

The University of Utah
FACILITIES MANAGEMENT

**SUPPLEMENTAL
GENERAL CONDITIONS
FOR UNIVERSITY OF UTAH PROJECTS**

September 30, 2011

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Revision Note: This document replaces the *Supplemental General Conditions for University of Utah Projects* dated May 2, 2011. The only change is a new paragraph 5.1 added to Article 5 “Request for Utility Shutdown.”

Article 1 Basic Definitions

Except as otherwise described herein, definitions provided in the General Conditions apply to this document. The following definition is added to the General Conditions:

UNIVERSITY PROJECT MANAGER. “University Project Manager” means the University of Utah Facilities Management person directly assigned to coordinate the University’s interests and involvement in the Work. If the contractor’s agreement is issued by the University of Utah, the “University Project Manager” is the “University’s Representative” as defined in the General Conditions.

Article 2 Affirmative Action

The Contractor is encouraged to utilize the services of Small Business Enterprises, Disabled Veteran-Owned Business Enterprises, Minority-Owned Business Enterprises, Woman-Owned Business Enterprises, and Small Disadvantage Business Enterprises as subcontractors and/or suppliers for University projects. The Contractor may be required to survey and provide information on contracts and utilization of these services.

Article 3 Access to Communication Manholes

The University of Utah requires communications manholes on campus to be fitted with a secure access system. Authorization will be required before the Contractor may enter any communication manhole, whether secured or not. Authorization will be requested through the University Project Manager and permission will be given by University Information Technology - Network and Communication Services.

- 3.1 The Contractor must not proceed with any work in the manhole without first fully understanding the systems and equipment currently in place. Assistance in identifying communications systems and their functions in the manhole may be obtained from University Information Technology - Network and Communication Services at 801-581-8999.
- 3.2 Note that campus communication systems provide support to several critical functions at the University, including, but not limited to major research activities. An unintended shutdown may adversely affect several critical functions, including highly expensive research. Unintended shutdown of any communication service caused by the Contractor which results in any damage(s) will be assessed to and paid by the Contractor.

Article 4 Digging Permits

A Digging Permit shall be required for all underground digging on campus. The University and other non-University entities support an extensive network of underground utilities.

- 4.1 Contractors shall request digging permits through the University Project Manager.
- 4.2 Requests for a Digging Permit are available on-line or from the University Project Manager. Requests must be submitted at least five full University working days prior to the commencement of digging. The request should include a description of the intended work, and drawing(s) showing the intended work area and the contract limit lines.

- 4.3 This permit process does not automatically request Blue Stakes assistance. The Contractor must also contact Blue Stakes and other utility companies as applicable for assistance in locating non-University underground utilities.
- 4.4 The issued Digging Permit will identify University utilities known to exist within the affected area. After issuance of the permit, Facilities Management (“FM”) will mark the location of existing University utilities at the site. Note that there is a risk that some underground utilities may not be documented in University records. All excavation should proceed with caution.
- 4.5 During excavation, the equipment operator shall have copies of the Digging Permit and Blue Stakes documentation in his/her immediate possession to guide the operator in utility avoidance and to document the University’s approval of the work.
- 4.6 Additional assistance in locating existing University utilities is available from the University Surveyor at 801-585-5070.
- 4.7 Contractor shall provide the University Project Manager notice of not less than two working days prior to backfilling over utilities or other underground improvements. While the intent of this requirement is to allow the University to collect survey data, this does not relieve the Contractor of its obligation to maintain As-Built documentation required by Article 4.8 of the General Conditions.

Article 5 Request for Utility Shutdown

A Request for Utility Shutdown shall be submitted to the University Project Manager for each anticipated interruption of any existing utility service on campus. This includes, but is not limited to, any interruption to electric systems, communications; control systems, security, gas (natural, laboratory gasses, etc.), water (potable, non-potable, purified, etc.), steam systems, high-temperature water systems; sanitary sewer, storm sewer, etc. The Contractor is to discuss anticipated shut-down requirements with University Project Manager well in advance of the proposed shut-down.

