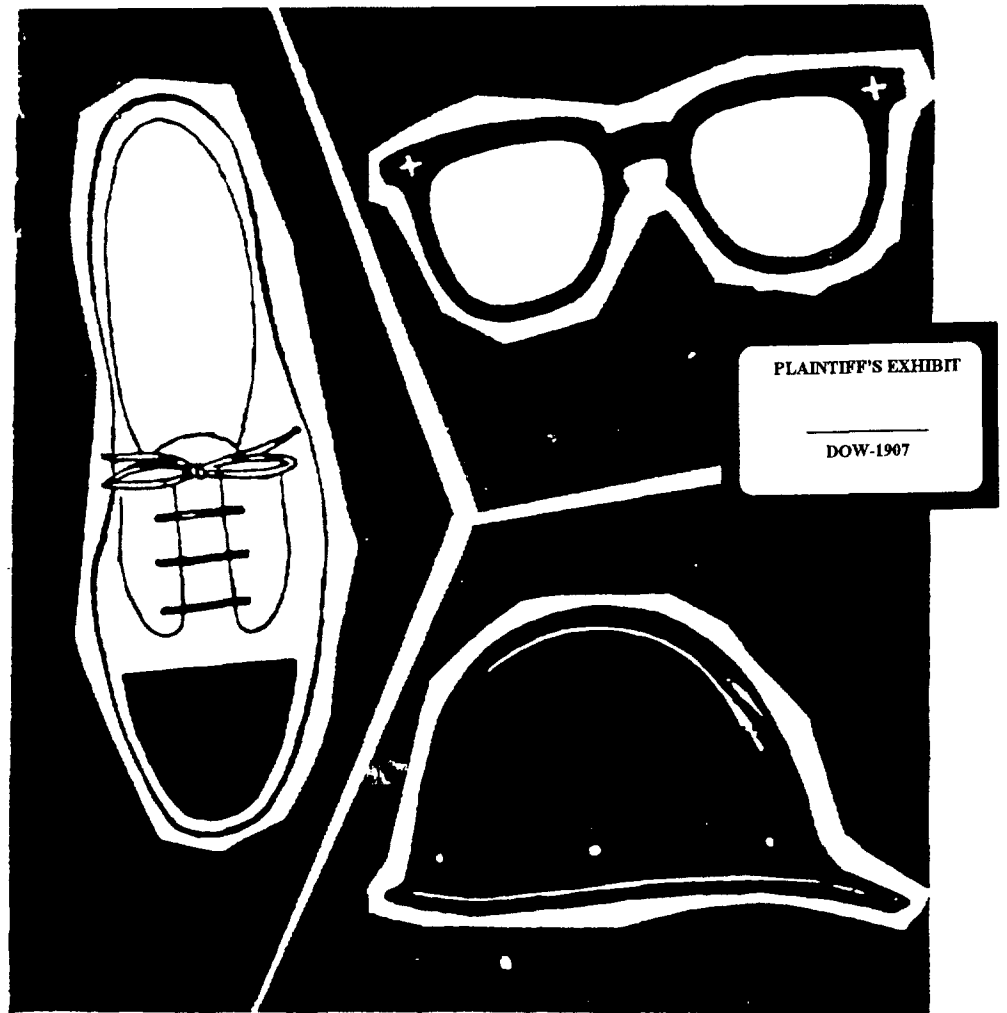




**The Michigan Division
GENERAL PLANT SAFETY
RULES AND PROCEDURES
Manual For Contractors**

DOW CHEMICAL U.S.A.



ST0009708

"Safety must be a *first* consideration and *basic* responsibility of *every* contractor employee working in the Midland "Division."



This Manual is made available to you as an interpretation of the Safety Clause of your contract.

All or parts of contents will apply to your work depending on the nature and sequences of your work.

DOW CHEMICAL U.S.A.

MICHIGAN DIVISION

**STATEMENT OF SAFETY & LOSS
PREVENTION**

The objective of the Michigan Division of Dow Chemical U.S.A. is to establish and maintain an active, successful accident and loss prevention program that will ultimately result in superior safety performance by Contractors doing work in our plants.

ST0009709

THE MICHIGAN DIVISION
GENERAL PLANT SAFETY
RULES AND PROCEDURES
MANUAL
FOR CONTRACTORS

The information in this manual is intended as one reference source for many of the safety rules and procedures which will be helpful to contractors in achieving good safety performance. It cannot, however, be assumed that every conditional safety procedure is contained herein or that abnormal or unusual circumstances may not warrant or require modifications or additional procedures.

Where these rules or procedures interfere with other safety considerations or adversely affect job efficiency, without materially affecting to the safety of the job, the DOW Representative can waive or modify these rules as they apply to a specific part of a job or contract.

BECAUSE OF THE UNIQUE HAZARDS ENCOUNTERED BY CONSTRUCTION WORK IN A CHEMICAL COMPLEX, THE DOW MICHIGAN DIVISION HAS DEVELOPED SPECIFIC DOW SAFETY RULES RELEVANT TO DOW CONTRACTS. THESE RULES IN PART ARE PRESENTED BELOW IN SUMMARY FORM AND ARE COVERED IN GREATER DETAIL IN THE BODY OF THIS MANUAL

1. ALWAYS WEAR YOUR SAFETY GLASSES. Ref. 6.2
2. HARD HATS WORN EVERYWHERE EXCEPT LUNCH ROOMS. Ref. 6.3
3. SMOKE ONLY IN POSTED LOCATIONS. Ref. 7.2
4. NO METAL LADDERS ALLOWED IN THE PLANT. Ref. 9.1
5. NO WELDING, CUTTING, FLAME OR SPARK-PRODUCING OR ENGINE DRIVEN EQUIPMENT ALLOWED WITHOUT SPECIFIC PERMISSION (HOT WORK PERMIT) BY THE DOW REPRESENTATIVE. (Part 8.0 and 12.0)

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6. ALL TRUCKS AND AUTOMOBILES OPERATED ON DOW PROPERTY MUST HAVE SEAT BELTS WHICH SHALL BE USED. Ref. 5.4
7. NO CANVAS OR PAPER TARPAULINS OR DROP CLOTHS ALLOWED. Ref. 7.4
8. DISPOSAL INTO PLANT SEWERS OF FLAMMABLE, CORROSIVE OR TOXIC MATERIALS IS PROHIBITED. Ref. 7.13
9. SPECIAL PERMISSION THROUGH THE DOW REPRESENTATIVE FROM PLANT PROTECTION IS REQUIRED BEFORE MOVING LARGE LOADS INCLUDING CRANES ON PLANT ROADS. Ref. 5.5
10. BEFORE USING ANY ELECTRICAL TOOL, BE SURE IT IS GROUNDED. Ref. 8.6
11. PERMITS MUST BE OBTAINED FROM THE DOW REPRESENTATIVE NOT ONLY FOR ALL "HOT WORK" BUT FOR WORK ALONG RAILROAD RIGHT-OF-WAY, EXCAVATION ON THE PROPERTY AND FOR ACCESS TO EXISTING BUILDING ROOFS. Ref. 12.1
12. OBSERVE RED DANGER TAGS ON VALVES, SWITCHES, CLUTCHES AND OTHER EQUIPMENT OPERATION CONTROLS. NO ONE WORKS ON EQUIPMENT WITHOUT FIRST, PLACING THEIR RED TAGS ON THE VALVES AND CONTROLS TO SUCH EQUIPMENT FOLLOWING THE PLACEMENT OF THE RED DANGER TAGS BY DOW. Part 11.0
13. BE ALERT FOR ANY EMERGENCY. CALL AN AMBULANCE 636-3393 FOR ANY PERSONNEL ACCIDENT, AND CALL THE FIRE DEPARTMENT 636-3311 FOR ANY FIRE OR SPILL. Part 2.0
14. WHEN EXCAVATIONS ARE TO BE PERFORMED, APPROVAL MUST BE OBTAINED FROM THE DOW REPRESENTATIVE. CURRENT TO DATE DRAWINGS STAMPED "CHECKED FOR UNDERGROUND INTERFERENCE" SHALL BE ISSUED. HAND EXCAVATION OR PROBING TO VERIFY UNDERGROUND LINES WILL BE REQUIRED. Part. 13.0
15. ELECTRICAL ENERGIZED POWER LINE CLEARANCE.
CONTRACTORS SHALL MAINTAIN A MINIMUM OF 10 FEET CLEARANCE BETWEEN HIMSELF OR HIS EQUIPMENT AND ANY ENERGIZED OVERHEAD POWER LINE. Ref. 8.4.4

INTRODUCTION

The Michigan Division General Plant Safety Rules and Procedures Manual For Contractors are mandatory by contract. It cannot, however, be assumed that every conditional safety procedure is contained herein or that abnormal or unusual circumstances may not warrant or require modifications or additional procedure. Dow Chemical U.S.A. Michigan Division, hereinafter referred to as "Owner" will be represented during construction as defined in the contract by a designate known as the "DOW REPRESENTATIVE".

"Nothing contained in this safety manual shall in any way operate to relieve Contractor or its employees, agents or subcontractors of any responsibility for exercise of due care or liability for negligence which otherwise would apply. Contractor shall at all times use its own judgment and discretion as to safety and safety procedures, particularly in situations not specifically covered by this manual."

Safety rules and procedures are an integral part of each contract and must be carried out fully, as any other specification for the job.

The contractor will be held responsible for and shall police the safety performance of his employees and his subcontractor's employees conforming with these safety rules and procedures. ANY EXCEPTION TO THE RULES SET FORTH HEREIN MUST HAVE PRIOR WRITTEN AUTHORIZATION FROM THE DOW REPRESENTATIVE.

Contractors and contractor supervision unable or unwilling to secure personnel performance in keeping with these rules will not be acceptable.

Contractor employees who exhibit a poor attitude toward safe work and safety procedures will not be acceptable. Employees expelled

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from Dow due to safety violations will not be allowed to return to any owner's work without proper authorization from the owner. The contractor's safety record will be one criteria used to judge his qualifications for bidding.

A Contractors Safety Performance Check Sheet will be used by the DOW Representative for the purpose of evaluation for any contractor.

IN ADDITION TO THE RULES SET FORTH HEREIN, CONTRACTORS WORKING IN OR NEAR AN EXISTING OPERATING FACILITY MUST BE COGNIZANT OF AND CONFORM TO OWNER'S SAFETY RULES FOR THAT AREA.

APPLICABLE FEDERAL, STATE OR LOCAL LAWS SHALL APPLY TO CONTRACT WORK. IF THERE IS ANY CONFLICT WITH APPLICABLE FEDERAL, STATE OR LOCAL LAWS, THE MORE STRINGENT WILL APPLY.

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DEFINITION OF TERMS

1. **OWNER:** Dow Chemical U.S.A.
2. **MANUFACTURING REPRESENTATIVE:** The manufacturing representative is Dow Chemical U.S.A.'s employee designated by the operating management of the facility to act in their behalf.
3. **DOW REPRESENTATIVE** is Dow Chemical U.S.A employee designated to work directly with the contractor on a day to day basis to keep the project progressing as scheduled and specified and in a safe manner.
4. **WILL, SHALL OR MUST:** The words "will" "shall" or "must" are to be understood as mandatory.
5. **SHOULD:** The word "should" is to be understood as being strongly recommended and to be followed if at all practical.

1.0 General Safety Rules

- 1.1 The contractor shall actively and adequately promote safe working performances on the part of his employees. He shall participate in activities to this end, such as safety organizations (e.g. Dow Midland Contractors Safety Council) special drives, contractor-owner programs, etc. It is expected that each contractor will conduct his own safety programs to best suit his particular needs.
 - 1.1.1 United States Standards Institute, Z-16.1 standard, "Recording and Measuring Work Injury Experience" shall be used as a guide to classify contractor injuries.
 - 1.1.2 Contractors are responsible for recording and reporting injuries and illnesses in accordance to Part 1904, Title 29 of OSHA.
 - 1.1.2.1. or Contractor shall make, keep, and preserve accurate and timely records and reports of work illnesses and injuries according to Act No. 154 Public Acts of 1974 section 61 State of Michigan.
 - 1.1.2.2. The contractor performing work under contract to the Dow Chemical Michigan Division shall submit quarterly form OSHA No. 102 of the MIOSHA requirements to the Dow Michigan Division Safety Dept.
 - 1.1.3. The DOW Representative shall each month rate the contractor for safety performance. Ref. Contractors Safety Performance Check Sheet, sample on page 11 or any other acceptable inspection form approved by the safety dept. and Construction administration.

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1.2 Prior to starting any field work on each job, the DOW Representative will conduct a pre-job safety conference. The attendees shall be:

- a) *Two or more contractor supervisors (one must be a job site supervisor)*
- b) *Subcontractor job site supervisor,*
- c) *Dow Manufacturing Representative,*
- d) *Dow Safety Representative,*
- e) *Dow Plant Protection officer Representative.*

At this time, the nature of any chemical hazards or special safety rules for the area will be reviewed by the DOW Manufacturing Representative. The contractor will be provided with printed copies of area rules and minutes of the meeting. The "pre-job Safety Check Sheet" (See Sample) will be prepared by the DOW Representative and copies furnished to the contractor. The contractor shall communicate these regulations as outlined by DOW Representative to his people and sub-contractors people prior to starting the job and safety information shall be maintained during the life of the project for all employees.

1.2.1 Any replacement of the contractors job site supervisor shall require safety meeting orientation for the new supervisor by the contractor.

1.3 An effective system of indoctrination and education of employees in safety and loss prevention is expected of each contractor. Contractors shall inform all their employees of all safety rules and all safety procedures before starting the job.

1.3.1 Contractor shall inform all their employees of location and use of re-

quired safety devices such as safety showers, eye baths, fire blankets, fire extinguishers, gas masks and etc.

1.3.2 Contractor shall instruct all their employees regarding the use of personal protective equipment.

1.4 Contractors shall use a regular system of work inspection to detect and correct hazardous conditions, safety rule violations and unsafe working practices.

1.4.1 Orderliness is a basic requirement for all jobs and must be maintained at all times.

1.4.2 Temporary buildings and material storage areas shall be set up through DOW Representative. (Reference Sec. 12.0, 12.1.5, 12.4)

1.4.3 Temporary buildings must be identified as to contractor's name.

1.5 Contractors shall report to the DOW Representative by name any contractor employee discharged for safety or plant rule infractions immediately. This must be followed by written report giving reason for discharge.

1.6 Contractors shall adjust their safety planning to cover jobs where circumstances have changed and new hazards require new controls. Additional safety meetings may be required.

1.7 The contractor shall provide "Underwriters Approved" temporary fire protection equipment as required by the fire insurance underwriters. This fire protection equipment shall have the approval of the DOW Representative. After any use of this equipment it shall be properly replaced or re-serviced by the contractor.

1.7.1 Minimum Size and Type Portable Fire Extinguisher

1.7.1.1 2½ gallon water-antifreeze

1.7.1.2 20 pound Dry Chemical

1.7.1.3 10 pound CO₂

CONSTRUCTION ADMINISTRATION PRE-JOB SAFETY CHECK SHEET

Date:
Project Name:
Location:
P.O. Number:
Contractor:
Dow Representative:

Check when the answer is YES; Explain in detail, under remarks, items not checked. Use asterisk if question does not apply. Under remarks write in any special conditions.

DOW EMERGENCY PLANNING Ambulance 636-3393

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Part No.

1. Are the standard emergency signals understood? ☐ 2.0
2. Contractor responsibility during an emergency understood? ☐ 2.0
3. Do you know the routes for possible evacuation? ☐ 2.0
4. Any special emergency regulations and signals for this job shall be explained under remarks. ☐ 2.0

DOW FIRE PREVENTION PLANNING Fire 636-3311

1. Are the Fire Prevention Requirements known? ☐ 7.0
2. Are plans understood for the provision of adequate fire protection equipment? ☐ 7.0

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3. Is the Hot Work Permit System and Requirements understood? (Designated place(s) to obtain known) ☐ 12.0
4. Are the smoking rules understood? (designated place(s) or area known?) ☐ 7.0

MANUFACTURING FACILITY INSTRUCTIONS

1. Have the properties of the chemicals or special hazards for the facility been reviewed by the Manufacturing Representatives and written recommendations prepared and submitted? ☐
2. Are the safety showers and/or eye wash locations known? ☐
3. Do you understand the special safety equipment requirements for this job and its use? ☐
4. Are the applicable Red Tag and/or Lock-out Rules understood? Safety Std. S-740 ☐ 11.0
5. Explain the seriousness of property damage accidents having a potential of manufacturing interruption? Example: Any utility service incident ☐
6. Roofs — Safety Standard 735 — are the roof access and exit restrictions understood? ☐ 12.0
7. Are you aware of the barrier regulations to control hazardous situations? Safety Std. S-700 ☐ 13.0
8. Excavation Safety Standard 800 — are the excavation requirements understood? ☐ 13.0

DOW'S REPRESENTATIVE INSTRUCTIONS

1. Do you understand the Prime Contractor is fully responsible for the actions and safety of all workmen on his job? ☐

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2. Do you have a copy of and understand "The Midland Division General Plant Rules Procedures Manual For Contractors" ☐
3. Will you make Subcontractors and all tradesmen on this job aware of check sheet data? ☐
4. Are the elevated working surfaces and ladder rules known? ☐ 9 & 10
5. Are the crane inspection and critical lift procedures understood? ☐ 8.0
6. Do you understand the temporary electrical and extension cord wiring requirements? ☐ 8.0
7. Are you aware of the Traffic Regulations controlling the transporting of materials and/or manpower? ☐ 5.0
8. Do you understand the personal protective equipment requirements? ☐ 6.0
9. Do you understand the housekeeping regulations? ☐ 7.0
10. Do you know the requirements of the Procedures for Investigating and Reporting Contractor accidents? ☐ 3.0
11. Is the discipline penalty known for safety regulations? Page v Para. 6 ☐

CONTRACTORS RESPONSIBILITY

1. Please submit in writing an outline of your Safety Program activity for this job. If not please explain. ☐

Remarks: (Explain all "NO" answers)

CONTRACTORS SAFETY PERFORMANCE CHECK (M) AND RATING FORM

Project Number _____ Date of Visit _____
 Job Location _____ Tree of Job _____ Contractor _____
 Place a check (✓) and Code Number in the space provided only if the condition requires action and describe in the Remarks section. No check mark indicates the condition is satisfactory. Items such as housekeeping, tool and equipment conditions, etc., shall be rated in the space following the question. See Code.

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TOTAL PROJECT SAFETY PERFORMANCE POINTS _____ = SCORE
 NUMBER OF SPACES CHECKED _____

REMARKS: (Were unsafe conditions corrected?)

Codes: Unsatisfactory - 1
 Good - 2 Pair 3 Pair 4 Unsatisfactory 5
 Original: Contractor
 Copy: Construction Administration Office
 Copy: Foreman
 Copy: Jobsite File
 Copy: Safety Dept.
 Date Rec. Signature _____
 Contractor Rec. Signature _____

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2.0 Emergency Procedures For All Accidents

2.1 The contractor shall provide at his own expense a job site telephone for the duration of the contract. If poles are needed, the location must be acceptable to owner. Pay station telephones and the use of owner telephones will not be permitted. Notify DOW Representative of the contractor job telephone number as soon as it has been installed. Any exception to the telephone service requirement must have the approval of the DOW Representative.

2.2 Contractors Accidents

2.2.1 Personal injury accident

2.2.1.1 The contractor shall see that all injured personnel receive proper first aid attention at a recognized facility.

2.2.1.2 Call Ambulance for any case that requires professional help (Doctor's, Nurse's, medical facility, etc.).

2.2.1.3 Report the incident immediately to the DOW Representative.

2.2.1.4 Owners medical facilities are used the contractor will receive an invoice for such services.

2.2.1.5 Following an investigation of the incident, a verbal report shall be made to the DOW Representative by the contractor. Written Report Reference 3.1.

2.2.2 Chemical Exposures

2.2.2.1 In the event of chemical exposure or contact immediately wash the eyes and/or the affected parts of the body

thoroughly with potable running water. Continue washing for at least 15 minutes or until the ambulance arrives.

2.2.2.2 If illness from inhalation occurs, remove the person at once to fresh air and call for the ambulance.

2.2.3 Fire or property loss accidents

2.2.3.1 Immediately report any fire to the Dow Fire Department 636-3311.

2.2.3.2 Fire or property loss incident requires the job site supervisor to immediately report to DOW Representative.

2.3 Owners Plant Emergencies

2.3.1 In the event of an alert, evacuation, explosion or fire, the contractor's personnel working in the area affected must observe the following rules.

2.3.1.1 The standard emergency siren signals used throughout the Midland division are as follows -

ALERT - One rise to maximum pitch. On this signal all flame or spark producing apparatus (welding machines, etc.) will be shutdown.

EVACUATION SIGNAL - Continuous sounding of the siren. All flame or spark producing equipment will be shut off and employees shall evacuate the building or area.

ALL CLEAR - Two rises to maximum pitch.

2.3.1.2 Do not re-enter the affected area until authorized by the DOW Representative.

2.3.2 The contractor shall notify the DOW Representative in person or by telephone as soon as possible that all employees in the area are accounted for or that specific employees cannot be accounted for.

3.0 Contractors Responsibilities For Written Reports Following Any Accident

3.1 The contractor representative, DOW representative and others who have a responsibility regarding the project shall participate in the investigation. A report form shall be filled out for any injury requiring medical treatment or any potentially serious incident, all fires, hazardous conditions and property damage incidents though no injury occurred. This report shall be submitted to the DOW Representative as soon as possible, but no later than 10:00 A.M. the following work day.

3.2 The contractor shall cooperate with the owner in providing accident and injury experience and exposure hours as requested, to maintain historical and statistical safety performance records.

4.0 Individual Accountability

- 4.1 Horseplay in any form is not allowed.
- 4.2 Conduct and behavior shall be in accordance with safety rules and procedures in order to eliminate unsafe acts.
- 4.3 Contractor personnel must not operate or make inoperative without permission, safety devices such as relief valves, deluge valves, gauge valves, electrical and mechanical interlocks, guards, electrical switches, etc.
 - 4.3.1 Any accidental interruption of lines or equipment in service or any irregularities observed must be reported immediately to the DOW Representative.
- 4.4 Contractor employees shall not use unsafe shortcuts, such as walking pipelines, sliding down pipe or stanchions and cutting corners to save a few steps.
 - 4.4.1 Personnel must not climb through, under, over, or between railroad cars of a train.
- 4.5 Tools, materials or equipment must not be dropped or thrown from one level to another.
 - 4.5.1 Sharp tools must be carried in sheaths when not in use.
- 4.6 Personnel must not ride a load being handled by a crane. Slings, hooks, etc., must not be ridden, except where a crane basket or a bosun's chair and safety belt are used.
- 4.7 Personnel must not walk, drop or jump onto a roof. Reference 12.5.
- 4.8 Personnel using pipe lines and/or conduit as a working surface to perform work must have prior written permission from DOW Representative.
- 4.9 Smoking on DOW property is prohibited except where specifically permitted by Dow Chemical U.S.A.
 - 4.9.1 No smoking in vehicles within the fenced confines of DOW property.

- 4.10 Contractors personnel shall not wander about the plant. They shall stay on the job site unless being moved to and from clockroom or from job site to job site.

- 4.11 Possession or use of intoxicating beverages or narcotics while on plant property and/or reporting for work under the influence of same is prohibited.

5.0 Vehicles And Traffic (Ref. 8.0)

- 5.1 Contractor personnel driving or riding vehicles shall comply with all of the safety rules and regulations regarding traffic and vehicles.
- 5.2 All vehicles must be in safe mechanical working condition at all times. In addition to complying with Federal and State requirements as to brakes, lights, signals, horns, mufflers, etc., vehicles must be periodically inspected by a representative of the contractor. Necessary repairs and adjustments must be made prior to their use on owner's property.
- 5.3 Fuel tanks on motorized vehicles must not be filled while the engine is running or when welding or other hot work is being done nearby. Smoking will not be allowed during fueling operations.
- 5.4 Automobiles, trucks and trailers
 - 5.4.1 The use of seat belts in automobiles and trucks
 - 5.4.1.1 The front seat of all vehicles shall be equipped with seat belts.
 - 5.4.1.2 All persons seated in the front of such vehicles shall properly adjust and fasten the seat belts before the vehicles are put into motion.
 - 5.4.1.3 When rear seats are equipped with belts their use is strongly recommended.

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- 5.4.2 The use of pick-ups, flatbeds, stake racks, winch trucks or buses as transportation for personnel will not be permitted unless adequate safety provisions are made to keep personnel from being accidentally thrown from the vehicles or otherwise injured. In any case, the number of personnel must not cause overcrowding.
- 5.4.3 Vehicles (as described in 5.4.2) stopped on plant roadways for the purpose of loading or discharging passengers must not be passed in either direction except, after coming to a full stop, the vehicle may be passed at no more than 10 miles per hour provided the way is clear.
- 5.4.4 Hauled material that overhangs the sides or ends of a truck must be red flagged at the extent of the overhang. Loads must not be hauled from a single suspension cable that allows free swinging beyond the sides of the truck.
 - 5.4.4.1 See 5.5.3 for special permit when hauling high, wide, long or heavy loads.
- 5.5 Cranes, cherry-pickers, other vehicles
 - 5.5.1 Riding of units (as described in 5.5) shall be permitted only when adequate safety provisions such as seats, platforms, rails, etc., are provided for the assigned crew.
 - 5.5.2 The following rules must be observed in the operation of cranes, cherry-pickers, and other vehicles having booms or extended loads, which extend 14 feet or more.
 - 5.5.2.1 Moving units (as described in 5.5.2) when entering any thoroughfare, street, roadway intersection or work area shall have a flagman to clear all other traffic before proceeding.

- 5.5.2.2 Booms or loads must be marked or flagged with high visibility material when moving on plant roads.
- 5.5.3 Contractors must obtain a special permit through the DOW Representative when moving units or loads on plant roads under any of the following conditions:
 - Reference Section 12.0, 12.1.3.
 - 5.5.3.1 Unit or load over eight feet wide.
 - 5.5.3.2 Unit or load over thirteen feet six inches (13 Ft. 6 In.) high.
 - 5.5.3.3 The unit or load overhang is more than fourteen feet (14 feet) front or rear.
 - 5.5.3.4 Heavy loads crossing any plant overpass or bridge with a gross load exceeding posted loading restrictions shall require a special permit.
- 5.6 Dump Trucks and Waste Hauling Units
 - 5.6.1 All trucks hauling waste and or demolition material on Dow property shall be equipped with an adequate rear closure to prevent any material from dropping off of the truck onto the roadways.

6.0 Protective Equipment And Clothing

6.1 The contractor and his employees shall recognize the importance and the use of personal protective safety equipment and clothing.

6.1.1 The DOW Representative shall inform the contractor, who shall then be responsible for enforcing owner's area or job rules requiring special personnel protection. Reference 1.2.

6.1.2 Contractors shall see that their employees have the required proper protective equipment.

6.2 APPROVED EYE PROTECTION - All personnel employed by any contractor or sub-contractor shall wear approved safety glasses at all times. (Exceptions will be allowed in offices, lunch rooms and washrooms). Safety glasses with side shields are required when grinding, chipping or performing any job where side shields would afford protection from flying particles.

6.2.1 As a matter of convenience contractor may purchase personal protective equipment at his own expense from the Dow Safety office through the DOW Representative.

6.2.2 All employees working in the vicinity of hazardous chemicals must know where the nearest safety shower and eye bath facilities are located.

6.3 APPROVED SAFETY HARD HATS are required for all contractor work. Metal hats are not approved.

6.4 All personnel shall wear air hoods, or equivalent, supplied by approved source of breathing air, when sandblasting or applying volatile or toxic material inside tanks, rooms or any other area not adequately ventilated.

6.4.1 Pressurized "PLANT AIR" does not meet breathing air requirements.

6.4.2 Compressor pressurized air shall be free of contaminants. Watch the air

intake - watch the heat of the compressor.

6.4.3 See Dow Safety Standard S-745 dated 8-21-72.

6.5 Lifelines, safety belts and lanyards shall be used only for employees safe guarding. Equipment will be tested prior to use.

6.5.1 Personnel must wear Coast Guard approved life jackets or otherwise be protected by handrails or lifelines when working over water wherein a drowning hazard exists.

6.6 Personnel shall wear personal clothing and footwear that is safe and proper for a chemical plant. Wearing of canvas shoes, sneakers or houseshoes and working in an undershirt, shorts or stripped to the waist is prohibited.

6.7 NOISE CONTROL - Protection against the effects of noise exposure shall be provided when the sound level exceeds the permissible noise exposure as specified in the Federal or State standards.

6.8 Asbestos Fiber Control

6.8.1. Secured a copy of the O.S.H.A. asbestos standard and learn the shall requirements then comply accordingly.

6.8.1.1. The allowable limits are 5 particles TIME LIMIT VALUES, longer than 5 microns, per cubic centimeter of air. In 1976 the TLV is lowered to 2 particles

6.8.1.2. Counsel with your Dow Rep. when help is needed to understand the requirements.

6.9 Urethane Sprayed Jobs.

6.9.1. The Applicator must follow all the requirements under the Health Stds. applicable to Urethane application.

6.9.1.1. A 50' radius must be signed and barricaded.

6.9.1.2. The applicator must wear adequate respiratory protection at all times.

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7.0 Fire Prevention

7.1 The only acceptable standard on all job sites shall be excellent housekeeping.

7.1.1 Accumulation of trash, oily rags, combustible materials and similar fire hazards of any nature will not be permitted.

7.2 Smoking on Dow property is prohibited except where specifically permitted by Dow Chemical U.S.A.

7.3 The area around welding operations must be kept free of hoses and flammable or combustible material of any kind.

7.3.1 Hot work permits. (Ref. 12.2)

7.4 Canvas or paper shall not be used as tarpaulins or drop cloths on Dow property.

7.5 There shall always be an adequate clearance of unrestricted passage to fire hydrants, extinguishers, hose racks, control valves, and other emergency equipment.

