

March 6, 2023

Adam Fletcher
Director of Community Development
City of Harrisonburg
409 South Main Street
Harrisonburg, VA 22801


Mr. Fletcher,

We are planning to develop 2 properties in Rockingham County bordering the north side of Harrisonburg. One of the properties would be the residue of a lot we plan to split in two. The owners of the parcel we sell also plan to develop their lot. These properties are along Friendship Drive and near Friendship Industries and do not have access to Rockingham County water and sewer. We are seeking water and sewer service from Harrisonburg City for this development.

These properties have Harrisonburg City water and sewer rights allocated to them per a plat that was made when a larger parcel was subdivided. We plan to proportion the existing allocations for the two properties among the proposed total of 3 properties to support the actual development that we foresee occurring on these properties. We have discussed with Public Utilities the options for the actual construction of water and sewer infrastructure and they have approved a preliminary engineering report for the purpose of obtaining the subdivision of the one lot. We have also discussed with Friendship Industries the impacts on their water supply and operations (during construction) and they are open to the development and water and sewer infrastructure changes.

See the attached PER report and site layouts for more details regarding the properties and plan.

Thank you and staff for your consideration.



Rudolfo "Rudy" Pineda
Friendship Properties Partners
3020A John Wayland Highway
Dayton, VA 22821

**APPLICATION FOR PUBLIC UTILITIES
FROM CITY OF HARRISONBURG, VIRGINIA
TO FACILITIES LOCATED IN ROCKINGHAM COUNTY**

I. GENERAL INFORMATION

(By Applicant)

Name of Applicant: Friendship Properties Partners
 Address of Applicant: 3020A John Wayland Highway Dayton, VA 22821
 Telephone of Applicant: 540-214-6477
 Service Location ID: TM 94-A-88 & 94-A-88B LOT(s) 4 & 5 Parcel
 Service Location Address: TBD Friendship Drive
 Type of Utility Requested: Water Sewer
 Type of Utility Use: Residential Commercial Industrial Institutional
 Agriculture Other: _____
 Rockingham County Approval: Attachment

II. UTILITY INFORMATION

(By Applicant)

A. Average Daily Usage:
(25.22) Equivalent Residential Connections * 260 *gpd* / E.R.C. = 6558 *gpd*
 Other Calculations: _____

 Specific Data (describe): 6558 gpd is existing allocation for 2 properties based on deed. Lot 4 will be subdivided to create 2 lots. Existing allocation will be reassigned to the 3 lots.

B. Peak Daily Usage
 AWWA Fixture Units is Equivalent to N/A *gpm*
 Average Daily Demand * Peak Factor of _____ = 19.85 *gpm*
 Specific Data describe): Existing allocation = Average Daily Demand = 6558 gpd = 4.56 gpm
 Peaking factor varies by property allocation (4.33, 4.38, 4.44), total
 Peak Hourly = 19.85 gpm (calculation per Harrisonburg DSCM 4.3.41)

C. Fire Flow Demand
 Requirement 1250 *gpm*
 Describe needs assessment: 1250 gpm is highest demand of the three properties (others are 750 gpm each; all are based on conceptual plans)

III. UTILITY ASSESSMENT COMMENTS

(By Director)

A. System Zone for Water

Zone ID: _____

Zone Transfer & Storage Issues for Daily Demand: _____

Site Specific Delivery and Pressure Issues for

Peak Demand: _____

Fire Flow Demand: _____

Other Issues: _____

B. System for Sanitary Sewer

Collection System Comments: _____

Interceptor System Comments: _____

Treatment System Comments: _____

Note: Comments may include the need for engineering evaluations that shall be completed prior to final evaluation of this application.

IV. RECOMMENDATION

Recommendation for Approval

Recommendation for Approval Subject to the Applicant Completing the following:

Forward to Planning Commission

Forward to City Council

Signature of Applicant

02-21-2023
Date

Signature of Director of Public Utilities

3.2.2023
Date

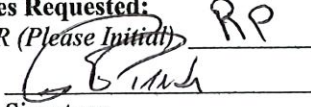
**Request for Review of Availability for Water and/or Sewer
To Land Located in Rockingham County**

City of Harrisonburg Code of Ordinances Section 7-2-4 requires that Rockingham County (the County) acknowledge that an Applicant (as defined in such ordinance) has requested public utility service from the City of Harrisonburg (the City) for property located in the County. By signatures of the Applicant, and authorized representatives of the City and the County, the City will begin to evaluate the City's ability to provide the requested services.

APPLICANT

The signature of the Applicant is an official request to obtain City utility services and acknowledgement that Applicant has reviewed the conditions of City Code of Ordinance Section 7-2-4 (see Page 2), including the requirement to submit certain documents incidental to this application.

Services Requested:

WATER (Please Initial) RP

 Signature

SEWER (Please Initial) RP
02-21-23
 Date

CITY OF HARRISONBURG


The signature of the City's Director of Public Utilities acknowledges the Applicant's request for utility services from the City. The signature does not constitute approval of services, but the City's intent to review the request and evaluate the City's ability to provide the requested services. The City will provide to the County a statement regarding the availability of requested services and the City's intent to provide such services subject to approval by the County.

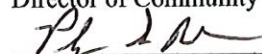

 Director of Public Utilities

3.2.2023
 Date

COUNTY OF ROCKINGHAM

The signatures of the County Officials below acknowledge the Applicant's intent to use utility services of the City instead of the County. These signatures shall not imply approval by the County of the provision of said services by the City. Final approval is contingent upon the Board of Supervisors' consent pursuant to Virginia Code, Section 15.2-2143. This acknowledgement in no way implies or constitutes approval of any rezoning, special use permit or any other land use related request that requires Board or administrative approval.


 Director of Community Development


 Director of Public Works

2.22.23
 Date

2.22.2023
 Date

Comments: _____

APPLICATION FOR PUBLIC UTILITIES FROM CITY OF HARRISONBURG, VA
TO FACILITIES LOCATED IN ROCKINGHAM COUNTY
AUTHORIZATION OF REVIEW

City Code of Ordinance Section 7-2-4(e) states, "The Director may charge a reasonable fee to cover time and expenses of processing the application". The following policy shall be used to distribute the expenses incurred by the Department of Public Utilities.

