TermoAndes
una empresa AES Gener

LAT 132 kV ET COBOS - ET SALTA ESTE Y OBRAS ASOCIADAS

TOMO 12

LAT 132 kV ET COBOS - ET SALTA ESTE Y OBRAS ASOCIADAS

APÉNDICES DEL PLAN DE SALUD Y GUÍA DE SEGURIDAD

TOMO 12

LAT 132 kV ET COBOS - ET SALTA ESTE Y OBRAS ASOCIADAS

CONTENIDO GENERAL

RUBRO A: **DOCUMENTACIÓN DE CARÁCTER GENERAL**

TOMO 1: PLIEGO DE BASES Y CONDICIONES, GENERALES Y PARTICULARES, PARA LA LICITACIÓN Y CONTRATACIÓN DE LA PROVISIÓN DE EQUIPOS Y MATERIALES, DE LA EJECUCIÓN DE LAS OBRAS CIVILES, DE LOS MONTAJES ELECTROMECÁNICOS Y LA PUESTA EN SERVICIO DE LAS INSTALACIONES.

RUBRO B: **DOCUMENTACIÓN DE CARÁCTER TÉCNICO**

- **ESTACION TRANSFORMADORA**

TOMO 2: ESPECIFICACIONES TÉCNICAS PARA LA EJECUCIÓN DE LAS OBRAS CIVILES Y MONTAJES ELECTROMECÁNICOS CON PROVISIONES COMPLEMENTARIAS.

- E.T. COBOS 132kV
- E.T. SALTA ESTE 132kV

TOMO 3: ESPECIFICACIONES TÉCNICAS PARA LA PROVISIÓN DEL EQUIPAMIENTO DE LAS PLAYAS.

TOMO 4: ESPECIFICACIONES TÉCNICAS PARA LA PROVISIÓN DEL EQUIPAMIENTO PARA SERVICIOS AUXILIARES, CONTROL, PROTECCIONES Y MEDICIÓN.

TOMO 5: PLANILLAS DE DATOS TÉCNICOS GARANTIZADOS.

- EQUIPOS DE PLAYA Y MATERIALES VARIOS (MONTAJE ELECTROMECANICO)
- EQUIPAMIENTO SERV. AUX., CONTROL Y PROTECCIONES

TOMO 6: PLANOS E.T. COBOS 132kV

- PLANOS OBRA CIVIL
- PLANOS ELECTROMECÁNICOS Y ELÉCTRICOS

TOMO 7: PLANOS E.T. SALTA ESTE 132kV

- PLANOS OBRA CIVIL
- PLANOS ELECTROMECÁNICOS Y ELÉCTRICOS

TOMO 8: ESPECIFICACIONES TÉCNICAS, PLANILLA DE DATOS TÉCNICOS GARANTIZADOS Y PLANOS PARA SISTEMA DE COMUNICACIONES

- SISTEMA DE COMUNICACIONES
- SISTEMA DE TELECONTROL, RED LAN TÉCNICA Y SOTR DE LA E.T.

♦ **LÍNEAS DE TRANSMISIÓN**

TOMO 9: ESPECIFICACIONES TÉCNICAS Y PLANILLAS DE DATOS TÉCNICOS GARANTIZADOS PARA LA EJECUCIÓN DE LAS OBRAS CIVILES, LOS MONTAJES Y LAS PROVISIONES DE MATERIALES PRINCIPALES Y MENORES.

TOMO 10: PLANOS GENERALES.

- **SALUD, SEGURIDAD Y MEDIOAMBIENTE**

TOMO 11: PLAN DE SALUD Y GUÍA DE SEGURIDAD.

TOMO 12: APÉNDICES DEL PLAN DE SALUD Y GUÍA DE SEGURIDAD.

TOMO 13: ESTUDIO DE IMPACTO AMBIENTAL Y SOCIAL

April 16, 2008

HEALTH & SAFETY PLAN GUIDE - APPENDICES
AES CORPORATION

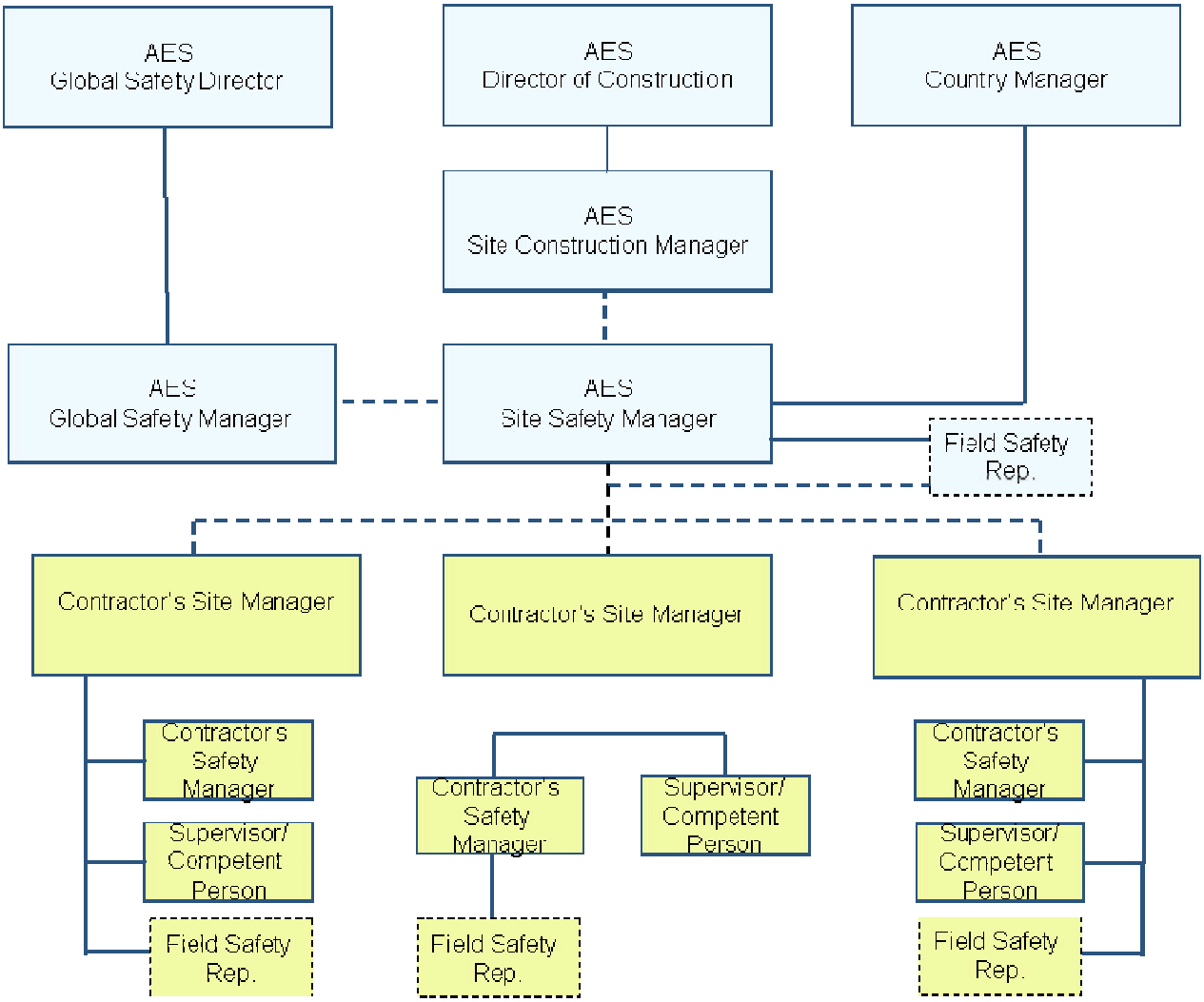
Contents

Appendix

AES APPENDICES
April 14, 2008

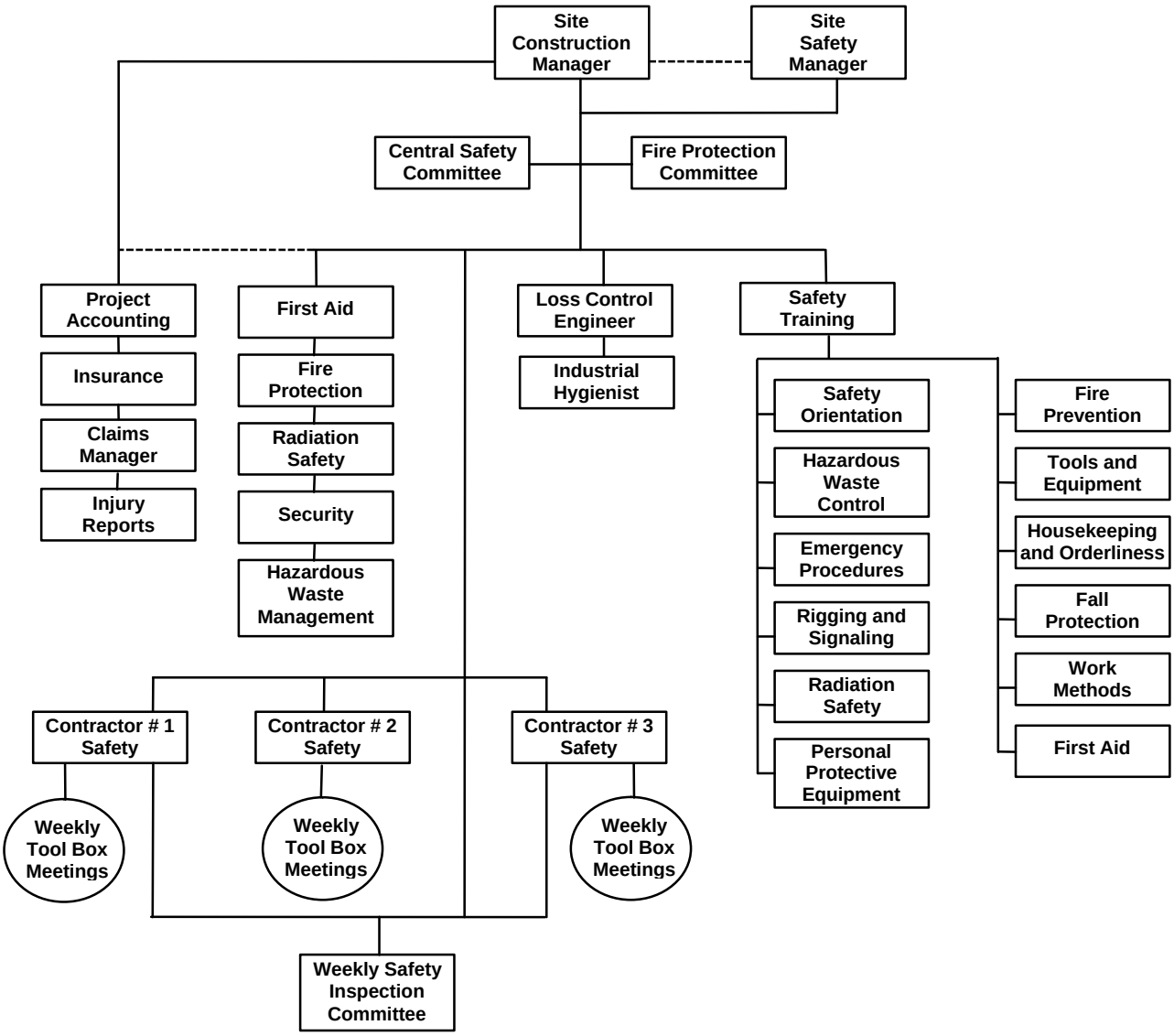
APPENDIX A

Sample AES Project Safety Organization Chart



APPENDIX B

Sample Project Safety Program Organization of Functions



APPENDIX C

Sample of Weekly Site Safety Committee Meeting Minutes

Present for:

Attendees:

AES -

The Construction Manager -

Contractor -

Weekly Safety Inspection Report

Mr. Jones toured the site and noted the following conditions:

Supervisors must return signed copy to the Safety Department indicating the correction of the specific unsafe conditions.

1. It has been noted throughout the jobsite that several pressurized cylinders such as propane, nitrogen, MAPP, and oxygen are being left unsecured and protective caps missing. It is possible that one of these cylinders could rupture by falling over and cause severe damage to personnel or property by its potential to become airborne. All cylinders are to be tied off to a solid object such as a column and protective caps put on after each use. (All appropriate Supervisors - to be Corrected by May 28, 200X)
2. A junction box cover is missing from a permanent plant light fixture on the north end, 38 ft-6 in. elevation, of the xxxxx Building. The problem with this condition is the possibility of someone coming into contact with the live wires, and the accumulation of dust inside the Junction Box, could result in a potential fire condition. (Tom A, Electrical Supervisor - Corrected)
3. A cleanup is needed north of the Turbine Building. An accumulation of metal tie bands and unsecured conduit is creating a tripping hazard and unstable footing. Although this is a laydown area, crafts must walk through this area to be able to "pick" loads. Along the west side of the Turbine Building, the same situation exists. (Tom A, Electrical Supervisor - Corrected)
4. The scaffolding on the northwest corner of the 38 ft-6 in. elevation of the Turbine Building is in an unsafe condition and has been tagged as defective until corrected. The following is a list of discrepancies:

    a. The X-bracing is loose and tied with wire.

    b. The X-bracing is missing on the lower buck.

    c. The foot is resting on thin plywood without support underneath.

    This scaffold is of an unsafe condition that could result in personal injury. Therefore, this scaffold must be brought up to xxxx Construction Company, Inc. safety standards. (Sam Brown, Chief Carpenter Supervisor - To Be Corrected by May 28, 200X)

5. There have been several unsafe grinding Ironworkers throughout the Containment Building. The proper equipment to be used while grinding is safety glasses along with full faceshields. (Richard Stephen, Ironworker Supervisor - Corrected)
6. It has been noted throughout the Control Building that rigging is being performed by using C-clamps in the vertical position. This is an improper rigging procedure and will not be allowed on this site. (All Supervisors - To be Corrected Immediately)

Safety Session Discussion Items

1. XXXX, Inc., wanted to know if it was acceptable to keep gasoline on the 43-foot elevation of the Service Building for their cut-off saw. (The answer was No; Gasoline Safety Containers must be returned to the Central Storage Area for flammables after refueling operations.)
2. Proper procedures for utilization of welding screens (was discussed).
3. Improving the ventilation system within the containment structure to remove dust. Safety Department was informed that electrostatic precipitators were ordered and additional 30-inch fans will be installed.
4. Q.C. pickup truck was noticed speeding on jobsite at approximately 2:30 pm on May 28, 200X. Truck Number was No. 22. (Quality Control Superintendent to check out and take appropriate action if this can be confirmed).
5. Any craftsperson that signs out a fire extinguisher on a temporary basis (painted with a 6 in. yellow band and numbered) must return it to its original location when through.
6. A second shift started on March 4, 200X, and all personnel are reminded that radiography will be conducted during the second and third shift. It is essential to obey all ropes and signs posted by the Quality Control Department. (All personnel are to obey the posted barricades and warning signs.)

NOTICE

XXXX WILL HAVE AN EVACUATION DRILL SOMETIME DURING THIS WEEK. ALL PERSONNEL ARE TO FOLLOW THE EVACUATION PROCEDURE DATED REVISION 3-1-0X, ATTACHED. REMEMBER, DURING AN EMERGENCY, AS IN A DRILL, WALK - DO NOT RUN TO AVOID INJURY TO FELLOW WORKERS.

Scheduled for next week's safety tour are Richard Stephen and M. Rick at 1:30 pm on Tuesday, June 3, 200X.

The next weekly Site Safety Committee Session is scheduled for Wednesday, June 3, 200X, at 11:30 am in the main conference room.

xxxxx
Safety Representative

xxxxx
Site Manager

Sample Weekly Safety Objective, Safety Training Session

TRIPS, SLIPS, AND FALLS-

Falls are one of the major sources of accidents. Employees have fallen from considerable heights, and received only a few broken bones; while others fall to the floor from a standing or sitting position with fatal injuries resulting.

Preventing such accidents requires maintaining safe conditions and controlling unsafe acts of employees.

Causes of employee tripping or stumbling:

1. Objects or materials in walkways
2. Tools on the ground and floor
3. Projecting parts of machines or equipment
4. Equipment or materials on stairs or aisle ways
5. Scrap or waste material scattered on the floor
6. Extension cords, power cables, air hoses
7. Holes and depressions in floor or other walkways
8. Uncovered drains, pits
9. Sudden changes in pitch or elevation
10. Employee not paying attention to conditions.

Preventing tripping - stumbling:

1. Planning and arrangement of machines, equipment, and tools.
2. Maintain storage areas for tools, equipment, and materials.
3. Do not place or leave materials, tools, or equipment in areas used for walkways.
4. Maintain good housekeeping.
5. Each individual at this Construction Project Must be alert, watch where he or she is walking, and be able to anticipate a hazard prior to getting exposed to such hazard.

REMEMBER: A SAFE WORKER IN AN UNSAFE ENVIRONMENT IS LESS LIKELY TO GET HURT THAN AN UNSAFE WORKER IN A SAFE PLACE. A SAFE WORKER IN A SAFE WORK PLACE MAKES ACCIDENTS PRACTICALLY NON-EXISTENT.

Sample Weekly Safety Objective, Safety Training Session

What Are the Dangers of Power Tools?

Appropriate personal protective equipment such as safety goggles and gloves must be worn to protect against hazards that may be encountered while using hand tools.

Workplace floors must be kept as clean and dry as possible to prevent accidental slips with or around dangerous power tools.

Power tools must be fitted with guards and safety switches; they are extremely hazardous when used improperly. The types of power tools are determined by their power source: electric, pneumatic, liquid fuel, hydraulic, and powder-actuated.

To prevent hazards associated with the use of power tools, workers must observe the following general precautions:

1. Never carry a tool by the cord or hose.
2. Never yank the cord or the hose to disconnect it from the receptacle.
3. Keep cords and hoses away from heat, oil, and sharp edges.
4. Disconnect tools when not using them, before servicing and cleaning them, and when changing accessories such as blades, bits, and cutters.
5. Keep all people not involved with the work at a safe distance from the work area.
6. Secure work with clamps or a vise, freeing both hands to operate the tool.
7. Avoid accidental starting. Do not hold fingers on the switch button while carrying a plugged-in tool.
8. Maintain tools with care; keep them sharp and clean for best performance.
9. Follow instructions in the user's manual for lubricating and changing accessories.
10. Be sure to keep good footing and maintain good balance when operating power tools.
11. Wear proper apparel for the task. Loose clothing, ties, or jewelry can become caught in moving parts.
12. Remove all damaged portable electric tools from use and tag them: "Do Not Use."

APPENDIX D

Safety Training Session Review

Date:

To: SAFETY DEPARTMENT
TRAINING SESSION CONDUCTED BY:

Name Craft/Company Area

NUMBER ATTENDING

COVERAGE OF MATERIAL (40 points) Observer's Rating
(Total Points)

1. Were the main points on objective discussed?
(0-15 points) _____
2. Was safety inspection report covered?
(0-5 points) _____
3. Were these points related to this group's work?
(0-5 points) _____
4. Was injury report given?
(0-5 points) _____
5. Were special hazards and special information discussed?
(0-10 points) _____

CONDUCTOR (50 points)

6. Evidence of thorough preparation?
(0-15 points) _____
7. Were points made clear? Understandable?
(0-15 points) _____
8. A good location selected for his Session?
(0-5 points) _____
9. Participation controlled by asking questions?
(0-10 points) _____
10. Did the Session start on time?
(0-5 points) _____

QUALITY (Overall effectiveness of Session) (10 points)

11. Based on your opinion, rate entire Session from 0 to 10.
    A. If Session was below average, rate from 0 to 5.
    B. If Session was average, rate 6.
    C. If Session was above average, rate from 7 to 10.

_____
(Total points)

OBSERVER'S INFORMATION

12. I spoke at the Session Yes_____ No_____

Observer's Name _____ Title _____

THIS SHEET MUST BE TURNED INTO THE SAFETY DEPARTMENT THE DAY OF THE SESSION

Safety Training Session Report

PROJECT:_____ DATE:_____

CRAFT:_____ NO. IN CREW:_____

SUPERVISOR/FOREMAN:_____ NO. ATTENDING:_____

SUBJECTS DISCUSSED: AES SAFETY REPORT

OTHER (DESCRIBE)_____

_____

_____

SUGGESTIONS OFFERED: _____

_____

_____

SUPERVISOR/FOREMAN _____

REMARKS: _____

_____

SUPERVISOR/FOREMAN _____

SIGNATURE: _____

_____

ATTENDANCE

NAME (Print Last Name First)	BADGE NO.	NAME (Print Last Name First)	BADGE NO.

APPENDIX E

Sample Risk Assessment

- **High Risk Areas**
  - Working at heights during steel frame installation
  - Working at heights during cast in place concrete activities
  - Working at heights during installation of roofing
  - Working at heights during installation of MEP system
  - Working at height from scaffolding activities
  - Electrical installation

- **Medium Risk Areas**
  - Excavation for utilities
  - Maintenance of perimeter protection systems to mitigate falls
  - Ensuring working platforms conform to meet safety requirements
  - Job clean-up

H&S PROJECT PLAN OUTLINE
SPECIAL DOCUMENTATION REGISTER

DATE	RECEIVED FROM	AUTHOR	TOPIC	DATE	LOCATION/COMMENTS

H&S PROJECT PLAN OUTLINE

RESPONSIBLE PARTY	

Appendix E, Forms

Risk Assessment – Concrete Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
CONCRETE ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		HIERARCHY OF RISK CONTROL LEVEL	CONTRACT OR PROJECT CONTROL ELEMENTS	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Electrical/Lighting/Ventilation				
Operational Issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication Issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control Issues				
Struck-by/Caught between issues				
Construction loading issues				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Conveying Systems Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
CONVEYING SYSTEMS ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		HIERARCHY OF RISK CONTROL LEVEL	CONTRACT OR PROJECT CONTROL ELEMENTS	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Electrical/Lighting/Ventilation				
Operational issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control issues				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Doors & Windows Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
DOORS AND WINDOWS ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Electrical/Lighting/Ventilation				
Operational Issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication Issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control Issues				
Entrances & storefronts				
Glass, glazing and window installation				
Doors & frames (hollow metal, wood, glass)				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Electrical Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
ELECTRICAL ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Electrical/Lighting/Ventilation				
Operational Issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication Issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control Issues				
Underground electrical				
Site lighting installation				
Lighting protection				
Switchgear/MCC/equipment installation				
Shutdowns/Tie-in (hazardous energy control)				
Energized work (NFPA 70E requirements)				

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS	Column D COMMENTS OR SPECIFIC ISSUES
ELECTRICAL ISSUES			
Testing			
Energization/start-up			
Lessons Learned			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Scope Review Performed By:	***Sign & Date:***		
Scope Review Approved By:	***Sign & Date:***		

Risk Assessment – Equipment Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
EQUIPMENT ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Environmental/Infection Control issues				
Industrial, Process equipment installation				
Lab, medical equipment				
Security, AV equipment				
Owner furnished equipment				
Work by others				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Finishes Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
FINISHES ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		HIERARCHY OF RISK CONTROL LEVEL	CONTRACT OR PROJECT CONTROL ELEMENTS	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Electrical/Lighting/Ventilation				
Operational Issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication Issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control Issues				
Stud wall (metal or wood) installation				
Drywall hanging				
Drywall finishing, painting, wall covering, tile				
Flooring (carpet, wood, tile, fluid applied)				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Furnishings Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
FURNISHINGS ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Environmental/Infection Control issues				
Furniture/casework, artwork				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – General Conditions Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
GENERAL CONDITIONS ISSUES				
Existing Conditions				
Adjacent Environment				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Exclusion of Unauthorized People				
Noise, Public Nuisance				
Vehicle Movement On/Off Site				
Temporary Facilities				
Office trailer				
Parking				
Stairs/ladders for access				
Job signs				
Communication				
Toilets				
Temporary Works				
Temporary Power and Other Services				
Storage and Distribution of Materials				
Scaffolding				

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS	Column D COMMENTS OR SPECIFIC ISSUES
GENERAL CONDITIONS ISSUES			
Mast Climbing Scaffolds			
Documentation of manufacturer's guidelines available (to be submitted to BLL).			
Competent person, operator and users training			
Damaged equipment			
Worksite inspection Unit must be operated on surface within limits set by manufacturer			
Anticipated movement of unit on jobsite. Refer to manufacturer's operating instructions			
Unit to be used freestanding or tied to building, per manufacturer's guidelines.			
Fall hazards.			
Platform extensions or modifications.			
Equipment being used within load limitations and proper load distribution according to platform configuration.			
Weather related issues. Work during windy conditions or electrical storms prohibited. Manufacturer's guidelines apply.			
Snagged platform.			
Malfunctioning platform.			
Suspended scaffolds (swing stage {two point}, multipoint, etc.)			
Must be designed by a qualified person			
Must be erected, moved, dismantled or altered under the supervision of a competent person. Users training.			
Structural changes or modifications			
Power supply for equipment			
Fall protection and safe access/ egress			
Equipment being used within load limitations and proper load distribution according to platform configuration.			
Daily use and inspection			
Welding operations			
Aerial & Scissor Lifts			
Lift is in proper working condition			
Operator training			
Pre-start inspection, work area inspection			
Modifications or alterations			
Fall protection			

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS	Column D COMMENTS OR SPECIFIC ISSUES
GENERAL CONDITIONS ISSUES			
Daily use			
Snagged platform			
Hoists			
Must be designed by a qualified person			
Documentation of manufacturer's guidelines available (to be submitted to BLL)			
Qualified operator			
Worksite inspection/Set-up			
Hoist modifications			
Inspections and test run			
Assembly of unit			
Labeling of hoist platforms			
Fall protection			
Equipment being used within load limitations and proper load distribution according to platform configuration			
Weather issues			
Clean-up			
Daily clean-up (additional labor)			
Trash chutes			
Recycling			
Commission and Permits to Work			
Prevention of Water or Groundwater Pollution			
Fire and Emergency Issues			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Scope Review Performed By:	***Sign & Date:***		
Scope Review Approved By:	***Sign & Date:***		

Risk Assessment – Masonry Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
MASONRY ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Electrical/Lighting/Ventilation				
Operational Issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication Issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control Issues				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Mechanical/Plumbing/Fire Protection Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
MECHANICAL, PLUMBING, FIRE PROTECTION ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Environmental/Infection Control issues				
Pipe/duct fabrication issues				
Pipe/duct installation issues				
Shutdowns/Tie-in (hazardous energy control)				
Testing (hydro/pneumatic)				
Insulation issues				
Energization/start-up				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Metal Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
METAL ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Environmental/Infection Control Issues				
Misc. metals				
Formal turnover and maintenance of edge protection				
Connecting/releasing from crane				
Decking (hoisting, landing, placing, holes and openings)				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Site Work Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
SITE WORK ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		HIERARCHY OF RISK CONTROL LEVEL	CONTRACT OR PROJECT CONTROL ELEMENTS	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Scaffold erection, access, use (loading & dismantling)				
Motorized equipment				
Electrical/Lighting/Ventilation				
Operational Issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication Issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control Issues				
Demolition				
Asbestos, Lead, Misc. Hazardous materials				
Excavation & Backfill				
Tunneling, boring and jacking				

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS	Column D COMMENTS OR SPECIFIC ISSUES
SITE WORK ISSUES			
Foundations, load bearing elements			
Paving (concrete, asphalt), flatwork			
Lessons Learned			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Additional Hazards			
Scope Review Performed By:	***Sign & Date:***		
Scope Review Approved By:	***Sign & Date:***		

Risk Assessment – Special Construction Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
SPECIAL CONSTRUCTION ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Environmental/Infection Control issues				
Cold room assembly				
Pre-Engineered structures				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Specialties Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
SPECIALTIES ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Electrical/Lighting/Ventilation				
Operational Issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication Issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control Issues				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Thermal & Moisture Protection Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
THERMAL AND MOISTURE PROTECTION ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		**HIERARCHY OF RISK CONTROL LEVEL**	**CONTRACT OR PROJECT CONTROL ELEMENTS**	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Electrical/Lighting/Ventilation				
Operational Issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication Issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control Issues				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

Risk Assessment – Wood & Plastic Issues

Residual Risk Register - H&S Project Plan Outlines

Column A BID PACKAGE	Column B RISK ASSESSMENT (High, Medium, Low, N/A or Unknown)	Column C CONTRACT OR PROJECT CONTROL ELEMENTS		Column D COMMENTS OR SPECIFIC ISSUES
WOOD AND PLASTICS ISSUES				
Protection of the Public				
Weather related issues				
Fall Prevention & Protection (personnel & objects) including rescue of all personnel		HIERARCHY OF RISK CONTROL LEVEL	CONTRACT OR PROJECT CONTROL ELEMENTS	
Working at heights in general				
Vertical Access to working floors				
Frame Erection				
Perimeter Protection				
Lifting over or adjacent to a public interface				
Working platforms				
Fixed Access Systems				
Mechanical Access Systems				
Elevator Shafts				
Service Shafts & Risers				
Excavations, pits and holes				
Ladders				
Electrical/Lighting/Ventilation				
Operational Issues				
Fire prevention/protection				
Industrial Hygiene/Hazard Communication Issues				
Manual material handling, repetitive work				
Powered Tools and Equipment				
Environmental/Infection Control Issues				
Temporary wood doors, covers, guardrails, etc.				
Roof/exterior blocking installation				
Interior blocking				
Lessons Learned				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Additional Hazards				
Scope Review Performed By:	***Sign & Date:***			
Scope Review Approved By:	***Sign & Date:***			

APPENDIX F

Job Safety Analysis (JSA) Procedure

The four basic steps in performing a job safety analysis are:

1. Select the job to be analyzed.
2. Break the job down into the steps that the job or activity is to be done and observe or discuss how these actions are performed.
3. Identify how and why potential accidents could occur. (This is the critical step because only an identified problem can be corrected or eliminated.)
4. Develop safe job procedures to eliminate the hazards and prevent potential accidents.

Instructions for Completing Job Safety Analysis Form

Job Safety Analysis (JSA) is an important accident prevention tool that works by finding hazards and eliminating or minimizing them before the job is performed, and before they have a chance to become accidents.

Use your JSA for job clarification and hazard awareness:

- As a guide in new worker training
- For periodic contacts and for retraining of senior workers
- As a refresher on jobs which run infrequently
- As an accident investigation tool
- To inform workers of specific job hazards and protective measures.

Sequence of Basic Job Steps

Break the job down into steps. Each of the steps of a job must accomplish some major task. The task will consist of a set of movements used to perform a task, and then determine the next logical set of movements. For example, the job might be to move a box from a conveyor in the receiving area to a shelf in the storage area. How does that break down into job steps? Picking up the box from the conveyor and putting it onto a hand truck is one logical set of movements, so it is one job step.

Everything related to that one logical set of movements is part of that job step. The next logical set of movements might be pushing the loaded hand truck to the storeroom. Removing the boxes from the truck and placing them on the shelf is another logical set of movements. And finally, returning the hand truck to the receiving area might be the final step in this type of job. ***Be sure to list all the steps in a job.*** Some steps might not be done each time -- checking the casters on a hand truck, for example. However, that task is part of the job as a whole, and must be listed and analyzed.

Identify Potential Hazards

Identify the hazards associated with each step. Examine each step to find and identify hazards -- actions, conditions and possibilities that could lead to an accident. It's not enough to look at the obvious hazards. It's also important to look at the entire environment and look for every conceivable hazard that might exist.

Be sure to list health hazards as well, even though the harmful effect may not be immediate. A good example is the harmful effect of inhaling a solvent or chemical dust over a long period of time.

