

RSC (Accord) T & C checklist

Fire Alarm Documentation Review

- Product Datasheets Provided for all Equipment
- Product Certification Certificates Provided for all Listed Equipment
- T&C Information & Documents Information is Complete, Includes all Equipment and Matches Documentation
 - Manufacturer's Product Datasheet
 - Certification Certificates
- Sample Fire Alarm Devices
 - Provided for all Equipment
 - Listed by Acceptable Certification Company
 - Matches Documentation
 - Manufacturer's Product Datasheet
 - Certification Certificate
- Sample Fire Alarm Cable (Listed)
 - Samples of all Cable Types Used Provided
 - Bears Accepted Certification Company Logo
 - Matches Documentation
 - Manufacturer's Product Datasheet
 - Certification Certificate
- Sample Fire Alarm Cable (Non-Listed)
 - Samples of all Cable Types Used Provided
 - 3rd Party Laboratory Test Report "Sample Description" Matches
 - Matches Documentation
 - Manufacturer's Product Datasheet
- As-Built Drawings Indicate all Required Information
 - Floor Identification
 - Compass with Indication of North
 - Legend (Indicates all Device Types, Models, etc.)
 - Graphic Scale
 - Room Descriptions
 - Riser Locations (SLC / NAC)
 - Primary Power Disconnecting (AC Power to Control Equipment)
 - Monitor or Control Interfaces to Other Systems
 - Walls and Doors

- Ceiling Geometries where Fire Detection is Provided
- Class A Wiring for SLC
- Class B Wiring for NAC
- Typical Wiring Diagrams Provided in As-Built Drawings and Indicates the Following (If Provided)
 - Initiating Devices
 - Notification Appliances
 - Remote Indicators
 - Annunciators
 - Remote Test Stations
 - End-of-Line and Power Supervisory Devices
- Control Unit Diagram Provided in As-Built Drawings and Indicates the Following (If Provided)
 - Location
 - Field Wiring Terminals and Identifications
 - Circuits Connected to Field Wiring Terminals and Identifications
 - Indicators and Manual Controls
 - Field Connections to Control Interfaces
- Riser Diagram Provided in As-Built Drawings
 - Coordinated with Floor Plans
 - General Arrangement of System in Building Cross-Section
 - Number of Risers
 - Type and Number of Circuits in Each Riser
 - Type & Number of System Components / Devices on Each Circuit, on Each Floor / Level (Device Count Table)
 - Number of Conductors for Each Circuit
- Input / Output Matrix Provided in As-Built Drawings and Specific to System Design
- Hard Copy of Control Equipment Installation Manual Provided
- Contractor's Installation Certificate Provided
 - Contractor's Name and Contact Information
 - Owner's Name and Contract Information
 - Type of System Installed
 - Relevant Codes and Standards Applied to System Design
 - Date of System Commissioning
- System Record of Completion Provided (NFPA 72)
 - Information is Complete and Accurate
 - Initiating Devices Supplementary Record of Inspection and Testing Provided

- Notification Appliance Supplementary Record of Inspection and Testing Provided
- Interface Components Supplementary Record of Inspection and Testing Provided
- Battery Calculation
 - Amp-Hour Current Draws in Accordance with Manufacturer's Product Datasheet
 - Device Counts Correspond with As-Built Drawings, Record of Completion & Voltage Drop Calculation
 - All Equipment Indicated on Calculation
 - 24-Hour Stand-By Provided
 - Adequate Alarm Time Provided
 - 5-Minute Alarm (Non-Voice Evacuation System)
 - 15-Minute Alarm (Voice Evacuation System)
 - 20 Percent Safety Margin to Calculated Amp-Hour Rating
 - No Signaling Line Circuit Exceeds the Maximum Current / Points Allowed by the Panel Manufacturer
 - Multiple Calculations Provided for Different Panel(s) (i.e. Power Extender, FACP, etc.)
- Voltage Drop Calculation
 - Cable Resistance in Accordance with Manufacturer's Product Datasheet
 - Starting Voltage 85% of Listed Nameplate Voltage
 - Device Counts Correspond with As-Built Drawings, Record of Completion & Battery Calculation
 - $V_d = I \times (R \times 2L) / 1000$
 - No Notification Appliance Circuit Exceeds the Maximum Output Current Allowed by the Panel Manufacturer

Fire Alarm Control Equipment Inspection & Testing

- Equipment Matches T&C Information & Documents
- Control Equipment Location
 - Meets Manufacturer's Operational Requirements (i.e. Ambient Temperature, Relative Humidity, etc.)
 - Installation Location of Main Panel is Constantly Attended
- Multiple Panels / Sub Panels Interfaced to Main Panel and Receive Common Signals (If Provided)
- System Free of Abnormal System Conditions (i.e. Trouble, Pre-Alarm, Alarm, Supervisory, etc.)
- Loop Device Count at Panel Matches Riser Diagram Device Count Table
- Control Equipment Batteries
 - Manufacture Date Indicated
 - Sizing Meets Battery Calculation Requirement and Matches As-Built
- Wiring
 - Fire Alarm Cable Type Matches Sample(s) Provided
 - Wiring Passed Through Cabinet Knockout(s) Protected

