THE NATION'S URANIUM PROCESSING FACILITY

UPF PAGE/PROCEDURE CHANGE NOTICE (PRCN)

PRCN Number:	PRCN-Y17-95-64-871-R05-03	Effective Date:	06/05/23

NOTE: PRCN Effective Date cannot precede effective date of associated document.

☒ Intent Change ☐ Non-Intent Change

Associated Document Number:	Y17-95-64-871	Rev: 5
Associated Document Title:	*UPF Construction Hoisting and Rigging Work Operations*	
Justification for Change:	Changes needed to Table 2. Site Transportation Operations	

Identify the scope of the change, including mark-up (i.e., strike-through for deletions, colored text for additions) of any new, removed, or changed content.

Updates to Table 2 Site Transportation

From:
Clearances envelope height within 6~~'~~ (0.15m) vertically of piperacks or similar

To:
Clearances envelope height within 6″ (0.15m) vertically of piperacks or similar

From:
Loadings shadow pressure between 2~~8~~.5 ksf (9.8 & 2.4 t/m2)

To:
Loadings shadow pressure between 2 & 5 ksf (9.8 & 24.4 t/m2)

Preparer			
UPF Construction Issues Management	Kellie R. Coleman		06/05/23
	Printed Name/Signature		Date
Approval			
UPF Project Field Engineer	Bradley A. Lewis		06/05/23
	Printed Name/Signature		Date
UPF Site Manager	Gary J. Cough		06/05/23
	Printed Name/Signature		Date

This document has been reviewed by a Y-12 DC / UCNI-RO and has been determined to be UNCLASSIFIED and contains no UCNI. This review does not constitute clearance for Public Release.

Name: Steve Buffalo Date: 06/05/23

RC-UPF DMC
06/05/23 15:37

THE NATION'S URANIUM PROCESSING FACILITY

UPF PAGE/PROCEDURE CHANGE NOTICE (PRCN)

PRCN Number:	PRCN-Y17-95-64-871-R05-02	Effective Date:	04/07/23

NOTE: PRCN Effective Date cannot precede effective date of associated document.

☒ Intent Change ☐ Non-Intent Change

Associated Document Number:	Y17-95-64-871	Rev:	5
Associated Document Title:	UPF Construction Hoisting and Rigging Work Operations		
Justification for Change:	This PRCN is in response to Condition Report ACT-10-25774-000-GCA-GAM-03941 *CNS Concerns with BNI Compliance with Records Identification and Retention Requirements (CNS letter 25774-22-CNS-017) [*CA]*		

Identify the scope of the change, including mark-up (i.e., strike-through for deletions, colored text for additions) of any new, removed, or changed content.

These changes supersede those implemented in the previous PRCN-Y17-95-64-871-R05-01.

Update to 4.0 Records:

From:
4.0 RECORDS

~~Records generated by this procedure shall be maintained in accordance with *UPF Document Management*. Record types for documents submitted to the UPF DMC are identified in ML-PS-801768-A001, *Uranium Processing Facility Project Master Document Type List*. Quality type is listed as Quality Lifetime (QA-L), Quality Nonpermanent (QA-NP), or Non-Quality (Non-QA).~~

~~Records generated during the performance of this procedure include:~~

Record Number	Record Title	~~Record Holder~~	System/ Location	~~Quality Type~~
CFN-1090	*UPF Lift Data Sheet*	~~UPF DMC~~	InfoWorks	~~QA-NP~~
CFN-1092	*UPF Pre-Lift Safety Checklist*	~~UPF DMC~~	InfoWorks	~~Non-QA~~
CFN-1093	*UPF Hoisting and Rigging Hazard Evaluation*	~~UPF DMC~~	InfoWorks	~~Non-QA~~
CFN-1103	*UPF Haul Plan Checklist*	~~UPF DMC~~	InfoWorks	~~Non-QA~~
CFN-1143	*UPF Daily Crane Lift Card*	~~UPF DMC~~	InfoWorks	~~Non-QA~~

To:
4.0 RECORDS

Records generated by this Document shall be maintained in accordance with Y15-95-800, *UPF Document Management*.

The following records generated are:

Record or Form Number	Record Title	System/ Location	Document Type
Document Specific	*UPF Lift Data Sheets (may include CFN-1090, CFN-1092, CFN-1093, CFN-1103)*	InfoWorks	HLP
CFN-1143	*UPF Daily Crane Lift Card*	InfoWorks	DCLC

RC-UPF DMC
04/07/23 09:11

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Name: J. S. Kyle Date: 04/07/23

THE NATION'S URANIUM PROCESSING FACILITY

UPF PAGE/PROCEDURE CHANGE NOTICE (PRCN)

Remove from 5.2 Interfacing References:

~~ML-PS-801768-A001, *Uranium Processing Facility Project Master Document Type List*~~

Add New Section, 5.3, *Forms:*

5.3 Forms

CFN-1090, *UPF Lift Data Sheet*
CFN-1092, *UPF Pre-Lift Safety Checklist*
CFN-1093, *UPF Hoisting and Rigging Hazard Evaluation*
CFN- 1103, *UPF Haul Plan Checklist*
CFN-1143, *UPF Daily Crane Lift Card*

Preparer			
UPF Construction Issues Management	Kellie R. Coleman	*Printed Name/Signature*	03/31/23 Date
Approval			
UPF Project Field Engineer	Bradley A. Lewis	*Printed Name/Signature*	04/03/23 Date
UPF Site Manager	Gary J. Cough	*Printed Name/Signature*	04/06/23 Date

THE NATION'S URANIUM PROCESSING FACILITY

UPF PAGE/PROCEDURE CHANGE NOTICE (PRCN)

PRCN Number:	PRCN-Y17-95-64-871-R05-01	PRCN Rev: 0	Effective Date: 10-16-2020
Associated Document Number:	Y17-95-64-871		Rev: 5
Associated Document Title:	*UPF Construction Hoisting and Rigging Work Operations*		

This PRCN is updating the Records Section.

Change From:

Record Number	Record Title	Record Holder	System / Location	Quality Type
CFN-1090	*UPF Lift Data Sheet*	UPF DMC	InfoWorks	QA-NP
CFN-1092	*UPF Pre-Lift Safety Checklist*	UPF DMC	InfoWorks	Non-QA
CFN-1093	*UPF Hoisting and Rigging Hazard Evaluation*	UPF DMC	InfoWorks	Non-QA
CFN-1103	*UPF Haul Plan Checklist*	UPF DMC	InfoWorks	Non-QA
CFN-1143	*UPF Daily Crane Lift Card*	UPF DMC	InfoWorks	Non-QA

Change To:

Record Number	Record Title	Record Holder	System / Location	Quality Type
CFN-1090	*UPF Lift Data Sheet*	UPF DMC	InfoWorks	QA-NP
CFN-1092	*UPF Pre-Lift Safety Checklist*	UPF Construction	Shared Drive	Non-QA
CFN-1093	*UPF Hoisting and Rigging Hazard Evaluation*	UPF Construction	Shared Drive	Non-QA
CFN-1103	*UPF Haul Plan Checklist*	UPF Construction	Shared Drive	Non-QA
CFN-1143	*UPF Daily Crane Lift Card*	UPF Construction	Shared Drive	Non-QA

Implements Quality Requirements (Select One)			
☐ None	☒ BNI	☐ CNS	☐ BNI & CNS

Preparer			
UPF Construction Issues Management Procedure Compliance:	Tammy D. Threat	*Printed Name/Signature*	09/28/20 Date

Approval			
UPF Project Field Engineer:	Bryan C. Leber	*Printed Name/Signature*	10/08/20 Date
UPF Engineering Manager:	Natalie H. Harkey	*Printed Name/Signature*	09/28/20 Date
Project Quality Manager, BNI:	Steven A. Gauthier	*Printed Name/Signature*	09/28/20 Date
UPF Acquisition Services Manager:	Monika P. Doherty	*Printed Name/Signature*	10/02/20 Date
UPF Site Manager:	W. Dave Ross	*Printed Name/Signature*	10/16/20 Date
UPF Project Manager:	Michael S. Robinson	*Printed Name/Signature*	09/29/20 Date

This document has been reviewed by a Y-12 DC / UCNI-RO and has been determined to be UNCLASSIFIED and contains no UCNI. This review does not constitute clearance for Public Release.
Name: A. L. Glover Date: 10/16/20

RC-UPF DMC
10/16/20 11:04

Pen and Ink (P&I) Cover Sheet

Cover sheet to provide space for DMC P&I stamp and associated DC/RO stamp, if required. This cover sheet is not included in the pagination of the document.
The Page Number(s) Affected listed on the Pen & Ink stamp refer to the page numbers of the original document.

Document Number:	Y17-95-64-871	
Revision:	5	
Title:	Procedure - UPF Construction Hoisting and Rigging Work Operations	

Pen & Ink for minor correction per Y15-95-800

Page Numbers Affected: 2 Reason for Change:

Adding sentence to revision log to reflect a form that was revised with revision 5 of this document.

Minor correction to a revision-controlled document requires the requestor to make the corresponding correction to the authoring database and/or native file.
Selection Required:

☒ Native File ☐ Authoring Database ☐ N/A for non-revision controlled

Signatures below verify that this is a minor correction and that the required changes have been made as checked above.

Tammy D. Threat — 05/08/20
Requestor - Printed Name / Signature — Date

W. Dave Ross — 05/08/20
Approver - Responsible Manager — Date
Printed Name / Signature

THE NATION'S URANIUM PROCESSING FACILITY

Preparer:

Tammy D. Threat — 04/22/20
UPF Construction Issues Management Procedure Compliance Lead — Date

Approval:

Bryan C. Leber — 04/30/20
UPF Project Field Engineer — Date

Ian Finnerty — 05/04/20
UPF Engineering Manager — Date

Steven A. Gauthier — 04/22/20
Project Quality Manager, BNI — Date

Monika P. Doherty — 05/06/20
UPF Acquisition Services Manager, Acting — Date

W. Dave Ross — 04/29/20
UPF Site Manager — Date

Michael S. Robinson — 05/01/20
UPF Project Manager — Date

05/07/2020
Effective Date

Implements Quality Requirements

☐ None ☒ BNI ☐ CNS ☐ BNI and CNS

RC-UPF DMC
05/06/20 20:55

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Name: Steven A Buffalo Date: 05/06/20

REVISION LOG

Revision 5 ☒ Major intent ☐ Minor intent ☐ Non-intent

- A Periodic Review was completed during this revision and was documented on UCN-23306.
- This revision incorporates the changes identified in and supersedes the following PRCNs:
  - PRCN-Y17-95-64-871-R04-01
  - PRCN-Y17-95-64-871-R04-02
  - PRCN-Y17-95-64-871-R04-03
  - PRCN-Y17-95-64-871-R04-04
  - PRCN-Y17-95-64-871-R04-05
- An evaluation determination has been performed confirming that this Command Media implements BNI quality requirements as tracked in the Programmatic Requirements Management System (PRMS).
- Form CFN-1194 was obsoleted and removed from the **Section 4.0, *Record*s**, ONLY for Command Media. Form CFN-1090 was revised with this revision.
- The following forms were obsoleted with this revision:
  - CFN-1089
  - CFN-1091
  - CFN-1102
  - CFN-1147
  - CFN-1194
- This revision is a complete rewrite to align more closely with the corporate procedure.
- Other changes include:
  - Reorganized appendices and attachments.
  - Added attachments.
  - Editorial changes.
  - Clarified language.
- Because of the extent of changes, revision bars are not shown.