7.5.1 All alleys, driveways, roads, transformers, and power poles, shall be kept clear of material and equipment.

7.5.2 All stairways and elevator approaches shall be kept clear.

7.6 Heating equipment for construction purposes shall be approved by the DOW Representative prior to use.

7.6.1 Electrical heating units shall be used for offices, lunchrooms, change rooms.

7.6.2 Under no conditions will a solid fuel salamander be permitted.

7.7 Temporary storage of flammable materials must be approved by the DOW Representative.

7.7.1 Flammable type material such as gasoline, oil, paints shall be clearly identified, separately stored and kept clear of work areas. Appropriate signs must be provided in storage areas.

7.7.2 All cans, five gallons maximum, used for transporting or transferring gasoline or fuel must be labeled by Underwriters' Laboratories or Factory Mutual Laboratories as approved safety cans with internal flame arrestor properly installed and closers operable.

Note - The word Fuel does include No. 2 Diesel Fuel

7.7.3 Class zero flammable liquid storage tanks must be grounded. Filler hoses must be bonded from the tank to the dispensing nozzle. Vehicles dispensing fuel must have a static ground. A properly installed flame arrestor should be on the tank vent if the flash point is 80 degrees or lower.

7.7.3.1 A shut-off valve is required on the outlet of storage tanks.

7.7.3.2 Equipment fuel tanks must not be filled while the engine is running.

7.7.3.3 Storage fuel tanks shall have the content identity stenciled on the tank shell. Letter size shall be a minimum of one and one half inches (1½").

7.7.4 Welding or any spark or flame producing operation must be stopped within 25' of the refueling operations.

7.8 Welding rod cabinets presenting a fire or safety hazard will not be permitted. Cabinets or fireproof materials equipped with strip heaters are recommended. If light bulbs are used, they must be securely guarded with adequate spacing in regard to the cabinet.

7.9 Volatile materials (such as flammable paint and coatings) shall not be applied near an open flame or welding operation. If such material is to be applied in a vessel, or other poorly ventilated, confined areas,

only explosion-proof lights, non sparking tools and connections shall be used.

7.9.1 Welding shall not be done within 25' of spray painting or coating operation.

7.10 Welding or cutting torches and hoses must not be connected to cylinders when stored in any enclosure or building. When work is shut down and equipment is unattended, close all valves at the MAPP and/or acetylene and oxygen cylinders, bleed lines and check five minutes later for pressure-build-up, disconnect hoses at the torch, remove hoses from cylinders and store. Ref. 8.7.2.

7.10.1 Cylinders must be equipped with valve caps when moved or stored.

7.10.2 All hose lines must be in good condition.

7.11 Cylinder Regulators and Compressed Gas Cylinders. See Dow Standards S-622 and S-623 dated 5-17-72.

7.11.1 Compressed gases including air must not be used for cleaning of clothes, the body or work areas. Oxygen must not be used for pressure testing purposes.

7.12 Adequate ventilation must be provided when cleaning agents are used. Only use non-flammable cleaning agents. Extra precaution is needed when chlorinated solvents are used in presence of hot surface or ultraviolet rays (welding).

7.13 Do not dump flammable, corrosive or toxic materials into PLANT SEWERS. Ref. Introduction Paragraph 6.

7.14 Electric welders shall not operate unattended. It is mandatory to shut the unit down at the close of the work hour. Ref. 8.6.2.3.

8.0 Machinery, Cranes, Tools And Equipment (Ref. 5.0)

8.1 The safe designed capacity of any tool or piece of equipment must not be exceeded. Tools and equipment must not be modified in any manner that reduces the original factor of safety or capacity.

8.1.1 Under no circumstance shall contractors use inadequate tools or equipment.

8.2 All contractor-owned, leased or rented equipment must be in safe mechanical working condition to render efficient service at all times.

8.2.1 A special permit must be obtained to cross either the river bridge or railroad overpass with a gross load exceeding posted loading restrictions. Ref. 5.5.3.4.

8.2.2 Equipment must be inspected by contractor supervision prior to its use on a job and periodically thereafter to insure that it is in safe working order. Special attention must be given to such items as cables, cable clamps, guards, booms, blocks, hooks, grounds, electrical cords and safety devices. For maintenance, *Equipment shall be made safe for repairs or adjustments.*

8.2.3 Defective tools and equipment must be tagged and removed from service immediately and if repairable, must be properly repaired before reuse on owners job.

8.2.4 Contractor will not be allowed to use owners tools or equipment. Do not loan contractor tools or equipment to owner's personnel.

8.3 Equipment with exposed gears, belts, couplings, etc., must be provided with proper guards.

8.4 The contractor has the complete responsibility for a safe operation when using hoisting equipment. This requires competent, well trained operators.

8.4.1 Suspended free swinging loads shall be controlled by the use of a tag line.

No load shall be lifted which exceeds the Manufacturer's rated capacity of the crane. When one of the following conditions prevail; the contractor shall submit in writing, an outline of the safety planning for the lift to be done to the DOW Representative, prior to starting the lift.

- a) The load exceeds 80% of rated load chart for crane.
- b) Anytime a lift is to be made within 10 feet of or above any pipeline, power line and/or existing structure.
- c) Two booms are required to make the lift.
- d) If poles or derricks are to be erected for this specific lift.

8.4.2 Do not use rope for hoisting men, or for guard rails. Rope can become quickly damaged by acids or chemicals. Use metal, cable or wood for hoisting, guying off scaffold or for temporary guard rails.

8.4.3 Lower or securely tie down all crane booms before leaving for the night. equipment not being used for long periods must be parked in the contractors' parking area.

8.4.4 Electrical Energized Power Line Clearance.

Safety Standard S-335 must be enforced by contractors working within the scope of this standard.

The Standard includes any work where the man or equipment will be within 10 feet of any energized over-

head power line. This includes cranes, condor lifts, bucket trucks, scaffolds and any other types of elevated work platforms.

When a 10 foot clearance cannot be maintained you must obtain a clearance in writing from Dow's Electrical Distribution and Maintenance people to work closer than 10 feet. Call 6-3399.

8.5 Pressure vessels used for construction, including fired boilers, must receive an annual hydrostatic test equal to 1-1/2 times the maximum allowable working pressure of the unit as well as a thorough visual external inspection. At this time, safety and relief valves, properly sized and set for the vessel, will be checked for freedom of operation.

8.5.1 Written certification of compliance to the rule will be furnished to the DOW Representative on demand. Plastic encapsulation and attachment to the certified equipment is recommended.

8.6 All electrical tools and equipment shall be properly grounded.

8.6.1 Temporary wiring.

8.6.1.1 All services and branch feeds shall:

- a) Be installed as per the National Electrical Code, which is minimum.
- b) Be properly fused and circuited to include Ground Fault Circuit Interrupters as required by Article 210-7 of the National Electrical Code.
- c) Have a proper ground for all outlets, devices, tools and frames of the welding machines.

1. Welding machines should have a separate adequate conductor from the machine direct to the ground rod.

d) Be grounding type non-metallic cable for 115/230 and 440 volt circuits.

e) Be mechanically protected or otherwise suitably guarded to prevent accidental damage by workmen and shall have a clearance of 7' 8" over walkways or areas where men are working.

f) Have a separate conductor of a size equivalent to the circuit conductor which shall serve as an equipment ground on feeder and branch circuits for combination lighting and portable tools.

g) Be marked with proper warning signs.

8.6.1.2 Cords and Connectors for Portable Electrical Devices:

a) Shall be provided with a separate equipment ground conductor.

b) Two-wire lamp holders shall be used only with lamps. Lamps within 7'-0" of working surfaces shall have guards.

c) Plug body screw bases shall not be used.

d) Connector bodies with matching caps with separate equipment grounding blades and grounded shells shall be used.

e) Cords shall be three wire rough service cords.

1. Where portable tools plug into outlets or cords, they shall be three wire cords with proper grounding type three wire receptables.

8.6.2 When arc welding is being done the following rules must be adhered to.

8.6.2.1 Hot work permit shall be obtained prior to starting the machine. Reference 12.0.

8.6.2.2 All machines shall be set up outside of buildings.

8.6.2.3 At the end of the work day (period) the safety switch for electric power supply (primary supply) shall be locked in an off position. Ref. 7.14

8.6.2.4 Primary supply cables are to be kept separated from welding leads.

8.6.2.5 All cables are to be supported or covered so as not to interfere with the safe passage of workers and to prevent damage to cables.

8.6.2.6 The ground cable plate shall be tack welded or clamped to the work.

8.6.2.7 When coupling cables, use insulated cable pressure connectors. Other methods require the approval of DOW Representative.

8.7 Gas Welding and Cutting

8.7.1 Gas welding and cutting operator

8.7.1.1 Hot work permit is required. Reference Section 12.0.

8.7.1.2 The operator should wear eight inch high safety shoes or spats as required by the contractor.

- 8.7.1.3 The operator should wear safety glasses under cutting goggles.
- 8.7.2 Gas welding and cutting equipment.
Ref. 7.11
- 8.7.2.1 When gas and oxygen cylinders are lifted by hoisting equipment, a basket, a cradle, or similar handling device must be used. Slings may be used only if the cylinders are specifically equipped for such handling. Cylinders must not be lifted by the valve protection caps.
- 8.7.2.2 Compressed gas cylinders must be stored in an upright position and safely fastened to a support. Cylinder valves must be capped.
- 8.7.2.3 Compressed gas cylinders must be stored out of doors.
- 8.7.2.4 Compressed gas cylinders when in use shall be in an upright position and properly fastened to a support or cart.
- 8.7.2.5 Regulators and gauges shall not be attached to cylinders when not in service.
- 8.7.2.6 When in service every effort must be made to protect the regulators and gauges from damage.
- 8.7.2.7 Regulators, gauges and torches shall be removed and stored in a locked storage.
- 8.8 Loose clothing must not be worn while working around operating machinery.
- 8.9 Metal building served with electricity shall have the skin of the building properly grounded, as well as the service entrance switch.

- 8.10 Hose connectors and adaptors shall be of a standard manufacture and used only for the type of service intended.

8.10.1 In order to insure positive locking at all times, connectors must be in good condition and not abused. Sandblast hose connections shall be the safety lock type which prevent accidental disengagement.

8.10.2 The air supply valve shall be shut off and air pressure on pneumatic tools must be bled down before tools are disconnected from air supply.

- 8.11 Powder-Actuated Tools shall be approved for use on Dow property.

8.11.1 "Approved Tool" means a tool meeting the requirements of the state of Michigan "General Safety Rules and Regulations for the Construction Industry" and acceptable to the DOW Representative. A "HOT WORK PERMIT" is required for operating the tool.

- 8.12 Tools used to process mineral items, non-metallic, (where there could be a potential health hazard) shall be of a design to control dusts or vapors. These tools shall be approved by the DOW representative. An example might be a brick saw that runs with a dry cut.

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9.0 Ladders

- 9.1 No metal ladders shall be permitted on Dow property. Use only electrically non-conductive heavy duty construction ladders.
- 9.2 All ladders used on the premises of Dow shall conform to the use and application as specified in ASA Code A-14.1 and State of Michigan Occupational Safety Standards R408.10401 - R408.10456.
- 9.3 See Dow Safety Standard S-750 dated 8-4-71.

10.0 Elevated Working Surfaces

- 10.1 Elevated working surfaces shall be designed, built and inspected by competent persons before use. Scaffold shall be patented metal scaffold. Use lumber only when metal scaffold is not feasible.
- 10.2 Makeshift scaffolds such as boxes, crates and drums must not be used.
- 10.3 All elevated working surfaces and allied equipment must be kept in good repair or remove from Dow property.
- 10.4 See Dow Safety Standard S-810 dated 4-19-72.

11.0 Safe Work Tags

- 11.1 The following safe work tags shall be used as the job warrants:
 - 11.1.1 Danger Red Tag Ref. 11.2
 - 11.1.2 Completion Blue Tag Ref. 11.3
 - 11.1.3 Equipment Transfer Buff Tag Ref. 11.4
- 11.2 The "Danger-Red Tag" shall be used to safe guard the workman or the facility. See Dow Safety Standard S-740 dated 4-19-72.
 - 11.2.1 To insure that operating status of equipment is not changed while it is being used or worked on, red danger tags must be attached to the controls so that personnel will know not to use them. These tags must be used to protect personnel exposed to hazards of equipment and must be respected by all personnel. The manufacturing representative responsible for the operation of equipment or their designate must clear and tag the equipment. Any contractor personnel whose safety could be endangered while working on tagged equipment must affix their tag.
 - 11.2.2 The "Danger Red Tag" "Do Not Operate or Use this Equipment" is red with white lettering furnished by "Dow".
 - 11.2.3 The responsibility for administering the Danger Red Tag regulations shall be a joint duty.
 - 11.2.3.1 The manufacturing representative or contractor who is responsible for a Plant, Shop, Laboratory, Construction Project, or any other Owner or Contractor operation shall place the facility in a safe

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- shutdown readiness and have a properly signed "Danger-Red Tag" attached to the facility before starting any work requiring owner or contractor employees.
- 11.2.3.2 The DOW Representative or CONTRACTOR shall be responsible for checking the readiness of the facility or equipment tagged by the manufacturing representative or contractor and shall prepare and attach a Danger Red Tag to the work prior to starting the job or to perform necessary maintenance to the equipment.
- 11.2.3.3 At the discretion of the DOW Representative, locks and/or blanks should be used on valves and switches in addition to, but not replacing red danger tags.
- 11.2.4 The only people permitted to remove a Danger Red Tag are the people who attached the tags or their authorized representative as specified on the tag.
- 11.2.5 No one shall operate or use a device to which a Danger Red Tag is attached.
- 11.2.6 When a job or repair is completed, the contractor will remove their tags. The manufacturing representative will remove their tags.
- 11.2.6.1 Contractor's tags removed must be signed, dated and turned in to the DOW Representative.
- 11.2.7 Unauthorized removal of a "Danger Red Tag" or operation of a valve, switch, controlling device, and etc. that is tagged out will be a discharge type safety rule violation.
- 11.2.7.1 Violation of the Danger Red Tag rule shall result in a disciplinary action up to and including rejection from any work on Dow property.
- 11.3 Completion Blue Tag
- 11.3.1 Mechanical or electrical equipment shall be tagged with the Motor Completion Tag, form No. 5200, furnished by Dow, to prevent operating of such equipment by anyone until items on the tag have been completed.
- 11.3.1.1 The tag shall be fastened to the start-stop control at the motor by the contractor.
- 11.3.2 The tag provides for certification by contractor that the equipment has been checked for lubrication, rotation, alignment, fuses, thermal elements and ground.
- 11.3.3 After all signatures, contractor shall move tag from the start-stop control to the starter switch handle to indicate the equipment is ready for operation by Dow.
- 11.4 Equipment Transfer Buff Tag
- 11.4.1 Used vessels to be moved shall be tagged with the Equipment Transfer Tag, form No. 5511 furnished by Dow, properly filled out by Dow personnel on the front and back. See Dow Safety Standard S-720 dated 1972. The equipment

Transfer Tag is the communications link between the manufacturing representative and the contractor. It shall be completely filled out to alert employees to any hazards while handling and working in or on the equipment. Do not remove the tag.

12.0 Safe Work Permits

12.1 The following safe work permits will be issued as the job warrants:

12.1.1 Hot work and vessel entry permit — Ref. 12.2

12.1.2 Occupancy of railroad right-of-way permit — Ref. 12.3, 13.2.3.

12.1.3 Special permit — Ref. 5.5.3, 8.2.1

12.1.4 Excavation permit (drawing required) — Ref. 13.1

12.1.5 Temporary Construction Shanty Permit — Ref. 12.4

12.1.6 Roof access permit — Ref. 12.5

12.1.7 Temporary Barriers — Ref. 12.6

12.1.8 Powerline Clearance Permit — Ref. 12.7

12.2 Hot work and vessel entry permits issued by Dow to the contractor personnel are required for all hot work & vessel entry. See Dow Safety Standard S-900 dated 5-3-72. These permits are designed to provide a means of checking at the job site the safety of such jobs as, but not limited to, entering closed vessels; working on electrical gear; welding, cutting on, breaking into or repairing pipelines or vessels in operation or under pressure or that have contained hazardous materials. These permits also cover work involving the use of flame or spark producing equipment on the Dow property.

12.2.1 CONTRACTOR supervisor must be in close contact with the progress of work as well as communicating with the DOW Representative for up-to-date status of operations. Further, contractor supervision must be certain that all personnel involved are informed as to specific procedures and changes in the situation.

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12.2.2 Hot work and vessel entry permits are to be initially requested through the CONTRACTORS' supervision and issued by the DOW Representative or facility manufacturing representative.

12.2.3 CONTRACTOR supervision must give a careful and complete description of the work to be done to the Dow person issuing the hot work or vessel entry permit.

12.2.3.1 Where a job presents a hazardous situation due to chemical, mechanical, electrical, temperature or gross exposure, it is mandatory that a written safe job procedure accompany the hot work or vessel entry permit. This procedure is to be signed by the DOW Representative, MANUFACTURING Representative, and the CONTRACTOR, who thereby agree that the procedure allows the job to be done safely.

12.2.4 It is the responsibility of the contractor to ensure that the directions restrictions noted on the hot work or vessel entry permits and safe job procedures must be carefully followed.

12.2.5 A hot work or vessel entry permit must be reissued for a job if there is evidence that conditions have changed subsequent to the issuance of the original hot work or vessel entry permit.

12.2.6 Permits are normally valid only for the shift issued. By mutual consent of the parties involved, permits may be issued for longer or shorter periods of time.

12.2.7 The contractor may request hot work or vessel entry permits for his own protection. Safety checks by the owner for dangerous gases or chemicals should be requested through the DOW Representative when there is any uncertainty.

12.3 A safe work permit shall be obtained to do any work within 9'-0" of the center of railroad track or over or under the railroad right-of-way. The Dow railroad department shall issue the permit and derailler-sign to the DOW Representative.

Reference 12.1.2 See Dow Safety Standard S-760 dated 8-21-72.

12.3.1 No obstruction of any kind, whether permanent or temporary, is permitted within 9'-0" horizontally from the center line of any railroad track and within 22'-6" vertically from the top of the rail.

12.3.2 The safe work permit shall specify the use of derailler-sign.

12.4 A safe work permit shall be obtained to place any temporary construction shanty on Dow property. Certain shanties may be approved for smoking by the DOW Representative. Ref. 7.2

12.5 A safe work permit shall be obtained to do any work on the roof of an existing manufacturing facility. See Dow Safety Standard S-735 dated 1965.

12.5.1 A job planning roof access permit is to assure workmen complete knowledge of roof and deck conditions and to specify precautionary methods to be employed while working in the area.

12.5.2 It is the equal and joint responsibility of plant supervision and contractor personnel entering the roof area to observe the permit requirement.

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- 12.6 Temporary barrier permits shall be required from Plant Protection to completely barricade a plant street, service drive or alley. See Dow Safety Standard S-700 dated 6-21-72.
- 12.7 Temporary Clearance permits shall be required from Dow's Electrical Distribution and Maintenance people when work must be performed closer than 10 feet to any electrical energized distribution lines. See Dow Safety Standard S-335 dated 3-21-73.

13.0 Excavation-Barriers-Devices To Penetrate The Earth

- 13.1 When excavations and penetrations of the earth are to be performed approval must be obtained from DOW Representative via using current to date drawings stamped "Checked For Underground Interference". Ref. Dow Safety Standard S-800 dated 8-16-72.
- 13.1.1 The purpose of these prints are to show the latest known underground interference and their locations. This will not constitute permission to do machine excavation, pile driving, soil boring, pole setting, etc.
- 13.1.2 The DOW Representative shall check mark each detail of the drawing before starting work.
- 13.1.3 Hand excavation or probing to verify location of underground lines will be required.
- 13.1.4 Excavation shall immediately stop when any underground interference whether or not shown on drawing is encountered.
- 13.1.5 Where a safety hazard would be created for any personnel, excavations such as ditches, trenches, or bell holes shall be sloped sufficiently to prevent cave-ins or slides. If sloping is impractical, shoring shall be used in cases whenever the vertical dimension exceeds four feet.
- 13.1.5.1 Personnel removing shorings after completion of work must not be in the bottom of the excavation.
- 13.2 Barriers
- 13.2.1 Contractors shall provide temporary substantial guardrails, signals, flagmen, or other appropriate

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warning devices to protect personnel near any hazardous operation or excavation. Floor openings, open trenches, excavation, etc., shall be covered when barriers do not provide protection to personnel.

13.2.1.1 Barriers must be sufficiently marked in order to be visible day or night.

13.2.1.2 Notify the DOW Representative at least one day in advance when placing barricades that will detour traffic.

13.2.2 Warning signs on barricades shall be used to restrict employees from entering areas when overhead work is in progress.

13.2.3 Railroad Derailer-sign

13.2.3.1 See Dow Safety Standard S-780 dated 6-21-72.

13.2.3.2 Safe Work Permits requirements reference 12.1.2, 12.1.3

13.2.3.3 In locations where strictly temporary loading or unloading operation of railroad cars are to be undertaken, portable derrails shall be used by personnel engaged in these operations to prevent over-running of the cars by a train.

14.0 Radiation

14.1 The contractor shall obtain written permission before bringing any radiation producing equipment on to the Dow property.

14.1.1 Radiation producing equipment is any equipment which can produce injurious amounts of emissions of Alpha or Beta particles, gamma or X-rays, or neutrons. For example, X-ray machines, electron microscopes, accelerators, or sealed radioactive sources and Laser equipment.

14.1.2 See Dow Safety Standard S-477 dated 1-1-72.

14.2 All state and/or federal laws governing use, storage or handling of a radiation source must be complied with.

14.3 A minimum of two qualified people are required for the performance of any radiographic work.

14.4 In locations where a radiation source is used or stored, regulations require that it be marked with a "Radiation Area" sign. **THIS SIGN IS FOR THE PURPOSE OF INFORMING ANYONE IN THE AREA THAT SUCH MATERIAL IS PRESENT.**

14.4.1 Only authorized personnel shall enter an area marked by "Radiation Area" sign.

14.4.2 All areas where a radiation hazard exists must be roped off and marked conspicuously by standard signs at a safe distance from the source of radiation. These signs bear the radiation symbol of magenta (or purple) on a yellow background with the words "Caution - Radiation Area".

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14.4.3 "RADIATION AREA" signs must be removed when a radiation hazard no longer exists in the affected area.

14.4.4 Equipment containing a source of radiation shall not be handled, uncrated or installed without prior clearance with the DOW Representative.

15.0 Removal of Facilities

15.1 This section specifically covers the removal and demolition of facilities. Due to the inherent hazards in this type of work, special care must be devoted to safe work procedures, scope understanding and communication concerning the safe clearance of the work.

15.2 It is not appropriate to make assumptions in any stage of this type of work. Responsibilities must be delegated only to those whose profession qualified them to make the necessary judgment and decisions that are required to assure the safest possible execution of the job. From start to finish, each person connected with removal of facilities must adopt an attitude of "Prepare For Any Possibility".

15.3 The CONTRACTOR shall ascertain with the DOW Representative that all lines, services and equipment have been cleaned or purged and properly cleared and tagged for safe removal. All lines (including water and steam) and equipment are to be considered hot until positive safe clearance has been obtained.

15.4 The pre-job safety meeting with the contractor as covered in Section I of this manual shall devote special attention to preplanning the safety aspects of removal of facilities and a thorough check of the drawing marked "Check For Underground Interference" Reference Section 13.1.1.

15.4.1 The Dow "Removal Survey Form" (sample form included in this manual) shall be completed and a copy presented to contractor by the DOW Representative.

15.4.2 Steps of dismantling and loads to be handled shall be reviewed with the DOW Representative prior to starting work. Locations for dis-

15.7.1 Material shall not be dropped outside an exterior wall of a structure being demolished unless an employee in the area is protected from injury by a barrier. A chute or mechanical equipment shall be used in lieu of dropping materials.

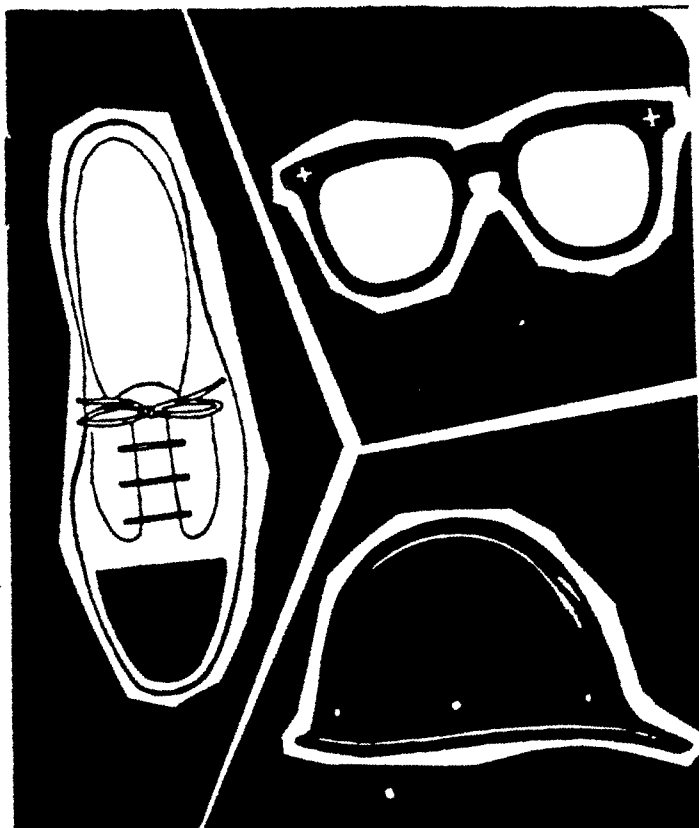
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**16.0 Reference Material
For Contractor Safety**

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- 16.1 Code of Federal Regulations, Title 29, Part 1926.
- 16.2 General and special conditions in construction contract documents, Dow Chemical U.S.A.
- 16.3 Guiding Principles For a Contractor Safety and Loss Prevention Program. Dow Chemical U.S.A., Midland, Michigan.
- 16.4 General Safety Rules and Regulations for the Construction Industry Construction Safety Commission, Bureau of Safety and Health - State of Michigan.
- 16.5 Manual of Accident Prevention in Construction. The Associated General Contractors of America, Incorporated.
- 16.6 Dow Chemical U.S.A., Michigan Division Safety Standards.

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**The Michigan Division
GENERAL PLANT SAFETY
RULES AND PROCEDURES
Manual For Contractors**

DOW CHEMICAL U.S.A.



ST0009737

"Safety must be a *first* consideration and *basic* responsibility of every contractor employee working in the Michigan "*Division*."



This Manual is made available to you as an interpretation of the Safety Clause of your contract.

All or parts of contents will apply to your work depending on the nature and sequences of your work.

DOW CHEMICAL U.S.A.

MICHIGAN DIVISION

**STATEMENT OF SAFETY & LOSS
PREVENTION**

The objective of the Michigan Division of Dow Chemical U.S.A. is to establish and maintain an active, successful accident and loss prevention program that will ultimately result in superior safety performance by Contractors doing work in our plants.

MAY, 1976

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**THE MICHIGAN DIVISION
GENERAL PLANT SAFETY
RULES AND PROCEDURES
MANUAL
FOR CONTRACTORS**

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The information in this manual is intended as one reference source for many of the safety rules and procedures which will be helpful to contractors in achieving good safety performance. It cannot, however, be assumed that every conditional safety procedure is contained herein or that abnormal or unusual circumstances may not warrant or require modifications or additional procedures.

Where these rules or procedures interfere with other safety considerations or adversely affect job efficiency, without materially affecting to the safety of the job, the DOW Representative can waive or modify these rules as they apply to a specific part of a job or contract.

BECAUSE OF THE UNIQUE HAZARDS ENCOUNTERED BY CONSTRUCTION WORK IN A CHEMICAL COMPLEX, THE DOW MICHIGAN DIVISION HAS DEVELOPED SPECIFIC DOW SAFETY RULES RELEVANT TO DOW CONTRACTS. THESE RULES IN PART ARE PRESENTED BELOW IN SUMMARY FORM AND ARE COVERED IN GREATER DETAIL IN THE BODY OF THIS MANUAL

1. ALWAYS WEAR YOUR SAFETY GLASSES. Ref. 6.2
2. HARD HATS WORN EVERYWHERE EXCEPT LUNCH ROOMS. Ref. 6.3
3. SMOKE ONLY IN POSTED LOCATIONS. Ref. 7.2
4. NO METAL LADDERS ALLOWED IN THE PLANT. Ref. 9.1
5. NO WELDING, CUTTING, FLAME OR SPARK-PRODUCING OR ENGINE DRIVEN EQUIPMENT ALLOWED WITHOUT SPECIFIC PERMISSION (HOT WORK PERMIT) BY THE DOW REPRESENTATIVE. (Part 8.0 and 12.0)

6. ALL TRUCKS AND AUTOMOBILES OPERATED ON DOW PROPERTY MUST HAVE SEAT BELTS WHICH SHALL BE USED. Ref. 5.4
7. NO CANVAS OR PAPER TARPULINS OR DROP CLOTHS ALLOWED. Ref. 7.4
8. DISPOSAL INTO PLANT SEWERS OF FLAMMABLE, CORROSIVE OR TOXIC MATERIALS IS PROHIBITED. Ref. 7.13
9. SPECIAL PERMISSION THROUGH THE DOW REPRESENTATIVE FROM PLANT PROTECTION IS REQUIRED BEFORE MOVING LARGE LOADS INCLUDING CRANES ON PLANT ROADS. Ref. 5.5
10. BEFORE USING ANY ELECTRICAL TOOL, BE SURE IT IS GROUNDED. Ref. 8.6
11. PERMITS MUST BE OBTAINED FROM THE DOW REPRESENTATIVE NOT ONLY FOR ALL "HOT WORK" BUT FOR WORK ALONG RAILROAD RIGHT-OF-WAY, EXCAVATION ON THE PROPERTY AND FOR ACCESS TO EXISTING BUILDING ROOFS. Ref. 12.1
12. OBSERVE RED DANGER TAGS ON VALVES, SWITCHES, CLUTCHES AND OTHER EQUIPMENT OPERATION CONTROLS. NO ONE WORKS ON EQUIPMENT WITHOUT FIRST, PLACING THEIR RED TAGS ON THE VALVES AND CONTROLS TO SUCH EQUIPMENT FOLLOWING THE PLACEMENT OF THE RED DANGER TAGS BY DOW. Part 11.0
13. BE ALERT FOR ANY EMERGENCY. CALL AN AMBULANCE 636-3393 FOR ANY PERSONNEL ACCIDENT, AND CALL THE FIRE DEPARTMENT 636-3311 FOR ANY FIRE OR SPILL. Part 2.0
14. WHEN EXCAVATIONS ARE TO BE PERFORMED, APPROVAL MUST BE OBTAINED FROM THE DOW REPRESENTATIVE. CURRENT TO DATE DRAWINGS STAMPED "CHECKED FOR UNDERGROUND REFERENCE" SHALL BE ISSUED. HAND EXCAVATION OR PROBING TO VERIFY UNDERGROUND LINES WILL BE REQUIRED. Part. 13.0
15. ELECTRICAL ENERGIZED POWER LINE CLEARANCE.
CONTRACTORS SHALL MAINTAIN A MINIMUM OF 10 FEET CLEARANCE BETWEEN HIMSELF OR HIS EQUIPMENT AND ANY ENERGIZED OVERHEAD POWER LINE. Ref. 8.4.4

INTRODUCTION

The Michigan Division General Plant Safety Rules and Procedures Manual For Contractors are mandatory by contract. It cannot, however, be assumed that every conditional safety procedure is contained herein or that abnormal or unusual circumstances may not warrant or require modifications or additional procedure. Dow Chemical U.S.A. Michigan Division, hereinafter referred to as "Owner" will be represented during construction as defined in the contract by a designate known as the "DOW REPRESENTATIVE".