- Excessive Wiring Not Located within Panel(s)
- Riser Diagram Posted at Control Equipment
- Wiring Fault Monitoring Specific to Circuit(s)*
 - Ground Fault
 - Short Circuit
 - Open Circuit

**Not required to indicate the specific circuit in trouble for a NAC power extender, however all relevant trouble signals shall still be supervised by the control panel.*

- Lamp Test Illuminates all Panel LEDs
- Piezo Alarm Functional for Panel(s)
- End of Line Resistor Not Located at NAC / SLC Terminals (Unless Permitted by Manufacturer)
- Primary AC Power & Secondary DC Power Loss Signals Monitored for all Panel(s)
- AC Power Supply*
 - Circuit Disconnection Location Identified at Control Equipment
 - Hardwired (No Intermediate Breakers, Electrical Plugs, etc.)
 - Dedicated (Not Shared with Any Other Factory Electrical Circuits)
 - Dedicated Circuit Breaker Locked & Labeled "FIRE ALARM"

**A UPS / IPS system is permitted to be used for the fire alarm system, however, if the UPS / IPS power supply is not monitored for fault signal(s) by the fire alarm system, the incoming UPS / IPS power supply to the control equipment is required to be wired in parallel to the existing AC power supply.*

- Notification Appliance at Control Equipment (Relocation Recommended)

Fire Alarm Inspection & Testing

- Employees Notified of System Testing
- Testing Equipment Provided by Contractor (Canned Smoke, Heat Gun, Multi Meter, Ladder)
- Equipment Matches T&C Information & Documents
- As-Built Drawings Accurate
 - Building Architectural Layout (Walls & Doors)
 - Building Room Use Names & Stair Designations
 - Fire Alarm System Device Locations
 - Fire Alarm System Device Types
 - Fire Alarm System Device Addresses
- Evacuation Signal
 - Notification Provided for All Areas
 - Audible 15 dB Above Ambient
 - Visual Notification Provided in Accordance with NFPA 72 where Average Ambient Exceeds 105 dBA*

- Three-Pulse Temporal Pattern Utilized for Audible Notification Appliances
- Synchronized Audible and Visual Notification within Notification Zones

**The total sound pressure level produced by combining the ambient sound pressure level with all audible notification appliances operating shall not exceed 110 dBA at the minimum hearing distance.*

- Magnetic Door Hold Open Devices
 - Automatic Release Provided for all Doors in Fire Rated Assemblies
 - Release on Alarm and Does Not Reenergize on System Silence
 - Fail Safe Wiring to Power Supply (i.e. Magnetic Door Holders Release if Power Supply Fails)
- Fresh Air and Exhaust Fans
 - Automatic Shut Down Provided for Exhaust Fan(s) and Fresh Air Supply Fan(s)
 - Shut Down on Alarm and Does Not Reenergize on System Silence
 - Fail Safe Wiring to Power Supply (i.e. Exhaust Fans Shut Down if Power Supply Fails)
- Public Address System
 - Automatic Override Provided for Public Address System(s)
 - Override on Alarm and Does Not Reenergize on System Silence
 - Fail Safe Wiring to Power Supply (i.e. Public Address System Shuts Down if Power Supply Fails)
- Elevator Recall
 - Automatic Primary Recall Provided for Factory Lift(s)
 - Recall on Alarm and Does Not Resume Service on System Silence
 - Fail Safe Wiring to Power Supply (i.e. Lift and Recall Remains Active if Power Supply Fails)
- Device Testing
 - Complete Testing of all Fire Alarm Initiating Devices
 - Detectors (Smoke, Heat, Beam, Air Sampling)
 - Manual Call Points
 - Valve Monitoring (Tamper Switch)
 - Waterflow Monitoring (Flow Switch)
 - Verification of Notification Appliance Operation
 - Verification of Interconnected System(s) Operation (i.e. HVAC System, Public Address System, Elevators, etc.)
- Device Address and Programming
 - Complete Address Legibly Labeled on Addressable Devices
 - Device Address Matches As-Built Drawings and Control Equipment Programming
 - Device Signals Match Fire Alarm Matrix (Alarm / Supervisory / Trouble)
- Notification Appliance Circuit Last Device
 - End of Line Resistor Provided
 - Operating Voltage Meets or Exceeds Manufacturer's Minimum Required Operating Voltage

