

Preliminary Engineering Report

Rutherford County Airport Sewer

Located in:

Rutherford County North Carolina

Prepared for:



Rutherford County
686 W Main Street
Forest City, NC 28043



September 18, 2025

Prepared by:



169 Oak Street
Forest City, North Carolina 28043
(828) 247-4495 fax (828) 247-4498

David W. Odom, PE
President

PROJECT OVERVIEW:

PROJECT BACKGROUND

Rutherford County (the “County”) owns approximately 266 acres of land that encompasses the Rutherford County Airport and adjacent properties. In alignment with the Rutherford County Airport Master Plan, the County is pursuing infrastructure improvements to support future economic development opportunities. A key component of this plan is the extension of public sewer service to the airport property.

The first phase of this extension will serve Parcel Nos. 1601431, 1603556, and 615666, all of which are located off Airport Road. Service will initially be provided for the Airport Terminal and existing airplane hangars. Future phases, as identified in the Master Plan, include additional terminal enhancements and development of a new Industrial Park along Airport Road with five industrial pad sites.

After evaluating several alternatives for wastewater service, the County determined that the most feasible and cost-effective option is to extend public sewer from the Town of Rutherfordton. This option provides reliable long-term capacity, ensures regional connectivity, and aligns with the County’s development objectives.

PROJECT COMPONENTS

This project would include the following:

- Approximately 9,000 linear feet of gravity sewer Line
- 60 proposed manholes
- 120 GPM Lift Station
- Approximately 14,000 linear feet of force main sewer Line

USEFUL LIFE OF PROPOSED INFRASTRUCTURE

Gravity Sewer (8-inch PVC or DIP pipe with manholes)

PVC gravity sewer pipe: 50–100 years

Ductile Iron Pipe (DIP): 75–100 years (with corrosion protection)

Concrete manholes: 50–75 years (longer with protective coatings/linings)

Notes: Gravity sewers generally have the longest life since they operate under low pressure and consistent flow conditions. Corrosion (especially from hydrogen sulfide gas in wastewater) and infiltration are the main limiting factors.

Force main Sewer (4-inch pressure pipe)

PVC force main: 50–75 years

HDPE force main: 50–75 years

Ductile Iron force main: 50–75 years (depending on corrosion protection)

Notes: Force mains have shorter lifespans than gravity sewers due to pressure cycling, surge events, and air/gas accumulation. Proper air release valves and surge protection extend life.

Lift Station (mechanical/electrical systems)

Structural components (wet well, concrete vaults): 50+ years (with protective coatings)

Pumps and motors: 10–20 years (depending on type, duty cycle, maintenance)

Controls, electrical panels, SCADA equipment: 10–15 years

Force main valves and appurtenances: 20–30 years

Notes: Lift stations have the shortest functional life because they contain moving mechanical and electrical components. They require ongoing O&M, periodic pump replacement, and modernization of controls.

PROJECT DRAWINGS

See the following appendices for project supplemental documents:

- Appendix A – Project Location Map
- Appendix B – Overall Proposed Sewer Map
- Appendix C – Existing Sewer Line and Lift station (Rutherfordton)
- Appendix D – Existing Airport Site
- Appendix E – Proposed Gravity and Force main along Airport Road (with beneficiaries)
- Appendix F – Proposed Force main connection to existing Rutherfordton Sewer (with beneficiaries)
- Appendix G – Airport Masterplan Layout
- Appendix H – Project Estimate

CONSTRUCTION COST ESTIMATE

The project includes:

- Installation of one lift station (120 GPM capacity)
- ~14,000 LF of 4-inch force main sewer line
- ~9,000 LF of 8-inch gravity sewer line with manholes and appurtenances

The gravity sewer system will collect wastewater from the airport properties and direct it to the new lift station located along Airport Road. The lift station will then pump wastewater through the force main along Airport Road, Oscar Justice Road, and Rock Road to connect with the existing Town of Rutherfordton sewer line just south of Camp Electric (Parcel No. 1655410).

The system is designed to accommodate future flows from the five proposed industrial pad sites, airport terminal, and hangars. The projected cumulative flow from the three immediate industrial sites is 56,000 gallons/day (120 GPM with peaking factor).

Estimated Quantities

- 9,000 LF of gravity sewer line
- 60 manholes
- 120 GPM lift station
- 14,000 LF of force main sewer line

Estimated Cost Summary

Construction with contingency:	\$4,930,625
Engineering & allowances:	\$ 294,500
Total Project Cost:	\$5,225,125

(See Appendix H for detailed cost estimate.)

PROJECT CONSTRAINTS

The sewer extension project for Rutherford County Airport does not appear to face any major constraints. While minor challenges, such as potential easement acquisitions, may need to be addressed, no significant conflicts or obstacles have been identified that would hinder successful implementation.

Currently, no dedicated easements exist for sewer infrastructure on the airport property or along the proposed sewer force main route. It is anticipated that most of the force main, along with some

segments of gravity sewer, will be located within existing NCDOT rights-of-way. Easements will be required for the airport gravity sewer (within airport-owned parcels), the sewer lift station, and potentially at a few points along the force main alignment. The exact need for easements will be confirmed following survey and design. A third-party easement acquisition firm, experienced with federally funded projects, will manage the acquisition process prior to bid authorization.