It's important to list all hazards

Hazards contribute to accidents, injuries and occupational illnesses. In order to do part three of a JSA effectively, you must identify potential and existing hazards. That's why it's important to distinguish between a hazard, an accident and an injury. Each of these terms has a specific meaning:

Some people find it easier to identify possible accidents and illnesses and work back from them to the hazards. If you do that, you can list the accident and illness types in parentheses following the hazard. But be sure you focus on the hazard for developing recommended actions and safe work procedures.

Recommended Action or Procedure

Decide what actions are necessary to eliminate or minimize the hazards that could lead to an accident, injury or occupational illness. Among the actions that can be taken are:

1) engineering the hazard out
2) introducing administrative controls
   - job instruction training
   - good housekeeping
   - good ergonomics

   (Fitting the task to the worker – not the worker to the task, to eliminate stresses and strains)
3) providing personal protective equipment

List recommended safe operating procedures on the form, and also list required or recommended personal protective equipment for each step of the job.

Be specific. Say exactly what needs to be done to correct the hazard, such as "lift, using your leg muscles." Avoid general statements like "be careful."

Give a recommended action or procedure for every hazard.

If the hazard is a serious one, it must be corrected immediately.

The JSA must be changed to reflect new conditions in the task being performed or new hazards not identified previously.

Job Safety Analysis (JSA) Form

JOB: **DATE:** **PERMIT:** **ISSUED BY:**

SUPERVISION/FOREMAN _____ _____

Consider the following and check the items which apply to the job, then review with the work crew.

PERMITS
- ____ Required
- ____ Cold Work
- ____ Hot Work
- ____ Entry Permit
- ____ All Conditions Met
- ____ Signed Off When Complete
- ____ Other _____

PERSONAL PROTECTIVE EQUIP. (PPE)
- ____ Rubber Gloves
- ____ Leather Gloves
- ____ Special Purpose Gloves
- ____ Slicker Suit
- ____ Acid Suit
- ____ Rubber Boots
- ____ Mono Goggles (vented/non-vented)
- ____ Face Shield
- ____ Respirator
- ____ Fresh Air
- ____ Ear Protection
- ____ Safety Harness
- ____ Burning Goggles
- ____ Other _____

TOOLS
- ____ Current Inspection
- ____ Proper Tools for the Job
- ____ Good Tool Condition
- ____ Qualifications
- ____ Other _____

EMERGENCY EQUIPMENT
- ____ Fire Extinguishers
- ____ Safety Shower
- ____ Evacuation Route
- ____ Other _____

ACCESS
- ____ Scaffold (properly inspected ____)
- ____ Ladder (Tied off ____)
- ____ Manlift
- ____ Personnel Basket (inspected & approved ____)
- ____ Operator Training
- ____ Special Provisions
- ____ Other

SUPERVISOR/FOREMAN RECOMMENDATION

WELDING
- ____ Flashburns
- ____ Combustibles
- ____ Spark Containment
- ____ Shields
- ____ Grounding
- ____ Water Hose
- ____ Fire Extinguisher
- ____ Fire Blanket
- ____ Fire Watch
- ____ Sewer Covers
- ____ Other _____

OVERHEAD WORK
- ____ Barricades
- ____ Signs
- ____ Hole Cover
- ____ Handrail
- ____ Other _____

ELECTRICAL
- ____ Locked & Tagged out
- ____ Try Start/Stop Switch
- ____ GFCI Test
- ____ Assured Grounding
- ____ Extension Cord Inspection
- ____ Other _____

LIFTING
- ____ Forklift
- ____ Cherry Picker
- ____ Load Chart
- ____ Angle
- ____ Crane
- ____ Chainfall
- ____ Proper Rigging Practices
- ____ Manual Lifting
- ____ Condition of Equipment
- ____ Operator Certificate

HAZARDS (ENVIRONMENTAL)
- ____ Electrical Shock
- ____ Heat Stress
- ____ Heavy Objects
- ____ Hot/Cold Surf. Or Mat.
- ____ Inadequate Lighting
- ____ Line Breaking
- ____ Noise
- ____ Poor Access/Egress
- ____ Sharp Objects
- ____ Other _____

HAZARDS/CHEMICALS
- ____ Chemical Burn Shin/Eyes
- ____ Flammable
- ____ Ingestion
- ____ Inhalation
- ____ Skin Contamination

HAZARDS/BODY
- ____ Fall Potential
- ____ Pinch Points
- ____ Slip-Trip Potential
- ____ Other _____

OTHER WORK IN AREA
- ____ Others Working Overhead
- ____ Type Work Others Doing
- ____ PPE Due to Other Work
- ____ Other _____

Confined Space

Know the Following:

- Possible hazards within the confined space
- First signs of exposure
- How to summons help
- How to track personnel
- Entering and exiting the confined space
- Maintain contact with all entrants by voice or visual
- Do not attempt to rescue unless you are a part of a coordinated effort
- Remain at entry point assume no duties with take you from there.

Location of Job (Unit/Location on Unit):

Additional PPE:

Complete Scaffold? Permit Type:	**Safety Access/ Location**	Have proper barricades been installed? Type Needed? Tagged?

Eye Wash/ Safety Shower:

Wind Direction:
Are other crews in area?

Pre-Job Preparation

1. Get Permit for Job 2. Fill out JSA 3. Review JSA (EVERYONE) 4. Sign JSA (EVERYONE)	Evacuation Route: Assembly Point:	**Hazards**

Pinch Points

Heat

Other

Job Task (What are You Doing) **Audit the Job** **Audit Time:**

Potential Hazards

Supervisors Comments

Recommended Action or Procedure	**Supervisor's Initials:**

Crew Name Signatures:

APPENDIX G

List of Information Sources/Duties of the Nurse

1. Occupational Health Guide for Medical and Nursing Personnel, State Medical Society of Wisconsin, 330 East Lakeside Street, Madison, WI 53701. Standing Orders samples.

2. Record Keeping Requirements, Occupational Safety and Health Administration.

3. MERC Manual, MERC Chemical Co., New York, NY.

4. Emergency Care and Transportation of the Sick and Injured - Committee on Injuries, American Academy of Orthopedic Surgeons, George Banta Co., Menasha, WI.

5. Dangerous Properties of Industrial Materials, Sax, N.J., R.H. Rheinhold, New York, NY.

6. Occupational Diseases - A Guide to Their Recognition. U.S. Government Printing Office, Public Health Service Publication No. 1097, Washington, DC 20402.

7. Analysis of Workers' Compensation Laws, Chamber of Commerce of the United States, Washington, DC. Published annually.

8. A Guide for Services for Construction Projects. American Medical Association, Department of Occupational Health, 535 North Dearborn Street, Chicago, IL 60610.

9. Guide to Developing Industrial Disaster Medical Services. American Medical Association, Department of Occupational Health, 535 North Dearborn Street, Chicago, IL 60610.

10. Taber's Cyclopedia Medical Dictionary, F.A. Davis Company, Philadelphia, PA.

APPENDIX H

Project First Aid Log

1. All injuries no matter how slight must be entered in the Project First Aid Log and a Work Related Injuries/Illness Form must be filled out. An employee must be given a release to go back to work in full or part and a medical case file must be started on each employee.

2. The following information must be included when recording an injury or illness:

   a) Date and time injury/illness occurred
   b) Date and time injury/illness was reported
   c) Name and badge number of patient
   d) Occupation of patient
   e) Type of injury or illness
      (Example: Superficial laceration, right middle finger, medial phalanx)
   f) Description of incident/accident
      (Example: Laborer fell on scrap lumber and cut finger on nail)
   g) Explanation of first aid treatment rendered
      (Example: Wound cleansed, antiseptic and bandage applied)
   h) Medical attendant's initials
   i) Where employee was sent: back to work or to a doctor, hospital, or clinic
   j) What treatment was ordered for the employee by the doctor?
   k) (Example: X-ray of left forearm, with wet reading)

3. All visitors to the first aid facility must be recorded in the Project First Aid Log.

4. Any information concerning the physical health of an employee must not be entered in the Project First Aid Log. Physical health information must only be entered in the Employee's personal health file, which must be in a secured location.

   Example: Any old injuries, illnesses (diabetes, hypertension), existing conditions (back problems, hernias), or significant operations.

5. A separate first aid log must exist for each contractor.

6. A separate file must be made for each employee who is listed on the first aid log. The "Work Related Injury/Illness" Form, Return to Work Authorization form, copy of the Incident Report and if the individual has been referred to the doctor a First Report of Injury must be included in this file.

Sample First Aid Sign-In Sheet

Date	Employee Name (Print)	Employee Signature	Injury	Comments

Sample First Aid Equipment & Supplies

Office Furniture/Equipment

Desk
Desk chair
Desk lamp
File cabinets with locks
Computer with printer
locks
Computer table and chair
Two straight back chairs
3 or 4 cubic feet refrigerator

First Aid Furniture/Equipment

Hospital bed/cot
Treatment chair
Foot stool
Examining lamp
Treatment table with drawers and

Utility cart
Supply cabinet and locks
Chrome revolving stool
Bathroom-toilet, basin, and shower
Self-closing waste can
Clothes locker
Waste basket
Telephone

Miscellaneous Supplies

Stationery and Report Forms
Office Supplies

First Aid Supplies

Aneroid
Stethoscope
Ring Cutter
Razor and Blades
Fingernail drill and points
Set of Apothecary Jars
Instrument Trays (Sterile
and Unsterile Instruments)
Emesis Basins
2 Qt. Basins (Round)
Forceps Jar
Thermometer Jar
1 Qt. Bowl
Adhesive Tape Dispenser
Hot Water Bottle - Disposables
Ice Bag - Disposables
Ear Syringe
Water Sterilizer
Medium Gauge 32 Oz.
Graduated Measure
9 1/2" Forceps Ammonia Inhalants
Knife Handle and Blades
Dressing Forceps

Otoscope Set
Pillow Cases - Disposable
Thermometers and Sheaths
Junior Band Aids
3/4" Band Aids
1" Band Aids
2" Band Aids
Knuckle Coverlets
Fingertip Coverlets
1" Dermicil Hypo-Allergenic Tape
1/2" Adhesive Tape
1" Adhesive Tape
2" Adhesive Tape
2 x 2 Sterile Gauze Pads
3 x 3 Sterile Gauze Pads
4 x 4 Sterile Gauze Pads
2 x 2 Unsterile Gauze Pads
3 x 3 Unsterile Gauze Pads
4 x 4 Unsterile Gauze Pads
2 x 2 Sterile Vaseline Dressings

Zephiran - 1:750
Anti-Rust Tablets

Mosquito Forceps
5 1/2" Bandage Scissors
5" Tissue Forceps
Tweezers
Hemostat (Small)
Forceps with teeth
Crutches
Traction Splint Furacin Soluble Dressing
2" Rubber Elastic Bandages
3" Rubber Elastic Bandages
4" Rubber Elastic Bandages
4 1/2" Kerlix
2" Kling
3" Kling
1" Improved Gauze
Band-Aid Butterfly Closures
Sterile Eye Patches
Q-Tips
Cotton Balls
Tourniquets - Velcro
Lite Saver Tubes
(Oropharyngeal)
Medicine Droppers
Finger Cots
Tongue Depressors
1 1/2" Needles (Sterile)
Aluminum Finger Splints
(Medium and Large)
Misc. Padded Wooden Splints
Sterile H_2O
Surgical Scrub Brushes
Sterile Sheets-Burns
Second Skin
Plastic Foot Tub
2 Portable Oxygen Units
Blankets-Disposable

Acetone
Lysol
Visine
Blinx
Vaseline
Burn Ointment
Burn Spray

Caladryl
Merthiolate
Alcohol
Icthammol - N.F.
Peroxide
Anbesol
Campho Phenique
Salt
Ammonia
Alcohol Swabs
Chemical Cold Packs
Chemical Heat Packs
Collyrium Eye Solution
Neosporin Ointment
Gatorade or Kwick Kick
Cutter Snake Bite Kit
Flashlight or Penlight
Pillows
Sheets-Disposable
Ocusol Eye Solution
Cold Blanket
Safety Pins
Polaris Dental Poultice
CPR Chart
Eye Chart
Heimlich Maneuver Chart

First Aid Kits:

3 packages - Adhesive Bandages, 1" x 3" pad, 16 per package
1 package - Ammonia Inhalants, 1/3 cc, 10 per package
3 packages - Compress Bandage, 4" pad, 1 per package
3 packages - Compress Bandage, 2" pad, 4 per package
1 package - Burn Ointment Tubes, 0.11 oz., 6 per package
1 package - Wound Ointment Tubes, 1/2 oz., 2 per package
1 package - Gauze Bandage, 4" x 6 yards, 1 per package
2 packages - Gauze Compress, 24" x 2 yards, 1 per package
2 packages - Merthiolate, Swabs, 0.5 cc, 10 per package
1 package - Paper cups, 10 per package

1 package - Tourniquet and Forceps
2 packages - Triangular Bandage, Nonsterile, 40", 1 per package
1 package - Wire Splint, 3 3/4" x 30", 1 per package
2 pair - Sterile Gloves
1 Bottle - Eye Irrigating Solution

The above should be kept in metal case; open lid serves as shelf.

FIRST AID KIT INSPECTION CARD

Date Inspected	Inspected by	Items Needed
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		

Figure 1 – Medical Unit

SMALL MEDICAL UNIT

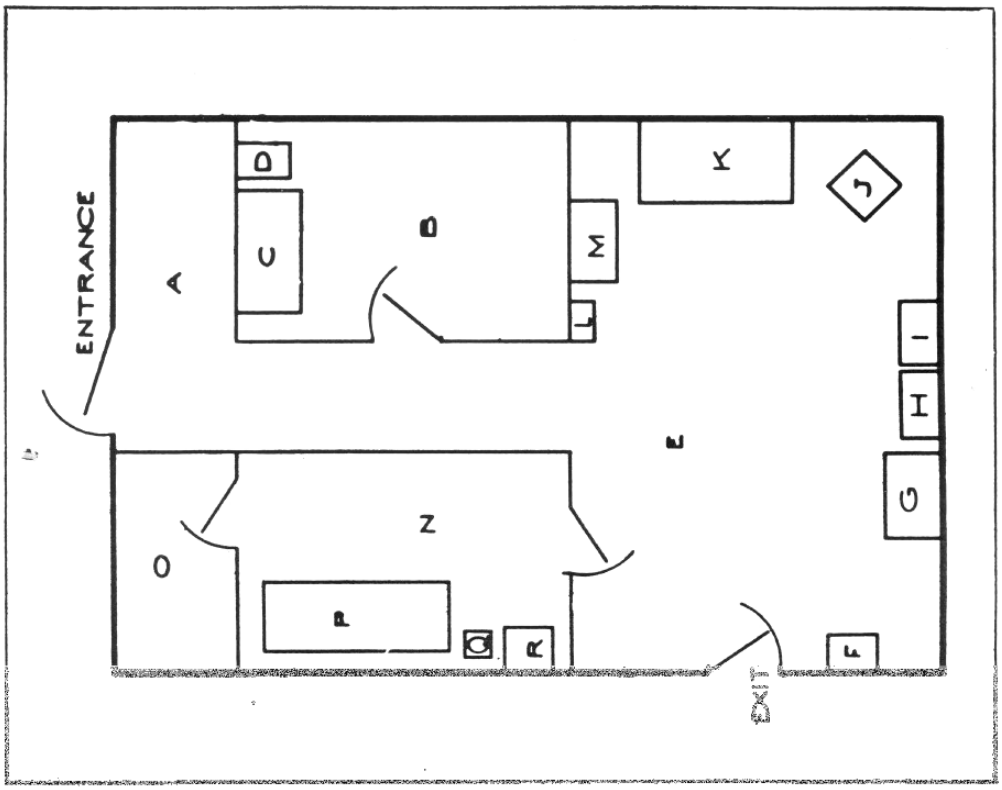


FIGURE 1 Area: Approximately 16' x 11'

A. Waiting room
B. Nurse's office and examining room
C. Desk
D. Files
E. General treatment area
F. Sink
G. Refrigerator
H. Cabinet
I. Treatment table
J. Treatment chair
K. Therapy table
L. Stretcher
M. Storage
N. Recovery room
O. Lavatory
P. Bed
Q. Heat lamp
R. Table

Figure 2 – Medical Unit

MEDIUM SIZED MEDICAL UNIT

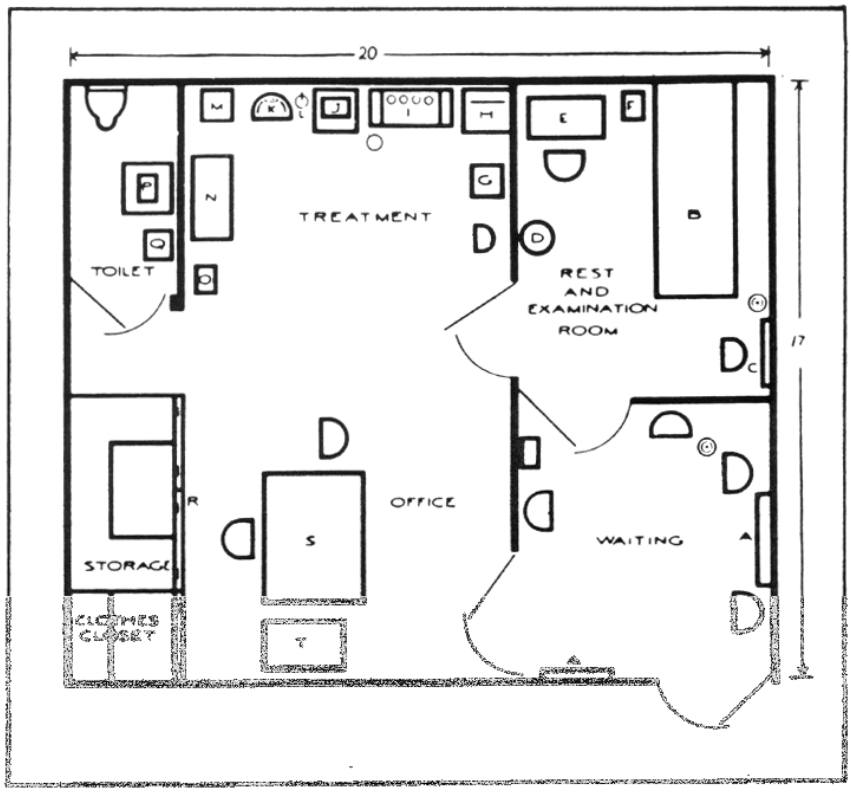


Figure II

A. Health Literature Racks
B. Bed
C. Snellen Vision Testing Chart
D. Infrared Lamp
E. Desk or Table
F. Foot Stool
G. Small Table on Wheels
H. (Emergency and/or Eye treatment table)
I. Dressing Table
J. Treatment Sink
K. Treatment Chair
L. Gooseneck Light
M. Supply Cabinet
N. Medicine Cabinet
O. Water Cooler (with refrigerator compartment)
P. Sink
Q. Supply Cabinet
R. Sliding Doors
S. Nurse's Desk
T. Files

Figure 2 – Medical Unit

LARGE SIZED MEDICAL UNIT

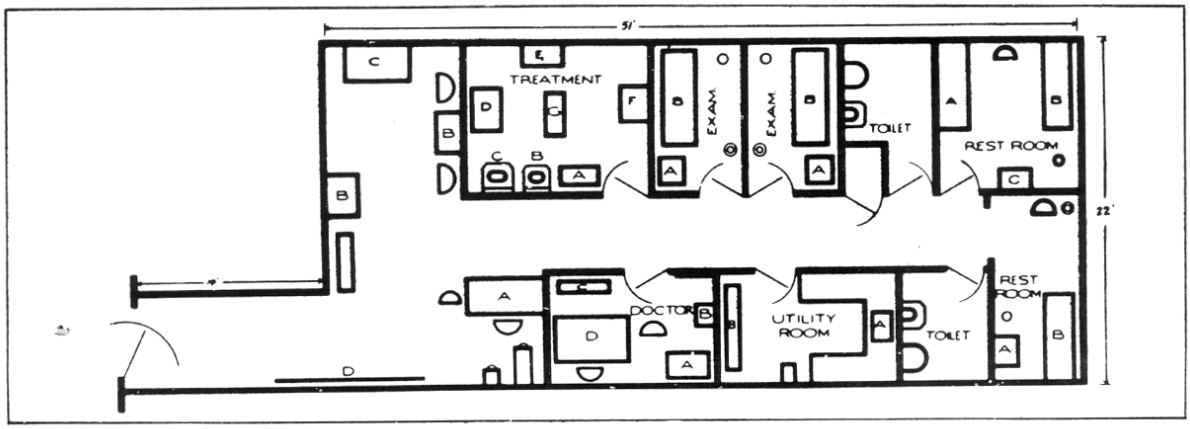


FIGURE III

Waiting Room
A. Desk
B. Table
C. Divan
D. Health Literature Rack

Doctor's Office
A. Files
B. Cabinet
C. Book Shelves
D. Desk

Examining Room
A. Cabinet
B. Examination Table

Utility Room
A. Sink
B. Cabinet

Rest Rooms
A. Stretcher
B. Cot
C. Table

Toilet Facilities
A. Sink
B. Bowl

Treatment Room
A. Cabinet
B. Treatment Sink
C. Foot Tub
D. Utility Table
E. Cabinet
F. Dressing Table

APPENDIX I

Injured Worker Case Management and Return-To-Work Forms

Injured Worker Information

Date of report:_____
Date & Time injury/illness occurred:_____
Time in: _____
Time out: _____

Worker name:_____
SS#_____
Date of hire: _____
Job title: _____
Experience: _____
How long on this site:_____

Name of Working Partner:_____

Job title:_____
Experience of Working Partner:_____
How long on this site:_____

Subcontractor:_____
Foreman: _____

Supervisor:_____

Work Location/Area:_____

****

Location of injury/illness: _____

Description of injury/illness:_____

_____

Description of first aid administered:_____

Allergies:_____

Physician referral? _____ yes or no
Return to work? _____ yes or no
Tetanus up to date?_____ yes or no
Restricted duty? _____ yes or no
Recordable? _____ yes or no
Workman's comp? _____ yes or no
Any related previous injury/illness? _____ yes or no

If yes, describe:_____
_____

Name of person/persons giving treatment: _____

Reviewed by: _____
Safety

Return to Work Authorization

Date: _____
Time: _____
Date of injury:_____

To:_____ (*Supervisor*)

_____ Was seen in the first aid office today for

treatment of _____

_____

_____

Treated by: _____

***The employee is being released to return to work without restrictions*.**

Please sign and <u>return to the Safety office</u>.

_____

Contractor Safety

_____

Superintendent

Foreman _____

Worker_____

****

_____

SAFETY SUPERVISOR

Medical Progress Notes

DATE	NOTES & COMMENTS

Medical Records (a)

NOTICE to Employees - Jobsite

Employee medical records are maintained in the first aid office. A copy may be obtained by filling in the request form available in the first aid office and then presenting this written request to the Safety Office. A reasonable period of time will be required to fulfill the request.

_____

Manager/Supervisor

Medical Records (b)

RELEASE OF EMPLOYEE MEDICAL AND EXPOSURE RECORDS INFORMATION
TO A DESIGNATED REPRESENTATIVE

I, _____ (full name of the worker) hereby authorize _____ (individual or organization holding the medical and exposure records) to release to _____ (individual or organization authorized to receive the medical information) the following medical information from my personal medical/exposure records:

_____

_____

_____

_____

(Describe generally the information desired to be released)

I give my permission for this medical information to be used for the following purposes:

_____

_____ _____

Full Name of Employee Date

_____

Full Name of Designated Recipient of Record

Copies of the above records were released to

_____ on _____

Recipient Date

_____

Representative-Title

_____

Medical Advisor

Medical Records (c)

RELEASE OF EMPLOYEE MEDICAL AND EXPOSURE RECORDS INFORMATION TO A DESIGNATED REPRESENTATIVE

I, _____ (full name of the worker) hereby authorize _____ (individual or organization holding the medical and exposure records) to release to _____ (individual or organization authorized to receive the medical information) the following medical information from my personal medical/exposure records:

_____

_____

_____

_____

_____

_____

_____

(Describe generally the information desired to be released)

I give my permission for this medical information to be used for the following purposes:

_____

_____ _____

Full Name of Employee Date

_____

Full Name of Designated Recipient of Record

Copies of the above records were released to

_____ on _____

Recipient Date

_____

Representative-Title

_____

Medical Advisor

Medical Records (d)

SAMPLE LETTER

Mr. John Doe, Business Manager
Local 501
P.O. Box 542
Somewhere, USA 19090

Dear Mr. Doe:

According to OSHA 29 CFR 1910.20, an employer is required to inform employees of the location of medical records associated with exposure to toxic substances.

We therefore are informing you that after the closeout of our XXXXX Project, these aforementioned medical records shall be retained by Contractor's Headquarters office: Thomas F. Jones, Manager of Safety, XYZ Corporation, 4300 Johnson Boulevard, Arlington, VA 22203.

Very truly yours,

Contractor - Manager/Supervisor

Medical Records (e)

(To be completed by the supervisor and taken to physician by employee.)

Please render medical service to _____ who is employed by Contractor and is presumed to have sustained an injury or illness in the course of employment. If hospitalization and/or medical treatment is required in excess of the limit provided by the Workers' Compensation Law of the state in which the injury occurred, the company will not be liable for the excess unless written authority for such treatment is first obtained from the Company, or its designated representative.

** Contractor requires all employees with doctor-treatable, work-related injuries or illnesses to submit to a drug/alcohol screen. Call number listed below for details.*

Date: _____
Phone Number: _____
BY: _____
TITLE: _____

Physician's Release

(To be completed by physician and given to employee.)

to:_____, whom I have treated for an injury/illness is hereby released:

_____ full duty work with attention given to not aggravate the injury.
_____ no additional treatment is required.
_____ a follow-up appointment has been scheduled on (date)_____
_____ Restricted duty work only as described below.
_____ No work allowed.

Attending Physician _____

Date _____

* Employee must present this form to his/her supervisor immediately after each physician's visit.

(Supervisor will fill in below and return to: Benefits Coordinator.)

The above named employee returned to work on _____and has been assigned to duties in accordance with the physician's release.

Job No. _____ Signed _____
Title _____
Date _____

APPENDIX J

Employee Personal Health File

1. An Employee Personal Health File shall be formulated for an employee after the following incidents have occurred:
   a. Injury requiring doctor's care (work related)
   b. Known allergies
   c. Discovery of an illness requiring observation

   Example: Hypertension (monitoring of BP), recent surgery, alcoholism, drug abuse.

2. An employee Personal Health File shall contain information of the following nature:
   a. Allergies
      Example: Allergic to Penicillin
   b. Existing illnesses, injuries
      Example: Hypertension, diabetes, heart disease, asthma, nervous disorders, hay fever, stomach problems, repaired hernias, old back injuries
   c. Medications being currently used, or prosthesis needed
   d. Major Operations
      Example: Open heart surgery
   e. Disabling injuries or illnesses of a temporary nature

3. A progress record shall be kept within the Employee's Personal Health File as a record for injuries or illnesses which have developed while working on the job site.

4. The following records should be included within the Employee's Personal Health File:
   a. Progress record
   b. Employer's First Report of Injury/Illness
   c. Physician's Referral Form
   d. Physician's Report
   e. Copies of any medication or doctor's bills from work related injuries
   f. Medical test results from work related injuries
   g. Lost Time Accident Record
   h. Medication and immunization record
   i. Medical Examination

APPENDIX K

OSHA Form 300

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name

City State

Identify the person			Describe the case			Classify the case																		
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of illness (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	**CHECK ONLY ONE** box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:											
						Death (G)	Days away from work (H)	Job transfer or restriction (I)	Other record-able cases (J)	Away From Work (days) (K)	On job transfer or restriction (days) (L)	(M) Injury (1)	Skin Disorder (2)	Respiratory Condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)	Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
					Page totals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**						

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Page 1 of 1

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

OSHA Form 300A

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year

U.S. Department of Labor

Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of...	(M)	
(1) Injury	0	(4) Poisoning 0
(2) Skin Disorder	0	(5) Hearing Loss 0
(3) Respiratory Condition	0	(6) All Other Illnesses 0

Establishment information

Your establishment name

Street

City State Zip

Industry description (e.g., Manufacture of motor truck trailers)

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

OR North American Industrial Classification (NAICS), if known (e.g., 336212)

Employment information

Annual average number of employees

Total hours worked by all employees last year

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company executive Title

Phone Date

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

OSHA's Form 301

Injuries and Illnesses Incident Report

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

This *Injury and Illness Incident Report* is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related Injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by

Title

Phone Date

Information about the employee

1) Full Name

2) Street

City State Zip

3) Date of birth

4) Date hired

5) ☐ Male ☐ Female

Information about the physician or other health care professional

6) Name of physician or other health care professional

7) If treatment was given away from the worksite, where was it given?

Facility

Street

City State Zip

8) Was employee treated in an emergency room? ☐ Yes ☐ No

9) Was employee hospitalized overnight as an in-patient? ☐ Yes ☐ No

Information about the case

10) Case number from the Log *(Transfer the case number from the Log after you record the case.)*

11) Date of injury or illness

12) Time employee began work AM/PM

13) Time of event AM/PM ☐ Check if time cannot be determined

14) **What was the employee doing just before the incident occurred?** Describe the activity, as well as the tools, equipment or material the employee was using. Be specific. Examples: "climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"; "daily computer key-entry."

15) **What happened?** Tell us how the injury occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time."

16) **What was the injury or illness?** Tell us the part of the body that was affected and how it was affected; be more specific than "hurt", "pain", or "sore." Examples: "strained back"; "chemical burn, hand"; "carpal tunnel syndrome."

17) **What object or substance directly harmed the employee?** Examples: "concrete floor"; "chlorine"; "radial arm saw." If this question does not apply to the incident, leave it blank.

18) **If the employee died, when did death occur?** Date of death

APPENDIX L

Employer's First Report of Injury/Illness

An Employer's First Report of Injury/Illness is required in each state for those injuries/illnesses requiring a doctor's services over and above first aid care. These report forms may be obtained from the state or the Worker's Compensation insurance underwriter.

1. This report shall be completed promptly by the nurse or first aid attendant and the project accountant.

2. If a doctor case should occur on the second or third shift, or on overtime work, the first aid attendant or nurse shall complete the sections they are responsible for and the project accountant will complete the remainder the following day.

3. When completed, the form will be signed by the Manager/Supervisor and initialed by both the Safety representative and the project accountant.

4. Copies of this report shall be distributed to the following offices:

    a. Worker's Compensation Insurance Underwriter's Claims Office.
    b. The correct state office. This copy may be handled by the Insurance Underwriter's Claims Office.
    c. Manager of Insurance, Headquarters Office.
    d. Manager, Safety, Environmental, and Health
    e. Client's insurance or safety office if requested.
    f. Copy in the First Aid Facility file.
    g. Copy in Employee's Personal Health file.

5. All report forms shall carry the job and the accident report (A.R.) number.

6. Information concerning such items as X-rays, medication, diagnosis, special treatments and dates of doctor's treatments and revisits shall be entered on the back of the form or attached as supplements.

7. Injury cases which present complex or difficult decisions regarding their classification or handling shall be discussed with the Risk Management Department & Global Safety Department.

APPENDIX M

Accident Investigation Report Form – Root Cause Checklist

TEAM MEMBERS:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

INCIDENT NAME:

_____

DATE OF INCIDENT: _____

(The incident name should be the same as that used on the Accident Investigation Form, etc.)

- Each item is to be reviewed by the investigation team and determined if it was part of the reason for the incident.
- If an item is determined not to be part of the cause, it is to be marked N/A.
- If an item is felt to be the root cause, it should be marked RC with an explanation given.
- If an item is felt to be a contributing factor, it should be marked CF with an explanation given.
- A summary of the findings and corrective actions are to be attached to this checklist. This will be a more detailed explanation than the one given in the Accident Investigation Report, etc.