- Signaling Line Circuit Continuity of Circuit Operation During Open Circuit Condition
- Fire Alarm Stacking (i.e. Evacuation Signal Resumes Upon Activation of Subsequent Device after System Silence)
- Equipment Installation
 - Wiring Connections Made in Workmanlike Manner
 - Notification Appliances Installed on Listed Surface (Wall / Ceiling)
 - Backboxes
 - Equipment Installed with Backbox in Accordance with Manufacturer's Installation Instructions
 - Provided with Cover and Mounted on Surface (Wall / Ceiling)
 - Secured to Ceiling with Permanent Fasteners (Zip Ties Unacceptable)
 - Detector Mounting
 - Spacing Does Not Exceed Manufacturer's Listed Spacing Requirements
 - Beam Depth Does Not Exceed 10% of the Ceiling Height when Mounted on the Bottom of Beams
 - Spaced and Located within 3 ft. (910 mm) of the High Side of Sloped Ceilings, Measured Horizontally
 - Smoke Detectors / Multi-Detectors Not Installed in Exterior Areas
 - Manual Call Points
 - Located within 5 ft (1.5 m) of Exit Doorway(s) on Each Floor
 - Operable Part 42 in. (1.07 m) to 48 in. (1.22 m) Above Finished Floor
 - Travel Distance to Call Point Does Not Exceed 200 ft (61 m)
 - Beam Detectors
 - Beam Paths are Unobstructed
 - Installed in Accordance with Manufacturer's Published Instructions
 - Spacing Between Detectors
 - Spacing from Ceiling
 - Beam Length
 - Air Sampling System
 - Control Equipment Meets all Requirements
 - See "*Fire Alarm Control Equipment Inspection & Testing*" Section
 - Piping and Fittings Installed Properly and Permanently Fixed
 - Sampling Ports Treated as Spot-Type Detectors for the Purpose of Location and Spacing
 - Air Sample Ports Not Obstructed
 - Provided with Remote Test Port
 - Maximum Air Sample Transport Time from Farthest Sampling Port to Detector \leq 120 Seconds
- Old Fire Alarm Equipment is Removed

Fire Pump Documentation Review

- Product Datasheets Provided for all Equipment
- Product Certification Certificates Provided for all Listed Equipment
- T&C Information & Documents Information is Complete, Includes all Equipment and Matches Documentation
 - Manufacturer's Product Datasheet
 - Certification Certificates
- Pump Room Detail Indicates all Required Information
 - Compass with Indication of North
 - Size and Type of Fitting, Valves, Regulators and Meters
 - Size, Length and Schedule of Material for Suction and Discharge Pipes
 - Test Connection Piping and Valves
 - Pump Driver Details Including Manufacturer and Horsepower
 - Voltage for Electric Motor-Driven Pump
 - Pump Make and Model Number
 - Pump Rating (__ GPM @ __ PSI __ RPM)
 - Pump Controller Manufacturer, Type, and Rating
 - Fuel System Details for Diesel-Driven Pump
 - Flow Meter Details
 - Jockey Pump and Controller Arrangement
 - Sensing Line Details
- Fire Water Storage Tank Detail Indicates all Required Information (If Provided)
 - Suction Main Location
 - Tank Dimensions Including Depth Below Grade (If Applicable)
 - Other Sources of Water Supply with Pressure or Elevation
- Anti-Vortex Plate Indicated on As-Built Drawings and Meets Installation Requirements
 - Horizontal Steel Plate At least Twice the Diameter of the Outlet on a Long Radius Elbow Fitting
 - Minimum Distance of 6 in. (152 mm) from Bottom of Tank
- Manufacturer's Pump Curve Provided and Specific to Pump Model(s)
- Contractor's Material and Test Certificate for Fire Pump Systems Provided (NFPA 20)
- Water Storage Tank Inspection Checklist Provided (NFPA 22)
 - Information is Complete and Accurate
- Fire Pump Acceptance Test(s) Provided
 - Individual Report Provided for Multiple Fire Pumps
 - Information is Complete and Accurate

- Graphic Representation
 - Pump Performance Curve
 - Manufacturer's Pump Curve

Fire Pump Inspection & Testing

- Equipment Matches T&C Information & Documents
- Pump and Control Equipment Location
 - Meets Manufacturer's Operational Requirements (i.e. Ambient Temperature, Relative Humidity, etc.)
- System Isolation Valve Provided for Testing of Fire Pump(s)
- Fire Water Tank
 - Sized in Accordance with Hydraulic Calculation Demand for 75 Minute Duration (Per BNBC)
 - Water Level Monitoring Provided (Water-Level Gauge / Listed, Closed-Circuit Water Level Alarm)
- Pump Room
 - Adequate Ventilation Provided
 - Controls Maximum Temperature to 120°F (49°C) at Combustion Air Cleaner Inlet with Engine Running at Rated Load
 - Supplies Air for Diesel Engine Combustion
 - Removes Any Hazardous Vapors
 - Supplies and Exhausts Air as Necessary for Radiator Cooling of the Diesel Engine when Required
 - Adequate Drainage Provided
 - Pitched Floors
 - Underground Sump Tank and Automatic Sump Pump (Below Grade Pump Room)
 - Sump Pump and Sump Tank Sizing Adequate
 - Floor Drain (Above Grade Pump Room)
 - Sprinkler Protection Provided
 - Diesel Engine Pump Driver and Day Tank(s)
 - Electric Pump Driver in Building Requiring Sprinkler Protection
- Control Valves
 - OS&Y Stems Lubricated
 - Supervised Open / Closed (i.e. Tamper Switch)
- Diesel Engine Diesel Fuel Supply
 - Fuel Tank Sized Adequately
 - 1 Gallon Per HP (5.07 L Per kW)
 - Plus 5 Percent Volume for Expansion and 5 Percent Volume for Sump
 - Fuel Tank Indicates Capacity

