Steel Erection

Short description

This section provides the guidance and framework for the management of steel erection activities on Centennial project sites.

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1 Objective and area of application

The objective of this section is to identify the requirements and manage the process for engaging structural steel erection activity. This includes performing a comprehensive risk assessment to identify activities associated with steel erection that could lead to potential risk to employees, subcontractors or other affected personnel. The project safety officer (PSO) and project superintendent are responsible to perform an initial risk assessment and ongoing risk assessments throughout the process and as conditions change.

This section provides the basic framework for the requirements of:

- Steel erection
- Systems-engineered metal buildings

2 Superior and additional applicable documents

1000_GP_11_01_en_5.0 Global Policy on Health, Safety, Environment/Sustainability and Quality (HSEQ)

This section of the HSEQ Manual applies to all Centennial employees and subcontractors who are performing work in Centennial facilities and project sites. There may be more stringent requirements than this section as defined by specific State, local or contract specific steel erection requirements. If there is a conflict between this section and other applicable regulations, the more stringent will apply.

3 Definitions

The following definitions of terms are important for an understanding of this section.

Term	Definition
Centennial	All Centennial employees, joint venture employees, subcontractors and business partners
Competent person	One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them
Qualified person	One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project
OSHA	Occupational Safety and Health Administration
EM 385-1-1	United States Army Corps of Engineers Safety and Health Requirements
ANSI	American National Standards Institute
Steel erection	The construction, alteration or repair of steel buildings, bridges

	and other structures, including the installation of metal decking and all planking used during the process of erection.
Telehandler	A machine widely used in the construction industry. It is similar in appearance and function to a forklift but operates and functions more like a crane than forklift, with the increased versatility of a single telescopic boom that can extend forwards and upwards from the vehicle
Walking/working surface	Any surface, whether horizontal or vertical, on which an employee walks or works
Multiple-lift rigging	A rigging assembly manufactured by wire rope rigging suppliers that facilitates the attachment of up to five independent loads to the hoist rigging of a crane
Connector	Means an employee who, working with hoisting equipment, is placing and connecting structural members and/or components
Construction load	Any load other than the weight of the employee(s), the joists and the bridging bundle.
Girt	A “Z” or “C” shaped member formed from sheet steel spanning between primary framing and supporting wall material.
HSEQ Director	Leads the HSEQ Team
Leading edge	The unprotected side and edge of a floor, roof, or formwork for a floor or other walking/working surface (such as deck) which changes location as additional floor, roof, decking or formwork sections are placed, formed or constructed
Metal decking	Commercially manufactured, structural grade, cold rolled metal panel formed into a series of parallel ribs; for this subpart, this includes metal floor and roof decks, standing seam metal roofs, other metal roof systems and other products such as bar gratings, checker plate, expanded metal panels, and similar products.
Purlin	A “Z” or “C” shaped member formed from sheet steel spanning between primary framing and supporting roof material.
Permanent floor	A structurally completed floor at any level or elevation (including slab on grade).
Column	A load-carrying vertical member that is part of the primary skeletal framing system. Columns do not include posts.
Systems-engineered metal building	A metal, field-assembled building system consisting of framing, roof and wall coverings. Typically, many of these components are cold-formed shapes. These individual parts are fabricated in one or more manufacturing facilities and shipped to the job site for assembly into the final structure. The engineering design of the system is normally the responsibility of the systems-engineered metal building
RPE	Registered Professional Engineer
Controlled Decking Zone (CDZ)	An area in which certain work (for example, initial installation and placement of metal decking) may take place without the use of guardrail systems, personal fall arrest systems, fall restraint systems, or safety net systems and where access to the zone is controlled

Steel joist	An open web, secondary load-carrying member of 144 feet or less, designed by the manufacturer, used for the support of floors and roofs
SSR	Senior Site Representative
PSM	Project Safety Manager
PSO	Project Safety Officer

4 General requirements for steel erection

Centennial facilities and project sites shall take into consideration the nature of the work, site layout and condition of the project site when engaging steel erection operation. Routine inspection and management of steel erection activity will be conducted to ensure hazards are not introduced through work process, materials or equipment. Steel erection operations can introduce many risks to employees, subcontractors or other affected personnel when engaging steel erection activities.

