**XVI During Construction**

1. **Abatement**

What is it**:**

Asbestos: a fibrous mineral, either amphibole or chrysotile, formerly used for making incombustible or fireproof articles and in building insulation. A fabric woven from asbestos fibers, formerly used for theater curtains, firefighters' gloves, formerly widely used in the form of fabric or board as a heat-resistant structural material

Asbestos Abatement

The size and scope of the overall project, with particular reference to the total amount of asbestos-containing material that will be disturbed determines the reporting or filing requirements established in the Asbestos Control Program Rules. An asbestos project is defined as any form of work that will disturb more than 25 linear feet or more than 10 square feet of asbestos-containing material.

Who is involved**?**

Every owner of a building where asbestos abatement activity occurs is responsible for the performance of the asbestos abatement activities by his/her agent, contractor, employee, or other representative. Each building owner is responsible for determining the amount of asbestos-containing material that may be disturbed during the course of work.

How/Process:

Before Abatement work-

* Determine the age of the building. Buildings prior to 1980 should be considered to have asbestos.
* Verify whether a full building Asbestos Survey, Inspection , and Testing was performed.
* If there is a report determine if the area of work contains Asbestos/Hazardous material and whether abatement is required.
* Building inspection
* Deconstruction & Non-Deconstructive survey.
* Inspection & Testing
* Obtain Survey/ Inspection/ Testing Building Report Document for WSU DCS archivist to file in the WSU Hazardous Abatement “Red Files”
* Coordinate scope of work & disposal w/ OEHS
* Establish OEHS FO for disposal
* Town Hall meeting/notification
* Issue Right to Know notification to contractor.
* 10 day notification SOM
* Abatement operation
* Air monitoring, PO required
* Clearances
* Obtain Air monitoring Reports for WSU DCS archivist to file in the WSU Hazardous Abatement “Red Files”

Checklist:

Common areas to be abated( ceiling tile, pipe insulation, floor mastic, spline ceilings, fireproofing, fume hoods, doors, frames, sinks, concrete, drywall,

Timeline Considerations:

10 day notification to the state

Forms:

OEHS

Right to Know,

Air Monitoring and occupancy clearances

Town Hall

Daily Time & Material Tickets

Filing:

Full Building Asbestos Inspection /Testing Report

Red Files

Air monitoring reports

Clearances

Daily time & material sheets

b. Geo-Technical

c. Air monitoring

d. Commissioning

e. Testing & Balancing

f. Material testing

g. Audiovisual

h. Security

i. Furniture

j. Low voltage contractor

**k. Building Controls/Siemens**

What it is:  
WSU have a blanket contract with Siemens for controls. All **new** controls will be Siemen’s. If renovating mechanical systems and controls verify with Senior Director of Operations that the new system should match existing system in the building,

The size of the project determines how it is designed and bought out.

For Projects less than $50,000**:** Design engineer to provide a sequence of operations. The Subcontractor or General Contractor will coordinate, purchase and install Siemen’s equipment using our discount.

For Projects over $50,000:Siemen’s to be brought in early in design to coordinate controls with design engineers. A req should be created to cover the design costs for Siemens. Siemens to produce control documents including sequence of operations for the bid set released with the balance of the construction documents for bids. . The University directly contracts with Siemen’s to purchase the controls at our negotiated discount. The General Contractor or CM will solicit a bid for the installation of the Siemens controls purchased by the University.

Who is involved:  
 The director of utilities

How/Process:

Checklist

Timeline Considerations:

Forms:

Filing:

l. Use tax & Pre-purchased chilers

1. **HazMat testing, Air monitoring, sampling.**
2. **Project Kickoff ( March 2014 NMilstein)**

What is it:

Coordination meeting with contractor to kick off construction period and review expectations.

Who is involved:

* Contractor
* Architect/engineer & any other consultants
* Customer and user groups as appropriate to space
* Departments who may have activities affected by construction/site
* Project manager
* Building engineer/operations Associate Director
* Other parties with whom construction details will need to be coordinated such as C & IT (data, phones) , Public Safety etc.
* OEHS – if abatement is complex and needs to be coordinated
* Abatement contractors
* Outside vendors who may be doing work in the building/area that may be affected by construction

How/Process:

* PM coordinates meeting asap after contract is signed and before construction commences. This meeting should clarify many questions specific to the project: communication/project authority, expectations with regard to site security, cleanup, staging materials, construction schedule, meeting schedule, building utility shutdown procedure etc. The intent is to discuss and document these expectations with the contractor and to some extent to ensure the customer is aware of the process of construction. It also provides an opportunity to remind the customer the expectations with regard to site safety, schedule etc. By the end of the meeting all should understand the “chain of command” with regard to the project authority so customers know they do not have the authority to direct the contractor and contractors know the “rules of the road” with regard to construction on our campus.
* PM prepares meeting agenda see Pre-construction kickoff meeting agenda Forms/Documents) editing with any special project considerations. It is useful to prepare this agenda a few days in advance to allow PM adequate time to incorporate all items that must be discussed into the meeting agenda.
* PM reserves recorder and records meeting. After meeting, PM burns disk for project record.

