

## 00701 Environmental, Health, and Safety

### Part 1: General

- 1.01 The number one priority in design work at NC State University is to provide a building design which does not compromise the short or long term safety and health of university employees, students, and guests, result in property damage, and complies with all pertinent environmental requirements. This section provides a set of checklists of key emphasis items, some general health and safety concerns that need to be conveyed through bid documents, and a brief listing of processes where hazardous materials are used that require special attention. Additional detail on electrical and mechanical installations, critical to employee health and safety, are contained in other sections of these design guidelines.

### Part 2: Design Guidelines - Environmental

- 2.01 A project may require reviews, approvals, and/or permits from multiple local, state, and/or federal agencies and their sub-units. The method of determining these requirements is provided in the NC State University Environmental Management Plan. An annotated version of the methodology is provided below.
- 2.02 All environmental permit-related activities, surveys, and testing (except geotechnical for structural purposes) will be coordinated through the Environmental Health and Safety Center's Environmental Affairs group.
- 2.03 The following annotated methodology will assist in determining required environmental processes and approvals. Consult the NC State University Environmental Management Plan for additional information.
- ❑ Determine if the project requires preparation of environmental documentation according to the UNC-GA criteria.
  - ❑ The proposed building site must be fully characterized to identify environmental constraints and potential issues. Permits and approvals, as appropriate for the project, must be obtained prior to initiating construction.
  - ❑ Air emission sources must be included on the University-wide air permit, or accounted for if insignificant. Air emission sources must be identified and characterized (ie: boilers, chemical exhausts, engine driven generators/equipment, etc.).
  - ❑ All wastewater discharges must be identified and characterized (approximate quantity and quality).
  - ❑ Fuel oil and any other hazardous material storage tanks must be identified and characterized.
  - ❑ Approval of the stormwater system design for the project must be obtained from the Environmental Health and Safety-Environmental Affairs group.

## Part 3: Design Guidelines - Health and Safety

### 3.01 General Guidelines - Health and Safety Checklists

Condensed summaries of key safety and health concerns and considerations related to building siting, design, construction, and startup are provided below in a checklist format. These summaries are, of course, not considered to be complete, but are intended to provide those who acquire property, and design and construct buildings with a consolidated listing of university safety and health “hot buttons”. References, where appropriate, to other sections of these construction guidelines are provided. Note that certain construction issues, while not a part of the building design process, need to be conveyed to prospective construction contractors via university bid documents, and are therefore included below in the building design section.

**Designers are encouraged to use these checklists as the basis for on-going communication with NC State Facilities Planning and Design staff on their status in addressing all key health, safety, and environmental issues throughout the progress of the design project.**

These checklists are listed temporally, with siting, design, construction, and start-up sections. Also included below are additional safety, health, and environmental topics, along with references to critical safety design content in other sections of this document.

### 3.02 Land / Building Acquisition / Siting – Environmental, Health, and Safety Issues

This section applies to the NC State Real Estate Division and any other University divisions who have the authority to enter into land or building purchase or lease agreements.

**Land Acquisition** - An adequate environmental assessment (see Environmental Management plan is required prior to land acquisition. This will assure that any present or future environmental liabilities are understood and factored into the final purchase decision.

**Building Acquisition** – Critical health, safety, and environmental factors must be considered prior to the purchase of buildings for employee occupancy or leasing purposes. Key questions include:

- Is building's intended use understood in advance of acquisition ?
- Are code/regulatory requirements for intended use understood in advance of acquisition?
- Does building have shortcomings when viewed against intended use requirements?
- If intended for hazardous materials use – is it presently or can be readily made compliant with NC Fire and Building Code requirements?
- With necessary renovation costs understood (see Design Requirements), is building acquisition still desirable ?
- Is location suitable for intended use (e.g. high hazard processes in congested area)?
- Does building contain asbestos or lead-containing paint? In cases where asbestos containing materials are present in the building, an asbestos management plan must be in place to prevent disturbance of materials and subsequent resident exposure.

