

# **Nexen Energy ULC**

## **Wellhead Structure**

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### **Installation Manual**

**Part No. 0468A**

**Sales Order No. 7593087**

**TS Work Order No. 3796070**

**January 2015**

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### **3. INTRODUCTION**

#### **3.1 Record of Ownership**

PROPERTY OF: \_\_\_\_\_

COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_

COUNTRY: \_\_\_\_\_

#### **3.2 Revisions Record**

Check each revision received and insert the revised and supplementary pages in your manual (if applicable).

| REV | REVISION<br>DATE | TECH PUBS<br>WO | PART<br>NUMBER | SALES ORDER<br>NUMBER |
|-----|------------------|-----------------|----------------|-----------------------|
| 0   | JAN 2015         | 3796070         | 0468A          | 7593087               |
| 1   | _____            | _____           | _____          | _____                 |
| 2   | _____            | _____           | _____          | _____                 |
| 3   | _____            | _____           | _____          | _____                 |

#### **3.3 Translation Notice**

This operation and maintenance manual is written in English. If the equipment owner translates this manual using in-house personnel or a professional service, then the equipment owner acknowledges responsibility for the accuracy of the translated manual. Stewart & Stevenson assumes no responsibility for unit operation errors, damage to or improper use of equipment, improperly trained personnel, improperly maintained equipment, or failure to follow normal safety precautions outlined in this manual or in the vendor literature that may result from inaccuracies in the translated manual.

#### **3.4 Copyright Notice**

Unpublished work © 2015 Stewart & Stevenson. The information in this publication, including text, images, and links, which may change at any time, is provided AS IS by Stewart & Stevenson without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. Stewart & Stevenson is a registered trademark of Stewart & Stevenson LLC.



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### 3.5 About This Manual

This manual is not a textbook on mechanics, electronics, or hydraulics. Sufficient descriptive material and illustrations are included to enable the operator to understand the basic construction and theory of operation of this equipment. The intent of this manual is to guide the operators and maintenance personnel in the proper use of the equipment. This manual is not a substitute for properly trained personnel or common sense.

No liability, neither expressed nor implied, is given for any information contained herein. This manual is intended **only as a guide** and not as a substitute for proper training by qualified personnel.

Stewart & Stevenson assumes no responsibility for improper use of equipment, improperly trained personnel, improperly maintained equipment, or failure to follow normal safety precautions outlined in this manual, in the vendor literature, or by properly trained personnel.

Use of this manual for any purpose other than for the safe and proper operation and maintenance of the equipment and all its components constitutes misuse, and is punishable by all applicable laws.

**If there is any discrepancy between information contained in this manual and the vendor literature, the vendor literature is assumed correct.** Stewart & Stevenson assumes no liability whatsoever for any person who fails to follow the operation and safety procedures of the original equipment manufacturers.

Please read through this manual in its entirety **before** attempting to operate the equipment. Stewart & Stevenson assumes no liability for failure to do so.

All information in this manual is based on the latest production information available at the time of publication. Direct any questions concerning the contents or format of this manual to:

**Stewart & Stevenson**  
**611 W. 38<sup>th</sup> Street**  
**Houston, Texas 77018**  
**Phone: (713) 803-0700**  
**Fax: (713) 803-0721**  
**Email: [techpub@ssss.com](mailto:techpub@ssss.com)**



### 3.6 Unit Identification

To aid the technician in repair or service work on this unit, a Stewart & Stevenson Manufacturing Technologies identification nameplate is located on the frame of the equipment.

The serial number identification of each unit will appear on the nameplate along with the date of manufacture. The mailing address of Stewart & Stevenson, telephone number, telex number, and cable information are all located in the middle of the nameplate on either side of the Stewart & Stevenson logo. This necessary information will ensure the customer a fast and accurate response to any parts and/or service request.

Please verify the serial number on the unit's identification nameplate, and

ENTER YOUR UNIT SERIAL NUMBER HERE: \_\_\_\_\_

If applicable,

ENTER YOUR COMPANY IDENTIFICATION NUMBER HERE: \_\_\_\_\_

### 3.7 Technical Assistance

For parts or warranty assistance, write or call:

Stewart & Stevenson Canada  
3111 Shepard Place SE  
Calgary, Alberta T2C 4P1

For Parts: **+1 403.215.5300**; ask for Parts Department.

For Service: **+1 403.215.5300**; ask for Warranty Department.

Toll Free: +1 800.661.6172

Be sure to list the equipment model number, rating, specific nature of the problem, and the suspected area of malfunction.

### 3.8 Proprietary Notice

This work contains the **CONFIDENTIAL and PROPRIETARY INFORMATION** of Stewart & Stevenson. Neither this document nor any information disclosed herein shall be reproduced in any form, used, nor disclosed to others for any reason, including manufacturing, without the expressed written permission of Stewart & Stevenson. All pages of this document are original pages of published material produced on or before the publication release date of January 2015, unless otherwise noted by a revision (REV) number.

### 3.9 Use of this Manual

This operations and maintenance manual contains valuable description, operation, maintenance, and troubleshooting information. However, the operations and maintenance manual cannot foresee every eventuality that may arise while working with, or working on, the various pieces of the well service equipment. While every effort is made to ensure that the information included in this manual is accurate and complete, no guarantee is made to that effect. When a situation of doubt, uncertainty, or lacking information exists, the engineering and/or service departments at Stewart & Stevenson should be consulted.



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#### 3.10 Third Party Information

This manual includes various datasheets, user information, drawings, service information, etc. relating to component parts of the Wellhead Structure, which was manufactured or supplied by other companies. This information is included in order to aid in the identification, operation, and service of the equipment. It should be noted that these documents are not controlled by Stewart & Stevenson, and no guarantee is made regarding their accuracy or completeness. If information is required beyond what is supplied in the provided documents, contact the engineering and/or service departments at Stewart & Stevenson.

#### 3.11 Use of this Information

This operation and maintenance manual is intended as a guideline, not a comprehensive set of operating instructions. It is impossible to foresee every eventuality that will arise during the operation of this unit, as each job it goes to will be different. The equipment owner/operator is therefore responsible for developing his or her own operating procedures with the aid of, and in accordance with, American Petroleum Institute Standards (or equivalent) and applicable State/Provincial or local regulations.

The Stewart & Stevenson Wellhead Structure has been engineered to offer the most reliable and cost-effective operation possible. The equipment has been designed, manufactured, and tested to function properly under a broad range of conditions. Premature equipment wear and failures can be avoided and service life prolonged if a preventive maintenance program is carefully followed, the equipment treated with respect, and operated properly by trained individuals.

Correct lubricants and fluids should be used depending on climate and operating conditions; Maintenance Schedules should also be adjusted to reflect these conditions.

This manual only covers equipment supplied by Stewart & Stevenson. Proper procedures and schedules relating to equipment manufactured by others are beyond the scope of this document.

#### 3.12 Modification or Repair of the Equipment

Please consult the Stewart & Stevenson engineering and/or service departments before carrying out any modifications, repairs, or overhauls of this equipment.

### 3.13 Manual Danger, Warning, Caution, and Note Statements

Throughout this manual, statements may appear which emphasize important and critical information. These statements will be set off from the rest of the text, and will be formatted and defined as shown.

|                                                                                                      |                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>DANGER!</b>  | Indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury. This type of statement is limited to only the most extreme situations.                  |
| <br><b>WARNING</b>  | Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.                                                                                        |
| <br><b>CAUTION</b> | Indicates a potentially hazardous situation, which, if not avoided, could result in minor or moderate injury or serious damage to equipment. It may also be used to alert against unsafe practices. |

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**NOTE:** Is used to notify personnel of installation, operation, or maintenance information that is important, but not hazard related.

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### 3.14 Statement of Warranty

Stewart & Stevenson warrants the Equipment to be free from defects in material and workmanship for a period of TWELVE (12) months from the Date of Delivery.

Stewart & Stevenson reserves the right to inspect the Equipment to determine the validity of the warranty claim and if determined to be valid, Stewart & Stevenson will, at its option: (1) replace the defective Equipment or parts thereof; or (2) authorize the Equipment or part to be returned to its authorized repair facility for repair; or (3) authorize the Equipment or part to be repaired at your plant. Stewart & Stevenson will not be responsible for any transportation costs.

Repair or replacement will be without charge, but removal and installation of other parts, including additional parts furnished, will be made at the Purchaser's expense. No charges will be accepted for returns, repairs, nor alternations done by the Purchaser, unless previously authorized in writing by Stewart & Stevenson.

The Purchaser acknowledges that the Equipment is of a size, design and type requested by the Purchaser and agrees that, except as stated herein, there are no other warranties, express or implied, including those of merchantability or fitness for particular use, which Stewart & Stevenson hereby disclaims.

The Purchaser is to pay all freight/flight charges, as well as, travel expenses for warranty work performed away from the Stewart and Stevenson fabrication facility.

#### **NOT COVERED UNDER THIS WARRANTY**

Equipment or parts manufactured by others; however, Stewart & Stevenson will assign the benefits of any manufacturer's warranty, if assignable.

Equipment or parts that are or have been in contact with corrosive chemicals or corrosive materials.

Equipment or parts customarily subject to wear.

Failure resulting from improper use or inadequate maintenance.

Personal injuries or death to any person (including the Purchaser and any of its employees, agents and contractors) or claims for loss or damage to property or business either direct, indirect or consequential, caused or contributed to by the Equipment or any failure thereof, regardless of whether caused by Stewart & Stevenson, any other person, by any default, or negligence of Stewart & Stevenson, Stewart & Stevenson's employees, agents and contractors.

Mileage in excess of 200 miles from a Stewart & Stevenson facility (USA only).

Overtime charges are not covered under warranty, and are extra. Weekend rates may apply.



## 4. BASIC SAFETY

The following are general safety precautions that are not related to any specific procedures and may not appear elsewhere in this manual. Personnel must understand and apply these precautions during all phases of operation and maintenance. Personnel must wear approved work clothing for operation and maintenance procedures. Personnel must wear approved safety protective equipment such as hard hats, protective eyeglasses, and steel-toed shoes or boots.

This equipment has been designed and manufactured to minimize hazards to personnel; however, the proper and safe operation of this equipment must be the responsibility of the operating company.

The following are basic safety precautions that must be followed when operating or maintaining the equipment. For more in depth safety instructions, the operating company's safety policies and procedures should be adhered to. Any personnel in contact with this equipment must read and understand the safety precautions contained here, as well as the operating company's safety policies and procedures, before performing any operation or maintenance procedure.

### 4.1 Safety Hazards

Each individual job will be carried out under different operating conditions. Therefore each job must be assessed on an individual basis and adjustments made to the operational environment to prevent loss of equipment and to protect personnel.

- Conduct a pre-job discussion before starting each job.
- Ensure that each employee is aware of his responsibilities.
- Point out existing hazards and explain all safety precautions that must be followed.

This equipment uses complex control systems and must be operated by trained personnel only. Keep the areas around equipment clean and free of hazards.

#### 4.1.1 Health Hazards



Use all cleaning solvents, fuels, oils, adhesives, epoxies, and catalysts in a well-ventilated area. Avoid frequent and prolonged inhalation of fumes. Concentrations of fumes of many cleaners, adhesives, and esters are toxic and cause serious adverse health effects, and possible death, if inhaled frequently. Wear protective gloves and wash thoroughly with soap and water as soon as possible after exposure to such materials. Take special precautions to prevent materials from entering the eyes. If exposed, rinse the eyes in an eyebath fountain immediately and report to a physician. Avoid spilling solvents on the equipment. Review hazard information on the appropriate Material Safety Data Sheet (MSDS) and follow all applicable personal protection requirements.



#### 4.1.2 Environmental Hazards



The disposal of many cleaning solvents, fuels, oils, adhesives, epoxies, and catalysts is regulated and, if mismanaged, could cause environmental damage. Review Material Safety Data Sheets (MSDS), product bulletin information, and applicable local, state, and federal disposal requirements for proper waste management practices.

#### 4.1.3 Fire Hazards



Keep all cleaning solvents, fuels, oils, esters, and adhesives away from exposed-element electric heaters, sparks or flame. Do not smoke when using flammable materials, in the vicinity of flammable materials, or in areas where flammable materials are stored. Provide adequate ventilation to disperse concentrations of potentially explosive fumes or vapors. Provide approved containers for bulk storage of flammable materials, and approved dispensers in the working areas. Keep all containers tightly closed when not in use.

#### 4.1.4 Electrical Hazards



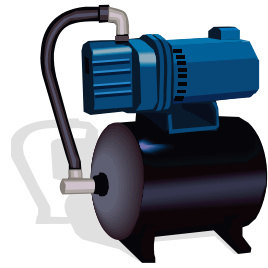
Use extreme care when working with electricity. Electricity can cause shock, burns, or death. Electrical power must be off before connecting or disconnecting electrical connectors. Lethal output voltages are generated by the equipment's electrical components.

#### 4.1.5 Hydraulic Pressure Hazards



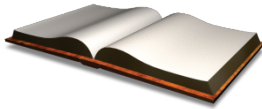
These units contain hoses and piping which contain fluids under pressure. Precautions must be taken when working on or around hoses, especially during operations.

#### **4.1.6 Compressed Air Hazards**



Air pressure used in work areas for cleaning or drying operations shall be regulated to 29 psi or less. Use approved personal protective equipment (goggles or face shield) to prevent injury to the eyes. Do not direct the jet of compressed air at yourself or other personnel so that refuse is blown onto adjacent work stations. If additional air pressure is required to dislodge foreign materials from parts, ensure that approved personal protective equipment is worn, and move to an isolated area. Be sure that the increased air pressure is not detrimental or damaging to the parts before applying high-pressure jets of air.

#### **4.1.7 Procedural Hazards**



Observe all specified and logical safety practices when assembling or disassembling the equipment. Wear safety glasses or other appropriate eye protection at all times. Do not allow safety wire or wire clippings to fly from the cutter when removing or installing wire. Do not use fingers as guides when installing parts or checking alignment of holes. Use only correct tools and fixtures. Avoid “shortcuts,” such as using fewer-than-recommended attaching bolts or inferior-grade bolts. Heed all warnings in this manual and in all vendor manuals, to avoid injury to personnel or damage to equipment.

#### **4.1.8 Tooling Hazards**



Improperly maintained tools and support equipment can be dangerous to personnel, and can damage equipment. Observe recommended inspection schedules to avoid unanticipated failures. Use tooling only for its designed purpose and avoid abuse. Be constantly alert for damaged equipment, and initiate appropriate action for approved repair immediately.

#### **4.1.9 Warning Devices**

This equipment does not generally incorporate devices which either lockout or automatically warn an individual that a piece of equipment is about to move. It is recommended that there be procedures established to prevent the equipment from being engaged at times when it is unsafe to do so.

#### **4.1.10 Control Lockouts**

When repair or maintenance is required, controls are to be locked out to prevent unintentional operation of equipment.



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#### **4.1.11 Guards**

Guards have been fitted on this equipment to protect both personnel and the equipment. These must always be in position, while the equipment is being operated. Fingers, hands, and other body parts will be protected from injury by moving machinery; personnel will be protected from injury through possible loose objects flying off the equipment; and, the machinery will be guarded from damage by the ingress of foreign objects.

#### **4.1.12 Electrical Connections**

All connecting and disconnecting of electrical and electronic cabling should be done when not energized.

#### **4.1.13 Fluids Under Pressure**

These units contain, or operate in the vicinity of, hosing and piping which contain fluids under pressure. Precautions must be taken when working on or around hosing, especially during operations.



## 5. EQUIPMENT SAFETY PRECAUTIONS

The following are safety precautions that are specific to the well servicing equipment and may appear elsewhere in this manual. Personnel must understand and apply these precautions during all phases of equipment operation and maintenance in addition to the general safety precautions described previously.

### 5.1 Danger, Warning, and Caution Statements

**NOTE:** The warnings and precautions given in this section are general in nature and pertain to **any** piece of equipment. Specific warnings and precautions are given as needed in the appropriate sections.