P&I

Revision 4 ☐ Major intent ☒ Minor intent ☐ Non-intent

- Clarified when to use CFN-1089, CFN-1143, and the Rigging STARRT Card.
- Revised the Responsibilities section to consolidate responsibilities for design engineering under Engineering Manager
- Removed section on “Use of Base Grip Hoist (Tirfors) for Lifting” – Per the UPF Lead Rigging Field Engineer, this type of equipment will not be used for lifting.
- See Revision Bars in right-hand margin for changed portions.

Previous revisions on record

CONTENTS

1.0 INTRODUCTION

1.1 Purpose

This procedure defines the work process for construction hoisting/rigging work operations and heavy transportation activities on the Uranium Processing Facility (UPF) construction sites.

1.2 Scope

This procedure is applicable to UPF/Bechtel National, Inc. Construction Hoisting/Rigging work operations performed by UPF Construction entities, whether self-performed or performed by a subcontractor.

Applicability to subcontractor employees is as specified in subcontract language.

Compliance provides a framework for managing construction rigging operations (including lifting and moving) that is, at minimum, compatible with United States Occupational Safety and Health Administration (OSHA) regulations and the American Society of Mechanical Engineers (ASME) industry codes. This procedure does not take precedence over any statutory regulations applying to the jobsite.

Y17-95-64-855, *UPF Structural Steel Erection* (which is intended to meet the requirements of OSHA 1926 Subpart R), provides the work process for erecting steel.

2.0 RESPONSIBILITIES

2.1 Site Manager

The Site Manager is responsible for ensuring that the requirements of this procedure are properly implemented.

2.2 Project Field Superintendent

The Project Field Superintendent (PFS) is responsible for:

- Planning and directing all project work operations.
- Ensuring load-handling operations are planned and executed in accordance with the requirements of this procedure.

2.3 Project Field Engineer

The Project Field Engineer (PFE) is responsible for:

- Supervising field engineering at the site, including those related to load-handling activities.
- Ensuring a procedure is in place for formal checking of rigging calculations.
- Ensuring the provision of rigging engineering expertise to assist with lift planning.
- Ensuring compliance with statutory and Bechtel requirements related to construction rigging work activities at the construction site.
- Ensuring that lifting and transportation operations are engineered, technically reviewed, and approved.

- Coordinating preparation of the Project Engineering Support Required Item List (lifting and transportation) with Design Engineering and Rigging Services.
- With the assistance of the Responsible Design Engineer, ensuring that specific rigging/lifting related requirements are incorporated into the equipment design before the purchase of major equipment.

NOTE: *Where subcontractors are responsible for lifting operations, the UPF Certified Rigging Engineer (CRE) is required to review the lift plan and validate the plan and Person in Charge (PIC). The PFE/Site Manager may also need to review the plan depending on the lift categorization.*

2.4 Rigging Supervisor/Superintendent

The Rigging Supervisor is responsible for:

- Managing rigging assets on-site.
- Scheduling resources, coordinating, and supervising load-handling activities.
- Appointing the PIC, which may be the PIC for all categories of load-handling operations.
- Ensuring that signalpersons, riggers, competent person riggers, and crane operators are qualified/certified as required by statute and the UPF Project's procedures.
- Planning load-handling activities (with the assistance of a CRE where required).

2.5 Certified Rigging Engineer

The CRE is responsible for:

- Providing expert rigging engineering support to the UPF Project in the planning and execution phases.
- Planning complex and critical load-handling operations, including preparation of drawings, calculations, risk assessments, method statements, and procedures, as required.
- Reviewing and approving critical lift and transport plans, whether prepared by the UPF Project personnel or others.
- Engaging in constructability reviews.
- Providing guidance to Design Engineering to determine maximum practical weights or dimensions for modules or assemblies to assist in their handling during transportation or lifting to ensure that neither the capacity of the transportation/lifting equipment, nor the allowable space in the transportation corridor, is exceeded.
- Participating in developing the construction equipment schedule regarding rigging operations.
- Developing innovative construction techniques to enhance safety and provide economic benefits and commercial advantage.
- Reviewing work interfacing with lifting and abnormal transport activities, such as road/culvert protection/reinforcement, soil preparation works, and lifting attachment design.

- Identifying requirements for soil improvements and special foundations for major crane operations, as well as coordinating with Geotech, as required, in the design of load-spreading details, ground improvements, or special foundations.
- Identifying any holds required in the installation sequence of steelwork or foundations to facilitate transport or lifting operations.

2.6 Project Rigging Engineer

The Project Rigging Engineer (PRE) is responsible for:

- Providing rigging engineering support to the UPF Project.
- Reporting to the PFE or CRE and serving as the focal point for preparation of lifting and transportation planning.
- Identifying the amount of assistance required from Design Engineering for performing a detailed design of complex lifting beams and frames; preparing conceptual designs for the items; and engaging Design Engineering in detailed design efforts.
- Identifying the amount of Design Engineering assistance required for verifying rigging calculations.
- Assisting the PFE in ensuring lifts are correctly categorized.
- Providing technical guidance and support to the Rigging Supervisor in developing safe work methods and plans for rigging operations.
- Assisting others in completing Lift Data sheets for medium-risk lifts.
- Preparing rigging drawings, calculations, and specifications of rigging materials and lifting equipment.
- Being engaged, if necessary, in Project lift/transport planning activities offsite, under the direction of the assigned CRE.
- Coordinating the preparation and approval of lift plans for critical activities, with assistance from the CRE.
- Coordinating with the CRE to establish and maintain a list of design-critical lifting and transportation activities that may require detailed collaboration with the Civil/Structural/Architectural Discipline and Geotechnical & Hydraulic Engineering Services (G&HES).
- Monitoring general project rigging operations to ensure all lifts are performed in accordance with approved rigging plans and procedures and that Standard Work Process Procedures are being complied with.
- Participating in safety walkdowns.
- Reviewing rigging plans for medium lifts where mandated.

2.7 Person in Charge

The PIC is responsible for:

- Reviewing and “approving to proceed” lift data sheets where required by this procedure at the time of lift.
- Selecting suitable lifting equipment and rigging hardware where not specified by a written plan.

- Inspecting the equipment before use and ensuring it is current with regulatory and UPF certification requirements, including inspection for the presence of Suspect/Counterfeit Items (S/CIs) (reference Y15-95-819PD, *UPF Suspect/Counterfeit Item Program Description).*
- Ensuring that rigging is configured correctly and is properly attached to the lifting equipment.
- Ensuring that assigned personnel are properly qualified for their task (e.g., signaling cranes); that they are trained, competent, and aware of their responsibilities and are complying with all applicable standards, requirements, and safe practices.
- Verifying that ground conditions, wind speeds, and other requirements are within acceptable parameters.
- Directing the execution of a load-handling activities.
- Complying with applicable UPF procedures; OSHA standards; federal, state, county, and local regulations; and customer and Project-specific requirements.
    - The most stringent requirement governs; in the case of conflict, statutory requirements take precedence.
- Observing safety standards and governmental regulations.
- Engaging in Job Hazard Analysis (JHA) and signing Safety Task Analysis and Risk Reduction Talk (STARRT) cards for rigging activities.
- Briefing the participants prior to a load-handling activity regarding the plan, the hazards present, and the control measures in place to manage risk.

2.8 Competent Person Rigger

The Competent Person Rigger (CPR) is responsible for:

- Bringing rigging expertise to the job and providing guidance and assistance to others regarding safe rigging practices.
- Planning, if necessary, load-handling operations, including selecting suitable equipment and rigging hardware.
- Being competent to perform the duties of a PIC for all lifts categorized as low- or medium-risk.
- Ensuring that rigging hardware and materials are inspected before each use, are configured correctly, and are properly attached to the lifting equipment.
- Engaging in the JHA and the STARRT process for rigging activities identified in applicable work packages.

2.9 Signal Person (Bellman)

The Signal Person/Bellman is responsible for the signaling of the Crane. The following additional requirements apply on the UPF Project:

- A Signal Person (Bellman is equivalent) shall be dedicated to signaling and voice commands (not allowed to support rigging activities concurrent with signaling, even though they may be qualified to do so), when (1) line of sight with crane Operators is obstructed, (2) line of sight may be compromised due to other activities in the vicinity of the lift, or (3) signaling for tower cranes and

semi-stationary cranes (e.g., crawler cranes positioned to support primary facility construction).

- Three or more Signal Persons may be needed to support tower crane or semi-stationary crane lifts when multiple blind spots are encountered in the swing path, as determined by the PIC or Rigging Supervisor.
- A Signal Person may support both signaling and rigging when there are no obstructions to line of sight with crane Operators (typically in open areas such as laydown).
- When a Signal Person is unsure of the conditions in which they can perform both roles (i.e., signaling AND rigging) or are limited to a single role (i.e., signaling OR rigging), the Rigging Supervisor or PIC will be consulted.

2.10 Bechtel Rigging Engineering Group

The Bechtel Rigging Engineering Group is responsible for:

- Bechtel Equipment Operations (BEO), providing Bechtel projects with rigging engineering support.
- Being the base organization for the majority of Bechtel's CREs.
- Providing rigging training services.
- Developing and reviewing critical load-handling plans.
- Maintaining Bechtel's internal rigging standards.
- Reviewing plans developed by others.
- Providing heavy lift rigging training services.

2.11 Geotechnical & Hydraulic Engineering Services

The G&HES is responsible for:

- Working with the PRE and Design Engineering to address all areas within the Y-12 complex where heavy haul and heavy lifting may be required.
- Providing input on the development of the site preparation drawings.
- Reviewing calculations provided by the heavy haul subcontractor to ensure they follow appropriate procedures and draw reasonable conclusions.
- Reviewing the adequacy of crane foundation requirements and design, delivery routes, and assembly areas for heavy lift cranes, Geotechnical parameters used for the design, etc.

2.12 Project Environmental, Safety & Health Representative

The Project Environmental, Safety & Health (ES&H) Representative is responsible for:

- Participating in the completion of, and providing input to, the STARRT card and the JHA.
- Providing ES&H coverage for medium and critical lifting activities and walkdowns, as required.
- Reviewing lifting plans (where mandated) and providing input to ensure compliance with applicable safety requirements.

2.13 Procurement (Traffic & Logistics)

Procurement (Traffic & Logistics [T&L]) is responsible for:

- Working with Vendors/subcontractors and the PRE to ensure that the route outside the plant facility for all major items transported is well understood and that the necessary logistics to execute the transport have been executed.
- Participating in defining the execution strategy for major items early so that the appropriate design forces can be incorporated into the design by the upstream supplier.

2.14 Vendor

The Vendor is responsible for:

- Ensuring that the design of items that they supply is sufficient to safely withstand the forces (and accelerations) induced during transport and load-handling/installation.
- Providing suitable (verified) lifting attachments, transport support, and lashing points.
- Being made aware of the shipping/lifting methods and forces for which their equipment shall be designed, including the various transport loads if their equipment will be installed in a module and transported to the site.
    - The RE must include this information in the purchase order. If final information is not available, the RE shall include conservative design values based on appropriate codes and standards.