Checklist:

* Discuss all items listed in pre-construction meeting agenda adjusting/ expanding the content of the agenda to suit project scope and special details.
* It is helpful to have a floor plan, campus map, Googlemaps view of building for discussion of exiting, fire separation, staging of materials, contractor parking etc.
* In particular remind contractor of date of substantial completion and liquidated damages as noted in their contract, discuss building notification system and the reason for the 7 day notice and that there are no exceptions, introduce the building engineer if present to assist in communication between contractor and engineer

Timeline Considerations:

* Meeting should be scheduled as quickly as possible after a contractor has been selected to ensure contract schedule is maintained and the contractor has the maximum time for construction. It may be scheduled during the time when contract is routing for approval in order to save time, as long as it is made clear that mobilization on site must await contract approval. The intent is to ensure that WSU does not hold up contractor from beginning work and constraining project schedule but at the same time, protects the university’s interests by making sure there is a signed contract in place before contractor begins work.

Forms/Documents:

* Pre-construction conference agenda ( in the Toolbox)

Filing:

**\Project number and Project name\2.0\_Communication\Mtg\_Minutes\Contractor**

1. **Access (Temporary access card & other access to construction spaces)**
2. **Move-out**
3. **Submittals Shop Drawings and RFIs** ( L Carter 3/6/14)

What is it: Submittals are documents that are provided to the owner, architect and engineer for their review, approval and consideration to ensure that the specified products and materials are installed in the building project. The submittals are used to choose and confirm the materials, their patterns and colors to meet the contract specifications. Typically known as “shop drawings”, the submittals can consist of shop drawings, product data, warranties, certifications, project manuals, or anything that explains part of the construction process.

Who is involved: Generally, the architect and/or engineer are responsible for reviewing and approving the submittals with the owner’s rep reviewing the submitted materials for compliance. When there is no consultant on the project, the review and approval process becomes the responsibility of the project manager and/or planner.

How/Process: The contractor submits the shop submittals to the consultant for review and approval. If there is not a consultant on the project, the shop submittals are sent directly to the project manager and planner for review and approval. The reviewer notes and stamps the submittal and returns it back to the contractor. If the submittal is rejected, the contractor is required to resubmit the shop submittal based on the reviewers notes indicated in the original shop submitted.

Checklist: The consultant should keep a shop drawing log that indicates what submittals have been issued by the contractor, when it was submitted and when it was reviewed and returned.

Timeline Considerations: The consultant contractually has 14 calendar days to return the shop submittals. Consideration should be taken for submittals for items that have lead times that could impact the project schedule.

Forms: Along with a shop submittal log to track each submittal, a shop submittal stamp (see fig. 1) is required for each submittal to indicate its level of compliance.

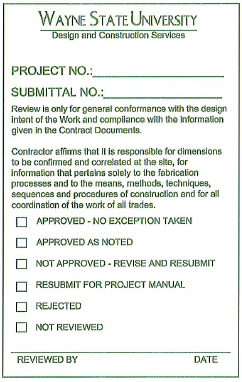


Figure 1

Filing: Each submittal should indicate its corresponding division. The divisions are as follows:

**Division 00 - Procurement and Contracting Requirements**

* 00 00 00 - Procurement and Contracting Requirements
* 00 10 00 - Solicitation
* 00 20 00 - Instructions for Procurement
* 00 30 00 - Available Information
* 00 40 00 - Procurement Forms and Supplements
* 00 50 00 - Contracting Forms and Supplements
* 00 60 00 - Project Forms
* 00 70 00 - Conditions of the Contract
* 00 80 00 - *Unassigned*
* 00 90 00 - Revisions, Clarifications, and Modifications

**Division 01 - General Requirements**

* 01 00 00 - General Requirements
* 01 10 00 - Summary
* 01 20 00 - Price and Payment Procedures
* 01 30 00 - Administrative Requirements
* 01 40 00 - Quality Requirements
* 01 50 00 - Temporary Facilities and Controls
* 01 60 00 - Product Requirements
* 01 70 00 - Execution and Closeout Requirements
* 01 80 00 - Performance Requirements
* 01 90 00 - Life Cycle Activities

**Division 02 - Existing Conditions**

* 02 00 00 - Existing Conditions
* 02 10 00 - *Unassigned*
* 02 20 00 - Assessment
* 02 30 00 - Subsurface Investigation
* 02 40 00 - Demolition and Structure Moving
* 02 50 00 - Site Remediation
* 02 60 00 - Contaminated Site Material Removal
* 02 70 00 - Water Remediation
* 02 80 00 - Facility Remediation
* 02 90 00 - *Unassigned*

**Division 03 - Concrete**

* 03 00 00 - Concrete
* 03 10 00 - Concrete Forming and Accessories
* 03 20 00 - Concrete Reinforcing
* 03 30 00 - Cast-in-Place Concrete
* 03 40 00 - Precast Concrete
* 03 50 00 - Cast Decks and Underlayment
* 03 60 00 - Grouting
* 03 70 00 - Mass Concrete
* 03 80 00 - Concrete Cutting and Boring
* 03 90 00 - *Unassigned*

