1 Status

1.1 Update of existing policy, effective 06/03/11.

2 Purpose

2.1 To provide general guidelines for rescue when team members are exposed to the risk of drowning.

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 Corporate Safety Officer or designee.

4 Definitions

4.1 Apron: The area along the waterfront edge of the pier or wharf.

4.2 Bow: Front of vessel.

4.3 Draft: The portion of the vessel that extends from the water line down into the water.

4.4 Freeboard: The portion of the vessel that extends from the water line up out of the water.

4.5 Leeward Approach: Against the wind and/or current.

4.6 Navigable Channels: Any tributary between navigable waters that can support pleasure, commercial or trade vessels (rivers, streams, channels, canal).

4.7 Navigable Waters: Any inland or sea going waterways that can support vessels.

4.8 PFD: Personal floatation device.

4.9 PIW: Person in water.

4.10 Port Side: Left side of vessel.

4.11 Rescue Nets: Net that attaches to gunwale of rescue boats, to aid in PIW rescue.

4.12 Starboard Side: Right side of vessel.

4.13 Steering Speed: The minimum speed necessary to steer the vessel to make forward progress.

4.14 Stern: Rear of vessel.
4.15 Wake: The wave actions caused by a boat or vessel.

4.16 Water Manikin: Training aid for realistic water rescue drills available at Rickers Wharf tool department.

4.17 Windward Approach: With the wind and/or current.

5 Policy

5.1.1 All Cianbro projects working around water will have a site specific water rescue plan and run drills to prove the efficiency of the rescue team. Drills need to be conducted on each site. The team member must be rescued within four minutes from the time the person enters the water.

5.2

6 Responsibilities

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

6.2 Corporate Safety is responsible for maintaining this document.
7 Water Rescue Safety Index

7.1 Planning

Site specific action plan – every job site with work activities around water where team members (or other persons after project) could be subject to drowning must develop a site specific, water rescue plan. See appendix A for sample plan.

7.1.1 Team members must be prepared and know what action to take should someone fall into the water. Rehearsing (drilling) how to react is vital to a successful and safe recovery operation. Rescue personnel must assume the person who is in the water may be unconscious, suffering from shock, and possibly injured.

7.1.2 The key to a successful rescue is preparation, practice and alertness. The action taken in the first few seconds after a team member falls into the water determines the success of the recovery. First actions should be swift and certain. Drills need to be conducted on each site, the team member must be rescued within 4 minutes from the time the person enters the water.

7.1.3 Notifications

- Coast Guard – The Coast Guard requires that any and all barges or vessel that may moor to potentially obstructing the navigable waters, shall notify the Coast Guard. A submitted plan may be required in some areas identifying location of barges and vessels. Contact your local Coast Guard Auxiliary for more information.
- Commercial Vessel – Commercial vessels have the right of way in navigable waters. It is suggested that you inform officials of these vessels, of your activities. Establish a meeting, and utilize a HOTLINE that provides the commercial vessel information of your daily activities.
- Notices to Mariners – Federal regulations require notification to mariners in writing of any activity that may/will disrupt navigable waters. Closures to navigable waters extended in excess of 12 hours require a 30-day prior notification to the Coast Guard for approval. Closures to navigable channels in excess of 12 hours require 60-day notification and approval from the Coast Guard.
- Other agencies may also require notifications such as DEP, EPA, OLISP, Army Corps of Engineers, local low environment authorities, and other agencies pending geographical location.

7.1.4 Activity Planning

Every work activity involving team members or others working around water where the danger exists of drowning, must include a water rescue plan in their activity specific plan. The general project specific plan should be attached (included in) to the activity specific plan. The team member briefing to review the specific activity plan should also include specific PPE hazards and solutions involving the possibility of someone falling into the water. Plus action items like:

- Use a notification signal to alert other team members that there is someone overboard;
- Who is the boat operator and who will be assisting the boat operator.
- Weather/environmental conditions think about wind, current and tide.
- Decide the recovery approach that is most affective for the situation (leeward or windward and starboard or port).
Each site needs to have a rescue boat, at the ready for in the event of PIW. Sites with only one boat will not use the boat as a work boat.

