

**CITY OF FLAGSTAFF
COCONINO ESTATES IMPROVEMENTS, PHASE 1**

SCOPE OF SERVICES

Draft 1 - March 5, 2019
Draft 2 – March 19, 2019
FINAL - March 27, 2019
Rev. 1 - April 11, 2019

*Peak Project No: 19COF01
City of Flagstaff Project No.: 03-18005*

Project Description

The Project is located on three streets in the Coconino Estates neighborhood of west Flagstaff. These three streets are bundled into one construction project and will be delivered through the CMAR project delivery process. The three streets and the limits of proposed improvements are listed below:

- W. Beal Road – N. Rockridge Road to N. Fort Valley Road
- N. Navajo Drive – W. Murray Road to W. Navajo Road, and a section of W. Whipple Road from N. Navajo Drive to N. McMillan Road
- W. Navajo Road – N. Navajo Drive to N. Fort Valley Road

Proposed improvements on the streets listed above generally consist of replacing existing water and sewer mains, water and sewer services, asphalt structural section, and select edge improvements (curb & gutter, sidewalk, etc.) for the entire project limits identified above. The approximate combined work is as follows:

Sanitary Sewer Improvements:

- Replace 5,000 LF of existing sewer main
- Replace 20 existing sewer manholes
- Replace 130 existing sewer services from the new main to the right-of-way.

Water Improvements:

- Replace 6,200 LF of existing water main
- Replace 130 existing water services from the new main to the existing meter
- Replace 30 existing water valves
- Replace 10 existing fire hydrant assemblies
- Replace 260 LF of 2" Water Main on Whipple Road
- Replace water service to FHS

Utility Improvements

- Replace street lights and install conduit for underground electrical service to street lights

Street Improvements:

- Replace 24,000 SY of existing asphalt structural section
- Replace affected signage, striping, and roadway markings

Edge Improvements:

- Replace 12,200 LF of select existing curb/gutter
- Replace 500 SF of select existing sidewalk

Replace 500 SF of select existing sidewalk ramps
Replace 1,600 SF of select existing valley gutters
Replace 1,000 SF of select existing driveways

Storm Water Improvements:

Address runoff conveyance issues within the project limits

All quantities listed are approximate. Attached is Exhibit A *Scoping Document* prepared by the City of Flagstaff which informed the details of the extent of the scope of work.

Project Team

City of Flagstaff Capital Improvements (Client)

Eli Reisner, P.E., Project Manager
Bret Petersen, P.E., Capital Improvements Engineer

Design Team

Peak Engineering (Prime)

Julie Leid, P.E., Principal, Project Manager & Primary Point of Contact
Tom Smith, P.E., Principal, Project Coordinator

JE Fuller (Subconsultant: Drainage)
Northland Exploration Surveys (Subconsultant: Topographic & Right of Way Surveying)
Speedie & Associates (Subconsultant: Geotechnical Investigation)

Construction Manager

Eagle Mountain Construction (EMC). EMC will provide pre-construction services under a separate contract with the City of Flagstaff. EMC's scope of services includes Cardno, subconsultant, for design phase utility research and locating. EMC's scope of services includes BetaPR, subconsultant, for public involvement.

Franchise Utilities

Arizona Public Service (APS). APS will provide design services under a separate contract with the City of Flagstaff.

TASKS AND DELIVERABLES

Task A: Overall Project

Task A-1: Survey & Mapping

Peak Engineering will contract with Northland Exploration for Land Surveying services. Their scope of services is attached as Exhibit B. Note that Topographic, Right of Way mapping and Ownership/Annotation is to be performed under a pre-engineering authorization, separate contract, and is not included in this scope of services. However, the topographic survey will be finalized and Northland will issue sealed documents for inclusion in the plans as reference. The option for preparation of exhibits for Temporary Construction Easements is not included in this scope. These items are noted on Exhibit B.

Surveying services included in this scope are:

- Miscellaneous survey. This is for additional data that may be needed as the design develops.
- Flagstaff High School (FHS) survey. This is for survey, mapping and preparation of a legal description and exhibit for a utility easement on the south side of FHS where there was once a water meter and vault. The meter and vault may need to be reinstalled and/or relocated depending on the outcome of the replacement of the FHS water service feed on the north side of the property.
- Survey of the existing FHS waterline area on the north side of the FHS campus from the connection on Navajo Road to an approximate 50' area immediately inside the FHS fence.

Deliverable: Topographic survey (digital and sealed PDF format) and corresponding update to the AutoCAD basemap (internal), legal description and exhibit for the FHS water service.

Task A-2: Geotechnical Investigation & Utility Coordination

Peak Engineering will contract with Speedie & Associates for geotechnical engineering. Their scope of services is presented in Exhibit D. Note that Speedie & Associates conducted pavement cores and borings for the Mountain View Utilities Upgrade in 2015. Their new scope of services will incorporate results from the previous investigation.

Peak Engineering will coordinate with EMC's utility locating company, Cardno, for utility records research, utility investigation and potholing. For the utility records research and utility investigation, Peak Engineering will furnish an AutoCAD basemap of the project area to EMC for distribution. The basemap will include survey control, surface linework (curb, gutter, centerline, pavement limits, etc.) and utility surface appurtenances. Surface appurtenances include water valve lids, water meters, sewer MH lids, sewer cleanouts, catch basin grates and stormdrain MHs and poles. The basemap will include APNs, names and address for each parcel in the project limits. Peak Engineering will also furnish the City's water meter logs and other available utility information previously collected for the project area. For the potholing, Peak Engineering will provide ASCII points and exhibit to show proposed pothole locations. Cardno's utility records research and locating is to be done before or during preparation of 30% design. Potholing is to be conducted after 30% design when new water and sewer alignments are determined and with the completed basemap.

It is expected that Cardno will investigate pipe depth, alignment, material and sizing for underground utilities and return sealed plan(s) and an AutoCAD file with this data and linework on the City's coordinate system and datum. In addition, we assume that Cardno will provide copies of the utility record documents for the project file. The AutoCAD file will also include location and size of water and sewer services from the main to the customer's side. For the potholing, it is expected that Cardno will return a sealed exhibit showing pipe depth, size, location and material for each pothole location that Peak Engineering can incorporate into the basemap and design file.

Deliverable: Report on Geotechnical Investigation, Project Basemap to Cardno, Pothole Location Exhibit & ASCII Points

Task A-3: 30% Design Documents

Peak Engineering will evaluate the existing right of way width and prepare preliminary linework for curb, gutter, sidewalk and parkway for review and discussion with the City's PM and staff. The purpose is to identify impacts for edge improvements alternatives. We will review impacts of typical roadway sections on a block-by-block basis because we assume that there may be a few options for sidewalk and parkway dimensions along each block. Peak Engineering will prepare sketches as needed to evaluate the possible edge improvements. We anticipate multiple meetings with project team to review impacts. Meetings are listed and quantified at the end of this task. We assume that the result of this effort is direction from the City on the preferred edge improvements that will be shown in the 30% plans.

Peak Engineering will prepare 30% design plans showing centerline stationing and proposed improvements for Navajo Road, Navajo Drive, Whipple Road between Navajo Drive and McMillan Road, and Beal Road from Highway 180 to Rockridge Road. The 30% design plans will present proposed phasing assuming 2-phase design and construction. The intent is to accelerate design of a portion of the project to allow for construction of the South Phase to commence in Spring 2020. The phasing is described as “South Phase” and “North Phase” with the limits of each phase to be determined during this task.

The 30% plans will present cross street match limits, water and sewer main alignments (horizontal only), FHS’s water service, stormdrain replacements and new inlets, curbing, sidewalk, and street lighting and conduit locations. At this stage of design, the existing residential water and sewer service locations will be shown in the plans but the new locations will not.

Peak Engineering will prepare a Design Concept Report (DCR). The DCR will capture details that the plans do not, such as a discussion of edge improvements, proposed variances to the City’s engineering standards and assumptions. We will include a discussion of stakeholder coordination and initial public involvement (Task A-4), if completed during this task. We anticipate one revision to the DCR after city review.

JE Fuller will perform a preliminary drainage analysis to determine the existing roadway capacity and proposed capacity with vertical curb instead of rolled curb and for the typical section geometry. Please refer to JE Fuller’s detailed scope of services in Exhibit C. The DCR will include a discussion of the preliminary drainage analysis prepared by JE Fuller; detailed results will be presented in an appendix.

Peak Engineering will prepare overall quantities in excel format to support EMC’s cost model. Peak Engineering will prepare an Engineer’s Opinion of Probable Construction Cost (EOPCC).

Peak Engineering will organize, participate and prepare agendas and notes for meetings during this task. We anticipate the following meetings:

- Project Kickoff with City & EMC (1)
- Utility Coordination with City, EMC & Cardno (1)
- Design Coordination with City & EMC (5)
- Design Comment Resolution and Cost Model Review with City & EMC (1)

Deliverable: Preliminary Linework for Edge Improvement Alternatives (internal), 30% Plans, Design Concept Report (Draft and Final), Drainage Analysis, Overall Project Quantities (spreadsheet), EOPCC, Meetings & Notes (8)

Task A-4: Stakeholder & Public Involvement

Peak Engineering will organize and document meetings with the following stakeholders. Stakeholder coordination will occur during different design tasks as appropriate.

- City of Flagstaff Water Services (1), Stormwater (2) and Traffic (1) Departments. We anticipate one meeting with Water Services to confirm proposed water and sewer replacements and service connections, two meetings with Stormwater to discuss drainage impacts and one meeting with Traffic to discuss typical section geometry.
- Mountain Line, NAIPTA (1). We anticipate one meeting with NAIPTA staff to discuss impacts to Route 5 (Orange) on Navajo Road during construction. We will work with NAIPTA to identify an alternate route.
- ADOT Coordination (2). We anticipate one meeting to discuss proposed improvements at the Highway 180 intersection with Beal Road and Navajo Road and one meeting for comment resolution for permitting.

- Arizona Public Service Coordination (2). We anticipate two meetings to discuss the alignment and location of conduit and positioning of street lights and electrical infrastructure. The meetings will likely occur at preliminary and final design. It is assumed that the City of Flagstaff will complete the application for the APS design and provide any associated fees.
- Flagstaff Unified School District (3). We anticipate one meeting to discuss safety and access for FHS and Marshall Elementary students and two meetings to discuss the District's primary water service location.
- Flagstaff Junior Academy (1). We anticipate one meeting to discuss safety and access for FJA students.
- Community Public Meetings (3). We anticipate one meeting during or soon after 30% design, one meeting during design development or near design completion of the South Phase and one meeting during design development or near design completion of the North Phase. For each meeting, Peak Engineering will prepare large format exhibit boards depicting the proposed improvements and provide a written summary of conversations/discussions from the meeting. Key design team members will attend the public meetings. We assume that BetaPR, EMC's subconsultant, will provide the public relations documents such as postcard notifications, comment cards and sign-in sheets and will compile comments.

Allowance Item(s)

- Additional Public Involvement. We have included an allowance for public involvement that may include door-to-door visits with residents, additional meetings and Council presentation. This task would be authorized at the discretion of the City's PM.

Deliverable: Stakeholder Meetings and Notes as Listed, Exhibits for and Attendance at 3 Public Meetings

TASK B: South Phase

Task B-1: 60% Design Documents

The limits of the South Phase will be determined during Task A-3, 30% Design, but is anticipated to include Navajo Road and Navajo Drive south of Beal Road. Design of Beal Road and the Beal/Navajo intersection is included in this phase but may be shifted to the North Phase depending on coordination with the USACE, results of the preliminary drainage analysis or EMC/COF's construction sequencing preferences.

Peak Engineering will prepare 60% design plans. The plans will include call-out text and construction notes but will not be keynoted or fully detailed. For 60% design, we will show horizontal and vertical alignments for the street centerline and water sewer and street utilities. We anticipate the following design sheets and index:

- Cover
- General Notes & Index
- Construction Control (future submittal)
- Details
- Topographic & Right of Way Survey (existing conditions sheets)
- Stormdrain Design from JE Fuller
- Water & Sewer Sheets (standalone for future ADEQ submittal, ~9 design sheets each water and sewer). The sheets will include the following elements:
 - Cover & General Notes
 - Details

- Utility Index
- Waterline Plan and Profile
- Sewerline Plan and Profile
- Valve & Hydrant Locations
- Manhole Locations
- Service Locations
- Street Improvements (~9 design sheets). The sheets will include the following elements:
 - Plan and Centerline Profile
 - Design Grades at Back of Curb
 - Driveway Slope Labels
 - Street Lighting
 - Striping & Signage Replacements
 - Street Lighting and Conduit Locations (per APS's layout)
 - Construction/Grading Limits
 - SWPPP (future submittal)

JE Fuller will prepare a preliminary drainage report per the scope of services in Exhibit C.

Peak Engineering will prepare an engineer's opinion of probable construction cost (EOPCC) based on estimated quantities. We will furnish estimated quantities in an excel spreadsheet for the team's use. We will review EMC's updated cost model.

Peak Engineering will submit plans to and request utility response letters from APS, Century Link, SuddenLink and UniSource.

Peak Engineering will submit plans to ADOT for review.

Peak Engineering will organize, participate and prepare notes for meetings during this task. We anticipate the following meetings:

- Design Coordination with City & EMC (6)
- Design Comment Resolution and Cost Model Review with City & EMC (1).

Deliverable: 60% Design Plans, Overall Project Quantities (spreadsheet), EOPCC (PDF & Spreadsheet), Cost Model Review, Meeting & Notes (7), Franchise Utility Letters, Preliminary Drainage Report

Task B-2: Final 1 Plans

Peak Engineering will prepare Final 1 Plans. Refer to Task B-1 for anticipated plan sheets and index. The sheets listed as future submittals will be developed and included in this task. The Final 1 Plans will be fully developed and detailed for submittal to the City of Flagstaff and ADEQ. The plan view will show finished grade contours, keynotes, and detailed grading at ramps, valley gutters, etc. Triple profiles will show curb grades and driveway locations. We will include cross section sheets showing the relationship between existing and proposed grades at regular intervals along the roadway. The street improvement plans will be construction ready but will be marked "Preliminary, Not for Construction" for City review.

The water and sewer plans will be fully developed and the profiles will show utility crossings and water and sewer services. The water and sewer plans will be sealed for submittal to ADEQ.

Peak Engineering will prepare an Engineer's Design Report per the requirements of ADEQ. Peak Engineering will prepare the ADEQ application for the City's signature. We assume that the City will provide capacity assurance and prepare a check for the submittal fee. Peak Engineering will make the ADEQ submittal.

Peak Engineering will submit plans to ADOT for review.

JE Fuller will prepare a final drainage report and Final 1 drainage improvement plans per their scope of services in Exhibit C.

Peak Engineering will prepare draft special provisions. The special provisions will reference the City of Flagstaff Engineering Standards & Specifications and MAG Specifications. We assume that the City will prepare the general conditions. We will include instructions in the special provisions for abandonment of the well in Beal Road, if applicable.

Peak Engineering will update the EOPCC, provide an updated Overall Project Quantities (spreadsheet) and will review EMC's Guaranteed Maximum Price (GMP) documents.

Peak Engineering will organize, participate and prepare notes for meetings during this task. We anticipate the following meetings:

- Design Coordination with City & EMC (6)
- Design Comment Resolution and Cost Model/GMP review with City & EMC (1).

Deliverable: Final 1 Plans, Engineer's Design Report, ADEQ Submittal, Final Drainage Report, Draft Special Provisions, Overall Project Quantities (spreadsheet), EOPCC, Cost Model/GMP Review, Meeting & Notes (7)

Task B-3: Final 2 Plans

Peak Engineering will address comments and edits in Final 2 Plans for Civil Improvement Plan approval and signatures. If required, Peak Engineering will address comments and resubmit to ADEQ. If required, JE Fuller will prepare an addendum to the drainage report.