#### 5.1.1 Danger Statements

|                                                                                     |                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>Under no circumstances is the reel to be lifted by the outside rims or any other part of the reel except the center shaft. Doing so could result in extensive damage to equipment and/or possible serious injury or death to personnel.</p> |
|  | <p>Allowing the reel to sit on an unreinforced area of the outside rims could cause the reel to distort or buckle, with resulting extensive damage to equipment and/or serious injury or death to personnel.</p>                               |



### 5.1.2 Warning Statements

|                                                                                                       |                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>WARNING</b>   | Operating personnel <b>MUST</b> be completely familiar with the control/indicator definitions before operation. If an operator is not familiar with the control/indicator definitions, he or she may cause serious injury to personnel and/or severe damage to the unit. |
| <br><b>WARNING</b>   | The hydraulic landing gear must be lowered and set firmly in place before filling the hydration tank with fluid. Failure to do so may result in serious injury to personnel and severe damage to the unit.                                                               |
| <br><b>WARNING</b>   | Use the Emergency Kill switch for emergencies only. This will increase unit life. The chemical additive and hydration system must normally be taken off-line slowly to allow all components to properly dissipate operational heat.                                      |
| <br><b>WARNING</b> | Always allow the power unit to cool down completely before shutdown. This will prolong the life of the engine.                                                                                                                                                           |

### 5.1.3 Cautionary Statements

|                                                                                                       |                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>CAUTION</b> | Always use caution when inspecting equipment. Do not begin operation/inspection until the equipment is shut down, isolated, and tagged “OUT OF SERVICE.” Any accidental or poorly timed operation can cause serious injury to personnel and/or damage to the equipment. |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 6. STRUCTURE COMPONENTS

### 6.1 Base Section—Qty 1 (Module B)

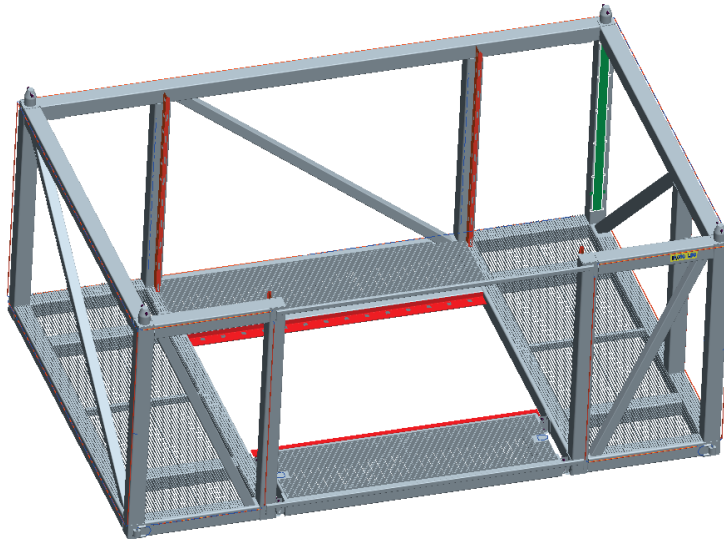


Figure 1, Module B

### 6.2 Middle Section—Qty 3 (Module M)

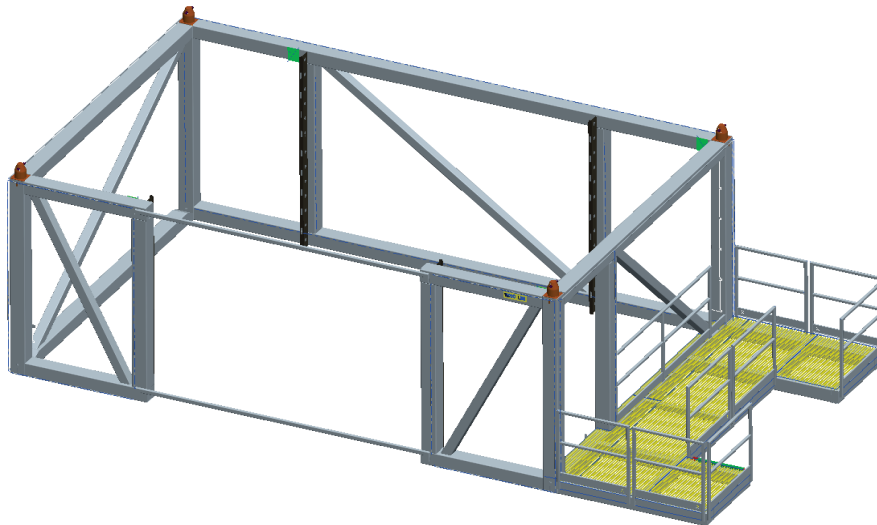


Figure 2, Module M



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### 6.3 Top Cover—Qty 1 (Module T)

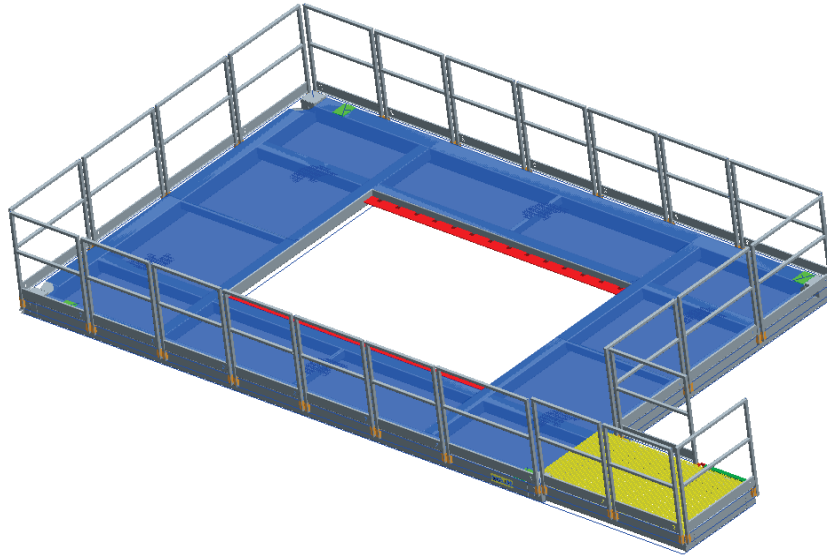


Figure 3, Module T

### 6.4 Fixed Stair 10'—Qty 4 (Module F1)

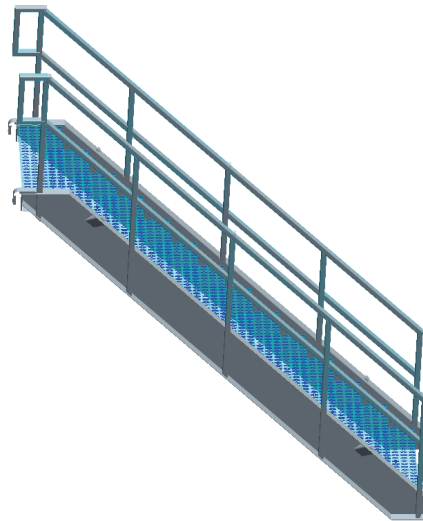


Figure 4, Module F1

## 6.5 Inner Platform—Qty 2 (Module I)

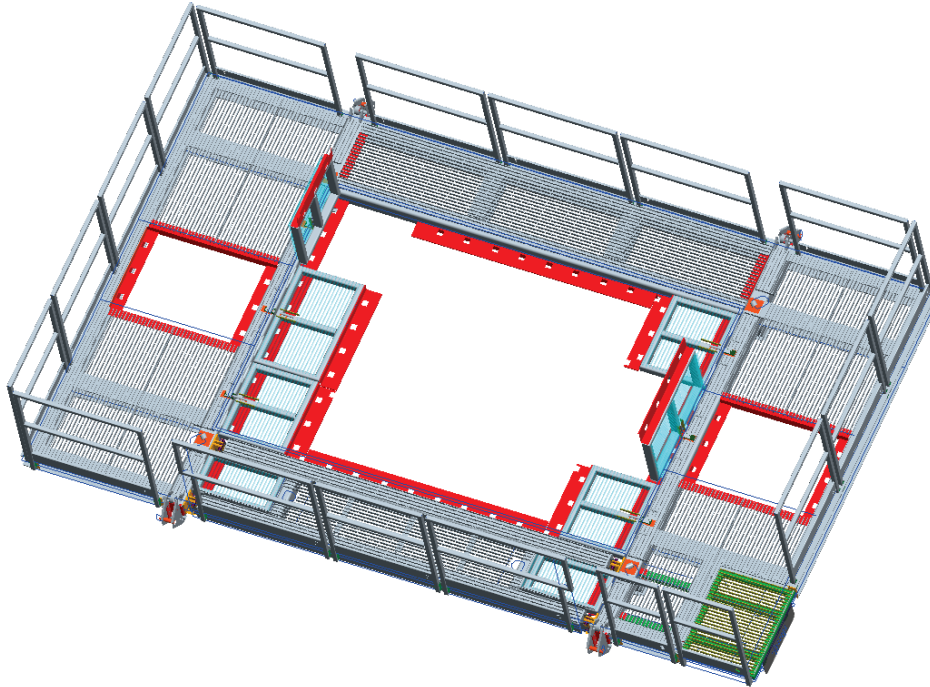


Figure 5, Module I

## 6.6 Telescoping Stair—Qty 3 (Module S)

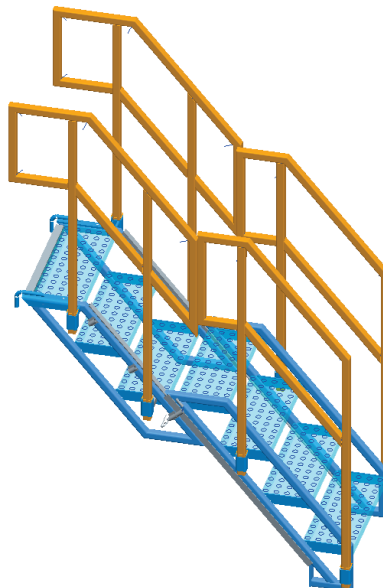


Figure 6, Module S



## WELLHEAD STRUCTURE INSTALLATION MANUAL

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### 6.7 Fixed Stair 18"—Qty 1 (Module F2)

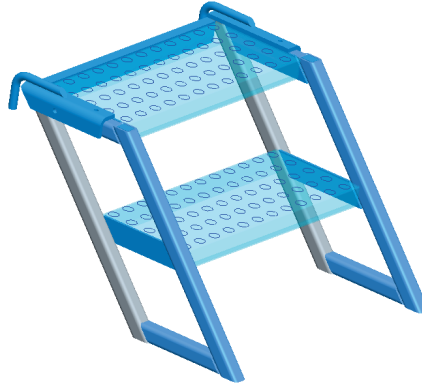


Figure 7, Module F2

### 6.8 Top Inner Platform—Qty1 (Module TI)

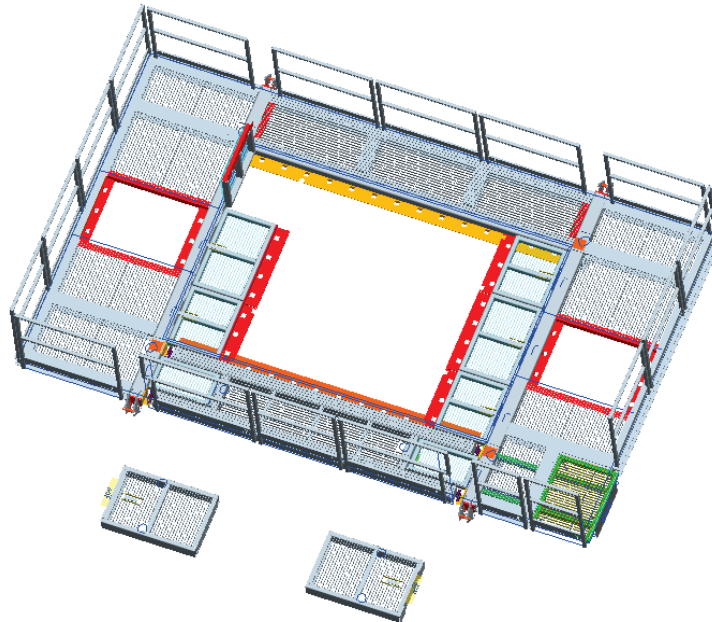


Figure 8, Module TI



## **6.9 Accessories**

- Tarp Kits
- Planks (10', 8', 3'10", 38½" and 57½" in length)
- Guylines Package (see Appendix drawing 27131988)



## WELLHEAD STRUCTURE INSTALLATION MANUAL

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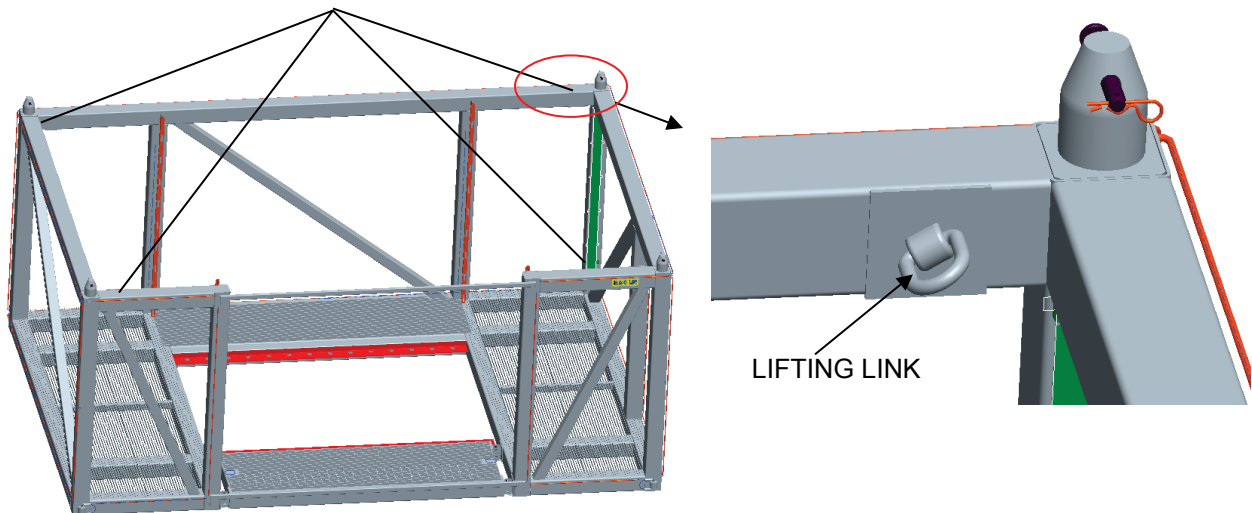
## 7. BASIC STRUCTURE RIG-UP PROCEDURE

### 7.1 Rig-Up Procedure

1. Place **Module B** (Weight = 16,000 lbs) centered over the wellhead, using a proper crane.

**WARNING**

When lifting the modules, remove the Tarp Rods (Qty = 2 per module) before lifting the module to prevent damage to the equipment and serious injury to personnel.

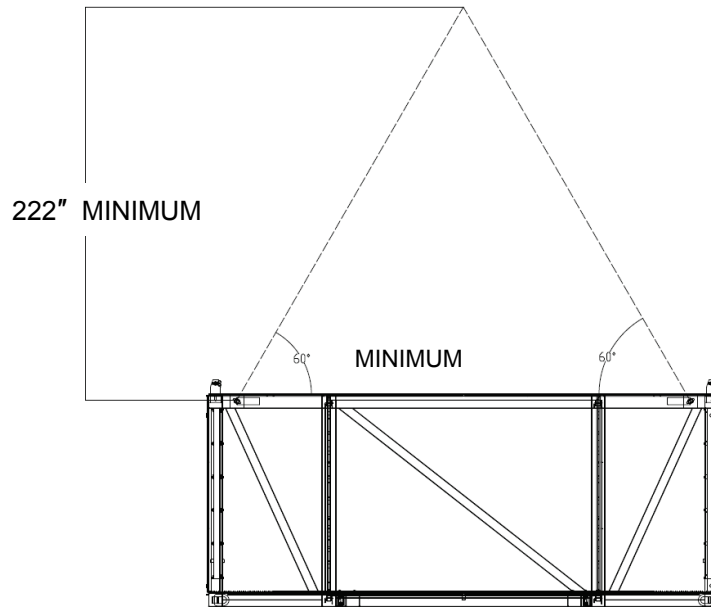


(See Figure 9, for lifting dims)



## WELLHEAD STRUCTURE INSTALLATION MANUAL

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**Figure 9, Base Lifting Diagram**



## WELLHEAD STRUCTURE

### INSTALLATION MANUAL

- Alternatively, remove the middle-bridge section, and drag to position using the provided pivot lugs, as shown below.