1. **Initial Review:** There shall be no charge to execute the "Application and Acknowledgement" form used to initiate the review process by City and County officials. There shall be no charge to provide the first response to the "Application for Public Utilities From City of Harrisonburg, Virginia to Facilities Located in Rockingham County: Code of Ordinance 7-2-4". It should be recognized that the first response may be a letter of recommendation for approval or disapproval, or, it may provide stipulations for additional information or engineering evaluation.

2. **Continued Review:** Under circumstances progressing beyond the initial review, the Department shall invoice the applicant for specific cost as incurred. Upon request, the Department may provide a non-binding estimate for the applicant to consider. The costs shall include, but are not limited to: processing, consulting and support as applied directly to the management of the application.

"Processing costs" - shall only include the time of the "application officer" to handle, coordinate, evaluate, review and manage the process until the application has been closed; unit billing rate shall be \$28.55/hour.

"Consulting costs" - shall refer to contracted, or in-house, hydraulic modeling performed to evaluate the water or sewer system impact. Contracted cost shall be forwarded at invoice costs. In house engineering rate shall be at \$34.55/hour.

"Support costs" - shall refer to the collection of information by field technicians billed at the rate accepted to # person crew used.

I hereby acknowledge that I may be charged according to the above policy.

Friend Property Partners
Name

02-21-23
Date

3020A John Weyland Hwy
P.O. Box; Street #

Dayton, VA, 22821
City, State, Zip



CITY OF HARRISONBURG
PUBLIC
UTILITIES

2155 BEERY ROAD, HARRISONBURG, VA 22801

OFFICE (540) 434-9959 • FAX (540) 434-9769

Heatwole Subdivision
(Lots 4, 4A and 5)
Water & Sanitary Sewer Evaluation:
March 09, 2023

Executive Summary

Whereas Rockingham County and the Harrisonburg City entered an agreement in 1996 for the City to supply water and sewer service to the Heatwole Subdivision, Harrisonburg Public Utilities recommends moving forward subject to the following:

- 1) Water and sewer rates applied to customers of the subdivision shall be exempted from Item E of the City – County Water Agreement 2006, either by specific reference or preferably by a holistic general revision to the City – County Water Agreement.
- 2) Developer impact fees, or supplemental water and sewer availability fees for the subdivision owners, shall be enacted to fund the proportional share of future capital investments that will be required for developing new drought water sources.

General Criteria:

It is prudent to ask why Harrisonburg should commit its water and sewer resources to develop a customer market that is external to its owner stakeholders. This inquiry is addressed below in the format of four perspectives as set forth by AWWA.

a) Revenue (to assist with \$98M of HPU water and sewer assets retiring in the next 20 years):

Water Fees 3 commercial connections @ \$2,500 per each = \$7,500

*Water Sales: 3 @ \$16.98 per month = \$611 annually

Sewer Fees 3 commercial connections @ \$4,500 per each = \$13,500

*Sewer Sales: 3 @ \$25.74 = \$927 annually

b) City Customer Discounts:

AWWA recommends that the rates to customers that are external to the owner stakeholders shall be established per “Utility Basis” methodology that recovers O&M expenses, transfer & tax expenses, depreciation of assets and a reasonable Rate of Return (ROI). ROI is like profit and can be applied to provide the owner customers a discounted rate.

Historically, past Harrisonburg practices in providing services to external County customers at near double rates (rural rates) has provided Harrisonburg customers with the discounted water rates that are in effect today. The subdivision is a potential customer to continue this benefit; however, the following inclusion to the City – County water agreement threatens this advantage:

- E. The City has further agreed that, as the amount of revenue received from the County from the water purchased from the City for resale in the County increases, the City will reduce the double rate currently charged to the residential and business customers in the County that it serves in such a manner so as to remain revenue neutral to the City. Such rate will be decreased over time until the rate charged to all water customers in the County served by the City, including the rate charged to the County shall be equal to that charged to City customers.

HPU recommends that the subdivision shall be exempted from Item E of the City - County Water Agreement 2006, either by specific reference or preferably by a holistic general revision to the Agreement.

c) Economies of Scale:

AWWA cites economies of scale for operations expenses as a reason for a municipal utility to provide service to external customers. At full development, the subdivision would add 6,558 gpd to a potential 12.9 MGD demand.

HPU considers the development to be rather insignificant in gaining overall economies of scale; however,

- The subdivision would require connection to the City's Park View Zone (PVZ) due to the elevation of the site. This connection would use capacity from a large number of system assets because of the travel through two pressure zones between the City's water treatment plant and the site. Due to the low demand, the capacity impact is minimal.
- The location of the subdivision would be provided sewer service through the City's North Interceptor. The City is engaged in a study of this and other interceptors through the City to identify available capacities. The low demand of this development will have minimal impact to the interceptor.

d) Economic, Social and environmental benefits or disadvantages:

AWWA cites, as a benefit to delivering service to external customers, the ability to influence the relationship that it has with the non-owner customers (example: type of housing).

HPU has no opinion to this matter; however, this topic can be considered as the application request further advances through the review process.

Water and Sewer Technical Review:

Criteria #1: Analysis of raw water supply & treatment capacities

In reference to pages 19 and 20 of the FY2019 Raw Water Supply Management Plan, Harrisonburg capacities are as follows

- Water Treatment: 15.0 MGD; reliable Water Supply: 10.4 MGD

Under forecasted circumstances, Harrisonburg has available treatment capacity for 1.1 MGD external sales but will simultaneously incur the need for an additional 4.6 MGD of reliable raw water supply during drought. The current planning agenda is to support growth to the limits of the WTP and to accept drought water supply needs into the City's future capital needs.

HPU recognizes the subdivision to be an acceptable customer for the City's current treatment and raw water planning agenda; fee structures (developer fees or customer availability fees) applied to the development can be developed to offset proportional costs for impacts upon future capital needs to fund raw water supplies.