Effective management of steel erection activities result in the following benefits for Centennial employees, subcontractors and other personnel:

- Decreased slip, trip and fall incidents
- Prevention of an unplanned collapse of the structure
- Reduction or elimination of fall hazards
- Prevention of hazards from falling objects or debris
- Prevention of crane or weight handling equipment incidents

All Centennial employees and subcontractors must be able to recognize and avoid steel erection hazards and be aware of safe work practices and procedures in commencing steel erection activity. Daily inspections and proper planning during construction operations is vital when engaging in steel erection operations.

5 Steel erection and operation procedure

5.1 Steel erection approval process

Before authorizing the commencement of steel erection, Centennial or the controlling contractor shall provide the steel erector (subcontractor) with the following written notifications:

- Footings, piers and/or walls have cured to provide adequate strength to support any and all forces imposed during steel erection activities
- Any anchor bolt repair, replacements or modifications that were completed in accordance with the project engineer of record (RPE)

5.2 Project site layout

Centennial and the steel erector shall ensure that site layout is acceptable to initiate steel erection activities including:

- Adequate access roads into and through the site for the movement and placement of:
    - Cranes or other erection equipment

    - Delivery or other vehicles
    - Other necessary equipment
    - Material to be erected
- Firm, properly graded, and drained area
- Readily accessible to the work
- Adequate space for the safe storage of materials and the safe operation of the steel erector's equipment
- Means to control vehicular and pedestrian traffic around the project site
- Limitations on dimensions or weights of components that can be delivered onto the project site
- Information on underground and overhead utilities and encumbrances
- Environmental and climate conditions on and around the site
- Adjacent structures
- Procedures for coordination with other subcontractors

5.3 Site specific steel erection plan

The subcontractor (steel erector) shall develop a site-specific steel erection plan prepared and developed by a qualified person for the hoisting and steel erection operation using the Steel Erection Plan (Appendix 1) or other acceptable written plan.

The site specific steel erection plan shall contain the following minimum components:

- The sequence of erection activity including specific processes that includes the following:
    - Material deliveries
    - Material staging and storage
    - Coordination with other trades and construction activities.
- A description of the crane or other equipment (telehandler, forklift etc.) selection and placement procedures, including the following:
    - Site preparation and ground conditions
    - Path for overhead loads
    - Critical lifts
    - Certifications of crane, telehandler or forklift operator specific to the equipment and function of the equipment
    - Qualification of riggers/signalpersons
    - Copy of the annual crane inspection certificate
    - Attachments (truss/boom attachment, jib, etc.)
    - Types of rigging used, its capacity and configuration
    - Capacity of the crane, telehandler or forklift when configured to hoist (including a load chart)
    - Means to ensure that affected personnel are not working below suspended loads
        - Connectors making initial connection of steel
        - Personnel needed for hooking and un-hooking of loads
    - Procedures for multiple-lift rigging
- A description of steel erection activities and procedures, including the following:
    - Stability considerations requiring temporary bracing and guying
    - Erection bridging terminus point
    - Anchor rod (anchor bolt) notifications regarding repair, replacement and modifications
    - Columns and beams (including joists and purlins)
    - Connections
    - Decking
    - Ornamental and miscellaneous iron

- A description of the fall protection procedures that will be used
- A description of the special procedures required for hazardous non-routine tasks.
- A certification for each employee who has received training for performing steel erection operations
- A list of the qualified and competent persons for steel erection
- A description of the procedures that will be utilized in the event of rescue or emergency response
- Identification of the site and project
- Signature of the qualified person who developed the steel erection plan

The Centennial approval process for steel erection plans is as follows:

- PSO
- SSR
- Superintendent

5.4 Hoisting and rigging

Utilizing cranes to erect structural steel and associated components is considered a best safety practice by Centennial. Cranes offer distinct advantages over forklifts and are the preferred method for effectively and efficiently erecting and setting structural steel and associated components. Although cranes are Centennial's preferred method for such tasks, the use of telehandlers or forklifts is not strictly prohibited but requires review and approval through the submitted steel erection plan.