NOTE 1: *Vendor liabilities shall be incorporated into contract documents.*

NOTE 2: *The qualifications of prospective subcontractors to perform critical lifts/load-handling activities shall be reviewed by UPF prior to award of a contract for those types of activities.*

3.0 REQUIREMENTS

Software—including spreadsheets and databases—utilized by this procedure (e.g., see CFN-1090, *UPF Lift Data Sheet*, etc.) shall be approved for Production in accordance with Y60-95-015, *UPF Software Quality Assurance*, prior to use. Before such software is approved for use, an alternate calculation shall be developed and approved by a CRE to support each use of such software. Each alternate calculation will be submitted to InfoWorks as part of a lift package.

3.1 General

When the scope of this procedure is performed (in full or in part) by clients, contractors, subcontractors, etc., the PFE ensures the minimum control activities are assigned to the responsible entities and documented on the Multi-Entry Work Process DOR form shown in **Attachment E, *Standard Use of Base Mounted Hoists (Tuggers)***.

The PFS (or designee) and PFE (or designee) plan and control work in accordance with Y17-95-64-800, *UPF Construction Work Control Program*.

The PFE shall ensure that the applicable quality inspection attributes are listed on the inspection records.

3.2 Provision of Properly Trained and Competent Personnel

Persons involved in planning and executing rigging work operations on the UPF Construction Project shall be trained and qualified to perform their assigned tasks, in accordance with Y90-95-027, *UPF Training Program*.

Persons performing certain tasks (e.g., signaling cranes) are required (by statute) to be formally qualified; persons operating cranes are required (by statute) to be certified.

3.2.1 Certified Rigging Engineer

CREs provide subject matter expert support to the UPF Project and their resident PRE, when applicable.

3.2.2 Project Rigging Engineer

Qualification for the role of PRE is obtained through Bechtel Corporate. PREs with this corporate qualification support the UPF Project.

3.2.3 Riggers, Signal Persons, and Competent Person Riggers

The required competencies of Riggers, Signal Persons, and CPRs on jobsites, and the processes by which they are to be qualified and approved, are explained in Y17-95-64-874, *UPF Rigger, Signal Person, and Competent Person Rigger Qualification*.

3.2.4 Crane Operators

NOTE: *For the purpose of Y17-95-64-873,* UPF Qualification of Construction Crane Operators*, the term "Crane Operator" includes not only operators of conventional construction cranes, but also operators of custom alternative heavy lift equipment, such as mast lifting systems and telescoping hydraulic gantries.*

The required competencies of Crane Operators on jobsites and the processes by which they are to be qualified and approved to work are contained in Y17-95-64-873.

3.3 Safe Systems of Work

The Rigging Supervisor ensures a safe system of work is implemented for all load-handling operations on the project through the following measures:

- Skilled planning (including risk reduction/control measures).
- The provision of properly trained, qualified, and competent personnel who have been informed of their relevant authorities and responsibilities.
- Engagement of the participants in the plan and its execution; effective monitoring.
- Selection, provision, and use of suitable lift/haul equipment that is well maintained, examined and tested, and is safely within capacity.
- Operational procedures for the safe execution of the rigging operation, including provisions for ensuring the safety of persons not involved in the lifting/hauling operation.

3.4 Planning

3.4.1 Rigging Execution Plan & Constructability

The PFS/PFE, with the assistance of the designated rigging engineer (CRE or PRE) and the Construction Coordinator develops, in the planning stage, a Rigging Execution Plan that defines the general strategy to be adopted to execute load-handling activities. The plan shall include:

- A list of all critical lifts and critical transportation activities.
- A summary of anticipated contractor or subcontractor participation.
- A list of planned heavy haul equipment and cranes (large and small).
- A list of applicable codes and standards.
- A summary of anticipated personnel training requirements.

3.4.2 Construction Support Required Item List

Early in the design phase, Design Engineering shall coordinate with Construction to prepare the Construction Support Required Item List.

3.4.3 Engineering Support Required Item List

The PFE or CC prepares the Project Engineering Support Required Item List.

Details regarding the list include:

- The list will contain design-critical items that require specific Engineering support beyond the normal review of vendor documentation. Subsequent additions to the list are to be trended and added to the schedule.
- The list shall be included on the discipline Design Control Checklist and shall be provided to the discipline chief engineers, along with the appropriate background and support materials (rigging plans, structural drawings, etc.) for review.

3.4.4 Vendor Documentation

In order to plan for safe lifting and handling operations, certain information regarding the item and its safe handling is required from the Vendor (i.e., equipment supplier or contractor).

This information shall be identified and shall be included as a deliverable in the purchase order or subcontract.

3.4.5 Supply of Rigging and Handling Equipment with Procured Items

At the time of procurement, the UPF CRE shall evaluate whether it is desirable for the Vendor to supply rigging hardware to handle the item or whether it is an unnecessary duplication. If the vendor does supply rigging, then it shall comply with UPF's requirements contained herein.

3.4.6 Categorization of Lifting Operations

In order to prescribe the extent of planning, review, and skilled oversight appropriate to the risk of each lifting operation, all lifting operations shall be categorized as being

either “Low,” “Medium,” or “Critical” risk (in accordance with the guidelines contained in **Table 1**).

NOTE 3: *Any lifting operation for which failure would pose exceptional risk to persons, property, schedule, and/or finances, and/or or which methodology is sufficiently unusual as to be outside the required skill sets of the designated CRE shall be defined as “Critical.”*

NOTE 4: *These categories are UPF definitions rather than OSHA (or ASME/American National Standards Institute) definitions.*

3.4.7 Weight Verification

The CRE ensures the payload weight is verified using certified scales or calibrated load cells with an accuracy of two percent or better when the total lift weight is predicted to be within five percent of the lifting device’s rated capacity (in the planned configuration).

Table 1. Lifting Operation Risk Categorization

LIFTING OPERATIONS RISK CATEGORIZATION

CRITERIA		RISK CATEGORY		
		low	medium	critical
payload weight (P)	0 tons to less than 10 tons (P < 10t). (See Note 6 - units)	*		
	10 tons to less than 50 tons (10t ≤ P < 50t)		*	
	50ton and above (P ≥ 50t)			*
chart capacity	lifts at less than 75% of chart	*		
	75% to less than 90%		*	
	90% and above			*
	if 360° chart not used or short outrigger duties planned		*	
hoist line pull	lifts using less than 75% of available hoist line pull	*		
	75% to less than 90%		*	
	90% and above			*
tandem lifts	upending operations (See Notes 7 & 8)		*	
	any 2-crane tandem lift (as a min).		*	
	either crane over 75% of chart			*
	where either crane travels carrying load		*	
	possibility of load transfer taking either crane over 75%			*
	significant possibility of boom or jib side loading			*
	any lift using more than 2 cranes			*
	"flipping" a load over 180° using 2 cranes (or crane and "hinge")			*
"special" lift devices	cranes where Superlift tray is required for the lift		*	
	"tugger" lifts	See App B	*	
	use of cranes designed for land use on barges		*	
	gin poles / stiffleg & guy derricks			*
	hydraulic gantries			*
	strand jacks or climbing jacks			*
	"alternative", custom or specialized rigs			*
specialized rigging	complex rigging arrangements (including "xmas-treeing" - see Att A)		*	
	custom below-the-hook hardware		*	
specialized crane use	use of a land-based crane on a barge		*	
	lifts using short outrigger spreads or narrow track centers		*	
	lifts not using 360 degree charts		*	
	"topping" and "tailing" with a single crane using two hoist drums			*
electrical hazards	lifting <u>over</u> any power line (regardless of clearance)			*
	lifts breaching Bechtel Safe Limit of Approach (even with deviation)			*
	lifts over Motor Control Centers or Switch Gear Buildings			*
	lifts requiring the assistance of a utility company			*
buildings/structures	lifting over occupied buildings or operating facilities			*
live plant	where live pipe racks or essential plant are in the fall zone			*
	when set up over critical underground services			*
"design-critical"	any item on the *Engineering Support Required Item List*	See Note 2		*

Note 1. No person shall be allowed, either in whole or in part, under any portion of any suspended load. Personnel assigned to rigging (i.e., attaching and/or detaching rigging hardware to an intended load) are permitted under the lifting/rigging hardware only, and to the extent required to attached or detach the hardware from the intended load prior to or after it has been lifted.

Note 2. Large flimsy loads with little integral strength; forming larger / heavier lifts by assembly of components where such preassemblywas not originallyenvisaged bythe designer; lifts inducing out-of-plane lifting loads or stress reversals as a result of lifting from points other than the permanent supports; where engineering assists with design of special handling frames, lift beams and custom structural rigging tackle; where review of permanent structures to withstand temporaryconstruction loads is required or where temporary structural additions to permanent structures are needed.

Note 3. A lift is categorized according to the highest risk category it meets in the table above.

Note 4. Any lift may be classified to a higher risk category due to the sensitivity, risk or cost of the payload being lifted.

Note 5. Any lift whose failure would pose exceptional risk to persons, property, schedule and/or finances, and/or whose methodology is sufficiently unusual as to be outside the skill sets required of the responsible Certified Rigging Engineer is to be defined as being "Super-Critical" and additionally requires review and approval by the BEO Chief Rigging Engineer.

Note 6. Units of measure (imperial or metric) customary at the project locale will be used to determine risk categorization based on payload weight. "ton" is a US "short" ton of 2000 lbs; "t" is a metric ton, (mT or Te) of 2205 lbs; "kip" (k) is 1000lbs; "ksf" is kips per square ft.

Note 7. Upending operations include any lifting operation in which a payload is upended utilizing 2 lifting devices or a lifting device and a continuously supported hinge (or ground).

Note 8. Piles, steel columns, and other similarly shaped payloads are exempted from the medium risk lift planning requirements when weighing less than 10 tons (P < 10t), and when neither lifting device exceeds 75% capacity at any point during the upending operation.

*Mandatory requirement. Higher risk category may be applied on highlighted items

3.4.8 Lift Planning Requirements

- Rigging certification and required personnel qualification documentation shall be on record and available for inspection by site personnel. It is not generally required that they are appended to the lift plan.
- Subcontractor personnel performing functions on UPF projects shall, at minimum, be qualified to standards that are equivalent to those required of UPF personnel performing similar functions.

General Requirements

- The Rigging Supervisor ensures all lifting/load-handling operations (even routine ones) are planned and the best rigging practices are used in the planning and execution.
- The Rigging Supervisor ensures all lift plans:
  - Define the methodology to be used to execute the work safely and efficiently.
  - Address the hazards posed by that operation and be designed to mitigate the risk of the operation so far as is possible.
  - Define measures to be taken to manage the residual risk.

NOTE 1: *There are minimum lift plan content requirements for each defined risk category of load-handling operation. A verbal plan may be sufficient for a low-risk lift. These are minimum requirements; if more is required to adequately explain the intent, it shall be added. If complexity requires it, the operation should be re-categorized to a higher level.*

- The Rigging Supervisor appoints a qualified PIC for each load-handling operation who takes the lead in executing the operation on the jobsite.