IMMEDIATE CAUSE

Safety references most frequently refer to substandard performances as
— **unsafe acts or unsafe conditions**.

- **Definition:**
  - "An unsafe act is when someone deviates from the accepted safe procedure for doing a job."
  - "An unsafe condition is hazardous physical condition or circumstance that could cause an incident".

- **Unsafe Acts (Substandard Act)**

— 1. Not following established safe methods (specify).
— 2. Not following established safe work procedure (specify).
— 3. Not following established safe rules (specify).
— 4. Not following posted safety signs or tags (specify).
— 5. Failure to inspect for hazards.
— 6. Failure to recognize hazardous situations.
— 7. Improper loading and placement.
— 8. Failure to use personal protective equipment.
— 9. Improper lifting
— 10. Taking improper position.
— 11. Working on equipment in motion.
— 12. Horseplay.

- **Unsafe Condition (Substandard)**

— 1. Defective equipment, tool or PPE
— 2. Equipment not guarded or inadequately guarded.
— 3. Hazardous walking surface
— 4. Poor housekeeping
— 5. Hazardous, gas, vapor or dust
— 6. Fire Hazard
— 7. Inadequate lighting
— 8. Inadequate ventilation
— 9. Excessive noise
— 10. Hygiene or health hazard
— 11. Inadequate

ν CONTRIBUTING CAUSES

Whether we refer to these deviations as substandard practices, unsafe acts or unsafe conditions, there is one important thing common to all; each one is only a symptom of the contributing cause that permitted the practice or condition to exist.

- When we fail to determine what the contributing cause behind the symptom really is, we fail to keep this domino from falling and the direct potential for loss exists.

- A lack of management control permits the existence of certain contributing causes of incidents, which downgrade the operation.

The contributing causes should explain why a person engages in substandard practices. It is only logical to assume that a person may not follow a safe work procedure if he or she has never been trained.

- Likewise, the contributing causes should explain why a substandard condition is created or exists. Contributing causes are classified into two groups: Personal Contributing Causes and Physical Contributing Causes.

- PERSONAL CONTRIBUTING CAUSES

A. Person's Physical Capability

- inappropriate height, weight, size, strength
- restricted range of body movements
- limited ability to sustain body positions
- substance sensitivities or allergies
- sensitivities to extreme temperature, sound, etc.
- vision deficiency
- hearing deficiency
- other sensory deficiency (touch, smell, balance)
- respiratory incapacity
- other permanent disabilities
- poor coordination

B. Person's Mental Capability

- poor judgment
- slow reaction time

C. Person's Physical Stress

- injury or illness
- fatigue due to task load or duration
- exposure to health hazards
- exposure to temperature extremes
- oxygen deficiency
- drugs/alcohol

D. Person's Mental Stress

- mental fatigue due to mental task load or speed extreme
- judgment/decision demands
- confusing directions
- conflicting demands

E. Person's Knowledge

- lack of experience
- inadequate orientation
- inadequate update training
- misunderstood directions

F. Person's Skills

- inadequate initial instruction
- inadequate practice
- infrequent performance

G. Person's Motivation

- improper attempt to save time or effort
- inappropriate peer pressure
- improper supervisory example

- PHYSICAL CONTRIBUTING FACTORS

A. Job Factors

- safe standard not established
- safety rule, procedure, or method not established
- equipment or facility safety standard not established
- equipment not maintained to specifications
- inadequate purchasing standard
- equipment inadequately designed
- equipment failed due to normal wear and tear

B. Engineering

- inadequate assessment of hazard
- inadequate consideration of human factors/ergonomics
- inadequate standards, specifications, and/or design
- inadequate assessment of operational readiness
- inadequate monitoring of initial operation
- inadequate evaluation of changes

C. Purchased Material

- inadequate specifications or requisitions
- inadequate research on materials/equipment
- inadequate specifications to vendors
- inadequate receiving, inspection, and acceptance
- improper loading or rate of use
- inadequate communication of safety and health data
- improper handling of materials
- improper storage of materials
- improper transportation of materials
- inadequate identification of hazardous items
- improper water disposal

D. Maintenance Inspection

- inadequate preventive: lubrication and servicing
- inadequate adjustment/assembly
- inadequate scheduling of work
- inadequate part substitution
- improper extension of service life

E. Tools and Equipment

- inadequate human factors/ergonomics consideration
- inadequate standards or specifications
- inadequate availability
- inadequate adjustment/repair/maintenance

F. Works Standards/Practices

- inadequate development of standards
- inadequate evaluation of exposure/potential
- inconsistent standards/procedures
- inadequate communication of standards/procedures
- inadequate training
- inadequate reinforcing with signs, color codes, and job aids
- used by unqualified or untrained people
- intentional abuse or misuse
- unintentional abuse or misuse

APPENDIX N

Contractor/Subcontractor Monthly Injury and Illness Log

Title Block

The title block for this form is identical to the "MONTHLY INCIDENT ANALYSIS" form except for the addition of contractor name. Check the appropriate box for the information listed on the log: ""; "CONTRACTOR (MANAGED)"; or "CONTRACTOR (DIRECT HIRE)" or SUBCONTACTOR.

Main Body of Log

"INCIDENT NUMBER" = Insert your own incident number for tracking purposes.

"NAME OF EMPLOYEE" = Self explanatory.

"CRAFT" = Self explanatory.

"NAME OF IMMEDIATE SUPERVISOR" = Self explanatory.

"TOTAL INCIDENTS TO DATE" = Total number of incidents that this employee has been involved with.

"DATE OF INCIDENT" = Self explanatory.

"DATE RETURNED TO WORK" = Self explanatory.

"FIRST AID CASE" = Check if first aid case.

"DOCTOR CASE" = Check if doctor case.

"RECORDABLE" = Check if recordable case.

"RESTRICTED WORK-DAY CASE" = Check if restricted work-day case.

"NO. RESTRICTED WORK-DAYS" = List number of restricted work-days.

"LOST WORK-DAY CASE" = Check if lost work-day case.

"NUMBER OF LOST WORK-DAYS" = List number of lost work-days.

"FATALITY" = Check if fatality.

"CAUSE OF INJURY" = Briefly describe cause of injury/illness.

"EXTENT OF INJURY" = Briefly describe extent of injury/illness.

Signature Block

The signature block for this form is identical to the "MONTHLY INCIDENT ANALYSIS" form.

Contractor/Subcontractor Monthly Injury and Illness Log (Form)

REPORT DUE BY THE 7TH OF EACH MONTH Page _____ of _____

Monthly Injury and Illness Log | ***Check One*** | | *Contractor (Managed)* | | *Contractor (Direct Hire)* | | *Subcontractor*

Company: **Project/Location:**

REPORT PERIOD: FROM: TO: REPORT #:

INCIDENT NUMBER	NAME OF EMPLOYEE	CRAFT	NAME OF IMMEDIATE SUPERVISOR	TOTAL INCIDENTS TO DATE	DATE OF INCIDENT	DATE RETURNED TO WORK	FIRST-AID CASE	DOCTOR CASE	RECORDABLE CASE	RESTRICTED WORK-DAY CASE	NO RESTRICTED WORK-DAYS	LOST WORK-DAY CASE	NUMBER LOST WORK-DAYS	FATALITIES	CAUSE OF INJURY	EXTENT OF INJURY

AVERAGE NUMBER OF WORKERS:	PREPARED BY: NAME: TITLE:	*CONTRACTOR SITE SAFETY FILE,*

APPENDIX O

Contractor Monthly Accident/Incident Analysis

Section A (See Form)

"CONTRACTOR (MANAGED)", or "CONTRACTOR (DIRECT HIRE)" = Check off the one appropriate box which identifies the information that will be filled out on this form. Individual forms must be filled out for each of these categories.

Check for the personnel on site. This includes non-manual workers and, if appropriate, direct hires craft.

Check "CONTRACTOR (MANAGED)" for contractors that are managed by.

Check "CONTRACTOR (DIRECT HIRE)" for contractors that are directly subcontracted to.

"CLIENT" = Insert project's client name.

"PROJECT/LOCATION" = Insert project name and project location.

"REPORT PERIOD" = Insert report period.

"JOB NUMBER" = Insert Job Number for project. If several exist, use only one of the numbers for the duration of the project. If the project involves a renewable contract that changes job numbers each year, the job number used on your monthly reporting would also change.

"REPORT NUMBER" = Insert the report number for tracking purposes. For example, the first report should be numbered "1".

Section B

Fill in Employee Trades or Subcontractors on site

"NUMBER/TYPE OF INCIDENT" = Fill in the number and type of incidents that are being reported during the month. If two laborers receive First Aid injuries from thermal burns while cutting steel, then the box at the intersection of the "LABORERS" column and "Burn-Thermal" row should have a "2" in it. After all the appropriate boxes have been filled in, then Total all of the rows to the right side of the matrix and put that number in the row's "MONTH" box. These should then be added to the "YEAR TO DATE" and "CUMULATIVE THROUGH JOB" Totals.

Looking at the columns, total all of the columns in the "MONTH" boxes at the bottom of the matrix. These Totals should then be added into the "YEAR TO DATE" and "CUMULATIVE THROUGH JOB" Totals at the bottom of Section B. As a final check for accuracy, you should add all of the "MONTH", "YEAR TO DATE" and "CUMULATIVE THROUGH JOB" Totals along the right side of the matrix into the lower right boxes. These Grand Totals should correspond to the Grand Totals of the "MONTH", "YEAR to DATE" and "CUMULATIVE through JOB" Totals along the bottom of Section B.

Section C

Fill in the appropriate "SUMMARY OF STATISTICS" for the "Month", "Year To Date" and "Cumulative through Job" categories.

"TOTAL EMPLOYEE HOURS" = Total employee hours for periods identified.

"FIRST AID CASES" = Number of First Aid cases for periods identified.

"DOCTOR CASES" = Number of cases where doctor visits are required.*

"RECORDABLE CASES" = Number of recordable cases.**

"RESTRICTED WORK-DAY CASES" = Number of restricted work-day cases.**

"NUMBER OF RESTRICTED WORK-DAYS" = Number of restricted work-days.**

"LOST WORK-DAY CASES" = Number of lost work-day cases.**

"NUMBER OF LOST WORK-DAYS" = Number of lost work-days.**

"FATALITES" = Number of fatalities.

"RECORDABLE CASE INCIDENCE RATE" = previously defined.

"LOST WORK-DAY CASE SEVERITY RATE" = previously defined.

"LOST WORK DAYS INCIDENCE RATE" = previously defined.

NOTE:

*Doctor cases refer to workers who see a doctor because of a work-related injury or illness. This includes doctor visits for non-recordable injuries or as well as recordable injuries.

**Note: The terms "recordable", "restricted work-day" and "lost work-day" correspond to OSHA's definition of these terms. OSHA's Recordkeeping Guidelines should be referenced for the exact definition of these terms.

Section D

Fill in the appropriate "SUMMARY OF OTHER INCIDENTS" for the "Month", "Year to Date" and "Cumulative through Job" categories.

"NUMBER OF FIRE INCIDENTS" = Number of fire incidents.

"NUMBER OF HEAVY EQUIPMENT/CRANE INCIDENTS" = Number of heavy equipment/crane incidents. Heavy equipment refers to mobile heavy equipment like graders, dump trucks, etc.

"NUMBER OF AUTO INCIDENTS" = Number of auto incidents.

"NUMBER OF PROPERTY DAMAGE INCIDENTS" = Number of incidents resulting in equipment or property damage.

"NUMBER OF NEAR-MISSES" = Number of near misses. These are incidents where the potential for serious injury or property damage was significant but nothing occurred.

Section E

"AVERAGE NUMBER OF WORKERS" = (Total number of employee hours for month) / 164. This calculation determines the average number of workers during a given month figuring that over a year a single worker with no over-time will work approximately 164 hours each month.

"PREPARED BY:" = Signature and title of person preparing this form.

"APPROVED BY:" = Signature and title of Site Manager (or highest site representative) approving this form.

Contractor Monthly Accident/Incident Summary Report (Form)

REPORT DUE BY THE 7TH OF EACH MONTH Page _____ of _____

Section A

Monthly Accident/Incident Analysis

Check One		*Contractor (Managed)*		*Contractor (Direct Hire)*		*Subcontractor*

Company: *Project/Location:*

REPORT FROM: TO: REPORT #:

PERIOD:

Section B

LIST EMPLOYEE TRADES OR SUB CONTRACTORS ON SITE																TOTALS		
																MONTH	YEAR TO DATE	CUMULATIVE THROUGH
ANIMAL / INSECT																		
BURN – CHEMICAL																		
BURN – THERMAL																		
CAUGHT BETWEEN																		
CHEMICAL/AIRBORNE EXPOSURE																		
ELECTRICAL																		
FALL – DIFFERENT LEVEL																		
FALL – SAME LEVEL																		
FOREIGN BODY IN THE EYE																		
HAND TOOL																		
HEAT / COLD EXPOSURE																		
MANUAL MATERIAL HANDLING/LIFTING																		
MOTOR VEHICLE																		
SLIP / NO FALL																		
STRIKING AGAINST OBJECT																		
STEPPING ON OBJECT																		
STRUCK BY OBJECT																		
OTHER																		
Month																		
YEAR TO DATE																		
CUMULATIVE THROUGH JOB																		

Section C

SUMMARY OF STATISTICS	MONTH	YEAR TO DATE	CUMULATIVE THROUGH JOB
TOTAL EMPLOYEE HOURS			
FIRST-AID CASES			
DOCTOR CASES			
RECORDABLE CASES			
RESTRICTED WORK-DAY CASES			
NUMBER OF RESTRICTED WORK DAYS			
LOST WORK-DAY CASE			
NUMBER OF LOST WORK DAYS			
FATALITIES			
RECORDABLE CASE INCIDENT RATE			
LOST WORK-DAY CASE INCIDENT RATE			
LOST WORK DAYS INCIDENT RATE			

Section D

Summary of Other Incidents	*Month*	*Year to Date*	*Cumulative Through Job*
NUMBER OF FIRE INCIDENTS			
NUMBER OF HEAVY EQUIPMENT/CRANE INCIDENTS			
NUMBER OF AUTO INCIDENTS			
NUMBER OF PROPERTY DAMAGE INCIDENTS			
NUMBER OF NEAR MISSES			

Section E

AVERAGE NUMBER OF WORKERS:	PREPARED BY:	**APPROVED BY: (SITE MANAGER)**
DISTRIBUTION: AES CONSTRUCTION SITE SAFETY MANAGER SITE SAFETY FILE	NAME: TITLE:	NAME: TITLE:

APPENDIX P

Fire Extinguishers

FIRE EXTINGUISHER SELECTION CHART

Selecting the Right Extinguisher	Pressurized Water or Pump Tank[1]	Foam (AFFF)[1]	Carbon Dioxide CO_2*	Regular Dry Chemical*	Multipurpose Dry Chemical[2]*	Halon 1211/1301*
Ordinary Combustibles [A]	YES	YES	DO NOT USE	DO NOT USE	YES	VERY SMALL FIRES ONLY
Flammable Liquids/Gases [B]	DO NOT USE	YES	YES	YES	YES[3]	YES
Live Electrical Equipment [C]	DO NOT USE	DO NOT USE	YES	YES	YES	YES
Combustible Metals[4] [D]	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE
Extinguishing Agent	Water	Aqueous Film Forming Foam	Carbon Dioxide	Sodium or Potassium Bicarbonate	Ammonium Phosphate Base	Bromotrifluoro-methane and Bro-mochlorodifluoro-methane
Operating Instructions	Pull lock pin and squeeze handle or hand pump. Use a side to side sweeping motion.	Pull lock pin and squeeze handle. Use a side to side sweeping motion.	Pull lock pin and squeeze handle. Use a side to side sweeping motion.	Pull lock pin and squeeze handle. Use a side to side sweeping motion.	Pull lock pin and squeeze handle. Use a side to side sweeping motion.	Pull lock pin and squeeze handle. Use a side to side sweeping motion.
Horizontal Range	30-40 ft.	20-25 ft.	3-8 ft.	5-20 ft.	5-20 ft.	6-15 ft.
Discharge Time	1 minute	50 seconds	8-30 seconds	8-20 seconds	8-20 seconds	8-15 seconds

NOTES:

1) Requires protection against freezing.
2) May leave corrosive deposits on some materials.
3) Not recommended for grease fires of appreciable depth, especially fires in deep fat fryers.
4) Use DRY POWDER EXTINGUISHERS or DRY POWDER AGENTS only.

DANGERS

* Avoid using extinguishers in confined areas.
* Avoid breathing discharged agents.

Fire Equipment Inspection

Inspector:_____ Date:_____

Equip. #	Appearance	Hose	Gauge	Tag/Plate	Retainer

Inspector signature:_____ Date_____

APPENDIX Q

Sample Fire Inspection Checklist

Name_____Date/Time_____

Location_____

_____

RETURN TO SAFETY DEPARTMENT WHEN COMPLETE

Yes	No	CONDITION
		Housekeeping
•	•	Are construction materials stored in an orderly manner?
•	•	Is combustible scrap and trash removed from the site regularly?
•	•	Are metal containers with covers provided for disposal of oily or paint-soaked rags?
		Smoking
•	•	Are NO SMOKING signs posted in hazardous areas?
•	•	Are NO SMOKING regulations enforced?
		Electrical
•	•	Is temporary wiring installed according to the provisions of the National Electrical Code?
•	•	Is wiring, including connections to junction boxes, panels, equipment, and the like, in good condition?
•	•	Are overcorrect protective devices (fuses, circuit breakers) in good operating conditions?
•	•	Are ground fault circuit interrupters (GFCI) provided where required?
		Welding and Cutting
•	•	Are any welding, cutting, or brazing operations in progress?
•	•	Are any combustible materials exposed by these operations?
•	•	Is a fire watch provided during, and for at least 30 minutes after, these operations?
•	•	Is portable fire extinguisher or small hose protection available where these operations are carried on?
		Temporary Heaters
•	•	Are temporary heaters in use of "approved" type?
•	•	Is sufficient clearance maintained between heaters and combustible materials?
•	•	Is a competent (licensed, where required) person responsible for temporary heating operations?
•	•	Are fuel storage and refueling arrangements satisfactory?
		Flammable-Combustible Liquids
•	•	Are flammable-combustible liquids stored and dispensed in a satisfactory

Yes	No	CONDITION
		Exits
•	•	Are exits adequately lighted?
•	•	Are stair exit fire doors in good operating condition?
•	•	Is adequate egress provided from uppermost work areas?
		Extinguishers and Small Hose
•	•	Are sufficient portable extinguishers of the proper type provided throughout?
•	•	Are extinguishers and small hoses kept in good operating condition?
•	•	Is equipment unobstructed and its location highlighted?
•	•	Is equipment protected against freezing?
•	•	Are selected personnel trained to operate extinguishers and small hose?
		Sprinkler Systems
•	•	Are sprinkler control valves accessible, labeled and open where necessary?
•	•	Are systems adequately protected against freezing?
•	•	Are sprinkler system pumper connections clearly marked and accessible to the public fire department?
•	•	Is the public fire department familiar with the sprinkler installation?
		Hydrants
•	•	Are hydrants unobstructed and accessible to the public fire department?
•	•	Are hydrants in good operating condition?
		Hydrants
•	•	Are hydrants unobstructed and accessible to the public fire department?
•	•	Are hydrants in good operating condition?
		Standpipes
•	•	Are standpipe systems installed and in service up to the highest level of construction operations?
•	•	Are standpipe system hose connections unobstructed and accessible

Yes	No	CONDITION
		manner?
•	•	Is adequate ventilation provided where flammable adhesives, paints, solvents, and other chemicals are in use?
•	•	Are roofing operations involving tar kettles supervised by a competent person?
•	•	Are asphalt-saturated roofing maps removed from the building and safety discarded after use?
		Exits
•	•	Are fire exits unobstructed, including access ways and discharge areas?
•	•	Are all exits clearly marked?
		Fire Alarms
•	•	Is a standard procedure established for reporting a fire to the fire department?
•	•	Are all workers instructed in this procedure?
•	•	Is an audible alarm in operation to alert workers of a fire on the site?
•	•	Is there a public fire alarm pull box located nearby?
•	•	Has the public fire department visited the site during the past month?

Yes	No	CONDITION
		to the public fire department?
•	•	Are standpipe systems adequately protected against freezing?
•	•	Are standpipe system pumper connections clearly marked and accessible to the public fire department?
		Construction Offices, Trailers, Sheds
•	•	Are combustible offices, trailers, and sheds located at least 30 ft. (10 m) away from major buildings and materials storage?
•	•	Are heating devices in offices, trailers, and sheds of an "approved" type?
•	•	Are fuel cylinders and fuel lines for heating devices protected against vehicular damages?
		Tarpaulins
•	•	Are tarpaulins used for temporary enclosure of building construction?
•	•	Are tarpaulins in use of the flame-resistant type?
•	•	Are tarpaulins in use tightly secured to prevent contact with ignition sources such as temporary heaters?

APPENDIX R

Global Harmonizing System

The GHS is a system for standardizing and harmonizing the classification and labeling of chemicals. It is a logical and comprehensive approach to:

- Defining health, physical and environmental hazards of chemicals;
- Creating classification processes that use available data on chemicals for comparison with the defined hazard criteria; and
- Communicating hazard information, as well as protective measures, on labels and Safety Data Sheets (SDS).

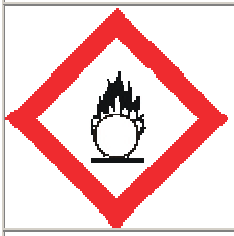
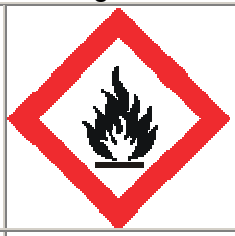
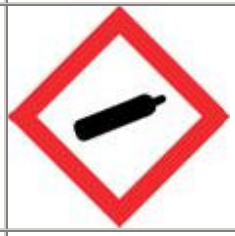
Adoption of the GHS by OSHA would require modifications to the Agency's Hazard Communication Standard (HCS). The GHS itself is not a regulation or a standard. The GHS Document provides countries with the regulatory building blocks to develop or modify existing national programs that address classification of hazards and transmittal of information about those hazards and protective measures. Ensure the safe use of chemicals as they move through the product life cycle from "cradle to grave."

There are a number of countries around the world that have developed standards requiring transmittal of information to users or handlers of chemicals. While similar to requirements in the United States, the variations result in different labels and material safety data sheets for the same chemicals.

Regulatory authorities in countries adopting the GHS will thus take the agreed criteria and provisions, and implement them through their own regulatory process and procedures rather than simply incorporating the text of the GHS into their national requirements.

Global Harmonizing System

Here are some examples of various warning symbols and labeling for chemicals.

GHS Pictograms and Hazard Classes		
		
▪ Oxidizers	▪ Flammables ▪ Self Reactives ▪ Pyrophorics ▪ Self-Heating ▪ Emits Flammable Gas ▪ Organic Peroxides	▪ Explosives ▪ Self Reactives ▪ Organic Peroxides
		
▪ Acute toxicity (severe)	▪ Corrosives	▪ Gases Under Pressure
		
▪ Carcinogen ▪ Respiratory Sensitizer ▪ Reproductive Toxicity ▪ Target Organ Toxicity ▪ Mutagenicity ▪ Aspiration Toxicity	▪ Environmental Toxicity	▪ Irritant ▪ Dermal Sensitizer ▪ Acute toxicity (harmful) ▪ Narcotic Effects ▪ Respiratory Tract ▪ Irritation

Example GHS Outer Container Label (55 gallon/200 liter drum)

ToxiFlam **Flammable liquids, toxic, n.o.s.**

Danger! Toxic If Swallowed **(contains XYZ)**

Flammable Liquid and Vapor **UN 1992**

Do not eat, drink or use tobacco when using this product. Wash hands thoroughly after handling. Keep container tightly closed. Keep away from heat/sparks/open flame. – No smoking. Wear protective gloves and eye/face protection. Ground container and receiving equipment. Use explosion-proof electrical equipment. Take precautionary measures against static discharge. Use only non-sparking tools. Store in cool/well-ventilated place.

IF SWALLOWED: Immediately call a POISON CONTROL CENTER or doctor/physician. Rinse mouth.

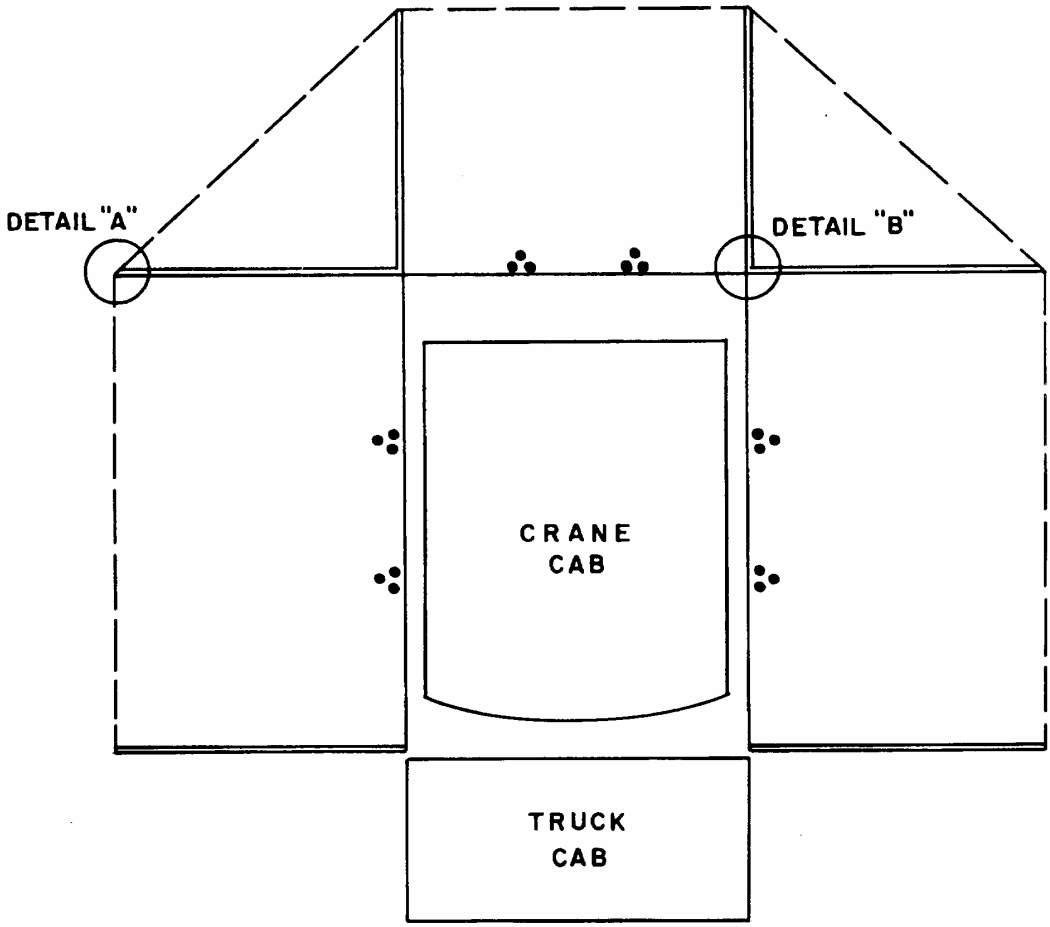
In case of fire, use water fog, dry chemical, CO_2 , or "alcohol" foam.

See Material Safety Data Sheet for further details regarding safe use of this product

MyCompany, MyStreet, MyTown NJ 00000, Tel: 444 999 9999

APPENDIX S

Barricades - Crane



BARRICADE RACK (HOLDS BARRICADE SUPPORT ARMS WHILE IN TRAVEL)

— — — 5/8 INCH ROPE OR SAFETY FLAGGING

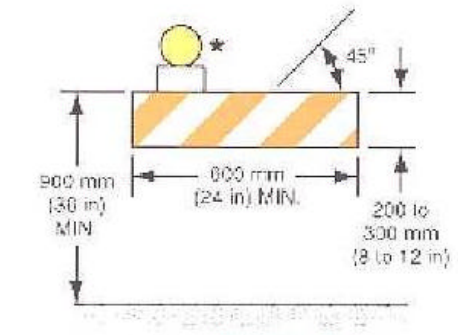
═══ BARRICADE SUPPORT ARMS (1 INCH O.D. CONDUIT)

NOTE: BARRICADES SHOULD EXTEND A MINIMUM OF 12 INCHES BEYOND THE SWING RADIUS OF THE ROTATING SUPERSTRUCTURE.

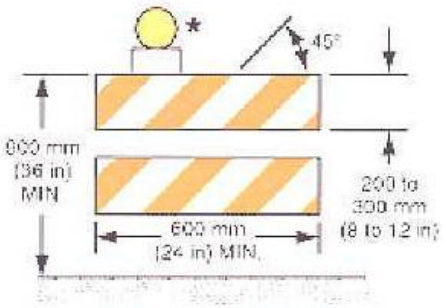
BARRICADE – TRUCK CRANE

APPENDIX T

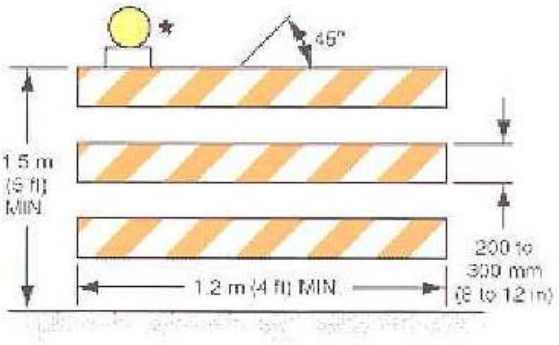
Types of Barricades - Channeling Devices



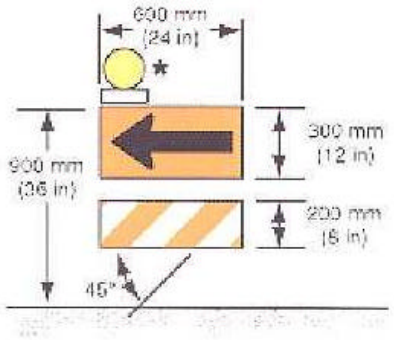
TYPE I BARRICADE **



TYPE II BARRICADE **



TYPE III BARRICADE **



DIRECTION INDICATOR BARRICADE **

* Warning lights (optional)
** Rail stripe widths shall be 150 mm (6 in), except that 100 mm (4 in) wide stripes may be used if rail lengths are less than 900 mm (36 in). The sides of barricades facing traffic shall have retroreflective rail faces.

Note: If barricades are used to channelize pedestrians, there shall be continuous detectable bottom and top rails with no gaps between individual barricades to be detectable to users of long canes. The bottom of the bottom rail shall be no higher than 150 mm (6 in) above the ground surface. The top of the top rail shall be no lower than 900 mm (36 in) above the ground surface.

Barrier Tape Identification System

In order to uniformly identify particular hazards on the construction site, a barrier tape identification system has been developed for use by all the contractors working on the project.

This system has been developed so that any employee working on the site, regardless of employer, can recognize and avoid a hazard when properly marked.

The following barrier tape identification system shall be used:

- General--Red tape (may have black in it). "Do not cross--Imminent Danger."
- Electrical--Yellow tape (may have black in it). Open wiring, switchgear, etc. "Do not cross."
- Radiation--Yellow and magenta (purple) tape. Possible radiation hazard, X-ray, etc. "Do not cross."

The contractor erecting the barrier tape shall hang a tag on the tape that indicates the hazard, duration of hazard, name of contractor, and name and contact information (cell phone, pager number, etc.) of the person erecting the tape.

