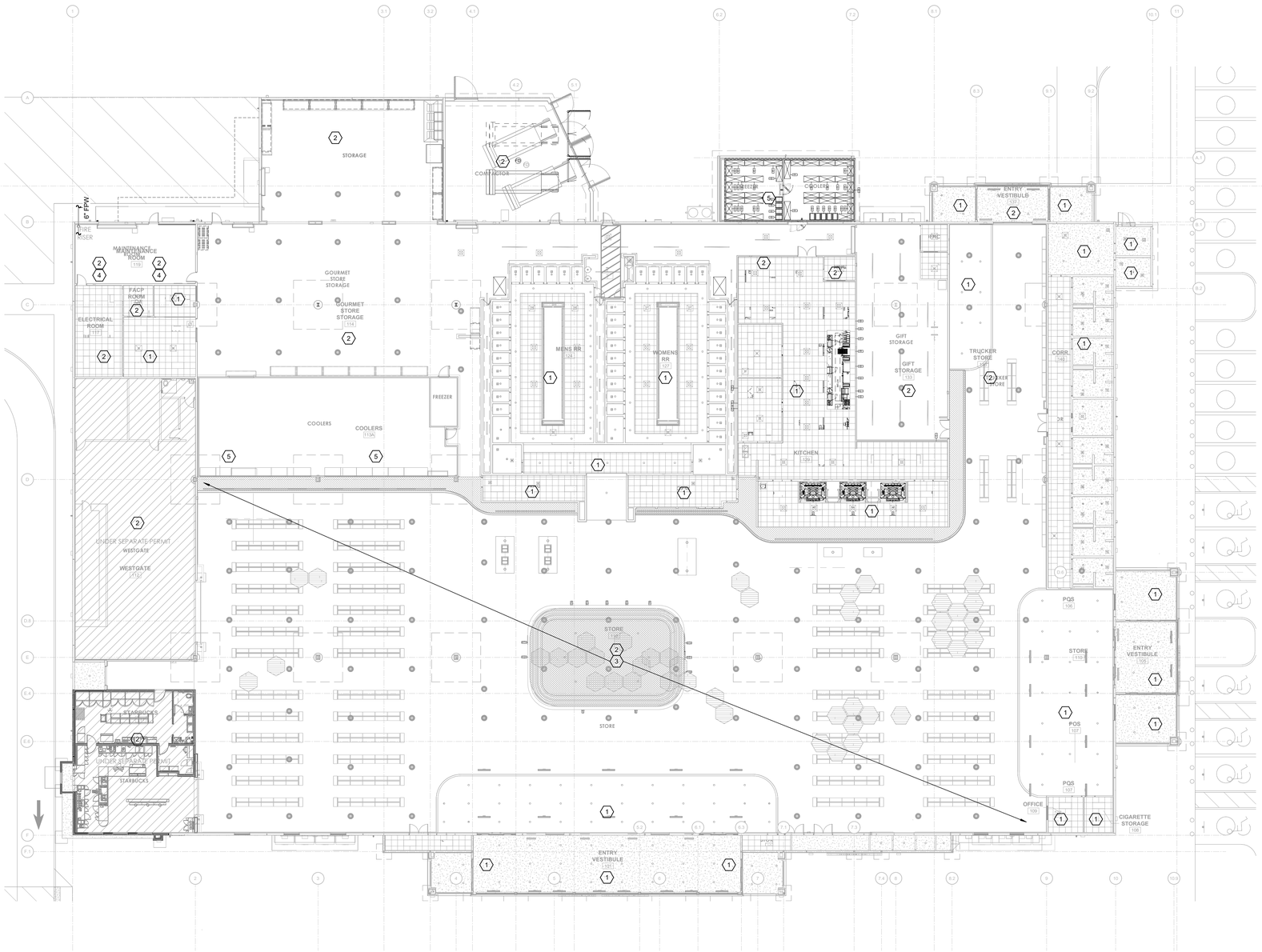

FAC 61G15-32 FIRE PROTECTION CRITERIA

61G15-32.003

(1) OVERALL DESCRIPTION
THE NEW CONSTRUCTION IS A 1-STORY FUTURE RESTAURANT / RETAIL / CONVENIENCE STORE BUILDING OF APPROXIMATELY 40,000 SQUARE FEET WITH A NEW WET PIPE FIRE SPRINKLER SYSTEM, DESIGNED PER NFPA 13, 2019 EDITION. A NEW FIRE MAIN WILL TAP INTO A NEW 6 INCH MAIN. THE FIRE LINE SHALL RUN UNDERGROUND TO THE FIRE RISER. THE BUILDING IS LOCATED IN LAKE CITY, FL.