**Division 04 - Masonry**

* 04 00 00 - Masonry
* 04 10 00 - *Unassigned*
* 04 20 00 - Unit Masonry
* 04 30 00 - *Unassigned*
* 04 40 00 - Stone Assemblies
* 04 50 00 - Refractory Masonry
* 04 60 00 - Corrosion-Resistant Masonry
* 04 70 00 - Manufactured Masonry
* 04 80 00 - *Unassigned*
* 04 90 00 - *Unassigned*

**Division 05 - Metals**

* 05 00 00 - Metals
* 05 10 00 - Structural Metal Framing
* 05 20 00 - Metal Joists
* 05 30 00 - Metal Decking
* 05 40 00 - Cold-Formed Metal Framing
* 05 50 00 - Metal Fabrications
* 05 60 00 - *Unassigned*
* 05 70 00 - Decorative Metal
* 05 80 00 - *Unassigned*
* 05 90 00 - *Unassigned*

**Division 06 - Wood, Plastics, Composites**

* 06 00 00 - Wood, Plastics, Composites
* 06 10 00 - Rough Carpentry
* 06 20 00 - Finish Carpentry
* 06 30 00 - *Unassigned*
* 06 40 00 - Architectural Woodwork
* 06 50 00 - Structural Plastics
* 06 60 00 - Plastic Fabrications
* 06 70 00 - Structural Composites
* 06 80 00 - Composite Fabrications
* 06 90 00 - *Unassigned*

**Division 07 - Thermal and Moisture Protection**

* 07 00 00 - Thermal and Moisture Protection
* 07 10 00 - Dampproofing and Waterproofing
* 07 20 00 - Thermal Protection
* 07 25 00 - Weather Barriers
* 07 30 00 - Steep Slope Roofing
* 07 40 00 - Roofing and Siding Panels
* 07 50 00 - Membrane Roofing
* 07 60 00 - Flashing and Sheet Metal
* 07 70 00 - Roof and Wall Specialties and Accessories
* 07 80 00 - Fire and Smoke Protection
* 07 90 00 - Joint Protection

**Division 08 - Openings**

* 08 00 00 - Openings
* 08 10 00 - Doors and Frames
* 08 20 00 - *Unassigned*
* 08 30 00 - Specialty Doors and Frames
* 08 40 00 - Entrances, Storefronts, and Curtain Walls
* 08 50 00 - Windows
* 08 60 00 - Roof Windows and Skylights
* 08 70 00 - Hardware
* 08 80 00 - Glazing
* 08 90 00 - Louvers and Vents

**Division 09 - Finishes**

* 09 00 00 - Finishes
* 09 10 00 - *Unassigned*
* 09 20 00 - Plaster and Gypsum Board
* 09 30 00 - Tiling
* 09 40 00 - *Unassigned*
* 09 50 00 - Ceilings
* 09 60 00 - Floorings
* 09 70 00 - Wall Finishes
* 09 80 00 - Acoustic Treatment
* 09 90 00 - Painting and Coating

**Division 10 - Specialties**

* 10 00 00 - Specialties
* 10 10 00 - Information Specialties
* 10 20 00 - Interior Specialties
* 10 30 00 - Fireplaces and Stoves
* 10 40 00 - Safety Specialties
* 10 50 00 - Storage Specialties
* 10 60 00 - *Unassigned*
* 10 70 00 - Exterior Specialties
* 10 80 00 - Other Specialties
* 10 90 00 - *Unassigned*

**Division 11 - Equipment**

* 11 00 00 - Equipment
* 11 10 00 - Vehicle and Pedestrian Equipment
* 11 15 00 - Security, Detention, and Banking Equipment
* 11 20 00 - Commercial Equipment
* 11 30 00 - Residential Equipment
* 11 40 00 - Foodservice Equipment
* 11 50 00 - Educational and Scientific Equipment
* 11 60 00 - Entertainment Equipment
* 11 65 00 - Athletic and Recreational Equipment
* 11 70 00 - Healthcare Equipment
* 11 80 00 - Collection and Disposal Equipment
* 11 90 00 - Other Equipment

**Division 12 - Furnishings**

* 12 00 00 - Furnishings
* 12 10 00 - Art
* 12 20 00 - Window Treatments
* 12 30 00 - Casework
* 12 40 00 - Furnishings and Accessories
* 12 50 00 - Furniture
* 12 60 00 - Multiple Seating
* 12 70 00 - *Unassigned*
* 12 80 00 - *Unassigned*
* 12 90 00 - Other Furnishings

**Division 13 - Special Construction**

* 13 00 00 - Special Construction
* 13 10 00 - Special Facility Components
* 13 20 00 - Special Purpose Rooms
* 13 30 00 - Special Structures
* 13 40 00 - Integrated Construction
* 13 50 00 - Special Instrumentation
* 13 60 00 - *Unassigned*
* 13 70 00 - *Unassigned*
* 13 80 00 - *Unassigned*
* 13 90 00 - *Unassigned*

**Division 14 - Conveying Equipment**

* 14 00 00 - Conveying Equipment
* 14 10 00 - Dumbwaiters
* 14 20 00 - Elevators
* 14 30 00 - Escalators and Moving Walks
* 14 40 00 - Lifts
* 14 50 00 - *Unassigned*
* 14 60 00 - *Unassigned*
* 14 70 00 - Turntables
* 14 80 00 - Scaffolding
* 14 90 00 - Other Conveying Equipment