With a clear permitting strategy, a competitive procurement process, and infrastructure designed for both durability and capacity, the project is well-positioned to provide reliable utility service, support future industrial development, and advance the County's long-term economic development goals.

PROPOSED METHOD OF CONSTRUCTION PROCUREMENT

The project will be delivered through a traditional design-bid-build approach, utilizing a sealed competitive bidding process in full compliance with 2 CFR § 200.320(c).

NUMBER OF CONSTRUCTION CONTRACTS ANTICIPATED

It is anticipated that there will be one construction contract that includes the following tasks:

1. Gravity Sewer Installation
2. Lift station Installation
3. Force main Installation

PROJECT PERMITS

Regulatory agencies that will have jurisdiction for this project include:

- Town of Rutherfordton (Sewer) – Rutherfordton, NC
 - Local Sewer Approval – Flow Acceptance and sewer plan approval
 - Acceptance of Sewer Infrastructure for Operations and Maintenance
- Rutherford County
 - Building Permits (Lift station)
- Broad River Water Authority – Rutherfordton, NC
 - Water Connection (Lift station)

- North Carolina Department of Transportation / NCDOT
 - Utility Encroachments
 - Driveway Permits
- State of North Carolina
 - Erosion Control Permit
 - Sewer Extension Permit
- Thermal Belt Rail Trail (Local Government)
 - Trail Encroachment for Sewer crossing under trail

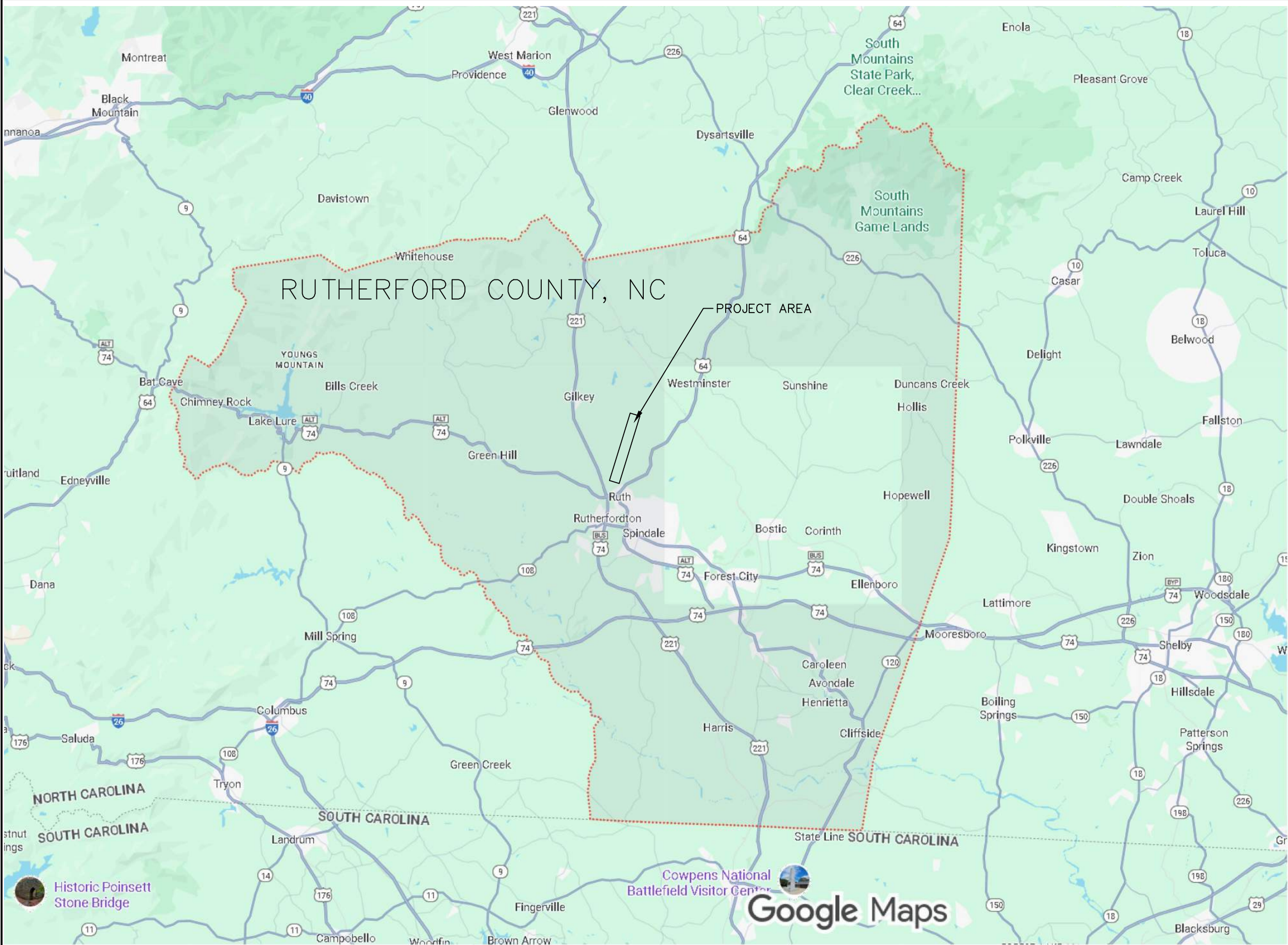
Summary

In summary, the proposed sewer extension project at Rutherford County Airport represents a strategic infrastructure investment that will not only meet immediate service needs for the airport terminal and hangars but also support long-term economic growth through the planned industrial park development. By selecting the most cost-effective and reliable wastewater solution, the County ensures both operational efficiency and regional connectivity, while the robust design life of the proposed infrastructure provides decades of dependable service. With a clear schedule, defined regulatory pathway, and competitive procurement process, this project positions Rutherford County to enhance its economic competitiveness, attract new industries, and strengthen the long-term vitality of the region.