- 5.1 Prior to beginning any work on a Utility Shutdown, the Contractor must meet with the University Project Manager and Plant Operations staff to define a hazard control plan that can include Lock Out Tag Out, Confined Space Entry, and NFPA 70 compliance. Refer to Article 24 in these Supplemental General Conditions for additional information. The Contractor must verify that all sources of hazardous energy for the affected system have been identified, properly controlled and/or isolated, and locked out prior to beginning any work. The Contractor and its subcontractors shall place their own locks on the shut down system as an added measure of protection for their employees.
- 5.2 Utility Shutdown Request forms are available on-line or they can be obtained from the University Project Manager.
- 5.3 Submit the request to the University Project Manager at least three (3) full University working days prior to the day of shut-down.

- 5.4 A longer lead time is required for interruptions affecting several campus departments, scientific experiment disruption, and similar complications. Shutdowns of this nature must be identified early and reviewed with the University Project Manager in order to determine notice requirements.
- 5.5 Each utility shut-down request is subject to approval by Campus Design & Construction, Plant Operations, and University departments which will be affected by the proposed loss of service.
- 5.6 If immediate shutdown is required to prevent damage to personnel or property, contact Plant Operations Dispatch at 801-581-7221.

Article 6 Drug Free Workplace

It is the policy of the University of Utah that "...the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance on University property is prohibited." All contractors, subcontractors, and their employees, while under contract with the University must abide by the terms of the above policy. Violation may result in termination of the contract. The University will prosecute violators of this policy to the fullest extent possible.

Article 7 Hazardous Chemicals

The University of Utah shall inform contractors of hazardous chemicals their employees may be exposed to while working on University projects. Conversely, the Contractor shall inform the University of Utah of all hazardous chemicals the Contractor will bring on campus that University of Utah employees may be exposed to. This exchange of information shall occur through the University Project Manager.

Article 8 Interim Life Safety Measures

The Contractor must observe the following interim life safety measures during construction of the project. The University must approve any variance or exception in writing.

- 8.1 All exits will provide free and unobstructed egress.
- 8.2 Free and unobstructed access to emergency departments and for emergency forces will be maintained.
- 8.3 Fire alarm, detection, and suppression systems will not be impaired. In the event of disruption, alternative systems shall be provided which are satisfactory to the authority having jurisdiction.
- 8.4 Temporary construction partitions will be smoke tight and built of non-combustible or limited combustible materials that will not contribute to the development or spread of a fire.
- 8.5 The Contractor will provide appropriate additional fire fighting equipment (such as charged, current fire extinguishers) on the construction site.
- 8.6 Smoking is prohibited in or adjacent to construction areas.

- 8.7 The Contractor will develop and enforce storage, housekeeping, and egress removal practices that reduce the flammable and combustible fire load of the building to the lowest level necessary for daily operation.
- 8.8 When structural or compartmentation features of fire safety are compromised, the Contractor will notify the A/E and University Project Manager so that the University can develop alternate fire safety procedures.

Article 9 Keys

Should the Contractor require key(s), (as determined by the University Project Manager) for access to the Project Site, the University Project Manager shall arrange to obtain such key(s) for the Contractor.

- 9.1 At the completion of the Project and before final payment is approved, the Contractor shall return University key(s) to the University Project Manager. Should he/she be unable to do so because of loss, theft, or for any reason, the cost of replacement key(s) and/or re-keying of any locks deemed necessary shall be deducted from the Contractor's final payment. Loss or theft of keys is to be reported to the University Project Manager immediately.

Article 10 No Smoking Area

In order to comply with the Utah State Clean Air Act which prohibits smoking in public buildings, a strict no smoking policy shall be enforced at any job site located within the confines of any University of Utah building or within 25 feet of any building opening or entrance. This policy will apply to all contractors, their employees and subcontractors.

