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**SPECIFICATIONS FOR THE DESIGN AND  
INSTALLATION OF FIRE SPRINKLER SYSTEM  
AND STANDPIPE SYSTEM FOR THE  
TONAPAH RESIDENCE HALL COMPLEX  
UNIVERSITY OF NEVADA LAS VEGAS**

**Prepared For:**

University of Nevada Las Vegas (UNLV)  
4505 S. Maryland Parkway  
Las Vegas, Nevada 89154-1048

V62266

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## **PART 1 - GENERAL**

### **1.01 GENERAL DESCRIPTION**

- A. Furnish all materials and labor for the detailed design and installation for (a) complete fire sprinkler and standpipe system modifications, hereafter referred to as the "System(s)" in complete compliance with this Specification the University of Nevada, Las Vegas, Tonopah Hall Fire Protection Systems Upgrade
- B. The conceptual drawings and this Specification define the scope of work for the project. The conceptual drawings are intended to be schematic only, and the Contractor's responsibilities are defined herein. Where conflicts occur between the Specification and conceptual drawings, the bidder is instructed to request clarification prior to bidding. In general, should a conflict occur, the Specification will overrule the conceptual drawings.
- C. The work shall be subject to the terms and conditions contained in the "Construction Contract," agreement between the Contractor and the Owner.

All applicable fees, taxes, and permit costs for all work contained in this specification section shall be included in this Contractor's base bid.

- D. Contractor shall be responsible for the review and compliance with this Specification section. All work shall be performed in accordance with these Specifications and good engineering and installation practice. Modifications to these Specifications will NOT be accepted without the expressed written approval of Owner, Owner's Representative, and/or Owner's Insurance Carrier; herein referred to as the "Owner". It is Contractor's responsibility to document the required approvals of any such modifications prior to the execution of work.
- E. Contractor shall field verify all site conditions and information contained on the conceptual drawings and is responsible for the complete design and installation of the system(s) in accordance with the specifications. The conceptual drawings may not show all information necessary for installation of the system(s), but are intended to be assist the Contractor for the in providing a visual representation of the proposed scope of work for the purpose of preparing a bid. The conceptual drawings indicate the following:
  - 1. Approximate pipe routing and sizes of the existing Class I standpipes and the existing sprinkler locations.
  - 2. Approximate number of new sprinklers required in addition to retained sprinklers or those that may need to be removed as a result of the fire sprinkler and standpipe modifications.
  - 3. Contractor shall provide a cost for replacing all existing sprinkler heads with the same type and brand proposed for the new installation.

- F. There shall be no impairments to any of the adjoining building system(s) in any way due to the work provided for in this specification.

## 1.02 INTENT OF SPECIFICATIONS

- A. The work performed pursuant to these specifications is to be complete in every respect, resulting in the System(s) installed in accordance with the applicable codes, standards, manufacturers' recommendations, and Underwriters Laboratories Inc. (UL) listings and/or Factory Mutual (FM) Global approval.
- B. Upon completion of this work, and as a part of this contract, Contractor shall provide Owner with:
  - 1. Complete information and "as-built" record drawings describing and depicting the entire system as installed, including all information necessary for maintaining, troubleshooting, and/or expanding the system at a future date.
  - 2. Complete documentation of system(s) testing and Authority Having Jurisdiction (AHJ) acceptance.
  - 3. Certification that Contractor's work has been inspected and tested, is installed entirely in accordance with the applicable codes, standards, manufacturers' recommendations and UL listings and/or FM approvals, and is in proper working order. Contractor shall use "Contractor's Material and Test Certificate(s)" as required by NFPA codes.

## 1.03 WORK INCLUDED

- A. General: Furnish all materials and labor for the design, installation, and testing of new sprinkler (and standpipe) system(s) in accordance with all applicable codes and requirements of this Specification.
- B. Existing Fire Protection Systems: The existing sprinkler protection in North Hall appears to be installed in accordance with the Retroactive Life and Fire Safety Standards for Existing Buildings. Ordinance Number 750 was passed on May 5 1981 and became effective May 19, 1981. Ordinance Number 755 which amended 750, was passed on May 19, 1981 and became effective on June 2, 1981. The existing sprinkler systems are zoned by floor. Sprinkler protection is provided in the corridor hallways, over the inside of the doors that open to the hallways, located in the main lobby, elevator lobbies, student lounges, and over the space formerly housing the fire pump in the mechanical room. A single 6-inch connection to the main fire pump for the Tonopah Complex supplies the combination standpipe/riser in stairway #1, the standpipe in stairway #2 and the hose station standpipe for the Class II standpipe cabinets located in the corridors.

- B. Sprinkler: The intent of this project is to provide complete and current code compliant sprinkler protection throughout the North Tower. Existing pipe, sprinkler locations, hangers, and bracing may be retained provided that the installation meets the requirements outlined in NFPA 13 and contributes to the complete sprinkler systems. Furnish and install all components necessary for the automatic sprinkler and standpipe system to result in fully operational systems. Provide appropriate water flow (vane type), and valve supervisory (tamper) switches to provide all monitoring of the System(s). Interface to the fire alarm system shall be completed by the Fire Alarm Contractor, as specified in the Fire Alarm Specification
- C. Sprinkler protection in the North Tower is to be provided based on the following criteria:
- a. 1<sup>st</sup> Floor: Light Hazard, 0.10 gpm/sq.ft. over the most remote 1500 sq.ft. This floor is used for administrative and storage purposes.
  - b. 2<sup>nd</sup> Floor: Ordinary Hazard Group 2, 0.20 gpm/sq.ft. over the most remote 1500 sq.ft. This floor is used for storage purposes and not for resident housing.
  - c. Mechanical Rooms/Electrical Rooms including rooms attached to the building: Ordinary Hazard Group 2, 0.20 gpm/sq.ft. over the most remote 1500 sq.ft.
  - d. 3<sup>rd</sup> Floor -6<sup>th</sup> Floor: Light Hazard, 0.10 gpm/sq.ft. using the Room Design Method. The fire rated boundary of a typical room is two adjacent rooms sharing a common bathroom, or a designated handicap room with bathroom. The sprinkler exception to a dwelling room bathroom as outlined in NFPA 13 Section 8.15.8.1 may be used. However at this time Ownership would like a line item cost associated with providing the sprinklers within the bathrooms.
- D. Sprinkler modifications in the South Tower are to be provided as follows”
- a. Add one sprinkler to the closet located in the pool table area of the 1<sup>st</sup> Floor Lounge.
  - b. Remove sprinklers and pipe from the elevator shafts. Cap pipe at point of connection and install a lockable valve.
- E. Standpipe Isolation Valves: Provide standpipe isolation valves with gages and drains for the Class I standpipes per NFPA 14 Section 6.3.2.
- F. Sprinkler Floor Control Assemblies: Modify as necessary, or provide new, sprinkler riser connections to the existing standpipe in Stairway #1, per NFPA 14 Section 6.3.5.1 complete with check valves, indicating control valve, inspectors test and drain combination, and express drain.
- G. Disconnect Class II Standpipe and Remove Valves and Hose: Upon completion and acceptance of the sprinkler systems by the Owner and the Authority Having Jurisdiction, disconnect and cap the connection from the fire main to the Class II hose standpipe. Drain and cap the standpipe pipe. Remove the hose, nozzles, and hose valves. Cap the pipe at the hose valves. Remove signage as necessary.