A telehandler or forklift may be used in limited scenarios including, but not limited to:

- A crane's footprint is too large for the work area or task
- There is insufficient overhead space for a crane
- The use of a crane may create a greater hazard than the use of other equipment

In these limited scenarios, a telehandler or forklift (including all attachments and rigging) shall be used in accordance with all manufacturer specifications and requirements.

Before authorizing the commencement of steel erection activities using a forklift or telehandler, a written site-specific steel erection plan shall be developed and reviewed in accordance with section 5.3 of this section.

Refer to HSEQ Manual section 23 (Material Handling Equipment and Operations) for the specific requirements from crane and material handling equipment and associated operations.

5.4.1 Multiple lift rigging

Multiple lift rigging may only be performed if the following criteria are adequately addressed:

- An approved mulitple lift rigging assembly is used
- A maximum of 5 members are hoisted per lift
- Only beams and similar structural members are lifted at one time
- All workers involoved in the process have been trained in the unique hazards associated with multiple-lift rigging
- All weight handling euipment manufacturer specifications are followed
- Multiple-lift rigging assembly for each attachment point must be:
    - Certified by the manufacturer or RPE
    - Have a 5 to 1 safety factor for all components

  - Rigged at the center of gravity for the components hoisted and maintained level during hoisting
  - Rigged from the top down
  - Rigged with members at least 7 feet apart
  - Rigged ony by a qualified person with experience with multiple-lift rigging
- Bundles of decking shall not be lifted by means of mulitple lift rigging

5.5 Plumbing up

A competent person shall make a determination if plumbing-up equipment shall be installed during the steel erection process to ensure the stability of the structure.

When plumbing-up equipment is used, it shall be in place and properly installed before the structure is loaded with construction material such as loads of joists, bundles of decking, or bundles of bridging. Plumbing-up equipment shall only be removed under the supervision of a competent person.

5.6 Temporary bracing

Adequate proper temporary bracing is paramount during steel erection operations. Centennial is committed to protect our work force from these associated hazards as shown in paragraph 5.3 of this section. A critical element of the required Steel Erection Plan is establishing a temporary bracing (or guying) plan.

Recommendations and requirements from the building manufacturer, best industry practices and engineered systems need to be preplanned into the process and clearly defined in the erection plan.

Bracing guidance is not limited only to steel erection. When wood trusses are set or masonry walls are being erected a proper engineered bracing plan must be planned, clearly defined and implemented. This plan may be provided by the manufacturer, developed by a licensed engineer, or developed by the subcontractor's competent person. In addition to the bracing requirements, the erection plan shall include specific language for bar joist bridging requirements when setting them on masonry, or other, support walls.

5.7 Fall protection

The process of steel erection creates new and narrow working surfaces which are constantly being created as skeletal steel is erected at various heights. The Centennial requirement above which fall protection (including connectors) is required during steel erection is six feet.

Whenever a worker is more than six feet above a lower level he or she shall be in compliance with HSEQ Manual section 20 (Fall Protection) and:

- Submit a fall protection work plan for Centennial approval
- Be equipped with a complete fall protection system
- Be trained in the hazards associated with working at heights

Effective methods of fall protection during steel erection activities include:

- Guardrails
- Safety nets
- Personal fall restraint systems
- Personal fall arrest systems
- Catch platforms

- Warning lines

5.7.1 Walking/working surfaces

To prevent tripping hazards, the following components shall not be attached so as to project from the top flanges of beams, joists, or beam attachments until after the metal decking, or other walking/working surface, has been installed:

- Shear connectors (such as headed steel studs, steel bars, or steel lugs)
- Reinforcing bars
- Deformed anchors
- Threaded studs

5.7.2 Controlled Decking Zone (CDZ)

Controlled decking zones alone are not permitted by Centennial as a method of fall protection during steel erection activities.

