1 Status

1.1 Update of existing policy, effective 09/02/11.

2 Purpose

2.1 Establishes rigging procedures for movement of any materials by hoisting means.

3 Applicability

3.1 This policy applies to all subsidiary companies and departments of The Cianbro Companies.

3.2 All organizations are required to comply with the provisions of this policy and procedure. Any deviation, unless spelled out specifically in the policy, requires the permission of the Safety Officer or designee.

4 Definitions

4.1 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 team members, and who has authorization to take prompt corrective measure to eliminate them. The competent person in charge of the lift is the lift director as per ASME (defined below).

Personnel responsibilities as per ASME American Society of Mechanical Engineers

- All responsibilities listed below shall be assigned in the work site organization. A single individual may perform one or more of these roles.
- Crane Operator: directly controls the crane’s functions
- Crane Owner: has custodial control of a crane by virtue of lease or ownership
- Crane User: arranges the crane’s presence on a worksite and controls its use there.
- Lift Director: directly oversees the work being performed by a crane and the associated rigging crew.
- Site supervisor: exercises supervisory control over the work site on which a crane is being used and over the work that is being performed on that site.

4.2 Load: The total weight of the materials being hoisted and all rigging and devices attached below the hook of the hoisting equipment, plus any deductions required by the manufacturer of the hoisting equipment (i.e. the block, the cable below the tip, etc.)

4.3 Qualified Rigger: A person that possesses a recognized degree, certificate or professional standing or has extensive knowledge, training and experience and can successfully demonstrate the ability to solve problems related to rigging loads.

4.4 Qualified Signal Person: A person that knows and understands the type of signals used at the work site, is competent in using these signals, understands the operations, limitations and dynamics of the equipment being used, knows and understands the signal person qualification requirements and has passed an oral or written test and a practical test. (Please see OSHA Standard 1926 Subpart CC for the entire description.)

4.5 Rigging: Any device used for attaching a load to a hoisting piece of equipment, such as a crane or chain fall, or the process of attaching the device to the equipment.

4.6 Softener: A material used to protect the rigging or hoisting cable from being damaged or cut by a sharp surface. Softeners are of two basic types – cut protection and abrasion protection.
4.7 Signal Person: The person designated to signal the crane operator, to keep an eye on obstructions and to assist the operator in making the hoist.

4.8 WLL: Working Load Limit.

4.9 WSTDA: Web Sling and Tie Down Association

5 Policy

5.1 To maintain the highest level of safe rigging operations, Cianbro Companies will use these procedures during all lifting / hoisting operations. All rigging operations will occur under the control of a competent rigger.

6 Responsibilities

6.1 The Corporate Safety Officer or designee is responsible for providing approval for the use of safe rigging procedures under this policy.

6.2 The top Cianbro manager of the job site is responsible for the implementation of this policy on the job site.

6.3 Corporate Safety is responsible for maintaining this document.
7 Safe Rigging Operations Index

7.1 Planning the Activity ............................................................................................................................ 3
7.2 Competent Person/Lift Director: .......................................................................................................... 4
7.3 General Requirements for Rigging Inspection and Use ...................................................................... 4
7.4 Wire Rope Slings ................................................................................................................................... 5
7.5 Synthetic Web Slings .......................................................................................................................... 5
7.6 Welded Alloy Steel Chains .................................................................................................................. 7
7.7 Disciplinary Action ............................................................................................................................... 8
7.8 OSHA References ............................................................................................................................... 8
7.9 American National Standard Institute (ANSI) Reference ................................................................. 9
7.10 Safety At Home ................................................................................................................................... 9
9 Related Documents ................................................................................................................................ 10
9.1 Appendix A Tagline Use Guideline ....................................................................................................... 11
9.2 Appendix B Softener Use Guidelines .................................................................................................... 12
9.3 Appendix C Sorting (Pelican) Hooks Guidelines .................................................................................. 13
9.4 Appendix D Rigger Classifications ........................................................................................................ 14
9.5 Appendix E ANSI Standard ................................................................................................................... 16

7.1 Planning the Activity

Prior to starting any major rigging activity, a detailed plan must be developed that identifies any potential hazards and the preventative measures appropriate to eliminate the hazard.

All written activity plans must include a complete listing of rigging needed to hoist materials and equipment. The competent person/lift director must be identified by the superintendent/site supervisor at the work location and shall be identified by name in the activity plan. The competent person/lift director must provide input into rigging/hoisting activities and approve activity plans involving rigging.

