



**NORTH DAKOTA STATE UNIVERSITY
FACILITIES MANAGEMENT
DESIGN STANDARDS**



NORTH DAKOTA STATE UNIVERSITY FACILITIES MANAGEMENT DESIGN STANDARDS

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NORTH DAKOTA STATE UNIVERSITY FACILITIES MANAGEMENT DESIGN STANDARDS

1. INTRODUCTION:

These Design Standards have been prepared to assist Architects and Engineers who have been commissioned to design projects for the University by setting standards which are in the best interest of the University. Throughout these Standards, the term “Architect”, “Engineer”, or “Consultant” is to be interchangeable with the applicable discipline required on the project. These Standards, which have been developed over a period of years, will assist all parties to eliminate problems that have developed from the use of substandard products and applications.

These Design Standards also affiliate with the North Dakota University System (NDUS) State Board of Higher Education (SBHE) Policy Manual Section 900: Facilities. The NDUS Architect’s Manual is included as Part Three of this Standard. We feel this data can be useful and advantageous to the project, Architect/Engineer/Consultant, and the institution. All the information contained in this folder is available in electronic format for Consultants use.

Because we have had problems in the past where some Consultants have not followed these standards and have left many items of importance out; we now require the Consultant to initial the line next to the section. This requirement will signify that the Consultant has read and understands the section. If an item is not included on the project and the Consultant has signed the section, the Consultant will be responsible for rectifying the problem at their cost through the errors and omissions clause of their contract.

If Consultant's do not agree with an item in the section or the whole section, they should not initial at the line and provide in writing why they disagree with that particular item. The Consultant will place an **NIA** symbol on the line if this item is not applicable to the project.

After the agreement has been initialed, return a copy to the Director.

2. COMMUNICATION:

Communication is of the utmost importance and the proper lines of communication often avoid unnecessary delays and misunderstandings.

3. PROJECT DEVELOPMENT AND DESIGN:

During this period the Architect and Engineer are required to consult with the Facilities Management Department on matters pertaining to basic systems design. Prior to assigning a room number schedule, consult with the Facilities Management Department so the schedule on the plans will be the room numbers used after the facility is occupied.

4. **BIDDING REQUIREMENT**

All bidding notifications shall be reviewed by the Facilities Management Director or Associate Director for Maintenance and Construction prior to advertisement. These notifications are to be advertised in the “Legal” section within The Forum of Fargo-Moorhead for a period of twenty-one (21) days before the date of the opening of bids. Additional notifications may be placed in a construction trade publication of general circulation among the contractors, building manufacturers, and dealers in this state, and the Builders Exchange. Advertisements shall be in compliance with NDCC § 48-01.1-03 and 05 and Part 6 of the NDUS Architects Manual.

The standard advertisement that shall be followed for bidding is supplied in Part Two, Exhibit A. The bold, italic print is to be replaced with the project information and not placed in the published notification.

5. **INSURANCE AND SAFETY REQUIREMENTS:**

Exhibit E of the NDUS Architects Manual (Part Three) outlines these requirements and are to be included within the project specifications. Contractors are required to submit a copy of their written safety program on projects estimated to exceed \$100,000. A “Waiver of Subrogation” is supplied at the end of Exhibit E and shall be included within the specifications of all projects over \$100,000. Architects and Engineers shall comply with Exhibit B, section 9.

6. **AMERICAN DISABILITIES ACT:**

Consultants shall confer with Facilities Management representatives about this law. North Dakota Century Code § 48-02-19 requires any person preparing plans or specifications for a public building provide a statement, to be filed with the North Dakota Office of Intergovernmental Assistance, that, in their professional judgment, the plans and specifications are in conformance with the American with Disabilities Act Accessibility Guidelines for Buildings and Facilities. Part Four, Exhibit A, contains this Conformance Statement.

7. **EQUALS AND SUBSTITUTIONS:**

The products and materials listed in this Standard are those that NDSU has utilized and currently requires. Any product or material that may be substituted requires prior approval by the Facilities Management Department. Within the specifications, require seven working days prior to the date of receipt of bids for review of substitutions by the Owner and the Consultant. No substitutions will be considered after the project has begun unless provided within the Contract.

8. **ENERGY CONSERVATION:**

Every effort should be made to conserve energy by providing a more efficient economical building operation. This may be accomplished through proper equipment selection, control devices for heating and cooling, recovery units, and properly installed insulation.

The University is open to other suggestions pertaining to energy conservation; discuss these with the Director.

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9. **ASBESTOS FREE BUILDINGS:**
No products or building materials used as a temporary or permanent element in the construction of a building will be allowed which have any form of asbestos containing material. Contractors shall be responsible to monitor shop drawings and product literature to verify the make-up of materials to be used in the building, and to remind material suppliers that their products must be asbestos free.

Contractors shall notify the Architect immediately of any materials which are suspected of containing asbestos, and shall not disturb or attempt to remove any asbestos containing material. The Architect will contact the Owner and inform the Owner of the Contractors observations. The Owner will obtain and provide the services of professionals skilled in asbestos removal.

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10. **SALVAGE:**
The Owner may want to salvage items from an existing building and site before it is built upon, demolished or remodeled.

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11. **SHOP DRAWING REVIEW:**
Provide the Facilities Management Department with one copy of Shop Drawings for review when forwarded to Consultant from Contractor. The Department will review each submittal and reply to appropriate Consultant if modifications need to be made; if no reply is made within two-business days from Facilities Management, then no changes should be considered.

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12. **USE OF PREMISES:**
- A. The Contractor shall confine apparatus, material storage, and the operation of the workers to limits indicated by the construction site boundaries. These boundaries are to be fenced-off by use of a chain link fence at minimum height of five feet and maintained in good condition through the completion of the project. If this confinement is not possible, prior approval must be obtained from the Facilities Management Department, via the project Consultant, before other University space is utilized by Contractor.
 - B. Smoking is allowed on Campus grounds and within the construction site. Smoking will be allowed in new construction up until the building is enclosed; enclosed will mean even when plastic is over the doorways and window openings. No smoking will be allowed within buildings undergoing renovations.
 - C. Consuming prepared foods is allowed on the construction site and within the building. If this privilege is abused, food will no longer be allowed within the building and must be consumed in a job trailer or outside the building.
 - D. Radios, tape players, compact disk players, etc. will be allowed unless interferes with classes or occupants.
 - E. Facilities Management reserves the right to halt all work on the construction site if the work is interfering with nearby facilities until that interference is corrected. Facilities Management will provide the contractor with adequate information so this condition could be avoided; however, University activities may not be interrupted.

13. TEMPORARY UTILITY SERVICES

Utility services for the construction site must be coordinated with the Facilities Management Department prior to connections being made.

A. Electrical Power Service:

Power will be provided to the site from a near-by transformer or building and will be metered with a Contractor provided meter. NDSU will read the meter and bill the General Contractor accordingly; Excel Energy will not meter nor read the meter at the site.

1. Depending on the job size, local power to the Work will be provided, without charge, to the Contractor.

B. Water Service:

Water will be provided without metering to the Work site.

C. Sanitary Facilities:

1. Contractors will be allowed to use the facilities for Work that will take place in a building with existing, operating sanitary facilities. Care must be made to keep these facilities in a clean and sanitary condition.

2. The General Contractor will be responsible to supply portable toilet facilities at the site for new construction. Near-by buildings will not be allowed unless the General Contractor has received permission from the Director. When permanent facilities have been installed in the new building, they may be used by the Contractors.

D. Heat and Steam Service:

All Work that requires heat in new construction will be the responsibility of the Contractor. Through an agreement with the Facilities Management Department, the Contractor may buy steam used from the main Campus steam distribution system. Usage of the steam will be billed back to the Contractor based on a value per thousand pounds of steam condensate measured through a Facilities Management supplied condensate meter.

E. Telephone and Fax Service:

Telephone and fax services may be provided through the NDSU Facilities Management Telecommunications department and billed to each Prime Contractor that requires a connection. Cellular phone service will be the responsibility of the Contractor.

Abuse of the Owner provided temporary services will result in the Owner adjusted expenses for those utilities to be billed to the Contractor of abuse. Prior notification will be provided to the Contractor of abuse to cease the abuse. The Owner will make the final decision on who the abuser was and the amount of wasted services.

14. CONSTRUCTION TRAFFIC AND PARKING:

Traffic routes will be as directed by the University Police Office. Contractor's parking shall be within the construction site, or as designated by the Police Office. Current construction permits must be obtained for the contractor's employees before parking on campus.

Parking in existing paved parking lots will require a fee charged to the vehicle's owner (self or company owned) in order to obtain a permit allowing the parking. General parking throughout campus requires the purchase of a "Construction Permit" by the vehicle owner.

Parking tickets will not be forgiven for parking on campus without a permit or outside the construction site boundaries.

15. PROJECT CLEANING:

The Contractor will keep the premises free from waste material accumulation, or rubbish created by the construction project. If the project is an interior renovation in an occupied building, the building may need to be cleaned daily. Consult with the Director on cleaning requirements.

Should the Contractor be negligent in this respect, the owner reserves the right to use his own forces for such cleanup. This additional cost of \$40.00 per hour will be charged back against the Contractor.

16. MAINTENANCE & OPERATING MANUALS AND AS-BUILT (PROJECT CLOSEOUT):

The Consultant is responsible for maintaining accurate AS-BUILT drawings which shall be brought up to date whenever anything is installed in a manner unlike that shown on the contract documents. Part Two, Exhibit C of these Standards contains the check-off sheet used by the Facilities Management Department for these items.

Upon completion of the project and before final payment is made, the Consultant shall transmit to the Facilities Management Department the following:

- A. Two updated specifications with addendum stapled to the front covers, two complete sets of AS-BUILT blueprints, and one disk copy set of AS-BUILT in AutoCAD “.dwg” format.
- B. Two sets of instructional operating and maintenance manuals and product information on all equipment and finish materials. Include part books on every piece of equipment that operates or has moving or electrical parts, for example: elevators, door hardware, alarm systems, etc..
 - 1. Include a complete subcontractor and supplier list containing specification section, company, contact individual, company address, and phone number.
 - a. Identify the contractor who installed the product with the same information.
 - 2. Include all warrantee information, cut sheets, and owners manual which is to include the operating procedures, product maintenance schedule, and maintenance requirements.
 - 3. A painting schedule noting all paints and stains used on the project. Designate this information by using the room number.
 - 4. Items shall be indexed according to the Construction Specification Institutes indexing system and separated by a tab system (ie: lumber 06010).
- C. A complete set of shop drawings if the complete set was not transmitted during the construction phase.
- D. Equipment operating instructions: All consultants shall set up training sessions for their respective products. Contact the Facilities Management representative to schedule the meeting times.
 - 1. A sign-in sheet shall list all owner's employees at the training function. The sign-in sheet shall be submitted to the Facilities Management representative along with the owners manuals. It is suggested that the manual be used as a reference or guide at the meetings and duration of instruction.
- E. Two copies of the 48-hour performances test run data. Mechanical section 37F.
- F. One year warrantee inspection: The respective consultants shall set up a final warrantee inspection on the eleventh month after substantial completion.

GENERAL ARCHITECTURAL STANDARDS

Exterior Conditions

1. TRAFFIC PATTERNS:
 - A. Service Entrance: Consult the Facilities Management Department concerning potential planning and future development of areas adjoining the project site. Furnish a service entrance to the building for moving equipment to, and from facility. Provide openings in buildings of sufficient size to permit ingress of the largest piece of equipment or machinery which could be needed in the future with in reason. Incorporate a study of trash disposal and/or removal. The University utilizes a containerized waste disposal pickup system. Provide interior space for storage of recycling containers/bins.
 - B. Pedestrian Traffic Flow: Study potential pedestrian traffic flow and provide ample sidewalk space. Sidewalks shall be a minimum eight feet wide adjoining the respective buildings. When two sidewalks join, provide a radius equal to half the sum of the sidewalk widths.
 - C. Vehicular Traffic Flow: Consult with Facilities Management concerning this matter.
 - D. Entrance Ramps and Steps: Ramps and steps at entrances to building should be on the interior of the facility to prevent winter hazards to pedestrians. Provide access for the disabled. Provide entrance vestibules to control building environment.
 - E. Provide power door operators on the main entrance of all accessible exterior doors. Verify push pad locations with the Facilities Management Department. A disabled individual should not have to cross the traffic flow to get to the push pad. Leave enough room in the vestibule for a wheelchair to maneuver.

Consider installing a power door operator which uses a garage door signal device to energize the operator. The signal should be compatible with other operators on campus if feasible.

2. **STORM WATER POLLUTION PREVENTION:**

Erosion control is mandatory on all construction projects to eliminate the potential runoff contamination of the storm discharge system. All Contractors are required to follow the Phase II of the National Pollution Discharge Elimination System (NPDES) which requires projects disturbing areas larger than one acre in size to apply for a storm water discharge permit, North Dakota general Permit Number: NDR 03-0000.

Projects smaller than one acre will still require the following measures to control sediment from entering into the storm water system.

- A. **Silt Fence:** Woven geotextile fabric fence with woven wire mesh backing installed along the down-slope perimeter of the site.
 - 1. Slopes longer than 75 feet on a 3:1 grade must be equally divided twice on the grade. Slopes steeper than 3:1 within 200 lineal feet of a surface water cannot be left open for more than seven days while not actively being worked without temporary erosion protection or permanent cover. For slopes 10:1 to 3:1, the time period is 14 days and slopes flatter than 10:1 can remain open for up to 21 days.
- B. **Construction Route:** Routes and traffic paths that lead from any construction site onto existing paved surfaces (roadways and parking lots) shall have an area within the route or path that will prevent vehicle tracking of sediment from the site. The area shall consist of one to three inch sized crushed rock with a fabric base. This area is to be maintained throughout the construction project and any sediment tracked onto the roadways must be removed within 24 hours of discovery.
- C. **Temporary Stockpiles:** No stockpiles are to be placed in the path of any storm water conveyances such as curb & gutter systems, ditches, trench, and manholes. Control the runoff from the stockpiles by tarping, silt fences around the base perimeter, or other effective sediment controls.
- D. **Storm Drain Inlets:** All installed storm drain inlets shall be protected until all disturbed areas with a potential for discharging to the inlet have been stabilized. Inlets are to be protected by the use of silt fence and straw bales or sandbag method.
- E. **Dewatering of Site:** Water basins on the site may not be drained directly into the storm sewer system; any site dewatering must be drained to a temporary or permanent sedimentation basin on the project.
- F. **General Pollution Prevention:** Control solid waste and debris by the use of daily trash management practices. Properly store oil, gasoline, paint, and other hazardous substances in a manner that prevents contamination of the site. Washing of vehicles are to be limited to sedimentation basins on the site, however, no engine-degreasing will be allowed on the site.

3. **LANDSCAPE AND FINISH GRADING:**

Landscape designs shall be coordinated through the Facilities Management Landscape Designer.

- A. Earth backfill compacted to 95% minimum density as per Standard Proctor ASTM D698-91 in twelve (12) inch lifts.
- B. The final slopes of the finish grade should not exceed 3:1. Retaining walls must be installed if this requirement cannot be met.
- C. Area drainage shall be connected to the storm sewer system.
- D. Rough grade level shall be twelve (12) inches below finish grade. NDSU will provide for the contractor the twelve (12) inches of top soil to bring grade to finish level.
- E. Final grading, seeding/sodding, and planting of trees and shrubs will be done by the Facilities Management Department unless otherwise noted.

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4. **IRRIGATION:**
Irrigation systems shall be coordinated with the NDSU Facilities Management landscape Designer and match the landscape design.
- A. **Water Meter:** Provide a City of Fargo acceptable water meter on the water supply line to the irrigation system. This meter is to be installed near the building water meter.
 - B. **Piping:** All underground irrigation piping shall be installed prior to the installation of plantings. Sprinkler contractor is to coordinate with the paving and sidewalk contractor the placement of PVC pipe sleeves under the paved areas.
 - 1. Piping from the building water supply to the main outside, underground sprinkler system valve shall be Type K soft copper.
 - 2. Mainline irrigation piping shall be Class 200 PVC placed a minimum 18 inches below finished grade.
 - 3. The lateral lines shall be polyethylene SDR rated.
 - C. **Controller:** Electronic irrigation controller shall be Max-Com ready with a two-wire network circuit board. Provide controller with a data line as per section “TELECOMMUNICATIONS FACILITIES”.
 - D. **Backflow Preventer:** Supply all systems with a backflow preventer on the mainline irrigation piping at intervals.
 - E. **Valve Boxes:** Properly size valve boxes to allow for ample maintenance room. Place the boxes in planting beds where possible; no boxes will be allowed in sidewalks or vehicle driving areas.
 - F. **Sprinkler Heads:** Heads shall be as manufactured by Hunter (no substitutions).
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5. **CONCRETE:**
These specifications can be found in Part Two as Exhibit D. Paving stones are not allowed.
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6. **FOUNDATIONS & BASEMENTS:**
Use poured concrete foundations avoiding block wall foundations on exterior walls.
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7. **ARCHITECTURAL SURFACES:**
All surfaces should be hard surfaced, such as, brick, stone, structural concrete, marble, etc. Exclude plastic, or other types of surfacing materials which might require replacing or refinishing in future years. With the exception of hollow metal entrances, no surfaces should require painting. Other exterior metals should be corrosion free and non-ferrous, for example, stainless steel and/or anodized aluminum. Baked enamel steel is acceptable for roof and downspout applications.
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8. **PIGEON ROOSTS:**
Prevent ledges which would encourage pigeon roosts in the design of the building.
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9. **DRAINTILE SYSTEM:**
Draintile must be installed whenever a garden level or full basement is considered. Draintile shall be placed beside the footing, not where the foundation wall meets the footing, and surrounded by no less than six (6) inches of pearock with a maximum diameter of 0.5 inch. A W. R. Grace Bituthane membrane system should be used for water-proofing all exposed wall surfaces.
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10. **INSULATION:**
ASHRAE Standard 90.1-1999 shall be followed.
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11. CAULKING:
- A. Acceptable polyurethane sealants are Tremco and Sika-flex in a single or multiple component. Acceptable silicone sealant is Lexon to be used where there is glazing installed and not where sealant will be immersed in water continuously. A closed cell PVC backer rod that is 30 to 50 percent larger than the joint width shall be used at each joint.
 - B. Install caulked expansion joints in the corners of all buildings and along the face of the buildings per the masonry institutes guidelines. No roof drains shall be placed over joints.
 - C. All exterior surfaces such as louvers, lights, outlets, etc. shall be caulked.

12.

ROOFS:

All roof levels above one story must have an access by means of hatch, door, or by another roof level.

Roof replacement projects that are more than two stories above the ground require the use of chutes to contain the debris removed. The use of cranes, forklifts, and other means that will bucket the material off the roof is acceptable.

There shall be one 20-pound fire extinguisher, type ABC, for **each** open flame, torch, or kettle that is located on the job site.

A. Membrane:

1. No. 1 grade non-reinforced Ethylene, Propylene, Diene, Terpolymer (EPDM), minimum 60-mils thickness.
 - a. On roofs with exhaust hoods that emit oils & chemicals that could damage the membrane, provide a slip sheet around the perimeter of the unit with this continuing to the nearest drain. If the roof has several units that emit these materials a suitable membrane, that is resistant to these materials, should be used.
2. All seams shall be fastened using the manufactures three-inch seam tape. Any seams with more than 0.5 inch of tape visible will be covered with manufactures six-inch cover strip.
3. Perimeter and curb fastening shall use the manufactures reinforced nailer strip, minimum six-inch wide, fastened every six inches using a one-inch fastening (batten) bar. Perimeter fastening plates are not allowed as means of securing the perimeter strips.
4. Preformed EPDM sleeves and flashing shall be minimum 60 mils thickness with manufactures stamp.
5. Avoid ballasted roofs; fully adhered and mechanically fastened roof membranes are preferred for flat surfaces. Self-adhering membranes are not allowed.
6. Membrane warranties shall be a minimum of 15 years; along with the five-year contractor warranty.

B. Sheet Metal:

1. Flashing trim and standing seam roof panels shall be fabricated of zinc-coated steel conforming to the G90 coating designation, aluminum-zinc alloy coated steel conforming to the AZ50 coating designation, or aluminum-coated steel conforming to Mil. Spec, Typ II.
2. Minimum thickness of the sheet metal shall be 24 gauge.
3. Scuppers and downspouts shall be opened faced and match the roof flashing trim color. For downspouts, utilize a colored liner with horizontal strapping four feet on center for support. Avoid placing a downspout on the north elevation.
4. Line all mechanical curbs and roof hatches with sheet metal.
5. Install 20 gauge aluminum mechanical clips on all paving blocks. Provide 24 gauge galvanized iron, continuous cee-channel edging at perimeter or all corner pavers.
6. Sheet metal warranties shall be a minimum of 20 years; along with the five-year contractor warranty.

