

SECTION 52

DEMOLITION



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Demolition Safety	
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<u>Rev Date</u>	<u>Rev Seq</u>	<u>Description</u>	<u>Revised By</u>
07/27/2015	1	Review and add "Make Safe" for electrical, AV, IT, Telecom conduit that penetrates ceiling or floor	Bill McCormick
08/04/2015	2	Omitted the Houston Tx Information	Bill McCormick

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1. Applicability

This standard applies to MAPP Construction and its subcontractors on projects involving demolition activities.

2. Purpose and Scope

The purpose of this standard is to establish the minimum safe work practices for manual and mechanical demolition activities performed on MAPP projects. Any subcontractor performing demolition activities shall have a work procedure that meets or exceeds this MAPP policy.

3. Implementation

Implementation of this standard is the responsibility of the MAPP project manager and superintendent directing activities of the facility, site, or project location.

4. Requirements

4.1. Preparatory and General Operations

**PRIOR TO BEGINNING WORK ALL ELECTRICAL (HIGH / LOW VOLTAGE)
MUST BE IDENTIFIED AND “MADE SAFE” ACCORDING TO MAPP’S ELECTRICAL
SAFETY POLICY AND PROCEDURE**

- 4.1.1. Appoint a Competent Person to conduct a pre-demolition engineering survey to determine the condition of the framing, floors, walls, and possibility of unplanned collapse of any portion of the structure. Survey adjacent structures in the same manner and make a written record of these surveys.
- 4.1.2. Determine if any asbestos, lead, or other hazardous materials are present within the structure. If so, refer to the appropriate subcontractor for the proper abatement or work procedure.
- 4.1.3. Notify, in advance, any utility companies involved, and require that all electric, gas, water, steam, sewer, or other service lines are shut off or otherwise controlled.
- 4.1.4. Protect and relocate, as needed, any utility lines providing utilities that it may be necessary to maintain during demolition.
- 4.1.5. If demolition of multiple floors include floor or ceiling penetrations, you must visually inspect all conduits for security. If ceiling grid is to be removed, inspect and/or secure all visible vertical unsecured conduit(s) that penetrates the top of wall. As a secondary assurance, the demolition work shall consist of the

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removal approximately one foot of drywall, wall board etc... utilizing the appropriate tool at floor level for inspection of any conduit that may not be visible during the ceiling/top of wall inspection. Caution must be used to lessen the impact of wall as to NOT vibrate and/or "jar" wall. This conduit shall also be secured to prevent falling through penetration. All applicable conduit locations must be marked with a vertical mark on all side(s) of wall to be demolished to indicate potential hazard. Once hazard is secured, the vertical demarcation shall be (X)'d out by a supervisor to indicate hazard is mitigated. The demolition contractor shall take appropriate precautions when demolishing this section of structure.

- 4.1.6. Determine if any type of hazardous chemicals, gases, explosives, flammable materials, or other dangerous substances have been used in any tanks, pipes, or other equipment. If so, perform testing and purging prior to the start of demolition activity.
- 4.1.7. Refer to Sec – 39 Fall Protection for wall/floor opening and fall protection requirements.
- 4.1.8. Brace or shore walls and floors of structures that have been damaged by fire, flood, explosion, or other cause if employees will be required to work within the structure.
- 4.1.9. Barricade and provide warning signs for areas into which material is dropped through holes in floors without the use of chutes. The barricade must be at least 42 inches high and 6 feet back from the projected edge of the opening above. Do not permit removal activities on these lower levels until debris handling ceases above.
- 4.1.10. Protect employee entrances to multi-story buildings with sidewalk sheds or canopies. Protection must extend a minimum of 8 feet from the face of the building, and 1 foot on each side of the entrance.
- 4.1.11. Conduct daily inspections prior to the start of work to identify and correct unsafe conditions.
- 4.1.12. Conduct documented weekly inspections.

4.2. Stairs, Ladders, and Passageways

- 4.2.1. Designate stairways, passageways, and ladders that are to be used for access, and keep other access ways entirely closed off at all times.

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- 4.2.2. Inspect all stairs, passageways, and ladders frequently, and maintain them in a clean, safe condition.
- 4.2.3. Require that adequate natural or artificial lighting is provided in areas being used, according to the table below.

Foot-Candles	Area or Operation
5	General construction area lighting
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas
5	Indoors: warehouses, corridors, hallways, and exit ways
Foot-Candles	Area or Operation
5	Tunnels, shafts, and general underground work areas. (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights are acceptable for use in the tunnel heading)
10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, barracks or living quarters, locker or dressing rooms, mess halls, and indoor toilets and workrooms.)
30	First aid stations, infirmaries, and offices.

4.3. Chutes

- 4.3.1.1. Do not drop material to any point lying outside the exterior walls of the structure unless the area is effectively protected.
- 4.3.2. When using chutes, require that:
 - 4.3.2.1. All material chutes at an angle of more than 45 degrees from the horizontal are totally enclosed.