All team members must be kept clear of loads about to be lifted and of suspended loads!
Do not lift loads over personnel!

Listed below are some items to consider when developing the activity plan.

A. Proper rigging and inspection (see section 7.2).
B. Identify competent person/lift director.
C. Weight evaluation.
   • Crane/hoist capacity - load/list charts.
   • Combined weight of object and rigging.
D. Proper crane setup (level, solid ground, etc.). Refer to the Crane Safety Policy and Procedure.
E. How are hoisting devices to be installed (tuggers, chain falls, etc.)?
F. Engineering (should lift be calculated and drawn up for educational/training purposes)?
G. What other work is ongoing below or near the lift (consider barricades, team member alarm system, etc.)?
H. Refer to Cianbro’s Pre-lift checklists for planning loads to be hoisted available on Cianbro.net. See section 9 Related Documents.
I. Are work locations near public or other areas where special precautions must be planned?

Complex rigging activities require extensive planning, if we are to complete the work without an incident.
7.2 Competent Person/Lift Director:

7.2.1 Identification of competent person/lift director - It shall be the responsibility of each project manager/superintendent/site supervisor to ensure every Cianbro work location/project activity has identified a competent person/lift director. This competent rigging person(s) must be identified by name for each activity involving the hoisting of materials and equipment where a load must be mechanically hitched or rigged and lifted. Written activity plans shall include naming the competent person/lift director, a signature of the competent person/lift director and require an inspection to be conducted prior to all lifts. The competent person/lift director will have the authority to take prompt corrective measures to eliminate any unsafe condition.

7.2.2 Competent Rigging Person – Shall meet the requirements in Appendix D of this document for each rigger level. All activities involving the hoisting of materials and equipment where a load must be mechanically hitched or rigged and lifted will be done by a competent rigger. Persons who are not competent riggers can only rig under the direct supervision of a competent rigger.

7.3 General Requirements for Rigging Inspection and Use

7.3.1 All rigging equipment, (slings, shackles, chain falls / come-a-longs, plate grabs, sheet hooks, etc.), must be inspected before each use by a competent rigging person.

7.3.2 All rigging equipment must be stored off the ground when not in use.

7.3.3 Any lifting device used that does not have the manufacturer's certification must be certified by a registered professional engineer. Example: job built sorting/sheet hooks, lifting beams, welded pad eyes, etc.

7.3.4 Use of (pelican) sorting hooks to rig loads is prohibited except when sorting sheets and like materials in a lay down yard area and when unloading or loading single pieces from truck to ground / ground to truck.

7.3.5 Synthetic slings can be used with sorting hooks provided the sling doesn’t come into contact with the load during the lift i.e. Double shackles with hooks.

7.3.6 Shackles attached to scale pans, concrete buckets or other apparatus where they remain in place, shall require bolt type shackles or shall have the screw pins wired to prevent loosening.

7.3.7 Every rigging activity must be supervised by a COMPETENT RIGGING PERSON.

7.3.8 All heavy or complex rigging activities must be planned prior to the lift. Activity plans shall be developed and reviewed with crew.

7.3.9 Any rigging incident or near miss must be reported, investigated and appropriate corrective actions taken. Report incidents to project management, regional safety manager and corporate safety department.

7.3.10 Use the appropriate pre lift checklists available on Cianbro.net. These checklists must be completed for weights to be lifted exceeding 75% of the cranes rated load capacity at the working radius and for two crane picks.
7.4 Wire Rope Slings

7.4.1 Inspect Slings Before Each use.

7.4.2 Remove slings from service if any of the following are observed:

- Manufacturer's name or trade mark, the rated capacities for each type of hitch must be legible.
- Ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay.
- Wear or scraping of one-third the original diameter of outside individual wires.
- Kinking, crushing, bird caging or any other damage resulting in distortion of the wire rope structure.
- Evidence of heat damage (remove from service if exposed to temperatures greater than 500°F. Fiber core wire rope slings shall be removed from service if exposed to temperatures greater than 200°F).
- End attachments that are cracked, deformed or worn.
- Hooks that have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.
- Corrosion of the rope or end attachments.

7.4.3 Softeners shall be used on all steel slings unless a competent person/lift director determines the softener creates an unsafe condition.

Note: Softeners must be adequate and appropriate for the application. Do not use work gloves, oily rags, etc. for softeners. Consult a competent rigger for proper material.