**Division 21 - Fire Suppression**

* 21 00 00 - Fire Suppression
* 21 10 00 - Water-Based Fire-Suppression Systems
* 21 20 00 - Fire-Extinguishing Systems
* 21 30 00 - Fire Pumps
* 21 40 00 - Fire Suppression Water Storage
* 21 50 00 - *Unassigned*
* 21 60 00 - *Unassigned*
* 21 70 00 - *Unassigned*
* 21 80 00 - *Unassigned*
* 21 90 00 - *Unassigned*

**Division 22 - Plumbing**

* 22 00 00 - Plumbing
* 22 10 00 - Plumbing Piping
* 22 20 00 - *Unassigned*
* 22 30 00 - Plumbing Equipment
* 22 40 00 - Plumbing Fixtures
* 22 50 00 - Pool and Fountain Plumbing Systems
* 22 60 00 - Gas and Vacuum Systems for Laboratory and Healthcare Facilities
* 22 70 00 - *Unassigned*
* 22 80 00 - *Unassigned*
* 22 90 00 - *Unassigned*

**Division 23 - Heating, Ventilating, and Air Conditioning (HVAC)**

* 23 00 00 - Heating, Ventilating, and Air Conditioning (HVAC)
* 23 10 00 - Facility Fuel Systems
* 23 20 00 - HVAC Piping and Pumps
* 23 30 00 - HVAC Air Distribution
* 23 40 00 - HVAC Air Cleaning Devices
* 23 50 00 - Central Heating Equipment
* 23 60 00 - Central Cooling Equipment
* 23 70 00 - Central HVAC Equipment
* 23 80 00 - Decentralized HVAC Equipment
* 23 90 00 - *Unassigned*

**Division 25 - Integrated Automation**

* 25 00 00 - Integrated Automation
* 25 10 00 - Integrated Automation Network Equipment
* 25 20 00 - *Unassigned*
* 25 30 00 - Integrated Automation Instrumentation and Terminal Devices
* 25 40 00 - *Unassigned*
* 25 50 00 - Integrated Automation Facility Controls
* 25 60 00 - *Unassigned*
* 25 70 00 - *Unassigned*
* 25 80 00 - *Unassigned*
* 25 90 00 - Integrated Automation Control Sequences

**Division 26 - Electrical**

* 26 00 00 - Electrical
* 26 10 00 - Medium-Voltage Electrical Distribution
* 26 20 00 - Low-Voltage Electrical Transmission
* 26 30 00 - Facility Electrical Power Generating and Storing Equipment
* 26 40 00 - Electrical and Cathodic Protection
* 26 50 00 - Lighting
* 26 60 00 - *Unassigned*
* 26 70 00 - *Unassigned*
* 26 80 00 - *Unassigned*
* 26 90 00 - *Unassigned*

**Division 27 - Communications**

* 27 00 00 - Communications
* 27 10 00 - Structured Cabling
* 27 20 00 - Data Communications
* 27 30 00 - Voice Communications
* 27 40 00 - Audio-Video Communications
* 27 50 00 - Distributed Communications and Monitoring Systems
* 27 60 00 - *Unassigned*
* 27 70 00 - *Unassigned*
* 27 80 00 - *Unassigned*
* 27 90 00 - *Unassigned*

**Division 28 - Electronic Safety and Security**

* 28 00 00 - Electronic Safety and Security
* 28 10 00 - Electronic Access Control and Intrusion Detection
* 28 20 00 - Electronic Surveillance
* 28 30 00 - Electronic Detection and Alarm
* 28 40 00 - Electronic Monitoring and Control
* 28 50 00 - *Unassigned*
* 28 60 00 - *Unassigned*
* 28 70 00 - *Unassigned*
* 28 80 00 - *Unassigned*
* 28 90 00 - *Unassigned*

**Division 31 - Earthwork**

* 31 00 00 - Earthwork
* 31 10 00 - Site Clearing
* 31 20 00 - Earth Moving
* 31 30 00 - Earthwork Methods
* 31 40 00 - Shoring and Underpinning
* 31 50 00 - Excavation Support and Protection
* 31 60 00 - Special Foundations and Load-Bearing Elements
* 31 70 00 - Tunneling and Mining
* 31 80 00 - *Unassigned*
* 31 90 00 - *Unassigned*

**Division 32 - Exterior Improvements**

* 32 00 00 - Exterior Improvements
* 32 10 00 - Bases, Ballasts, and Paving
* 32 20 00 - *Unassigned*
* 32 30 00 - Site Improvements
* 32 40 00 - *Unassigned*
* 32 50 00 - *Unassigned*
* 32 60 00 - *Unassigned*
* 32 70 00 - Wetlands
* 32 80 00 - Irrigation
* 32 90 00 - Planting