C. Carpentry:

1. No treated lumber will be allowed for blocking. Install metal nailer strips with screws such as Carlisle's HP Fastener for wood or steel or Rawl's #14 Deck Screw.

D. Vapor Barriers:

1. Vapor barriers shall be used where high moisture content areas exist such as pools, showers, residence halls, and food service areas.
2. A minimum six mil. poly vapor barrier shall be used and should be installed to wrap up six inches on blocking and nailed six inches on-center on the blocking. Also consider the Griffolyn Reinforced vapor barrier, VAPORGuard 3 ply system by Reef Industries.

- E. Insulation:
 1. The primary insulation shall be polyisocyanurate with a 0.50 inch fiberboard top sheet
 2. Design a 0.25 inch per foot slope in all new construction
 3. Provide on new construction a minimum R-26 insulation value.
- F. Disconnects/Reconnects:
 1. Roof Drains: Drains shall be maintained at the current elevations with insulation sump to drain. Marathon drains are not acceptable for new or roof replacement applications.
 2. Plumbing/HVAC: All work requiring roof-top units and plumbing fixtures to be modified for the roof work is the responsibility of the roof contractor. All work shall be performed by a licenced contractor that has been approved by the Facilities Management department.
 3. Electrical: All work requiring any electrical and telecommunication line to be modified for the roof work is the responsibility of the roof contractor. All work shall be performed by a licenced contractor that has been approved by the Facilities Management department.

13. ENTRANCES:

All entrances, including emergency exits, are to be handicap accessible unless there are conditions that prevent the entrance from being so. Recess the entrances three feet into the building to protect the door from the elements; emergency exits and other infrequently used doors need not be.

Vestibules should be designed at all entrances. Provide adequate space between the doors that meet ADAAG requirements. Verify that the interior door can be opened by a wheelchair bound individual with the exterior door is closed behind them. All vestibules shall be heated.

Any door leading to the outside shall latch when closed.

Consult the included red binder, “**Door Hardware Specification Guideline**” for approved doors and hardware.

A. Hollow Metal Entrances:

All frames and doors shall meet National Association of Metal Manufactures specifications.

1. Frames:
 - a. Fourteen (14) gauge with a ten (10) gauge steel reinforcement bar welded internally at hinge, closure, and latch locations. “Knock-down” frames will not be allowed.
 - b. Every exterior entrance frame shall have an internal 0.5 inch metal electrical conduit installed from a junction box located at the center of the head to the center-most hinge to allow wiring to the panic device. Like conduit shall be installed from the same head location to the latch edge of the door allowing the installation of a door-ajar monitor switch.
 - c. Brush-type weather striping is to be installed where door meets frame.
 - d. After installation, grout all hollow metal frames solid with masons cement.
2. Doors:
 - a. Sixteen (16) gauge cold-rolled steel with ten (10) gauge steel reinforcement welded internally at closure location, fourteen (14) gauge continuous screw preps at hinge locations. Edges shall be continuously welded and ground smooth, tops shall be flush; putty or fillers on door edges will not be allowed.
 - b. Doors are required to have the convenience to get electrical wiring from the center-most hinge to the panic device.
 - c. Individual doors shall be three feet wide and seven feet tall (3-0, 7-0).
 - d. Doors shall be insulated with fiberglass insulation only.
 - e. Insulating glazing shall be one inch, utilizing non-flush glazing stops.
 - f. Provide a minimum six inch center stile for panic device between glazing. Match horizontal stiles on the door with the frame.

B. Aluminum Entrances:

All frames and doors shall meet the Aluminum Association, Incorporated specifications.

1. Frames:

- a. Extruded aluminum shapes, minimum material thickness shall be 0.125 inches with fully welded corners with corner brackets of extruded aluminum, fastened with stainless steel screws.
- b. Hinge side of the frame shall be reinforced with a full length 1.5 inch by 1.5 inch by 3/16 inch steel angle; the butts are to be tapped directly into the steel.
- c. Every exterior entrance frame shall have an internal 0.5 inch metal electrical conduit installed from a junction box located at the center of the head to the center-most hinge to allow wiring to the panic device. Like conduit shall be installed from the same head location to the latch edge of the door allowing the installation of a door-ajar monitor switch.
- c. Brush-type weather striping is to be installed where door meets frame.

2. Doors:

- a. Extruded aluminum shapes, minimum material thickness shall be 0.125 inches with fully welded corners with corner brackets of extruded aluminum, fastened with stainless steel screws.
- b. Hinge style of door shall be reinforced with a full length 3/16 inch by 1.5 inch flat steel bar; the butts are to be tapped directly into the steel bar.
- c. Doors are to have a minimum eight inch top rail, a six inch mid rail, a ten inch bottom rail, and 4.5 inch sides.
- d. Provide all exterior doors with a channel for wiring of electronic panic devices or locksets from the electrified hinge location.
- e. Glazing to be one inch tempered insulated glass for the exterior door; interior door to be 0.25 inch laminated interior glass.
- f. Brush-type weather striping is to be installed at the base of the door.

C. Electronic Access Systems:

All exterior doors shall be prepared for the use of card access, power door operators, and remote access systems. Provide appropriate conduit and rough-in for card (proximity) reader to be mounted near the entrance, door ajar monitor switch on the door and frame, and a proximity detector above the door on the interior side.

1. The card access used is Synergistic, Model WA-PAC, supplied by RA Security Specialists.
 - a. Communications Controller: Synergistics #CC-1065
 - b. Card Reader Controller: Synergistics #QRC-1065
 - c. Programmable I/O Controller: Synergistics #PIO-1060
 - d. Proximity Card Readers: Hughes #5350-1
2. The power door operator used is Besam 150 supplied by Fargo Glass and Paint.
 - a. Six (6) by six (6) inch activation pads are to be installed with the traffic flow.
 - b. Since all exterior doors are to latch closed, power door operator will activate panic device when activation pad is touched.
3. A panic device with a retractable latch bolt such as Yale 7100 with SquareBolt™ are recommended at these locations; electronic strikes are not allowed.

D. Final lock cores and master keying will be supplied by the Facilities Management Associate Director.

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14. WINDOWS:
- A. In air-conditioned buildings, do not provide movable sash units unless specifically necessary, such as in residence halls.
 - B. Use double pane insulated units with low-E glazing whenever possible to reduce energy loss.
 - C. Specify windows that have integral weatherstripping and thermal barriers. Provide testing as an option at the Owner's request.
 - D. Windows with an internal core of wood is to be used in historical renovation only. A dark anodized aluminum window is preferred.
 - E. Provide five percent replacement parts on all operating windows to include locks, wheels, glass frames, glass, and screened frames.
 - F. Be sure that drapes or shades are installed on south and west windows to block out hot afternoon sun.
 - G. Give window washing consideration in proposing the type of window. The University owns a washer unit capable of reaching a height of 40 feet above ground level.

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15. EXTERIOR BUILDING SPECIALTIES:
- A. Signage:
 - 1. Buildings and the departments within are identified by the NDSU supplied stand-alone green building sign.
 - 2. No logos or discipline signa is to be installed or applied to a buildings exterior.
 - 3. If lettering is to be installed, it shall be six (6) inch cast aluminum with a matte edge and clean anodized finish such as #507 Heavy Ribbon style, provided by A.R.K. Ramos.
 - B. Mechanical:

This section does not govern the implementation of exterior mechanical equipment; however, pedestrian safety shall be considered when designing elements such as steam pressure relieve systems. Cooling towers and other ancillary air-conditioning equipment will be installed at grade level. The "GENERAL MECHANICAL Standards" is to be consulted.
 - C. Lighting:

To be determined by electrical standards; refer to the "GENERAL ELECTRICAL Standards" section.

Interior Conditions

1. GENERAL:

Ceiling and floor tile, carpet, paint, wood floors, etc., must have the same batch number when ordering each product in bulk. Extra quantities of the aforementioned products shall be made available to the Owner, at five (5) percent of the facilities total use, for future use to replace damaged materials. Discontinued batches or materials will not be accepted.

2. WALL MOUNTED ITEMS:

A. Keep the floor area clear in circulation (halls-corridor) areas. Whenever possible, respective units should be recessed, i.e., drinking fountains, telephone booths, display cabinets, directory boards, and fire extinguisher cabinets, etc. All ADAAG guidelines relative to providing for the disabled must be observed.

B. The Facilities Management Department should be conferred about providing proper plywood or stud backing for present and future wall shelving, cabinets, door stops, signage, grab bars, etc.

3. DOORWAYS:

All entrances, including emergency exits, are to be handicap accessible unless there are conditions that prevent the doorway from being so.

Consult the red binder, “**Door Hardware Specification Guideline**” for approved doors.

A. Frames:

1. Hollow metal fourteen (14) gauge will only be allowed for fire rated frames. Provide ten (10) gauge reinforcement welded internally at hinge, closure, and latch locations. “Knock-down” frames will not be allowed.
2. Frames shall be prepared for one and a half (1 1/2) ball bearing butts per door.
3. Doors that are prepared for electronic access, provide an internal 0.5 inch electrical conduit installed from the head to the center-most hinge to allow wiring to the panic device. Like conduit shall be installed from the same head location to the latch edge of the door allowing the installation of a door-ajar monitor switch.
4. Prior to installation, grout all hollow metal frames with masons cement allowing space to install the gypsum wallboard appropriately.
5. All hollow metal frames shall be caulked to drywall after finish coat of paint. Caulk shall match paint color.
6. Wood frames are allowed in very limited cases and only with Facilities Management approval.

B. Doors:

1. Individual doors shall be three feet wide and seven feet tall (3-0, 7-0) unless required by the Facilities Management Department.
2. All full size doors shall be provided with one and a half (1 1/2) pair of ball bearing butts.
3. Provide each door with a vision panel and/or sidelight allowed per code.
 - a. Provide an eight inch minimum stile on doors with panic devices.
4. All wood labeled doors shall have a minimum four inch solid core wood edge on the butt and latch side to facilitate the solid mounting of hardware.
5. Doors with labeling over 20 minutes are to be 16 gauge hollow metal.
 - a. Sixteen (16) gauge cold-rolled steel with ten (10) gauge reinforcement welded internally at closure location, fourteen (14) gauge continuous screw preps at hinge locations. Edges shall be continuously welded and ground smooth, tops shall be flush; putty or fillers on door edges will not be allowed.
 1. An example of the hinge reinforcement is the Ceco's Optional Continuous Hinge Reinforcement.

4. **HARDWARE:**

Consult the “**Door Hardware Specification Guideline**” red binder for approved hardware. Hardware finishes will be determined and selected based on the project and matched to existing on renovation projects.

- A. Final lock cores and master keying will be supplied by the Facilities Management Associate Director.
 - 1. Keys for specialty items such as directory boards, cabinets, napkins dispensers, towel and fire cabinets, etc., shall be properly identified and turned over to the Facilities Management Department upon completion of the project. Key the cylinders alike for all specialty items. For example, all directory boards should be keyed alike, however, a different key is used for towel dispensers, but all towel dispensers should be keyed alike.
- B. Hinges shall be only ball bearing (BB) throughout the project. Frames and doors shall be tapped for fasteners; self-tapping fasteners will not be allowed. Fasteners, exposed either when the door is open or closed, shall have phillips heads.
- C. Locksets shall be cylindrical type with lever handle and shall be the product of one manufacturer throughout the project. Backsets are limited to 2.75 inches on all locksets, deadlocks, and latchsets. Bolt throw on pairs of doors shall be not less than 5/8 inch.
- D. Exit Devices should be surface mounted. The dogging on non-labeled doors shall be by cylinder dogging (dash 2 function). A night latch function on the panic device may be advised. Where electronic access is installed, provide an exit device with a retractable latch bolt; avoid the use of retractable strikes.
- E. Door closures shall be exposed closure type with closure mounted as inverted on jamb and arm fastened to door. Avoid the use of floor type or overhead concealed units. Thru-bolts are required when fastening to door.
- F. Magnetic door holds shall be used when individual doors are held open and are required to close due to code requirements. Connect devices to centralized Simplex alarm system. Do not use a fusible link door closures.
- G. Kickplates shall be installed on all wooden doors where applicable.

5. **GYPSON WALLBOARD:**

- A. Specify only 0.625 (5/8) inch gypsum wallboard throughout the project and require fastening the studs entire height.
 - 1. Specify high-density gypsum wallboard for all corridor, dining areas, storage rooms, and residence halls.
- B. A minimum of three coats of taping compound is needed on all walls and ceilings. Tape and compound shall be used on corner beads; corner beads shall be screwed in, not crimped. All taping compound shall be feathered out.
- C. **Notification is required prior to priming to inspect the taping surfaces first.**

6. PARTITION WALLS:

Provide washable finishes on all surfaces. On corridor walls, use either glazed brick, ceramic tile, or marble, which can be maintained with the least amount of effort. Vinyl wall covering is not allowed.

An easily cleanable, washable base material, a minimum four (4) inches high, should be installed throughout. When applying wood paneling over drywall or plaster, place joints on the center of stud and off the drywall joint to accommodate nailing.

7. PLASTERING:

A. Use lay in acoustical ceiling tile to provide better access to the building utilities. Plastered surfaces should be used in restrooms and residence halls. Suspended ceilings would be best in laboratory and office areas. Confer with the Facilities Management Department when making this determination.

B. Acoustical plaster and acoustical ceiling tile should not be within touch without the use of a ladder to avoid damage to the finished surface. Minimum height of eleven (11) feet when using this type of material on common area ceilings in resident halls. Provide proper conditions above freezing when applying plaster. Include access panels in all plaster ceiling, where feasible, to provide access to mechanical pipe, duct work, etc.

8. FLOOR SURFACES:

A. On high traffic areas, use Terrazzo™, ceramic tile, quarry tile, epoxy, or hard surface, to provide an easily maintained surface. The base material will be inspected and held responsible by and to the Consultant prior to installation to prevent cracking of floor covering due to settlement and noticeable failure.

B. In classrooms, student rooms, etc., use a vinyl composition tile and a minimum four inch vinyl base. Provide gray grout in all ceramic, slate or, quarry tile installations. NDSU will seal and coat all finished floors.

C. Carpeting is acceptable only in low traffic areas or areas where acoustics or aesthetics are important. Avoid carpet seam placement in traffic-path areas.

1. Pile shall be solution dyed with a minimum of 26 ounces is required in offices and 32 ounces in hallways.
2. Primary backing shall be woven synthetic; secondary backing shall be "Ultraloc MP".
3. All carpet shall have a tight fit against all surfaces.
4. Seam Seal all seams within the field of the carpet.

D. All floors susceptible to water, shall drain to floor drains. Indicate floor pitch on plan.

9. STAIR TREADS:

A. Service and emergency exit stairwells shall be of reinforced concrete with an abrasive strip.

1. Emergency or other exterior stairways will not be allowed in new construction projects or renovation projects. All stairways shall be contained internally within the building design.

B. Public Areas are recommended as a hard surface similar to Terrazzo with nonskid strips or ceramic tile with nonskid strips. Limited cases will allow rubber landings.

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10. **PAINTING:**
Paint includes coating system materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats. Finish color is "Pittsburgh Paint" Number 2511 or approved manufactures matched color. Facilities Management maintains a record of colors used throughout the campus which is to be complied with for renovation projects.
- The semi-gloss paint grade shall be 100% Acrylic Latex with a specular gloss (sheen) not to exceed 25-45 units at 60° Fahrenheit. Verify with MSDS that the paint contains not less then 30% solids.
- Varnish shall be a polyurethane composition for durability and quick drying periods. A compatible sealer is used on all varnished surfaces.
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11. **RAILINGS:**
All metal railing edges shall be filled with putty and ground smooth. Consult Facilities Management Department for paint product
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12. **CLASSROOM SPECIALTIES:**
- A. A hard-wearing washable surface shall be provided on walls, especially beneath instructional boards.
 - B. All white boards, chalk boards, and cork boards shall be fastened onto walls; gluing will not be allowed.
 - C. Fixed auditorium seating shall have a retractable desk top that is easily placed out of the way and a spring-loaded seat that will close automatically as manufactured by "American Seating" and "Irwin", no substitutions.
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13. **FIRE EXTINGUISHERS:**
- A. Fire Extinguisher: Provide 15 pound ABC all purpose extinguishers in each fan, elevator machine, and mechanical equipment room. Recess cabinet into wall.
 - B. In public areas, use ABC all purpose fire extinguisher. Install the fire extinguishes in recessed wall cabinets equipped with keyed locks, a break glass window, and the break glass device. Key all boxes alike. The glass shall be transparent enabling the owner to view extinguisher pressure gauge.
 - C. Be aware of computers and electronic equipment when specifying fire extinguisher systems.
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14. **VENDING MACHINES:**
When applicable, incorporate a study of vending machines and provide a vending machine area.
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15. **ROOM NUMBERS AND DIRECTORY BOARDS:**
- A. Final room identification and numbers will be provided and installed by the Facilities Management Department. The Facilities Management room numbering are the record numbers that the mechanical Building Control Unit and the electrical panels will use. Plywood backing of one foot high shall be installed with top at 5'-6" above finished floor.
 - B. Contact Facilities Management for installation locations of recessed directory boards. Use a minimum two door, three (3) foot high by four (4) foot wide directory board with locks. Match directory boards finish with the room door hardware finish.

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16. REST ROOMS:
- A. In shower and drying room installations, provide glazed block on walls with cement plaster ceiling.
 - B. Toilet and shower partitions shall be ceiling hung and urinal partitions shall be fastened to same wall as the urinal. All partitions shall use Phillip head, stainless steal fasteners; do not use security screws.
 - 1. Ceiling hung partitions shall be firmly installed at ceiling level to ten (10) inch by 10.5 weight cee-channel welded to 3x3 angle iron bracing that is firmly fastened to structure. The bottom of the cee-channel is to be at the ceiling elevation that the wallboard/plaster will cover with no gap inbetween.
 - 2. All hardware shall be standard manufactures stainless steel.
 - a. Latch and keepers shall be surface mounted, bolt-type.
 - b. Provide a pull handle on toilet side of handicap stall.
 - b. Standard manufactures stainless steel hinges may be used on steel partitions; stainless steel continuous hinges are to be used on solid-polymer partitions.
 - C. NDSU will supply liquid soap dispensers and waste paper containers. The contractor shall furnish the following restroom accessories made of stainless steel with a No. 4 satin finish:
 - 1. Surface mounted two-roll toilet paper dispensers, one per toilet stool (American Specialties Model Number 0715)
 - 2. Surface mounted dual sanitary napkin tampon dispensers, 25 cents denomination notation, one per women's room (American Specialties Model Number 0864)
 - 3. Partition mounted sanitary napkin receptacles, one per women's stall (American Specialties Model Number 0472-1)
 - 4. Surface mounted multi-fold paper towels dispensers, one per two china basins, not to include waste containers (American Specialties Model Number 0210)
 - 5. Surface mounted channel frame mirror sized to cover china basin(s) without a break

Verify current product with the Facilities Management Associate Director.
 - D. Flooring shall be a poured, seamless epoxy surface or ceramic tile.
 - E. Use a molded counter top unit with vitreous china recessed lavatory and the faucet unit(s) mounted in lavatory. Provide wall hung water closets with white elongated, open front seats, and diaphragm flush valves.

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17. SERVICE ROOMS AND SPACES:
- A. These service closets shall be provided on every floor, no more than 250 feet apart. Each building should have one custodial sink per floor. Custodial closets should not be located in or accessed through restrooms. It is advisable, though, to design the custodian's closet between the men's and women's rest rooms, with an access door leading to the common pipe chase.
 - B. Custodian rooms shall have a minimum ceiling height of eight feet. Specify bare concrete or epoxy flooring and ceramic tiled walls. Mechanical ventilation shall be electrically interlocked with light switch, providing 15 air changes per hour. Supply at least 50 foot candles of lighting in the space. Implement a self-closing door with a hold open device.
 - C. Provide the following fixtures:
 - 1. A duplex 120 volt ground fault interrupt outlet.
 - 2. A rack with mop holders for hanging a minimum of three mops and three brooms.
 - 3. Sixteen (16) inch deep shelves, sixteen (16) inches apart vertically.
 - 4. Twenty four (24) inches by twenty four (24) inches service floor sink with hot and cold water.
 - 5. Clear access of thirty six (36) inches by forty eight (48) inches is needed for a custodial cart.