If required, Peak Engineering will revise the EOPCC and update the Overall Project Quantities (spreadsheet). We will review EMC's Guaranteed Maximum Price (GMP) document.

Peak Engineering will finalize the Special Provisions.

Peak Engineering will prepare Final 2 plans with 2 mylar cover sheets for City signature. The City's PM will coordinate signatures and Peak will prepare an electronic version (PDF) of the approved plans.

Peak Engineering will prepare the plans for the encroachment permit and the COF and EMC will make the submittal to ADOT. Note that EMC will be required to furnish information for the encroachment permit.

Peak Engineering will provide an addendum to Final 2 Plans, if required, for permitting.

Peak Engineering will organize, participate and prepare notes for meetings during this task. We anticipate the following meetings:

- Design Coordination with City & EMC (2)

Deliverable: Final 2 Plans (2 mylar covers & PDF version), Special Provisions, Drainage Report Addendum (JE Fuller), Overall Project Quantities (spreadsheet), Meeting & Notes (2), Review of GMP Revisions if Required.

Optional Item(s)

Peak Engineering will prepare a design for FHS's south side water service connection. Design includes connection to the main and extension of the service to the water meter vault and Reduced Pressure Assembly (RPA). Design does not include customer side improvements.

Task B-4: Beal & Rio de Flag Utilities at Bridge (Optional)

Peak Engineering will design water and sewer main replacements at the Beal Road bridge at the Rio de Flag. The design will be incorporated into Tasks B-1 through B-3, above. This is presented as optional because it is not yet determined if this scope will fall under this project or the USACE's Rio de Flag project. This task includes coordination with EMC for design for a waterline boring and with Speedie & Associates for additional soil borings.

This task includes up to 4 meetings regarding the Army Corps of Engineers jurisdictional waters and proposed improvements at Beal and the Rio de Flag crossing. We anticipate three meetings related to the improvements at the crossing. These meetings may be conducted with City staff, the USACE and/or the USACE's design engineer.

This task includes scour calculations by JE Fuller for protection of the water and sewer mains in the Rio de Flag. It is assumed that the improvements would comply with the USACE Nationwide Permit (<0.10 acre disturbance in navigable waterway) and no additional permitting would be required.

TASK C: North Phase

The limits of the North Phase will be determined during Task A-3, 30% Design, but is anticipated to include Navajo Drive north of Beal Road. Design of Beal Road and the Beal/Navajo intersection may be included in this phase but is budgeted for in Task B, South Phase.

Task C-1: 60% Design Documents

Refer to Task B-1 for a detailed description of tasks, modified for 5 design sheets for each water, sewer and roadway improvements and excepting submittal to ADOT.

Task C-2: Final 1 Plans

Refer to Task B-2 for a detailed description of tasks excepting submittal to ADOT. Note that the GMP may not be developed until Final 2 Plans for the North Phase. Whether it is GMP review or cost model review, it is the same level of effort.

Task C-3: Final 2 Plans

Refer to Task B-3 for a detailed description of tasks excepting submittal to ADOT. Note that the GMP may not be developed until Final 2 Plans for the North Phase. Whether it is GMP review or cost model review, it is the same level of effort.

TASK D: Construction Phase Services (Allowance)

Task D-1: Season 1 South Phase

Construction phase services may include participation in the City pre-construction meeting, on-site representation to address unforeseen conditions and preparation of field orders (exhibits) as needed. To establish a budget for this Task, we anticipated 32-week construction duration. We anticipate two hours/week of a Project Engineer, two hours/week of designer and two hours/month of Project Manager time. We assume that EMC will organize and prepare meeting notes.

Task D-2: Season 2 North Phase

Refer to Task D-1 for a detailed description of estimated tasks.

Fee Summary

We propose to bill lump sum percent complete per task unless otherwise noted as an allowance or optional service. Allowances would be invoiced as time and materials and optional services would be invoiced as lump sum for the task. Allowances and optional services are to be as authorized by the City's PM. Please refer to the attached cost detail summary for hour totals. We propose a contract time period of 925 calendar days.

Invoicing format shall be as follows:

Description	Total
Task A: Overall Project	
<i>Task A-1: Survey & Mapping</i>	\$1,585
Northland Exploration	\$7,216
FHS Survey & Legal Descriptions/Exhibit (Optional)	\$2,618
<i>Task A-2: Geotechnical Investigation & Utility Coordination</i>	\$4,170
Geotechnical Investigation, Speedie	\$11,220
Geotechnical Borings (Allowance)	\$9,240
<i>Task A-3: 30% Design Documents</i>	\$67,575
JE Fuller	\$52,349
<i>Task A-4: Stakeholder & Public Involvement</i>	\$19,705
JE Fuller	\$1,584
Additional Public Involvement (Allowance)	\$9,000
Subtotal	\$186,262
TASK B: South Phase	
<i>Task B-1: 60% Design Documents</i>	\$67,120
JE Fuller	\$18,188.50
<i>Task B-2: Final 1 Plans</i>	\$90,685
JE Fuller	\$16,681.5
<i>Task B-3: Final 2 Plans</i>	\$17,950
JE Fuller	\$6,517.50
FHS South Water Service Design (Optional)	\$2,470
<i>Task B-4: Beal & Rio de Flag Utilities at Bridge (Optional)</i>	\$10,260
JE Fuller	\$5,324
Subtotal	\$235,196.50

TASK C: North Phase	
<i>Task C-1: 60% Design Documents</i>	\$54,935
JE Fuller	\$18,188.50
<i>Task C-2: Final 1 Plans</i>	\$69,335
JE Fuller	\$16,681.50
<i>Task C-3: Final 2 Plans</i>	\$13,750
JE Fuller	\$6,517.50
Subtotal	\$179,407.50
TOTAL DESIGN FEE	\$600,866
TASK D: Construction Phase Services	
<i>Task D-1: Season 1 South Phase (Allowance)</i>	\$19,200
JE Fuller	\$2,200
<i>Task D-2: Season 2 North Phase (Allowance)</i>	\$19,200
JE Fuller	\$2,200
Subtotal	\$42,800
Reimbursable Project Expenses (Allowance)	\$4,025
TOTAL PROJECT	\$647,691

Assumptions & Exclusions

The City has performed a hydraulic model of the water and sewer system and the mainline pipe sizing provided by the City meets domestic and fire demands. Water modeling is not required for the new connection for FUSD.

Design of the replacement of the existing FHS's water service is included in the design.

Design of a new stormdrain system is not included. Stormdrain design is limited to replacement of existing infrastructure and new lateral connections, if needed, at intersections that already have stormdrain.

Peak will not prepare a roadway asset inventory, photo-documentation of street or driveway conditions, or prepare a video of the existing conditions.

If Beal bridge utilities are included, the City will furnish the Beal Bridge design in PDF & CAD.

Electrical engineering for street lighting is not included. APS will provide conduit sizing and infrastructure requirements for the underground street light services. Peak Engineering will specify alignment of conduit and location of boxes on the plans.

Meeting with Franchise Utilities, with the exception of 2 meetings with APS, is not included.

Preparation of legal and parcel descriptions or easements is limited to one description and exhibit for FUSD's water service at FHS. The City will prepare the boiler plate language for the easement and will be responsible for recording easement with the County Recorder.

No traffic study or traffic impact analysis is required and is therefore not included.

Preparation of Traffic Control Plans is not included.

Construction inspection and construction observations are not included.

As-built plans and/or Record Drawings, as defined in the City Engineering Standards, are not included.

404 permitting in the Rio de Flag is not included.

Public input gathering such as surveys, e-mails, etc is not included with the exception of notes from the public meetings.

The City and EMC will complete the ADOT encroachment permit.

The City will prepare the design application and contract with APS.

Design Schedule

Please refer to the attached design schedule.

Attachments

Cost Detail Spreadsheet Summary

Design Phase Schedule

Exhibit A: City of Flagstaff Scoping Document, dated 2/13/2019

Exhibit B: Northland Exploration Scope of Services

Exhibit C: JE Fuller Scope of Services

Exhibit D: Speedie & Associates Scope of Services

- End -

Client Name: City of Flagstaff
Project Name: Coconino Estates Improvements Phase 1
Project Number: 19COF01 (City Project No: 03-18005)

Client Information	
Name:	Capital Improvements Dept (PM: Eli Reisner)
Address:	211 W Aspen Avenue Flagstaff, AZ 86001

Project Budget Summary

Task	Task Description	Principal Engineer		Project Manager		Project Engineer		Designer		Engineering Intern		Technical Drafter		Clerical		Total Hours	Labor Cost per Task
		Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars		
		Hourly Rate: \$175		\$160		\$145		\$120		\$75		\$90		\$70			
1	Task A-1: Survey & Mapping	1.00	\$ 175	1.00	\$ 160	2.00	\$ 290	8.00	\$ 960	-	\$ -	-	\$ -	-	\$ -	12.00	\$ 1,585
2	Task A-2: Geotechnical Investigation & Utility Coord	-	\$ -	5.00	\$ 800	10.00	\$ 1,450	16.00	\$ 1,920	-	\$ -	-	\$ -	-	\$ -	31.00	\$ 4,170
3	Task A-3: 30% Design Documents	-	\$ -	71.00	\$ 11,360	175.00	\$ 25,375	257.00	\$ 30,840	-	\$ -	-	\$ -	-	\$ -	503.00	\$ 67,575
4	Task A-4: Stakeholder & Public Involvement	9.00	\$ 1,575	53.00	\$ 8,480	98.00	\$ 14,210	37.00	\$ 4,440	-	\$ -	-	\$ -	-	\$ -	197.00	\$ 28,705
5	Task B-1: 60% Design (South Phase)	-	\$ -	55.00	\$ 8,800	168.00	\$ 24,360	283.00	\$ 33,960	-	\$ -	-	\$ -	-	\$ -	506.00	\$ 67,120
6	Task B-2: Final 1 Plans (South Phase)	-	\$ -	91.00	\$ 14,560	189.00	\$ 27,405	406.00	\$ 48,720	-	\$ -	-	\$ -	-	\$ -	686.00	\$ 90,685
7	Task B-3: Final 2 Plans (South Phase)	-	\$ -	19.00	\$ 3,040	52.00	\$ 7,540	82.00	\$ 9,840	-	\$ -	-	\$ -	-	\$ -	153.00	\$ 20,420
8	Task B-4: Beal & RDF Utilities (Optional)	-	\$ -	16.00	\$ 2,560	20.00	\$ 2,900	40.00	\$ 4,800	-	\$ -	-	\$ -	-	\$ -	76.00	\$ 10,260
9	Task C-1: 60% Design (North Phase)	-	\$ -	45.00	\$ 7,200	143.00	\$ 20,735	225.00	\$ 27,000	-	\$ -	-	\$ -	-	\$ -	413.00	\$ 54,935
10	Task C-2: Final 1 Plans (North Phase)	-	\$ -	64.00	\$ 10,240	151.00	\$ 21,895	310.00	\$ 37,200	-	\$ -	-	\$ -	-	\$ -	525.00	\$ 69,335
11	Task C-3: Final 2 Plans (North Phase)	-	\$ -	17.00	\$ 2,720	38.00	\$ 5,510	46.00	\$ 5,520	-	\$ -	-	\$ -	-	\$ -	101.00	\$ 13,750
12	Task D: Construction Phase Services	-	\$ -	28.00	\$ 4,480	128.00	\$ 18,560	128.00	\$ 15,360	-	\$ -	-	\$ -	-	\$ -	284.00	\$ 38,400
LABOR TOTAL:			\$ 1,750	\$ 74,400	\$ 170,230	\$ 220,560	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 466,940

Reimbursable Project Expenses

A	Printing & Reprographics	\$ 4,000
B	Parking	\$ 25
C	Mileage	\$ -
D	Postage	\$ -
E	Equipment	\$ -
F	Other	\$ -
RPE TOTAL:		\$ 4,025

Sub-Consultants (Includes 10% markup)

Northland Exploration	\$ 7,216	
Northland Exploration (Flag High)	\$ 2,618	
JE Fuller	\$ 136,708	
JE Fuller (Beal Bridge Utils)	\$ 5,324	
JE Fuller (Construction Allowance)	\$ 4,400	
Speedie & Associates	\$ 11,220	
Speedie & Associates (4 Borings)	\$ 9,240	
SUB-CONSULTANT TOTAL:		\$ 176,726

PROJECT TOTAL:
\$ 647,691

Client Name: City of Flagstaff

Project Name: Coconino Estates Improvements Phase 1

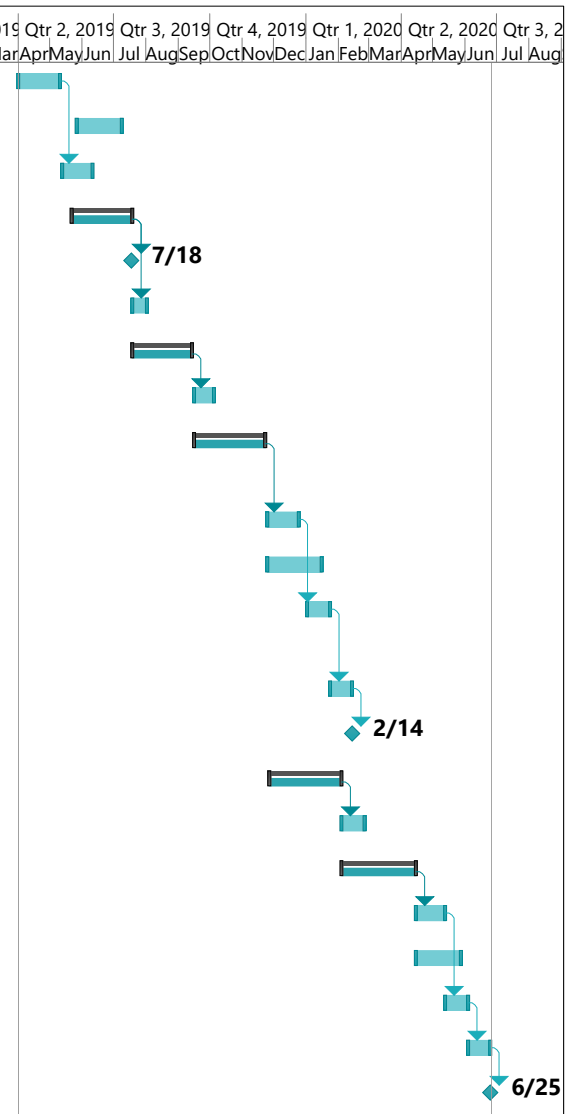
Project Number: 19COF01 (City Project No: 03-18005)