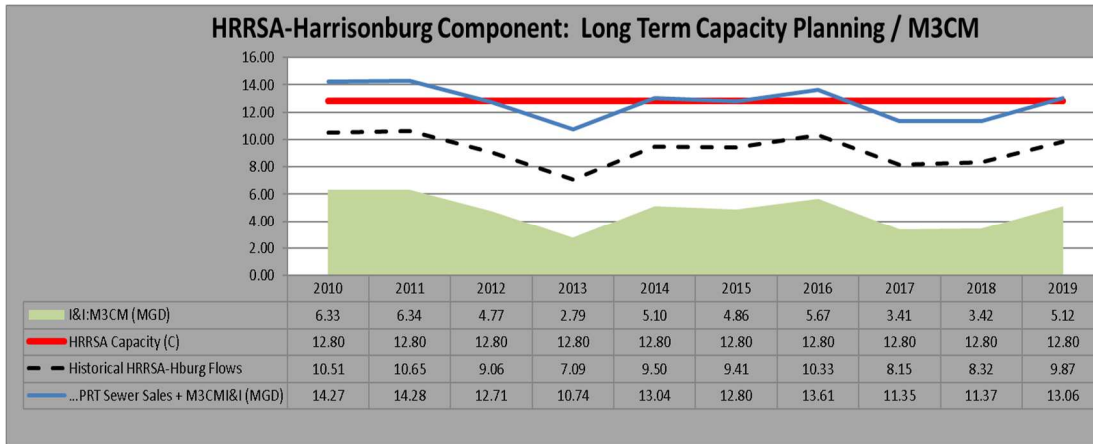
Criteria #2: Analysis of water system distribution

HPU engineering team in coordination with Colman Engineering has identified what appears to be a suitable connection to provide adequate fire and domestic flows by connecting to the City's Park View Zone (PVZ). Detailed calculations will be provided by the applicant during site design.

HPU recommends approval to serve the subdivision upon submittal of detailed engineering calculations with the site development plan.

Criteria #3: Analysis of sewer treatment capacity

The following is recaptured from page 19 of the City's Sanitary Sewer Management Plan (SSMP) FY2019. The figure shows that Harrisonburg is facing major infiltration & inflow abatement such to make its capacity at HRRSA adequate for future city internal sales. Adding the subdivision adds 6,558 gpd abatement to the task.



In summary, there appears concern for adequate Harrisonburg treatment capacity in HRRSA for the subdivision. Reserving the HRRSA capacity for I&I, however, is not a desirable business plan.

If the development successfully meets other water and sewer criteria, HPU suggests that it will be willing to support providing sewer service and to take on the added I&I abatement or to purchase future capacity at HRRSA if this latter opportunity arises.

Criteria #4: Analysis of sewer and interceptor collection systems

a) Impact upon the City's North Interceptor:

HPU is engaged in a study of the available capacity in its interceptors, and the results of this study are not yet available. The proposed development requests a connection in the northern extreme of the City. The impact of this location is that the flow will be transferred through the entire length of the City to the Harrisonburg Rockingham Regional Sewer Authority (HRRSA) interceptors in the south of the City. Due to the low flow of the proposed development, it is anticipated that the additional flows will have a negligible impact to the conveyance system.

HPU recognizes the small impact of the proposed development and accepts the allocation within the existing conveyance system.

PRELIMINARY ENGINEERING REPORT

Water and Sanitary Sewer Main Extensions
City of Harrisonburg, Virginia

Name of Proposed Project:

Friendship Properties Partners

Owner's Information:

Rodriguez Pineda & Javier Rodolfo
3020A John Wayland Highway
Dayton, VA 22821

Prepared by:

Deron Weaver

Date of Submittal: 1/20/2023

Reviewed by:

Gil Colman, PE

Revised:



Colman Engineering, PLC
P.O. Box 1764
Harrisonburg, VA 22803
Phone: 540.246.3712

A. INTRODUCTION

The owner is planning to subdivide a property (creating Lot 4A), develop the residue (Lot 4) and prepare for development of an adjacent lot (Lot 5). Lot 4A is expected to be occupied by a trucking business operation, Lot 4 by rental buildings for a variety of light industrial uses, and Lot 5 by an event center. The properties are along the north side of Friendship Drive in Rockingham County just outside the Harrisonburg City limit. The project seeks to use City water and sewer services, which are already allocated for the properties but need to be redistributed.

For planning purposes, the existing allocations and proposed developments are as follows:

| Lot | Use | Size | People | Existing Allocation (gpd) |
|---------------|-------------------------------|--|---------------------------|---------------------------|
| LOT 4A | Truck Parking & Shop | 12,000 sf | 20 | 3190 |
| LOT 4 | Various Light Industrial Uses | (3) 12,000 sf buildings; (5) 2,400 sf units ea | 75 (15 units, 5/unit) | |
| LOT 5 | Event Center | 10,800 sf | 400 guests + 10 employees | 3368 |
| TOTAL: | | | | 6558 |

See a conceptual layout in Appendix A, sheet 1. The event center building will most likely be sprinkled. The nearest fire hydrants, located in and on the edge of the parking lot of the nearby Friendship Industries facility at 801 Friendship Drive are 57E and 57F. No hydrant flow tests were performed for this report because discussion with Public Utilities indicates that the line serving these hydrants/Friendship Industries would not have adequate supply. The purpose of this report is to show what water and sewer modifications would be required to supply the projected demand based on discussion with Public Utilities indicating what connection locations would be suitable.

Water and sewer main extensions are proposed. An 8" water line with 3 hydrants would be installed on the north side of Friendship Drive, fronting the proposed developments. There are two options for supplying adequate pressure and flow to this line. Water line option A (see Appendix A, sheet 2) would bypass an existing pressure reducing vault to supply the existing water main nearest to the proposed development (that also serves nearby Friendship Industries) with higher pressure and flow while preserving the ability to isolate and control pressure in other existing mains downstream of the vault. This is contingent on Friendship Industries accepting the change in their water supply pressure and flow. Water line option B (see Appendix A, sheet 2) would install a new water main to the proposed property developments from a connection point upstream of the aforementioned pressure reducing vault. A proposed sewer main extension will run along the north side of Friendship Drive to connect to the existing City of Harrisonburg manhole that receives the lateral from the Friendship Industries facility. These improvements are mostly in existing right-of-way or easements but may also

require additional easements or modifications. The proposed buildings will remain outside the proposed utility easements. Sewer cleanouts and water services will be installed per DCSM standards for the proposed developments.