The proposed schedule would be as follows:

Preliminary Project Schedule

- Months 1–6: Project Surveying and Design
- Months 6–9: Project Permitting, Easements, EDA Submittal Package
- Month 10: EDA Bid Package Submittal & Review
- Months 11-12: Solicitation of Bids, Bidding and approval of Award
- Month 13: Award Contracts
- Month 14-23 Construction
- Month 24: Project Close-out



Map data ©2025 Google 2 mi

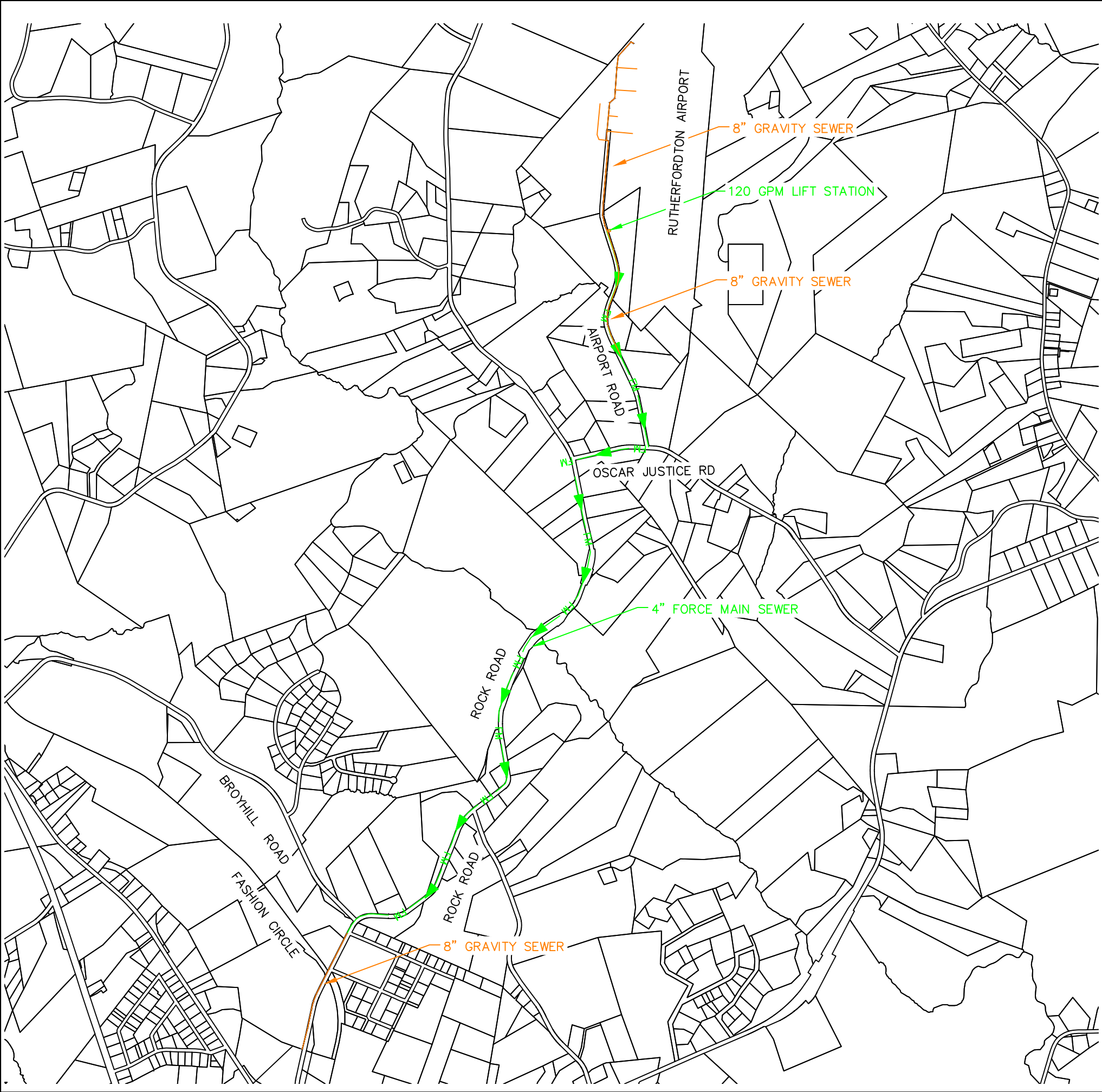


RUTHERFORD COUNTY AIRPORT SEWER EXTENSION