(2) ACCEPTANCE TESTING
THE FIRE SPRINKLER ACCEPTANCE TESTING SHALL BE PROVIDED PER NFPA 13, 2019 EDITION.

(3) OCCUPANCY CLASSIFICATION
THE BUILDING IS A 1-STORY MIXED USE BUILDING AND IS NEW CONSTRUCTION. THE BUILDING SHALL INCLUDE TWO SHELLED RESTAURANTS, LARGE RESTROOMS, SALES AREA, CONVENIECE STORE AND A LARGE STORAGE AREA. THE BUILDING SHALL HAVE AN ORDANARY HAZARD GROUP 1 CLASSIFICATION.

(4) PREPARATION OF DOCUMENTS
THE SPRINKLER SYSTEM FOR THE BUILDING WILL BE A WET PIPE SYSTEM, DESIGNED PER NFPA 13, 2019 EDITION, FOR ORDINARY HAZARD GROUP 1. THE SYSTEM WILL INCLUDE USING STEEL, SCHEDULE 40 PIPING IN THE SPACE TO UPRIGHT HEADS LOCATED IN THE BUILDING. ANY EXPOSED PIPING WILL BE STEEL, SCHEDULE 40. SPRINKLERS WILL BE 'QUICK RESPONSE' TYPE.

(5) STRUCTURAL SUPPORT
STRUCTURAL SUPPORT AND STRUCTURAL OPENINGS FOR THE FIRE PROTECTION SYSTEM INCLUDING LIVE AND DEAD LOADS HAVE BEEN COORDINATED WITH THE STRUCTURAL ENGINEER. STEEL SLEEVES WILL BE SET PRIOR TO CONCRETE PLACEMENT TO PROVIDE FOR PENETRATIONS OF FIRE PROTECTION PIPING THROUGH THE FLOORS OR ROOF STRUCTURE. CORE DRILLING WILL BE ALLOWED FOR CMU WALL PENETRATIONS FOR FIRE PROTECTION PIPING AS MAY BE REQUIRED. ALL PENETRATIONS WILL BE PROPERLY FIRE-CAULKED, AS REQUIRED.

61G15-32.004

2(a) POINT OF SERVICE
POINT OF SERVICE IS A 8" FIRE MAIN LOCATED APPROXIMATELY 70 FT. FROM THE PROPOSED SPRINKLER RISER. A 6" FIRE LINE SHALL BE EXTENDED TO SERVE THE NEW HYDRANT AND A 6" MAIN SHALL BE EXTENDED TO SERVE THE SPRINKLER SYSTEM FOR THE BUILDING.

2(b) GOVERNING STANDARDS
SYSTEM DESIGN AND INSTALLATION SHALL COMPLY WITH 2019 EDITION OF NFPA 16 AND THE 2019 EDITION OF NFPA 25 AS WELL AS THE 2020 FLORIDA BUILDING CODE AND THE 7TH EDITION FLORIDA FIRE PREVENTION CODE.

2(c) OCCUPANCY CLASSIFICATIONS
THIS BUILDING IS A 1-STORY MIXED USE BUILDING AND IS NEW CONSTRUCTION. THE BUILDING SHALL HAVE AN ORDINARY GROUP 1 HAZARD OCCUPANCY.

2(d) DESIGN APPROACH
THE SYSTEM SHALL BE A HYDRAULICALLY CALCULATED FULLY AUTOMATIC, WET SYSTEM INSTALLED THROUGHOUT THE ENTIRE BUILDING. LIGHT HAZARD OCCUPANCY AREAS OF THE BUILDING SHALL BE DESIGNED FOR 0.10 GPM/SF OVER THE MOST DEMANDING 900 SQUARE FEET USING 155ºF (K=5.6) 'QUICK-RESPONSE' HEADS (COVERAGE AREA REDUCTION BASED ON 10 FEET CEILING HEIGHTS PER NFPA 13, 2019, FIGURE 11.2.3.2.3.1) WITH A MAXIMUM COVERAGE AREA OF 225 SF PER HEAD AND MAXIMUM HEAD SPACING OF 15 FEET.

ORDINARY HAZARD (GROUP 1) OCCUPANCY AREAS OF THE BUILDING SHALL BE DESIGNED FOR 0.15 GPM/SF OVER THE MOST DEMANDING 1500 SQUARE FEET USING 155ºF (K=5.6) 'QUICK-RESPONSE' HEADS WITH A MAXIMUM COVERAGE AREA OF 130 SF PER HEAD AND MAXIMUM HEAD SPACING OF 15 FEET.

2(e) WATER SUPPLY CHARACTERISTICS
THE WATER SUPPLY IS FROM A 30" WATER MAIN. THE MAIN IS 70 FEET AWAY FROM THE RISER. A 6" PRIVATE FIRE LINE TO SERVE THE SPRINKLER SYSTEM. THE DURATION OF THE SUPPLY WILL BE ADEQUATE FOR THIS APPLICATION.

2(f) FLOW TEST INFORMATION
STATIC PRESSURE: 72 PSI
RESIDUAL PRESSURE: 38 PSI
PITOT TUBE AVERAGE PRESSURE: 32 PSIG
FLOWRATE AT TEST: 1,194 GPM
FLOWRATE AT 20 PSI: 1,266 GPM
TEST CONDUCTED AT ON 03/19/2022 BY INSPECTOR 1308
FLOW TEST WAS CONDUCTED ON HYDRANT 61A3-1 AT WEBBS GLEN AND US HIGHWAY 441.
PRESSURE WAS MEASURED ON HYDRANT 61A3-2 AT WEBBS GLEN AND US HIGHWAY 441.

2(g) VALVING AND ALARM REQUIREMENTS
INSTALL FLOW SWITCH IN FIRE RISER AND PUT TAMPER SWITCH ON CONTROL VALVE IN RISER WITH LOCAL AUDIBLE ALARM AND CENTRAL STATION MONITORING - ISOLATION VALVES ON BACKFLOW PREVENTER OUTSIDE SHALL BE CHAINED AND LOCKED OPEN.

2(h) MIC RISK EVALUATION
THERE IS A MINIMAL RISK OF MIC IN THE WATER SUPPLY FOR THIS LOCATION ACCORDING TO THE LAKE CITY FIRE PLAN REVIEW OFFICE AND JEA LOCAL UTILITY COMPANY.

2(i) BACKFLOW PREVENTION DETAILS
8" DOUBLE CHECK DETECTOR ASSEMBLY BACKFLOW PREVENTER MEETING CODE REQUIREMENTS SHALL BE INSTALLED. MAXIMUM PRESSURE DROP ACROSS BACKFLW PREVENTER TO BE 10 PSI.

2(j) COMPONENT SPECIFICATIONS
ALL INSIDE AND UNDERGROUND PIPING, VALVES, SWITCHES, AND OTHER COMPONENTS TO BE UL AND FM LISTED MATERIALS FOR FIRE PROTECTION. ALL UNDERGROUND PIPING SHALL BE INSTALLED BY A STATE (FS635.521) CERTIFIED CONTRACTOR, WHO SHALL BE RESPONSIBLE FOR PIPING OUTSIDE OF THE BUILDING UP TO ONE FOOT ABOVE FINISHED FLOOR INSIDE THE BUILDING.

PRELIMINARY HYDRAULIC ANALYSIS WORKSHEET

LIGHT HAZARD

1. FLOW REQUIREMENTS:

   A. DENSITY x DESIGN AREA x BALANCING FACTOR
   DENSITY = 0.10 GPM/SF
   DESIGN AREA = 900 SF (40% AREA REDUCTION FOR USE WITH QRS HEADS)
   BALANCING FACTOR = 1.3
   (0.1 GPM/SF) x (900 SF) x (1.3)
   = 117 GPM

   B. OUTSIDE HOSE STREAM DEMAND
   = 100 GPM

   TOTAL FLOW DEMAND = A + B = 117 GPM + 100 GPM = 217 GPM

2. FLOW PRESSURE REQUIREMENTS

   A. END SPRINKLER PRESSURE
   $Q = k\sqrt{P}$
   $Q^2 = k^2P$
   $P = Q^2 / k^2$
   $P = (Q/k)^2$
   Q = DESIGN DENSITY x COVERAGE AREA PER SPRINKLER
   Q = 0.10 GPM/SF x 225 SF = 22.5 GPM
   k = 5.6
   $P = (22.5/5.6)^2$ = 16.1 PSI

   B. ELEVATION LOSS
   HEIGHT x 0.433
   10 x 0.433 = *4.33 PSI*

   C. OUTSIDE FRICTION LOSS (INCLUDING DDCV BACKFLOW PREVENTOR) = 20 PSI

   D. INSIDE FRICTION LOSS = 20 PSI

   TOTAL PRESSURE = A + B + C + D
   = 16.1 + *4.33* + 20 + 20 = *60.4 PSI*

PRELIMINARY HYDRAULIC ANALYSIS WORKSHEET

ORDINARY HAZARD (GROUP 1)

1. FLOW REQUIREMENTS:

   A. DENSITY x DESIGN AREA x BALANCING FACTOR
   DENSITY = 0.15 GPM/SF
   DESIGN AREA = 900 SF (40% AREA REDUCTION FOR USE WITH QRS HEADS)
   BALANCING FACTOR = 1.3
   (0.15 GPM/SF) x (900 SF) x (1.3)
   = 175.5 GPM

   B. OUTSIDE HOSE STREAM DEMAND
   = 250 GPM

   TOTAL FLOW DEMAND = A + B = 175.5 GPM + 200 GPM = 425.5 GPM

2. FLOW PRESSURE REQUIREMENTS

   A. END SPRINKLER PRESSURE
   $Q = k\sqrt{P}$
   $Q^2 = k^2P$
   $P = Q^2 / k^2$
   $P = (Q/k)^2$
   Q = DESIGN DENSITY x COVERAGE AREA PER SPRINKLER
   Q = 0.15 GPM/SF x 130 SF = 19.5 GPM
   k = 5.6
   $P = (19.5/5.6)^2$ = 12.1 PSI

   B. ELEVATION LOSS
   HEIGHT x 0.433
   10 x 0.433 = 4.33 PSI

   C. OUTSIDE FRICTION LOSS (INCLUDING DDCV BACKFLOW PREVENTOR) = 20 PSI

   D. INSIDE FRICTION LOSS = 20 PSI

   TOTAL PRESSURE = A + B + C + D
   = 12.1 + *4.33* + 20 + 20 = *56.4 PSI*

1 / FP0.1 — # KEYED NOTES:

1. PROVIDE SEMI-RECESSED PENDANT TYPE SPRINKLER HEADS IN ALL AREAS WITH HARD OR LAY IN CEILINGS.
2. PROVIDE UPRIGHT PENDANT TYPE SPRINKLER HEADS IN ALL AREAS EXPOSED TO STRUCTURE.
3. PROVIDE SPINKLER HEADS ABOVE AND BELOW CLOUD CEILINGS.
4. AVOID RUNNING PIPING OVER DATA/ELECTRICAL EQUIPMENT IF POSSIBLE. PROVIDE REQUIRED CLEARANCES DEFINED BY NEC WHERE PIPING MUST BE INSTALLED OVER DATA/ELECTRICAL EQUIPMENT.
5. PROVIDE DRY PENDANT HEADS IN COOLER AND FREEZERS.

OVERALL FIRE PROTECTION PLAN

SCALE: 1/16" = 1'-0"

NOT FOR CONSTRUCTION

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This item has been digitally signed and sealed by Thomas J. Fugard, PE on the date adjacent to the seal.
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BUSY BEE ELLISVILLE

136 SW WEBBS GLN
LAKE CITY, FL 32024

PROJECT NO.:	22024
DATE:	04/10/2025
PRIOR ISSUES:	

DESIGN CRITERIA

FP0.1

DRAWN BY:	DD
CHECKED BY:	TF

DESIGN DEVELOPMENT