The barriers shall be erected far enough back from the hazard to allow for adequate warning and protection. The barrier shall be constructed so that it will stand against adverse weather conditions and construction traffic. If the hazard is of a magnitude that requires additional protection, it shall be the contractor's responsibility to provide such protection as well as the barrier tape. It will be the responsibility of the contractor erecting the barrier tape to maintain it as long as the hazard is present.

APPENDIX U

Health & Safety Orientation: Supervisor Orientation Checklist

Each supervisor is responsible to ensure that every new employee is oriented into their crew. The items on this checklist must be discussed with each new employee (check each item covered). This list is not all inclusive and other pertinent items may be added according to need and conditions.

Employee Name: _____ Date: _____

Badge No.: _____Craft:_____

1. Introduce yourself and explain your position._____
2. Give general description of job employee will be doing. _____
3. Introduce employee to other supervisors he/she should know. _____
4. Explain who can give work assignments/change them. _____
5. Introduce employee to crew members. _____
6. Explain any special safety rules or practices/your safety expectations. _____
7. Explain work hours/scheduled workdays. _____
8. Explain non-workdays and policy for inclement weather. _____
9. Explain pay rate and when/if subject to change. _____
10. Explain how and when paid. _____
11. Explain who is expected to furnish what tools/equipment/safety gear. _____
12. Explain policy for absences, overtime, sickness, etc. _____
13. Explain quality and quantity of work expected. _____
14. Explain who answers questions and complaints._____
15. Explain project Substance Abuse Policy._____
16. Other (describe):

_____
_____
_____
_____
_____
_____

Supervisor's Signature Department/Title

_____
Employee's Signature

APPENDIX V

Health & Safety Orientation: Sample Record of Attendance

Project_____ JOB No._____

Name_____ Craft_____Badge No.____

Date_____ Time_____

This is to acknowledge that I have attended the AES H&S Orientation, and received a copy of the Project Safety Requirements. While employed on this project, I agree to comply with them.

☐ AES Project Safety Requirements

☐ Other List:

_____ _____

Instructor Attendee

_____ _____

Date Date

APPENDIX W

Workforce Safety Incentive Programs

Award Program – Example 1

Awards for individual workers without injury

Lottery: (tickets every 40 workdays) Prizes are drawn every 120 days
Insulated Coffee Mugs: (first 40 days)
Golf Cap: (first 80 days)
T-Shirt: (first 120 days)
Lunch Tote: (first 160 days)
Coleman Thermos: (first 200 days)

Awards for Contractors without any worker injuries:

Pizza lunch (every 40 days): If all workers of a contractor are injury free, the contractor receives a pizza lunch for all his workers.

Rules

1. Awards will be drawn and/or distributed bi-monthly for every 40 workdays completed without recordable injury.
2. Eligibility will be verified before prizes are awarded.
3. Eligibility will be confirmed by the Project Safety Manager. Eligibility must be met for both time on-site and for no injuries.
4. Lottery awards will be based on the number of safety award tickets completed and turned in to the PSM.
5. Pizza and other meals will be distributed to eligible contractors at the designated site. Contractors are responsible for distributing the food to their workers.
6. All workers are eligible, including tradesmen, supervisors, officers and clerical personnel located on-site. All tiers of subcontractors are eligible.
7. Recordable injuries/illnesses are defined by OSHA as those requiring medical treatment.
8. Workers of the Owner, Construction Manager, and the carrier are not eligible to participate.
9. Only actual workdays will be counted for the awards. Holidays, weekends and rain days not worked do not count towards the award period.
10. Workers who experience a break in employment due to change of job, layoff, etc. will renew eligibility upon rehire at the same number of days previously accrued.
11. Workers who have a recordable injury or lost time injury will begin again at O days.
12. Any disputes will be settled by the consensus of one individual, typically the project safety director.
13. Any worker who works for a firm which is not eligible for a pizza lunch due to fellow workers being injured, but is individually eligible for an award, may pick up his award from the PSM. These individuals must present an Award Eligibility Form completed by their employer in order to obtain an award.

Workforce Safety Incentive Program - Example No. 2
Safety Token Program

Who is eligible?

Each crew member receives 5 tokens for each week worked without injury

Each foreman receives 5 tokens for each week worked without injury.

Each superintendent receives 5 tokens for each week worked without injury.

What disqualifies you from receiving safety tokens?

Any disabling injury that prevents you from working your next shift of work.

Any injury to a third party.

Any damage to company property that may have been prevented with due caution.

Any damage to property of a third party that may have been prevented with due caution.

Any incident which, in the opinion of the foreman, supervisor or PSM is serious enough to merit withholding the individual's tokens. This includes an individual's failure to work safely.

In the case of a disqualifying accident:

If an accident occurs that results in 7 (seven) or more lost workdays, the entire job-site forfeits their tokens for one week.

Every individual involved in the accident forfeits their tokens for one month. This includes any individual whose actions contributed to the accident.

The foreman and superintendent responsible for the crew will forfeit their tokens for one month for each disqualifying accident under their supervision.

What are your tokens good for?

Tokens can be used to select gifts from the items kept by the PSM.

Tokens can be exchanged for grocery store or restaurant gift certificates.

Rules

Tokens can only be redeemed by the worker who earned them.

Lost tokens will not be replaced.

If your employment is terminated for cause, your tokens are deemed valueless and the award will be forfeited.

If you leave the project by choice, your tokens will be honored.

Contractor Safety Incentive Program - Example No. 3
Incident Rate Based Programs - Reward Only

In addition to safety requirements and in a concerted effort to promote safety awareness during construction, the owner offers a SIP to reduce the number of claims against compensation insurance. Final computation for determining the *Lost Work Day Incidence Rate (IR)* for the contract and total contract price for establishing the *Incentive Value (IV)* will be accomplished on the date of final substantial completion. IV, calculated at 1% of the total contract price, but not to exceed $500,000 and IR are specified as follows:

IV: 5 IR: 7.6

As an incentive to assist in reducing costs, the owner will share reduction in workers' compensation insurance cost if the cumulative IR at that time for lost work day cases in this contract, as determined by the Bureau of Labor Statistics computing method, is reduced to a level below that specified, with IR calculated as follows:

$$\frac{N \times 200{,}000}{MH}$$

N = Number of injuries and/or illnesses
MH = Total hours worked by all construction-site workers
200,000 = Base for 100 full-time equivalent workers, working 40 hours per week, 50 weeks per year

Cost reduction benefit will be shared with the contractor in the amount of 5% of the IV for each full decimal fraction (0.1) that the IR is reduced below that specified to a maximum amount of the IV, payable to the contractor, for an incidence rate of 2.0 lower than the IR or less.

As a further incentive, upon completion of all contract work at the site, the contractor will share in the cost for workers' compensation coverage if the cumulative IR at that time for lost work day cases on this contract, as determined by the Bureau of Labor Statistics computing method, is increased to a level above that specified. Contractor will be charged 5% of the IV for each full decimal fraction (0.1) that the IR is increased above that specified to a maximum amount of the IV, payable to the owner for an incidence rate of 2.0 higher than the IR or more.

Money due to the contractor for effective participation in the SIP will be paid in a lump sum. However, if it appears the contractor may exceed the specified IR for this contract, funds will be withheld from monthly payments as necessary to satisfy any contractor liability for the amount calculated above.

Contractor Safety Incentive Program - Example No. 4
Incident Rate Based Programs - Reward and Penalty

This program offers contractors an opportunity to receive a bonus at the end of the contract if their lost time accident rate for the project is better than the established performance goal. Under this program it is also possible that a contractor would be charged additional fees up to a maximum of the full bonus amount available for the contract.

Program Format

The format for this SIP considers only the contractors lost time injury frequency when making the final award/penalty calculation. The amount of award/penalty payment possible depends on the dollar amount of the contract and cannot exceed $500,000. The criteria and formula for this program are fairly simple:

$$\text{Calculation: } \frac{\text{Number of lost time injuries x 200,000}}{\text{Total accumulated work hours}}$$

The total amount of incentive value possible for each contract is determined by taking 1% of the total contract value at the time of award, up to $500,000. The intent is to have contractors perform below the lost time frequency rate established for their particular type of construction.

The contractor will be awarded 5% of the incentive value for every full decimal fraction of 0.1 that the lost time frequency rate is reduced below the established frequency rate 7, with the full incentive value paid to the contractor if the lost time frequency rate is 2.0 below the frequency rate limit.

On the other hand, if the contractor's frequency rate exceeds the established frequency rate limit, the contractor will be charged 5% of the incentive value for every full decimal point (0.1) above the rate limit. A lost time frequency rate at or above 2.0 over the frequency rate limit will result in the contractor being charged the full incentive value. The following examples use 6.9 as the established frequency rate:

Contractor A

Contract value	$100,000,000
Incentive value	$100,000
Lost time frequency	4.5
Incentive Award	$100,000

Contractor A had a lost time frequency rate greater than 2.0 below the 6.9 frequency rate limit. A full award payment will be made to the contractor.

Contractor B

Contract value	$100,000,000
Incentive value	$100,000
Lost time frequency	6.3
Incentive Award	$30,000

Contractor B had a lost time frequency rate 0.6 below the frequency rate limit. 5% of the full incentive value is paid for every 0.1 below the frequency rate limit ($5,000 x 6).

Contractor C

Contract value	$100,000,000
Incentive value	$100,000
Lost time frequency	8.1
Incentive Award	$60,000

Contractor C had a lost time frequency rate 1.2 above the frequency rate limit. 5% of the full incentive value is charged for every 0.1 above the frequency rate limit ($5,000 x 12).

Contractor D

Contract value	$100,000,000
Incentive value	$100,000
Lost time frequency	9.5
Incentive Award	$100,000

Contractor D had a lost time frequency rate greater than 2.0 above the 6.9 frequency rate limit. The contractor will be charged the full incentive award value. If any of these contractors had completed their contract with a lost time frequency rate of 6.9 there would be no bonus or penalty payment since 6.9 is the frequency rate limit. This program does not take into account the dollar loss that can be incurred as a result of the injuries that constitute lost time. The program focuses only on injury frequency. The incentive value could be exceeded by one very serious lost time injury accident. For contractors in the previous examples, their maximum award possible was $100,000. A contractor could have an excellent lost time frequency rate (2.0 or less) entitling the contractor to the full incentive award amount and at the same time have incurred losses in excess of the incentive award amount. Under this program a contractor could have a fatality and still be eligible for part or the entire incentive award. Fatalities count as 5 lost workday cases in the calculation. With enough accumulated work hours the contractor's frequency rate could still fall below the 6.9 frequency rate limit. This program does not disqualify contractors having fatal accidents during the execution of their contract.

Contractor Safety Incentive Program - Example No. 5
Loss Ratio Based Program - Reward Only

The amount of the SIP award will vary from $-0- to as much as $500,000. The exact amount will depend on workers' compensation loss experience on the project and results of the ____. Any SIP award will be made 120 days after the project is completed and accepted by the owner.
The actual amount of the SIP award will be a percentage of the owner's dividend under the.
Incurred losses, as reported and reserved 90 days after completion and acceptance of the project will be used to determine this dividend. These incurred losses will be multiplied by a development factor of 1.30 to take into account possible loss reserve increases and/or incurred-but-not-reported claims.
The percentage of dividend to be paid to the contractor as the award will be based on the overall workers' compensation loss ratio for the project. This ratio will equal incurred workers' compensation losses for all contractors and subcontractors covered under the multiplied by the 1.30 development factor. This sum will then be divided by the standard workers' compensation premium for the project, determined by multiplying project payroll/$100 times the appropriate workers' compensation rates times the applicable experience modification factors.
The loss ratio will then be compared to the table below to determine the percentage to be applied to the owner's dividend.

Workers' Compensation Loss Ratio	Percentage
0-15%	30%
15-30%	20%
20-45%	10%
45-60%	5%
60% or more	0%

In no event will the contractor's SIP award exceed $500,000. No SIP award will be payable if there is a fatality at the project or the incurred loss reserve on any loss exceeds $2 million (either general liability or workers' compensation).
Existence of the SIP does not modify the contractors' responsibility for job-site safety.

Contractor Safety Incentive Program - Example No. 6
Loss Ratio Based Program - Reward and Penalty

This option is similar to the Reward Based Contractor Incentive Program, except that a deterrent, in the form of a penalty, is also added to the calculation. Refer to our sample below.
Some contractors may object strenuously to the penalty portion of such a program and increase their bids on the chance they may not meet desired project loss ratios. However, contractors with strong, effective safety programs may reduce bids by some or all of the potential incentive recovery, to assure they will be low bidder, under the assumption they will make up the reduction under the incentive program.

Payout/Penalty Example:

Loss Ratio	Amount	Loss Ratio	Amount	Loss Ratio
105% (Max Penalty)	200,000	75%	50,000	45%
100%	175,000	70%	25,000	40%
95%	150,000	65% (Break Even)	0	35%
90%	125,000	60%	25,000	30%
85%	100,000	55%	50,000	25% (Max. Reward)
80%	75,000	50%	75,000	

An alternative could be offered where the penalty starts at a higher percentage loss ratio:

90% at $25,000 penalty
95% at $50,000 penalty
100% at $100,000 penalty

Workforce Safety Incentive Program - Example 7
Award Program

Goal:
The incentive program is designed to reward the safe work practices for all trades on site. This plan is intended to promote a safe and accident free work environment.

Duration:
This safety incentive program is scheduled to begin on MONTH DAY YEAR and extend until project completion.
Budget: _____ (30 MONTHS)
Plan:
The goal of having a safe and accident free work site will only be enhanced with a heightened awareness to safety and rewarding safe practices. This plan consists of four main incentives that are set up on quarterly and bi-monthly intervals. Listed below are the incentives.

Incentive # 1
Goal: No lost time accident or disability for each respective workers, crews or trade.

(Quarterly)
Reward: Catered lunch (Pizza) for all crews and trades working at XXXX Project. This will be a quarterly event held at the XXXX Project and administered by _____, XXXX Construction, Project Safety Manager & oversight by XXXX, beginning on MONTH DAY YEAR.
Costs: Estimate (4) lunches @_____each. Total:

Incentive # 2

Goal: No lost time, recordable or visit to the clinic by a worker, crew or trade. (Bi-monthly)

Reward: Worker's who meet this goal on a bi-monthly basis will be eligible for a random drawing in which selected tools will be given away. These drawings will occur bi-monthly with the first drawing on _____.
Costs: Estimate (__) drawings @ _____ Total:

Incentive # 3

Goal: No Lost time, recordable or visit to the clinic by a worker (Quarterly)

Reward: All workers who meet this goal on a quarterly basis are eligible for awards. Awards are to be structured on the following increments.

1st Quarter	Golf Shirts
2nd Quarter	Ball Caps
3rd Quarter	T-shirts
4th Quarter	Thermos Set

Costs: Approximate Costs* Golf shirts _____
Ball Caps _____
T-shirts _____
Thermos Set _____
Total _____

Incentive # 4

Goal: Reward safe work practices by individual workers during random visits and walk thru's.

Reward: Workers that exhibit extraordinary safe work acts can be nominated by peers or highlighted by the XXXX Management Team will receive immediate reward for safe practices. Rewards would include dinner passes, movie tickets, sporting event passes, gift certificates etc.

Cost: Approximately _____

Rules/Qualifications:

1. All workers will be eligible for this award program's incentives and rewards.
2. Eligibility of reward winners will be verified before awards.
3. Workers must work a minimum of 400 hours per quarter to be eligible for the quarterly rewards program.
4. All disputes will be resolved and decided by the Project Safety Manager.
5. Lack of reporting or hiding accidents will disqualify contractor and their workers from the incentive program.
6. The Project Safety Manager will administer supervision of the incentive program.
7. All workers must have attended the safety orientation program to be eligible for the program.
8. Workers not complying with the code of safe practices or working unsafe may be disqualified from the bi-monthly reward program.
9. Disqualification from more than two bi-monthly awards program within an established quarter automatically results in disqualification from quarterly rewards.

APPENDIX X

Operator Qualification Record

Name:_____

S.S. No:_____

Type Equipment	Years Experience
_____	_____
_____	_____
_____	_____
_____	_____

_____ _____
Operator's Signature Date

_____ _____
Designated by Date

APPENDIX Y

Mobile Equipment: Welding Machine Inspection Form

Inspector _____ Date _____

ID Number	Manufacturer	Ground	Elect. Holder	Cables	Connections
1.					
2.					
3.					
4.					
5.					

	Tires	Jack	Receptacles	Rain Cap	Output
1.					
2.					
3.					
4.					
5.					

Inspector Signature _____ Date _____

Mobile Equipment: Hydraulic Crane Inspection Report

UNIT NO._____

MAKE:_____ MODEL:_____ CAPACITY:_____
TYPE:_____ SERIAL NO._____ LOCATION:_____

Mark each box with D, R, S, N/A Deficient Repair Satisfactory N/A

General:	D	R	S	N/A
Keepers/bolts/fastener				
Warning signs/decals				
Hand signal chart				
Access covers/latches				
Lubrication				
Non-slip surface				
Guards				
Fire extinguisher				

ENGINE:	D	R	S	N/A
Oil/leaks				
Fuel leaks				
Cooling system				
Fan belts				
Battery/anchor				
Muffler/exhaust system				

Hydraulic System:	D	R	S	N/A
Leaks				
Hoses/piping/fillings				

Carrier:	D	R	S	N/A
Frame/Weldments				
Outrigger cylinders				
Outrigger pad/keepers				
Tire ply rating				
Tire condition				

Inspector:_____

Remarks:

Returned to Vendor	
Awaiting Repairs	
Tagged Out	

Carrier Cab:	D	R	S	N/A
Operator's Manual				
Load chart				
Controls				
Steering				
Travel				
Swing Brake				
Alarms/horn				
All switches				
Axle lockouts				
Windows/wipers				
Seat/seal belt				
Gauges				
Lights/turn signals				
Heater/fan				
Parking brake				

Upper Works:	D	R	S	N/A
Anti two block				
Computer (load test)				
Boom angle indicator				
Main hoist				
Auxiliary hoist				
Rope end connections				
Sheaves/bushing				
Block/ball NDT				
Boom angle indicator				
Jib/connections				
Swing assembly				
Boom hoist cylinder				
Telescoping				
Extension				

Mobile Equipment: Main Wire Hoist Rope and Hook Report

Rope Description **Hook Tram**

Date	Measured Diameter	Broken Wires In 1 rope lay	Broken Wires in 1 strand of lay	Throat	Bowl	Tip Twist

AUXILIARY HOIST ROPE AND HOOK

Rope Description **Hook Tram**

Date	Measured Diameter	Broken Wires In 1 rope lay	Broken Wires in 1 strand of lay	Throat	Bowl	Tip Twist

Remark:

Inspector:_____

	Returned to Vendor
	Awaiting Repairs
	Tagged Out

Mobile Equipment: Equipment Inspection Report

Equip.#_____Job#_____Date_____
Make/Model_____Hours_____

"G" new or good condition; "F' fair or serviceable condition; "R" needs repair, "N' item not applicable:

GENERAL
___Body
___Cab
___Fire Extinguisher
___Safety Glass
___Angle Ind.
___Load Ind.
___Load Charts
___Proximity Signs
___Signal Charts
___Turntable Mtg.
___Counterweight
___Backup Alarm
___Horns
___Cont. Panel Gauges
___Windshield Wipers
___Upholstery
___Lubrication

ENGINE & TRANS.
___Oil Level Cond.
___Oil Leaks
___Operating Cond.
___Cooling Sys./Hoses
___Water Level Anti Free
___Battery Cond.
___Belts/Fan/Alt.
___Trans. Level Cond
___U-Jnts. - Hyd.Pump
___Fan Hub/Grd.Cond.
___Exhaust Sys.
___Air System
___Air pressure
___Air sys.
___Guards in position

UPPER WORKS
___Boom Hoist Cyl.
___Boom Hoist Cyl. Mtg
___Structure
___Swing Motor
___Swing Brakes
___Main Hoist Flg.
___Aux. Hoist Flg.
___Main Hoist Brakes
___Aux. Hoist Brakes
___Control Operator
___Boom Hoist Cable

HYDRAULIC SYSTEM
___Hoses
___Lines
___Pumps
___Motors
___Fittings
___Hyd. Fluid Level
___Leakage

CARRIER
___Tire Lug/Trak Cond.
___Tire Condition
___Tire Pressure
___Brakes
___Steering
___Outriggers
___Outrigger bushing
___Power steer/bushing
___Lighting Sys.
___Structure
___Hyd. Tag Reel
___Telescope Cyl
___Telescope Section
___Pt. Sheaves Lub.
___Pt. Sheaves Cond.
___Load Block Cond.
___Load Bk. Capacity
___Hook Condition
___Hook Safety Latch
___Jib Condition
___Jib Sh. Axle Lubed
___Sheave Guards
___Reeving
___Rope Sockets
___Cable Clamps
___Wedge Socket
___Dead-End Connect

WIRE ROPE
___Jib Pendants
___Load Line
___Whip Line

Remarks:
Inspection By:_____Date_____

Mobile Equipment: Equipment Inspection Report (Daily)

Equipment:_____ Capacity:_____
Equipment No._____ Owner:_____
For Week Ending:_____ Shift: Day _____ Night_____

	Mon	Tue	Wed	Thu	Fri	Sat
PRE-OPERATION INSPECTION						
1. Check engine oil, water, gas, and battery.	( )	( )	( )	( )	( )	( )
2. Check hydraulic system for leakage.	( )	( )	( )	( )	( )	( )
3. Check hydraulic oil reservoir for level and dirt.	( )	( )	( )	( )	( )	( )
4. Inspect hoist brake & boom operation.	( )	( )	( )	( )	( )	( )
5. Condition of all glass.	( )	( )	( )	( )	( )	( )
6. Check boom, hoist lines for wear.	( )	( )	( )	( )	( )	( )
7. Grease sheaves.	( )	( )	( )	( )	( )	( )
8. Check tires.	( )	( )	( )	( )	( )	( )
9. On air operated cranes, drain water from air tanks.	( )	( )	( )	( )	( )	( )
POWER PLANT						
1. Start engine, warm up.	( )	( )	( )	( )	( )	( )
2. Check all instruments.	( )	( )	( )	( )	( )	( )
HOISTING MECHANISM						
1. Set out riggers.	( )	( )	( )	( )	( )	( )
2. Check boom operation up/down; right/left.	( )	( )	( )	( )	( )	( )
3. Check air pressure on air operated units.	( )	( )	( )	( )	( )	( )
4. Check brakes.	( )	( )	( )	( )	( )	( )
TRAVEL MECHANISM						
1. Test brakes.	( )	( )	( )	( )	( )	( )
2. Back up alarms.	( )	( )	( )	( )	( )	( )
3. Turn signals, lights, horn.	( )	( )	( )	( )	( )	( )
EQUIPMENT						
1. Fire extinguisher.	( )	( )	( )	( )	( )	( )
RECORDS						
1. Load chart.	( )	( )	( )	( )	( )	( )
2. Annual inspection report.	( )	( )	( )	( )	( )	( )

DATE_____ SIGNATURE:_____

Mobile Equipment: Equipment Inspection Report

☐ Quarterly ☐Incoming ☐Annual ☐Correction of Deficiencies ☐Audit

Mark each box with "G" new or good condition; "F' fair or serviceable condition; "R" needs repair, "N' item not applicable:

Make:_____ Model:_____ Serial No.:_____

Capacity:_____ Eng.Hours:_____ Owner:_____

General:	G	F	R	N/A
Lubrication				
Access covers/guard				
Fire extinguisher				
Non-slip surface				
Capacity markings				
Warning signs				

UPPER WORKS:	G	F	R	N/A
Safety locks				
Boom/cylinders				
Dipper/cylinders				
Bucket/connections				
Bucket/cylinder				
Boom swing				
Telescoping				
Front bucket/blade				
Blade cylinders				
Bushings/pins/keepers				
Hooks/eyes				
Auxiliary attachments				
Winch				
Wire rope				

HYDRAULIC SYSTEM	G	F	R	N/A
Oil leak/leaks				
Hoses/piping				

CAB:	G	F	R	N/A
Operator's manual				
Controls/labels				
Steering/travel				
Load chart				
Gauges				
Lights				
Horn/alarms				
Windows/wipers				
Heater/fan				
Brakes				
Roll protection				
Control/safety hooks				
Frame/weldments				
Outrigger pads				
Arm rest				
Drive motors				
Tires/tracks				
Seat belt				
Rollers/idlers				

ENGINE:	G	F	R	N/A
Leaks				
Battery/anchorage				
Muffler/exhaust				
Belts				
Cooling system				

Remarks:

Inspectors:_____ Date:_____

☐ Tagged Out ☐Awaiting Repairs ☐Returned to Vendor

APPENDIX Z

Rigging and Lifting: Choker/Sling Inspection

Job Name:

Date _____

Job No. _____

Superintendent: _____

Inspector: _____

				Y / N / N/A			
No.	Choker/Sling	Size/In.	Rating/#'s	Cuts	Tears	Frays	Appearance
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

Drum Hoist Inspection

MONTH:_____HOIST #:_____

DATE:_____JOB #:_____

ITEM	CONDITION
HOIST TYPE	
CABLE/WIRE ROPE SIZE	
CAPACITY	
IF MOUNTED, WHERE	
APPEARANCE	
PAINT	
LEAD CHAIN	
HOOK DAMAGE	
SAFETY LATCH	
BRAKE	
MOUNTING STRUCTURE	

COMMENTS:

_____

_____

_____

_____

Come-a-long Chainfall Inspection

Location_____ Date_____
Inspector_____

G=Good NR=Needs Repair (Remove from Service)

Designation Number	Manufacturer	Capacity	Appearance	Paint	Chain	Safety Latch	Hook	Handle	Body	Stop Link

COMMENTS

APPENDIX AA

Rigging and Lifting – Critical Lift Plan

A. WEIGHT

1. Equipment Condition — New ( ) Used ( )
2. Weight Empty _____lbs.
3. Weight of Headache Ball _____lbs.
4. Weight of Block _____lbs.
5. Weight of Lifting Bar _____lbs.
6. Weight of Slings & Shackles _____lbs.
7. Weight of Jib Erect Stored _____lbs.
8. Weight of Headache Ball on Jib _____lbs.
9. Weight of Cable (Load Fall) _____lbs.
10. Allowance for Unaccounted Material in Equipment _____lbs.
11. Other _____lbs.

Total Weight [ ]

Source of Load Weight: _____

(Name Plate, Drawings, Calculated, etc)

Weights Verified By: _____

B. JIB

Erected ___ Stored _____

1. Is Jib to be Used? _____
2. Length of Jib _____
3. Angle of Jib _____
4. Rated Capacity of Jib (From Chart) [ ]

C. CRANE PLACEMENT

1. Any Deviation from Smooth Solid Foundation in the area? _____
2. Electrical Hazards in area? _____
3. Obstacles or obstructions to lift or swing? _____
4. Swing direction and degree (boom swing) _____

D CABLE

1. Number of Parts of Cable _____
2. Size of Cable _____

E. SIZING OF SLINGS

1. Sling Selection
   a. Type of Arrangement _____
   b. Number of Slings in Hook-up _____
   c. Sling Size _____
   d. Sling Length _____
   e. Rated Capacity of Sling [ ]
2. Shackle Selection
   a. Pin Diameter (inches) _____
   b. Capacity (tons) _____
   c. Shackle Attached to Load By: _____
   d. Number of Shackles _____

F. CRANE

1. Type of Crane _____
2. Crane Capacity _____tons
3. Lifting Arrangement
   a. Max Distance–Center of Load to Center of Pin of Crane _____ft.
   b. Length of Boom _____ft.
   c. Angle of Boom at Pick-up _____degrees
   d. Angle of Boom at Set _____degrees
   e. Rated Capacity of Crane Under Severest Lifting Conditions (from chart)
      1. Over Rear _____lbs.
      2. Over Front _____lbs.
      3. Over Side _____lbs.
      4. From Chart—Rated Capacity of Crane for this lift [ ]
      5. Max. Load on Crane
      6. Lift is _____% of Crane's Rated Capacity

G. PRE-LIFT CHECK LIST

	YES	NO
1. Matting Acceptable	( )	( )
2. Outriggers Fully Extended	( )	( )
3. Crane in Good Condition	( )	( )
4. Swing Room	( )	( )
5. Head Room Checked	( )	( )
6. Max. Counterweights Used	( )	( )
7. Tag Line Used	( )	( )
8. Experienced Operator	( )	( )
9. Experienced Flagman (designated)	( )	( )
10. Experienced Operator	( )	( )
11. Load Chart in Crane	( )	( )
12. Wind Conditions	_____	
13. Crane Inspected By:	_____	
14. Functional Test of Crane By:	_____	

SPECIAL INSTRUCTIONS OR RESTRICTIONS FOR CRANE, RIGGING, LIFT, ETC.

_____

_____

DIAGRAM CRANE AND LOAD PLACEMENT		DIAGRAM RIGGING CONFIGURATION

***MULTIPLE CRANE LIFTS REQUIE A SEPARATE LIFT PLAN FOR EACH CRANE.**
***ANY CHANGES INT HE CONFIGURATION OF THE CRANE, PLACMENT, RIGGING, LFITING SCHEME, ETC., OR CHANGES IN ANY CALCULATIONS REQUIRE THAT A NEW LIFT PLAN BE DEVELOPED.**

X _____ DATE _____
SIGNATURE OF JOB SUPERVISOR

X _____ DATE _____
SIGNATURE-PLAN CHECKED BY

APPENDIX BB

Rigging and Lifting: Equipment Job Safety Plan (JSP)

All Personnel must read and sign JSP prior to work BEGINNING!

The use of this form will guide you safely through your operating and rigging task, but is not all-inclusive. Use your knowledge and good judgment as well.

Project Name:			**Job #:**
Qualified Operator:			**Date:**
Crane Mod. #	**Crane Cap. (ton)**		**Crane #:**
Unit:	**Permit #:**	**Permit Type:**	
Task:			

***Crane Deductions / Rigging / Load Weight**

Main Block _____
Aux Block _____
Aux Sheave _____
Stowed jib _____
Erected Jib _____
Rigging Wt. _____
Load Wt.

(Total LOAD _____) **Divided By (Cranes Cap. _____)** ***X 100* = _____% CHART**

*****Reference for Deductions**

Main Block
Aux. Block
Aux. Sheave
**Stowed Jib
**Erected Jib
Enter Deductions on far LEFT

_____ **Radius (ft.)**
_____ **Angle (Degrees)**

On Outriggers ☐
360 Degrees ☐
Over the Front ☐
Over the Rear ☐

	Yes	No	N/A
Structural Clearances Checked	☐	☐	☐
Electrical Clearances Checked	☐	☐	☐
Cranes Properly Matted	☐	☐	☐
Lift Area Barricaded	☐	☐	☐

Concerns; Comments

Operator's Signature:

Resolution of Concerns

Supervisor's Signature:

Jib/Extension Erection and Stowing Pre-lift 2nd Check

☐ Manufacture's recommendations for erection and stowing have been followed.
☐ ALL anti-two block and computer wiring properly installed or disconnected.
☐ Wedge socket, ball and anti-two block weights properly installed or disconnected.
☐ ALL boom pins and keeper pins installed properly or removed properly.
☐ ALL pendant lines properly installed and pinned or removed properly.
☐ Hoist cable properly positioned in Idler Sheave or Gantry depending on boom configuration.
☐ Operator has visually inspected jib/extension for proper installation or stowing.
☐ ALL clearances checked to boom up or down from grade to working position or from working position to grade.

