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**02 20 00 EXISTING CONDITIONS**

**02 22 00 Existing Conditions Assessment**

Part 1 – General

This section applies to all activities that materially change or affect the current features found on campus. Areas incorporated into this section are civil surveys, geotechnical engineering investigation, archaeological studies and utility mapping.

Part 2 – Products

N/A

Part 3 – Execution

All existing built site features shall be noted as to their disposition during and after construction, i.e., removed, relocated, demolished, stored, etc. Contractor is to provide record photographs, prior to the start of construction, documenting the condition of all site features and areas to remain (i.e. parking lots, landscape areas, etc.).

All landscape material (trees, shrubs, etc.) and irrigation supply devices shall be noted as to remain, stored, relocated or demolished. If existing plant material is to remain or be stored for future project use, it shall be noted as the Contractor’s responsibility to maintain such plant material for the duration of construction.

Any existing site feature (built or plant material) shall be clearly identified as to whom will remove, relocate, demolish or store it (Contractor or NAU).

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**02 30 00 SUBSURFACE INVESTIGATION**

02 31 13 Seismic Investigations

Part 1 – General

DP to insert seismic investigation report.

Part 2 – Products

N/A

Part 3 – Execution

N/A

02 32 13 Subsurface Investigation

Part 1 – General

- Any project requiring subsurface investigation work shall be coordinated through Owner.
- Blue stakes shall only occur when disturbance to the ground is expected within two weeks of the request.
- Soils investigations to determine subsurface conditions shall be made prior to the design and construction of new buildings and other structures. Such investigations shall also be conducted when additions to existing facilities are considered and are of such a scope that would significantly increase or change the distribution of foundation loads.
- Geotechnical investigations prepared for adjacent construction projects are another potential source of available site information.
- In accordance with the exception as prescribed in the International Building Code (IBC), where geotechnical data from adjacent areas are well known, the Owner’s building official (and along with a written request from the Design Professional) can accept the use of local engineering practices for the design of foundations.
- The Design Professional along with all other consultants (e.g. Geotechnical Engineer, Structural Engineer, etc.) shall identify the type of tests, number of tests, frequency of tests, requirements of tests, etc....
- Where geotechnical investigations are required, a written report of the investigations shall be submitted at the time of schematic design and no later than permit application.
- In any event, geotechnical investigations shall be conducted and reported in accordance with (and fully comply with) the applicable requirements as specified in the most recent edition of the Owner’s adopted International Building Code (IBC).

Part 2 – Products

Such work shall be performed by an independent testing agency. An approved agency shall provide all information as necessary for the NAU Project Manager, Design Professional, and

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NAU Building Official to determine that the agency meets the applicable requirements as specified in the International Building Code. An approved agency shall be objective, competent and independent from the contractor responsible for the work being inspected. The agency shall also disclose possible conflicts of interest so that objectivity can be confirmed. An approved agency shall have adequate equipment to perform required tests. The equipment shall be periodically calibrated. An approved agency shall employ experienced personnel educated in conducting, supervising and evaluating tests and/or inspections.

Part 3 – Execution

Geotechnical Investigations Required

The purpose of a geotechnical investigation is to determine the engineering qualities of the subsurface such as soils or rocks at a site, and how their location and depth affects an envisioned construction project. The presence of any buried organic materials with poor engineering qualities, obstructions to earthwork, and the depth of the water table are also important to identify during a geotechnical investigation. Geotechnical investigations shall be conducted in accordance with applicable requirements as specified in the most recent edition of the Owner’s adopted International Building Code (IBC). The investigation of soils is to be done by a *registered design professional* in recognition that the testing and calculations necessitate individuals with significant experience in soil and foundation analysis. Where subsurface conditions are found or suspected to be of a critical nature, the Design Professional shall seek the professional advice of highly experienced foundation engineers.

Soils investigations to determine subsurface conditions shall be made prior to the design and construction of new buildings and other structures. Such investigations shall also be conducted when additions to existing facilities are considered and are of such a scope that would significantly increase or change the distribution of foundation loads.

Geotechnical Investigations Exception

The Owner’s Building Official (and along with a written request from the Design Professional) shall be permitted to waive the requirement for a geotechnical investigation where satisfactory data from adjacent areas is available that demonstrates an investigation is not necessary for any of the conditions as noted in the applicable code sections of the IBC (e.g. Sections 1803.5.1 through 1803.5.6 and Sections 1803.5.10 and 1803.5.11.)

Regardless of the objective of the soils investigation, the information generally required includes one or more (or all) of the following items for determining subsurface conditions:

1. The depth, thickness and composition of each soil stratum;
2. For rock, the characteristics of the rock stratum (or strata), including the thickness of the rock to a reasonable depth;
3. The depth of ground water below the site surface; and

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4. The engineering properties of the soil and rock strata that are pertinent for the proper design and performance of the foundation system.

For shallow foundations, the soils investigation should yield sufficient information to establish the character and load-bearing capacity of the soil (or rock) at depths that will receive the foundations.