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- 4.3.2.2. Closures are provided for openings at floor levels where materials are inserted.
 - 4.3.2.3. The chute openings do not exceed 48 inches in height measured along the wall of the chute.
 - 4.3.2.4. A substantial gate is installed at or near the discharge end of the chute.
 - 4.3.2.5. A competent employee is assigned to control the gate and the backing and loading of trucks.
 - 4.3.2.6. The discharge end of the chute is securely closed off when operations are not in progress.
 - 4.3.2.7. Chute openings are protected by a substantial guardrail approximately 42 inches in height (Sec - 39 Fall Protection).
 - 4.3.2.8. Any space between the chute and the edge of openings in the floors through which it passes are solidly covered over.
 - 4.3.2.9. A stop-log, measuring at least 4 inches by 6 inches, is installed at the edge of each chute where the material is dumped from mechanical equipment or wheelbarrows.
- 4.4. Removal of Materials Through Floor Openings
- 4.4.1. Do not cut an opening in a floor for material disposal larger than 25 percent of the total floor area unless the lateral supports of the removed floor remain in place.
 - 4.4.2. Shore all floors that are weakened or made unsafe by demolition operations to safely carry the maximum intended imposed load.
- 4.5. Removal of Walls, Masonry, and Chimneys
- 4.5.1. Do not permit employees to work on top of a wall when weather conditions constitute a hazard.
 - 4.5.2. Do not allow masonry walls to fall on floors in quantities that exceed the safe carrying capacities of the floors.
 - 4.5.3. Provide ladders or walkways to allow employees to safely reach or leave any scaffold or wall.

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- 4.5.4. Do not permit any wall section greater than one story in height to stand alone without lateral bracing, unless the wall was originally designed and constructed to stand alone, and is in a condition safe enough to be self-supporting.
 - 4.5.5. Leave all walls in stable condition at the end of each shift.
 - 4.5.6. Do not cut or remove any structural or load-supporting members on any floor until all stories above have been demolished and removed. This does not prohibit the cutting of floor beams for material disposal, provided that the shoring and flooring requirements outlined elsewhere in this SMS are met.
 - 4.5.7. Plank floor openings solid within 10 feet of any wall being demolished, unless personnel are kept out of the area below.
 - 4.5.8. In buildings of "skeleton-steel" construction, the steel framing may be left in place during demolition of the masonry. If this is done, clear all steel beams, girders, and other supports of loose material as the demolition progresses downward.
 - 4.5.9. Provide planking as described in the next subsection for workers engaged in steel razing when floor arches have been removed.
 - 4.5.10. Dismantle steel construction column-length by column-length, and tier by tier.
 - 4.5.11. Do not demolish retaining walls that support earth or adjoining structures until the earth has been properly braced or structures have been properly underpinned.
 - 4.5.12. Require that walls used as retaining walls for piling debris are capable of supporting the imposed load.
- 4.6. Manual Removal of Floors
- 4.6.1. Remove all debris and materials from floor arches and adjacent areas for a distance of 20 feet before beginning demolition.
 - 4.6.2. Barricade areas directly beneath floor arches that are being demolished, and do not allow employees in the area.
 - 4.6.3. Provide planking, not less than 2 inches by 10 inches full-size undressed, for employees to stand on while breaking down floor arches between beams.
 - 4.6.4. Position the planks to provide a safe support for the workers should the arch between the beams collapse. Allow no more than 16 inches (40 centimeters) of open space between the planks.

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- 4.6.5. Require that openings cut in a floor extend the full span of the arch between supports.
 - 4.6.6. Provide walkways at least 18 inches wide, made of planks at least 2 inches thick, when necessary to enable workers to reach areas without walking on exposed beams. Install guardrails in accordance with Sec-39 – Fall Protection.
 - 4.6.7. Lay planks over solid bearings with the ends overlapping at least 1 foot.
 - 4.6.8. Install stringers of adequate strength to support the walkway planks.
 - 4.6.9. Require that the ends of the stringers be supported by girders or beams, and not by floor arches alone.
- 4.7. Removal of Walls, Floors, and Material with Equipment
- 4.7.1. Do not use mechanical equipment on floors or working surfaces unless they are of sufficient strength to support the imposed load.
 - 4.7.2. Install curbs or stop-logs at floor openings to prevent equipment from running over the edge.
 - 4.7.3. Require that all mechanical equipment comply with Equipment Operations policy.
- 4.8. Storage of Debris
- 4.8.1. Do not exceed the allowable loads when storing materials on floors.
 - 4.8.2. Do not remove wooden floorboards more than one floor above grade for storage of debris, and require that falling material does not endanger the stability of the structure.
 - 4.8.3. Do not remove floor arches more than 25 feet above grade to provide a storage area for debris, and require that floor arch removal does not endanger the stability of the structure.
 - 4.8.4. Leave wood beams in place to brace interior walls or free-standing exterior walls until other support can be installed to replace them.
 - 4.8.5. Block off storage space into which material is dumped, except for openings necessary for removal of the material.

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4.8.6. Keep openings closed at all times when material is not being removed.

4.9. Mechanical Demolition

4.9.1. Designate a competent person to perform continuing inspections as the work progresses to detect hazards resulting from weakened or deteriorated floors or walls, or loosened material.

4.9.2. Do not permit employees to work in areas where such hazards exist until they are corrected by shoring, bracing, or other means.

4.9.3. Do not permit anyone in any area where potential hazards exist when balling, clamming, or grappling is being performed. Allow only those workers necessary for the performance of operations in these areas at any other time.

4.9.4. Require that the weight of the demolition ball does not exceed 50 percent of the crane's rated capacity, based on maximum boom length and angle at which the ball will be used, or 25 percent of the nominal breaking strength of the line by which it is suspended, whichever is less.

4.9.5. Keep the crane boom and loadline as short as possible.

4.9.6. Attach the ball to the loadline using a swivel-type connection to prevent twisting of the loadline, and with a positive means to prevent the ball from becoming accidentally disconnected.

4.9.7. Remove all roof cornices or other ornamental stonework before pulling walls over.

4.9.8. Cut all affected steel members free prior to pulling walls over.

5. Documentation Summary

The following information will be maintained in the project file:

- Pre-demolition Engineering Survey.
- Qualifications of Demolition Competent Person.
- Hazardous Material Survey Documentation.

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- Utility Verifications.
- Weekly Demolition Safety Inspection.