Article 11 Operating and Maintenance Manuals / Warranties and Guarantees

- 11.1 All information is to be organized by discipline (architectural, mechanical, electrical, etc.).
- 11.2 Security Systems O&M Manuals and Warranties/Guarantees
 - a. The Security Contractor shall submit security systems O&M and warranty/guaranty documents separately.
 - b. These documents must be delivered directly to the UCard main office by the installing Security Contractor. No other entity will receive a copy of security system documentation.
- 11.3 Warranties and Guarantees
 - a. Submit two sets of paper originals bound in a binder for the University (plus sets required by DFCM for their projects)
 - b. Submit two CDs of the same information prepared electronically in a self executable searchable PDF format for the University (plus sets required by DFCM for their projects).

- c. Hard copies and electronic submittals are to be clearly identified on the front cover and label with the title “Warranties and Guarantees”, University building number, the project name, University project number, and the Contractor’s business name.

11.4 Operating and Maintenance Manuals

- a. Submit O&M manuals as a separate bound document in the same formats described above for warranties and guarantees (2 paper sets and 2 electronic copies of a self executable searchable PDF).
- b. The following information shall appear on the front cover (both CD and hard copy):

<p><u>"Operation and Maintenance Manual"</u></p> <p>Building Number: Project Name: Volume Number: University Project Number:</p> <p>A/E Firm: A/E Subconsultant(s): Commissioning Agent:</p> <p>Contractor: Major Subcontractor(s):</p>

- c. Special equipment must include a material list, and special architectural items must include paint color identification (source and catalog number).
- d. Include complete set(s) of building control diagrams, drawn as installed at the site with all sequences of operations included for all equipment. Equipment, devices and wiring shall be clearly identified with model, size, etc. These drawings are to be included in O&Ms as well as being framed behind glass and hung in the mechanical room along with a valve matrix showing valve type, service and location.
- e. For each item of equipment, include approved submittals and provide data and instruction sheets marked to indicate the equipment/device serial number, the plan symbol found on the construction drawings, the model number, and all options ordered.
- f. Additionally, the following information is to be included:
 - (1) A table of contents.
 - (2) A complete parts list(s) and source of supply for each piece of equipment, including contact information (addresses and phone numbers).

- (3) The balance report, where applicable.
- (4) Performance curves and capacity data.
- (5) Wiring diagrams.

Article 12 Parking Permits

Every vehicle will require a permit to park on the University of Utah campus. The Contractor is responsible for all costs of required parking permits. Contractor permits are available at 1901 E. South Campus Drive, Room #101 (the north-west corner of the Annex Building just east of the Jon M. Huntsman Center). The sale of parking permits to Contractors is subject to any limitations or other constraints identified in the bidding documents and by University of Utah Commuter Services.

Article 13 Parking on University Sidewalks

Parking or driving on campus sidewalks is not allowed unless prior authorization is received and a hang-tag permit is clearly visible in the vehicle. Authorization must be obtained through the University Project Manager. The hang-tag shall be placed on the vehicle's dashboard or interior mirror, fully visible through the windshield at all times. Not all sidewalks are vehicle accessible. For more information see <http://www.facilities.utah.edu/sidewalkpermits/>.

Article 14 Sexual Harassment

Sexual harassment of any kind is taken very seriously at the University. Contractors will be held responsible for the actions of their employees and subcontractors while working on University projects. Any contractor, subcontractor, or employee thereof participating in verbal or other sexual intimidation of any kind toward any other individual or group (e.g., making "catcalls") shall be held in violation of Federal Law, Title VII, Section 703 (sexual harassment) and will be prosecuted to the fullest extent possible. University sanctions of convicted violators may include, but not be limited to, termination of Contract.

Article 15 Site Lighting

New and existing site lighting along walkways and around the perimeter of the construction site shall be operational for all hours of darkness during extent of construction. Upon notification of lighting failure, the Contractor shall respond and initiate repair of the failed system within four hours of notification. If the response time exceeds four hours, the University reserves the right to repair the system and the Contractor will then be responsible for the repair costs.