"Nothing contained in this safety manual shall in any way operate to relieve Contractor or its employees, agents or subcontractors of any responsibility for exercise of due care or liability for negligence which otherwise would apply. Contractor shall at all times use its own judgment and discretion as to safety and safety procedures, particularly in situations not specifically covered by this manual."

Safety rules and procedures are an integral part of each contract and must be carried out fully, as any other specification for the job.

The contractor will be held responsible for and shall police the safety performance of his employees and his subcontractor's employees conforming with these safety rules and procedures. ANY EXCEPTION TO THE RULES SET FORTH HEREIN MUST HAVE PRIOR WRITTEN AUTHORIZATION FROM THE DOW REPRESENTATIVE.

Contractors and contractor supervision unable or unwilling to secure personnel performance in keeping with these rules will not be acceptable.

Contractor employees who exhibit a poor attitude toward safe work and safety procedures will not be acceptable. Employees expelled

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from Dow due to safety violations will not be allowed to return to any owner's work without proper authorization from the owner. The contractor's safety record will be one criteria used to judge his qualifications for bidding.

A Contractors Safety Performance Check Sheet will be used by the DOW Representative for the purpose of evaluation for any contractor.

IN ADDITION TO THE RULES SET FORTH HEREIN, CONTRACTORS WORKING IN OR NEAR AN EXISTING OPERATING FACILITY MUST BE COGNIZANT OF AND CONFORM TO OWNER'S SAFETY RULES FOR THAT AREA.

APPLICABLE FEDERAL, STATE OR LOCAL LAWS SHALL APPLY TO CONTRACT WORK. IF THERE IS ANY CONFLICT WITH APPLICABLE FEDERAL, STATE OR LOCAL LAWS, THE MORE STRINGENT WILL APPLY.

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DEFINITION OF TERMS

1. **OWNER:** Dow Chemical U.S.A.
2. **MANUFACTURING REPRESENTATIVE:** The manufacturing representative is Dow Chemical U.S.A.'s employee designated by the operating management of the facility to act in their behalf.
3. **DOW REPRESENTATIVE** is Dow Chemical U.S.A. employee designated to work directly with the contractor on a day to day basis to keep the project progressing as scheduled and specified and in a safe manner.
4. **WILL, SHALL OR MUST:** The words "will" "shall" or "must" are to be understood as mandatory.
5. **SHOULD:** The word "should" is to be understood as being strongly recommended and to be followed if at all practical.

1.0 General Safety Rules

- 1.1 The contractor shall actively and adequately promote safe working performances on the part of his employees. He shall participate in activities to this end, such as safety organizations (e.g. Dow Midland Contractors Safety Council) special drives, contractor-owner programs, etc. It is expected that each contractor will conduct his own safety programs to best suit his particular needs.
 - 1.1.1 United States Standards Institute, Z-18.1 standard, "Recording and Measuring Work Injury Experience" shall be used as a guide to classify contractor injuries.
 - 1.1.2 Contractors are responsible for recording and reporting injuries and illnesses in accordance to Part 1904, Title 29 of OSHA.
 - 1.1.2.1. or Contractor shall make, keep, and preserve accurate and timely records and reports of work illnesses and injuries according to Act No. 154 Public Acts of 1974 section 61 State of Michigan.
 - 1.1.2.2. The contractor performing work under contract to the Dow Chemical Michigan Division shall submit quarterly form OSHA No. 102 of the MIOSHA requirements to the Dow Michigan Division Safety Dept.
 - 1.1.3. The DOW Representative shall each month rate the contractor for safety performance. Ref. Contractors Safety Performance Check Sheet, sample on page 11 or any other acceptable inspection form approved by the safety dept. and Construction administration.

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1.2 Prior to starting any field work on each job, the DOW Representative will conduct a pre-job safety conference. The attendees shall be:

- a) Two or more contractor supervisors (one must be a job site supervisor)
- b) Subcontractor job site supervisor,
- c) Dow Manufacturing Representative,
- d) Dow Safety Representative,
- e) Dow Plant Protection officer Representative.

At this time, the nature of any chemical hazards or special safety rules for the area will be reviewed by the DOW Manufacturing Representative. The contractor will be provided with printed copies of area rules and minutes of the meeting. The "pre-job Safety Check Sheet" (See Sample) will be prepared by the DOW Representative and copies furnished to the contractor. The contractor shall communicate these regulations as outlined by DOW Representative to his people and sub-contractors people prior to starting the job and safety information shall be maintained during the life of the project for all employees.

1.2.1 Any replacement of the contractors job site supervisor shall require safety meeting orientation for the new supervisor by the contractor.

1.3 An effective system of indoctrination and education of employees in safety and loss prevention is expected of each contractor. Contractors shall inform all their employees of all safety rules and all safety procedures before starting the job.

1.3.1 Contractor shall inform all their employees of location and use of re-

quired safety devices such as safety showers, eye baths, fire blankets, fire extinguishers, gas masks and etc.

1.3.2 Contractor shall instruct all their employees regarding the use of personal protective equipment.

1.4 Contractors shall use a regular system of work inspection to detect and correct hazardous conditions, safety rule violations and unsafe working practices.

1.4.1 Orderliness is a basic requirement for all jobs and must be maintained at all times.

1.4.2 Temporary buildings and material storage areas shall be set up through DOW Representative. (Reference Sec. 12.0, 12.1.5, 12.4)

1.4.3 Temporary buildings must be identified as to contractor's name.

1.5 Contractors shall report to the DOW Representative by name any contractor employee discharged for safety or plant rule infractions immediately. This must be followed by written report giving reason for discharge.

1.6 Contractors shall adjust their safety planning to cover jobs where circumstances have changed and new hazards require new controls. Additional safety meetings may be required.

1.7 The contractor shall provide "Underwriters Approved" temporary fire protection equipment as required by the fire insurance underwriters. This fire protection equipment shall have the approval of the DOW Representative. After any use of this equipment it shall be properly replaced or reserviced by the contractor.

1.7.1 Minimum Size and Type Portable Fire Extinguisher

1.7.1.1 2½ gallon water-antifreeze

1.7.1.2 20 pound Dry Chemical

1.7.1.3 10 pound CO₂

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CONSTRUCTION ADMINISTRATION PRE-JOB SAFETY CHECK SHEET

Date:
 Project Name:
 Location:
 P.O. Number:
 Contractor:
 Dow Representative:

Check when the answer is YES; Explain in detail, under remarks, items not checked. Use asterisk if question does not apply. Under remarks write-in any special conditions.

DOW EMERGENCY PLANNING Ambulance 636-4400

- | | Manual
Part No. | |
|--|--------------------------|-----|
| 1. Are the standard emergency signals understood? | ☐ | 2.0 |
| 2. Contractor responsibility during an emergency understood? | ☐ | 2.0 |
| 3. Do you know the routes for possible evacuation? | ☐ | 2.0 |
| 4. Any special emergency regulations and signals for this job shall be explained under remarks. | ☐ | 2.0 |

DOW FIRE PREVENTION PLANNING Fire 636-4400

- | | | |
|--|--------------------------|-----|
| 1. Are the Fire Prevention Requirements known? | ☐ | 7.0 |
| 2. Are plans understood for the provision of adequate fire protection equipment? | ☐ | 7.0 |

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- | | | |
|---|--------------------------|------|
| 3. Is the Hot Work Permit System and Requirements understood? (Designated place(s) to obtain known) | ☐ | 12.0 |
| 4. Are the smoking rules understood? (designated place(s) or area known?) | ☐ | 7.0 |

MANUFACTURING FACILITY INSTRUCTIONS

- | | | |
|--|--------------------------|------|
| 1. Have the properties of the chemicals or special hazards for the facility been reviewed by the Manufacturing Representatives and written recommendations prepared and submitted? | ☐ | |
| 2. Are the safety showers and/or eye wash locations known? | ☐ | |
| 3. Do you understand the special safety equipment requirements for this job and its use? | ☐ | |
| 4. Are the applicable Red Tag and/or Lock-out Rules understood? Safety Std. S-740 | ☐ | 11.0 |
| 5. Explain the seriousness of property damage accidents having a potential of manufacturing interruption? Example: Any utility service incident | ☐ | |
| 6. Roofs — Safety Standard 733 — are the roof access and exit restrictions understood? | ☐ | 12.0 |
| 7. Are you aware of the barrier regulations to control hazardous situations? Safety Std. S-700 | ☐ | 13.0 |
| 8. Excavation Safety Standard 800 — are the excavation requirements understood? | ☐ | 13.0 |

DOW'S REPRESENTATIVE INSTRUCTIONS

- | | | |
|--|--------------------------|--|
| 1. Do you understand the Prime Contractor is fully responsible for the actions and safety of all workmen on his job? | ☐ | |
|--|--------------------------|--|

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2. Do you have a copy of and understand "The Midland Division General Plant Rules Procedures Manual For Contractors" ☐
3. Will you make Subcontractors and all tradesmen on this job aware of check sheet data? ☐
4. Are the elevated working surfaces and ladder rules known? ☐ 9 & 10
5. Are the crane inspection and critical lift procedures understood? ☐ 8.0
6. Do you understand the temporary electrical and extension cord wiring requirements? ☐ 8.0
7. Are you aware of the Traffic Regulations controlling the transporting of materials and/or manpower? ☐ 5.0
8. Do you understand the personal protective equipment requirements? ☐ 6.0
9. Do you understand the housekeeping regulations? ☐ 7.0
10. Do you know the requirements of the Procedures for Investigating and Reporting Contractor accidents? ☐ 3.0
11. Is the discipline penalty known for safety regulations? Page v Para. 6 ☐

CONTRACTORS RESPONSIBILITY

1. Please submit in writing an outline of your Safety Program activity for this job. If not please explain. ☐

Remarks: (Explain all "NO" answers)

CONTRACTORS SAFETY PERFORMANCE CHECK (✓) AND RATING FORM

Project Number _____ Date of _____
 Job Location _____ Type of Job _____ Contractor _____
 Place a check (✓) and Code number in the space provided only if the condition requires action and appears in the Remarks section. No check mark indicates the condition is satisfactory. Items such as housekeeping, tool and equipment conditions, etc., shall be rated in the space following the caption. See Code.

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TOTAL PROJECT SAFETY PERFORMANCE POINTS _____ = SCORE
 NUMBER OF SPACES CHECKED _____

REMARKS: (Were unsafe conditions corrected?)

Cells: Undeclared - 1
 Classified - Good 1 Fair 2 Poor 3 Unsatisfactory 4

Original: Contractor
 Copy: Construction Administration Office
 Copy: Personnel
 Copy: Jobable File
 Copy: Safety Dept.

One Rep. Signature _____

Contractor Rep. Signature _____

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2.0 Emergency Procedures For All Accidents

2.1 The contractor shall provide at his own expense a job site telephone for the duration of the contract. If poles are needed, the location must be acceptable to owner. Pay station telephones and the use of owner telephones will not be permitted. Notify DOW Representative of the contractor job telephone number as soon as it has been installed. Any exception to the telephone service requirement must have the approval of the DOW Representative.

2.2 Contractors Accidents

2.2.1 Personal injury accident

2.2.1.1 The contractor shall see that all injured personnel receive proper first aid attention at a recognized facility.

2.2.1.2 Call Ambulance for any case that requires professional help (Doctor's, Nurse's, medical facility, etc.).

2.2.1.3 Report the incident immediately to the DOW Representative.

2.2.1.4 Owners medical facilities are used the contractor will receive an invoice for such services.

2.2.1.5 Following an investigation of the incident, a verbal report shall be made to the DOW Representative by the contractor. Written Report Reference 3.1.

2.2.2 Chemical Exposures

2.2.2.1 In the event of chemical exposure or contact immediately wash the eyes and/or the affected parts of the body

thoroughly with potable running water. CALL AMBULANCE. Continue washing for at least 15 minutes or until the ambulance arrives.

2.2.2.2 If illness from inhalation occurs, remove the person at once to fresh air and call for the ambulance.

2.2.3 Fire or property loss accidents

2.2.3.1 Immediately report any fire to the Dow Fire Department 636-4400

2.2.3.2 Fire or property loss incident requires the job site supervisor to immediately report to DOW Representative.

2.3 Owners Plant Emergencies

2.3.1 In the event of an alert, evacuation, explosion or fire, the contractor's personnel working in the area affected must observe the following rules.

2.3.1.1 The standard emergency siren signals used throughout the Midland division are as follows -

ALERT - One rise to maximum pitch. On this signal all flame or spark producing apparatus (welding machines, etc.) will be shutdown.

EVACUATION SIGNAL - Continuous sounding of the siren. All flame or spark producing equipment will be shut off and employees shall evacuate the building or area.

ALL CLEAR - Two rises to maximum pitch.

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2.3.1.2 Do not re-enter the affected area until authorized by the DOW Representative.

2.3.2 The contractor shall notify the DOW Representative in person or by telephone as soon as possible that all employees in the area are accounted for or that specific employees cannot be accounted for.

3.0 Contractors Responsibilities For Written Reports Following Any Accident

3.1 The contractor representative, DOW representative and others who have a responsibility regarding the project shall participate in the investigation. A report form shall be filled out for any injury requiring medical treatment or any potentially serious incident, all fires, hazardous conditions and property damage incidents though no injury occurred. This report shall be submitted to the DOW Representative as soon as possible, but no later than 10:00 A.M. the following work day.

3.2 The contractor shall cooperate with the owner in providing accident and injury experience and exposure hours as requested, to maintain historical and statistical safety performance records.

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4.0 Individual Accountability

- 4.1 Horseplay in any form is not allowed.
- 4.2 Conduct and behavior shall be in accordance with safety rules and procedures in order to eliminate unsafe acts.
- 4.3 Contractor personnel must not operate or make inoperative without permission, safety devices such as relief valves, deluge valves, gauge valves, electrical and mechanical interlocks, guards, electrical switches, etc.
 - 4.3.1 Any accidental interruption of lines or equipment in service or any irregularities observed must be reported immediately to the DOW Representative.
- 4.4 Contractor employees shall not use unsafe shortcuts, such as walking pipelines, sliding down pipe or stanchions and cutting corners to save a few steps.
 - 4.4.1 Personnel must not climb through, under, over, or between railroad cars of a train.
- 4.5 Tools, materials or equipment must not be dropped or thrown from one level to another.
 - 4.5.1 Sharp tools must be carried in sheaths when not in use.
- 4.6 Personnel must not ride a load being handled by a crane. Slings, hooks, etc., must not be ridden, except where a crane basket or a bosun's chair and safety belt are used.
- 4.7 Personnel must not walk, drop or jump onto a roof. Reference 12.5.
- 4.8 Personnel using pipe lines and/or conduit as a working surface to perform work must have prior written permission from DOW Representative.
- 4.9 Smoking on DOW property is prohibited except where specifically permitted by Dow Chemical U.S.A.
 - 4.9.1 No smoking in vehicles within the fenced confines of DOW property.

- 4.10 Contractors personnel shall not wander about the plant. They shall stay on the job site unless being moved to and from clockroom or from job site to job site.
- 4.11 Possession or use of intoxicating beverages or narcotics while on plant property and/or reporting for work under the influence of same is prohibited.

5.0 Vehicles And Traffic (Ref. 8.0)

- 5.1 Contractor personnel driving or riding vehicles shall comply with all of the safety rules and regulations regarding traffic and vehicles.
- 5.2 All vehicles must be in safe mechanical working condition at all times. In addition to complying with Federal and State requirements as to brakes, lights, signals, horns, mufflers, etc., vehicles must be periodically inspected by a representative of the contractor. Necessary repairs and adjustments must be made prior to their use on owner's property.
- 5.3 Fuel tanks on motorized vehicles must not be filled while the engine is running or when welding or other hot work is being done nearby. Smoking will not be allowed during fueling operations.
- 5.4 Automobiles, trucks and trailers
 - 5.4.1 The use of seat belts in automobiles and trucks
 - 5.4.1.1 The front seat of all vehicles shall be equipped with seat belts.
 - 5.4.1.2 All persons seated in the front of such vehicles shall properly adjust and fasten the seat belts before the vehicles are put into motion.
 - 5.4.1.3 When rear seats are equipped with belts their use is strongly recommended.

- 5.4.2 The use of pick-ups, flatbeds, stake racks, winch trucks or buses as transportation for personnel will not be permitted unless adequate safety provisions are made to keep personnel from being accidentally thrown from the vehicles or otherwise injured. In any case, the number of personnel must not cause overcrowding.
- 5.4.3 Vehicles (as described in 5.4.2) stopped on plant roadways for the purpose of loading or discharging passengers must not be passed in either direction except, after coming to a full stop, the vehicle may be passed at no more than 10 miles per hour provided the way is clear.
- 5.4.4 Hauled material that overhangs the sides or ends of a truck must be red flagged at the extent of the overhang. Loads must not be hauled from a single suspension cable that allows free swinging beyond the sides of the truck.
 - 5.4.4.1 See 5.5.3 for special permit when hauling high, wide, long or heavy loads.
- 5.5 Cranes, cherry-pickers, other vehicles
 - 5.5.1 Riding of units (as described in 5.5) shall be permitted only when adequate safety provisions such as seats, platforms, rails, etc., are provided for the assigned crew.
 - 5.5.2 The following rules must be observed in the operation of cranes, cherry-pickers, and other vehicles having booms or extended loads, which extend 14 feet or more.
 - 5.5.2.1 Moving units (as described in 5.5.2) when entering any thoroughfare, street, roadway intersection or work area shall have a flagman to clear all other traffic before proceeding.
 - 5.5.2.2 Booms or loads must be marked or flagged with high visibility material when moving on plant roads.
 - 5.5.3 Contractors must obtain a special permit through the DOW Representative when moving units or loads on plant roads under any of the following conditions:
 - Reference Section 12.0, 12.1.3.
 - 5.5.3.1 Unit or load over eight feet wide.
 - 5.5.3.2 Unit or load over thirteen feet six inches (13 Ft. 6 In.) high.
 - 5.5.3.3 The unit or load overhang is more than fourteen feet (14 feet) front or rear.
 - 5.5.3.4 Heavy loads crossing any plant overpass or bridge with a gross load exceeding posted loading restrictions shall require a special permit.
- 5.6 Dump Trucks and Waste Hauling Units
 - 5.6.1 All trucks hauling waste and or demolition material on Dow property shall be equipped with an adequate rear closure to prevent any material from dropping off of the truck onto the roadways.

6.0 Protective Equipment And Clothing

6.1 The contractor and his employees shall recognize the importance and the use of personal protective safety equipment and clothing.

6.1.1 The DOW Representative shall inform the contractor, who shall then be responsible for enforcing owner's area or job rules requiring special personnel protection. Reference 1.2.

6.1.2 Contractors shall see that their employees have the required proper protective equipment.

6.2 APPROVED EYE PROTECTION - All personnel employed by any contractor or sub-contractor shall wear approved safety glasses at all times. (Exceptions will be allowed in offices, lunch rooms and washrooms). Safety glasses with side shields are required when grinding, chipping or performing any job where side shields would afford protection from flying particles.

6.2.1 As a matter of convenience contractor may purchase personal protective equipment at his own expense from the Dow Safety office through the DOW Representative.

6.2.2 All employees working in the vicinity of hazardous chemicals must know where the nearest safety shower and eye bath facilities are located.

6.3 APPROVED SAFETY HARD HATS are required for all contractor work. Metal hats are not approved.

6.4 All personnel shall wear air hoods, or equivalent, supplied by approved source of breathing air, when sandblasting or applying volatile or toxic material inside tanks, rooms or any other area not adequately ventilated.

6.4.1 Pressurized "PLANT AIR" does not meet breathing air requirements.

6.4.2 Compressor pressurized air shall be free of contaminants. Watch the air

intake - watch the heat of the compressor.

6.4.3 See Dow Safety Standard S-745 dated 8-21-72.

6.5 Lifelines, safety belts and lanyards shall be used only for employees safe guarding. Equipment will be tested prior to use.

6.5.1 Personnel must wear Coast Guard approved life jackets or otherwise be protected by handrails or lifelines when working over water wherein a drowning hazard exists.

6.6 Personnel shall wear personal clothing and footwear that is safe and proper for a chemical plant. Wearing of canvas shoes, sneakers or houseshoes and working in an undershirt, shorts or stripped to the waist is prohibited.

6.7 NOISE CONTROL - Protection against the effects of noise exposure shall be provided when the sound level exceeds the permissible noise exposure as specified in the Federal or State standards.

6.8 Asbestos Fiber Control

6.8.1. Secured a copy of the O.S.H.A. asbestos standard and learn the shall requirements then comply accordingly.

6.8.1.1. The allowable limits are 5 particles TIME LIMIT VALUES, longer than 5 microns, per cubic centimeter of air. In 1976 the TLV is lowered to 2 particles

6.8.1.2. Counsel with your Dow Rep. when help is needed to understand the requirements.

6.9 Urethane Sprayed Jobs.

6.9.1. The Applicator must follow all the requirements under the Health Stds. applicable to Urethane application.

6.9.1.1. A 50' radius must be signed and barricaded.

6.9.1.2. The applicator must wear adequate respiratory protection at all times.

7.0 Fire Prevention

- 7.1 The only acceptable standard on all job sites shall be excellent housekeeping.

7.1.1 Accumulation of trash, oily rags, combustible materials and similar fire hazards of any nature will not be permitted.

- 7.2 Smoking on Dow property is prohibited except where specifically permitted by Dow Chemical U.S.A.

- 7.3 The area around welding operations must be kept free of hoses and flammable or combustible material of any kind.

7.3.1 Hot work permits. (Ref. 12.2)

- 7.4 Canvas or paper shall not be used as tarpaulins or drop cloths on Dow property.

- 7.5 There shall always be an adequate clearance of unrestricted passage to fire hydrants, extinguishers, hose racks, control valves, and other emergency equipment.

7.5.1 All alleys, driveways, roads, transformers, and power poles, shall be kept clear of material and equipment.

7.5.2 All stairways and elevator approaches shall be kept clear.

- 7.6 Heating equipment for construction purposes shall be approved by the DOW Representative prior to use.

7.6.1 Electrical heating units shall be used for offices, lunchrooms, change rooms.

7.6.2 Under no conditions will a solid fuel salamander be permitted.

- 7.7 Temporary storage of flammable materials must be approved by the DOW Representative.

7.7.1 Flammable type material such as gasoline, oil, paints shall be clearly identified, separately stored and kept clear of work areas. Appropriate signs must be provided in storage areas.

- 7.7.2 All cans, five gallons maximum, used for transporting or transferring gasoline or fuel must be labeled by Underwriters' Laboratories or Factory Mutual Laboratories as approved safety cans with internal flame arrestor or properly installed and closers operable.

Note - The word Fuel does include No. 2 Diesel Fuel

- 7.7.3 Class zero flammable liquid storage tanks must be grounded. Filler hoses must be bonded from the tank to the dispensing nozzle. Vehicles dispensing fuel must have a static ground. A properly installed flame arrestor should be on the tank vent if the flash point is 80 degrees or lower.

7.7.3.1 A shut-off valve is required on the outlet of storage tanks.

7.7.3.2 Equipment fuel tanks must not be filled while the engine is running.

7.7.3.3 Storage fuel tanks shall have the content identity stenciled on the tank shell. Letter size shall be a minimum of one and one half inches (1½").

- 7.7.4 Welding or any spark or flame producing operation must be stopped within 25' of the refueling operations.

- 7.8 Welding rod cabinets presenting a fire or safety hazard will not be permitted. Cabinets or fireproof materials equipped with strip heaters are recommended. If light bulbs are used, they must be securely guarded with adequate spacing in regard to the cabinet.

- 7.9 Volatile materials (such as flammable paint and coatings) shall not be applied near an open flame or welding operation. If such material is to be applied in a vessel, or other poorly ventilated, confined areas,

only explosion-proof lights, non sparking tools and connections shall be used.

7.9.1 Welding shall not be done within 25' of spray painting or coating operation.

7.10 Welding or cutting torches and hoses must not be connected to cylinders when stored in any enclosure or building. When work is shut down and equipment is unattended, close all valves at the MAPP and/or acetylene and oxygen cylinders, bleed lines and check five minutes later for pressure-build-up, disconnect hoses at the torch, remove hoses from cylinders and store. Ref. 8.7.2.

7.10.1 Cylinders must be equipped with valve caps when moved or stored.

7.10.2 All hose lines must be in good condition.

7.11 Cylinder Regulators and Compressed Gas Cylinders. See Dow Standards S-622 and S-623 dated 5-17-72.

7.11.1 Compressed gases including air must not be used for cleaning of clothes, the body or work areas. Oxygen must not be used for pressure testing purposes.

7.12 Adequate ventilation must be provided when cleaning agents are used. Only use non-flammable cleaning agents. Extra precaution is needed when chlorinated solvents are used in presence of hot surface or ultraviolet rays (welding).

7.13 Do not dump flammable, corrosive or toxic materials into PLANT SEWERS. Ref. Introduction Paragraph 6.

7.14 Electric welders shall not operate unattended. It is mandatory to shut the unit down at the close of the work hour. Ref. 8.6.2.3.

8.0 Machinery, Cranes, Tools And Equipment (Ref. 5.0)

8.1 The safe designed capacity of any tool or piece of equipment must not be exceeded. Tools and equipment must not be modified in any manner that reduces the original factor of safety or capacity.

8.1.1 Under no circumstance shall contractors use inadequate tools or equipment.

8.2 All contractor-owned, leased or rented equipment must be in safe mechanical working condition to render efficient service at all times.

8.2.1 A special permit must be obtained to cross either the river bridge or railroad overpass with a gross load exceeding posted loading restrictions. Ref. 5.5.3.4.

8.2.2 Equipment must be inspected by contractor supervision prior to its use on a job and periodically thereafter to insure that it is in safe working order. Special attention must be given to such items as cables, cable clamps, guards, booms, blocks, hooks, grounds, electrical cords and safety devices. For maintenance, *Equipment shall be made safe for repairs or adjustments.*

8.2.3 Defective tools and equipment must be tagged and removed from service immediately and if repairable, must be properly repaired before reuse on owners job.

8.2.4 Contractor will not be allowed to use owners tools or equipment. Do not loan contractor tools or equipment to owner's personnel.

8.3 Equipment with exposed gears, belts, couplings, etc., must be provided with proper guards.

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8.4 The contractor has the complete responsibility for a safe operation when using hoisting equipment. This requires competent, well trained operators.

8.4.1 Suspended free swinging loads shall be controlled by the use of a tag line.

No load shall be lifted which exceeds the Manufacturer's rated capacity of the crane. When one of the following conditions prevail, the contractor shall submit in writing, an outline of the safety planning for the lift to be done to the DOW Representative, prior to starting the lift.

- a) The load exceeds 80% of rated load chart for crane.
- b) Anytime a lift is to be made within 10 feet of or above any pipeline, power line and/or existing structure.
- c) Two booms are required to make the lift.
- d) If poles or derricks are to be erected for this specific lift.

8.4.2 Do not use rope for hoisting men, or for guard rails. Rope can become quickly damaged by acids or chemicals. Use metal, cable or wood for hoisting, guying off scaffold or for temporary guard rails.

8.4.3 Lower or securely tie down all crane booms before leaving for the night, equipment not being used for long periods must be parked in the contractors' parking area.

8.4.4 Electrical Energized Power Line Clearance.

Safety Standard S-335 must be enforced by contractors working within the scope of this standard.

The Standard includes any work where the man or equipment will be within 10 feet of any energized over-

head power line. This includes cranes, condor lifts, bucket trucks, scaffolds and any other types of elevated work platforms.

When a 10 foot clearance cannot be maintained you must obtain a clearance in writing from Dow's Electrical Distribution and Maintenance people to work closer than 10 feet. Call 6-3399.

8.5 Pressure vessels used for construction, including fired boilers, must receive an annual hydrostatic test equal to 1-1/2 times the maximum allowable working pressure of the unit as well as a thorough visual external inspection. At this time, safety and relief valves, properly sized and set for the vessel, will be checked for freedom of operation.

8.5.1 Written certification of compliance to the rule will be furnished to the DOW Representative on demand. Plastic encapsulation and attachment to the certified equipment is recommended.

8.6 All electrical tools and equipment shall be properly grounded.

8.6.1 Temporary wiring.

8.6.1.1 All services and branch feeds shall:

- a) Be installed as per the National Electrical Code, which is minimum.
- b) Be properly fused and circuited to include Ground Fault Circuit Interrupters as required by Article 210-7 of the National Electrical Code.
- c) Have a proper ground for all outlets, devices, tools and frames of the welding machines.

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1. Welding machines should have a separate adequate conductor from the machine direct to the ground rod.
- d) Be grounding type non-metallic cable for 115/230 and 440 volt circuits.
- e) Be mechanically protected or otherwise suitably guarded to prevent accidental damage by workmen and shall have a clearance of 7' 8" over walkways or areas where men are working.
- f) Have a separate conductor of a size equivalent to the circuit conductor which shall serve as an equipment ground on feeder and branch circuits for combination lighting and portable tools.
- g) Be marked with proper warning signs.

