Activity Hazard Analysis (AHA)

- EM 385 2008 01.A.13 FIGURE 1-2

CONTRACTOR REQUIRED AHA TRAINING

Activity Hazard Analysis (AHA)

Activity/Work Task:	Overall Risk Assessment Code (RAC) (Use highest code)					
Project Location:	**Risk Assessment Code (RAC) Matrix**					
Contract Number:	**Severity**	**Probability**				
Date Prepared:		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title):	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	**Step 1**: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.	RAC Chart				
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible	E = Extremely High Risk				
		H = High Risk				
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.	M = Moderate Risk				
		L = Low Risk				

Job Steps	Hazards	Controls	RAC

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements

The **AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person's**

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Activity Hazard Analysis (AHA)

- **AHAs:**
  - Risk Assessment Tool
  - Defines the Activity or Work to be Performed
  - Identifies Hazards
  - Establishes Controls to Reduce the Hazard to an Acceptable Risk Level
  - Living Document
    - ✓Changes with Site Conditions or Operations
    - ✓Changes of competent/qualified personnel

WHAT ARE WE TRYING TO AVOID ON OUR JOB SITES?

AHA'S PRE-PLAN ACTIVITES TO AVOID UNPLANNED EVENTS

Contractor Required – AHA (New Format)

Activity Hazard Analysis (AHA)

Activity/Work Task:	Overall Risk Assessment Code (RAC) (Use highest code)
Project Location:	**Risk Assessment Code (RAC) Matrix**
Contract Number:	
Date Prepared:	
Prepared by (Name/Title):	
Reviewed by (Name/Title):	

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Job Steps	Hazards	Controls	RAC

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements

The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person's

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Contractor Required - AHA

- **COE EM 385-1-1, para 01.A.13.a: AHAs shall define the activities being performed and identify the work sequences, the specific anticipated hazards, site conditions, equipment, materials and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk.**

- **COE EM 385-1-1, para 01.A.13.b: Work will not begin until the AHA for the work activity has been accepted by the Government Designated Authority (GDA) and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representative at preparatory and initial control phase meetings.**

- **COE EM 385-1-1, para 01.A.13.c: Identify the names of the Competent/Qualified person(s) required for a particular activity as specified by OSHA and EM 385-1-1. (i.e., Excavation, Fall Protection, Scaffolding, etc.)**

- **COE EM 385-1-1, para 01.A.13.d: AHAs shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified personnel. **Living document****

Develop Site Specific AHAs
Six Step Process

- **Step 1:**
  - Identify: **Definable Features of Work**
    - ✓ Reference
      - Contractor Quality Control Plan
      - Contractor Project Schedule
        - Subcontractors and suppliers working on the project shall also contribute in developing an accurate "Project Schedule".
  - Within each "Definable Features of Work" there may be other sub-phases of work to complete the "Definable Features of Work" such as
    - ✓ Set-up/Demobilization of office trailers
    - ✓ Staging of construction materials
    - ✓ Demolition of walls, HVAC systems, etc.
    - ✓ Asbestos/Lead abatement activities