7.1.5 Drill/Exercise
If possible an organized drill/exercise should be held at the project site with local supporting agencies (Fire Department, Coast Guard, Special Rescue Personnel, etc.) If local agencies are not available for drill the project will still conduct drill with team member on site. If conducting drill without local agencies. Site will notify agencies that project will be conducting a drill and the time the drill will be conducted in case the public confuses the drill with an actual PIW. A water rescue manikin is available at Ricker’s Wharf tool department as an aid for water rescue drill. This should also include nighttime rescue if work is planned in the evenings. Conduct a meeting after the drill/exercise to review what went well and what did not. Revise emergency planning as needed to correct any deficiencies.

7.2 Rescue
A team member shall be designated a sufficient number of persons trained to assist in the safe and orderly emergency evacuation and rescue of all persons at the project or who have fallen into the water. The action taken in the first few seconds after a person falls into the water decides the success of the recovery. An alert team member can do much to save the life of someone who might otherwise drown.

7.2.1 Assistance from shore (5 basic steps, do not move to the next step until you are sure that the step before will not work)
- Step one- Announce or signal alarm “Man over board!”
- Step two- Try to reach the team member use your hand or anything else that can be held onto such as a jacket, belt, rope, oar (do not pass the point end to a gaff to the victim)
- Step three- Throw something to the person that will float (life ring, PFD, rope etc.).
- Step four- If the person is to far away, use an object such as boat, canoe, surf board, raft, boogie board or anything else you can row in an effort to reach the person.
- Step five- Go to the person by swimming and only if you are a good swimmer and are trained in lifesaving techniques. If available tie a line to yourself, you may not have the energy to swim back. (Alternate is to go for help).

7.2.2 Rescue by Boat
- Call out repeatedly, “Team member in water!”
- Throw a ring buoy toward the side of the person in the water. (Do not throw the floatation object at the person, it could cause further injury if it hits the individual. Throw the object so that it or its line can drift down to the person while avoiding fouling the line in the propeller).
- Sound five or more blasts on the sound signal horn. This will alert other boats in the area that a danger exists.
- Rescue nets are available from Rock-N-Rescue Valencia, PA 1-(800)346-ROPE & Marine Rescue Technologies Sebastian, FL 1(772)388-1326. Nets can be attached to the gunwale of rescue boat and provide a two to one mechanical factor to pull a PIW into the rescue boat. They can also aid a PIW to self rescue if they are able. NOTE: Rescue net can be used on small rescue boats 14’ to 16’ to help hold onto PIW to the side of the boat and take them to shallow water for rescue. It is not recommended to use nets on smaller boats to pull PIW into boat because of the boat tipping factor.
- On approach of the individual the boat operator must inform the rescue crew on how the recovery will be made and whether it will be accomplished on port or starboard sides. The approach will be influenced by: wind, sea surface conditions, maneuverability of the boat, and maneuvering space restrictions.

7.2.3 Approach by boat
There are two methods of approach:
- The leeward approach (against the wind and current). See Section 9.2
- The windward approach (with the wind and current). See Section 9.2
Use a leeward approach at all practical times! A leeward approach provides the best control of the vessel and protection to the person in the water (PIW). Windward approaches are used in confined spaces or when a leeward approach is impossible.

- If rescue boat is equipped with rescue nets, deploy nets.
- Perform the leeward approach with the bow of the boat facing the greatest force of on coming resistance during the time of pick up. This condition could be wind, current, seas, or any combination of the three
- There will be times when the winds and current are from different directions. Select the heading, which provides the best control on the approach to the PIW. When the actual approach reaches the PIW, care shall be taken to slow the heading and prevent the wake of the boat from overcoming the PIW. When the PIW is on the side of the boat or recovery area of the boat the boat shall be dead in the water. Place the engine in neutral. Make all recoveries into the prevailing weather or sea conditions. Take care not to overrun the PIW or to have so much headway that the boat drifts beyond the PIW. If the PIW does drift beyond the boat, DO NOT BACK UP! The propeller could injure the person.

7.3 Recovery

The conditions of the PIW will dictate the type of recovery procedures used. On the condition of the PIW can be determined (i.e. conscious, unconscious, or injured). The rescue team will select one of the following procedures; generally, the pickup is completed at the lowest point of the freeboard and away from the propellers.