		Total Hours per Employee Category:							Project Totals	
		10	465	1174	1838	0	0	0	3487	
		Total Labor Cost per Employee Category:							466,940	
Task	Sub-Task	Principal Engineer	Project Manager	Project Engineer	Designer	Engineering Intern	Technical Drafter	Clerical	Total Hours per Task	Labor Cost per Task
		\$175	\$160	\$145	\$120	\$75	\$90	\$70		
1	Task A-1: Survey & Mapping	\$ 175	\$ 160	\$ 290	\$ 960	\$ -	\$ -	\$ -	12	\$ 1,585
	1 Process Basemap/Contract	1	1	2	8				12	\$ 1,585
	2								0	\$ -
	3								0	\$ -
	4								0	\$ -
	5								0	\$ -
	6								0	\$ -
	7								0	\$ -
	8								0	\$ -
	9								0	\$ -
	10								0	\$ -
2	Task A-2: Geotechnical Investigation & Utility Coord	\$ -	\$ 800	\$ 1,450	\$ 1,920	\$ -	\$ -	\$ -	31	\$ 4,170
	1 Review prelim geotech		2	2					4	\$ 610
	2 Coord with Cardno & review results, Import to basemap		2	4	8				14	\$ 1,860
	3 Potholing Exhibit/Data to Cardno		1	4	8				13	\$ 1,700
	4 APNs Addresses Water Meters								0	\$ -
	5								0	\$ -
	6								0	\$ -
	7								0	\$ -
	8								0	\$ -
	9								0	\$ -
	10								0	\$ -
3	Task A-3: 30% Design Documents	\$ -	\$ 11,360	\$ 25,375	\$ 30,840	\$ -	\$ -	\$ -	503	\$ 67,575
	1 Evaluate R/W, prelim linework for curb, S/W, parkway		16	32	80				128	\$ 16,800
	2 Block-by-block Exhibits/Printouts of S/W and parkway options		2	8	8				18	\$ 2,440
	3 Establish CL Stationing, Resolve CL with ROW CL		1	12	24				37	\$ 4,780
	4 Draft WL Alignment		3	9	40				52	\$ 6,585
	5 Draft SL Alignment		3	9	40				52	\$ 6,585

6	Prepare Plan Sheets, QC Review		8	8	48				64	\$ 8,200
7	Capture Req'ts and Write DCR		8	16					24	\$ 3,600
8	Drainage Coord with JEF			8	8				16	\$ 2,120
9	Meetings (8 @ 3 hours each PM, 4 hours each PE x 2 PEs)		24	64					88	\$ 13,120
10	Quantities/Est/Cost Model Review		6	9	9				24	\$ 3,345
4	Task A-4: Stakeholder & Public Involvement		\$ 1,575	\$ 8,480	\$ 14,210	\$ 4,440	\$ -	\$ -	\$ -	197 \$ 28,705
1	COF Water Services, SW & Traffic Department (4)		8	8	2				18	\$ 2,680
2	Mountain Line (1)		2	2	1				5	\$ 730
3	ADOT (2)		4	4	2				10	\$ 1,460
4	USACE (4)								0	\$ -
5	FUSD (3)		6	6	4				16	\$ 2,310
6	FJA (1)		2	2					4	\$ 610
	APS Coordination for light pole conduit (2)			4	4				8	\$ 1,060
7	Public Meetings (3 @ 3hrs each Principal, PM & 2 PEs)	9	9	18					36	\$ 5,625
8	Exhibits for Public Meetings		2	8	24				34	\$ 4,360
9	Mailers for Public Meetings								0	\$ -
10	Comment Compilation for Public Meetings			6					6	\$ 870
11	ALLOWANCE for door-to-door		20	40					60	\$ 9,000
5	Task B-1: 60% Design (South Phase)		\$ -	\$ 8,800	\$ 24,360	\$ 33,960	\$ -	\$ -	\$ -	506 \$ 67,120
1	CL vertical profile		1	9	36				46	\$ 5,785
2	BOC & Driveway Grading Eval		2	9	27				38	\$ 4,865
3	Intersection grading (8) - matchup to ex to check CL		4	18	36				58	\$ 7,570
4	Waterline design		1	8	24				33	\$ 4,200
5	Sewerline design		1	8	24				33	\$ 4,200
6	Roadway Plan preparation (9 sheets), constr notes		2	12	40				54	\$ 6,860
7	Utility Plan preparation (9 sheets ea = 18), constr notes		4	18	60				82	\$ 10,450
8	EOPCC & Cost Model Review		9	12	18				39	\$ 5,340
9	Drainage Coord with JEF		2	9	9				20	\$ 2,705
10	Meetings (7 @ 3 hours each PM, 4 hours each PE x 2 PEs)		21	56					77	\$ 11,480
11	Submittal to Franchise Utils, QC		8	9	9				26	\$ 3,665
6	Task B-2: Final 1 Plans (South Phase)		\$ -	\$ 14,560	\$ 27,405	\$ 48,720	\$ -	\$ -	\$ -	686 \$ 90,685
1	Final CL profile, BOC grading		4	4	40				48	\$ 6,020
2	Final Intersection grading (8)		4	18	72				94	\$ 11,890
3	Waterline profile design		4	9	40				53	\$ 6,745
4	Sewerline profile design		4	9	40				53	\$ 6,745
5	Roadway Plan development (9 sheets)		4	18	80				102	\$ 12,850
6	Utility Plan development (9 sheets ea = 18)		4	18	80				102	\$ 12,850
7	ADEQ EDR, Submittal, Forms		4	16					20	\$ 2,960
8	Drainage Coord with JEF		4	12	18				34	\$ 4,540
9	Meetings (7 @ 3 hours each PM, 4 hours each PE x 2 PEs)		21	56					77	\$ 11,480
10	Submittal, QC, Special Provisions		32	16	18				66	\$ 9,600
11	ADOT Submittal		2	9	18				29	\$ 3,785
12	Cost Model Review		4	4					8	\$ 1,220

7	Task B-3: Final 2 Plans (South Phase)	\$	-	\$	3,040	\$	7,540	\$	9,840	\$	-	\$	-	\$	-	153	\$	20,420
	1	Final Edits			8		18		60							86	\$	11,090
	2	Submittal			1		6		6							13	\$	1,750
	3	GMP Review			4		8									12	\$	1,800
	4	ADOT Resubmittal			1		2		4							7	\$	930
	5	OPTIONAL - Design of FHS's Southside Service Connection			1		6		12							19	\$	2,470
	6	Meetings (2 @ 2 hours each PM, 3 hours each PE x 2 PEs)			4		12									16	\$	2,380
	7															0	\$	-
	8															0	\$	-
	9															0	\$	-
	10															0	\$	-
8	Task B-4: Beal & RDF Utilities (Optional)	\$	-	\$	2,560	\$	2,900	\$	4,800	\$	-	\$	-	\$	-	76	\$	10,260
	1	Boring design sheet			4		8		40							52	\$	6,600
	2	Special Provisions			2											2	\$	320
	3	Coordination with Cardno & Speedie			2		4									6	\$	900
	4	USACE (4)			8		8									16	\$	2,440
	5															0	\$	-
	6															0	\$	-
	7															0	\$	-
	8															0	\$	-
	9															0	\$	-
	10															0	\$	-
9	Task C-1: 60% Design (North Phase)	\$	-	\$	7,200	\$	20,735	\$	27,000	\$	-	\$	-	\$	-	413	\$	54,935
	1	CL vertical profile			1		9		27							37	\$	4,705
	2	BOC & Driveway Grading Eval			2		9		27							38	\$	4,865
	3	Intersection grading (4) - matchup to ex to check CL			2		9		18							29	\$	3,785
	4	Waterline design			1		9		24							34	\$	4,345
	5	Sewerline design			1		9		24							34	\$	4,345
	6	Roadway Plan preparation (9 sheets), constr notes			1		9		36							46	\$	5,785
	7	Utility Plan preparation (9 sheets ea = 18), constr notes			2		9		36							47	\$	5,945
	8	EOPCC & Cost Model Review			5		9		18							32	\$	4,265
	9	Drainage Coord with JEF			1		6		6							13	\$	1,750
	10	Meetings (7 @ 3 hours each PM, 4 hours each PE x 2 PEs)			21		56									77	\$	11,480
	11	Submittal to Franchise Utils, QC			8		9		9							26	\$	3,665
10	Task C-2: Final 1 Plans (North Phase)	\$	-	\$	10,240	\$	21,895	\$	37,200	\$	-	\$	-	\$	-	525	\$	69,335
	1	Final CL profile, BOC grading			4		4		40							48	\$	6,020
	2	Final Intersection grading (4)			2		12		40							54	\$	6,860
	3	Waterline profile design			4		9		40							53	\$	6,745
	4	Sewerline profile design			4		9		40							53	\$	6,745
	5	Roadway Plan development (9 sheets)			2		12		60							74	\$	9,260
	6	Utility Plan development (9 sheets ea = 18)			2		12		60							74	\$	9,260
	7	ADEQ EDR, Submittal, Forms			3		12									15	\$	2,220
	8	Drainage Coord with JEF			2		9		12							23	\$	3,065

ID	Task Mode	Task Name	Duration	Start	Finish	2019 Qtr 2, 2019 Qtr 3, 2019 Qtr 4, 2019 Qtr 1, 2020 Qtr 2, 2020 Qtr 3, 2020
						Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug
1	★	A-1: SURVEY	30 days	Mon 4/1/19	Fri 5/10/19	
2	★	A-2: GEOTECH	30 days	Mon 5/27/19	Mon 7/8/19	
3	★	SUBSURFACE UTILITY INVESTIGATION (CARDNO)	20 days	Mon 5/13/19	Mon 6/10/19	
4	★	A-3: 30% DESIGN	40 days	Wed 5/22/19	Thu 7/18/19	
8	★	A-4: PUBLIC MEETING #1	0 days	Thu 7/18/19	Thu 7/18/19	
9	★	CITY REVIEW: 30% DESIGN	10 days	Fri 7/19/19	Thu 8/1/19	
10	★	B-1: 60% DESIGN (SOUTH SECTION: NAVAJO/BEAL)	40 days	Fri 7/19/19	Fri 9/13/19	
14	★	CITY REVIEW: 60% DESIGN	15 days	Mon 9/16/19	Fri 10/4/19	
15	★	B-2: FINAL 1 DESIGN (SOUTH SECTION: NAVAJO/BEAL)	50 days	Mon 9/16/19	Fri 11/22/19	
19	★	CITY REVIEW: FINAL 1 DESIGN	20 days	Mon 11/25/19	Tue 12/24/19	
20	★	ADEQ REVIEW: FINAL 1 DESIGN	30 days	Mon 11/25/19	Wed 1/15/20	
21	★	B-3: FINAL 2 DESIGN (SOUTH SECTION: NAVAJO/BEAL)	15 days	Thu 1/2/20	Thu 1/23/20	
22	★	CITY REVIEW: FINAL 2 DESIGN	15 days	Fri 1/24/20	Thu 2/13/20	
23	★	FINAL APPROVAL	0 days	Fri 2/14/20	Fri 2/14/20	
24	★	C-1: 60% DESIGN (NORTH SECTION: NAVAJO)	40 days	Wed 11/27/19	Mon 2/3/20	
28	★	CITY REVIEW: 60% DESIGN	15 days	Tue 2/4/20	Tue 2/25/20	
29	★	C-2: FINAL 1 DESIGN (NORTH SECTION: NAVAJO)	50 days	Tue 2/4/20	Tue 4/14/20	
33	★	CITY REVIEW: FINAL 1 DESIGN	20 days	Wed 4/15/20	Tue 5/12/20	
34	★	ADEQ REVIEW: FINAL 1 DESIGN	30 days	Wed 4/15/20	Wed 5/27/20	
35	★	C-3: FINAL 2 DESIGN (NORTH SECTION: NAVAJO)	15 days	Wed 5/13/20	Wed 6/3/20	
36	★	CITY REVIEW: FINAL 2 DESIGN	15 days	Thu 6/4/20	Wed 6/24/20	
37	★	FINAL APPROVAL	0 days	Thu 6/25/20	Thu 6/25/20	



Project: 2019-03-05 COCO EST
Date: Wed 3/6/19

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Progress	
Project Summary		Manual Summary		Manual Progress	
Inactive Task		Start-only			
Inactive Milestone		Finish-only			



Coconino Estates Improvements Phase I Scoping Document E-OUTLINE

WITH COMMENTS 2-33-2019

Participants

Bret Petersen, Capital Improvements Engineer
Gary Miller, Development Engineer
Jeffrey Bauman, Traffic Engineer
Steven Hill, Streets Supervisor
Adam Miele, Acting Streets Section Head
Ryan Roberts, Water Services Engineering Manager
Jim Davis, Water Services Plan Reviewer
Chris Kirkendall, Stormwater Manager
Patrick O'Connor, Water Distribution Supervisor
Joe Almendarez, Wastewater Collection Supervisor

Angel Baca, Acting Construction Manager
Amy Hagin, Public Works Parks Manager
Kent Snide, Fire Inspector
Nathan Reisner, ADOT District Development Engineer
Anne Dunno, NAIPTA Project Manager
Bob Kuhn, FUSD Assist. Superintendent for Operations
Martin Conboy, Unisource
Sanford Yazzie, Suddenlink
Manuel Hernandez, Century Link
Kent Bushman, APS
Ryan Weisner, APS

Project Location

W. Beal Road – N. Rockridge Road to N. Fort Valley Road
N. Navajo Drive – W. Navajo Road to W. Murray Road
W. Navajo Road – N. Navajo Drive to N. Fort Valley Road



Figure 1. Location Map.

Existing Conditions

Existing Roadway

W. Beal Road – N. Rockridge Road to N. Fort Valley Road

W. Beal Rd. is a partially striped two-way two lane Minor Collector Roadway with a speed limit of 25 miles per hour. From N. Rockridge Rd. to N. Aztec St. there is no striping, from N. Aztec St. to N. Navajo Dr. there is center line striping and a striped parking lane on both sides, from N. Navajo Dr. to N. Fort Valley Rd. there is a striped parking lane on both sides. Available right-of-way varies from approximately 50'- 56' from the west end to N. Aztec St. then from N. Aztec St. to N. Fort Valley Rd. it is approximately 60'. The existing roadway width (RW) and back of curb to back of curb (BCBC) measurements varied per section as follows:

- West of N. Rockridge Rd. to N. Rockridge Rd. – RW 37' and BCBC 41'
 - Existing 3' parkway and 4' sidewalk on both sides of the roadway
- N. Rockridge Rd. to N. Aztec St. – RW 37' and BCBC 41'
 - No parkway and an existing 4' sidewalk on both sides of the roadway
 - Except for the missing sidewalk at the southwest corner of the Beal/Aztec intersection along the north side of 1119 N. Aztec St. property
- N. Aztec St. to the Rio De Flag – RW 37' and BCBC 41'
 - No parkway and an existing 4' sidewalk on both sides of the roadway
- At the Rio De Flag – RW 20' and BCBC 24'
 - No parkway and an existing sidewalk that varies from 4' to 12' on both sides of the roadway
- Rio De Flag to N. Navajo Dr. – RW 32' and BCBC 36'
 - No sidewalk
- N. Navajo Dr. to N. Fort Valley Rd. – RW 32' and BCBC 36'
 - No sidewalk

The pavement is in very poor condition, with an OCI of 47.64. The typical cross slope provided by the crown was either nonexistent or varied a great deal throughout the project limits, with some of the roadway severely dropping off down to the curb lip. There is rolled curb and gutter, on both sides of the roadway for the entire length of the project. Roughly 60% of the rolled curb and gutter needs to be replaced. The west 1/3 of the project has sidewalk on both sides of the street with either existing non-compliant ADA sidewalk ramps or no existing sidewalk ramps. The east 2/3 of the project does not have sidewalk on either side. Approximately 25% of the existing sidewalk needs to be replaced. There are multiple rolled curb residential driveways on both sides, with concrete as the material for most of the private driveways. All four existing valley gutters need to be replaced.

Beal Rd. is the primary access route for the Rock Ridge Estates Neighborhood.