Definable Features of Work

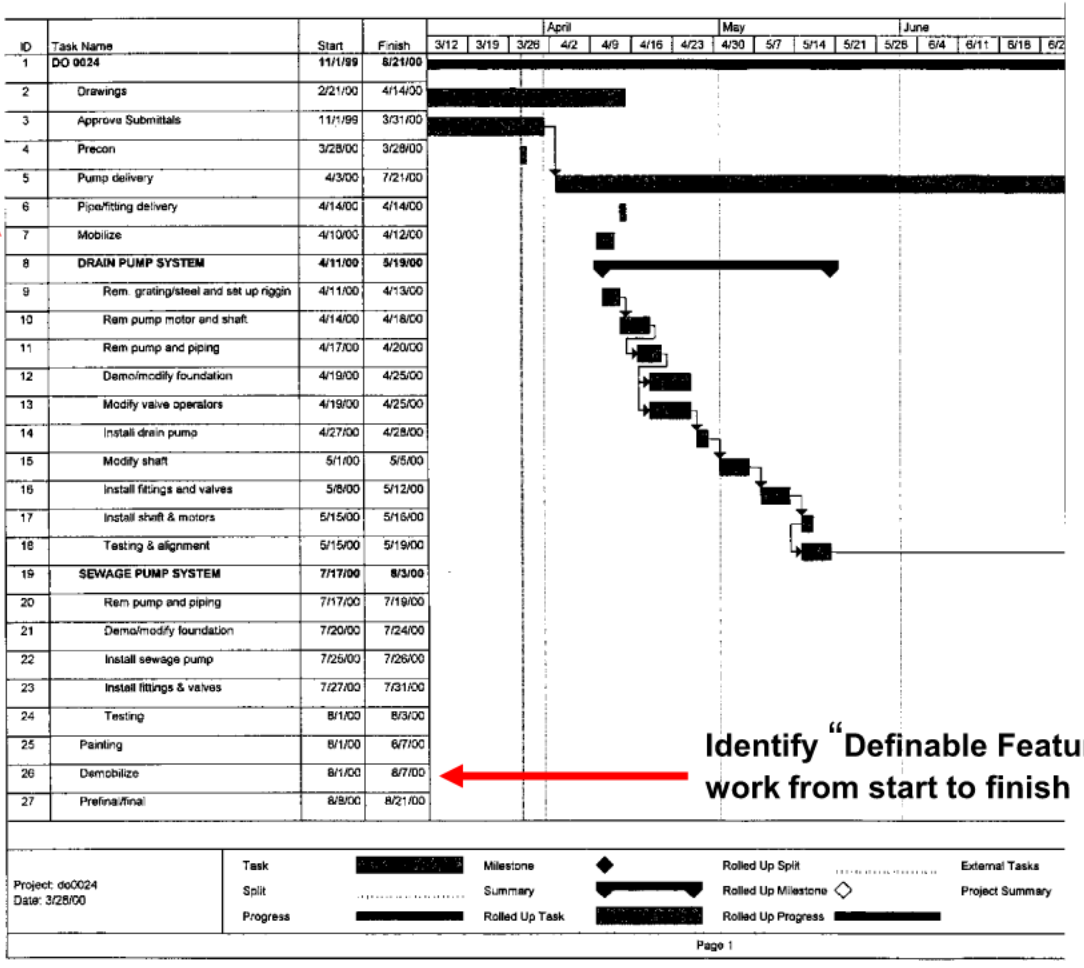
Examples of "Definable Features of Work" from start to finish

Within each "Definable Features of Work" there may be other sub-phases of work to complete the "Definable Features of Work"

For Example: Mobilization

Sub-phases:

- **Placement of project field office**
- **Utilities tie-in**
- **Erection of project fencing**
- **Establishing lay-down areas**
- **Environmental controls**
- **Erection of USACE project sign**
- **Etc.**



Identify "Definable Features" of work from start to finish

Definable Features of Work

List "Definable Features of Work" and sub-phases of work on AHAs under "Job Steps:

For Example:

Mobilization

- **Placement of project field office**
- **Utilities tie-in**
- **Erection of project fencing**
- **Establishing lay-down areas**
- **Environmental controls**
- **Erection of USACE project sign**

Activity Hazard Analysis (AHA)

Activity/Work Task:	Overall Risk Assessment Code (RAC) (Use highest code)					
Project Location:	**Risk Assessment Code (RAC) Matrix**					
Contract Number:	**Severity**	**Probability**				
Date Prepared:		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title):	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	**Step 1**: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.	RAC Chart				
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible	E = Extremely High Risk				
		H = High Risk				
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.	M = Moderate Risk				
		L = Low Risk				