_____ 18. **CASEWORK / CABINETRY:**
Manufactures who wish to supply cabinetry must be approved prior to the bid by submitting a sample that meets the requirements in NDSU Exhibit F. Consult the Facilities Management Cabinet Shop prior to specifying this section.

_____ 19. **ELEVATORS:**
Avoid the use of chairlifts if the vertical rise is above eight feet in elevation. All elevator work shall conform to ASME A17.1 Safety Code for Elevators and Escalators and ASME A17.3 Safety Code for Existing Elevators and Escalators. Follow all ADAAG requirements for car location and directions indicators.

A. Controllers shall have solid state starting, such as “Sof-start” and shall be coordinated with ShuntTrip disconnects.

B. Hydraulic jack cylinder shall be installed with a Schedule 40 PVC casing with glued cap at the bottom. Fill annular space with Union Guard 160.

C. Call stations, car stations, handrails, and other fixtures shall be stainless steel and vandal resistant fixtures.

D. Install communication system with automatic dialer to campus Police; consult with Facilities Management and Telecommunications.

GENERAL MECHANICAL STANDARDS

- _____ 1. **ACCESS TO VALVES, COILS, AND OTHER MECHANICAL EQUIPMENT:**
Provide access doors of sufficient size to all vents, balancing valves, thermostatically controlled valves, to permit future replacement of valves. Place the valves to be accessible from the access doors. Coils in Units shall be accessible to allow cleaning.

- _____ 2. **DECIBEL RATINGS:**
Specify decibel ratings on all potential noise producing equipment, e.g., fans, blowers, transformers, etc. The permissible sound level increase in occupied spaces should be specified at 4db greater when all equipment is turned on as compared to the sound level when all equipment is off.

- _____ 3. **DEMOLITION:**
All unused piping shall be removed and discarded by the Contractor where any remodeling or renovation occurs. However, all insulation shall be verified for asbestos containing material before removal.

- _____ 4. **MANHOLES:**
Manhole spacing shall not exceed 300 lineal feet. Install manholes where any line will intersect or tie into existing lines. If a 90° elbow is encountered, check with the Facilities Management Department for a possible installation of a manhole at the elbow.

5. UTILITY CONNECTIONS:

As the project nears completion, the following requirements must be met prior to connection of University supplied utilities.

- A. All valves feeding utilities into the Contractor's building area from the Owner's utilities will be opened and closed by University personnel.
- B. The contractor will, at all times, respect the use of owner supplied utilities, using them prudently. The Contractor will be responsible for the cost of utilities until a point of substantial completion is attained. This determination will be made in conjunction with the Architects and Engineering consultants.
- C. Steam return from the units will be dumped in lieu of being returned for a period of time to be determined by the Engineer in consultation with the Facilities Management Director. Contractor should determine when this will be accomplished and should submit that information to the Engineer for approval.
- D. Chilled water return from the units will also be dumped for a period of time to be determined by the Engineer in consultation with the Facilities Management Director.
- E. All strainers in piping shall be blown down and left clean when placed back in service. Valves shall be checked for tight closing.
- F. Final inspection by the University will not be conducted without prior to delivery of all air balance and performance data, plus a spare parts list, operating instructions, and equipment descriptive literature that contains complete numbered replacement parts list. Test data information will be obtained by an independent firm. The firm shall be responsible to owner. The Engineer should provide an allowance in the contract to cover this expense. A 48-hour continuous performance of all Mechanical and Electrical equipment shall be performed before final acceptance. Air flow, temperature, ampere readings, etc., shall be recorded and become the property of the University if satisfactory. If the tests do not meet the design requirements the deficiencies shall be corrected and another 48-hour test shall be run, until all corrections are complete.
- G. Post Final Inspection
The Architect shall arrange for an inspection 10 months after date of final acceptance for the purpose of work that should be corrected under the one-year guarantee provisions of the contract.

6. PIPING RUNS:

For future use main runs of piping shall utilize plugged tees instead of elbows. All plugs must be anchored and secured, but must be available for future use.

7. UTILITY MAINS:

All mains (steam, gas, water, condensate, etc.) shall be color coded and labeled indicating service and direction of flow.

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8. **STEAM DISTRIBUTION:**
Consult with the Facilities Management Department concerning the installation of a tunnel or direct buried systems. Tunnels and direct buried lines are to be covered with sufficient soil to prevent damage to vegetation above them.
- A. Tunnels shall be of minimum size four (4) feet wide by six (6) feet high inside dimension. Tunnels and vaults shall be constructed following the Concrete Specifications, Part Two, Exhibit B.
 - B. Water proof tunnel and vaults with W. R. Grace bituthane membrane. Water stop is required where a vertical wall connects with a horizontal slab.
 - C. Each vault shall have draintile with a sump pit that is piped into the storm sewer system with steel pipe (no plastic will be allowed). Grade the floor to the sump pit and ventilate all tunnels.
 - D. Provide a clear access to shut-off valves.
 - E. Direct buried systems shall be supplied by Perma-Pipe™.
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9. **STEAM PRESSURE REDUCING VALVES:**
Install Spence Type "E" pressure regulators with bypasses at mechanical entrances of high pressure distribution lines. Use cascading or step pressure operated parallel pressure reducing stations where large fluctuation in steam use is anticipated. Individual PRV's for each item of equipment are not satisfactory. Pipe the reduced pressure steam from the reduced pressure header to the items of equipment, utilizing proportional pneumatic steam control valves that have positive shut-off, fail-to-open, temperature control of medium being heated.
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10. **CONDENSATE PUMP:**
Non-electric positive displacement pressure-powered pumps such as Johnson Corporation Liqui-Mover LMV Series®.
- A. Provide stainless steel, spring loaded wafer check valves.
 - B. Provide sight glass.
 - C. Provide electronic cycle counter
 - D. Provide removable insulating jacket for the pump tank and valves.
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11. **DRIP TRAPS:**
Install drip traps before all thermostatic temperature regulating valves and pressure reducing valves, and at line's end.
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12. **EXPANSION JOINTS:**
Externally pressurized expansion joints with stainless steel bellows, flow liner, and flanged connections as manufactured by Metraflex Metragator™.
- A. Place expansion joints within a vault.
 - B. Expansion joints are to be covered with a removable insulating jacket.

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13. **CONDENSATE METER:**
Each new construction shall have a condensate meter installed for both selling back steam to the contractor and for monitoring steam consumption after building occupation. Specify only units that meter condensation usage by flow through coils that are excited with pulsed direct circuit current that establishes a magnetic field. Units specified shall be ABB Automation, Magnetic Flowmeters MINI-MAG® , Series 10D1475J with ABB Automation, Magnetic Flowmeters Signal Converter, Series 50XM1000N.
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14. **PIPING MATERIALS:**
Use only best quality piping materials; no DWV nor other plastic pipe is acceptable. If copper is used for drain lines, use only Type "L" hard copper tubing, not DWV weight copper. Condensate return lines shall be only extra strong, black, genuine wrought iron. Hot or cold water Type "L" hard copper using 95-5 solder or silver solder. Refrigeration tubing shall be Type "K" hard copper silver soldered.
- A. Pipes penetrating exterior walls must be installed to prevent breakage when building settles. Use metallic pipe for five foot minimum distance outside building perimeter. Prefer spools cast in walls with hubs on both sides or packed sleeves.
 - B. In general, pressure piping should not be placed under concrete slabs within buildings. Where such placement is unavoidable, the piping must be run in a so such that leakage can be channeled off without pressurizing the underside of the slab.
 - C. No piping should be run in concrete floors with the exception of waste piping. No piping should be buried under the lowest floor level with the exception of wasted piping.
 - D. At every point where piping and duct work penetrate a floor slab, except slabs on grades, a cast-in sleeve or other curbing at least 1" high must be provided so that any leakage of water or liquids must be at least 1" deep in order to spill through floor penetrations.
 - E. All air-unit water control valves must have flanges or be set in unions for easy removal.
 - F. Use careful consideration when running sump pump water from a building. The water should not run over any existing pedestrian walks or driveways. Provide proper slope away from the building for drainage.
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15. **FLOOR DRAINS:**
Design shall include enough slope to provide for proper drainage. This is especially important if ceramic floor tile is to be installed.
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16. **ACCESS TO PLUMBING SUPPLY:**
Each restroom plumbing fixture supply and drain line tree shall be accessible within a chase, with access to chase through a full height door. Install the chase with a minimum width of two (2) feet.
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17. **ACCESS TO PIPE LINES:**
All pipe lines should be accessible by use of tunnels, chases, crawl spaces, accessible ceilings, etc.
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18. **CLEAN-OUTS:**
Be liberal with clean-outs in sewer lines within buildings. Clean-out plugs should be set with a suitable lubricant to facilitate removal.
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- _____ 19. **PLUMBING FIXTURES:**
- A. Wall hung water closets with white seats, Sloan diaphragm flush valves. Install automatic flush valves that are hard wired to building electrical system.
 - B. Vitreous china lavatories supplied by American Standard or Kohler.
 - C. Delta or Moen commercial grade faucets with a single lever handle on all lavatories and sinks or approved equal.
 - D. Delta shower valves or approved equal.
 - E. Recessed electric water coolers, Halsey Taylor, constructed of stainless steel.
- _____ 20. **PIPING AND VALVE IDENTIFICATION:**
Paint and all piping label with paint or waterproof ink. Label all valves with tags. Furnish schedule of valves and tags -framed. Paint all piping in equipment rooms to University color code as identified in Section 15.
- _____ 21. **HOSE BIBS:**
Hose bibs should be provided in all toilets/machinery spaces, and at 100 ft. intervals for exterior use (frost-proof type). All bibs should be key operated with inside valve control.
- _____ 22. **DOMESTIC WATER HEATING:**
- A. Water heaters should be located in a heated area as close as possible to the larger demand sources.
 - B. Insure insulation is installed on all hot water lines and heaters.
 - C. Water saver shower heads should be installed in all shower rooms.
 - D. Use water saver aerators in all sinks and wash basins.
 - E. Install temperature control valves (mixing valves) on hot water lines where showering facilities are involved.
- _____ 23. **VALVES:**
Provide full-port ball valves provided by Apollo or Combraco, on all water lines up to two inches in diameter whenever possible. High pressure steam valves shall be Class 150 cast steel supplied by Velan or Crane.

24. PIPE AND EQUIPMENT IDENTIFICATION:

Contents and direction of flow on all piping shall be identified by stenciling. Stencils on piping up to 1-1/4" size shall be 1/2" high. Stencils on larger piping or pipe covering shall be 1" high. Stencils shall be applied at all points where pipes pass through walls, at each change of direction and on each 15 feet of straight lengths. Stencil paint shall be as noted.

Pipe identification shall be as follows:

		Color of Pipe	Color of Letters
Cold Water (Potable)	CW	Blue	White
Hot Water (Potable)	HW	Green, Light	White
Circulating <u>H</u> ot Water (Potable)	CHW	Green, Light	White
Industrial Cold Water (Non-potable)	ICW	Green, Light	White
Industrial <u>H</u> ot Water (Non-potable)	IHW	Green, Light	White
Circulating Industrial <u>H</u> ot Water	CIHW	Green, Light	White
Reverse Osmosis	RO	Blue, Dark	White
Tempered Water	TW	Blue	White
Drain Line	D	Green, Dark	White
Storm Drain	STORM	Blue, Light	White
Sanitary Drain	SAN	Green, Dark	White
Vacuum	VAC	Blue, Dark	White
Compressed Air	AIR	Yellow	Blue
Laboratory Air	LAB AIR	Yellow	Blue
Natural Gas	GAS	Yellow	Black
100 PSIG Steam	STM-100	Yellow	Black
GO PSIG Steam	STM-60	Yellow	Black
15 PSIG Steam	STM-15	Yellow	Black
Condensate	COND	Gray-Yellow	Black
Condenser Water Supply	CWS	Blue, Light	White
Condenser Water Return	CWR	Blue, Light	White
Chilled Water Supply	CHWS	Blue, Light	White
Chilled Water Return	CHWR	Blue, Light	White
Glycol-Heating Water Supply	GHWS	Green, Light	White
Glycol-heating Water Return	GHWR	Green, Light	White
Heating Water Supply	HWS	Green, Light	White
Heating Water Return	HWR	Green, Light	White
Heat Recovery Supply - Sys. 1	HRS-1	Green, Light	White
Heat Recovery Return - Sys. 1	HRR-1	Green, Light	White
Heat Recovery Supply - Sys. 2	HRS-2	Green, Light	White
Heat Recovery Return - Sys. 2	HRR-1	Green, Light	White
Heat Recovery Supply - Sys. 3	HRS-3	Green, Light	White
Heat Recovery Return - Sys. 3	HRR-3	Green, Light	White
Fireline (Zone No. 1)Sprinkler Piping	FIRE-1	Red	White
Fireline (Zone No. 2)	FIRE-2	Red	White
Fireline (Zone No. 3)	FIRE-3	Red	White
Fireline (Zone No. 4)	FIRE-4	Red	White
Radioactive		Yellow	Black
Toxic		Yellow	Black
Foam		Red	Black
Carbon Dioxide (Co ²)		Red	Black
Halon		Red	Black

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25. **THERMOMETER WELLS:**
Install thermometer wells in each location where function of unit can be checked, i.e.: before and after heat exchanger and chillers, before and after supply fan coils, in the return air, supply air, fresh air, and mixed air sides of supply fan units.
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26. **THERMOMETERS:**
Furnish sufficient thermometers to check temperature properly, not necessarily for each thermometer well, but enough for at least 50% of thermometer wells.
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27. **WATER CHILLERS:**
Chillers are based upon Trane™ units; alternate units will be used with approval from Facilities Management.
- A. Air-cooled rotary screw type for large chillers.
 - 1. Supply the chiller with a microprocessor control panel with a password-protected keypad interface. The interface shall communicate with the existing digital control system.
 - B. Air-cooled scroll type for smaller chillers.
 - C. All chillers shall have full architectural louvered enclosures covering the condensing and compressor units.
 - D. Avoid reciprocating compressors.
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28. **WATER TREATMENT:**
Utilize optimum water treatment for closed water circuits, both heating and cooling, and condenser water treatment. Consult with University Chemical supplier for their recommendations on water treatment.
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29. **SCHEMATIC LAYOUT OF SYSTEMS:**
When applicable, provide a color coded schematic systems layout of HVAC System showing area served: location of controls, control valves, unit location. Schematic should be suitable for framing and wall mounting in respective mechanical spaces.
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30. **TEMPERATURE CONTROLS:**
Specify Direct Digital Controls by Trane™ operated by “Summit System”.
- A. Provide temperature sensors on the inlet and outlet water piping for all heat transfer equipment such as coils and heat exchanger.
 - B. All equipment shall have the capability to be started, stopped, or adjusted from the remote workstation at Thorson Maintenance Center. The equipment would include, but not limited to, the air handling units, fans, pumps, and chillers.
- Thermostatic Controls shall be adjustable units in private areas (office, conference, sleeping rooms) and non adjustable in common areas (classrooms, auditoriums, corridors, etc).

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31. HEATING AND AIR CONDITIONING SYSTEM:
- A. Ventilation systems should utilize variable air volume systems with reheat coils.
 - B. Use CO² sensors in the return air from classrooms, auditoriums, and large meeting places.
 - C. To the extent feasible, establish separate temperature control zones that can be heated, cooled, or ventilated independently.
 - D. If practical, install the air-conditioner condensing unit in a location away from direct sunlight.
 - E. All heating systems should have outdoor air resetting capabilities and heating water pumps will have on-off operation regulated by out door temperature. Water pumps shall be provided by Bell & Gosset.
 - F. Incorporate an economizer cycle on all supply air fans with mixed air capabilities.
 - G. Heating shall utilize steam converted hot water systems.
 - H. Recover heating and cooling energy from exhaust air whenever possible.
 - I. All heating and chilled water pipes shall have adequate insulation.
 - J. Air handling units subject to outside air shall be supplied with a propylene glycol mixture to prevent damage to the coils and system freeze-up.
 - 1. Specify propylene glycol manufactured by Dow, "DOWFROST Fluid™" or "Pipe Saver PS5™" as supplied by Virginia KMP.
 - K. All air handling units and exhaust fans shall connect with the campus computer control systems.
 - L. Avoid using domestic water-cooled refrigeration condensing units unless the process is a closed-loop system.
 - M. All exhaust fan equipment shall have back draft dampers.
 - N. Be aware of existing or future conditions. Do not place supply air louvers by loading docks; carbon monoxide from vehicle exhaust could create a hazardous indoor air quality problem. Raise all units high enough to protect them from blowing or drifting snow, but keep them low enough to avoid negative aesthetic appeal.
 - O. Try to contain the majority of mechanical equipment in one utility area around the building. If possible, water chillers and other equipment should be placed on the building's ground. Check with the Facilities Management Department on installing a visual barrier around cooling towers and other mechanical equipment if it does not damage the aesthetic appeal of the building.

-
32. UNDER FLOOR DUCT:
An above floor inspection door shall be installed in each under floor duct to be used to pump out water.

-
33. HAND AIR VENT VALVES:
Furnish liberal quantity of hand air vent valves on closed circuit heating and cooling water systems.

-
34. AIR HANDLING DUCTS:
Refrain from installing under-ground floor air handling ducts. If there is no way to keep from installing these underground, pitch all ducts to a central point and install a drain with backwater check.

- _____ 35. **AIR FILTERS:**
Provide pleated throw away air filters as Farr 30-30 or Hippo brand filters; include one extra set in contract.
- _____ 36. **LAB SAFETY:**
All laboratories shall be supplied with emergency shower and eye wash stations. Place a floor drain under shower. Provide wheelchair accessible shower, eyewash, and an accessible lab station.
- _____ 37. **CHEMICAL STORAGE ROOMS:**
- A. Provide adequate ventilation.
 - B. Provide a beamed floor.
 - C. Verify the possibility of installing a fire suppression system.
 - D. Design cabinets to be impermeable to anticipated corrosive materials and liquids.

GENERAL ELECTRICAL STANDARDS

- _____ 1. **GENERAL ELECTRICAL:**
 - A. All Service entrance into campus buildings shall be 480/277 volts. All step downs and power drops shall take place within the building.
 - B. Closely review electrical distribution system for things such as excessive line loss. Avoid overloading transformation equipment. Voltage drops should not exceed 3% of branch circuits or feeders, for a total of 5% to the farthest outlet based on steady state design load conditions.
 - D. Check individual electrical equipment such as motors and fluorescent lighting for proper power factor. Power factor should be at least 90% or more under rated condition.

- _____ 2. **BEFORE EXCAVATION OR DRILLING ON CAMPUS:**

Contact North Dakota One Call and the Facilities Management Department before any excavating or trenching.

- _____ 3. **UNDERGROUND INSTALLATION:**

All underground wire of 600 volts or less shall be buried in PVC conduit a minimum of 30 inches deep. High voltage underground lines shall have a yellow or red warning tape and be buried a minimum of 48 inches deep covered with six inches of sand.

- _____ 4. **TRANSFORMERS:**

Building transformers are provided by Excel Energy and they are to be consulted as to the transformer placement.

Step-down transformers shall be high efficiency as manufactured by Powersmiths International Corporation.

- _____ 5. **ACCESSIBILITY:**

Where applicable, provide general accessibility to ceiling spaces and pipe chases, to facilitate potential fixture changes or remodeling.

- _____ 6. **ELECTRICAL PANELS:**
 - A. The service entrance shall be “Square D” with Power Logic CM 3250 monitor, fully equipped with bussing and mounting hardware.
 - B. Each panel shall be supplied with twenty percent (20%) spare capacity which shall include additional spare breakers for future installations.
 1. Each panel shall be equipped with additional with three phase breakers.
 2. Each panel shall be equipped with additional single phase breakers.
 - C. Provide “Square D” Power logic CM 3250 electrical meter and C/T’s as per Excel Energy requirements. Provide the circuit monitor with display and ethernet communication card.

- _____ 7. **ELECTRICAL POWER EQUIPMENT:**

Premium efficiency motors shall be used, job-rated electrical motors are not acceptable. All electrical motor name plate data shall be true capacity. Electric motor with speeds in excess of 1800 RPM is discouraged.