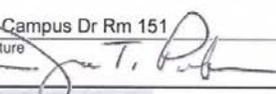
Article 16 Tax Exemption

Do not include Utah State Sales and Use Tax on materials purchased for the Work, and do not include this tax on materials for proposed changes or invoices. The University of Utah is exempt from Federal Excise Taxes and Utah Sales and Use Taxes. The Contractor is responsible for complying with all Utah State Sales and Use Tax exemption requirements. The Contractor is responsible for payment of all Utah State Sales and Use Tax obligations that arise from the Contractor's failure to comply with exemption requirements.

*The Utah State Tax Commission Exemption Certificate (Number N21318)
is provided on the following page.*

TAX EXEMPTION CERTIFICATE

	Utah State Tax Commission Exemption Certificate (Sales, Use, Tourism and Motor Vehicle Rental Tax)	TC-721 Rev. 1/09
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Name of business or institution claiming exemption (purchaser) University of Utah		Telephone Number 801-581-7241	
Street Address 1901 E South Campus Dr Rm 151	City Salt Lake City	State UT	ZIP Code 84112
Authorized Signature 	Name (please print) James T. Parker	Title Director of Procurement & Supply Mgt.	
Name of Seller or Supplier:		Date	

The person signing this certificate **MUST** check the applicable box showing the basis for which the exemption is being claimed. Questions should be directed (preferably in writing) to Taxpayer Services, Utah State Tax Commission, 210 N 1950 W, Salt Lake City, UT 84134. Telephone (801) 297-2200, or toll free 1-800-662-4335.

DO NOT SEND THIS CERTIFICATE TO THE TAX COMMISSION
 Keep it with your records in case of an audit.

CONSTRUCTION MATERIALS PURCHASED FOR RELIGIOUS AND CHARITABLE ORGANIZATIONS

I certify the construction materials purchased are on behalf of a religious or charitable organization. I further certify the purchased construction materials will be installed or converted into real property owned by the religious or charitable organization.

Name of religious or charitable organization:

 UNIVERSITY OF UTAH

Sales Tax Exemption No. _____ N21318

Name of project: _____

To be valid this certificate must be filled in completely, including a check mark in the proper box.

A sales tax license number is required only where indicated.

Please sign, date and, if applicable, include your license or exemption number.

NOTE TO SELLER: Keep this certificate on file since it must be available for audit review.

NOTE TO PURCHASER: Keep a copy of this certificate for your records. You must notify the seller of cancellation, modification, or limitation of the exemption you have claimed.

If you need an accommodation under the Americans with Disabilities Act, contact the Tax Commission at (801) 297-3811 or TDD (801) 297-2020. Please allow three working days for a response.

DO NOT SEND THIS CERTIFICATE TO THE TAX COMMISSION
 Keep it with your records in case of an audit.

Article 17 Water Use on Campus

Fire hydrants on campus may only be used with permission. If water trucks or tanks must be filled outside the construction area, the water station between Buildings 306 and 309 may be used.

Article 18 Storm Water Pollution Prevention (SWPPP)

In addition to complying with the SWPPP requirements provided for in the Instruction to Bidders, the Contractor shall comply with the following. The University must approve any variance or exception in writing.

- 18.1 The Contractor must employ the following storm water pollution prevention measures during construction of the project.
 - a. Perimeter control, a system of sediments control best management practices (BMPs) that act as barriers to retain sediment on the construction site.
 - b. Construction entrance/exit stabilization for all entrances/exits used by the project, no matter how short the duration. Sediment tracking onto University roads, parking lots, sidewalks, and other paved surfaces is prohibited. If tracking occurs, the Contractor must clean the affected area before the end of the workday.
 - c. Temporary earth stabilization until final stabilization has been achieved.
 - d. Protect all storm drain inlets/catch basins that could receive storm water from the project until final stabilization of the site has been achieved.
 - e. If concrete work is part of the project, a concrete washout area must be provided. The area must be lined or a sealed container may be used.
- 18.2 The Contractor's SWPPP must be reviewed and approved by the University's Department of Environmental Health and Safety (EHS) prior to submitting the application (NOI) online, and the Contractor must have the permit before beginning construction. The University Project Manager will assist in submitting the Contractor's SWPPP to EHS.
- 18.3 The Contractor shall assume full responsibility for any SWPPP drafted by others and adopted by the Contractor for use at the construction site. The Contractor shall finalize and file the SWPPP grading, sediment and erosion control plan and pay permit fees. The Contractor shall make any needed modifications to the SWPPP to fit the existing site conditions prior to beginning construction.
- 18.4 In addition to other requirements, the Contractor shall:
 - a. Inspect the construction site to verify the SWPPP plan every two weeks and after significant rainfall, and keep a record of each inspection at the construction site,
 - b. Remedy deficient management practices, controls and control structures; and,

- c. Modify the SWPPP as site conditions change (i.e., as demolition and construction phases progress).

Article 19 Vehicle Idling Policy

In an effort to reduce vehicle emissions and fuel use at the University of Utah, the Contractor shall adhere to this idling policy for all vehicles and equipment operating on campus.

- 19.1 For the purposes of this policy, idling means an engine is running while the vehicle it serves is stationary, or the equipment it operates is not performing work.
- 19.2 Contractor vehicles and equipment are prohibited from idling for periods longer than 60 seconds except under the following conditions:
 - a. Where idling is necessary to power auxiliary equipment such as lifts, hoists, computers or safety lighting (auxiliary equipment does not include the vehicle's air conditioner, heater or defrost for wintertime vehicle warm up),
 - b. Where idling is necessary for testing, maintenance, repair or diagnostic purposes,
 - c. Where idling is necessary to maintain factory installed emissions equipment on diesel equipment,
 - d. Where a vehicle is stopped at a traffic control signal; in heavy traffic at a TRAX line or railroad crossing; traveling through a construction zone; and / or,
 - e. Where turning off the motor could jeopardize the health and safety of the driver or passenger.

Article 20 Environmentally Preferable Products

Subject to limitations and the review and approval requirements stated in the General Conditions and other Contract Documents regarding substitutions, substitution requests and the use of specified materials or products, the Contractor, where allowed, is encouraged to offer Energy Star certified products, EPEAT (Electronic Product Environmental Assessment Tool) recommended products, or products that meet FEMP (Federal Energy Management Program) standards for energy consumption. The University of Utah also encourages contractors to offer products or services, when allowed by Contract Documents, that have a lesser or reduced effect on human health and the environment when compared with competing products or services. Items considered may include raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, disposal, etc.

Article 21 Integrity of Fire Rated Partitions

For all construction work performed in patient care facilities, unless specifically shown on the drawings, neither the Contractor nor any Subcontractor shall allow holes, cuts, or any other type of penetration in any floor slab, partition above the ceiling, or any otherwise concealed partition, without first notifying the University or the University's representative of every such occurrence. The purpose of this notification is to enable the University to verify that each such penetration is properly sealed according to the requirements of current UBC and NFPA codes (as part of the Work of the Contractor) if required by the

University. Prior to covering concealed locations, and prior to Substantial Completion, the Contractor shall be responsible to arrange an inspection with the University or University's representative where personal inspection will verify that each such penetration is properly sealed.

Article 22 Roof Access

Access to University roofs is limited to authorized personnel only. Roof safety is the responsibility of the Contractor and includes any individual working for or contracting with the Contractor. Safety issues include potential falling hazards and roof integrity protection. Any individual intending to access a University roof must first obtain permission follow the procedures described at the Plant Operations web site under "Roof Access."

Article 23 Utility Connections

Connections to certain campus utilities require specific tasks. The following utilities have specific connection task requirements:

- 23.1 Trace Wire. For all underground piping, a #10 THW copper wire must be installed alongside of the pipe to serve as a trace wire. The trace wire must be brought to the interior of valve boxes and manholes when applicable. At building penetrations, trace wire must be brought to the surface outside of the building and secured inside a single valve irrigation box with cover. Any terminations of trace wire not described above shall be secured inside a single valve irrigation box with cover. Terminations of the trace wire shall be noted on As-Built drawings.

- 23.2 Electrical Power-Up. The following requirements must be met prior to activating electrical power at new or remodeled buildings on campus. The Contractor's Work will be subject to inspection by the University's Electric Shop and power-up will not be allowed until the following requirements are met.
 - a. Manholes
 - (1) Switchgear in manholes shall be labeled to identify the building being served.
 - (2) Each new and existing high voltage cable shall be fire-taped and racked on manhole walls.
 - (3) Each new and existing high voltage cable shall be marked to indicate feeder number and feeder voltage.
 - (4) Each conduit leaving the manhole shall be marked to show the next manhole or building.
 - (5) Each manhole shall be labeled with a manhole number.
 - (6) All ground wires in the manhole and all terminations shall be properly grounded.
 - (7) Prior to power-up, each manhole shall be cleaned of all trash.

- b. Above Ground High Voltage Switches and Transformers
- (1) Switches and transformers shall be labeled to identify the voltage and building served.
 - (2) Properly ground all gear and terminations.
 - (3) Color code each feeder leaving the transformer per the voltage feeding the building. Colored tape shall be applied at all terminations, junction boxes and pull boxes. Conductors in sizes #6 and below shall be color coded with colored insulation. Power conductors shall be color coded as follows:

Conductor	208v	480v
phase A	black	brown
phase B	red	orange
phase C	blue	yellow
neutral	white	grey
ground	green	green

- c. Main Distribution Panels
- (1) Each distribution panel shall be grounded.
 - (2) Each feeder entering the panel from a transformer shall be color coded (as described in paragraph “b” above) to identify the voltage.
 - (3) Each distribution panel shall be labeled to identify the voltage.
- d. Equipment Labeling
- (1) Compliance with NFPA 70E 2009 130.3 C Equipment Labeling (including current updates) is required. All labels must be in place prior to connection to the University Electrical System.

23.3 High Temperature Water Connections. The following requirements must be met prior to activating high temperature water piping at new or remodeled buildings on campus. The Contractor will assist the University during system start-up.

- a. Prior to requesting start-up assistance, the Contractor shall check all parts of the system for leaks, and repack valve stem glands that indicate a need for additional packing.

- b No valve between existing and new HTW piping shall be opened until after all tests are approved, and internal cleaning operations are complete; then, system valves may be opened only with authorization and on-site-assistance from Campus Utility Services, the High Temperature Water Plant, and the University Project Manager.
- c The HTW Plant personnel will provide on site management of the start-up process and direct the Contractor in valve positioning. The Contractor shall not activate any valve during start-up until directed to do so by the University.
- d Additional requirements include:
 - (1) Shut-down and start-up will be accomplished by University personnel only. The Contractor shall follow “Request for Utility Shutdown” procedures, but allow additional lead time to allow adequate preparation time for University services.
 - (2) The Contractor shall boil out each HTW pipe system before connecting to a live HTW system. Water quality for start up must be 0 PPH and shall be verified by a University authorized water treatment specialist.
 - (3) Pressure test each pipeline at 800 lbs for 24 hours. If hydrostatic testing is not feasible, provide certification of a leak proof system through x-ray analysis.
 - (4) Before opening or cutting into any HTW pipe, the Contractor must verify 0 PSI in the line and receive approval from the HTW plant.
 - (5) All connections shall be welded and tested before start up. Threaded pipe connections will not be allowed.
 - (6) All pressure gauges, thermometers, valves, etc. shall be furnished and installed in the piping system prior to start-up.
 - (7) Pipe insulation will be installed in confined areas such as manhole vaults and any location where space limitations pose a risk of burn injury.
 - (8) Ladders shall be installed inside manhole vaults.

23.4 Natural Gas Main Connections. Natural gas piping shall be installed in accordance with State adopted code, DOT standards, Questar standards, and University of Utah standards.

- a. Exterior buried gas lines shall follow Questar approved specifications for plastic pipe and shall be bedded in sand the entire length of the line. Exterior above ground gas lines 2-1/2” and larger shall be schedule 40 forged black steel butt welded fittings; or, for 2” and smaller shall be 150 lb malleable iron with screwed fittings. Steel pipe must have an approved protective coating.

- (1) For buried plastic pipe, yellow warning tape shall be installed 2 feet above the gas line, in addition to an 18 gage copper wire along the entire length of the pipe.
 - (2) When a gas pipe is run through a wall, the pipe shall be run through protective sleeve and sealed to prevent water from entering the building.
 - (3) All outside above ground gas piping shall be painted with a protective gray paint.
- b. All gas piping shall be tested at 3 PSI for 10 minutes with no drop. A half-pound increment gauge shall be used. Where the supply is over 2 pounds, the test shall be at 1 ½ times the maximum working pressure. All tests shall be witnessed by the University of Utah Plumbing Shop or its' designee.

23.5 Sanitary Sewer Connections. Sewer mains shall be installed in accordance with State adopted code, using procedures to keep dirt out of the sewer main. All installed piping shall be inspected by the University Plumbing Shop prior to backfill.

- a. Buried sewer mains shall be bedded in sand and supported throughout its entire length. Under no circumstances will a pipe be supported with rocks.
- b. Warning tape will be installed at 2 feet above the pipe when PVC pipe is installed.
- c. Each new sewer main shall be air tested between manholes by a certified testing company. If the air test fails, a camera shall be sent down the sewer main to inspect the line, and the damaged part of the main will be dug up and repaired.
- d. All building laterals shall be tied in with a manhole, not a WYE.

23.6 Steam System Connections. An extension to any campus steam piping system will not be allowed until a stamped professionally engineered plan, including drawings and specifications, is approved by the University. Isolation shut-off valves and steam trap design is required.

- a. Welded or threaded pipe connections are allowed on steam / condensate systems using only black steel pipe and fittings.
- b. Verify the steam demand for each building system before adding any steam appliance.
- c. Do not pipe condensate directly to sanitary sewer.
- d. Verify proper steam connection points and condensate return connection points before completing the installation and connecting to the existing system.

23.7 Piping Tie-In to Existing Building Systems. All piping shall be insulated and labeled. Specific requirements for connections to existing building systems are:

a. Pressure Testing

- (1) The Contractor shall apply a hydrostatic test to each piping system. Each system shall hold a minimum of 100 PSI of water or 1 ½ times the operating pressure, whichever is greater, for 30 minutes without any pressure drop on the gage.

b. Pipe Cleaning

- (1) Piping (black iron, PVC, copper) shall be cleaned with West B802 Alkaline Clean, 25 gallons in every 1000 gallons of water. Circulate the mix 24 to 48 hours, flush with potable city water, then final fill the system with chemicals described hereinafter. The Contractor shall provide documentation and certify that the required procedure was followed.

c. Chemical Fill

- (1) Each piping system to be connected to existing shall be filled with appropriate chemicals or antifreeze equal to the existing system before isolation valves are opened to the building system.
- (2) Close loop systems shall have West C-404, 50 to 100 PPM, MO+6.
- (3) Glycol systems shall have 30% minimum of either Jeffcool P150 or Dowfost.
- (4) Open loop systems shall have West C-313-U at 200 PPM; and shall include sodium hypochlorite at 0.5 to 1.5 PPM.

d. Black iron piping shall be American made schedule 40 seamless (only).

e. Copper Piping

- (1) Copper piping shall be type L with dielectric unions and sweat fittings.
- (2) Gas welded piping shall be nitrogen purged while welding. All fittings will be wiped clean.

23.8 Storm Drainage Connections. Storm drainage piping shall be installed in accordance with State adopted code, and in a manner as to keep dirt out of the piping. All installed piping shall be inspected by the University Plumbing Shop and the University's inspector (Office of the Building Official) prior to backfill or concealment.

- a. Exterior Piping
 - (1) Storm water from roofs, paved areas, yards, courtyards, etc. shall drain into a dedicated storm drainage system. Under no circumstance shall storm water be tied to a sanitary sewer line.
 - (2) Storm drainage piping shall be installed with a bedding material in the bottom of the trench. If PVC is used, 1 foot of sand on the bottom of the pipe, and 2 feet of sand over the top of the pipe will be required. Under no circumstance shall the pipe be resting on rocks.
 - (a) All storm drain laterals shall tie into a manhole or a collection box.
 - (b) A storm drain shall not reduce in size in the direction of flow.
 - (c) Buried storm drain piping 12 inches and smaller shall be tested by a certified testing company between manholes. If the test fails, a camera shall be sent down the line to determine the location of the bad section, it shall be dug up and repaired.
 - (d) Buried storm drain piping larger than 12 inches shall be inspected using a camera sent down the line to check joints for tightness. If a joint is not secure, it shall be dug up and repaired.
- b. Interior piping:
 - (1) Storm drain piping inside buildings shall be tested using either water or air.
 - (a) If water is used, all openings shall be tightly sealed, except at the highest point, and then filled with water to the point of overflow. No part of the system shall be tested with less than 10 feet of head of water. The static pressure shall be held for 15 minutes.
 - (b) If air is used, 5 PSI shall be maintained for a minimum of 15 minutes with no loss on the gage.

23.9 Water Main Connections. Installation and disinfection of water mains shall be in accordance with State adopted code. Before connecting new water mains to an existing water main; the following must be done:

- a. All water mains shall be kept clean during construction.
- b. All fittings shall be installed with restraining glands and thrust blocks.
- c. All water mains shall be swabbed and cleaned with a 1% hypochlorite disinfecting solution if dirt or trench water enters the pipe per State adopted code.

- d. All water lines shall be capped at the end of the work day to protect piping from animal entry and dirt inside the pipe.
- e. When C900 is used, it shall be bedded with sand one foot below the pipe and 2 feet above the pipe. Caution tape shall be installed at 2 feet above and all along the pipe.
- f. All building supply lines shall be installed with shut off valves on all three sides of the tee.
- g. To fill the water main with water, the Contractor must use an approved cross-connection control device. A hydrostatic pressure test will be required (200 PSI for 2 hours).
- h. All new water lines shall be chlorinated with a 50 PPM or higher and remain in the pipe for a 24 hour period. After the retention period, the heavily chlorinated water shall be flushed into a sanitary sewer only. Salt Lake City Sewer Department must be contacted to let them know that high chlorinated water is coming to them. Upon refilling the system with clean potable water, two bacteriological samples 24 hours apart shall be taken. After the second sample comes back satisfactory, the system can be connected to the University's water system. All work shall be inspected by the University of Utah's Plumbing Shop before being buried or concealed and prior to start-up.

23.10 Water Line Connections Inside Buildings. Water lines entering each building shall have parallel pressure reducing valves and parallel backflow prevention devices with appropriate isolation valves on each parallel path.

- a. Backflow prevention devices shall be installed to separate potable water from industrial and/or non-potable water.
- b. Installation shall be in accordance with State adopted code and will be inspected by the University Plumbing Shop and Building Inspector.
- c. Each floor of the building shall have an isolation valve(s), accessible at the floor it serves.
- d. Each laboratory room shall have an isolation valve(s), accessible in the lab it serves, in addition to shut-off valves at each fixture in the lab.
- e. The Contractor shall test water piping at 2 times the operating pressure for 30 minutes. The test shall be in accordance with State adopted code.
- f. The Contractor shall clean the water piping system by first flushing with clean potable water until dirty water is no longer observed at outlet points. The system shall be filled with clean water including 50 PPM chlorine and held in the system for 24 hours (or 200 PPM for 3 hours). The system shall then be flushed with clean potable water until chlorine is no longer present. The heavily chlorinated

water shall be flushed into a sanitary sewer only. Salt Lake City Sewer Department must be contacted to let them know that high chlorinated water is coming to them.

Article 24 Additional OSHA Requirements

In addition to any safety regulations or practices which may otherwise be required or prudent, the Contractor shall establish and implement safety programs that comply with the following OSHA General Industry regulations when working inside University buildings or on or around University utility systems:

- 24.1 CFR 1910.146, Permit Required Confined Space
- 24.2 CFR 1910.147; Control of Hazardous Energy (Lock Out Tag Out)
- 24.3 CFR 1910.335; Electrical Safeguards for Personal Protection

End of Supplemental General Conditions