



## **LOW ACTIVITY WASTE PRETREATMENT SYSTEM**

Hanford Site Richland, WA  
PROJECT NUMBER 31269 (T5L01)

DATA SHEET NUMBER: 210LP-PA-BC-CRN-001

FOR

Weather Enclosure Crane  
210LP-PA-BC-CRN-001

PREPARED FOR

Washington River Protection Solutions, LLC

AECOM  
6200 South Quebec Street  
Greenwood Village, Co 80111

Revision: 1      Status: Approved for Bid



Weather Enclosure Crane

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**DATA SHEET REVISION PAGE**

Project Name: LOW ACTIVITY WASTE PRETREATMENT SYSTEM Discipline: Mechanical

Client: Washington River Protection Solutions, LLC

**Revision Signatures**

J. Dixon Prepared By	_____	Date	_____	J. Dixon Approved By	_____	Date	_____
S. Bultemeier Checked By	_____	Date	_____	B. ATHERTON Approved By (PEM)	_____	Date	_____
C. Hietbrink IDV By	_____	Date	_____	P. Bell Approved By (QA)	_____	Date	_____

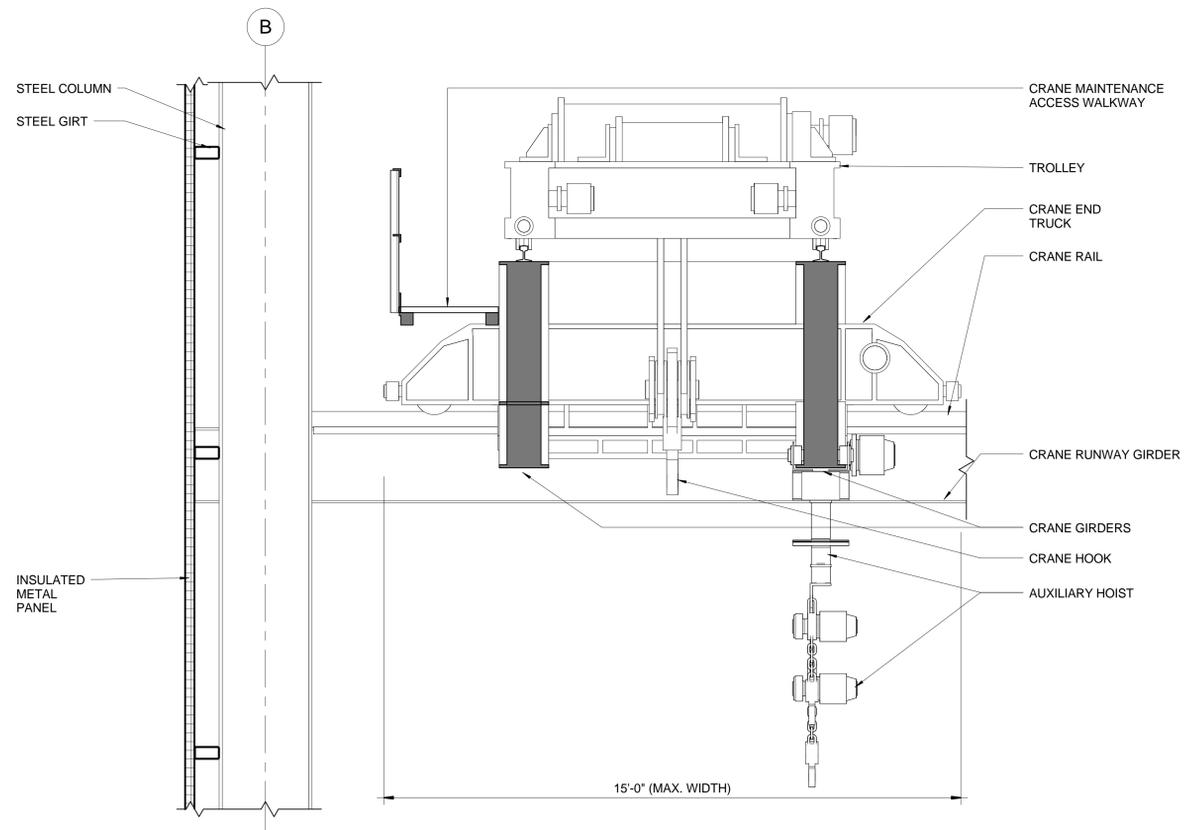
Status	Rev No	Date	Prepared By	Pages	Description of Changes
Draft	A	7/20/2016	J. Dixon	3	<b>For IDR</b>
Approved for Bid	0	8/25/2016	J. Dixon	8	<b>Approved for Bid</b>
Approved for Bid	1	9/9/2016	J. Dixon	8	<b>Approved for Bid</b>

Safety Related: Yes  No  Quality Level: Full QA  Enhanced QA  Commercial QA

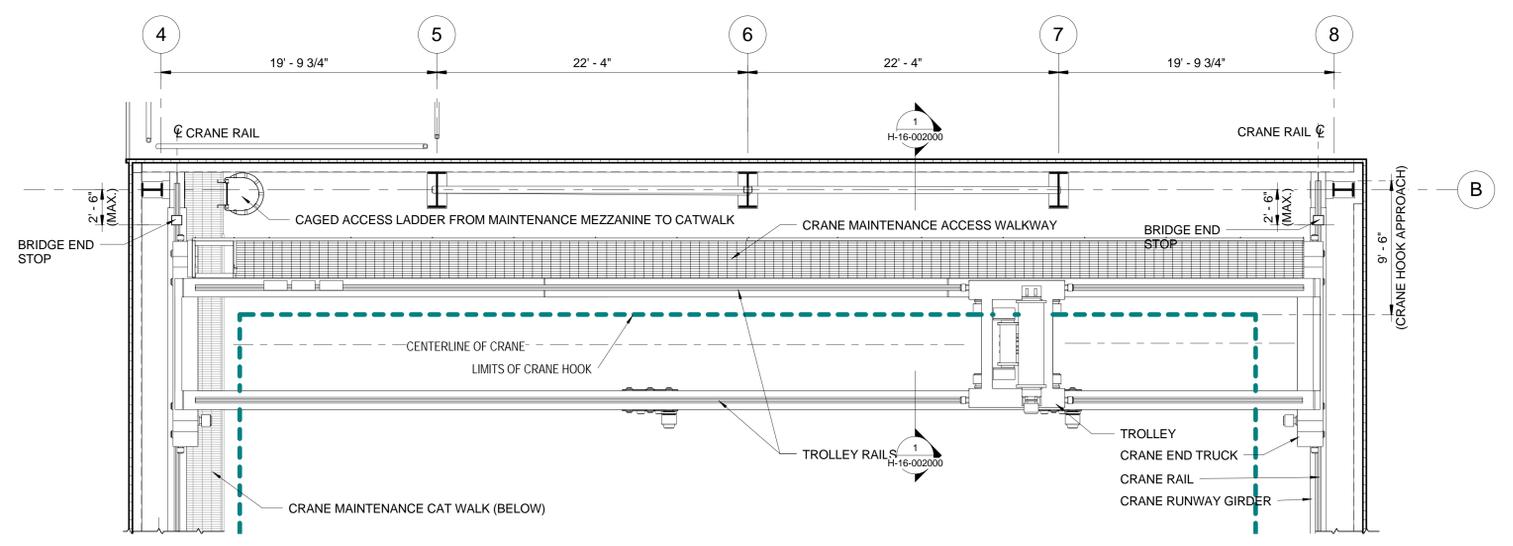
AECOM ATKINS AREVA		BRIDGE CRANE DATA SHEET			ITEM NUMBER		PAGE		
		<input type="checkbox"/> INQUIRY <input checked="" type="checkbox"/> PROPOSAL <input type="checkbox"/> STUDY <input type="checkbox"/> RECORD			210LP-PA-BC-CRN-001		3 OF 8		
CUSTOMER				PROJECT		JOB NO.		DATE:	
WASHINGTON RIVER PROTECTION SOLUTIONS, LLC				LOW ACTIVITY WASTE PRETREATMENT SYSTEM		31269 (T5L01)		7/20/2016	
REVISIONS (DATE & BY)		7/20/16, Joe Dixon		8/25/16, Joe Dixon		9/9/16, Joe Dixon		BY: Joe Dixon	
A									
SERVICE				MANUFACTURER		NO. REQ'D.		SOURCE OF QUOTE	
WEATHER ENCLOSURE CRANE				TBD		1		TBD	
<b>EQUIPMENT DETAILS</b>									
<b>DESIGN INFORMATION</b>					<b>DESIGN INFORMATION (continued)</b>				
Number of cranes required: 1					Max. allowable endtruck width: 15 ft bumper to bumper				
Number of cranes on runway: 1					Max. allowable crane weight: 164,000 lb				
Bridge crane type: Top running double girder					Max. allowable wheel load: 108,020 lb				
Auxiliary hoist quantity: 2 on same trolley, underhung on south girder					<b>POWER &amp; CONTROLS</b>				
Capacity:					Power required:				
Main hoist: 30 ton					AC - volts / phase / hertz: 480V / 3 Phase / 60Hz				
Aux. hoist(s): 1 ton each					DC - volts: N/A				
Bridge: 32 ton					Area classification: (TBD)				
Total lift (highest to lowest point):					Motor enclosure type(s): TENV				
Main hoist: 61' 10"					Electrification method:				
Aux. hoist(s): 61' 10"					Bridge: Festoon				
Main hoist hook type: Powered rotate latch style hook					Main hoist/trolley: Festoon				
Main hook approach: 4'-6" to center of rail on both sides minimum					Aux. hoist/trolley: Festoon				
Aux. hoist hook type: Free swivel latch style hook					Junction box enclosure rating(s): NEMA Type 12				
Aux. hook approach: 4'-6" to center of rail on both sides minimum					Control method(s): Wireless pendant and remote control station with video monitors.				
Runway length: 124' 7"					Control location(s): Main working area and remote operation area located above the truck bay.				
Runway span: 82' 0"					Cameras:				
Speeds required:					Quantity: 4				
Bridge: Variable up to 125 ft/min					Location(s): Two bridge, one trolley, one load block.				
Main hoist: Variable up to 10 ft/min					Load block camera to be radiation hardened				
Main trolley: Variable up to 100 ft/min					Monitor(s): 2 x 24" or larger located at control station				
Aux. hoist(s): Variable up to 10 ft/min					DVR: Capable of recording 4 or more channels with 1TB drive or larger				
Aux. trolley: Variable up to 100 ft/min					<b>Safety Design Requirements</b>				
Service environment (in/outdoor): Indoor					Seismic Design Criteria: SDC-3, Limit State A/NDC-3, satisfied by				
Max. temperature: 110° F					NOG-1 requirements identified in the				
Min. temperature: 50° F					crane specification. Crane must stay on				
Humidity: 0 to 100%					rails, maintain control of the load, but is not				
Service Class (CMAA): Heavy Duty Class D					required to operate after seismic DBE.				
Bridge Service:					Safety Critical Components: All items in the load path for the crane are				
Moves/Hour: 0.5					Safety Significant (SS) components as				
Hour/Day: 10 hrs 5 days a week					defined in the crane specification				
Speed: Maximum					Quality Requirements for Safety Items:				
Average movement: 60 ft					All items identified as safety significant are				
Main Hoist Service:					to be built to Full Quality Assurance (FQA).				
Lifts/Hour: 0.5					All other items are Enhanced Quality				
Hour/Day: 10 hrs 5 days a week					Assurance (EQA).				
Average height of lift: 50'					<b>NOTES &amp; ADDITIONAL INFORMATION</b>				
Speed: Maximum					The Manufacturer shall review all information on this Data Sheet, and shall				
Load attachment (hook, etc): Hook					clearly mark/note any deviations from the Buyer supplied information.				
Aux. Hoist(s) Service:					The Manufacturer shall reference and comply with the Specification noted				
Lifts/Hour: 0.5					in the heading of this Data Sheet, and the Attachments that form a part of				
Hour/Day: 10 hrs 5 days a week					that Specification.				
Average height of lift: 50'					The Manufacturer shall refer to the Building Clearance Drawing(s) noted				
Speed: Maximum					below:				
Load attachment (hook, etc): Hook					H-16-002000, LAWPS Weather Enclosure Crane/Building Interface				
Material/Load to be handled: Main hoist to handle shield plates and maintenance activates. Auxiliary hoists to handle only replacement of pipe jumpers.					H-16-002001, LAWPS Weather Enclosure Crane Hook Approaches				
Special service conditions: Radiation level: 5 mrad/hr					H-16-002003, LAWPS Weather Enclosure Crane Building Section				
Lower Block radiation level: 40 rad/hr									
for short periods and 5mrad/hr general area									
Expected to have intervals of inactivity									
Paint: Safety Yellow, lead and chromate free									

AECOM ATKINS AREVA		BRIDGE CRANE DATA SHEET				ITEM NUMBER	PAGE
		<input type="checkbox"/> INQUIRY <input checked="" type="checkbox"/> PROPOSAL <input type="checkbox"/> STUDY <input type="checkbox"/> RECORD				210LP-PA-BC-CRN-001	4 OF 8
CUSTOMER			PROJECT			JOB NO.	DATE:
WASHINGTON RIVER PROTECTION SOLUTIONS, LLC			LOW ACTIVITY WASTE PRETREATMENT SYSTEM			31269 (T5L01)	7/20/2016
						SPEC. NO. 15-2-007	BY: Joe Dixon
REVISIONS (DATE & BY)		A	7/20/16, Joe Dixon	0	8/25/16, Joe Dixon	1	9/9/16, Joe Dixon
SERVICE			MANUFACTURER			NO. REQ'D.	SOURCE OF QUOTE
WEATHER ENCLOSURE CRANE			TBD			1	TBD
EQUIPMENT DETAILS							
<b>SAFETY SIGNIFICANT COMPONENTS</b>				<b>SAFETY SIGNIFICANT CRITICAL CHARACTERISTICS (continued)</b>			
<p>The Crane is designated as Safety Significant (SS) for those components that are required to meet the safety requirements listed in the crane specification:</p> <ul style="list-style-type: none"> <li>-Prevent damaging interactions with SS SSCs during design basis NPH events.</li> <li>-Maintain control of lifted loads during normal operations</li> <li>-Maintain control of lifted loads during (and after) design basis seismic event</li> </ul> <p>All items that are specified as required to meet the above requirements are SS and will be FQA.</p> <p>Items Classified as SS:</p> <ul style="list-style-type: none"> <li>- All load path items (Vendor to provide list of load path items to buyer for approval.</li> <li>- Main Hoist Final Over-travel High Limit Switch</li> <li>- Drum Overspeed Detection Switch</li> <li>- Wire Rope Hoist Mis-Reeve Limit Switch</li> <li>- Secondary Main hoist Brake (Drum Brake)</li> <li>- Safety Control Circuit</li> </ul>				<p>6 The crane shall be provided with seismic restraints at the bridge and trolley levels to ensure that they cannot be dislodged during a DBE.</p> <p>7 Structural bolted connections in the hook load path, including bridge girder to end tie/end truck connections shall be either Pre-tensioned or Slip Critical joints designed and installed in accordance with the requirements of the AISC/RCSC Specification for Structural Joints Using High-Strength Bolts for bolted connections and made with unaltered ASTM A325, ASTM A490 bolts, ASTM F436 washers (where required), and ASTM A563 nuts (galvanized or coated bolts and/or nuts shall not be used).</p> <p>8 The crane shall be designed to meet a 40 year life span for all components or have the components easily replaced if 40 years is not possible.</p> <p>9 Structural and mechanical materials subject to load path shall be specified by a nationally recognized standard that requires chemical and physical properties. The Certified Material Test Reports (CMTR) must be provided for all components and able to be verified during BUYER inspections.</p> <p>10 All welds are to be performed to approved weld procedures, inspected to approved inspection procedures and made available for BUYER inspection prior to painting and or closing of any weldments that may not allow for later access. Weld inspectors must be certified in accordance with ASNT SNT-TC-1A for NDT inspections, and in accordance with AWS QC-1 or SNT-TC-1A for visual inspections.</p> <p>11 All weld inspections for load bearing weldments shall be submitted to the BUYER for approval. Weld maps shall be provided for all load bearing welds. Weld maps shall contain welders name, date/time of welds and testing, weld procedure used, heat or lot number of material and weld filler, weld inspectors name, and weld inspection procedure used.</p> <p>12 All welding and inspections, including procedure and performance qualifications, shall be in accordance with the requirements of AWS D14.1. All welding procedures, inspection and test procedures, and procedure qualification records shall be submitted for approval prior to start of fabrication. All modifications must have tracked changes.</p> <p>Main Hoist Final Over-Travel High Limit Switch</p> <p>1 The limit switch shall be purchased to FQA</p> <p>2 The switch shall operate through a separate control circuit from the first high limit switch to cause the removal of power to the hoist motor and set the hoist brakes.</p> <p>Hoist Mis-Reeve Limit Switch</p> <p>1 The limit switch shall be purchased to FQA</p> <p>2 The switch shall detect improper spooling of the hoist rope onto the wire rope drum.</p> <p>Overspeed Detection</p> <p>1 The overspeed detection shall be purchased to FQA</p> <p>2 The overspeed detection shall be actuated by contact with the wire rope drum or drum shaft</p> <p>3 The overspeed switch shall not depend upon PLC, VFD or any software for operation</p> <p>4 The overspeed detection shall immediately upon detection of overspeed, open the hoist line contactor, thereby setting both primary and secondary brakes and de-energizing the motor</p>			
<p><b>SAFETY SIGNIFICANT CRITICAL CHARACTERISTICS</b></p> <p>Load Bearing Components:</p> <p>1 All Load bearing components shall be built to FQA</p> <p>2 The crane must stay on the runway in a Design Basis Event. This shall be proven through the seismic calculations that are independently reviewed and approved prior to being submitted to the buyer. The calculations design to meet ASME NOG-1 2010</p> <p>3 The crane must control its load in a DBE. This shall be proven through the seismic calculations that are independently reviewed and approved prior to being submitted to the buyer. The calculations and design are to meet ASME NOG-1, 2010 .</p> <p>4 The crane is not required to run after a DBE. The crane hoist rope usage shall comply with Original Equipment Manufacturers (OEM) recommendations and in accordance with Wire Rope Users Manual; Wire Rope Technical Board (WRTB). Hoist reeving systems shall be double reeved with left lay and right lay wire ropes equalized by an equalizer bar for the main hoist. Wire rope selection shall be in accordance with CMAA 70. Hoist wire ropes shall be improved, extra-improved, or extra-extra improved plow steel, bright (uncoated, non-galvanized), preformed, regular lay, with a strand core or independent wire rope core. The classification shall be appropriate for the usage. Wire rope fleet angle shall meet the more strict of the limits described in CMAA 70 or wire rope Manufacturer's recommendations. The fleet angle shall be designed so as to eliminate the possibility of the lead ropes contacting or scrubbing against the adjacent wraps on the drum.</p> <p>5 The crane hoist rope drum shall be a one-piece steel weldment; finish-machined after all welding and stress relieving have been completed. The longitudinal and circumferential welds of drum barrels shall be full depth penetration welds. The drum shall be a single wrap design with not less than two dead wraps remaining on the drum at the lowest position. Drum grooves shall be helical and machined right and left hand. The drum groove radius and depth shall be within minimum and maximum range recommended by the Wire Rope User's Manual. The wire rope dead ends shall be anchored on the drum barrel by clamping or by inserting end fittings into reinforced pockets.</p>							

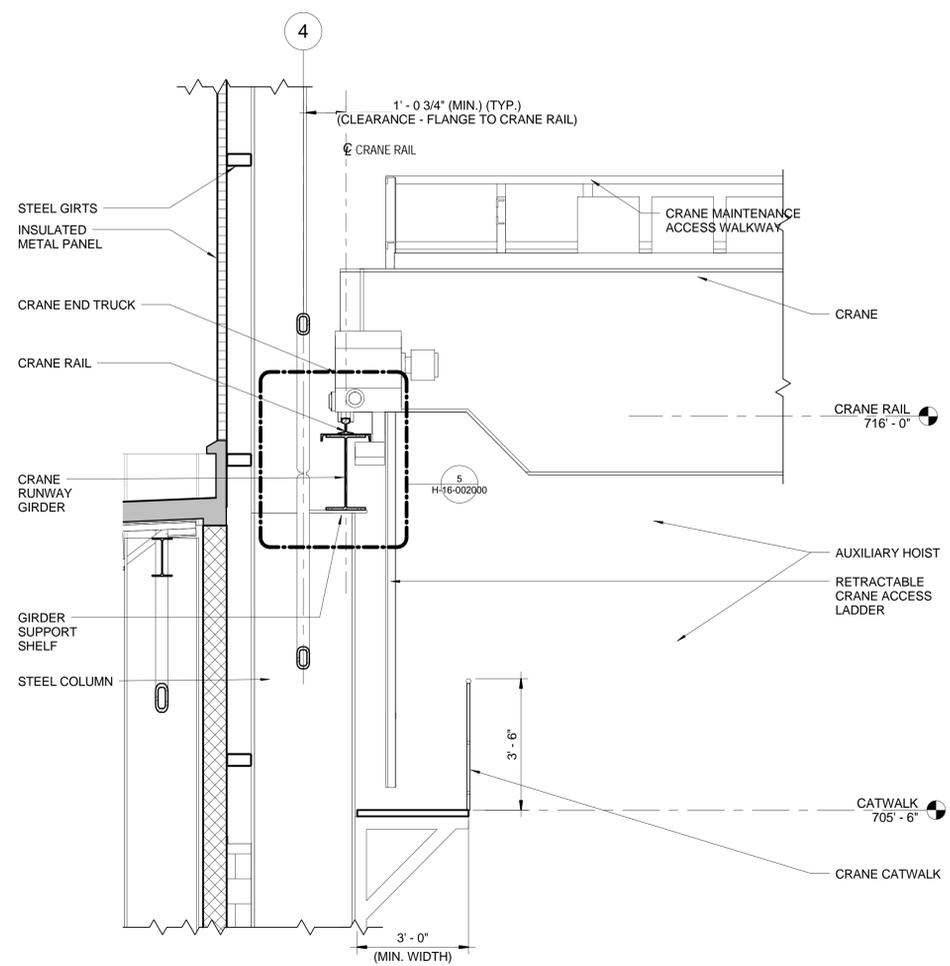




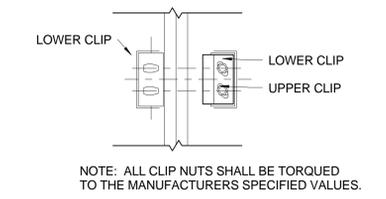
1 CRANE DWG - CROSS SECTION



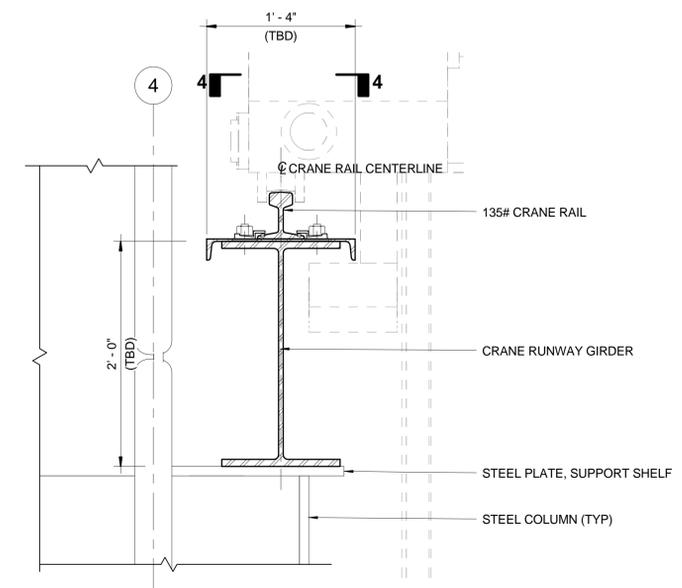
2 CRANE DWG - PLAN VIEW



3 CRANE DWG - SECTION - CRANE RAIL SUPPORT



4 PLAN DETAIL - WELDABLE RAIL CLIP



5 DETAIL - CRANE RAIL GIRDER

FOR INFORMATION ONLY

REVISION APPROVAL RECORD				DRAWING STATUS			
DISCIPLINE	BY	DATE	REV	ISSUED	REV	DATE	PEM
ARCH.				PRELIMINARY			
BUILDING SERVICES							
CIVIL							
ELECTRICAL							
ENVIRON.							
GEN. ARRANG.							
I & C							