NOTE 2: *Only qualified signal persons are allowed to signal cranes (see Y17-95-64-874)*

- The Crane Operator shall maintain a crane log to be kept in the crane in which the basic details of each lift made are entered. A generic entry is sufficient for repetitive, similar lifts (e.g., steel erection) (see **Attachment C, *Rigging Operation STARRT Card [Example]***).
- The PIC shall explain the lift plan to the participants before starting the operation. The formality of this discussion varies by lift category.

3.4.9 Requirements by Risk Category

Low-Risk Lifts

- Prior to lifting, the characteristics of every low-risk lift are to be entered into CFN-1143, *UPF Daily Crane Lift Record*, maintained by the Responsible Foreman/Supervisor.
- The PIC creates the lift plans for low-risk lifts in discussion with the Crane Operator. The plan is basically a verbal agreement on how the operation is to be conducted.
- The PIC shall be a Qualified Rigger/Signal Person with the experience and technical knowledge to undertake that responsibility.

Medium-Risk Lifts

- The PIC ensures the Lift Data Sheet is completed. The Lift Data Sheet should be supplemented by relevant crane chart extracts and any other information required to adequately explain the intent (e.g., a rigging hook-up sketch).
- Subcontractors may use their own format Lift Data sheets, but the content has to be equivalent, or they may elect to use the UPF sheets.
- The information may alternatively be presented on a drawing, sketch, or proprietary software package output, or other equivalent means, as long as it is sufficiently complete to adequately explain the intent.
- The Data Sheet shall be allocated a unique identifier to allow it to be stored and retrieved.
- The PIC coordinates planning a medium-risk load-handling operation and preparing the lift plan documents. This task may require the assistance of, or delegation to, a qualified person, such as a CRE or Civil Field Engineer.
    - The content of the lift data sheet shall be verified by a knowledgeable person (other than the originator).
    - The PFE (or designee) is required to approve to proceed.
    - Projects may, at their discretion and according to how they are structured, designate other required signatories for medium-lift plans (e.g., if a CRE does not originate the lift, he/she may be the checker and/or a required approver).
    - Medium-lift plan approval signatures will typically be on the Lift Data Sheet as the primary document, although projects may elect to use other formats at their discretion.
- The PIC shall be a foreman or other experienced person qualified as a UPF CPR. If qualified by subcontractor, he/she shall meet equivalent standards and be nominated to be in charge by the subcontractors representative on site.

Critical Risk Lifts

- A comprehensively documented lift plan shall be prepared; this will typically include:
    - Completed Lift Data sheet(s)
    - Layout drawings and rigging hookup details
    - Procedures (including special instructions for complex lifts), means of communication, and means of monitoring
    - Crane chart extracts and similar supporting data
- UPF-produced critical lift plans are typically prepared by a CRE or a PRE under the supervision and direction of a CRE.
- Subcontractors producing critical lift plans are required to use appropriately qualified persons to prepare them.
- The CRE or PRE coordinates with the PIC to ensure that the plan is accurate and comprehensive in explaining the planner’s intent.
    - The assistance of other disciplines, such as Structural, Civil, Geotechnical, or Welding Engineers, may be required to prepare the lift plan.
    - The content of the critical lift plan shall be verified by a knowledgeable person (other than the originator).

- Critical lift plans, heavy/permit haul plans, and critical site moves (including those supplied by a subcontractor) are required to be reviewed and, if deemed satisfactory, "approved to proceed" by a BEO CRE. Submission is required in sufficient time to allow for the Bechtel review process and any iteration that may be required.
- The PFE (or the PFE's designee) is also required to "approve to proceed."
- Projects may, at their discretion and according to how they are structured, designate other required signatories for critical-lift plans. Typically, the approval of the SM or Area Manager will also be required.
- As Critical-lift plans are typically several documents, a cover sheet will be required and this (rather than the LDS) is the most appropriate place for approval signatures. (The LDS will still be "originated" and "checked"). The format of the lift plan is at the Project's discretion.
- Critical-lift plans should be color-coded (by use of a color-coded cover sheet or a border hatch or similar) to distinguish them from medium-lift plans.

NOTE: *UPF rigging supervisors/foremen are required to be qualified as CPRs (which also qualifies them as signal persons).*

- The Rigging Supervisor ensures the PIC for a critical lift is qualified and competent.
  - The PIC shall have the requisite knowledge, training, experience, and authority. If qualified by the UPF Project, the PIC shall be a Rigging Superintendent or foreman (qualified by virtue of the required UPF CPR qualification and competent by virtue of the position held).

Super-Critical Lift

Super-critical lifts shall be treated as critical-lifts with the additional review and approval of the BEO Rigging Manager.

3.4.10 Generic Lift Plans

Where a lifting operation is conducted repetitively within fixed parameters, a generic lift plan may be prepared. This plan must be given, at maximum, a 30-day timeframe noted on CFN-1092, *UPF Pre-Lift Safety Checklist*, after which it expires. If still required thereafter, it may be revalidated by the PRE, as long as nothing is changed (e.g., crane used and configuration is the same, parts of line have not changed, material lifted is still the same, slings are the same and in good condition). To qualify for a generic plan, the operation must:

- Be conducted in a defined location (e.g., laydown area "A").
- Use a particular piece of lifting/transport equipment in a defined configuration.
- Specify a maximum weight to be lifted.
- Define a minimum and maximum radius for the operations.
- Be for pieces of a similar nature (e.g., offloading pipe up to xx diameter and yy length).
- Use the same rigging.
- Not be critical lifts.

NOTE: *If the parameters change, a new lift plan is required.*

At the discretion of the Rigging Engineer and the SM, generic plans may be selectively issued for critical lifting operation, such as lifting 50lb (22.7 kg) valves over live pipe-racks at low capacity percentages; the plan must specifically list every item to which it applies

3.4.11 Lift Data Sheet

See CFN forms listed in **Section 4.0, *Records***, for a list of UPF Lift Data Sheets.

3.4.12 Heavy and Oversize Cargo Transportation Categories (Over-the-Road)

The designated CRE coordinates with Procurement when loads are heavy or abnormally sized and/or transportation requires the use of specialized transport equipment/techniques or where an engineered solution is needed.

3.4.13 Risk categorization of Over-the-Road Transportation Operations

The designated CRE/T&L shall assess whether the risk posed by the transport operation allows it to be treated as low-risk or whether it should be categorized as being medium- or critical-risk. Factors to be considered include weight, height/width/length, axle loadings, stability, proximity to power lines on route, clearances, value, impact on schedule, complexity, use of non-standard arrangements, and permit restrictions.

3.4.14 Over-the-Road Transportation Plans—Preparation and Review

The designated CRE determines if the over-the-road Heavy Haul/Oversize Cargo transportation operation is categorized as medium- or critical-risk, a transportation plan shall be prepared in which the hazards posed by the operation are addressed, risk is mitigated as far as possible, and all residual risk is managed. Guidelines to the content of those plans are contained in CFN-1103, *UPF Haul Plan Checklist*. If a route survey is determined to be required, its content should be in accordance with the guidelines of CFN-1103.

The over-the-road transport plan/route study may be prepared by a Bechtel Rigging Engineer (on request), or by a contracted transport company or consultant. If the study is deemed critical, it shall be submitted to a Bechtel CRE for “approval to proceed.”

3.4.15 Site transportation Operations—Preparation and Review of Transportation Plans

- Risk Categorization of Site Transportation Operations
  - The PRE reviews potential jobsite hazards to transport operations, and ensures the risks associated with those hazards are addressed in planning site transportation operations.
  - In order to prescribe the extent of planning, review, and skilled oversight appropriate to the risk of each site transportation operation, they shall be categorized as being “Low,” “Medium,” or “Critical” risk according to the criteria (the highest risk category met by any of the criteria governs.). An operation may be re-categorized to a more stringent category at the discretion of the Site Manager, Rigging Supervisor, Rigging Engineer, or other responsible

person in order to prescribe a greater depth of planning and more stringent review and approval.

NOTE: *An operation may be re-categorized to a more stringent category at the discretion of the Site Manager, Rigging Supervisor, Rigging Engineer, or other responsible person in order to prescribe a greater depth of planning and more stringent review and approval.*

Table 2. Site Transportation Operations

SITE TRANSPORTATION OPERATIONS
RISK CATEGORIZATION

		RISK CATEGORY			
	CRITERIA	**low**	**medium**	**critical**	
Payload Weight, P	0 tons to less than 50 tons (P < 50t)	*			
	50 tons to less than 100 tons (50t ≤ P < 100t)		*		
	100 tons and above (P ≥ 100 ton)			*	
Transporter Capacity	Transporting at less than 75% of trailer carrying capacity	*			
	75% to less than 90%		*		
	90% and above			*	
Payload Size	width of load or trailer <16′ (4.9m)	*			
	width of load or trailer => 16′		*		
Clearances	envelope height within 3′ (0.9m) vertically of piperacks or similar		*		PRCN 03
	envelope height within 6″ (0.15m) vertically of piperacks or similar			*	
	any part of load/trailer within 6′ (1.8m) laterally to live/critical plan			*	
	within 3’ (0.9m) vertor 6′ (1.8m) hor of Safe Limit of approach to power line			*	
Stability	angle of stability above 8 deg to 12 deg		*		
	angle of stability 5 deg to 8 deg			*	
	load has high C of G relative to width (> 2.5:1)			*	
	all 4-point hydraulic suspension arrangements			*	
	large sail area			*	
Arrangements	use of Holland or similar (house moving type) dollies			*	
	use of independent dollies with/without turntables			*	
	skid/roller/skate systems		*		
Loadings	axle loads > 15 tons (13.6t)		*		PRCN 03
	shadow pressure between 2 & 5 ksf (9.8 & 24.4 t/m2)		*		
	shadow pressure > 5 ksf (24.4 t/m2)			*	
	crossing critical structures/undergrounds			*	

*Mandatory requirement. Higher risk category may be applied on highlighted items

Note: “Ton” is a U.S. “short” ton of 2,000lbs; “t” is a metric ton, (mT or Te) of 2,205lbs; “kip” (k) is 1,000lbs; “ksf” is kips per square ft.

3.4.16 Planning Requirements for Site Transportation Operations

- The PRE ensures low-risk site transportation operations shall be planned and executed by qualified technicians/operators using best practice. A formally recorded plan is not required.
- The PRE ensures that site transportation operations categorized as medium- or critical-risk have a transportation plan prepared in which the hazards posed by the

operation are addressed, risk is mitigated as far as is possible, and residual risk is managed.

- A route study may be required when:
  - Obstructions exist or clearances are tight.
  - Complex movements are required.
  - Civil preparation work is required.
  - When within 50 ft. (15.24 m) of an energized power line.
  - Permits require it.
  - Crossing levees, culverts, and weak bridges.
- The PRE prepares the transport plan/route study on request.
  - The plan may also be prepared by a consultant or by a qualified representative of a contracted transport company. If the study is deemed critical, it shall be submitted to a Bechtel CRE for approval to proceed. Submission is required in sufficient time to allow for the Bechtel review process and any iterations that may be required; projects shall establish an appropriate lead time for these deliverables.
- The PIC supervises and controls the transport operation.
- The CRE/PRE verify payload weight to guard against overloading the lifting/transportation device and/or rigging attachments.
- If weight estimates indicate that the total weight may be within five percent of the lifting/transportation device's rated capacity (as configured and used), the weight of the payload shall be verified using one of the following methods of verification:
  - Scaled weight information from the fabricator prior to shipping.
  - U.S. Department of Transportation certified weight scale tickets (required for over-the-road transporters).
  - Weighing of payload on calibrated scales (calibrated hydraulic jacks acceptable) or by calibrated load cells.