**Leasing Arrangements**Lease non-university space for employee or student occupancy:

- Review building / space suitability questions prior to agreement.
- Check for the presence of asbestos / lead in building
- Check adequacy of fire protection and other life safety systems
- Check adequacy of building HVAC systems

Lease university space to tenants

- Tenants must be advised of NC State safety requirements via the lease
- Tenants must be advised of building / space modification requirements via the lease. (Modifications to university buildings conducted by tenants can adversely affect the safety of other tenants, disturbance of asbestos containing materials, unsafe installations, etc).
- Tenants must be advised of the presence of asbestos prior to entering into the lease (if present, mechanisms must be in place to prevent inadvertent disturbance by the landlord, their contractors, or tenants.

3.03 Safety and Health Design Guidelines for New Buildings

This section applies to all designers involved in work on NC State University buildings. The checklist includes considerations for buildings along with, where applicable, additional considerations for laboratories.

## a) General

- Determine Occupancy and Research Work – This will drive the design requirements. Functionality of the building for its intended purpose must be given primary consideration.
- Determine Applicable Codes/Regulations/Best Practice – The following safety guidelines represent a listing of key concerns for NC State University building construction. All appropriate regulations / codes should be considered along with generally accepted and state-of-the-art design practices at the time of design
- Review this Checklist - This checklist represents some key safety considerations for NC State University building design. The appropriate party (indicated) should initial that the point has been addressed. Where deviations are requested, these should be indicated and discussed with the FP&D project engineer.
- Review remainder of Design/Construction Document – It provides additional detail on points indicated and other key design considerations

Included below is subject matter that is essential for the safety and long term comfort and productivity of building occupants. These elements should be addressed carefully, and must not be compromised by competing design considerations.

Life Safety – Construction of buildings to permit adequate detection, fire and smoke control, and safety building egress is the highest priority.

Security – A key concern to university residents and guests. University requirements for building security need to be carefully considered for each building design.

Air Handling Systems – Need to be carefully designed. Assure initial design of laboratory buildings provides for future growth in supply air systems as increases in building exhaust occur over time.

Moisture Control – This is a key design component in an ongoing program to maintain a healthy and comfortable indoor air environment. Mold, dust mites and other undesirable effects will stem from poor moisture control.

Ergonomics - Consider materials handling assisting devices (cranes, hoists), lab workstation design, and office workstations, as well as other ergonomic factors which can impact health, safety, and productivity.

Access and Maintainability – All mechanical system maintenance access points, utilities, sprinkler shutoff valves and any other items needing prompt and easy accessibility for safety reasons must be planned and constructed accordingly

Labeling – Utilities, including but not limited to gas services, air supply and exhaust systems, electrical panels, should be clearly labeled.

b) Site Design and Building Envelope

- ❑ **Grading** – Consider building grading with respect to push carts (ergonomics), building egress, spill retention , etc
- ❑ **Access / Egress** – Maintain a clear, unobstructed path to and from all building doors to a safe area where evacuees may congregate. Adequate access to the building by Fire Department response vehicles must be established (consider fire vehicle size and weight in design.
- ❑ **Loading Docks** – Consider dock levelers, ramps, and similar means to accommodate the various vehicles that may be encountered. Assume access by research personnel not equipped with supply vehicles. Avoid ergonomic strain.
- ❑ **Spill retention** – Provide adequate grading, curbs, retention trenches, as appropriate to contain chemical spills during delivery
- ❑ **Lighting** – provide adequate exterior lighting for security. Provide security “blue lights” as appropriate
- ❑ **Exterior Walls** – Adequately sealed / insulated to prevent moisture infiltration or condensation
- ❑ **Air Intakes** – Adequately separated from building exhaust discharges and external sources of pollution
- ❑ **Safe Roof Access** – consider direct access to roof (elevator) . Provide for roof edge protection – install railings or suitable tie off points on roof for worker fall protection
- ❑ **Roof and Window Construction** – Construct / Seal carefully to avoid water / moisture infiltration
- ❑ **Stairs** – Provide railings, side and center rails, according to OSHA requirements

c) Building Interiors

- ❑ **Ergonomic Concerns** – lighting, VDT locations - Provide adequate lighting for the task, layout VDT use locations to avoid glare, workstations should be ergonomically correct
- ❑ **Egress** – Exit routes, dimensions, door swings, number of exits, distances to exit, protection of routes – all must be considered
- ❑ **Emergency Lighting** – must be selected based on understanding of tasks to be performed in the area
- ❑ **Segregation of Interior Space** – Review planned research activity / code requirements for segregation of space. Segregate high hazard operations from undergraduate teaching areas. Consider the need for segregation of air handling systems..
- ❑ **Access to Mechanical Systems** – ceiling access, overhead units, utility shutoffs
- ❑ **Materials Selection** – Slow flame spread – special attention to vertical wall coverings –
- ❑ **Flooring materials** – Slip resistant surfaces / finishes
- ❑ **Shop Space** – Provide adequate shop space – plan for exhaust ventilation for welding/brazing, painting etc.