See Section H Conclusion for additional discussion regarding the adequacy of proposed and existing utilities.

B. Average Daily Water and Sewer Demand (Table 4-1)

The table below shows the water demand generated by the proposed development, based on Table 4-1 in the DCSM, and the proposed supply reallocation. The proposed development will generate an average daily demand of 6475 gpd, and 6558 gpd are already allocated for these properties (plat by Bobby Owens, 12-7-1998). Note that the demand estimates are based on rates provided in the Harrisonburg DCSM that most closely approximate the actual intended use.

| Lot | Use | Demand by Use | Quantity | Average Daily Demand (gpd) | Existing Allocation (gpd) | Proposed Allocation & Design Average Daily Demand (gpd (gpm)) |
|---------------|-------------------------------|--------------------------------------|---------------------------------|----------------------------|---------------------------|---|
| LOT 4A | Truck Parking & Shop | 25 gpd/ factory employee/ 8-hr shift | 20 employees | 500 | 3190 | 558 (0.39) |
| LOT 4 | Various Light Industrial Uses | 25 gpd/ factory employee/ 8-hr shift | 75 employees (15 units, 5/unit) | 1875 | | 1900 (1.32) |
| LOT 5 | Event Center | Elementary Schools, without showers | 400 guests + 10 employees | 4100 | 3368 | 4100 (2.85) |
| TOTAL: | | | | 6475 | 6558 | 6558 (4.56) |

C. Water Design Demand

1. Needed Fire Flow

The water demand design will be affected most significantly by the NFF. The highest Needed Fire Flow for each property (based on the building with the highest flow) is shown below. See full calculations in Appendix B.

| Lot | Building | Construction Type | Occupancy | Building Size (sf) | NFF (gpm) |
|--------|----------------------------|--------------------------|---------------------------|----------------------------------|-----------|
| LOT 4A | Truck Repair Shop | Class 3 (Noncombustible) | C-2 (Limited Combustible) | 12,000 (6,000 largest fire area) | 1250 |
| LOT 4 | Building nearest to Lot 4A | Class 3 (Noncombustible) | C-3 (Combustible) | 12,000 (2,400 largest fire area) | 750 |
| LOT 5 | Main Event Center | Class 3 (Noncombustible) | C-2 (Limited Combustible) | 10,800 (sprinklered) | 750 |

2. Maximum Daily Demand

The maximum daily demand is 2.5 times the average daily demand (DSCM 4.3.4.1).

Maximum Daily Demand = Average Daily Demand * 2.5

| Lot | Average Daily Demand (gpm) | Maximum Daily Demand (gpm) |
|--------|----------------------------|----------------------------|
| LOT 4A | 0.39 | 0.98 |
| LOT 4 | 1.32 | 3.30 |
| LOT 5 | 2.85 | 7.13 |
| TOTAL | 4.56 | 11.41 |

3. Peak Hourly Demand

The peak hourly domestic demand is calculated per DSCM 4.3.4.1:

$$Q = A.D.D. * P.F.$$

A.D.D = Average Daily Demand, gpm

$$P.F. = \text{Peaking Factor} = (18 + p^{0.5}) / (4 + p^{0.5})$$

p = Population in thousands or Population equivalent in thousands (100 gpd = 1 person)

| Lot | Population equivalent, thousands | Average Daily | Peaking Factor | Peak Hourly Demand (gpm) |
|-----|----------------------------------|---------------|----------------|--------------------------|
| | | | | |

| | | Demand (gpm) | | |
|--------|-------|-----------------|-------|-------|
| LOT 4A | .0056 | 0.39 | 4.44 | 1.73 |
| LOT 4 | .019 | 1.32 | 4.38 | 5.78 |
| LOT 5 | .041 | 2.85 | 4.33 | 12.34 |
| | | | TOTAL | 19.85 |

D. Sewer Design Demand

The average daily sewer demand generated by the proposed developments will be approximately 4.56 gpm (see Section B for calculation). Per DCSM Section 4.3.4.2, the minimum peak design capacity for “submain” sewers serving one or two branches is 400% of the average design flow.

$$\text{Peak Design Capacity} = 400\% (4.56 \text{ gpm}) = 18.24 \text{ gpm}$$

E. Evaluation of Water System Capacity

Per DCSM 4.3.5.2.1, the water main must be sized to:

A. To convey the combined peak hourly domestic, industrial and other normal demands at velocities of less than 4 feet per second. May be waived if Peak Hourly Demand \leq 625 GPM.

The Peak Hourly Demand is \leq 625.

AND

B. To convey the larger of the peak hourly demand OR maximum daily demand plus needed fire flow (NFF) at greater than or equal to 20 psi.

Either option A or B of the proposed water line improvements would be able to achieve this requirement.

AND

C. To convey the design flow rate at or below the velocities specified in the "Pipe Size Table" (DCSM 4.3.5.2.1.C)

For the proposed 8" pipe: 1,500 gpm max. flow and 9.6 fps max. velocity.

Discussion with Public Utilities indicates that either option A or B for the proposed water main would be capable of conveying the peak hourly flow of 19.9 gpm OR the NFF of 1250 gpm plus the maximum daily demand of 11.4 gpm (1261.4 gpm total) at 20 psi or more and within the flow rate and velocity parameters for 8" pipe.

F. Evaluation of Sewer System Capacity

The sewer main extension is 8" and the existing receiving line is 8". The receiving line is expected to have adequate capacity for the proposed development.

Capacity of 8" pipe @ 1% slope, flowing at 0.94 depth of flow, $n = 0.014$:

1.22 cfs = 548 gpm capacity > 18.24 gpm (combined sewer design demand for all properties; receiving line has steeper slope, per construction plans)

G. Maps and Preliminary Design Drawings

See Appendix A.

H. Conclusion

Based on discussion with Public Utilities, the available water supply is adequate to provide peak hourly or the NFF plus the maximum daily demand within the required velocity, flow, and pressure parameters. Either construction option A or B could provide the proposed development with connection to this water supply. The existing sewer infrastructure is estimated to be adequate for the proposed development.