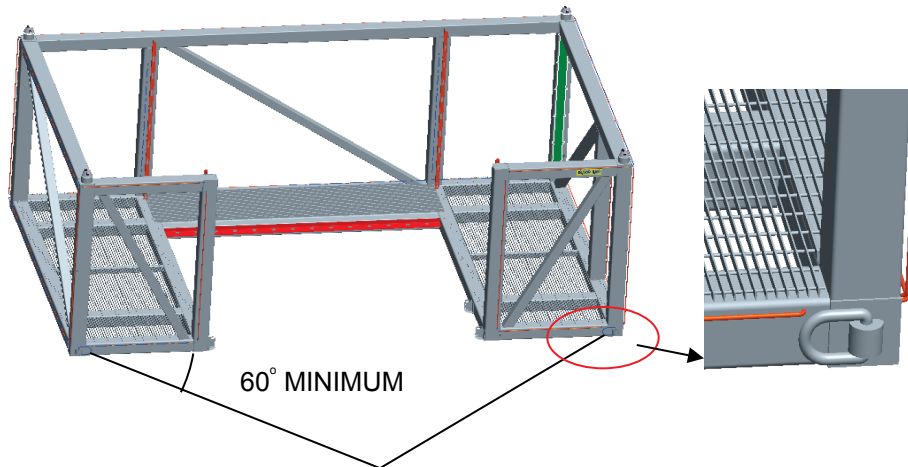


Figure 10, Base Dragging Diagram

**NOTE:** If an inner platform (**Module I**) is required in the base module, **Step 3** will be followed for installation.

- Use a proper crane to pick up **Module M** (Weight=11,000 lbs) and stack **Module M** on top of **Module B** via the four (4) corner locating pins. Ensure the stack is secured with the supplied locking pins and cotter pins.

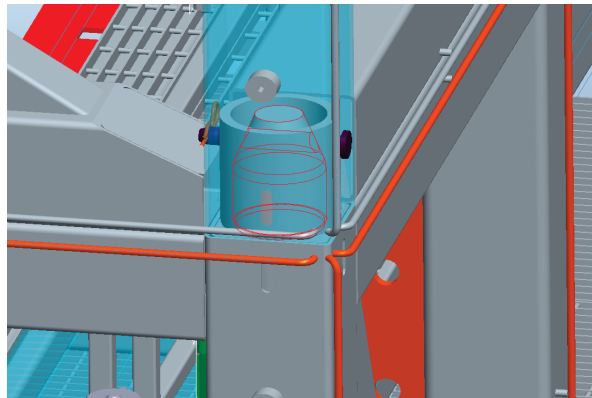
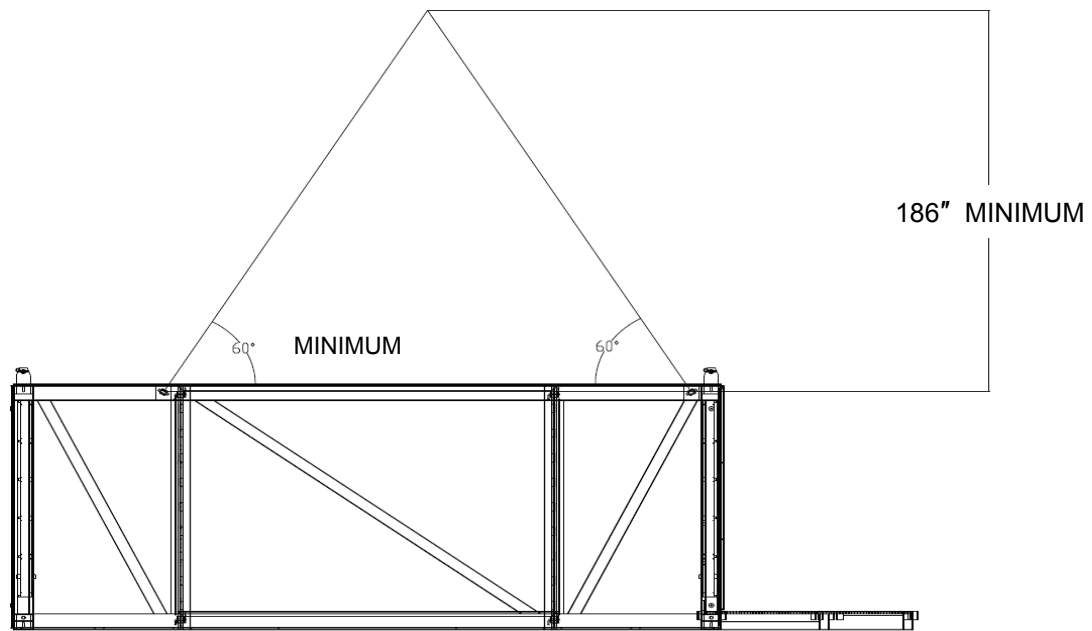
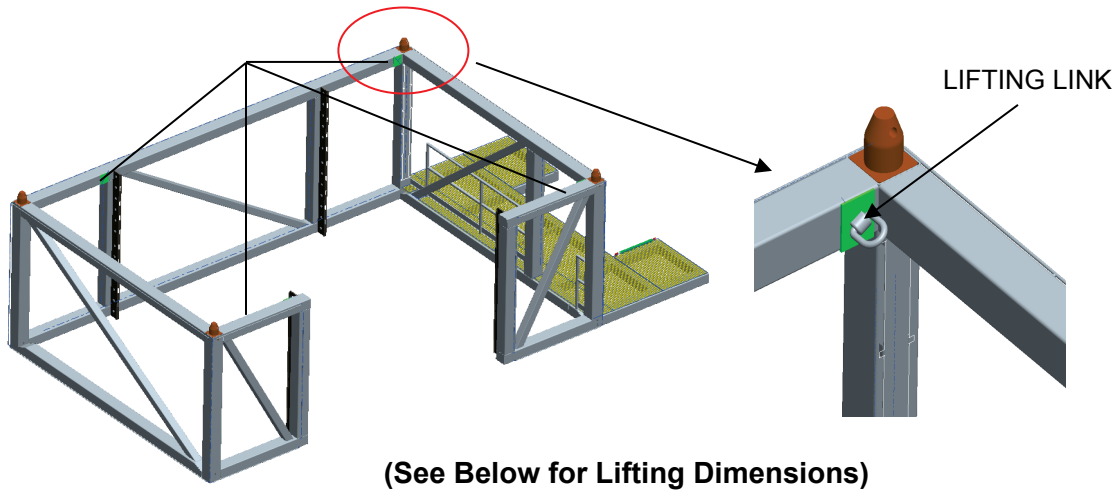


Figure 11, Stacking & Securing Module M on top of Module B



## WELLHEAD STRUCTURE INSTALLATION MANUAL



**Figure 12, Middle-Section Lifting Diagram**



## WELLHEAD STRUCTURE

### INSTALLATION MANUAL

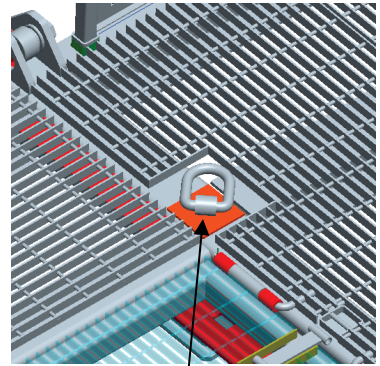
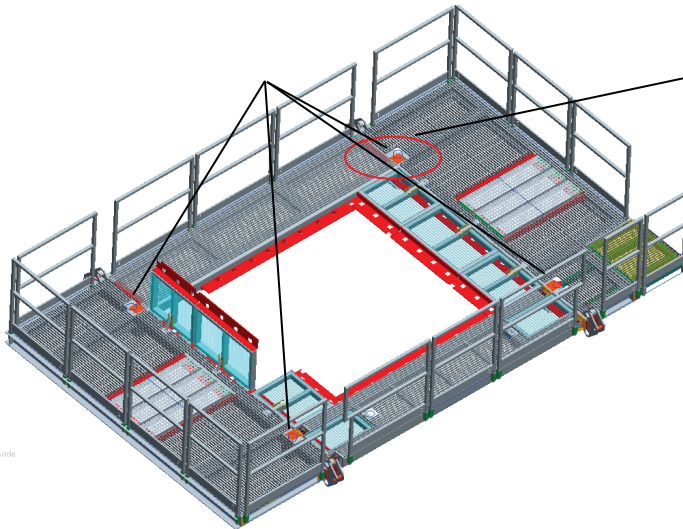
4. Use a proper crane to pick up an inner platform (**Module I weight = 8,500 lbs; Module TI = 8,500 lbs** will be the last piece), lower it inside the tower structure through the four (4) T-bars to the desired location, and then secure and lock using the supplied pins. The **Removable Platform** cannot be removed until **Module I** is pinned and locked at the desired height.



**WARNING**

**Remove the Inner platform before lifting the module to prevent damage to the equipment and serious injury to personnel.**

ROTATE THE INNER PLATFORM AND /OR REMOVE FOLDABLE PLATFORMS  
IF NEEDED TO BYPASS THE TOP BOP SECTION

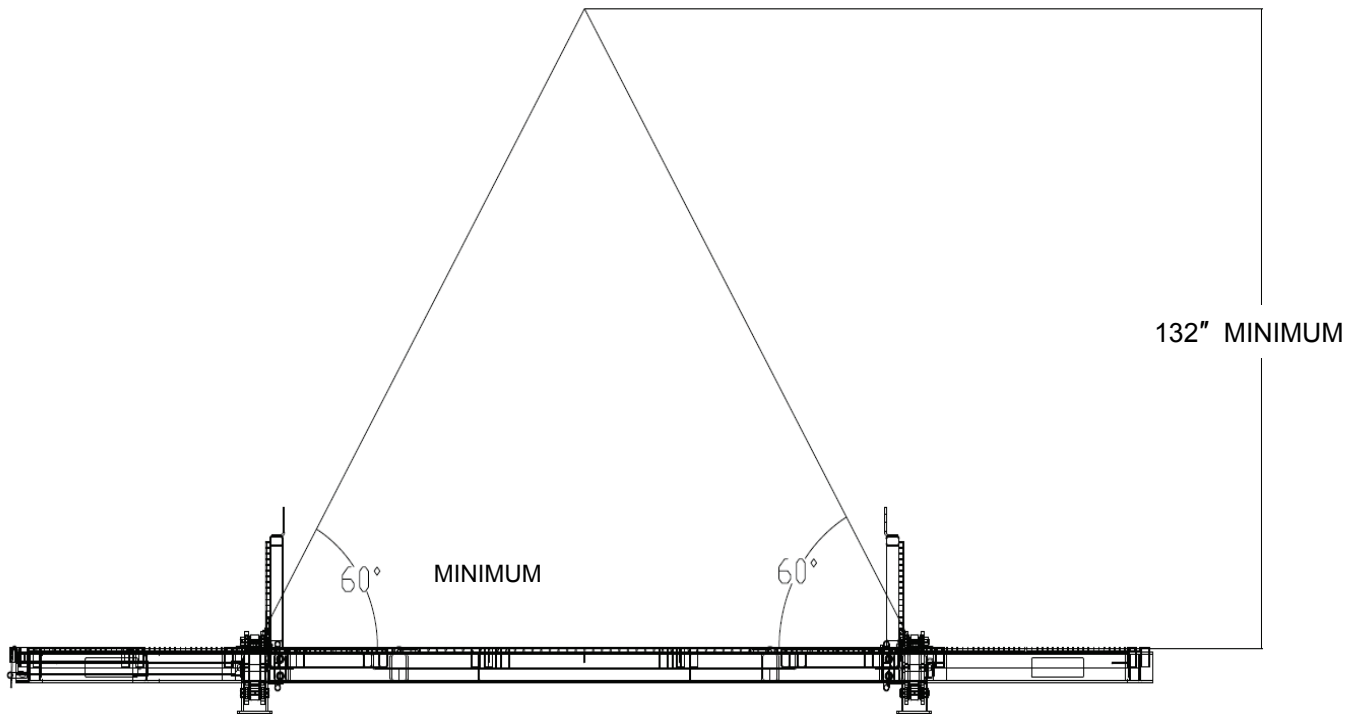


LIFTING LINK

(See Figure 13, for Inner Platform Lifting Diagram)



## WELLHEAD STRUCTURE INSTALLATION MANUAL



**Figure 13, Inner Platform Lifting Diagram**

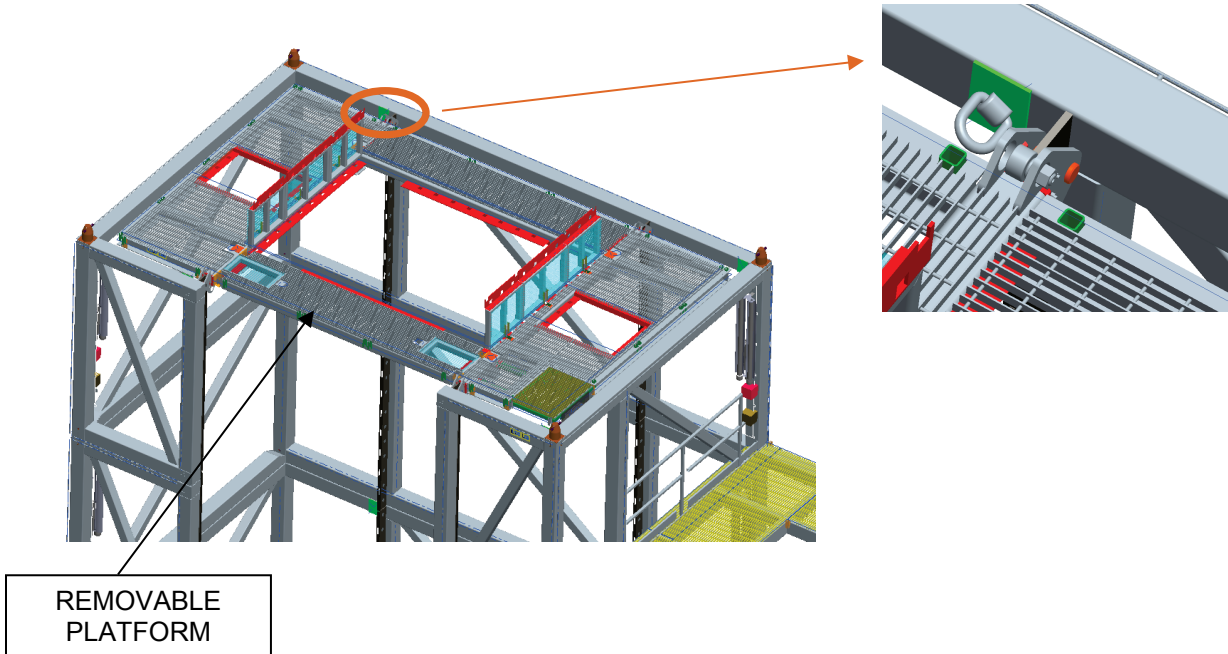


Figure 14, Inner Platform Dropped-In

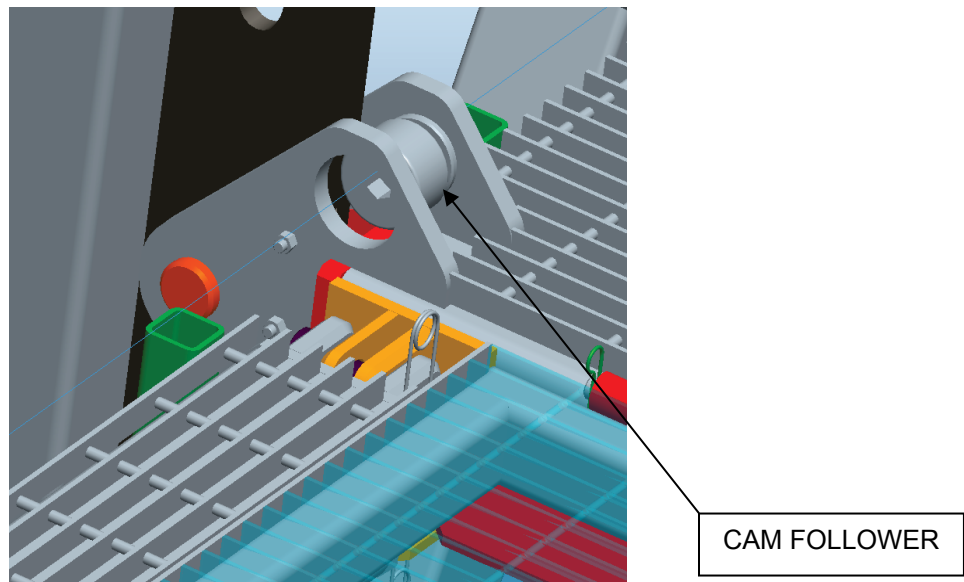


Figure 15, Cam Follower in Contact with T-Bar

**NOTE:** If required and for the added safety, the supplied safety pins can be used on the T-rail holes right below the intended ones before lowering the platform.