Job Steps	Hazards	Controls	RAC

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements

The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person's

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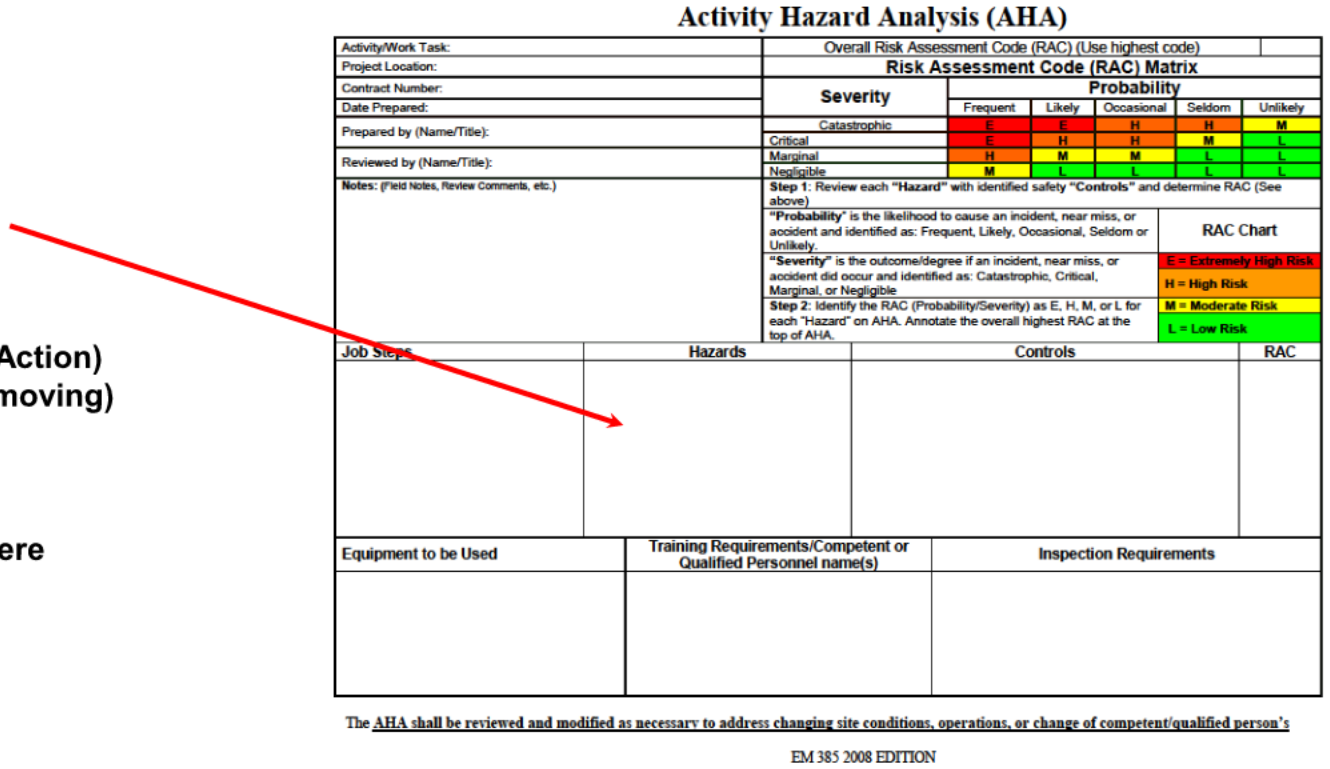
Hazards

- **Step 2:**
  - Identify: Recognized or anticipated hazards for each definable and/or sub-phases of work
    - ✓ **Ask yourself the following to help identify hazards (not all inclusive):**
      - Is there a danger of the employee of being struck by something (falling objects, moving equipment, etc.) from above, side, behind or in front?
      - Can the employee slip or trip?
      - Can the employee be caught in or between objects, machinery, collapsing walls, confined space, etc.?
      - Strains or sprains?
      - Electrical shock?
      - Can the employee fall from same or different levels?
      - Can employee or equipment come into contact with overhead lines or underground utilities?
      - Can employee be exposed to hazardous environments or chemicals?
    - ✓ **Utilize past experiences, Lessons Learned, After Action Reports, Accident Trends, common sense, etc. to help identify hazards**

