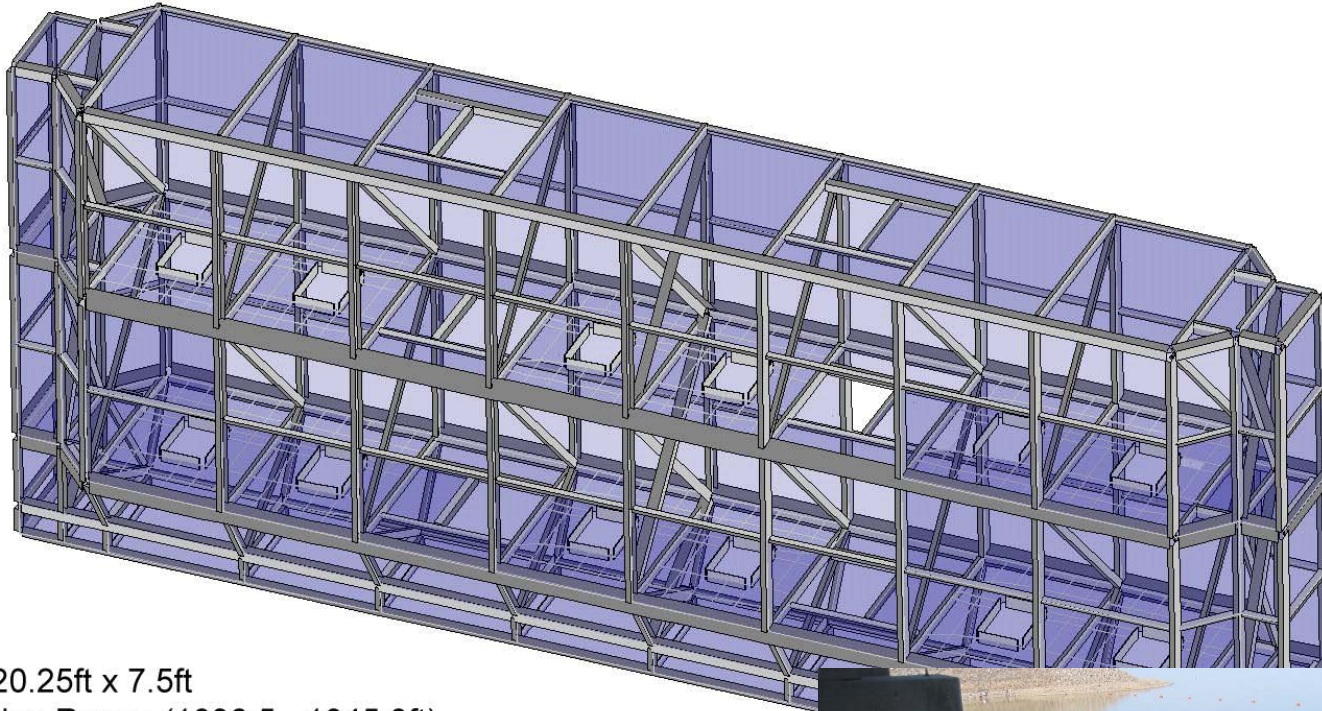
Examples







John Redmond Floating Bulkhead



Stats:

50ft x 20.25ft x 7.5ft

Operating Range (1036.5 - 1045.0ft)

Minimum Freeboard (2.0ft)

Minimum Operating Weight (93.5 Tons)

Minimum, operating, Draft (9.75ft)

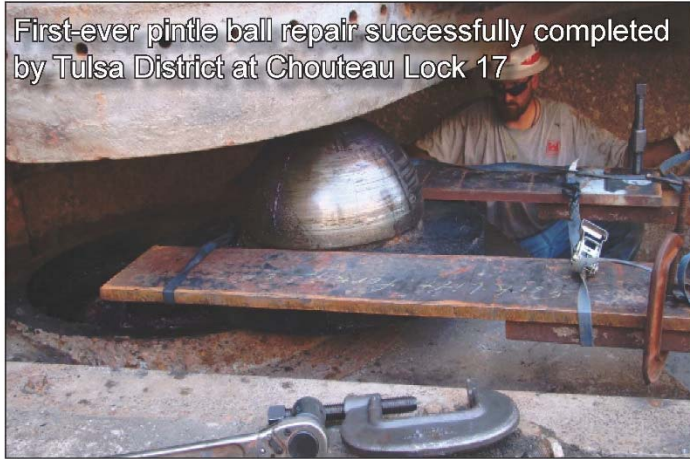


04/25/2013



Tulsa District Project Update

First-ever pintle ball repair successfully completed by Tulsa District at Chouteau Lock 17



The moment of truth as the custom-made pintle ball is moved into place under the dam gate. There were no existing replacement parts available for this work at Chouteau Lock and Dam 17 in Chouteau, Oklahoma, so crews were forced to wait until the actual placement of the part to know if it would fit, which it did.