## WELLHEAD STRUCTURE

### INSTALLATION MANUAL

5. As required, repeat **Steps 2** and **3** to stack additional **Modules M** onto the assembly, and add up to two (2) **Modules I** + one (1) **Module TI** to be mounted inside the tower structure. The maximum stacking can be three (3) **Modules M** on top of **Module B** to form a tower of 40' in height.



Never attempt to lift the module with the top cover installed. Doing so may cause damage to the equipment and serious injury to personnel.

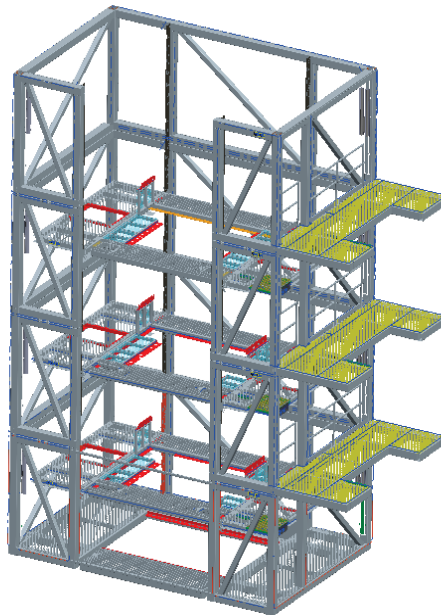


Figure 16, Three (3) Modules M + One (1) Module B Configuration



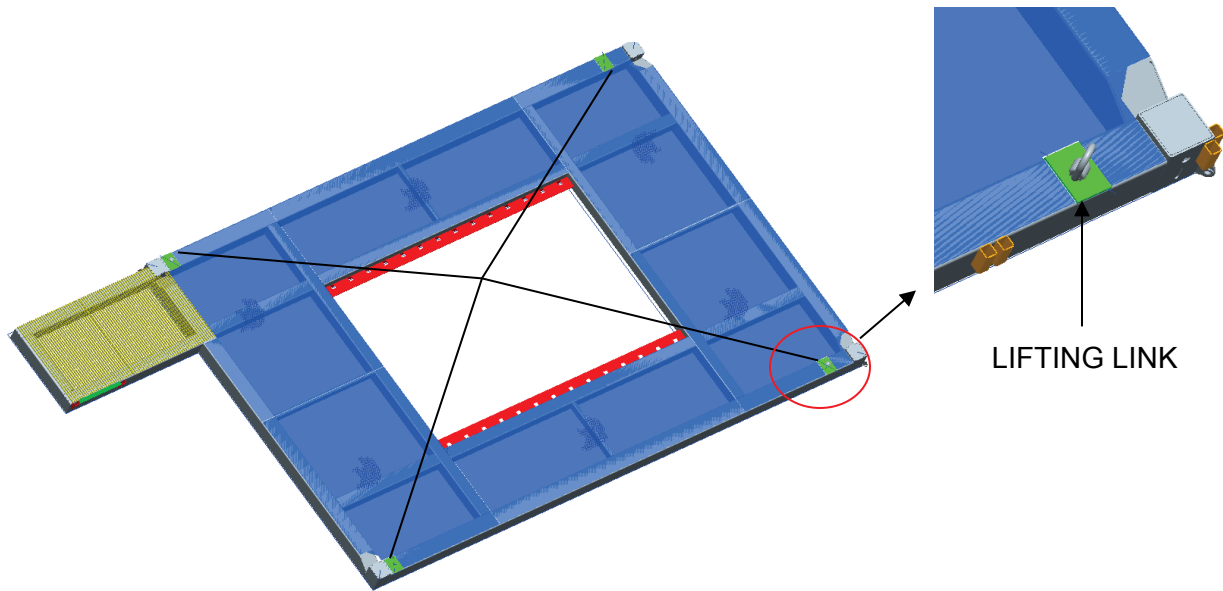
Never attempt to lift the module with the top cover installed. Doing so may cause damage to the equipment and serious injury to personnel.

6. Use a proper crane to pick up the top cover (**Module T** Weight = 8,000 lbs) and stack **Module T** on top of the last **Module M** via the 4 corner locating pins. Ensure the **Module T** is secured with the supplied locking pins and cotter pins.



## WELLHEAD STRUCTURE INSTALLATION MANUAL

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(See Figure 17, for Top Cover Lifting dims)



## WELLHEAD STRUCTURE INSTALLATION MANUAL

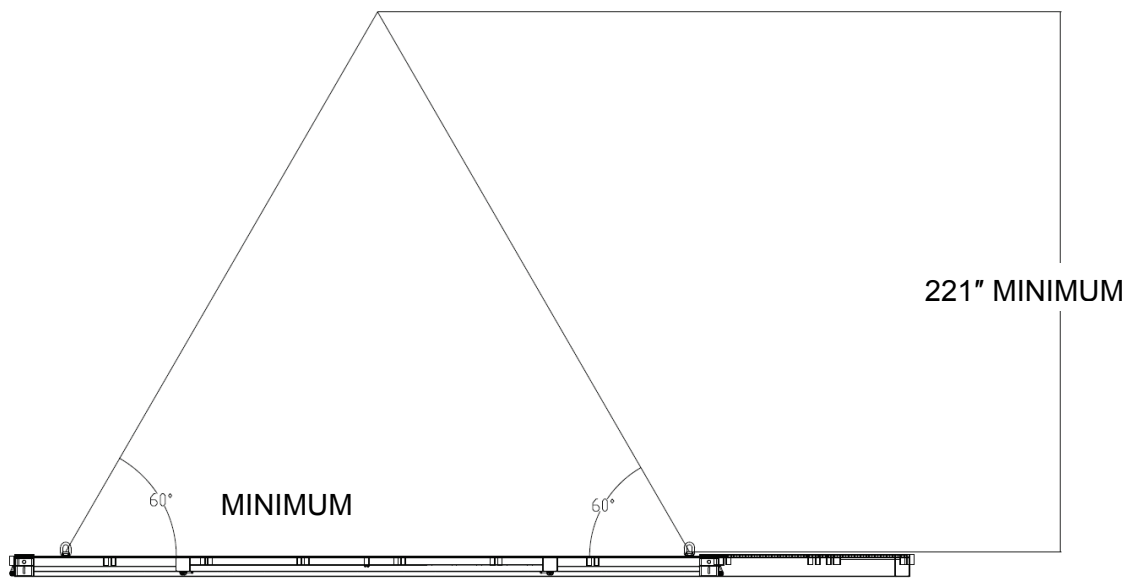


Figure 17, Top Cover Lifting Diagram

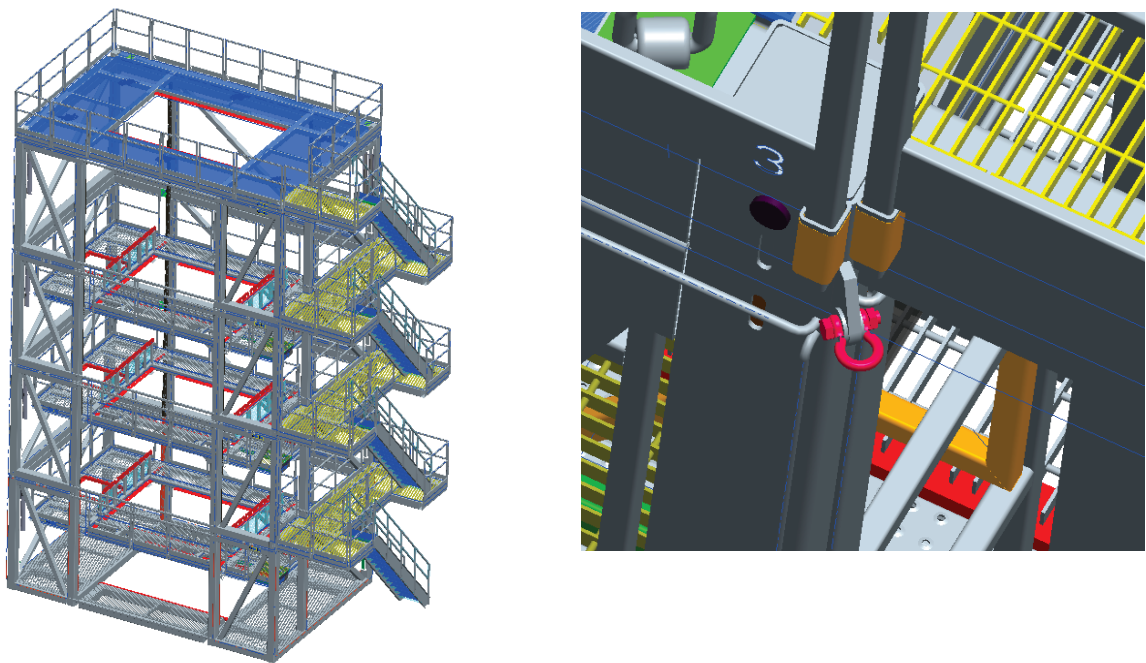


Figure 18, Top Cover Installation and Guyline Application

7. Install guylines (as required per **Table 1**). Connect the guylines to the ground anchor points, and apply the proper pre-tension (1,000 lbs).



## WELLHEAD STRUCTURE

### INSTALLATION MANUAL

**Table 1, Acceptable Stack Combinations & Guyline Requirements**

| # | STACK COMBINATION                   | GUYLINES<br>REQUIRED | GROUND ANCHOR<br>LOCATION |
|---|-------------------------------------|----------------------|---------------------------|
| 1 | 1 Module B + 1 Module T             | NO                   | --                        |
| 2 | 1 Module B + 1 Module M+ 1 Module T | NO                   | --                        |
| 3 | 1 Module B + 2 Module M+ 1 Module T | YES                  | See Drawing<br>27131987   |
| 4 | 1 Module B + 3 Module M+ 1 Module T | YES                  | See Drawing<br>27131987   |

---

**NOTE:** Up to three (3) **Inner platforms** can fit inside any of the stack combination in **Table 1**, provided the clear height between two constructive **Inner Platforms** is 8' minimum for head clearance.

---

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**NOTE:** Stack combinations listed in **Table 1** are the **ONLY** acceptable Rig-Up options for the wellhead structure.

---



## WELLHEAD STRUCTURE INSTALLATION MANUAL

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## 8. ACCESS STAIRS & GUARDRAILS INSTALLATION

### 8.1 Installation Procedures

1. Install **Fixed Stairs F1** to connect each level by inserting the hooks on the stair top into the mating slots at the walkway edge (no connection is required at stair bottom). Install the walkway perimeter guardrails, as required, matching the numerical ID on the kick plate to the one on the grating floor.

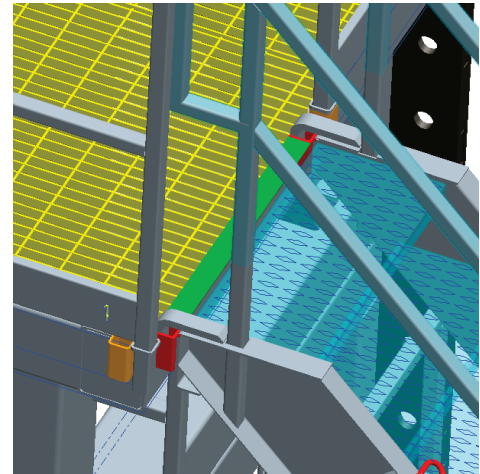
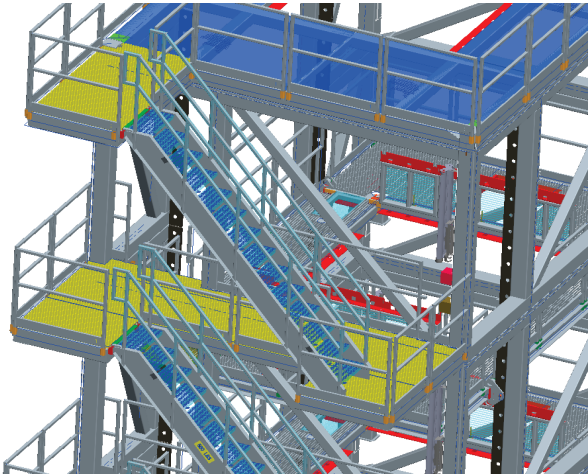
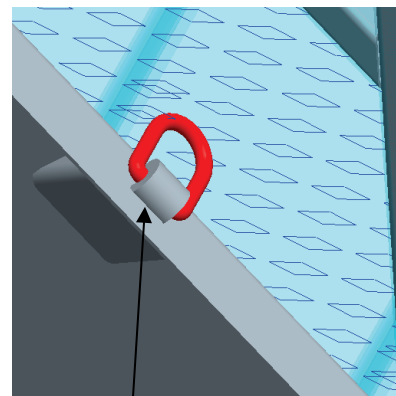
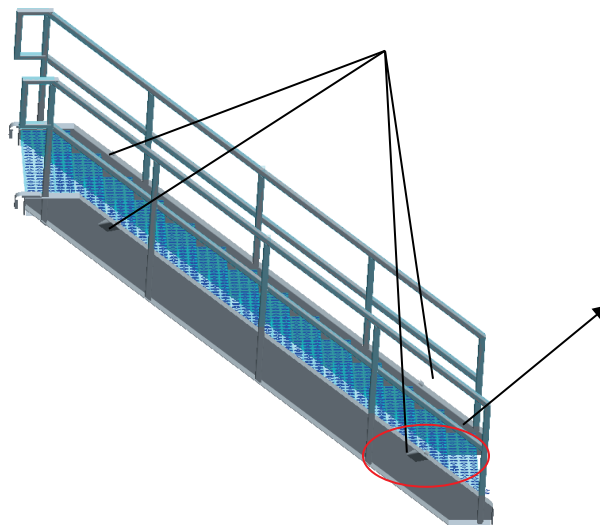


Figure 19, Fixed Stair F1 Installation

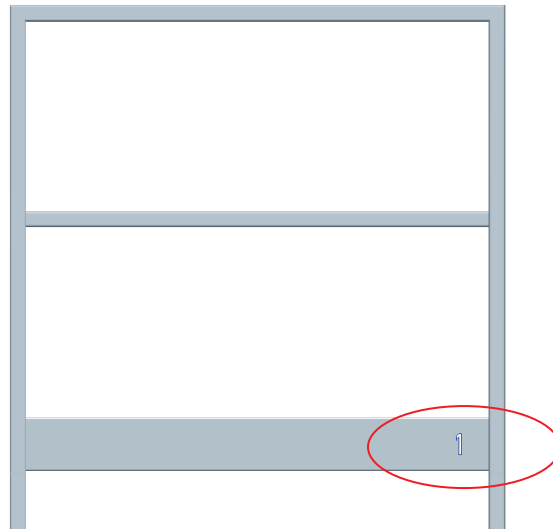


LIFTING LINK

Figure 20, Fixed Stair F1 Lifting Diagram (Weight = 650 lbs)