**Division 33 - Utilities**

* 33 00 00 - Utilities
* 33 10 00 - Water Utilities
* 33 20 00 - Wells
* 33 30 00 - Sanitary Sewerage Utilities
* 33 40 00 - Storm Drainage Utilities
* 33 50 00 - Fuel Distribution Utilities
* 33 60 00 - Hydronic and Steam Energy Utilities
* 33 70 00 - Electrical Utilities
* 33 80 00 - Communications Utilities
* 33 90 00 - *Unassigned*

**Division 34 - Transportation**

* 34 00 00 - Transportation
* 34 10 00 - Guideways/Railways
* 34 20 00 - Traction Power
* 34 30 00 - *Unassigned*
* 34 40 00 - Transportation Signaling and Control Equipment
* 34 50 00 - Transportation Fare Collection Equipment
* 34 60 00 - *Unassigned*
* 34 70 00 - Transportation Construction and Equipment
* 34 80 00 - Bridges
* 34 90 00 - *Unassigned*

**Division 35 - Waterway and Marine Construction**

* 35 00 00 - Waterway and Marine Construction
* 35 10 00 - Waterway and Marine Signaling and Control Equipment
* 35 20 00 - Waterway and Marine Construction and Equipment
* 35 30 00 - Coastal Construction
* 35 40 00 - Waterway Construction and Equipment
* 35 50 00 - Marine Construction and Equipment
* 35 60 00 - *Unassigned*
* 35 70 00 - Dam Construction and Equipment
* 35 80 00 - *Unassigned*
* 35 90 00 - *Unassigned*

**Division 40 - Process Integration**

* 40 00 00 - Process Integration
* 40 10 00 - Gas and Vapor Process Piping
* 40 20 00 - Liquids Process Piping
* 40 30 00 - Solid and Mixed Materials Piping and Chutes
* 40 40 00 - Process Piping and Equipment Protection
* 40 50 00 - *Unassigned*
* 40 60 00 - *Unassigned*
* 40 70 00 - *Unassigned*
* 40 80 00 - Commissioning of Process Systems
* 40 90 00 - Instrumentation and Control for Process Systems

**Division 41 - Material Processing and Handling Equipment**

* 41 00 00 - Material Processing and Handling Equipment
* 41 10 00 - Bulk Material Processing Equipment
* 41 20 00 - Piece Material Handling Equipment
* 41 30 00 - Manufacturing Equipment
* 41 40 00 - Container Processing and Packaging
* 41 50 00 - Material Storage
* 41 60 00 - Mobile Plant Equipment
* 41 70 00 - *Unassigned*
* 41 80 00 - *Unassigned*
* 41 90 00 - *Unassigned*

**Division 42 - Process Heating, Cooling, and Drying Equipment**

* 42 00 00 - Process Heating, Cooling, and Drying Equipment
* 42 10 00 - Process Heating Equipment
* 42 20 00 - Process Cooling Equipment
* 42 30 00 - Process Drying Equipment
* 42 40 00 - *Unassigned*
* 42 50 00 - *Unassigned*
* 42 60 00 - *Unassigned*
* 42 70 00 - *Unassigned*
* 42 80 00 - *Unassigned*
* 42 90 00 - *Unassigned*

**Division 43 - Process Gas and Liquid Handling, Purification and Storage Equipment**

* 43 00 00 - Process Gas and Liquid Handling, Purification and Storage Equipment
* 43 10 00 - Gas Handling Equipment
* 43 20 00 - Liquid Handling Equipment
* 43 30 00 - Gas and Liquid Purification Equipment
* 43 40 00 - Gas and Liquid Storage
* 43 50 00 - *Unassigned*
* 43 60 00 - *Unassigned*
* 43 70 00 - *Unassigned*
* 43 80 00 - *Unassigned*
* 43 90 00 - *Unassigned*

**Division 44 - Pollution and Waste Control Equipment**

* 44 00 00 - Pollution and Waste Control Equipment
* 44 10 00 - Air Pollution Control
* 44 20 00 - Noise Pollution Control
* 44 30 00 - Odor Control
* 44 40 00 - Water Pollution Control Equipment
* 44 50 00 - Solid Waste Control and Reuse
* 44 60 00 - Waste Thermal Processing Equipment
* 44 70 00 - *Unassigned*
* 44 80 00 - *Unassigned*
* 44 90 00 - *Unassigned*

**Division 45 - Industry-Specific Manufacturing Equipment**

* 45 00 00 - Industry-Specific Manufacturing Equipment

**Division 46 - Water and Wastewater Equipment**

* 46 00 00 - Water and Wastewater Equipment
* 46 10 00 - *Unassigned*
* 46 20 00 - Water and Wastewater Preliminary Treatment Equipment
* 46 30 00 - Water and Wastewater Chemical Feed Equipment
* 46 40 00 - Water and Wastewater Clarification and Mixing Equipment
* 46 50 00 - Water and Wastewater Secondary Treatment Equipment
* 46 60 00 - Water and Wastewater Advanced Treatment Equipment
* 46 70 00 - Water and Wastewater Residuals Handling and Treatment
* 46 80 00 - *Unassigned*
* 46 90 00 - *Unassigned*