Hazards

List "Hazards" on the AHAs under "Hazards"

Examples of Hazards (not all inclusive)::
Struck By
Struck by Falling Object
Struck Against
Fall on Same Level
Fall on Different Level
Slipped/ Tripped (No fall)
Punctured By
Laceration
Caught On
Caught By
Caught Between
Lifted, Strained by (Single Action)
Contacted by (Object was moving)
Electric Shock
Impaled
Downing
Oxygen Deficient Atmosphere
Exposed To
Stung By
Equipment Failure
Equipment Rollover
Fire
Cave-In



Activity Hazard Analysis (AHA)

Activity/Work Task:	Overall Risk Assessment Code (RAC) (Use highest code)					
Project Location:	**Risk Assessment Code (RAC) Matrix**					
Contract Number:	**Severity**	**Probability**				
Date Prepared:		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Catastrophic	E	E	H	H	M
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Reviewed by (Name/Title):	Marginal	H	M	M	L	L
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Notes: (Field Notes, Review Comments, etc.)	**Step 1**: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.	RAC Chart				
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible	E = Extremely High Risk				
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	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.	M = Moderate Risk				
		L = Low Risk				

Job Steps	Hazards	Controls	RAC

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements

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Controls

- **Step 3:**
  - Identify: Site specific control measures to eliminate or reduce each hazard to an acceptable risk level
    - ✓ Ask yourself the following (not all inclusive):
      - How can the working condition or process be changed?
      - Can the hazard be eliminated with engineering controls?
      - What type of PPE can we use?
      - Can the hazard be eliminated with administrative controls?
      - What can the employee do to prevent an accident or eliminate the hazard?
  - Utilize past experiences, Lessons Learned, After Action Reports, Accident Trends, common sense, etc. to help formulate control measures.
  - GOAL: Reduce each Hazard to Acceptable Risk Level

Controls

Job Steps	Hazards	Controls	RAC
Mobilization:			
Project field office placement	Stuck by moving equipment	Wear reflective vests. Establish “No Zone” with flagging or barrier tape. Authorized personnel only! Back up alarms. Operators maintain eye contact with spotters at all times.	
	Fall from elevated heights	Provide ladder for safe access to roof. Personnel shall wear full body harness with lanyard. Install manufacture approved anchor point at least 6 ft (1.8 m) from the roof line. 100 percent tie-off at all times.	
Utilities tie-in			

Competent/Qualified Personnel

- **Step 4:**
  - Identify: Names of the Competent or Qualified Personnel required for the activity or job step
    - ✓ Reference
      - EM 385-1-1
      - OSHA
    - ✓ Proof of competency/qualification shall be submitted to the GDA for acceptance prior to start of work
    - ✓ Attached competency/qualification documentation to AHA
    - ✓ Examples of Competent/Qualified Personnel
      - Excavation
      - Scaffolding
      - First Aid/CPR
      - Electrical
      - Confined Space

Competent/Qualified Personnel

- **Names of the Competent or Qualified Personnel required for the activity or job step**
- **Reference**

  EM 385-1-1
  Spec Section 013526
  OSHA

- **Attached competency/qualification documentation to AHA**
- **Include training requirements for all other workers also in this section**

Activity Hazard Analysis (AHA)

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Contract Number:	**Severity**	**Probability**				
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Notes: (Field Notes, Review Comments, etc.)	**Step 1**: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)					
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	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible	E = Extremely High Risk H = High Risk				
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Job Steps	Hazards	Controls	RAC

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements

The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person's

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Risk Assessment Code (RAC)