N. Navajo Drive – W. Navajo Road to W. Murray Road

N. Navajo Dr. is a non-striped two-way two lane Local Roadway with a speed limit of 25 miles per hour. The existing width allows for on street parking on both sides and two-way travel. Available right-of-way is approximately 60' from W. Navajo Rd. to W. Beal Rd. and 50' from W. Beal Rd. to W. Murray Rd. The existing roadway width (RW) and back of curb to back of curb (BCBC) measurements varied per section as follows:

- W. Navajo Rd. to W. Havasupai Rd. – RW 36' and BCBC 40'
 - No existing sidewalk
- W. Havasupai Rd. to W. Beal Rd. – RW varies from 36' – 32' and BCBC 40' – 36'
 - No existing sidewalk
- W. Beal Rd. to W. Whiting Rd. – RW 26' and BCBC 30'
 - No existing sidewalk
- W. Whiting Rd. to W. Murray Rd. – RW 32' and BCBC 36'
 - No existing sidewalk

The pavement is in very poor condition with an OCI of 47.07. The typical cross slope provided by the crown was either nonexistent or varied a greatly throughout the project limits, with some of the roadway severely dropping off down to the curb lip. There is rolled curb and gutter, on both sides of the roadway for the entire length of the project. Roughly 50% of the rolled curb and gutter needs to be replaced. There is no sidewalk. There are multiple rolled curb residential driveways on both sides, with concrete as the material for most of the private driveways and a few various private driveway materials such as asphalt, pavers, and stamped and stained concrete.

W. Navajo Road – N. Navajo Drive to N. Fort Valley Road

W. Navajo Rd. is a striped two-way two lane Minor Collector with a speed limit of 25 miles per hour. The existing width allows for on street parking on both sides and two-way travel. Available right-of-way is approximately 60’ from N. Navajo Drive to N. Fort Valley Road. The existing roadway width is 37’ and back of curb to back of curb measurement is 41’. The existing pavement is in poor condition with an OCI of 46.93. There is rolled curb and gutter, on both sides of the roadway for the entire length of the project. Roughly 70% of the rolled curb and gutter needs to be replaced. Most of the road does not have sidewalk, except for the section approximately 100’ east and west of Hopi Dr. on the south side of Navajo Rd. with no parkway and a 5’ wide sidewalk. The existing sidewalk is in very good condition. There are multiple rolled curb residential driveways on both sides, with concrete as the material for most of the private driveways.

Mountain Line (NAIPTA) Buses utilize Navajo Rd. for their Bus Route #5 traveling in both directions.

Navajo Rd. is also utilized by delivery trucks and school busses to access the three schools (Marshal Elementary, Flagstaff Middle School, and Flagstaff High School) just to the south of Navajo Rd. off Hopi Dr.

Existing Utilities

W. Beal Rd.

There are existing water and sewer mains within the roadway that run the entire length of project limits, both with the applicable services, manholes, fire hydrants, and valves. See Table 1 for more information.

Table 1. W. Beal Rd. Existing Utilities.

Water Main						
Location	Length (ft)	Size	Material	Year Built	Years Old	Notes
Just West of Rockridge	112	8"	AC	1975	43	Roughly 112' west of Rockridge to Rockridge
Rockridge to Just West of Aztec	216	8"	AC	1975	43	From Rockridge to roughly 170' west of Aztec
Just West of Aztec to Navajo	630	8"	AC	1968	50	Roughly 170' west of Aztec to Navajo
Navajo to Just West of Fort Valley	825	6"	CI	1954	64	Navajo to roughly 50' west of Fort Valley
Just West of Fort Valley	50	6"	DI	1984	34	Roughly 50' west of Fort Valley to Fort Valley
Total Length (ft)	1,833					
Sewer Main						
Location	Length (ft)	Size	Material	Year Built	Years Old	Notes
MH 1-134 to MH 1-104	284	8"	VCP	1975	43	
MH 1-104 to MH 1-120	338	8"	VCP	1968	50	
MH 1-084 to 1-087	907	8"	VCP	1954	64	
Total Length (ft)	1,529					
Stormwater						
Location	Length (ft)	Size	Material	Year Built	Years Old	Notes
Just West of Aztec	50	18"x29"	CMP	NA	NA	Roughly 180' west of Aztec
Rio De Flag to Navajo	255	NA	NA	NA	NA	GIS Shows on Beal south of the Right-of-way
Total Length (ft)	305					

Along with the utilities listed above there are water and sewer mains connecting to the Beal Rd. water and sewer mains at Rockridge Rd., Aztec St., the Rio De Flag (sewer only), McMillan Rd., and just west of McMillian Rd. (sewer only). There are existing catch basins within the roadway on the south side of the intersection of Beal Rd. and Navajo Dr. and on the both sides of the roadway roughly 180' west of Aztec St.

APS, Suddenlink, and Century Link all appear to be above ground in the utility easements behind the properties to the south of Beal Rd. and in the utility easements between the roads and the Rio De Flag that run perpendicular to Beal Rd. The only overhead lines on Beal Rd. are at Fort Valley Rd. crossing Beal Rd., east of McMillan Rd. crossing Beal Rd., at the Rio De Flag crossing Beal Rd., and the overhead lines providing power to the one (1) existing street light at the east end of the road. The existing street lights on Beal Rd. west of the Rio De Flag are powered by underground lines. Unisource is assumed to be in the roadway or the utility easements.

N. Navajo Dr.

There are existing water and sewer mains within the roadway that run the entire length of project limits, both with the applicable services, manholes, fire hydrants, and valves. See Table 2 for more information.

Table 2. N. Navajo Dr. Existing Utilities.

Water Main						
Location	Length (ft)	Size	Material	Year Built	Years Old	Notes
Navajo Rd. to Just North of Havasupai	779	8"	CI	1947	71	Navajo Rd. to roughly 150' North of Havasupai
Just North of Havasupai to Whiting	1,144	8"	CI	1954	64	Roughly 150' North of Havasupai to Whiting
Whiting to Anderson	371	8"	AC	1959	59	
Anderson to Just North of Anderson	622	8"	CI	1959	59	Anderson to roughly 250' North of Anderson
Just North of Anderson to Murray	706	8"	AC	1959	59	Roughly 250' North of Anderson to Murray
Total Length (ft)	3,622					
Sewer Main						
Location	Length (ft)	Size	Material	Year Built	Years Old	Notes
MH 1-144 to MH 1-146	706	8"	PVC	1988	30	
MH 1-146 to Just North of Havasupai	160	8"	VCP	1947	71	MH 1-146 to roughly 160' North of Havasupai
Just North of Havasupai to MH 1-076	1,137	8"	VCP	1954	64	Roughly 160' North of Havasupai to MH 1-076
MH 1-076 to MH 1-074	790	8"	VCP	1959	59	
MH 1-074 to MH 1-073	475	6"	VCP	1959	59	
MH 1-073 to Murray	80	8"	VCP	1959	59	
Total Length (ft)	3,348					
Stormwater						
Location	Length (ft)	Size	Material	Year Built	Years Old	Notes
Just West of Aztec	60	30"x60"	CMP	NA	NA	Crosses Navajo Dr. roughly 140' south of Beal
Total Length (ft)	60					

Along with the utilities listed above there are water and sewer mains connecting to the Navajo Dr. water and sewer mains at Havasupai Rd., Whipple Rd., Whiting Rd., Anderson Dr. (water only).

APS, Suddenlink, and Century Link all appear to be above ground in the utility easements behind the properties to the west and sometimes the east of Navajo Dr. and the utility easements between roads running perpendicular to Navajo Dr. The only overhead lines on Navajo Dr. are north of Havasupai Rd. crossing Navajo Dr., north of Whipple Rd. crossing Navajo Dr., and the overhead lines providing power to the ten (10) existing street lights that vary to either side of the road along the entire length of the project. Unisource is assumed to be in the roadway or the utility easements.

W. Navajo Rd.

There are existing water and sewer mains within the roadway that run the entire length of project limits, both with the applicable services, manholes, fire hydrants, and valves. See Table 3 for more information.

Table 3. N. Navajo Dr. Existing Utilities.

Water Main						
Location	Length (ft)	Size	Material	Year Built	Years Old	Notes
Navajo Dr. to Just West of Fort Valley	1,152	8"	CI	1947	71	Navajo Dr. to roughly 85' west of Fort Valley
Just West of Fort Valley to Fort Valley	85	8"	DI	1983	35	Roughly 85' West of Fort Valley to Fort Valley
Total Length (ft)	1,237					
Sewer Main						
Location	Length (ft)	Size	Material	Year Built	Years Old	Notes
MH 1-144 to MH 1-143	158	8"	PVC	1988	30	
MH 1-143 to MH 1-155	961	6"	VCP	1947	71	
Total Length (ft)	1,119					

Along with the utilities listed above there are water and sewer mains connecting to the Navajo Rd. water and sewer mains at Hopi Dr. and Fort Valley Rd. (water only). There is also a water main connecting to the Navajo Rd. water main between addresses 401 and 327 Navajo Rd. that feeds the service meter to Flagstaff High School. There is also an existing 20-inch Ductile Iron reclaimed water main, built in 1992, crossing Navajo Rd. at Hopi Dr.

APS, Suddenlink, and Century Link all appear to be above ground in the utility easements behind the properties to the north and south of Navajo Rd. The only overhead lines on Navajo Rd. are at Fort Valley Rd. crossing Navajo Rd. and near Hopi Dr. on the north side of Navajo Rd. providing overhead power to the three (3) existing street lights at the west end of the road. Unisource is assumed to be in the roadway or the utility easements.

Scope

Utilities Scope

SEE ATTACHED UTILITY IMPROVEMENT EXHIBITS ON Pages 10 – 19

W. Beal Rd.

Sewer Improvements

- Remove and replace existing sewer main from west of Rockridge Rd. to west of Rio De Flag.
 - MH 1-134 roughly 100' west of Rockridge Rd. to MH 1-120 roughly 40' west of the Rio De Flag.
 - Replace all 6 Manholes (MH) along this stretch of sewer main.
 - Replace with new 8" sewer pipe, same size as existing 8" VCP.
 - Where the sewer mains coming from Rockridge Rd. and Aztec St. connect to the Beal Rd. sewer main, replace the portion of these sewer mains from the Beal sewer main up to the Beal right-of-way if not already new PVC or DI.
 - **COORDINATE WITH THE RIO DE FLAG/BEAL BRIDGE PROJECT FOR POTENTIAL RECONFIGURATION OF THE EXISTING SEWER MAIN IN BEAL RD. STARTING AROUND MH 1-119 AND HOW THE CONNECTION TO THE RIO DE FLAG SEWER, AND POTENTIAL RECONFIGURATION OF THE RIO DE FLAG SEWER TO EITHER GO UNDER THE BEAL BRIDGE OR AROUND TO THE WEST POSSIBLY**

REQUIRING A PUMP AROUND ON THE INTERCEPTOR.

• 404 PERMIT IS NEEDED FOR TRENCHING IN THE RIO DE FLAG.

- Remove and replace existing sewer main from west of Rio De Flag to west of Fort Valley Rd.
 - MH 1-084 roughly 120' east of the Rio De Flag to MH 1-087 roughly 70' west of Fort Valley Rd.
 - Replace all 6 Manholes (MH) along this stretch of sewer main.
 - Replace with new 8" sewer pipe, same size as existing.
 - Where the sewer mains coming from McMillan and sewer main just west of McMillian connect to the Beal sewer main, replace the portion of these sewer mains from the Beal Rd. sewer main up to the Beal Rd. right-of-way if not already new PVC or DI.
- **INCLUDING MH 1-086.**
- Remove and replace all existing sewer laterals for properties serviced off the Beal Rd. sewer main between MH 1-134 and MH 1-087.
- **Is there existing sufficient sewer information for the ADEQ submittal?**
 - **YES**

Water Improvements

- Remove and replace existing water main from west of Rockridge Rd. to west of Fort Valley Rd.
 - West limits of water main improvements, tie into existing 8" PVC water main built in 1988 that starts roughly 112' west of Rockridge Rd.
 - East limits of water main improvements, tie into existing 8" DI water main built in 1982 that starts roughly 10' west of Fort Valley Rd.
 - Replace existing 8" AC & CI and 6" CI with new 8" water main.
 - **Is water modeling needed due to changing water main size?**
 - **NO**
 - **Is there existing sufficient water information for the ADEQ submittal?**
 - **YES**
 - Abandon existing water main to greatest extent possible.
 - Where the water mains coming from Rockridge Rd., Aztec St., and McMillan Rd. connect to the Beal Rd. water main, replace the portion of these water mains from the Beal Rd. water main up to the Beal Rd. right-of-way if not already new PVC DI.
- **COORDINATE WITH THE RIO DE FLAG/BEAL BRIDGE PROJECT WITH THE NEW MAIN REPLACEMENT WITHIN A CASING THAT DOES NOT CONFLICT WITH THE BRIDGE OR SEWER.**
- Remove and replace all existing water services from the main to the meter for all properties serviced off the Beal Rd. water main from Rock Ridge Rd. to Fort Valley Rd.
 - Adjust elevation of meter and private side of service to City standard as needed.
- Remove and replace all existing fire hydrant assemblies.
 - Evaluate fire hydrant location to be used as blow offs at the high point of water main sections during maintenance.
- Remove and replace all existing water valves and water valve box assemblies.
- **Are there any valves outside the project limits that would need to be replaced in order to shut down and tie the proposed main into the existing mains?**
 - **NOT KNOWN AT THIS TIME**
- **DETERMINE WHAT TO DO WITH OLD ABANDONED SHALLOW WELL ON BEAL RD. JUST WEST OF THE BEAL BRIDGE. PLANS IN THE PAST HAVE CALLED IT OUT TO BE "ABANDONED PER ARIZONA DEPARTMENT OF WATER RESOURCES ABANDONMENT RULE A.A.C. R12-866 AND THE ADWR WELL ABANDONMENT HANDBOOK"**

Stormwater Improvements

- Evaluate the current capacity of the roadway to determine if the existing rolled curb and gutter provides the proper capacity, or if all the rolled curb and gutter needs to be removed and replaced with vertical curb and gutter based on capacity.
 - **ROADWAY SHOULD HOLD THE 10 YR STORM.**
- Remove and replace **EVALUATE CONDITION OF** two existing catch basins between Rockridge

Rd. and Aztec St. with combination curb inlet catch basins.

- Evaluate existing condition of CMP at this location and remove and replace as needed **IF DETERMINED TO BE NECESSARY.**
- ~~Remove and replace existing catch basin at the Rio De Flag on the south side of Beal Rd. with a scupper to the east of the bridge.~~
- ~~Remove and replace~~ **EVALUATE CONDITION OF** two existing catch basins at Navajo Dr. on the south side of Beal Rd. with 24"x48" (double grate) catch basin per MAG SD 537, this is from Plateau Engineering's 30% design of the Mountain View Utility & Street Improvements Project (Mountain Subdivision) from 2015.
 - **EVALUATE EXISTING CONDITION OF CMP AT THIS LOCATION AND REMOVE AND REPLACE IF DETERMINED TO BE NECESSARY.**
- Evaluate drainage through all intersections and determine if valley gutters are necessary to convey drainage through intersections.
 - Evaluate condition of existing valley gutters and determine if it is necessary to remove and replace existing valley gutters.
- Coordinate as necessary with US Army Corps of Engineers on improvements to the Beal bridge.
- What level of drainage analysis needs to be completed on this project?
 - **A DRAINAGE REPORT IS NEEDED.**

Underground Traffic & Street Improvements

- Should installing underground electrical lines to power existing or new street lights be considered on this project?
 - **UNDETERMINED IF WILL BE INCLUDED IN THE SCOPE AT THIS TIME**
- Should removing and replacing the one (1) existing street light with a new City standard street light be considered on this project?
 - **EVALUATE EXISTING STREET LIGHT FOR COMPLIANCE WITH CITY STANDARDS AND CONFLICT WITH OTHER PROPOSED IMPROVEMENTS, IF OUT OF COMPLIANCE OR IN CONFLICT WILL NEED TO BE REPLACED.**
- A separate funding source other than RR&SS would have to be identified for the underground electrical lines and to replace the existing street light with a new City standard street light.