-
8. **MOTOR STARTERS:**
Use only “Square D” starters. Install variable frequency drives on motors that cycle. All three phase starters shall have three overhead relays.
-
9. **MOTOR PROTECTION:**
All motors shall have phase failure protection.
-
10. **ELECTRICAL - EMERGENCY LIGHTING:**
Install separate emergency lighting panel for all exit lights, fire alarm circuits, stairwell lights, and mechanical equipment spaces. Self-powered units or auxiliary power source are necessary. Preferably, these units should be not gas or diesel units if installed indoors.
- Provide transfer switches for equipment and emergency lighting.
-
11. **ELECTRICAL OUTLETS:**
- A. Furnish at least one 120-volt double outlet on each wall in each classroom and office and every 25 feet in corridors, and one outlet on each level in the stair towers. Furnish a 120-volt clock outlet in each classroom and office.
 - B. Provide a junction box above dropped ceilings in outlet home run circuit for individual rooms. Provide a junction box above dropped ceilings in individual rooms if multiple rooms exist on one run for future wiring
-
12. **LAMP BALLAST:**
- A. Specify and verify that all ballast used are compatible with “Simplex” Power Line Carrier systems. Be aware that some Advance ballast catalog numbers for those that are compatible match numbers for ballast that are not compatible.
 - B. Only high efficiency electronic ballast are to be installed.
-
13. **EXTERIOR LIGHTING:**
- A. Parking Lot and Street Lighting:
 - 1. Use high pressure sodium lamps for outdoor lighting with photoelectric cells on-off control.
 - B. Walkway Lighting:
 - 1. 150 watt High Pressure Sodium
 - 2. Ten (10) foot height poles, brushed aluminum
 - 3. Clear globe with reflector to cast light down

-
14. **INTERIOR LIGHTING:**
Interior light shall be mounted so the lamp can be replaced from a ten foot stepladder, or relamping poles should be furnished with project. Fixtures that require special equipment, scaffolds, or other paraphernalia to relamp or service are to be kept to a minimum.
- A. General facility lighting shall be fluorescent two (2) feet by four (4) feet, four (4) lamp fixtures supplied with T-8 lamps with electronic ballast.
 - B. Special lighting is to be high intensity discharge Metal Halide lamps.
 - C. Use selective switching to control lighting levels when possible.
 - D. Consider using motion detectors to control lights in class rooms, store rooms, custodial rooms, etc., where lights are apt to be left on.
 - E. Minimize lighting used only for decorative purposes and corridors.

-
15. **CLOCK AND CLASS BELL PROGRAM SYSTEM:**
Use standard class bell program system and corridor clocks, to be compatible with present Simplex system.

-
16. **ALARM SYSTEM:**
The alarm system shall be designed to permit future extension of alarm circuits to a central alarm center, which is controlled by "Simplex". Any new building and renovation is required to be compatible to add additional screens for the color graphics, addressable alarm, system.
- Locate alarm equipment in the building where damage could be caused due to equipment failure. Examples are high water in sump pit, low control air, low house air, low temperature, building security, fire pumps and valves and fire protection.

-
17. **TELECOMMUNICATIONS FACILITIES**
- A: Building Entrance/Outside Plant:
- 1. Provide three four inch PVC ducts from proposed building entrance to nearest communications vault or access facility.
 - 2. Populate one of the three, four inch ducts with three 1 1/4 inch inner ducts.
 - 3. All ducts and inner ducts should be equipped with a pull rope or mule-tape.
 - 4. Ensure two to three inches separation between each underground duct. Spacers are to be used.
 - 5. Ducts should be buried at a depth of 30 inches below finished grade to top of ducts with warning tape installed approximately six inches above top of ducts.
 - 6. All ducts should be sealed watertight at all vault and building penetrations.
 - 7. Facilities Management and Network Services will communicate to all details relating to outside cable infrastructure including sizing of fiber optics and twisted pair, type of protection and terminations to the architect and/or electrical engineer for the project.
 - 8. Aerial installations and intermediate pedestals will be avoided.

B: Telecommunications Room (Closet):

1. Locate this room as close as possible to the center of the serving area. Longest cable run cannot exceed 90 meters (295 feet). Efforts should be made to collapse all communications circuits into a single Telecommunications room; however, this may not be feasible or practical based on design and architecture.
2. Room size is based on usable square footage within the facility that the closet will serve:
 - a. less than 5000 sq. ft., room shall be 10 ft. by 8 ft.
 - b. 5000 sq. ft. to 8000 sq. ft., room shall be 10 ft. by 9 ft.
 - c. 8000 sq. ft. to 10,000 sq. ft., room shall be 10 ft. by 11 ft.
3. Minimum ceiling height 8.5 feet above finished floor.
4. The Telecommunications Room should not be shared with other electrical distribution facilities or other equipment that would produce any EMI.
5. The telecommunications room should be provided with adequate environmental control that will maintain a temperature of 64 ° F. to 75 ° F. and a relative humidity level 30% to 55%.
6. Minimum floor loading of 2.4 kPa (50 lbf/ft²).
7. Provide access to building ground.
8. Minimum lighting equivalent of 500 LUX (50 foot candles) measured 1m. above finished floor.
9. If multiple Telecommunications rooms are required to support a facility, adequate conduit or tray capacity should be placed to accommodate current and future cabling needs.
10. All drop terminations should be on '110' hardware using 4-pair connecting blocks rated at Category 5e or higher.
11. Provide two 20 Amp (non switched) 3-wire, 120 volt duplex electrical outlets, on separate branch circuits.
12. This room should be properly secured (card key or keyed separately)
13. Three walls should be lined with 3/4 inch AC – Grade or better plywood, eight feet high. Plywood surface shall be painted with two coats of gray enamel.
14. If fire protection is required, a dry-pipe sprinkler system should be considered.

C. Work Area (Offices):

1. For each occupant of a work area, provide a minimum of one communications outlet. Two outlets would provide additional flexibility.
2. The work area outlet should be located within three feet of an electrical outlet and installed at the same height.
3. Coordinate location of all floor outlets with furniture design and placement.
4. Each outlet should be roughed-in with a four inch square deep box with a single gang mudring.

5. Each outlet should have two 4-pair; 100-ohm cables rated at category 5e or higher pulled in. Leave 18 inches of cable at the outlet and 12 – 20 ft. in the telecommunications room (depending on location of field terminations).

D. Horizontal Distribution:

1. Each communications outlet should have a 3/4 inch EMT conduit installed from the rough-in outlet box to either a cable distribution tray or home run to the telecommunications room.
2. Cable runs cannot exceed 90 meters (295 feet) from the outlet to the telecommunications room termination point.
3. Each cable should be adequately labeled for easy identification (i.e. room number / voice-data/ run number etc.).
4. If a metallic tray is being used for horizontal distribution, ensure that there is a continuous bond to ground through out the distribution system.

E. Miscellaneous:

Consult with Facilities Management and Network Services on the need and locations for the following applications and/or systems:

1. Private CATV system
2. Electronic Access Systems
3. HVAC Networking / Communications
4. UPS for Telecommunications
5. Roof access for external antennas (wireless or microwave / weather-head)
6. “Code Blue” emergency towers
7. PA / speaker systems

F: References:

ANSI/TIA/EIA – 568 – A
ANSI/TIA/EIA – 569 – A
ANSI/TIA/EIA - 606
ANSI/TIA/EIA – 607
NEC ARTICLE 318 (Cable trays)



NORTH DAKOTA STATE UNIVERSITY FACILITIES MANAGEMENT DESIGN STANDARDS

PART TWO

NDSU EXHIBITS

PART TWO

**NDSU
EXHIBITS**

EXHIBIT A

**ADVERTISEMENT FOR BID
STANDARD**

ADVERTISEMENT FOR BIDS
“PROJECT TITLE”
NORTH DAKOTA STATE UNIVERSITY
FARGO, NORTH DAKOTA

Sealed proposals for “*project title*” on the campus of North Dakota State University, Fargo, North Dakota will be received at the Facilities Management Department front desk of the Thorson Maintenance Center, Bolley Drive, North Dakota State University, (P O Box 5383, Fargo ND 58105-5383), until 2:00 p.m. Central Time Zone, “*(Tuesday or Thursday only) date*” at which time they will be opened and publicly read.

Bids shall be in accordance with and submitted on supplied Bid form within the Bidding Documents prepared by “*consultant*”. Failure to do so will result in rejection of the Bid.

The work will consist of “*project description*”.

Bidding Documents may be obtained from the office of “*consultant*” and examined at the following locations until Bid opening time:

“*Locations (no NDSU site is to be indicated)*”

Copies of the Bid Documents (one set of Project Drawings and one set of Project Specifications to include addendums) may be obtained from the Office of the Architect, upon the payment of a (*amount*) refundable deposit in the form of a check made out to North Dakota State University. Deposit will be refunded to those returning the Documents to the Architect in good condition within ten (10) calendar days after the opening of bids. Partial sets of Bid Documents may be purchased from the Architect if specific sheet and section numbers are requested through written request. Charges for partial sets will be (*amount*) for each Drawing sheet and (*amount*) for each Specification sheet. No refund will be made for partial sets of Bid Documents. Completeness and adequacy of the list of documents requested shall be the responsibility of the person making the request. Addendum will not be submitted to those who receive partial sets of Bid Documents.

Each Bid submitted shall consist of two separate sealed envelopes, attached together, with each envelope clearly marked on the outside with the contractors name, the contractors prime (General, Mechanical, and/or Electrical), “*project title*” and “*bid date*”.

Each Bidder shall submit in one envelope a Bidder’s Security Bond in a sum equal to five percent (5%) of the full amount of the Bid to the North Dakota State Board of Higher Education, executed by a surety company authorized to do business in North Dakota. All bonds shall comply with North Dakota Century Code, including Chapter 48-01 as amended.

Each Bidder shall hold a current and valid North Dakota Contractor’s License of the proper class issued by the Secretary of State, and shall enclose a copy of the license or certificate of renewal of the license in the same envelope as the Bidder’s Security Bond. The license shall be for the highest amount of the Bidder’s total bid combination including add alternates.

Each Bidder shall complete the “Bidder Questionnaire”, and shall enclose the Questionnaire in the same envelope as the Bidders Security Bond.

Each Bidder shall submit in the second envelope the Bid form supplied with the Bidding Documents or through addendum.

All bids must be upon the basis of cash payment for the work and materials and must be sealed. All construction items covered in the contract must be completed by “*completion date*”.

No bids may be withdrawn for a period of thirty (30) days after the date and time set for the opening of bids.

The Board reserves the right to reject any or all bids, and to waive any informalities therein.

The successful bidder is required at the time the Contract is executed to provide a Sales Tax Certificate, Workers’ Compensation Certificate, Certificate of Insurance to include North Dakota Stop Gap and Builders Risk coverage (General Contractor only), Company Safety Manual, North Dakota University System Performance-Payment Bond, and Waiver of Subrogation.

North Dakota University System
North Dakota State University
Fargo, North Dakota
Mr. Bruce Frantz
Facilities Management Director

PART TWO

**NDSU
EXHIBITS**

EXHIBIT B

**BIDDER
QUESTIONNAIRE**

BIDDER QUESTIONNAIRE

North Dakota Law, N.D.C.C. § 48-01.1-02, provides that public construction contracts are to be awarded to the lowest responsible bidder. The purpose of this form is to assist NDSU in determining if there is any reason to believe, should you bid on an NDSU project, that your company is or is not a responsible party to be awarded a contract at NDSU. This form must be signed by an officer of the organization.

COMPANY NAME: _____

ADDRESS: _____

CONTACT PERSON: _____

TELEPHONE NUMBER: _____ FAX NUMBER: _____

E-MAIL ADDRESS: _____

TYPE OF FIRM: Corporation _____ Partnership _____ Individual _____ Joint Venture _____ Other _____

If the firm is a successor to a previous firm within the last three years, state the name and type of organization of the previous firm.

1. How many years has your organization been in business as a contractor?
2. On a separate sheet, list the three largest (dollar value) projects your organization has completed in the past five years, giving the name and address of the project, owner, architect, contract amount and date of completion.
3. On a separate sheet, list the three largest current projects (state contract amount) under construction by your organization.
4. Claims and suits relating to projects. (If the answer to any question is yes, please attach details):
 - 4.1 In the past five years, has your organization ever failed to complete a contract, been defaulted, had a contract terminated for convenience or had liquidated damages assessed against it?
 - 4.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?
 - 4.3 In the past five years, has your company or any of its key people been found to have committed, or entered into a consent or plea agreement relating to a violation of state, federal or local environmental protection laws or for a crime arising from the performance of a public contract?
5. Are you now in default on any obligations to banks or other financial institutions or have you filed for bankruptcy?

I, the undersigned, do hereby certify that I have read and truthfully completed this questionnaire and, to the best of my knowledge, the information provided is true and accurate.

Authorized Signature Title Date

STATE OF NORTH DAKOTA)
)ss.
COUNTY OF CASS)

On this _____ day of _____, 20____, before me, _____, the undersigned officer, personally appeared _____, subscribed to the within instrument and acknowledged that he/she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

(SEAL)

Notary Public

My commission expires: _____

PART TWO

**NDSU
EXHIBITS**

EXHIBIT C

**MAINTENANCE AND OPERATING
MANUALS SPECIFICATIONS CHECK-OFF LIST**

PROJECT:

MAINTENANCE & OPERATING MANUALS/SPECIFICATIONS CHECK-OFF LIST

No. of Copies	Item	Date Received	Received By
2	Updated specifications with addendum(s) stapled to the front cover and AS-BUILT blueprints		
1	Transparency set that is blueprint-able or disk copy		
2	Instructional manuals and product information on all equipment and finish materials (to include part books on all equipment that has moving or electrical components; item brochures; maintenance of the item). Items indexed according to CSI indexing system		
1	Shop drawings		
1	Painting schedule		
1	List of subcontractors and suppliers		
2	48-hour performance test run data		
3	Laminated color coded floor plan designating the mechanical system per area		
1	Key set for any locking device		
1	Attendance for Facilities Management Department equipment operating instruction		
1	Attendance at one year inspection		

PART TWO

NDSU EXHIBITS

EXHIBIT D

CONCRETE SPECIFICATIONS

CONCRETE SPECIFICATIONS

The work to be done under these specifications and the accompanying plans consists of the furnishing of all labor, materials, accessories, and plant necessary to complete the paving of concrete surfaces, curbs and gutters on the campus of North Dakota State University.

1.0. GENERAL

1.1. Use of Premises:

- A. **Site Traffic:** During the period of work, the Contractor will have full use of the site the work is being performed at. Contractor may not block traffic or pedestrian use of any other area that the work is not being performed. Contractor shall supply and maintain all barricades to block-off the work area. Contractor must keep in mind that the pedestrian traffic on campus do not like to be detoured, and will walk right through their work if the area is not properly protected. Yellow caution tape does not work on campus.
- B. **Site Protection:** Protect all existing trees and other planting areas that will not be directly effected by the work. Existing surface areas shall be protected and no more will be removed without approval from Facilities Management.
- C. **Temporary Utility Services:** Utility services for the construction site must be coordinated with the Facilities Management Department prior to connections being made.
 - 1. **Electrical Power Service:** Power will be provided in the form of 110 voltage to the site from a near-by building; additional power will be the responsibility of the contractor.
 - 2. **Water Service:** Water will be provided without metering to the Work site.
 - 3. **Sanitary Facilities:** Near by buildings may be used by the contractor. Care must be made to keep these facilities in a clean and sanitary condition. The General Contractor will be responsible to supply portable toilet facilities at the site for new construction
- D. **Site Restoration:** Backfill the areas affected by the new concrete work with clean black dirt. Facilities Management will restore all plantings, including the grass. Surfaces shall be broom-cleaned of any debris or dirt when site is left.
- E. **Parking:** General parking throughout campus requires the purchase of a "Construction Permit" by the vehicle owner. **Parking tickets will not be forgiven for parking on campus without a permit or outside the construction site boundaries.**
- F. **Site Storage:** All material and equipment shall be confined to the area allowed by Facilities Management unless prior approval was granted to store material outside the area of work.
 - 1. Excess black dirt will be stored on the NDSU campus.
 - 2. Excess clay or contaminated material will be removed from campus and become the property of the Contractor.
 - 3. All construction debris shall be removed from the site on a daily basis.

1.2. Testing:

Facilities Management will pay for all soil proctors, soil density test, and concrete compression test. The Contractor is responsible for the concrete mix design. The contractor is responsible for the payment of all test and testing services of all test which fail to meet or exceed these project specifications.

Contractor shall arrange for the testing and allow access to the site for the testing at all times.

1.3. Concrete Advertising Stamp: Stamps advertising ones company are not acceptable anywhere on campus.

2.0. SITE WORK

2.1. Removals:

- A. Owner will mark out the areas for removal.

- B. All concrete and asphalt surfaces are to be saw cut to the surfaces full depth from the area that is to be kept. Asphalt pavement may be cut with a coultier with the approval of the Owner.
- C. All roots or other vegetation more than one inch in thickness below the finished surface shall be removed to a depth of six inches below the base of the surface.

2.2. Sub-Grade:

- A. Compaction: Sub-grade shall be between 95 to 105 percent of maximum density as determined by ASTM D698 in the top 12 inches of the sub-grade. The Contractor may scarify, dry the material, or apply water as necessary to obtain the required density and stability. Material that will not compact readily shall be removed and replaced with Owner approved suitable material.
- B. Fill: Sub-grade areas that require fill to bring the elevation up to the base course shall be compacted in 12 inch lifts to 95 to 105 percent of maximum density. No stones larger the three inches in diameter are permitted in fill as well as other objectionable material. Fill outside the pavement areas are to compacted to 90 percent.

2.3. Aggregate Base:

- A. Material: Material shall be crushed or uncrushed gravel, crushed stone, natural gravel, or combination there-of and free from sod, plants, roots, other organic matter or other objectionable material.

B. Gradation:	Aggregate, as determined by ASTM C136 and ASTM C117:	Crushed Portland cement concrete:
	Sieve	Weight Passing
	<u>Designation</u>	<u>Square Mesh Sieve</u>
	1"	100 %
	3/4"	90 - 100
	3/8"	50 - 90
	No. 4	35 - 70
	No. 10	20 - 55
	No. 40	10 - 35
	No. 200	3 - 10
		Crushed Portland cement concrete:
	Sieve	Weight Passing
	<u>Designation</u>	<u>Square Mesh Sieve</u>
	1 1/2"	100 %
	1"	90 - 100
	3/4"	80 - 100
	No. 4	35 - 70
	No. 30	16 - 40
	No. 200	4 - 20

- C. Compaction: Shall be between 95 to 105 percent of maximum density as determined by ASTM D698.

3.0. CONCRETE

3.1. Materials:

- A. Portland Cement: Type I - ASTM C150; Type III - High Early Strength C150

B. Aggregates:	Fine Aggregates	Weight Passing	Course Aggregate:
	Sieve Designation	Square Mesh Sieve	Shall conform to size
	3/8"	100 %	No. 57, one inch to No. 4.
	No. 4	95 - 100	
	No. 8	80 - 100	
	No. 16	50 - 85	
	No. 30	25 - 60	
	No. 50	10 - 30	
	No. 100	2 - 10	

- C. Reinforcing Steel: New steel conforming to ASTM A615, Grade 60, deformed bars
 - 1. Dowel bars conforming to ASTM A615, Grade 40, non-deformed, plain bars

- D. Joint Expansion Filler: Resin impregnated fiberboard, minimum thickness 1/2 inch .

- E. Joint Sealer: Hot poured elastic type

- F. Curing Compound: White acrylic based curing and sealing compound with 18 percent minimum solids content.