Foundation problems are not uncommon and may vary greatly, ranging from very simple and manageable problems to very complex situations that may be either manageable or without practical remedy.

As indicated in the IBC exception, where geotechnical data from adjacent areas are well known, the building official (and along with a written request from the Design Professional in responsible charge of the project) can accept the use of local engineering practices for the design of foundations.

Information to be included in Construction Documents

When a written report is required by the International Building Code, it is required to include at a minimum the items listed in the applicable code sections. Load-bearing values for soils must be documented so that the foundation design can be verified.

Also show all: existing conduits, drains, utility lines, sewers, tunnels, cables, trees, paving, walks, foundations and other objects or obstructions, whether in use or abandoned. State that information is for contractor’s use and that in no way shall the Owner be held responsible for accuracy of the information.

Preparation of Plans for Borings

In the preparation of plans for boring locations, the Design Professional shall study plans of existing underground utilities and shall locate borings to avoid these utilities. Where excavation will remove lateral support from any foundation, an investigation shall be conducted to assess the potential consequences and address mitigation measures. Maps showing underground installations may be available for review upon request from Facility Services.

Unless approved by Owner, the disturbance from a subsurface investigation shall be remediated to restore it to original condition, immediately after a survey is complete. Owner may withhold payment until this is corrected.

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**02 40 00 DEMOLITION**

Part 1 - General

A demolition plan shall be created to graphically show the extent of the demolition work and its impact to adjacent areas. Adequate provisions must be made to maintain traffic (vehicles, bikes and pedestrians) through/past the construction zone via the use of temporary walkways, signage, barricades, etc. Emergency egress paths are particularly critical, so closure of existing building exits and egress paths must be coordinated with the Owner (Fire Marshal). Develop traffic control plans for vehicles, bikes and pedestrians in advance for Owner review/approval. Owner may from time to time choose to assist with minor signage, but the bulk of the traffic control measures during construction lies with the contractor.

Provisions shall be made in the documents to require that all demolition work be performed without disruption to adjacent occupied areas, i.e., off-hours work. Only when the anticipated demolition work will not present disruption to the user or occupant can the assumption be made that it can be conducted at any time.

Demolition work is usually associated with trash and dust. Appropriate provisions shall therefore be made to address mitigation procedures in the demolition work.

The demolition plan shall identify all materials/equipment, etc., which are to be reused and/or salvaged by either the Owner or the Contractor. Please keep in mind that all equipment and building material is the property of Owner and only the Owner can make the determination on reuse and salvage.

A complete investigation of the area(s) shall be performed so that all existing aspects and elements affected by the project are either removed under the demolition plan or incorporated into the new work with the installation drawings, i.e., existing/abandoned outlets, t-stats, etc. Where callouts such as 'Match Existing' are used, these locations shall be field checked during design to verify that the proposed improvement will indeed fit well to the existing.

Part 1 – General

Other than items which are to be reused on the project, there are two groups of salvageable material presented with nearly all projects. Care must be exercised when handling all salvageable material so as to maintain its value.

The following items are may be salvaged by the Owner and Contractor must consult Owner before disposition of these items.

- LED exit lights
- Door Hardware
- Fire Alarm Exits

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- Chalk/White boards
- Drinking Fountains
- EMCS Equipment
- Window Blinds
- Lab Fixtures
- Meters (all kinds)
- Backflow Preventers
- Furniture and non-permanent fixtures
- Artwork
- Wood/HM Doors
- Plumbing Fixtures
- Electrical Light Fixtures
- Electrical panels
- Casework
- Electrical Equipment
- Mechanical Equipment
- Disconnect switches
- Starters
- Ceiling diffusers
- Elevator equipment
- Windows
- Projection screens
- Soap dispensers
- Transformers
- Mirrors
- Clocks
- Thermostats
- Irrigation equipment
- Access doors
- Shelving
- Refrigeration equipment
- Landscape planting
- HVAC mixing boxes
- Lab equipment (hoods)

Prior to finalizing the construction documents the DP shall conduct a site meeting with the appropriate Owner personnel and determine precisely what items are to be salvaged. The documents should then clearly identify what is to be salvaged, by whom and where it is to be delivered to or stored. Options include but are not limited to:

- Removal and transport by Contractor.
- Removal by Contractor and transport by Owner.



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- Removal and transport by Owner.

Whenever Owner is to participate in either the removal or transportation of salvage materials a time frame and contact person shall be identified and referenced in the documents.

All items encountered which contain an affixed Northern Arizona University Control Tag (has a property control number) require special procedures for disposal. Consequently, these items should be brought to the attention of the Owner (Project Manager). Items which contain this tag are part of the registered inventory of Owner and disposal must be coordinated through Owner’s Property Administration department.

Fluorescent light fixture tubes and certain light fixture ballasts must be separately disposed of in accordance with applicable environmental regulations. Consequently, the removal and disposal of existing fluorescent light fixtures shall include the following:

- All fluorescent tubes shall be removed and packaged by the Contractor in cartons. The number of tubes in each carton shall be clearly marked on the outside of the carton. Contractor to deliver packaged tubes to Owner’s universal wastes table, via coordination with the Owner’s Moving and Recycling Services department.
- Fixture ballasts not clearly marked as containing “NO PCB’s” shall be removed by the Contractor and after short clipping all wires place them in a metal drum. After completion of the demolition effort, Owner will remove the drum for disposal offsite. Apportioned disposal costs are then to be charged to the project.

Part 2 – Products

N/A

Part 3 – Execution

All electrical services discontinued with the demolition effort shall be properly “tagged out”.

Prior to starting any demolition work, Contractor shall verify with Owner (Project Manager and Trades) that all utilities have been disconnected.

In the case of a building renovation, some of the utilities might need to stay on during the renovation work, to keep the building under a conditioned environment (i.e. heating system stays on during a winter interior renovation project). Close coordination with the Owner (Project Manager and Trades) will then be required to ensure safe work environment during renovation. Contractor shall also coordinate with Owner’s Fire Marshal and, as applicable depending on the nature of the renovation work, shall present a plan identifying how the building’s Fire Life Safety systems will remain active and protect the building against fire during the renovation process.

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In the case of the demolition of street lighting and pedestrian lighting, there should never be a time when travelways for vehicles, bikes and pedestrians experience a substandard level of lighting. This may be special sequencing of the demolition work to keep the existing lights in place until the new lighting is operational, or the provision for temporary lighting, or some other means to maintain safe lighting levels.

All permits and fees for demolition are the responsibility of the Contractor but these requirements should be specifically identified in the contract documents.

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**02 50 00 SITE REMEDIATION**

Part 1 – General

Through the Owner’s Office of Environmental Health and Safety, Owner will provide some information on potential existing site conditions that might require site remediation. This could also be discovered during subsurface investigations. Depending on the nature of the required remediation, Owner may elect to either hire an independent contractor to conduct the remediation effort, or have the DP and Contractor identify the nature of the remediation and hire some experts appropriately.

If during the course of construction, some unknown conditions are discovered by the Contractor, they should be reported immediately to Owner’s Project Manager who will take the appropriate measure, including contacting the Owner’s Office of Environmental Health and Safety.

Part 2 – Products

N/A

Part 3 – Execution

N/A

**\*\*END OF SECTION\*\***

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**02 60 00 CONTAMINATED SITE MATERIAL REMOVAL**

Part 1 – General

Should the Contractor encounter contaminated site materials during earthwork activities, Contractor shall stop all work and report immediately to Owner (Project Manager). Depending on the nature of the contamination, Owner will make the determination to either contract the Contractor to remove all contaminated materials, or hire an independent contractor to perform such task.

Part 2 – Products

N/A

Part 3 – Execution

N/A

**\*\*END OF SECTION\*\***

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**02 70 00 WATER REMEDIATION**

Part 1 – General

The Design Professional and Contractor shall review the geotechnical and/or soil investigation report(s) and determine if water might be an issue during excavation activities. If such, Design Professional shall provide recommendations on how to perform water remediation and include in the design ways to divert the water, collect it, or deal with it with appropriate choice of foundation system.

The NAU Flagstaff campus has numerous sporadic groundwater springs that may not always been found during subsurface investigations, especially depending on the time of the year the investigation is being performed. Numerous springs have developed unpredictably within caissons or footings during excavation, requiring water pumping, or switching to a different type of concrete mix design or foundation system to adjust to soil conditions.

Contractor shall be aware of this risk and be prepared to take appropriate measures should water remediation be necessary on the project.

Part 2 – Products

N/A

Part 3 – Execution

N/A

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**02 80 00 FACILITY REMEDIATION**

Part 1 – General

As part of the existing conditions investigation to be performed during the Programming phase of the project, Owner will conduct and provide a survey report on potential existing hazardous materials (such as Asbestos, Lead, Radioactive materials, hazardous chemicals, etc...) to the Design Professional and Contractor at the end of the Programming Phase.

As the project design evolves and scope is being defined more precisely, the DP shall identify existing building components that will need to be demolished or disturbed during the renovation process and provide a detailed demolition scope that will help the Owner define further the level of facility remediation required for the project. The Owner’s Office of Environmental Health and Safety shall be informed of all changes of scope throughout the project with adequate lead time to ensure that any additional necessary remediation is accounted for and completed prior to the commencement or continuance of work in the target area.

On almost all renovation projects, Owner will handle the facility remediation scope, hiring an independent contractor to perform the work. All required remediation work shall be scheduled and performed prior to the commencement of other demolition or construction activities. Remediation of all hazards may require removal of materials which are not otherwise impacted by the project if contact or disturbance hazards to workers exist or may arise during the project. Owner will make recommendations for abatement scope based on their evaluation of the demolition scope, building area, applicable regulations, and NAU standards and policies.

Refer to Section Division 1 for additional procedural information.

Part 2 – Products

N/A

Part 3 – Execution

N/A

**\*\*END OF SECTION\*\***