N. Navajo Dr.

Sewer Improvements

- Remove and replace existing sewer main from Navajo Rd. to Murray Rd.
 - MH 1-144 at Navajo Dr./Navajo Rd. intersection to MH 1-073 at Navajo Dr./Murray Rd. intersection.
 - Replace all 10 Manholes (MH) along this stretch of sewer main.
 - Replace existing 8" PVC and 6" VCP with new 8" sewer pipe.
 - Is sewer modeling needed due to changing water main size?
 - **NO**
 - Is there existing sufficient sewer information for the ADEQ submittal?
 - **YES**
 - Where the sewer mains coming from Havasupai Rd., Whipple Rd., Whiting Rd., and Murray Rd. connect to the Navajo Dr. sewer main, replace the portion of these sewer mains from the Navajo Dr. sewer main up to the Navajo Dr. right-of-way if not already new PVC or DI.
- The Navajo Dr. sewer main from MH 1-144 (Navajo Rd.) to MH 1-146 (Havasupai Rd.) was replaced in 1988 with 8" PVC but is believed to be installed incorrectly and is currently having issues and would greatly benefit from being replaced correctly. Is this still the case and the direction from Water Services?
 - **YES, PROCEED AS IF WE WILL REMOVE AND REPLACE SEWER MAINS AND MANHOLES FROM MH 1-144 TO 1-146. THIS SECTION IS CURRENTLY BEING TV'D TO ENSURE WE WANT TO INCLUDE IT THE SCOPE OF THIS PROJECT.**
- Remove and replace all existing sewer laterals for properties serviced off the Navajo Dr. sewer

main between Navajo Rd. and Murray Rd (MH 1-144 and MH 1-073).

Water Improvements

- Remove and replace existing water main from Navajo Rd. to Murray Rd.
 - South limits of water main improvements, tie into the proposed 8" water main as part of this project on Navajo Rd.
 - North limits of water main improvements, tie into existing 8" DI water main built in 1983 at the Navajo Rd./Murray Rd. intersection.
 - **REPLACE EXISTING BLOW OFF AT END OF NAVAJO RD. TO BE INCLUDED.**
 - Replace existing 8" AC & CI with new 8" water main.
 - **Is water modeling needed?**
 - **NO**
 - **Is there existing sufficient information for the ADEQ submittal?**
 - **YES**
 - Abandon existing water main to greatest extent possible.
 - Where the water mains coming from Havasupai Rd., Whipple Rd., Whiting Rd., Anderson Dr., and Murray Rd. connect to the Navajo Dr. water main, replace the portion of these water mains from the Navajo Dr. water main up to the Navajo Dr. right-of-way if not already new PVC DI.
- Remove and replace all existing water services from the main to the meter for all properties serviced off the Navajo Dr. water main from Navajo Rd. to Murray Rd.
 - Adjust elevation of meter and private side of service to City standard as needed.
- Remove and replace all existing fire hydrant assemblies.
 - Evaluate fire hydrant location to be used as blow offs at the high point of water main sections during maintenance.
- Remove and replace all existing water valves and water valve box assemblies.
- **Are there any valves outside the project limits that would need to be replaced in order to shut down and tie the proposed main into the existing mains?**
 - **NOT KNOWN AT THIS TIME**
- **REPLACE APPROXIMATELY 260 LF OF 2-INCH WATER MAIN IN WHIPPLE FROM NAVAJO TO MCMILLAN.**

Stormwater Improvements

- Evaluate the current capacity of the roadway to determine if the existing rolled curb and gutter provides the proper capacity, or if all the rolled curb and gutter needs to be removed and replaced with vertical curb and gutter based on capacity.
 - **ROADWAY SHOULD HOLD THE 10 YR STORM.**
- Remove and replace ~~EVALUATE CONDITION OF~~ existing catch basin at Whiting Rd. ~~with a combination curb inlet catch basin.~~
 - This catch basin is not shown on City's GIS.
 - Evaluate existing condition of CMP at this location and remove and replace ~~as needed~~ **IF DETERMINED TO BE NECESSARY.**
- Evaluate drainage through all intersections and determine if valley gutters are necessary to convey drainage through intersections.
 - Evaluate condition of existing valley gutters and determine if it is necessary to remove and replace existing valley gutters.
- **What level of drainage analysis needs to be completed on this project?**
 - **A DRAINAGE REPORT IS NEEDED.**

Underground Traffic & Street Improvements

- **Should installing underground electrical lines to power existing or new street lights be considered on this project?**
 - **UNDETERMINED IF WILL BE INCLUDED IN THE SCOPE AT THIS TIME**
- **Should removing and replacing the ten (10) existing street lights with new City standard street lights be considered on this project?**

- Remove and replace all existing fire hydrant assemblies.
 - Evaluate fire hydrant location to be used as blow offs at the high point of water main sections during maintenance.
- Remove and replace all existing water valves and water valve box assemblies.
- Are there any valves outside the project limits that would need to be replaced in order to shut down and tie the proposed main into the existing mains?
 - **NOT KNOW AT THIS TIME**

Stormwater Improvements

- Evaluate the current capacity of the roadway to determine if the existing rolled curb and gutter provides the proper capacity, or if all the rolled curb and gutter needs to be removed and replaced with vertical curb and gutter based on capacity.
 - **ROADWAY SHOULD HOLD THE 10 YR STORM.**
- Evaluate drainage through all intersections and determine if valley gutters are necessary to convey drainage through intersections.
 - Evaluate condition of existing valley gutters and determine if it is necessary to remove and replace existing valley gutters.
- What level of drainage analysis needs to be completed on this project?
 - **A DRAINAGE REPORT IS NEEDED.**

Underground Traffic & Street Improvements

- Should installing underground electrical lines to power existing or new street lights be considered on this project?
 - **UNDETERMINED IF WILL BE INCLUDED IN THE SCOPE AT THIS TIME**
- Should removing and replacing the three (3) existing street lights with new City standard street lights be considered on this project?
 - **EVALUATE EXISTING STREET LIGHT FOR COMPLIANCE WITH CITY STANDARDS AND CONFLICT WITH OTHER PROPOSED IMPROVEMENTS, IF OUT OF COMPLIANCE OR IN CONFLICT WILL NEED TO BE REPLACED.**
- A separate funding source other than RR&SS would have to be identified for the underground electrical lines and to replace the existing street lights to new City standard street lights.

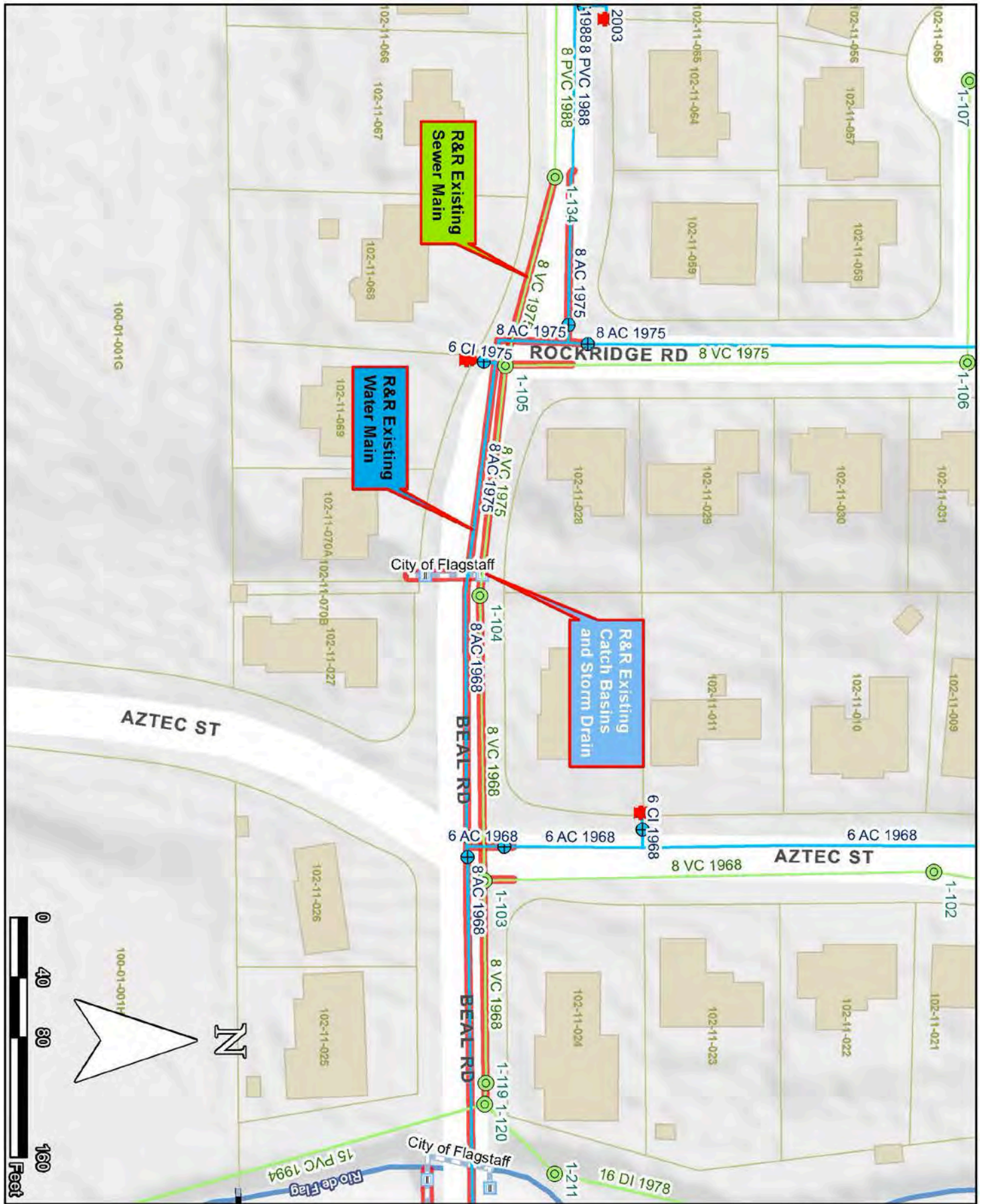
Franchise Utilities Scope

All Three Streets

- **APS, Suddenlink, and Century Link** - all appear to be above ground and no conflicts are anticipated at this time.
- **Unisource** – Lower and/or vertically realign existing gas lines if existing elevation does not allow for minimum cover requirements as needed for construction of the new typical pavement structural section, or if the installation of new utilities does not allow for the existing gas lines to remain at the existing elevation. If existing gas lines existing elevation allows for minimum cover requirements with the new typical pavement section and placement of new utilities, then Contractor is to protect existing gas lines in place.