- 3.2. Proportions:
1. 28-day strength to meet the surface specified psi.
 2. Water cement ratio not to exceed 0.45.
 3. Air content of air-entrained concrete shall not be less than five percent, nor more than eight percent of volume.
 4. Fly-ash maximum percentage will be 30.
 5. Slump shall not exceed four inches; when using slip forming equipment, slump shall not exceed 1 1/2 inches.
- 3.3. Surfaces:
- A. Bike Pads: Bike pads to be dyed red concrete, to be stamped with the use of NDSU stamp roller. All bike pads are to be 6 inches thick, 4,000 P.S.I., rebar to be #4, 18" O.C. All expansion joints are to be determined by NDSU. Place four inch duct tape and plastic to protect existing concrete where new red concrete will be placed against it.
 - B. Sidewalk: Sidewalks and other walking surfaces to be 6 inches thick, minimum 7 feet wide, 4000 P.S.I., rebar #4, 18" O.C.
 - C. Garbage Dumpster Pads: Garbage dumpster pads to be 6 inches thick, 4000 P.S.I., #4 rebar, 18" O.C. (This is the pad the dumpster sits on, not the approach the truck drives on.)
 1. Single Dumpster Pad Dimensions - 10 feet wide by 16 feet front-to-back
 2. Double Dumpster Pad Dimensions - 16 feet wide by 16 feet front-to-back
 - D. Streets and Garbage Dumpster Approaches: Streets and garbage dumpster approaches are to be 8 inches thick, 5000 P.S.I., #5 rebar, 12" O.C.
- 3.4. Execution:
- A. Forms and Form Setting: Forms shall be set upon the compacted sub-grade to the exact grade and alignment. Sidewalk side to side slope is not to exceed one-quarter (1/4) inch per foot of sidewalk width, unless otherwise directed by Facilities Management. Forms shall be left in place until the concrete they enclose is a minimum of 15 hours old.
 - B. Reinforcing Steel: Place steel as indicated in the Surface section on plastic chairs; do not use brick or rocks to support the steel.
 - C. Concrete Placement: Moist the subgrade before placement of concrete. Deposit concrete in excess of the required depth, compacted or vibrated with as little handling to fill all voids, and finished smooth and even. Broom the surface transversely across the pavement sufficiently to leave marks, not grooves.
 - D. Expansion Joints: Tool joints into the wet concrete or "green sawed" within 48 hours after the concrete placement.
 1. Placement of joints to be coordinated with Facilities Management.
 - E. Curing: Compound shall completely cover the surface, and be applied continuously and uniformly with proper equipment maintained in good condition.
 - F. Joint Sealing: Install elasticized sealant in joints with expansion material after 48 hours of concrete pour. Clean joints prior to placing sealant.

PART TWO

**NDSU
EXHIBITS**

EXHIBIT E

**FIVE YEAR
ROOF GUARANTEES**

FIVE YEAR ROOFING GUARANTEE

ADHERED EPDM

OWNER: _____

ADDRESS: _____

PROJECT: _____ PROJECT NO.: _____

PROJECT ADDRESS: _____

DATE OF FINAL ACCEPTANCE: _____

CONTRACTOR: _____

ADDRESS: _____

PHONE NO.: _____

This guarantee stipulates that the above named Contractor shall, during a period of five (5) years from the date of final acceptance of the Work, maintain the roof system, including the wood blocking, vapor retarder, insulation, roof membrane and base flashing in a watertight condition and repair all defects which result from faulty workmanship or defective materials, without further cost to the Owner, including replacement of any wet insulation caused by such defects. This guarantee does not include replacing damaged building components or contents in the building.

Excluded from this guarantee may be any and all damage to said roof, the building or their contents caused by acts or omissions of the Owner: fire, lightning, windstorms exceeding a strong gale (55 MPH), hailstorm, or other unusual phenomenon of the elements; movement or failure of the supporting building structure that causes membrane or flashing failure; or vapor condensation beneath the roof.

Exclude from this guarantee any damages to the building or the contents within.

Before expiration of the above guarantee period, the roofing Contractor shall inspect the roof in the presence of the Owner's representative and make necessary correction of all deficiencies not considered normal. The guarantee shall remain in force until the necessary repair work has been done.

SIGNED: _____

TITLE: _____

DATE: _____

FIVE YEAR ROOFING GUARANTEE

MECHANICALLY ATTACHED EPDM

OWNER: _____

ADDRESS: _____

PROJECT: _____ PROJECT NO.: _____

PROJECT ADDRESS: _____

DATE OF FINAL ACCEPTANCE: _____

CONTRACTOR: _____

ADDRESS: _____

PHONE NO.: _____

This guarantee stipulates that the above named Contractor shall, during a period of five (5) years from the date of final acceptance of the Work, maintain the roof system, including the wood blocking, vapor retarder, insulation, roof membrane and base flashing in a watertight condition and repair all defects which result from faulty workmanship or defective materials, without further cost to the Owner, including replacement of any wet insulation caused by such defects. This guarantee does not include replacing damaged building components or contents in the building.

Excluded from this guarantee may be any and all damage to said roof, the building or their contents caused by acts or omissions of the Owner: fire, lightning, windstorms exceeding a strong gale (55 MPH), hailstorm, or other unusual phenomenon of the elements; movement or failure of the supporting building structure that causes membrane or flashing failure; or vapor condensation beneath the roof.

Exclude from this guarantee any damages to the building or the contents within.

Before expiration of the above guarantee period, the roofing Contractor shall inspect the roof in the presence of the Owner's representative and make necessary correction of all deficiencies not considered normal. The guarantee shall remain in force until the necessary repair work has been done.

SIGNED: _____

TITLE: _____

DATE: _____

FIVE YEAR ROOFING GUARANTEE

BUILT - UP

OWNER: _____

ADDRESS: _____

PROJECT: _____ PROJECT NO.: _____

PROJECT ADDRESS: _____

DATE OF FINAL ACCEPTANCE: _____

CONTRACTOR: _____

ADDRESS: _____

PHONE NO.: _____

This guarantee stipulates that the above named Contractor shall, during a period of five (5) years from the date of final acceptance of the Work, maintain the roof system, including the wood blocking, vapor retarder, insulation, roof membrane and base flashing in a watertight condition and repair all defects which result from faulty workmanship or defective materials, without further cost to the Owner, including replacement of any wet insulation caused by such defects. This guarantee does not include replacing damaged building components or contents in the building.

Excluded from this guarantee may be any and all damage to said roof, the building or their contents caused by acts or omissions of the Owner: fire, lightning, windstorms exceeding a strong gale (55 MPH), hailstorm, or other unusual phenomenon of the elements; movement or failure of the supporting building structure that causes membrane or flashing failure; or vapor condensation beneath the roof.

Exclude from this guarantee any damages to the building or the contents within.

Before expiration of the above guarantee period, the roofing Contractor shall inspect the roof in the presence of the Owner's representative and make necessary correction of all deficiencies not considered normal. The guarantee shall remain in force until the necessary repair work has been done.

SIGNED: _____

TITLE: _____

DATE: _____

FIVE YEAR SHEET METAL GUARANTEE

OWNER: _____

ADDRESS: _____

PROJECT: _____ PROJECT NO.: _____

PROJECT ADDRESS: _____

DATE OF FINAL ACCEPTANCE: _____

CONTRACTOR: _____

ADDRESS: _____

PHONE NO.: _____

This guarantee stipulates that the above named Contractor shall, during a period of five (5) years from the date of final acceptance of the Work, maintain the sheet metal flashing systems in a weather tight condition and repair all defects which result from faulty workmanship or defective materials, without further cost to the Owner, including replacement of any wet insulation caused by such defects. This guarantee does not include replacing damaged building components or contents in the building.

Excluded from this guarantee may be any and all damage to said roof, the building or their contents caused by acts or omissions of the Owner: fire, lightning, windstorms exceeding a strong gale (55 MPH), hailstorm, or other unusual phenomenon of the elements; movement of failure of the supporting building structure that causes flashing failure; or vapor condensation beneath the roof.

Exclude from this guarantee any damages to the building or the contents within.

Before expiration of the above guarantee period, the roofing Contractor shall inspect the roof in the presence of the Owner's representative and make necessary correction of all deficiencies not considered normal. The guarantee shall remain in force until the necessary repair work has been done.

SIGNED: _____

TITLE: _____

DATE: _____

PART TWO

NDSU EXHIBITS

EXHIBIT F

CASEWORK SPECIFICATIONS

LAMINATE CLAD CASEWORK SPECIFICATION

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Fixed modular laminate clad casework and components.
- B. Flexible rail mounted laminate clad casework and components.
- C. Countertops.
- D. Mobile storage units, tables and components.

1.02 RELATED SECTIONS

- A. Blocking within walls where indicated.
- B. Millwork, trim, and custom cabinetry.
- C. Locks master keyed to room doors.
- D. Glass.
- E. Base molding.
- F. Hoods and ducting within or adjacent to casework.
- G. Appliances.
- H. Sinks and service fixtures, service waste lines, connections, and vents.
- I. Electrical service fixtures.

1.03 DEFINITIONS

- A. Identification of casework components and related products by surface visibility.
 - 1. Open Interiors: Any open storage unit without solid door or drawer fronts and units with full glass insert doors and/or acrylic doors.
 - 2. Closed Interiors: Any closed storage unit behind solid door or drawer fronts, sliding solid doors.
 - 3. Exposed Ends: Any storage unit exterior side surface that is visible after installation.
 - 4. Other Exposed Surfaces: Faces of doors and drawers when closed, and tops of cabinets less than 72 inches above furnished floor.
 - 5. Semi-Exposed Surfaces: Interior surfaces which are visible, bottoms of wall cabinets and tops of cabinets 72 inches or more above finished floor.
 - 6. Concealed Surfaces: Any surface not visible after installation.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Minimum of 5 years experience in providing manufactured casework systems for similar types of projects, produce evidence of financial stability, bonding capacity, and adequate facilities and personnel required to perform on this project.
- B. Manufacturer: Provide products certified as meeting or exceeding ANSI-A 161.1-1998 testing \ standards.

1.05 SUBMITTAL

- A. Comply with Section 01330, unless otherwise indicated.
- B. Product Data: Manufacturer's catalog with specifications and construction details.
- C. Shop Drawings: Indicate dimensions, description of materials and finishes, general construction, specific modifications, component connections, anchorage methods, hardware, and installation procedures, plus the following specific requirements.
 - 1. Include section drawings of typical and special casework, work surfaces and accessories.
 - 2. Indicate locations of plumbing and electrical service field connection by others.
- D. Casework Samples:
 - 1. Base cabinet: Cabinet conforming to specifications, with drawer and door.
 - 2. Wall cabinet: Cabinet conforming to specifications, with door.
 - 3. Cabinet samples shall be complete with specified hardware for doors, drawers and shelves.
 - 4. Component samples: Two sets of samples for each of the following:
 - a. Decorative laminate color charts.
 - b. PVC edges.

1.06 PRODUCT HANDLING

- A. Deliver completed laminate clad casework, countertops, and related products only after wet operations in building are completed, store in ventilated place, protected from the weather, with relative humidity range of 20 percent to 50 percent.

- B. Protect finished surfaces from soiling and damage during handling and installation with a protective covering.

1.07 JOB CONDITIONS

- A. Environmental Requirements: Do not install casework until permanent HVAC systems are operating and temperature and humidity have been stabilized for at least 1 week.
 - 1. Manufacturer/Supplier shall advise Contractor of temperature and humidity requirements for architectural casework installation areas.
 - 2. After installation, control temperature and humidity to maintain relative humidity between 25 percent and 55 percent.
- B. Conditions: Do not install casework until interior concrete work, masonry, plastering and other wet operations are complete.

1.08 WARRANTY

- A. Lifetime Guarantee and Limited Warranty to the original owner against defective material and fabrication for as long as they own the product. This is a warranty of replacement and repair only, manufacture will correct defects in material and/or fabrication without charge.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

- A. Manufacturer:
 - 1. Prior approved manufacture.
 - a. Specifications are based on manufacturer's literature from:
 - TMI Systems Design Corporation
50 South Third Avenue West
Dickinson, North Dakota 58601
800-456-6716

 - R & S Caseworks
3362 35 Avenue Southwest
Fargo, North Dakota 58104
701.298.0252

 - Northern Woodwork, Inc.
1581 Hwy 59 Southeast
P.O. Box 654
Thief River Falls, Minnesota 56701
218.681.2305
 - b. Other manufacturers shall comply with the minimum levels of material and detailing indicated within the specifications. A manufacture wishing to submit bid shall comply with submittal as indicated.

2.02 MATERIALS

- A. Core Materials:
 - 1. Particleboard up to 7/8 inch thick: Industrial Grade average 47-pound density particleboard, ANSI A 208.1-1999, M-3.
 - 2. Particleboard 1 inch thick and thicker: Industrial Grade average 45-pound density particle-board, ANSI A 208.1-1999, M-2.
 - 3. MR Moisture Resistant Particleboard: Average 47-pound density particleboard, ANSI A 208.1 1-1999, M-3.
 - 4. Medium Density Fiberboard 1/4 inch thick: Average 54-pound density grade, ANSIA 208.2.
 - 5. Medium Density Fiberboard 3/4 inch thick: Average 48-pound density grade, ANSI A 208.2.
- B. Decorative Laminates:
 - 1. High-pressure decorative laminate VGS (.028), NEMA Test LD 3-1995.

2. High-pressure decorative laminate HGS (.048), NEMA Test LD 3-1995.
 3. High-pressure decorative laminate HGP (.039), NEMA Test LD 3-1995.
 4. High-pressure cabinet liner CLS (.020), NEMA Test LD 3-1995.
 5. High-pressure backer BKH (.048), (.039), (.028), NEMA Test LD3-1995.
 6. Thermally fused melamine laminate, NEMA Test LD 3-1995.
- C. Chemical-Resistant decorative laminate, NEMA Test LD 3-1995.
- D. Laminate Color Selection: Maximum 1 color per unit face and 5 colors per project. (See Color Selection in section 3.05).
- E. Edging Materials:
1. 1mm PVC banding.
 2. 3mm PVC banding, machine profiled to 1/8 inch radius.
- F. Glass:
1. Wall unit full sliding glass doors: 1/4 inch thick laminated safety glass.
 2. Glass insert doors, hinged or sliding wall cabinets: 1/4 inch thick laminated safety glass.
 3. Glass insert doors, hinged or sliding tall or base cabinets. 1/4 inch thick laminate safety glass.
 4. Sliding doors mounted in aluminum track.
 5. Trim glass inserts: Extruded rigid PVC channel and self-locking insert retainer strip.

2.03 SPECIALTY ITEMS

- A. Support Members: Furniture grade, epoxy powder coated steel.
1. Adjustable countertop support brackets. Fixed and/or flexible rail mounted with integral wire management and leveling pad.
 2. Under counter support frames.
 3. Legs.
- B. Tote Trays:
1. Heavy-duty vacuum-formed polypropylene plastic with full top rim and pull. Trays are ivory color, equipped with label holder.
 2. Tote tray/supply cabinets equipped with injection molded polycarbonate; continuous side rail support glide. Each side rail support glide is adjustable with integral support pins to interface 32mm pre-drilled holes.
- C. Mobile Storage Units:
1. Tall mobile storage units, as indicated on the drawings, are structural steel framed with epoxy powder coated 2 inch x 1 inch tubing.
 2. Casters: 5 inch soft rubber double ball bearing, heavy gauge steel fork, zinc plate finish with 2 brakes per unit. Load capacity per caster to be a minimum of 200 pounds.
 3. Side panels, back, top, drawer fronts, and doors are of 3/4 inch thick particleboard, laminated on the exterior with high pressure decorative laminate VGS and on the interior with high pressure CLS cabinet liner. Exposed edges are PVC banding, 1mm or 3mm thickness, to match adjacent casework.
 4. Low mobile storage units are mounted to a caster base.
- D. Articulating Computer Keyboard Tray:
1. Under counter mount with slide, tilt, and rotation mechanism and mouse tray, black molded polymer.
- E. Music Specialty/Heavy Duty Storage Units:
1. Instrument and uniform storage unit: Exposed exterior finished ends are VGS laminate balanced on interior surface with CLS cabinet liner. Unexposed End panels and vertical dividers are thermally fused melamine laminates, both faces, with matching 3mm PVC front edging. Cabinet backs are 1/2 inch thick particleboard core laminated with thermally fused melamine laminate.
 2. Instrument shelves: 3/4 inch thick particleboard core laminated both faces with thermally fused melamine laminate. Shelves are doweled into sides. Top surface is molded flat stock heavy-duty polyethylene with textured abrasion-resistant finish permanently bonded to shelf. Front edge of shelf is high-impact resistant PVC extrusion full width of shelf.
 3. Wire grille doors: Heavy gauge rod welded to 3/16 inch diameter vertical; 2-3/4 inch, hospital tip, 0.095 inch thick steel, five knuckle hinges welded to door. Epoxy powder coated spring-loaded locking latch with integral label holder, padlock eye, and rubber bumper. Latch is covered with a vinyl protection cap.
 4. Solid doors: 3/4 inch thick particleboard core laminated with VGS laminate on the exposed surface and balanced with CLS cabinet liner on the interior surface. 3mm PVC edged doors and five knuckle, 2-3/4 inch, hospital tip, 0.095 inch thick steel epoxy powder coated hinges, spring loaded locking latch with integral label holder, padlock eye, and rubber bumper. Latch is covered with a vinyl protection cap.
- F. Pharmacy Units:

1. Pharmacy units: Furnish as indicated on drawings.
 - a. Base units:
 1. Single faced configuration.
 2. Adjustable shelving.
 3. Sloped adjustable shelves with gravity trays
 - b. Wall units:
 1. Adjustable shelving.
 2. Sloped adjustable shelves with gravity trays.
 - c. Tall units:
 1. Single faced configuration.
 2. Adjustable shelving.
 3. Sloped adjustable shelves with gravity trays.
 4. Double faced configuration.
 - d. Install sloped shelves with KV #80 standards and KV #179 adjustable shelf brackets. Sloped shelves are 3/4 inch or 1 inch thick particleboard core with finish matching open interior selection. Edge shelves with 3mm PVC lip at the front.
 - e. Gravity trays are heavy-duty vacuum-formed polypropylene plastic with removable dividers.
 1. 6-3/4 inch x 2-1/2 inch x 9-1/4 inch with one removable divider.
 2. 6-3/4 inch x 2-1/3 inch x 20-1/4 inch with two removable dividers.

2.04 CABINET HARDWARE

- A. Hinges:
 1. Five knuckle, institutional grade, 2-3/4 inch overlay type with hospital tip. 0.095 inch thick. ANSI-BHMA standard A156.9, Grade 1.
 - a. Doors 48 inches and over in height have three (3) hinges per door.
 - b. Magnetic door catch with maximum 5 pound pull provided, attached with screws and slotted for adjustment.
- B. Pulls:
 1. Door and drawer front pulls, are epoxy powder coated metal wire style, 96mm spacing on screws. Pull design shall comply with the Americans with Disability Act (ADA).
- C. Drawer Slides:
 1. Regular, kneespace and pencil: 100-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both directions with self-closing feature. Paper storage, 150-pound load rated epoxy coated steel slides.
 2. File: Full extension, 150-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both directions with self-closing feature.
- D. Adjustable Shelf Supports:
 1. Injection molded transparent polycarbonate friction fit into cabinet end panels and vertical dividers, adjustable on 32mm centers. Each shelf support has 2 integral support pins, 5mm diameter, to interface pre-drilled holes, and to prevent accidental rotation of support. The support automatically adapts to 3/4 inch or 1 inch thick shelving and provides non-tip feature for shelving. Supports may be field fixed if desired. Structural load to 1200 pounds (300 pounds per support) without failure.
- E. Locks:
 1. National #M49054, removable core, disc tumbler, cam style lock with strike. Furnish 2 keys. Lock for sliding 3/4 inch thick doors is a disc type plunger lock, sliding door type with strike. Lock for sliding glass/acrylic doors is a ratchet type sliding showcase lock.
 2. Automatic door bolt, Hafele #530-1604, used to secure inactive door on all locked cabinets.
- F. Sliding Door Track: Anodized aluminum double channel.
- G. Coat Rods: 1 inch diameter, 14-gauge chrome plated steel installed in captive mounting hardware.
- H. File Suspension System: Extruded molding integral with top of drawer box sides to accept standard hanging file folders.
- I. Mirrors: 1/4 inch thick polished mirror plate.

2.05 FABRICATION:

- A. Fabricate casework, countertops and related products to dimensions, profiles, and details shown.
- B. Cabinet Body Construction:
 1. Tops and bottoms are glued and doweled to cabinet sides and internal cabinet components such as fixed horizontals, rails and vertical. Minimum 6 dowels each joint for 24 inch deep cabinets and a minimum of 4 dowels each joint for 12 inch deep cabinets.