**Division 48 - Electrical Power Generation**

* 48 00 00 - Electrical Power Generation
* 48 10 00 - Electrical Power Generation Equipment
* 48 20 00 - *Unassigned*
* 48 30 00 - *Unassigned*
* 48 40 00 - *Unassigned*
* 48 50 00 - *Unassigned*
* 48 60 00 - *Unassigned*
* 48 70 00 - Electrical Power Generation Testing
* 48 80 00 - *Unassigned*
* 48 90 00 - *Unassigned*

1. **Inspections**
   1. **Electrical Inspections –**

What is it:

Inspection by AHJ (Authority having Jurisdiction) to ensure that construction meets all applicable standards according to the National Electric Code

Who is involved:

* Architect/engineer – provides design drawing for construction and submits them to the State of Michigan for plan review (classrooms and dormitories) and electrical inspection.
* Contractor required for electrical permit if required.
* Classrooms and dormitories – Electrical inspector provides 50% and final inspections.
* All other spaces- WSU Electrical inspector provides 50% and final inspection.
* Customer – needs to be notified of any test of the system.

Forms:

* Forms are completed by A/E and sent with full set of drawing & specifications to the State of Michigan Bureau of Construction for plan review.
* WSU PM is responsible to coordinate review of project with appropriate electrical inspector for 50% completion and substantial completion.

How/Process:

Authority having Jurisdiction

* Classrooms and dormitories- State Of Michigan Electrical Inspector.
* The WSU electrical inspector is responsible for all other buildings on campus.

Whenever modifications are being made to the following systems the Electrical Inspector must review and inspect:

* Service
* Distribution
* Power
* Lighting
* Fire pump
* Grounding
* Fire alarm system (Electrical)
* Dampers
* Site lighting
* Generators

Items to remember:

* If the project is going to have a phased occupancy each phase will have to be inspected independently.
* Classroom buildings cannot be inspected before 8 am or after hours.

Role of electrical inspector:

* Classrooms and dormitories – State Of Michigan Electrical Inspector provides review and inspections.
* The WSU electrical inspector offers oversight coordination and inspects all other buildings.

Classrooms and residence hall

Plan Review

Signed and sealed drawings and a plan review fee must be submitted to the **Department of licensing and Regulatory Affairs, Bureau of Construction Codes (BCC) Plan Review Division** inLansingin order to startthe reviewprocess. The architect on the project must submit the drawing and specifications and all bulletins and addenda to the State. The plan reviewer will send written review to the architect. Be sure to have the architect send you a copy. All items listed on report must be addressed either by the architect or at the time of inspection. The plan reviewer will list whether an electrical plan review will be required. The project will require Electrical inspection.

All other buildings:

The WSU electrical inspector will perform all inspections and acceptance tests for buildings that do not fall under the BCC.

Checklist:

The items required for final inspection if applicable to your project are:

* The approved set of electrical drawings
* Electrical specifications
* The electrician must be present
* The general contractor should be present

Timeline consideration

The inspector will visit the site two times:

* 50% Inspection (rough or above ceiling)
* 100% inspection
* It is the project managers, or authorized generator contractor and/or electrical contractor’s responsibility to schedule these visits. The project manager must verify that the contractor is ready for the inspections.

Filling

* 5.0 close out – inspection

Refer to other sections/documents:

* Retail Projects section for special instruction
  1. **Mechanical, plumbing and other (elevator) inspections**
  2. **Food Service Inspections**
  3. **Elevator**
  4. **City of Detroit**
  5. **Fire Marshal inspections**

What is it:

Inspections by AHJ (Authority Having Jurisdiction) to ensure that construction meets all applicable fire alarm and fire suppression standards according to codes

Who is involved:

* Architect/engineer – provides design drawings for construction and submits them to the State of Michigan for plan review ( classrooms and dormitories) and Fire Marshal inspection
* Contractor
* Classrooms and dormitories – AHJ = State of Michigan Fire Marshal, does 50% and final inspections and signs certificate of occupancy
* All other spaces – AHJ = WSU Fire Marshal – does 50% and final inspections and provides approval to occupy.
* Customer – need to be notified of any test of the system

Forms:

* Forms are completed by A/E and sent with full set of drawings & specs to State of Michigan. Bureau of Construction for plan review. Subcontractor for fire alarm device work sends shop drawings to state. The state forwards these documents to State Fire Marshal.
* WSU PM is responsible to coordinate review of project with appropriate AHJ at 50% completion and substantial completion. Campus Fire Marshal will inspect all projects *first* to ensure readiness/completion. Then ,if appropriate the State Fire Marshall is scheduled to inspect.

How/Process:

Authority having Jurisdiction

Bureau of Fire Safety (State Fire Marshal) is responsible for inspecting all classroom buildings and residence halls.

The University Fire Marshal is responsible for all other buildings on campus.