7.3.1 PIW Conscious and Uninjured

- Cast out line or life ring with a line to the PIW.
- Haul in the PIW to the side of the boat or recovery area of the boat.
- If the person needs assistance to board the boat, multiple team members can aid by each placing a hand under the PIW armpit using the other hand to hold onto the boat. Or if boat is equipped with rescue nets place PIW in net and use pull lines to roll PIW into rescue boat. In smaller boats it may be difficult to provide multiple team members to aid in the recovery and still maintain balance to prevent tipping the boat. Use rescue nets to hold onto PIW next to boat to bring them to shallow water for rescue.
- If only one person is available to lift the uninjured person from the water: the PIW shall be positioned facing the boat with their arms extended upwards. The rescue person should reach down with arms crossed and grasp the PIW’s wrists. The rescue member should lift the PIW straight out of the water while simultaneously uncrossing their arms. This should extract the victim from the water in a corkscrew like motion.
- If the freeboard of the boat is too high to reach the PIW, use a line under the armpits in a horse collar fashion. The line should cross the chest, pass under each arm, and up behind the head. Try to pick the PIW straight up and out of the water, dragging the PIW back over may cause injury to him or her. Or if boat is equipped with rescue net. Use rescue nets to roll PIW into boat.

NOTE: A person is light in water due to buoyancy; once the PIW comes out of the water the person becomes “dead weight.” Keep this in mind during recovery, so not to injure yourself or the PIW, or cause tipping of the boat. Rescue nets supply a two to one mechanical factor when bringing a PIW into rescue boat.

7.3.2 PIW Unconscious or Injured

- Quickly deploy a surface swimmer donned with a Personal Floatation Device (PFD) and tending line. Depending on water temperatures a wet or dry suit may be required.
- Swim to the PIW and if he or she is face down turn the PIW over making motions slow and easy.
- Wait for the EMS to arrive.
- If conditions do not allow for EMS use floatation equipped stokes litter to recover the PIW into the boat. This condition shall be used ONLY when the PIW is seriously injured and seas are calm.
7.4 Survival Techniques

7.4.1 Hypothermia – Hypothermia is a condition in which the body loses heat faster than it can produce it. This causes a dangerous reduction of the body’s inner temperature. Hypothermia results from exposure to wind and wetness. Victims of hypothermia may become blue-gray in color. Violent shivering develops which may give way to muscle spasms and even loss of the use of arms and legs. Confusion and drunken behavior also indicate that a person may be hypothermic.

- To protect yourself from hypothermia, avoid the conditions that cause it. Dress warmly and stay dry. Wear a hat. Put on rain gear before it rains and wear a wool jacket. Wool traps body heat even when wet. Know the effects which wind has on cold weather. It may be 40 degree’s (F) outside with the sun shining, but a 10-mph wind lowers the wind-chill temperature to 28 degree’s (F).

- Survival in cold water depends on many factors. Temperature of water, body size, fat and activity in the water. Large people cool slower than small people do and children cool faster than adults do.

7.4.2 Increase Chance for Survival

- Do not discard any clothing because it helps trap the body's heat.

- Do not move around unnecessarily, swimming or treading water, a person will cool about 35% faster than when remaining still. The average person wearing light clothing and a PFD may survive 2.5 to 3 hours in 50-degree waters by remaining still. Their survival time can be increased considerably by getting as far out of the water as possible and covering their head.

- Keep your head and neck out of the water. Most of your heat loss is through your head, neck, groin and sides.

- Assume the fetal, or Heat Escape-Lessening Posture (HELP).

- If there are several people in the water, huddling close, side to side in a circle will preserve body heat. Placing children in the middle of the circle will preserve body heat. Placing children in the middle of the circle will lend them some of the adult’s body heat and extend their survival time.

- Get onto anything that floats (get out of the water).

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7.5 Boating Safety Education Requirements

7.5.1 Cianbro Small Boat Operator Certification: In order to operate a Cianbro boat you must be certified by Cianbro.

7.5.2 Other Boating Safety Certifications That May Be Needed

- Some states such as Connecticut, Maryland and New York have boating safety education laws designed to assure that the younger generation of boaters have fundamental knowledge of boating rules and safety and that eventually all boat operators will be operating their boats with a basic level of boating education. Maryland law also imposes the requirement for persons convicted of certain boating violations, to successfully complete a boating safety education course, regardless of the age of the operator.
• A course 8 to 10 hours in length or an equivalency examination is required in order to receive a valid certificate to operate a powerboat in Maryland. Information on Maryland requirements can be obtained by calling (410) 260-3280 or the US Coast Guard 1-800-336-BOAT.
• A course 8 to 10 hours in length or an equivalency examination is required in order to receive a valid STATE OF CONNECTICUT certificate of personal watercraft operation. Information on Connecticut requirements can be obtained by calling Connecticut Department of Environmental Protection Marine Headquarters 333 Ferry Rd., Old Lyme, CT 06791 (860)434-8638 or the US Coast Guard 1-800-336-BOAT.