- H. Sprinkler Zones – The existing sprinkler zoning of the Tonopah Hall Complex shall be maintained.
- I. Water supply for the building is supplied by public water pressure and flow and by a 1000 gpm at 146 psi diesel driven vertical turbine fire pump taking suction from a cistern. The contractor is responsible for confirming this information. The fire pump is located in fire pump room located in the courtyard between the North Tower and South Tower.
- J. Drains: Provide all piped connections to the exterior of the building necessary to drain and test the sprinkler and standpipe systems. Drains shall terminate at the exterior of the building, or, when and where approved by Owner, at an interior drain capable of handling full flow conditions.
- K. Shields: Install shields where necessary to protect electrical equipment from sprinkler discharge. Shields shall be such that water spray from sprinklers is shielded from the intended equipment only. Shields shall not completely block water spray over the remainder of the area to be protected. Coordinate with electrical drawings for these locations.
- L. Demolition: Perform demolition of the existing components not retained with the exception of the Class II Standpipe piping. Contractor shall remove all sprinklers, pipe, fittings, valves and associated equipment not retained as part of the upgrades and shall be responsible for the removal of such from the site. Contractor shall not re-use any removed material for the new sprinkler and standpipe systems in this Specification.
- M. Valves: Furnish and install all system control valve(s), main and inspector's test drain valves, and other appurtenances as required for a fully operable system. All system control valves shall be equipped with tamper switches for electronic supervision.
- N. Painting: Painting of pipe and fittings shall be included in the following areas where pipe is exposed except for the mechanical rooms and electrical rooms. This Contractor shall include one coat of latex primer, and one finished coat of latex paint. Pipe and fittings shall be painted red (unless otherwise indicated on building plans or as directed by Owner) to indicate fire service use.
- O. Submittals: Prepare and submit shop drawings, product data sheets, hydraulic calculations, record drawings and other submittals required herein. Work is not to proceed until all required submittals have been approved by Owner and all AHJ. Contractor shall be responsible for the submission of the required materials to the owner and all approving authorities. All required calculations for water delivery time for dry pipe system(s), if applicable shall be submitted in accordance with the requirements of NFPA 13. If the design of the dry system(s) require(s) the use of a water delivery time calculation program, Contractor shall confirm that such calculations are acceptable to the AHJ prior to submitting a bid.

- P. Tests: Each new sprinkler and/or standpipe system shall be tested in accordance with the requirements of NFPA 13 and NFPA 14, AHJ and the Owner. Attendance at fire alarm tests when it includes tests of the sprinkler alarm and supervisory devices is also required. Contractor shall be responsible for carrying out all required tests. Separate tests may be required by the Owner and AHJ shall be carried out without additional cost to the Owner.
- Q. Warranty: Warranty all new equipment and systems during installation and for a period of one (1) year after final acceptance of the work by the Owner.
- R. Approvals: Obtain all approvals required for the work of this section from the AHJ and Owner.
- S. Fees: Pay all fees required to obtain permits, inspections and final approval of the work in this section.
- T. Coordination: Coordinate work with all other trades working on the project, and with the other fire protection system(s) specified elsewhere.
- U. Unit Additions: Contractor shall provide unit pricing for any additional work or services as described in the Bid Format sheets.

#### **1.04 RELATED WORK SPECIFIED ELSEWHERE**

- A. Alarms: Wiring and connection to sprinkler system alarm and supervisory devices shall be provided by Fire Alarm Contractor as detailed in the Fire Alarm and Detection Specification.
- B. Drains: Floor drains and other facilities for receiving discharge from sprinkler and standpipe system drains.

#### **1.05 OWNER'S REPRESENTATIVE**

- A. All contacts with UNLV shall be directed to the Owner's Representative, hereafter referred to as the Owner:  
  
Mr. David Pierce  
UNLV Student Affairs  
4505 S. Maryland Parkway  
Box 451048  
Las Vegas, NV 89154-1048  
Phone: (702) 895-2470  
Email: David.Pierce@unlv.edu
- B. The Owner or the Owner's Consultant will issue all approvals and instructions required for this work. No other person may issue an approval or instructions to the Contractor without the written authorization of the Owner.



## 1.06 WORKING CONDITIONS

- A. It shall be the responsibility of all bidders to inspect the job site and become familiar with the conditions under which the work will be performed. Inspection of the building may be made by appointment with the Owner's Representative. Bidders are required to inspect the building prior to bid.
- B. Existing drawings and conceptual drawings which are in the possession of the Owner will be made available to bidders. It shall be the bidders' responsibility to review the existing drawings for the purpose of preparing a bid. Copies of the existing drawings will be made available at cost, upon request. The Owner makes no warranty as to the accuracy of any drawings. Bidders shall field verify any information on which the bidder intends to rely prior to submittal of a bid.
- C. The Contractor will be responsible for attending a pre-construction meeting, weekly construction coordination meetings with the Owner's Representative, and monthly meetings with the Owner's Consultant and Quarterly Project Team Meetings.
- D. All work, shall be conducted during normal working hours of 9 a.m. to 6 p.m. Some areas may only be accessed during non-peak times (off-hours), as per Owner's requirements. All work shall be coordinated with the Owner's Representative. Noise restrictions shall apply and will be explained at the pre-bid meeting.
- E. The Contractor shall be responsible for prior coordination of all work and demolition with the Owner's Representative.

Existing fire protection system(s) shall not be taken out of service without prior written approval from the Owner's Representative, the Owner's Consultant and notification to the Nevada State Fire Marshal's Office. If such systems are taken out of service, the Contractor shall provide fire watch acceptable to the Owner and the Authority Having Jurisdiction, until those systems are replaced or restored to service. No area of the building shall be unprotected where/when existing and new systems are not operational. A fire watch shall be provided for the portion of the system is down for more than eight (8) hours or for any duration the system is down when the contractor is not on site actively working on the system. Note: Contractor must meet fire watch requirements of the Nevada State Fire Marshal's Office.

- F. New or revised fire suppression systems, components, and/or appliances shall be put into service as soon as they are functional. Once put into service, they shall not be removed from service without the Owner's written authorization.

## 1.07 QUALITY ASSURANCE

ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE PORTIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS AND OTHER GUIDELINES OR STANDARDS LISTED HEREIN:

1. International Building Code - 2012 Edition as amended by the State of Nevada.
2. International Fire Code - 2012 Edition as amended by the State of Nevada.
3. NFPA 13 2010 Edition - Standard for the Installation of Sprinkler Systems
4. NFPA 14 2010 Edition - Standard for the Installation of Standpipe and Hose Systems

All work and materials shall conform to all Federal, State, and local codes and regulations governing this installation including the Nevada Administrative Code

- B. Code Conflicts: Should conflicts exist between the referenced NFPA Standards, Federal, State or local codes and this specification, it shall be Contractor's responsibility to bring the conflict to the attention of Owner for resolution. The contractor shall not attempt to resolve code conflicts with the local authority, independent of Owner. In general, in the event of a conflict, the most stringent of the requirements will apply.
- C. Permit Fees: Contractor shall be responsible for filing all documents, paying all fees and securing all permits, inspections and approvals necessary for completing the scope of the work in this section.
- D. Equipment: All devices, systems, equipment and materials furnished and installed shall be new and shall be submitted for approval by Owner. All sprinklers, pipe, fittings, hangers, valves, and other materials and equipment shall be UL Listed and/or FM approved for their intended use. All shall be acceptable to the AHJ when such agencies have listings of acceptable equipment.
- E. Fittings: Fittings may be of the flanged, threaded, or grooved type. Welded outlets on cross-mains for riser nipples and/or branch lines, and for sprinkler outlets on branch lines will be permitted. All shall be UL Listed and/or FM approved for their intended use. The use of plain-end fittings to join steel pipe is not permitted.
- F. Contractor Requirements: Contractor shall:
1. Hold all licenses and obtain all permits necessary to perform work of this type in the State of Nevada. Copies of Contractor's licenses shall be provided with bid submittal.

2. Be regularly engaged, for the past five (5) years in the design, installation, testing and servicing of automatic sprinkler systems for buildings of this type.
3. Contractor's site supervisor will be at the job site at all times when work is actively in progress.