- **Step 5:**
  - Identify: Risk Assessment Code (RAC)
  - Review each "Hazard" for **"Probability"** and **"Severity"** per Risk Assessment Code Matrix chart
    - ✓ **Probability:** Likelihood of the hazard to cause a incident, near miss, or accident
      - Frequent - Occurs very often, known to happen regularly
      - Likely - Occurs several times, a common occurrence
      - Occasional - Occurs sporadically, but is not uncommon
      - Seldom - Remotely possible, could occur at some time
      - Unlikely - Can assume will not occur, but not impossible

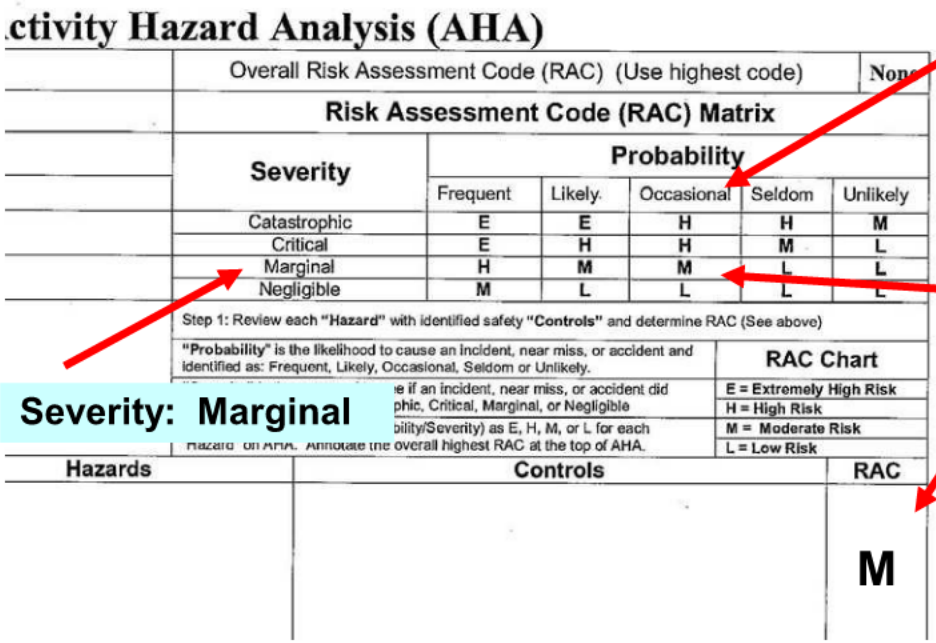
Risk Assessment Code (RAC)

- **Step 5 con't:**
  - ✓ **Severity:** Outcome/degree of the incident, near miss, or accident
    - Catastrophic - Death or permanent total disability; Major property damage
    - Critical - Permanent partial disability or temporary total disability; Extensive damage to equipment or systems
    - Marginal - Lost workdays due to injury or illness; Minor damage to equipment or systems, property, or the environment
    - Negligible - First aid or minor medical treatment; Slight equipment or system damage, but fully functional or serviceable; Little or no property or environmental damage

Risk Assessment Code (RAC)

- **Step 5 con't:**
  - Ask yourself: How often **(probability)** will this hazard result in a incident, near miss, or accident?
    - ✓ For Example:
      - Employee falling from roof or elevated heights (Hazard)
      - Probability: Occasional
  - Ask yourself: What will be the outcome or degree **(severity)** of injury or property damage if the incident, near miss, or accident did occur on site?
    - ✓ For Example:
      - Broken arm or leg with lost time (outcome or degree)
      - Severity: Marginal
  - Review "Risk Assessment Code (RAC) Matrix" chart to determine Risk Assessment Code (RAC) as E, H, M, or L
  - RAC: M (Moderate Risk)

Risk Assessment Code (RAC)



ctivity Hazard Analysis (AHA)

Overall Risk Assessment Code (RAC) (Use highest code) | None

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

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Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Hazards	Controls	RAC
		M