#### Additional Considerations for Lab Buildings

- ❑ **Hood layout** - Hoods must be positioned 10 feet away from lab entrances and away from main lab throughways
- ❑ **Other hazardous processes** – May require specific controls – See list of specific processes at end of this section
- ❑ **Chemical and Gas storage** – Follow CGA and OSHA requirements
- ❑ **Eating areas** – Plan to include and separate from chemical use locations
- ❑ **Offices and Lab** – Separate office space from lab space
- ❑ **Floors** - Cove or rounded corners at floor/wall interface, seamless/sealed floors/floor coverings for spill retention
- ❑ **Work surfaces** - Chemical resistant coatings / low porosity for easy cleaning / decontamination
- ❑ **Waste drains** – chemical resistant construction (e.g. glass or equivalent, no ABS)
- ❑ **In-lab service shutoffs** – Locate so they may be kept readily accessible at all times
- ❑ **Electrical outlets** – locate away from shower area
- ❑ **Drainage for emergency showers and eyewashes** – Consider and provide where feasible
- ❑ **Egress** – Consider alcoves for lab entry to allow for exterior door swing from lab while not allowing swing into corridor. Plan for a minimum of 36 inches within main aisle labs for egress.
- ❑ **Faucets** – Protect with vacuum breakers

- **Maintenance Access to “clean space”** – Above ceiling access may not be possible from the clean space – plan for adequate catwalks etc for access to all mechanical systems
- d) Emergency Control / Fire Protection
- **Smoke Control Systems** – Adequate planning of smoke control systems
  - **Smoke Detection** – Adequate provision and placement of smoke detectors
  - **Sprinklers** – All new buildings should be provided with sprinkler protection. Sprinkler details should be submitted to fire insurance carrier. Avoid obstructions to necessary sprinkler throw pattern. Provide copy of sprinkler test to NC State Fire Protection Division.
  - **Alarm Annunciation Panels** – Provided at building entrance, ready access by fire department.
  - **Emergency Power** – Adequate provision of emergency power to hazardous materials exhaust ventilation, emergency lighting, critical safety detection systems (e.g gas detection)
  - **Building Materials and Finishes** – Exercise care in the selection of coverings (carpet schedule, etc) with focus on minimal flame spread, smoke production. Minimize use of carpet, fabric, etc as vertical finishes
  - **Fire Doors** – Appropriate placement and rating.
  - **Fire and Panic Hardware** – Appropriate for the building location and use
  - **Stairwells** – Properly located, constructed, and protected
  - **Evacuation Alarms** – wall mounted audible / visual alarm stations are properly spaced and located so their tops are not more than 6 inches below the finished ceiling, and the top is not less than 90 inches above the finished floor, whichever will provide a higher installation ( to alleviate noise exposure concerns during evacuation). Units with adjustable sound levels will be utilized.
  - **Emergency Lighting** – Adequately placed and tested
  - **Fire Separation** – Room to room, lab to lab, floor to floor, room/lab to corridor segregation where required
  - **Rating of Exit Corridors** – Properly rated for hazard occupancy
  - **Penetrations** – floor, wall, ceiling penetrations sealed properly
  - **Access to Shutoffs** – building shutoffs and local (lab) shutoffs - well marked – readily accessible – no obstructions – readily visible, not concealed by landscaping – newly installed building utility shutoffs should be reported to EH&S for inclusion on emergency plans
  - **Electrical Breaker Panels** – logical layout as to area served, well marked indicating devices controlled, readily accessible to both maintenance.
  - **Fire Extinguishers** – Fire Extinguishers must be provided on the basis of the area protected and hazard class (see NFPA 10).
  - **Exits - Clearly Marked** – Adequate Number – Adequate signage (number and visibility) in exit access routes