- Fuel Level Indicator (Sight Tube) Provided
- Minimum Required Fuel Level Maintained by at Least Two Thirds
- Fuel Tank Provided with a Vent Connection
 - Normal Vent 2 in. (50 mm) NPT, or*
 - Normal Vent at Least as Large as the Largest Filling or Withdrawal Connection but not Less than 1 ¼ in. (32 mm) Nominal Inside Diameter
 - Vent Piping Arranged so that Vapors are Discharged Upward or Horizontally Away from Adjacent Walls and not Trapped by Eaves or Other Obstructions
 - Outlets Terminates Correctly
 - At Least 5 ft (1.5 m) from Building Openings
 - At Least 12 ft (3.7 m) Above the Finished Ground Level
 - Vents from Interstitial Spaces of Double-Wall Tanks not Manifolder Together with a Vent from the Primary Compartment of the Tank

**Or sized in accordance with ANSI/UL 142, Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, or other approved standards.*

- Fuel Tank Supply Pipe Connection to Engine No Lower than Level of Engine Fuel Transfer Pump
- Engine Manufacturer's Fuel Pump Static Head Pressure Limits Not Exceeded (When Fuel Level at Maximum)
- Fuel Tank Provided with Spill Containment (Wall, Curb, or Dike Sufficient to Hold Entire Capacity)*
 - *Unless the fuel tank is double walled, in which case spill containment is not required.*
- Primary Fuel Line Construction Material Adequate (Galvanized Steel / Copper Not Permitted)
- Fuel Line Construction at Engine Connection Meets ISO 15540 Requirements
 - Flame-Resistant Reinforced Flexible Hose with 30-Minute Fire Resistance Rating
 - Pressure Rating No Less than Two Times the Fuel Supply and Return Working Pressure
 - Threaded Connections Used
- Shut-Off Valve Not Provided on Fuel Return Line (Prohibited)
- Shut-Off Valve Provided on Fuel Supply Line and Locked in Open Position (Required)
- Fuel Line(s) Not Vulnerable to Accidental Damage
- Pressure Sensing Lines
 - Construction Material Acceptable (Bass / Rigid Copper Pipe Types K, L, or M / Series 300 Stainless Steel)
 - Tapping Location Between Pump's Discharge Check Valve and Discharge Isolation Valve
 - Shut-Off Valve Not Provided (Prohibited)
 - Nominal Size of Piping and Fittings 1/2 in. (15 mm)
 - Check Valves Provided as Required (Unless Water Supply is Clean – See Ground-Face Unions Below)
 - Two Bronze or Stainless Steel Check Valves
 - Located at Least 5 ft (1.52 m) Apart
 - Nominal 3/32 in. (2.4 mm) Hole Drilled in Clapper to Serve as Dampening

- Ground-Face Unions with Noncorrosive Diaphragms Drilled with Nominal 3/32 in. (2.4 mm) Orifice
 - Inspection Test Valve Assembly Consists of a Tee, Valve, Second Tee with Branch Plugged, Second Valve
- Fire Pump Controllers
 - Free of Abnormal System Conditions
 - Required Signals Monitored and Verified at the Fire Alarm Control Equipment
 - Running
 - Loss of Phase
 - Phase Reversal
 - Manual Shut-Down Provided or Automatic Shut Down Run Timer Duration Acceptable
 - Diesel Fire Pump 30 Minutes
 - Electric Fire Pump 10 Minutes
- Fire Pump Suction Piping
 - Piping Size Maintained (Within 10 Pipe Diameters Upstream of Pump Suction Flange)
 - 500 GPM 5 Inch (127 mm)
 - 750 GPM 6 Inch (152 mm)
 - 1000 GPM 8 Inch (203 mm)
 - 1250 GPM 8 Inch (203 mm)
 - Horizontal Split Case Elbow / Tee with Centerline Plane Parallel to Pump Shaft > 10 Pipe \varnothing from Suction Flange
 - Suction Pipe Suction Strainer (Y-Strainer)
 - Vertically Oriented
 - Serviceable (Cap Removable and Cleanable)
 - Strain Relief (Pump and Suction Supply are on Separate Foundations with Rigid Interconnecting Pipe)
 - Check Valves / Backflow Prevention Devices or Assemblies > 10 Pipe \varnothing from Suction Flange*