5.7.3 Roof and floor holes and openings

All covers for holes in floors, roofs and other walking/working surfaces or potential walking/working surfaces, shall be clearly marked with the word “HOLE” and be securely attached. In all instances, the marking of the word “HOLE” shall be as follows:

- Marking color shall be red or another high-visibility color
- Lettering shall be at least 12” high or as large as possible on smaller covers
- Block style lettering (printed capital letters) shall be used
- Secured from movement or accidental displacement
- Support twice the weight of employees, equipment, and materials that may be imposed on the cover at any time

Hole covers and the required markings shall be inspected daily by the Centennial project superintendent and/or PSO or designated representative and the results of the inspection noted in the daily report. Any deficiency relating to covers and/or required markings shall be corrected immediately. Markings shall be maintained to ensure they are legible.

5.8 Falling object protection

All materials, equipment and tools at heights that are not currently being used shall be secured against accidental displacement. All other construction processes below steel erection activities shall not be permitted unless suitable overhead protection for workers is provided. Wire mesh, plywood, or equivalent material shall be installed around columns where planks or metal decking do not fit tightly to prevent objects from falling to lower levels.

Methods of falling object protection include, but are not limited to:

- Mesh debris screens and nets
- Catch platforms
- Solid panels or canopies
- Restricting personnel access by placing barricades and signage
- Hardhats (required at all times on Centennial project sites)

5.9 Metal decking

General requirements for metal decking are:

- The metal decking bundle packaging and/or strapping shall not be used for hoisting
- Dunnage, flashing or other materials that are placed on top of the metal decking bundles will be removed or secured to bundles during hoisting
- Metal decking shall be secured at the end of the work shift or when environmental or jobsite conditions require

During installation, metal decking must be:

- Laid tightly & immediately secured to prevent movement
- Placed to ensure full support by structural members
- Loaded with the weight distributed over the underlying supports to prevent overloading
- Bundles of metal decking shall not be placed on steel joists until all bridging has been installed and anchored and all joist bearing ends have been attached

5.10 Column anchorage

This section addresses the hazards associated with column stability and, specifically, the proper use of anchor rods (anchor bolts) to ensure column stability.

General requirements for columns are:

- All columns shall be anchored by a minimum of 4 anchor rods (anchor bolts)
- Columns shall be set on level finished floors, pre-grouted leveling plates, leveling nuts, or shim packs which are adequate to transfer the construction loads
- All columns shall be evaluated by a competent person to determine whether guying or bracing is needed
- Anchor rods/bolts shall not be repaired, replaced or field modified without approval of the manufacturer or an RPE

Columns must be set on one of the following to adequately transfer the construction loads imposed:

- Level finished floors
- Pre-grouted leveling
- Leveling nuts
- Shim packs

5.11 Connection of beams, columns and joists

Inappropriate or inadequate connections of beams and columns are hazardous and can lead to collapses and potential injury, death or other loss. This section sets forth performance and specification requirements for connecting beam and columns, in order to minimize the hazard of structural collapse during the early stages of the steel erection process. All requirements are the minimum requirements and manufacturer or RPE specifications may provide additional or specific guidance.