PROJECT LOCATION MAP

APPENDIX A

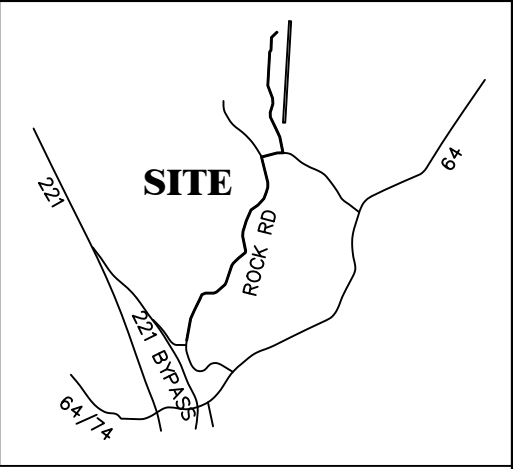
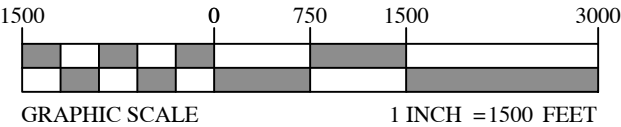
DATE: 09/16/2025
PROJECT #: 25204



120 GPM LIFT STATION
13,000' 4" FORCE MAIN
9,000' 8" GRAVITY SEWER
60 MANHOLES

PROPOSED 4" FORCE MAIN SEWER
PROPOSED 8" PUBLIC GRAVITY SEWER

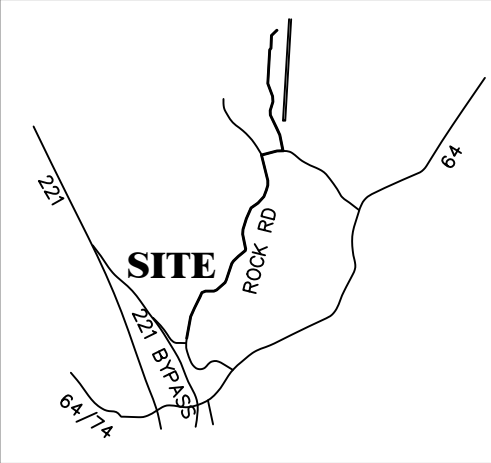
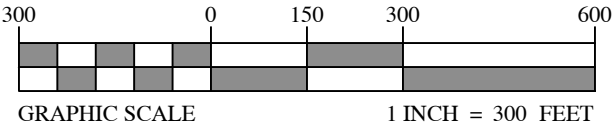
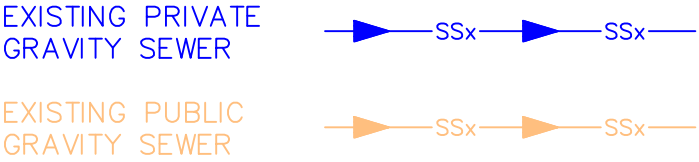
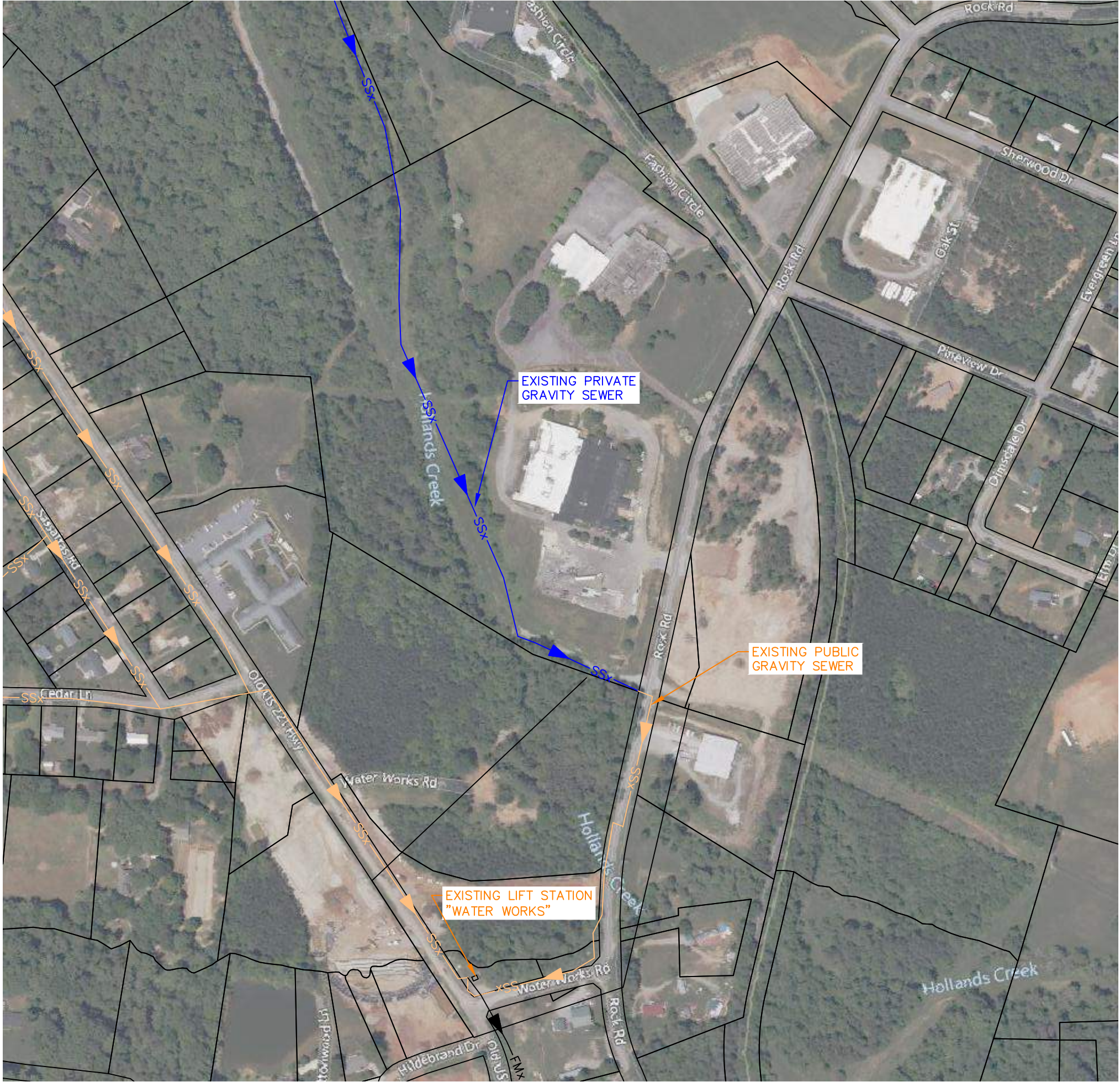
FM FM



Odom Engineering PLLC
169 Oak Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC Firm#: P-0880

RUTHERFORD COUNTY AIRPORT SEWER EXTENSION

OVERALL PROPOSED SEWER MAP

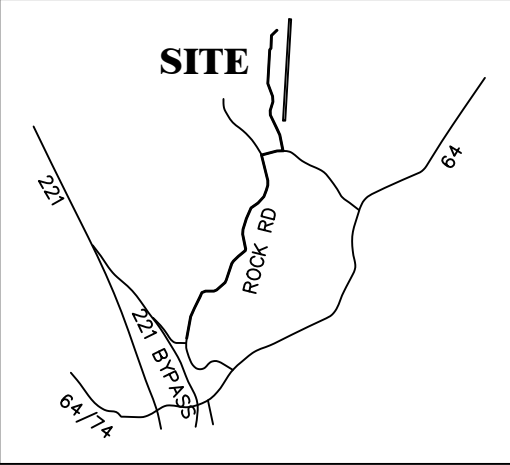


RUTHERFORD COUNTY AIRPORT
SEWER EXTENSION

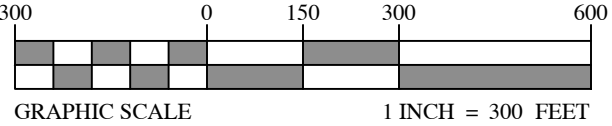
EXISTING SEWER LINE AND LIFTSTATION (RUTHERFORDTON)