Operator's Signature:
Riggers' Signature:

*** All crane Deductions, rigging wt. And load wt. Added together will equal TOTAL LOAD.**
**** For cranes equipped with stingers (telescoping extensions) this weight is for the full retracted position ONLY. When in an extended position, refer to the manufactures load chart deductions.**

APPENDIX CC

Rigging and Lifting: Sample Work Plan

SAMPLE SITE SPECIFIC SAFE WORK PLAN
FOR MAJOR LIFT RIGGING PROCEDURES

The attached procedure is intended to be used as a guideline by Company and/or Subcontractors when developing detailed procedures for Heavy Hauling, Rigging, and Erection of Components.

[Name of the Company or Subcontractor]

SITE SPECIFIC SAFE WORK PLAN
FOR

[Title]

[Project Name]

P.O./Contract No._____ J.O. No._____
Procedure No._____ Revision_____

Contractor_____
Prepared By_____

Date_____ Page 1 of ___

APPROVAL	SIGNATURE	DATE
[Organization Name]	_____	_____

NOTE

There shall be NO deviations to the instructions contained in this procedure. Modification, deletion, or any other change to these instructions shall be implemented only when authorized by an approved revision to the procedure.

SAMPLE Site Specific Safe Work Plan

[Include items that are to be completed prior to the lift. List any special requirements or unique problems that must be resolved or completed prior to the lift. As a minimum, the following should be addressed.]

Equipment Job Safety Plan must be provided in this report. JSP's must be filled out and approved prior to lifting of the component. JSP's must be attached as part of the rigging procedure.

Prior to making the lift, the assigned supervisor must thoroughly brief personnel involved with the lift as to their duties and responsibilities. The Owner may be invited to attend this briefing.

The assigned supervisor shall ensure that precautions are taken during all lifts to prevent damage to equipment.

The area of crane placement shall be physically located by the assigned supervisor and verified by the Resident Engineer.

The assigned supervisor shall obtain pertinent "hotwork" permits and passes as required by the Contractor's site program.

Lifts shall not be undertaken if the wind is 20 mph, or greater.

All weights should be specified in U.S. short tons unless stated otherwise in the Equipment Lift Record Card or in the Contractor/Subcontractor rigging procedures.

PROCEDURE

[In this section, describe in a detailed sequence of what will take place. This section shall include each step associated with moving, maneuvering, or lifting of the component. The sequence, as given, should provide a means of accomplishing the technical requirements of the lift in a safe and orderly manner. An example follows.]

a. Attach rigging to crane sister hook as shown on drawing _____.

b. Attach rigging for tailing crane as shown on drawing ____ and position tail crane in accordance with drawing _____.

Check radius of both the lift crane and tail crane and check boom angle indicators.

Inspect all rigging and cranes.

Take a strain on the lift crane and break the load free of the front saddle.

Take a strain on the tail crane and while holding the load, inspect both cranes.

Raise the main load slowly and begin upending the component.

[Continue as required to complete the lift operation.]

ATTACHMENTS

[In this section, list all information necessary for the lift. As a minimum, include the following as appropriate to the scope of the work. These items should be attached as part of the procedure.]

- Delivery of Equipment

  [Include a drawing or record which identifies the delivery of the component to the site, e.g. barge, rail car, tractor trailer. Drawings should show the component and its relationship to the transporter, including dimensions for location of the center of gravity of the component; binder/tie down arrangement, saddles, welds, etc., and other information pertinent to delivery.]

- Storage Location

  [Include a drawing showing the area that the component will be stored, if not being set immediately upon delivery. Drawings should include dimensions to center of gravity of the component, matting if required, binder arrangement, and any special covering or purge required by the manufacturer or Owner.]

- Crane Layout

  [Include a drawing showing the location of all cranes, including coordinates/dimensions to the center pin for orientation. Show details of all rigging hook-ups to the load block, sling and shackle sizes, crane matting and mat orientation, and orientation of the component and transporter.]

- Equipment Lift Record Card / Crane Capacity Charts

  [An Equipment Lift Record Card must be completed for each crane. Include the weights of rigging equipment as part of the weight to be lifted. Attach the individual crane capacity chart (see sample) to each JSP.]

- Load-Out Arrangement of Component

  [Include a drawing for any intermediate transfer of the component, e.g. from a barge to a tractor trailer. The drawing should show the haul route, including super-elevations and percent grade along the route. Location, size, and depth of buried or underground culverts, pipes, or equipment should also be identified.]

- Soil Bearing Capacities
  [Include information concerning ground loadings from transporters and lift cranes.]

- Calculations

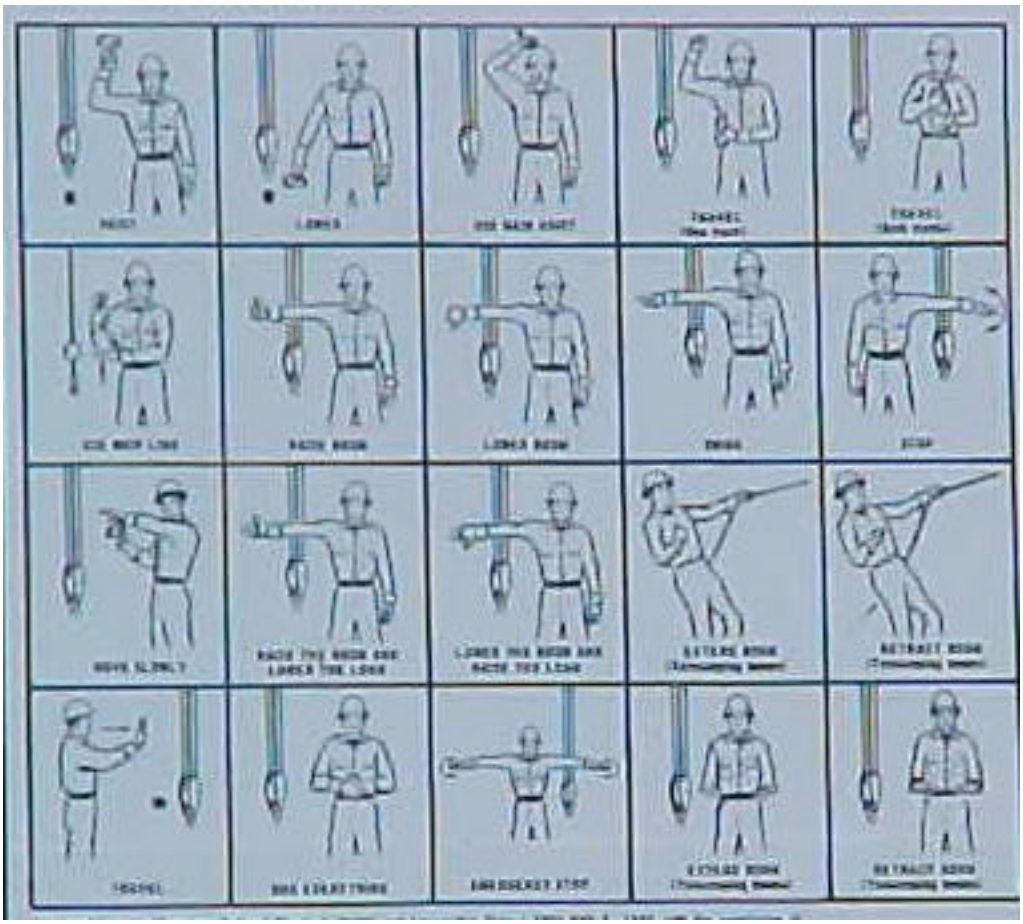
  [Provide engineering calculations pertinent to the component being moved, transported, or set. Include calculations for lift beams, upending devices, tiedown/binder arrangements, choker sizes, center of gravity for non-symmetrical components, etc. Drawings and calculations should be stamped by a RPE.]

- Certifications

  [Include the following minimum certifications:
  - Proof load data on slings
  - Radiographs or magnetic particle examination reports (lift beams, crane hooks, etc.)
  - Nondestructive examination reports on crane hooks.
  - Use history on cranes and transporters.
  - Load test results of cranes and/or crane inspection reports by the manufacturer's technical representative.
  - Calibration of torque devices.
  - Proof load certification on spreader beams and equalizer beams.]

APPENDIX DD

Crane Hand Signals



APPENDIX EE

Scaffold Design Requirements

Scaffold Capacity

Scaffolds must be designed by a qualified person and must be constructed and loaded in accordance with that design.

Each scaffold and scaffold component must be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

Direct connections to roofs and floors, and counterweights used to balance adjustable suspension scaffolds, must be capable of resisting at least 4 times the tipping moment imposed by the scaffold operating at either the rated load of the hoist, or 1.5 (minimum) times the tipping moment imposed by the scaffold operating at the stall load of the hoist, whichever is greater.

Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds must be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.

Each suspension rope, including connecting hardware, used on adjustable suspension scaffolds must be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope with the scaffold operating at either the rated load of the hoist, or 2 (minimum) times the stall load of the hoist, whichever is greater.

The stall load of any scaffold hoist must not exceed 3 times its rated load.

Scaffold Platform Construction

Each platform on all working levels of scaffolds must be fully planked or decked between the front uprights and the guardrail supports as follows:

Each platform unit (e.g., scaffold plank, fabricated plank, fabricated deck, or fabricated platform) must be fully decked with no gaps or openings. There must be no space between adjacent units, and between platforms and adjacent uprights.

The requirement to provide full planking or decking does not apply to platforms used solely by workers performing scaffold erection or dismantling. In these situations, only the planking that is established as necessary to provide safe working conditions is required.

Except as stated above, each scaffold platform and walkway must be at least 18inches (46 cm) wide.

There is no minimum width requirement for boatswains' chairs

Where scaffolds must be used in areas that it can be demonstrated are so narrow that platforms and walkways cannot be at least 18 inches (46 cm)

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wide, such platforms and walkways must be as wide as feasible, and workers on those platforms and walkways must be protected from fall hazards by the use of guardrails and/or personal fall arrest systems.

The front edge of all platforms must not be more than 6 inches from the face of the work, unless guardrail systems are erected along the front edge and/or personal fall arrest systems are used to protect workers from falling.

Each end of a platform unless cleated or otherwise restrained by hooks or equivalent means, must extend over the centerline of its support at least 6 inches (15 cm).

Each end of a platform 10 feet or less in length must not extend over its support more than 12 inches (30 cm) unless the platform is designed and installed so that the cantilevered portion of the platform is able to support workers and/or materials without tipping, or has guardrails which block worker access to the cantilevered end.

Each platform greater than 10 feet in length must not extend over its support more than 18 inches (46 cm), unless platform is designed and installed so that the cantilevered portion of the platform is able to support workers and/or materials without tipping, or has guardrails which block worker access to the cantilevered end.

On scaffolds where scaffold planks are abutted to create a long platform, each abutted end must rest on a separate support surface. This provision does not preclude the use of common support members, such as "T" sections, to support abutting planks, or hook on platforms designed to rest on common supports.

On scaffolds where platforms are overlapped to create a long platform, the overlap must occur only over supports, and must not be less than 12 inches (30 cm) unless the platforms are nailed together or otherwise restrained to prevent movement.

At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle must be laid first, and platforms which rest at right angles over the same bearer must be laid second, on top of the first platform.

Wood platforms must not be covered with opaque finishes, except that platform edges may be covered or marked for identification. Platforms may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.

All wood platforms must be treated with fire-retardant finishes so as to reduce the risk of fire from “hot work” operations.

Scaffold components manufactured by different manufacturers must not be intermixed or modified except as allowed by the manufacturer of that equipment.

Scaffold components made of dissimilar metals must not be used together unless a competent person has determined that galvanic action will not reduce the strength of any component

Criteria for Supported Scaffolds

Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) must be restrained from tipping by guying, tying, bracing, or equivalent means, as follows:

- Guys, ties, and braces must be installed at locations where horizontal members support both inner and outer legs.
- Guys, ties, and braces must be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet (6.1 m) or less thereafter for scaffolds 3 feet (0.91 m) wide or less, and every 25 feet or less thereafter for scaffolds greater than 3 feet (0.91 m) wide. The top guy, tie or brace of completed scaffolds must be placed no further than the 4:1 height from the top. Such guys, ties and braces must be installed at each end of the scaffold

and at horizontal intervals not to exceed 30 feet (9.1 m) (measured from one end [not both] towards the other).

- Ties, guys, braces, or outriggers must be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.
- A qualified person must determine the structural integrity of steel, reinforcing steel, and concrete or building members prior to the attachment of scaffold ties, guys, or bracing.

Supported scaffold poles, legs, posts, frames, and uprights must bear on base plates, mud sills or other adequate firm foundation. Mudsills when used must be constructed of 2 x 10 in. lumber.

- Footings must be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.
- Unstable objects must not be used to support scaffolds or platform units.
- Unstable objects must not be used as working platforms.
- Supported scaffold poles, legs, posts, frames, and uprights must be plumb and braced to prevent swaying and displacement.
- When screw jacks are used, they must be used in accordance to manufacturer's recommendations but must not be extended in excess of 12 in. in height.

Criteria for Suspension Scaffolds

All suspension scaffold support devices, such as outrigger beams, cornice hooks, parapet clamps, and similar devices, must rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist (or at least 1.5 times the load imposed on them by the scaffold at the stall capacity of the hoist, whichever is greater).

Suspension scaffold outrigger beams, when used, must be made of structural metal or equivalent strength material, and must be restrained to prevent movement.

The inboard ends of suspension scaffold outrigger beams must be stabilized by bolts or other direct connections to the floor or roof deck, or they must have their inboard ends stabilized by counterweights.

Before the scaffold is used, direct connections must be evaluated by a competent person who must confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed.

- Counterweights must be made of non-flowable material. Sand, gravel and similar materials that can be easily dislocated must not be used as counterweights.
- Only those items specifically designed as counterweights must be used to counterweight scaffold systems. Construction materials such as, but not limited to, masonry units and rolls of roofing felt, must not be used as counterweights.
- Counterweights must be secured by mechanical means to the outrigger beams to prevent accidental displacement.
- Counterweights must not be removed from an outrigger beam until the scaffold is disassembled.
- Outrigger beams which are not stabilized by bolts or other direct connections to the floor or roof deck must be secured by tiebacks.
- Tiebacks must be equivalent in strength to the suspension ropes.

- Outrigger beams must be placed perpendicular to its bearing support (usually the face of the building or structure). However, where it can demonstrate that it is not possible to place an outrigger beam perpendicular to the face of the building or structure because of obstructions that cannot be moved, the outrigger beam may be placed at some other angle, provided opposing angle tiebacks are used.
- Tiebacks must be secured to a structurally sound anchorage on the building or structure. Sound anchorages include structural members, but do not include standpipes, vents, other piping systems, or electrical conduit.
- Tiebacks must be installed perpendicular to the face of the building or structure, or opposing angle tiebacks must be installed. Single tiebacks installed at an angle are prohibited.

Suspension scaffold outrigger beams must be:

- Provided with stop bolts or shackles at both ends;
- Securely fastened together with the flanges turned out when channel iron beams are used in place of I-beams;
- Installed with all bearing supports perpendicular to the beam center line;
- Set and maintained with the web in a vertical position; and
- When an outrigger beam is used, the shackle or clevis with which the rope is attached to the outrigger beam must be placed directly over the center line of the stirrup.

Suspension scaffold support devices such as cornice hooks, roof hooks, roof irons, parapet clamps, or similar devices must be:

- Made of steel, wrought iron, or materials of equivalent strength;
- Supported by bearing blocks; and
- Secured against movement by tiebacks installed at right angles to the face of the building or structure, or opposing angle tiebacks must be installed and secured to a structurally sound point of anchorage on the building or structure. Sound points of anchorage include structural members, but do not include standpipes, vents, other piping systems, or electrical conduit.
- Tiebacks must be equivalent in strength to the hoisting rope.

When winding drum hoists are used on a suspension scaffold, they must contain not less than four wraps of the suspension rope at the lowest point of scaffold travel. When other types of hoists are used, the suspension ropes must be long enough to allow the scaffold to be lowered to the level below without the rope end passing through the hoist, or the rope end must be configured or provided with means to prevent the end from passing through the hoist.

The use of repaired wire rope as suspension rope is prohibited.

Wire suspension ropes must not be joined together except through the use of eye splice thimbles connected with shackles or cover plates and bolts.

The load end of wire suspension ropes must be equipped with proper size thimbles and secured by eye-splicing or equivalent means.

Ropes must be inspected for defects by a competent person prior to each work-shift and after every occurrence which could affect a rope's integrity. Ropes must be replaced if any of the following conditions exist:

- Any physical damage which impairs the function and strength of the rope.

- Kinks that might impair the tracking or wrapping of rope around the drum(s) or sheave(s).
- Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.
- Abrasion, corrosion, scrubbing, flattening or peening causing loss of more than one-third of the original diameter of the outside wires.
- Heat damage caused by a torch or any damage caused by contact with electrical wires.
- Evidence that the secondary brake has been activated during an over-speed condition and has engaged the suspension rope.

Swaged attachments or spliced eyes on wire suspension ropes must not be used unless they are made by the wire rope manufacturer or a qualified person.

When wire rope clips are used on suspension scaffolds:

- There must be a minimum of 3 wire rope clips installed, with the clips a minimum of 6 rope diameters apart.
- Clips must be installed according to the manufacturer's recommendations.
- Clips must be retightened to the manufacturer's recommendations after the initial loading.
- Clips must be inspected and retightened to the manufacturer's recommendations at the start of each work-shift thereafter.
- U-bolt clips must not be used at the point of suspension for any scaffold hoist.
- When U-bolt clips are used, the U-bolt must be placed over the dead end of the rope, and the saddle must be placed over the live end of the rope.

Suspension scaffold power-operated hoists and manual hoists must be tested and listed by a qualified testing laboratory.

Gasoline-powered equipment and hoists must not be used on suspension scaffolds.

Gears and brakes of power-operated hoists used on suspension scaffolds must be enclosed.

In addition to the normal operating brake, suspension scaffold power-operated hoists and manually operated hoists must have a braking device or locking pawl which engages automatically when a hoist makes either of the following uncontrolled movements: an instantaneous change in momentum or an accelerated over-speed.

Manually operated hoists must require a positive crank force to descend.

Two-point and multi-point suspension scaffolds must be tied or otherwise secured to prevent them from swaying, as determined to be necessary based on an evaluation by a competent person. Window cleaners' anchors must not be used for this purpose.

Devices whose sole function is to provide emergency escape and rescue must not be used as working platforms. This provision does not preclude the use of systems which are designed to function both as suspension scaffolds and emergency systems.

Access

This section applies to scaffold access for all workers. Access requirements for workers erecting or dismantling supported scaffolds are specifically addressed later in this procedure.

When scaffold platforms are more than 12 inches. above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface must be used. Cross-braces must not be used as a means of access.

When climbing ladders, workers must maintain three-point contact at all times. Tools or materials may not be carried up in workers' hands. Toe-boards must not be used as handholds or foot holds.

Portable, hook-on, and attachable ladders:

- Portable, hook-on, and attachable ladders must be positioned so as not to tip the scaffold.
- Hook-on and attachable ladders must be positioned so that their bottom rung is not more than 12 inches above the scaffold supporting level or a height equal to the vertical rung spacing, which ever is larger.
- When hook-on and attachable ladders are used on a supported scaffold more than 35 feet (10.7 m) high, they must have rest platforms at 35-foot (10.7 m) maximum vertical intervals.
- Hook-on and attachable ladders must be specifically designed for use with the type of scaffold used.
- Hook-on and attachable ladders must have a minimum rung length of 11 1/2 inches (29 cm).
- Hook-on and attachable ladders must have uniformly spaced rungs with a maximum spacing between rungs of 16 3/4 inches.

Stairway-type ladders must:

- Be positioned such that the vertical distance between the bottom step above the scaffold supporting level is not more than 12 inches or a vertical height equal to the distance between the steps of the ladder, whichever is greater.
- Be provided with rest platforms at 12 foot (3.7 m) maximum vertical intervals.
- Have a minimum step width of 16 inches (41 cm), except that mobile scaffold stairway-type ladders must have a minimum step width of 11 1/2 inches (30 cm).
- Have slip-resistant treads on all steps and landings.
- Stair-towers (scaffold stairway/towers) must be positioned such that their bottom step is not more than 12 inches above the scaffold supporting level.
- A stair-rail consisting of a top-rail and a mid-rail must be provided on each side of each scaffold stairway.
- The top-rail of each stair-rail system must also be capable of serving as a handrail, unless a separate handrail is provided.
- Handrails, and top-rails that serve as handrails, must provide an adequate handhold for workers grasping them to avoid falling.
- Stair-rail systems and handrails must be surfaced to prevent injury to workers from punctures or lacerations, and to prevent snagging of clothing.

- The ends of stair-rail systems and handrails must be constructed so that they do not constitute a projection hazard.
- Handrails, and top-rails that are used as handrails, must be at least 3 inches (7.6 cm) from other objects.
- Each scaffold stairway must be at least 18 inches (45.7 cm) wide between stair-rails.
- Treads and landings must have slip-resistant surfaces.
- Stairways must be installed between 40 degrees and 60 degrees from the horizontal.
- Guardrails must be provided on the open sides and ends of each landing.

Access for workers erecting or dismantling supported scaffolds must be in accordance with the following:

- The Construction Manager must provide safe means of access for each worker erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. The competent person and the AES Site Safety Manager must determine whether it is feasible or would pose a greater hazard to provide, and have workers use a safe means of access. This determination must be based on site conditions and the type of scaffold being erected or dismantled.
- Hook-on or attachable ladders must be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.
- When erecting or dismantling tubular welded frame scaffolds, (end) frames, with horizontal members that are parallel, level and are not more than 22 inches apart vertically may be used as climbing devices for access, provided they are erected in a manner that creates a usable ladder and provides good hand hold and foot space.
- Cross-braces on tubular welded frame scaffolds must not be used as a means of access or egress.

Use

Scaffolds and scaffold components must not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

The use of shore or lean-to scaffolds is prohibited.

Scaffolds and scaffold components must be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity.

Scaffolds must not be moved horizontally while workers are on them.

Scaffolds must not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come closer to exposed and energized power lines than as follows:

Insulated & Un-insulated Line Voltage	Minimum Distance
Less than 50 kV	10 feet (3.1m)
More than 50 kV	10 feet (3.1 m) plus 4.0 inches (10 cm) for each 1 kV over 50 kV

Note: Scaffolds and materials may only be closer to power lines than specified above where the utility company or electrical system operator has been notified of the work and de-energized the lines, relocated the lines, or installed protective coverings to prevent accidental contact with the lines.

Scaffolds must be erected, moved, dismantled, or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Such activities must be performed only by experienced and trained workers selected for such work by the competent person.

Workers must be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials.

Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads must be used.

Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for workers to be on the scaffold and those workers are protected by a personal fall arrest system or wind screens. Wind screens must not be used unless the scaffold is secured against the anticipated wind forces imposed

Debris must not be allowed to accumulate on platforms.

Makeshift devices, such as but not limited to boxes and barrels, must not be used on top of scaffold platforms to increase the working level height of workers.

Ladders must not be used on scaffolds to increase the working level height of workers, except on large area scaffolds where the following conditions have been satisfied:

To reduce the possibility of welding current arcing through the suspension wire rope when performing welding from suspended scaffolds, the following precautions must be taken, as applicable:

- An insulated thimble must be used to attach each suspension wire rope to its hanging support (such as cornice hook or outrigger). Excess suspension wire rope and any additional independent lines must be insulated from grounding.
- The suspension wire rope must be covered with insulating material extending at least 4 feet (1.2 m) above the hoist. If there is a tail line below the hoist, it must be insulated to prevent contact with the platform. The portion of the tail line that hangs free below the scaffold must be guided or retained, or both, so that it does not become grounded.
- Each hoist must be covered with insulated protective covers.
- In addition to a work lead attachment required by the welding process, a grounding conductor must be connected from the scaffold to the structure. The size of this conductor must be at least the size of the welding process work lead, and this conductor must not be in series with the welding process or the work piece.
- If the scaffold grounding lead is disconnected at any time, the welding machine must be shut off.
- An active welding rod or un-insulated welding lead must not be allowed to contact the scaffold or its suspension system.

Fall Protection

Each worker on a scaffold more than 6 feet above a lower level must be protected from falling to that lower level.

- Each worker on a boatswains' chair, float scaffold or needle beam scaffold must be protected by a personal fall arrest system.
- Each worker on a single-point or two-point adjustable suspension scaffold must be protected by both a personal fall arrest system and guardrail system.
- Each worker on a self-contained adjustable scaffold must be protected by a guardrail system (with minimum 200 pound top-rail capacity) when the platform is supported by the frame structure, and by both a personal fall arrest system and a guardrail system (with minimum 200 pound toprail capacity) when the platform is supported by ropes.
- Each worker on a walkway located within a scaffold must be protected by a guardrail system (with minimum 200 pound top-rail capacity) along both sides of the walkway.
- For all scaffolds not otherwise specified, each worker must be protected by the use of personal fall arrest systems or guardrail systems.

In addition to meeting the requirements of fall protection, personal fall arrest systems used on scaffolds must be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member. Vertical lifelines must not be used when overhead components, such as overhead protection or additional platform levels, are part of a single-point or two-point adjustable suspension scaffold.

- When vertical lifelines are used, they must be fastened to a fixed safe point of anchorage, must be independent of the scaffold, and must be protected from sharp edges and abrasion. Safe points of anchorage include structural members of buildings, but do not include standpipes, vents, other piping systems, electrical conduit, outrigger beams, or counterweights. There must only be one vertical lifeline per worker.
- When horizontal lifelines are used, they must be secured to two or more structural members of the scaffold, or they may be looped around both suspension and independent suspension lines (on scaffolds so equipped) above the hoist and brake attached to the end of the scaffold. Horizontal lifelines must not be attached only to the suspension ropes.
- When lanyards are connected to horizontal lifelines or structural members on a single-point or two-point adjustable suspension scaffold, the scaffold must be equipped with additional independent support lines and automatic locking devices capable of stopping the fall of the scaffold in the event one or both of the suspension ropes fail. The independent support lines must be equal in number and strength to the suspension ropes.
- Vertical lifelines, independent support lines, and suspension ropes must not be attached to each other, nor must they be attached to or use the same point of anchorage, nor must they be attached to the same point on the scaffold or personal fall arrest system.

Guardrail systems installed to meet the requirements of this section must comply with the following:

- Guardrail systems must be installed along all open sides and ends of platforms. Guardrail systems must be installed before the scaffold is released for use by workers other than erection/ dismantling crews.
- Guardrails (top-rails and mid-rails) must be 2 x 4 in. or equivalent with vertical uprights not to exceed 8 foot intervals. Toe-boards must be a minimum of 4 in. in height.
- The top edge height of top-rails or equivalent member on supported scaffolds must be installed between 38 inches (0.97 m) and 45 inches (1.2 m) above the platform surface. The top edge height on supported scaffolds and on all suspended scaffolds where both a guardrail and a personal fall arrest system are required must be between 36 inches (0.9 m) and 45 inches (1.2 m). When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of this section.
- When mid-rails, screens, mesh, intermediate vertical members, solid panels, or equivalent structural members are used, they must be installed between the top edge of the guardrail system and the scaffold platform.
- When screens and mesh are used, they must extend from the top edge of the guardrail system to the scaffold platform, and along the entire opening between the supports.
- When intermediate members (such as balusters or additional rails) are used, they must not be more than 19 inches (48 cm) apart.
- When the loads specified above are applied in a downward direction, the top edge must not drop below the minimum height requirements previously stated.
- Mid-rails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members of a guardrail system must be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along the mid-rail or other member of at least 75 pounds (333 n) for guardrail systems with a minimum 100 pound top-rail capacity, and at least 150 pounds (666 n) for guardrail systems with a minimum 200 pound top-rail capacity.
- Guardrails must be surfaced to prevent injury to a worker from punctures or lacerations, and to prevent snagging of clothing.
- The ends of all rails must not overhang the terminal posts except when such overhang does not constitute a projection hazard to workers.
- Steel or plastic banding must not be used as a top-rail or mid-rail.
- Manila or plastic (or other synthetic) rope is prohibited for use as top-rails or mid-rails.

Falling Object Protection

In addition to wearing hard-hats each worker on a scaffold must be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toe-boards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects. When the falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measures, the Contractor/Subcontractor must place such potential falling objects away from the edge of the surface from which they could fall and must secure those materials as necessary to prevent their falling.

Where there is a danger of tools, materials, or equipment falling from a scaffold and striking workers below, the following provisions apply:

- The area below the scaffold to which objects can fall must be barricaded, and workers must not be permitted to enter the hazard area.
- A toe-board must be erected along the edge of platforms more than 6 feet above lower levels for a distance sufficient to protect workers below.
- Where tools, materials, or equipment are piled to a height higher than the top edge of the toe-board, paneling or screening extending from the toe-board or platform to the top of the guardrail must be erected for a distance sufficient to protect workers below.
- A guardrail system must be installed with openings small enough to prevent passage of potential falling objects.
- A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects must be erected over the workers below.

Screening used must consist of No. 18 gage, 1/2 in. wire mesh or equivalent.

Canopies, when used for falling object protection, must comply with the following criteria:

- Canopies must be installed between the falling object hazard and the workers.
- When canopies are used on suspension scaffolds for falling object protection, the scaffold must be equipped with additional independent support lines equal in number to the number of points supported, and equivalent in strength to the strength of the suspension ropes.
- Independent support lines and suspension ropes must not be attached to the same points of anchorage.

List of Training Topics for Scaffold Erectors and Dismantlers.

This Appendix is provided to serve as a guide to assist AES or Construction Manager Personnel when evaluating the training needs of workers erecting or dismantling supported scaffolds.

Workers erecting or dismantling scaffolds must be trained in the following topics:

General Overview of Scaffolding

Regulations and standards

Erection/dismantling planning

PPE and proper procedures

Fall protection

Materials handling

Access

Working platforms

Foundations

Guys, ties and braces

Tubular Welded Frame Scaffolds

Specific regulations and standards

Components

- Parts inspection
- Erection/dismantling planning
- Guys, ties and braces
- Fall protection
- General safety
- Access and platforms
- Erection/dismantling procedures
- Rolling scaffold assembly
- Putlogs

Tube and Clamp Scaffolds

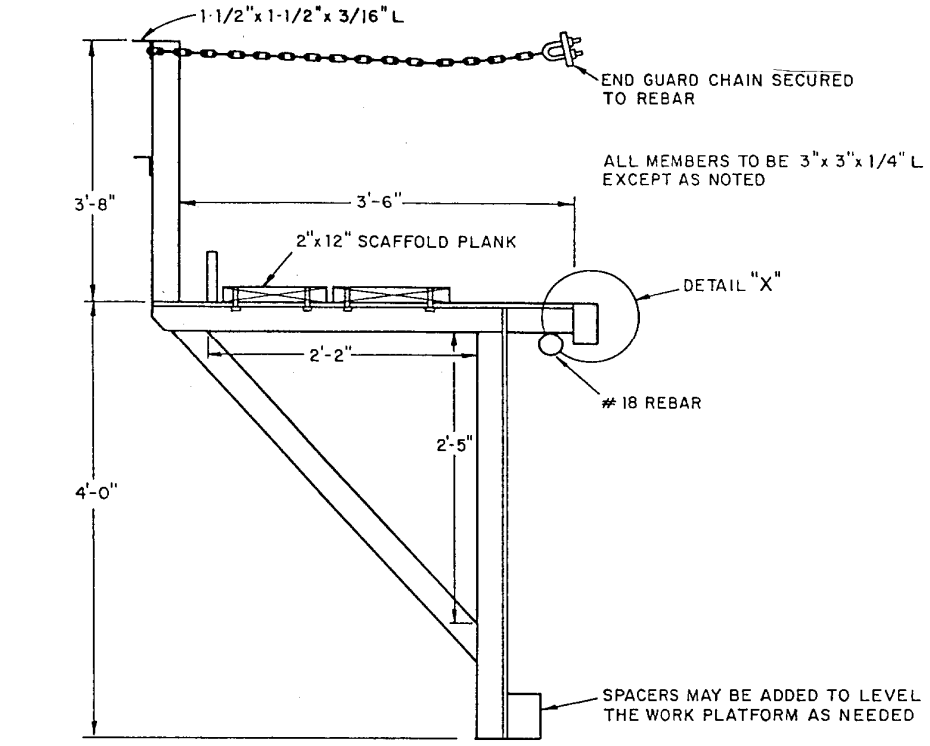
- Specific regulations and standards
- Components
- Parts inspection
- Erection/dismantling planning
- Guys, ties and braces
- Fall protection
- General safety
- Access and platforms
- Erection/dismantling procedures
- Buttresses, cantilevers, & bridges

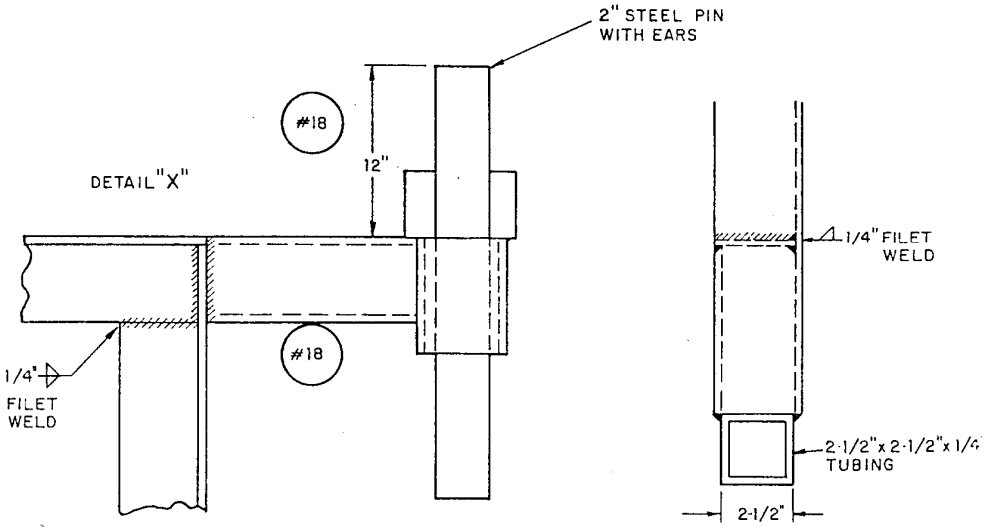
System Scaffolds

- Specific regulations and standards
- Components
- Parts inspection
- Erection/dismantling planning
- Guys, ties and braces
- Fall protection
- General safety
- Access and platforms
- Erection/dismantling procedures
- Buttresses, cantilevers, & bridges

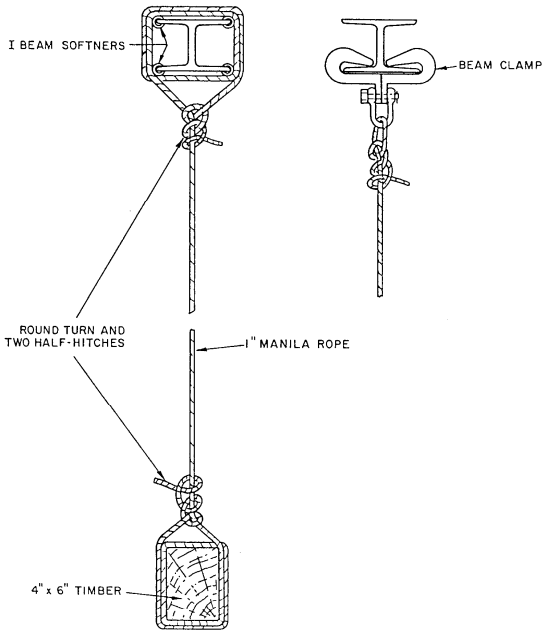
Scaffold erectors and dismantlers must all receive the general overview, and, in addition, specific training for the type of supported scaffold being erected or dismantled.

Scaffolds Illustrations

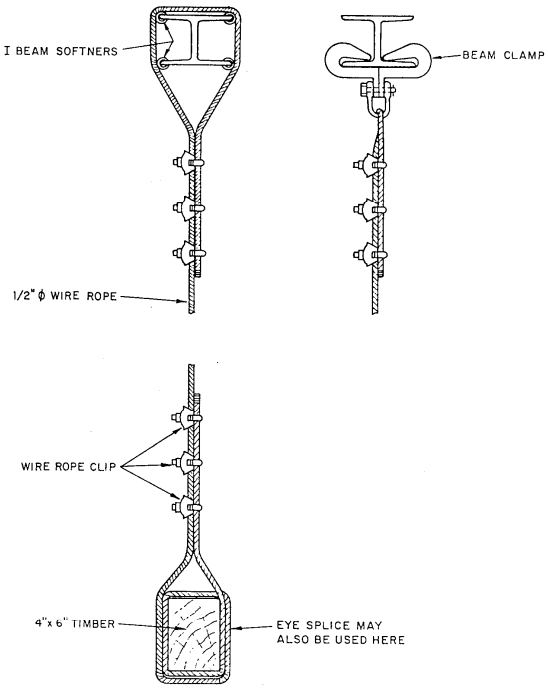




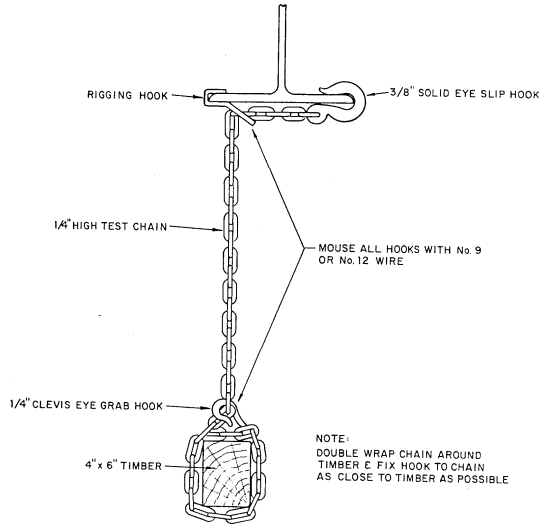
BRACKET SCAFFOLD



NEEDLE BEAM SCAFFOLD
MANILA ROPE SUPPORT

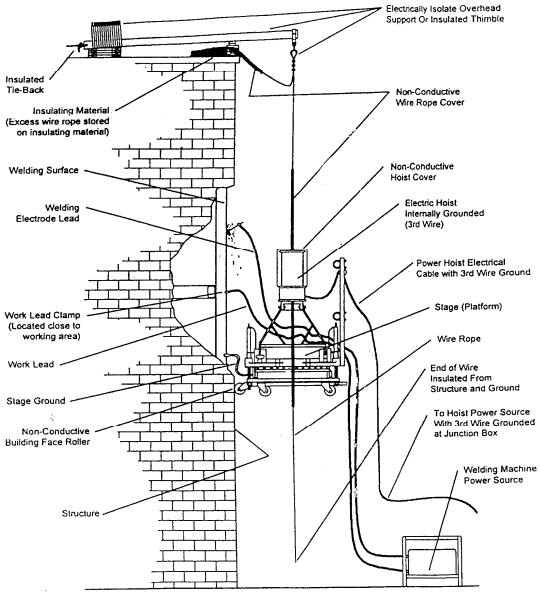


NEEDLE BEAM SCAFFOLD
WIRE ROPE SUPPORT

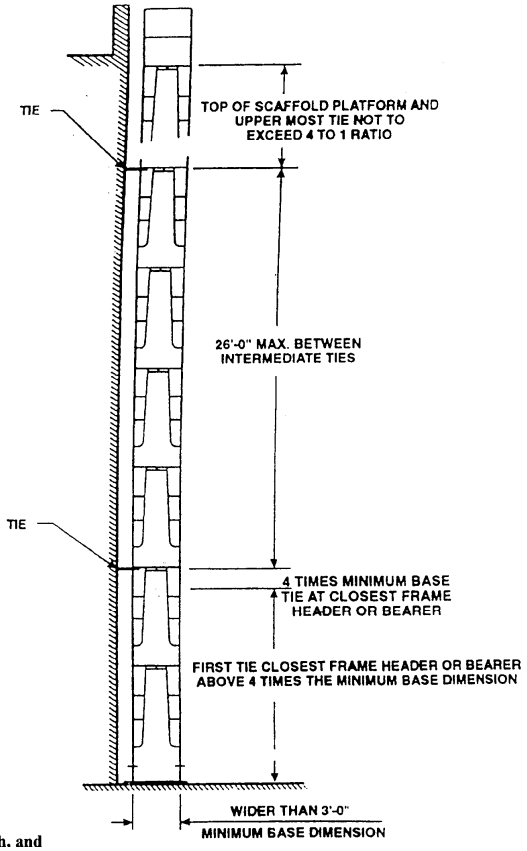


NEEDLE BEAM SCAFFOLD
CHAIN SUPPORT

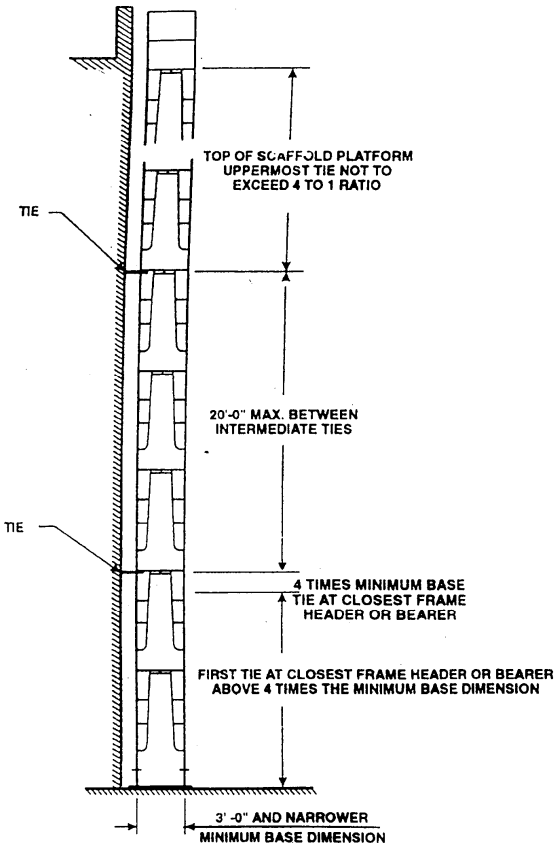
SUSPENDED SCAFFOLD PLATFORM WELDING PRECAUTIONS



MAXIMUM VERTICAL TIE SPACING
WIDER THAN 3'-0" BASES



MAXIMUM VERTICAL TIE SPACING
3'- 0" AND NARROWER BASES



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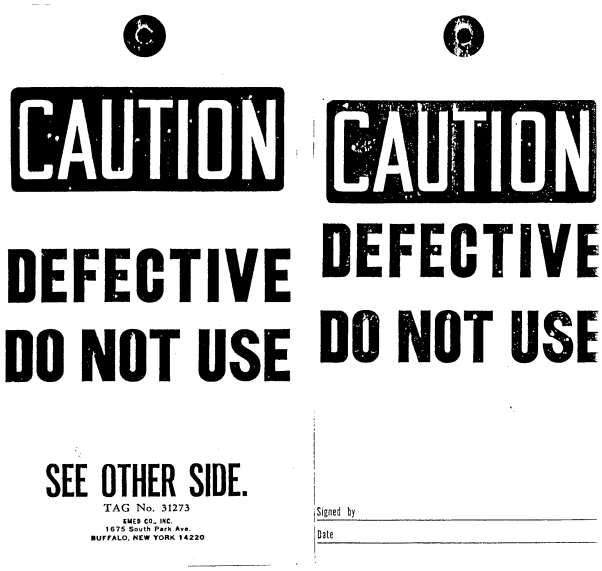
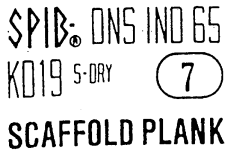
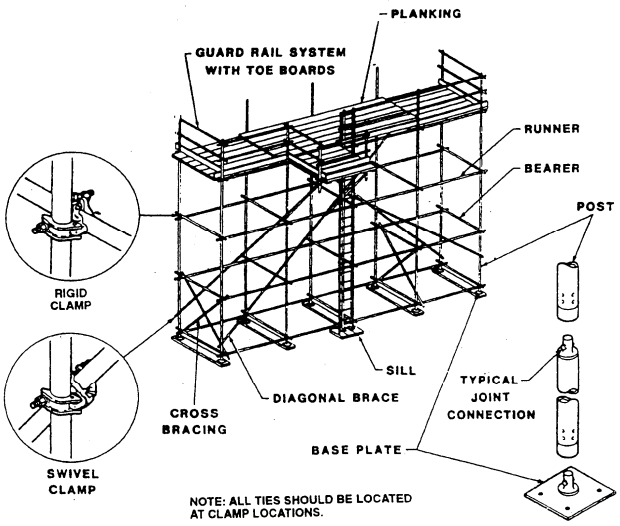




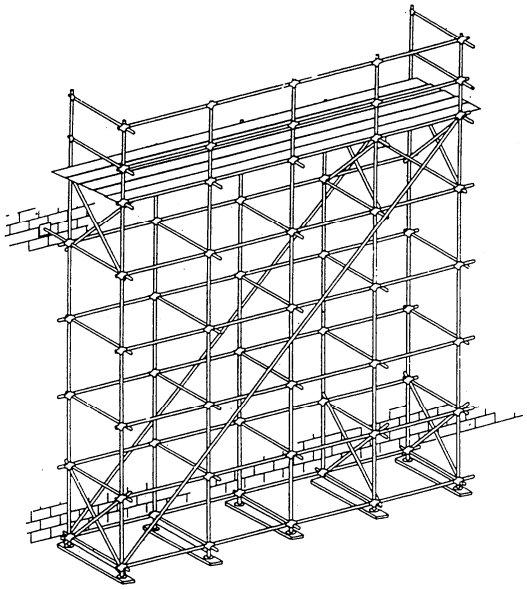
Grade stamp courtesy of Southern Pine Inspection Bureau

Grade stamp courtesy of West Coast Lumber Inspection Bureau

TUBE and COUPLER SCAFFOLD



BRACING – TUBE & COUPLER SCAFFOLDS



APPENDIX FF

Scaffold Safety Checklist

ITEMS TO BE CHECKED	NEEDS REPAIR	CONDITIONS O.K.
Any surrounding hazards:		
- Noxious vapors / fumes	_____	_____
- Caustic	_____	_____
- Other chemicals	_____	_____
- Overhead electrical lines	_____	_____
- Excessive heat	_____	_____
- Moving equipment / machinery	_____	_____
- Overhead work	_____	_____
- Other	_____	_____
Scaffold base on firm, solid footing	_____	_____
Scaffold level and plumb	_____	_____
Scaffold fully planked	_____	_____
Scaffold guardrails / toeboard in place	_____	_____
Scaffold secure, stable or guyed	_____	_____
Scaffold bracing in place	_____	_____
Scaffold board color code O.K.	_____	_____
Safe access provided	_____	_____
Wheel pulleys and / or rope available to raise / lower material	_____	_____
Barricade required below	_____	_____
Personal fall protection required	_____	_____

Corrective Action: List all action taken to correct noted deficiencies:

_____

_____

_____

_____

Audited by: _____

Date: _____

APPENDIX GG

Typical Examples of Confined Spaces on Construction Sites

Vaults

A variety of vaults are found on the construction jobsite. On various occasions, workers must enter these vaults to perform a number of functions. The restricted nature of vaults and their frequently below-grade location can create an assortment of safety and health problems.

Oxygen-Deficient Atmosphere

One of the major problems confronting construction workers while working in vaults is the ever-present possibility of an oxygen-deficient atmosphere.

Explosive or Toxic Gases, Vapors, or Fumes

While working in an electrical vault, workers may be exposed to the build-up of explosive gases such as those used for heating (propane). Welding and soldering produce toxic fumes which are confined in the limited atmosphere.

Electrical Shock

Electrical shock is often encountered from power tools, line cords, etc. In many instances, such electrical shock results from the fact that the contractor has not provided an approved grounding system or the protection afforded by ground-fault circuit interrupters or low-voltage systems.

Purging

In some instances, purging agents such as nitrogen and argon may enter the vault from areas adjacent to it. These agents may displace the oxygen in the vault to the extent that it will asphyxiate workers almost immediately.

Materials Falling In and On

A hazard normally considered a problem associated with confined spaces is material or equipment which may fall into the vault or onto workers as they enter and leave the vault. Vibration could cause the materials on top of the vault to roll off and strike workers. If the manhole covers were removed, or if they were not installed in the first place, materials could fall into the vault, causing injury to the workers inside.

Condenser Pits

A common confined space found in the construction of nuclear power plants is the condenser pit. Because of their large size, they are often overlooked as potentially hazardous confined spaces. These below-grade areas create large containment areas for the accumulation of toxic fumes,

gases, and so forth, or for the creation of oxygen-deficient atmospheres when purging with argon, freon, and other inert gases. Other hazards will be created by workers above dropping equipment, tools, and materials into the pit.

Manholes

Throughout the construction site, manholes are commonplace. As means of entry into and exit from vaults, tanks, pits, and so forth, manholes perform a necessary function. However, these confined spaces may present serious hazards which could cause injuries and fatalities. A variety of hazards are associated with manholes. To begin with, the manhole could be a dangerous trap into which the worker could fall. Often covers are removed and not replaced, or else they are not provided in the first place.

Pipe Assemblies

One of the most frequently unrecognized types of confined spaces encountered throughout the construction site is the pipe assembly. Piping of sixteen to thirty-six inches in diameter is commonly used for a variety of purposes. For any number of reasons, workers will enter the pipe. Once inside, they are faced with potential oxygen-deficient atmospheres, often caused by purging with argon or another inert gas. Welding fumes generated by the worker in the pipe, or by other workers operating outside the pipe at either end, subject the worker to toxic atmospheres. The generally restricted dimensions of the pipe provide little room for the workers to move about and gain any degree of comfort while performing their tasks. Once inside the pipe, communication is extremely difficult. In situations where the pipe bends, communication and extrication become even more difficult. Electrical shock is another problem to which the worker is exposed. Ungrounded tools and equipment or inadequate line cords are some of the causes. As well, heat within the pipe run may cause the worker to suffer heat prostration.

Ventilation Ducts

Ventilation ducts, like pipe runs, are very common at the construction site. These sheet metal enclosures create a complex network which moves heated and cooled air and exhaust fumes to desired locations in the plant. Ventilation ducts may require that workers enter them to cut out access holes, install essential parts of the duct, etc. Depending on where these ducts are located, oxygen deficiency could exist. They usually possess many bends, which create difficult entry and exit and which also make it difficult for workers inside the duct to communicate with those outside it. Electrical shock hazards and heat stress are other problems associated with work inside ventilation ducts.

Tanks

Tanks are another type of confined workspace commonly found in construction. They are used for a variety of purposes, including the storage of water, chemicals, etc.

Tanks require entry for cleaning and repairs. Ventilation is always a problem. Oxygen-deficient atmospheres, along with toxic and explosive atmospheres created by the substances stored in the tanks, present hazards to workers. Heat, another problem in tanks, may cause heat prostration,

particularly on a hot day. Since electrical line cords are often taken into the tank, the hazard of electrical shock is always present. The nature of the tank's structure often dictates that workers must climb ladders to reach high places on the walls of the tank.

Sumps

Sumps are commonplace. They are used as collection places for water and other liquids. Workers entering sumps may encounter an oxygen-deficient atmosphere. Also, because of the wet nature of the sump, electrical shock hazards are present when power tools are used inside. Sumps are often poorly illuminated. Inadequate lighting may create an accident situation.

Containment Cavities

These large below-grade areas are characterized by little or no air movement. Ventilation is always a problem. In addition, the possibility of oxygen deficiency exists. As well, welding and other gases may easily collect in these areas, creating toxic atmospheres. As these structures near completion, more confined spaces will exist as rooms are built off the existing structure.

Electrical Transformers

Electrical transformers are located on the jobsite. They often contain a nitrogen purge or dry air. Before they are opened, they must be well vented by having air pumped in. Workers, particularly electricians and power plant operators, will enter these transformers through hatches on top for various work-related reasons. Testing for oxygen deficiency and for toxic atmospheres is mandatory.

Heat Sinks

These larger pit areas hold cooling water in the event that there is a problem with the pumps located at the water supply to the plant--normally a river or lake--which would prevent cooling water from reaching the reactor core. When in the pits, workers are exposed to welding fumes and electrical hazards, particularly because water accumulates in the bottom of the sink. Generally, it is difficult to communicate with workers in the heat sink, because the rebar in the walls of the structure deaden radio signals.

UNUSUAL CONDITIONS

Confined Space Within a Confined Space

By the very nature of construction, situations are created which illustrate one of the most hazardous confined spaces of all--a confined space within a confined space. This situation appears as tanks within pits, pipe assemblies or vessels within pits, etc. In this situation, not only do the potential hazards associated with the outer confined space require testing, monitoring, and control, but those of the inner space also require similar procedures. Often, only the outer space is evaluated. When workers enter the inner space, they are faced with potentially hazardous conditions. A good example of a confined space within a confined space is a vessel with a nitrogen purge inside a

filtering water access pit. Workers entering the pit and/or the vessel should do so only after both spaces have been evaluated and proper control measures established.

APPENDIX HH

Sample Hot Work Permit (Welding, Cutting & Brazing)

(Front)

This permit becomes void:

(1) At the end of the shift or
(2) Whenever conditions change significantly or
(3) On any emergency signal.

PERMIT NO. _____

DATE: _____ SHIFT: _____

BUILDING: _____ AREA: _____

NATURE OF WORK: _____

_____

SPECIAL PRECAUTIONS: _____

_____

IS FIRE WATCH REQUIRED?: _____

ADDITIONAL PERMIT REQUIRED?: (i.e., confined space) _____

STEP 2 (See reverse side for Step 1)

The location where this work is to be done has been examined, necessary precautions taken, and permission is granted for this work. (See other side)

Permit expires: _____ Signed: _____
(Safety Representative)

Time started: _____ Completed: _____

STEP 3 FINAL CHECKUP

Work area and all adjacent areas to which sparks and heat might have spread (including floors above and below and on opposite sides of walls) were inspected 30 minutes after the work was completed and were found firesafe.

Signed:

(Back)

ATTENTION

STEP 1

Before approving and cutting and welding permit, the supervisor shall inspect the work area and confirm that precautions have been taken to prevent fire in accordance with this manual.

PRECAUTIONS

- ☐ Sprinklers in service
- ☐ Cutting and welding equipment in good repair
- ☐ Personnel protective equipment available and in good condition

WITHIN 35 FT OF WORK

- ☐ Floors swept clean of combustibles
- ☐ Combustible floors wet down, covered with damp sand, metal or other shields
- ☐ No combustible material or flammable liquids
- ☐ Combustibles and flammable liquids protected with covers, guards or metal shields
- ☐ All wall and floor openings covered
- ☐ Covers suspended beneath work to collect sparks

WORK ON WALLS OR CEILINGS

- ☐ Construction noncombustible and without combustible covering
- ☐ Combustible moved away from opposite side of wall

WORK ON ENCLOSED EQUIPMENT
(Tanks, containers, ducts, dust collectors, etc.)

- ☐ Equipment cleaned of all combustibles
- ☐ Containers purged of flammable vapors

FIRE WATCH

- ☐ To be provided during and 30 minutes after operation
- ☐ Supplied with extinguisher and small hose
- ☐ Trained in use of equipment and in sounding fire alarm
- ☐ Has necessary personnel protective equipment

FINAL CHECKUP

- ☐ To be made 30 minutes after completion of any operation unless fire watch is provided.

Signed:_____

(Supervisor)

APPENDIX II

Agenda for Pre-construction Meeting

Orientation

1) Explain why a safety program exists
2) Advantages-
3) Prescribed safety standards
4) Review
   (a) Accident prevention agreements
   (b) General conditions of specifications on safety
   (c) Special conditions of specifications on safety
5) Other requirements—local, state, federal
6) Supervision
   (a) Organization at project site
   (b) Functions of site personnel
   (c) Responsibilities
   (d) Delegated authorities
   (e) Relations regarding enforcement and discipline

Discussion of site safety program

1) Plans regarding layout of temporary construction, site, buildings, etc.
2) Actions taken to plan and coordinate activities between different operations and crafts
3) Access to work areas
4) Safety indoctrination and training
5) Delegation of safety responsibilities to supervisors
6) Integration of safety into operating methods and procedures
7) Housekeeping program
8) Safety factors in job-built appurtenances
9) Traffic control and parking facilities
10) Fire protection/Hot works permits
11) Lighting, ventilation, protective apparel and first aid/medical care
12) Safe operating condition of equipment and maintenance
13) Site emergency plans
14) Documentation
15) Hazard Communication
16) Specific hazards such as crane operations, fall protection, trenching, scaffolding safety, confined space, hazard control of energy sources, etc.
17) Substance Abuse Testing

2. General
   a) Methods for meeting objectives
   b) Plans for periodic readjustment of safety objectives
   c) Handling of safety deficiencies
   d) Arrangements for additional meetings and periodic staff meetings
   e) Follow-up of agreements in pre-construction meeting
   f) Three cardinal rules to observe for a workable safety program:
      1) All agreements must be fair.
      2) Paperwork must be minimized when possible.
      3) The program must be simple and deal with the facts.

APPENDIX JJ

Sample Excavation Permit

EXCAVATION PERMIT /COMPETENT PERSON CHECKLIST

INSTRUCTIONS
1. Complete permit before excavation begins. 2) Post Permit/Competent Person Checklist and JSA at the job site until work is complete. 3) Send permit to safety office upon completion. Permits will be retained for 2 years.

Supervisor's Name:	**Jobsite:**
Permit Begins: Date: _____ Time: _____ AM/PM	**Permit Expires:** Date: _____ Time: _____ AM/PM
Location & Dimensions of excavation:	
Soil Type:	
Nature Of Work	
Describe:	

"I HEREBY ATTEST THAT THE FOLLOWING CONDITIONS EXISTED AND THAT THE FOLLOWING ITEMS WERE CHECKED OR REVIEWED DURING THIS INSPECTION"			
All open trenches being worked were inspected.	YES	NO	N/A
Preplanning for emergencies & trench rescue?	YES	NO	N/A
Were any tension cracks observed along top of any slopes?	YES	NO	N/A
Were slopes cut at design angle of repose?	YES	NO	N/A
Was any water seepage noted in trench walls or bottom?	YES	NO	N/A
Was there evidence of significant fracture planes in soil or rock?	YES	NO	N/A
Confined Space Entry Permit Required?	YES	NO	N/A
Underground Utilities / Piping Located & Flagged?	YES	NO	N/A
Were trench box(s) certified?	YES	NO	N/A
Was traffic in area adequately away from trenching operations with barricades?	YES	NO	N/A
Were hydraulic shores pumped to design pressure?	YES	NO	N/A
Was there any evidence of caving or sloughing of soil since the last field inspection?	YES	NO	N/A
Access and Egress provided	YES	NO	N/A
Atmospheric Testing	YES	NO	N/A
System Lockout/Tagout	YES	NO	N/A
Stability of Adjacent Structures	YES	NO	N/A
Exposure to Falling Loads Controlled? (material at least 2' from edge)	YES	NO	N/A
Protection from Water Accumulation	YES	NO	N/A
Was bracing system installed in accordance with design? (Shoring systems installed & maintained in accordance with manufacturer's instructions)	YES	NO	N/A

Protective System

Sloping and Benching — Option 1 2 3 4
What is the angle or slope ratio? _____

Support System (shoring) — Option 1 2 3 4

Shielding System — Option 1 2 3 4

Is the Excavation Barricaded? **YES** **NO**

ATMOSPHERIC TESTING (OXYGEN SAFE RANGE OF 20.5% TO 22 % REQUIRED) (COMBUSTIBLES < 10% LEL)

% Oxygen: _____% Test Time: _____
_____% Test Time: _____
_____% Test Time: _____
_____% Test Time: _____

Toxicity Test _____PPM Test Time: _____
_____PPM Test Time: _____
_____PPM Test Time: _____
_____PPM Test Time: _____

Flammables/ Combustible _____ ***TEST TIME:*** _____
LEL Test Time: _____
_____LEL Test Time:
_____LEL Test Time:
_____LEL

Other

Emergency Services:

Identify

Method of Communication

Phone Number

Confined Space Permit Required	**YES**	**NO**	
Is Hot Work Permit Required?	**YES**	**NO**	If **YES**, Is it attached to this Permit? **YES** **NO**

SIGNATURE OF COMPETENT PERSON AUTHORIZING ENTRY

Supervisor/Competent Person Signature: **Safety/Superintendent Signature:**	**Date:**	**Time:**

APPENDIX KK

Excavations: Soil Classification Method

This appendix describes a method of classifying soil and rock deposits based on site and environmental conditions and on the structure and composition of earth deposits. Contained herein are definitions, set forth requirements, and acceptable visual and manual tests for use in classifying soils.

Classification of soil by a competent person is a prerequisite to designing protective systems for excavations.

2.0 DEFINITIONS

Cemented Soil - A soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.

Cohesive Soil - Clay (fine grained soil) or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical sideslopes, and is plastic when moist. Cohesive soil is hard to break up when dry and exhibits significant cohesion when submerged. Examples include clayey silt, sandy clay, silty clay, clay, and organic clay.

Dry Soil - Soil that does not exhibit visible signs of moisture content.

Fissured - A soil material that has a tendency to break along definite planes of fracture with little resistance or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

Granular Soil - Gravel, sand, or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

Layered System - Two or more distinctly different soil or rock types arranged in layers. Miscellaneous seams or weakened planes in rock or shale are considered layered.

Moist Soil - A condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.

Plastic - A property of a soil which allows the soil to be deformed or molded without cracking or appreciable volume change.

Saturated Soil - A soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or Torvane shear device.

Soil Classification (for the proper use of this procedure) - A method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the environmental conditions of exposure.

Stable Rock - Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

Submerged Soil - Soil which is underwater or is free-seeping.

Type A - Cohesive soil with an unconfined compressive strength of 1.5 tons per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are clay, silty clay, sandy clay, clay loam, and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if:

1. The soil is fissured.
2. The soil is subject to vibration from heavy traffic, pile driving, or similar effects.
3. The soil has been previously disturbed.
4. The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater.
5. The material is subject to other factors that would require it to be classified as a less stable material.

Type B - Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf, or:

1. Granular, cohesionless soils, including angular gravel, silt, silt loam, sandy loam, and, in some cases, silty clay loam and sandy clay loam.
2. Previously disturbed soil, except those which would otherwise be classed as Type C soil.
3. Soil that meets the unconfined compressive strength or requirements of Type A, but is fissured or subject to vibration.
4. Dry rock that is not stable.
5. Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than 4H:1V, but only if the material would otherwise be classified as Type B.

Type C - Cohesive soil with an unconfined compression strength of 0.5 tsf or less:

1. Granular soils including gravel, sand, and loamy sand.
2. Submerged soil or soil from which water is free-seeping.
3. Submerged rock that is not stable.
4. Material in a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper.

Unconfined Compressive Strength - The load per unit area at which a soil will fail in compression. It can be determined by laboratory testing or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

Wet Soil - Soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

3.0 REQUIREMENTS

Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, Type B, or Type C. The classification of deposits shall be made based on the results of at least one visual and at least one manual analysis using the tests described in this appendix or in other recognized

methods of soil classification and testing, such as those adopted by the American Society of Testing Materials.

In a layered system, the system shall be classified in accordance with its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.

If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the deposit shall be reclassified to reflect the changed conditions.

4.0 ACCEPTABLE VISUAL AND MANUAL TESTS

Visual Tests - Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material.

1. Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is granular material.
2. Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.
3. Observe the side of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.
4. Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and other underground structures and to identify previously disturbed soil.
5. Observe the opened side of the excavation to identify layered systems. Examine layered systems to identify whether the layers slope toward the excavation. Estimate the degree of slope of the layers.
6. Observe the area adjacent to the excavation and the sides of the opened excavation for evidence of surface water, water seeping from the sides of the excavation, or the location of the level of the water table.
7. Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

Manual Tests - Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information in order to classify soil properly.

1. Plasticity - Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8 in. in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a 2 inch (50 mm) length of 1/8 inch thread can be held on one end without tearing, the soil is cohesive.
2. *Dry Strength* - If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand, or silt. If the dry soil breaks

into clumps which do not break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered unfissured.

3. Thumb Penetration - The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. (This test is based on the thumb penetration test described in American Society for Testing and Materials (ASTM) Standard designation D2488 - "Standard Recommended Practice for Description of Soils (Visual-Manual Procedure)."Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of soil, as soon as practicable after excavation to keep to a minimum the effects of exposure to drying influences. If the excavation is later exposed to wetting influences (rain, flooding), the classification of the soil must be changed accordingly.
4. Other Strength Tests - Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer or by using a hand-operated Torvane shear device.
5. Drying Test - The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately 1 inch thick (2.54 cm) and 6 inches. (15.24 cm) in diameter until it is thoroughly dry:
    - If the sample develops cracks as it dries, significant fissures are indicated.
    - Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as an unfissured cohesive material and the unconfined compressive strength should be determined.
    - If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

SOURCE:

Occupational Safety and Health Administration (OSHA), 29 CFR 1926.26 Subpart P, Excavations (Appendix A)

APPENDIX LL

Excavations: Maximum Allowable Slopes

Table B-1 Maximum Allowable Slopes

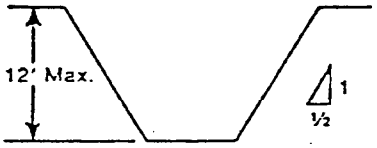
Soil or Rock Type	Maximum Allowable Slopes (H:V)[1] for Excavations Less Than 20 Feet Deep[3]	
Stable Rock	Vertical	(90°)
Type A[2]	3/4:1	(53°)
Type B	1:1	(45°)
Type C	1½:1	(34°)

Notes:

[1] Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

[2] A short-term maximum allowable slope of 1/2H:1V (53°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53°).

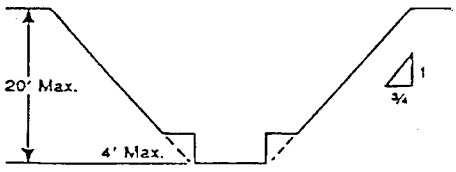
[3] Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.



Simple Slope—Short Term

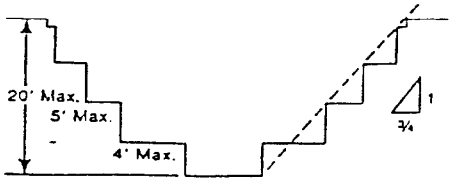
Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of ½:1.

Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of ½:1.



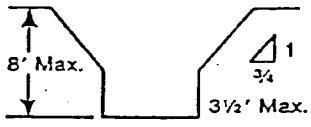
Simple Bench

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of ¾ to 1 and maximum bench dimensions as shown above.



Multiple Bench

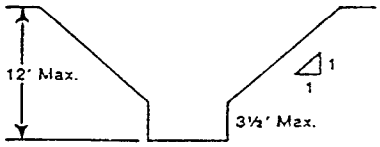
3. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3½ feet.



Unsupported Vertically Sided Lower Portion—Maximum 8 Feet In Depth

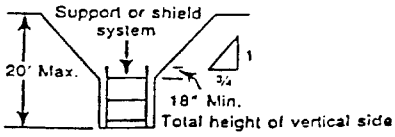
All excavations more than 8 feet but not more than 12 feet in depth which unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3½ feet.

All excavations more than 8 feet but not more than 12 feet in depth which unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3½ feet.



Unsupported Vertically Sided Lower Portion—Maximum 12 Feet In Depth

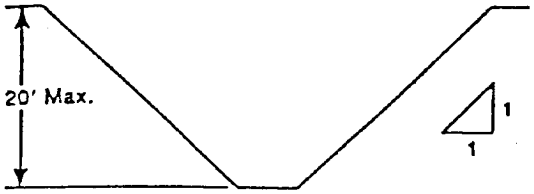
All excavations 20 feet or les in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of ¾:1. The support or shield system must extend at least 18 inches above the top of the vertical side.



Supported or Shielded Vertically Sided Lower Portion

4. All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under § 1926.652(b).

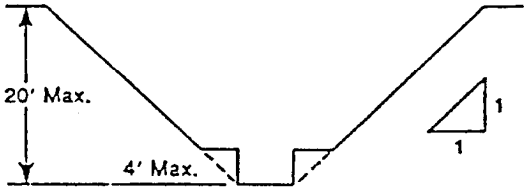
B—1.2 Excavations Made In Type B Soil



Simple Slope

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.

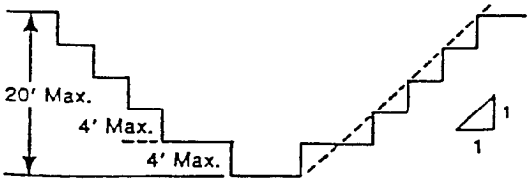
This bench allowed in cohesive soil only.



Single Bench

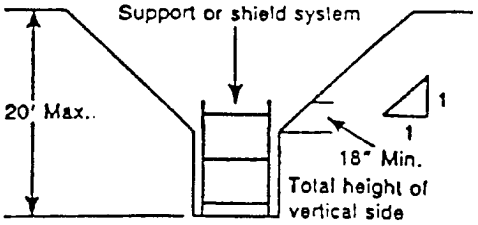
2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions as shown above.

This bench allowed in cohesive soil only



Multiple Bench

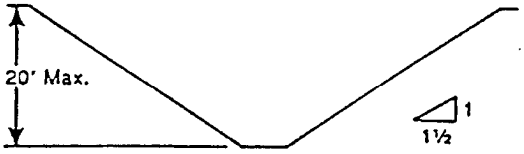
3. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.



Vertically Sided Lower Portion

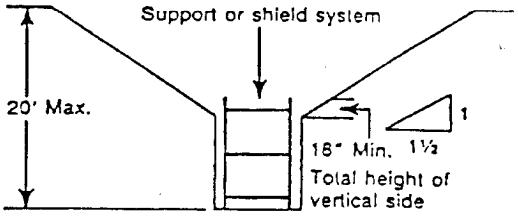
4. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

B—1.3 Excavations Made In Type C Soil



Simple Slope

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1½:1.



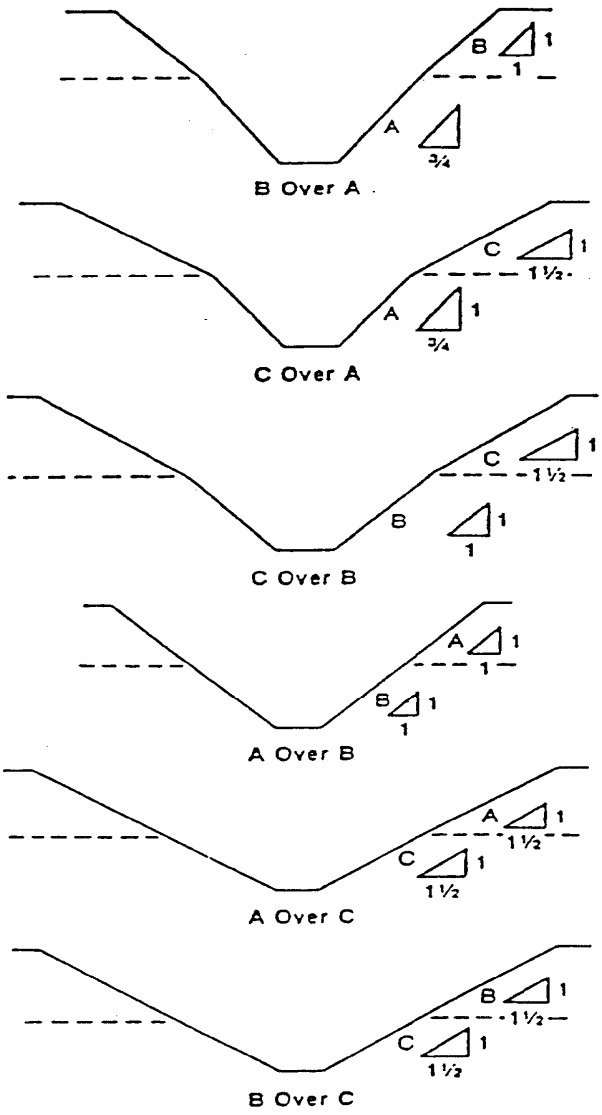
Vertical Sided Lower Portion

2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1½:1.

3. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

B—1.4 Excavations Made In Layered Soils

1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.



SOURCE:

Occupational Safety and Health Administration (OSHA), 29 CFR 1926.26 Subpart P, Excavations (Appendix B)

APPENDIX MM

Excavations: Timber Shoring

TABLE C-1.1

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *

SOIL TYPE A P_a = 25 X H + 72 psf (2 ft Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS **												
	CROSS BRACES						WALES		UPRIGHTS				
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15				CLOSE	4	5	6	8
5 TO 10	UP TO 6	4X4	4X4	4X6	6X6	6X6	4	Not Req'd	---				2X6	
	UP TO 8	4X4	4X4	4X6	6X6	6X6	4	Not Req'd	---					2X8
	UP TO 10	4X6	4X6	4X6	6X6	6X6	4	8X8	4			2X6		
	UP TO 12	4X6	4X6	6X6	6X6	6X6	4	8X8	4				2X6	
10 TO 15	UP TO 6	4X4	4X4	4X6	6X6	6X6	4	Not Req'd	---					3X8
	UP TO 8	4X6	4X6	6X6	6X6	6X6	4	8X8	4		2X6			
	UP TO 10	6X6	6X5	6X6	6X8	6X8	4	8X10	4			2X6		
	UP TO 12	6X6	6X6	6X6	6X8	6X8	4	10X10	4				3X8	
15 TO 20	UP TO 6	6X6	6X6	6X8	6X8	6X8	4	6X8	4	3X6				
	UP TO 8	6X6	6X6	6X8	6X8	6X8	4	8X8	4	3X6				
	UP TO 10	8X8	8X8	8X8	8X8	8X10	4	8X10	4	3X6				
	UP TO 12	8X8	8X8	8X8	8X8	8X10	4	10X10	4	3X6				
OVER 20	SEE NOTE 1 [See 1926.652, Appendix C, paragraph (g)]													

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may by substituted for wood.

TABLE C-1.2

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *

SOIL TYPE B $P_a = 45 \times H + 72$ psf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS**													
	CROSS BRACES						WALES		UPRIGHTS					
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)				
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15				CLOSE	2	3		
5 TO 10	UP TO 6	4X6	4X6	6X6	6X6	6X6	5	6X8	5			2X6		
	UP TO 8	6X6	6X6	6X6	6X8	6X8	5	8X10	5			2X6		
	UP TO 10	6X6	6X6	6X6	6X8	6X8	5	10X10	5			2X6		
	See Note 1													
10 TO 15	UP TO 6	6X6	6X6	6X6	6X8	6X8	5	8X8	5		2X6			
	UP TO 8	6X8	6X8	6X8	8X8	8X8	5	10X10	5		2X6			
	UP TO 10	8X8	8X8	8X8	8X8	8X10	5	10X12	5		2X6			
	See Note 1													
15 TO 20	UP TO 6	6X8	6X8	6X8	8X8	8X8	5	8X10	5	3X6				
	UP TO 8	8X8	8X8	8X8	8X8	8X10	5	10X12	5	3X6				
	UP TO 10	8X10	8X10	8X10	8X10	10X10	5	12X12	5	3X6				
	See Note 1													
OVER 20	SEE NOTE 1 [See 1926.652, Appendix C, paragraph (g)]													

* Mixed oak or equivalent with a bending strength not less than 850 psi.
** Manufactured members of equivalent strength may by substituted for wood.

TABLE C-1.3

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *

SOIL TYPE C P_a = 80 X H + 72 psf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS**													
	CROSS BRACES								UPRIGHTS					
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					VERT. SPACING (FEET)	SIZE (IN.)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET) (See Note 2)				
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15				CLOSE				
5 TO 10	UP TO 6	6X8	6X8	6X8	8X8	8X8	5	8X10	5	2X6				
	UP TO 8	8X8	8X8	8X8	8X8	8X10	5	10X12	5	2X6				
	UP TO 10	8X10	8X10	8X10	8X10	10X10	5	12X12	5	2X6				
	See Note 1													
10 TO 15	UP TO 6	8X8	8X8	8X8	8X8	8X10	5	10X12	5	2X6				
	UP TO 8	8X10	8X10	8X10	8X10	10X10	5	12X12	5	2X6				
	See Note 1													
	See Note 1													
15 TO 20	UP TO 6	8X10	8X10	8X10	8X10	10X10	5	12X12	5	3X6				
	See Note 1													
	See Note 1													
	See Note 1													
OVER 20	SEE NOTE 1 [See 1926.652, Appendix C, paragraph (g)]													

* Mixed Oak or equivalent with a bending strength not less than 850 psi.
** Manufactured members of equivalent strength may be substituted for wood.

TABLE C-2.1

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS *

SOIL TYPE A P_a = 25 X H ± 72 psf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (S4S) AND SPACING OF MEMBERS **													
	CROSS BRACES						WALES		UPRIGHTS					
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)				VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)					
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15			CLOSE	4	5	6	8	
5 TO 10	UP TO 6	4X4	4X4	4X4	4X4	4X6	4	Not Req'd	Not Req'd			4X6		
	UP TO 8	4X4	4X4	4X4	4X6	4X6	4	Not Req'd	Not Req'd					4X8
	UP TO 10	4X6	4X6	4X6	6X6	6X6	4	8X8	4		4X6			
	UP TO 12	4X6	4X6	4X6	6X6	6X6	4	8X8	4				4X6	
10 TO 15	UP TO 6	4X4	4X4	4X4	6X6	6X6	4	Not Req'd	Not Req'd					4X10
	UP TO 8	4X6	4X6	4X6	6X6	6X6	4	6X8	4			4X6		
	UP TO 10	6X6	6X6	6X6	6X6	6X6	4	8X8	4				4X8	
	UP TO 12	6X6	6X6	6X6	6X6	6X6	4	8X10	4			4X6		4X10
15 TO 20	UP TO 6	6X6	6X6	6X6	6X6	6X6	4	6X8	4	3X6				
	UP TO 8	6X6	6X6	6X6	6X6	6X6	4	8X8	4	3X6		4X12		
	UP TO 10	6X6	6X6	6X6	6X6	6X8	4	8X10	4	3X6				
	UP TO 12	6X6	6X6	6X6	6X8	6X8	4	8X12	4	3X6		4X12		
OVER 20	SEE NOTE 1 [See 1926.652, Appendix C, paragraph (g)]													

* Douglas fir or equivalent with a bending strength not less than 1500 psi.

** Manufactured members of equivalent strength may be substituted for wood.

SOURCE:

Occupational Safety and Health Administration (OSHA), 29 CFR 1926.26 Subpart P, Excavations (Appendix C)

APPENDIX NN

Excavations: Aluminum Hydraulic Shoring

TABLE D - 1.1
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL TYPE A

DEPTH OF TRENCH (FEET)	HYDRAULIC CYLINDERS			
	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)	WIDTH OF TRENCH (FEET)	
			UP TO 8	OVER 8 UP TO 12	OVER 12 UP TO 15
OVER 5 UP TO 10	8	4	2 INCH DIAMETER	2 INCH DIAMETER NOTE (2)	3 INCH DIAMETER
OVER 10 UP TO 15	8				
OVER 15 UP TO 20	7				
OVER 20	NOTE (1)				

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g) of Part 29 CFR 1926.652
Note (1): See Appendix D, Item (g) (1)
Note (2): See Appendix D, Item (g) (2)

TABLE D - 1.2
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL TYPE B

DEPTH OF TRENCH (FEET)	HYDRAULIC CYLINDERS				
	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)	WIDTH OF TRENCH (FEET)		
			UP TO 8	OVER 8 UP TO 12	OVER 12 UP TO 15
OVER 5 UP TO 10	8	4	2 INCH DIAMETER	2 INCH DIAMETER NOTE (2)	3 INCH DIAMETER
OVER 10 UP TO 15	6.5				
OVER 15 UP TO 20	5.5				
OVER 20	NOTE (1)				

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g) of Part 29 CFR 1926.652
Note (1): See Appendix D, Item (g) (1)
Note (2): See Appendix D, Item (g) (2)

TABLE D - 1.3
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE B

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS						TIMBER UPRIGHTS		
			WIDTH OF TRENCH (FEET)						MAX.HORIZ.SPACING (ON CENTER)		
	VERTICAL SPACING (FEET)	SECTION MODULUS (IN³) *	UP TO 8		OVER 8 UP TO 12		OVER 12 UP TO15		SOLID SHEET	2 FT.	3 FT.
			HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER			
OVER 5 UP TO 10	4	3.5	8.0	2 IN	8.0	2 IN NOTE(2)	8.0	3 IN	—	—	3x12
		7.0	9.0	2 IN	9.0	2 IN NOTE(2)	9.0	3 IN			
		14.0	12.0	3 IN	12.0	3 IN	12.0	3 IN			
OVER 10 UP TO 15	4	3.5	6.0	2 IN	6.0	2 IN NOTE(2)	6.0	3 IN	—	3x12	—
		7.0	8.0	3 IN	8.0	3 IN	8.0	3 IN			
		14.0	10.0	3 IN	10.0	3 IN	10.0	3 IN			
OVER 15 UP TO 20	4	3.5	5.5	2 IN	5.5	2 IN NOTE(2)	5.5	3 IN	3x12	—	—
		7.0	6.0	3 IN	6.0	3 IN	6.0	3 IN			
		14.0	9.0	3 IN	9.0	3 IN	9.0	3 IN			
OVER 20	NOTE (1)										

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g) of Part 29 CFR 1926.652
Notes (1): See Appendix D, item (g) (1)
Notes (2): See Appendix D, Item (g) (2)
* Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

TABLE D - 1.4
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE C

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS						TIMBER UPRIGHTS		
	VERTICAL SPACING (FEET)	SECTION MODULUS (IN³)	WIDTH OF TRENCH (FEET)						MAX. HORIZ SPACING (ON CENTER)		
			UP TO 8		OVER 8 UP TO 12		OVER 12 UP TO 15		SOLID SHEET	2 FT.	3 FT.
			HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER			
OVER 5 UP TO 10	4	3.5	6.0	2 IN	6.0	2 IN NOTE(2)	6.0	3 IN	3x12	—	—
		7.0	6.5	2 IN	6.5	2 IN NOTE(2)	6.5	3 IN			
		14.0	10.0	3 IN	10.0	3 IN	10.0	3 IN			
OVER 10 UP TO 15	4	3.5	4.0	2 IN	4.0	2 IN NOTE(2)	4.0	3 IN	3x12	—	—
		7.0	5.5	3 IN	5.5	3 IN	5.5	3 IN			
		14.0	8.0	3 IN	8.0	3 IN	8.0	3 IN			
OVER 15 UP TO 20	4	3.5	3.5	2 IN	3.5	2 IN NOTE(2)	3.5	3 IN	3x12	—	—
		7.0	5.0	3 IN	5.0	3 IN	5.0	3 IN			
		14.0	6.0	3 IN	6.0	3 IN	6.0	3 IN			
OVER 20	NOTE (1)										

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g) of Part 29 CFR 1926.652
Notes (1): See Appendix D, item (g) (1)
Notes (2): See Appendix D, Item (g) (2)
• Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

Source: Occupational Safety and Health Administration (OSHA), 29 CFR 1926.26 Subpart P, Excavations (Appendix D)

APPENDIX OO

Pressure Vessels Testing

PERMIT FOR PNEUMATIC OR HYDROSTATIC PRESSURE TESTING FOR VESSELS (TANKS AND ASSOCIATED PIPING)

TO _____ (Craft Supervisor) APPROVED _____ Senior Construction Site Representative in Response

FROM _____ (Engineer) _____ Senior Site Safety Representative

A. System Description: Boundary Identification (Drawing Nos., Line Nos.)

		Serv.	Pipe Spec.	Size	Sched. Type	Mat'l	Lin. Ft.	Volume	Pressure Text	Relief Valve Setting
PIPING:	1.									
	2.									
	3.									
	4.									
VESSEL:	1.									
	2.									
	3.									

B. PRESSURE SOURCE_____AT_____PSI.

C. INSTALL FOLLOWING IN ORDER FROM PRESSURE SOURCE TO SYSTEM:

YES___NO___1.GATE VALVE YES___NO___3. RELIEF VALVE YES___NO___5. GATE VALVE IN BRANCH AS MANUAL BLOWDOWN
YES___NO___2.REDU.VALVE YES___NO___4. PRESS. GAUGE

D. SPECIAL REQUIREMENTS: (Danger Tags, Locks, Chains, Etc.)

	Barricades	Warning Signs	Clearing Personnel From Area	Face Shields	Kickback Apron	Other (Specify)
YES						
NO						

E. TEST PROCEDURE:

1. RAISE PRESSURE IN INCREMENTS OF _____ PSI.
2. HOLD EACH INCREMENT FOR _____ MIN.
3 LEAK TEST WILL BE _____ (Specify soap, snoop, etc.)

ALL SYSTEMS MUST BE RELIEVED BEFORE LEAKS ARE REPAIRED

DATE STARTED _____ DATE COMPLETED _____

Responsible Test Supervisor shall return this permit to the Safety Office when testing is complete.

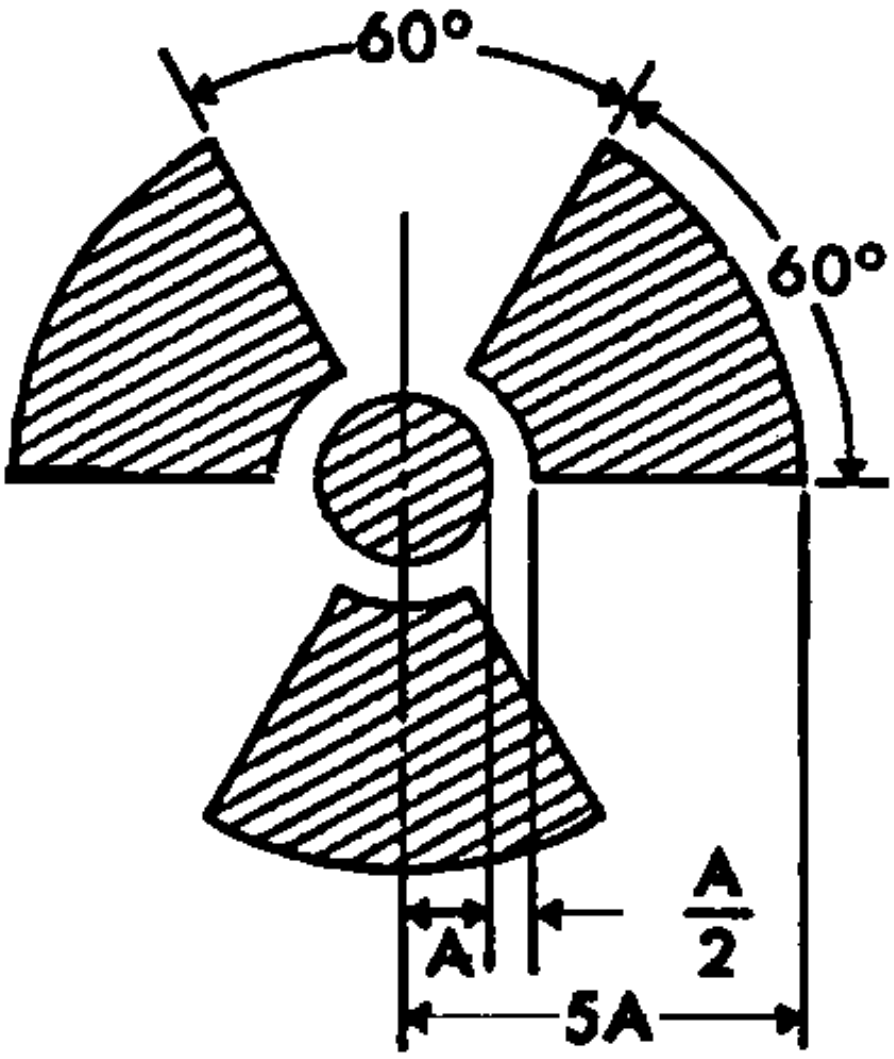
Copies: Safety Dept.
Engr.

APPENDIX PP

Radiation Symbol

RADIATION SYMBOL

1. Cross-hatched area is to be magenta or purple.
2. Background is to be yellow.



APPENDIX QQ

Occupational Dose Record for a Monitoring Period

NRC FORM 6 (1-2010) 10 CFR PART 20 — U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO.3150-0006 EXPIRES: 11/30/2010

Estimated burden per response to comply with this mandatory collection request: 20 minutes. This information is used to ensure that doses to individual do not exceed regulatory limits. This information is required to record/annually report individual occupational exposure to radiation to ensure that the exposure does not exceed regulatory limits. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0006), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

OCCUPATIONAL DOSE RECORD FOR A MONITORING PERIOD

1. NAME (LAST, FIRST, MIDDLE INITIAL)	2. IDENTIFICATION NUMBER	3. ID TYPE	4. SEX ☐ MALE ☐ FEMALE	5. DATE OF BIRTH (MM/DD/YYYY)

6. MONITORING PERIOD (MM/DD/YYYY - MM/DD/YYYY)	7. LICENSEE NAME	8. LICENSE NUMBER(S)	9A. ☐ RECORD ☐ ESTIMATE	9B. ☐ ROUTINE ☐ PSE

INTAKES				DOSES (In rem)	
10A. RADIONUCLIDE	10B. CLASS	10C. MODE	10D. INTAKE IN μCi		
				DEEP DOSE EQUIVALENT (DDE)	11.
				LENS (EYE) DOSE EQUIVALENT (LDE)	12.
				SHALLOW DOSE EQUIVALENT, WHOLE BODY (SDE,WB)	13.
				SHALLOW DOSE EQUIVALENT, MAX EXTREMITY (SDE,ME)	14.
				COMMITTED EFFECTIVE DOSE EQUIVALENT (CEDE)	15.
				COMMITTED DOSE EQUIVALENT, MAXIMALLY EXPOSED ORGAN (CDE)	16.
				TOTAL EFFECTIVE DOSE EQUIVALENT (ADD BLOCKS 11 AND 16) (TEDE)	17.
				TOTAL ORGAN DOSE EQUIVALENT MAX ORGAN (ADD BLOCKS 11 AND 16) (TODE)	18.
				19. COMMENTS	

20. SIGNATURE - LICENSEE	21. DATE PREPARED

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APPENDIX RR

Process Safety Chemical Threshold Quantities Listing

This Appendix contains a listing of toxic and reactive highly hazardous chemicals which present a potential for a catastrophic event at or above the threshold quantity.

Chemical Name	CAS**	TQ**
Acetaldehyde	75-07-0	2500
Acrolein (2-Propenal)	107-02-8	150
Acrylyl Chloride	814-68-6	250
Allyl Chloride	107-05-1	1000
Allylamine	107-11-9	1000
Alkylaluminums	Varies	5000
Ammonia, Anhydrous	7664-41-7	10000
Ammonia solutions (greater than 44 percent ammonia by weight	7664-41-7	15000
Ammonium Perchlorate	7790-98-9	500
Ammonium Permanganate	7787-36-2	7500
Arsine (also called Arsenic Hydride)	7784-42-1	100
Bis(Chloromethyl) Ether	542-88-1	100
Boron Trichloride	10294-34-5	2500
Boron Trifluoride	7637-07-2	250
Bromine	7726-95-6	1500
Bromine Chloride	13863-41-7	1500
Bromine Pentafluoride	7789-30-2	2500
Bromine Trifluoride	7787-71-5	15000
3-Bromopropyne (also called Propargyl Bromide)	106-96-7	100
Butyl Hydroperoxide (Tertiary)	75-91-2	5000
Butyl Perbenzoate (Tertiary)	614-45-9	7500
Carbonyl Chloride (see Phosgene)	75-44-5	100
* Carbonyl Fluoride	353-50-4	2500
Cellulose Nitrate (concentration greater than 12.6 percent nitrogen	9004-70-0	2500
Chlorine	7782-50-5	1500
Chlorine Dioxide	10049-04-4	1000
Chlorine Pentrafluoride	13637-63-3	1000
Chlorine Trifluoride	7790-91-2	1000
Chlorodiethylaluminum (also called Diethylaluminum Chloride)	96-10-6	5000
1-Chloro-2,4-Dinitrobenzene	97-00-7	5000
Chloromethyl Methyl Ether	107-30-2	500
Chloropicrin	76-06-2	500
Chloropicrin and Methyl Bromide mixture	None	1500
Chloropicrin and Methyl Chloride mixture	None	1500
Commune Hydroperoxide	80-15-9	5000
Cyanogen	460-19-5	2500

Cyanogen Chloride	506-77-4	500
Cyanuric Fluoride	675-14-9	100
Diastole Peroxide (concentration greater than 70 percent)	110-22-5	5000
Diazomethane	334-88-3	500
Dibenzoyl Peroxide	94-36-0	7500
Diborane	19287-45-7	100
Dibutyl Peroxide (Tertiary)	110-05-4	5000
Dichloro Acetylene	7572-29-4	250
Dichlorosilane	4109-96-0	2500
Diethylzinc	557-20-0	10000
Diisopropyl Peroxydicarbonate	105-64-6	7500
Dilauroyl Peroxide	105-74-8	7500
Dimethyldichlorosilane	75-78-5	1000
Dimethylhydrazine, 1,1-	57-14-7	1000
Dimethylamine, Anhydrous	124-40-3	2500
2,4-Dinitroaniline	97-02-9	5000
Ethyl Methyl Ketone Peroxide (also Methyl Ethyl Ketone Peroxide; concentration greater than 60 percent)	1338-23-4	5000
Ethyl Nitrite	109-95-5	5000
Ethylamine	75-04-7	7500
Ethylene Fluorohydrin	371-62-0	100
Ethylene Oxide	75-21-8	5000
Ethyleneimine	151-56-4	1000
Fluorine	7782-41-4	1000
Formaldehyde (Formalin)	50-00-0	1000
Furan	110-00-9	500
Hexafluoroacetone	684-16-2	5000
Hydrochloric Acid, Anhydrous	7647-01-0	5000
Hydrofluoric Acid, Anhydrous	7664-39-3	1000
Hydrogen Bromide	10035-10-6	5000
Hydrogen Chloride	7647-01-0	5000
Hydrogen Cyanide, Anhydrous	74-90-8	1000
Hydrogen Fluoride	7664-39-3	1000
Hydrogen Peroxide (52 percent by weight or greater)	7722-84-1	7500
Hydrogen Selenide	7783-07-5	150
Hydrogen Sulfide	7783-06-4	1500
Hydroxylamine	7803-49-8	2500
Iron, Pentacarbonyl	13463-40-6	250
Isopropylamine	75-31-0	5000
Ketene	463-51-4	100
Methacrylaldehyde	78-85-3	1000
Methacryloyl Chloride	920-46-7	150
Methacryloyloxyethyl Isocyanate	30674-80-7	100
Methyl Acrylonitrile	126-98-7	250
Methylamine, Anhydrous	74-89-5	1000
Methyl Bromide	74-83-9	2500
Methyl Chloride	74-87-3	15000
Methyl Chloroformate	79-22-1	500

Methyl Ethyl Ketone Peroxide (concentration greater than 60 percent)	1338-23-4	5000
Methyl Fluoroacetate	453-18-9	100
Methyl Fluorosulfate	421-20-5	100
Methyl Hydrazine	60-34-4	100
Methyl Iodide	74-88-4	7500
Methyl Isocyanate	624-83-9	250
Methyl Mercaptan	74-93-1	5000
Methyl Vinyl Ketone	79-84-4	100
Methyltrichlorosilane	75-79-6	500
Nickel Carbonly (Nickel Tetracarbonyl)	13463-39-3	150
Nitric Acid (94.5 percent by weight or greater)	7697-37-2	500
Nitric Oxide	10102-43-9	250
Nitroaniline (para Nitroaniline)	100-01-6	5000
Nitromethane	75-52-5	2500
Nitrogen Dioxide	10102-44-0	250
Nitrogen Oxides (NO; NO(2); N2O4; N2O3)	10102-44-0	250
Nitrogen Tetroxide (also called Nitrogen Peroxide)	10544-72-6	250
Nitrogen Trifluoride	7783-54-2	5000
Nitrogen Trioxide	10544-73-7	250
Oleum (65 percent to 80 percent by weight; also called Fuming Sulfuric Acid)	8014-94-7	1000
Osmium Tetroxide	20816-12-0	100
Oxygen Difluoride (Fluorine Monoxide)	7783-41-7	100
Ozone	10028-15-6	100
Pentaborane	19624-22-7	100
Peracetic Acid (concentration greater 60 percent Acetic Acid; also called Peroxyacetic Acid)	79-21-0	1000
Perchloric Acid (concentration greater than 60 percent by weight)	7601-90-3	5000
Perchloromethyl Mercaptan	594-42-3	150
Perchloryl Fluoride	7616-94-6	5000
Peroxyacetic Acid (concentration greater than 60 percent Acetic Acid; also called Peracetic Acid)	79-21-0	1000
Phosgene (also called Carbonyl Chloride)	75-44-5	100
Phosphine (Hydrogen Phosphide)	7803-51-2	100
Phosphorus Oxychloride (also called Phosphoryl Chloride)	10025-87-3	1000
Phosphorus Trichloride	7719-12-2	1000
Phosphoryl Chloride (also called Phosphorus Oxychloride)	10025-87-3	1000
Propargyl Bromide	106-96-7	100
Propyl Nitrate	627-3-4	2500
Sarin	107-44-8	100
Selenium Hexafluoride	7783-79-1	1000
Stibine (Antimony Hydride)	7803-52-3	500
Sulfur Dioxide (liquid)	7446-09-5	1000
Sulfur Pentafluoride	5714-22-7	250
Sulfur Tetrafluoride	7783-60-0	250
Sulfur Trioxide (also called Sulfuric Anhydride)	7446-11-9	1000
Sulfuric Anhydride (also called Sulfur Trioxide)	7446-11-9	1000

Tellurium Hexafluoride	7783-80-4	250
Tetrafluoroethylene	116-14-3	5000
Tetrafluorohydrazine	10036-47-2	5000
Tetramethyl Lead	75-74-1	1000
Thionyl Chloride	7719-09-7	250
Trichloro (Chloromethyl) Silane	1558-25-4	100
Trichloro (dichlorophenyl) Silane	27137-85-5	2500
Trichlorosilane	10025-78-2	5000
Trifluorochloroethylene	79-38-9	10000
Trimethyoxysilane	2487-90-3	1500

Footnote(*) Chemical Abstract Service Number
Footnote(**) Threshold Quantity in Pounds (Amount necessary to be covered by this standard.)