#### **1.08 SPRINKLER SYSTEM DESIGN CRITERIA**

- A. Densities: Hydraulically designed and calculated sprinkler system(s) shall be installed in accordance with the construction documents. The system(s) has (have) been designed to produce discharge densities of:
  1. 0.10 gpm/square foot over the hydraulically most remote 1,500 square feet on the 1<sup>st</sup> Floor of the North Tower. (Light Hazard Occupancy).
  2. 0.20 gpm/square foot over the hydraulically most remote 1,500-square-feet on the 2<sup>nd</sup> Floor of the North Tower and in the Mechanical and Electrical Rooms
  3. 0.10 gpm/square foot per the Room Design Method. The fire rated boundary surrounds two resident rooms sharing a common bathroom or a handicap room with bathroom per NFPA 13 Section 11.2.3.3 on Floor 3, 4, 5, and 6. OR 0.10 gpm/square foot over the design area and meeting the minimum flow rates per the listing of the sprinkler installed when using the Residential Sprinkler Approach per NFPA 13 Section 11.3.1.3.
  4. Sprinkler protection in bathrooms on Floors 3, 4, 5, and 6 are not required to be sprinklered per NFPA 13 Section 8.15.8.1 as they do not exceed 55 sq.ft. and have walls and ceilings of non-combustible and limited combustibile construction. However, Ownership would like a line item cost associated with adding the sprinkler heads into the bathrooms.
  5. Dry barrel side wall sprinklers are to be used to provide sprinkler protection in Stairway #2 and the open vestibule serving Stairway #2.
- B. Hose stream requirements: The calculations shall include a 100 gpm inside hose stream at the hose valve closest to the floor control valve assembly. The combined (inside and outside) hose stream for the calculations shall be 250 gpm.
- C. Sprinklers under ducts (or other): Provide sprinklers under ducts, stairways, and other obstructions as required by NFPA 13.

## 1.09 SUBMITTALS

- A. Shop Drawings: Contractor will be authorized to start the project or portions of the project when the shop drawings for the work are received, reviewed and approved by Owner and the AHJ. Installation prior to these approvals shall be at this Contractor's risk.
1. Shop drawings shall show all of the information required by the applicable NFPA codes for working plans.
  2. Shop drawings shall include a drawing legend sheet identifying:
    - a. All symbols used on the drawings, by type of device or equipment, manufacturer and manufacturer's part number. This information shall correspond to the manufacturer's catalog data sheets and installation manuals.
    - b. All conventions, abbreviations and specialized terminology used on the drawings, as necessary to understand and interpret the information contained therein.
    - c. A complete drawing list identifying all drawings in the shop drawing package by title, drawing number and Specification cross reference.
  3. Shop drawings shall be single line or architectural floor plan drawings, drawn to 1/8-inch equals 1 foot scale or larger (i.e., 1/4-inch, etc.), showing a key plan and all other information required by the applicable NFPA codes for shop drawings.
- B. Product Data: Contractor shall submit a product data submittal with the shop drawings. Manufacturers' Data Sheets shall show the type and model of all equipment or material proposed. This information shall include type of pipe, hangers, valves, pipe fittings/joining methods, air compressors, releasing panels, detection equipment, sprinklers, water flow devices, supervisory devices, fire department connections, escutcheons, and signage. When a Data Sheet shows more than one product, the specific proposed product shall be clearly indicated by arrows or other suitable means. All manufacturers' data sheets shall clearly show all UL listings and/or FM approvals for each product submitted.
- C. Contractor shall provide hydraulic calculations in accordance with the requirements of NFPA 13, showing that the pipe sizes provided will produce adequate performance. A minimum safety factor of 10 psi or 10%, whichever is greater, of the available pressure at the required system flow (including all required hose stream demands) shall be demonstrated in the hydraulic calculations.

- D. Three (3) sets of shop drawings, product data sheets, and hydraulic calculations as described in parts A, B and C shall be submitted to Owner for review. Only complete submittals containing all required information for all work required in this section will be reviewed. Incomplete submittals will be returned to Contractor without being reviewed.
- E. All drawings and diagrams shall be prepared on drawing sheets of uniform size, 30 by 42 inches minimum, and shall contain no extraneous information. Marked up electrical, HVAC, or similar drawings or copies of catalog data sheets are not acceptable in lieu of the required drawings or diagrams. All other information required for this submittal shall be submitted in one or more appropriately labeled (i.e., Contractor's name, project, submittal name/description and date) and indexed 3-ring binders.
- F. All Drawings and diagrams shall include Contractor's title block, complete with drawing title, Contractor's name, address, date including revisions, and preparer's and reviewers initials. All drawings and diagrams shall be reviewed and stamped by a registered Fire Protection Engineer, as required by the AHJ.
- G. Samples: Within 30 days of authorization to proceed, Contractor shall submit to Owner for approval, samples of all types of proposed sprinklers, including types of finishes available and a complete list of where each type and finish will be installed.
- H. Mock ups of any proposed soffit material showing shall be provided. The mock-up shall include the color and type of material proposed along with an installed section of pipe and sprinklers.
- I. Prior to start of installation, Contractor shall submit copies of all permits and approvals to Owner necessary to conduct this work. A minimum of one complete set of such permits and approvals shall be kept by Contractor at the job site and shall be available for review.
- J. Contractor shall provide Owner with one copy of all documents that are reviewed and approved by the AHJ and/or local code authorities. These documents shall include, but not be limited to, the following:
  - 1. Site inspection forms
  - 2. Shop drawings
  - 3. Final inspection forms

All documents shall include all required approval stamps, signatures or other information necessary to properly certify that the installation has been reviewed and accepted by the State of Nevada Fire Marshal's Office.

- K. Operation and Maintenance (O&M) Manual: The Contractor shall provide Owner with an indexed 3-ring binder containing:
1. 11" x 17" reduced copies of the 'as-built' record drawings required below (Final submittal only).
  2. Manufacturers' catalog data sheets and installation manuals.
  3. Copy of all test certificates and approvals.
  4. A list of recommended spare parts and summary of spare parts provided.
  5. A service directory, including a list of Contractor's contact names and telephone numbers for service on the system, including emergency service as required elsewhere in these Specifications.
- M. Draft O&M Manual: Within 30 days following the notice of authorization to proceed, Contractor shall submit to Owner three copies of the draft manual for approval, excluding test certificates and drawings. The draft manual will be reviewed for required content and approved or disapproved on that basis. Upon completion of the project, Contractor shall revise the approved, preliminary manual to reflect the system as installed and to coordinate the testing and maintenance schedule with the approved Contractor testing protocols. Any and all assigned fire protection device numbers shall also be indicated on Contractor's record drawings.
- N. Final O&M Manual: Within 30 days of the completion of the work, three (3) final copies of the approved manual with reduced drawings and test certificates shall be delivered to the Owner.
- O. Record Drawings: Contractor shall provide and maintain on the site an up-to-date 'as-built' record set of approved shop drawing prints which shall be marked to show each and every change made to the sprinkler system from the original approved shop drawings. This requirement shall not be construed as authorization to deviate from or make changes to the shop drawings approved by Owner without written instruction from Owner in each case. These drawings shall be maintained in a current condition at all times and shall be made available for review immediately upon request during normal working hours throughout the installation.
- P. Upon completion of the 'as-built' record drawings and before final approval, one set of reproducible 'as-built' record drawings shall be delivered to Owner. Upon approval by Owner, three (3) sets of final record drawings shall be furnished to Owner. In addition, a record set of drawings shall be transmitted to Owner in the latest version of AutoCAD 2010 electronic format with any applicable executable, un-archiving files.

- Q. If Contractor's submittals, upon review by Owner, do not conform to the requirements of these specifications, Contractor shall be required to resubmit with modifications, within ten (10) working days of receipt of Owner's notification to Contractor. Contractor shall be responsible for Owner's expenses for subsequent review of rejected submittals that were necessitated by Contractor's failure to make the requested modifications. Such extra fees shall be deducted from payments by Owner to Contractor.

#### **1.10 REIMBURSEMENT OF CONSULTANT'S COSTS**

- A. In the event substitutions are proposed to the Owner after the Contract has been awarded, the Consultant will record all time used by him and by its consultants in evaluation of each such proposed substitution.

#### **1.11 SUBCONTRACTORS**

- A. Contractor shall submit with its bid, a list of all proposed Subcontractors. All proposed Subcontractors are subject to the approval of the Owner and Complex Operator.
- B. The installing electrical Subcontractor(s) shall:
1. Hold all licenses and permits necessary to perform this work.
  2. Have at least five years of experience in the installation of systems of this type and be familiar with all applicable local, state and federal laws and regulations.
  3. Be regularly engaged in the servicing, installation and testing of fire detection, emergency voice communications, and alarm systems, as appropriate.
  4. Have worked on one or more large, retrofit projects in the last five years.

#### **1.12 EQUIPMENT LIST**

- A. The Contractor shall submit with the bid a detailed equipment list, identifying types, models and quantities of all materials, devices and equipment proposed. At a minimum it shall include all of the devices indicated in Appendix A. This submittal shall include original version of manufacturers' data sheets showing the types and models of all equipment, devices, material and wire proposed. Evidence of ULI listings and local approvals, if required, shall be submitted with the data sheets.
- B. When a data sheet shows more than one product, the proposed product shall be clearly indicated by arrows or other suitable means.

### **1.13 WORK SCHEDULE**

- A. The Contractor shall submit with the bid in accordance with the instructions given at the pre-bid meeting, a proposed work schedule in bar chart format. This schedule shall indicate the time necessary in calendar days for:
1. Project start-up.
  2. Property survey and delivery of existing conditions report.
  3. Design.
  4. Development of background drawings.
  5. Shop drawing submittals.
  6. Installation, identifying specific areas or floors. Installation shall include demolition, conductor, devices, patching and painting.
  7. Pre-acceptance test/commissioning activity to be completed by the Contractor.
  8. Final inspection by Owner's Consultant.
  9. Final inspection and testing by the local AHJ and testing, as required by Section 3.0.
  10. Estimated number of rooms, if any, to be taken out of and brought back into service during each week.
- B. The proposed work schedule will be reviewed and finalized during the pre-construction meeting and will be updated prior to each weekly construction coordination meeting.
- C. The proposed work schedule shall include appropriate review times for the Owner, the Owner's Consultant, and the authority having jurisdiction.

### **1.14 WARRANTY AND EMERGENCY SERVICE**

- A. Contractor shall warrantee all materials and workmanship for a period of three (3) years beginning with the date of final acceptance of Contractor's completed installation by Owner. Contractor shall be responsible during the design, installation, testing and warranty periods for any damage caused by Contractor (or its subcontractors) or by defects in Contractor's (or its subcontractors') work, materials, or equipment.



- B. Emergency Service: During the installation and warranty period, Contractor shall provide emergency repair service for the sprinkler (and standpipe) system(s) within four (4) hours of a request by Owner for such service. This service shall be provided on a 24-hour per day, seven days per week basis.

#### **1.15 SUBCONTRACTORS**

- A. Spare parts and special tools shall be provided to Owner prior to final acceptance, and shall be provided for each system riser location.
- B. Spare Parts: Contractor shall install UL listed and/or FM approved spare sprinkler cabinets containing a minimum quantity of sprinklers, of each type, finish and temperature rating used in accordance with the requirements of NFPA 13, but not less than six (6) spare sprinklers of each type. Contractor shall provide two (2) sets of sprinkler wrenches compatible with each type of sprinkler provided in each cabinet. The cabinets shall be installed near the system riser(s) at location(s) approved by Owner. Contractor shall provide as many sprinkler cabinets as necessary to accommodate the required number of spare sprinklers, but a minimum of one spare cabinet per sprinkler riser location shall be provided.
- C. Special Tools: Contractor shall supply Owner with two (2) complete sets of special tools and equipment necessary to perform routine maintenance on the sprinkler systems.

#### **1.16 SUBCONTRACTORS**

- A. Date of Final Acceptance will be established by Owner and shall be based on acceptance of the installation and required approved documentation by Owner and AHJ.

### **PART 2 – SYSTEM REQUIREMENTS**

#### **2.01 GENERAL**

All equipment and system components furnished and installed shall be new and of first quality, and be listed by Underwriters Laboratories Inc. (UL), and/or approved by Factory Mutual (FM) for their intended use. All such equipment and system components shall be installed in accordance with the respective UL listings and/or FM approvals. All materials shall be acceptable to AHJ.

#### **2.02 PIPE AND FITTINGS - GENERAL**

- A. Pressure ratings: Pressure ratings of all fittings shall meet or exceed maximum working pressures available within the system.

- B. Corrosion protection: All piping and hangers, where exposed to the weather or installed in a corrosive atmosphere, shall be protected against corrosion. Piping and hangers in such areas shall be stainless steel and/or hot dipped galvanized. Piping having an external only galvanized finish in such areas is unacceptable.
- C. Fire Department Connections: Use existing.

### **2.03 ABOVEGROUND PIPING COMPONENTS**

- A. Pipe Sizes 2.5 inches (65 mm) and Larger.
  - 1. Piping shall be ASTM A-53/A-135/A-795, Weight Class STD (Standard), Schedule 40 (except for Schedule 30 for pipe sizes 8 inches (200 mm) and greater in diameter), Type E or Type S, Grade A; black steel pipe. Steel pipe shall be joined by means of flanges welded or screwed to the pipe, threaded fittings, or grooved couplings only. Piping shall not be joined by welding or weld fittings.
  - 2. Thin wall Pipe: Schedule 10 Pipe meeting ASTM A-53, A-135 or A-795 requirements with grooved pipe couplings and fittings. Grooves in Schedule 10 pipe shall be rolled groove only. Pipe having wall thicknesses less than Schedule 10 are unacceptable.
- B. Piping Sizes 2 inches (50 mm) and Smaller
  - 1. Steel Pipe: Steel piping shall be ASTM A-53/A-135/A-795, Weight Class STD (Standard), Schedule 40, Type E or Type S, Grade A, steel pipe with threaded end connections. Fittings shall be ASME B16.39, Class 150, cast or ductile iron threaded fittings. Unions shall be ASME B16.39, Class 150, unions. Pipe may also be joined using grooved couplings and fittings. Where grooved joining is used, cut or rolled grooves are acceptable.

2. Post-Chlorinated Polyvinyl Chloride (CPVC) Pipe shall comply with NFPA 13 and all applicable state and local building code requirements. Such pipe shall be UL listed and/or FM approved for fire protection use, and shall comply with ASTM F 442. CPVC shall only be used when acceptable to Owner, Owner's Agents, and the AHJ. When CPVC materials are used, Contractor shall be responsible for the compliance with all compatibility issues that involve the use of CPVC. This includes the use of the compatible steel pipe, proper precautions for cutting oils that are used to thread steel pipe, and any and all other outside contaminants that could cause the CPVC pipe and/or fittings to fail over time. CPVC fittings shall be UL listed and/or FM approved, and shall be joined in accordance with the listings of the pipe and fittings. Cure times shall be in accordance with the manufacturers' recommendations, but shall not be less than 24 hours.

C. Pipe Hangers and Supports

1. Pipe hangers and supports shall be UL listed and/or FM approved, and shall be the adjustable type. Installation shall be according to the manufacturers' listing.
2. Seismic hangers and bracing shall be UL listed and/or FM approved for fire protection use and shall be installed in accordance with their listings and manufacturers' recommendations. Type, quantity, and spacing shall be in accordance with the requirements for the specific seismic zone requirements and those of NFPA.

**2.04 CONTROL AND DRAIN VALVES:**

A. Sprinkler system control and drain valves shall be the following types:

1. OS & Y gate valves.
2. Butterfly valves with gear operator assembly and open/closed position indicator. Butterfly valves shall have an integrated, factory-installed supervisory (tamper) switch.
3. Brass seated, straight-way or angle globe valves for main drain and inspector's test. System Gauges shall be riser mounted to ¼ inch, three-way globe valves.

B. All valves must be UL listed and/or FM approved for their intended use.

C. Signs: All water supply control valves and drain valves shall be marked with metal signs and shall be secured with metal chains or other means approved by Owner and AHJ to show their function and sprinkler system zone which they serve. Contractor shall provide a valve chart showing the valve numbers and locations. Contractor shall mount the chart at the Fire Alarm Control Panel. Attachment of signs to the valves with adhesives is not permitted.

- D. Pressure Ratings: Pressure ratings of all valves shall meet or exceed maximum working pressures available within the system.
- E. Supervision: All system control valves shall be capable of being locked in the open position. System control valves shall be equipped with electronic supervisory (tamper) switch having two normally open contacts (rated for 24vdc service).
- F. Access Panels: Furnish and install access panels (minimum size 12-inches by 12-inches) for all control valves located above finished ceilings or concealed in walls. Owner will select finish of access panels. Access panels installed in fire resistive construction shall be of the types required for maintaining proper protection of assembly.

## 2.05 ELECTRICAL WORK

- A. Contractor will be responsible for the mounting of all water flow, tamper, and pressure switches for the fire protection systems in this Section. Wiring of such devices is outside the scope of this specification. Wiring of such devices is included in the Alarm and Detection specification and is the responsibility of the A&D contractor.
- B. Testing. Provide the required assistance to the Alarm and Detection Contractor to test, adjust and place the fire protection system(s) into initial operation.

## 2.06 SPRINKLERS

- A. Contractor shall furnish and install fire sprinklers of the following types:
  - Quick Response, ordinary temperature rated in light hazard areas.
  - Quick Response, ordinary temperature rated, extended coverage in light hazard and residential areas.
  - Quick response, intermediate temperature rated, in mechanical and electrical rooms.
  - Residential sprinklers, ordinary temperature rated, are permitted on residential floors. Residential sprinklers must be capable of meeting their listing criteria based on densities required and spacing.
  - Dry Barrel Sidewall, intermediate temperature rated, quick response to protect the exterior landings and stairway enclosure for Stairway# 2. The landings and stairway are not conditioned space.
- B. Final Selection: Owner will select finishes for all automatic sprinklers and escutcheons.
- C. Uniformity: All sprinklers within a space shall be from the same manufacturer and shall have the same type and style of heat response element, including temperature rating and response characteristics.

- D. Temperature Rating: It shall be Contractor's responsibility to install sprinklers of the proper temperature rating as required by NFPA 13.
- E. Corrosion Resistance: Sprinklers located on exterior piping systems or in areas exposed to corrosive atmospheres shall be UL listed and/or FM approved corrosion resistant coated or stainless steel.
- F. Sprinkler Escutcheons: Flush sprinkler escutcheons shall be metal and shall be listed for use with the sprinklers. Recessed sprinklers and escutcheons shall be UL listed and/or FM approved as an assembly, and the sprinkler and escutcheon shall be of the same manufacturer.
- G. Sprinkler Orifice: Sprinkler orifice sizes shall be confirmed through hydraulic calculations for the system(s). Sprinklers having a nominal 'K' factor of less than 5.6 are not acceptable unless specifically allowed by NFPA 13 and are installed for their listed application. The orifice size shall be uniform within a protected area.
- I. All sprinklers in finished areas shall be center of tile plus or minus 1/2 inch, unless approved by the Owner. All sprinklers shall be aligned in all directions when multiple sprinklers are in the same area and are in the same line of sight. Where acceptable to AHJ, the use of flexible drops is permitted, but all such drops must be installed in accordance with their UL listings and/or FM approvals. Where such listings/approvals differ, the most stringent installation requirements will apply. The use of flexible drops shall be accounted for in all hydraulic calculations for the system(s). Flexible drops shall be of the braided, stainless steel hose style. Flexible drops employing corrugated steel tubing will not be permitted.

## **2.07 IDENTIFICATION SIGNS**

- A. Contractor shall furnish and install hydraulic calculation signs for each new sprinkler zone. Hydraulic calculation signs shall be affixed to the corresponding system riser downstream of the system control valve and main drain at the riser. Contractor shall also provide identification signs for all valves installed under this section.
- B. Hydraulic calculation signs shall include all information indicated in NFPA 13 and its appendices. Valve identification signs shall identify the function of the valve and the area served.
- C. Identification signs shall be rigid, metal plaques with embossed enamel background and lettering. Signs shall be secured by chain or durable wire to each sprinkler zone control valve, main and auxiliary drain, and inspector's test valve. System hydraulic calculation placards affixed using adhesives, and/or using permanent marker for information, are NOT acceptable.

## **2.08 SUPERVISORY AND ALARM EQUIPMENT**

- A. All water flow and valve supervisory switches shall be furnished, installed and properly adjusted by the sprinkler contractor. Alarm monitoring of these devices will be by others.
- B. Contacts: All water flow and valve supervisory switches shall be provided with two "Form C" (D.P.D.T.) contacts for monitoring. Specific contact rating shall be coordinated with the fire alarm contractor.
- B. Water flow Switches: Vane-type and/or pressure-type water flow indicators shall be provided to indicate water flow in each sprinkler system zone and shall be UL listed and/or FM approved. All water flow switches shall be equipped with an adjustable retard setting that can be varied from 0 to 60 (minimum) seconds.
- C. Supervisory Switches: Valve supervisory (tamper) switches shall be provided for all valves controlling the water supply to the sprinkler and standpipe systems. Valve supervisory switches for OS&Y type valves shall be the yoke mounted or integral type. Supervisory switches for butterfly style valves shall be factory installed and integral to the valve assembly.
- D. Loop Type Valve Supervisory Switches: Contractor shall not use wire loop type switches.

## **2.09 INSPECTOR'S TEST AND DRAIN ASSEMBLY(S)**

- A. An inspector's test and drain assembly(s) shall be provided at each floor connection to the combination standpipe/riser for the wet-pipe system(s). This test and drain assembly may be a modular unit type.
- B. For applications other than that specified in 2.09 A, an inspector's test and drain assembly shall be provided at the most hydraulically remote part of the wet and/or dry-pipe system and shall discharge to a location approved by the Owner.
- C. Inspector's test and drain assemblies shall comply with the requirements of NFPA 13. All components of test and drain assemblies shall be UL listed and/or FM approved.

## **2.10 MISCELLANEOUS PRODUCTS**

- A. Pressure Gauges: Pressure gauges shall be UL listed 3-3/16-inch minimum diameter, dial type gauges with a maximum limit of not less than twice the normal working pressure at the point installed. All gauges shall be provided with 1/4 inch, 3-way shut-off valve (gauge-cock).

### **PART 3 – SYSTEM REQUIREMENTS**

#### **3.01 WORKING CONDITIONS**

- A. Contractor shall visit the site and become familiar with the conditions under which the work will be performed.
- B. Contractor's installation hours will be determined at the Pre-Bid Meeting.

#### **3.02 PREPARATION FOR WORK**

- A. Cooperation with other trades: Contractor shall coordinate with the work of the other trades towards the general purpose of having the construction progress as rapidly and as smoothly as possible with a minimum of interference between trades.
- B. Before the start of Structural Work, Contractor shall submit to Owner locations, sizes, and instructions for openings and penetrations required for his work. Submittal and proposed penetrations shall be subject to Owner's approval. Contractor shall provide any additional penetrations or openings or relocation required, that were not addressed in their initial submittal at no additional cost to Owner. In general, penetrations of primary structural members are not permitted.
- C. Approval prior to installation: No work shall commence prior to approval of shop drawings by the approving authorities, including Owner. Any change in work that has been installed prior to approval of the shop drawings shall be made without additional compensation to Contractor.

#### **3.03 GENERAL INSTALLATION**

- A. Aesthetics shall be a primary consideration when installing sprinklers and sprinkler piping in all areas. Any facet of sprinkler installation that deviates from the approved shop drawings and does not meet with Owner's approval shall be revised by Contractor to Owner's satisfaction at no additional cost.
- B. All holes made by Contractor in any wall, ceiling, or floor shall be patched by Contractor, restoring the wall, ceiling, floor or member to its original condition, fire resistance, and integrity.
- C. Location of all equipment, controls, piping, valves and drains shall be subject to Owner's approval.
- D. All sprinklers and equipment shall be installed in accordance with manufacturers' instructions. All special tools, including sprinkler wrenches, recommended by the manufacturer shall be used.
- E. Sprinklers shall be installed with the deflector to ceiling distances in accordance with their UL listings and/or FM approval and the requirements of NFPA 13.

### **3.04 PIPING**

- A. All sprinkler piping installed in public areas or non-public areas with suspended ceilings shall be concealed in the walls, ceilings or soffits. Pipe in unfinished areas may be exposed.
- B. All piping exposed within the building public areas shall be painted with one coat by Contractor. Owner is to select the colors. All exterior piping shall be primed with zinc chromate and painted by Contractor. Colors are to be approved by the Owner in writing prior to start of the work.
- C. Escutcheon Plates: All exposed pipe which passes through a wall, ceiling, or floor shall be provided with metal escutcheon plates.
- D. Minimum Height: All exposed piping and devices shall be installed as high as possible, but no less than seven (7) feet clear above the finished floor in traffic or working areas, so as not to obstruct any portion of a window, doorway, stairway way or passageway. Pipe and fittings shall not interfere with the operation or accessibility of any mechanical, plumbing or electrical equipment.
- E. Protection: Contractor shall provide Owner approved, adequate permanent protection for any installed piping, valves, devices or accessories which, in Owner's opinion, are subject to physical damage or may be hazards.
- F. Fire stopping: Pipe that passes through fire-rated resistive barriers (including shaft walls and corridor walls) shall be sleeved and grouted or sealed to maintain the integrity and rating of the fire resistive barrier. Materials used with CPVC pipe must be listed by the manufacturer as compatible with the CPVC pipe
- G. Testing: All piping is to be flushed and hydraulically tested prior to acceptance by owner. Flushing and testing must be performed in accordance with NFPA standards.
- H. Contractor shall provide all equipment necessary for testing and flushing and any special equipment required for the installation of any portion sprinkler (and/or standpipe) system(s). Contractor shall remove all such equipment at the end of the job.
- I. All above ground piping 2-1/2" and larger shall be provided with labels at 20-foot intervals indicating sprinkler system piping

### **3.05 SYSTEM TEST AND DRAIN CONNECTIONS**

- A. Contractor shall provide all test valves and drain connections as required by NFPA 13.



- B. All test connections and drain riser connections shall be hard piped to discharge waste water to the exterior of the building. When acceptable to Owner, drain piping may terminate at an interior drain of sufficient size and capacity to accommodate the anticipated maximum flow. The sprinkler contractor shall coordinate routing of the drain pipe and points of discharge.

### **3.06 RISERS**

- A. Contractor shall locate the main risers and standpipes for the sprinkler system to *minimize obstruction to traffic or building operations. Exact location of risers shall be approved by Owner.*
- B. Zoning: The fire sprinkler system shall be zoned on a per floor basis and divided into zones as noted herein (and/or on the riser diagram shown on the conceptual drawings). Sprinkler zones shall not exceed the maximums specified in NFPA 13. Sprinkler zoning (and alarms) will also conform to alarm and detection and/or smoke control system zoning.
- C. Supervisory Switches: Valve supervisory switches shall be provided on all valves installed as part of this scope of work controlling water supply to the fire sprinkler system.

### **3.07 FLUSHING AND SANITIZATION**

- A. All equipment and materials prior to installation shall be clean inside and outside. All waste material such as chips, filings, welding stubs, dirt, rags, debris, and any other foreign material shall be removed from the components before assembly.
- B. All steel pipe coupons or punched holes for welded or mechanical outlets shall be attached to the pipe near the pipe hole. Protective plastic caps shall be located over openings and pipe ends during installation to prevent foreign material from entering the pipe at any time.

### **3.08 SEISMIC CONSIDERATIONS**

- A. Sprinkler piping on any floor level may cross building structural separations such as expansion and seismic joints, provided that the piping is specifically designed with flexible connections at each crossing and able to accommodate the calculated differential motions during an earthquake. All required structural, differential movement and drift calculations shall be prepared by a licensed structural engineer possessing current State of Nevada registration. (Contractor shall verify locations of seismic joints.)

### **3.09 SWAY BRACING, FLEXIBLE COUPLINGS, HANGERS**

- A. All flexible couplings, hangers and sway bracing shall be designed and installed as required by NFPA 13 (including all appendices) and in accordance with their listings and/or approvals. Flexibility, internal pressure, and differential movement between the piping and building, earth, or other supporting structure(s) shall be allowed for, so that no allowable stress is exceeded in any member.

### **3.10 TRAINING**

- A. Contractor shall conduct two (2) training sessions of four (4) hours each at the project site to familiarize the building personnel with the features, operation and maintenance of the sprinklers and standpipe. Training sessions shall be scheduled by Owner at a time mutually agreeable to Contractor and Owner.
- B. Agenda: Contractor shall submit a proposed training agenda for Owner's review and approval within 60 days of receipt of authorization to proceed. The proposed training agenda shall include, but not be limited to, the following:
  - 1. Overview of system operation.
  - 2. Overview of system equipment and device locations.
  - 3. Detailed operation guidelines.
  - 4. Detailed maintenance procedures.
  - 5. Periodic testing procedures.
- C. Final Agenda: Contractor shall submit the final approved training agenda 14 days prior to the first training session.

### **3.11 FINAL INSPECTION AND TESTING**

- A. Contractor shall make arrangements with Owner for Owner's final inspection and witnessing of the final acceptance tests. This test shall be separate from testing by the local authorities.
- B. All tests and inspections required by the referenced Codes and Standards, AHJ, and Owner shall be conducted by Contractor under this scope of work.
  - 1. When AHJ are required to witness tests, Contractor shall be responsible for making all necessary arrangements with the code authorities and coordinating the testing with Owner.
  - 2. Contractor shall be responsible for completing all test documents with necessary approval stamps and signatures of the AHJ. Contractor shall submit one copy of each of these documents to Owner for their records.

- C. Acceptance Testing: Upon completion of each system, perform and document on an NFPA or approved format, system tests as described herein. All acceptance tests shall be performed in the presence of Owner.
1. Hydrostatic tests.
  2. Flushing of piping.
  3. Test of sprinkler supervisory system – The Alarm and Detection Contractor should be present at the testing of all sprinkler alarm and supervisory devices. This Contractor shall coordinate the final testing of all such devices with the Alarm and Detection Contractor.
  4. Air and system trip test for dry sprinkler system(s).
- D. Contractor shall provide at least five (5) working days' notice for all tests to all involved.

#### 3.11.1 Final Approval:

- A. Final approval and acceptance of the work will be given by Owner when:
1. The completed sprinkler system(s) has (have) been inspected, tested and approved by Owner and AHJ.
  2. Required submittals, system operation and maintenance manuals, record drawings, spare parts, special tools and training have been provided to, reviewed, and accepted by Owner.
  3. Written certification is submitted that states all equipment has been inspected and tested by a manufacturer's certified representative.
  4. Written certification is submitted that states all equipment is installed in accordance with the manufacturer's recommendations and UL and/or FM approvals.
- B. Owner's Representative may visit the job site to observe the work and witness the final acceptance tests when advised by Contractor that the work is complete and ready for test. If the work has not been completed, or the test is unsatisfactory, Contractor shall be responsible for Owner's added expenses for re-inspection and witnessing the retesting of the work. Such extra fees (\$205 per hour) shall be deducted from payments by Owner to Contractor.
- C. Additional Tests: Any additional tests, required by the referenced codes, standards, or criteria, or by Owner, shall be performed. This documentation shall include:
1. The date and time of each test.

2. A reference set of contractor record drawings, numerically identifying the individual components and circuits tested, test locations, and indicating the measured sound level in each corridor and guest room location.
3. A description of each test performed.
4. A checklist of each device tested, indicating the results of each test.
5. The names and signatures of the individuals conducting and witnessing each test.

**END OF SECTION**

**APPENDIX A**  
**BIDDER'S CHECKLIST**

**APPENDIX A**

**BIDDER'S CHECKLIST**

1. Does Bid Price include all necessary demolition and restoration of existing walls, floors, and ceilings? \_\_\_\_\_
2. Does Bid Price include all taxes? \_\_\_\_\_
3. Does Bid Price include all testing, inspection and permit fees? \_\_\_\_\_
4. Does price include a three (3) year guarantee? \_\_\_\_\_
5. Have existing building drawings been reviewed? \_\_\_\_\_
6. Have existing building conditions been surveyed? \_\_\_\_\_
7. Does price include all required x-ray or ultrasound detection where core drills will be performed in floor slabs? \_\_\_\_\_
8. Does Package include: \_\_\_\_\_
  - a. Manufacturer's data sheets for equipment proposed? \_\_\_\_\_
  - b. List of proposed sub-contractors? \_\_\_\_\_
  - c. List of past retrofit projects? \_\_\_\_\_
  - d. Functional block diagram of proposed system? \_\_\_\_\_
  - e. Copies of Contractor's licenses required to perform this work? \_\_\_\_\_
  - f. Proposed work schedule in calendar days? \_\_\_\_\_
9. Is it understood that the installing Contractor shall be completely responsible for the design, as well as installation of the Systems? \_\_\_\_\_

Contractor Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**APPENDIX B**  
**CUTTING AND PATCHING SPECIFICATION**

## **APPENDIX B**

### **CUTTING AND PATCHING SPECIFICATION**

#### **1.0 GENERAL**

#### **1.1 GENERAL DESCRIPTION**

Work included:

- A. Cutting, coring, or demolition and patching of existing walls, ceilings or floors required to:
  - 1. Install the specified work.
  - 2. Remove and replace defective work or work not conforming to contract requirements.
  - 3. Remove samples of installed work as required for testing or inspection.
- B. Providing and maintaining proper safety barricades and dustproof and weatherproof barriers.

#### **1.2 SUBMITTALS**

- A. Prior to any coring or demolition which affects the structural safety of the project, work of another Contractor, existing occupied spaces or the safety of the public or Owner's employees, Contractor shall submit written notice to Owner's Representative requesting consent to proceed with the work, including the following:
  - 1. Area affected.
  - 2. Reason for cutting, coring or demolition
  - 3. Proposed method of cutting, coring or demolition and patching.
  - 4. Shop drawings, indicating work required.
  - 5. Methods of protecting exposed work, the public and UNLV employees.
- B. Contractor is not to proceed with the work until the Owner's Representative has approved the submittals, inspected the protection provided and given permission to proceed with the work.



### **1.3 PROTECTION**

- A. Provide and maintain protection for existing construction which is to remain, adjacent property, and the public and UNLV employees.
- B. Provide all barricades, lights, signals and other protection, which may be required by federal, state and local laws or ordinances and maintain same for the full period of the operation.
- C. Provide and maintain temporary weather-tight and/or dust-tight protection, as approved by the Owner, for openings which expose the existing or new construction and equipment to weather or separate that portion of Owner's existing occupancy (which will remain in operation during construction) from new construction areas.
  - 1. Temporary barriers shall be of noncombustible or flame retardant-treated materials.
  - 2. Where applicable, protection may be removed for working purposes and then replaced at end of each day's work.
  - 3. Temporary protection in the construction area shall remain in place until removal of such protection is authorized by the Owner's Representative.

### **1.4 EXISTING CONDITIONS**

- A. Details of existing construction to be removed, altered, or reused furnished are for Contractor's convenience. Owner, UNLV management or the Owner's Consultant assume no responsibility of accuracy of details.
- B. Contractor will be permitted to make its own investigation of existing conditions, when he visits site during the bid period.

### **2.0 PRODUCTS**

#### **2.1 MATERIALS**

- A. Replacement or repair materials shall match those of the existing adjacent surfaces.
- B. Finished surfaces shall be repaired to match existing finished surfaces.
- C. All surfaces, walls, floors and ceilings shall be repaired to maintain their integrity and fire resistance. Owner's Representative may have materials in storage surplus for use. Coordination with Owner's Representative is recommended for materials.

- D. Replace fireproofing material removed from structural steel with new fireproofing material of equal or better fire rating. New or replacement fireproofing material shall be approved by the Owner's Consultant and the AHJ.

### **3.0 EXECUTION**

#### **3.1 INSPECTION**

- A. Contractor is to inspect the work during cutting, coring or demolition and patching.
- B. After cutting, coring or demolition work is completed, Contractor is to inspect conditions affecting installation of new products.

#### **3.2 PREPARATION**

Prior to cutting, coring, or demolition, provide the following:

- A. Shoring, bracing and support as required to maintain structural integrity of project.
- B. Protection from elements.
- C. X-raying or ultrasound detection of all locations to be core drilled through building floor slabs.
- D. Other protection indicated in Paragraph 1.2.A of this Section.

#### **3.3 PERFORMANCE**

- A. Perform operations in such manner as to avoid hazards to persons and property and interference with the use of adjacent areas or interruption of free passage to and from such areas. Take care to prevent the spread of dust and flying particles.
- B. Execute cutting, coring demolition and debris removal work in a careful and orderly manner. Accumulation of rubbish will not be permitted.
- C. Restore work which has been cut or removed and install new products to provide completed work in accordance with contract requirements.
- D. Refinish entire surfaces as necessary to provide an even finish.
  - 1. Continuous surfaces: Refinish to nearest intersection of surfaces.
  - 2. Assembly: Refinish entire assembly.

- C. Opening in stair floor shall be patched with a waterproof and fireproof sealant.
- D. No utilities shall be interrupted without first notifying the Owner's Representative and having its concurrence with the interruption. Provide temporary support for utilities whose support is disturbed by removal work. Coordinate with related trades any disconnecting and rerouting of existing services.

### **3.4 OWNERSHIP AND DISPOSAL OF REMOVED MATERIALS**

Removed materials shall become property of the Contractor and shall be removed from the premises and legally disposed of by the Contractor.

### **3.5 CLEAN-UP**

The areas of cutting, coring, demolition and debris removal, inside and outside the building shall be left in a safe and clean condition suitable for the installation of new work.

END OF SECTION

**APPENDIX C**  
**PAINTING SPECIFICATION**

## **APPENDIX C**

### **PAINING SPECIFICATION**

#### **1.0 GENERAL**

#### **1.1 WORK TO BE PAINTED**

- A. Existing construction where cutting and patching has been done to accommodate new work.
- B. New construction required for the installation of the new work.
- C. Piping, devices and equipment, in accordance with the specification requirements.

#### **1.2 QUALITY CONTROL**

- A. Color and texture of finish coats shall match existing.
- B. Color of priming coat shall be lighter than body coat.
- C. Color of body coat shall be lighter than finish coat.
- D. Color prime and body coats as required so as to not show through the finish coat and to mask surface imperfections.

#### **1.3 SUBMITTALS**

##### **1.3.1 MANUFACTURER'S LITERATURE AND DATA**

- A. When required by the Owner, and before any work is done, or any color and finish panels are prepared, submit Manufacturer's literature, indicating brand names, kind, color, and texture of paint.
- B. Prior to delivering products to the site, submit material safety data sheets to the Owner's Representative for approval.

##### **1.3.2 SAMPLE PANELS**

When required by the Owner, and before any painting or finishing is done, submit panels for Owner's approval showing color and texture of finish coats or clear finishes. Panels to be composition board, 4 inch by 11 inch by 1/8 inch showing each color and finish. Attach labels to each panel stating the following:

- A. Paint color and code.
- B. Type of finish.

- C. Name of Contractor.
- D. Name of project.
- E. Locations to be finished.

## **1.4 DELIVERY AND STORAGE**

### **1.4.1 DELIVERY**

- A. All materials shall be delivered to the site in the Manufacturer's sealed container marked to show the following:
  - 1. Name of Manufacturer
  - 2. Kind of paint
  - 3. Batch number
  - 4. Instructions for use
  - 5. Safety precautions
- B. In addition to the Manufacturer's label, each container shall bear a label upon which is legibly printed the surface upon which material is to be applied.

### **1.4.2 STORAGE**

- A. Painting materials shall be stored at a location approved by the Owner Representative, protected by automatic sprinklers, and isolated from the construction area.
- B. Maintain space for storage and handling of painting materials and equipment in a neat and orderly condition.
- C. Store all materials at the site at least 24 hours before using in order to bring their temperature to between 65 and 85°F.

## **1.5 JOB CONDITIONS**

### **1.5.1 SAFETY**

- A. Observe all required safety regulations and the manufacturer's warnings and instructions during the storage, handling and application of painting materials.
- B. All safety rules supplied by OSHA or the EPA for fresh air supply in enclosed areas where spray painting is being done must be met.

- C. Proper protective safety equipment (*i.e.*, respirators, dust mask, hard hats, goggles) must be supplied and worn by workers.
- D. Necessary precautions shall be taken to protect personnel and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.
- E. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at the end of each day's work.

### 1.5.2 LEAD-BASED PAINT

The responsibility of compliance with Section 401 of the Lead-Based Paint Poisoning Prevention Act, as amended, is placed upon the Contractor.

### 1.5.3 ATMOSPHERIC AND SURFACE CONDITIONS

- A. Do no exterior painting in foggy, damp or rainy weather.
- B. Do no exterior painting when it is windy and dusty.
- C. Paint exterior and interior surfaces when the ambient temperature is between 45 and 90°F; except when water-thinned paints are used, the ambient temperature shall be between 50 and 90°F, unless otherwise designated in the Manufacturer's printed instructions. Maintain these temperatures until the paint dries hard.
- D. Apply only on clean, dry and frost-free surfaces. Apply water-thinned acrylic and cementations paints to damp (not wet) surfaces where allowed by the Manufacturer's printed instructions.
- E. Do no painting in direct sunlight or on surfaces which will soon be warmed by the sun. Concrete and masonry surfaces to which water-thinned acrylic and cementations paints are applied shall be dampened with a fine mist of water on hot, dry days to prevent excessive suction and to cool the surface.

## 2.0 PRODUCTS

### 2.1 PAINT

- A. The Owner's Representative will provide paint color specifications for use in obtaining matching paint.
- B. All new paint colors and textures shall match those of the existing adjacent areas.
- C. Repaint the entire existing ceiling and/or wall surface that has been altered or damaged or where soffits are added due to installation of new work.

- D. Spot painting will be acceptable only if the painting matches the existing paint, to the Owner's Representative's satisfaction. If the spot painting does not match, the entire contiguous surface shall be repainted.

### **3.0 EXECUTION**

#### **3.1 PAINT PREPARATION**

- A. Thoroughly mix all painting materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.
- B. Finish paint shall not be used as primer. Primers must be matched to substrate being painted:
  - 1. Dry wall - polyvinyl acetate primer latex.
  - 2. Metal - primer required by manufacturer for proper adhesion.
  - 3. Masonry - proper masonry sealer/primers to insure proper adhesion to substrate.
- C. No material shall be thinned, unless necessary for proper application and when finish paint is used for body and prime coats. Materials and the quantities used for thinning shall be in accordance with the manufacturer's printed instructions.
- D. Remove paint skins, then strain paint through commercial paint strainer to remove all lumps and other particles.
- E. Two-component and two-part paint and those requiring additives shall be mixed in such a manner as to be uniformly blended in accordance with the manufacturer's printed instructions.
- F. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer.

#### **3.2 SURFACE PREPARATION**

##### **3.2.1 GENERAL**

- A. Remove radiators, lighting fixtures and similar items for complete painting of such items and adjacent areas.
- B. Contractor shall verify the requirements for surface conditions and prime coat.
- C. Surfaces to be finished shall be dry, clean, smooth and prepared as specified.



- D. Materials and methods used for cleaning shall be compatible with the substrate and specified finish. Remove any residue remaining from cleaning agents used.
- E. Method of surface preparation is optional provided results of finish painting produce solid even color and texture specified.

### 3.2.2 MASONRY, CONCRETE, CEMENT PLASTER AND STUCCO

- A. Remove all dust, dirt, oil, grease efflorescence, and other deterrents to paint adhesion.
- B. Use emulsion-type cleaning agents to remove oil, grease, paint and similar products. The use of solvents, acid, or steam is not permitted.
- C. Remove all loose mortar in masonry work.
- D. Replace mortar and fill all open joints, holes, cracks and depressions with patching compound, finished flush with adjacent surface, with texture to match texture of adjacent surface.
- E. Concrete floors to be painted shall be neutralized by washing with a solution of three pounds of zinc sulphate crystals to one gallon of water, allowed to dry three days and brushed thoroughly free of crystals.
- F. Concrete shall have all broken and spalled edges repaired with patching compound to match adjacent surfaces. Remove projections to level of adjacent surface by grinding or similar methods.

### 3.2.3 GYPSUM PLASTER AND DRYWALL

- A. Remove efflorescence, loose and chalking plaster. Remove dust, dirt, and other deterrents to paint adhesion.
- B. Fill holes, cracks and other depressions with patching compound, finished flush with adjacent surface, with texture to match texture of adjacent surface.

## 3.3 APPLICATION

- A. Start of surface preparation or painting will be construed as acceptance by the Contractor of the surface as satisfactory for the application of materials.
- B. Unless otherwise specified, paint shall be applied in three coats: prime, body, and finish. When the two coats succeeding the prime coat are the same, the first coat applied over the primer shall be considered as the body coat, the second coat as the finish coat.
- C. Before application of body and finish coats, surfaces shall be primed except as otherwise specified.

- D. Retouch damaged and abraded painted surfaces before applying succeeding coats.
- E. Apply each coat evenly and in full covering body.
- F. No less than 48 hours shall elapse between application of succeeding coats, except as allowed by the Manufacturer's printed instructions, and approved by the Owner's Representative.
- G. Finished painted surfaces shall have solid even color, free from runs, lumps, brush marks, laps, holidays, or other defects.
- H. To prevent the items from sticking in the shut position, operable items such as access doors and panels, window sashes, rolling doors, and similar items shall not be painted when in the closed position.
- I. All necessary precautions shall be taken to prevent painting of sprinklers. Painted sprinklers shall be replaced at no additional cost to the Owner.
- J. Painting may be applied by brush, roller or spray, except as otherwise noted.
- K. Spray painting will not be allowed unless approved by the Owner's Representative
  - 1. Painting materials specifically required by the Manufacturer to be applied by spraying shall be so applied.
  - 2. In areas where paint is applied by spray, all items not to be painted shall be masked, or enclosed with polyethylene, or similar air-tight material with all edges and seams continuously sealed.

### **3.4 PRIMERS**

After surface preparation, apply prime coat to various materials as follows:

- A. Cement, plaster, concrete and masonry: latex emulsion, except use two coats of latex primer when substrate has aged less than six months.
- B. Drywall: latex primer, except use pigmented sealer in shower rooms.

### **3.5 PROTECTION**

Protect all work from paint droppings and splattering by use of masking, drop cloths, removal of items or by other approved methods.

### **3.6 CLEAN-UP**

- A. Upon completion, clean paint from all hardware, glass and other surfaces and items not required to be painted.
- B. Before final inspection, any work which has become damaged or discolored shall be touched up or refinished in a manner to produce solid even color and finish texture, free from defects.
- C. Contractor shall be responsible for replacing and/or repairing any and all areas damaged during the execution of this work.

END OF SECTION

**APPENDIX D**

**TONOPAH NORTH FIRE SPRINKLER SCOPE**

# Construction Scope for the North Tonopah Residence Complex

1. Bring Fire Sprinkler piping up to modern code requirements by fully sprinklering the Tonopah North Tower as shown on the plans.
2. Add a fire sprinkler head into each of the dorm room bathrooms.
3. Removal of the Class II standpipes and hoses for the Tonopah North Tower. The water line feeding the hose cabinet will be removed and capped at the fire riser pipe on each floor. Abandon water feet to standpipe in wall. Where the old standpipe cabinet was removed, install a Larsen brand fully recessed fire extinguisher cabinet model number O-2409 with a solid steel front door with Horizontal red die cut lettering "Fire Extinguisher". Patch and repair wall, tape texture and paint to match existing wall.
4. Install in the Class I standpipes in the Tonopah North Residence Hall isolation valves in each of the standpipes.
5. Install in the Class I standpipes in the Tonopah Residence Hall North check valves, pressure switches and main drain valve.
6. Remove WON door and repair architectural finishes if State Fire Marshall allows removal. Install steel swing doors and closures