**Where a backflow preventer with butterfly control valves is installed in the suction pipe, the backflow preventer is required to be at least 50 ft (15.2 m) from the pump suction flange (as measured along the route of pipe).*
- Discharge Pipe Minimum Pipe Sizing Maintained
 - 500 GPM 5 Inch (127 mm)
 - 750 GPM 6 Inch (152 mm)
 - 1000 GPM 6 Inch (152 mm)
 - 1250 GPM 8 Inch (203 mm)
- Diesel Engine Fire Pump
 - Batteries
 - Free of Corrosion
 - Mounted on Raised Rack

- Pressure Relief Valve
 - Listed Spring-Loaded or Pilot-Operated Diaphragm Type
 - Located Between Pump and Pump Discharge Check Valve
 - Readably Accessible / Removable for Repairs Without Disturbing Piping
 - Minimum Valve / Discharge Pipe Sizing*
 - *If pipe uses more than one elbow, use the next larger pipe size.*
 - 500 GPM 3 Inch (76 mm) Valve with 5 Inch (127 mm) Discharge Pipe
 - 750 GPM 4 Inch (101 mm) Valve with 6 Inch (152 mm) Discharge Pipe
 - 1000 GPM 4 Inch (101 mm) Valve with 8 Inch (203 mm) Discharge Pipe
 - 1250 GPM 6 Inch (152 mm) Valve with 8 Inch (203 mm) Discharge Pipe
 - Provided with Means for Detecting Motion (Flow) of Water Through Valve
 - Shut-Off Valve Not Provided on Supply / Discharge Piping (Prohibited)
 - Discharge Piping to Supply Source Run Independently and Not Combined with Other Relief Valves*
 - *Relief valve discharge piping from a single fire pump returning water back to the supply source is permitted to be combined with fire pump test piping downstream of any control valve.*
 - Discharge Pipe Located Away from Pump Suction to Prevent Drafting Air into the Suction Pipe
- Electric Motor Fire Pump
 - Circulation Relief Valve
 - Sizing (0.75 Inch for Pumps with Rated Capacity Less than 2500 GPM)
 - Located on Discharge Side Before the Discharge Check Valve
 - Manual Shut-Off Valve on Piping (Prohibited)
 - Discharge to Approved Drain
 - Set to Operate Below Shutoff Pressure at Minimum Expected Suction Pressure
- Weekly No Flow Testing of Fire Pumps
 - Diesel Fire Pump Run for 30 Minutes
 - Electric Fire Pump Run for 10 Minutes
 - Documentation Maintained On-Site
- Eccentric Reducers Oriented to Avoid Air Pockets
- Pump Room Test Line
 - Throttle Valve Configuration in Accordance with Flow Meter Manufacturer's Installation Instructions
 - Discharge Pipe Located Away from Pump Suction to Prevent Drafting Air into the Suction Pipe
 - Flow Meter
 - Sizing Meets Pump Capacity Rating*
 - *Use next larger size of piping, if piping length exceeds 100 ft. (30.5 m), including equivalent lengths.*
 - 750 GPM 5 Inch (127 mm)

- 1000 GPM 6 Inch (152 mm)
 - 1250 GPM 6 Inch (152 mm)
 - Label with Latest Calibration Date (Required Annually)
- Fire Pump Suction & Discharge Piping Pressure Gauge
 - Suction (Horizontal Split-Case)
 - Dial Diameter Not Less than 89 mm with Nominal 6 mm Gauge Valve
 - Connected to Suction Pipe Near the Pump
 - Pressure Range 2x Rated Maximum Suction Pressure of Pump
 - Dial Reads inHg (mmHg) / PSI (Bar) for Suction Range
 - Discharge (Vertical Turbine / Horizontal Split-Case)
 - Dial Diameter Not Less than 89 mm with Nominal 6 mm Gauge Valve
 - Connected Near Discharge Casting
 - Dial Pressure at Least 2x Rated Working Pressure of Pump but not less than 200 PSI (13.8 Bar)
 - Dial Reads in Bar / PSI / Both
- Drip Pockets
 - Draining Properly
 - Drain Piping Hard Piped to Drain
 - Drip Rate Adequate to Keep Pump Packing Lubricated
 - In Accordance with Pump Manufacturer's Published Instructions, or
 - Approximately One Drop Per Second
- Vertical Shaft Turbine Pump
 - Suction Strainer
 - Cast or Heavy Fabricated, Corrosion-Resistant Metal Cone or Basket-Type
 - Has a Free Area of At Least 4x the Area of the Suction Connection
 - Openings Sized to Restrict the Passage of a 0.5 in. (12.7 mm) Sphere
 - Located on Suction Manifold
 - Bottom at Least ½ Pump Bowl Diameter from Bottom of Pit (Not Less than 12 in. (305 mm))
 - Automatic Air Release Valve
 - Nominal 1.5 in (38 mm) Pipe Size or Larger Valve
 - Located at Highest Point on Discharge Line Between Fire Pump and Discharge Check Valve
 - Impeller Submergence to Pump Bowl Assembly Bottom (Pump Manufacturer's Installation Instructions)
- Flow Test
 - Fire Pumps do not Exceed Maximum Operating Pressure
 - Flow Test Results in Accordance with Pump Manufacturer's Performance Curve