- e) Additional Considerations for Lab Buildings- See also Section 00704
- ❑ **Segregation of HVAC (zones)** - Segregation of supply air systems may be required where high hazard materials are in use. Smoke management systems which also interact with gas detection systems may be required for certain operations.
  - ❑ **Location of additional alarm panels** – Lab alarm panels which required action by persons other than lab staff (e.g. alarms which prompt evacuation or response by safety or fire personnel) must be placed outside of the lab and reviewed for appropriate interaction with building alarm systems.
  - ❑ **Shutoffs** – Where central gas supply of flammable or oxidizing gases are supplied to labs locate a shutoff valve, labeled and color coded, at an accessible location outside of the lab
  - ❑ **Shower and eyewash** – An ANSI approved eyewash shall be provided in each laboratory where chemicals will be handled. Teaching labs shall also contain a safety shower. ANSI compliant showers may otherwise be located in hallways. Both eyewashes and safety showers shall be provided within 10 seconds travel time. Eyewashes shall be located so that it is not necessary to move through a closeable doorway or similar access restriction. Where feasible, water supply should be controlled to a temperature between 60 and 95 degrees Fahrenheit. See Appendix \_\_\_ for further detail.
  - ❑ **Gas Control Systems**- “Zoning” of air handling systems where toxic gases are in use. Ability to isolate a building section by negative pressure via remote control of air supply systems
  - ❑ **Electrical Breaker Panels** – logical layout as to area served, well marked indicating devices controlled, readily accessible to both maintenance and also to lab occupant if serving as sole means for emergency shutdown of lab power
  - ❑ **Alarm Annunciation Panels** – Provided at building entrance, ready access by fire department. Panel location must be in ”protected” area not subject to contaminated air from high hazard operations.
- f) Mechanical
- ❑ **General** – comply with NC Mechanical Code
  - ❑ **Noise** - installed equipment should not exceed 80 dBA measured 3 feet from the equipment. Any equipment expected to exceed this level needs to be identified to the FP&D project manager prior to installation. Focus on sound insulation of mechanical rooms if adjacent to office space. Focus on measures to control HVAC air handler noise
  - ❑ **Pressure Vessels** – clearly indicate on drawings with notification to Construction Management for listing, marking, and inspection
  - ❑ **Confined Spaces** – clearly indicate on drawings with notification to Construction Management for listing, marking, and inspection – plan access to equipment to avoid additional permit required confined spaces (e.g. stairs, ventilation, etc)
  - ❑ **Chillers** – Alarms installed according to university guidelines and connected to Public Safety  
SCBA is not to be procured and installed at chiller locations.

- ❑ **Freight Elevators** – Provide means for efficient transfer of heavy equipment floor to floor and to roof
  - ❑ **Lined ductwork**- insulation on duct interiors should be avoided due to avoid indoor air quality concerns
  - ❑ **Air intakes** – locate remote from sources of contamination including building, boiler, and sanitary exhaust. Where ground level intakes are provided, elevate or provide space buffer against ground vegetation, mulch, etc
  - ❑ **Air changes** – Provide ASHRAE / building code required number of air changes to workspaces with adequate outside air provision. Each office space should be provided with at least one supply diffuser
  - ❑ **Maintenance Accessibility** – This is critical to assure a functional and healthy building over the course of its lifetime. This point is heavily emphasized in various sections of the NC State Guidelines for Construction.
  - ❑ **Air distribution** – at least one air supply diffuser must be located in every area used as an office
  - ❑ **Filtration** – Provide at least 80% ASHRAE 5276 dust spot efficiency filters in the air supply. Air filters should be located downstream of the fan.
  - ❑ **Humidification** – Humidifiers should be located downstream of fans and filters. Indirect steam humidification is preferred. The use of local pan type humidifiers should be avoided.
  - ❑ **Balancing** – The system and hood balancing must be conducted by AABC or NEBB certified balancers. Hoods and other exhaust devices shall not be balanced until all HVAC construction and balancing is completed. Special planning (and funding) for air supply / exhaust balancing will be necessary for instances where staged building occupancy is planned.
  - ❑ **Labeling** – Each fan must be labeled according to section \_\_\_ with the identification of connected exhaust devices. Each fume hood and other exhaust device shall be labeled, identifying the exhaust fan serving the device as well as the other information included in Section \_\_\_.
  - ❑ **Work Clearances** – Must be adequate for ready access to fan coils, condensate pans, and other mechanical devices requiring maintenance access. Special care shall be taken to assure that architectural finishes (ceilings, etc) do not impede ready maintenance access to mechanical systems.
- g) Additional Mechanical Considerations for Lab Buildings - See also Section 00704, 15850
- Laboratory ventilation systems will be built according to ANSI Z9.5, NFPA 45, NC Building, Fire, and Mechanical Codes, and according to University specifications. The lab ventilation system must be discussed with FP&D and EH&S at the program phase of the project. Proposed deviations from these references should be discussed with the FP&D project manager prior to incorporation into design plans.
- General room ventilation (supply and exhaust) shall be provided to prevent the buildup of fugitive emissions in the laboratory. A general room ventilation system shall be designed such that the placement of supply and exhaust maximize the clearance of contaminants from the lab. Lab and hood exhaust ventilation will be continuous. Hood exhaust flow will not be modulated with changes in supply air unless approved by NC State FP&D and EH&S.

