Steps in Reviewing the Hazards Associated with Working at Heights

**Risk Assessment**

- **Identify potential Fall Hazards using the Preplanning Checklist**

  **Hazard Analysis**
  - Exposure avoidance and control techniques

  **Fall Hazard Controls**
  - Employee awareness & communication (preplanning and coordination), Protection systems

  **Fall Restraint**
  - Guard rails, travel restraint systems

  **Fall Arrest**
  - Personal arrest systems, safety nets, lifeline systems – vertical and horizontal walk line requirements

  **Anchor Requirements**
  - Restraint versus arrest, temporary versus permanent

  **Procedure Development**
  - Safe Work Practice Guidelines

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**Build It Smart**

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Build It Smart
Recognizing Hazards

Consider Hazardous Falls

⇒ Falls at the same level
⇒ Falls against an object
⇒ Falls from vehicles/equipment
⇒ Falls from stairs, ladders and ramps
⇒ Falls from one work level to another
⇒ Falls into/through openings

Underlying Causes of Falls

⇒ Reaching beyond the work surface
⇒ Poor housekeeping
⇒ Walking off unguarded edge
⇒ Carrying objects
⇒ Slippery surfaces
⇒ Climbing onto or from work surface
⇒ Using machinery or equipment
⇒ Weather conditions: heat, rain, ice, and/or winds
Safe Work Practice Guidelines

Eliminate Crane Collapse, Failure or Tip-Over
Use qualified operators
Use qualified signal persons
Do not over-load
Travel only within manufacture’s limits
Inspect parts daily
Refuse to use damaged crane
Place outriggers on solid support

Eliminate Derrick Collapse or Failure
Use qualified operators
Use qualified signal persons
Do not over-load
Ensure derrick flooring is adequately fastened
Inspect all parts daily
Refuse to use damaged derrick

Eliminate Ladder Collapse or Failure
Inspect daily
Do not over-load
Keep feet of ladder at even levels
Use the proper ladder for the job

Eliminate Scaffold Collapse
Inspect:
All pieces before erecting
All components before getting on any scaffold
Over-head anchors before each shift

Do:
Build base on level, solid floor
Consider and construct for wind loads
Follow erection procedures and manufacturers specifications
Install bracing and outriggers

Do Not:
Over-load
Climb on bracing
Use damaged or faulty planks or other components

Eliminate Scissor Lift & Boom Supported Work Platform Tip-Over or Collapse
Do not over-load
Be aware of all sources of electrical power
Be alert for surface penetration covers (continued on page 12)

Precast Concrete Erection: guard rail system—safety net system—personal fall arrest system—fall protection plan
Roofing Work: guard rail system—safety net system—personal fall arrest system—safety monitor system—warning line with guard rail or safety net or personal fall protection or fall restraint system
Unprotected Sides and Edges: guard rail system—safety net system—personal fall arrest system—fall restraint system
Ramps, Runways, Walkways: guard rail system—personal fall arrest system—safety net system
Wall Openings: guard rail system—safety net system—personal fall arrest system—fall restraint system

Fall Protection Options for Hazardous Exposures

Precast Concrete Erection: guard rail system—safety net system—personal fall arrest system—fall protection plan
Roofing Work: guard rail system—safety net system—personal fall arrest system—safety monitor system—warning line with guard rail or safety net OR personal fall protection or fall restraint system
Unprotected Sides and Edges: guard rail system—safety net system—personal fall arrest system—fall restraint system
Ramps, Runways, Walkways: guard rail system—personal fall arrest system—safety net system
Wall Openings: guard rail system—safety net system—personal fall arrest system—fall restraint system
Safe Work Practices Guidelines

**Ladders**

- Keep angle of the ladder within prescribed limits
- Secure ladders to prevent slipping
- Where possible, secure top and or bottom of ladder
- Do not splice together short ladders to make a longer ladder
- Destroy and discard damaged ladders
- When in traffic areas barricade or tape off the area
- Do not use the top two steps on step ladders

**Eliminate Slipping & Tripping Hazards**

- Maintain good housekeeping
- Look for and remove nuts, washers, cords, rope & tools
- Keep loose parts and pieces in secure containers or non-hazardous area
- Clean up and properly dispose of left over materials
- Pay attention to work surfaces; for mud, sand, water or ice
- Clean up oil, grease, paint, fireproofing, & dust

**Eliminate Electrical Hazards**

- Instruct crew members on location of all sources of electrical power and proper work practices, including that equipment must be grounded or double insulated
- Tag, barricade and post warning signs in hazardous areas
- Watch distances when transporting ladders, or scaffolds, or other materials
- Flag roof mounted weather heads to prevent tripping or falling over power lines
- Prevent initiation of sparking, corona, or voltage collapse
- Eliminate work areas where electrical hazards exist
- Use protective equipment

**Eliminate Falling Objects**

- Maintain good housekeeping
- Dispose of left over materials
- Secure materials, tools, parts on hoists
- Eliminate over-head work of welders and burners—when unavoidable every effort to catch the fire must be made
- Preplan for catching slag and fire

**Eliminate Falling Through Roofs or Floor Openings**

- Barricade holes before removing covers
- Use appropriate fall protection equipment
- Highlight all barricade hazards with signs
- Cover holes with clearly marked covers

**Eliminate Unguarded Edges Hazards**

- Preplan for leading edge work at unprotected edge, side, or openings in floors, roofs, ramps, or runways where there is no guard rail system in place and the edge is not guarded
- Use appropriate fall protection equipment

**Minimum Safe Distance From High Voltage**

<table>
<thead>
<tr>
<th>Power line voltage Phase to phase (kV)</th>
<th>Minimum safe clearance (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 or below</td>
<td>10</td>
</tr>
<tr>
<td>Above 50 to 200</td>
<td>15</td>
</tr>
<tr>
<td>Above 200 to 350</td>
<td>20</td>
</tr>
<tr>
<td>Above 350 to 500</td>
<td>25</td>
</tr>
<tr>
<td>Above 500 to 750</td>
<td>35</td>
</tr>
<tr>
<td>Above 750 to 1,000</td>
<td>45</td>
</tr>
</tbody>
</table>