3.5 Equipment

During performance of this section, inspection for S/CI in accordance with Y15-95-819PD is required. If S/CI is identified, the associated requirements of Y15-95-819PD shall be followed.

3.5.1 Rigging Tackle and Below-The-Hook Lifting Devices

Y17-95-64-875, *UPF Control of Hoisting and Rigging Equipment*, defines UPF's standards for the selection, use, and maintenance of rigging appurtenances, hardware, and below-the-hook (BTH) lifting devices typically used by the UPF Project. Manufacturer instructions and/or recommendations for the safe use, inspection, replacement, repair, and testing of rigging appurtenances, hardware, and BTH lifting devices shall be followed.

3.5.2 Use of Base Mounted Hoists (Tuggers) for Lifting

Base mounted hoists (tuggers) present specific hazards that must be addressed when planning for their use in lifting operations. See **Attachment E** for specific

requirements. Note that tuggers are treated as “cranes” and tugger lifts are categorized using the same criteria as any other lifting operation.

3.5.3 Lifting Lugs/Trunnions and Attachments to the Load

NOTE 1: *Lifting attachments welded to loads are considered part of the piece itself as are bolted-on lifting attachments specifically designed as part of that piece and used in conjunction with that piece only.*

NOTE 2: *Bolted-on lifting attachments intended for multiple uses (e.g., a lug used on numerous structural columns) are considered to be BTH lifting devices and are governed by ASME B30.20,* Below-the-Hook Lifting Devices*, and rigging hardware codes.*

NOTE 3: *Attachment bolts for bolted-on lifting attachments are not to be reused unless otherwise confirmed otherwise in writing by the RE.*

NOTE 4: *Lugs designed to be field-welded to assemblies for handling purposes, although not strictly BTH lifting devices, shall be designed to ASME B30.20 criteria. If for limited engineered use, this will generally require a minimum design factor of 2:1 on yield (which equates to approximately 1.25x American Institute of Steel Construction structural steel design requirements).*

3.6 Civil Preparation

3.6.1 Construction Loadings to Permanent Structures

The PFE, in consultation with Design Engineering, will verify if any construction operation that is planned to load a permanent structure in a manner that has the potential to overload that structure.

3.6.2 Ground Preparation

The CRE/PRE, in consultation with the UPF Geotechnical Engineer, verifies that all cranes are located on prepared surfaces that are level and adequate to safely support the maximum loads the crane (as configured) can impose in use, without excessive deflection.

The UPF Geotechnical Engineer establishes permissible temporary construction loadings for the Project site to guide personnel in general planning of lifting and transportation operations. In cases where there is no responsible Geotechnical Engineer and the operation is “low-risk,” a qualified person shall make a conservative determination of the ground bearing capability based on observation and guidance contained in the Bechtel Rigging Handbook. Testing may be required on very poor ground.

3.6.3 Approved Plan in Place

Before starting a load-handling operation, the PIC verifies that the operation has been correctly categorized, that an appropriate plan is in place, and that the plan has the required approvals where required.

3.6.4 Risk Reduction and Hazard Analysis

The PIC or CPR conducts a STARRT card review for each task (work package) before the start of each shift, in accordance with Y17-95-64-823, *UPF Safety Task*

Analysis and Risk Reduction Talk/Job Hazard Analysis Program (STARRT/JHA) Process. See **Attachment C** for an example of a Rigging Operation STARRT Card.

The PIC ensures all persons performing the work participate. The risks associated with the work are discussed, and a STARRT card shall be compiled and signed by the PIC and participants. This card is to be displayed in the work area; no one is to be allowed in the work area unless they have signed the STARRT card confirming their understanding of its content.

3.6.5 Mitigating Risk

The Project ES&H Representative verifies that:

- Appropriate exclusion zones are defined and monitored by supervision. This includes the area behind a crane as crane booms often spring back and fall to the rear when a crane fails.
- Supervision is properly enforcing PPE requirements and personnel are trained in its proper use.

3.6.6 Checks and Pre-Lift Meeting

The Crane Operator, along with the PRE and Rigging Supervisor, ensures:

- Set-up is thoroughly checked.
- Set-up is in accordance with the plan.
- No previously unidentified hazards exist before starting any load-handling operation.

The PRE and Rigging Supervisor ensure that the Crane Operator has completed the daily crane checklist and confirm that all equipment and systems are in a satisfactory condition to perform the lift, in accordance with Y17-95-64-872, *UPF Cranes Use and Operation*.

NOTE 1: *The Operator should stop the operation should visual or radio communications be lost or interrupted; it is not to be restarted until the PIC confirms that effective communication has been restored.*

NOTE 2: *For medium- or critical-risk operations, the pre-lift briefing (by the PIC) will incorporate the contents of the task-specific JHA. JHA meetings are facilitated by safety and they may possible require to be represented at the meeting.*

NOTE 3: *For medium-risk operations, pre-lift meeting participation by the PRE and Rigging Supervisor is not mandatory, but may be requested at the discretion of the PIC.*

The PIC conducts a pre-lift briefing with the rigging crew, equipment operators, and all other personnel involved before starting any load-handling operation. Clear communication between the operator, signal person, and other persons directing and monitoring the operation shall be established.

The PIC ensures a pre-lift safety checklist CFN-1092 is completed for medium- or critical-risk operations. All participants are required to sign the checklist to confirm that the planned procedure has been described to them and they understand their roles and responsibilities.

3.6.7 Hazard Briefing

The PIC ensures the rigging crew understands any job-specific procedures regarding hazards before starting load-handling operation. Hazards include, but are not limited to, the following:

- Mechanical and Electrical Hazards—when rigging operations take place in close proximity to electricity or mechanical energy sources that are not locked out or de-energized, and where danger to the riggers or other personnel involved in rigging activities may exist. CFN-1093, *UPF Hoisting and Rigging Hazard Evaluation*, should be used. Reference UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, to determine UPF requirements for work near utilities.
- Moving Equipment Hazards—when rigging operations take place in close proximity to moving machinery, vehicles, or equipment, if danger to the riggers or personnel involved in the rigging activities exist.
- Hazardous Materials—when rigging activities occur in environments where the presence or possible release of hazardous materials endangers the riggers or other personnel.
- Confined Spaces—when rigging operations take place in a confined space.
- Lifting Over Personnel—note that persons are not allowed, either in whole or in part, under any portion of a suspended load. Personnel assigned to rigging (i.e., attaching and/or detaching rigging hardware to an intended load) are permitted under the lifting/rigging hardware only, and to the extent required to attached or detach the hardware from the intended load prior to or after it has been lifted.
- Public Protection—when rigging operations take place in close proximity to the public, where danger to the riggers or other personnel involved in the rigging activity exists from foreseeable activity of the public, or where danger exists from foreseeable consequences of the rigging operation.
- Ground and Support Conditions—when cranes, hoists, or loads are set upon, or moved over, ground that is not compacted or where underground structures, vaults, trenches, pipelines, pits, or other structures or voids exist or may exist.

If these are suspected, the PIC shall bring it to the attention of the Responsible Supervisor for further evaluation.

- Temporary Supports—when loads are set upon, or moved across, temporary structures or supports, or when cranes or hoists are set-up on, or are supported by, temporary structures or supports during the rigging process.
- Floor/Structure Loading—when loads are moved across floors, roofs, decks, or other portions of a permanent structure, the design loading capacity shall not be exceeded without referring to a qualified engineer.
- Weather Conditions—when weather conditions such as high winds, storms, lightning, fog, ice, or snow may affect the operation and endanger the riggers or other persons.
- Multiple Loads—when more than one independent load is hoisted at the same time on a primary hoist line during steel erection (this practice is commonly called “Christmas treeing”)
- Lifting of Personnel—when personnel are lifted (see UPF-CP-219, *UPF Suspended Personnel Platforms*).

- Multiple Crane Lifts.

3.6.8 Monitoring the Operation

Once all the pre-lift checks have been satisfactorily completed, the PIC can initiate the operation.

NOTE: *It may be necessary to appoint dedicated monitors to watch critical clearances, such as tail swing, boom clearances, power lines, etc.*

- The PIC monitors the execution of the lift to ensure that it remains on track, that conditions remain within established parameters, and that no unanticipated hazards arise.
- The PIC ensures loads to cranes, radii, etc., are monitored at all times to ensure the operation is progressing as planned and the equipment remains within capacity. This monitoring is particularly important when upending or flipping loads, and when using multiple cranes. Any unanticipated shifting of weight shall be cause to stop the operation until the reason is adequately explained, and the PIC and Crane Operator are satisfied it is safe to recommence. If necessary, the assistance of a CRE shall be sought to investigate.
- The PIC/Crane Operator ensures the load is not completely released from the lifting or transport equipment until it is confirmed that the load is leveled/aligned as required, is stable, and is securely supported (including against possible wind loads).

3.6.9 Post Operation

Once a lift has been safely completed, the rigging crew can release and remove the rigging; the crane should be removed, dismantled, or brought to a safe out-of-service condition as appropriate.

- The PIC/CPR inspects rigging equipment and tags it for repair or destruction if damaged. Acceptable rigging equipment shall be returned to the rigging loft or other designated place for safe, protected storage.
- Other equipment, (e.g., crane mats) should be removed when not required and placed in storage.
- Do not permanently remove barriers until the area is cleared of equipment/participants and made safe.
- Any lessons learned from the operation or suggestions for improvement should be communicated to the appropriate discipline.

3.7 Subcontracting—"Third-Party" Contracting and Rental Considerations

3.7.1 Subcontracting

Subcontracting all or some of the work does not mean that the UPF Project has subcontracted all the risk; nor does it mean that UPF is unconcerned about the manner in which the work conducted on its behalf is being executed. Subcontractors shall be required to execute the work to standards meeting or exceeding those that Bechtel requires of itself (see APA-UPF-4MP-T81-04102, *UPF Subcontractor Requirements*). These requirements (as they specifically apply) are to be included in contracts/purchase orders with subcontractors and suppliers.

3.7.2 Renting Lifting/Hauling Equipment

When UPF hires lifting/hauling equipment, the rental agreement/contract shall include:

- UPF's qualification requirements for any personnel to be provided.
- Requirements for test, certification, inspection, and maintenance documentation.

NOTE: *When renting equipment (rather than contracting a service), Bechtel assumes total responsibility for operations conducted with that equipment and shall:*

- Appoint appropriately qualified PICs.
- Specify lifting/transportation equipment and plan the operation.
- Maintain the equipment and assemble/disassemble, dependent upon the rental basis.

4.0 RECORDS

Records generated by this Document shall be maintained in accordance with Y15-95-800, *UPF Document Management*.