		Diesel Fire Pump			Electric Fire Pump		
Rated Flow	GPM	Suction (mmHg / inHg)	Discharge (PSI / Bar)	Controller (PSI / Bar)	Suction (mmHg / inHg)	Discharge (PSI / Bar)	Controller (PSI / Bar)
0%							
50%							
100%							
150%							

- Fire Pump Start Pressures Programmed Correctly

Need

- Pump Churn Pressure
- Minimum Static Supply Pressure (Typically Zero for a Fire Water Storage Tank)

Requirements

- Jockey Pump Stop (Pump Churn Pressure Plus the Minimum Static Supply Pressure)
- Jockey Pump Start (At Least 10 PSI Less than the Jockey Pump Stop Point)
- Electric Fire Pump Start (5 PSI Less than the Jockey Pump Start Point)
- Diesel Fire Pump Start (10 PSI Less than the Electric Pump Start Point)
- Fire Pump Stop (Equal to Jockey Pump Stop)

Standpipe Documentation

- Product Datasheets Provided for all Equipment
- Product Certification Certificates Provided for all Listed Equipment
- T&C Information & Documents Information is Complete, Includes all Equipment and Matches Documentation
 - Manufacturer’s Product Datasheet
 - Certification Certificates
- As-Built Drawings Indicate all Required Information
 - Floor Identification
 - Compass with Indication of North
 - Graphic Scale
 - Room Descriptions
 - Riser Locations
 - Walls and Doors
 - Pipe Type and Schedule of Wall Thickness
 - Size and Location of Standpipes, Hose Connections, Hand Hose, Nozzles, Cabinets and Related Equipment
 - Type of Fittings and Joints and Locations of all Welds and Bends
 - Type and Location of Hangers, Sleeves, Braces, and Methods of Securing Piping
 - Control Valves, Check Valves, Drain Pipes and Test Connections

- Make, Type, Model and Size of Alarm Valve
- Hose Valve Manufacturer and Model
- Type and Location of Waterflow Alarm(s)
- Size and Location of Hydrant(s) and Relation to Fire Department Connection(s)
- Size, Location, and Piping Arrangement of Fire Department Connection(s)
- Location of Hose Valves Used in Hydraulic Calculation(s)
- Hydraulic Reference Points Corresponding with Hydraulic Calculation(s)
- Contractor's Installation Certificate Provided
 - Contractor's Name and Contact Information
 - Owner's Name and Contract Information
 - Type of System Installed
 - Relevant Codes and Standards Applied to System Design
 - Date of System Commissioning
- Contractor's Material and Test Certificate for Aboveground Piping Provided (NFPA 14)
 - Information is Complete and Accurate
- Contractor's Material and Test Certificate for Underground Piping Provided (NFPA 14)
 - Information is Complete and Accurate
- Hydraulic Calculation Provided and Meets Requirements of NFPA 14
 - 500 GPM (1892.7 LPM) Flowed at Remote Riser
 - 250 GPM (946.35 LPM) at Top of Riser
 - 250 GPM (946.35 LPM) at Floor Below
 - 250 GPM (946.35 LPM) Flowed at Additional Risers
 - Maximum Flow of 1250 GPM (4731.6 LPM) for Non-Sprinklered Building
 - Maximum Flow of 1000 GPM (3785.4 LPM) for Sprinklered Building
 - Remote Hose Connection Flow Meets Minimum Pressure Requirement (Per BNBC)
 - 65 psi (4.48 bar) for Class I - 2 ½ in. (65 mm) Hose Connection
 - Hydraulic Node Layout is Legible and Corresponds with As-Built Drawings
 - Water Tank Sizing Meets Pump Demand (75 Minutes Per BNBC)
 - Fire Pump Sizing Meets Calculation Demand
 - Multiple Calculations Provided for Buildings Requiring a Standpipe System
 - Graphic Representation
 - Supply and Demand Curve Graph

Standpipe Inspection & Testing

- Testing Equipment Provided by Contractor
 - Class I - 2 ½ in. (65 mm) Hose
- Equipment Matches T&C Information & Documents
- Bottom of Standpipe Riser
 - Monitored Isolation Valve Provided
 - Drain Pipe Provided
- Fire Department Connection Provided with Check Valve
- Water Flow Monitoring Provided for Individual Building Standpipe Systems
- Class I - 2 ½ in. (65 mm) Hose Connections
 - Provided for any Building Having a Story More than 33 ft (10.1 m) Above Fire Department Access
 - Located within Exit Stairs
 - Provided at Top Landing of Exit Stairs Accessing the Rooftop
 - Provided for Accessible Rooftops (Unless Pitch Exceeds 4 in 12)
 - Provided for Horizontal Exits
 - Travel Distance Does Not Exceed 150 ft. (45.7 m) for Non-Sprinklered Building
 - Travel Distance Does Not Exceed 200 ft. (61 m) for Sprinklered Building
- Class II - 1 ½ in. (40 mm) Hose Connections
 - Provided for Non-Sprinklered Building(s) Having a Story More than 33 ft (10.1 m) Above Fire Department Access
 - Travel Distance Does Not Exceed 130 ft. (39.6 m)
- Hose Connections
 - Unnecessary Additional Control Valve(s) are Supervised
 - Plug / Cap Present
 - Readably Accessible and Positioned to Allow Pressurization of Fire Hose
- Standpipe Piping
 - Properly Supported (Per NFPA 13 Chapter 9)
 - Condition (Without Rust or Damage)
- Standpipe Riser
 - Located in Rated Enclosure
 - Top of Riser
 - Pressure Gauge with Connection Not Smaller than ¼ in. (6 mm)
 - Air Ventilation (Not Required but Recommended)
- Remote Standpipe Flow Test
 - Residual Pressure of 2 ½ in. (65 mm) Hose Connections Shall Not Exceed 175 psi (12.1 Bar)

- Residual Pressure of 1 ½ in. (40 mm) Hose Connections Shall Not Exceed 100 psi (6.9 Bar)
- Old Standpipe Equipment is Removed

Fire Suppression System Documentation Review

- Product Datasheets Provided for all Equipment
- Product Certification Certificates Provided for all Listed Equipment
- T&C Information & Documents Information is Complete, Includes all Equipment and Matches Documentation
 - Manufacturer's Product Datasheet
 - Certification Certificates
- Sample Sprinkler Nozzles
 - Provided for All Nozzle Types
 - Listed by Acceptable Certification Company
 - Matches Documentation
 - Manufacturer's Product Datasheet
 - Certification Certificate
- As-Built Drawings Indicate all Required Information
 - Floor Identification
 - Compass with Indication of North
 - Graphic Scale
 - Sprinkler Legend
 - Room Descriptions
 - Riser Locations
 - Walls and Doors (Including Small Enclosures Without Sprinkler Protection)
 - Fire Walls
 - Pipe Type and Schedule of Wall Thickness
 - Type of Fittings and Joints and Locations of all Welds and Bends
 - Type and Location of Hangers, Sleeves, Braces, and Methods of Securing Piping
 - Control Valves, Check Valves, Drain Pipes and Test Connections
 - Make, Type, Model and Size of Alarm Valve
 - Type and Location of Waterflow Alarm(s)
 - Size and Location of Standpipes, Hose Connections, Hand Hose, Nozzles, Cabinets and Related Equipment
 - Size and Location of Hydrant(s) and Relation to Fire Department Connection(s)
 - Size, Location, and Piping Arrangement of Fire Department Connection(s)
 - Hydraulic Reference Points Corresponding with Hydraulic Calculation(s)

- Overall Site Plan
- Indicated Minimum Sprinkler Spacing
 - Light Hazard: 225 ft² (20.9 m²)
 - Ordinary Hazard: 130 ft² (12.1 m²)
- Riser / Elevation Diagram Provided in As-Built Drawings
 - Vertical Elevation of Each Floor
 - All Pumps and Piping Configurations
 - Structural Member Information (If Required for Clarity and Including Ceiling Construction)
 - Ceiling / Roof Heights and Slopes Not Shown in Full Height Cross Section
- Contractor's Installation Certificate Provided
 - Contractor's Name and Contact Information
 - Owner's Name and Contract Information
 - Type of System Installed
 - Relevant Codes and Standards Applied to System Design
 - Date of System Commissioning
- Contractor's Material and Test Certificate for Aboveground Piping (NFPA 13)
 - Information is Complete and Accurate
- Contractor's Material and Test Certificate for Underground Piping (NFPA 13)
 - Information is Complete and Accurate
- Hydraulic Calculation Provided and Meets Requirements of NFPA 13
 - Minimum Pressure of Remote Sprinkler 7 PSI (0.48 Bar)
 - Verify Minimum Operating Pressure for Sprinkler Nozzle Type on Manufacturer's Product Datasheet
 - Minimum Design Density
 - Light Hazard: 0.10 GPM/ft² (4.1 mm/min)
 - Ordinary Hazard: 0.20 GPM/ft² (8.2 mm/min)
 - Sprinklers with Correct K-factors Used Throughout Design Area
 - K-5.6 (80) Densities of 0.2 GPM/ft² (8.2 mm/min) or Less
 - K-8.0 (115) Densities Between 0.2 GPM/ft² and 0.34 GPM/ft² (8.2 mm/min to 13.9 mm/min)
 - Minimum Flow
 - Light / Ordinary Hazard: Design Density x Actual Area of Sprinkler Coverage*
 - *Maximum Areas of Sprinkler Coverage:
 - Light Hazard: 225 ft² (20.9 m²)
 - Ordinary Hazard: 130 ft² (12.1 m²)
- Design Area of Water Application