Odom Engineering PLLC

169 Oak Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC Firm#: P-08880



25 EXISTING BUILDINGS ON AIRPORT PROPERTY
17 ADDITIONAL BUILDINGS PLANNED



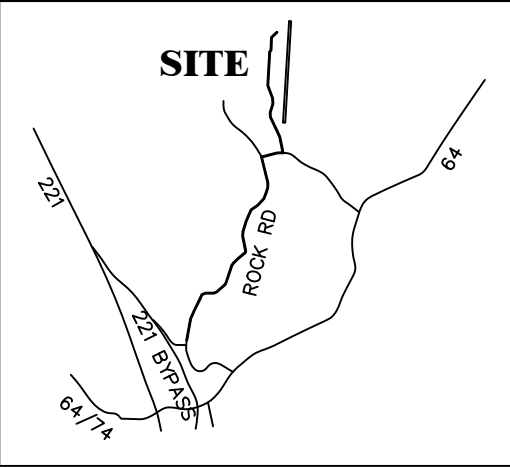
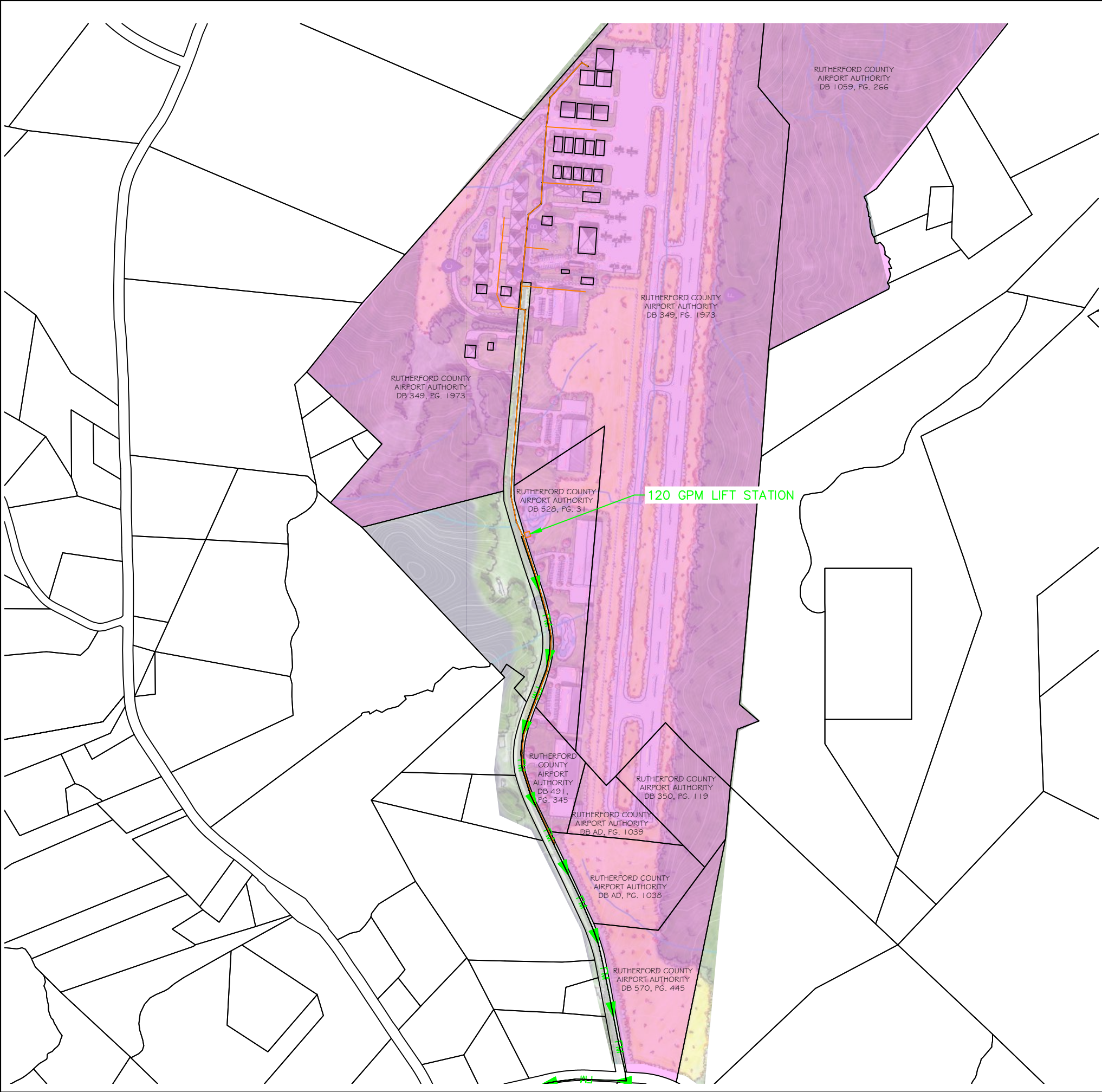
RUTHERFORD COUNTY AIRPORT SEWER EXTENSION

EXISTING AIRPORT SITE



**Odom
Engineering
PLLC**

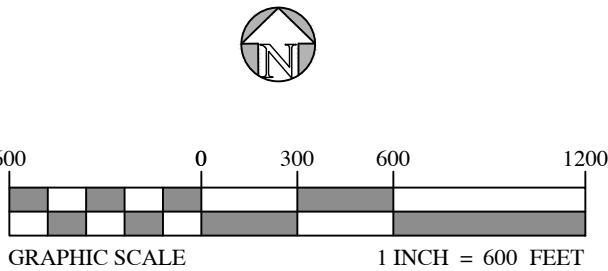
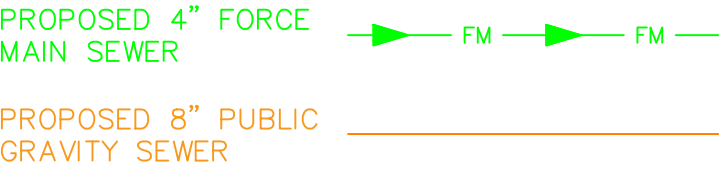
169 Oak Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC Firm#: P-08880



PROJECT BENEFICIARIES

MAGENTA— PROPERTIES OWNED BY RUTHERFORD AIRPORT

APPROXIMATELY 75 ACRES OF SERVICEABLE AREA





Odom
Engineering
PLLC

169 Oak Street, Forest City, N.C. 28043
ph: 828.247.4495 fax: 828.247.4498
NC Firm#: P-0880

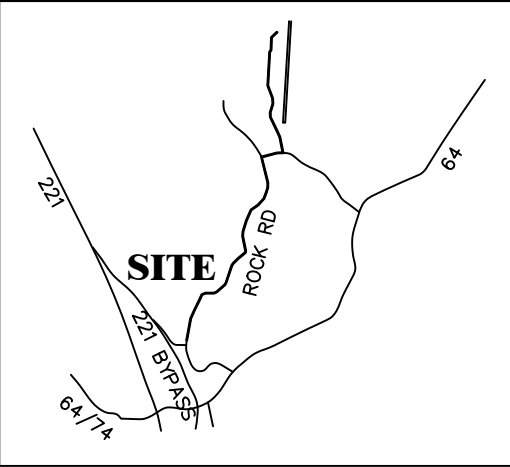
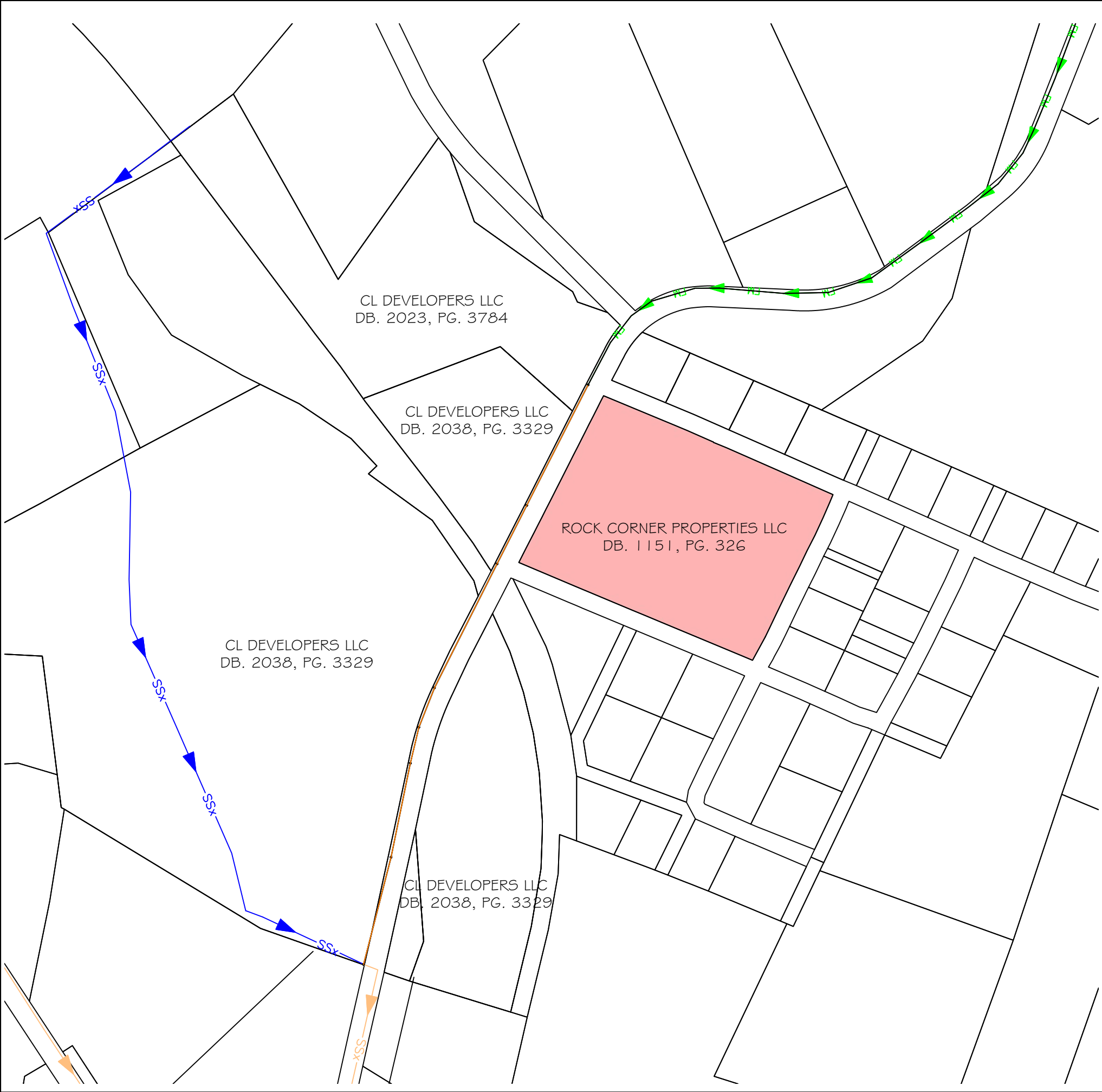
RUTHERFORD COUNTY AIRPORT

SEWER EXTENSION

PROPOSED GRAVITY AND FORCEMAIN ALONG
AIRPORT ROAD (WITH BENEFICIARIES)

APPENDIX E

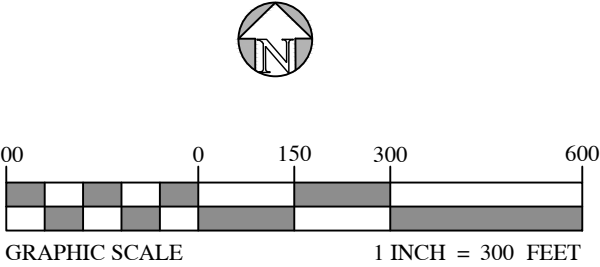
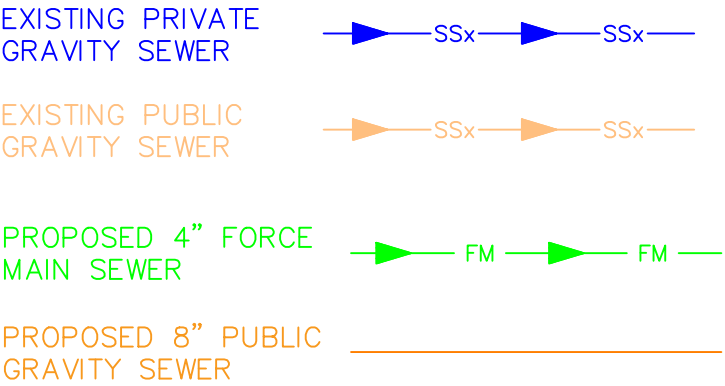
DATE: 09/16/2025
PROJECT #: 25204



PROJECT BENEFICIARIES

RED– PROPERTIES WE PLAN TO BE ABLE TO SERVICE

APPROXIMATELY 9 ACRES OF SERVICEABLE AREA



Odom Engineering PLLC

169 Oak Street, Forest City, N.C. 28043
 ph: 828.247.4495 fax: 828.247.4498
 NC Firm#: P-0880

RUTHERFORD COUNTY AIRPORT SEWER EXTENSION

PROPOSED FORCEMAIN CONNECTION TO EXISTING
RUTHERFORDTON SEWER (WITH BENEFICIARIES)



RUTHERFORD COUNTY AIRPORT

FQD

1 MASTER PLAN

A significant opportunity exists at the Rutherford County Airport to make a lasting first impression on air-travel visitors. Listed below are a few of the key features of the Rutherford County Airport Master Plan.

A TERMINAL ENHANCEMENTS

Create a welcoming atmosphere, update terminal building, and establish a shared courtyard with 57-Alpha restaurant.

B FUTURE HANGARS (WITHIN MAIN CAMPUS)

Seven (7) new T-hangars are proposed within the Main Campus.

C NEW HANGAR DEVELOPMENT (WEST CAMPUS)

Eleven (11) hangars are proposed in the new East Campus hangar development.

D INDUSTRIAL PARK

Several industrial sites are preserved to accommodate future businesses requiring close access to air transport.

E FUTURE 1000' RUNWAY EXTENSION

A proposed 1,000 ft. runway extension will help meet the increased need to serve larger business jets.

F FUTURE EAST CAMPUS

There is an opportunity for future expansion east of the runway.



LEGEND

- | | |
|--------------------------------|----------------------------------|
| 1 ENTRANCE SIGN | 2 PILOT'S PLAZA |
| 2 EXPANDED PARKING W/ SIDEWALK | 3 RELOCATED KIOSK |
| 4 COVERED PARKING | 4 SCULPTURE OR EXISTING FLAGPOLE |
| 5 OUTDOOR DINING PLAZA | 5 FENCE SCREENING |
| 6 COVERED TABLES | 6 TERMINAL LOUNGE/ TOWER |
| 7 RELOCATED STONE MONUMENT | |

TERMINAL FEATURES:



COVERED PARKING



OUTDOOR DINING



FENCE SCREENING



ENHANCED LANDSCAPING

NOT TO SCALE



PROPOSED



EXISTING

2 TERMINAL SITE PLAN

3 TERMINAL PHOTORENDERING



NOT TO SCALE

RUTHERFORD COUNTY AIRPORT SEWER EXTENSION

AIRPORT MASTERPLAN LAYOUT



APPENDIX H

Project Name: RUTHERFORD COUNTY AIRPORT SEWER

Owner: RUTHERFORD COUNTY

Estimate Date: September 17, 2025

ITEM	DESCRIPTION	QTY	UNITS	ESTIMATE	
				UNIT COST	TOTAL COST
1	8 inch Gravity Sewer Line	9,000	LF	\$ 125	\$ 1,125,000
2	4 ft Diameter Manholes	60	EA	\$ 10,000	\$ 600,000
3	Sewer Taps for commercial development at Airport	40	EA	\$ 5,000	\$ 200,000
4	Airport Lift Station Complete (Includes) <i>Duplex Pump LS with 6' Precast Concrete Wetwell</i> <i>Locking Cover and Safety Grating</i> <i>Grading for access road and wetwell</i> <i>Excavation and Wetwell Placement</i> <i>Concrete Ballast for Wetwell</i> <i>Electrical Installation and Generator</i> <i>Asphalt access Road</i> <i>Security Fencing with Double Swing Gate</i>	1	LS	\$ 525,000	\$ 525,000
5	4" PVC SDR 21 or HDPE DR 11 Force Main	14,000	LF	\$ 70	\$ 980,000
6	Air Release Valves	3	EA	\$ 15,000	\$ 45,000
7	Trench Rock Excavation	2,000	CY	\$ 100	\$ 200,000
8	Asphalt Pavement Repair	775	SY	\$ 100	\$ 77,500
9	Concrete Pavement Repair	500	SY	\$ 100	\$ 50,000
10	Gravel Drive Repair	300	LF	\$ 50	\$ 15,000
11	Select Backfill	500	CY	\$ 50	\$ 25,000
12	Stream Crossing	2	EA	\$ 25,000	\$ 50,000
13	Road Crossings	200	LF	\$ 750	\$ 150,000
14	Erosion Control (Silt fence, matting, seeding)	1	LS	\$ 100,000	\$ 100,000
15	Traffic Control	1	LS	\$ 35,000	\$ 35,000
16	Mobilization	1	LS	\$ 110,000	\$ 110,000
				Subtotal	\$ 4,287,500
				Contingency	\$ 643,125
				Total Construction Cost Estimate	\$ 4,930,625
ALLOWANCES					
	Geotechnical				\$ 15,000
	Surveying (includes easement surveys)				\$ 50,000
	Easements and Legal (estimated 10)	10	ea	\$ 5,000	\$ 50,000
	Engineering Design & Permitting				\$ 95,000
	Bidding and Award				\$ 9,500
	Construction Administration and Observation				\$ 75,000
				Allowances Subtotal:	\$ 294,500
				PROJECT TOTAL:	\$ 5,225,125