The following records generated are:

PRCN 01 & 02

Record or Form Number	Record Title	System/ Location	Document Type
Document Specific	*UPF Lift Data Sheets (may include CFN-1090, CFN-1092, CFN-1093, CFN-1103)*	InfoWorks	HLP
CFN-1143	*UPF Daily Crane Lift Card*	InfoWorks	DCLC

5.0 REFERENCES

5.1 Source References

ASME 17.1, *Safety Codes for Elevators and Escalators*

ASME B30.1, *Jacks, Industrial Rollers, Air Casters, and Hydraulic Gantries*

ASME B30.10, *Hooks*

ASME B30.2, *Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)*

ASME B30.21, *Lever Hoists*

ASME B30.22, *Articulating Boom Cranes*

ASME B30.23, *Personnel Lifting Systems*

ASME B30.26, *Rigging Hardware*

ASME B30.3, *Tower Cranes*

ASME B30.5, *Mobile and Locomotive Cranes*

ASME B30.6, *Derricks*

ASME B30.9, *Slings*

ASME BTH-1 2014, *Design of Below-the-Hook Lifting Devices*

ASME HST-1, *Performance Standard for Electric Chain Hoists*

ASME HST-2, *Performance Standard for Hand Chain Manually Operated Chain*

ASME HST-3, *Performance Standard for Lever Hoists*

ASME HST-4, *Performance Standard for Overhead Electric Wire Rope Hoists*

ASME HST-5, *Performance Standard for Air Chain Hoists*

ASME HST-6, *Performance Standard for Air Wire Rope Hoists*

ASME P 30.1, *Planning for Load Hhandling Aactivities*

Bechtel Corporate Construction Operating Instruction 4MP-T11-E105, *Rigging Engineering Training, Development, and Certification*

Bechtel Corporate Construction Operating Instruction 4MP-T11-L101, *BEO Rigging Services*

Bechtel Corporate Policy 230, *Procurement of Goods and Services*

Bechtel Crane Foundation Handbook

Bechtel Engineering Design Guide 3DG-C15-00014, Lifting Lugs

Bechtel Procedure 4MP-T81-01903, *Construction Rigging Work Operations*

Bechtel Rigging Handbook

DOE P 450.4 Chg 1 (MinChg), *Integrated Safety Management System Policy*

DOE-STD-1090-2011, *Hoisting and Rigging*

ITSDF B56.10, *Manually Propelled High Lift Industrial Trucks*

ITSDF B56.11.4, *Hook-Type Forks and Fork Carriers for Powered Industrial Forklift Trucks*

ITSDF B56.6, *Safety Standard for Rough Terrain Fork Lift Trucks*

NQA-1, Subpart 2.15, *Quality Assurance Requirements for Hoisting, Rigging, and Transportation of Items for Nuclear Power Plants*

OSHA Regulation – 29 CFR Part 1926, Subpart CC*, Cranes and & Derricks in Construction*

OSHA Regulation – 29 CFR Part 1926, Subpart H, 1926.251, *Rigging Equipment for Material Handling*

OSHA Regulation – 29 CFR Part 1926, Subpart R, *Subpart R—Steel Erection*

UPF-CP-214, *Barricades and Signs*

Y17-95-64-838, *UPF Management of Construction Equipment*

Y17-95-64-849, *UPF Small Tools and Small Capital Equipment*

Y17-95-64-851, *UPF Construction Equipment Maintenance*

5.2 Interfacing References

APA-UPF-4MP-T81-04102, *UPF Subcontractor Requirements*

ASME B30.20, *Below-the-Hook Lifting Devices*

UPF-CP-219, *UPF Suspended Personnel Platforms*

UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*

Y15-95-800, *UPF Document Management*

Y15-95-819PD, *UPF Suspect/Counterfeit Item Program Description*

Y17-95-64-823, *UPF Safety Task Analysis and Risk Reduction Talk/Job Hazard Analysis Program (STARRT/JHA) Process*

Y17-95-64-855, UPF Structural Steel Erection

Y17-95-64-872, *UPF Cranes Use and Operation*

Y17-95-64-873, *UPF Qualification of Construction Crane Operators*

Y17-95-64-874, *UPF Rigger, Signal Person, and Competent Person Rigger Qualification*

Y17-95-64-875, *UPF Control of Hoisting and Rigging Equipment*

Y60-95-015, *UPF Software Quality Assurance*

Y90-95-027, *UPF Training Program*

PRCN 02

5.3 Forms

CFN-1090, *UPF Lift Data Sheet*

CFN-1092, *UPF Pre-Lift Safety Checklist*

CFN-1093, *UPF Hoisting and Rigging Hazard Evaluation*

CFN- 1103, *UPF Haul Plan Checklist*

CFN-1143, *UPF Daily Crane Lift Card*

PRCN 02

6.0 SUPPLEMENTAL INFORMATION

Appendix A, *Acronyms and Definitions*

Appendix B, *Development of Project Rigging Strategy*

Appendix C, *Preparation and Approval of Project Rigging Plans*

Appendix D, *Lift Execution Process*

Attachment A, *Rigging Operation STARRT Card (Example)*

Attachment B, *Pre-Lift Safety Checklist (Sample)*

Attachment C, *Rigging Operation STARRT Card (Example)*

Attachment D, *Low-Risk Crane Lift Summary (Sample)*

Attachment E, *Standard for Use of Base Mounted Hoists (Tuggers)*

APPENDIX A
Acronyms and Definitions

(Page 1 of 4)

Acronyms

ASME	American Society of Mechanical Engineers
BEO	Bechtel Equipment Operations
BNI	Bechtel National, Inc.
BTH	Below-the-Hook
CPR	Competent Person Rigger
CRE	Certified Rigging Engineer
CSA	Civil/Structural/Architectural
DCCL	Design Control Checklist
ES&H	Environmental, Safety & Health
G&HES	Geotechnical & Hydraulic Engineering Services
JHA	Job Hazard Analysis
NDE	Nondestructive Evaluation
OSHA	Occupational Safety and Health Administration
PFE	Project Field Engineer
PFS	Project Field Superintendent
PIC	Person in Charge
PRE	Project Rigging Engineer
S/CI	Suspect/Counterfeit Item
STARRT	Safety Task Analysis and Risk Reduction Talk
SWPP	Standard Work Process Procedures
T&L	Traffic and Logistics
UPF	Uranium Processing Facility

Definitions

Competent Person Rigger	A person with advanced rigging skills who is qualified as a UPF CPR in accordance with Y17-95-64-874 CPRs may be sourced from a variety of trades such as riggers, ironworkers, boilermakers or electricians and may be craftsmen, foremen, supervisors or superintendents.

APPENDIX A
Acronyms and Definitions

(Page 2 of 4)

Crane	A powered Lifting Device, providing an elevated and movable suspension point from which a load may be hung; lifting of the load is either by raising the suspension point and/or by hoisting the load towards the suspension point using (typically) a reeved hoist line attached to a winch. **NOTE:** *For the purpose of this procedure "crane" includes conventional construction cranes, other means of powered lifting in which the load is suspended and "alternative" engineered lift systems such as Strand Jacks, Jacking Systems and Hydraulic Gantries. Forklifts, excavators and like devices are not considered cranes unless fitted with attachments or otherwise rigged to perform the function of a crane (suspended load). Such use must be an approved method.*
Crane Operator	An individual who is responsible for operating any Lifting Device defined as a "crane" Qualified Crane Operator is a qualification held by a UPF operator or subcontractor employee in accordance with Y17-95-64-873, qualifying that person to operate a crane on the UPF site.
Engineering Support Required Item List	A list (prepared by Construction) of design-critical lifting and transportation operations requiring specific engineering support beyond the normal review of vendor documentation
Field Level Hazard Assessment	A process that uses employee participation to identify and resolve environmental, safety, and health hazards associated with a specific task before performing the task
Lift Data Sheet	A tabular sheet collating all the essential parameters of the lifting operation; it is the primary record containing details of the configuration of the crane(s), capacity deductions to be taken, load weight and center of gravity details, rigging to be used, operating radii, crane capacities, etc.
Lifting	The process of changing the elevation and/or location of a payload using a Lifting Device Lifting operations include not only the actual process of lifting, but all necessary pre-lift preparations and post-lift demobilization.
Lifting Device	Any manual or powered machine used to lift a load; such devices include, but are not limited to, the following: crane winch/"tugger," chain fall, hydraulic or mechanical jack, levers, pulley system, beam launcher, etc.
Lifting/ Transportation Plan	The information necessary to accomplish the operation ensuring its safety and efficiency The plan has to explicitly communicate the scheme and specify the risk control measures to be adopted in its execution to address the hazards present. The minimum contents of a plan vary according to the complexity of the operation and the risk it poses; a plan for a simple low-risk operation may be verbal whereas a plan for a complex critical operation will be documented and very comprehensive.
Payload Weight	The weight of the item to be handled, including the weight of attachments, saddles, temporary supports, insulation, and contents, as applicable; does not include rigging weight

APPENDIX A
Acronyms and Definitions

(Page 3 of 4)

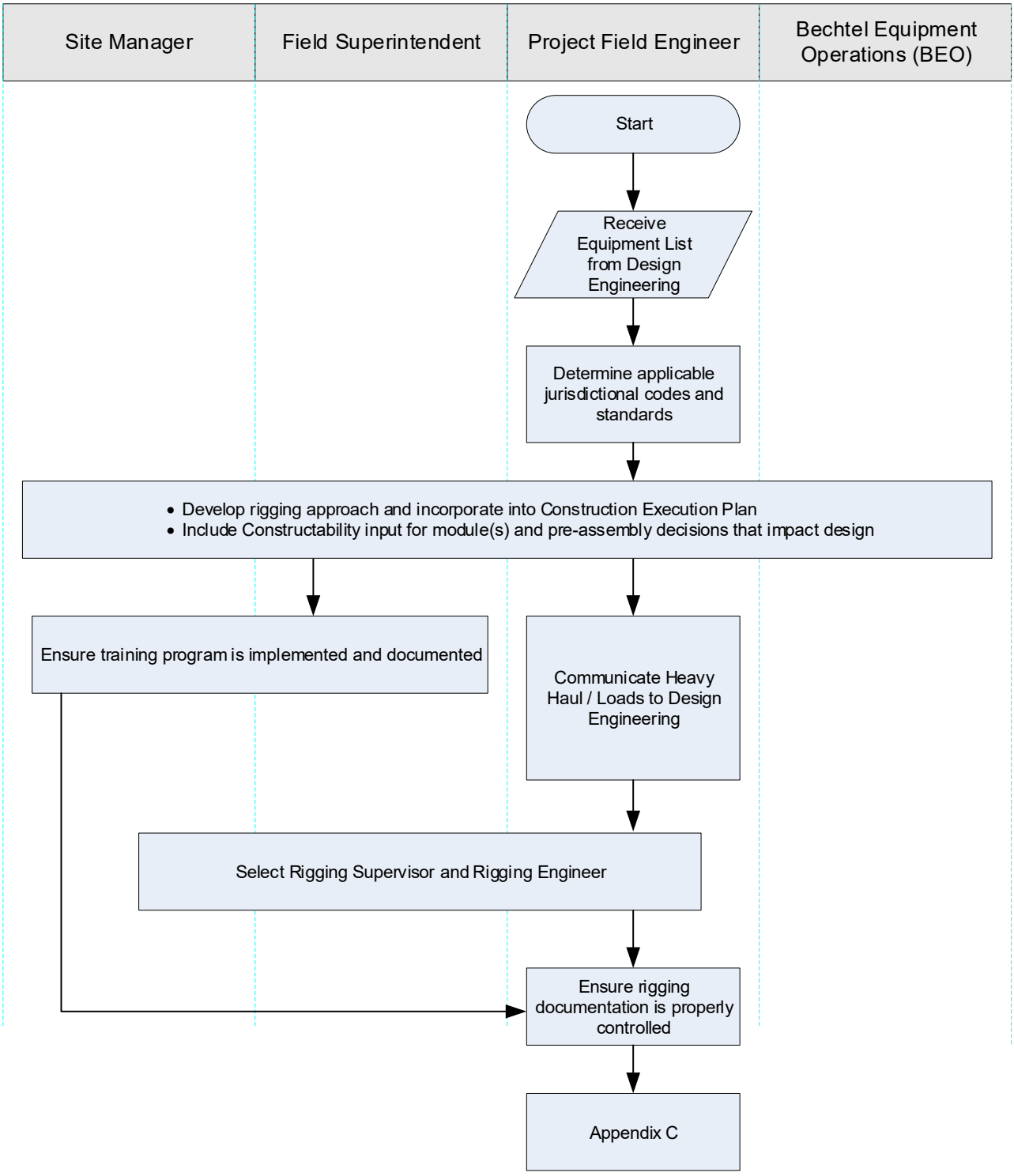
Person in Charge/ Appointed Person/Lift Director	A qualified individual appointed to direct a lifting/hauling operation on behalf of the project and be responsible for the safe execution of the work
Project Rigging Engineer	A qualified individual assigned responsibility for engineering, planning, and oversight of rigging activities
Rated Load Capacity	The maximum hoisting or carrying capacity that a lifting or transportation device is rated to lift or transport in the specific configuration and operating conditions applying to its use
Rigger	An individual who is responsible for attaching rigging gear (i.e., shackles and slings) from a payload to a lifting or transportation device; a “rigger helper” is under the direct supervision of a rigger. A Qualified Rigger is a Rigger who has been assessed as meeting the qualification requirements for a Qualified Rigger in accordance with Y17-95-64-874.
Rigging Personnel	Any project employee (including any discipline craft employees) whose job duties and responsibilities may include the preparation of a load for safe movement, selection of components to be used in the movement of a load, and participation in the movement or supervision of the movement of the load (vertically or horizontally)
Rigging Execution Plan	A plan that defines the Project’s general strategy to be adopted to execute load-handling/rigging activities
Rigging Planning & Rigging (Lift or Transport) Plans	The planning process for a load-handling activity to determine how best to conduct it as safely and efficiently as possible Where required, the document describes the plan, supports it, and validates it and describes the risk management measures.
Rigging Supervisor	A qualified individual (UPF or subcontractor employee) assigned responsibility for planning and supervising rigging work on a project If a UPF employee, he/she should be qualified as a UPF CPR.
Rigging tackle/below-the hook lifting devices	Any form of lifting gear (tackle) used to attach the payload to the Lifting Device (e.g., shackles, slings, spreaders, beams, and lift frames)
Rigging Work Operations (also referred to as Load-Handling Operations)	As used in this procedure, may encompass not only lifting but also “abnormal” transportation and jacking/skidding/skating
Safe Limit of Approach to Electrical Power Sources	The closest distance any person, load, piece of load-handling equipment, or anything else associated with the operation may approach a live electrical line or other energized equipment The distance varies with voltage. Refer to UPF-MANUAL-CM-001.

APPENDIX A
Acronyms and Definitions

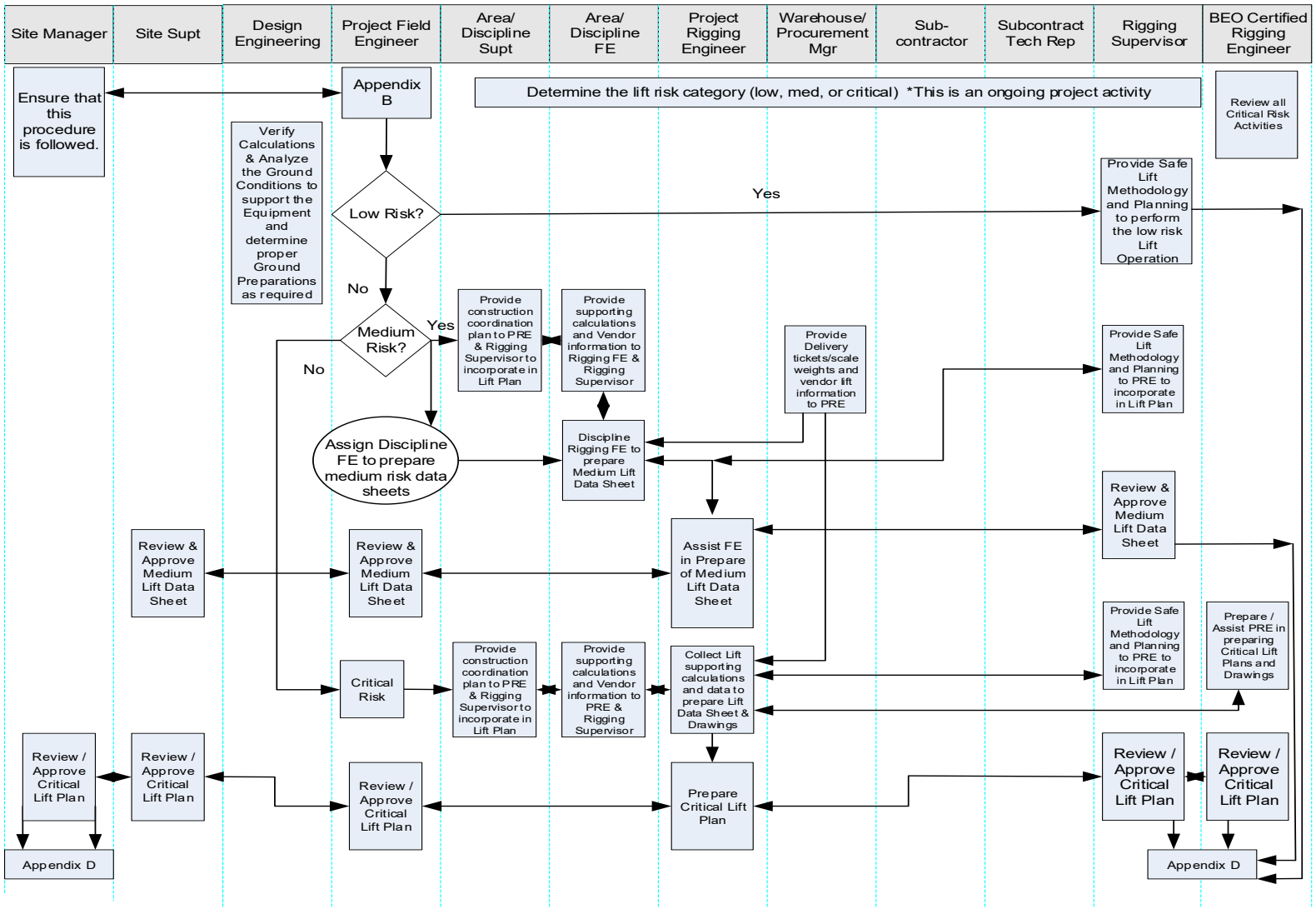
(Page 4 of 4)

Signal Person	A person who, by means of verbal or hand signals, directs a crane operator to execute the required movements of a crane. A Qualified Signal Person is one who has been assessed as meeting the qualification requirements in accordance with Y17-95-64-874.
Transportation	The process of moving equipment or materials from one point to another using a transportation device (hauling is land transportation with a powered vehicle)
Transportation Device	Any machine, equipment or device used to transport a load; examples include any wheeled vehicle e.g., haul trailer(s)—self-driven or towed; waterway vessel(s), specialist rail gear (such as Schnable cars); air transport machine(s), rollers, skates, skidding systems, and similar devices
Units	The primary units used in this procedure are United States Customary System (USCS) units

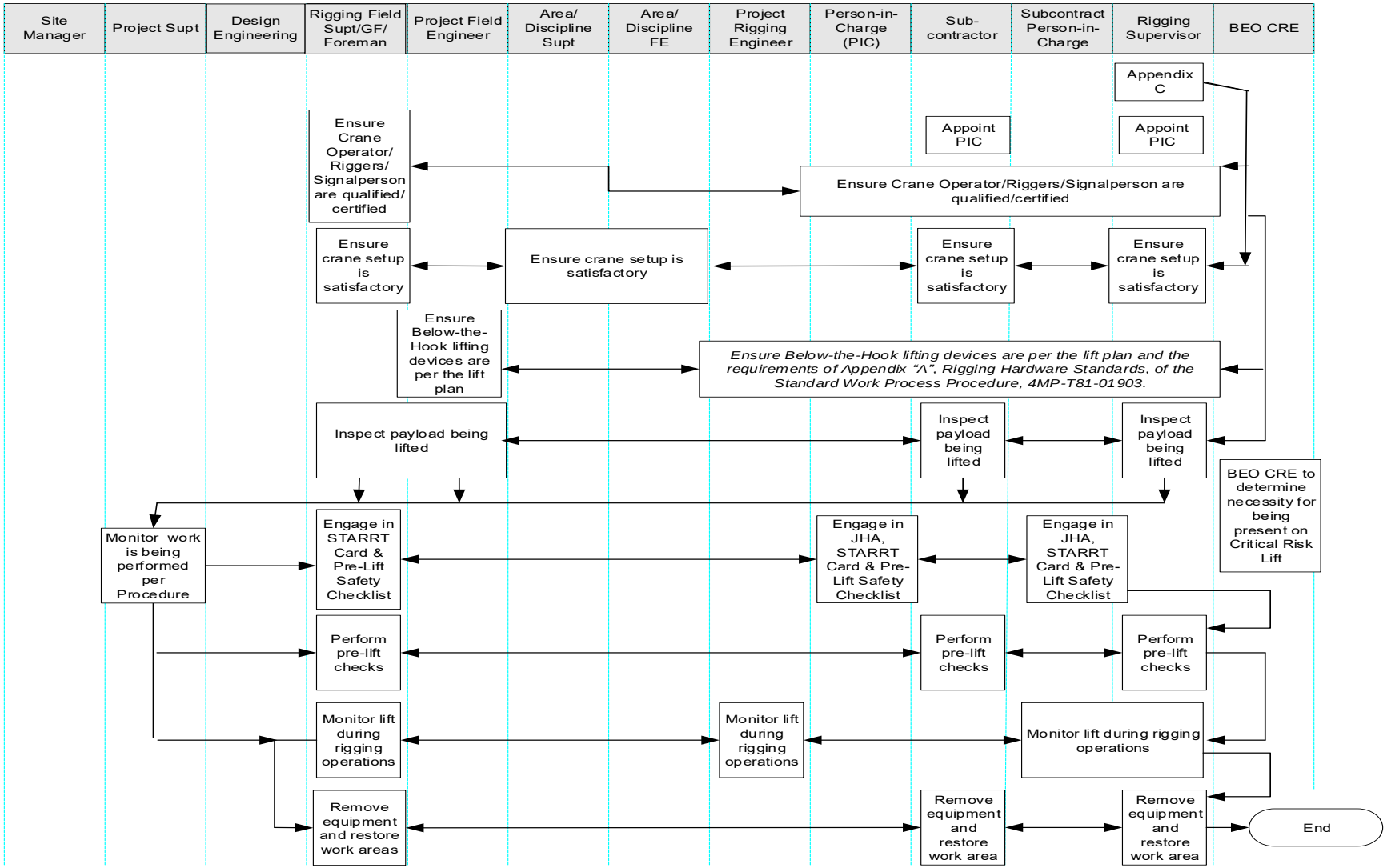
APPENDIX B
Development of Project Rigging Strategy



APPENDIX C
Preparation and Approval of Project Rigging Plans



APPENDIX D
Lift Execution Process



ATTACHMENT A
Multi-Entity Work Process DOR

MULTI-ENTITY WORK PROCESS DOR					
Work Process: Construction Rigging Work Operations			Date:		
Project No.:	Project Name:				
Subcontract No.:	Subcontractor Name:				
Entity #1:			Entity #2:		
Entity #3:			Entity #4:		
Work Process Step:	**Responsibility P = Primary; S = Support; M = Monitor; A = Approve**				
	UPF	**Entity #1**	**Entity #2**	**Entity #3**	**Entity #4**
1. Develop critical haul / lift execution plan describing how the work will be accomplished					
2. Review and approve critical haul / lift plans, calculations, and drawings					
3. Implement and document training					
4. Prepare Lift Data Sheet					
5. Prepare Detailed Plan for Medium and Critical Lifts and for Heavy Hauls					
6. Prepare calculations for Critical Hauls and Critical Lifts					
7. Ensure crane operators qualified					
8. Prepare the Critical Haul routes and/or Lift site to accomplish the task, (i.e. level, compaction, clearance, etc.)					
9. Inspect and accept crane setup					
10. Approve lift and spreader beam calculations and drawings					
11. Pre-lift inspections and safety checks					
12. Verify heavy lift crane setups prior to performing the work					
13. Execute heavy haul / lift work per the approved plan					
14. Remove heavy haul / lift equipment from the site after the completion of the work					
Comments:					
Performed by:				Date:	
Reviewed by:				Date:	

ATTACHMENT B
Pre-Lift Safety Checklist (Sample)

(Page 1 of 2)

(Mandatory to complete for Medium and Critical Lifts)	
Pre-Lift Safety Checklist	
Project Name & No.:	Inspection/lift date:
Payload Name:	
Payload No.:	Rigging Drawing Number:
Verified Weight of Payload:	Dimensions of Lift: x x
Make & Model of crane(s):	Equipment Number of Crane(s):
Weather Conditions:	

Pre-Lift Verifications

1. Did the crew use the approved rigging plan to set up this lift? Yes No

2. Operator(s) and Flagman:

☐Operator(s) Name: Operator(s)	☐PIC
☐Certified by:	☐Signal person Name
	☐Signal person
	☐Qualified:

3. Safety measures and communications assurance:

☐FLHA Card or JSA completed	☐Crane has OSHA Annual Inspection	☐Crane(s) Daily Report with Operator
☐Personnel Safety barricades up	☐Proper PPE with Lift Personnel	☐Crane's or alternate air horn available
☐Tail swing barricades installed	☐Lift, Travel & Swing Area clear	☐Radio communication required?

4. Final Check of machinery:

☐Crane(s) set-up & located per the Rigging Drawings	☐Crane(s) set-up on mats if required (verify size & quantity)
☐Radius from crane(s) Center of Rotation to Payload checked	☐Crane(s) on even terrain and level
☐Boom length & number of line parts in Block is correct	☐Safe working distance from power lines verified
☐Underground utilities verified & protection installed as required	☐Crane travel paths leveled, compacted, matted where specified

5. Final Check of Below the Hook lift devices:

☐Sling eyes are seated properly in the block hook(s)	☐Correct size shackles are installed
☐Hook block latches fitted and working properly	☐Softeners provided at rigging bearing points (where required)
☐Correctly rated Slings selected per rigging arrangement	☐Recorded inspections and test certifications, as required by OSHA and this procedure, current for all Rigging used. Documentation on file and available at site.
☐Correct Spreader Bar or Beam is installed (if required)	Tag Lines attached to control payload

6. Does the actual rigging scheme differ from the approved rigging diagrams?

Yes No If yes, explain why:

7. A brief and final description of the planned sequence of the lifting operation was discussed with ALL individuals involved in the lift.

Yes No If no, explain why, or if yes and there were any comments from the discussion to be noted:

ATTACHMENT B
Pre-Lift Safety Checklist (Sample)

(Page 2 of 2)

(Mandatory to complete for Medium and Critical Lifts)

A full description of the planned lifting procedure has been described and I understand my roles and responsible during this upcoming operation.

EMPLOYEE NO.	CRAFT/TRADE	NAME (PRINT)	SIGNATURE
	Project Rigging Engineer *		
	Rigging Supervisor*		

- PRE and Rigging Supervisor presence / signature is optional for Medium Risk activities.

ATTACHMENT C
Rigging Operation STARRT Card (Example)

RIGGING WORK OPERATIONS STARRT ☐Required ☐N/A

RIGGING HARDWARE/SPECIALTY RIGGING PRE-LIFT CHECKLIST — **Will rigging be used today? Yes/No**

RIGGING INSPECTION CHECK	Yes	N/A
☐ Rigging Hardware will be inspected before use?		
☐ Rigging Hardware Quarterly Inspected:		
First Quarter - Yellow		
Second Quarter - Green		
Third Quarter - Red		
Forth Quarter - Blue		
Foreman/General Foreman VERIFIED!		

WIRE ROPE SLINGS (All used today)	Yes	N/A
☐ Does the slings have identification tag?		
☐ Is diameter of item to lift > the diameter of rope?		
☐ Does the Rigger understand the **D/d Ratio**?		
☐ No more than 3 broken wires in 1 strand/1 lay?		
☐ No more than 6 random broken wires in 1 lay?		
☐ Checked for severe kinks, abrasion or scrapes?		
☐ Is Rope over stretched, deformed or corroded?		
☐ Instructed all users that there shall be no more than 2 eyes of sling in a single hook?		
Foreman/General Foreman VERIFIED!		

"CHAINFALLS AND COME-A-LONGS"	Yes	N/A
☐ Is it clearly marked with manufacturer name, model, serial number, "Safe Working Load Limit"?		
☐ Verified it has an annual inspection?		
☐ Performed the daily "before use inspection?		
☐ Will the chainfall be used to "pull a load"?		
☐ Will the come-a-long be used to lift personnel?		
☐ No more than one person will operate the chainfall or come-a-long at any time?		
☐ Will the area beneath the chainfall/come-a-long be barricaded to prevent people from walking below a suspended load?		
☐ The chainfall or come-a-long will be attend at all times? Attended means access no farther than 26' horizontal!		
☐ The chainfall or come-a-long will be removed and stored properly at end of shift?		
☐ If No, How long will it remain in service/place?		

NOTE: IF THE CHAINFALL/COME-A-LONG IS LEFT IN PLACE UNATTENDED THEN A BARRICADE MUST BE ERECTED TO PREVENT PERSONNEL FROM ENTERING THE AREA BENEATH THE LOAD.

Foreman/General Foreman VERIFIED! ☐

ROUNDSLING & SYNTHETIC SLINGS	Yes	N/A
☐ Does the slings have identification tag?		
☐ Is the rated for the load that is being picked?		
☐ Does the Rigger understand the **D/d Ratio**?		
☐ Inspect for tears, cuts, holes, excessive wear?		
☐ Is sling discolored? Ultraviolet/Sunlight damage?		
☐ Sling soiled and/or sour/musty smell?		
☐ Will sling be constantly exposed to weather?		
☐ If yes, explain why:		

WIRE ROPE CLIPS	Yes	N/A
☐ U-bolt clips did not "saddle a dead horse"?		
☐ is the correct number of clips being used?		
☐ Have the clip bolts been torque with a torque wrench to the proper torque value?		
☐ Have the properly torque clip bolts been clearly marked (orange paint) and identified as verified?		
Foreman/General Foreman VERIFIED!		

Specific to Roundslings:	Yes	N/A
☐ Any tears, cuts, wear on outer jacket?		
☐ Any exposed central yarns?		
☐ Does sling have a "over load cord"? Exposed?		
☐ If sling has fiber optics test, does light shine?		
☐		
Foreman/General Foreman VERIFIED!		

SHACKLES	Yes	N/A
☐ Clear raised letter markings/rated capacity on?		
☐ The right type of shackle being used for the job?		
☐ Shackle properly being pulled?		
☐ Inspect shackles for bent, gouges & deep cuts?		
Foreman/General Foreman VERIFIED!		

OTHER SPECIAL RIGGING (List)	Yes	N/A

CRANE LIFT PRE-LIFT CHECKLIST — **Will a crane be used today? Yes/No**

Pre-Lift Check	Yes	N/A
☐ Crane adequate for JOB?		
☐ No lift >90% chart capacity?		
☐ Payload weight < 20 ton?		
☐ Emergency response needed?		
☐ Medium Lift Plan?		
☐ Heavy/Critical Lift Plan?		
☐ Lift Plan signed/approvals?		
☐ Pre-Lift Checklist complete?		
☐		
☐		

Rigging Check	Yes	N/A
☐ Rigging hardware adequate?		
☐ Rigging properly assembled?		
☐ Softeners used where needed?		
☐ Rigging properly tagged?		
☐ Sling angles > 45°		
☐ Lift point inspect/adequate?		
☐ D/d Ratio adequate?		
☐ Tag lines length OK to control?		
☐		
☐		

Crane Set-up Check	Yes	N/A
☐ Equipment Daily Checklist?		
☐ Crane on adequate ground?		
☐ Crane set-up level?		
☐ Adequate parts of line?		
☐ Proper Matting set-up?		
☐ Obstructions/Clearance?		
☐ Weather Conditions Good?		
☐ Lift area barricaded?		
☐		
☐		

Personnel Check	Yes	N/A
☐ Person-in-Charge identified?		
☐ Signal Person(s)) identified?		
☐ Communication (hand/radio)?		
☐ Operator certified/qualified?		
☐ Non-essential persons out?		
☐ Rigger roles identified?		
☐ Other craft roles identified?		
☐ Rigging Engineer present?		
☐		
☐		

If the crane is re-located and set-up in a different position then a new STARRT card has to be generated.

ATTACHMENT D
Low-Risk Crane Lift Summary (Sample)

"LOW RISK" CRANE LIFT SUMMARY

Payload Description/Crane Location	Weights		Radius	Crane Chart Capacity	Chart %	Rigging Inspected (Yes/No)	Approved
	Payload+Rigging	Deductions					

Items lifted during the day must be added to the list above prior to picking up the payload. Single entry for repetitive operations permissible (note number off).

ATTACHMENT E
Standard for Use of Base Mounted Hoists (Tuggers)

Reference Bechtel Corporate Standard Work Process Procedure 4MP-T81-01903, *Construction Rigging Work Operations*.