8.6.1.2 Cords and Connectors for Portable Electrical Devices:

- a) Shall be provided with a separate equipment ground conductor.
- b) Two-wire lamp holders shall be used only with lamps. Lamps within 7'-0" of working surfaces shall have guards.
- c) Plug body screw bases shall not be used.
- d) Connector bodies with matching caps with separate equipment grounding blades and grounded shells shall be used.
- e) Cords shall be three wire rough service cords.

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1. Where portable tools plug into outlets or cords, they shall be three wire cords with proper grounding type three wire receptables.

8.6.2 When arc welding is being done the following rules must be adhered to.

8.6.2.1 Hot work permit shall be obtained prior to starting the machine. Reference 12.0.

8.6.2.2 All machines shall be set up outside of buildings.

8.6.2.3 At the end of the work day (period) the safety switch for electric power supply (primary supply) shall be locked in an off position. Ref. 7.14

8.6.2.4 Primary supply cables are to be kept separated from welding leads.

8.6.2.5 All cables are to be supported or covered so as not to interfere with the safe passage of workers and to prevent damage to cables.

8.6.2.6 The ground cable plate shall be tack welded or clamped to the work.

8.6.2.7 When coupling cables, use insulated cable pressure connectors. Other methods require the approval of DOW Representative.

8.7 Gas Welding and Cutting

8.7.1 Gas welding and cutting operator

8.7.1.1 Hot work permit is required. Reference Section 12.0.

8.7.1.2 The operator should wear eight inch high safety shoes or spats as required by the contractor.

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- 8.7.1.3 The operator should wear safety glasses under cutting goggles.
- 8.7.2 Gas welding and cutting equipment. Ref. 7.11
 - 8.7.2.1 When gas and oxygen cylinders are lifted by hoisting equipment, a basket, a cradle, or similar handling device must be used. Slings may be used only if the cylinders are specifically equipped for such handling. Cylinders must not be lifted by the valve protection caps.
 - 8.7.2.2 Compressed gas cylinders must be stored in an upright position and safely fastened to a support. Cylinder valves must be capped.
 - 8.7.2.3 Compressed gas cylinders must be stored out of doors.
 - 8.7.2.4 Compressed gas cylinders when in use shall be in an upright position and properly fastened to a support or cart.
 - 8.7.2.5 Regulators and gauges shall not be attached to cylinders when not in service.
 - 8.7.2.6 When in service every effort must be made to protect the regulators and gauges from damage.
 - 8.7.2.7 Regulators, gauges and torches shall be removed and stored in a locked storage.
- 8.8 Loose clothing must not be worn while working around operating machinery.
- 8.9 Metal building served with electricity shall have the skin of the building properly grounded, as well as the service entrance switch.

- 8.10 Hose connectors and adaptors shall be of a standard manufacture and used only for the type of service intended.
 - 8.10.1 In order to insure positive locking at all times, connectors must be in good condition and not abused. Sandblast hose connections shall be the safety lock type which prevent accidental disengagement.
 - 8.10.2 The air supply valve shall be shut off and air pressure on pneumatic tools must be bled down before tools are disconnected from air supply.
- 8.11 Powder-Actuated Tools shall be approved for use on Dow property.
 - 8.11.1 "Approved Tool" means a tool meeting the requirements of the state of Michigan "General Safety Rules and Regulations for the Construction Industry" and acceptable to the DOW Representative. A "HOT WORK PERMIT" is required for operating the tool.
- 8.12 Tools used to process mineral items, non-metallic, (where there could be a potential health hazard) shall be of a design to control dusts or vapors. These tools shall be approved by the DOW representative. An example might be a brick saw that runs with a dry cut.
- 8.13 Vehicle-Mounted or Support Work Platforms (Aerial Lift Units)
 - 8.13.1 Types of powered vehicle-mounted aerial life units used to elevate personnel to a job site above ground elevation.
 - a) Bucket trucks
 - b) Aerial ladders — except fire fighting equipment
 - c) Powered work platforms or equivalent

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- d) Vertical towers
- e) Forklift platforms
- f) Crane suspended platforms

- 8.13.2 Contractor shall acquire a copy of a Dow Safety Standard S-830 and use aerial lift units that meet the rules of this standard and the American National Standard for Vehicle-Mounted Elevating and Rotating Work Platforms ANSI 92.2.

9.0 Ladders

- 9.1 No metal ladders shall be permitted on Dow property. Use only electrically non-conductive heavy duty construction ladders.
- 9.2 All ladders used on the premises of Dow shall conform to the use and application as specified in ASA Code A-14.1 and State of Michigan Occupational Safety Standards R408.10401 - R408.10458.
- 9.3 See Dow Safety Standard S-750 dated 8-4-71.

10.0 Elevated Working Surfaces

- 10.1 Elevated working surfaces shall be designed, built and inspected by competent persons before use. Scaffold shall be patented metal scaffold. Use lumber only when metal scaffold is not feasible.
- 10.2 Makeshift scaffolds such as boxes, crates and drums must not be used.
- 10.3 All elevated working surfaces and allied equipment must be kept in good repair or remove from Dow property.
- 10.4 See Dow Safety Standard S-810 dated 4-19-72.

11.0 Safe Work Tags

- 11.1 The following safe work tags shall be used as the job warrants:
- 11.1.1 Danger Red Tag Ref. 11.2
 - 11.1.2 Completion Blue Tag Ref. 11.3
 - 11.1.3 Equipment Transfer Buff Tag Ref. 11.4
- 11.2 The "Danger-Red Tag" shall be used to safe guard the workman or the facility. See Dow Safety Standard S-740 dated 4-19-72.
- 11.2.1 To insure that operating status of equipment is not changed while it is being used or worked on, red danger tags must be attached to the controls so that personnel will know not to use them. These tags must be used to protect personnel exposed to hazards of equipment and must be respected by all personnel. The manufacturing representative responsible for the operation of equipment or their designate must clear and tag the equipment. Any contractor personnel whose safety could be endangered while working on tagged equipment must affix their tag.
- 11.2.2 The "Danger Red Tag" "Do Not Operate or Use this Equipment" is red with white lettering furnished by "Dow".
- 11.2.3 The responsibility for administering the Danger Red Tag regulations shall be a joint duty.
- 11.2.3.1 The manufacturing representative or contractor who is responsible for a Plant, Shop, Laboratory, Construction Project, or any other Owner or Contractor operation shall place the facility in a safe

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shutdown readiness and have a properly signed "Danger-Red Tag" attached to the facility before starting any work requiring owner or contractor employees.

- 11.2.3.2 The DOW Representative or CONTRACTOR shall be responsible for checking the readiness of the facility or equipment tagged by the manufacturing representative or contractor and shall prepare and attach a Danger Red Tag to the work prior to starting the job or to perform necessary maintenance to the equipment.
- 11.2.3.3 At the discretion of the DOW Representative, locks and/or blanks should be used on valves and switches in addition to, but not replacing red danger tags.
- 11.2.4 The only people permitted to remove a Danger Red Tag are the people who attached the tags or their authorized representative as specified on the tag.
- 11.2.5 No one shall operate or use a device to which a Danger Red Tag is attached.
- 11.2.6 When a job or repair is completed, the contractor will remove their tags. The manufacturing representative will remove their tags.
 - 11.2.6.1 Contractor's tags removed must be signed, dated and turned in to the DOW Representative.

- 11.2.7 Unauthorized removal of a "Danger Red Tag" or operation of a valve, switch, controlling device, and etc. that is tagged out will be a discharge type safety rule violation.

- 11.2.7.1 Violation of the Danger Red Tag rule shall result in a disciplinary action up to and including rejection from any work on Dow property.

11.3 Completion Blue Tag

- 11.3.1 Mechanical or electrical equipment shall be tagged with the Motor Completion Tag, form No. 5200, furnished by Dow, to prevent operating of such equipment by anyone until items on the tag have been completed.
 - 11.3.1.1 The tag shall be fastened to the start-stop control at the motor by the contractor.
- 11.3.2 The tag provides for certification by contractor that the equipment has been checked for lubrication, rotation, alignment, fuses, thermal elements and ground.
- 11.3.3 After all signatures, contractor shall move tag from the start-stop control to the starter switch handle to indicate the equipment is ready for operation by Dow.

11.4 Equipment Transfer Buff Tag

- 11.4.1 Used vessels to be moved shall be tagged with the Equipment Transfer Tag, form No. 5511 furnished by Dow, properly filled out by Dow personnel on the front and back. See Dow Safety Standard S-720 dated 1972. The equipment

Transfer Tag is the communications link between the manufacturing representative and the contractor. It shall be completely filled out to alert employees to any hazards while handling and working in or on the equipment. Do not remove the tag.

12.0 Safe Work Permits

12.1 The following safe work permits will be issued as the job warrants:

12.1.1 Hot work and vessel entry permit
- Ref. 12.2

12.1.2 Occupancy of railroad right-of-way permit - Ref. 12.3, 13.2.3.

12.1.3 Special permit - Ref. 5.5.3, 8.2.1

12.1.4 Excavation permit (drawing required) - Ref. 13.1

12.1.5 Temporary Construction Shanty Permit - Ref. 12.4

12.1.6 Roof access permit - Ref. 12.5

12.1.7 Temporary Barriers - Ref. 12.6

12.1.8 Powerline Clearance Permit - Ref. 12.7

12.1.9 Electrical Hot Work Variance - Ref. 12.8

12.2 Hot work and vessel entry permits issued by Dow to the contractor personnel are required for all hot work & vessel entry. See Dow Safety Standard S-900 dated 5-3-72. These permits are designed to provide a means of checking at the job site the safety of such jobs as, but not limited to, entering closed vessels; working on electrical gear; welding, cutting on, breaking into or repairing pipelines or vessels in operation or under pressure or that have contained hazardous materials. These permits also cover work involving the use of flame or spark producing equipment on the Dow property.

12.2.1 CONTRACTOR supervisor must be in close contact with the progress of work as well as communicating with the DOW Representative for up-to-date status of operations. Further, contractor supervision must be certain that all personnel involved are informed as to specific procedures and changes in the situation.

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12.2.2 Hot work and vessel entry permits are to be initially requested through the CONTRACTORS' supervision and issued by the DOW Representative or facility manufacturing representative.

12.2.3 CONTRACTOR supervision must give a careful and complete description of the work to be done to the Dow person issuing the hot work or vessel entry permit.

12.2.3.1 Where a job presents a hazardous situation due to chemical, mechanical, electrical, temperature or gross exposure, it is mandatory that a written safe job procedure accompany the hot work or vessel entry permit. This procedure is to be signed by the DOW Representative, MANUFACTURING Representative, and the CONTRACTOR, who thereby agree that the procedure allows the job to be done safely.

12.2.4 It is the responsibility of the contractor to ensure that the directions restrictions noted on the hot work or vessel entry permits and safe job procedures must be carefully followed.

12.2.5 A hot work or vessel entry permit must be reissued for a job if there is evidence that conditions have changed subsequent to the issuance of the original hot work or vessel entry permit.

12.2.6 Permits are normally valid only for the shift issued. By mutual consent of the parties involved, permits may be issued for longer or shorter periods of time.

12.2.7 The contractor may request hot work or vessel entry permits for his own protection. Safety checks by the owner for dangerous gases or chemicals should be requested through the DOW Representative when there is any uncertainty.

12.3 A safe work permit shall be obtained to do any work within 9'-0" of the center of railroad track or over or under the railroad right-of-way. The Dow railroad department shall issue the permit and derailler-sign to the DOW Representative.

Reference 12.1.2 See Dow Safety Standard S-760 dated 6-21-72.

12.3.1 No obstruction of any kind, whether permanent or temporary, is permitted within 9'-0" horizontally from the center line of any railroad track and within 22'-6" vertically from the top of the rail.

12.3.2 The safe work permit shall specify the use of derailler-sign.

12.4 A safe work permit shall be obtained to place any temporary construction shanty on Dow property. Certain shanties may be approved for smoking by the DOW Representative. Ref. 7.2

12.5 A safe work permit shall be obtained to do any work on the roof of an existing manufacturing facility. See Dow Safety Standard S-735 dated 1965.

12.5.1 A job planning roof access permit is to assure workmen complete knowledge of roof and deck conditions and to specify precautionary methods to be employed while working in the area.

12.5.2 It is the equal and joint responsibility of plant supervision and contractor personnel entering the roof area to observe the permit requirement.

- 12.6 Temporary barrier permits shall be required from Plant Protection to completely barricade a plant street, service drive or alley. See Dow Safety Standard S-700 dated 8-21-72.
- 12.7 Temporary Clearance permits shall be required from Dow's Electrical Distribution and Maintenance people when work must be performed closer than 10 feet to any electrical energized distribution lines. See Dow Safety Standard S-335 dated 3-21-73.
- 12.8 The Electrical Contractor must obtain an electrical hot work variance before performing work on the line side of any 480 volt device. The Contractor's electrical supervisor will be responsible for reviewing the proper work procedures and supplying the protective equipment needed to perform the necessary electrical hot work safely. The electrical hot work variance will be issued through the DOW Representative.

13.0 Excavation-Barriers-Devices To Penetrate The Earth

- 13.1 When excavations and penetrations of the earth are to be performed approval must be obtained from DOW Representative via using current to date drawings stamped "Checked For Underground Reference". Ref. Dow Safety Standard S-800 dated 8-18-72.
- 13.1.1 The purpose of these prints are to show the latest known underground reference and their locations. This will not constitute permission to do machine excavation, pile driving, soil boring, pole setting, etc.
- 13.1.2 The DOW Representative shall check mark each detail of the drawing before starting work.
- 13.1.3 Hand excavation or probing to verify location of underground lines will be required.
- 13.1.4 Excavation shall immediately stop when any underground reference whether or not shown on drawing is encountered.
- 13.1.5 Where a safety hazard would be created for any personnel, excavations such as ditches, trenches, or bell holes shall be sloped sufficiently to prevent cave-ins or slides. If sloping is impractical, shoring shall be used in cases whenever the vertical dimension exceeds four feet.
- 13.1.5.1 Personnel removing shorings after completion of work must not be in the bottom of the excavation.
- 13.2 Barriers
- 13.2.1 Contractors shall provide temporary substantial guardrails, signals, flagmen, or other appropriate

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warning devices to protect personnel near any hazardous operation or excavation. Floor openings, open trenches, excavation, etc., shall be covered when barriers do not provide protection to personnel.

13.2.1.1 Barriers must be sufficiently marked in order to be visible day or night.

13.2.1.2 Notify the DOW Representative at least one day in advance when placing barricades that will detour traffic.

13.2.2 Warning signs on barricades shall be used to restrict employees from entering areas when overhead work is in progress.

13.2.3 Railroad Derailer-sign

13.2.3.1 See Dow Safety Standard S-780 dated 6-21-72.

13.2.3.2 Safe Work Permits requirements reference 12.1.2, 12.1.3

13.2.3.3 In locations where strictly temporary loading or unloading operation of railroad cars are to be undertaken, portable deraills shall be used by personnel engaged in these operations to prevent over-running of the cars by a train.

14.0 Radiation

14.1 The contractor shall obtain written permission before bringing any radiation producing equipment on to the Dow property.

14.1.1 Radiation producing equipment is any equipment which can produce injurious amounts of emissions of Alpha or Beta particles, gamma or X-rays, or neutrons. For example, X-ray machines, electron microscopes, accelerators, or sealed radioactive sources and Laser equipment.

14.1.2 See Dow Safety Standard S-477 dated 1-1-72.

14.2 All state and/or federal laws governing use, storage or handling of a radiation source must be complied with.

14.3 A minimum of two qualified people are required for the performance of any radiographic work.

14.4 In locations where a radiation source is used or stored, regulations require that it be marked with a "Radiation Area" sign. **THIS SIGN IS FOR THE PURPOSE OF INFORMING ANYONE IN THE AREA THAT SUCH MATERIAL IS PRESENT.**

14.4.1 Only authorized personnel shall enter an area marked by "Radiation Area" sign.

14.4.2 All areas where a radiation hazard exists must be roped off and marked conspicuously by standard signs at a safe distance from the source of radiation. These signs bear the radiation symbol of magenta (or purple) on a yellow background with the words "Caution - Radiation Area".

14.4.3 "RADIATION AREA" signs must be removed when a radiation hazard no longer exists in the affected area.

14.4.4 Equipment containing a source of radiation shall not be handled, uncrated or installed without prior clearance with the DOW Representative.

15.0 Removal of Facilities

15.1 This section specifically covers the removal and demolition of facilities. Due to the inherent hazards in this type of work, special care must be devoted to safe work procedures, scope understanding and communication concerning the safe clearance of the work.

15.2 It is not appropriate to make assumptions in any stage of this type of work. Responsibilities must be delegated only to those whose profession qualified them to make the necessary judgment and decisions that are required to assure the safest possible execution of the job. From start to finish, each person connected with removal of facilities must adopt an attitude of "Prepare For Any Possibility".

15.3 The CONTRACTOR shall ascertain with the DOW Representative that all lines, services and equipment have been cleaned or purged and properly cleared and tagged for safe removal. All lines (including water and steam) and equipment are to be considered hot until positive safe clearance has been obtained.

15.4 The pre-job safety meeting with the contractor as covered in Section I of this manual shall devote special attention to preplanning the safety aspects of removal of facilities and a thorough check of the drawing marked "Check For Underground Interference" Reference Section 13.1.1.

15.4.1 The Dow "Removal Survey Form" (sample form included in this manual) shall be completed and a copy presented to contractor by the DOW Representative.

15.4.2 Steps of dismantling and loads to be handled shall be reviewed with the DOW Representative prior to starting work. Locations for dis-

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posal of equipment and materials will be given to the contractor at this time.

15.4.3 When specified, it is the CONTRACTORS responsibility to see that temporary provisions are made available where safety showers, eye wash baths and fire protection are being removed.

15.5 For procedures that require "Safe Work Tags" and/or "Safe Work Permits" see section 11.0 and/or 12.0.

15.6 The use of frost balls or similar devices and explosives in conjunction with new construction and/or demolition work is prohibited, except as specifically allowed in individual job specifications.

15.7 Material removal from a structure.

15.7.1 Material shall not be dropped outside an exterior wall of a structure being demolished unless an employee in the area is protected from injury by a barrier. A chute or mechanical equipment shall be used in lieu of dropping materials.

DOW REMOVAL SURVEY MICHIGAN DIVISION		JOB NUMBER
JOB DESCRIPTION		BLDG NO
		PREPARED BY
		DATE
		PLANNING TEAM
		DEMOLITION REP
CHECK LIST		PROJECT ENGR
1. Has all power & water been disconnected?	Yes ☐ No ☐	SAFETY ENGR
2. Have steam traps been disconnected?	Yes ☐ No ☐	CONSTRUCTION REP
3. Is city water line disconnected?	Yes ☐ No ☐	CONTACT LIST
4. Is high water line disconnected?	Yes ☐ No ☐	ENGINEERING
5. Is storm water line disconnected?	Yes ☐ No ☐	FIRE DEPARTMENT
6. Are process lines disconnected and blanked at hot ends?	Yes ☐ No ☐	PLANT PROTECTION
7. Are all water/mix lines disconnected?	Yes ☐ No ☐	PROPERTY ACCTG
8. Is all equipment purged clean?	Yes ☐ No ☐	PROPERTY MANAGER
9. Are all tanks purged clean?	Yes ☐ No ☐	PRODUCTION
10. Has operating department checked and tagged equipment and tanks "Safe"?	Yes ☐ No ☐	SURPLUS EQUIP
11. Is everything repaired for safety?	Yes ☐ No ☐	MAINTENANCE
12. Has dissection of material been determined and arrangements made for reprocessing of demolition?	Yes ☐ No ☐	UTILITIES DIST
13. Have affected neighbors or interested parties been consulted or notified?	Yes ☐ No ☐	
14. Has usable material and equipment been removed and made available?	Yes ☐ No ☐	
15. Will removal cause any production interruption?	Yes ☐ No ☐	
16. Has remaining stock, inventory and equipment been accounted? (During and after demolition?)	Yes ☐ No ☐	
17. Has a check been made of all under ground lines, and are they safe?	Yes ☐ No ☐	
18.	Yes ☐ No ☐	
19.	Yes ☐ No ☐	
20.	Yes ☐ No ☐	
21.	Yes ☐ No ☐	
SPECIAL PRECAUTIONS EXPLAIN ALL "NO" ANSWERS		REMOVAL NOTIFICATION
		PLANT PROT
		ENGR OFF SUPV
		ENGR MAP SECT
		PROPERTY ACCTS

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**16.0 Reference Material
For Contractor Safety**

- 16.1 Code of Federal Regulations, Title 29, Part 1926.
- 16.2 General and special conditions in construction contract documents, Dow Chemical U.S.A.
- 16.3 Guiding Principles For a Contractor Safety and Loss Prevention Program. Dow Chemical U.S.A., Midland, Michigan.
- 16.4 General Safety Rules and Regulations for the Construction Industry Construction Safety Commission, Bureau of Safety and Health — State of Michigan.
- 16.5 Manual of Accident Prevention in Construction. The Associated General Contractors of America, Incorporated.
- 16.6 Dow Chemical U.S.A., Michigan Division Safety Standards.

After reading this book, sign and return this page to: Engineering & Construction Services, 294 Bldg.

This Certifies:

That I have in my possession a copy of "The Michigan Division General Plant Safety Rules and Procedures Manual For Contractors", Dow Chemical U.S.A. I have read same.

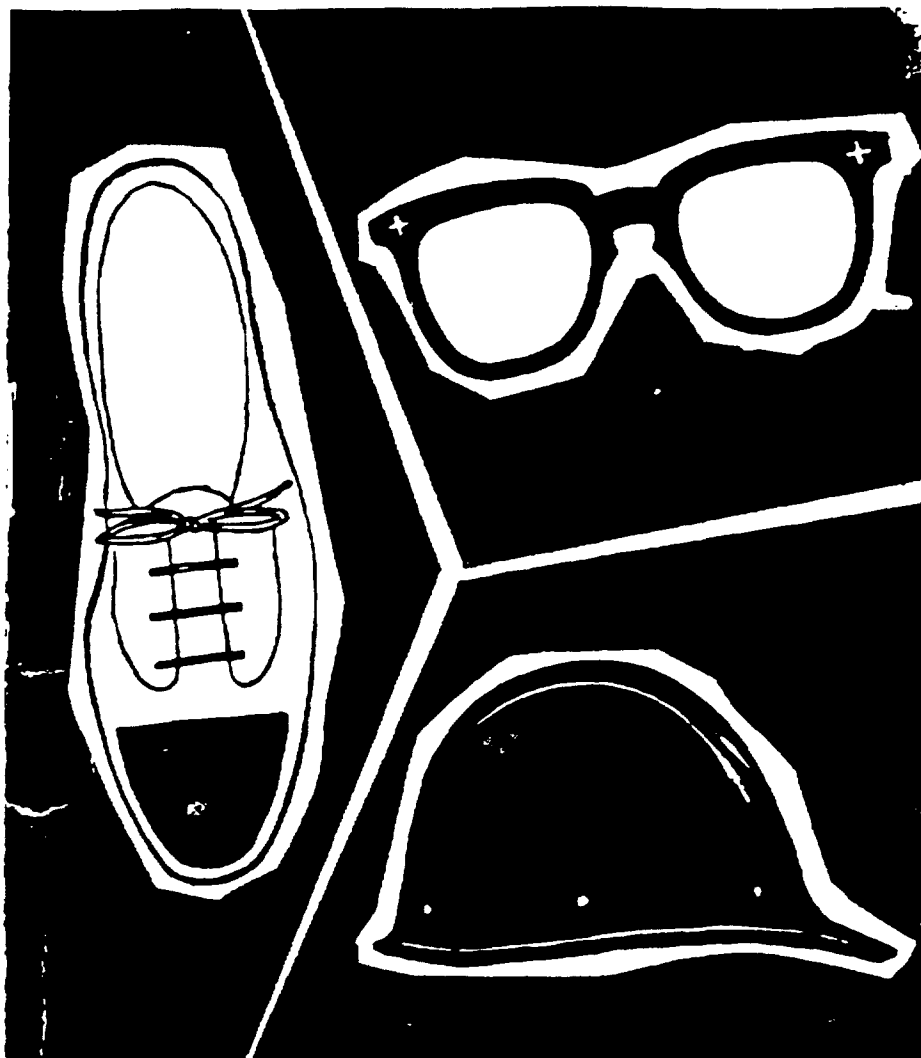
I agree to abide by the rules and assist in every way possible in making these rules and regulations effective.

Signed:

(Employee's Signature)

(Date)

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**The Michigan Division
GENERAL PLANT SAFETY
RULES AND PROCEDURES
Manual For Contractors**

DOW CHEMICAL U.S.A.



DATE: OCTOBER 1977

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"Safety must be a *first* consideration and *basic* responsibility of every contractor employee working in the Michigan "Division."



This Manual is made available to you as an interpretation of the Safety Clause of your contract.

All or parts of contents will apply to your work depending on the nature and sequences of your work.

PLANT RULES

FOREWORD

These rules summarize a code of conduct that is intended to provide Midland Location employees a safe, efficient, and harmonious work environment.

Violation of any of these rules will be considered as cause for disciplinary action up to and including discharge.

These rules are not exhaustive and any conduct of a dangerous, disruptive, or disorderly nature will be subject to appropriate discipline.

General Manager
Michigan Division

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**THE MICHIGAN DIVISION
GENERAL PLANT SAFETY
RULES AND PROCEDURES
MANUAL
FOR CONTRACTORS**

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The information in this manual is intended as one reference source for many of the safety rules and procedures which will be helpful to contractors in achieving good safety performance. It cannot, however, be assumed that every conditional safety procedure is contained herein or that abnormal or unusual circumstances may not warrant or require modifications or additional procedures.

Where these rules or procedures interfere with other safety considerations or adversely affect job efficiency, without materially affecting to the safety of the job, the OWNER Representative can waive or modify these rules as they apply to a specific part of a job or contract.

BECAUSE OF THE UNIQUE HAZARDS ENCOUNTERED BY CONSTRUCTION WORK IN A CHEMICAL COMPLEX, THE DOW MICHIGAN DIVISION HAS DEVELOPED SPECIFIC DOW SAFETY RULES RELEVANT TO DOW CONTRACTS. THESE RULES IN PART ARE PRESENTED BELOW IN SUMMARY FORM AND ARE COVERED IN GREATER DETAIL IN THE BODY OF THIS MANUAL. ANY DOW STANDARD REFERENCED IN THIS MANUAL IS AVAILABLE UPON REQUEST FROM CAPITAL PURCHASING GROUP OF THE DOW CHEMICAL COMPANY, THE CONTRACTOR GATE OR THRU YOUR OWNER REPRESENTATIVE. ALL SAFETY STANDARDS USED MUST BE THE MOST CURRENT TO BE VALID. ALSO, READ SECTION 4.0 INDIVIDUAL ACCOUNTABILITY.

1. INDUSTRIAL STRENGTH SAFETY GLASSES MUST BE WORN AT ALL TIMES, THIS INCLUDES INSIDE VEHICLES. REF. 6.2.
2. HARD HATS WORN EVERYWHERE EXCEPT LUNCH ROOMS. Ref. 6.3.
3. SMOKE ONLY IN POSTED LOCATIONS. Ref. 7.2

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4. NO METAL LADDERS ALLOWED IN THE PLANT. Ref. 9.1
5. NO WELDING, CUTTING, FLAME OR SPARK-PRODUCING OR ENGINE DRIVEN EQUIPMENT ALLOWED WITHOUT A HOT WORK PERMIT ISSUED BY THE OWNER REPRESENTATIVE. (Part 8.0 and 12.0)
6. ALL TRUCKS AND AUTOMOBILES OPERATED ON DOW PROPERTY MUST HAVE SEAT BELTS WHICH SHALL BE USED. SPEED LIMIT IN THE PLANT IS 30 M.P.H. MAXIMUM UNLESS OTHERWISE POSTED. CARS ARE TO BE LEFT UNLOCKED WITH THE KEYS IN THE IGNITION. DO NOT PARK ON ROADWAYS, SERVICE DRIVES, ALLEYS, OR NEAR DOORWAYS, LOADING DOCKS, DUMPSTER BOXES OR ACCESS THERETO. PARK IN DESIGNATED AREAS ONLY. OBEY ALL TRAFFIC SIGNS & SIGNALS. TRAFFIC CONTROL REGULATIONS WILL BE ENFORCED. Ref. 5.4
7. NO CANVAS OR PAPER TARPAULINS OR DROP CLOTHS ALLOWED. Ref. 7.4
8. DISPOSAL INTO PLANT SEWERS OF FLAMMABLE, CORROSIVE OR TOXIC MATERIALS IS PROHIBITED. Ref. 7.13
9. SPECIAL PERMISSION THROUGH THE OWNER REPRESENTATIVE FROM PLANT PROTECTION IS REQUIRED BEFORE MOVING LARGE LOADS INCLUDING CRANES ON PLANT ROADS. Ref. 5.5
10. ALL ELECTRIC TOOLS SHALL BE GROUNDED OR DOUBLE INSULATED Ref. 8.6
11. WORK PERMITS MUST BE OBTAINED FROM THE OWNER REPRESENTATIVE NOT ONLY FOR ALL "HOT WORK" BUT FOR WORK ALONG RAILROAD RIGHT-OF-WAY, EXCAVATION ON THE PROPERTY AND FOR ACCESS TO EXISTING BUILDING ROOFS. Ref. 12.1
12. OBSERVE RED DANGER TAGS ON VALVES, SWITCHES, CLUTCHES AND OTHER EQUIPMENT OPERATION CONTROLS. NO ONE SHALL WORK ON EQUIPMENT WITHOUT FIRST, PLACING THEIR RED TAGS ON THE VALVES AND CONTROLS TO SUCH EQUIPMENT FOLLOWING THE PLACEMENT OF THE RED DANGER TAGS BY DOW. Part 11.0
13. DO NOT ENTER BARRICADED AREAS OR VAPOR CLOUDS. BE ALERT FOR ANY EMERGENCY, REPORT ANY FIRE, SPILL OR PERSONNEL INJURY. IF YOU ARE CALLING FROM A DOW FACILITY THE EMER. # IS 1-2-3. IF FROM A CONTRACTOR TRAILER CALL PLANT PROTECTION 636-4400, TELL THEM WHAT IS WRONG AND YOUR LOCATION, THEY WILL SEND THE FIRE TRUCK OR AMBULANCE. Part 2.0
14. WHEN EXCAVATIONS ARE TO BE PERFORMED, APPROVAL MUST BE OBTAINED FROM THE OWNER REPRESENTATIVE. CURRENT TO DATE DRAWINGS STAMPED "UNDERGROUND REFERENCE DRAWINGS" SHALL BE ISSUED. HAND EXCAVATION OR PROBING TO VERIFY UNDERGROUND LINES SHALL BE REQUIRED. Part. 13.0
15. ELECTRICAL ENERGIZED POWER LINE CLEARANCE.
CONTRACTORS SHALL MAINTAIN A MINIMUM OF 10 FEET CLEARANCE BETWEEN HIMSELF OR HIS EQUIPMENT AND ANY ENERGIZED OVERHEAD POWER LINE. Ref. 8.4.4
16. SANDBLASTING IS SPECIFICALLY PROHIBITED ON JOB SITES OR ON ANY DOW PROPERTY, UNLESS A WRITTEN VARIANCE HAS BEEN ISSUED THRU THE OWNER REPRESENTATIVE. SANDBLASTING REQUIRED SHALL NORMALLY BE PERFORMED AT THE CONTRACTORS FACILITY. O.S.H.A. STANDARDS FOR PERSONAL PROTECTIVE EQUIPMENT MUST BE APPLIED.
17. CERTAIN AREAS WITHIN THE MICHIGAN DIVISION HAVE SPECIFIC PRECAUTIONARY MEASURES. THESE MEASURES WILL BE SPELLED OUT IN THE PRE-JOB SAFETY MEETING.
18. NO CONTAMINATED RUBBLE IS TO BE TAKEN TO THE CITY LANDFILL. RUBBLE MUST BE ACCOMPANIED BY A TAG #5510 WITH AN APPROVAL STAMP ON THE BACKSIDE. THIS APPROVAL IS OBTAINED THRU YOUR OWNER REPRESENTATIVE.