The proposed sewer improvements include the construction of 4 sanitary sewer manholes and an 8" sewer line extending from an existing manhole north of Friendship Industries to the northwest corner of lot 5. This line may require an exclusive 20' wide public utility easement in the portion outside the Friendship Drive right of way (or wider depending on installed line depth). The proposed water line improvements include an 8" main extension along Friendship Drive and 3 hydrants (one in front of each property to be developed). This line would connect either to an existing 12" line north of Friendship Drive (that would be supplied with higher pressure by bypassing an upstream pressure reducing vault) or a new 8" main extension that would extend to a point upstream of the pressure reducing vault. Valves will be installed as required by Public Utilities. A 20' wide exclusive easement may be required for proposed water lines outside of the public right of way, or existing easements may be expanded to provide the required easement area.

APPENDIX A
Conceptual Site & Utility Layout

APPENDIX A

Needed Fire Flow Calculations

ISO Fire Flow Calculation For: Truck Shop - Lot 4A

| | | | |
|--|---|---------|---|
| <u>TYPE OF CONSTRUCTION:</u> | Class 3 (noncombustible construction) | | |
| | CONSTRUCTION COEFFICIENT => | F = | 0.8 |
| <u>BUILDING SIZE :</u> | LARGEST ZONE = | 6000 SF | |
| | 2 nd LARGEST ZONE = | 6000 SF | |
| | EFFECTIVE AREA => | A = | 9000 SF |
| <u>CONSTRUCTION FACTOR:</u> | C = (18)(F)(A) ^{0.5} | C = | 1250 gpm |
| | <i>(ROUNDED TO NEAREST 250 gpm)</i> | | |
| <u>TYPE OF OCCUPANCY:</u> | C-2 (Limited-Combustible) | | |
| | OCCUPANCY FACTOR => | O = | 0.85 |
| <u>EXPOSURE (X) & COMMUNICATION (P):</u> | X ₁ + P ₁ = | 0.0896 | X ₄ + P ₄ = 0 |
| | X ₂ + P ₂ = | 0 | X ₅ + P ₅ = 0 |
| | X ₃ + P ₃ = | 0 | X ₆ + P ₆ = 0 |
| | | | Max (X+P) = 0.09 |
| NEEDED FIRE FLOW: | NFF = (C)(O)[1+(X + P) _i] | | 1158 gpm |
| | | | <i>(BEFORE ROUNDING OR REDUCTION)</i> |
| SPRINKLER REDUCTION? | No | => | 0% |
| NEEDED FIRE FLOW: | | | 1158 gpm |
| | | | <i>(AFTER REDUCTION, BEFORE ROUNDING)</i> |
| | TOTAL FIRE FLOW NEEDED = | | 1250 gpm |
| | <i>(ROUNDED TO NEAREST 250 gpm, or 500 gpm if > or = 2500 gpm)</i> | | |

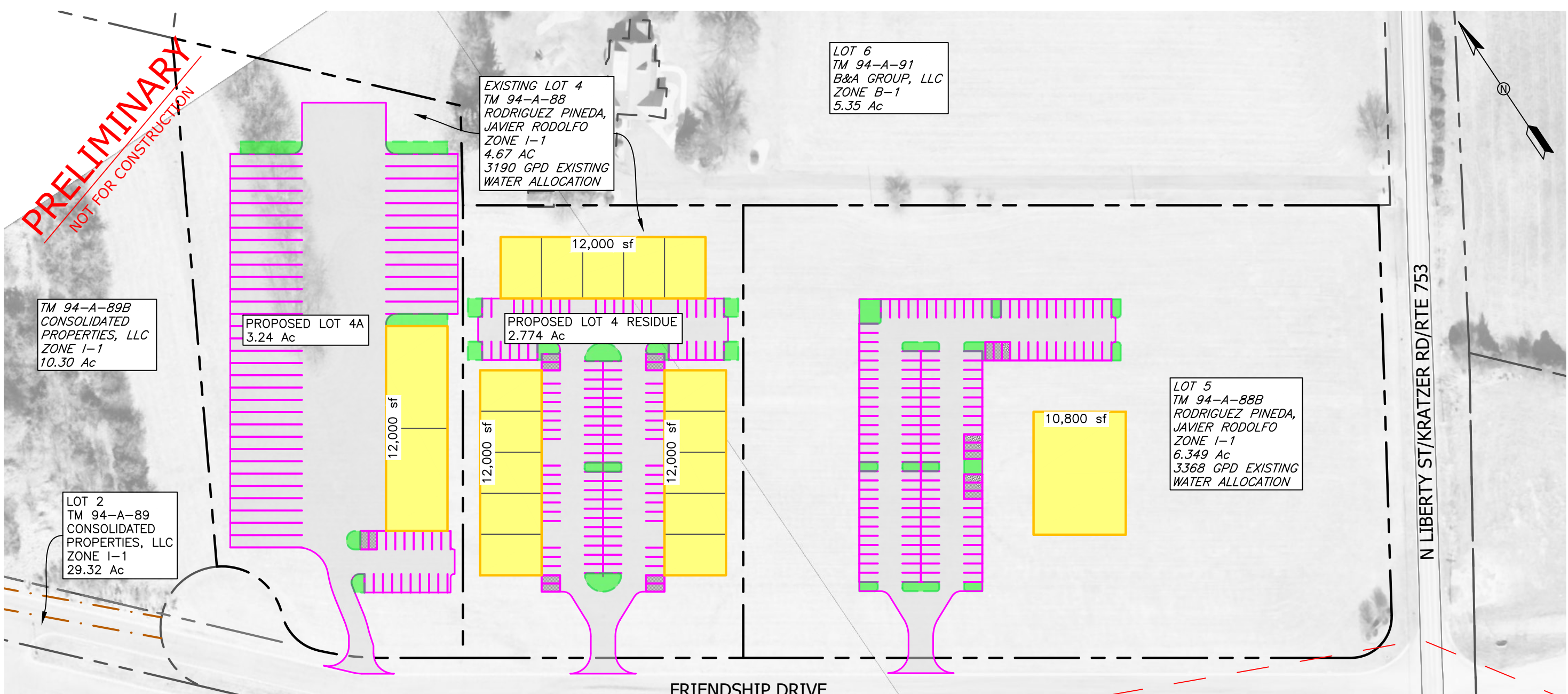
ISO Fire Flow Calculation For: Light Industrial Uses - Lot 4

| | | | |
|---|---|---------------------------------|-------------------------------------|
| <u>TYPE OF CONSTRUCTION:</u> | Class 3 (noncombustible construction) | | |
| | CONSTRUCTION COEFFICIENT => | F = | 0.8 |
| <u>BUILDING SIZE :</u> | LARGEST ZONE = | 2400 SF | |
| | 2 nd LARGEST ZONE = | 2400 SF | |
| | EFFECTIVE AREA => | A = | 3600 SF |
| <u>CONSTRUCTION FACTOR:</u> | C = (18)(F)(A) ^{0.5} | C = | 750 gpm |
| | <i>(ROUNDED TO NEAREST 250 gpm)</i> | | |
| <u>TYPE OF OCCUPANCY:</u> | C-3 (Combustible) | | |
| | OCCUPANCY FACTOR => | O = | 1.00 |
| <u>EXPOSURE (X) & COMMUNICATION (P):</u> | | | |
| | X ₁ + P ₁ = | 0 | X ₄ + P ₄ = 0 |
| | X ₂ + P ₂ = | 0 | X ₅ + P ₅ = 0 |
| | X ₃ + P ₃ = | 0 | X ₆ + P ₆ = 0 |
| | | | Max (X+P) = 0.00 |
| NEEDED FIRE FLOW: | NFF = (C)(O)[1+(X + P) _i] | | 750 gpm |
| | <i>(BEFORE ROUNDING OR REDUCTION)</i> | | |
| SPRINKLER REDUCTION? | No | => | 0% |
| NEEDED FIRE FLOW: | | | 750 gpm |
| | <i>(AFTER REDUCTION, BEFORE ROUNDING)</i> | | |
| | | TOTAL FIRE FLOW NEEDED = | 750 gpm |
| <i>(ROUNDED TO NEAREST 250 gpm, or 500 gpm if > or = 2500 gpm)</i> | | | |

ISO Fire Flow Calculation For: Event Center - Lot 5

| | | | |
|---|---------------------------------------|---------------------------------|-------------------------------------|
| <u>TYPE OF CONSTRUCTION:</u> | Class 3 (noncombustible construction) | | |
| | CONSTRUCTION COEFFICIENT => | F = | 0.8 |
| <u>BUILDING SIZE :</u> | LARGEST ZONE = | 10800 SF | |
| | 2 nd LARGEST ZONE = | 0 SF | |
| | EFFECTIVE AREA => | A = | 10800 SF |
| <u>CONSTRUCTION FACTOR:</u> | C = (18)(F)(A) ^{0.5} | | C = 1500 gpm |
| | (ROUNDED TO NEAREST 250 gpm) | | |
| <u>TYPE OF OCCUPANCY:</u> | C-2 (Limited-Combustible) | | |
| | OCCUPANCY FACTOR => | O = | 0.85 |
| <u>EXPOSURE (X) & COMMUNICATION (P):</u> | | | |
| | X ₁ + P ₁ = | 0 | X ₄ + P ₄ = 0 |
| | X ₂ + P ₂ = | 0 | X ₅ + P ₅ = 0 |
| | X ₃ + P ₃ = | 0 | X ₆ + P ₆ = 0 |
| | Max (X+P) = | | 0.00 |
| <u>NEEDED FIRE FLOW:</u> | NFF = (C)(O)[1+(X + P) _i] | | 1275 gpm |
| | (BEFORE ROUNDING OR REDUCTION) | | |
| <u>SPRINKLER REDUCTION?</u> | Yes | => | 50% |
| <u>NEEDED FIRE FLOW:</u> | | | 638 gpm |
| | (AFTER REDUCTION, BEFORE ROUNDING) | | |
| | | TOTAL FIRE FLOW NEEDED = | 750 gpm |
| (ROUNDED TO NEAREST 250 gpm, or 500 gpm if > or = 2500 gpm) | | | |

PRELIMINARY
NOT FOR CONSTRUCTION



TM 94-A-89B
CONSOLIDATED
PROPERTIES, LLC
ZONE I-1
10.30 Ac

PROPOSED LOT 4A
3.24 Ac

EXISTING LOT 4
TM 94-A-88
RODRIGUEZ PINEDA,
JAVIER RODOLFO
ZONE I-1
4.67 AC
3190 GPD EXISTING
WATER ALLOCATION

LOT 6
TM 94-A-91
B&A GROUP, LLC
ZONE B-1
5.35 Ac

PROPOSED LOT 4 RESIDUE
2.774 Ac

LOT 5
TM 94-A-88B
RODRIGUEZ PINEDA,
JAVIER RODOLFO
ZONE I-1
6.349 Ac
3368 GPD EXISTING
WATER ALLOCATION

LOT 2
TM 94-A-89
CONSOLIDATED
PROPERTIES, LLC
ZONE I-1
29.32 Ac

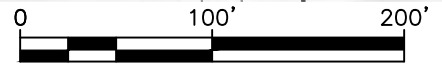
TM 94-A-89A
FRIENDSHIP INDUSTRIES, INC.
ZONE I-1
4.23 Ac

LOT 1
TM 56-A-3
CONMAT
PROPERTIES, LC
ZONE M-1
20.36 Ac

ROCKINGHAM COUNTY
HARRISONBURG CITY

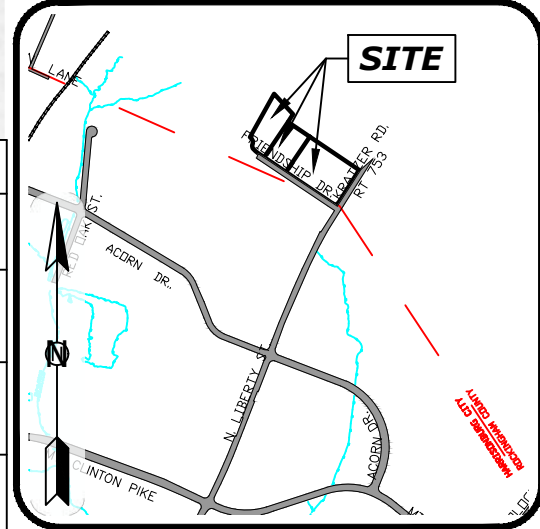
CITY TM 57-A-1 ZONE M-1
COUNTY TM 94-A-88A ZONE I-1
ARIAKE USA INC.
6.349 Ac

TM 56-A-5
FRIENDSHIP INDUSTRIES, INC.
ZONE M-1
3.41 Ac



| USE & DEMAND TABLE | | | | | | |
|--------------------|--------------------------|------------------------------------|--------------------------------------|---------------|----------|---------------------|
| PROPERTY | USE | EQUIVALENT UNIT* | QUANTITY | RATE | DEMAND | PROPOSED ALLOCATION |
| LOT 4A | PRIVATE TRUCK SHOP | FACTORY EMPLOYEE, 8 HR SHIFT | 2 SHOPS X 10 EMPLOYEES PER SHOP = 20 | 25 GPD/PERSON | 500 GPD | 558 GPD |
| LOT 4 | VARIOUS LIGHT INDUSTRIAL | FACTORY EMPLOYEE, 8 HR SHIFT | 15 SHOPS X 5 EMPLOYEES PER SHOP = 75 | 25 GPD/PERSON | 1875 GPD | 1900 GPD |
| LOT 5 | EVENT CENTER | ELEMENTARY SCHOOLS WITHOUT SHOWERS | 400 GUEST + 10 EMPLOYEES = 410 | 10 GPD/PERSON | 4100 GPD | 4100 GPD |
| | | | | | TOTAL | 6558 |

*DEMAND UNIT AND RATE FROM DCSM USE TO APPROXIMATE ACTUAL ANTICIPATED USE



VICINITY MAP
1" = 2000'

Project: CE202274
Sheet: **1** of 2

Revisions:
.....
.....
.....

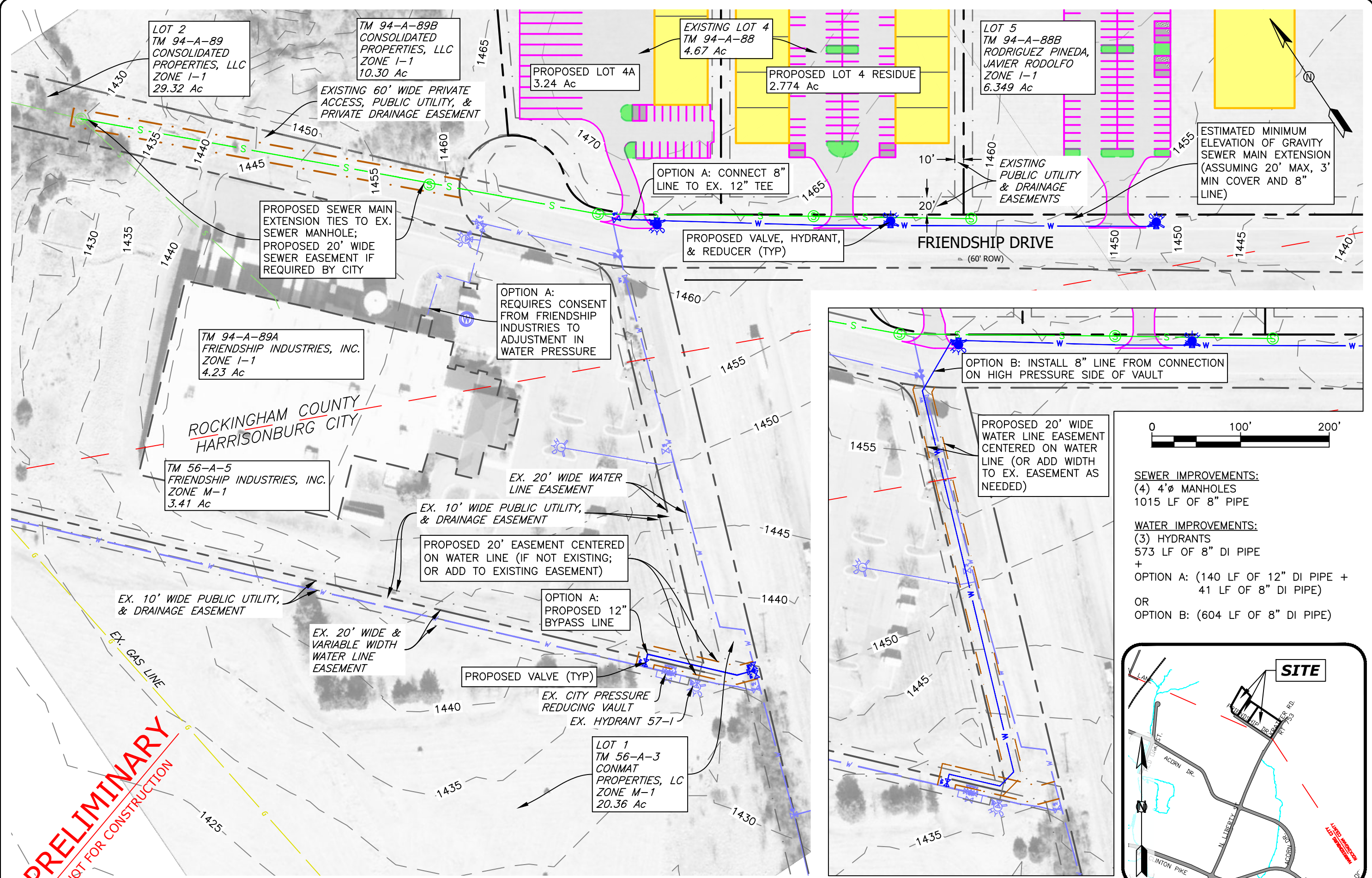
Date: 1/23/2023
Scale: 1" = 100'
Designer: GLC, PE
Drafter: DPW
Reviewer: GLC, PE

CONCEPTUAL SITE LAYOUT AND USE
Friendship Properties Partners PER
LANTZ Construction
North Side of Friendship Drive
@ Harrisonburg City/Rockingham County boundary

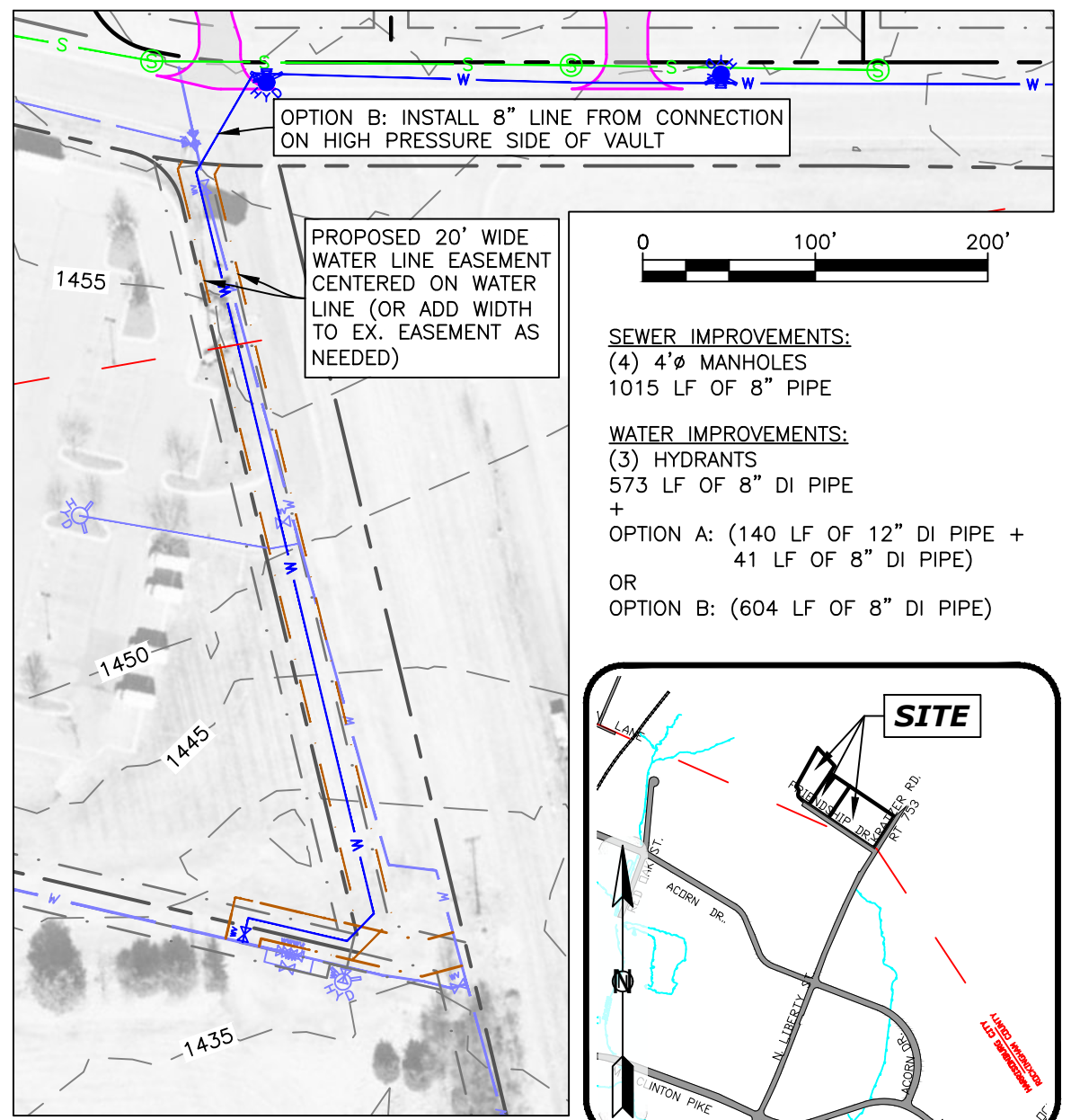
PRELIMINARY

COLMAN ENGINEERING, PLC
1123 South High Street | Harrisonburg, VA 22801 | Ph: (540) 246-3712
Email: contact@colmanengineering.com | www.colmanengineering.com

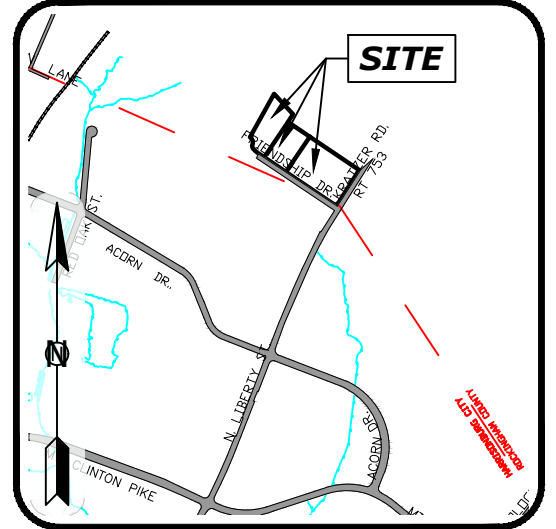
PRELIMINARY
NOT FOR CONSTRUCTION



UTILITY LAYOUT - WATER SUPPLY OPTION A



WATER SUPPLY OPTION B



VICINITY MAP
1" = 2000'

- SEWER IMPROVEMENTS:**
 (4) 4'Ø MANHOLES
 1015 LF OF 8" PIPE
- WATER IMPROVEMENTS:**
 (3) HYDRANTS
 573 LF OF 8" DI PIPE
 +
 OPTION A: (140 LF OF 12" DI PIPE + 41 LF OF 8" DI PIPE)
 OR
 OPTION B: (604 LF OF 8" DI PIPE)

Project: CE202274
 Sheet: 2 of 2

Revisions:

Date: 1/23/2023
 Scale: 1" = 100'
 Designer: GLC, PE
 Drafter: DPW
 Reviewer: GLC, PE

CONCEPTUAL UTILITY LAYOUT
 Friendship Properties Partners PER
 LANTZ Construction
 North Side of Friendship Drive
 @ Harrisonburg City/Rockingham County boundary

PRELIMINARY

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