General requirements for connecting columns and beams:

- During the final placement of solid web structural members, the load must not be released from the hoisting line until:
    - Two bolts are placed to secure the connection per the manufacturer's guidance
    - The bolts are "wrench tight"

- Diagonal bracing must be secured by at least one “wrench-tight” bolt per connection
- When two structural members on opposite sides of a column web, or a beam web over a column, are connected sharing common connection holes:
    - At least one bolt with its wrench-tight nut must remain connected to the first member unless:
        - A shop-attached or field-attached seat or equivalent connection device is supplied with the member in order to secure the first member and prevent the column from being displaced
- Open web steel joists must be secured (field bolted and the joist stabilized) before releasing the load
- A steel joist shall not be placed on any part of a structure that is not stabilized
- When steel joists are landed, they shall be secured to prevent unintentional displacement
- Steel joists and girders shall not be used as anchorage for fall arrest systems unless approved by an RPE or qualified person for fall protection
- Any load placed on a steel joist shall be distributed so as not to exceed the carrying capacity of the steel joist
- A bundle of decking shall bear on a minimum of three steel joist members that:
    - Are attached and anchored at both ends
    - Has at least one row of bridging installed and anchored
    - Does not exceed 4,000 pounds
    - Is within 1 foot of the bearing surface of the joist end

6 Systems-engineered buildings

Systems-engineered buildings constitute a large percentage of the steel erection projects at Centennial. These metal structures use different types of steel members and a different erection process than typical steel erection. They also present certain unique hazards, such as those associated with anchor bolts, construction loads and double connections.

6.1 General requirements for the erection of systems-engineered buildings

- All structural columns must be anchored by at least four anchor bolts
- Rigid frames must have 50 percent of their bolts, or the number of bolts specified by the manufacturer, whichever is greater, installed and tightened on both sides of the web adjacent to each flange before the hoisting equipment is released
- Construction loads are prohibited from:
    - Being placed on any inadequately secured structural steel framework
    - Being placed beyond any area 8 feet from the center-line of the primary support member
- When girts or eave struts share common connection holes:
    - At least one bolt must remain securely in place for the connection of the first member
    - A field-attached seat or similar connection device supplied or approved by the manufacturer may be used in lieu of the bolt
    - Both ends of all steel joists must be fully bolted/welded to the support structure before:
        - Releasing the hoisting cables
        - Allowing a worker on the joist
        - Allowing any construction load on the joist
- Purlins and girts are prohibited from:
    - Being used as an anchorage for fall arrest (unless an RPE verifies in writing that the purlin or girt is of adequate strength)

- Being used as a walking/working surface unless all permanent bridging is installed and a fall protection system is provided (a fall protection plan must be submitted for approval in accordance with HSEQ Manual section 20: Fall Protection)

7 Training

Every subcontractor employee involved in the steel erection process shall be trained by a qualified person in the following areas, as applicable:

- Fall protection and fall hazard awareness training
- Falling object Protection
- Steel erection methods and procedures
- Hoisting and rigging
- Crane operations and requirements
- Multiple lift rigging
- Connectors to be trained in hazards associated with connecting

Retraining shall be provided whenever:

- A worker demonstrates a lack of understanding or awareness of his or her actions or the hazards presented by the task, process or procedure
- New processes, equipment or procedures are introduced

8 Amendment history

Date	Version	Revised content
08.04.2014	1.0	Initial Preparation
01.01.2015	1.1	Clarification on Steel Erection Plan approval and signature authority
01.01.2018	2.0	Updates to Paragraph 2 Superior Documents to add the Group Policy and Global Standards, Paragraph 3 Definitions (Centennial and HSEQ Director), Paragraph 5.7.3 Roof and Floor Holes and Openings (color and lettering size) and Appendices 1 - 2 (logo)

9 Appendix

Appendix 1: Steel Erection Plan (0206500_CP_11_24_en_A1.2)

Appendix 2: Shake-Out and Unloading Plan (0206500_CP_11_24_en_A2.1)

Steel Erection Plan

0206500_CP_11_24_en_A1.2

Instructions: Complete the Steel erection plan template below. This plan template should include site specific details regarding steel erection activities.

