PART 1 - GENERAL

The following specification is intended for use for the design, selection of materials, and installation of fire hydrants. All fire hydrants shall meet the requirements of the Florida Department of Environmental Protection (FDEP) permit.

1.1 SCOPE

1.1.1 General:

This specification provides the requirements for supplying, installation, and testing of stand alone fire hydrants and fire hydrant assemblies for the project.

1.1.1 Work Included

The Contractor shall, unless otherwise specified, furnish all labor, materials, equipment, tools, and all other associated appurtenances necessary to do the work required under the contract to include but not limited to unloading, hauling and distributing all fire hydrant assemblies or stand alone fire hydrants and appurtenances.

The Contractor shall also remove any surfacing; as required; excavate the trenches and pits to the required dimensions; construct and maintain all required for traffic control; sheet, brace, and support the adjoining ground or structures where necessary; handle all drainage or ground water; provide barricades, guards, and warning lights; tap existing water mains, install valves, lay pipe, install fire hydrant, and pressure and bacteriological test the pipe, fittings, valves, and appurtenances; backfill and consolidate the trenches and pits; maintain all surfaces over the trench until surface restoration is completed; restore the surfaces unless otherwise stipulated; remove surplus excavated material; and clean the site of the work.

The Contractor shall also furnish all labor, materials, equipment, tools, and all other associated appurtenances required to rearrange sewers, conduits, ducts, pipes or other structures encountered in the installation of the work.

1.1.2 Location of the Work

The location of this work is as shown on the Contract Documents

1.1.3 Coordination of the Work

The Contractor shall be responsible for the satisfactory coordination of the installation of the stand alone fire hydrants and fire hydrant assemblies with other construction and activities in

the area. Delays in work resulting from lack of such harmony shall not in any way be a cause for extra compensation by any of the parties.

1.1.4 Working Hours

The work shall be carried out in accordance with local ordinance and so as not to cause any unreasonable nuisance to affected residents. Under emergency conditions, this limitation may be waived by the consent of Charlotte county Utilities (CCU).

1.2 METHOD OF MEASUREMENT & PAYMENT

The work shall be measured and the compensation determined in the following manner:

1.2.1 Fire Hydrant Assembly

a. The fire hydrant assembly shall be paid for at the contract bid price for each hydrant assembly which shall include furnishing the fire hydrant, hydrant riser pipe, foot valve assembly, hydrant gate valve with pad/valve box/cover, up to 5 feet of pipe from the hydrant fitting at the water main to the foot valve assembly, pipe jointing material, restraints, bollards (where necessary), bedding material, concrete support blocks, concrete thrust blocks, and all other appurtenances, and of delivering, handling, laying, dewatering, trenching, sheeting and backfilling, furnishing and installing flowable fill used for tunneling/deflecting pipe under and adjacent to existing storm piping/structures, testing, restoration of the surface (unless separate bid item is provided), final painting, necessary permits, and all material and work necessary to install the fire hydrant assembly complete in place at the location specified.

b. The fire hydrant assembly fitting (tee, cross, or other) at the water main shall be paid for separately at the contract bid price for fittings or as otherwise specified in the contract documents.

c. When the fire hydrant assembly is connected to an existing water main by wet tap, the tapping sleeve and all equipment, material, and work to install the tapping sleeve, tap the existing main, and test the connection shall be paid for separately at the contract bid price for wet tapping for each size specified. The tapping valve shall replace the normal hydrant valve in the fire hydrant assembly and therefore the tapping valve shall be considered part of the hydrant assembly and shall be paid for as part of the contract bid price for the hydrant assembly.

d. Any piping in excess of 5 feet installed from the hydrant fitting at the water main to the foot valve assembly shall be paid for at the contract bid price for the pipe size specified. Any fittings required for deflection of the hydrant piping between the hydrant fitting at the water main and the foot valve assembly shall be paid for separately at the contract bid price for fittings or as otherwise specified in the contract documents.

e. All restraints required for installation of the fire hydrant assembly at the location shown on the plans including restraints for any additional piping in excess of 5 feet and restraints for any additional fittings for deflection of the hydrant piping to avoid conflicts shall be considered incidental to the work and no direct compensation will be made therefore.

1.2.2 End of Line Fire Hydrant

a. The fire hydrant assembly installed at the end of a potable water main shall be considered to start at and include the hydrant gate valve and shall be paid for at the contract bid price for each end of line hydrant assembly which shall include furnishing the fire hydrant, hydrant riser pipe, foot valve assembly, hydrant gate valve with pad/valve box/cover, up to 5 feet of pipe from the hydrant gate valve at the water main to the foot valve assembly, pipe jointing material, restraints, bollards (where necessary), bedding material, concrete support blocks, concrete thrust blocks, and all other appurtenances, and of delivering, handling, laying, dewatering, trenching, sheeting and backfilling, furnishing and installing flowable fill used for tunneling/deflecting pipe under and adjacent to existing storm piping/structures, testing, restoration of the surface (unless separate bid item is provided), final painting, necessary permits, and all material and work necessary to install the end of line fire hydrant assembly complete in place at the location specified.

b. Any piping in excess of 5 feet installed from the hydrant gate valve to the foot valve assembly shall be paid for at the contract bid price for the pipe size specified. Any fittings required for deflection of the hydrant piping between the hydrant gate valve at the water main and the foot valve assembly shall be paid for separately at the contract bid price for fittings or as otherwise specified in the contract documents.

c. All restraints required for installation of the end of line fire hydrant assembly at the location shown on the plans including restraints for any additional piping in excess of 5 feet and restraints for any additional fittings for deflection of the hydrant piping to avoid conflicts shall be considered incidental to the work and no direct compensation will be made therefore.

1.2.3 Fire Hydrant Extension

a. Fire hydrant extension (as required to bring each hydrant up to the proper elevation as directed by CCU) shall be one continuous piece. Payment for all materials and labor necessary to complete this item shall be made at the bid unit price per linear foot.

1.3 REFERENCED STANDARDS (Latest Revision)

ANSI/AWWA: C-502, C-600
UL/FM
NFPA 2003, Standard for Fire Hose Connections, SPP-60, Standard 1231
AASHTO Code
ISO
FDEP: Water Distribution System Requirements
Florida Administrative Code
Ten States Recommended Standards for Water

1.4 PARTIAL LISTING OF RELATED SECTIONS

002340 - Valves
002240 - Dewatering
001760 – Surveying and Record Drawings
002930 - Grassing

002335 - Potable Water and Reclaimed Water Mains
009900 - Surface preparation painting and coating

Note: This is only a partial listing of related sections. The Contractor shall be responsible to review the entire contract documents.

1.5 SUBMITTALS

1.5.1 For only those materials that the Contractor is requesting deviations from these specifications, the Contractor shall submit in writing documentation to justify approval of these materials by Charlotte County Utilities (CCU) prior to the start of the project. The Contractor shall submit four (4) signed copies of the material submittals.

1.5.2 The contractor submittals shall include the statement that the submittals have been reviewed and the materials meet the contract specifications and/or standard details.

1.5.3 Final approval is at the discretion of CCU.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 General

The materials used in this work shall be all new and conform to the requirements for class, kind, size and material as specified below.

2.1.2 Requirements

a. This product specification covers post-type, dry-barrel fire hydrants with compression shut off (opening against pressure) or gate shutoff. All products furnished shall conform to the latest revision of the American National Standards Institute and American Water Works Association C-502 Standard (ANSI/AWWA C502) and shall be UL/FM approved.

b. Each hydrant shall be designed for a minimum working pressure of 200 psig. All parts of the hydrant shall be designed to withstand without being functionally impaired or structurally damaged a hydrostatic test of not less than 400 psig or twice the rated working pressure, whichever is greater, with the hydrant completely assembled and pressurized as follows:

1. With the nozzle caps in place, the main valve open, the hydrant inlet capped, and the test pressure applied to the interior of the hydrant.

2. With the main valve closed, the hydrant inlet capped, and the test pressure applied at the hydrant inlet.

3. The design safety factor of the operating mechanism shall not be less than 5 and shall be based on the foot-pounds of torque required for the closing and opening of the hydrant at a working pressure of 200 psig.

c. Hydrants shall be functional and capable of being opened or closed without difficulty following an application of an operating torque of 200 lb-ft at the operating nut in the opening direction with the hydrant fully closed and the closing direction with the hydrant fully opened. The torque requirements apply only to hydrants of 5-ft bury or less.

d. The fire hydrant shall have 2 hose nozzles and 1 pumper nozzle. The nominal inside diameter of the hose nozzle shall be 2 ½ inches. The nominal inside diameter for the pumper nozzle shall be 4 inches. The outlet-nozzle threads are to conform to the National Fire Protection Association (NFPA) 2003, Standard for Fire Hose Connections. The nominal diameter of the main valve opening shall be 5 ¼ inches. The hydrant shoe shall be provided with a 6 inches mechanical joint connection to fit the connecting pipe.

e. The fire hydrant shall open left (counterclockwise).

f. The fire hydrant shall have a non-rising stem. No more than one six (6) inch stem extension shall be provided if required to make the base of the fire hydrant grade level without prior written CCU approval.

g. The bonnet section shall have all bearing surfaces and stem threads sealed in a lubricant reservoir. If oil is used as a lubricant, the reservoir shall be designed to allow for easy filling through a fitting or plug. Where grease is used as a lubricant, the reservoir shall be sealed. The reservoir shall be adequately sealed with "O" rings.