- Light / Ordinary Hazard: 1500 ft² (139.4 m²)
- Hose Stream Allowance (Total Combined for Inside and Outside)
 - Light Hazard: 100 GPM (378.54 LPM)
 - Ordinary Hazard: 250 GPM (946.35 LPM)
- Total Number Sprinklers Flowed
 - Light Hazard: 1500 ft² / Actual Area of Sprinkler Coverage
 - Ordinary Hazard: 1500 ft² / Actual Area of Sprinkler Coverage
- Minimum Branch Line Length
 - Light / Ordinary Hazard: $1.2 \times \text{Sqrt} (1500 \text{ ft}^2) = 46.5 \text{ ft} (14.2 \text{ m})$
- Number of Sprinklers Flowed Per Branch Line
 - Light / Ordinary Hazard: Minimum Branch Line Length / Distance Between Sprinklers on Branch Line
- Hydraulic Node Layout is Legible and Corresponds with As-Built Drawings
- Water Tank Sizing Meets Pump Demand (75 Minutes Per BNBC)
- Fire Pump Sizing Meets Calculation Demand
- Multiple Calculations Provided (Most Remote vs. Most Demanding)
- Graphic Representation
 - Supply and Demand Curve Graph

Fire Suppression System Inspection & Testing

- Equipment Matches T&C Information & Documents
- As-Built Drawings Accurate
 - Building Architectural Layout (Walls & Doors)
 - Building Room Use Names & Stair Designations
 - Sprinkler Piping Bracing Locations
 - Sprinkler Types
 - Pipe Sizing
- Spare Sprinklers Provided for all Types Used on System
 - Under 300 Sprinklers — No Fewer than 6 Sprinklers
 - 300 to 1000 Sprinklers — No Fewer than 12 Sprinklers
 - Over 1000 Sprinklers — No Fewer than 24 Sprinklers
- Sprinkler Wrench Provided
- Sprinkler Piping
 - Properly Supported (Per NFPA 13 Chapter 9)
 - Condition (Without Rust or Damage)

- Sprinkler Riser
 - Located in Rated Enclosure
 - Air Ventilation at Top of Riser (Minimum One)
 - Floor Control Valve Assemblies Provided*
 - Floor Control Valve with Tamper Switch
 - Main Drain
 - Connection \geq 1 in. (25 mm) in Diameter
 - Pressure Gauge at Main Drain Associated with Floor Control Valve
 - Smooth Bore Corrosion-Resistant Orifice with Smallest K-Factor on Particular System
 - Drain Discharge (Outside / Drain Connection Capable of Accepting Full Flow / etc.)
 - Flow Switch
 - Retard Delay Set to 30 to 90 Seconds
 - Check Valve**
 - Pressure Gauge Above Riser Check Valve
 - Flanged Joint / Mechanical Coupling (Individual Floor / Zone Control Valves Not Provided)***

**Not required for sprinklers on the top level of a multistory building where supplied by piping on the floor below.*

***Not required where total area of all floors combined does not exceed the system protection area limitations:*

Light hazard — 52,000 ft² (4830 m²)

Ordinary hazard — 52,000 ft² (4830 m²)

****At the riser at each floor for connections to piping serving floor areas in excess of 5000 ft² (465 m²).*

- Combined Sprinkler / Standpipe Riser with 2 ½ in. (65 mm) Hose Valves*
 - Located in Rated Enclosure
 - Air Ventilation at Top of Riser (Minimum One)
 - Individual Control Valve and Check Valve Provided at Each Connection from Standpipe to Sprinkler
 - Minimum 4 in. (100 mm) Riser (Unless Hydraulic Calculations Indicate Smaller - Sprinkler / Hose Stream)
 - Riser Isolation Control Valve (Located so that Supply to Other Risers from Source of Supply is Not Interrupted)

**Building containing only light or ordinary hazard occupancies*

- Sprinkler Nozzles
 - Orientation in Accordance with Listing (Upright / Pendent)
 - Free of Paint / Caulk
 - Frame Arms Parallel to Branch Line (Upright)
 - Escutcheon Provided for Recessed, Flush-Type or Concealed Sprinklers
- Sprinkler Coverage
 - Provided for All Areas

- Underneath Fixed Obstructions Greater than 47 in. (1200 mm) Wide
- Obstructions at Least 18 in. (457 mm) from Deflectors
- Upright / Pendent Sprinkler Spacing
 - Standard Upright Deflector from Ceiling in Unobstructed Construction: 1-12 in. (25-300 mm)
 - Upright / Pendent from End Wall: 100 mm 1 in. (25 mm)
- Sidewall Sprinkler Spacing
 - Standard Sidewall Deflector from Ceiling: 1-6 in. (100-150 mm)
- Hydraulic Design Information Sign (Hydraulic Data Nameplate) Provided and Indicates Required Information
 - Location of Design Area or Areas
 - Size (Area) of or Number of Sprinklers in Design Area
 - Discharge Densities Over Design Area or Areas
 - Required Flow and Residual Pressure Demand at Base of Riser or Fire Pump
 - Occupancy Classification or Commodity Classification and Maximum Permitted Storage Height and Configuration
 - Hose Stream Allowance Included in Addition to Sprinkler Demand
 - Name of Installing Contractor