- a. Tops, bottoms and sides of all cabinets are particleboard core.
 - 2. Cabinet backs: 1/4 inch thick prefinished medium density fiberboard. Wall and tall cabinets are provided with a 1 inch x 1-3/4 inch PVC mounting strip used to secure the cabinet to the wall.
 - a. Exposed back on fixed or movable cabinets: 3/4 inch thick particleboard with the exterior surface finished in VGS laminate as selected.
 - b. Flexible rail mounted cabinet backs: 3/4 inch thick particleboard structurally doweled into cabinet sides and top panels.
 - 3. Fixed base and tall units have an individual factory-applied base, constructed of 3/4 inch thick exterior grade plywood. Base is 96mm (nominal 4 inch) high unless otherwise indicated on the drawings.
 - 4. Base units, except sink base units: Full sub-top. Sink base units are provided with open top, welded steel/epoxy painted sink rail full width at top front edge concealed behind face rail/doors, a split back removable access panel.
 - 5. Side panels and vertical dividers shall receive adjustable shelf hardware at 32mm line boring centers. Mount door hinges, drawer slides and pull-out shelves in the line boring for consistent alignment.
 - 6. Exposed and semi exposed edges.
 - a. Edging: 1mm PVC.
 - 7. Adjustable shelf core: 3/4 inch thick particleboard up to 30 inches wide, 1 inch thick particleboard over 30 inches wide.
 - a. Front edge: 1mm PVC.
 - 8. Interior finish, units with open Interiors:
 - a. Top, bottom, sides, horizontal and vertical members, and adjustable shelving faces with thermally fused melamine laminate with matching prefinished back.
 - 9. Interior finish, units with closed Interiors:
 - a. Top, bottom, sides, horizontal and vertical members, and adjustable shelving faces with thermally fused melamine laminate with matching prefinished back.
 - 10. Exposed ends:
 - a. Faced with VGS high-pressure decorative laminate.
 - 11. Wall unit bottom:
 - a. Faced with thermally fused melamine laminate.
 - 12. Balanced construction of all laminated panels is mandatory. Unfinished core stock surfaces, even on concealed surfaces (excluding edges), not permitted.
- C. Drawers:
- 1. Sides, back and sub front: Minimum 1/2 inch thick particleboard, laminated with thermally fused melamine doweled and glued into sides. Top edge banded with 1mm PVC.
 - 2. Drawer bottom: Minimum 1/2 inch thick particleboard laminated with thermally fused melamine, screwed directly to the bottom edges of drawer box.
 - 3. Paper storage drawers: Minimum 3/4 inch thick particleboard sides, back, and sub front laminated with thermally fused melamine. Minimum 1/2 inch thick particleboard drawer bottoms screwed directly to the bottom edges of the drawer box. Provide PVC angle retaining bar at the rear of the drawer.
- D. Door/Drawer Fronts:
- 1. Core: 3/4 inch thick particleboard.
 - 2. Provide double doors in opening in excess of 24 inches wide.
 - 3. Faces:
 - a. Exterior: VGS High-pressure decorative laminate.
 - b. Interior: High-pressure cabinet liner CLS.
 - 4. Door/drawer edges: 3mm PVC, external edges and outside corners machine profiled to 1/8 inch radius.
 - 5. Miscellaneous Shelving:
 - a. Core material: 3/4 inch or 1 inch thick particleboard.
 - b. Exterior: VGS High-pressure decorative laminate.
 - c. Edges: 3mm PVC, external edges and outside corners machine profiled to 1/8 inch radius.

2.06 DECORATIVE LAMINATE COUNTERTOPS:

- A. Core: 1 inch thick ANSI A 208.1-1993 M-2 particleboard.
- B. Surface: HGS/HGP high-pressure decorative laminate with balanced backer sheeting.
- C. Edges, including applied backsplash: 3mm PVC, exposed edges and corners machine profiled to 1/8 inch radius. Edges are machine applied with moisture curing polyurethane (PUR) hotmelt for fast setting, high strength adhesion.

2.07 HEAVY DUTY TABLES:

- A. Work tops: 1 inch thick particleboard core laminated top surface with HGS/HGP laminate, balanced with backer sheeting.
 - 1. Edges: 3mm PVC
- B. Work top support frame: Furniture grade, epoxy powder coated steel.
- C. Under table storage units: Manufacturer's flexible rail mounted Under counter units adapted for installation to work top support frame.
- D. Adjustable legs: 1-3/4 inch x 1-3/4 inch x 14 gauge epoxy powder coated tubing fitted inside 2 inch x 2 inch x 14 gauge with height adjustment.
 - 1. Heavy-duty, non-marking adjustable floor glides.

2.08 UTILITY CHASE SYSTEM

- A. Flexible rail utility chase frames: Epoxy powder coated, steel internal frame assembly. Dimensionally integrated to align with and accommodate fixed modular or flexible rail-mounted casework and countertops.
- B. Flexible rail mounted casework support rail and interfacing support keys:
 - 1. Extruded aluminum 6061-T6 alloy, epoxy powder coated, concealed structural fasteners secured through portion of closure panel one or both sides as required.
- C. Chase access panels: 3/4 inch thick with 1mm PVC edges, thermally fused melamine laminate faces both sides.
- D. Chase assemblies are pre-drilled to accept other system components..
- E. Wing walls: 1 inch thick particleboard with high-pressure decorative laminate VGS both sides, 3mm PVC edges, two levelers on bottom edge.
- F. Reagent ledges and over-chase shelving: 1 inch thick particleboard with 3mm PVC edges; provide laminate surfaces as indicated.

2.09 CHALK, TACK, MARKERBOARD, ETC.

- A. Instructional/Display Surfaces:
 - 1. Relocatable chalkboards, markerboards, and tackboards. Dimensionally integrated to align with fixed modular or flexible rail mounted casework.
 - 2. Support system: Extruded aluminum, 6061-T6 alloy, support keys securely mounted through continuous galvanized mounting strips on back of unit. Units over 13 inch high have 2 pair of support keys 5 modules apart vertically to allow height adjustment. Support keys interface horizontal support rail. Stand-off extrusion is provided on each unit to hold vertical surface parallel to wall surface.
 - 3. Chalkboard and markerboard: Porcelain enamel on steel, minimum 26 gauge, laminated to 3/4 inch thick particleboard core using water-proof adhesives.
 - 4. Tackboard: 1/4 inch thick tac-tex vinyl impregnated cork laminated to 1/2 inch thick particleboard core using water-proof adhesives.
 - 5. Back surface sealed with 0.015 aluminum moisture barrier. Radius corners 2 inches. Edges finished with PVC with custom overhang lip.
 - 6. Stiffen boards to minimize flexing.

PART 3- EXECUTION

3.01 INSPECTION:

- A. The casework contractor must examine the job site and the conditions under which the work under this section is to be performed, and notify the building owner in writing of unsatisfactory conditions. Do not proceed with work under this Section until satisfactory conditions have been corrected in a manner acceptable to the installer.

3.02 PREPARATION:

- A. Condition casework to average prevailing humidity conditions in installation areas prior to installing.

3.03 INSTALLATION:

- A. Erect casework, plumb, level, true and straight with no distortions. Shim as required. Where laminate clad casework abuts other finished work, scribe and cut to accurate fit.
- B. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind.
- C. Repair minor damage per plastic laminate manufacturer's recommendations. Replace other damaged cabinets or materials.

3.04 CLEANING:

- A. Leave cabinets broom clean inside and out. Wipe off fingerprints, pencil marks, and surface soil etc., in preparation for final cleaning by the building owner.
- B. Remove and dispose of all packing materials and related construction debris.

3.05 COLOR SELECTION:

A. Laminate Color Selection:

- 1. Select from the full range of Wilsonart®, Nevamar®, Pionite®, and Formica® stock color charts for cabinet faces, exposed ends, open interiors, and countertops. Note: Color charts are found in the Ordering and Specifying section of the TMI catalog. Thermally fused melamine laminates available in Frosty White, Light Beige, Dove Grey colors (matched to Wilsonart®).

B. Hinge and Pull Color Selection:

- 1. Select from your choice of stock colors (matched to Wilsonart®) Frosty White, Light Beige, Dove Grey, Slate Grey, Black and Chrome. Other colors are available. Special order colors may impact cost and lead times.

C. Miscellaneous Hardware Color Selection (support brackets, table frames, rail):

- 1. Select from your choice of stock colors (matched to Wilsonart®) Frosty White, Light Beige, Dove Grey, Slate Grey and Black.

D. 1mm PVC Edge Banding Color Selection:

- 1. Select from your choice of many 1mm PVC edges available in a variety of solid, pattern and woodgrains matching laminate colors*. Special order colors may impact cost and lead times.

E. 3mm PVC Edge Banding Color Selection:

- 1. Select from your choice of 3mm PVC stock colors (matched to Wilsonart®) Frosty White, Light Beige, Dove Grey, Slate Grey, Black. Other colors are available*. Special order colors may impact cost and lead times.



NORTH DAKOTA STATE UNIVERSITY FACILITIES MANAGEMENT DESIGN STANDARDS

PART THREE

**NORTH DAKOTA
UNIVERSITY SYSTEM**

ARCHITECTS-ENGINEERS MANUAL

ACKNOWLEDGMENT

The 2000 revision and up-date of the North Dakota University System Architect–Engineer Manual required the effort of a number of people. The Architect-Engineer Manual Task Force is particularly indebted to Vice Chancellor for Administrative Affairs Laura Glatt and General Counsel Pat Seaworth of the University System office for their guidance, support and help in accomplishing the review and revision of this Manual.

Don W. Hanson, Chair, NDSU

Task Force Members

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Rick Johnson, NDSU

Wayne Flack, NDSCS

Roger Jensen, NDSCS

PREFACE

This manual has been designed as a guide for these professional services contracted with the State Board of Higher Education.

ARCHITECT, ENGINEER REQUIRED:

In altering, repairing, or constructing any building, or in making any improvements to it, where the cost exceeds \$100,000, plans, drawings, and specifications must be prepared by a licensed Architect, North Dakota Century Code (NDCC) § 48-01.1-04, or a licensed Engineer if work involves structural, mechanical or electrical design. Drawings and specifications for construction of public works involving an estimated cost in excess of \$100,000 shall be prepared by a registered professional Engineer in accordance with NDCC § 43-19.1-28.

ARCHITECT, ENGINEER, LAND SURVEYOR SELECTION:

- A. In accordance with NDCC § 54-44.7 and State Board of Higher Education (SBHE) Policy 902.6; Architect, Engineer, and land surveying services shall be procured by negotiating contracts on the basis of demonstrated competence and qualification for the particular type of services required. The Compensation Guidelines for Architectural Services, Exhibit A, shall be used as a guide for determining compensation for these services.
- B. Architect, Engineer and land surveyor services for projects for which fees are estimated to be \$10,000 or less may be secured by direct negotiation. Accumulative fees paid through direct negotiation, by any single state agency, may not exceed \$20,000 during the preceding 12-month period.

No agency may separate service contracts or split or break projects for the purpose of circumventing the provisions of NDCC § 54-44.7.

The Architect/Engineer shall work closely with the college or university president or his/her designated representative (hereinafter referred to in this manual as the institutional representative) and institutional building committee, but is commissioned by and responsible to the State Board of Higher Education rather than the individual institution.

1. BUILDING/PROJECT REQUIREMENTS

All buildings/projects/improvements shall be constructed within the limits of the state appropriations, bond issues, or other specific allocations of funds made by the State Board of Higher Education.

- 1.2 Costs allocated to a project shall include the cost of fixed furnishings and equipment, Architect and Engineer's fees, miscellaneous and reimbursable expenses. Utility extensions or connections, curb, gutter, sidewalk, landscaping, and all other related items may be included in the building/project/improvement cost or funding sources identified separately.

NOTE: Fixed furnishings and equipment means any piece of property which, when installed in a facility for continuing use in connection with the facility, is considered a permanent part of the facility and cannot be reasonably removed without affecting the structural integrity of the facility, including its utility or ventilation systems. The simple connection of electric power by plugging a piece of equipment into the facility's electrical system, or the temporary attachment of equipment to a utility system does not qualify the item as fixed equipment. Fixed equipment must be installed with hard connections.

- 1.3 Every building or approved portion thereof must be completed, and upon acceptance, be ready for occupancy for its designed purpose and function except for possible placement of moveable furniture to be delivered.
- 1.4 Plans to leave any portion of a building unfinished or to postpone the completion of any work on a building or other improvement must be approved by the SBHE.

2. INTRODUCTORY MEETINGS

Upon selection of the Architect/Engineer, the institutional representative shall arrange for introductory meetings to discuss the following:

- 2.1 The Owner-Architect Agreement AIA B141-1997, including SBHE amendments (Exhibit B).
- 2.2 The role of the institutional building committee.
- 2.3 The scope of the project.
- 2.4 Preliminary budget to include any or all of the following:
 - Building construction
 - Architect/Engineer compensation
 - Special consultants
 - Survey, soil tests, etc.
 - Building utility services
 - Landscaping
 - Furnishings
 - Performance testing of project systems
 - Reproducible drawings as applicable
- 2.5 Tentative progress schedule.
- 2.6 Site location.
- 2.7 Providing or directing the Architect/Engineer to obtain, at the Owner's expense, a certified survey of the site, soil testing, and other tests or reports required for the project.
- 2.8 Arrangements by the institutional representative to obtain legal, audit, and insurance counseling services as may be required for the project.
- 2.9 Progress schedule. Suggested time allocations for performances of various project phases are provided in the following table (which can be agreed to during Architect/Engineer selection process). If the project requires Federal agency approval, add one month.

Size of Project	Schematic & Design Development Phase	Construction Document Phase	Bidding Phase	Construction Phase
Up to \$200,000	Two (2) months	Two (2) months	One (1) month	Six (6) months
\$200,000 through \$1,000,000	Four (4) months	Three (3) months	One (1) month	6 - 12 months
Over \$ 1,000,000	Four - eight (4 - 8) months	Four - six (4 - 6) months	One (1) month	12+ months

3. SCHEMATIC DESIGN

Upon approval of the project, the Architect shall proceed with the schematic design phase.

- 3.1 The Architect and institutional building committee shall meet as often as required to remain within the schedule and program.
 - 3.1.1 Memorandums of meetings shall be made by the Architect with copies to the institutional representative and building committee.
- 3.2 All communications on requirements, change in requirements, or possible alternates shall be submitted in writing to the institutional representative.
- 3.3 The Architect shall comply with applicable laws, regulations and ordinances, including but not limited to: federal regulations; state building code; zoning laws or ordinances; regulations or ordinances enforced by city and state fire marshals or health, plumbing, electrical, and safety inspectors; laws or regulations governing access for the handicapped; and standards of the American National Standards Institute.
- 3.4 New or replacement electric services to buildings shall be placed underground unless otherwise approved by the Institution.
- 3.5 Prior to designing an addition to or remodeling of an existing building, the Architect shall, by inspection, become familiar with the use, design, and condition of the present facility. If drawings and specifications for the existing facility are available, the institutional building committee shall provide same to the Architect.
- 3.6 The Architect shall submit a statement of estimated total project costs (including costs specified in Section 1.2) to the institutional representative and building committee. If the estimate exceeds the available funds, the Architect shall not proceed further until notified by the institutional representative.
- 3.7 The schematic design studies shall be distributed to the institutional representative.

4. DESIGN DEVELOPMENT

- 4.1 Upon approval of the schematic design, the Architect shall proceed with the design development phase using, as applicable, procedures as outlined in Section 3.
- 4.2 The Architect shall describe details of construction to the institutional building committee, and provide samples of materials for the committee's approval.
- 4.3 The design development documents shall be distributed to the institutional representative and building committee for review and comments. Design shall conform to the state building code.
- 4.4 The Architect shall submit a statement of probable project cost to the institutional representative.

5. CONSTRUCTION DOCUMENTS

- 5.1 Upon approval of the design development documents, the Architect shall proceed with the preparation of the construction documents consisting of working drawings and specifications.
- 5.2 Final drawings and construction specifications shall be distributed to the institutional representative with a request to advertise for bids.
- 5.3 The construction specifications shall include the Insurance and Safety Requirements as described in Exhibit E.
- 5.4 Procedures for advertisement for bids, bid opening date, etc., shall be determined by the institutional representative. Reference Section 6 of this manual for bidding procedures.
- 5.5 The Architect shall distribute final drawings and specifications to appropriate state and/or local agencies for review.
- 5.6 The Architect shall provide a statement that the plans and specifications are, in the professional judgment of that person, in conformance with the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities as contained in the appendix to title 28, code of Federal Regulations, part 36 [28 CFR 36]. Reference NDCC § 54-21.3-04.1. A statement of conformance, Part Four, Exhibit A, must be submitted to the office of North Dakota Intergovernmental Assistance for recording. Submit copy to the institutional representative.

6. BIDDING

- 6.1 Upon approval of the construction documents and setting of the bid opening date by the institution, the Architect shall proceed with the advertisement for bids.
- 6.2 The Architect shall prepare the advertisement for bids and submit a copy to the institutional representative for review. Upon approval, the Architect shall be responsible for advertising the project in the official local newspaper and such other publications as necessary. A minimum of 21 days shall be allowed for accepting formal bids. Reference NDCC § 48-01.1-03 and 05.
- 6.3 The Architect shall furnish a list of potential bidders to the institutional representative.
- 6.4 Addenda shall be issued by the Architect with copies to the institutional representative and SBHE consultant.
- 6.5 All statutory requirements regarding bidding procedures shall be followed.
- 6.6 Bidding procedures regarding Single vs. Multiple Prime Bids shall comply with NDCC § 48-01.1-06.
- 6.7 The bid opening shall be conducted cooperatively by the institutional representative and Architect.
- 6.8 The Architect shall provide a signed tabulation of all bids, with recommendation, to the institutional representative for review.

7. AWARD OF CONTRACTS

- 7.1 NDCC § 48-01.1-02 and State Board of Higher Education procedures shall be followed for award of contracts.
- 7.2 Upon award of contracts, the Architect shall prepare contracts using AIA Document A101-1997. Three copies of the contract with original signatures shall be submitted to the institutional representative for approval.
- 7.3 Guidelines for preparing contracts and related documents are included as Exhibit C.
- 7.4 No payments to a Contractor may be approved until all contractual obligations have been met and the contract has been signed by both the Owner and Contractor.
- 7.5 Contracts must be fully executed prior to preparation of any Change Orders.

8. CONSTRUCTION PHASE

- 8.1 All directions to the Contractors shall be issued through the Architect.
- 8.2 The Architect shall submit work schedules, schedules of values, list of subcontractors, periodic work progress reports, and other relative information to the institutional representative.
- 8.3 Regularly scheduled meetings will be held with the Architect, representatives of all prime Contractors, and an institutional representative in attendance. The Architect is responsible for providing minutes of these meetings to all interested parties.
- 8.4 A Change Order shall be issued for any change in the work, adjustment to the contract sum, or in the contract time. The budget for the project must have sufficient funds to support any changes in contract amounts. Change Orders are not to be utilized as a procedure for substantially increasing the scope of the project. The Architect shall prepare all change orders and submit four copies to the institutional representative for review. The institutional representative shall obtain approval of the change order in accordance with SBHE policy 902.9. Change orders must be signed by 1) the Contractor, 2) the Architect and 3) the Board office designee or institutional representative, whichever is appropriate as determined by SBHE policy 902.9. Change Orders shall contain the following information:
- Number of Change Order.
 - Original contract amount.
 - Total amount of previous amendments or change orders.
 - Amount of present change order request, including a list and cost of each change.
 - Total revised contract amount.
- 8.5 If a Contractor desires to store certain materials off the project site, the Agreement for Storing Materials Off-Site, Exhibit F, shall be completed and four copies submitted to the institutional representative for review.
- 8.6 During the construction phase, all Contractor's pay requests shall be submitted to the Architect/Engineer for review. Upon approval, three copies shall be forwarded to the institutional representative for payment.
- 8.7 Guarantees and Warranties:
- 8.7.1 All guarantee and warranty documents, including manuals relating to warranties on the project, and a listing and explanation of all project components that have separate manufacturer or dealer warranties will be provided to the institutional representative by the Architect.
- 8.7.2 The roofing Contractor shall provide a written roof guarantee to the institution covering a period of not less than five years. The guarantee should state that during the period covered by the guarantee, the Contractor will, at no expense to the Owner, make or cause to be made, any repairs that may be necessary as a result of defects in workmanship or materials and/or normal wear and tear by the elements and will maintain the roof in a water tight condition free from all leaks arising from such causes. Lightning, hail storms or tornadoes shall not be considered normal wear and tear by the elements. (Part Two, Exhibit A)
- 8.7.3 Other warranties and guarantees shall be provided as set forth in the contract documents.
- 8.8 The Architect shall provide to the institutional representative As-Built drawings in the form of computer data disks compatible with the Institution's CAD system. If the Institution does not maintain a CAD system, the Architect shall provide one complete set of reproducible drawings with all changes as noted on the Contractor's record copy.

