



Specification

Title: Wire Sawing
Specification No: CSDA-WS-106
Effective Date: Jun 1, 1998
Revised: Sept 24, 2019

1. Codes, Standards & Definitions

- 1.1. Occupational Safety and Health Administration - Safety and Health Standards Digest Construction Industry. (OSHA - 3149/1996).
- 1.2. The cutting contractor shall adhere to all applicable safety guidelines in accordance with federal, state, and local ordinances.
- 1.3. Definitions:
 - 1.1.1. Owner – Legal owner of the structure or object being cut and consequently, the owner of the holes/openings created by the cutting contractor.
 - 1.1.2. Contracting agency – The contractor hired directly or indirectly by the owner that is sub-letting the cutting requirements to a cutting contractor.
 - 1.1.3. Cutting contractor – The contractor hired to perform the actual cutting operation.
 - 1.1.4. Slurry – The liquid material comprised of water and cuttings generated when the owner's structure is cut using water as a coolant.
 - 1.1.5. Embedments – Objects within or immediately adjacent to the cutting area that could be damaged or severed during cutting. Examples of embedments are reinforcing rods, cables, and utilities such as electrical power and telephone lines.
 - 1.1.6. Holes/openings – The voids resulting from the core drilling/cutting operations of the cutting contractor. Ownership of the holes/openings rests with the owner, not with the cutting contractor.

2. Prerequisites

- 2.1. Normal and customary equipment used on wire saw job include:
 - 2.1.1. Provided by cutting contractor:
 - 2.1.1.1. Power unit.
 - 2.1.1.2. Wire saw assembly.
 - 2.1.1.3. Control station, or remote.
 - 2.1.1.4. Idler wheels and universal brackets.
 - 2.1.1.5. Diamond wire.
 - 2.1.1.6. Safety shielding for wire, drive wheel, and red barricade tape.
 - 2.1.1.7. Core drilling equipment, roto hammers, bits, anchors, and miscellaneous hand tools.
 - 2.1.2. Provided by owner or contracting agency:
 - 2.1.2.1. Plastic sheeting.
 - 2.1.2.2. Scaffolding for personnel access.
 - 2.1.2.3. Storage containers for water or slurry.
 - 2.1.2.4. Shoring, scaffolding, rigging, and rigging equipment for managing the piece to be removed.
 - 2.1.2.5. Sump area and sump pump.
 - 2.1.2.6. Disposal of all waste.

- 2.2. It is the responsibility of the owner or contracting agency to have the location of the cut area to be reviewed, approved, and have all cut lines clearly marked prior to the start of any cutting operations. Additionally, it is the responsibility of the owner or contracting agency to clearly mark the location and all types of embedment(s) both on the cut lines and near the cutting area.
- 2.3. It is the responsibility of the owner or contracting agency to provide water and electrical power for the cutting contractor.
- 2.4. It is the responsibility of the owner or contracting agency to provide fall protection in accordance with OSHA standard 1926.501(b) for all holes/openings created by the cutting contractor.
- 2.5. It is recommended that a pre-job meeting be held with the owner or contracting agency to determine the following information relating to steel reinforcing bar or other embedments:
 - 2.5.1. Are there steel reinforcing bars or other embedments within the structure to be cut?
 - 2.5.2. What is the size and location of the steel reinforcing bars or other embedments?
 - 2.5.3. Is it permissible to cut the steel reinforcing bars or other embedments in the course of the sawing operation?
 - 2.5.4. Is it possible to lay out the cut line in such a way that minimizes or avoids the cutting of the steel reinforcing bars or other embedments?
 - 2.5.5. After cutting begins is it permissible to move the cut line to stop splitting a steel reinforcing bar or embedment?
 - 2.5.6. Review the CSDA Tolerance document to clarify cutting expectations, CSDA-TL-001, U.S. Tolerances for Cutting and Coring.
- 2.6. Any scaffolding required by the cutting contractor should be designed, provided by, and erected by competent personnel and according to code requirements.
- 2.7. The owner or contracting agency must determine if there are utility lines contained within, adjacent to, or secured to the structure being cut. If utility lines are present as described, the owner or contracting agency must take the necessary action to have all services for these utilities cut off. If the utilities are buried, the owner or contracting agent must call the appropriate agency for accurate utility location as state or local regulation may require. The cutting contractor must be named on the permit.
- 2.8. Embedments:
 - 2.8.1. If the owner or contracting agency directs that an embedment be intentionally cut whether or not service is turned off, then the owner and contracting agency shall protect the cutting contractor from all claims for damages arising from the cutting of the embedment.
 - 2.8.2. If the layout provided by the owner or contracting agency causes an embedment to be unintentionally cut, then the owner and contracting agency shall protect the cutting contractor from all claims for damages arising from the cutting of the embedment.
- 2.9. It is the owner or contracting agency's responsibility to provide protection to the person(s) and property from potential water or slurry damage. The cutting contractor shall not be deemed an owner or generator of slurry; and the owner and contracting agency shall protect the cutting contractor from all loss and expense associated with such claims.