Probability: Occasional

Severity: Marginal

Risk Assessment Code (RAC)

- **Moderate Risk (M)**
- **Identify (M) as RAC for the hazard on AHA**
- **Repeat RAC process for each hazard**

Risk Assessment Code (RAC)

Job Steps	Hazards	Controls	RAC
Mobilization:			
Project field office placement	Stuck by moving equipment	Wear reflective vests. Establish “No Zone” with flagging or barrier tape. Authorized personnel only! Back up alarms. Operators maintain eye contact with spotters at all times.	L
	Fall from elevated heights	Provide ladder for safe access to roof. Personnel shall wear full body harness with lanyard. Install manufacture approved anchor point at least 6 ft (1.8 m) from the roof line. 100 percent tie-off at all times.	M

Most RACs will be (M) or (L) after safety controls have been identified, but some RACs may be classified as (H) or (E) after safety controls have been identified. See next slide.

Risk Assessment Code (RAC)

- **Step 5 con't**
  - RACs that are **E (Extremely High Risk)** or **H (High Risk)** after safety controls
    - ✓Contact QA, GDA. Do not proceed until management agrees on the course of action
    - ✓Potential E or H activities or job steps
      - Energized Electrical operations
      - Contractor Diving operations
      - Entry into Permit Required Confined Spaces
      - Hot Work on or around fuel systems
      - Critical lift crane ops
    - ✓Review and acceptance from GDA (when necessary)

Risk Assessment Code (RAC)

Job Steps	Hazards	Controls	RAC
Mechanical Works Installation of new 200 ton HVAC cooling tower	Loss of load during crane lift	Develop critical lift plan IAW EM 385-1-1, para 16.H. Submit critical lift plan to GDA for acceptance and review plan with all involved with the lift. Inspect rigging. Detail rigging plan Verify wind speed prior to lift Inspect crane prior to use Load test crane	H

RACs classified as (H) or (E) after identifying safety controls may require additional review and acceptance. Seek guidance or instruction from GDA before start of work.

Equipment, Training, and Inspection

- **Step 6:**
  - Identify: Equipment to be Used, Training Requirements, and Inspection Requirements
    - ✓ Reference:
      - EM 385-1-1
      - Governmental Safety Specs 013526
      - OSHA 29 CFR 1926
      - Manufacture Instructions/Recommendations (Operator Manual)
      - Industry Practices
    - ✓ Utilize past experiences, Lessons Learned, After Action Reports, Accident Trends, common sense, etc.
    - ✓ Communicate with subcontractors, suppliers, etc.

Equipment, Training, and Inspection

Equipment to be Used	Training Requirements	Inspection Requirements
Excavator Generator Scaffolding (Frame or Tube Clamp?) Full body Harness with Lanyard Portable Toilets 5 Ma GFCI Power Cord Sets Crane First Aid Kit Safety Shoes Safety Glasses Hardhat Respiratory Protection	30 OSHA Construction Safety Indoctrination Training First Aid/CPR Fall Protection Daily Tool Box Meetings (Japan) Weekly/Monthly Safety Training Respirator Emergency Response Procedures Fire Extinguisher Qualified Crane Operator Qualified Heave Equipment Operator Qualified Electricians Qualified Scaffold Erectors	SSHO/QC Daily Site Inspections Scaffolding Shoring Systems for Excavation Monthly First Aid Kits Fall Protection PPE and Anchors All Heavy Equipment Power Cord Sets (Daily) GFCIs (at least Monthly) Grounding (Monthly)

Conclusion

- Construction work is inherently dangerous
- AHAs are a risk management tool to help identify hazards or risks and formulate controls to reduce the hazard to an acceptable risk level
- Communicate with subcontractors, suppliers, etc. when developing AHAs
- AHAs shall be reviewed and modified as necessary to address changing site conditions, operations, or changes of competent/qualified personnel
- Safety requires a TEAM EFFORT!