Source: OSHA 29CFR 1926.64 List of Highly Hazardous Chemical, Toxics and Reactives (Mandatory) Appendix A

APPENDIX SS

Chemical-Related Activities: Training Course-Record of Attendance

Chemical – Related Activities
Training Record
TRAINING COURSE - RECORD OF ATTENDANCE

.COURSE TITLE_ COURSE NUMBER TIME __/
HR MIN

Location_ DURATION __/
HR MIN

IN Instructor_ DATE / /

SOCIAL SECURITY NUMBER			PRINT NAME			DEPT./ CRAFT	SIGNATURE	Test Score
			LAST	FIRST	M.I.			

APPENDIX TT

Sample Security Badge

AES SECRITY BADGE

Name: _____ DOB: _____

Last First Middle Month/Day/Year

Contractor: _____ Craft: _____

Employee Number: _____ ID Issue Date: _____ Return Date: _____

Reissue Date: _____ _____ _____ _____

The undersigned acknowledges this identification badge remains the property of AES. This identification badge shall be surrendered to any Project Security Officer or AES staff member upon demand. The badge holder further agrees to wear this identification badge on the upper torso of his or her body in plain view.

Signed this _____ day of _____, 20 _____.

X _____

Identification Badge Envelope

APPENDIX UU

Waste Management Plan - Form

Project: _____

	TRADE GENERATING WASTE AND TYPE OF WASTE	RECYCLING FEASIBLE? YES / NO	METHOD OF DISPOSAL / RECYCLING / WASTE REDUCTION	
1000	**General Conditions**			
2000	**Site Works**			
3000	**Concrete**			
4000	**Masonry**			
5000	**Metals**			
6000	**Wood and Plastics**			
7000	**Thermal & Moisture Protection**			
8000	**Doors and Windows**			
9000	**Finishes**			
10000	**Specialties**			
11000	**Equipment**			
12000	**Furnishings**			
13000	**Special Construction**			
14000	**Conveying Systems**			
15000	**Mechanical**			
16000	**Electrical**			

APPENDIX VV

Sample Contractor Weekly Safety Inspection Form

Project:

Building/Location	Contractor:	Phone	Date

Section I of II CHECK LIST Week Ending-

Item No. DESCRIPTION	SATISFACTORY	UNSATISFACTORY	NOT APPLICABLE
1. Personal Protective Equipment	☐	☐	☐
2. Housekeeping	☐	☐	☐
3. Flammable and Combustible Liquids	☐	☐	☐
4. Welding and Cutting Operations	☐	☐	☐
5. Electrical Equipment/Installations(Lo/To)	☐	☐	☐
6. Floor and Wall Openings/Guards	☐	☐	☐
7. Ladders and Scaffolding	☐	☐	☐
8. Fire Protection/Prevention	☐	☐	☐
9. Material Storage and Handling	☐	☐	☐
10. Demolition Work	☐	☐	☐
11. Concrete Const. & Masonry Work	☐	☐	☐
12. Steel Erection	☐	☐	☐
13. Excavation Shoring and Trenching	☐	☐	☐
14. Hoists, Cranes and Derricks	☐	☐	☐
15. Hand and Power Tools	☐	☐	☐
16. Heavy Equipment & Maintenance	☐	☐	☐
17. Motor Vehicles	☐	☐	☐
18. Accident Prevention (signs/tags)	☐	☐	☐
19. Barricades	☐	☐	☐
20. Compressed Air	☐	☐	☐
21. Fall Protection	☐	☐	☐
22. Access/Egress	☐	☐	☐
23. Confined Space(s)	☐	☐	☐

Note: Any comments, deficiencies or summaries should be identified by item numbers in section II

Section II of II

Summary/Comments/Recommendations/Corrective Action

(Please include applicable item No. from Section I)

Item #

_____

_____

_____

Item #

_____

_____

_____

Item #

_____

_____

_____

Item #

_____

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_____

_____

Inspection Team Members Name: Company/Phone #:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

OVERALL RATING: Above Average ☐ Average ☐ Below Average ☐ Unsatisfactory ☐

Special Instructions or Notes:

1._____

2._____

3._____

4._____

5._____

APPENDIX WW

Sample Construction Safety & Health Audit

NO.	AUDIT QUESTIONS	SCORING GUIDELINES				SCORE	COMMENTS
		World Class	Functional Process	Needs Improvement	Needs Development		
		6	4	2	0		
	CULTURE and MANAGEMENT INVOLVEMENT						
1	Has Project senior management clearly communicated its support and expectations regarding safety policy and accident costs?	Project Senior mgmt. expresses their support and expectations through a formal safety policy, signed by the current president, and periodically communicated to all workers. Program is monitored regularly. Senior mgmt. demonstrates their support. Middle management reinforces these efforts.	Project senior management expresses their support and expectations through a signed formal safety policy and periodic demonstrations of support. Policy is understood by most workers. Local management reinforces these efforts.	Commitment may be expressed, but not demonstrated by senior management. OR There is no evidence of the policy being understood or practiced in the field.	There is no formal management expression of support for worker safety and well being.	0	
2	Have specific health & safety goals been established for the operations and communicated to all staff members?	Measurable goals have been established, & all staff members understand the company's goals. Progress on the goals is tracked and communicated on a regular basis. Safety and health issues are included on the agenda of management operational meetings.	Measurable goals have been established for the company, & most workers understand the goals. Progress is measured irregularly.	Project health & safety goals have been established but are not communicated. Goals are not measurable or not being measured. Few workers understand the goals.	No health & safety goals have been established	0	
3	Is Project senior management actively involved in the health & safety program?	Project senior management's role in loss prevention is clearly defined. Management is involved in H&S activities on a regular basis, (e.g. attending safety meetings, participating in safety activities), and communicates the safety message in newsletters, bulletin board postings, etc. workers can offer examples of management's commitment to safety.	Project Management role is described in safety manual. Management is occasionally involved in selected health & safety activities. Most workers can offer examples of management's commitment to safety.	Management is involved in a few, low profile health & safety activities. Most workers cannot offer examples of management's commitment to safety.	Management is not involved in the health & safety program.	0	
4	Has an individual been given the responsibility and authority to manage overall safety and health?	There is a Project Site Safety Manager who is supported by field staff and corporate management. The coordinator has clearly defined responsibilities and is held accountable for results. The coordinator is able to exercise decision-making authority	A Project Site Safety Manager has been assigned clearly defined responsibilities, but is not held accountable for results.	A Project Site Safety Manager has been appointed, but responsibilities have not been clearly defined. Or safety coordinator has other responsibilities taking up more than 75% of their time, has limited training or authority.	There is no specific internal responsibility for safety programs.	0	

NO.	AUDIT QUESTIONS	SCORING GUIDELINES				SCORE	COMMENTS
		World Class	Functional Process	Needs Improvement	Needs Development		
		6	4	2	0		
	CULTURE and MANAGEMENT INVOLVEMENT						
5	Are staff members held accountable for safety management results?	Safety responsibilities are defined for all levels in company. Management and supervision held accountable for effective implementation of safety and health activities and provide monthly reports on safety performance and accident results. Safety and Health program costs are allocated to divisions, jobs, etc.	Safety responsibilities are defined for all levels in company. Some mgmt. and supervision are held accountable for effective implementation of safety and health activities. Quarterly (min.) reporting is required and monitored by management. Safety performance is communicated to the organization. Accident costs are not formally charged to jobs or departments.	There is no specific accountability process, but department management is recognized when accidents do occur. There is no chargeback mechanism.	Neither management nor hourly workers are held accountable nor are they provided with any information regarding results.	0	
6	Are any Safety Recognition or Disciplinary processes in effect?	Management periodically recognizes safety and health performance with personal acknowledgements of safety milestones, activities, etc. Recognition is based on safety activities as well as results. Disciplinary action is structured process with training provided. Documentation is maintained. Discipline is equally enforced and applied to supervision as well as hourly workers. Corrective measures are taken	Management recognizes safety and health performance annually (min.) with personal acknowledgements of safety milestones, activities, etc. Recognition is based on results primarily. Disciplinary action is structured process with limited training provided. Documentation is maintained. Discipline is enforced and sometimes applied to supervision. Corrective measures are taken	Management occasionally recognizes safety efforts, with most recognition being informal with little evidence. Disciplinary program is not well defined, little documentation, no supervisory training and applied subjectively. No discipline applied to supervision	Little or no evidence of a recognition program. Unsafe workers rewarded as well as safe workers. Documentation is not available, discipline applied with no guidelines or corrective action.	0	
39	Is there a process in place for auditing health & safety processes on an annual basis and implementing appropriate corrective actions?	Formal health & safety program audits are performed annually as part of the continuous improvement process to assess the content and implementation of safety policies and procedures. Recommendations are tracked and completed on a timely basis. Senior management & hourly staff members are involved in the audit process. Training has been provided for the auditing team. Continuous improvement in the safety and health programs is evident.	Formal health & safety program audits are completed periodically to assess the content and implementation of the policies and procedures. Recommendations are tracked and completed on a timely basis. Training has been provided for the auditing team.	Health & safety audits are completed periodically with limited documentation and follow-up. No training has been provided for the auditors.	No formal health & safety audits have been completed.	0	

NO.	AUDIT QUESTIONS	SCORING GUIDELINES				SCORE	COMMENTS
		World Class	Functional Process	Needs Improvement	Needs Development		
		5	3	2	0		
	SAFETY and PREVENTION						
7	Have clearly defined Project safety and health policies and procedures been developed which are appropriate to contractor's operations and structure?	Health & safety policies are established & implemented effectively & consistently. Policies are reviewed and updated annually. Key safety mgmt activities are described. e.g.: compliance issues are current and applicable to operations; mgmt./ worker roles are defined; & management is clearly supportive of a proactive safety program activities.	Health & safety policies are established & effectively implemented consistently. Compliance issues are current, workers understand their roles; workplace conditions appear to be well controlled; etc. Some safety management activities are included and have time requirements assigned to them	Health & safety policies are established, but implementation is inconsistent. Written programs have not been updated or not appropriate to operations. (May include generic policies and procedure); few , if any safety management activities are described	No health & safety policies have been established or the policies are not implemented.	0	
8	Have effective safety committees been established to complete measurable, results-oriented activities that will lead to improved safety and health performance?	Regular, formal committees meetings. Purpose of committee is defined. The committee is comprised of field workers and management representatives. Project senior management participates in committee activities periodically. Proactive agenda and clearly impacts the company's safety activities. Documentation available.	Formal safety committees meet regularly. The committee comprised of field and management representatives. Committee activities are prioritized based on existing exposures, loss history, & inspection results. Committee activities impact safety performance. Documentation available	Formal safety committees have been established. Meetings irregular or missed. Committee activities are restricted (i.e. JSA's, inspections, reviews of past accidents, worker complaints). No documentation	No formal safety committees have been established. Or, an informal committee meets intermittently, but has no real impact on safety performance.	0	
9	Are workers expected to actively participate in health and safety activities?	Project mgmt and workers have been trained to conduct audits for unsafe acts and are active in safety meetings including presenting topics. Management solicits input from workers on a wide range of health & safety issues, including recognition programs, safety rules & procedures, & recommendations for safety controls.	Supervisors and workers are involved in auditing, but with emphasis on unsafe conditions. Workers participate actively in safety meetings and provide input into recognition programs and provide safety suggestions through an worker representative.	Supervisors and workers occasionally participate in safety meetings.	Worker involvement is limited to required training programs. There is little other worker involvement in safety and health activities	0	
10	Has a scheduled health & safety inspection process been implemented to identify & correct unsafe conditions & behaviors?	An inspection process has been established. Targeted inspection checklists are used. Hazard recognition training has been provided. A system has been established to track corrective actions. The inspections focus on conditions and worker behaviors. Inspection results are analyzed to define trends and root causes.	An inspection process has been established. Targeted inspection checklists are provided. Limited training has been provided on hazard recognition. Inspections focus on conditions with little regard to unsafe behaviors or root causes. A system has been established to track corrective actions.	Inspections are completed, but no training on hazard recognition has been provided. No inspection guidelines are provided. No tracking systems for corrective actions has been established.	No inspection process has been established.	0	

NO.	AUDIT QUESTIONS	SCORING GUIDELINES				SCORE	COMMENTS
		World Class	Functional Process	Needs Improvement	Needs Development		
		5	3	2	0		
	SAFETY and PREVENTION						
11	Has an industrial hygiene risk assessment been completed to identify potential occupational health exposures? Consider noise, heat/ cold stress, silica, metals, volatiles, etc.	A formal industrial hygiene monitoring plan has been developed based on the hazards associated with the operations. Appropriate medical surveillance plans, sanitary controls, jsa's, confined space, eng., admin. controls and PPE are provided for exposed workers. Management and workers are given monitoring results and trained re: hazards, controls, etc. Appropriate emergency provisions are available.	Baseline industrial hygiene monitoring has been completed. Additional sampling is performed when operations or conditions change. Appropriate PPE is available. Or, an industrial hygiene risk assessment has been completed within the past year, and no significant IH exposures were identified. Workers are trained in exposure recognition.	Air &/or noise sampling has been done in the past on a reactive basis. There is no plan for periodic monitoring based on the exposure.Or, no industrial hygiene monitoring has been completed, and there is no training to recognize potential exposures.	No industrial hygiene monitoring has been completed. There is no evidence that air or noise sampling has been completed. No industrial hygiene risk assessment has been completed. IH exposures may exist based on the operations or processes used.	0	
12	Is there a procedure in place to effectively investigate accidents and near misses?	Managers & supervisors have been trained on the incident investigation polices. The policy requires all accidents and near misses are investigated and documented within 48 hrs. for minor incidents and within 24 hrs. for major incidents. Root causes of incidents are identified. System established to quality review investigations and track corrective actions to completion. Satisfactory evidence exists to confirm above	Managers and supervisors have been trained on the written incident investigation polices. The policies require that all accidents and near misses are investigated and documented promptly - within 48 hrs. for minor accidents and within 24 hrs. for major accidents. Evidence of most incidents are being investigated and corrective action being taken	Written incident investigation polices and procedures have been issued, but have not been effectively communicated to managers and supervisors. No time requirements have been established for completing incident investigations. Evidence indicates poor conformance and quality control	There are no incident investigation procedures.	0	
13	Is there a process in place for systematically analyzing projects, tasks, & work methods for health & safety exposures?	A formal safety assessment process has been established. It is systematically applied and the results of the risk assessments are used to train workers and to develop or refine company SOPs.	A written procedure has been established for analyzing projects & job tasks. The analyses are performed in response to an injury, property damage, OSHA citation, or other outside party.	Analyses have been completed in limited instances. No formal analysis process has been established.	No analyses have been completed.	0	

NO.	AUDIT QUESTIONS	SCORING GUIDELINES				SCORE	COMMENTS
		World Class	Functional Process	Needs Improvement	Needs Development		
		4	3	1	0		
	TRAINING and EDUCATION						
15	Is there a formal orientation program for new workers covering critical health & safety topics & safe work methods?	A formal orientation process has been developed. Written guidelines are provided to ensure consistency of health & safety training. Recognized hazards and controls are communicated by supervisors. Comprehension is evaluated and written documentation of this training is maintained.	The orientation process addresses the critical safety and compliance topics that apply to the specific job. Safe work procedures are explained by department supervisors. Written documentation of the training is maintained.	The orientation process addresses generic safety and health rules. A checklist or signed form outlining rules, procedures, etc. Limited interaction from safety or site management.	There is no formal orientation process for new workers.	0	
16	Is there a formal ongoing training process for job-specific safety topics & regulatory compliance training for supervisors and workers?	A formal safety training program is in place. Training topics are defined for each job class and conducted before higher risk activities are performed. A system is used to track training and documentation is maintained. Time appropriate to subject & allow for worker participation. Supervisors, competent persons and workers can demonstrate their understanding of the training topics and their roles within the safety program.	A formal health & safety training program is in place. Training topics are defined for each job class or department. A training schedule has been established. Written documentation of the training is maintained.	Health & safety training is provided at time of hire. Follow-up training is performed occasionally. Most training is presented in weekly toolbox training sessions.	There is no formal health & safety training program for workers besides toolbox training sessions.	0	
17	Do managers and supervisors receive safety management training to ensure they understand their roles in the safety program and the impact of accident costs on operating profits?	Mandatory safety training is given to newly hired or newly appointed managers and supervisors. The financial impact of safety is covered in the training. Responsibilities and procedures for all parties are clearly defined and included in job descriptions. Requirements are updated periodically, minimum annually. Managers and supervisors can demonstrate their understanding of this training.	Mandatory safety training is given to newly hired or newly appointed managers and supervisors. There are detailed procedures outlining roles and responsibilities for all parties.	Managers and supervisors receive initial training on safety management. There is no evidence to support the safety management training process/ activity.	Managers and supervisors receive no special training or supporting materials on safety.	0	

NO.	AUDIT QUESTIONS	SCORING GUIDELINES				SCORE	COMMENTS
		World Class	Functional Process	Needs Improvement	Needs Development		
		4	3	1	0		
	Planning						
1	How does the contractor anticipate safety issues when bidding/ preparing for a job?	Contractor team visits project location prior to bidding the job to identify risks and potential hazards and security concerns associated with work. Estimators are trained to identify safety related costs in their bids. Pre-project safety assessment is completed and reviewed with site mgmt. before work begins. A site safety plan is developed prior to mobilization.	Estimators review safety criteria and issues in bid documents and are required to visit locations to identify potential hazards. Safety concerns are clarified in pre-bid meetings. Site safety plans are prepared before job begins.	Bids are prepared after reviewing specs and attending pre-bid meeting. Safety specs may be a factor in pricing. Company safety manual acts as site safety plan.	There is no evidence of safety planning in the pre job planning process.	0	
22	How are Contract Safety Specifications being managed?	The contractor reviews contract safety specs with their project management team and any subcontractors prior to the job. Safety specs are applied to all subs by contract. Specifications are interpreted and enforced by the safety representative and other supervisory members with a system to discipline, fine or withhold payments.	Safety specs are discussed with project management team. Safety specs may not be passed down to the subcontractors. Enforcement of specs delegated to an individual.	Safety specifications are limited to compliance with local, state, and federal laws. Little effort is made to review application of specs to the job with project management or sub-contractor.	No evidence of contract safety specifications being included in any pre-planning activities.	0	
23	Does the contractor participate in Pre Job Safety meetings?	Pre job safety meetings are held to formally identify safety roles and responsibilities, authority and protocols for enforcement. Project safety assessments are reviewed. Competent person information is exchanged Emergency and medical care procedures are reviewed as well as accident and safety reporting requirements. Meeting schedules are established and other information is exchanged.	Pre job safety meetings identify safety roles and responsibilities. Project safety assessments are reviewed. Emergency procedures are provided and accident reporting criteria is reviewed.	Pre-job meeting are concerned with production with cursory attention placed on safety. Safety reps may not be invited or present.	No pre job meetings are conducted	0	
24	Is there a Contractor Safety Qualification process in place?	The contractor qualifies the subcontractors who work for them through a formal process that includes: multi year E.M.R.s (less than 1.0), accident data, relevant experience, safety program evaluation, safety violations, site evaluations. A list is maintained and updated annually	The contractor qualifies subcontractors based on E.M.R.s, accident data and a safety program review.	Subcontractors are required to provide a copy of their safety manual with their bid. E.M.R. data may be requested	There is no established subcontractor qualification experience required	0	
25						0	

NO.	AUDIT QUESTIONS	SCORING GUIDELINES				SCORE	COMMENTS
		World Class	Functional Process	Needs Improvement	Needs Development		
		4	3	2	1		
	Project (site) Safety						
26	Does contractor control site environment satisfactorily?	Site access is well maintained; worker parking and material lay down areas are assigned, housekeeping is good and work areas are segregated from public, good use of signage, visitors are escorted or controlled, traffic is controlled, lighting adequate, sanitary facilities are proper, etc.	Access is suitable with designated parking/ material lay down areas, housekeeping is satisfactory, lighting adequate and sanitary facilities are satisfactory. Some work areas or visitor controls are lacking but acceptable.	Site conditions show need for significant improvements. Random parking/ material storage, poor housekeeping, poor traffic controls, lighting, or other conditions under contractors control is marginal to poor.	Overall contractor control of worksite environment is poor. Housekeeping practices, public exposures or other significant items are particularly bad.	0	
27	Can the contractor produce documentation of the site safety practices?	A site safety plan, project safety assessment or task safety assessments should be available. Site inspection, accident investigations, crane and equipment inspections, orientation and training records, permits, disciplinary action, meeting minutes and safety reports are provided as evidence of safety program implementation.	Most of the expected documentation is available and current. Additional evidence is available to confirm the safety processes are being followed	The documentation available is inconsistent with program requirements, sporadic or not current, poor quality	Very little or no documentation is evident. Expected processes are not being practiced.	0	
28	Are Physical Hazard Controls satisfactory?	Equipment is in good condition, fall protection is good, electrical in good condition, LOTO evident, confined space, fall protection, I.H. hazards controlled, trenches protected, fueling areas protected, proper welding, etc. Overall maintenance of controls is good.	Generally above average controls but some conditions reflect need for better maintenance, more appropriate controls, etc.	Controls were regularly found to be lacking showing trends of neglect, lack of regulatory compliance, or inadequate training.	Physical hazards were consistently found to be missing or unsatisfactory. Dangerous conditions exposing workers or the public presented a high level of concern.	0	
29	Is an emergency plan and first aid facility available?	An emergency action plan specific to the site and personnel is designed to address expected emergency conditions. Drills are conducted and emergency numbers are posted. 1st aid facilities are immediately available and trained personnel are on site.	An emergency plan is available but not current for site/ personnel. Emergency numbers are posted and 1st aid facilities are maintained.	Emergency plan is generic, safety numbers are not posted. Responsibilities not assigned.	No emergency plan, limited 1st aid facilities available.	0	

NO.	AUDIT QUESTIONS	SCORING GUIDELINES				SCORE	COMMENTS
		World Class	Functional Process	Needs Improvement	Needs Development		
		4	3	2	1		
	Accidents and Injury Mgmt						
36	Are appropriate staff members held accountable for participating in the injury management process to return injured workers to work as soon as medically possible to minimize workers' compensation costs?	Appropriate staff members participate in accident review meetings for all lost time cases, contact workers in their areas on a weekly basis, communicate with accidents adjusters as necessary to assist with appropriate RTW placement, and keep management apprised of the status and other issues related to the worker accidents.	Appropriate staff members participate in accident review meetings for all lost time cases, and there is regular discussion regarding lost time cases. Line supervisors are otherwise not involved.	Participation is sporadic, reactive, or forced	Operations management does not participate in management of a specific WC accident.	0	
37	Are the workers trained on accident, near miss accidents reporting procedures?	Worker orientation materials clearly describe procedures and are verbally reviewed during orientation. The worker is informed of procedures at the time of injury, and information is readily available.	Workers are provided with work-related injury procedures during orientation and at the time of an event.	Training is not provided at orientation. Workers are given information regarding accident reporting procedures only after an injury occurs.	Workers are provided with information at orientation that includes work-related injury procedures.	0	
38	Are the supervisors trained on workers' compensation benefits and accident reporting procedures?	Mandatory supervisory training occurs on absence reporting and absence management. Responsibilities and procedures for all parties are clearly defined and readily available.	Most supervisors receive occasional training on workers' compensation and the injury management process. There are detailed procedures outlining roles and responsibilities for all parties.	Supervisors receive information on workers' compensation benefits, usually after an incident occurs. There are incomplete procedures to support the management process	There is no formal workers' compensation training.	0	
1	Has management communicated their expectations and service requirements to medical providers, field case managers, and accident providers?	Specific expectations or service requirements are documented and vendor performance is evaluated against these. Management meets with all vendors at least annually to review and update the program based on quality issues or changes in requirements. Vendors are expected to tour the company's facilities and have a working knowledge of the various physical job requirements.	Management meets with the local accidents office at least annually to review the general program status and requirements, revising procedures as necessary. Accident adjusters, physicians, and field case managers are encouraged to tour the company's facilities and have a working knowledge of the various physical job requirements.	Management meets with the local accidents office at least annually to review the general program status and requirements, revising procedures as necessary.	Standard service requirements are documented for the accidents administrator only.	0	

NO.	AUDIT QUESTIONS	SCORING GUIDELINES				SCORE	COMMENTS
		World Class	Functional Process	Needs Improvement	Needs Development		
		4	3	2	1		
	Accidents and Injury Mgmt						
22	Have guidelines been established to encourage workers to report injuries in a timely manner?	The injury reporting process has been documented and posted. Workers are required to report all injuries, near misses, and potential WC accidents (e.g., early CTD symptoms) to their supervisors immediately to facilitate early accident management. Report lag times are tracked and shared with departments.	A reporting policy for injuries and near misses has been established and communicated to workers. The injury reporting procedure is followed consistently, but the reporting of near misses is inconsistent. The injury reporting results are not tracked and evaluated. Injuries and near misses are expected to be reported within 24 hours of occurrence.	An injury reporting policy has been established, but it is not known or understood by the workers. The reporting policy does not require injuries to be reported within 24 hours of occurrence.	No clear reporting policies have been established.	0	
23	Have guidelines been established to ensure timely reporting of workers' compensation accidents to the TPA or in-house accidents adjuster?	Accident reporting guidelines for completion of Employer's First Report of Injury have been established and include immediate reporting of catastrophic injuries and reporting of all other injuries by the end of the work shift. Accidents are submitted by toll-free number or electronically directly into the accident system. Average accident reporting lag time is 0-3 days.	Accident reporting guidelines have been established, and accident reports must be completed within 24 hours. Accidents are reported by fax, telephone or email directly to accident administrator. Average accident reporting lag time does not exceed 7 days.	Accident reporting guidelines have been established, but time requirements exceed 48 hours. Or, accidents are submitted by mail, and average accident reporting lag time average does not exceed 14 days.	No guidelines and no timeframe established for accident reporting. Or, the average accident reporting lag time exceeds 14 days for the facility.	0	

Construction Audit

SCORING TOTALS

Project	***Project CONTACTS***
LOCATION	
DATE	***Construction Auditor***

Culture & Mgmt. Involvement	Score	Safety & Prevention	Score	Training & Education	Score	Accident Injury Management	Score	Injury Management	Score	Continuous Improvement	Score
1. Senior management expectations	0	7. Safety and health policies	0	16. Formal orientation program	0	21. Expectations for vendors	0	26. Communications for injured workers	0	36. Workers' compensation cost reduction targets	0
2. Facility safety and health goals	0	8. Effective safety committees	0	17. Formal ongoing training process	0	22. Incident reporting guidelines	0	27. Medical provider selection	0	37. Metrics are appropriate	0
3. Senior management participation	0	9. Employee participation	0	18. Safety management training	0	23. Timely incident reporting	0	28. Nurse case management	0	38. Loss and data analysis	0
4. Assignment of responsibility	0	10. Safety and health inspection process	0	19. Employee training on workers' compensation	0	24. Internal claim handling instructions	0	29. Clinical management process	0	39. Safety and health audits	0
5. Staff accountability	0	11. Ergonomic risk assessment	0	20. Supervisors training on workers' compensation	0	25. Accident status updates	0	30. Workers' compensation field case management (FCM) nurses	0	40. Accident management audits	0
6. Injury management accountability	0	12. Industrial hygiene risk assessment	0					31. Management of injured workers	0		
		13. Preplacement screening process	0					32. Return-to-work policy	0		
		14. Accident investigation	0					33. Return-to-work responsibilities	0		
		15. Exposure assessment system	0					34. Return-to-work planning	0		
								35. Return-to-work disincentives	0		
AVERAGE CULTURE & MANAGEMENT SCORE	**0**	**AVERAGE SAFETY AND PREVENTION SCORE**	**0**	**AVERAGE TRAINING & EDUCATION SCORE**	**0**	**AVERAGE PRE JOB PLANNING SCORE**	**0**	**AVERAGE PROJECT (SITE) SCORE**	**0**	**AVERAGE CONTINUOUS IMPROVEMENT SCORE**	**0**
										Audit Analysis Score	***0***

APPENDIX XX

Sample Safety & Health Plan Modification Log

SECTION XVI – 16.41
LIST OF EFFECTIVE PAGES

PAGE	DATE of REVISION	SUBJECT/TOPIC	DATE