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URS ARCHITECTS, LLC

**ATKINS** **AREVA**

AECOM PROJECT NO.: 31269

DWG NUMBER	TITLE	REF NUMBER	TITLE
	DRAWING TRACEABILITY LIST		REFERENCES

PLG: 202LP

**CAUTION**  
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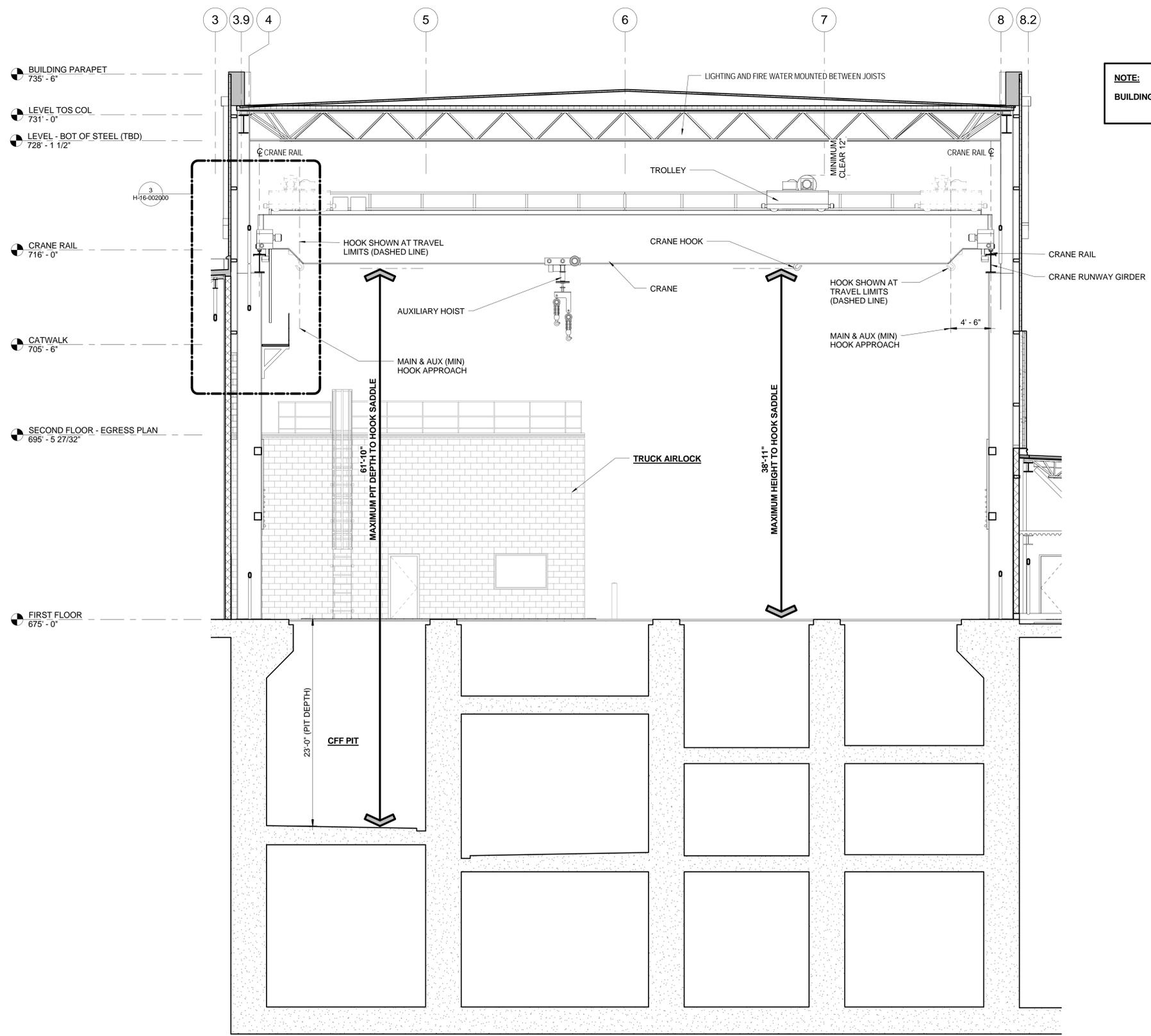
U.S. DEPARTMENT OF ENERGY  
Office of River Protection

LAWPS  
WEATHER ENCLOSURE  
CRANE/BUILDING INTERFACE

H-16-002000

SCALE: As indicated





**NOTE:**  
BUILDING STRUCTURE SHOWN WITHOUT DEFLECTION.

1 CRANE DWG - ELEVATION

FOR INFORMATION ONLY

REVISION APPROVAL RECORD				DRAWING STATUS			
DISCIPLINE	BY	DATE	REV	ISSUED	REV	DATE	PEM
ARCH.				PRELIMINARY			
BUILDING SERVICES							
CIVIL							
ELECTRICAL							
ENVIRON.							
GEN. ARRANG.							
I & C							

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**ATKINS** **AREVA**  
 AECOM PROJECT NO.: 31269

DWG NUMBER	TITLE	REF NUMBER	TITLE
	DRAWING TRACEABILITY LIST		REFERENCES

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DESIGNER Author	CHECKER	DATE
DATE		
INDEX 1		

U.S. DEPARTMENT OF ENERGY  
 Office of River Protection  
**LAWPS**  
 WEATHER ENCLOSURE  
 CRANE - BUILDING SECTION  
 H-16-002003  
 SCALE: 3/16" = 1'-0"  
 SHEET NO. A