- 8.9 When requested, the Architect shall provide a schematic systems layout of the project, i.e., electrical, plumbing, HVAC (air conditioning systems). The size and detail of the schematics shall be such as to communicate with detail and clarity, the areas served, controls and controlling devices, and system operational characteristics.
- 8.10 Equipment may be moved into the building prior to final inspection provided that:
- 8.10.1 The Contractor is in agreement and understands that the Builder's Risk Insurance must remain in effect until final inspection and acceptance. A written communication by the Contractor to the institutional representative is required.
- 8.10.2 The institutional representative approves.
- 8.11 Final pay requests should be accompanied by AIA Document G707, Consent of Surety Company to Final Payment. Supporting AIA documents may be required upon request by the institution.
- 8.12 A post-final inspection shall be arranged by the Architect ten months after the final acceptance date for purposes of work to be corrected under the one-year guarantee provisions of the contract.

9. INSPECTION AND ACCEPTANCE

9.1 There shall be a final inspection of each newly constructed or remodeled building.

Every building or designated portion thereof, must be substantially complete before occupancy by the institution. A Certificate of Substantial Completion, AIA Document 709, should be prepared and submitted to the institutional representative.

9.2 Before final acceptance of the project is made and after concurrence of the Architect and Contractor, a 48-hour continuance performance test may be conducted by an independent firm engaged by, and responsible to, the Owner. Air-water flow, temperature, and ampere readings, etc., shall be recorded and become the property of the Owner if satisfactory. If the tests do not meet the design requirements, the deficiencies shall be corrected, and another 48-hour test shall be run until all corrections are made. All costs of performance testing shall be the responsibility of the Owner; however, costs involving correction of deficiencies and additional testing shall be borne by the Contractor, if of an adjustment/installation nature, or by the Architect if redesign is necessary.

9.3 Final inspection shall be made by the institutional representative, Architect, and Contractors.

9.4 The Architect shall be responsible for preparing a punch list during the inspection. Upon completion, the Architect shall be responsible for issuing the punch list to all participants in the inspection.

9.5 Final acceptance by the Institution may not be granted until all items on the punch list have been completed and all guarantees, as required, have been provided to the Institution.

10. BUILDING PLAQUES

New buildings or portions being renovated are no longer required by the Board of Higher Education to have a building plaque installed.

The following are the previous requirements for building plaques and may be followed for a plaque.

10.1 Year building was completed.

10.2 Names of members of State Board of Higher Education and the Chancellor.

10.2.1 Name of persons in office at the time construction contracts were let shall be placed on the plaque.

10.3 President of the Institution.

10.3.1 Where there is a change in the Presidency of an Institution during the period the funds become available for a building until its completion, the name of both presidents shall be included on the plaque.

10.4 Architect and Prime Contractors

11. CONSTRUCTION MANAGER

Pursuant to NDCC § 48-01.1-09, a governing body may use a construction manager on a public improvement. If a construction manager is used, the construction manager “shall bond the entire cost of the project through a single bond, or through bonds supporting all bid packages and the construction manager’s bond for the full amount of the construction manager’s services.” NDCC § 48-01.1.09 (Supplement 1997).

The use of a construction manager changes some of the duties of the Architect and, subsequently, some of the requirements previously set out in this Manual. The following are variances from the requirements of this Manual that apply when a construction manager is used:

- 11.1 AIA Documents. When a construction manager is used, AIA Document B141/CMA: Standard Form of Agreement Between Owner and Architect Where the Construction Manager is NOT a Constructor – Construction Manager / Advisor Edition, is to be used. Along with this document, AIA 801/CMA: Standard Form of Agreement Between Owner and Construction Manager Where the Construction Manager is NOT a Constructor; AIA Document A201/CMA, General Conditions of the Contract for Construction – Construction Manager / Advisor Edition; and AIA 101/CMA: Standard Form of Agreement Between Owner and Contractor – Stipulated Sum – Construction Manager / Advisor Edition, should be utilized.
- 11.2 Exhibit G, which contains the amendments to AIA Document B141/CMA: Standard Form of Agreement Between Owner and Architect Where the Construction Manager is NOT a Constructor – Construction Manager – Advisor Edition, should be used rather than Exhibit B.
- 11.3 Exhibit H contains the amendments to be used with the agreement between the Owner and the construction manager – AIA Document B801/CMA: Standard Form of Agreement Between Owner and Construction Manager Where the Construction Manager is NOT a Constructor.
- 11.4 Duties of the Construction Manager. There are many duties that are normally the responsibility of the Architect that become the responsibility of the Construction Manager when a Construction Manager is used. The duties of the Construction Manager are set out in AIA 801/CMA: Standard Form of Agreement Between Owner and Construction Manager Where the Construction Manager is NOT a Constructor. Where these duties conflict with the duties of the Architect as contained in this Manual, the terms contained in AIA 801/CMA: Standard Form of Agreement Between Owner and Construction Manager Where the Construction Manager is NOT a Constructor, take precedence. Also, some of the duties normally the responsibility of the Architect are shared by the Architect and Construction Manager. Again, these shared duties are set out in AIA Document B141/CMA: Standard Form of Agreement Between Owner and Architect Where the Construction Manager is NOT a Constructor – Construction Manager/Advisor Edition and AIA Document B801/CMA: Standard Form of Agreement Between Owner and Construction Manager Where the Construction Manager is not a Constructor. All duties of the Architect contained in this Manual that are not modified by these two AIA documents remain duties of the Architect.

HISTORY: Amends and replaces Appendix F, 1980 Manual. State Board of Higher Education Minutes, Nov. 7, 1985, pg 5422.
Amend. SBHE Minutes, February 6, 1987, pg 5566.
Amend. Section 4, SBHE Minutes, July 16, 1986, pg 5625.
Amend. Section 3, SBHE Minutes, June 27, 1988, pg 5731.
Amend. Exhibit B, SBHE Minutes, Oct. 26, 1989, pg 5902.
Amend. Section 9.4, SBHE Minutes, May 24, 1990, pg 6002.
Amend. Section 2 & Exhibit A, SBHE Minutes, Nov. 8, 1990, pg 6059.
Amend. Section 6 & Exhibit B, SBHE Minutes, Sept. 19, 1996, pg 6685

PART THREE

**NORTH DAKOTA
UNIVERSITY SYSTEM**

ARCHITECTS-ENGINEERS MANUAL

EXHIBIT A

**COMPENSATION GUIDELINES
FOR ARCHITECTURAL SERVICES**

COMPENSATION GUIDELINES FOR ARCHITECTURAL SERVICES

1. Negotiated fees may be based on a percentage of construction contract costs, a lump sum, or hourly compensation with a stated maximum.
2. Architectural services shall be provided in accordance with Owner-Architect Agreement AIA Document B-141-1997, current edition as modified and adopted by this document, Exhibit B, or subsequent action by the State Board of Higher Education.
3. Compensation for Architectural Services shall include the following services required in connection with building design and construction:
 - Structural Engineering
 - Mechanical Engineering
 - Electrical Engineering
4. Services not included as part of the Architectural Service shall be as follows:
 - A. Survey Work
 - B. Soil Borings
 - C. Special Consultants if required.

PART THREE

**NORTH DAKOTA
UNIVERSITY SYSTEM**

ARCHITECTS-ENGINEERS MANUAL

EXHIBIT B

**OWNER-ARCHITECT
AGREEMENT AMENDMENTS**

OWNER-ARCHITECT AGREEMENT AMENDMENTS

The form for the Owner-Architect Agreement shall be AIA Document B141-1997. The following amendments shall be placed on page 2-12 under Article 2.9 MODIFICATIONS.

1. Delete Article 1.3.4 MEDIATION, Article 1.3.5 ARBITRATION and Article 1.3.6 CLAIMS FOR CONSEQUENTIAL DAMAGES.
2. Change Subarticle 1.3.7.1 to read: “This Agreement shall be governed by the laws of the State of North Dakota.”
3. In Subarticle 1.3.9.2.1 after the word “Project” insert: other than regular trips from the office to the site.
4. Amend Subarticle 1.3.9.2.6 by deleting the words “carried by” and inserting, in lieu thereof, the words “required by the Owner.” Delete the remainder of the sentence.
5. Amend Subarticle 2.4.1 to include: “normal civil engineering services.”
6. In Subarticle 2.6.1.8 in the second sentence before the words “shall not be liable” add the words: “absent negligence.”
7. Amend Subarticle 2.7.2 to include the following:
 - Delete first part of sentence “Upon request of the Owner and ...”
 - Add “The prime Contractor’s representative” following Owner designated representative.
 - Add “warranty claims” after performance.
8. Amend to delete the following sections of Subarticle 2.8.2 (.1, .2, .3, .7). These services shall be part of the designated services of this Agreement.
9. Add: Architect shall secure and keep in force during the term of the Agreement, from insurance companies authorized to do business in North Dakota: (1) commercial general liability, with minimum limits of liability of \$1,000,000 per claim and annual aggregate limit; (2) automobile liability, with minimum limits of liability of \$250,000 per person and \$1,000,000 per occurrence; and (3) workers’ compensation insurance as required by state law. Architect shall furnish Owner with certificates of insurance as evidence these policies are in effect.

Architect shall procure and maintain professional liability insurance covering liability for negligent acts, errors, or omissions in providing or failing to provide professional services, with a minimum coverage limit of \$500,000. Coverage shall be in force during the terms of this Agreement and for a period of at least twelve months thereafter.

Insurance coverage may not be canceled or modified without thirty (30) days prior written notice to Owner.

Contractor agrees to defend, indemnify, and hold harmless the state of North Dakota, its agencies, officers and employees (State), from and against claims based on the vicarious liability of the State or its agents, but not against claims based on the State’s contributory negligence, comparative and/or contributory negligence or fault, sole negligence, or intentional misconduct. This obligation to defend, indemnify, and hold harmless does not extend to professional liability claims arising from professional errors and omissions. The legal defense provided by Contractor to the State under this provision must be free of any conflicts of interest, even if retention of separate legal counsel for the State is necessary. Contractor also agrees to defend, indemnify, and hold the State harmless for all costs, expenses and attorneys’ fees incurred if the State prevails in an action against Contractor in establishing and litigating the indemnification coverage provided herein. This obligation shall continue after the termination of this agreement.

10. When applicable, substitute the word Architect with the word Engineer throughout this document.

OWNER-ARCHITECT AGREEMENT AMENDMENTS

The form for the Owner-Architect Agreement shall be AIA Document B151-1997. The following amendments shall be placed on page 18 under Article 12 OTHER CONDITIONS OR SERVICES.

1. Delete Article 7 DISPUTE RESOLUTION.
2. Change Subarticle 9.1 to read: “This Agreement shall be governed by the laws of the State of North Dakota.”
3. In Subarticle 10.2.1.1 after the word “Project” insert: other than regular trips from the office to the site.
4. Amend Subarticle 10.2.1.6 by deleting the words “carried by” and inserting, in lieu thereof, the words “required by the Owner.” Delete the remainder of the sentence.
5. Amend Subarticle 2.1 to include: “normal civil engineering services.”
6. In Subarticle 2.6.16 in the second sentence before the words “shall not be liable” add the words: “absent negligence”.
7. Add: Architect shall secure and keep in force during the term of the Agreement, from insurance companies authorized to do business in North Dakota: (1) commercial general liability, with minimum limits of liability of \$1,000,000 per claim and annual aggregate limit; (2) automobile liability, with minimum limits of liability of \$250,000 per person and \$1,000,000 per occurrence; and (3) workers’ compensation insurance as required by state law. Architect shall furnish Owner with certificates of insurance as evidence these policies are in effect.

Architect shall procure and maintain professional liability insurance covering liability for negligent acts, errors, or omissions in providing or failing to provide professional services, with a minimum coverage limit of \$500,000. Coverage shall be in force during the terms of this Agreement and for a period of at least twelve months thereafter.

Insurance coverage may not be canceled or modified without thirty (30) days prior written notice to Owner.

Contractor agrees to defend, indemnify, and hold harmless the state of North Dakota, its agencies, officers and employees (State), from and against claims based on the vicarious liability of the State or its agents, but not against claims based on the State’s contributory negligence, comparative and/or contributory negligence or fault, sole negligence, or intentional misconduct. This obligation to defend, indemnify, and hold harmless does not extend to professional liability claims arising from professional errors and omissions. The legal defense provided by Contractor to the State under this provision must be free of any conflicts of interest, even if retention of separate legal counsel for the State is necessary. Contractor also agrees to defend, indemnify, and hold the State harmless for all costs, expenses and attorneys’ fees incurred if the State prevails in an action against Contractor in establishing and litigating the indemnification coverage provided herein. This obligation shall continue after the termination of this agreement.

8. When applicable, substitute the word Architect with the word Engineer throughout this document.

PART THREE

**NORTH DAKOTA
UNIVERSITY SYSTEM**

ARCHITECTS-ENGINEERS MANUAL

EXHIBIT C

**GUIDELINES FOR PREPARATION OF
CONSTRUCTION CONTRACTS AND RELATED DOCUMENTS**

GUIDELINES FOR PREPARATION OF CONSTRUCTION CONTRACTS AND RELATED DOCUMENTS

BUILDING PROJECTS

1. The Standard Form of Agreement Between Owner and Contractor, AIA Document A101-1997 should be used unless a Construction Manager is used, in which case AIA Document A101/CMA-1992: Standard Form of Agreement Between Owner & Contractor-Stipulated Sum-Construction Manager/Advisor Edition, should be used.

PUBLIC WORKS PROJECTS

2. The Standard Form of Agreement Between Owner and Contractor or other contract approved by the SBHE or institutional legal counsel should be used.
3. Names of parties to the contract should appear identically throughout the contract and supporting documents.
4. If a change, an addition, or an omission is made on the contract, it must be initialed by both parties.
5. If the contracting party is a corporation, the president of that corporation must sign the contract or, if some other corporate officer signs, proof of authority to sign must be submitted along with the contract. Proof of authority to sign is often evidenced by a corporate resolution or bylaw.
6. Surety bonds for public improvement contracts are required if a contract exceeds \$100,000.
7. The date of the contract referred to in the surety bond must be identical to the date on the face of the contract.
8. The name of the contractor as it appears on the contract and on the surety bond must be identical as to spelling, capitalization, spacing, and placing of commas.
9. The dollar amount of the bond cannot be for less than the contract.
10. The surety bond may be dated on or after the contract date, but not prior to the contract date.
11. The signatures of the principal and the attorney-in-fact of surety on the surety bond must be acknowledged before a notary public. The surety bond does not have to be signed by the president; the Acknowledgment of Principal will identify the signatory's official position.
12. Notaries should endorse, separately from the seal, the date of expiration of their commission.
13. The surety bond need only be countersigned by a North Dakota resident agent if required by NDCC § 26.1-11-07. Frequently the attorney-in-fact of surety is also the resident agent.
14. The dates of the acknowledgments must not be prior to the date of the surety bond.
15. The surety bond must be signed by an attorney-in-fact who has current authority to sign for the surety. (Such authority is evidenced by the power of attorney.) The date the attorney signed the surety bond must not be prior to the date of the surety bond.
16. The surety bond must comply with NDCC § 48-02-06.2 and must be in the standard format required by the SBHE which includes provisions for the payment of interest on bills and claims not paid within 90 days, the payment of all sales and use taxes and worker's compensation premiums. (Exhibit D)
17. The power of attorney should be current as of the contract date. If the power of attorney was initially executed prior to the contract date, the update certificate on the power of attorney must be dated on or after the contract date.

**GUIDELINES FOR PREPARATION OF CONSTRUCTION CONTRACTS AND RELATED DOCUMENTS
(CONTINUED)**

18. Does the power of attorney limit, to a certain dollar amount, the value of the contract which the attorney is authorized to ensure on behalf of the surety? If so, the contract amount may not exceed the dollar amount stated in the power of attorney.
19. The name of the insured must coincide with the party whose name is on the contract.
20. Insurance requirements must include all coverages and limits outlined in Exhibit E. The Owner and the State of North Dakota and its agencies, officers, and employees shall be endorsed on the commercial general liability policy and automobile liability policy as additional insured. **The contractor shall furnish certificates of insurance and copies of the additional insured endorsements prior to commencement of the contract.** Include a copy of the Signed Endorsement indicating the additional insured.

NDSU REQUIREMENT: Certificates of Indorsement shall accompany the contract documents. Disclaimers that are attached to the commercial general liability policy and automobile liability policy shall have from the endorsee, such a statement modifying the endorsement.

Endorsements shall contain a "Waiver of Subrogation" waiving any right of recovery the insurance companies may have against the State. Copies of the policies must be provided upon request.

The general contractor's bid shall include the builder's risk premium on an amount equal to 100 percent of the base bid plus all add alternates, plus 75 percent of the base bid and add alternates for other contracts, including the architect's fee. Builders' risk insurance shall remain in effect until the building or project is accepted by the Board.

For all projects for which the total estimated cost exceeds \$100,000, Contractor shall submit to the Owner a copy of the written safety program to be used as guidelines and direction of the Contractor's and subcontractors' worksite activities. Details of the requirement appear in Exhibit E.

21. The Tax Clearance certificate and Worker's Compensation certificate must be current, i.e., must not have expired, as of the date the contracts are submitted for approval.
22. The name of the contractor indicated on the tax clearance certificate and Worker's Compensation certificate should correspond to the name of the contractor on the face of the contract.
23. The "Agreement for Storing Materials Off-Site, Exhibit F, shall be accompanied by a current power of attorney. The power of attorney evidences the authority of the attorney to sign for the surety.
24. **NDSU Amendments to AIA A201-1997:**
The following must be placed in Subparagraph 8.1.of "AIA 101-Standard Form of Agreement Between Owner and Contractor":

Amend AIA Document A201-1997 as follows:

- | | |
|--------------------|---|
| Subparagraph 3.4.3 | add "NDSU has an obligation to make information available to the campus on where to get information about Registered Sex Offenders who are working on NDSU property. You are obligated to inform NDSU Campus Police, in advance of any of your employees being on NDSU property, of any such employee who is a Registered Sex Offender. This obligation includes property owned or controlled by NDSU that is at locations other than the main campus (for example, the Equine Center, Downtown Campus, Research & Extension Centers, etc.)." |
| Subparagraph 4.4.1 | strike "arbitration" |
| Subparagraph 4.4.5 | strike "and arbitration" |
| Subparagraph 4.4.6 | second line, strike "and arbitration";
strike all remaining "arbitration" and replace with "or by mediation" |
| Subparagraph 4.4.8 | strike "by mediation or by arbitration" and replace with "or by mediation" |
| Subparagraph 4.5.1 | strike "arbitration or" |

Subparagraph 4.5.2	strike “The request may be made concurrently with the filing of a demand for arbitration but, in such event,”; capitalize “m” in the next work (mediation); strike “arbitration or” from remainder of last sentence
Paragraph 4.6	delete in entirety
Subparagraph 8.3.1	strike “and arbitration”
Subparagraph 9.7.1	strike “awarded by arbitration” and replace with “agreed to in mediation”
Subparagraph 10.3.3	delete in entirety
Paragraph 10.5	delete in entirety
Subparagraph 11.4.9	strike “an arbitration award” and replace with “a mediation agreement”
Subparagraph 11.4.10	delete “The Owner as fiduciary shall, in the case of arbitration, make settlement with insurers in accordance with directions of arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

PART THREE

**NORTH DAKOTA
UNIVERSITY SYSTEM**

ARCHITECTS-ENGINEERS MANUAL

EXHIBIT D

**PERFORMANCE-
PAYMENT BOND**

PERFORMANCE - PAYMENT BOND
Standard Format Required by the North Dakota State Board of Higher Education

KNOW ALL MEN BY THESE PRESENTS: That we ^{*1} _____ ,
a ^{*2} _____ hereinafter called "Principal" and
^{*3} _____ of _____ State of _____ ,
corporation organized under the laws of the State of _____ , and duly authorized to transact business in the
State of North Dakota hereinafter called the "Surety," are held and firmly bound unto ^{*4} _____ ,
hereinafter called "Owner" in the penal sum of _____ dollars (\$ _____)
in lawful money of the United States for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors,
administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, The Principal entered into a certain contract with the Owner,
dated the ^{*5} _____ day of _____ , _____ , a copy of which is hereto attached and made a part hereof for
the construction of:

NOW, THEREFORE, if the Principal and all subcontractors shall well, truly, and fully perform, all the undertakings, covenants, terms,
conditions, and provisions of said contract during the original term thereof, and any extension thereof which may be granted by the
Owner, with or without notice to the surety, and if he shall pay all bills or claims on account of labor and materials, including supplies
used for machinery and motor power equipment, performed, furnished, and used in and about the performance of said contract,
including all demands of subcontractors, and has made, or will make, prior to commencement of any work by himself or itself, or any
subcontractor under such contract, full and true report to the North Dakota Worker's Compensation Bureau and Unemployment
Compensation Division of the payroll expenditures for the employees to be engaged in such work, and if he, or it, has paid, or will
pay the premium thereon prior to commencement of such work, and if he, or it, will pay or cause to be paid all sales and use taxes
payable as a result of such contract, including use taxes due from any subcontractor under the above named Principal, and shall pay
all gasoline and special motor fuel taxes used in the performance of such contract, and shall pay all motor vehicle fees required for
commercial vehicles used in connection with the performance of said contract, and shall pay to the State of North Dakota all state
income taxes upon income derived or to become due from such work or project, and shall fully indemnify and save harmless the Owner
from all cost or damage which it shall suffer by reason of failure to do so, and shall reimburse and repay the Owner for all outlay and
expense which the Owner may incur in making good any default and shall promptly make payment, including interest of the amount
authorized under Section 13-01-14, NDCC, on bills and claims not paid within 90 days, to all persons, firms, subcontractors, and
corporations, furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any
authorized extension or modification thereof, including all amounts due for repairs on machinery, equipment and tools, consumed or
used in connection with the construction of such work, and all insurance premiums on said work, whether by subcontractor or
otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time,
alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the
same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time,
alteration or addition to the terms of the contract or to the work or to the specifications.