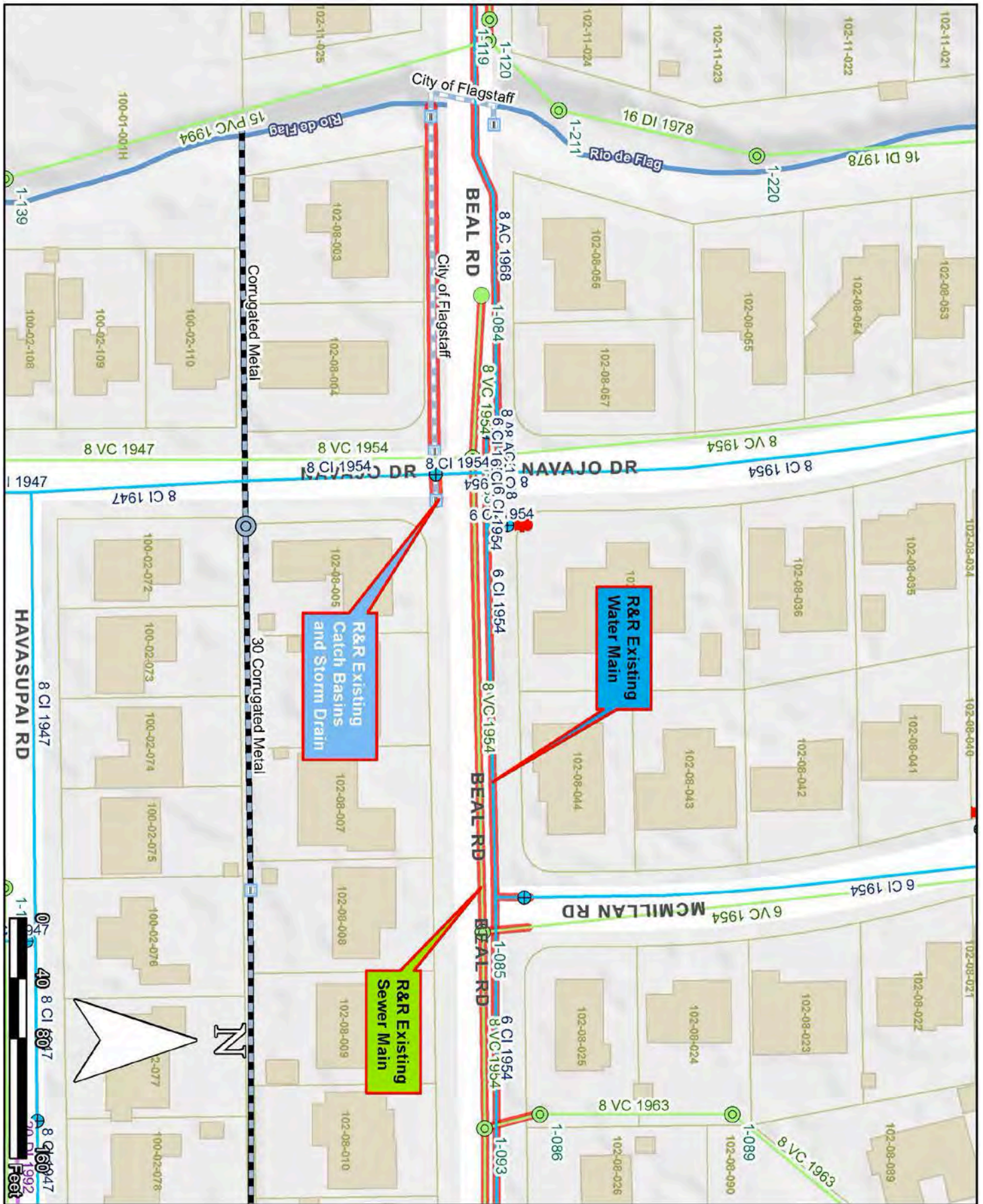
UTILITY IMPROVEMENT EXHIBITS

PAGES 11 - 20



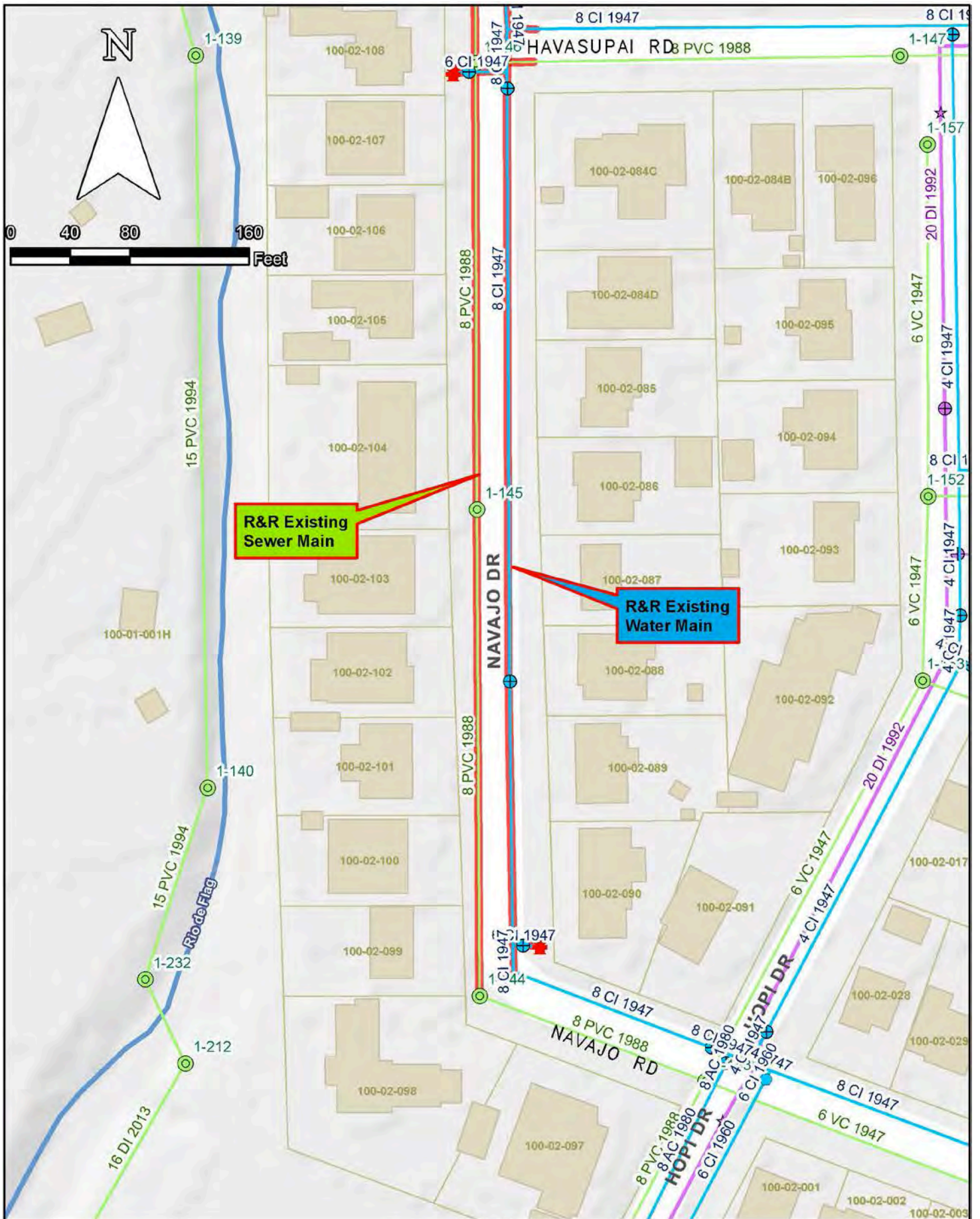
W. Beal Rd.

(1) Rockridge Rd. to Rio De Flag



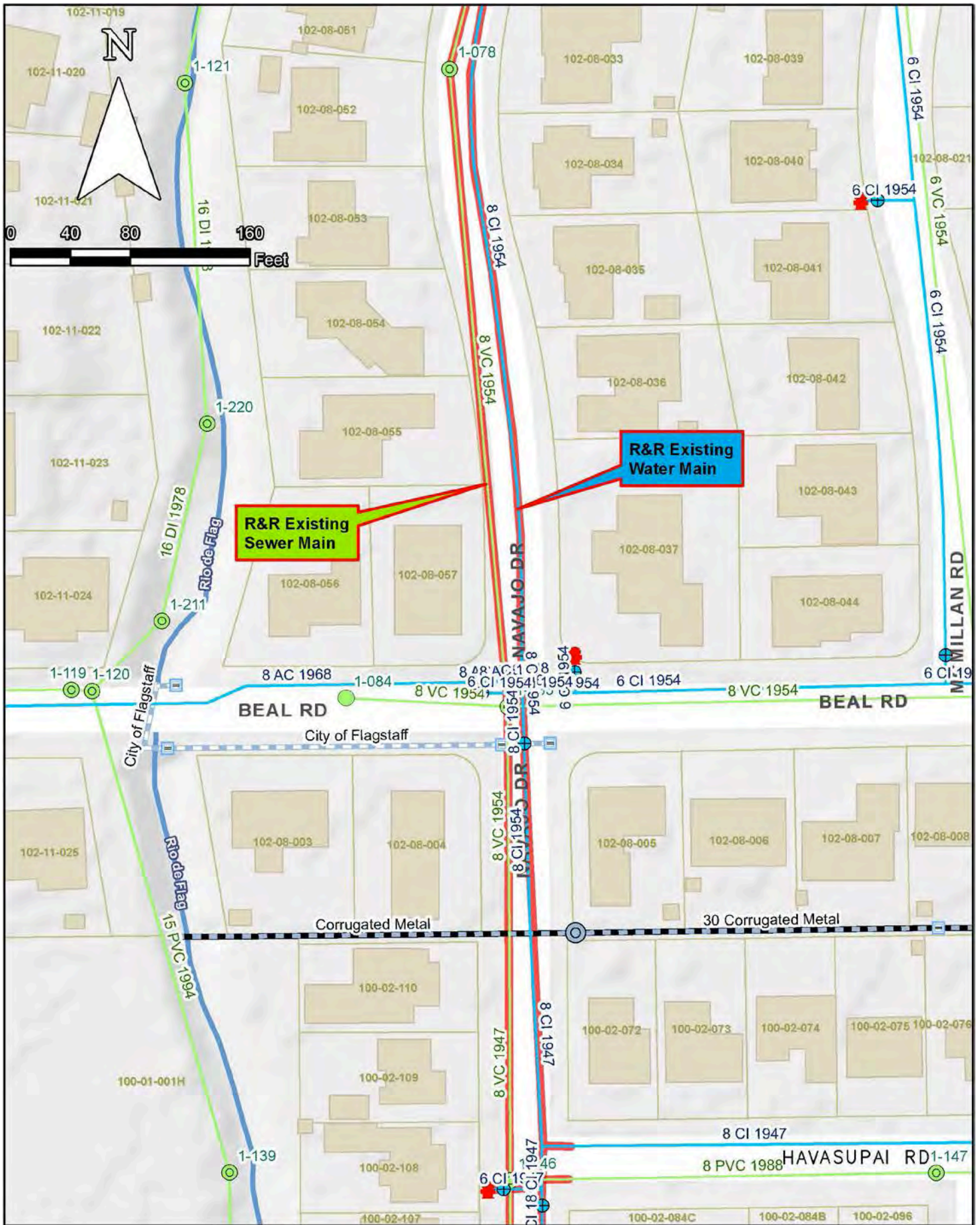
W. Beal Rd.

(2) Rio De Flag to Sewer Main West of McMillan Rd.



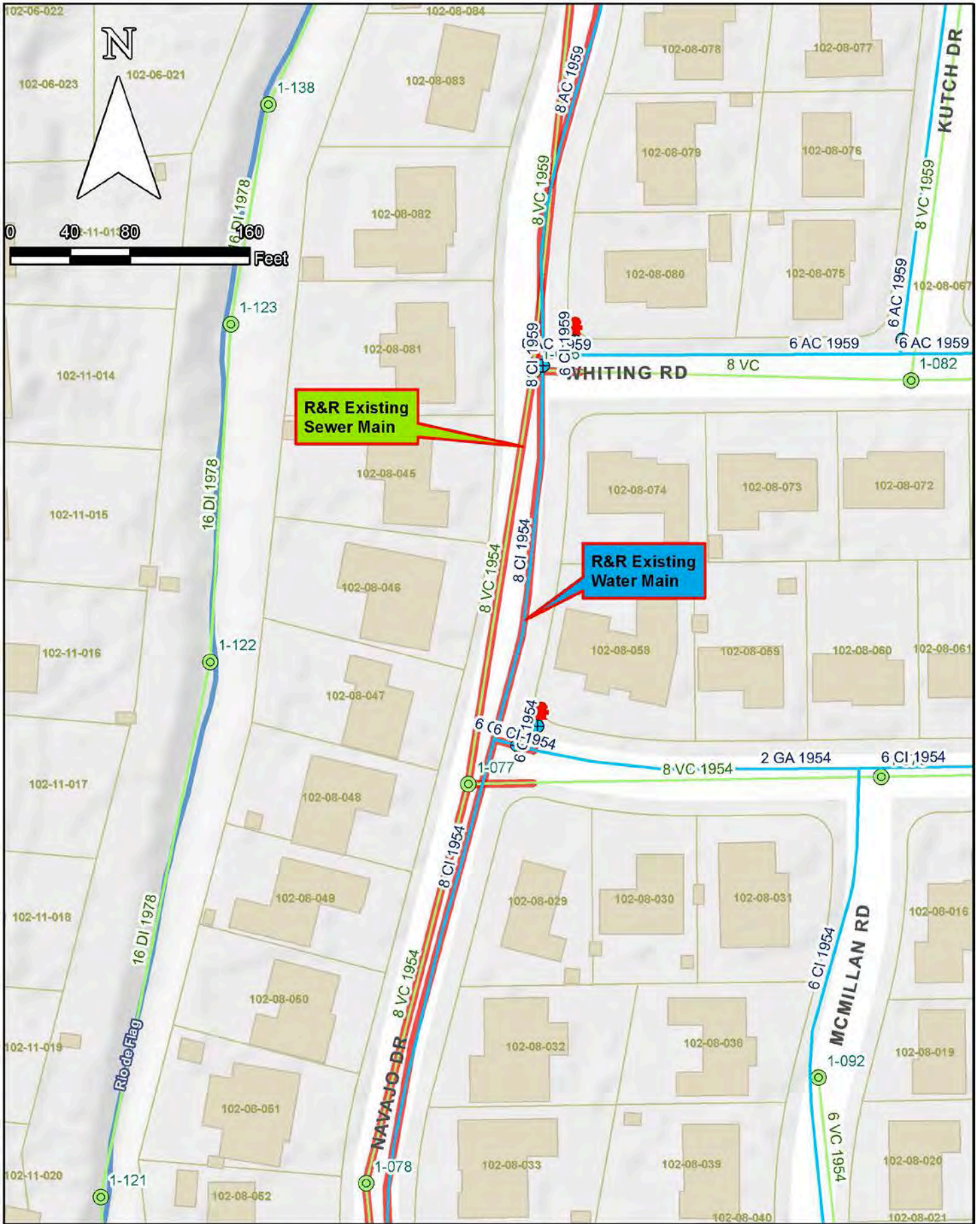
N. Navajo Dr.

(1) Navajo Rd. to Havasupai Rd.



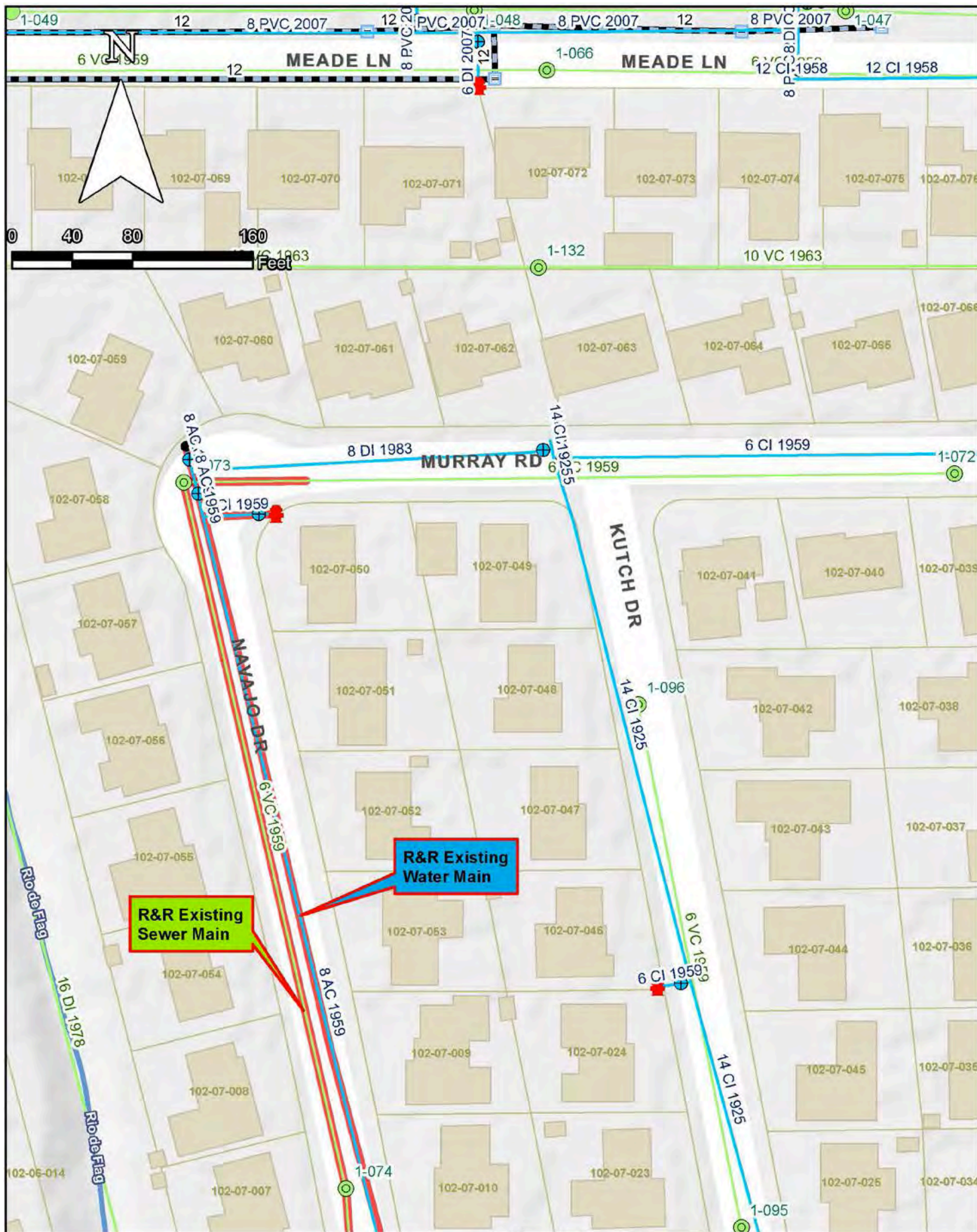
N. Navajo Dr.