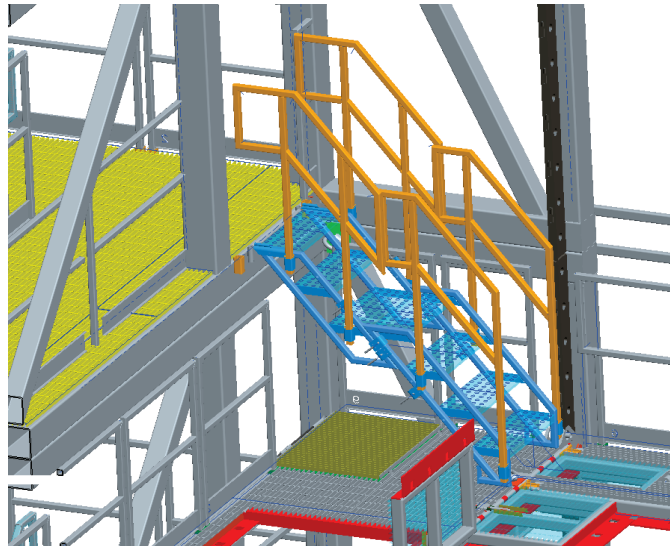


## WELLHEAD STRUCTURE INSTALLATION MANUAL

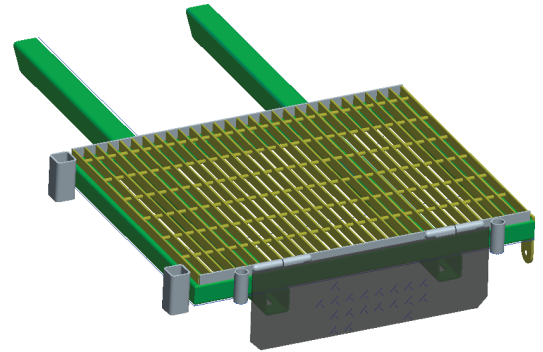
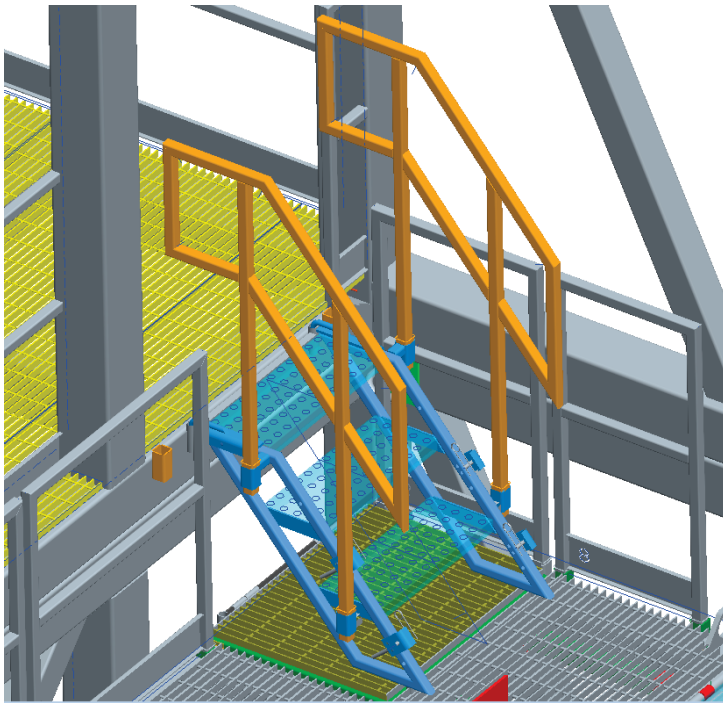


**Figure 21, Guardrail Marking**

2. Install the telescoping stair (**Module S**) to access inner platform from each floor after adjusting it to the proper height. Stair **S** can be adjusted between four (4) steps to six (6) steps, and it can go upward or downward from the Main structure to the inner platform, depending on the platform position within the structure. Fixed stair **F2** can only be used at an 18" height difference (up or down) scenario. Similarly, the Three (3) Step section of the telescoping stair can only be used at a 27" height difference (up or down) scenario.

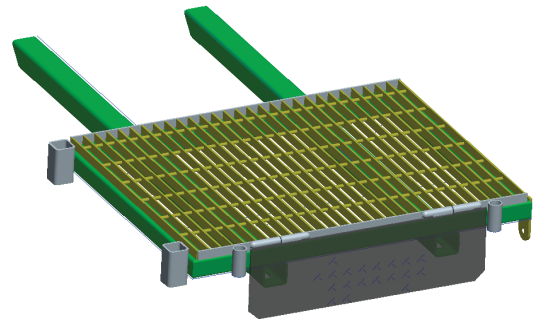
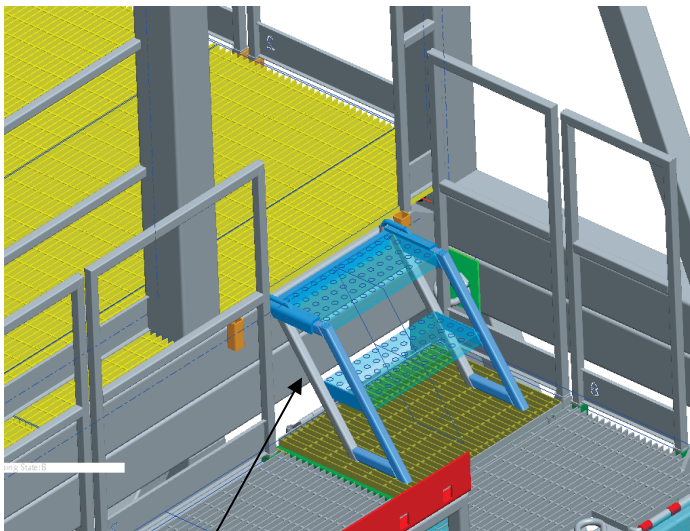


**Figure 22, Six (6) Steps Downward to Inner Platform**



FILLER PLATFORM REQUIRED

**Figure 23, Three (3) Steps Downward to Inner Platform  
(Filler platform required in both UP and DOWN Applications)**



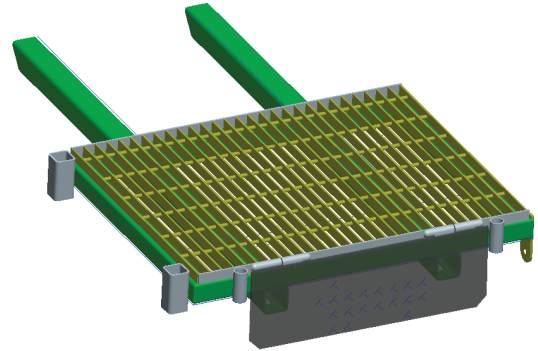
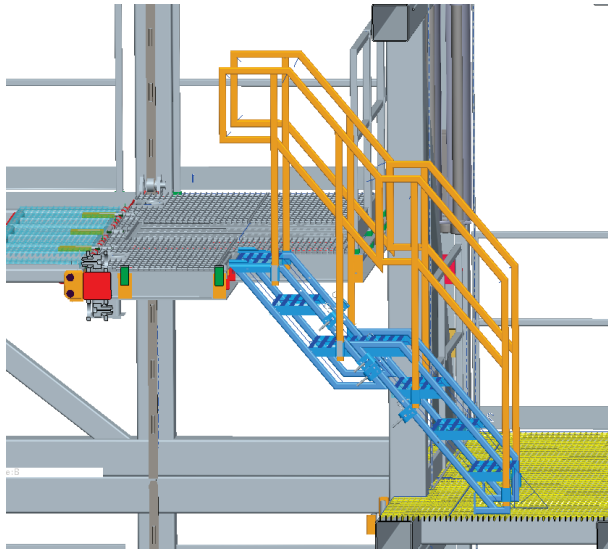
FILLER PLATFORM REQUIRED

Fixed Stair F2

**Figure 24, Two (2) Steps Downward to Inner Platform  
(Filler platform required in both UP and DOWN Applications)**



## WELLHEAD STRUCTURE INSTALLATION MANUAL



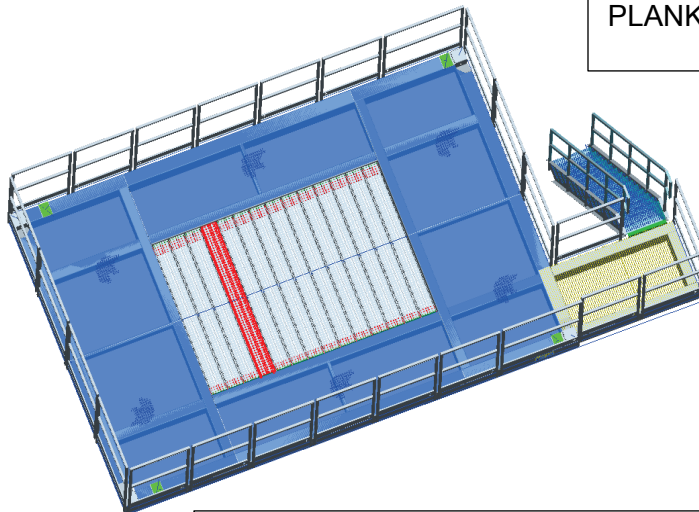
FILLER PLATFORM REQUIRED

**Figure 25, Six (6) Steps Upward to Inner Platform  
(Filler platform removed in Four (4) steps to Six (6) steps upward application)**

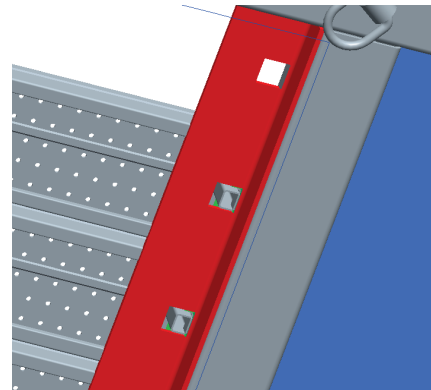
Filler platform is required at three (3) steps, two (2) steps upward and flush level configuration.

3. Add planks (10', 8', and 3' 10") as required.

### A) TOP COVER



TOP COVER REQUIRES (QTY 14) 8'  
PLANKS TO BE COMPLETELY COVERED



FIT PLANK LOCATOR INSERTS INTO SQUARE CUTOUTS

**Figure 26, Top Cover Planks Installation**

B) INNER PLATFORM

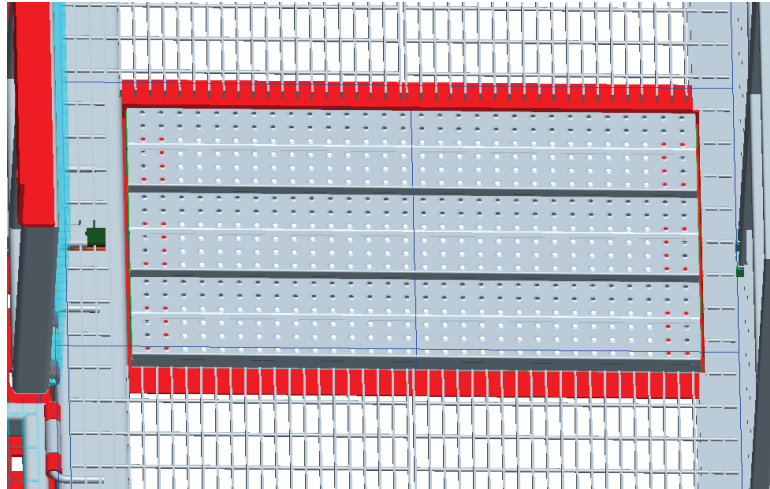


Figure 27, Inner Platform with 3'10" Planks installed

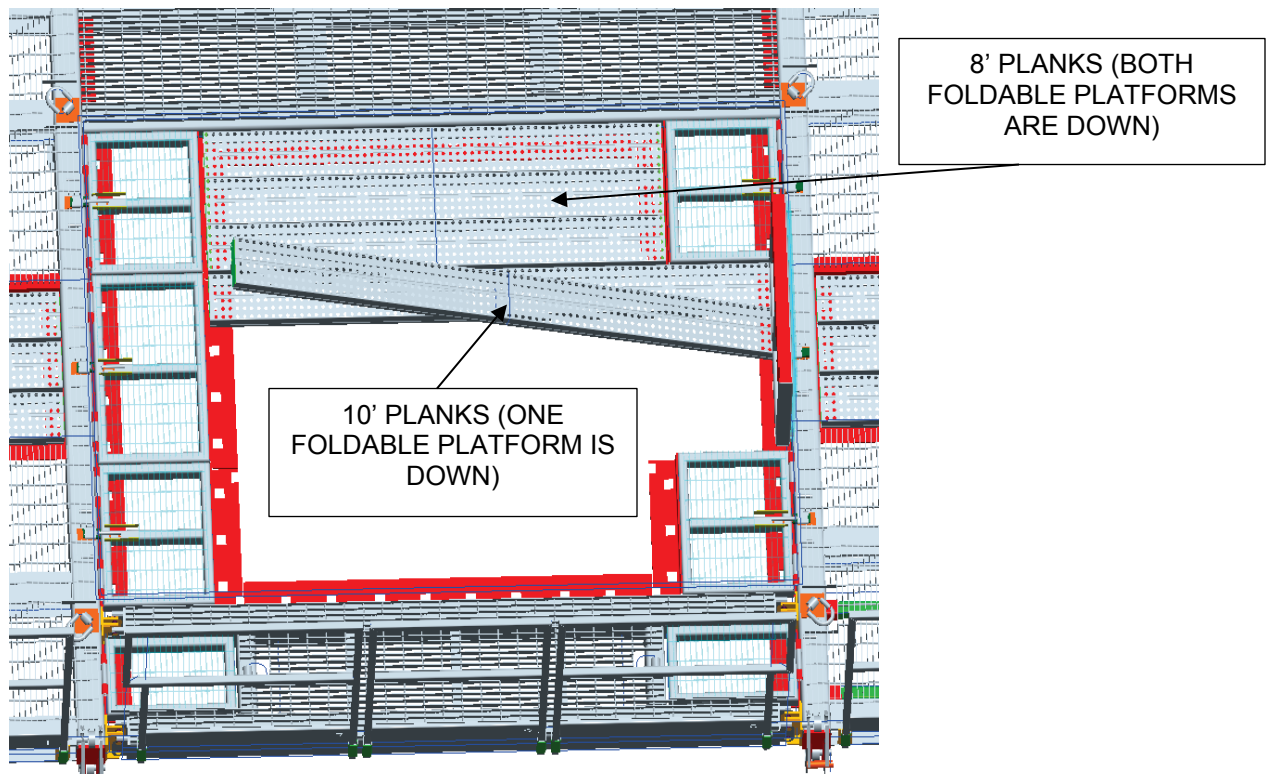


Figure 28, Inner Platform with 8' and 10' Planks Installed

**NOTE:** When installing 10' planks, the plank needs to enter into the square cutout at an angle.



## WELLHEAD STRUCTURE INSTALLATION MANUAL

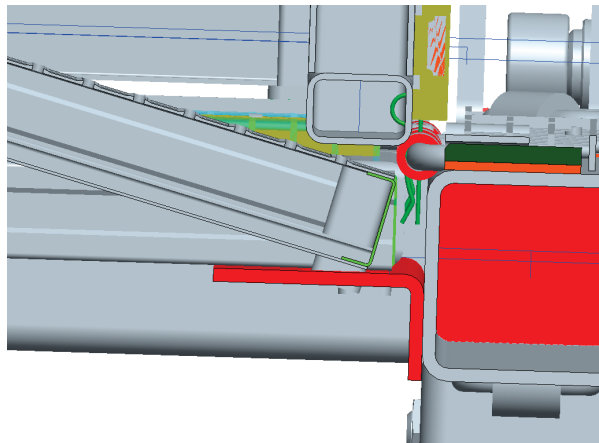


Figure 29, 10' Planks Installation Entry Angle

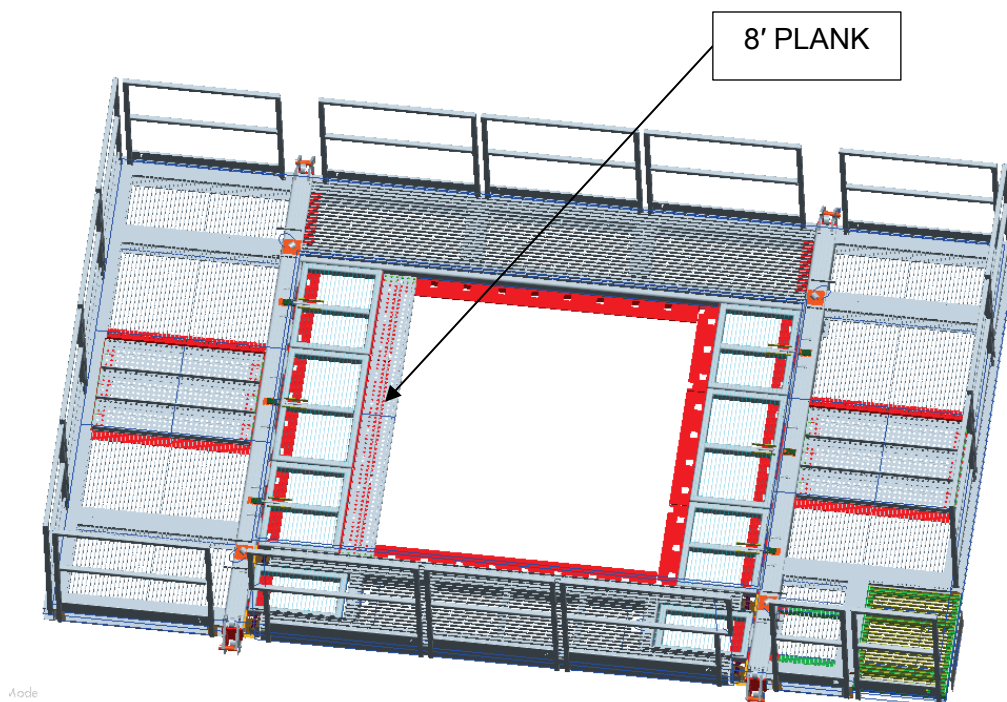
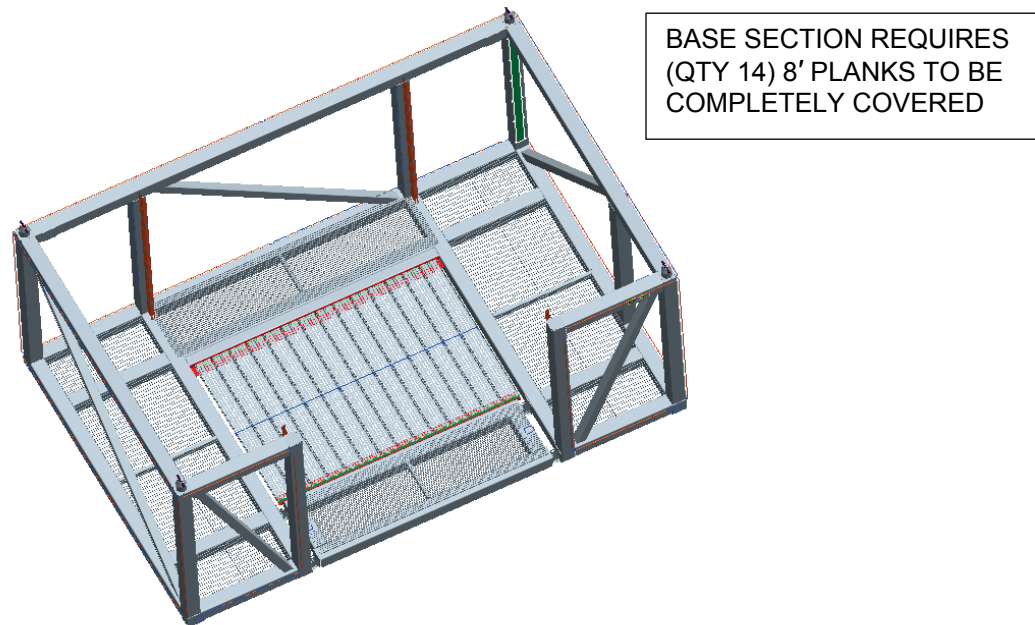


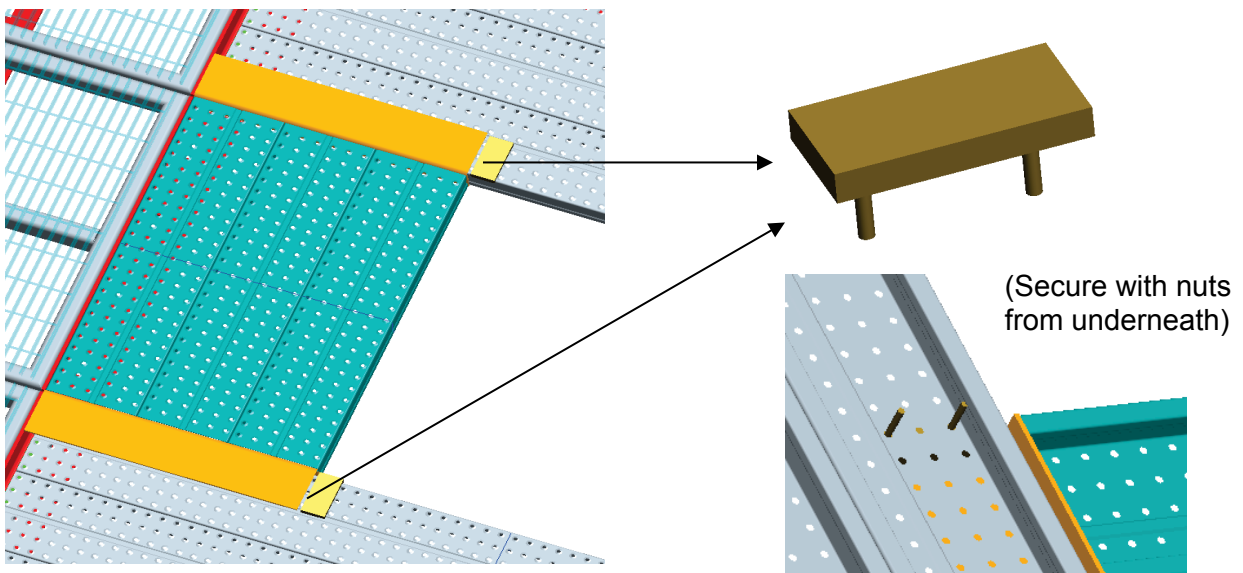
Figure 30, 8' Planks Installation at Opposite Orientation

**NOTE:** 8' planks can also be installed in an opposite orientation with both side-foldable platforms down.



**Figure 31, Base Section Planks Installation**

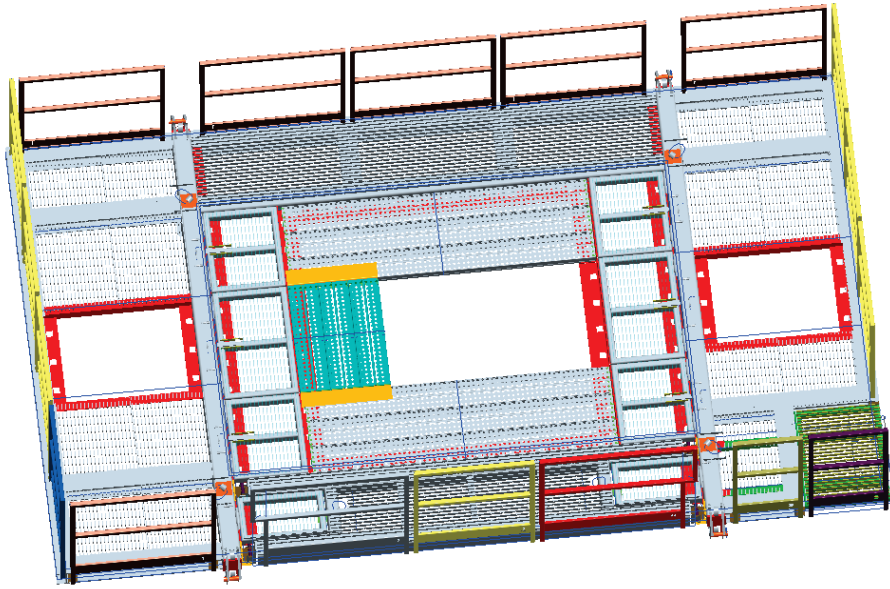
4. Assemble either 38½" or 57½" planks as required to form a platform and lock with supplied locking mechanisms to the side of plank. Secure the locking mechanism with nuts.



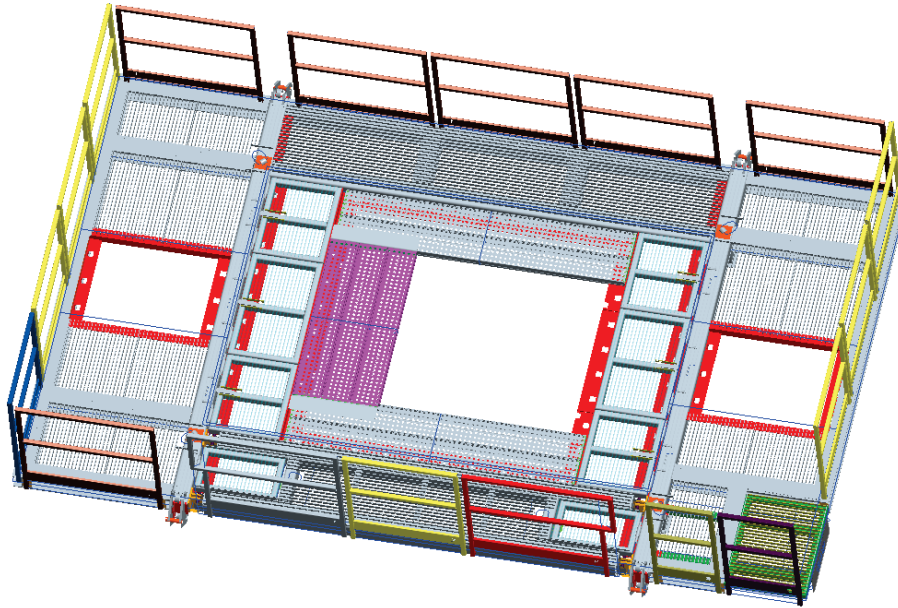
**Figure 32, Assemble Planks to Form a Mini-Platform and Secure with Locking Mechanism**



## WELLHEAD STRUCTURE INSTALLATION MANUAL



**Figure 33, 38½" Plank Assembly to Fill a Gap with Four (4) Horizontal Planks Removed**

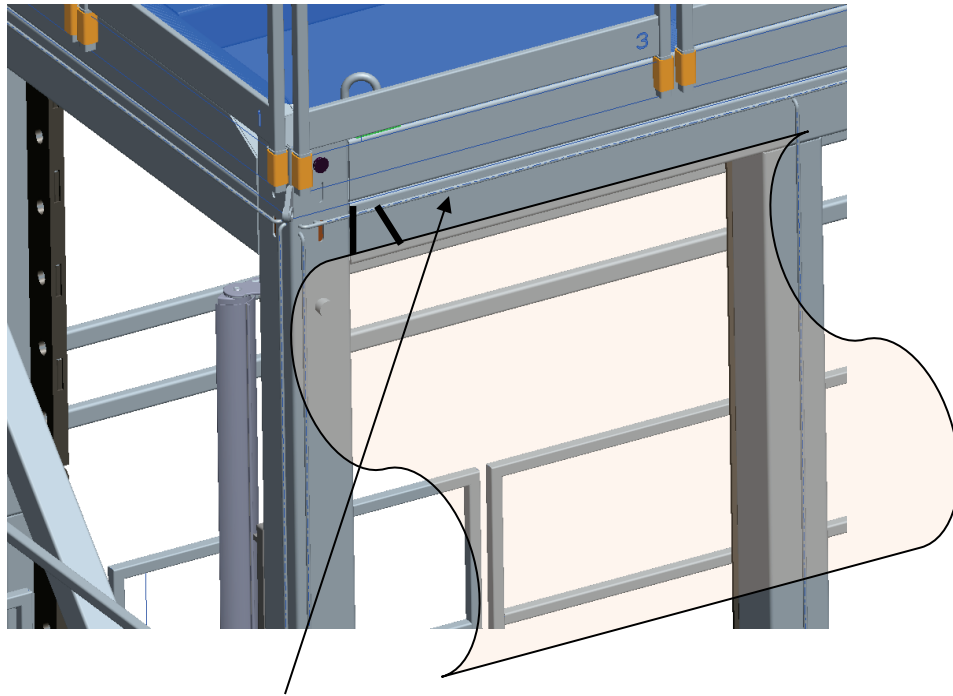


**Figure 34, 57½" Plank Assembly to Fill a Gap with Six (6) Horizontal Planks Removed**

## 9. TARP INSTALLATION

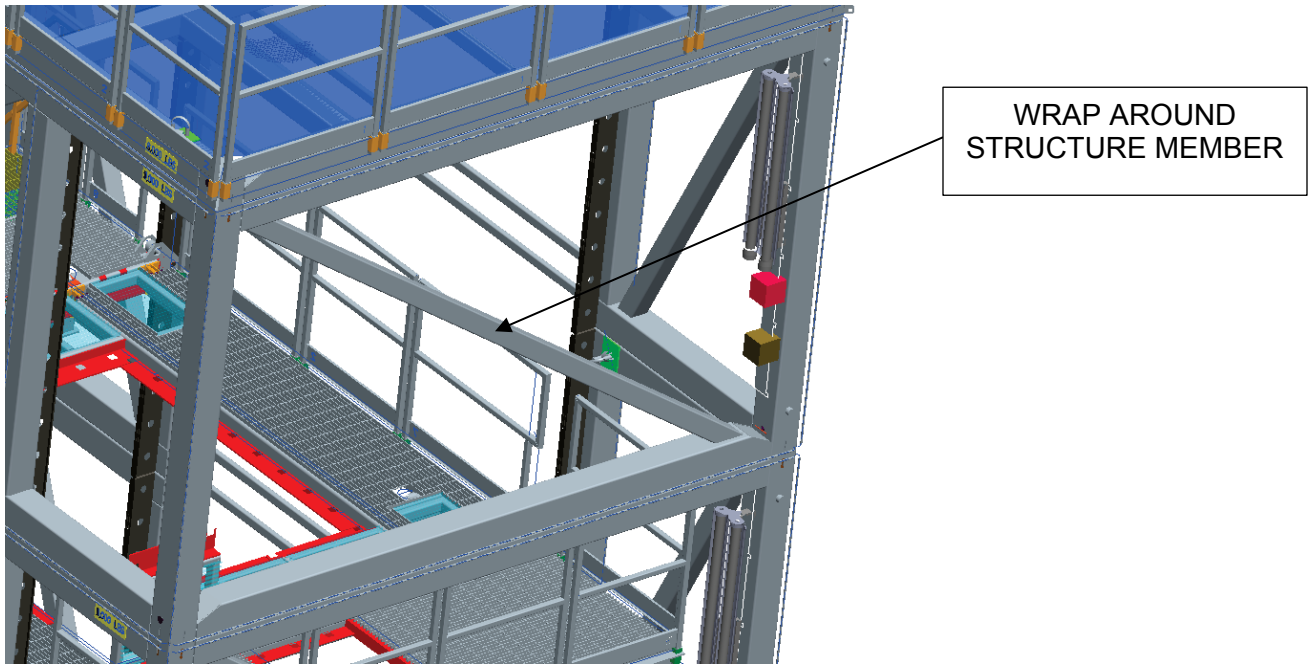
### 9.1 Tarp Installation Procedures

1. Apply tarp sections by wrapping around  $\frac{1}{2}$ " round tarp bars or structure members where applicable.



WRAP AROUND  $\frac{1}{2}$ " ROUND BAR

**Figure 35, Tarp Round Bar Wrapping**



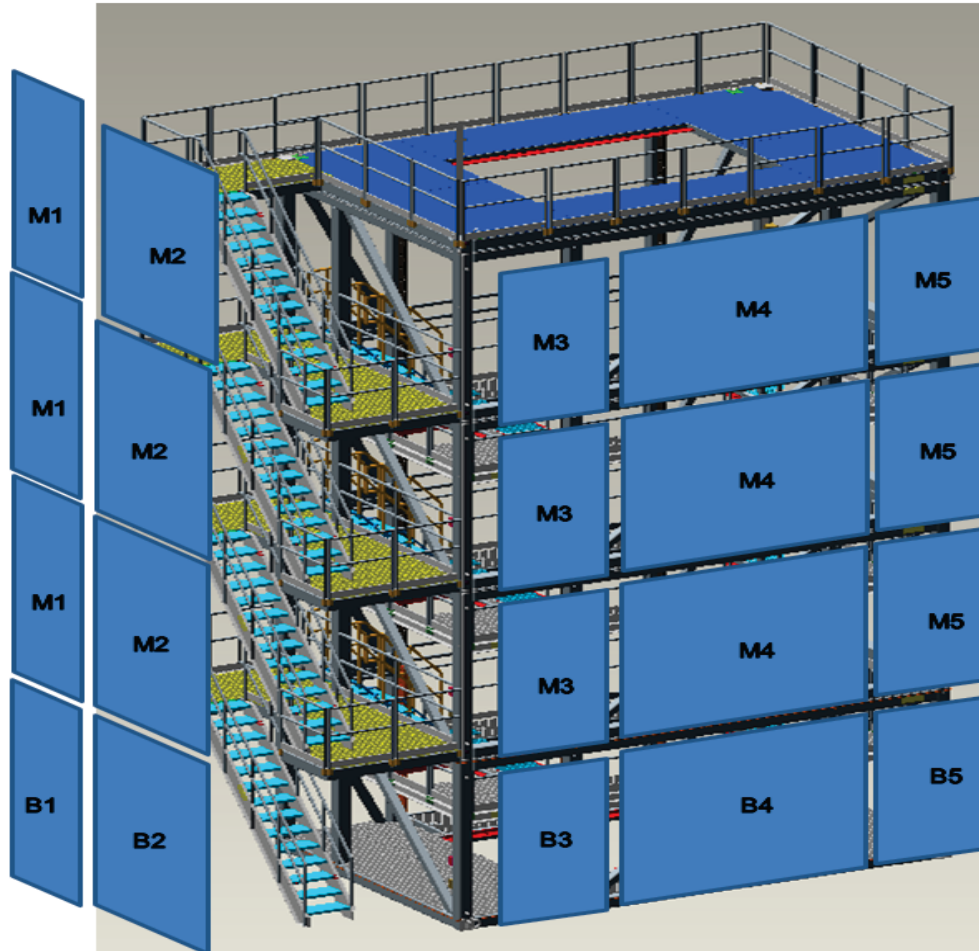
**Figure 36, Tarp Structure-Member Wrapping**

2. Install two (2) tarp holding bars in the opening areas in front of the main structure, secure with pins, and wrap tarp around the tarp holding bars.

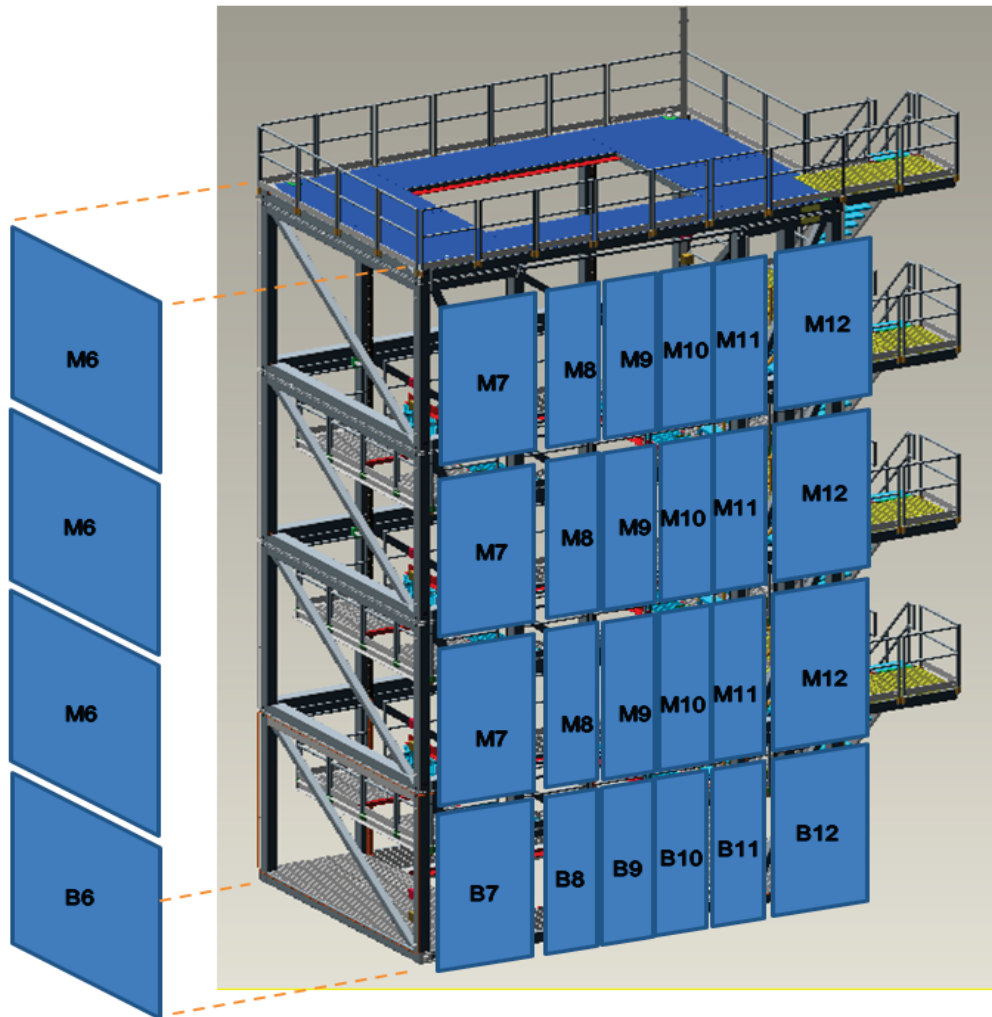


**Figure 37, Tarp Installation in the Structure's Open Area**

3. Tarp installation sequence (Numbering starts at the door and works counter-clockwise).



**Figure 38, Tarp Application (Wellhead Structure Back-View)**

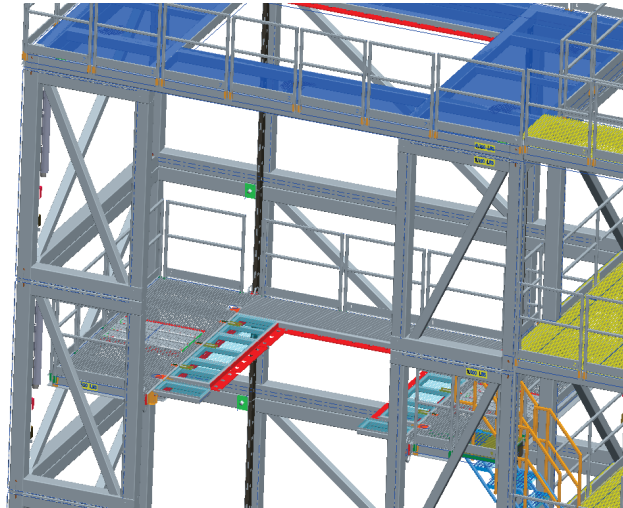


**Figure 39, Tarp Application Continue (Wellhead Structure Front-View)**

## 10. OPENING THE FRONT SECTION

### 10.1 Procedures

1. Remove the tarp and tarp holding bars in the open section.



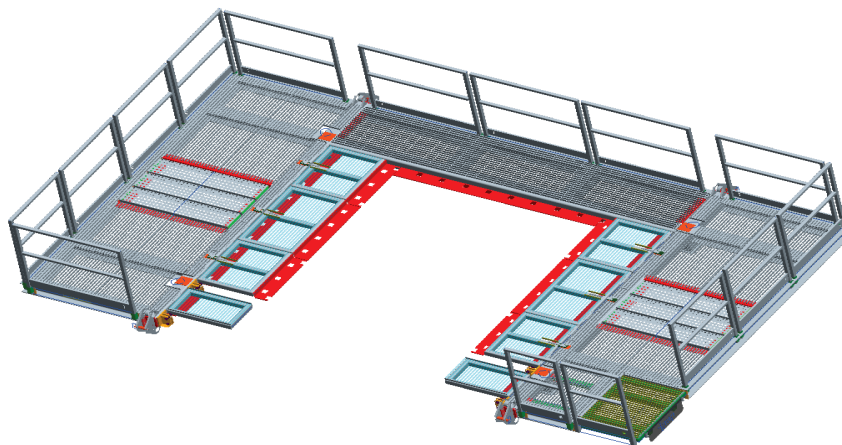
**Figure 40, Tarp Bars Removed**

2. Remove the bridging section on the inner platform.

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**NOTE:** This can only be done after the platform is pinned in place.

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**Figure 41, Inner Platform Bridging Section Removed**



## WELLHEAD STRUCTURE INSTALLATION MANUAL

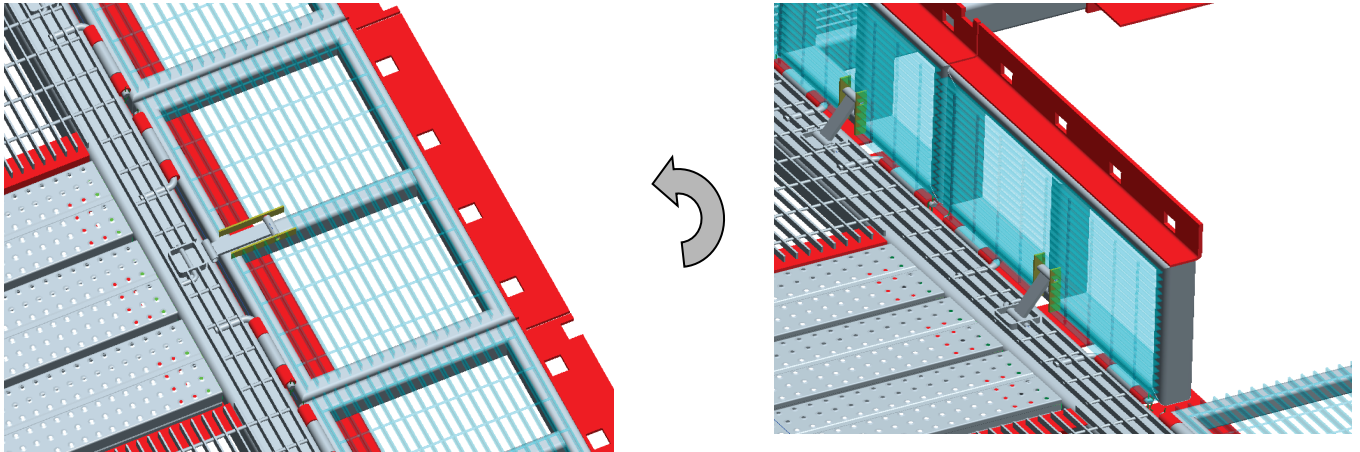
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## 11. FOLDABLE PLATFORMS VERTICAL LOCKING

### 11.1 Vertical Locking Procedure

1. Flip the foldable platform to the vertical position.



**Figure 42, Foldable Platforms (Horizontal and Vertical Positions)**

2. Flip the bar to sit in the receiver pocket, and slide the pin to secure the platform.



**Figure 43, Foldable Platforms Secured with the Pin**



## WELLHEAD STRUCTURE INSTALLATION MANUAL

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## 12. TOP INNER PLATFORM EXTENSION CONFIGURATION

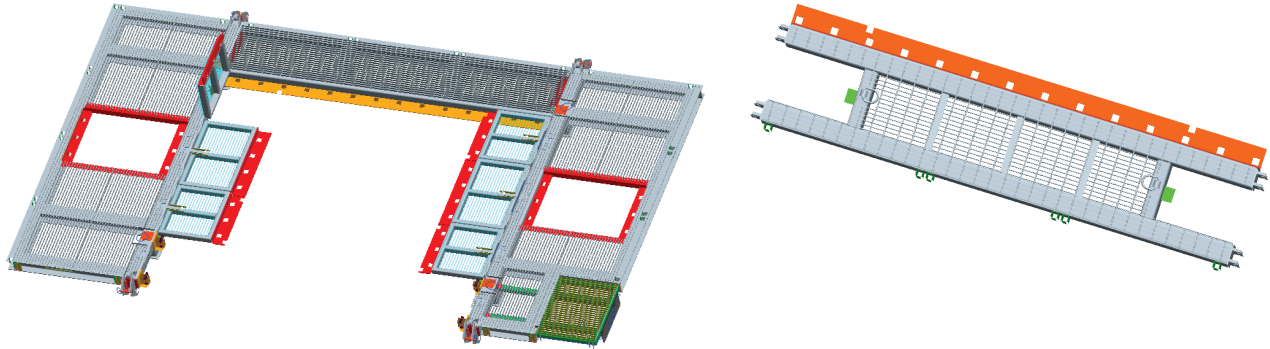


Figure 44, The Removable Section Removed

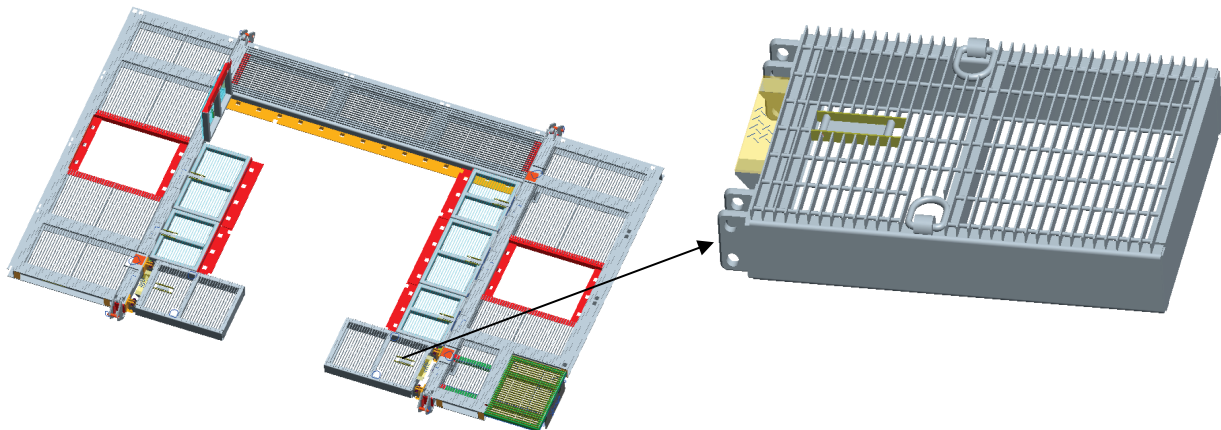


Figure 45, Addition of Two (2) Extensions to the Platform & Locking with Existing Pins

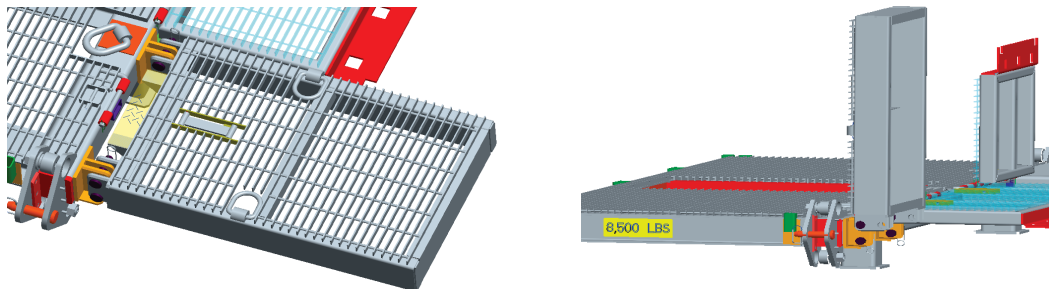


Figure 46, Working and Lift-Up Position of the Extension Platform



## WELLHEAD STRUCTURE INSTALLATION MANUAL

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## 13. FALL ARREST LINKS

There are (4) fall arrest links (Rated 3T) located underneath the top cover (**Module T**) and each inner platform (**Module I**). Personnel, operating on the inner platform, can use the fall arrest links as needed.



## WELLHEAD STRUCTURE INSTALLATION MANUAL

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## **14. EQUIPMENT DISMANTLING**

Reverse the Steps in Sections 9, Section 8 and Section 7 of this manual.



## **WELLHEAD STRUCTURE INSTALLATION MANUAL**

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## 15. APPENDIX:

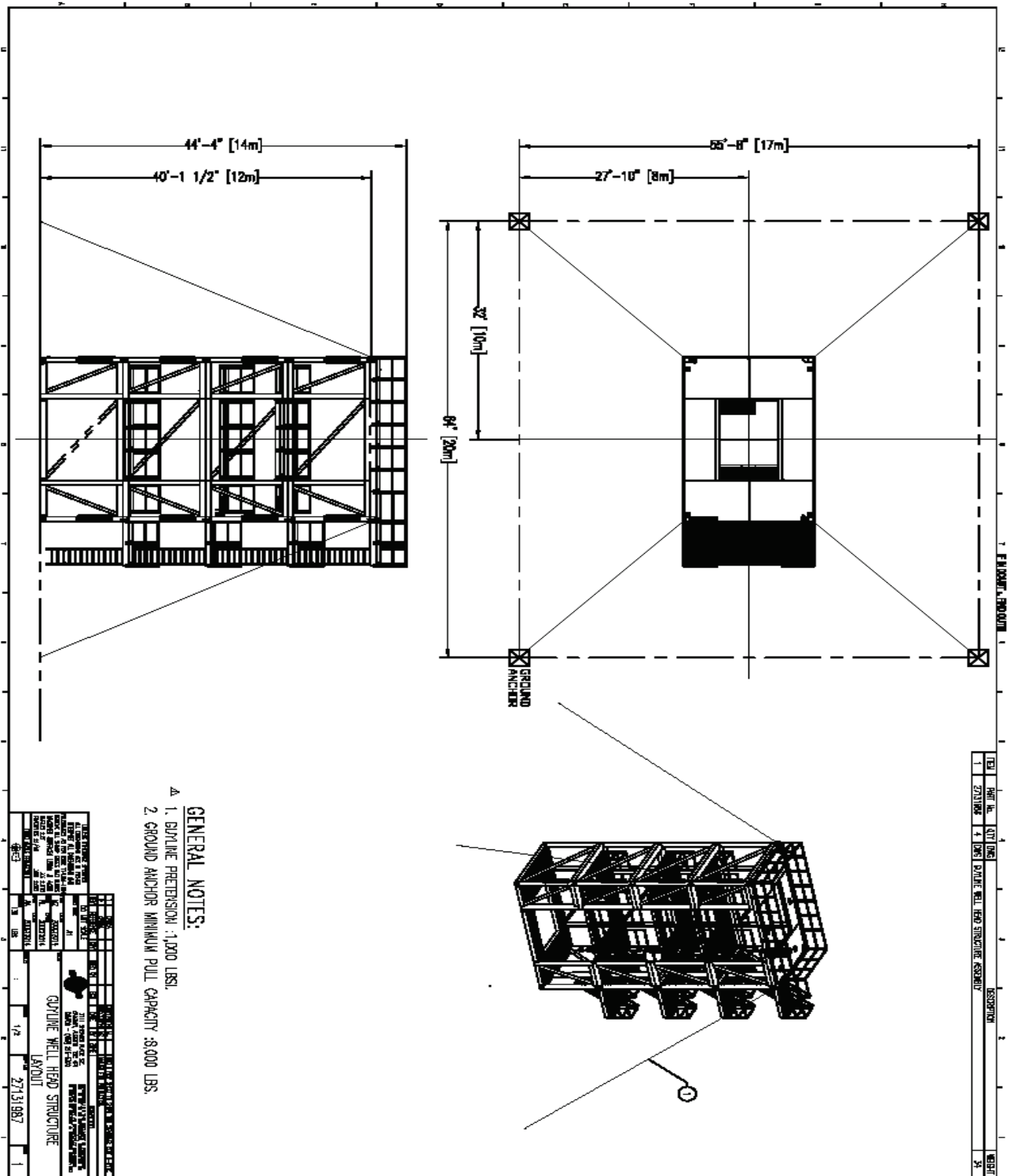
- Component Weights
- Drawing 27131987
- Drawing 27131988

Table 2, Major Component Weights

| Component                               | Weight (lbs)       |                 |
|-----------------------------------------|--------------------|-----------------|
|                                         | Without Guardrails | With Guardrails |
| Base Section ( <b>Module B</b> )        | 16,000             | 16,000          |
| Middle Section ( <b>Module M</b> )      | 11,000             | 11,000          |
| Top Cover ( <b>Module T</b> )           | 8,000              | 9,000           |
| Inner Platform ( <b>Module I</b> )      | 8,500              | 9,000           |
| Top Inner Platform ( <b>Module TI</b> ) | 8,500              | 9,000           |

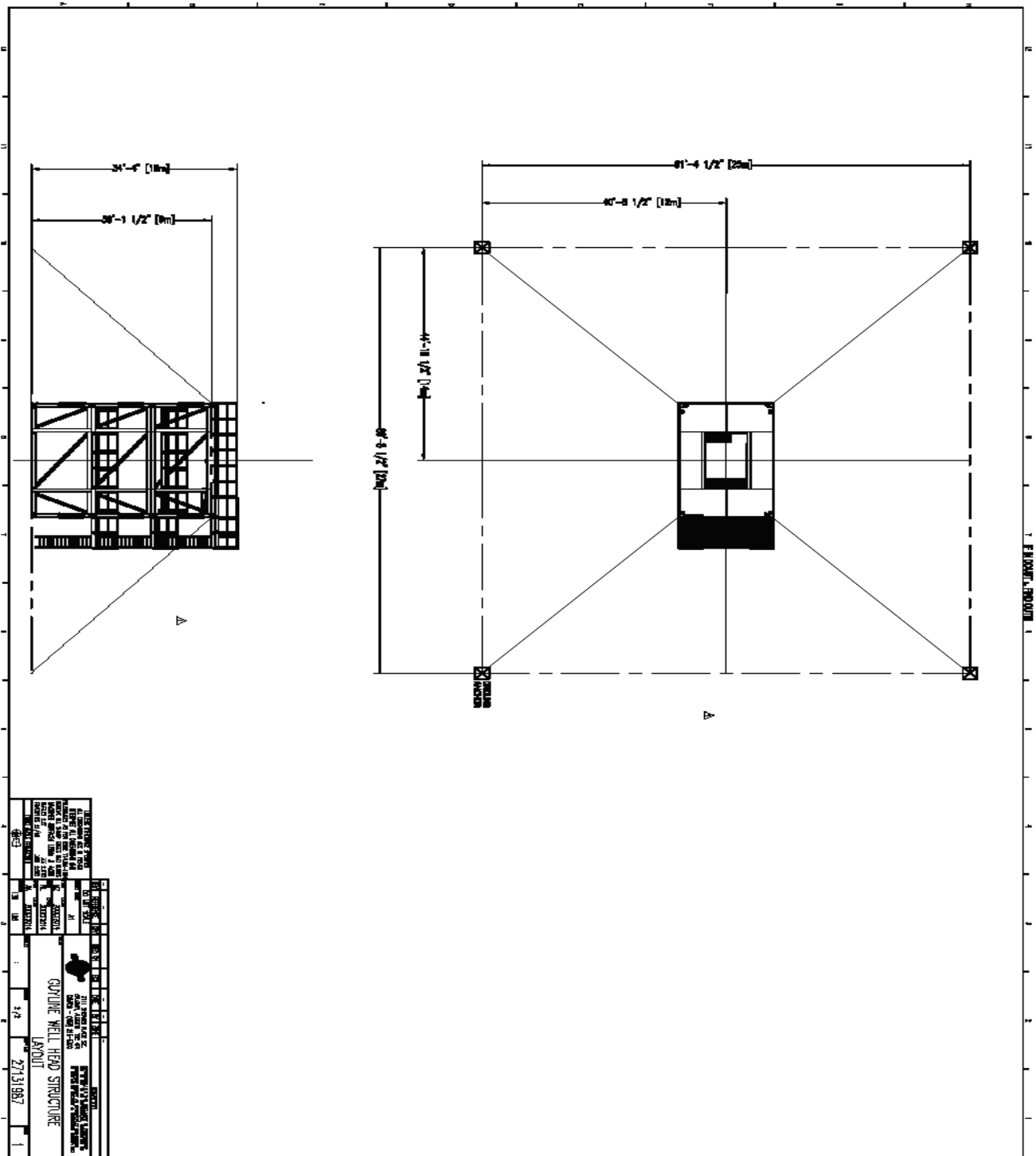


# WELLHEAD STRUCTURE INSTALLATION MANUAL

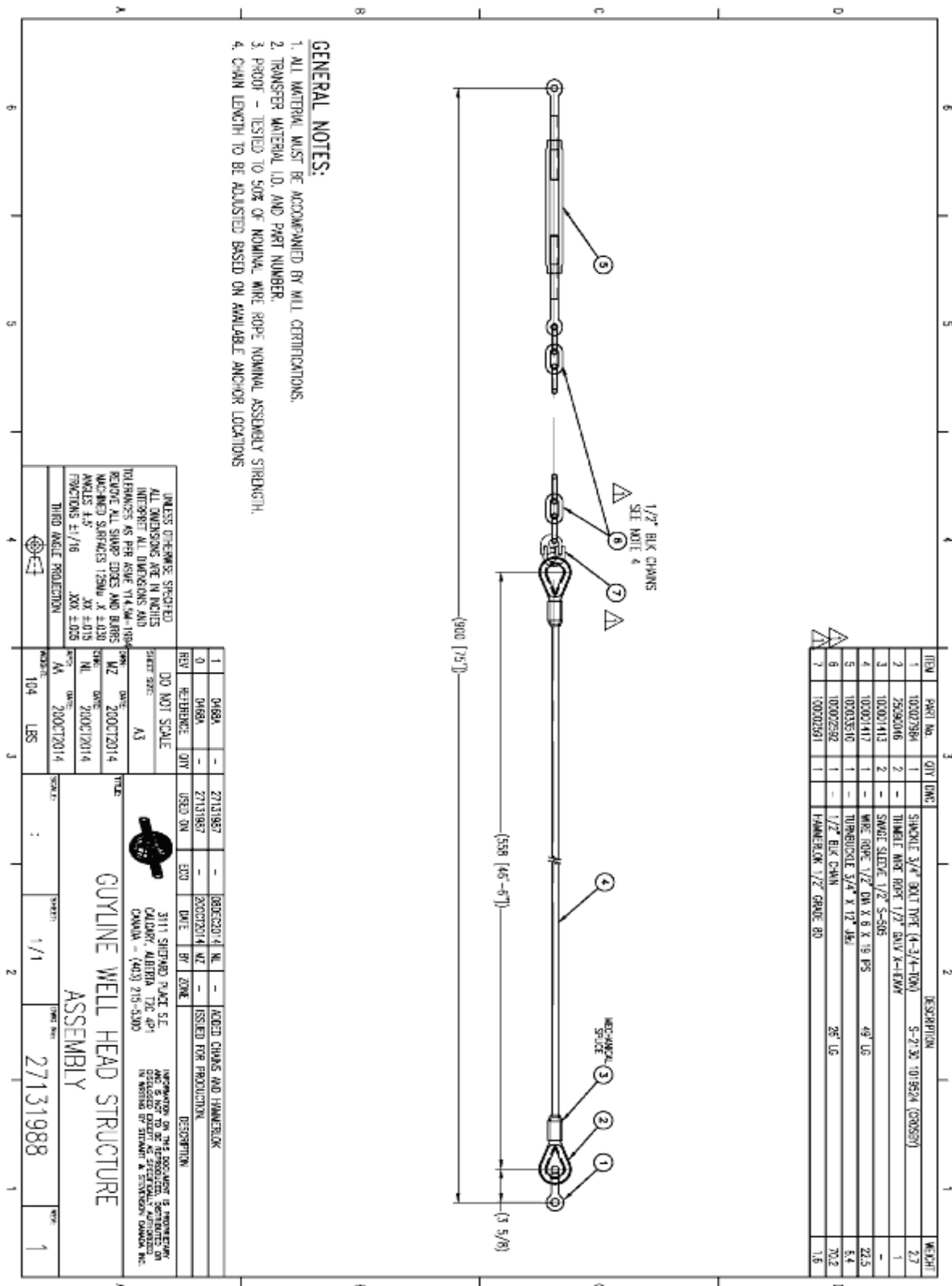




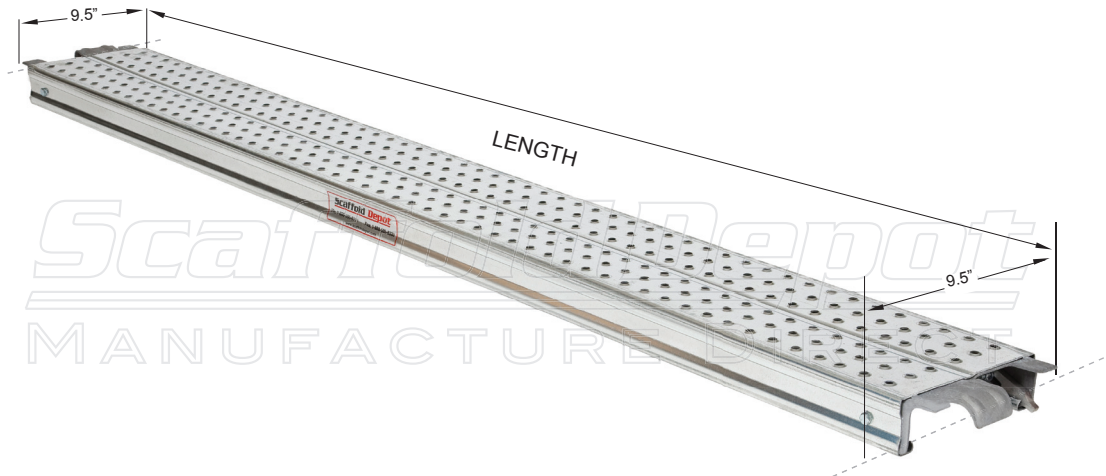
# WELLHEAD STRUCTURE INSTALLATION MANUAL



# WELLHEAD STRUCTURE INSTALLATION MANUAL



## Heavy Duty Rhino Plank



Results are based on analytical calculation with Safety Factor of 4:1  
All deflections measured at the mid-span of the plank.  
Load data based on 33,000 psi minimum yield strength for steel.  
Point load & uniform loads are two separate load cases.  
Loading values do not consider hook or planks support connections.

| Length   |        | Max<br>Center Load | Uniform<br>(Lbs/Foot) | Uniform (Lbs/<br>Square Foot) | Max Deflection | Weight Lbs |
|----------|--------|--------------------|-----------------------|-------------------------------|----------------|------------|
| Imperial | Metric |                    |                       |                               |                |            |
| 2        | 0.61   | 909 lbs            | 908 plf               | 1148 pfs                      | 0.01 in        | 12         |
| 2'2"     | 0.65   | 852 lbs            | 801 plf               | 1012 pfs                      | 0.01 in        | 12.6       |
| 3'       | 0.91   | 606 lbs            | 404 plf               | 510 pfs                       | 0.02 in        | 16         |
| 3'6"     | 1.07   | 519 lbs            | 296 plf               | 375 pfs                       | 0.03 in        | 18         |
| 3'10"    | 1.15   | 485 lbs            | 258 plf               | 327 pfs                       | 0.04 in        | 20         |
| 4'       | 1.22   | 454 lbs            | 227 plf               | 287 pfs                       | 0.04 in        | 20.2       |
| 5'       | 1.52   | 364 lbs            | 145 plf               | 184 pfs                       | 0.07 in        | 24         |
| 5'2"     | 1.57   | 353 lbs            | 137 plf               | 173 pfs                       | 0.07 in        | 24.6       |
| 6'       | 1.83   | 303 lbs            | 101 plf               | 128 pfs                       | 0.01 in        | 28         |
| 7'       | 2.13   | 260 lbs            | 74 plf                | 94 pfs                        | 0.14 in        | 31.2       |
| 8'       | 2.44   | 227 lbs            | 57 plf                | 72 pfs                        | 0.18 in        | 36         |
| 9'       | 2.74   | 202 lbs            | 45 plf                | 57 pfs                        | 0.22 in        | 40         |
| 10'      | 3.05   | 182 lbs            | 36 plf                | 46 pfs                        | 0.28 in        | 44         |