Whenever modifications are being made to the following systems the Fire Marshal must review and inspect:

* Fire Alarm System (including duct smoke detectors)
* Fire Suppression System
* Egress Path
* Fire Separation (modifying the fire doors, penetrating fire walls or relocating or opening up the fire walls.
* Emergency lighting or exit signage

Items to remember:

* When construction is being performed in an occupied area a one hour fire separation wall must be constructed to protect the occupants. This needs to be addressed in pre-bid meetings, pre-construction meetings and confirmed that contractors have accounted for this in construction bids & pre-construction kickoff meetings. Review construction exiting and fire separation plans with campus Fire Marshal during pre-construction kickoff meeting
* Hot work permits must be obtained by the contractor performing the work. See hot work policy.
* If the project is going to have a phased occupancy each phase will have to be submitted and given their own BFS number in order to receive multiple certificates of occupancy even if the drawings are exactly the same.
* Classroom buildings cannot be inspected before 8 am or after hours. Most programmable fire alarm systems can be silenced during testing so not to disturb other occupants. Coordinate/provide building notification to all stakeholders so they are aware a test is being performed.
* Temporary Certificates of Occupancy will only be granted for paper work deficiencies not incomplete work. Temporary Certificates of Occupancy must be resolved in less than 30 days.
* Refer the contractors to the WSU Fire Safety Manual. It contains our policy on hot works and other safety items. It can be found at the following web site. <http://idrm.wayne.edu/risk/fire-manual/index.php>

Role of the University Fire Marshal

The University Fire Marshal (UFM) offers oversight and coordination with the State Fire Marshal (SFM) and inspects all other buildings that do not fall under the State Inspectors jurisdiction. The UFM must be copied on all documentation sent to the State. The UFM will walk the sites before the inspections are called for to verify that the project is truly ready for inspection. On small projects the SFM may assign the inspection duties to the UFM.

The UFM will perform all plan reviews and inspections for buildings that do not fall under the SFM. See below.

Classrooms and Residence Halls

Plan Review  
Signed and Sealed drawings and a plan review fee must be submitted to the **Department of licensing and Regulatory Affairs, Bureau of Fire Services, Plan Review Division** in Lansing in order to start the review and inspection process and establish the BFS project number. The architect on the project must submit the drawings and specifications and all bulletins and addenda to the State. The plan reviewer will send a written review to the architect. Be sure to have the architect send you a copy. All items listed on the report must be addressed either by the architect or at the time of inspection. The plan reviewer will list whether an electrical plan review and inspection, fire alarm and fire suppression shop drawings will be required. The contractor submitting the fire alarm shop drawings must be Act 144 Certified and is required to submit all documentation and fees required to obtain permits and inspections. The BFS will not require mechanical or plumbing inspections.

All other Buildings

The UFM will perform all plan reviews, inspections, and acceptance tests for buildings that do not fall under the SFM. The UFM shall review the project during the planning\design process or the job order contracting scoping meeting and walk through. The UFM must be invited to the 90% document review meeting. Though there are not any fees paid nor do the documents need to be signed and sealed by a licensed architect the same submittal and notification process should be followed for the UFM.

The earlier the UFM is brought into the process the easier it is for him to assist you. Remember that he has the entire campus to cover so adequate review time and proper early notification time must be anticipated in your schedules.

Checklist:

The items required for final inspection if applicable to your project are:

* Point by point lighting calculations for emergency lighting
* Fire alarm and fire suppression submittals
* The installing fire alarm contractor must be present and must be Act 144 Certified and provide documentation that the system has been tested ( 12A)
* The electrician must be present
* The fire suppression contractor must be present
* The security contractor making the final connections to Public Safety must be present.
* Flame Spread and Smoke Contribution affidavits

Fire Suppression: (need input from others)

Timeline Considerations

The Inspector will visit the site three times:

* Construction Consultation
* 50% Inspection (rough or above ceiling)
* 100% Inspection Certificate of Occupancy

It is the project manager’s responsibility to schedule these visits. The project manager must verify that the contractor is ready for the inspections. Officially the BFS needs 4 weeks’ notice to do an inspection however only in August and September are they usually that busy. They are willing to work with us to get our projects inspected within 10 days or less of our call. Do NOT make everything an emergency. Work with WSU Fire Marshal and Contractor to ensure work is complete and that State Fire Marshal does not make unnecessary trips.

Filing

5.0 Close Out – Inspections

Refer to other sections/documents:

* IX State Review
* Policy 100-004 Authorities having Jurisdiction and Construction inspections
* Retail Projects section for special instructions
  1. **OEHS**

1. **Impact Reports**
2. **Change Orders**
3. **Allowance Tracking**
4. **Hot Work Permit**
5. **Building Shut-Down Notification**

After hours/Weekend shutdown notification (Omar Jan 29,2014)

1-After 5:00 PM during business days

2-During weekend

3-During official holidays.

Why we need it after hours or weekends:

The reasons for after hours or weekends shutdown are:

* The shutdown is affecting on classes or cause disturbance for occupant
* Doing the shutdown at the same time for scheduled maintenance shutdown

Who is in charge:

Project Manager

Who is involved:

* Project Manager
* FPM-Operations
* Contractor(s)
* Building coordinator
* Risk Management (if needed)

Check list:

1-Are you sure you can’t do the shutdown during normal business hours

2-Are you sure this shutdown will not affect on other occupied buildings

3-Are you sure that shutdown time window is suitable for required work

4-Are you sure utilities will be ready before next business day

5-Did you scheduled the shutdown at same time for regular maintenance shutdown

6-Do you need any permits to do the shutdown

7-Do you need any inspections after the shutdown (if so is this affecting the building occupant)

8-Do you need to inform other parties about this shutdown (WSUPD, City, etc…)

9-Did you sent the project notification 7 days at least prior to shutdown

10-Did you got approval from all the parties

11-Did you scheduled a meeting before this shutdown

Notification Process:

1-Set the date & time

2-Prepare & send WSU shutdown notification form

3-Scheduled a meeting

4-Confirm all required permits are on hand

5-Contact all other parties if needed (WSUPD, City, etc..)