7.4.4 Malleable iron clips are prohibited for use on Cianbro job sites.

7.4.5 Slings, bridles and bull wires shall not have eyes formed using wire rope clips.

7.5 Synthetic Web Slings

7.5.1 WSTDA – WS – 2 states “Synthetic web slings shall always be protected from being cut by corner, edges, protrusions, or abrasive surfaces.”

7.5.2 WSTDA – WS – 2 states “Polyester round slings shall always be protected from being cut by corners, edges, and protrusions.”

7.5.3 Synthetic slings shall not be loaded in excess of their rated capacity. Consideration shall be given to the angle from the horizontal (sling to load angle) which affects rated capacities.

7.5.4 Select proper sling having suitable characteristics for the type of load, hitch, and environment.

7.5.5 Synthetic slings used in basket hitches shall have the load balanced to prevent slippage.

7.5.6 Polyester round slings with cut covers exposing the load bearing yarns shall be removed from service.

7.5.7 With multi sling bridal each leg must have the capacity to carry ½ the load.

7.5.8 To maintain an acceptable D/d ratio at the shackle pin use a shackle one size larger than the sling i.e. with a 6400 # capacity web sling use a ¾” shackle with a capacity of 9500#.
7.5.9 Width of attachment hardware (crane hook) cannot be more than 1/3 the length of the sling eye.

7.5.10 Synthetic slings can be used in temperatures from -40F to +194F degrees. ASME B30.9 notes that some synthetics do not maintain their breaking strengths at temperatures above 140 degrees F. Contact manufacturer at these temps.

7.5.11 Wet synthetic slings can be used. Some manufacturers / Rigging trainers deduct 15% from SWL, if needed contact manufacturer.

7.5.12 Frozen synthetics CANNOT be used. THAW first.

7.5.13 Nylon and polyester are degraded in acid and alkali environments, check with manufacturer if working in these areas.

7.5.14 If a double wrap basket or double wrap choker hitch is used – ensure the 2nd wrap does not cross over the first on the bottom of the load. This condition prevents the hitch from equalizing and sharing the load.

7.5.15 Hoist all loads slowly and smoothly to avoid shock loading.

7.5.16 With multi leg lifts keep sling angles (horizontal angles) at 60 degrees or greater.

7.5.17 Do not use Synthetic slings in Basket hitches for load turning.

7.5.18 Use Rigging Hardware with suitable contact width (see chart pg11 – WSTDA-RS-2)

7.5.19 Synthetic slings are NOT Field repairable, only manufacturer may repair.

7.5.20 Capacities in choker hitch are rated at 120 degrees. For choker angles 90 to 120 =87%, 60 to 89 degrees = 74%; 30 to 59 degrees = 62%; 0 to 29 degrees = 49%. Multiply tags capacity by appropriate %.

7.5.21 Removal From Service Criteria
- Tag is missing or not readable
- Acid or alkali burns
- Melting, charring, weld spatters (any heat damage) on any part of sling
- Holes, tears, cuts, or embedded particles
- Fittings that are pitted, corroded, cracked, stretched, bent, twisted, gouged or broken
- Knots in any part of sling
- Excessive abrasive wear
- Exposed core fibers (round slings)

7.5.22 Sling Protection

A. ASME, WSTDA, the rigging books all say riggers must prevent slings from cutting, leaving the actual methods and materials in the riggers hands.

B. Sling protection falls into two groups: Abrasion Protection and Cut Protection
   - Abrasion Protection: is the “padding” between sling and load, protecting the sling from rough surfaces.
   - Cut Protection: is material that prevents the sling from contacting the load and will not be cut/broken by the compression during lifting.

C. Examples:
   - Abrasion Protection – Fire hose, old slings in 12” pieces, Kevlar stitched or sleeved on web slings.
   - Cut Protection – Litton with blue high density plastic, Corner Max protectors with sewn in material to keep the load corners away from the sling, Newco fabricates steel softeners for wire rope.
D. Sling protection is required whenever synthetic slings are used unless the competent rigger decides it is not necessary.
E. Ensure there is a variety of manufactured protection available on site to give riggers options as they need them (Examples: Sling Max Corner Pads, Litton Rigging Gear, Newco 2" Nylons with sewn on Kevlar abrasion covers.)

7.6 Welded Alloy Steel Chains

7.6.1 Frequent (daily – visual) and periodic (documented) inspections must be performed on all chains used for lifting. This includes chain falls, hoists, as well as multi-leg bridles.

- Ensure identification marking (tag) is affixed and shows size, grade, rated capacity, reach and sling manufacturer’s name.
- Inspect chain hook retaining nuts, collars and pins, welds or riveting used to secure the retaining member.
- Hooks, rings, oblong links, pear shaped links, welded or mechanical coupling links or other attachments shall have a rated capacity at least equal to that of the alloy steel chain with which they are used or the sling shall not be used in excess of the rated capacity of the weakest component.
- Makeshift links or fasteners formed from bolts, cords or other such attachments shall not be used.
- Ensure that before using each new, repaired or reconditioned chain sling, including all welded components in the sling assembly, is proof tested by the sling manufacturer or equivalent entity. Cianbro should request and retain a certificate of the proof test.

7.6.2 Remove chains from service if any of the following occur:

- Slings are heated above 1000°F.
- The chain size at any point of any link is less than that required by law (Reference 29 CFR 1926.251).
- Chain links that are twisted, broken, cracked or otherwise damaged.

7.6.3 Periodic Inspections:

- A thorough inspection shall be performed at least once every 12 months.
- The assembly shall be removed from service: when excessive wear of chain, chain stretch and whenever wear at any point (of any link) exceeds what was shown in table H-2 of 1926.251.
- Chain hooks suspected of cracks or with other visible defects shall be inspected using dye penetrant, magnetic particle or other suitable means.
- Attention should be directed to the frequency of sling use, the severity of service conditions and the nature of the lifts being made.
- Equipment inspected will be tagged and the inspection documented on a log. Records of the most recent month in which each sling was thoroughly inspected shall be available for examination in accordance with 1910.184(e)(3)(ii). Annual inspection tags can be obtained at Pittsfield Supply.

7.6.4 When inspecting chains which are components of chain falls, come-a-longs or hoists, it is necessary to follow manufacturer’s instructions for maintenance and inspection, plus:

- Check braking mechanism for evidence of slippage under load.
- Hooks damaged from chemicals, deformations, cracks or having more than 15 percent in excess of normal throat opening, or more than 10 degree twist from the plane of the unbent hook shall be removed from service. Hooks shall be free to rotate 360°.
- All load bearing components of a hoist should be inspected for damage.
- Frequent and periodic inspections are required. See APPENDIX B - ANSI B30.16-1973 Overhead Hoists.
7.6.5 Limited distribution and use of spreader chain slings in field operations will be permitted on a trial basis starting in March 2005.

- Spreader Chain Slings will be limited, controlled and used for appropriate work activities.
- Safety hooks will be required with sure lock hooks or hooks with a heavy duty safety latch.
- Spreader Chain Slings will be bar coded and tracked as a small tool items and maintained/inspected similar to chain falls.
- Spreader Chain Sling assemblies will be assigned to an individual team member who will be held accountable for daily and monthly inspections and proper use. (Examples: operators assigned to cranes or boom trucks or supervisors working on activities like handling re-bar, sorting steel or lay down yard activities.)
- Daily and monthly inspections will be completed by the individual assigned to the spreader chain sling and documentation will be sent to Pittsfield small tool supply department.
- Annual inspections will be conducted by sending the spreader chain sling assembly to Pittsfield small tool supply department similar to chain falls.
- The use of single-leg assemblies is still prohibited.
- No field repairs or modifications will be allowed except for the replacement of a safety latch or hook. Return the spreader chain assembly to Pittsfield small tool supply department for repairs or modifications.

7.7 Disciplinary Action

7.7.1 Failure to follow Cianbro’s safety program requirements outlined in this Safety Policy and Procedure shall result in disciplinary action as outlined in Cianbro’s progressive disciplinary procedure.

7.8 OSHA References

1926.251 Rigging Equipment for material handling
(a) General
(b) Alloy Steel Chains
(c) Wire Rope
(d) Natural Rope and Synthetic Fiber
(e) Synthetic Webbing (Nylon, Polyester, and Polypropylene)
(f) Shackles and Hooks

1910.184 (d) Inspections (daily)
(e) (3),(i) and (ii) Inspections (Periodic)
7.9 American National Standard Institute (ANSI) Reference

ANSI B30.16-1973 Overhead Hoists

**NOTE:** Cianbro recommends frequent review of "Bob's Rigging and Crane Handbook" and "Rigging Handbook 3rd Edition J. Klinke" by each supervisor responsible for Rigging Activities. These may be ordered through Cianbro Institute.

The importance of maintaining an effective rigging inspection program cannot be over emphasized!

**PLEASE PARTICIPATE!**

Use this safety policy and procedure frequently for training personnel to rig and avoid mishaps.

**DO NOT LIFT LOADS OVER PERSONNEL!**

7.10 Safety At Home

Each team member using rigging at home is strongly encouraged to use the safe practices described in this policy. Inspect rigging before each use, check capacities of the rigging and the hoisting equipment and make sure that no one is under any suspended load.

8 Budget / Approval Process

8.1 Purchase and maintenance of Cianbro Companies hoisting and rigging equipment is the responsibility of Cianbro Equipment LLC.

8.2 Purchase and maintenance of special or project required rigging equipment and rental equipment is the responsibility of the project.

8.3 Purchasing Requirements: As of January 1, 2004, all steel slings being manufactured were required to have capacity / manufacturer tags attached. Some of the slings we have in use were purchased before that date. We are in the process of tagging a number of those slings. During this process, we are aware that some of the slings that were purchased have no backup to show that they meet our standards. This makes it difficult to accurately rate and tag the slings.

These are the Requirements:

- **Wire Rope Slings**
  - Material – EIPS, IWRC, domestic wire rope
  - Construction - loop & loop flemish eye splice
  - Tagging - tagged with capacity / manufacturer
  - Conform to OSHA and ANSI standards

- **Synthetic / Nylon Slings**
  - Material – grade 8 or 9 nylon webbing
  - Construction - type 3, eye & eye w/ tapered eyes
  - Tagging - tagged with capacity / manufacturer
  - Conform to OSHA and ANSI standards

Cianbro requires that all rigging equipment be sourced through one of several preferred vendors. These vendors are well aware of Cianbro’s requirements, as well as the current industry standards (they will supply us with materials that meet the standards.) Contact Corporate Purchasing for current list of preferred vendors.
9 Related Documents

9.1 See attachments.

9.2 Document available on Cianbro.net or Cianbro.net>Standard Operating Procedures – on the SOP.

<table>
<thead>
<tr>
<th>Document Description</th>
<th>Document Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigging Classification Sheet</td>
<td>PD634</td>
</tr>
<tr>
<td>Pre-Lift Checklist Land Based Cranes Only</td>
<td>SD1004</td>
</tr>
<tr>
<td>Pre-Lift Checklist Barge Mounted Cranes Only</td>
<td>SD1003</td>
</tr>
<tr>
<td>Manual Hoist Pre-Lift Rigging Checklist</td>
<td>SD1038</td>
</tr>
<tr>
<td>Pre-Lift Checklist Procedures for Overhead Cranes/Power Hoist</td>
<td>SD1005</td>
</tr>
<tr>
<td>Boom Truck Critical Lift Plan</td>
<td>SD1034</td>
</tr>
<tr>
<td>Pre-Lift Checklist for Two Cranes</td>
<td>SD1039</td>
</tr>
<tr>
<td>Supervisor Monthly &amp; Daily Chain Sling Assembly Inspection</td>
<td>SD1066</td>
</tr>
</tbody>
</table>
‘Tagline Use’
Guideline

WHY DO WE USE TAGLINES? TO HELP CONTROL LOADS/MATERIALS SUCH AS:
- Controlling loads in windy conditions.
- To keep long materials from swinging into the crane booms.
- To keep loads/materials from swinging into power lines.
- Maneuvering loads through or around tight spaces.
- Anytime when working around traffic and pedestrians.
- When performing steel erection.
- When hoisting close to or onto scaffolds.
- When hoisting suspended personnel platforms, if appropriate.
- When a rotation of the load would be hazardous.
- When working on any site when MSHA rules apply (tag lines on all loads).

TYPES OF MATERIALS USED AS TAGLINES:
- Nonconductive line: **dry polypropylene rope only** (when used around power lines).
- Do not use electrical extension cords, wire, air hoses or lanyards used for fall protection.
- No loops, hooks or knots on the ends of taglines (they tend to catch on items).

LENGTH OF TAGLINES:
- Short enough so as not to get tangled on items being lifted over.
- Long enough to handle bulky/long loads from the ground (100% control).
- Long enough to control a load when landing.

SECURING TO LOADS:
- Use knots that can be easily untied.
- Can use snap hooks on end of tagline to secure to load.
- Tie to bolt holes in steel, to rigging on loads, or wrap around the loads.

HANDLING TAGLINES:
- Do not wrap the tagline around your hands, arms or body (You may find yourself going up with the load. For the reason, you cannot unwrap the line as fast as the load was being lifted.)
- May need 2- taglines to control the load
  **Example:** Have a tagline on each end of a girder where one team member would be pulling in one direction and the second team member would guide the load in a different direction.
- May need to wrap a tagline around a fixed object to control or secure the line.

STORING TAGLINES:
- Coiled up in rigging storage area.
- Inside compartments of cranes, boom trucks and other lifting equipment.
- Send taglines with rigging.
- Store & inspect taglines as part of your rigging.
Softener Use Guidelines

All rigging operations no matter how large or small should have a softener use evaluation done; these guidelines we hope will help you in making that evaluation.

WHEN DO WE NEED TO USE SOFTENERS?

• Anytime an edge could come in contact with a sling or a load handling and control device. (Chain falls, load chains, nylon and cables slings etc.).
• Whenever there is a change that a load will shift or slide in the slings.

TIPS FOR MAKING SURE SOFTENERS ARE USED CONSISTENTLY:

• Make sure that there are enough softeners of the right material on the project.
• Make sure that the softeners are secure in place when the load is lifted.
• Ensure that the softeners are picked up and put away with the rest of the rigging materials.
• Train team members to use softeners with all rigging materials – nylon, chains and cable slings.
• Include the type and number of softeners needed in your Activity Plan.

SOME TYPES OF SOFTENERS THAT CAN BE USED

• Sliding sleeve covers that go over the end of the nylon slings.
• Velcro closure sling covers that allow it to be put on before or after the slings are in place on the load.
• SlingMax has some good softener products like CornerMax Wear Pads.
• Nylon slings can have softeners sewn in them by the manufacturer.
• Sling Protectors that have magnets that attaches them to steel for use with cable and nylon slings (Linton Rigging Gear LLC).
• Shackle Pin Pads are a product of SlingMax.
• Wood can be a very good softener for steel when using cable and chain slings.
• Fire Hose works well with nylon slings and can be cut to whatever lengths are needed and slid over the slings.
• Split round steel pipe on steel edges is a good softener.

BENEFITS OF SOFTENER USE

• Prevents accidents that could injure you or your co-workers.
• Stops damage to the slings and load.
• Softeners save Job Costs by not having to replace damage slings.
• It’s the right thing to do.
9.3 Appendix C

Sorting (Pelican) Hooks Guidelines

Sorting hooks are designed to sort materials – commonly flat plates, sheet piles, straight beams and round pipes in a lay down area. Other uses include off-loading trucks and rolling structural shapes. The intent is to have the loads engaged fully into the throat of the hook. The following are guidelines for the safe use of the hooks on our project sites:

1. Know the weight of the load and the capacity of the rigging – including the hook. The hooks that we use are normally rated for 7.5 tons in the throat of the hook.

2. There is also an allowance for loading the hook further towards the tip. If the load is not engaged into the throat of the hook the load limit is reduced to 2 tons, however the load cannot be closer than 2” from the hook tip.

3. Hooks must be attached to the load in a manner that maintains a level, balanced and stable condition throughout the sequence of the lift.

4. If the load begins to bend, then stop the pick and evaluate the process further. Change the configuration if necessary.

5. Use only wire rope slings for attachment to the hook if sling contacts load.

6. If using sorting hooks with synthetic slings, add extra shackles at hooks so sling doesn’t contact load.

7. The loads must be in full view of the operator at all times during the pick.

8. The load will be maintained as close to the ground as possible at all times.

9. Materials shall not be lifted over head with sorting hooks. A positive connection must be used – i.e. a latching hook, choked slings, etc. for items being lifted over head.

10. Tension must be maintained at all times during the lift so that the hooks do not disengage.

11. The sling angles shall not be greater than 45° from horizontal to maintain the allowable 7.5 ton hook capacity. At angles greater than 45° the force attempts to tip load and spread the hook. If the angle is greater than 45° then the capacity is reduced to 2 tons provided the limitations in item #2 are also met.

12. Side loading of the hooks will not be allowed.

13. Off-loading trucks with sorting hooks will be permitted.

14. Team members will not be allowed in potential pinch points during the pick.

15. Sorting hooks shall not be used for any purpose that exceeds the manufacturer’s recommendations.

16. Sorting hooks shall not be used for erecting steel.

17. Sorting hooks shall not be used in choker hitch applications.
9.4 Appendix D

Rigger Classifications

The task of rigging is an integral part of everyday work in our company. There is a wide range of skills required depending upon the complexity of the job. Starting in 2002, we distinguish the various rigging levels of abilities by breaking down our classifications in five groups: Level 1, 2, 3, 3A and 4 Riggers for which we issue hard hat decals. For specific designation, we also grant at the level 2 six endorsements. The definitions below are used objectively to assign a rigging level and/or endorsements. The individual rigging classification will be reviewed yearly during the team member profile process.

New rigger classification must have been endorsed by a superintendent/site supervisor and confirmed by the regional rigging coordinator. Level 1 will be granted at this stage while level 2 on up will be submitted to regional rigging committee for final approval. To facilitate this process, we use the Rigger Classification Combo form (PD634) available under cianbro.net, resources, forms, secure forms, and Rigger Classification Combo. The new Cianbro classifications will show on team member profiles, as hard hat decals, and on electronic reports available to our managers and supervisors.

NCCCO certifications for Signalperson and rigger have been added as a requirement in May 2010. We are planning on completing our catching up with current riggers by 2012.

Level 1 Rigger
At a minimum, the team member should have taken Cianbro’s current 8-hour Basic Rigger Training Class and applied this knowledge for one year of “rigging in the field”*. Some basic rigging work activities would require the team member to be competent in:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Come-along / chain fall operations</td>
</tr>
<tr>
<td>b.</td>
<td>Crane signal ability -knowledge of crane operations (documented written and practical test)</td>
</tr>
<tr>
<td>c.</td>
<td>Use and care of nylon/wire rope slings</td>
</tr>
<tr>
<td>d.</td>
<td>Use and care of rigging hardware (i.e.) cable clips, shackles, sorting hooks,, and tag lines.</td>
</tr>
<tr>
<td>e.</td>
<td>Basic knot tying</td>
</tr>
<tr>
<td>f.</td>
<td>Rigging safety</td>
</tr>
<tr>
<td>g.</td>
<td>Boom truck / fork lift load charts</td>
</tr>
</tbody>
</table>

Level 2 Rigger
In addition to the criteria outlined in Level 1 Rigger, the team member needs two years of rigging in the field and to have demonstrated ability in:

<p>| | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>a.</td>
<td>Determination of weights of loads and sling tension</td>
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<tr>
<td>b.</td>
<td>Determination of center of gravity of loads</td>
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<tr>
<td>c.</td>
<td>Jacking/blocking operations</td>
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<tr>
<td>d.</td>
<td>Sliding/rolling operations</td>
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<tr>
<td>e.</td>
<td>Multi-crane lifts (20T and under)</td>
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<td>f.</td>
<td>Lift chart training</td>
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<tr>
<td>g.</td>
<td>Crawler/truck crane, hydraulic crane, crane on barges (list charts), tower crane, and overhead crane</td>
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<tr>
<td>h.</td>
<td>Blind lift</td>
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<tr>
<td>i.</td>
<td>Mobile crane set up</td>
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<td>j.</td>
<td>Complete Advanced Rigger Training Class</td>
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<tr>
<td>k.</td>
<td>NCCCO Signal person and Rigger certifications</td>
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Potential additional Endorsements for Level 2

### 2.1 Fab Shop Endorsement
- Over head crane operations
- Proper use of chains, plate grabs and magnets
- Rigging, handling and turning over materials

### 2.2 Structural Steel Erection Endorsement
- Pre lift planning
  - Load turning with 1 or 2 crane(s)
  - Lifting beam

### 2.3 Coffer Dam Construction Endorsement
- Heavy lift training (portion of level 3 Master)

### 2.4 Pile Driving Endorsement
- Overhead crane to capacity with required Pre-lift Checklist Form (SD1005)

### 2.5 Marine Endorsement
Please note: At times the complexity of the lift, elevation, center of gravity, etc) is a larger concern than the crane’s capacity. ALL lifts need to be reviewed with both factors in mind-complexity and capacity.
For a description of the above endorsements, see the definition under the Level 3 and 3A and/or review the course outline.

These endorsements will be available on the Qualification Master report and in CMiC but not displayed with hard hat decals.

* Must be involved with rigging operations on a regular basis.
** Time can be accrued from other construction companies but needs to be verified.

Level 3 Rigger
This team member would work for two years in the field (performing rigging functions) after completing all Level 2 requirements (except the Fab Shop and Marine endorsements), and would need to be involved in all of the following operations:

<table>
<thead>
<tr>
<th>Structural Steel Erection</th>
<th>Coffer dam construction</th>
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</thead>
<tbody>
<tr>
<td>a. Buildings</td>
<td>a. Land</td>
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<td>b. Bridges</td>
<td>b. Water (optional)</td>
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<td></td>
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<tr>
<td>Heavy rigging &gt;50 tons</td>
<td>NCCCO Certifications for Signalperson and Rigger maintained</td>
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<tr>
<td>a. Crane lift</td>
<td></td>
</tr>
<tr>
<td>b. Jack/block</td>
<td></td>
</tr>
<tr>
<td>c. Side/roll</td>
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</tr>
<tr>
<td>Multi-crane lifts (over 20 T)</td>
<td>Complete the Master Rigging Training Class</td>
</tr>
</tbody>
</table>

Level 3A Rigger
This team member would possess the same experience and training as described in the Level 3 Rigger, but would also have marine experience as outlined below:
- Barge set up
- Mooring lines and knots
- Barge moving and operations

Level 4-Master Rigger
Will meet all requirements of a Level 3 and demonstrated the following proficiencies.
Has worked with our temporary structural design group on the proper spreader beam selection, rigging plans, steel erection plans, and temporary support of shoring plans.
This team member can be sent to any job to perform any rigging task. He or she would be considered a Master Rigger (Level 4).

The dynamics of rigging are broad and are ever changing. These steps, which require a minimum of five years** to achieve, will require the successful team member to have a real desire to pursue this profession. Candidates will be evaluated throughout the process.

This team member would be considered a “competent person/lift director” in all rigging operations including marine operations.

If you have any questions regarding this classification, please feel free to call the representative for your region:

- Northern New England contact Garth Miller at Cianbro Institute (207) 697-2452
- Southern New England contact Don Smith at (860) 286-3000
- Mid Atlantic Region contact Lee Aylward at (443) 400-8249
- Operation Services, Equipment, Fabrication and Coating contact George Bell at (207) 679-2115 or Pokie Sinclair at (443) 400-8235

Once a team member completes the above listed requirements of a level, s/he would be considered competent for that level and the previous ones, if any.

* Must be involved with rigging operations on a regular basis
** Time can be accrued from other construction companies but needs to be verified
9.5 Appendix E

ANSI Standard B30.16-1973

16-1.2.1.2 Frequent Inspection

Items such as the following shall be inspected for damage at intervals as defined including observation during operation for any damage, which might appear between regular inspections. Deficiencies shall be carefully examined and a determination made as to whether they constitute a safety hazard.


b. Load chain for wear, twists, and broken, cracked or otherwise damaged links. Daily. Check chain also for deposits of foreign material which may be carried into the hoist mechanism.

c. Hooks for deformation, chemical damage, or cracks. Hooks damaged from chemicals, deformatons or cracks or having more than 15 percent in excess of normal throat opening or more than 10 degree twist from the plane of the unbent hook, refer to 16-1.2.3.3 b.3.

Note: Any hook that is twisted or has throat opening in excess of normal indicates abuse or overloading of the unit. Other load bearing components of the hoist should be inspected for damage, daily.

16-1.2.1.3 Periodic Inspection

Complete inspection of the hoist shall be performed at intervals as generally defined in 16-1.2.1.1 b.2 depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of 16-1.2.1.2 and in addition items such as the following. Any deficiencies such as listed, shall be carefully examined and determination shall be made as to whether they constitute a safety hazard.

a. Excessive wear of chain, load sprockets, idler sprockets or chain stretch.

b. Hooks. dye penetrates; magnetic particle or other suitable crack detecting inspection should be performed at least once per year.

c. Hook retaining nuts or collars and pins, welds or riveting used to secure the retaining member should be inspected.

d. Brake Mechanism. Worn, glazed or oil contaminated friction discs, worn pawls, cams or ratchet. Corroded, stretched or broken pawl springs.

e. Worn, cracked or distorted parts, such as: hood blocks, suspension housing, outriggers, hand chain wheels, chain attachments, clevises, yokes, suspension bolts, shafts, gears and bearings.

f. Loose bolts, nuts or rivets.

g. Supporting structure and trolley, if used, shall be inspected for continued ability to support the imposed loads.

h. Warning label required by 16-1.1.1.3 for absence or illegibility.