The mechanical system for any particular project shall be determined by a rational life cycle cost analysis of the options. Constant volume, VAV, or heat recovery systems may all be acceptable, if use, economic, and safety factors favor a specific system. The designer shall submit an economic analysis during schematic design.

- ❑ **Commissioning** – Will be planned at the program phase of the project for buildings where extensive HVAC and exhaust work is planned.
- ❑ **Supply air** – The air supply system should be equipped with a reheat coil in rooms with labs
- ❑ **Diffusers** – Low velocity diffusers will be used in laboratories where fume hoods are present.
- ❑ **Air changes** – Refer to ANSI 62-89. Generally, 8-12 air changes per hour should be provided for occupied laboratories, and unoccupied labs must have a minimum of 6 air changes per hour. Deviations from these rates must be pre-approved by NC State FP&D and EH&S.
- ❑ **Balancing** – Pressure differential to hallway. Hoods balanced by certified balancing contractor
- ❑ **Exhaust devices** – Provisions should be made for local exhaust of instruments, gas cabinets, vented storage cabinets or special operations not requiring the use of a fume hood (local capture devices). Design and construction should comply with latest version of the ACGIH Ventilation Manual
- ❑ **Pre-approval by EH&S** – Bio-safety cabinets, laminar flow chemical hoods
- ❑ Gas cabinets comply with NC Fire code section 2203
- ❑ **Materials of Construction** – Select appropriate duct, fan, sealing materials based on properties of materials to be exhausted.
- ❑ **Emergency Power** – Must be provided to exhaust fans controlling hazardous material emissions. It is typically acceptable for exhaust fans to run at 50% capacity when operating on emergency power.
- ❑ **Loss of Exhaust alarms** – All exhaust devices (fume hoods, gas cabinets, etc) will be monitored by a University approved exhaust monitor (see \_\_\_\_\_)
- ❑ **Recirculation restriction** – Exhaust air may not be recirculated from laboratories, dark rooms, or other areas where fugitive chemical emissions may be present in the workarea.
- ❑ **Discharge above roof** – Exhaust stacks must terminate at least 8 feet above roof level. Where architectural screens are provided around stacks, the stack height must be increased by 50% above the screen top to achieve the equivalent stack height needed.
- ❑ **Exhaust stacks** – rain protected by zero back-pressure design. Extend 8 foot above rooftop. Anchored, secured, and flashed according to University specifications
- ❑ **Labeling** – Exhaust fans and exhausted devices must be labeled as indicated in Section \_\_\_\_\_.
- ❑ **VAV Fume Hood Exhaust** – The default university position is that VAV fume hood exhaust will not be used without special permission. This does not necessarily

eliminate VAV exhaust systems where the constant hood exhaust is combined with the general lab exhaust. Systems should be examined on a case by case basis.