Work involving the repair of a major component of a lock along the McClellan-Kerr Arkansas River Navigation System (MKARNS) was recently completed ahead of schedule by the Tulsa District, U.S. Army Corps of Engineers (USACE).

The work involved the removal and replacement of a pintle ball at Lock 17 at Chouteau, Oklahoma. This was the first time such a repair has been performed on a lock on the MKARNS. The entire lock was emptied of water, an operation referred to

as "dewatering," so that the dam gate could be lifted for the removal of the pintle.

Impact to commercial operations along the navigation system was kept to a minimum through extensive planning, spanning several months, in an effort to close the lock for three weeks or less. The lock closed August 27 and reopened to river traffic September 6, with crews scheduled to continue any other required work between traffic.

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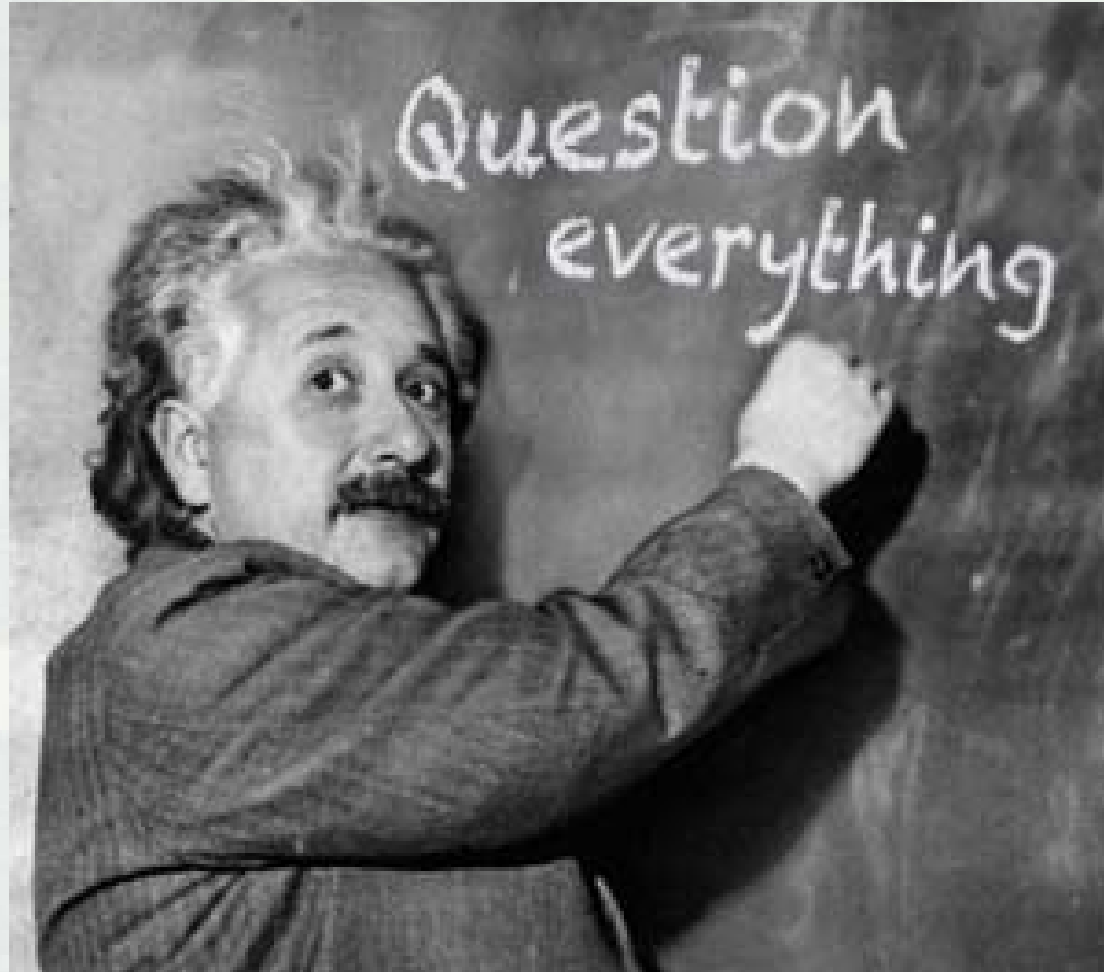
February 2013



February 2011



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