IV

V

INTRODUCTION

The Michigan Division General Plant Safety Rules and Procedures Manual For Contractors are mandatory by contract. It cannot, however, be assumed that every conditional safety procedure is contained herein or that abnormal or unusual circumstances may not warrant or require modifications or additional procedure. Dow Chemical U.S.A. Michigan Division, hereinafter referred to as "Owner" will be represented during construction as defined in the contract by a designate known as the "OWNER REPRESENTATIVE".

"Nothing contained in this safety manual shall in any way operate to relieve Contractor or its employees, agents or subcontractors of any responsibility for exercise of due care or liability for negligence which otherwise would apply. Contractor shall at all times use its own judgment and discretion as to safety and safety procedures, particularly in situations not specifically covered by this manual."

Safety rules and procedures are an integral part of each contract and must be carried out fully, as any other specification for the job.

The contractor will be held responsible for and shall police the safety performance of his employees and his subcontractor's employees conforming with these safety rules and procedures. ANY EXCEPTION TO THE RULES SET FORTH HEREIN MUST HAVE PRIOR WRITTEN AUTHORIZATION FROM THE OWNER REPRESENTATIVE.

Contractors and contractor supervision, unable or unwilling to secure personnel performance in keeping with these rules will not be acceptable.

Contractor employees who exhibit a poor attitude toward safe work and safety procedures will not be acceptable. Employees expelled from Dow due to safety violations will not be allowed to return to any owner's work without proper authorization from the owner. The contractor's safety record will be

one criteria used to judge his qualifications for bidding.

A Contractors Safety Performance Check Sheet will be used by the OWNER Representative for the purpose of evaluation for any contractor.

IN ADDITION TO THE RULES SET FORTH HEREIN, CONTRACTORS WORKING IN OR NEAR AN EXISTING OPERATING FACILITY MUST BE COGNIZANT OF AND CONFORM TO OWNER'S SAFETY RULES FOR THAT AREA.

APPLICABLE FEDERAL, STATE OR LOCAL LAWS SHALL APPLY TO CONTRACT WORK. IF THERE IS ANY CONFLICT WITH APPLICABLE FEDERAL, STATE OR LOCAL LAWS, THE MORE STRINGENT WILL APPLY.

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DEFINITION OF TERMS

1. **OWNER:** Dow Chemical U.S.A.
2. **MANUFACTURING REPRESENTATIVE:** The manufacturing representative is Dow Chemical U.S.A.'s employee designated by the operating management of the facility to act in their behalf.
3. **OWNER REPRESENTATIVE** is Dow Chemical U.S.A. employee designated to work directly with the contractor on a day to day basis to keep the project progressing as scheduled and specified and in a safe manner.
4. **WILL, SHALL OR MUST:** The words "will" "shall" or "must" are to be understood as mandatory.
5. **SHOULD:** The word "should" is to be understood as being strongly recommended and to be followed if at all practical.

1.0 General Safety Rules

- 1.1 The contractor shall actively and adequately promote safe working performances on the part of his employees. He shall participate in activities to this end, such as safety organizations (e.g. Dow Midland Contractors Safety Council) special drives, contractor-owner programs, etc. The contractor through his safety program, shall instruct each employee at least monthly re-safety conduct and performance. This includes the recognition and avoidance of unsafe conditions plus those regulations applicable to his work environment that serve to control or eliminate hazards or other exposures to industrial illness or injury. To assist a contractor conduct safety meetings, Dow will make available, upon request, and without charge, a conference room and access to it's safety film library and projection equipment.
 - 1.1.1 American National Standard Institute. Z-16.1 standard, "Recording and Measuring Work Injury Experience" shall be used as a guide to classify contractor injuries.
 - 1.1.2 Contractors are responsible for recording and reporting injuries and illnesses in accordance to Part 1904, Title 29 of OSHA.
 - 1.1.2.1 or Contractor shall make, keep, and preserve accurate and timely records and reports of work illnesses and injuries according to Act No. 154 Public Acts of 1974 section 61 State of Michigan.
 - 1.1.2.2 The contractor performing work under contract to the Dow Chemical Michigan Division shall submit monthly form OSHA No. 100 of the MIOSHA requirements to the Dow Michigan Division — E&CS — 294 Bldg.

- 1.1.3 The *OWNER* Representative shall each month rate the contractor for safety performance. Ref. Contractors Safety Performance Check Sheet, sample on page 11 or any other acceptable inspection form approved by the Safety Dept. and Contract Administration.
- 1.2 Prior to starting any field work on each job, the *OWNER* Representative will conduct a pre-job safety conference. The attendees shall be:
- a) Two or more contractor supervisors (one must be a job site supervisor)
 - b) Subcontractor job site supervisor,
 - c) Dow Manufacturing Representative,
 - d) Dow Safety Representative,
 - e) Dow Plant Protection officer Representative.

At this time, the nature of any chemical hazards, evacuation route or special safety rules for the area will be reviewed by the *DOW* Manufacturing Representative. The contractor will be provided with printed copies of area rules and minutes of the meeting. The "pre-job Safety Check Sheet" (See Sample) will be prepared by the *OWNER* Representative and copies furnished to the contractor. The contractor shall communicate these regulations as outlined by *OWNER* Representative to his people and sub-contractor people prior to starting the job and safety information shall be maintained during the life of the project for all employees.

- 1.2.1 AN OUTLINE OF YOUR SAFETY PROGRAM, INCLUDING MODIFICATIONS FOR THIS SPECIFIC JOB, MUST BE ON FILE PRIOR TO ISSUANCE OF THESE MINUTES AND START OF WORK.
- 1.2.2 Any replacement of the contractors job site supervisor shall require safety meeting orientation for the new supervisor by the contractor.

- 1.3 An effective system of indoctrination and education of employees in safety and loss prevention is required. Each new employee must report to E&CS 294 Bldg. for contractor orientation, before going to the job site to start work. Contractors shall inform their employees of all safety and health rules pertaining to their particular job.
- 1.3.1 Contractor shall inform all their employees of location and use of required safety devices such as safety showers, eye baths, fire blankets, fire extinguishers, gas masks and etc. Also the evacuation route from their job site.
 - 1.3.2 Contractor shall instruct all their employees regarding the use of personal protective equipment.
- 1.4 Contractors shall use a regular system of work inspection to detect and correct hazardous conditions, safety rule violations and unsafe working practices.
- 1.4.1 Orderliness is a basic requirement for all jobs and must be maintained at all times.
 - 1.4.2 Temporary buildings and material storage areas shall be set up through your *OWNER* Representative. (Reference Sec. 12.0, 12.1.5, 12.4)
 - 1.4.3 Temporary buildings must be identified as to contractor's name.
- 1.5 Contractors shall report to the *OWNER* Representative by name any contractor employee discharged for safety or plant rule infractions immediately. This must be followed by written report giving reason for discharge.
- 1.6 Contractors shall adjust their safety planning to cover jobs where circumstances have changed and new hazards require new controls. Additional safety meetings may be required.

- 1.7 The contractor shall provide "Underwriters Approved" temporary fire protection equipment as required by the fire insurance underwriters. This fire protection equipment shall have the approval of the *OWNER* Representative. After any use of this equipment it shall be properly replaced or re-serviced by the contractor.

1.7.1 Minimum Size and Type Portable Fire Extinguisher

- 1.1.1.1 2½ gallon water-antifreeze
1.7.1.2 20 pound Dry Chemical
1.7.1.3 10 pound CO₂



DOD CONTRACT U.S.A
CONTRACT ADMINISTRATION
SHAWNEE, KANSAS

DATE: _____

REPORT OF MODIFICATION

REASON FOR MODIFICATION

MODIFICATION NO.

MODIFICATION DATE

MODIFICATION BY

MODIFICATION NO.

MODIFICATION DATE

MODIFICATION BY

MODIFICATION NO.

MODIFICATION DATE

MODIFICATION BY

MODIFICATION NO. _____

MODIFICATION DATE _____

MODIFICATION BY _____

MODIFICATION NO. _____

MODIFICATION DATE _____

MODIFICATION BY _____

MODIFICATION NO. _____

MODIFICATION DATE _____

MODIFICATION BY _____

SECTION 1. Summary of Changes

DATE _____

NAME AND TITLE _____

NAME AND TITLE _____

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AN OUTLINE OF YOUR SAFETY PROGRAM, INCLUDING MODIFICATIONS PER THIS SPECIFIC JAG, MUST BE ON FILE PRIOR TO ISSUANCE OF THESE STUDIES AT START OF WORK.

1. The contractor shall maintain records of all safety studies and modifications.
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CONTRACTOR'S SAFETY PERFORMANCE CHECK (C) AND RATING FORM

Project Number: _____ Date of Check: _____ Contractor: _____

Check a circle (X) and Give Number 1 to 5 for each item. 1 = Excellent, 2 = Good, 3 = Fair, 4 = Poor, 5 = Unsatisfactory.

Item	Rating	Item	Rating
1. Safety Meeting		21. Safety Meeting	
2. Safety Meeting		22. Safety Meeting	
3. Safety Meeting		23. Safety Meeting	
4. Safety Meeting		24. Safety Meeting	
5. Safety Meeting		25. Safety Meeting	
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7. Safety Meeting		27. Safety Meeting	
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9. Safety Meeting		29. Safety Meeting	
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13. Safety Meeting		33. Safety Meeting	
14. Safety Meeting		34. Safety Meeting	
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17. Safety Meeting		37. Safety Meeting	
18. Safety Meeting		38. Safety Meeting	
19. Safety Meeting		39. Safety Meeting	
20. Safety Meeting		40. Safety Meeting	
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22. Safety Meeting		42. Safety Meeting	
23. Safety Meeting		43. Safety Meeting	
24. Safety Meeting		44. Safety Meeting	
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26. Safety Meeting		46. Safety Meeting	
27. Safety Meeting		47. Safety Meeting	
28. Safety Meeting		48. Safety Meeting	
29. Safety Meeting		49. Safety Meeting	
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80. Safety Meeting		100. Safety Meeting	

TOTAL PROJECT SAFETY PERFORMANCE POINTS: _____

NUMBER OF SPACES CHECKED: _____

Rating: _____

Comments: _____

2.0 Emergency Procedures For All Accidents

- 2.1 The contractor shall provide at his own expense a job site telephone for the duration of the contract. If poles are needed, the location must be acceptable to owner. Pay station telephones and the use of owner telephones will not be permitted. Notify *OWNER* Representative of the contractor job telephone number as soon as it has been installed. Any exception to the telephone service requirement must have the approval of the *OWNER* Representative. A pagemaster or radio may be carried in lieu of telephone for short contracts, or pending telephone installations, with approval of the *OWNER* Representative.

2.2 Contractors Accidents

2.2.1 Personal injury accident

- 2.2.1.1 The contractor shall see that all injured personnel receive proper first aid attention at a recognized facility.
- 2.2.1.2 Call Ambulance 636-4400 for any case that requires professional help (Doctor's, Nurse's medical facility, etc.)
- 2.2.1.3 Report the incident immediately to the *OWNER* Representative.
- 2.2.1.4 Following an investigation of the incident, a verbal report shall be made to the *OWNER* Representative by the contractor. Written Report Reference 3.1.

2.2.2 Chemical Exposures

- 2.2.2.1 In the event of chemical exposure or contact immediately wash the eyes and/or the affected parts of the body

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thoroughly in the nearest safety shower. If a spray of chemical occurs to the face or head while goggles are being worn—they should not be removed until the chemical has been removed in the shower. CALL AMBULANCE 636-4400. Continue washing for at least 15 minutes or until the ambulance arrives.

- 2.2.2.2 If illness from inhalation occurs, remove the person at once to fresh air and call for the ambulance.

2.2.3 Fire or property loss accidents

- 2.2.3.1 Immediately report any fire to the Dow Fire Department 636-4400.
- 2.2.3.2 Fire or property loss incident requires the job site supervisor to immediately report to *OWNER* Representative.

2.3 Owners Plant Emergencies

- 2.3.1 In the event of an alert, evacuation, explosion or fire, the contractor's personnel working in the area affected must observe the following rules.

- 2.3.1.1 The standard emergency siren signals used throughout the Midland division are as follows —

ALERT — One rise to maximum pitch. On this signal all flame or spark producing apparatus (welding machines, etc.) will be shutdown.

EVACUATION SIGNAL — Continuous sounding of the siren. All flame or spark producing equipment will be

shut off and employees shall evacuate the building or area.

ALL CLEAR — Two rises to maximum pitch.

- 2.3.1.2 Do not re-enter the affected area until authorized by the *OWNER* Representative.

- 2.3.1.3 In case of an alert or evacuation all hot permits are canceled **IMMEDIATELY**. They must be re-issued at termination of the plant emergency before the contractor resumes work.

- 2.3.2. The contractor shall notify the *OWNER* Representative in person or by telephone as soon as possible that all employees in the area are accounted for or that specific employees cannot be accounted for.

3.0 Contractors Responsibilities For Written Reports Following Any Accident

- 3.1 The contractor representative, *OWNER* Representative and others who have a responsibility regarding the project shall participate in the investigation. A report form shall be filled out for any injury requiring medical treatment or any potentially serious incident, all fires, hazardous conditions and property damage incidents though no injury occurred. The report shall be submitted to the *OWNER* Representative as soon as possible, but no later than 10:00 A.M. the following work day.
- 3.2 The contractor shall cooperate with the owner in providing accident and injury experience and exposure hours as requested, to maintain historical and statistical safety performance records.

4.0 Individual Accountability

- 4.1 HORSEPLAY IN ANY FORM IS NOT ALLOWED
- 4.2 Conduct and behavior shall be in accordance with safety rules and procedures in order to eliminate unsafe acts. Contractors or an individual employee can be removed from the plant for violations of the rules.
- 4.3 Contractor personnel must not operate or make inoperative without permission, safety devices such as relief valves, deluge valves, gauge valves, electrical and mechanical interlocks, guards, electrical switches, etc.
 - 4.3.1 Any accidental interruption of lines or equipment in service or any irregularities observed must be reported immediately to the *OWNER* Representative.
- 4.4 Contractor employees shall not use unsafe shortcuts, such as walking pipelines, sliding down pipe or stanchions and cutting corners to save a few steps.
 - 4.4.1 Personnel must not climb through under, over, or between railroad cars of a train.
- 4.5 Tools, materials or equipment must not be dropped or thrown from one level to another.
 - 4.5.1 Sharp tools must be carried in sheaths when not in use.
 - 4.5.2 Do not use *DOW* ladders or tools.
- 4.6 Personnel must not ride a load being handled by a crane. Slings, hooks, etc., must not be ridden, except where a crane basket or a bosun's chair and safety belt are used.
- 4.7 Personnel must not walk, drop or jump onto a roof. Reference 12.5.
- 4.8 Personnel using pipe lines and/or conduit as a working surface to perform work must have prior written permission from *OWNER* Representative.

- 4.9 Smoking on *DOW* property is prohibited except where specifically permitted by Dow Chemical U.S.A.

- 4.9.1 No smoking in vehicles within the fenced confines of *DOW* property.

- 4.10 Contractors personnel shall not wander about the plant. They shall stay on the job site unless being moved to and from clockroom or from job site to job site.

- 4.11 Possession or use of intoxicating beverages or narcotics while on plant property and/or reporting for work under the influence of same is prohibited.

- 4.12 Newspapers or reading material not pertaining to work are not permitted in *DOW*.

- 4.13 Never walk thru liquid or walk/drive thru vapor clouds inside the plant.

4.14 Plant Regulations

- 4.14.1 No one shall be permitted to take firearms, cameras, televisions, or tape recorders into Dow. Personal radios may be used with approval of the *OWNER* Representative. Use of two-way radios inside the plant shall be cleared by Plant Protection through the *OWNER* Representative.

- 4.14.2 No one shall be permitted to take any tools, equipment or material out of the plant at any time without the proper pass out. Ref. 4.15.

- 4.14.3 All Contractor and Subcontractor personnel shall enter and leave the plant each day through the Dow designated contractor clockroom.

- 4.14.4 Each Contractor shall be responsible for his personnel and those of his Subcontractor who are on the premises under his name. To aid in locating and accounting for personnel in cases of emergency, safety, and security, Contractor employees shall be required to

follow check in and out procedures as designated at the contractor clockroom or job site.

- 4.14.5 Tools and/or equipment shall be locked at all times after working hours or when not in immediate use. Whenever equipment or tools are lost or stolen, call Plant Protection 636-0034, 636-4343 or 636-3365, immediately.
- 4.14.6 When Contractor wishes to work men before regular hours, after regular hours or on Saturdays, Sundays or Holidays, he must have written authorization from the *OWNER* Representative.
- 4.15 Instructions for removal of materials, equipment and tools from the plant.
 - 4.15.1 Contractor employees' personal tools shall be checked out at the Contractor's clockroom by Plant Protection.
 - 4.15.2 A pass out card, available at the Contractor clockroom, itemizing items belonging to the Contractor and signed by the *OWNER* Representative is required. The pass out card shall be given to Plant Protection at the gate when the material leaves the plant. For loads of material too large to itemize, the *OWNER* Representative shall be notified at least 30 minutes before loading to allow him to inspect the load and sign the pass out card.
 - 4.15.3 A local distributor upon entering the plant gate shall declare any items on his truck which will be still on his truck when he leaves the plant. Driver will sign pass out card stating that these items are his property.
 - 4.15.4 For items being returned to local distributors, driver shall have a pass out card, signed by the *OWNER* Representative, listing the items and to what company they are being returned.

4.15.5 For Dow furnished items taken from the plant by Contractor's truck to be used on jobs outside the fence, a pass out card signed by the *OWNER* Representative responsible for the job receiving the items shall be issued. The job number or building number shall be noted on the upper right hand corner of the pass out card.

4.15.6 After hours, Saturdays, Sundays and Holidays — The movement of Contractor material leaving the plant other than during regular working hours is discouraged. Under emergency conditions, when Contractor's material has to be removed from the plant, contact Plant Protection, phone 636-4400.

4.16 Identification Cards

- 4.16.1 All personnel employed by any Contractor or Subcontractor must obtain a Dow Contractor's badge before starting work on any job, unless otherwise specifically approved in writing by Dow Plant Protection Department.
- 4.16.2 Personnel at the Contractor Gate must be notified upon termination of an employee or completion of the job.

5.0 Vehicles And Traffic (Ref. 8.0)

- 5.1 Contractor personnel driving or riding vehicles shall comply with all of the safety rules and regulations regarding traffic and vehicles.
- 5.2 All vehicles must be in safe mechanical working condition at all times. In addition to complying with Federal and State requirements as to brakes, lights, signals, horns, mufflers, etc., vehicles must be periodically inspected by a representative of the contractor. Necessary repairs and adjustments must be made prior to their use on owner's property. Also — keys are to be left in vehicles that are parked in the plant.

5.3 Fuel tanks on motorized vehicles must not be filled while the engine is running or when welding or other hot work is being done nearby.

5.4 Automobiles, trucks and trailers

5.4.1 The use of seat belts in automobiles and trucks

5.4.1.1 The front seat of all vehicles shall be equipped with seat belts.

5.4.1.2 All persons seated in the front of such vehicles shall properly adjust and fasten the seat belts before the vehicles are put into motion.

5.4.1.3 When rear seats are equipped with belts their use is strongly recommended.

5.4.2 The use of pick-ups, flatbeds, stake racks, winch trucks or buses as transportation for personnel will not be permitted unless adequate safety provisions are made to keep personnel from being accidentally thrown from the vehicles or otherwise injured. In any case, the number of personnel must not cause overcrowding.

5.4.3 Vehicles (as described in 5.4.2) stopped on plant roadways for the purpose of loading or discharging passengers must not be passed in either direction except, after coming to a full stop, the vehicle may be passed at no more than 10 miles per hour provided the way is clear.

5.4.4 Hauled material that overhangs the sides or ends of a truck must be red flagged at the extent of the overhang. Loads must not be hauled from a single suspension cable that allows free swinging beyond the sides of the truck.

5.4.4.1 See 5.5.3 for special permit when hauling high, wide, long or heavy loads.

5.5 Cranes, cherry-pickers, other vehicles

5.5.1 Riding of units (as described in 5.5) shall be permitted only when adequate safety provisions such as seats, platforms, rails, etc., are provided for the assigned crew.

5.5.2 The following regulations must be observed for the movement of heavy equipment, operation of cranes, cherry-pickers, and other vehicles having booms or extended loads, which extend 14 feet or more.

5.5.2.1 Each crane shall have the ball or block painted a fluorescent red/orange color.

5.5.2.2 All hydraulic cranes will have the jib extension stowed away in its proper place before traveling on or across plant streets. Department supervision may make an exception to this if flagman and escorts are used appropriately. This shall be limited to short distances, or when emergency dictates.

5.5.2.3 A flagman shall be out whenever a crane with a boom or jib extended is moved into a throughfare. The flagman shall insure all traffic has been stopped before signaling the crane to emerge.

5.5.2.4 A sign shall be placed on the rear of the trailing escort vehicle warning traffic. "Slow Moving, Heavy Equipment, Dangerous To Pass." Escort vehicle to use emergency flashers and/or rotating beacon.

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- 5.5.2.5 Winch trucks, while in transit shall not have the load suspended from the hook. The load shall be supported by the bed of the truck. If a load is too fragile (such as an instrument panel) to be transported on the bed, it may be suspended from the hook if securely tied down.
- 5.5.2.6 The hook of a winch truck shall not dangle when traveling. It shall be tied down, set in a stand or lay on the bed of the truck.
- 5.5.3 Contractors must obtain a special permit through the *OWNER* Representative when moving units or loads on plant roads under any of the following conditions:
Reference Section 12.0, 12.1.3.
- 5.5.3.1 Unit or load over eight feet wide.
- 5.5.3.2 Unit or load over thirteen feet six inches (13 Ft. 6 In.) high.
- 5.5.3.3 The unit or load overhang is more than fourteen feet (14 feet) front or rear.
- 5.5.3.4 Heavy loads crossing any plant overpass or bridge with a gross load exceeding posted loading restrictions shall require a special permit.
- 5.5.3.5 See DOW Safety Std S-630.
- 5.6 Dump Trucks and Waste Hauling Units
- 5.6.1 All trucks hauling waste and or demolition material on Dow property shall be equipped with an adequate rear closure to prevent any material from dropping off of the truck onto the roadways.

6.0 Protective Equipment And Clothing

- 6.1 The contractor and his employees shall recognize the importance and the use of personal protective safety equipment and clothing.
- 6.1.1 The *OWNER* Representative shall inform the contractor, who shall then be responsible for enforcing owner's area or job rules requiring special personnel protection. Reference 1.2.
- 6.1.2 Contractors shall see that their employees have the required proper protective equipment.
- 6.2 APPROVED EYE PROTECTION — All personnel employed by any contractor or subcontractor shall wear approved industrial strength safety glasses at all times. (Exceptions will be allowed in offices, lunch rooms and wash-rooms). Safety glasses with side shields are required when grinding, chipping or performing any job where side shields would afford protection from flying particles. Industrial strength glasses are 3 MM in thickness with heavy duty frames.
- 6.2.1 Phototropic-type lenses are prohibited in areas where eye protection is required. (Phototropic-type lenses are defined as those designed to change in tint when exposed to varying light intensity.)
- 6.2.2 Dow requires that anyone working with hot tar in the kettle or handling hot tar must wear safety glasses and a face shield. Also long sleeve shirts and a min. of 6" high laced boots.
- 6.2.3 As a matter of convenience contractor may purchase personal protective equipment at his own expense from the Dow Safety Office through the *OWNER* Representative.
- 6.2.4 All employees working in the vicinity of toxic chemicals must know where

the nearest safety shower and eye bath facilities are located.

- 6.3 APPROVED SAFETY HARD HATS are required for all contractor work. Metal hats are not approved.
- 6.4 All personnel shall wear air hoods, or equivalent, supplied by approved source of breathing air, when sandblasting or applying volatile or toxic material inside tanks, rooms or any other area not adequately ventilated.
 - 6.4.1 Pressurized "PLANT AIR" does not meet breathing air requirements.
 - 6.4.2 Compressor pressurized air shall be free of contaminants. Watch the air intake — watch the heat of the compressor.
 - 6.4.3 See Dow Safety Standard S-745.
- 6.5 Lifelines, safety belts and lanyards shall be used only for employees safe guarding. Equipment will be inspected prior to use.
 - 6.5.1 Personnel must wear Coast Guard approved life jackets (these jackets must also be fire resistant) or otherwise be protected by handrails or lifelines when working over water wherein a drowning hazard exists.
- 6.6 Personnel shall wear personal clothing and footwear that is safe and proper for a chemical plant. Certain areas in the plant require long sleeve shirts and/or other specific protective measures. Wearing of canvas shoes, sneakers or houseshoes and/or working in an undershirt, shorts or stripped to the waist is prohibited.
- 6.7 NOISE CONTROL—Protection against the effects of noise exposure shall be provided when the sound level exceeds the permissible noise exposure as specified in federal or state standards.
- 6.8 Asbestos Fiber Control

- 6.8.1 Secure a copy of the O.S.H.A. asbestos standard and learn the *shall* requirements then comply accordingly.

- 6.8.1.1 The allowable 8 hour average exposure level is 2 fibers, longer than 5 microns, per cubic centimeter of air.
- 6.8.1.2 See Dow Safety Standard S-140. Also Dow Environmental Std. E-500.
- 6.8.1.3 Counsel with your *OWNER* Representative when help is needed to understand the requirements.

6.9 Urethane Sprayed Jobs.

- 6.9.1 The Applicator must follow all the requirements under the Health Stds. applicable to Urethane application.
 - 6.9.1.1 A 50' radius must be signed and barricaded.
 - 6.9.1.2 The applicator must wear adequate respiratory protection at all times.

7.0 Fire Prevention

- 7.1 The only acceptable standard on all job sites shall be excellent housekeeping.
 - 7.1.1 Accumulation of trash, oily rags, combustible materials and similar fire hazards of any nature will not be permitted.
- 7.2 Smoking on Dow property is prohibited except where specifically permitted by Dow Chemical U.S.A. Smoking permits for contractor facilities are issued by plant protection thru the *OWNER* Representative.
- 7.3 The area around welding operations must be kept free of hoses and flammable or combustible materials and similar fire hazards of any nature will not be permitted.

- 7.3.1 Hot work permits. (Ref. 12.2)
- 7.4 Canvas or paper shall not be used as tarpaulins or drop cloths on Dow property.
- 7.5 There shall always be an adequate clearance of unrestricted passage to fire hydrants, extinguishers, hose racks, control valves, and other emergency equipment.
- 7.5.1 All alleys' driveways, roads, transformers, and power poles, shall be kept clear of material and equipment.
- 7.5.2 All stairways and elevator approaches shall be kept clear.
- 7.6 Heating equipment for construction purposes shall be approved by the *OWNER* Representative prior to use.
- 7.6.1 Electrical heating units shall be used for offices, lunchrooms, change rooms.
- 7.6.2 Under no conditions will a solid fuel salamander be permitted.
- 7.7 Temporary storage of flammable materials must be approved by the *OWNER* Representative. See Safety S-620.
- 7.7.1 Flammable type material such as gasoline, oil, paints shall be clearly identified, separately stored and kept clear of work areas. Appropriate signs must be provided in storage areas.
- 7.7.2 All cans, five gallons maximum, used for transporting or transferring gasoline or fuel must be labeled by Underwriters' Laboratories or Factory Mutual Laboratories as approved safety cans with internal flame arrestor properly installed and closers operable.
Note—The word Fuel does include No. 2 Diesel Fuel
- 7.7.3 Class zero flammable liquid storage tanks must be grounded. Filler hoses must be bonded from the tank to the

dispensing nozzle. Vehicles dispensing fuel must have a static ground. A properly installed flame arrestor should be on the tank vent if the flash point is 80 degrees or lower.