**PERFORMANCE - PAYMENT BOND
(CONTINUED)**

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed this the _____ day of _____, _____.

ATTEST:

(Principal) Secretary

Principal

By ^{*6} _____

(SEAL)

Address

Surety

By _____
Attorney-in-Fact

Address

Countersigned by:

Resident Agent

Address

- *1 Correct name of Contractor
- *2 A Corporation, a Partnership, or an Individual, as case may be
- *3 Correct name of Surety
- *4 Correct name of Owner
- *5 Date of Bond, cannot be prior to date of Contract
- *6 I Contractor is Partnership, all partners should execute bond.

Signatures must be acknowledged before a Notary Public
Attach copy of Power of Attorney to each Bond

**ACKNOWLEDGMENT OF PRINCIPAL
(Individual or Partnership)**

STATE OF _____

SS

COUNTY OF _____

On this _____ day of _____, _____, before me personally appeared

_____ known to me to be the person (or persons) who

is (are) described in and who executed the within instrument, and acknowledged to me that he/she (or they) executed the same.

Notary Public**

(SEAL)

**ACKNOWLEDGMENT OF PRINCIPAL
(Corporation)**

STATE OF _____

SS

COUNTY OF _____

On this _____ day of _____, _____, before me personally appeared

_____ known to me to be the person (or persons) who

is (are) described in and who executed the within instrument, and acknowledged to me that he/she (or they) executed the same.

Notary Public**

(SEAL)

PART THREE

**NORTH DAKOTA
UNIVERSITY SYSTEM**

ARCHITECTS-ENGINEERS MANUAL

EXHIBIT E

**INSURANCE AND
SAFETY REQUIREMENTS**

INSURANCE AND SAFETY REQUIREMENTS

Architect/Engineer shall include the following in the General Conditions of the Specifications

For all capital projects or improvements, the Contractor shall procure and maintain, at a minimum, the following insurance coverage and limits during the term of the contract and for two years thereafter:

Liability Insurance in a form providing coverage not less than that of standard Commercial General Liability insurance policy (occurrence form) in the following amounts:

For all projects for which the total estimated cost exceeds \$100,000: not less than \$1,000,000 per occurrence, \$2,000,000 general aggregate limit and \$1,000,000 aggregate products and completed operations.

For projects for which the total estimated cost is \$100,000 or less: not less than \$250,000 per occurrence, \$1,000,000 general aggregate limit and \$1,000,000 aggregate products and completed operations.

The aggregate limit shall apply separately to occurrences at the location or project to which the contract relates. The policy shall include a "stop-gap" Employers Liability endorsement to cover the employer's liability for injury to employees which fall outside the State's Workers' Compensation laws.

Automobile Liability Insurance covering all owned, non-owned and hired automobiles, trucks and trailers. Such insurance shall provide coverage not less than that of the Standard Comprehensive Automobile Liability policy in limits not less than \$1,000,000 combined Single Limit each occurrence for bodily injury and property damage.

Workers' Compensation benefit limits as required by the State of North Dakota.

Other insurance deemed necessary by the Contractor, including, but not limited to, coverage on contractor's or subcontractor's equipment.

The Owner and the State of North Dakota and its agencies, officers, and employees (State) shall be endorsed on the commercial general liability policy and automobile liability policy as additional insured. Contractor shall furnish certificates of insurance and copies of the additional insured endorsements prior to commencement of the contract. Endorsements shall contain a "Waiver of Subrogation" waiving any right of recovery the insurance companies may have against the State as well as provisions that the policies and/or endorsements may not be canceled or modified without thirty days prior written notice to the Owner, and that any attorney who represents the State under the policy must first qualify and be appointed by the North Dakota Attorney General as required under NDCC Section 54-12-08.

Contractor's insurance coverage shall be primary (i.e. pay first) as respects any insurance, self-insurance or self-retention maintained by the State. Any insurance, self-insurance or self-retention maintained by the State shall be in excess of the Contractor's insurance and shall not contribute with it.

The insurance may be in policy or policies of insurance, primary and excess, including the so-called umbrella or catastrophe form and be placed with insurers rated "A" or better by A.M. Best Company, Inc.

The State shall be indemnified, saved and held harmless to the full extent of any coverage actually secured by the Contractor in excess of the minimum requirements set forth above.

All subcontractors shall maintain the same scope of insurance required of the Contractor. The General Contractor shall ensure compliance with this requirement.

All Risk Builder's Risk insuring the interest of Owner, Contractor(s) and subcontractors of all tiers including coverage on an All Risk basis, including, but not limited to, coverage against fire, lightning, wind damage, hail, explosion, riot or civil commotions, aircraft and other vehicles, collapse and coverage available under the so-called Installation Floater. The policy(ies) for such coverage shall be secured and maintained by the General Contractor in an amount equal to the Full Completed Value of the project. Any deductible amounts under the policies shall be the sole responsibility of the General Contractor.

INSURANCE AND SAFETY REQUIREMENTS

(CONTINUED)

The general contractor's bid shall include the builder's risk premium on an amount equal to 100 percent of the base bid plus all add alternates, plus 75 percent of the base bid and add alternates for other contracts, including the architect's fee.

Builder's risk insurance shall remain in effect until the building or project is accepted.

The State Fire and Tornado Fund shall be contacted by the institution regarding additions to or remodeling of existing buildings to ascertain that adequate coverage for the existing building will be in effect should damage occur due to the contractor's work. Institutions should request permission from the State Insurance Commissioner for a State Fire and Tornado Fund waiver of subrogation prior to construction.

Contractor shall comply with the provisions of AIA Document A201 Article 10, Protection of Persons and Property, General Conditions of the Contract for Construction. Contractor shall keep informed of and comply with all federal, state and local laws, regulations and other legal requirements governing safety, health, sanitation and the performance of the contract in general. Contractor shall provide, inspect and maintain all safeguards, safety devices, protective equipment, safety programs and other needed actions reasonable necessary to protect the life, health, and property of the Contractor, subcontractors, the Owner and the State, including their employees, officers, assigns and agents, and the public, in connection with the performance of work covered by the contract.

For all projects for which the total estimated cost exceeds \$100,000, Contractor shall submit to the Owner a copy of the written safety program to be used as guidelines and direction of the Contractor's and subcontractors' worksite activities. This program must meet all federal, state and local laws and other legal requirements and include the following minimum provisions: (1) a worksite safety policy and mission statement; (2) assigned responsibilities among management, supervisors and employees; (3) a system for periodic self-inspections, including inspection of job sites, materials, work performance and equipment; (4) a thorough accident and injury reporting and investigation process; (5) a safety orientation program including first aid, medical attention, emergency facilities, fire protection and prevention, housekeeping, illumination, sanitation, personal protective equipment and occupational noise exposure; and (6) a safety training program including safety "tool box" meetings and other systems for ongoing training, including training for employees on the recognition, avoidance and prevention of unsafe conditions.

It shall be a condition of the contract, and shall be made a condition of each subcontract entered into pursuant to the contract, that the Owner assumes no liability relating to its receipt and review of the Contractor's safety plan. Safety remains the responsibility of the Contractor. Furthermore, the right of the Owner to receive and review the safety plan shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

WAIVER OF SUBROGATION AND SEVERABILITY OF INTERESTS ENDORSEMENT

A certificate of insurance has been provided to North Dakota State University by the undersigned insurer on behalf of:

for the following project:

This endorsement is provided to comply with the North Dakota State Board of Higher Education waiver of subrogation requirements, and it is understood and agreed that, with respect to the insurance coverages listed on the certificate, the undersigned insured hereby waives all rights to subrogation against North Dakota State University and the State of North Dakota, its agencies, officers and employees under the insurance policies as so indicated on the certificate.

Further, where the State of North Dakota, North Dakota State Board of Higher Education or North Dakota State University is included as an additional insured, the policies as stated on the certificate of insurance shall include a cross liability or severability of interests clause in addition to the waiver of subrogation.

The undersigned also certifies that they are authorized to make this endorsement on behalf of said insurer.

Signature Authorized Agent for Insurer

Print Name Authorized Agent for Insurer

Date

PART THREE

**NORTH DAKOTA
UNIVERSITY SYSTEM**

ARCHITECTS-ENGINEERS MANUAL

EXHIBIT F

**AGREEMENT FOR
STORING MATERIALS OFF-SITE**

AGREEMENT FOR STORING MATERIALS OFF-SITE

This supplemental agreement is entered into this _____ day of _____, _____ between the

_____ (hereinafter called "the Owner") and
_____ (hereinafter called "the Contractor")
for _____

WHEREAS, the Contractor desires to store certain materials off the site for use in construction of

under contract dated _____ in order to furnish better storage, and desires to
obtain advances for materials properly stored on the premises of _____

to the Contractor in accordance with contract provisions as if they were properly stored on the site, provided the following conditions are complied with:

1. The above described warehouse selected for off-site storage must be suitable for storage and satisfactory to the Owner;
2. Any extra expense incurred because of off-site storage shall be borne by the Contractor;
3. Storage shall be at the risk of the Contractor and the loss, damage, or destruction of any materials so stored does not relieve the Contractor of the duty to complete the contract and the Contractor shall, if necessary, replace such items at his own expense;
4. The Owner will advance to the Contractor 90% of the invoice value of the materials thus stored;
5. Payments for materials stored off the site will be made only on regular Periodical Estimates at the prescribed monthly intervals the same as for materials stored on the site;
6. All materials stored shall be adequately covered by insurance, and;
7. The consent of Surety shall be obtained and evidenced by signature hereto.

STATE BOARD OF HIGHER EDUCATION
Owner

Contractor

By: _____

By: _____

Surety

COUNTERSIGNED BY:

By: _____

Resident Agent

PART THREE

**NORTH DAKOTA
UNIVERSITY SYSTEM**

ARCHITECTS-ENGINEERS MANUAL

EXHIBIT G

**OWNER-ARCHITECT AGREEMENT AMENDMENTS TO AIA DOCUMENT
B141/CMA: STANDARD FORM OF AGREEMENT BETWEEN OWNER
AND ARCHITECT WHERE THE CONSTRUCTION MANAGER IS NOT A
CONSTRUCTOR – CONSTRUCTION MANAGER – ADVISOR EDITION**

OWNER-ARCHITECT AGREEMENT AMENDMENTS TO AIA DOCUMENT B141/CMA: STANDARD FORM OF AGREEMENT BETWEEN OWNER AND ARCHITECT WHERE THE CONSTRUCTION MANAGER IS NOT A CONSTRUCTOR – CONSTRUCTION MANAGER – ADVISOR EDITION

The following amendments shall be placed in Article 12 of AIA Document B141/CMA: Standard Form of Agreement Between Owner and Architect Where the Construction Manager is NOT a Constructor – Construction Manager – Advisor Edition:

1. Paragraph 2.1.1 is amended to include normal civil engineering services.
2. In the first sentence of paragraph 2.6.5, the words “at critical stages and,” are inserted after the word “site,” and the second sentence is deleted and replaced with:

Although the Architect shall not be required to make exhaustive continuous on-site inspections to check the quality or quantity of the work, inspections shall be frequent enough to monitor the work under the circumstances.
3. In paragraph 2.6.16, the words “absent negligence” are added in the second sentence before the words “shall not be liable.”
4. In paragraph 3.4.1, the phrase “and programming the requirements of the Project” is deleted.
5. Article 7 is deleted (Arbitration).
6. Article 9.1 is changed to read: “This Agreement shall be governed by the laws of the State of North Dakota.”
7. In paragraph 10.2.1.1, “other than regular trips from the office to the site” is inserted after the word “Project.”
8. In paragraph 10.2.1.5, the phrase “carried by the Architect and Architect’s consultants” is deleted and replaced with “required by the Owner.”
9. Paragraph 10.3.1 is deleted.
10. In paragraph 10.3.2, the word “Subsequent” is deleted and the word “monthly” is deleted and replaced with “as funds become available.”
11. The following clause regarding insurance is added:

Architect shall secure and keep in force during the term of the Agreement, from insurance companies authorized to do business in North Dakota: (1) commercial general liability, with minimum limits of liability of \$1,000,000 per claim and annual aggregate limit; (2) automobile liability with minimum limits of \$250,000 per person and \$1,000,000 per occurrence; and (3) workers’ compensation insurance as required by state law. Architect shall furnish Owner with certificates of insurance as evidence these policies are in effect.

Architect shall procure and maintain professional liability insurance covering liability for negligent acts, errors, or omissions in providing or failing to provide professional services, with a minimum coverage limit of \$500,000. Coverage shall be in force during the terms of this Agreement and for a period of at least twelve months thereafter.

Insurance may not be canceled or modified without thirty (30) days’ prior written notice to Owner.

Architect agrees to indemnify, save, and hold harmless the Owner and the State of North Dakota and its agencies, officers, and employees, from any and all claims of any nature, including all costs, expenses, and attorney's fees, which may in any manner arise out of or result from architect's negligent acts or omissions in performing work under this Agreement, except for claims arising out of the sole negligence of Owner or the State.

**OWNER-ARCHITECT AGREEMENT AMENDMENTS TO AIA DOCUMENT B141/CMA: STANDARD FORM OF AGREEMENT BETWEEN OWNER AND ARCHITECT WHERE THE CONSTRUCTION MANAGER IS NOT A CONSTRUCTOR – CONSTRUCTION MANAGER – ADVISOR EDITION
(CONTINUED)**

Architect's obligation to indemnify, save, and hold harmless the State shall not be limited to the amount of insurance actually secured under this Agreement, including any insurance above the minimum required, but shall extend to the full amount on any claims, losses, or damages incurred or awarded, including costs, expenses, and attorney's fees.

12. When applicable, substitute the word "Architect" with the word "Engineer" throughout this document.

PART THREE

**NORTH DAKOTA
UNIVERSITY SYSTEM**

ARCHITECTS-ENGINEERS MANUAL

EXHIBIT H

**OWNER-CONSTRUCTION
MANAGER AGREEMENT AMENDMENTS**



OWNER-CONSTRUCTION MANAGER AGREEMENT AMENDMENTS

The following terms and conditions are incorporated into AIA Document B801/CMA: Standard Form of Agreement Between Owner and Construction Manager Where the Construction Manager is NOT a Constructor:

- 14.1 Article 10.1 is changed to read: “This Agreement shall be governed by the laws of the State of North Dakota.”
- 14.2 The heading of Article 12.2 is changed to read “REIMBURSABLE EXPENSES WHEN AUTHORIZED BY THE OWNER.”
- 14.3 The following is added to paragraph 12.2.1.1 after the word “Project”: “(other than regular trips from the office to the site).”
- 14.4 The phrase “normally carried by the Construction Manager” is deleted from paragraph 12.2.1.4 and replaced with: “required by the Owner.”
- 14.5 Paragraph 12.3.1 is deleted.
- 14.6 In paragraph 12.3.2, the word “Subsequent” is deleted and the word “monthly” is deleted and replaced with “as funds become available.”
- 14.7 Construction Manager shall bond the entire cost of the project through a single bond, or through bonds supporting all bid packages and the Construction Manager’s bond for the full amount of the Construction Manager’s services.
- 14.8 Liability Insurance
- 14.8.1 Construction Manager shall secure and keep in force during the term of this contract from insurance companies, government self-insurance pools, or government self-retention funds authorized to do business in North Dakota, commercial general liability covering Construction Manager for any and all claims of any nature which may in any manner arise out of or result from this contract. The minimum limits of liability required are \$250,000 per person and \$750,000 per occurrence.
- 14.8.2 The Owner, including its officers and employees, shall be endorsed on the commercial general liability policy as additional insured. Construction shall furnish a certificate of insurance and a copy of the additional insured endorsement to the undersigned Owner representative prior to commencement of this contract. Said endorsement shall contain a “Waiver of Subrogation” waiving any right of recovery the insurance company may have against the Owner as well as provisions that the policy and/or endorsement may not be canceled or modified without thirty (30) days prior written notice to the undersigned Owner representative, and that any attorney who represents the Owner under this policy must first qualify as and be appointed by the North Dakota Attorney General as a Special Assistant Attorney General as required under NDCC § Section 54-12-08.
- 14.8.3 Construction Manager’s insurance coverage shall be primary (i.e., pay first) in respect to any insurance, self-insurance, or self-retention maintained by the Owner. Any insurance, self-insurance, or self-retention maintained by the Owner shall be excess of Construction Manager’s insurance and shall not contribute with it.
- 14.8.4 Any deductible amount or other obligations under the policy(ies) shall be the sole responsibility of Construction Manager.
- 14.8.5 The Owner will be indemnified, saved, and held harmless to the full extent of any coverage actually secured by Construction Manager in excess of the minimum requirements set forth above.

NORTH DAKOTA STATE UNIVERSITY FACILITIES MANAGEMENT DESIGN STANDARDS

PART FOUR

**AMERICAN WITH DISABILITIES ACT
ACCESSIBILITY GUIDELINES**

PART FOUR

AMERICAN WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES

EXHIBIT A

CONFORMANCE STATEMENT



ADAAG CONFORMANCE STATEMENT
NORTH DAKOTA DEPARTMENT OF COMMERCE/DCS
SFN 19701 (06/03)

(This form must be submitted for new construction, alterations, and additions to buildings and facilities subject to the Americans with Disabilities Act.)

AMERICAN WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) CONFORMANCE STATEMENT													
Name & Building Address	Owner												
	City/County												
Date Construction to Start	Projected Completion Date												
Type of Construction <table style="margin-left: auto; margin-right: auto; border: none;"> <tr> <td style="padding: 0 20px;">New Building</td> <td style="text-align: center;">_____</td> <td style="padding: 0 20px;">Sq. Ft.</td> <td style="text-align: center;">_____</td> </tr> <tr> <td style="padding: 0 20px;">Addition</td> <td style="text-align: center;">_____</td> <td style="padding: 0 20px;">Sq. Ft.</td> <td style="text-align: center;">_____</td> </tr> <tr> <td style="padding: 0 20px;">Alteration</td> <td style="text-align: center;">_____</td> <td style="padding: 0 20px;">Sq. Ft.</td> <td style="text-align: center;">_____</td> </tr> </table>		New Building	_____	Sq. Ft.	_____	Addition	_____	Sq. Ft.	_____	Alteration	_____	Sq. Ft.	_____
New Building	_____	Sq. Ft.	_____										
Addition	_____	Sq. Ft.	_____										
Alteration	_____	Sq. Ft.	_____										
Describe Alteration:													
Type of Occupancy/Use (Refer to Occupancies and Divisions defined in the International Building Code):													
I certify, to the best of my professional judgement, that the plans and specifications for the above referenced building or facility conforms with the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities as adopted in North Dakota Century Code Section 54-21.3-04.1.													
_____ Name of Design Professional	_____ Firm												
_____ Signature	_____ Phone Number Date												
Send To: Division of Community Services 1600 East Century Avenue, Suite 2 P O Box 2057 Bismarck, North Dakota 58502-2057													