Forms:

WSU project notification form

1. **Furniture and/or equipment installation/ certification**
2. **Telephone Service Request**
3. **Material Testing**

What is it?

Materials testing is the process of pulling, bending, twisting, turning, hitting, and

squeezing building materials or components to make sure they withstand the

intense stresses, strains and impact forces they are likely to experience in use

and  application. In other words, materials’ testing examines the overall strength,

toughness, flexibility, suitability and fitness for the intended purpose.

Why is it required?

Effective materials testing is essential to verify building material characteristics

for application trials, detect defects, analyze failures.

Who is involved and what are their roles?

Material Testing Vendor – Study project document, perform required tests and

submit test results.

General Contractor – Schedule testing services with testing vendor and sign time

tickets for the technician in the field.

Architect/ Engineer - Identify and specify tests and acceptable parameter required

for the project and review test reports for compliance with specifications.

WSU Project Manager – Bring testing vendor on board before construction

commencement, manage / coordinate all testing activity from start to acceptance.

How is it done?

N/A

Forms

Filing

File all test reports electronically in a folder.

Reference

See attached list of tests that may be required for a construction / renovation

Project.

**q**. **Security**

What is it?

This comprises of installation of security devices such as cameras, alarms, one

card machines and associated infrastructure. Security devices can report locally

or report to a central networking system (WSU Police)

Why is it required?

The purpose to install security devices is to protect and monitor university’s

property and personal.

Who is involved and what are their roles?

General Contractor / Security Vendor / Electrical Subcontractor – Furnish, install

and test security devices per university guidelines and project specification.

Coordination with the project team is required before final installation.

WSU Police / C&IT (department and university ) / One Card Office– Participate in

coordination meetings and facilitate testing of security devices.

WSU Project Manager – Make sure key team members are involved early on

in the project and all security concerns from customer and WSU Police is being

addressed.

Architect / Security Consultant – Answer questions / concerns that come up

during coordination / installation and verify that work is performed per

specifications.

*Note: WSU Police plays a role only if the security system in the project reports*

*back to Public safety.*

How is it done?

Security contractor can be the General Contractors sub-contractor or could be

directly hire by WSU.

Critical Timeline

Security consultant must be involved during planning Phase of the project. There

are infrastructure required that should be covered in the construction document.

Forms

Filing

File hard and soft copies of as builds drawings. A set of drawing must be

sent to WSU Police for their files.

Reference

Other primary contracts / methods of contracting

**r. Testing and balancing**

What is it?

It is the process of performing air and hydronic flow / pressure measurements on

the building HVAC system. Flow is adjusted to achieve optimum performance of

the building environmental equipment.

Why is it required?

Testing and balancing is performed to achieve proper operation of the HVAC

system in a building.

Who is involved and what are their roles?

Testing balancing vendor – Perform required tests, adjustments and balance

building HVAC system and submit results.

General Contractor – Schedule and facilitate testing – balancing with WSU PM

and testing vendor.

Architect/ Engineer – Verify proper operation and capacity of existing HVAC

System, design new or revisions to the existing HVAC system to support

renovation of the space, and review test reports for compliance with design and

specifications.

WSU Project Manager – Bring vendor on board before construction

commencement, manage / coordinate all testing – balancing activity from start to

acceptance.

*Note: Testing and balancing vendor are in some cases directly hired by the*

*General Contractors.*

Critical Timeline

A testing and balancing vendor must be brought on board before construction

Commencement. It is important to measure air and water flow / pressure of

existing HVAC system.

How is it done?

N/A

Forms

Filing

File pre and post construction test reports electronically in a folder.

Reference

Other primary contracts / methods of contracting

**u. Fire Watch Services**

What is it:

Service company provides individuals to walk a building and check for possible fire during a time when the building alarm system is not in service. Their mission is to act as a temporary alarm system – they call Public Safety if fire conditions are discovered. They must walk the building at least once an hour and records their observations.

Who is involved:

* Office of Risk Management
* Project Manager
* Vendor approved by Risk Management and Public Safety ( currently Securitas)

How/Process:

* Coordinate with office of Risk Management to get a quote from their approved vendor.
* Vendor will provide invoice to Office of Risk Management who forwards it to us.
* Project Manager signs invoice and submits to Business Services for “direct pay request”, to be billed to plant fund.

Checklist:

* Get quote from Office of Risk Management
* Let Building Coordinator know that the vendor will be doing the fire watch and that there will be two people in the building walking the building hourly.
* Check to determine whether vendor needs keys/onecard etc to access special spaces

Timeline Considerations:

* Vendor is to walk the building every hour and log observations

Forms:

* Logs of the fire watch are provided to WSU. Risk Management sends them to the State Fire Marshal

Filing: