

GENERAL NOTES

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1. DESIGN AND INSTALLATION OF ALL FIRE SPRINKLER AND FIRE ALARM SYSTEMS SHALL CONFORM TO NFPA 13, NFPA 24 AND NFPA 72, ADA, NEC, AND NASA AMES SPECIFICATIONS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND HYDRAULIC CALCULATIONS FOR APPROVAL FOR ALL AREAS INDICATED TO BE SPRINKLED. WORK SHALL NOT COMMENCE UNTIL DRAWINGS AND CALCULATIONS ARE APPROVED. ALL DESIGN, DRAWINGS AND CALCULATIONS SHALL BE IN ENGLISH UNITS.
2. EXISTING WORK SHOWN IS FOR INFORMATION ONLY. NO GUARANTEE OF ACCURACY IN DISTANCE OR CLEARANCE IS IMPLIED. THE CONTRACTOR MUST VERIFY, TO HIS OR HER SATISFACTION, ALL ROUTES AND MEASUREMENTS IN THE FIELD BEFORE BIDDING, ORDERING MATERIAL OR COMMITTING TO ANYTHING.
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A WORK SCHEDULE AND MEET WITH THE COTR TO AGREE ON THE WORK SCHEDULE BASED ON PHASED CONSTRUCTION AND TO COORDINATE WITH THE COTR THE USE OF SPECIFIC CRITICAL AND NON-CRITICAL AREAS. CONTRACTOR SHALL PERFORM WORK ONE PHASE OR FLOOR AT A TIME TO MINIMIZE DISRUPTION TO THE CUSTOMER. CONTRACTOR SHALL PROVIDE FIRE SPRINKLER COVERAGE FOR 100% OF THE AREAS SHOWN ON THE DRAWINGS.
4. ANY WALLS, FLOORS OR CEILINGS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED OR REPAIRED TO MATCH THE EXISTING. ALL PATCHING (INCLUDING METAL STUDS) AND PAINTING OF THE WALLS AND CEILINGS SHALL BE PERFORMED BY WORKERS QUALIFIED IN THOSE TRADES.
5. CONTRACTOR SHALL NOT CUT, DRILL OR MODIFY ANY (E) STRUCTURAL MEMBERS, BEAMS OR WALLS WITHOUT PRIOR APPROVAL FROM THE COTR. FIRE STOP ALL PENETRATIONS THROUGH WALLS, FLOORS AND CEILINGS. IN THE FINISHED AREA, INSTALL ESCUTCHEONS AROUND PENETRATIONS. ALL PIPE PENETRATIONS THROUGH WALL, SHALL BE FITTED WITH CHROME COLLAR AROUND THE PIPE PENETRATIONS.
6. THE CONTRACTOR SHALL MAINTAIN AT THE JOB SITE, AN UP-TO-DATE SCALED REDLINE DRAWING SET. THE SCALED REDLINE DRAWING SET SHALL REFLECT ALL APPROVED CHANGES TO THE DESIGN DRAWINGS. THE REDLINE DRAWING SET SHALL BE KEPT CLEAN AND IN GOOD CONDITION AND SHALL BE TURNED OVER TO THE COTR ALONG WITH AN ELECTRONIC COPY OF THE "AS BUILT" DRAWINGS (AUTOCAD RELEASE 14 OR NEWER) AT THE COMPLETION OF THE PROJECT.
7. UPON COMPLETION OF THE SPRINKLER AND FIRE ALARM SYSTEMS, A SATISFACTORY PRELIMINARY AND FINAL TEST OF THE COMPLETE SYSTEMS WILL BE REQUIRED. SEE SPECIFICATION SECTIONS 15514 AND 16722.
HAZARDOUS MATERIALS
8. THE ACOUSTICAL SPRAYED CEILING ON THE VARIOUS FLOORS MAY CONTAIN ASBESTOS MATERIALS. IF THESE MATERIALS ARE DISTURBED OR DAMAGED DURING CONSTRUCTION, THEY SHALL BE HANDLED IN ACCORDANCE WITH SECTION 02080 OF THE PROJECT SPECIFICATIONS.
9. ALL PAINTED SURFACES CONTAIN LEAD BASED PAINT. THE NASA LEAD MANAGEMENT PLAN AND ALL FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO THE HANDLING, DISTURBANCE, STORAGE, AND DISPOSAL OF LEAD MUST BE ADHERED TO. LEAD BASED PAINT REMOVAL SHALL BE IN ACCORDANCE WITH SECTION 02090 OF THE PROJECT SPECIFICATIONS.
10. WALLS CONTAIN ASBESTOS IN THE JOINT COMPOUND. ANY PENETRATIONS THROUGH WALLS WILL REQUIRE ABATEMENT.
11. FLOOR TILES AND MASTIC MAY BE ASBESTOS CONTAINING. PRIOR TO ANY FLOOR PENETRATIONS, THE FLOOR TILES SHALL BE EVALUATED BY THE COTR, AND IF NECESSARY ABATED BY THE CONTRACTOR.
FIRE SPRINKLER SYSTEM
12. FIRE SPRINKLER PIPING SHALL BE SUPPORTED AND SEISMIC BRACED (FOR SEISMIC ZONE 4) IN ACCORDANCE WITH NFPA 13. LISTED EXPANSION ANCHORS SHALL BE INSTALLED PER THE REQUIREMENTS OF NFPA 13. ALL PIPE HANGERS AND SUPPORTS SHALL HAVE FACTORY MUTUAL OR UL LISTING AND APPROVAL.
13. SPRINKLERS, BRANCH LINES AND PIPE MAINS ARE ONLY SHOWN AS A SUGGESTED TYPICAL ARRANGEMENT. CONTRACTOR SHALL PLACE SPRINKLERS AND MAINS IN ACCORDANCE WITH NFPA 13. ALL NEW PIPE SIZES SHOWN ARE MINIMUMS AND SHALL BE SIZED PER NFPA 13, APPROVED HYDRAULIC CALCULATIONS AND IN ACCORDANCE WITH NASA AMES SPECIFICATIONS.
14. THE SPRINKLER PIPING LAYOUT & SIZES INDICATED ON THIS DRAWING ARE SCHEMATIC AND DOES NOT SHOW ALL THE BENDS AND PENETRATIONS. CONTRACTOR SHALL CARRY OUT A THOROUGH FIELD INVESTIGATION AND ESTABLISH AN OPTIMUM PIPING LAYOUT AND SIZES TO AVOID EXISTING STRUCTURAL AND SERVICES OBSTRUCTIONS. ABOVE CEILING SPACES HAVE LIMITED ACCESS AND ARE CONGESTED. AREA OF SPRINKLER COVERAGE SHALL BE AS PER NFPA 13 AND NASA AMES SPECIFICATIONS.
15. NOT USED.
16. EXPOSED PIPE AND FITTINGS SHALL NOT BE USED IN FINISHED AREAS UNLESS OTHERWISE SHOWN OR APPROVED BY THE COTR. ALL PIPING SHALL BE INSTALLED ABOVE SUSPENDED CEILINGS AND CONCEALED WHEREVER POSSIBLE UNLESS OTHERWISE SHOWN, OR APPROVED BY THE COTR. EXPOSED SPRINKLER PIPING SHALL BE PAINTED TO MATCH BACKGROUND COLOR IN FINISHED AREAS AND LABELED AS PER SPECIFICATIONS. CONCEALED PIPING SHALL BE PRIMED AND PAINTED WITH A FINISH COAT OF RED PAINT AND LABELED AS PER SPECIFICATIONS.
17. U.O.N. OR APPROVED BY COTR, ORDINARY TEMPERATURE RATED STANDARD RESPONSE PENDANT TYPE SPRINKLERS SHALL BE USED THROUGHOUT. U.O.N. OR APPROVED BY THE COTR, SEMI-RECESSED PENDANT TYPE SPRINKLER HEADS SHALL BE USED IN ALL T-BAR CEILING AREAS. PENDANT TYPE MAYBE USED WHEN OBSTRUCTIONS EXIST. UPRIGHT SPRINKLER HEADS SHALL BE USED IN CONCEALED SPACES ABOVE CEILINGS WITH COMBUSTIBLE MATERIALS AND IN ALL OPEN CEILING AREAS. THE QUANTITY AND LOCATIONS OF THE SPRINKLER HEADS SHALL BE PROVIDED AS PER NFPA 13 AND NASA SPECIFICATIONS. SIDE WALL SPRINKLER HEADS SHALL ONLY BE USED WHERE SHOWN OR APPROVED BY THE COTR.

18. CONTRACTOR SHALL INSTALL SPRINKLER HEAD GUARDS IN SPACES THAT ARE LESS THAN 2130 mm HIGH AND IN ELEVATOR SHAFTS, MACHINE ROOMS, MECHANICAL ROOMS, AND IN AREAS SUBJECT TO PHYSICAL DAMAGE.
19. WHERE SPRINKLER PIPING CROSSES BUILDING EXPANSION/CONTRACTION JOINTS, CONTRACTOR SHALL INSTALL APPROVED FLEXIBLE PIPE CONNECTORS AND/OR SEISMIC JOINTS.
20. CONTRACTOR SHALL PERFORM FLOW TEST AT THE NEAREST FIRE HYDRANT, WITNESSED BY THE GOVERNMENT, TO VERIFY ACTUAL STATIC AND RESIDUAL PRESSURES PRIOR TO DESIGN. HYDRAULIC CALCULATIONS SHALL BE BASED ON THE STATIC AND RESIDUAL PRESSURES THAT IS 10% LESS THAN THE ACTUAL FLOW TEST PRESSURES AT THE NEAREST FIRE HYDRANT. RESIDUAL PRESSURE SHALL BE MEASURED AT A FLOW OF 3790 L/MIN (1000 GPM). CONTRACTOR SHALL INCLUDE THE BACKFLOW PREVENTION ASSEMBLY'S FRICTION LOSS IN THE HYDRAULIC CALCULATIONS. CONTRACTOR SHALL PERFORM HYDRAULIC CALCULATION TO ENSURE THAT THE EXISTING WET-PIPE SPRINKLER SYSTEM PERFORMANCE, INCLUDING THE NEW BACKFLOW PREVENTION ASSEMBLY'S PRESSURE LOSS, IS ADEQUATE AND COMPLIES WITH NFPA 13. CONTRACTOR SHALL REPLACE ANY DEFICIENCIES IN THE EXISTING WET-PIPE SPRINKLER SYSTEMS, INCLUDING BUT NOT LIMITED TO EXISTING RISERS OR MAINS IF THE HYDRAULIC CALCULATIONS PROVE IT TO BE NECESSARY.
21. FIRE SPRINKLER SYSTEM MODIFICATIONS SHALL BE PERFORMED BY A CONTRACTOR HOLDING A CURRENT CALIFORNIA C-16 LICENSE.
22. ALL CONCEALED SPACES ABOVE FINISHED CEILINGS AND BELOW FINISHED FLOORS THAT CONTAIN COMBUSTIBLE MATERIALS SHALL BE SPRINKLED IN ACCORDANCE WITH NFPA 13.
23. CONTRACTOR SHALL PROVIDE OWN ACCESS ABOVE (E) CEILING TO INSTALL (N) SPRINKLER SYSTEM. CEILING TILES AND CEILING DAMAGED DURING CONSTRUCTION SHALL BE REPLACED OR REPAIRED WITH NON-HAZARDOUS MATERIALS TO MATCH EXISTING. ACCESS HATCHES MAYBE INSTALLED SUBJECT TO CONTRACTING OFFICER'S APPROVAL.
24. POSSIBLE HAZARDOUS DEBRIS ABOVE THE DROP CEILING MAY EXIST. THIS DEBRIS COULD BE FROM ACOUSTICAL CEILING SPRAY AND/OR PIPE LAGGING THAT HAS BEEN DROPPED ON TO THE CEILING TILES DUE TO MATERIAL DELAMINATION. IF HAZARDOUS DEBRIS IS FOUND, THE CONTRACTOR WILL STOP WORK IN THAT AREA AND NOTIFY THE COTR.
25. PIPE AND FITTINGS:
PIPING DN50 AND SMALLER SHALL BE BLACK STEEL SCHEDULE 40, MEETING ASTM A-135. PIPING DN65 AND LARGER MAY BE SCHEDULE 10 BLACK STEEL, MEETING ASTM A-135. FITTINGS FOR PIPING DN50 AND SMALLER SHALL BE DUCTILE IRON SCREWED FITTINGS CLASS 125 AND 250 POUND. SCREWED FITTINGS FOR PIPING DN65 AND LARGER SHALL BE EXTRA HEAVY PATTERN. GROOVED FITTINGS SHALL BE DUCTILE IRON, JOINED WITH VICTAULIC STYLE 77 COUPLINGS (RATED 6900 kPa) OR EQUAL. TAPPING T'S ARE NOT ALLOWED IN THIS CONTRACT. HOLE CUT T'S SHALL NOT BE USED. WELDED PIPES AND FITTINGS SHALL BE IN ACCORDANCE WITH NFPA 13.
26. 48 HOURS IN ADVANCE OF PROPOSED FIRE SPRINKLER SYSTEM SHUTDOWN, CONTRACTOR SHALL NOTIFY THE COTR. NASA WILL PERFORM THE SHUTDOWN AND MAKE THE REQUIRED NOTIFICATIONS. CONTRACTOR SHALL PROVIDE A SCHEDULE OF WHAT SECTIONS OF THE SYSTEM ARE REQUIRED TO BE SHUTDOWN AND FOR HOW LONG.
27. COORDINATE ALL TIE-INS TO NEW AND EXISTING SPRINKLER SYSTEMS SO THAT EXISTING FIRE SPRINKLER SYSTEM WILL BE OPERATIONAL AT THE END OF THE WORK DAY OR CONTRACTOR SHALL PROVIDE A FIRE WATCH DURING ALL NASA NON-BUSINESS HOURS.
28. NOT USED.
29. WHEN FIRE SPRINKLER MODIFICATIONS ARE COMPLETE AND PRIOR TO TIE-IN TO EXISTING SYSTEM, SYSTEM SHALL BE STERILIZED AND HYDROSTATICALLY TESTED IN THE PRESENCE OF THE COTR OR AN AUTHORIZED REPRESENTATIVE AS PER SPECIFICATION SECTION 15514. A MATERIALS AND TEST CERTIFICATE SHALL BE SUBMITTED AS REQUIRED BY NFPA 13.
30. NOT USED.
31. CONTRACTOR SHALL INSTALL SPRINKLERS CENTERED IN T-BAR CEILINGS ALONG HALLWAYS AND CORRIDORS WHERE PHYSICALLY POSSIBLE. CONTRACTOR SHALL INSTALL FEED MAINS AND PIPING AS CLOSE TO THE STRUCTURAL CEILING AS PHYSICALLY POSSIBLE.

- ELECTRICAL/FIRE ALARM SYSTEM
32. EXISTING FIRE ALARM SYSTEM SHALL BE KEPT OPERATIONAL UNTIL THE NEW FIRE SPRINKLER AND FIRE ALARM SYSTEM ARE COMPLETED IN THEIR ENTIRETY, THROUGH ALL PHASES, TESTED, ACCEPTED AND PUT INTO OPERATION.
 33. THE CONTRACTOR, PRIOR TO BIDDING, SHALL VISIT THE JOB SITE TO BECOME ACQUAINTED WITH THE EXISTING INSTALLATION AND SYSTEMS RELATED TO HIS WORK AND SHALL INCLUDE IN THE BID PROPOSAL ALL LABOR AND MATERIALS REQUIRED FOR THE ELECTRICAL INSTALLATION TO BE COMPLETE AND OPERATIONAL.
 34. EXISTING EQUIPMENT AND/OR ELECTRICAL WIRING WHICH IS TO REMAIN, BUT HAS TO BE REMOVED TO FACILITATE THE INSTALLATION OF THE NEW EQUIPMENT SHALL BE RESTORED TO ITS ORIGINAL OPERATING CONDITION.
 35. ELECTRICAL EQUIPMENT AND FEEDERS SHALL BE SUPPORTED AND/OR ANCHORED IN ACCORDANCE WITH UNIFORM BUILDING CODE ZONE 4 SEISMIC REQUIREMENTS.
 36. AFTER COMPLETION OF THE NEW WORK, ALL EXISTING FIRE ALARM DEVICES AND CONDUIT/WIRING SHALL BE REMOVED AS FAR AS PRACTICABLE UP TO THE EXISTING PANEL OR DEVICE THAT IS TO REMAIN, UNLESS OTHERWISE NOTED. WHERE EXISTING CIRCUIT CONDUIT/WIRING RUNS ARE CONCEALED IN FIXED BUILDING WALL, CEILING AND/OR OTHER STRUCTURE, EXISTING CONDUCTORS SHALL BE REMOVED, AND CONDUITS CUT-OFF AND CAPPED. WHERE AN EXISTING DEVICE IS TO REMAIN AND CIRCUIT IS INTERRUPTED, THE CIRCUIT SHALL BE EXTENDED AS REQUIRED.
 37. WHERE OUTLETS, SWITCHES AND OTHER ELECTRICAL EQUIPMENT ARE REMOVED AND/OR CONDUIT IS CUT OFF, ALL EXISTING CONDUCTORS SHALL BE REMOVED BACK TO THE PANELBOARD THAT IS TO REMAIN, UNLESS OTHERWISE NOTED.
 38. EXISTING CONDUCTORS REMOVED FROM SERVICE SHALL NOT BE USED FOR NEW WORK UNDER THIS CONTRACT.
 39. EXISTING EMPTY CONDUIT RUNS REMAINING IN PLACE MAY BE UTILIZED FOR THE RENOVATION WORK, PROVIDED THAT THE CONDUIT IS OF ADEQUATE SIZE PER NASA AMES SPECIFICATIONS AND NEC FOR THE NUMBER AND SIZE OF CONDUCTORS BEING INSTALLED.
 40. BLANK COVERS SHALL BE INSTALLED WHEREVER A DEVICE IS REMOVED AND OUTLET BOX REMAINS IN PLACE. PAINT TO MATCH COLOR OF WALL. REPLACE CEILING TILES WHERE DEVICES ARE REMOVED OR PATCH TO MATCH EXISTING.
 41. WHERE EXISTING CONDUIT AND/OR CIRCUIT HAS BEEN INTERRUPTED BY REMOVAL OF AN OUTLET, WALL, OR PORTION OF THE CIRCUIT, THE REMAINING CONDUIT AND/OR CIRCUIT SHALL BE REROUTED, EXTENDED AND RECONNECTED AS REQUIRED TO PROVIDE CONTINUITY OF THE CIRCUIT THAT IS TO REMAIN IN SERVICE.
 42. THE COTR RETAINS FIRST SALVAGE RIGHTS TO ALL EXISTING EQUIPMENT REMOVED UNDER THIS CONTRACT. THE CONTRACTOR SHALL CONSULT WITH THE COTR FOR DISPOSITION OF THE EXISTING EQUIPMENT TO BE REMOVED. EXISTING FIRE ALARM DEVICES SHALL BE HANDED OVER TO THE GOVERNMENT. THE CONTRACTOR SHALL INCLUDE IN HIS BID PROPOSAL ALL COSTS RELATED TO THE DISPOSAL OF THE EXISTING EQUIPMENT REMOVED UNDER THIS CONTRACT.
 43. PRIOR TO ANY PRELIMINARY OR FINAL TESTING OF THE FIRE ALARM SYSTEM, THE CONTRACTOR SHALL SUBMIT TO THE COTR FOR APPROVAL, A SEQUENCE OF OPERATIONS TEST MATRIX SHOWING DEVICE TYPE AND REQUIRED OPERATIONS.
 44. FIRE ALARM CIRCUIT CONDUIT BOXES, FITTINGS AND DEVICES SHALL BE PAINTED RED TO INDICATE THEY ARE PART OF THE FIRE ALARM SYSTEM.
 45. THE CONTRACTOR SHALL RESTORE, REPAIR AND PAINT ALL AREAS WHERE FIRE ALARM EQUIPMENT AND DEVICES ARE REMOVED TO MATCH THE SURROUNDING SURFACES. REPLACE CEILING TILES WHERE DEVICES ARE REMOVED OR PATCH TO MATCH EXISTING.
 46. ALL CONDUIT SHALL BE RUN CONCEALED EXCEPT WHERE APPROVED. ALL EXPOSED CONDUIT SHALL BE PAINTED TO MATCH THE EXISTING BACKGROUND COLOR OR SURROUNDING.
 47. ALL WORK SHALL MEET THE REQUIREMENT OF CEC, NFPA 72, ADAAG AND NASA STANDARD SPECIFICATIONS.
 48. ALL WIRING SHALL BE SUPPORTED FROM THE STRUCTURE. SUPPORTING FROM THE CEILING OR EQUIPMENT SHALL NOT BE ALLOWED.
 49. ALL SPLICES SHALL BE MADE THROUGH TERMINAL DEVICES AND SHALL BE SECURED TO J-BOXES.
 50. ALL EXPOSED CONDUITS OR CONDUITS INSTALLED AT EXTERIOR OF BLDG. SHALL BE IN RGS AND/OR INSTALLED DIRECT BURIED UNDERGROUND SHALL BE IN PVC.
 51. CONCEALED CONDUITS IN EMT THAT ARE INSTALLED IN COMPUTER ROOMS, RAISED FLOOR OR CEILING CONSIDERED AS PLENUM SPACES, AND IN LABORATORY ROOMS SHALL HAVE COMPRESSION TYPE CONNECTIONS. WIRING SHALL BE RATED SUITABLE FOR THE OCCUPANCY TYPE PER CEC.
 52. CEILINGS SHALL BE SUITABLY MARKED WITH RED DOTS TO INDICATE THE LOCATION OF FIRE ALARM DEVICES, BOXES OR JUNCTION BOXES, ETC, CONCEALED ABOVE THE CEILING. PROVIDE SUITABLE LABEL FOR ALL FIRE ALARM DEVICES OR ZONE CONTROL MODULE LOCATIONS.

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ZONE	LETTER	DESCRIPTION	DRAWN DATE APPRVD
REVISIONS			
DESIGNED	DATE	 Ames Research Center Moffett Field, California N245 FIRE SUPPRESSION/FIRE ALARM SYSTEM MOD. <u>GENERAL</u> GENERAL NOTES	
DESIGNED	DATE		
CHECKED	DATE		
PROJECT MANAGER	DATE		
REQUESTER	DATE		
SAFETY	DATE	SIZE	CAGE CODE
SUPERVISOR	DATE	D	25307
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