Town of Holly Springs Development Services
Special Study/FFA
Hydraulic/FFA Submittal Requirements

Submittal requirements are separated into 2 groups.
Section A: Proposed development extending water mains.
Section B: Proposed development only constructing a water main to service a single site.

All required Special Studies must be submitted to Development Services under "*Development Review & Special Study Submittals*" with the first submittal of the Development Petition for the project, or the submittal will be rejected from the review cycle.

All of the following must be included for a complete submittal:

1. **Special Studies & Reports Application (form 8037)**
2. **Fee Schedule (form 7019)**
3. **One digital copy of signed and sealed reports**
4. **Electronic copy of EPANET (.inp) water model**
5. **Fee per approved fee schedule**

Please be aware that the fee for the third party review of this document will be billed after each review. Please return the payment as soon as possible to prevent delay in your project later in the process.

SECTION A: Proposed development that is extending a water main to provide fire protection.

- Submit Town's Approved water infrastructure map and indicate where development will occur and where proposed piping will connect to Town's existing pipes
- Demonstrate how total demand was determined and explain how demand is distributed in the model
- Conduct a fire flow test in accordance with Chapter 6 of AWWA M-17. Reference includes guidance on Planning, Field Procedures, and Determining Available Flow.
- Submit fire flow test results that include the following:
  - Map showing location of residual hydrant and flow hydrant
  - Flow hydrant port size and number of ports used during test
  - Flow hydrant discharge pressure (psi) and resulting flow rate (gpm)
  - Residual hydrant elevation (ft. above msl)
  - Static pressure at residual hydrant (psi)
  - Residual pressure at residual hydrant (psi)
  - Time of day test completed
  - Nearest elevated tank level
- If a pump curve is used to simulate system supply based on fire flow test results, submit calculations used to develop model's pump curve (minimum 3 point curve)
- Perform a pipe network analysis using a pipe network program, and submit the model as an EPANET file (.inp file)

- Pipe network should have a North Carolina State Plane coordinate system (NAD_1983_StatePlane_North_Carolina_FIPS_3200_Feet). When the model is imported into GIS, it should be located spatially in the correct location and should be properly scaled.
- Submit model output data that should at minimum include the following:
    - Node data (hydrant nodes should be identified as such)
        - Node ID
        - Demand (gym)
        - Elevation (ft. above msl)
        - Needed fire flow (gpm)
        - Available fire flow at residual pressure of 25 psi (gpm)
        - Total flow available (gpm)
        - Static pressure (psi)
        - Residual pressure (psi)
    - Pipe data
        - Pipe ID
        - Diameter (inch)
        - Material
        - Length (ft)
        - Hazen Williams Roughness Coefficient
        - Minor loss coefficient
        - Head loss (ft)
        - Flow (gpm)
        - Velocity (ft/s)
    - Pump Data
        - Pump ID
        - Elevation (ft above msl)
        - Shutoff head (ft)
        - Design Head (ft)
        - Design Discharge (gpm)
        - Maximum operating discharge rate and corresponding head
        - Modeled discharge rate (gpm)
        - Modeled pump head (ft)

SECTION B: Proposed building that will receive fire flow protection from an existing waterline

- Submit Town's Approved water infrastructure map and indicate site location
- Conduct a fire flow test in accordance with Chapter 6 of AWWA M-17. Reference includes guidance on Planning, Field Procedures, and Determining Available Flow.
- Submit fire flow test results that include the following:
    - Map showing location of residual hydrant and flow hydrant
    - Flow hydrant port size and number of ports used during test
    - Flow hydrant discharge pressure (psi) and resulting flow rate (gpm)
    - Residual hydrant elevation (above msl)
    - Static pressure at residual hydrant (psi)
    - Residual pressure at residual hydrant (psi)
    - Time of day test completed
    - Nearest elevated tank level

- Submit required fire flow for site with supporting documentation substantiating required fire flow
- Submit calculations that indicate the available fire flow at a residual pressure of 25 psi and indicate if this meets the required available flow for the site.
- Submit the peak hour demand of site (gpm)
- Account for sprinkler demand.

To request copies of FFA's for approved projects, please submit a request to shirlena.white@Hollyspringsnc.us .

The applicant's engineer is responsible for performing the fire flow test however please coordinate with Mark Harris (919-524-4725) or mark.harris@Hollyspringsnc.us with Development Services to schedule when it will occur and ensure a staff member can be present.