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- 2.10. The owner or contracting agency shall be responsible for providing proper, safe, and appropriate disposal of slurry:
 - 2.10.1 Collection and disposal of the slurry must be planned for by agreement with the owner or contracting agency before work commences.
 - 2.10.2 Dust to be controlled to meet the OSHA Respirable Crystalline Silica (RCS) standard.
- 2.11. Adequate safety provisions must be provided by the owner or contracting agency to protect the operator's work area; as well as below, above, and adjacent to the area being cut.
 - 2.11.1. The owner or contracting agency shall provide safe access to and from the work area.
 - 2.11.2. Barricades, cones, red danger tape or other devices shall be used as appropriate to keep unauthorized people out of the work area and shall be provided by the owner or contacting agency.
- 2.12. The owner or contracting agency shall be responsible for crane, rigging, and for designing and installing any bracing or shoring required to make sure that the material being cut free is supported in a safe and effective manner. This is to ensure that when the structure is cut free it is retained, in place, and causing no damage to persons, equipment, or adjacent structures.
- 2.13. The owner or contracting agency shall isolate or protect the other structures or facilities that are part of or adjacent to the structure being cut.

3. Sawing Set-up Procedures

Except when the cutting contractor determines that any of the following steps do not apply to a particular work or that other steps are appropriate:

- 3.1. Core drill the wire access and rigging holes into the concrete structure in accordance with the work plan as required for wire access and/or work piece removal.
- 3.2. Utilize the sump area for water/slurry collection and secure the wire saw in a proper location. Place/drape plastic sheeting or wooden splash shield around drive wheel and idlers, if required, to minimize or contain water dripping or slinging from equipment.
- 3.3. Place the saw control station at a location which allows the operator to view as much of the drive wheel and cutting area as possible, but not in line with the drive wheel or wire (unless appropriate additional safety precautions are taken).

4. Cutting Operation

Except when the cutting contractor determines that any of the following steps do not apply to a particular work or that other steps are appropriate:

- 4.1. The cutting contractor shall:
 - 4.1.1. Inspect diamond wire for the condition of the wire connectors as well as the base cable.
 - 4.1.2. Ensure the proper splicing or joining of the diamond wire ends when forming a loop (pre-twisting wire as required).
 - 4.1.3. As appropriate, place partitions or screens between wire operating area and the personnel work area to minimize the chance of any flying objects contacting any work site personnel.
 - 4.1.4. Stop wire rotation prior to anyone entering the vicinity of the wire operation for any reason such as wire guide adjustment or water spray adjustment.
 - 4.1.5. Allow no personnel to be in-line with the wire while rotating (unless appropriate additional safety precautions are taken).

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- 4.1.6. On applications requiring a bottom horizontal cut, sequence the cut or shore the work piece or install shims such that the weight of the work piece is prevented from jamming, pinching and/or crushing the diamond wire.
 - 4.1.7. Never allow the wire saw to run unattended.
 - 4.1.8. The wire saw should be operated in accordance with the saw manufacturer's specifications.
 - 4.1.9. Notify the owner or contracting agency when the hole/opening is completed so that they can provide fall protection in accordance with OSHA standard 1926.501(b).
- 4.2. Wire and Equipment Inspection: periodically inspect wire and wire connectors. Refer to CSDA TST-162 Wire Sawing Safety.

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