- 7.7.3.1 A shut-off valve is required on the outlet of storage tanks.
- 7.7.3.2 Equipment fuel tanks must not be filled while the engine is running.
- 7.7.3.3 Storage fuel tanks shall have the content identity stenciled on the tank shell. Letter size shall be a minimum of one and one half inches (1½").
- 7.7.4 Welding or any spark or flame producing operation must be stopped within 25' of the refueling operations.
- 7.8 Welding rod cabinets presenting a fire or safety hazard will not be permitted. Cabinets or fireproof materials equipped with strip heaters are recommended. If light bulbs are used, they must be securely guarded with adequate spacing in regard to the cabinet.
- 7.9 Volatile materials (such as flammable paint and coatings) shall not be applied near an open flame or welding operation. If such material is to be applied in a vessel, or other poorly ventilated, confined areas, only explosion-proof lights, non sparking tools and connections shall be used.
- 7.9.1 Welding shall not be done within 25' of spray painting or coating operation.
- 7.9.2 Mixing of materials containing flammable solvents must be mixed using an air driven motor or an explosion proof electrical motor.
- 7.10 Welding or cutting torches and hoses must not be connected to cylinders when stored in any enclosure or building. When work is shut down and equipment is unattended, close all valves

at the MAPP and/or acetylene and oxygen cylinders, bleed lines and check five minutes later for pressure-build-up, disconnect hoses at the torch, remove hoses from cylinders and store. Ref. 8.7.2.

- 7.10.1 Cylinders must be equipped with valve caps when moved or stored.
- 7.10.2 All hose lines must be in good condition.
- 7.10.3 Backflo preventors must be used on all oxygen and acetylene supply hoses to prevent a backflash fire.
- 7.11 Cylinder Regulators and Compressed Gas Cylinders. See Dow Standards S-622 and S-623.
 - 7.11.1 Compressed gases including air must not be used for cleaning of clothes, the body or work areas. Oxygen must not be used for pressure testing purposes.
- 7.12 Adequate ventilation must be provided when cleaning agents are used. Only use non-flammable cleaning agents. Extra precaution is needed when chlorinated solvents are used in presence of hot surface or ultraviolet rays (welding).
- 7.13 Do not dump flammable, corrosive or toxic materials into PLANT SEWERS. Ref. Introduction Paragraph 6.
- 7.14 Electric welders shall not operate unattended. It is mandatory to shut the unit down at the close of the work hour. Ref. 8.6.2.3.

8.0 Machinery, Cranes, Tools And Equipment (Ref. 5.0)

- 8.1 The safe designed capacity of any tool or piece of equipment must not be exceeded. Tools and equipment must not be modified in any manner that reduces the original factor of safety or capacity.
 - 8.1.1 Under no circumstance shall contractors use inadequate tools or equipment.

- 8.2 All contractor-owned, leased or rented equipment must be in safe mechanical working condition to render efficient service at all times.

- 8.2.1 A special permit must be obtained to cross either the river bridge or railroad overpass with a gross load exceeding posted loading restrictions. Ref. 5.5.3.4.
- 8.2.2 Equipment must be inspected by contractor supervision prior to its use on a job and periodically thereafter to insure that it is in safe working order. Special attention must be given to such items as cables, cable clamps, guards, booms, blocks, hooks, grounds, electrical cords and safety devices. For maintenance, *Equipment shall be made safe for repairs or adjustments.*
- 8.2.3 Defective tools and equipment must be tagged and removed from service immediately and if repairable, must be properly repaired before reuse on owners job.
- 8.2.4 Contractor will not be allowed to use owners tools or equipment. Do not loan contractor tools or equipment to owner's personnel.

- 8.3 Equipment with exposed gears, belts, couplings, etc., must be provided with proper guards.

- 8.4 The contractor has the complete responsibility for a safe operation when using hoisting equipment. This requires competent, well trained operators.

- 8.4.1 Suspended free swinging loads shall be controlled by the use of a tag line.

No load shall be lifted which exceeds the Manufacturer's rated capacity of the crane. When one of the following conditions prevail; the contractor shall submit in writing, an outline of the safety planning for the lift to be done

to the *OWNER* Representative, prior to starting the lift.

- a) The load exceeds 80% of rated load chart for crane.
- b) Anytime a lift is to be made within 10 feet of or above any pipeline, power line and/or existing structure.
- c) Two booms are required to make the lift.
- d) If poles or derricks are to be erected for this specific lift.

8.4.2 Do not use rope for hoisting men, or for guard rails. Rope can become quickly damaged by acids or chemicals. Use metal, cable or wood for hoisting, guying off scaffold or for temporary guard rails.

8.4.3 Lower or securely tie down all crane booms before leaving for the night. Equipment not being used for long periods must be parked in the contractors' parking area.

8.4.4 Electrical Energized Power Line Clearance.

Safety Standard S-335 must be enforced by contractors working within the scope of this standard.

The Standard includes any work where the man or equipment will be within 10 feet of any energized overhead power line. This includes cranes, condor lifts, bucket trucks, scaffolds and any other types of elevated work platforms.

When a 10 foot clearance cannot be maintained you must obtain a clearance in writing from Dow's Electrical Distribution and Maintenance people to work closer than 10 feet. Call 6-3399.

8.5 Pressure vessels used for construction, including fired boilers, must receive an annual hydrostatic test equal to 1½ times the maximum allowable working pressure of the unit as well

as a thorough visual external inspection. At this time, safety and relief valves, properly sized and set for the vessel, will be checked for freedom of operation.

8.5.1 Written certification of compliance to the rule will be furnished to the *OWNER* Representative on demand. Plastic encapsulation and attachment to the certified equipment is recommended.

8.6 Electrical requirements for contractor-owned equipment (Trailers, Shanties, Power Centers, Tools, Etc.)

8.6.1 All services and branch circuits shall be installed per the National Electrical Code. Electricians shall perform all electrical work.

a) The contractor shall provide the service ground for construction site power. Driven ground rods shall be ½" x 10'. (Underground reference dwgs. are required before driving rods.)

b) Service cables shall be 600 V type SO, W or G with ground and in continuous lengths without splice. Cables passing through work areas shall be covered or elevated for protection and arranged to eliminate tripping hazards.

c) Receptacles (120 V, 15 & 20 amp, single phase) used for hand tools shall be protected by a Ground Fault Circuit Interrupter or an assured Equipment Grounding Conductor Program.

8.6.1.1 Grounding & Bonding

a) The non-current-carrying metal parts of portable and/or plug-connected equipment shall be grounded through three wire cords and plugs.

b) Portable tools protected by a UL approved system

- of double-insulation need not be grounded.
- c) Exposed non-current-carrying metal parts of fixed electrical equipment including motors, transformers, generators, welders and other machinery shall be grounded.
- d) The skin of metal buildings and trailers with electric service shall be grounded.
- 8.6.1.2. Cords & Connectors for Portable Electrical Devices
 - a) Extension cords shall be Hard-Service with a separate equipment grounding conductor. (Flat cords are not acceptable.)
 - b) Temporary lights shall be equipped with multi-conductor cord, (multi-conductor cable or single-conductor wires) lamp sockets, lamp guards and proper connecting devices. The assembly shall be installed where it is not subject to mechanical damage and shall be suspended by devices that are designed for that purpose. The entire assembly shall meet OSHA and NEC requirements.
 - c) Plugbody screw bases shall not be used.
 - d) Cord connector bodies and caps shall be the grounding type.
- 8.6.2 When arc welding is being done the following rules must be adhered to.

- 8.6.2.1 Hot work permit shall be obtained prior to starting the machine. Reference 12.0
- 8.6.2.2 All engine driven machines shall be set up outside of buildings.
- 8.6.2.3 At the end of the work day (period) the safety switch for electric power supply (primary supply) shall be in the off position. Ref. 7.14
- 8.6.2.4 Primary supply cables are to be kept separated from welding leads.
- 8.6.2.5 All cables are to be supported or covered so as not to interfere with the safe passage of workers and to prevent damage to cables.
- 8.6.2.6 The ground return electrode shall be attached directly to the immediate work to prevent the flow of objectionable currents thru structures & equipment.
- 8.6.2.7 When coupling cables use insulated cable pressure connectors. Other methods require the approval of OWNER Representative.
- 8.6.2.8 Welding cable terminals, lugs & connectors shall be insulated and/or protected to prevent making electrical contact with employees or conducting objects.
- 8.7 Gas Welding and Cutting
 - 8.7.1 Gas welding and cutting operator
 - 8.7.1.1 Hot work permit is required. Reference Section 12.0
 - 8.7.1.2 The operator should wear

- eight inch high safety shoes or spats as required by the contractor.
- 8.7.1.3 The operator shall wear safety glasses under cutting goggles.
- 8.7.2 Gas welding and cutting equipment. Ref. 7.11
- 8.7.2.1 When gas and oxygen cylinders are lifted by hoisting equipment, a basket, a cradle, or similar handling device must be used. Slings may be used only if the cylinders are specifically equipped for such handling. Cylinders must not be lifted by the valve protection caps.
- 8.7.2.2 Compressed gas cylinders must be stored in an upright position and safely fastened to a support. Cylinder valves must be capped.
- 8.7.2.3 Compressed gas cylinders must be stored out of doors.
- 8.7.2.4 Compressed gas cylinders when in use shall be in an upright position and properly fastened to a support or cart.
- 8.7.2.5 Regulators and gauges shall not be attached to cylinders when not in service.
- 8.7.2.6 When in service every effort must be made to protect the regulators and gauges from damage.
- 8.7.2.7 Regulators, gauges and torches shall be removed and stored in a locked storage.
- 8.7.2.8 Welding trucks may transport cylinders with gauges

attached *only in the job site area*. The cylinders must have gauges removed & caps installed for travel on any Dow roadway. The cylinders must be mounted & secured in racks designed to hold them in place on the truck.

- 8.7.2.9 Welding carts may be moved with cylinders that have gauges attached *only in the job site area*. Transportation of the cart in or behind a vehicle on a Dow roadway requires that the gauges be removed & caps put on the cylinders.
- 8.8 Loose clothing must not be worn while working around operating machinery.
- 8.9 Rollover protective structures (roll-over bars) are required for material handling equipment. This includes the following types of equipment: all rubber-tired self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural & industrial tractors, crawler tractors, crawler-type loaders, & motor graders, with or without attachments, that are used in construction work. This requirement does not apply to sideboom pipelaying tractors. For more information see OSHA Part 1926.1000.
- 8.10 Hose connectors and adaptors shall be of a standard manufacture and used only for the type of service intended.
- 8.10.1 In order to insure positive locking at all times, connectors must be in good condition and not abused. Sandblast hose connections shall be the safety lock type which prevent accidental disengagement.
- 8.10.2 The air supply valve shall be shut off and air pressure on pneumatic tools must be bled down before tools are disconnected from air supply.

8.11 Powder-Actuated Tools shall be approved for use on Dow property.

8.11.1 "Approved Tool" means a tool meeting the requirements of the state of Michigan "General Safety Rules and Regulations for the Construction Industry" and acceptable to the *OWNER* Representative. A "HOT WORK PERMIT" is required for operating the tool.

8.12 Tools used to process mineral items, non-metallic, (where there could be a potential health hazard) shall be of a design to control dusts or vapors. These tools shall be approved by the *OWNER* Representative. An example might be a brick saw that runs with a dry cut.

8.13 Vehicle-Mounted or Support Work Platforms (Aerial Lift Units)

8.13.1 Types of powered vehicle-mounted aerial lift units used to elevate personnel to a job site above ground elevation.

- a) Bucket trucks
- b) Aerial ladders — except fire fighting equipment
- c) Powered work platforms or equivalent
- d) Vertical towers
- e) Forklift platforms
- f) Crane suspended platforms

8.13.2 Contractor shall acquire a copy of a Dow Safety Standard S-630 and use aerial lift units that meet the rules of this standard and the American National Standard for Vehicle-Mounted Elevating and Rotating Work Platforms ANSI 92.2

8.13.3 Aerial lifts (condors, giraffs, JLG's) etc. — self-propelled cannot be driven over the overpass or through the tunnel.

9.0 Ladders

9.1 No metal ladders shall be permitted on Dow property. Use only electrically non-conductive heavy duty construction ladders.

9.2 All ladders used on the premises of Dow shall conform to the use and application as specified in ANSI Std 814.1-3 and State of Michigan Occupational Safety Standards R408.10401 — R408.10456.

9.3 Do not work from the top two steps of a stepladder.

9.4 See Dow Safety Standard S-750.

10.0 Elevated Working Surfaces

10.1 Elevated working surfaces shall be designed, built and inspected by competent persons before use. Scaffold shall be patented metal scaffold. Use lumber only when metal scaffold is not feasible.

10.2 Makeshift scaffolds such as boxes, crates and drums must not be used.

10.3 All elevated working surfaces and allied equipment must be kept in good repair or remove from Dow property.

10.4 See Dow Safety Standard S-810.

11.0 Safe Work Tags

11.1 The following safe work tags shall be used as the job warrants:

- 11.1.1 Danger Red Tag Ref. 11.2
- 11.1.2 Equipment Installation Tag Ref. 11.3
- 11.1.3 Equipment Transfer Buff Tag Ref. 11.4
- 11.1.4 Asbestos Tags Ref. 11.5.

11.2 The "Danger-Red Tag" shall be used to safeguard the workman or the facility. See Dow Safety Standard S-740.

- 11.2.1 To insure that operating status of equipment is not changed while it is being used or worked on, red danger tags must be attached to the controls so that personnel will know not to use them. These tags must be used to protect personnel exposed to hazards of equipment and must be respected by all personnel. The manufacturing representative responsible for the operation of equipment or their designate must clear and tag the equipment. Any contractor personnel whose safety could be endangered while working on tagged equipment must affix their tag.
- 11.2.2 The "Danger Red Tag" "Do Not Operate or Use this Equipment" is red with white lettering furnished by "Dow".
- 11.2.3 The responsibility for administering the Danger Red Tag regulations shall be a joint duty.
 - 11.2.3.1 The manufacturing representative or contractor who is responsible for a Plant, Shop, Laboratory, Construction Project, or any other Owner or Contractor operation shall place the facility in a safe shutdown readiness and have a properly signed "Danger-Red Tag" attached to the facility before starting any work requiring owner or contractor employees.
 - 11.2.3.2 The OWNER Representative or CONTRACTOR shall be responsible for checking the readiness of the facility or equipment tagged by the manufacturing representative or contractor and shall prepare and attach a Danger Red Tag to the work prior to starting the job or to perform

necessary maintenance to the equipment.

- 11.2.3.3 At the discretion of the OWNER Representative, locks and/or blanks should be used on valves and switches in addition to, but not replacing red danger tags.
 - 11.2.4 The only people permitted to remove a Danger Red Tag are the people who attached the tags or their authorized representative as specified on the tag.
 - 11.2.5 No one shall operate or use a device to which a Danger Red Tag is attached.
 - 11.2.6 When a job or repair is completed, the contractor will remove their tags. The manufacturing representative will remove their tags.
 - 11.2.6.1 Contractor's tags removed must be signed, dated and turned in to the OWNER Representative.
 - 11.2.7 Unauthorized removal of a "Danger Red Tag" or operation of a valve, switch, controlling device, and etc. that is tagged out will be a discharge type safety rule violation.
 - 11.2.7.1 Violation of the Danger Red Tag rule shall result in a disciplinary action up to and including rejection from any work on Dow property.
- 11.3 Equipment Installation Tag
- 11.3.1 Mechanical or electrical equipment shall be tagged with the Equip. Installation Tag, form No. M-61730, furnished by Dow, to prevent operating of such equipment by anyone until items on the tag have been completed.
 - 11.3.1.1 The tag shall be fastened to the start-stop control at the motor by the contractor.

11.3.2 The tag provides for certification by contractor that the equipment has been checked for lubrication, rotation, alignment, fuses, and thermal elements.

11.3.3 After all signatures, contractor shall move tag from the start-stop control to the starter switch handle to indicate the equipment is ready for operation by Dow.

11.4 Equipment Transfer Buff Tag

11.4.1 Used vessels to be moved shall be tagged with the Equipment Transfer Tag, form No. 5511 furnished by Dow, properly filled out by Dow personnel on the front and back. See Dow Safety Standard S-720. The equipment Transfer Tag is the communications link between the manufacturing representative and the contractor. It shall be completely filled out to alert employees to any hazards while handling and working in or on the equipment. Do not remove the tag.

11.5 Asbestos Tags

11.5.1 All asbestos removed from bldgs. or pipelines in Dow must be put in 4 ml. plastic bags tagged with an asbestos tag or sticker before being taken to the Dow landfill.

12.0 Safe Work Permits

12.1 The following safe work permits will be issued as the job warrants:

12.1.1 Hot work and vessel entry permit, line opening permits — Ref. 12.2.

12.1.2 Occupancy of railroad right-of-way permit — Ref. 12.3, 13.2.3.

12.1.3 Special permit — Ref. 5.5.3, 8.2.1

12.1.4 Underground reference (drawing required) — Ref. 13.1.

12.1.5 Temporary Construction Shanty Permit — Ref. 12.4.

12.1.6 Roof access permit — Ref. 12.5.

12.1.7 Temporary Barriers — Ref. 12.6

12.1.8 Powerline Clearance Permit — Ref. 12.7

12.1.9 Electrical Hot Work Variance — Ref. 12.8

12.2 Hot work and vessel entry permits issued by Dow to the contractor personnel are required for all hot work & vessel entry. See Dow Safety Standard S-900. These permits are designed to provide a means of checking at the job site the safety of such jobs as, but not limited to, entering closed vessels; working on electrical gear; welding, cutting on, breaking into or repairing pipelines or vessels in operation or under pressure or that have contained hazardous materials. These permits also cover work involving the use of flame or spark producing equipment on the Dow property.

12.2.1 CONTRACTOR supervisor must be in close contact with the progress of work as well as communicating with the OWNER Representative for up-to-date status of operations. Further, contractor supervision must be certain that all personnel involved are informed as to specific procedures and changes in the situation.

12.2.2 Hot work and vessel entry permits are to be initially requested through the CONTRACTORS' supervision and issued by the OWNER Representative or facility manufacturing representative.

12.2.3 CONTRACTOR supervision must give a careful and complete description of the work to be done to the Dow person issuing the hot work or vessel entry permit.

12.2.3.1 Where a job presents a haz-

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ardous situation due to chemical, mechanical electrical, temperature or gross exposure, it is mandatory that a written safe job procedure accompany the hot work or vessel entry permit. This procedure is to be signed by the *OWNER* Representative, *MANUFACTURING* Representative, and the *CONTRACTOR*, who thereby agree that the procedure allows the job to be done safely.

- 12.2.4 It is the responsibility of the contractor to ensure that the directions restrictions noted on the hot work or vessel entry permits and safe job procedures must be carefully followed.
 - 12.2.5 A hot work or vessel entry permit must be reissued for a job if there is evidence that conditions have changed subsequent to the issuance of the original hot work or vessel entry permit.
 - 12.2.6 Permits are normally valid only for the shift issued. By mutual consent of the parties involved, permits may be issued for longer or shorter periods of time.
 - 12.2.7 The contractor may request hot work or vessel entry permits for his own protection. Safety checks by the owner for dangerous gases or chemicals should be requested through the *OWNER* Representative when there is any uncertainty.
- 12.3 A safe work permit shall be obtained to do any work within 9'-0" of the center of railroad track or over or under the railroad right-of-way. The Dow railroad department shall issue the permit and derailler-sign to the *OWNER* Representative.
- Reference 12.1.2 See Dow Safety Standard S-760.

12.3.1 No obstruction of any kind whether permanent or temporary, is permitted within 9'-0" horizontally from the center line of any railroad track and within 22'-6" vertically from the top of the rail.

12.3.2 The safe work permit shall specify the use of derailler-sign.

12.4 A placement permit must be obtained thru your *OWNER* Representative to locate any temporary facility, such as lunchroom, shower trailer, fab area, etc. on Dow property. Smoking permits may also be obtained thru your *OWNER* Representative after facility is set up & approved. Ref. 7.2

12.5 A safe work permit shall be obtained to do any work on the roof of an existing manufacturing facility. See Dow Safety Standard S-735.

12.5.1 A job planning roof access permit is to assure workmen complete knowledge of roof and deck conditions and to specify precautionary methods to be employed while working in the area.

12.5.2 It is the equal and joint responsibility of plant supervision and contractor personnel entering the roof area to observe the permit requirement.

12.6 Temporary barrier permits shall be required from Plant Protection to completely barricade a plant street, service drive or alley. See Dow Safety Standard S-700.

12.7 Temporary Clearance permits shall be required from Dow's Electrical Distribution and Maintenance people when work must be performed closer than 10 feet to any electrical energized distribution lines. See Dow Safety Standard S-335.

12.8 The Electrical Contractor must obtain an electrical hot work variance before performing work on the line side of any 460 volt device. The Contractor's electrical supervisor will be responsible for reviewing the proper work procedures and supplying the protective

equipment needed to perform the necessary electrical hot work safely. The electrical hot work variance will be issued through the *OWNER* Representative.

13.0 Excavation-Barriers-Devices To Penetrate The Earth

- 13.1 When excavations and penetrations of the earth are to be performed approval must be obtained from *OWNER* Representative via using current to date drawings stamped "Underground Reference Drawings". Ref. Dow Safety Standard S-800.
- 13.1.1 The purpose of these prints are to show the latest known underground reference and their locations. This will not constitute permission to do machine excavation, pile driving, soil boring, pole setting, etc.
- 13.1.2 The *OWNER* Representative shall check mark each detail of the drawing before starting work.
- 13.1.3 Hand excavation or probing to verify location of underground lines will be required.
- 13.1.4 Excavation shall stop immediately when any underground interference is encountered, whether or not it is shown on the drawing.
- 13.1.5 Where a safety hazard would be created for any personnel, excavations such as ditches, trenches, or bell holes shall be sloped sufficiently to prevent cave-ins or slides. If sloping is impractical, shoring shall be used in cases whenever the vertical dimension exceeds four feet.
- 13.1.5.1 Personnel removing shorings after completion of work must not be in the bottom of the excavation.

13.2 Barriers

- 13.2.1 Contractors shall provide temporary substantial guardrails, signals, flagmen, or other appropriate warning devices to protect personnel near any hazardous operation or excavation. Floor openings, open trenches, excavation, etc., shall be covered when barriers do not provide protection to personnel.
- 13.2.1.1 Barriers must be sufficiently marked in order to be visible day or night.
- 13.2.1.2 Notify the *OWNER* Representative at least one day in advance when placing barricades that will detour traffic. See Safety Std. S-700.
- 13.2.2 Warning signs on barricades shall be used to restrict employees from entering areas when overhead work is in progress.
- 13.2.3 Railroad Derailer-sign
- 13.2.3.1 See Dow Safety Standard S-760.
- 13.2.3.2 Safe Work Permits requirements reference 12.1.2. 12.1.3
- 13.2.3.3 In locations where strictly temporary loading or unloading operation of railroad cars are to be undertaken, portable derails shall be used by personnel engaged in these operations to prevent overrunning of the cars by a train.

14.0 Radiation

- 14.1 The contractor shall obtain written permission before bringing any radiation producing equipment on to the Dow property.

- 14.1.1 Radiation producing equipment is any equipment which can produce injurious amounts of emissions of Alpha or Beta particles, gamma or X-rays, or neutrons. For example, X-ray machines, electron microscopes, accelerators, or sealed radioactive sources and Laser equipment.
- 14.1.2 Industrial hygiene must be notified thru the *OWNER* Representative when contractors are working with radiographic sources on Dow property.
- 14.1.3 See Dow Safety Standard S-477.
- 14.2 All Dow, state and/or federal laws governing use, storage or handling of a radiation source must be complied with.
- 14.3 The contractor who is responsible for the job shall notify the *OWNER* Representative as to the name of the company who will do the radiography & his proposed time of arrival. The *OWNER* Representative relays this to the contractors gate & the welding center. When the radiographer arrives at the contractors gate he should identify himself as a radiographer with a radiation source & the location he is going to work. The contractors gate notifies the welding center they have arrived & the welding center will follow the work being done. A contractor radiographer check list shall be filled out in triplicate & signed by the contractor & welding engineer. Industrial hygiene is notified by the welding engineer, when the contractor has been checked in & when his work is complete. A minimum of two qualified people are required for the performance of any radiographic work.
- 14.4 In locations where a radiation source is used or stored, regulations require that it be marked with a "Radiation Area" sign. *THIS SIGN IS FOR THE PURPOSE OF INFORMING ANYONE IN THE AREA THAT SUCH MATERIAL IS PRESENT.*
 - 14.4.1 Only authorized personnel shall enter

- an area marked by "Radiation Area" sign.
- 14.4.2 All areas where a radiation hazard exists must be roped off and marked conspicuously by standard signs at a safe distance from the source of radiation. These signs bear the radiation symbol of magenta (or purple) on a yellow background with the words "Caution — Radiation Area."
- 14.4.3 "RADIATION AREA" signs must be removed when a radiation hazard no longer exists in the affected area.
- 14.4.4 Equipment containing a source of radiation shall not be handled, uncrated or installed without prior clearance with the *OWNER* Representative.

15.0 Removal of Facilities

- 15.1 This section specifically covers the removal and demolition of facilities. Due to the inherent hazards in this type of work, special care must be devoted to safe work procedures, scope understanding and communication concerning the safe clearance of the work.
- 15.2 It is not appropriate to make assumptions in any stage of this type of work. Responsibilities must be delegated only to those whose profession qualified them to make the necessary judgment and decisions that are required to assure the safest possible execution of the job. From start to finish, each person connected with removal of facilities must adopt an attitude of "Prepare For Any Possibility".
- 15.3 The *CONTRACTOR* shall ascertain with *OWNER* Representative that all lines, services and equipment have been cleaned or purged and properly cleared and tagged for safe removal. All lines (including water and steam) and equipment are to be considered hot until positive safe clearance has been obtained.
- 15.4 The pre-job safety meeting with the contractor

as covered in Section I of this manual shall devote special attention to preplanning the safety aspects of removal of facilities and a thorough check of the drawing marked "Underground Reference Drawings." Ref. Section 13.1.1.

- 15.4.1 The Dow "Removal Survey Form" (sample form included in this manual) shall be completed and a copy presented to contractor by the *OWNER* Representative.
 - 15.4.2 Steps of dismantling and loads to be handled shall be reviewed with the *OWNER* Representative prior to starting work. Locations for disposal of equipment and materials will be given to the contractor at this time.
 - 15.4.3 When specified, it is the *CONTRACTORS* responsibility to see that temporary provisions are made available where safety showers, eye wash baths and fire protection are being removed.
 - 15.4.4 Prior to permitting employees to start demolition operations, an engineering survey shall be made, by a competent person, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer shall have in writing evidence that such a survey has been performed. Ref. O.S.H.A. 1926.850 Subpart T. Section A.
- 15.5 For procedures that require "Safe Work Tags" and/or "Safe Work Permits" see section 11.0 and/or 12.0.
- 15.6 The use of frost balls or similar devices and explosives in conjunction with new construction and/or demolition work is prohibited, except as specifically allowed in individual job specifications.

15.7 Material removal from a structure.

- 15.7.1 Materials shall not be dropped to any point lying outside the exterior walls of the structure unless the area is effectively protected. An effective method would be the use of a chute with a properly protected discharge or mechanical equipment to hoist or lower material from one level to another or dropping materials weighing less than 100 lbs into a caged enclosure to contain the material. Ref. O.S.H.A. — Subpart T — Demolition — 1926.850.

15.8 Asbestos Removal-Handling and Disposal Requirements

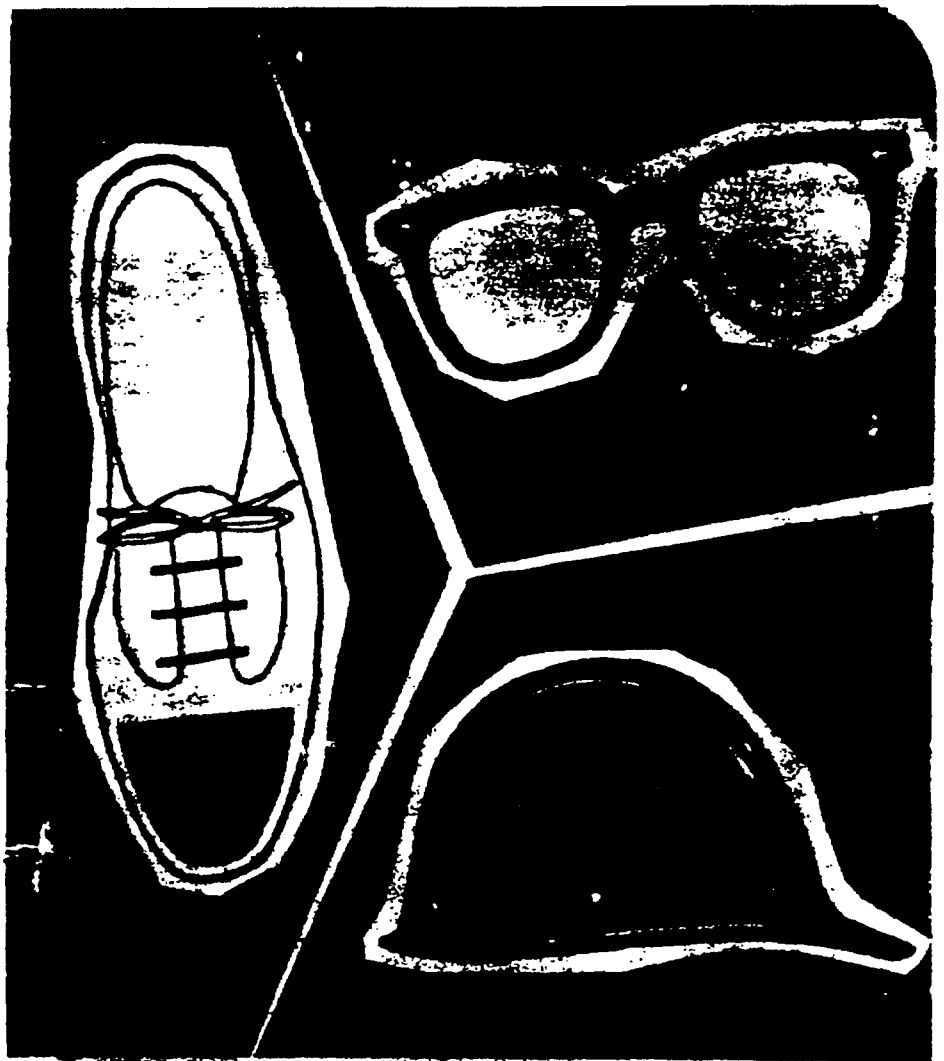
- 15.8.1 The "work" covered by these specifications involves the handling of asbestos. The Contractor agrees to file notification of intent to demolish or renovate according to requirements of the Environmental Protection Agency Regulations on National Emission Standards for Hazardous Air Pollutants, Subpart B-National Emission Standard for Asbestos. The notification of start of demolition or renovation must be sent the EPA Region V, Chicago, Illinois, attention Director of Enforcement, prior to commencement of the work. The Contractor also agrees to follow all specified procedures indicated in the aforementioned document to assure no visible emission of asbestos will occur to the outside air. A copy of the notification will also be sent to the State of Michigan Air Pollution Control Division, Michigan Department of Natural Resources, Stevens T. Mason Building, 8th Floor, Lansing, Michigan 48926.
- 15.8.2 The *OWNER* Representative will review data pertaining to Dow prior to the Contractor's notification to Federal and State Agencies. Written

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- 16.1 Code of Federal Regulations, Title 29, Part 1926.
- 16.2 General and special conditions in construction contract documents, Dow Chemical U.S.A.
- 16.3 Guiding Principles For a Contractor Safety and Loss Prevention Program. Dow Chemical U.S.A., Midland, Michigan.
- 16.4 General Safety Rules and Regulations for the Construction Industry Construction Safety Commission, Bureau of Safety and Health—State of Michigan.
- 16.5 Manual of Accident Prevention in Construction. The Associated General Contractors of America, Incorporated.
- 16.6 Dow Chemical U.S.A., Michigan Division Safety Standards.



**The Michigan Division
GENERAL PLANT SAFETY
RULES AND PROCEDURES
Manual For Contractors**

DOW CHEMICAL U.S.A.



DATE: JUNE, 1979

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"Safety must be a *first* consideration and *basic* responsibility of every contractor employee working in the Michigan "*Division.*"



This Manual is made available to you as an interpretation of the Safety Clause of your contract.

All or parts of contents will apply to your work depending on the nature and sequences of your work.

PLANT RULES

FOREWORD

These rules summarize a code of conduct that is intended to provide Midland Location employees a safe, efficient, and harmonious work environment.

Violation of any of these rules will be considered as cause for disciplinary action up to and including discharge.

These rules are not exhaustive and any conduct of a dangerous, disruptive, or disorderly nature will be subject to appropriate discipline.

General Manager
Michigan Division

THE MICHIGAN DIVISION GENERAL PLANT SAFETY RULES AND PROCEDURES MANUAL FOR CONTRACTORS

The information in this manual is intended as one reference source for many of the safety rules and procedures which will be helpful to contractors in achieving good safety performance. It cannot, however, be assumed that every conditional safety procedure is contained herein or that abnormal or unusual circumstances may not warrant or require modifications or additional procedures.

Where these rules or procedures interfere with other safety considerations or adversely affect job efficiency, without materially affecting to the safety of the job, the OWNER Representative can waive or modify these rules as they apply to a specific part of a job or contract.

BECAUSE OF THE UNIQUE HAZARDS ENCOUNTERED BY CONSTRUCTION WORK IN A CHEMICAL COMPLEX, THE DOW MICHIGAN DIVISION HAS DEVELOPED SPECIFIC DOW SAFETY RULES RELEVANT TO DOW CONTRACTS. THESE RULES IN PART ARE PRESENTED BELOW IN SUMMARY FORM AND ARE COVERED IN GREATER DETAIL IN THE BODY OF THIS MANUAL. ANY DOW STANDARD REFERENCED IN THIS MANUAL IS AVAILABLE UPON REQUEST FROM CAPITAL PURCHASING GROUP OF THE DOW CHEMICAL COMPANY, THE CONTRACTOR GATE OR THRU YOUR OWNER REPRESENTATIVE. ALL SAFETY STANDARDS USED MUST BE THE MOST CURRENT TO BE VALID. ALSO, READ SECTION 4.0 INDIVIDUAL ACCOUNTABILITY.

1. INDUSTRIAL STRENGTH SAFETY GLASSES MUST BE WORN AT ALL TIMES, THIS INCLUDES INSIDE VEHICLES. Ref. 6.2.
2. HARD HATS WORN EVERYWHERE EXCEPT LUNCH ROOMS. Ref. 6.3.
3. SMOKE ONLY IN POSTED LOCATIONS. Ref. 7.2

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4. NO METAL LADDERS ALLOWED IN THE PLANT. Ref. 9.1
5. NO WELDING, CUTTING, FLAME OR SPARK-PRODUCING OR ENGINE DRIVEN EQUIPMENT ALLOWED WITHOUT A HOT WORK PERMIT ISSUED BY THE OWNER REPRESENTATIVE. (Part 8.0 and 12.0)
6. ALL TRUCKS AND AUTOMOBILES OPERATED ON DOW PROPERTY MUST HAVE SEAT BELTS WHICH SHALL BE USED. SPEED LIMIT IN THE PLANT IS 30 M.P.H. MAXIMUM UNLESS OTHERWISE POSTED. CARS ARE TO BE LEFT UNLOCKED WITH THE KEYS IN THE IGNITION. DO NOT PARK ON ROADWAYS, SERVICE DRIVES, ALLEYS, OR NEAR DOORWAYS, LOADING DOCKS, DUMPSTER BOXES OR ACCESS THERETO. PARK IN DESIGNATED AREAS ONLY. OBEY ALL TRAFFIC SIGNS & SIGNALS. TRAFFIC CONTROL REGULATIONS WILL BE ENFORCED. Ref. 5.4
7. NO CANVAS OR PAPER TARPAULINS OR DROP CLOTHS ALLOWED. Ref. 7.4
8. DISPOSAL INTO PLANT SEWERS OF FLAMMABLE, CORROSIVE OR TOXIC MATERIALS IS PROHIBITED. Ref. 7.13
9. SPECIAL PERMISSION THROUGH THE OWNER REPRESENTATIVE FROM PLANT PROTECTION IS REQUIRED BEFORE MOVING LARGE LOADS INCLUDING CRANES ON PLANT ROADS. Ref. 5.3
10. ALL ELECTRIC TOOLS SHALL BE GROUNDED OR DOUBLE INSULATED Ref. 8.6
11. WORK PERMITS MUST BE OBTAINED FROM THE OWNER REPRESENTATIVE NOT ONLY FOR ALL "HOT WORK" BUT FOR WORK ALONG RAILROAD RIGHT-OF-WAY, EXCAVATION ON THE PROPERTY AND FOR ACCESS TO EXISTING BUILDING ROOFS. Ref. 12.1
12. OBSERVE RED DANGER TAGS ON VALVES, SWITCHES, CLUTCHES AND OTHER EQUIPMENT OPERATION CONTROLS. NO ONE SHALL WORK ON EQUIPMENT WITHOUT FIRST, PLACING THEIR RED TAGS ON THE VALVES AND CONTROLS TO SUCH EQUIPMENT FOLLOWING THE PLACEMENT OF THE RED DANGER TAGS BY DOW. Part 11.0

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the owner. The contractor's safety record will be one criteria used to judge his qualifications for bidding.

IN ADDITION TO THE RULES SET FORTH HEREIN, CONTRACTORS WORKING IN OR NEAR AN EXISTING OPERATING FACILITY MUST BE COGNIZANT OF AND CONFORM TO OWNER'S SAFETY RULES FOR THAT AREA.

A REVIEW OF THE JOB-SITE CHEMICALS & PHYSICAL AGENTS WILL BE GIVEN TO ALL CONTRACTOR PERSONNEL BEFORE START OF WORK. CONSEQUENCES OF OVEREXPOSURE & METHODS OF CONTROL WILL BE INCLUDED.

CONTRACTOR EMPLOYEES MUST ACKNOWLEDGE THEIR UNDERSTANDING OF THE INFORMATION PRESENTED BY SIGNING IN THE SPACES PROVIDED ON PAGE 4, PARAGRAPH VII OF THE PRE-JOB SAFETY CONFERENCE PACKAGE, FORM NO. M-61441.

APPLICABLE FEDERAL, STATE OR LOCAL LAWS SHALL APPLY TO CONTRACT WORK. IF THERE IS ANY CONFLICT WITH APPLICABLE FEDERAL, STATE OR LOCAL LAWS, THE MORE STRINGENT WILL APPLY.

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1.0 General Safety Rules

- 1.1 The contractor shall actively and adequately promote safe working performances on the part of his employees. He shall participate in activities to this end, such as safety organizations (e.g. Dow Midland Contractors Safety Council) special drives, contractor-owner programs, etc. The contractor through his safety program, shall instruct each employee at least monthly re-safety conduct and performance. This includes the recognition and avoidance of unsafe conditions plus those regulations applicable to his work environment that serve to control or eliminate hazards or other exposures to industrial illness or injury. To assist a contractor conduct safety meetings, Dow will make available, upon request, and without charge, a conference room and access to it's safety film library and projection equipment.

1.1.1 American National Standard Institute, Z-16.1 standard, "Recording and Measuring Work Injury Experience" shall be used as a guide to classify contractor injuries.

1.1.2 Contractors are responsible for recording and reporting injuries and illnesses in accordance to Part 1904, Title 29 of OSHA.

1.1.2.1 or Contractor shall make, keep, and preserve accurate and timely records and reports of work illnesses and injuries according to Act No. 154 Public Acts of 1974 section 61 State of Michigan.

- 1.2 Prior to starting any field work on each job, the *OWNER* Representative will conduct a pre-job safety conference. The attendees shall be:

- a) *Two or more contractor supervisors (one must be a job site supervisor)*
- b) *Subcontractor job site supervisor,*
- c) *Dow Manufacturing Representative,*

d) *Dow Safety Representative,*

e) *Dow Plant Protection officer Representative.*

At this time, the nature of any chemical hazards, evacuation route or special safety rules for the area will be reviewed by the *DOW* Manufacturing Representative. The contractor will be provided with printed copies of area rules and minutes of the meeting. The "pre-job Safety Check Sheet" will be prepared by the *OWNER* Representative and copies furnished to the contractor. The contractor shall communicate these regulations as outlined by the *OWNER* Representative to his people and sub-contractor people prior to starting the job and safety information shall be maintained during the life of the project for all employees.

1.2.1 **AN OUTLINE OF YOUR SAFETY PROGRAM, INCLUDING MODIFICATIONS FOR THIS SPECIFIC JOB, MUST BE ON FILE PRIOR TO START OF ON-SITE WORK.**

1.2.2 Any replacement of the contractors job site supervisor shall require safety meeting orientation for the new supervisor by the contractor.

- 1.3 An effective system of indoctrination and education of employees in safety and loss prevention is required. Each new employee must report to Contractor's Gate, 815 Bldg. for contractor orientation, before going to the job site to start work. Contractors shall inform their employees of all safety and health rules pertaining to their particular job.

1.3.1 Contractor shall inform all their employees of location and use of required safety devices such as safety showers, eye baths, fire blankets, fire extinguishers, gas masks and etc. Also the evacuation route from their job site.

- 1.3.2 Contractor shall instruct all their employees regarding the use of personal protective equipment.
- 1.4 Contractors shall use a regular system of work inspection to detect and correct hazardous conditions, safety rule violations and unsafe working practices.
 - 1.4.1 Orderliness is a basic requirement for all jobs and must be maintained at all times.
 - 1.4.2 Temporary buildings and material storage areas shall be set up through your *OWNER* Representative. (Reference Sec. 12.0, 12.1.5, 12.4)
 - 1.4.3 Temporary buildings must be identified as to contractor's name.
- 1.5 Contractors shall report to the *OWNER* Representative by name any contractor employee discharged for safety or plant rule infractions immediately. This must be followed by written report giving reason for discharge.
- 1.6 Contractors shall adjust their safety planning to cover jobs where circumstances have changed and new hazards require new controls. Additional safety meetings may be required.
- 1.7 The contractor shall provide "Underwriters Approved" temporary fire protection equipment as required by the fire insurance underwriters. This fire protection equipment shall have the approval of the *OWNER* Representative. After any use of this equipment it shall be properly replaced or re-serviced by the contractor.
 - 1.7.1 Minimum Size and Type Portable Fire Extinguisher
 - 1.1.1.1 2½ gallon water-antifreeze
 - 1.7.1.2 20 pound Dry Chemical
 - 1.7.1.3 10 pound CO₂

2.0 Emergency Procedures For All Accidents

- 2.1 The contractor shall provide at his own expense a job site telephone for the duration of the contract. If poles are needed, the location must be acceptable to owner. Pay station telephones and the use of owner telephones will not be permitted. Notify *OWNER* Representative of the contractor job telephone number as soon as it has been installed. Any exception to the telephone service requirement must have the approval of the *OWNER* Representative. A pagemaster or radio may be carried in lieu of telephone for short contracts, or pending telephone installations, with approval of the *OWNER* Representative.
- 2.2 Contractors Accidents
 - 2.2.1 Personal injury accident
 - 2.2.1.1 The contractor shall see that all injured personnel receive proper first aid attention at a recognized facility.
 - 2.2.1.2 Call Ambulance 636-4400 for any case that requires professional help (Doctor's, Nurse's medical facility, etc.) (1-2-3 Owner's Phone)
 - 2.2.1.3 Report the incident immediately to the *OWNER* Representative.
 - 2.2.1.4 Following an investigation of the incident, a verbal report shall be made to the *OWNER* Representative by the contractor. Written Report Reference 3.1.
 - 2.2.2 Chemical Exposures
 - 2.2.2.1 In the event of chemical exposure or contact immediately wash the eyes and/or the affected parts of the body

thoroughly in the nearest safety shower. If a spray of chemical occurs to the face or head while goggles are being worn — they should not be removed until the chemical has been removed in the shower. CALL AMBULANCE 636-4400. Continue washing for at least 15 minutes or until the ambulance arrives.

- 2.2.2.2 If illness from inhalation occurs, remove the person at once to fresh air and call for the ambulance.

2.2.3 Fire or property loss accidents

- 2.2.3.1 Immediately report any fire to the Dow Fire Department 636-4400. (1-2-3 Owner's Phone)
- 2.2.3.2 Fire or property loss incident requires the job site supervisor to immediately report to OWNER Representative.

2.3 Owners Plant Emergencies

- 2.3.1 In the event of an alert, evacuation, explosion or fire, the contractor's personnel working in the area affected must observe the following rules.

- 2.3.1.1 The standard emergency siren signals used throughout the Midland division are as follows —

ALERT — One rise to maximum pitch. On this signal all flame or spark producing apparatus (welding machines, etc.) will be shutdown.

EVACUATION SIGNAL — Continuous sounding of the siren. All flame or spark producing equipment will be

shut off and employees shall evacuate the building or area.

ALL CLEAR — Two rises to maximum pitch.

- 2.3.1.2 Do not re-enter the affected area until authorized by the OWNER Representative.

- 2.3.1.3 In case of an alert or evacuation all hot permits are canceled *IMMEDIATELY*. They must be re-issued at termination of the plant emergency before the contractor resumes work.

- 2.3.2 The contractor shall notify the OWNER Representative in person or by telephone as soon as possible that all employees in the area are accounted for or that specific employees cannot be accounted for.

3.0 Contractors Responsibilities For Written Reports Following Any Accident

- 3.1 The contractor representative, OWNER Representative and others who have a responsibility regarding the project shall participate in the investigation. A report form shall be filled out for any injury requiring medical treatment or any potentially serious incident, all fires, hazardous conditions and property damage incidents though no injury occurred. The report shall be submitted to the OWNER Representative as soon as possible, but no later than 10:00 A.M. the following work day.
- 3.2 The contractor shall cooperate with the owner in providing accident and injury experience and exposure hours as requested, to maintain historical and statistical safety performance records.

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4.0 Individual Accountability

- 4.1 HORSEPLAY IN ANY FORM IS NOT ALLOWED
- 4.2 Conduct and behavior shall be in accordance with safety rules and procedures in order to eliminate unsafe acts. Contractors or an individual employee can be removed from the plant for violations of the rules.
- 4.3 Contractor personnel must not operate or make inoperative without permission, safety devices such as relief valves, deluge valves, gauge valves, electrical and mechanical interlocks, guards, electrical switches, etc.
 - 4.3.1 Any accidental interruption of lines or equipment in service or any irregularities observed must be reported immediately to the *OWNER* Representative.
- 4.4 Contractor employees shall not use unsafe shortcuts, such as walking pipelines, sliding down pipe or stanchions and cutting corners to save a few steps.
 - 4.4.1 Personnel must not climb through under, over, or between railroad cars of a train.
- 4.5 Tools, materials or equipment must not be dropped or thrown from one level to another.
 - 4.5.1 Sharp tools must be carried in sheaths when not in use.
 - 4.5.2 Do not use *DOW* ladders or tools.
- 4.6 Personnel must not ride a load being handled by a crane. Slings, hooks, etc., must not be ridden, except where a crane basket or a bosun's chair and safety belt are used.
- 4.7 Personnel must not walk, drop or jump onto a roof. Reference 12.5.
- 4.8 Personnel using pipe lines and/or conduit as a working surface to perform work must have prior written permission from *OWNER* Representative.

- 4.9 Smoking on *DOW* property is prohibited except where specifically permitted by Dow Chemical U.S.A.

- 4.9.1 No smoking in vehicles within the fenced confines of *DOW* property.

- 4.10 Contractors personnel shall not wander about the plant. They shall stay on the job site unless being moved to and from clockroom or from job site to job site.

- 4.11 Possession or use of intoxicating beverages or narcotics while on plant property and/or reporting for work under the influence of same is prohibited.

- 4.12 Newspapers or reading material not pertaining to work are not permitted to be read during working hours.

- 4.13 Never walk thru liquid or walk/drive thru vapor clouds inside the plant.

4.14 Plant Regulations

- 4.14.1 No one shall be permitted to take firearms, cameras, televisions, or tape recorders into Dow. Personal radios may be used with approval of the *OWNER* Representative. Use of two-way radios inside the plant shall be cleared by Plant Protection through the *OWNER* Representative.

- 4.14.2 No one shall be permitted to take any tools, equipment or material out of the plant at any time without the proper pass out. Ref. 4.15.

- 4.14.3 All Contractor and Subcontractor personnel shall enter and leave the plant each day through the Dow designated contractor clockroom.

- 4.14.4 Each Contractor shall be responsible for his personnel and those of his Subcontractor who are on the premises under his name. To aid in locating and accounting for personnel in cases of emergency, safety, and security, Contractor employees shall be required to

follow check in and out procedures as designated at the contractor clockroom or job site.

- 4.14.5 Tools and/or equipment shall be locked at all times after working hours or when not in immediate use. Whenever equipment or tools are lost or stolen, call Plant Protection 636-0034, 636-4343 or 636-3365, immediately.
- 4.14.6 When Contractor wishes to work men before regular hours, after regular hours or on Saturdays, Sundays or Holidays, he must have written authorization from the *OWNER* Representative.
- 4.15 Instructions for removal of materials, equipment and tools from the plant.
 - 4.15.1 Contractor employees' personal tools shall be checked out at the Contractor's clockroom by Plant Protection.
 - 4.15.2 A pass out card, available at the Contractor clockroom, itemizing items belonging to the Contractor and signed by the *OWNER* Representative is required. The pass out card shall be given to Plant Protection at the gate when the material leaves the plant. For loads of material too large to itemize, the *OWNER* Representative shall be notified at least 30 minutes before loading to allow him to inspect the load and sign the pass out card.
 - 4.15.3 A local distributor upon entering the plant gate shall declare any items on his truck which will be still on his truck when he leaves the plant. Driver will sign pass out card stating that these items are his property.
 - 4.15.4 For items being returned to local distributors, driver shall have a pass out card, signed by the *OWNER* Representative, listing the items and to what company they are being returned.

- 4.15.5 For Dow furnished items taken from the plant by Contractor's truck to be used on jobs outside the fence, a pass out card signed by the *OWNER* Representative responsible for the job receiving the items shall be issued. The job number or building number shall be noted on the upper right hand corner of the pass out card.

- 4.15.6 After hours, Saturdays, Sundays and Holidays — The movement of Contractor material leaving the plant other than during regular working hours is discouraged. Under emergency conditions, when Contractor's material has to be removed from the plant, contact Plant Protection, phone 636-4400.

4.16 Identification Cards

- 4.16.1 All personnel employed by any Contractor or Subcontractor must obtain a Dow Contractor's badge before starting work on any job, unless otherwise specifically approved in writing by Dow Plant Protection Department.
- 4.16.2 Personnel at the Contractor Gate must be notified upon termination of an employee or completion of the job.

5.0 Vehicles And Traffic (Ref. 8.0)

- 5.1 Contractor personnel driving or riding vehicles shall comply with all of the safety rules and regulations regarding traffic and vehicles.
- 5.2 All vehicles must be in safe mechanical working condition at all times. In addition to complying with Federal and State requirements as to brakes, lights, signals, horns, mufflers, etc., vehicles must be periodically inspected by a representative of the contractor. Necessary repairs and adjustments must be made prior to their use on owner's property. Also — keys are to be left in vehicles that are parked in the plant.

5.3 Fuel tanks on motorized vehicles must not be filled while the engine is running or when welding or other hot work is being done nearby.

5.4 Automobiles, trucks and trailers

5.4.1 The use of seat belts in automobiles and trucks

5.4.1.1 The front seat of all vehicles shall be equipped with seat belts.

5.4.1.2 All persons seated in the front of such vehicles shall properly adjust and fasten the seat belts before the vehicles are put into motion.

5.4.1.3 When rear seats are equipped with belts their use is strongly recommended.

5.4.2 The use of pick-ups, flatbeds, stake racks, winch trucks or buses as transportation for personnel will not be permitted unless adequate safety provisions are made to keep personnel from being accidentally thrown from the vehicles or otherwise injured. In any case, the number of personnel must not cause overcrowding.

5.4.3 Vehicles with flashing red lights, (as described in 5.4.2) stopped on plant roadways for the purpose of loading or discharging passengers must not be passed in either direction.

5.4.4 Hauled material that overhangs the sides or ends of a truck must be red flagged at the extent of the overhang. Loads must not be hauled from a single suspension cable that allows free swinging beyond the sides of the truck.

5.4.4.1 See 5.5.3 for special permit when hauling high, wide, long or heavy loads.

5.5 Cranes, cherry-pickers, other vehicles

5.5.1 Riding of units (as described in 5.5) shall be permitted only when adequate safety provisions such as seats, platforms, rails, etc., are provided for the assigned crew.

5.5.2 The following regulations must be observed for the movement of heavy equipment, operation of cranes, cherry-pickers, and other vehicles having booms or extended loads, which extend 14 feet or more.

5.5.2.1 Each crane shall have the ball or block painted a fluorescent red/orange color.

5.5.2.2 All hydraulic cranes will have the jib extension stowed away in its proper place before traveling on or across plant streets. Department supervision may make an exception to this if flagman and escorts are used appropriately. This shall be limited to short distances, or when emergency dictates.

5.5.2.3 A flagman shall be out whenever a crane with a boom or jib extended is moved into a throughfare. The flagman shall insure all traffic has been stopped before signaling the crane to emerge.

5.5.2.4 A sign shall be placed on the rear of the trailing escort vehicle warning traffic, "Slow Moving, Heavy Equipment, Dangerous To Pass." Escort vehicle to use emergency flashers and/or rotating beacon.

- 5.5.2.5 Winch trucks, while in transit shall not have the load suspended from the hook. The load shall be supported by the bed of the truck. If a load is too fragile (such as an instrument panel) to be transported on the bed, it may be suspended from the hook if securely tied down.
- 5.5.2.6 The hook of a winch truck shall not dangle when traveling. It shall be tied down, set in a stand or lay on the bed of the truck.
- 5.5.3 Contractors must obtain a special permit through the *OWNER* Representative when moving units or loads on plant roads under any of the following conditions:
Reference Section 12.0, 12.1.3.
 - 5.5.3.1 Unit or load over eight feet wide.
 - 5.5.3.2 Unit or load over thirteen feet six inches (13 Ft. 6 In.) high.
 - 5.5.3.3 The unit or load overhang is more than fourteen feet (14 feet) front or rear.
 - 5.5.3.4 Heavy loads crossing any plant overpass or bridge with a gross load exceeding posted loading restrictions shall require a special permit.
 - 5.5.3.5 See DOW Safety Std S-630.
- 5.6 Dump Trucks and Waste Hauling Units
 - 5.6.1 All trucks hauling waste and or demolition material on Dow property shall be equipped with an adequate rear closure to prevent any material from dropping off of the truck onto the roadways.

6.0 Protective Equipment And Clothing

- 6.1 The contractor and his employees shall recognize the importance and the use of personal protective safety equipment and clothing.
 - 6.1.1 The *OWNER* Representative shall inform the contractor, who shall then be responsible for enforcing owner's area or job rules requiring special personnel protection. Reference 1.2.
 - 6.1.2 Contractors shall see that their employees have the required proper protective equipment.
- 6.2 APPROVED EYE PROTECTION — All personnel employed by any contractor or subcontractor shall wear approved industrial strength safety glasses at all times. (Exceptions will be allowed in offices, lunch rooms and wash-rooms). Safety glasses with side shields are required when grinding, chipping or performing any job where side shields would afford protection from flying particles. Industrial strength glasses are 3 MM in thickness with heavy duty frames.
 - 6.2.1 Phototropic-type lenses are prohibited in areas where eye protection is required. (Phototropic-type lenses are defined as those designed to change in tint when exposed to varying light intensity.)
 - 6.2.2 Dow requires that anyone working with hot tar in the kettle or handling hot tar must wear safety glasses and a face shield. Also long sleeve shirts and a min. of 6" high laced boots.
 - 6.2.3 As a matter of convenience contractor may purchase personal protective equipment at his own expense from the Dow Safety Office through the *OWNER* Representative.
 - 6.2.4 All employees working in the vicinity of toxic chemicals must know where

- the nearest safety shower and eye bath facilities are located.
- 6.3 APPROVED SAFETY HARD HATS are required for all contractor work. Metal hats are not approved.
 - 6.4 All personnel shall wear air hoods, or equivalent, supplied by approved source of breathing air, when sandblasting or applying volatile or toxic material inside tanks, rooms or any other area not adequately ventilated.
 - 6.4.1 Pressurized "PLANT AIR" does not meet breathing air requirements.
 - 6.4.2 Compressor pressurized air shall be free of contaminants. Watch the air intake — watch the heat of the compressor.
 - 6.4.3 See Dow Safety Standard S-745.
 - 6.5 Lifelines, safety belts and lanyards shall be used only for employees safe guarding. Equipment will be inspected prior to use.
 - 6.5.1 Personnel must wear Coast Guard approved life jackets (these jackets must also be fire resistant) or otherwise be protected by handrails or lifelines when working over water wherein a drowning hazard exists.
 - 6.6 Personnel shall wear personal clothing and footwear that is safe and proper for a chemical plant. Certain areas in the plant require long sleeve shirts and/or other specific protective measures. Wearing of canvas shoes, sneakers or houseshoes and/or working in an undershirt, shorts or stripped to the waist is prohibited.
 - 6.7 NOISE CONTROL — Protection against the effects of noise exposure shall be provided when the sound level exceeds the permissible noise exposure as specified in federal or state standards.
 - 6.8 Asbestos Fiber Control

- 6.8.1 Secure a copy of the O.S.H.A. asbestos standard and learn the *shall* requirements then comply accordingly.
 - 6.8.1.1 The allowable 8 hour average exposure level is 2 fibers, longer than 5 microns, per cubic centimeter of air.
 - 6.8.1.2 See Dow Safety Standard S-140, Also Dow Environmental Std. E-500.
 - 6.8.1.3 Counsel with your *OWNER* Representative when help is needed to understand the requirements.
- 6.9 Urethane Sprayed Jobs.
 - 6.9.1 The Applicator must follow all the requirements under the Health Stds. applicable to Urethane application.
 - 6.9.1.1 A 50' radius must be signed and barricaded.
 - 6.9.1.2 The applicator must wear adequate respiratory protection at all times.

7.0 Fire Prevention

- 7.1 The only acceptable standard on all job sites shall be excellent housekeeping.
 - 7.1.1 Accumulation of trash, oily rags, combustible materials and similar fire hazards of any nature will not be permitted.
- 7.2 Smoking on Dow property is prohibited except where specifically permitted by Dow Chemical U.S.A. Smoking permits for contractor facilities are issued by plant protection thru the *OWNER* Representative.
- 7.3 The area around welding operations must be kept free of hoses and flammable or combustible materials and similar fire hazards of any nature will not be permitted.

- 7.3.1 Hot work permits. (Ref. 12.2)
- 7.4 Canvas or paper shall not be used as tarpaulins or drop cloths on Dow property.
- 7.5 There shall always be an adequate clearance of unrestricted passage to fire hydrants, extinguishers, hose racks, control valves, and other emergency equipment.
- 7.5.1 All alleys, driveways, roads, transformers, and power poles, shall be kept clear of material and equipment.
- 7.5.2 All stairways and elevator approaches shall be kept clear.
- 7.6 Heating equipment for construction purposes shall be approved by the *OWNER* Representative prior to use.
- 7.6.1 Electrical heating units shall be used for offices, lunchrooms, change rooms.
- 7.6.2 Under no conditions will a solid fuel salamander be permitted.
- 7.7 Temporary storage of flammable materials must be approved by the *OWNER* Representative. See Safety S-620.
- 7.7.1 Flammable type material such as gasoline, oil, paints shall be clearly identified, separately stored and kept clear of work areas. Appropriate signs must be provided in storage areas.
- 7.7.2 All cans, five gallons maximum, used for transporting or transferring gasoline or fuel must be labeled by Underwriters' Laboratories or Factory Mutual Laboratories as approved safety cans with internal flame arrestor properly installed and closers operable.
Note — The word Fuel does include No. 2 Diesel Fuel
- 7.7.3 Class zero flammable liquid storage tanks must be grounded. Filler hoses must be bonded from the tank to the

dispensing nozzle. Vehicles dispensing fuel must have a static ground. A properly installed flame arrestor should be on the tank vent if the flash point is 80 degrees or lower.

- 7.7.3.1 A shut-off valve is required on the outlet of storage tanks.
- 7.7.3.2 Equipment fuel tanks must not be filled while the engine is running.
- 7.7.3.3 Storage fuel tanks shall have the content identity stenciled on the tank shell. Letter size shall be a minimum of one and one half inches (1½").
- 7.7.4 Welding or any spark or flame producing operation must be stopped within 25' of the refueling operations.
- 7.8 Welding rod cabinets presenting a fire or safety hazard will not be permitted. Cabinets or fireproof materials equipped with strip heaters are recommended. If light bulbs are used, they must be securely guarded with adequate spacing in regard to the cabinet.
- 7.9 Volatile materials (such as flammable paint and coatings) shall not be applied near an open flame or welding operation. If such material is to be applied in a vessel, or other poorly ventilated, confined areas, only explosion-proof lights, non sparking tools and connections shall be used.
- 7.9.1 Welding shall not be done within 25' of spray painting or coating operation.
- 7.9.2 Mixing of materials containing flammable solvents must be mixed using an air driven motor or an explosion proof electrical motor.
- 7.10 Welding or cutting torches and hoses must not be connected to cylinders when stored in any enclosure or building. When work is shut down and equipment is unattended, close all valves

at the MAPP and/or acetylene and oxygen cylinders, bleed lines and check five minutes later for pressure-build-up, disconnect hoses at the torch, remove hoses from cylinders and store. Ref. 8.7.2.

- 7.10.1 Cylinders must be equipped with valve caps when moved or stored.
- 7.10.2 All hose lines must be in good condition.
- 7.10.3 Backflo preventors must be used on all oxygen and acetylene supply hoses to prevent a backflash fire.
- 7.11 Cylinder Regulators and Compressed Gas Cylinders. See Dow Standards S-622 and S-623.
 - 7.11.1 Compressed gases including air must not be used for cleaning of clothes, the body or work areas. Oxygen must not be used for pressure testing purposes.
- 7.12 Adequate ventilation must be provided when cleaning agents are used. Only use non-flammable cleaning agents. Extra precaution is needed when chlorinated solvents are used in presence of hot surface or ultraviolet rays (welding).
- 7.13 Do not dump flammable, corrosive or toxic materials into PLANT SEWERS. Ref. Introduction Paragraph 6.
- 7.14 Electric welders shall not operate unattended. It is mandatory to shut the unit down at the close of the work hour. Ref. 8.6.2.3.

8.0 Machinery, Cranes, Tools And Equipment (Ref. 5.0)

- 8.1 The safe designed capacity of any tool or piece of equipment must not be exceeded. Tools and equipment must not be modified in any manner that reduces the original factor of safety or capacity.
 - 8.1.1 Under no circumstance shall contractors use inadequate tools or equipment.

- 8.2 All contractor-owned, leased or rented equipment must be in safe mechanical working condition to render efficient service at all times.

- 8.2.1 A special permit must be obtained to cross either the river bridge or railroad overpass with a gross load exceeding posted loading restrictions. Ref. 5.5.3.4.

- 8.2.2 Equipment must be inspected by contractor supervision prior to its use on a job and periodically thereafter to insure that it is in safe working order. Special attention must be given to such items as cables, cable clamps, guards, booms, blocks, hooks, grounds, electrical cords and safety devices. For maintenance, *Equipment shall be made safe for repairs or adjustments.*

- 8.2.3 Defective tools and equipment must be tagged and removed from service immediately and if repairable, must be properly repaired before reuse on owners job.

- 8.2.4 Contractor will not be allowed to use owners tools or equipment. Do not loan contractor tools or equipment to owner's personnel.

- 8.3 Equipment with exposed gears, belts, couplings, etc., must be provided with proper guards.

- 8.4 The contractor has the complete responsibility for a safe operation when using hoisting equipment. This requires competent, well trained operators.

- 8.4.1 Suspended free swinging loads shall be controlled by the use of a tag line.

No load shall be lifted which exceeds the Manufacturer's rated capacity of the crane. When one of the following conditions prevail: the contractor shall submit in writing, an outline of the safety planning for the lift to be done

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to the *OWNER* Representative, prior to starting the lift.

- a) The load exceeds 80% of rated load chart for crane.
- b) Anytime a lift is to be made within 10 feet of or above any pipeline, power line and/or existing structure.
- c) Two booms are required to make the lift.
- d) If poles or derricks are to be erected for this specific lift.

8.4.2 Do not use rope for hoisting men, or for guard rails. Rope can become quickly damaged by acids or chemicals. Use metal, cable or wood for hoisting, guying off scaffold or for temporary guard rails.

8.4.3 Lower or securely tie down all crane booms before leaving for the night. Equipment not being used for long periods must be parked in the contractors' parking area.

8.4.4 Electrical Energized Power Line Clearance.

Safety Standard S-335 must be enforced by contractors working within the scope of this standard.

The Standard includes any work where the man or equipment will be within 10 feet of any energized overhead power line. This includes cranes, condor lifts, bucket trucks, scaffolds and any other types of elevated work platforms.

When a 10 foot clearance cannot be maintained you must obtain a clearance in writing from Dow's Electrical Distribution and Maintenance people to work closer than 10 feet. Call 6-3399.

- 8.5 Pressure vessels used for construction, including fired boilers, must receive an annual hydrostatic test equal to 1½ times the maximum allowable working pressure of the unit as well

as a thorough visual external inspection. At this time, safety and relief valves, properly sized and set for the vessel, will be checked for freedom of operation.

8.5.1 Written certification of compliance to the rule will be furnished to the *OWNER* Representative on demand. Plastic encapsulation and attachment to the certified equipment is recommended.

8.6 Electrical requirements for contractor-owned equipment (Trailers, Shanties, Power Centers, Tools, Etc.)

8.6.1 All services and branch circuits shall be installed per the National Electrical Code. Electricians shall perform all electrical work.

a) The contractor shall provide the service ground for construction site power. Driven ground rods shall be ¾" x 10'. (Underground reference dwgs. are required before driving rods.)

b) Service cables shall be 600 V type SO, W or G with ground and in continuous lengths without splice. Cables passing through work areas shall be covered or elevated for protection and arranged to eliminate tripping hazards.

c) Receptacles (120 V, 15 & 20 amp, single phase) used for hand tools shall be protected by a Ground Fault Circuit Interrupter or an assured Equipment Grounding Conductor Program.

8.6.1.1 Grounding & Bonding

a) The non-current-carrying metal parts of portable and/or plug-connected equipment shall be grounded through three wire cords and plugs.

b) Portable tools protected by a UL approved system

of double-insulation need not be grounded.

- c) Exposed non-current-carrying metal parts of fixed electrical equipment including motors, transformers, generators, welders and other machinery shall be grounded.
- d) The skin of metal buildings and trailers with electric service shall be grounded.

8.6.1.2. Cords & Connectors for Portable Electrical Devices

- a) Extension cords shall be Hard-Service with a separate equipment grounding conductor. (Flat cords are not acceptable.)
- b) Temporary lights shall be equipped with multi-conductor cord, (multi-conductor cable or single-conductor wires) lamp sockets, lamp guards and proper connecting devices. The assembly shall be installed where it is not subject to mechanical damage and shall be suspended by devices that are designed for that purpose. The entire assembly shall meet OSHA and NEC requirements.
- c) Plugbody screw bases shall not be used.
- d) Cord connector bodies and caps shall be the grounding type.

8.6.2 When arc welding is being done the following rules must be adhered to.

8.6.2.1 Hot work permit shall be obtained prior to starting the machine. Reference 12.0

8.6.2.2 All engine driven machines shall be set up outside of buildings.

8.6.2.3 At the end of the work day (period) the safety switch for electric power supply (primary supply) shall be in the off position. Ref. 7.14

8.6.2.4 Primary supply cables are to be kept separated from welding leads.

8.6.2.5 All cables are to be supported or covered so as not to interfere with the safe passage of workers and to prevent damage to cables.

8.6.2.6 The ground return electrode shall be attached directly to the immediate work to prevent the flow of objectionable currents thru structures & equipment.

8.6.2.7 When coupling cables use insulated cable pressure connectors. Other methods require the approval of OWNER Representative.

8.6.2.8 Welding cable terminals, lugs & connectors shall be insulated and/or protected to prevent making electrical contact with employees or conducting objects.

8.7 Gas Welding and Cutting

8.7.1 Gas welding and cutting operator

8.7.1.1 Hot work permit is required. Reference Section 12.0

8.7.1.2 The operator should wear

eight inch high safety shoes or spats as required by the contractor.

- 8.7.1.3 The operator shall wear safety glasses under cutting goggles.

8.7.2 Gas welding and cutting equipment.
Ref. 7.11

- 8.7.2.1 When gas and oxygen cylinders are lifted by hoisting equipment, a basket, a cradle, or similar handling device must be used. Slings may be used only if the cylinders are specifically equipped for such handling. Cylinders must not be lifted by the valve protection caps.
- 8.7.2.2 Compressed gas cylinders must be stored in an upright position and safely fastened to a support. Cylinder valves must be capped.
- 8.7.2.3 Compressed gas cylinders must be stored out of doors.
- 8.7.2.4 Compressed gas cylinders when in use shall be in an upright position and properly fastened to a support or cart.
- 8.7.2.5 Regulators and gauges shall not be attached to cylinders when not in service.
- 8.7.2.6 When in service every effort must be made to protect the regulators and gauges from damage.
- 8.7.2.7 Regulators, gauges and torches shall be removed and stored in a locked storage.
- 8.7.2.8 Welding trucks may transport cylinders with gauges

attached *only in the job site area*. The cylinders must have gauges removed & caps installed for travel on any Dow roadway. The cylinders must be mounted & secured in racks designed to hold them in place on the truck.

- 8.7.2.9 Welding carts may be moved with cylinders that have gauges attached *only in the job site area*. Transportation of the cart in or behind a vehicle on a Dow roadway requires that the gauges be removed & caps put on the cylinders.

- 8.8 Loose clothing must not be worn while working around operating machinery.
- 8.9 Rollover protective structures (roll-over bars) are required for material handling equipment. This includes the following types of equipment: all rubber-tired self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural & industrial tractors, crawler tractors, crawler-type loaders, & motor graders, with or without attachments, that are used in construction work. This requirement does not apply to sideboom pipelaying tractors. For more information see OSHA Part 1926.1000.
- 8.10 Hose connectors and adaptors shall be of a standard manufacture and used only for the type of service intended.
- 8.10.1 In order to insure positive locking at all times, connectors must be in good condition and not abused. Sandblast hose connections shall be the safety lock type which prevent accidental disengagement.
- 8.10.2 The air supply valve shall be shut off and air pressure on pneumatic tools must be bled down before tools are disconnected from air supply.

8.11 Powder-Actuated Tools shall be approved for use on Dow property.

8.11.1 "Approved Tool" means a tool meeting the requirements of the state of Michigan "General Safety Rules and Regulations for the Construction Industry" and acceptable to the *OWNER* Representative. A "HOT WORK PERMIT" is required for operating the tool.

8.12 Tools used to process mineral items, non-metallic, (where there could be a potential health hazard) shall be of a design to control dusts or vapors. These tools shall be approved by the *OWNER* Representative. An example might be a brick saw that runs with a dry cut.

8.13 Vehicle-Mounted or Support Work Platforms (Aerial Lift Units)

8.13.1 Types of powered vehicle-mounted aerial lift units used to elevate personnel to a job site above ground elevation.

- a) Bucket trucks
- b) Aerial ladders — except fire fighting equipment
- c) Powered work platforms or equivalent
- d) Vertical towers
- e) Forklift platforms
- f) Crane suspended platforms

8.13.2 Contractor shall acquire a copy of a Dow Safety Standard S-630 and use aerial lift units that meet the rules of this standard and the American National Standard for Vehicle-Mounted Elevating and Rotating Work Platforms ANSI 92.2

8.13.3 Aerial lifts (condors, giraffs, JLG's) etc. — self-propelled cannot be driven over the overpass or through the tunnel.

8.14 Wood Piling

8.14.1 The contractor shall use driving equipment commonly used in standard driving operations. The contractor shall have a written set of safety "key points" pertaining to the safe operation of his equipment. All equipment and safety "key points" shall be inspected and approved by the *OWNER* Representative before starting driving operations.

8.14.2 All contractors are required to wear long sleeves & gloves when handling any treated timber and/or piles. Gloves should be properly disposed of at the end of piling operations.

9.0 Ladders

- 9.1 No metal ladders shall be permitted on Dow property. Use only electrically non-conductive heavy duty construction ladders.
- 9.2 All ladders used on the premises of Dow shall conform to the use and application as specified in ANSI Std 814.1-3 and State of Michigan Occupational Safety Standards R408.10401 — R408.10456.
- 9.3 Do not work from the top two steps of a stepladder.
- 9.4 See Dow Safety Standard S-750.

10.0 Elevated Working Surfaces

- 10.1 Elevated working surfaces shall be designed, built and inspected by competent persons before use. Scaffold shall be patented metal scaffold. Use lumber only when metal scaffold is not feasible.
- 10.2 Makeshift scaffolds such as boxes, crates and drums must not be used.
- 10.3 All elevated working surfaces and allied equipment must be kept in good repair or remove from Dow property.
- 10.4 See Dow Safety Standard S-810.

11.0 Safe Work Tags

- 11.1 The following safe work tags shall be used as the job warrants:
 - 11.1.1 Danger Red Tag Ref. 11.2
 - 11.1.2 Equipment Installation Tag Ref. 11.3
 - 11.1.3 Equipment Transfer Buff Tag Ref. 11.4
 - 11.1.4 Asbestos Tags Ref. 11.5.
- 11.2 The "Danger-Red Tag" shall be used to safe guard the workman or the facility. See Dow Safety Standard S-740.

- 11.2.1 To insure that operating status of equipment is not changed while it is being used or worked on, red danger tags must be attached to the controls so that personnel will know not to use them. These tags must be used to protect personnel exposed to hazards of equipment and must be respected by all personnel. The manufacturing representative responsible for the operation of equipment or their designate must clear and tag the equipment. Any contractor personnel whose safety could be endangered while working on tagged equipment must affix their tag.
- 11.2.2 The "Danger Red Tag" "Do Not Operate or Use this Equipment" is red with white lettering furnished by "Dow".
- 11.2.3 The responsibility for administering the Danger Red Tag regulations shall be a joint duty.
 - 11.2.3.1 The manufacturing representative or contractor who is responsible for a Plant, Shop, Laboratory, Construction Project, or any other Owner or Contractor operation shall place the facility in a safe shutdown readiness and have a properly signed "Danger-Red Tag" attached to the facility before starting any work requiring owner or contractor employees.
 - 11.2.3.2 The OWNER Representative or CONTRACTOR shall be responsible for checking the readiness of the facility or equipment tagged by the manufacturing representative or contractor and shall prepare and attach a Danger Red Tag to the work prior to starting the job or to perform

necessary maintenance to the equipment.

- 11.2.3.3 At the discretion of the *OWNER* Representative, locks and/or blanks should be used on valves and switches in addition to, but not replacing red danger tags.
 - 11.2.4 The only people permitted to remove a Danger Red Tag are the people who attached the tags or their authorized representative as specified on the tag.
 - 11.2.5 No one shall operate or use a device to which a Danger Red Tag is attached.
 - 11.2.6 When a job or repair is completed, the contractor will remove their tags. The manufacturing representative will remove their tags.
 - 11.2.6.1 Contractor's tags removed must be signed, dated and turned in to the *OWNER* Representative.
 - 11.2.7 Unauthorized removal of a "Danger Red Tag" or operation of a valve, switch, controlling device, and etc. that is tagged out will be a discharge type safety rule violation.
 - 11.2.7.1 Violation of the Danger Red Tag rule shall result in a disciplinary action up to and including rejection from any work on Dow property.
- 11.3 Equipment Installation Tag**
- 11.3.1 Mechanical or electrical equipment shall be tagged with the Equip. Installation Tag, form No. M-61730, furnished by Dow, to prevent operating of such equipment by anyone until items on the tag have been completed.
 - 11.3.1.1 The tag shall be fastened to the start-stop control at the motor by the contractor.

- 11.3.2 The tag provides for certification by contractor that the equipment has been checked for lubrication, rotation, alignment, fuses, and thermal elements.

- 11.3.3 After all signatures, contractor shall move tag from the start-stop control to the starter switch handle to indicate the equipment is ready for operation by Dow.

11.4 Equipment Transfer Buff Tag

- 11.4.1 Used vessels to be moved shall be tagged with the Equipment Transfer Tag, form No. 5511 furnished by Dow, properly filled out by Dow personnel on the front and back. See Dow Safety Standard S-720. The equipment Transfer Tag is the communications link between the manufacturing representative and the contractor. It shall be completely filled out to alert employees to any hazards while handling and working in or on the equipment. Do not remove the tag.

11.5 Asbestos Tags

- 11.5.1 All asbestos removed from bldgs. or pipelines in Dow must be put in 4 ml. plastic bags tagged with an asbestos tag or sticker before being taken to the Dow landfill.

12.0 Safe Work Permits

- 12.1 The following safe work permits will be issued as the job warrants:

- 12.1.1 Hot work and vessel entry permit, line opening permits — Ref. 12.2.
- 12.1.2 Occupancy of railroad right-of-way permit — Ref. 12.3, 13.2.3.
- 12.1.3 Special permit — Ref. 5.5.3, 8.2.1
- 12.1.4 Underground reference (drawing required) — Ref. 13.1.

- 12.1.5 Temporary Construction Shanty Permit — Ref. 12.4.
- 12.1.6 Roof access permit — Ref. 12.5.
- 12.1.7 Temporary Barriers — Ref. 12.6
- 12.1.8 Powerline Clearance Permit — Ref. 12.7
- 12.1.9 Electrical Hot Work Variance — Ref. 12.8
- 12.2 Hot work and vessel entry permits issued by Dow to the contractor personnel are required for all hot work & vessel entry. See Dow Safety Standard S-900. These permits are designed to provide a means of checking at the job site the safety of such jobs as, but not limited to, entering closed vessels; working on electrical gear; welding, cutting on, breaking into or repairing pipelines or vessels in operation or under pressure or that have contained hazardous materials. These permits also cover work involving the use of flame or spark producing equipment on the Dow property.
 - 12.2.1 CONTRACTOR supervisor must be in close contact with the progress of work as well as communicating with the OWNER Representative for up-to-date status of operations. Further, contractor supervision must be certain that all personnel involved are informed as to specific procedures and changes in the situation.
 - 12.2.2 Hot work and vessel entry permits are to be initially requested through the CONTRACTORS' supervision and issued by the OWNER Representative or facility manufacturing representative.
 - 12.2.3 CONTRACTOR supervision must give a careful and complete description of the work to be done to the Dow person issuing the hot work or vessel entry permit.
 - 12.2.3.1 Where a job presents a haz-

ardous situation due to chemical, mechanical electrical, temperature or gross exposure, it is mandatory that a written safe job procedure accompany the hot work or vessel entry permit. This procedure is to be signed by the OWNER Representative, MANUFACTURING Representative, and the CONTRACTOR, who thereby agree that the procedure allows the job to be done safely.

- 12.2.4 It is the responsibility of the contractor to ensure that the directions restrictions noted on the hot work or vessel entry permits and safe job procedures must be carefully followed.
- 12.2.5 A hot work or vessel entry permit must be reissued for a job if there is evidence that conditions have changed subsequent to the issuance of the original hot work or vessel entry permit.
- 12.2.6 Permits are normally valid only for the shift issued. By mutual consent of the parties involved, permits may be issued for longer or shorter periods of time.
- 12.2.7 The contractor may request hot work or vessel entry permits for his own protection. Safety checks by the owner for dangerous gases or chemicals should be requested through the OWNER Representative when there is any uncertainty.
- 12.3 A safe work permit shall be obtained to do any work within 9'-0" of the center of railroad track or over or under the railroad right-of-way. The Dow railroad department shall issue the permit and derailer-sign to the OWNER Representative.

Reference 12.1.2 See Dow Safety Standard S-760.

- 12.3.1 No obstruction of any kind whether permanent or temporary, is permitted within 9'-0" horizontally from the center line of any railroad track and within 22'-6" vertically from the top of the rail.
- 12.3.2 The safe work permit shall specify the use of derailer-sign.
- 12.4 A placement permit must be obtained thru your *OWNER* Representative to locate any temporary facility, such as lunchroom, shower trailer, fab area, etc. on Dow property. Smoking permits may also be obtained thru your *OWNER* Representative after facility is set up & approved. Ref. 7.2
- 12.5 A safe work permit shall be obtained to do any work on the roof of an existing manufacturing facility. See Dow Safety Standard S-735.
 - 12.5.1 A job planning roof access permit is to assure workmen complete knowledge of roof and deck conditions and to specify precautionary methods to be employed while working in the area.
 - 12.5.2 is the equal and joint responsibility of plant supervision and contractor personnel entering the roof area to observe the permit requirement.
- 12.6 Temporary barrier permits shall be required from Plant Protection to completely barricade a plant street, service drive or alley. See Dow Safety Standard S-700.
- 12.7 Temporary Clearance permits shall be required from Dow's Electrical Distribution and Maintenance people when work must be performed closer than 10 feet to any electrical energized distribution lines. See Dow Safety Standard S-335.
- 12.8 The Electrical Contractor must obtain an electrical hot work variance before performing any electrical hot work. See Safety Std. 340. The Contractor's electrical supervisor will be responsible for reviewing the proper work procedures and supplying the protective

equipment needed to perform the necessary electrical hot work safely. The electrical hot work variance will be issued through the *OWNER* Representative.

13.0 Excavation-Barriers-Devices To Penetrate The Earth

- 13.1 When excavations and penetrations of the earth are to be performed approval must be obtained from *OWNER* Representative via using current to date drawings stamped "Underground Reference Drawings". Ref. Dow Safety Standard S-800.
 - 13.1.1 The purpose of these prints are to show the latest known underground reference and their locations. This will not constitute permission to do machine excavation, pile driving, soil boring, pole setting, etc.
 - 13.1.2 The *OWNER* Representative shall check mark each detail of the drawing before starting work.
 - 13.1.3 Hand excavation or probing to verify location of underground lines will be required.
 - 13.1.4 Excavation shall stop immediately when any underground interference is encountered, whether or not it is shown on the drawing.
 - 13.1.5 Where a safety hazard would be created for any personnel, excavations such as ditches, trenches, or bell holes shall be sloped sufficiently to prevent cave-ins or slides. If sloping is impractical, shoring shall be used in cases whenever the vertical dimension exceeds four feet.
 - 13.1.5.1 Personnel removing shorings after completion of work must not be in the bottom of the excavation.

13.2 Barriers

- 13.2.1 Contractors shall provide temporary substantial guardrails, signals, flagmen, or other appropriate warning devices to protect personnel near any hazardous operation or excavation. Floor openings, open trenches, excavation, etc., shall be covered when barriers do not provide protection to personnel.
 - 13.2.1.1 Barriers must be sufficiently marked in order to be visible day or night.
 - 13.2.1.2 Notify the *OWNER* Representative at least one day in advance when placing barricades that will detour traffic. See Safety Std. S-700.
- 13.2.2 Warning signs on barricades shall be used to restrict employees from entering areas when overhead work is in progress.
- 13.2.3 Railroad Derailer-sign
 - 13.2.3.1 See Dow Safety Standard S-760.
 - 13.2.3.2 Safe Work Permits requirements reference 12.1.2, 12.1.3
 - 13.2.3.3 In locations where strictly temporary loading or unloading operation of railroad cars are to be undertaken, portable derails shall be used by personnel engaged in these operations to prevent overrunning of the cars by a train.

14.0 Radiation

- 14.1 The contractor shall obtain written permission before bringing any radiation producing equipment on to the Dow property.

- 14.1.1 Radiation producing equipment is any equipment which can produce injurious amounts of emissions of Alpha or Beta particles, gamma or X-rays, or neutrons. For example, X-ray machines, electron microscopes, accelerators, or sealed radioactive sources and Laser equipment.

- 14.1.2 Industrial hygiene must be notified thru the *OWNER* Representative when contractors are working with radiographic sources on Dow property.

- 14.1.3 See Dow Safety Standard S-477.

- 14.2 All Dow, state and/or federal laws governing use, storage or handling of a radiation source must be complied with.

- 14.3 The contractor who is responsible for the job shall notify the *OWNER* Representative as to the name of the company who will do the radiography & his proposed time of arrival. The *OWNER* Representative relays this to the contractors gate & the welding center. When the radiographer arrives at the contractors gate he should identify himself as a radiographer with a radiation source & the location he is going to work. The contractors gate notifies the welding center they have arrived & the welding center will follow the work being done. A contractor radiographer check list shall be filled out in triplicate & signed by the contractor & welding engineer. Industrial hygiene is notified by the welding engineer, when the contractor has been checked in & when his work is complete. A minimum of two qualified people are required for the performance of any radiographic work.

- 14.4 In locations where a radiation source is used or stored, regulations require that it be marked with a "Radiation Area" sign. *THIS SIGN IS FOR THE PURPOSE OF INFORMING ANYONE IN THE AREA THAT SUCH MATERIAL IS PRESENT.*

- 14.4.1 Only authorized personnel shall enter

an area marked by "Radiation Area" sign.

- 14.4.2 All areas where a radiation hazard exists must be roped off and marked conspicuously by standard signs at a safe distance from the source of radiation. These signs bear the radiation symbol of magenta (or purple) on a yellow background with the words "Caution — Radiation Area."
- 14.4.3 "RADIATION AREA" signs must be removed when a radiation hazard no longer exists in the affected area.
- 14.4.4 Equipment containing a source of radiation shall not be handled, uncrated or installed without prior clearance with the OWNER Representative.

15.0 Removal of Facilities

- 15.1 This section specifically covers the removal and demolition of facilities. Due to the inherent hazards in this type of work, special care must be devoted to safe work procedures, scope understanding and communication concerning the safe clearance of the work.
- 15.2 It is not appropriate to make assumptions in any stage of this type of work. Responsibilities must be delegated only to those whose profession qualified them to make the necessary judgment and decisions that are required to assure the safest possible execution of the job. From start to finish, each person connected with removal of facilities must adopt an attitude of "Prepare For Any Possibility".
- 15.3 The CONTRACTOR shall ascertain with OWNER Representative that all lines, services and equipment have been cleaned or purged and properly cleared and tagged for safe removal. All lines (including water and steam) and equipment are to be considered hot until positive safe clearance has been obtained.
- 15.4 The pre-job safety meeting with the contractor

as covered in Section I of this manual shall devote special attention to preplanning the safety aspects of removal of facilities and a thorough check of the drawing marked "Underground Reference Drawings." Ref. Section 13.1.1.

- 15.4.1 The Dow "Removal Survey Form" shall be completed and a copy presented to contractor by the OWNER Representative.
- 15.4.2 Steps of dismantling and loads to be handled shall be reviewed with the OWNER Representative prior to starting work. Locations for disposal of equipment and materials will be given to the contractor at this time.
- 15.4.3 When specified, it is the CONTRACTORS responsibility to see that temporary provisions are made available where safety showers, eye wash baths and fire protection are being removed.
- 15.4.4 Prior to permitting employees to start demolition operations, an engineering survey shall be made, by a competent person, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer shall have in writing evidence that such a survey has been performed. Ref. O.S.H.A. 1926.850 Subpart T. Section A.
- 15.5 For procedures that require "Safe Work Tags" and/or "Safe Work Permits" see section 11.0 and/or 12.0.
- 15.6 The use of frost balls or similar devices and explosives in conjunction with new construction and/or demolition work is prohibited, except as specifically allowed in individual job specifications.

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15.7 Material removal from a structure.

- 15.7.1 Materials shall not be dropped to any point lying outside the exterior walls of the structure unless the area is effectively protected. An effective method would be the use of a chute with a properly protected discharge or mechanical equipment to hoist or lower material from one level to another or dropping materials weighing less than 100 lbs into a caged enclosure to contain the material. Ref. O.S.H.A — Subpart T — Demolition — 1926.850.

15.8 Asbestos Removal-Handling and Disposal Requirements

- 15.8.1 The "work" covered by these specifications involves the handling of asbestos. The Contractor agrees to file notification of intent to demolish or renovate according to requirements of the Environmental Protection Agency Regulations on National Emission Standards for Hazardous Air Pollutants, Subpart B-National Emission Standard for Asbestos. The notification of start of demolition or renovation must be sent the EPA Region V, Chicago, Illinois, attention Director of Enforcement, prior to commencement of the work. The Contractor also agrees to follow all specified procedures indicated in the afore mentioned document to assure no visible emission of asbestos will occur to the outside air. A copy of the notification will also be sent to the State of Michigan Air Pollution Control Division, Michigan Department of Natural Resources, Stevens T. Mason Building, 8th Floor, Lansing, Michigan 48926.
- 15.8.2 The *OWNER* Representative will review data pertaining to Dow prior to the Contractor's notification to Federal and State Agencies. Written

notification to the *OWNER* Representative stating that government notifications have been made, will be required before the work is started.

- 15.9 Some electrical & hydraulic devices may have oils which contain PCB. See *OWNER* Representative for proper disposal.

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16.0 Reference Material For Contractor Safety

- 16.1 Code of Federal Regulations. Title 29, Part 1926.
- 16.2 General and special conditions in construction contract documents. Dow Chemical U.S.A.
- 16.3 Guiding Principles For a Contractor Safety and Loss Prevention Program. Dow Chemical U.S.A., Midland, Michigan.
- 16.4 General Safety Rules and Regulations for the Construction Industry Construction Safety Commission, Bureau of Safety and Health — State of Michigan.
- 16.5 Manual of Accident Prevention in Construction. The Associated General Contractors of America, Incorporated.
- 16.6 Dow Chemical U.S.A., Michigan Division Safety Standards.

After reading this book, sign and return this page to: Contractor's Gate, 815 Bldg.

This Certifies:

That I have in my possession a copy of "The Michigan Division General Plant Safety Rules and Procedures Manual For Contractors", Dow Chemical U.S.A. I have read and understand same.

I agree to abide by the rules and assist in every way possible in making these rules and regulations effective.

Signed:

(Employee's Signature)

(Date)

(Contractor Company)

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