Project Title:

Plan Template Author (print name):

Subcontractor (company name): Date:

General

Pre-Construction Conference – Accomplished by Site Superintendent prior to the start of steel erection activities. The purpose of such conference is to develop and review the site-specific erection plan that will meet the requirements OSHA 1926.752(e) & U.S. Army Corp of Engineers EM 385-1-1 (if applicable). All personnel will have signed the Centennial's site safety policy form and have completed a Centennial project safety orientation.

Project Location:

Sequence of Erection Activity

A shakeout / unloading / staging plan has been completed prior to steel erection activities? Yes No

If yes, please reference the "shake-out plan" (Appendix 2) for material staging requirements

Note: Stored structural steel to be stored in a designated lay down area, decking to be stacked no more than 5 feet high, no loose or misc. iron allowed within 6 feet of perimeter roof, unused misc. steel secured at the end of each shift.

Crane Description

Crane make / model:

Crane serial identification number:

Crane has current insurance? Yes No

Crane safe working load capacity:

Crane has been annually tested within the current year? Yes No

Please see the separate crane lift and rigging plan

Note: Crane supplied with an NCCCO certified operator with a current medical qualification (physical), load chart, qualified rigger and signal person (as needed) and equipment certifications will be available upon arrival on-site. Site preparation; firm, level ground around perimeter of building capable of supporting heavy loads.

Critical Lifts

Crane lifts which will impose 75% or more of crane lifting capacity or lifts involving two or more cranes.

This project will require a critical lift(s)? Yes No

If yes, please explain:

Description of Steel Erection Activities

Stability considerations requiring temporary bracing and guying will be considered before placement and determined by the on-site competent person for steel erection.

Initial crane set will be determined by (crane subcontractor):

Please explain the sequence of erection (i.e. columns first, then roof beams, etc.):

Will multiple lift rigging be used? Yes No

If yes, explain:

Explain any ornamental and misc iron activities:

Fall Protection

Will connection be made from aerial/scissor lifts? Yes No

If yes, explain:

All workers will be protected from falling by manufacturer approved standard guardrails. Workers will also utilize a full body harness with fall restraint lanyard (no more than six feet) to ensure that workers are not discharged from the basket. All loads will be controlled by the use of a tag line There will be no freely swinging loads. At no time will personnel be allowed underneath of a load.

Will additional methods of fall protection be implemented into this activity? Yes No

If yes, explain:

Reference separate fall protection plan

Description of special procedures for Hazardous / Non-Routine Tasks

Will special requirements be implemented on this project?

If yes, explain:

Employee Training / Certifications

List employees who have received training for performing steel erection operations as required:

Name	Name	Name

Competent Person for Steel Erection (name):

Procedures Utilized During an Emergency Rescue / Response

Subcontractor: ,
shall provide for prompt (MAX OF 5 MINUTES) rescue of their employees in the event of a fall or shall assure that employees are able to rescue themselves.

List equipment on-site that will aid in a rescue:

Column Anchorages

Describe column anchorages:

Alignment of Structural Steel Members

The competent person for steel erection activities, listed above, will make this determination in conjunction with the manufacturer's guidelines. The manufacturer's installation instructions will be available on site at all times and will be used as a reference by the competent person for steel erection.

Repairs of Modifications / Torch Cutting

Prior to any field modifications to steel are attempted the engineer of record will be contacted for clarification and direction to repair or alter. **Written approval will be required.**

Note: If modifications are anticipated a burn permit (if applicable) and a fire watch must be implemented

Diagonal Bracing

Explain methods for diagonal bracing:

Structural Steel Connections

Explain methods for structural steel connections:

Loose Items

Explain how loose items (bolt bags / tool bags / etc.) will be secured from falling:

Falling Object Protection

Will access to areas below the elevated steel erection activities be controlled? Yes | No

If yes, explain methods / equipment / barricades to control access:

Overhead Suspended Load Pre-Planning

Routes for suspended loads must be preplanned to ensure that no employee works directly below a suspended load **except where infeasible** [engaged in the initial connection of the steal / hooking or unhooking of the load].