7.5.3 Other states may also have boating safety laws and special requirements.

7.6 Safety At Home
All states have different rules and regulations on safe boating. PLEASE: check the safe boating requirements in the state you are operating any watercraft.

8 Budget / Approval Process
8.1 It is the responsibility of each jobsite to procure and provide all materials and PPE required and to provide necessary training.

9 Related Documents
9.1 See attachments.
Sample
Project Specific

Cold Water Rescue Plan

**Description of Job:** Cut out a section of 24” pipe out of the seawater out-fall line coming out of building 2. We will be replacing it with a new spool piece that comes with some type of flow meters that has to be in place by May 1st. Then we will demo out the existing steel structure around it and replace it with a new stainless platform and pipe support.

**Proposed Rescue Plan:** We will have a boat and motor ready for use in the water during work activities. We will start the motor twice a day to insure that it is in running condition. We will start it before start of each workday and again after lunch (if it has not been used that day). The boat will be tied up at a nearby pump house which has ladder access down to the water. We will have a life ring buoy with 90 feet of rope hanging on the nearby handrail adjacent to the job area. All team members working in this area will be required to wear a Coast Guard approved life vest with an attached whistle. All team members will also be tied off to a ratline that we will install. We will be following our Cianbro Safety Policy and Procedure for working over near water. This plan will be attached to the activity plan. We also plan to have plant radios available for use. This will give us direct contact with the building 2 operators and their emergency response team. One radio will be placed in the on-site Cianbro trailer and one at the work location.

Our daily plan will be to contact the local Coast Guard station to keep them informed of our work activity around water. We will call them again at the end of our shift to let them know that we have stopped work for the day. In the event of a person over board, our first response will be to begin our own rescue procedures using the life ring and the rescue boat. Our procedure will include using the ring and/or boat to pull the person to the ladder so she or he can climb up. If the person is unable to climb up on their own, a tripod will be used to hoist them up. We will not attempt to pull the team member into the boat as this may create a capsizing situation. We will start additional rescue procedures by calling the Coast Guard. Once the team member is out of the water we will quickly get them inside one of the buildings with heat and nearby blankets. We will then call the local fire department to get medical help for the team member if necessary.

**Access:** The job site, for the most part, is an all-flat service area. You can access the work area from a number of different ways – through buildings and by the walkway around building 2. We plan to use a ladder to access down to the ocean floor when we need to and also to get down to working platform. The work platform will be constructed of planks, new and existing steel. (Attached drawing shows diagram of sit and work area).

**Scope of Work:** Go over job with team members by using our activity plan to assure that all team members are comfortable with the scope of work. Plans are to prefab most of the new platform during the week before the shutdown. Install new drop legs so, along with existing steel, we can make a working platform. Then we will unbolt flanges on the 24” pipe and take out the section needed to install a new spool piece. Once the new spool piece is installed we will then continue to finish out the steelwork. All of the steelwork will be set with our fork truck with an attached lifting boom. Once the job is complete we will demobilize the area.
Leeward/Windward Rescue Approach Method

Rescue personnel must select an approach that is suitable for the existing conditions. There are two basic approaches:

- A leeward approach - against the wind and current
- A windward approach – with the wind and current

**Leeward Approach:**

Perform the leeward approach with the bow facing into the greatest force of oncoming resistance at the time of pickup. This may be the wind, current, seas, or any combination of the three. There are times when the wind and current are from different directions. Select the heading, which will best ease the approach. The approach must be made rapidly but as the boat nears the person you must slow the boat and reduce your headway. The person in the water should be next to the recovery area on the boat and the boat should be dead in the water. Place the engines in neutral. When the person is overboard alongside the boat, have a crewmember make the recovery. Make all pick ups into the prevailing weather and sea conditions. Take care not to overrun the person overboard or to have so much headway on that the boat drifts beyond the person overboard. If the person in the water does drift aft of the boat, do not back down to effect the recovery. The propeller could injure the person.

Placing person in the water on leeward side of boat on approach

**Windward Approach:**

Perform the windward approach when the wind is coming from behind the boat. Use the windward approach when the person overboard is in a confined space or a leeward approach is impossible. However, avoid a situation where the boat can not turn into the wind. The operator must maneuver into a position upwind and up current from the person overboard, place the engine in neutral and drift down to the person. Ensure that the boat drifts so it places the person overboard along the “recovery” side but do not allow the boat to drift over the person.