h. The fire hydrant shall have a safety flange or breakaway flange at the ground line as stipulated in Section 3.1 General Design of ANSI/AWWA C-502 latest revision.

i. Parts that require lubrication and come into contact with water shall be lubricated with a non-toxic food grade lubricant that does not pose a health hazard to the public if consumed.

j. Fire hydrant nozzles shall have a cast iron weather caps with chain retainers.

k. Fire hydrants shall be painted with two (2) coats of Federal Safety yellow above the finished grade or factory coated with electrode position (e-coat) epoxy primer and catalyzed with a two part yellow polyurethane top coating. Surface preparation and field painting shall be in accordance with CCU specifications.

l. Fire hydrants shall have the manufacture’s name and the date of manufacture in raised one (1) inch letters cast into the barrel of the fire hydrant above the installed ground line.

m. All hydrant valves shall have a valve pad in accordance with the CCU valve specification requirements including the installation of the three (3) inch bronze disc with the valve size, date of installation, etc.

n. The following products are approved:

Mueller	Centurion
Kennedy	K81D
AFC	B84B
Clow	Medallion
M & H	929

PART 3 - EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

3.1.1 General

a. Hydrant water pipes shall be installed to the depth and the locations shown on the contract engineering drawings and the CCU Standard Details. Hydrants shall not be installed on water mains less than six (6) inches in diameter.

b. Four (4) each six (6) inch in diameter bollards shall be installed to protect the hydrants in high vehicle traffic areas in accordance with the engineering drawings.

3.1.2 Installation Location

3.1.2.1 Right-of-Way:

a. All hydrants shall be installed in accordance with the Charlotte County Municipal Code and as defined in the NFPA No. SPP-60. Distances shall be measured by “hose lay” along the path of vehicle travel. Hydrants shall be installed one (1) foot inside the right-of-way on lot line between two (2) properties.

3.1.2.2 Hydrant Separation:

a. Mobile home parks, mobile home subdivisions, and recreational vehicle parks: fire hydrants shall be installed such that the distance between the hydrants does not exceed 800 feet. All hydrants shall be designed to deliver a minimum flow of 500 gallons per minute at 20 pounds per square inch residual pressure for a minimum of one (1) hour.

b. Single family residences except as defined in “a” above include single-family, duplex, and triplex units: fire hydrants shall be installed such that the distance between hydrants does not exceed 800 feet. All hydrants shall be designed to deliver a minimum flow of 750 gallons per minute and at 20 pounds per square inch residual pressure for a minimum of one (1) hour.

c. Industrial, commercial, apartment areas, and other high-value areas as defined but not limited to in NAFP Standard 1231 and Annex B to Ordinance No. 85-9: fire hydrants shall be installed such that the distance between the hydrants does not exceed 600 feet. All hydrants shall be designed to deliver a minimum flow of 1250 gallons per minute at 20 pounds per square inch residual pressure for a minimum of one (1) hour.

d. Heavy manufacturing and heavy industrial areas as defined but not limited to NAFP Standard 1231: fire hydrants shall be installed such that the distance between hydrants does not exceed 600 feet. All hydrants shall be designed to deliver a minimum flow of 1250 gallons per minute and at 20 pounds per square inch residual pressure for a minimum of one (1) hour.

3.1.3 Testing

3.1.3.1 Pressure and bacteriological tests:

Pressure and bacteriological tests shall be conducted for all installations of fire hydrants as specified in standard specification 002335 - Potable Water and Reclaimed Water Mains. These tests shall be conducted as part of the water main. The hydrant valve shall remain open as part of the pressure testing.

3.1.3.2 Installation with a wet tap on an existing water main:

Pressure and bacteriological tests shall be conducted for all installations of fire hydrants as specified in standard specification 002335 - Potable Water and Reclaimed Water Mains. The hydrant gate valve shall remain open as part of the pressure testing.

3.1.4 Water Pressure Classification (If Required)

3.1.4.1 The Contractor shall request from CCU Operations a fire flow test on individual hydrants to determine the class of the hydrant and paint the tops and nozzle caps in the colors as noted below.

3.1.4.2 The hydrants shall be classified in accordance with their rated capacities at 20 psi (1.4 bar) residual pressure or other designated value and the tops, and nozzle caps shall be painted with two (2) coats of the following capacity-indicating color scheme.

Class	Color	Rated Capacity (gpm)	Rated Capacity (L/min)
AA	Light Blue	1500	5680 or greater
A	Green	1000 to 1499	3785 to 5675
B	Orange	500 to 999	1900 to 3780
C	Red	Less than 500	1900

END OF SECTION