Include a sketch below of the crane placement on the project site and indicate travel paths of suspended loads:

Personal Protective Equipment

List all applicable PPE:

Covering of Open Holes

Covers of roof and floor openings shall be capable of supporting without failure twice the weigh of the employees, equipment and material. All covers shall be secured to prevent accidental displacement and labeled as “HOLE” in block style letters.

Emergency Response Contact Numbers

Fire and EMS:	(number)			
Site Superintendent:	(name)		(number)	
Steel Erection Competent Person:	(name)		(number)	
Project Safety Officer / SSHO:	(name)		(number)	

Plan Review (signature required)

Centennial PSO/Superintendent:		Date:	
Centennial SSR:		Date:	

Shake-Out and Unloading Plan

0206500_CP_11_24_en_A2.1

Instructions: Complete the Shake-out / unloading plan template below. This plan template should include site specific details regarding the staging of materials for steel erection activities.

Project Title:

Plan Template Author (print name):

Subcontractor (company name): Date:

General

Pre-Construction Conference – Accomplished by Site Superintendent prior to the start of unloading Engineering Buildings from trucks. All personnel will have signed Centennial's site safety policy form and have completed a Centennial project safety orientation.

Project Location:

Unloading Sequence

Material will be delivered to the project site via flat bed trucks?	Yes	No
If yes, access points and routes of truck/trailer travel have been established?	Yes	No
All ground personnel will, at a minimum, utilize ANSI Class II Retroreflective PPE?	Yes	No
Has a lay-down area been established for placement of materials?	Yes	No

If yes, describe:

Note: Construction superintendent will coordinate staging of materials with subcontractor personnel.

Will the use of powered industrial trucks (Forklifts) be used to unload material?

If yes, describe:

If yes, forklifts will be inspected daily by a competent person and the completed inspection reports will remain on site:	Yes	No

Note: All palletized material will be removed using standard forklift procedures and within forklifts manufacturers guidelines. The maximum lift of any load will not exceed 75% of the maximum lifting capacity of equipment.

Un-palletized Material

All un-palletized materials have been identified on shop drawings?	Yes	No

Note: These drawings list overall length, size and weight of each piece. These shop drawings are being provided to the subcontractors so they can identify correct pick points using the center of gravity for balance and proper weight distribution.

The maximum lift of any load will not exceed 75% of the maximum lifting capacity of assigned lifting equipment.	Yes	No

Note: The forklift driver shall lift the load a few inches to ensure the load will not shift.

The forklift manufacturer has verified that there are no limitations/restrictions for material hanging laterally over the tines. Yes No

The tines will be slid under each piece of material with a balanced load. This piece will be slid back against the mast and secured to prevent movement. The competent person shall determine the best way to secure each load. When the load extends past the tines, the competent person shall determine the safest way to control the load. Tag lines shall be made available and used when the competent person deems them necessary to stabilize/control the load.

All personnel will remain clear of the lift and load.

An area has been identified where ground personnel shall be located so they are not exposed to the load or hazards associated with the load? Yes No

If yes, explain:

Exclusion areas will be readily identifiable with the use of barricades (i.e. caution tape / candle sticks)? Yes No

Note: This exclusion area shall encompass the lifting/unloading area all the way to the lay-down area. The only workers allowed in the exclusion area are those workers designated by the competent person and having a direct relationship with the load (i.e. tag line holders). Workers in the designated exclusion area shall wear reflective outer-garments as stated in ANSI/SEA 107. Truck drivers will also be removed from the exclusion area.

Manual Material Handling / Other Trades On-Site

The Construction Superintendent will coordinate other trades and construction activities during steel building unloading and assembly. Superintendent and erector shall maintain all routes of egress and access for other subcontractors or emergency vehicles. Subcontractors and trades shall be made aware of any hazards and shall stay clear of lifting or operation area.

Plan Review / Approval

Centennial PSO/Superintendent:

Name: Date:

Centennial SSR:

Name: Date: