



Facilities Planning and Construction

Design and Construction Standards

DIVISION 02 – Existing Conditions

Preface

The Texas Tech University System's 'Design and Construction Standards', as administrated by TTUS Facilities Planning and Construction, are intended to serve as guidelines to the Design Professional and Construction Management teams for design development and construction administration of Texas Tech University System (TTUS) Capital Projects. They communicate the minimum expectations and requirements relative to specific building systems, design provisions, general specification requirements, and administrative procedures for new facilities being constructed on Texas Tech University System (ASU, MSU, TTU, TTUHSC, and TTUHSC El Paso) campuses. Several, but not all requirements for each component Institution or Agency within the TTU System are covered. Design Professionals, Construction Managers at Risk and/or Design-Build Firms shall also refer to provisions covered in their service Agreements, as well as within the project's Basis of Design (BOD) document.

In addition, the 'Design and Construction Standards' shall also be utilized in conjunction with the approved project specific Program and Schematic Design development. In the event of conflict between this document and specific project requirements, Design Professionals, Construction Managers at Risk and/or Design-Build Firms shall contact TTUS Facilities Planning & Construction for clarification.

The guidelines within the 'Design and Construction Standards' are not intended to prohibit the use of alternative design solutions, methods, systems, products or devices not covered in this document. Offered alternatives deviating from or not covered in these standards shall be documented by the Design Professional and/or Construction Management teams and submitted to TTUS Facilities Planning & Construction for approval prior to implementation.

Throughout the 'Design and Construction Standards' there are references to manufacturer specific products. These are to be considered the 'Basis of Design' to establish the expected minimum quality requirements. Design Professionals are encouraged to identify and include equivalent products and/or manufacturers offering comparable products to facilitate open bidding environments.

General Requirements for Existing Conditions

Notifications

The Construction Manager shall notify TTUS FP&C and Texas Excavation Safety System (Dig TESS) 1-800-344-8377 or 811 at least 48-hours prior to the start of trenching and / or excavation work.

The Contractor shall carefully coordinate the Work of this section with all other Work and construct and maintain shoring, bracing, protection and supports, as required.

Hazardous Materials

TTUS FP&C will take every precaution and put forth all necessary effort to identify hazardous material prior to start of the Work. In the event suspect hazardous materials are encountered during the process of demolition, the Contractor shall cease demolition immediately and notify TTUS FP&C so that suspect material can be reviewed and evaluated. The component Institution will conduct testing as required if suspect material is deemed a potential risk by the component Institution's Environmental Health and Safety division. The Contractor will be released to resume demolition after the risk of exposure has been assessed and all necessary actions have been taken to properly resolve the suspect material.

Site Preparation

Except for topsoil to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site and disposed of in a manner that does not violate federal or state laws.

Remove obstructions, trees, shrubs, grass, and other vegetation to the extents defined in the construction documents. Completely remove stumps, roots, obstructions, and debris. Fill depressions caused during site preparation and demolition with satisfactory soil material unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding 8-inch loose depth and compact each layer to density specified. Import fill (select or engineered) material must be tested for contaminants before the material can be delivered on site for backfill use. At a minimum, soils testing analysis must include the following:

- Synthetic Precipitation Leaching Procedure (SPLP)
- RCRA (Metals 8) – Identify presence and quantity of the following

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- Arsenic (As), Barium (Ba), Cadmium (Cd), Chromium (Cr), Lead (Pb), [Mercury](#) (Hg), Selenium (Se), and Silver (Ag).
- Total Petroleum Hydrocarbons (TPH)
- Pesticides (presence and quantity)

TTUS FP&C will retain an independent material testing and inspection agency to conduct specified materials testing and inspections. Required testing will conform with the stipulation of the IBC, Chapter 17 Special Inspections and Tests, as well as other applicable ASTM's, guidelines and governing quality control standards specified. TTUS FP&C will fund the original tests. If the original testing proves inferior or substandard construction not in conformance with the specifications, the Construction Manager will be responsible for all associated costs related to retesting until the Work is proven to meet the specifications requirements.

Site Demolition

Before beginning demolition Work, the Contractor shall carefully survey existing conditions and examine the Drawings and Specifications to determine the extent of the Work and all existing conditions to be affected. The Contractor shall notify the appropriate utility owner and TTUS FP&C of their intent to remove any utility services. The Contractor shall take all necessary precautions to insure against damage to existing conditions and existing to remain. Damages resulting from execution of the Work shall be repaired or replaced as approved by the Design Professional and TTUS FP&C at no additional cost to the component Institution.

The Contractor shall be responsible for ensuring the structural integrity of existing structures as required because of any cutting, removal or demolition work performed under any part of this contract.

The extent of demolition work is to be shown on the Contract Drawings. Coordinate with TTUS FP&C to determine any salvaged items to be turned over to the component Institution and clearly indicate in the construction documents.

Use saw cutting methods for removal of tunnel or vault walls, floors or roofs. Do not use impact hammers for tunnel or vault removal near tunnel sections to remain. Use saw cutting methods for removal of concrete curbs and paving.

During demolition operations and removal of soil spoils, debris, etc., ensure minimum interference with roadways, walks, and adjacent occupied or used facilities. Do not close or obstruct roadways, walks or

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other occupied or used facilities without permission from TTUS FP&C. Provide alternate routes around closed or obstructed traffic ways if required by TTUS FP&C, or governing regulations. Where pedestrian and driver safety are endangered, the Contractor shall provide sufficient safety precautions and adequate manned flaggers if necessary.

Existing utilities are to remain in service and protected against damage during demolition operations. If existing utilities are to be interrupted, notify the Architect and TTUS FP&C at least 72-hours in advance. All interruptions must be approved by the component Institution. Contact TTUS FP&C minimum one week in advance to coordinate utilities shut-downs.

Tree Protection

Prevent unnecessary damage and mitigate the effects of construction to trees located within the construction zone. Prevent direct root damage, indirect root damage, and trunk and crown disturbances. Prevent soil compaction of critical root zone as defined as that area directly beneath the drip line of the tree canopy. Vehicles, equipment, and materials shall not be parked or stored in the critical root zone of trees to remain. Provide tree preservation fencing around all existing trees to remain. Refer to Divisions 32 and 33 for specifics on tree protection and pruning. All tree limb and root pruning shall be done at the discretion of the Grounds Maintenance Department or a certified arborist.

If existing trees are destroyed, harmed, or damaged beyond repair/recovery as a result of construction operations, TTUS FP&C reserves the right to reduce the contract sum by the total amount of repair or replace the damages. Damages will be evaluated by Grounds Maintenance, using International Shade Tree Conference Standards, and assessed at current market price per square inch using the following standard: *Cross section measurement of tree trunk at 24" above existing grade level.*

Erosion, Sedimentation and Dust Control

The Contractor shall establish, construct, and maintain erosion and sediment control measures. Siltation control devices shall be installed in the locations shown in the Storm Water Pollution Prevention Plan (SWPPP) before construction begins. The erosion control structures shall be maintained until permanent ground cover is established. The Contractor, with the advice and consultation of the Design Professional, shall endeavor to stop all sediment and erosion to a level of effort acceptable to the Owner and Design Professional. The Contractor shall exercise precautionary

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measures to minimize dust emissions which will include, but shall not be limited to, periodic sprinkling or wetting of the site. The Contractor has the option of using a dust palliative.

Storm Water Pollution Prevention Plan (SWPPP)

The TTUS FP&C Storm Water Pollution Prevention Program requires preparation of a Storm Water Pollution Prevention Plan (SW3P) for any project that causes a disturbance of soil on any campus of the Texas Tech University System. The plan will incorporate measures in response to and ensure compliance with the terms of the Texas Pollution Discharge Elimination System (TPDES) General Permit for Storm Discharges from Construction Activities.

02 41 16 Structure Demolition

Regarding the safety and health requirements for demolition operations, comply with [ANSI/ASSE A10](#) and NFPA 241 standards.

Unless otherwise indicated, demolition waste becomes property of the Contractor.

Provide a monthly recycled content manifest report from the demolition Contractor disclosing all materials and amounts (define units as applicable) that were diverted from the landfill, inclusive of but not limited to steel, reinforcing bars, copper, aluminum, glass, concrete, masonry, and other recyclable materials as the project presents.

The demolition Contractor is required to provide submittals inclusive of but not limited to analysis reports, demolition phasing drawings, and other drawings as required that fully describe the Contractor's intent of demolition execution. These submittals are to indicate the measures proposed for protecting individuals and property, environmental protection, dust, noise, and stormwater controls. These submittals are to indicate proposed locations for the construction of barriers for the protection of existing structures, hardscapes and plantings to remain.

Carefully detach items to be salvaged from existing construction, in a manner to prevent damage, and deliver to Owner or protect and retain for reinstallation as directed. Include fasteners or brackets needed for reattachment elsewhere.

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Historic items, relics, antiques, and similar objects including, but not limited to cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to TTUS FP&C or the component Institution uncovered during demolition shall remain the property of TTUS FP&C or the component Institution.

The Design Professional shall clearly define in detail special measures proposed to protect adjacent buildings to remain including effective means of egress from those buildings.

Refrigerant recovery shall be performed by a certified refrigerant recovery technician. Remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction before starting demolition. Provide a statement of refrigerant recovery signed by the refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery procedures were performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

A pre-demolition conference shall be conducted at the project site minimum seven days prior to start of demolition Work. At a minimum, the pre-demolition conference shall discuss and resolve the following areas of concern:

1. Review and discuss condition of construction to be demolished.
2. Review and discuss structural load limitations of existing structures.
3. Review and discuss the demolition schedule, verify availability of demolition personnel, equipment, and facilities needed to complete the Work on time..
4. Review and discuss the demolition protection plan for pedestrians, workers, equipment, existing utilities, infrastructure, and the environment (hazardous air pollutants, hazardous materials, and stormwater discharge control).
5. Review and discuss the procedures for noise and dust control.
6. Review and discuss the procedures for protection of adjacent structures.

Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from TTUS FP&C.

On-site storage or sale of removed items or materials is not permitted. Burning of demolition debris is not permitted.

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Verify all utilities have been disconnected and capped before starting demolition operations. Owner will arrange to shut off Owner owned utilities.

Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

Demolish indicated buildings completely. Use methods required to complete the Work within limitations of governing regulations. Use of explosives is not permitted.

Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations. Maintain fire watch during and for at least one-hour after flame cutting operations. Maintain adequate ventilation when using cutting torches.

Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing. Complete engineering surveys as required during demolition to detect hazards that may result from building demolition activities.

Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation. Clean adjacent structures of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

02 41 19 Selective Demolition

Regarding the safety and health requirements for demolition operations, comply with [ANSI/ASSE A10](#) and NFPA 241 “Standard for Safeguarding Construction, Alteration, and Demolition Operations”.

Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations. Use

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of explosives is not permitted. Unless otherwise indicated, demolition waste becomes property of the Contractor.

The demolition Contractor is required to provide submittals inclusive of but not limited to analysis reports, demolition phasing drawings, selective demolition schedules, and other drawings as required that fully describe the Contractor's intent of demolition execution. Submittals are to indicate the measures proposed for protecting individuals and property, environmental protection, dust, noise, and stormwater controls. Submittals are also to indicate proposed locations for the construction of barriers for the protection of existing structures, hardscapes, and plantings to remain. If required, provide landfill manifests indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

Provide a monthly recycled content manifest report from the demolition Contractor disclosing all materials and amounts (define units as applicable) that were diverted from the landfill, inclusive of but not limited to steel, reinforcing bars, copper, aluminum, glass, concrete, masonry, and other recyclable materials as the project presents.

Provide a time sequenced Schedule of Selective Demolition activities that includes, at a minimum, the following:

1. Detailed sequence of selective demolition and removal Work, with starting and ending dates for each activity. Ensure building occupants and on-site operations are and remain uninterrupted.
2. Interruption of utility services. Indicate start, duration, and end dates/times when each utility service will be interrupted. Coordinate shutoff, capping, and continuation of utility services with TTUS FP&C so as to minimize disruptions to end users and occupants.
3. Use of elevator and stairs. Component Institutions must provide approval prior to Contractor use. All damages incurred will be repairs by the Contractor at no cost to the component Institution.
4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
5. Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

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Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled. For items identified for salvage, carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner. For existing items to remain or to be reinstalled, detach items from existing construction, prepare for reuse, and reinstall where indicated. Existing items of construction that are not to be permanently removed but reused are to be appropriately protected throughout construction.

Historic items, relics, antiques, and similar objects including, but not limited to cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to TTUS FP&C or the component Institution uncovered during demolition shall remain the property of TTUS FP&C or the component Institution.

The Design Professional shall clearly define in detail special measures proposed to protect adjacent buildings to remain including effective means of egress from those buildings.

Refrigerant recovery shall be performed by a certified refrigerant recovery technician. Remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction before starting demolition. Provide a statement of refrigerant recovery signed by the refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery procedures were performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

A pre-demolition conference shall be conducted at the project site minimum seven days prior to start of demolition Work. At a minimum, the pre-demolition conference shall discuss and resolve the following areas of concern:

1. Review and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule, verify availability of materials, demolition personnel, equipment, and facilities needed to complete the Work on time.
4. Review and discuss the demolition protection plan for pedestrians, workers, equipment, existing utilities, infrastructure, and the environment (hazardous air pollutants, hazardous materials, and stormwater discharge control).
5. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

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6. Review areas where existing constructions to remain requires protection.
7. Review and discuss the procedures for noise and dust control.
8. Review and discuss the procedures for protection of adjacent structures.

Verify all utilities have been disconnected and capped before starting demolition operations. Owner will arrange to shut off Owner owned utilities.

Review record documents of existing construction. Owner does not guarantee that existing conditions are same as those indicated in record documents. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required. When unanticipated mechanical, electrical, or structural elements conflict with intended function or design are encountered, investigate, and measure the nature and extent of conflict. Promptly submit a written report to TTUS FP&C and the Design Professional.

Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations. If steel tendons are existing, locate tensioned steel tendons and include recommendations for de-tensioning.

Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations. Cover and protect furniture, furnishings, and equipment that have not been removed.

Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations. Maintain fire watch during and for at least one-hour after flame cutting operations. Maintain adequate ventilation when using cutting torches

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Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing. Complete engineering surveys as required during demolition to detect hazards that may result from building demolition activities.

Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation. Clean adjacent structures of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering, and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

Selective Demolition of Mechanical, Plumbing and Electrical Systems

If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.

- Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same material.
- Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same material.

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- Equipment to Be Removed: Disconnect and cap services and remove equipment. Remove all conductors serving demolished equipment.
- Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
- Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner. Remove all conductors serving demolished equipment.
- Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same ductwork material.
- Ducts to Be Abandoned in Place: Cap or plug ducts with same ductwork material.

Selective Demolition of Concrete and Masonry

- Demolish concrete in small sections using power-driven saws. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- Saw-cut concrete slabs-on-grade at perimeter of area to be demolished, break up and remove.
- Demolish masonry in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

Selective Demolition of Roofing

- Remove no more existing roofing than what can be covered in one day by new roofing or made weathertight so that building interior remains protected from exposure of environmental and climatological elements.
- Remove existing roof membrane, flashings, copings, and roof accessories down to substrate and to extents defined on Construction Documents.

Selective Demolition of Resilient Flooring

- Remove floor coverings and adhesive according to recommendations in Resilient Floor Covering Institutes' "Recommended Work Practices for the Removal of Resilient Floor Coverings."

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Do not allow demolished materials to accumulate on-site. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent. Transport demolished materials for disposal legally and in a controlled manner. Do not allow dust and debris to become air borne during transport.

Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition before selective demolition operations began.