- ❑ **Gas Services** – Storage and supply systems for compressed and liquified gases comply with appropriate NFPA, ANSI, and NC State Building and Fire Code requirements. Compressed gas cylinder systems shall also meet NC State requirements listed in the Compressed Gas Safety section of the University safety manual.
- ❑ **Continuous operation** – design plans for fume hoods will consider that they will operate continuously. Fan controls for start / stop of fume hood fans should not be provided at the hood.
- ❑ **Filtration** – Adequate filtration shall be used in supply air systems with easy access for filter changes.
- ❑ **No fire dampers** – Fire dampers will not be located in exhaust ductwork which serves areas / devices where hazardous materials are used.
- ❑ **No positive pressure duct** – Exhaust ductwork within the building shall be maintained under negative pressure. Exhaust fans should be located on the building roof.
- ❑ **Perchloric acid hoods** – Must be served by a dedicated fan and ductwork with water washdown capability. Special hood and duct construction is required. See Industrial Ventilation - Section 15850

h) Electrical

- ❑ **Grounding** – All flammable liquid storage cabinets, gas lines carrying flammable gases, laser and other optical tables, and other spark producing or current transmitting metal tables or equipment must be effectively grounded.
- ❑ **Outlets** – must be provided for fixed appliances and one duplex outlet provided for each 3 feet of bench length. Outlets served by emergency power should be labeled or color coded. Outlets on fume hoods must be located outside of the hood interior.
- ❑ **GFI Protection** – GFI circuits must be provided within 6 feet of all sinks, including sinks installed in laboratory hoods
- ❑ **Labeling** – Breaker panels must be clearly labeled indicating the devices served
- ❑ **Single source of power** – Hazardous equipment should have a single source of power (e.g shutting one clearly identified and lab accessible breaker will kill power to the equipment)
- ❑ **Failsafe emergency off** – Labs which house gases requiring automatic shutoffs and class 3b and 4 laser labs will have a failsafe emergency shutoff provided at the lab entrance. See Section \_\_\_\_\_
- ❑ **Emergency power** – Provision of emergency power to lab exhaust fans, emergency lighting, gas detectors, and other critical devices must be planned accordingly.
- ❑ **Work Clearances** – Room layouts must consider working clearances around equipment . These include, but are not limited to, required front and side access to electrical panel, clearance in front of fume hoods, gas cabinets, sinks, and benchtops, as well as code required access for exitways and minimum work clearances behind equipment. Adequate work clearances around lab experimental equipment will need

to be identified by lab research staff in early stages of design and provided to FP&D for inclusion into design drawings. See Section \_\_\_\_ for additional detail.

- ❑ **Electrical Outlets** - Adequate number and distribution of electrical outlets – Adequate outlets must be provided to avoid the use (and misuse) of extension cords in labs. Careful consideration should be given to distribution / location. Cords across floors and walkways must be avoided.

#### 3.04 Safety and Health Guidelines during Construction

The following items may require consideration during construction.

- ❑ **General** – Assure contractor work conforms to 29 CFR 1910 and 1926 and the AGC Accident Prevention Manual – See section \_\_\_\_

- ❑ **NCSU Permits required for:**
  - ❑ Crane Lifts
  - ❑ Hot Work
  - ❑ Sprinkler/Smoke system impairment
  - ❑ Powder actuated tools
  - ❑ **Asbestos** - Removal, disturbance
  - ❑ **Lead** - Removal, disturbance
  - ❑ **Confined Spaces** Access
  - ❑ **Excavations / Ground Breaking**- Shoring
  - ❑ **Fall Protection** - Prevention/ procedures
  - ❑ **Pressure Vessels**
  - ❑ **Labeling**
  - ❑ **Documentation**
    - Drawings
    - Operating Manuals

#### a) Construction Phase

- ❑ Sedimentation Control
- ❑ Confined Spaces
- ❑ Dust Control
- ❑ Progress Inspections
- ❑ Emergency Egress Routes Maintained
- ❑ Detour / closure routes identified
- ❑ Safety Contact Identified
- ❑ Hazardous Materials Storage / Use

- MSDS –Material Safety Data Sheets should be readily available for all chemicals used on the
  - NC State job site. The MSDS should be kept in the job office at the site and kept on file at the Contractor’s office.
  - Hazardous Materials Disposal
  - Storage of Contractor Equipment
- b) Commissioning Phase
- Balancing of Exhaust Systems
  - Leak Testing of Gas Supply Systems
  - Testing of Alarm Systems
  - Testing of Gas Detectors
  - Testing of Exhaust Control Systems (e.g. VAV, etc)
  - Emergency Equipment – generators, shutoff devices, etc
- c) Startup Phase
- Use of Building Occupancy Checklist
  - Special Cases -Phased Occupancy
  - Pressure Vessels / Confined Spaces – labeling / reporting
  - Markings / Labels
  - Operation / Maintenance Manuals