(2) Havasupai Rd. to Navajo Sewer Manhole 1-078



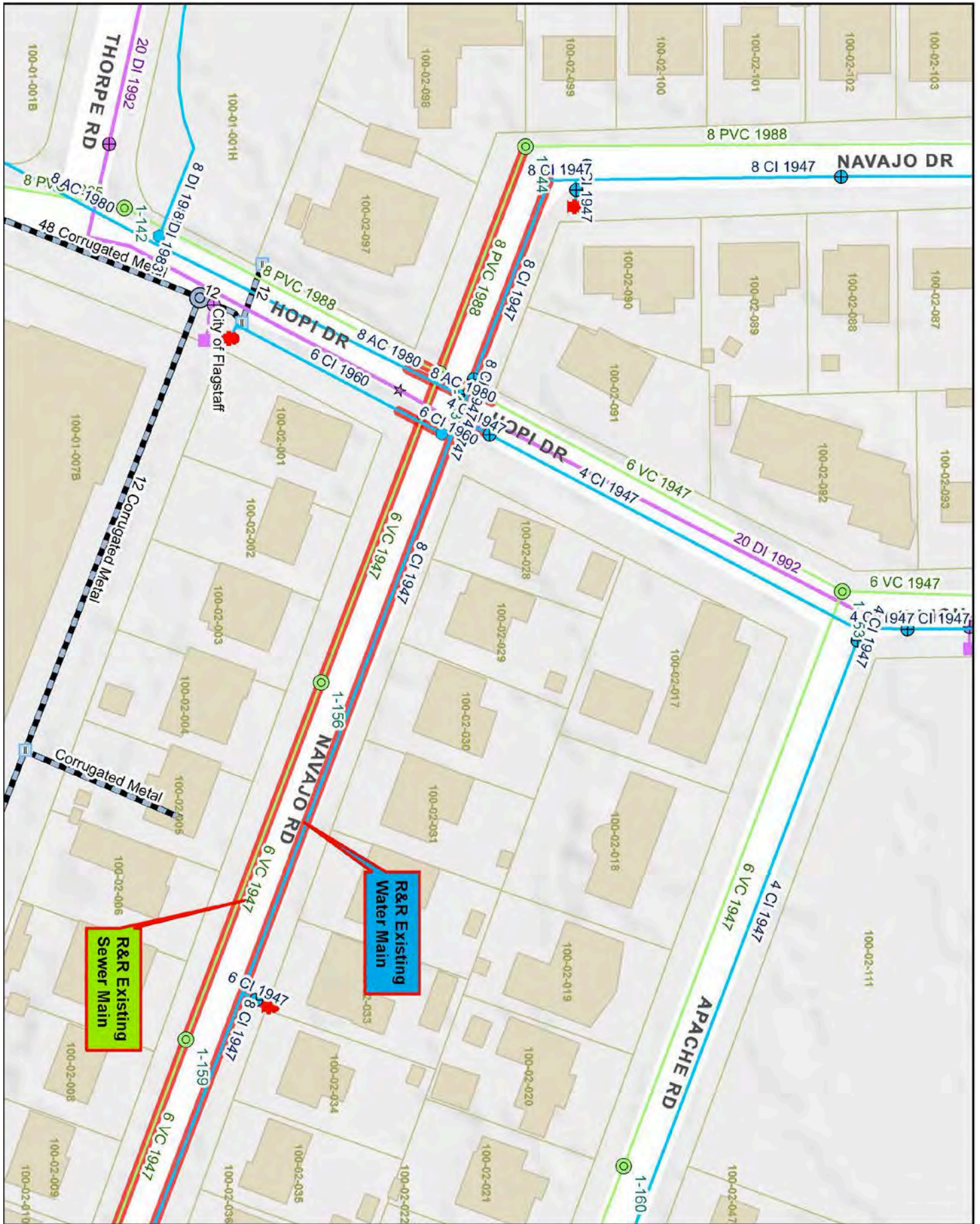
N. Navajo Dr.

(3) Navajo Sewer Manhole 1-078 to Rio De Flag Sewer Manhole 1-138



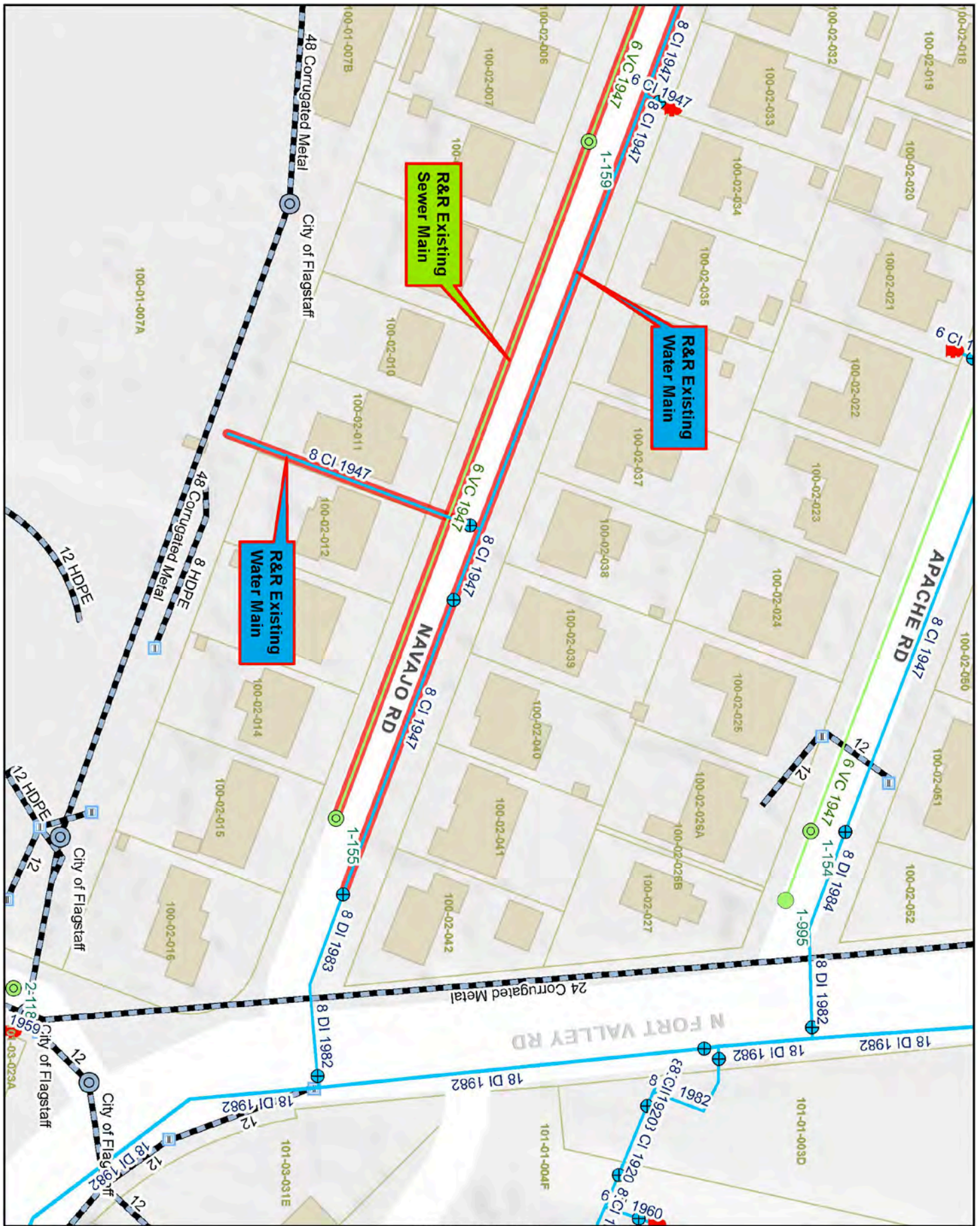
N. Navajo Dr.

(5) Navajo Sewer Manhole 1-074 to Murray Rd.



W. Navajo Rd.

(1) Navajo Dr. to Navajo Rd. Sewer Manhole 1-159



W. Navajo Rd.

(2) Navajo Rd. Sewer Manhole 1-159 to Fort Valley Rd.

Roadway Scope

W. Beal Rd.

- Remove and replace pavement structural section from approximately 120' west of Rockridge Rd. to Fort Valley Rd.
 - This will require maintaining minimum coverage over proposed and existing utilities and rebuilding small sections of adjacent streets to transition into/out of Beal Rd. as needed.
- A typical cross slope **AND OR CROSS SECTION, IF POSSIBLE**, will be determined during the design phase.
- Evaluate traffic data to determine if pavement structural section needs to be different than City's standard structural section for collector streets.
- Evaluate existing right-of-way and feedback from community outreach efforts during design to determine if it is possible to install new sidewalk to connect to the existing sidewalk along Beal Rd. at the Rio De Flag to the existing sidewalk at Fort Valley Rd.
 - A separate funding source other than RR&SS would have to be identified for the sidewalk as it does not currently exist.
- Remove and replace existing rolled curb and gutter with either roll curb and gutter or vertical curb and gutter, as determined by the drainage report and community outreach efforts during design.
- **EVALUATE CONDITION OF CURB AND GUTTER BETWEEN ROCKRIDGE AND AZTEC AND RECOMMEND REMOVAL.**
- Remove and replace existing select edge improvements.
 - Select edge improvements: curb and gutter, sidewalk, sidewalk ramps, and driveways.
- Remove and replace all street signs affected by construction with new signs to current City of Flagstaff Standards.
- Remove, re-establish, and document (including recordation) all affected survey monuments and handholes.
- Existing striping plan will be assessed for possible improvements during the design phase.
- Contractor to protect existing landscape improvements. Contractor will remove and replace in kind any landscape improvements needed for construction of improvements.

N. Navajo Dr.

- Remove and replace pavement structural section from Navajo Rd. to Murray Rd.
 - This will require maintaining minimum coverage over proposed and existing utilities and rebuilding small sections of adjacent streets to transition into/out of Navajo Dr.as needed.
- A typical cross slope **AND OR CROSS SECTION, IF POSSIBLE**, will be determined during the design phase.
- Evaluate traffic data to determine if pavement structural section needs to be different than City's standard structural section for local streets.
- Remove and replace existing rolled curb and gutter with either roll curb and gutter or vertical curb and gutter, as determined by the drainage report and community outreach efforts during design.
- Remove and replace existing select driveways.
- Remove and replace all street signs affected by construction with new signs to current City of Flagstaff Standards.
- Remove, re-establish, and document (including recordation) all affected survey monuments and handholes.
- Contractor to protect existing landscape improvements. Contractor will remove and replace in kind any landscape improvements needed for construction of improvements.

W. Navajo Rd.

- Remove and replace pavement structural section from Navajo Dr. to Fort Valley Rd.
 - This will require maintaining minimum coverage over proposed and existing utilities and rebuilding small sections of adjacent streets to transition into/out of Navajo Rd. as

needed.

- A typical cross slope **AND OR CROSS SECTION, IF POSSIBLE**, will be determined during the design phase.
- Evaluate traffic data to determine if pavement structural section needs to be different than City's standard structural section for collector streets.
- Evaluate existing right-of-way and feedback from community outreach efforts during design to determine if it is possible to install new sidewalk to connect the existing sidewalk along Hopi Dr. to the existing sidewalk at Fort Valley Rd.
 - A separate funding source other than RR&SS would have to be identified for the sidewalk as it does not currently exist.
- Remove and replace existing rolled curb and gutter with either roll curb and gutter or vertical curb and gutter, as determined by the drainage report and community outreach efforts during design.
- Remove and replace existing select edge improvements.
 - Select edge improvements: curb and gutter, sidewalk, sidewalk ramps, and driveways.
- Remove and replace all street signs affected by construction with new signs to current City of Flagstaff Standards.
- Remove, re-establish, and document (including recordation) all affected survey monuments and handholes.
- Existing striping plan will be assessed for possible improvements during the design phase.
- Contractor to protect existing landscape improvements. Contractor will remove and replace in kind any landscape improvements needed for construction of improvements.

Funding

There are two Phases to the Coconino Estates Improvements. Phase I has been described above and Phase II is three streets north of W. Meade Ln. as described below, and all three streets having a scope simply described as replacing sewer and water mains, sewer and water services, pavement structural section, and select edge improvements (very similar scope to Navajo Dr. in Phase I).

- N. Crescent Drive – W. Meade Lane to N. Talkington Drive
 - N. Navajo Drive – N. Talkington Drive to W. Elizabeth Drive
 - W. Elizabeth Drive – N. Navajo Drive to N. Talkington Drive
-
- The preliminary construction cost estimate for the Coconino Estates Improvements Phase I is in the range of \$6,300,000 - \$6,200,000.
 - The preliminary total combined construction cost estimate for the Coconino Estates Improvements Phase I and Phase II is in the range of \$9,700,000 - \$9,600,000.
 - Approved budget for FY 19 is \$1,034,298 from the **Road Repair and Street Safety** – Utility Replacements and Overlays – Coconino Estates appropriations. The FY 19 budget will be used for costs associated with the initial design of the Coconino Estates Improvements Phase I and Phase II. The FY 20 budget is \$3,901,300 and will be used to cover the remainder of the design of the Coconino Estates Improvements Phase I and Phase II and possibly the beginning of the construction on Phase I. FY 21 and FY 22 proposed budgets are \$5,028,400 and \$2,489,200, respectively, which will be used to cover the construction cost of the Coconino Estates Improvements Phase I and Phase II.

Schedule

Coconino Estates Improvements Phase I

- Design anticipated to start spring 2019.
- Design anticipated to be complete spring 2020.
- Construction is anticipated to start summer 2020.
- Construction is anticipated to be complete fall 2021.

Coconino Estates Improvements Phase II

- Design anticipated to start summer 2019.
- Design anticipated to be complete summer 2020.
- Construction is anticipated to start spring 2021.
- Construction is anticipated to be complete fall 2021.

During Construction

PARKS Perspective

- **The two (2) entrances to the FUTS will need to be considered, and quite frankly closed to travelers when construction along Beal is in this area.**
- **There is a way to re-route either down Aztec or Navajo (depending on that construction schedule), or simply close and re-route down 180.**
- **Martin's expertise here is desired and approval of that TCP when the time comes.**

W. Beal Rd.

Pictures and Descriptions

Figure 2. R&R water/sewer mains & appurtenances, and pavement section.



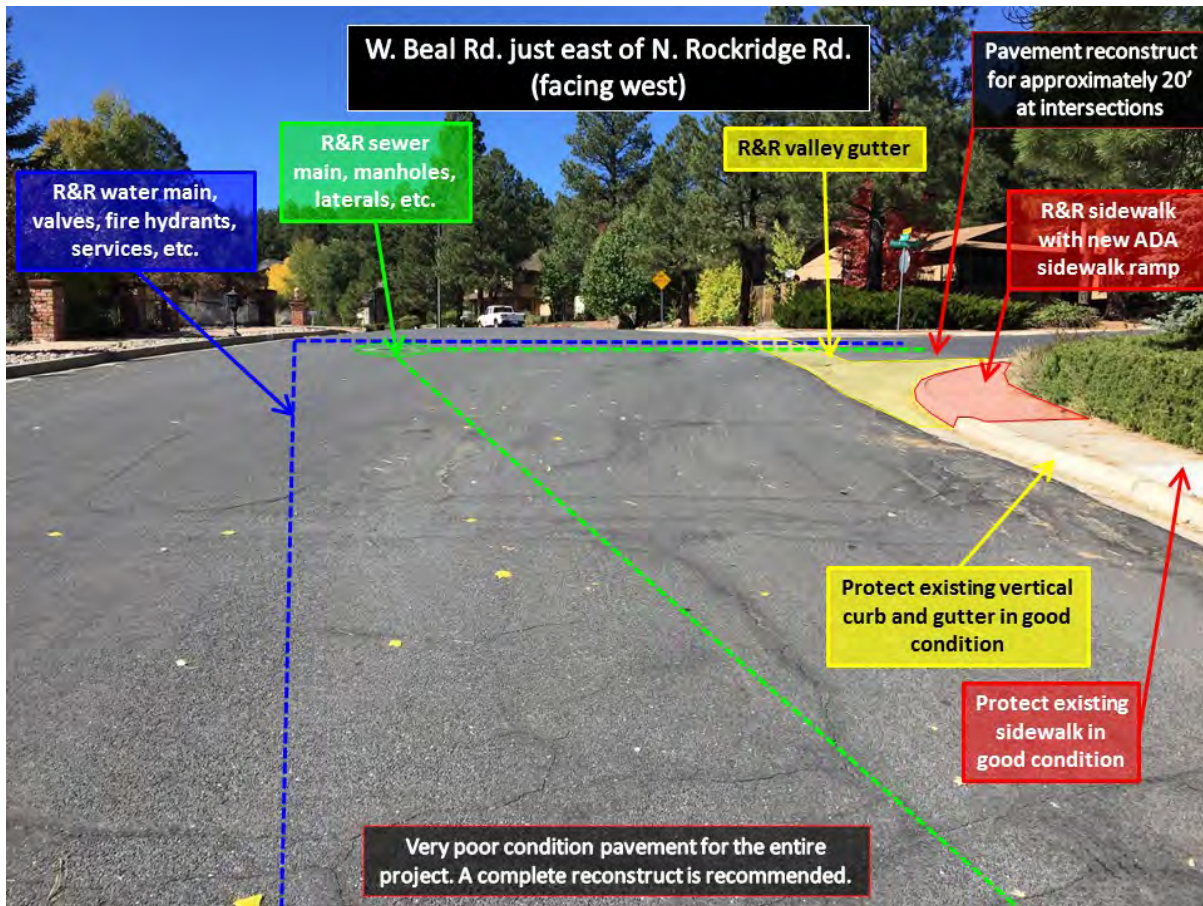


Figure 3. R&R water/sewer mains & appurtenances, pavement section, valley gutter, and sidewalk with ADA ramp.

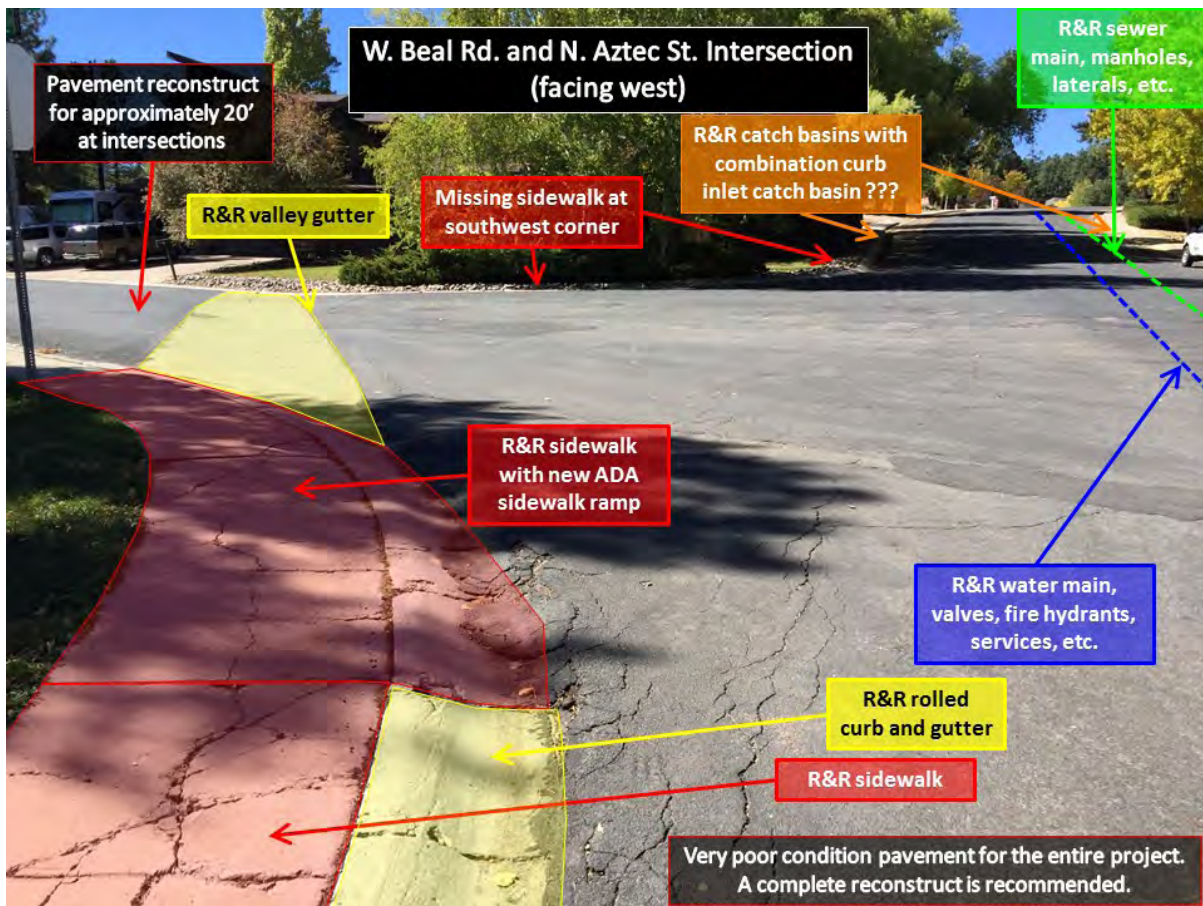


Figure 4. R&R water/sewer mains & appurtenances, pavement section, valley gutter, and catch basins??? .

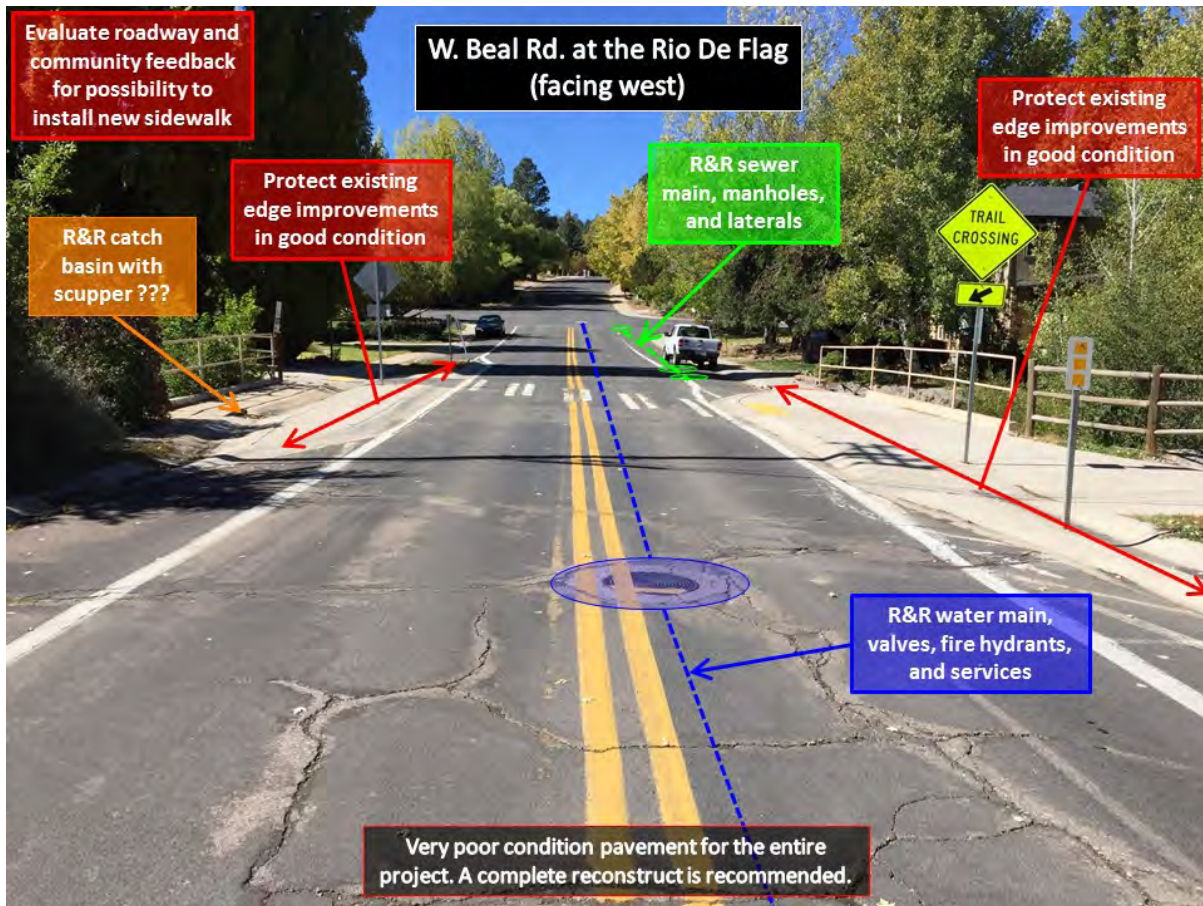


Figure 5. R&R water/sewer mains & appurtenances, pavement section, and catch basin with scupper???.

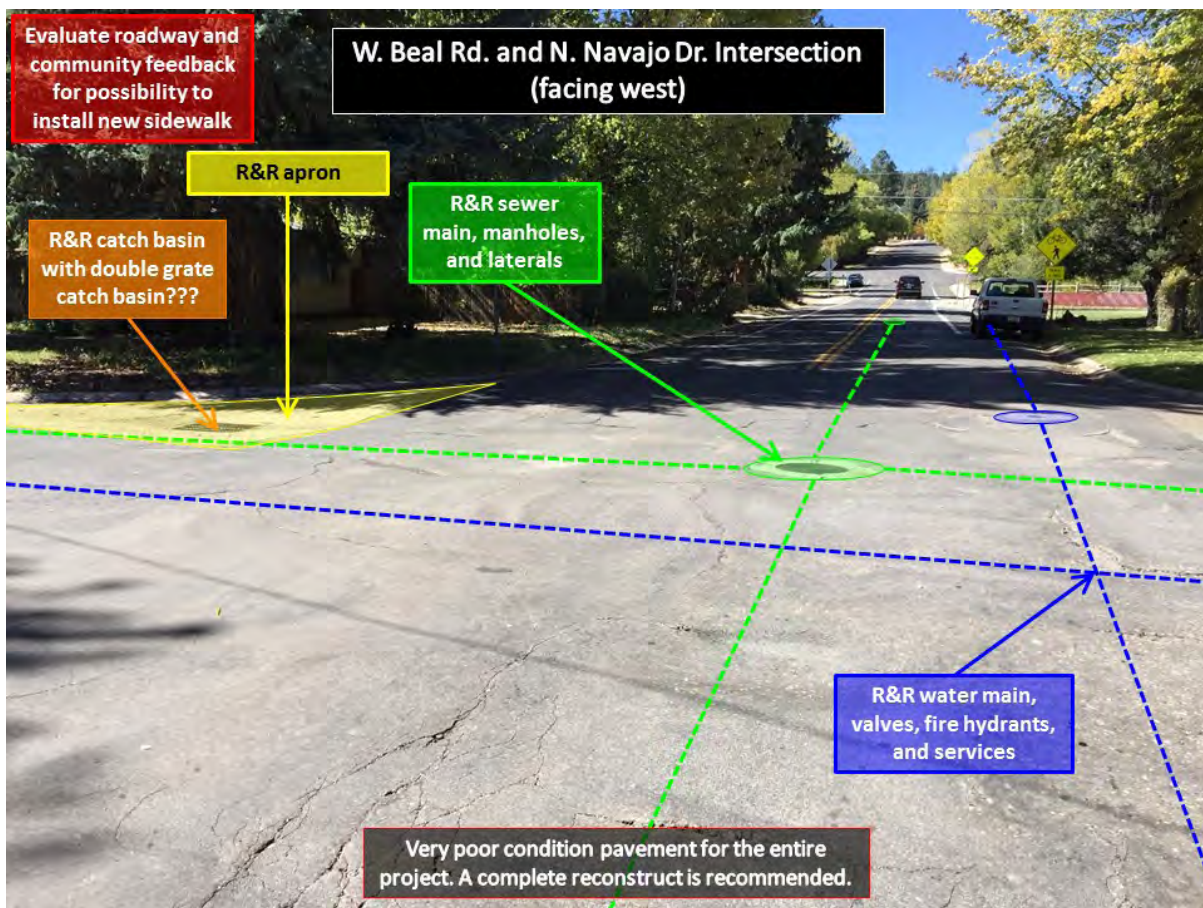


Figure 6. R&R water/sewer mains & appurtenances, pavement section, apron, and catch basin (CB) with double grate CB.

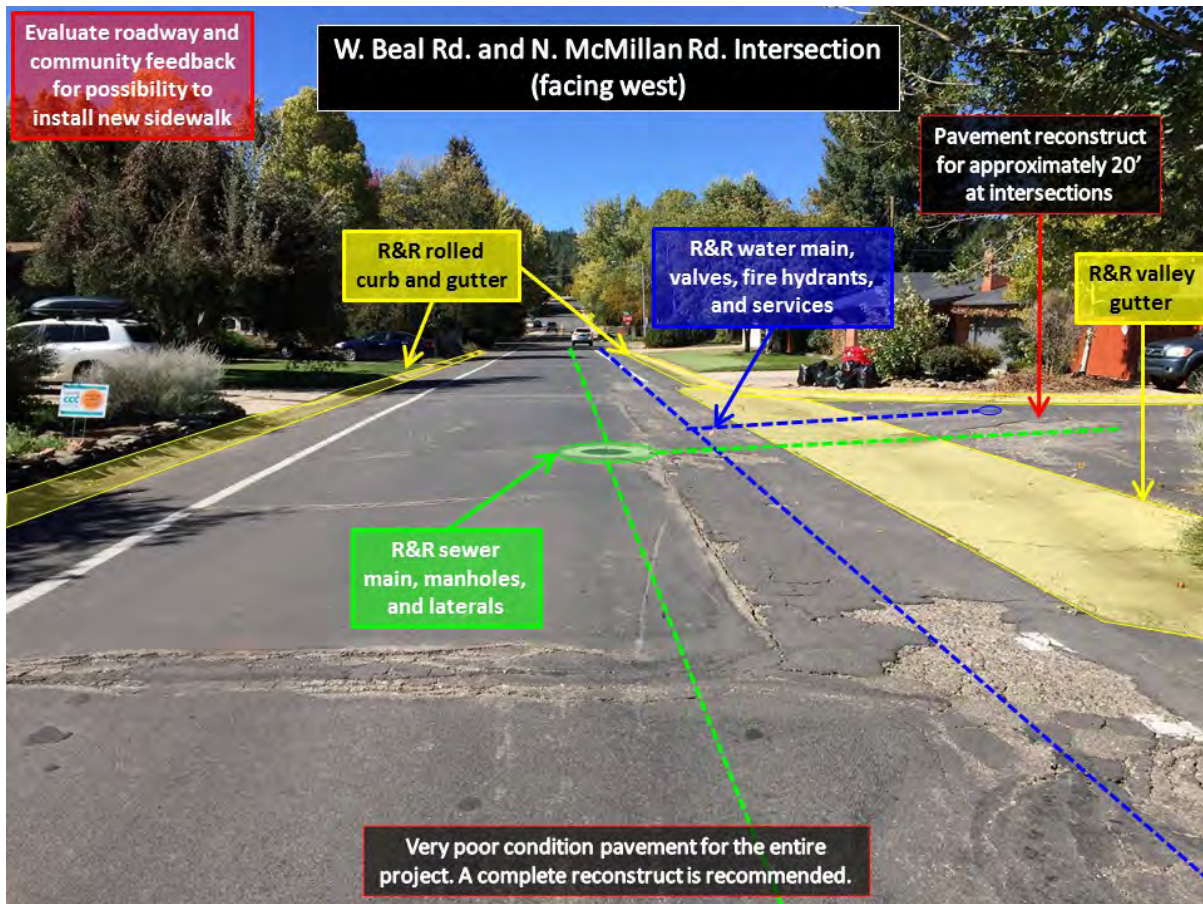


Figure 7. R&R water/sewer mains & appurtenances, pavement section, valley gutter, and rolled curb and gutter.

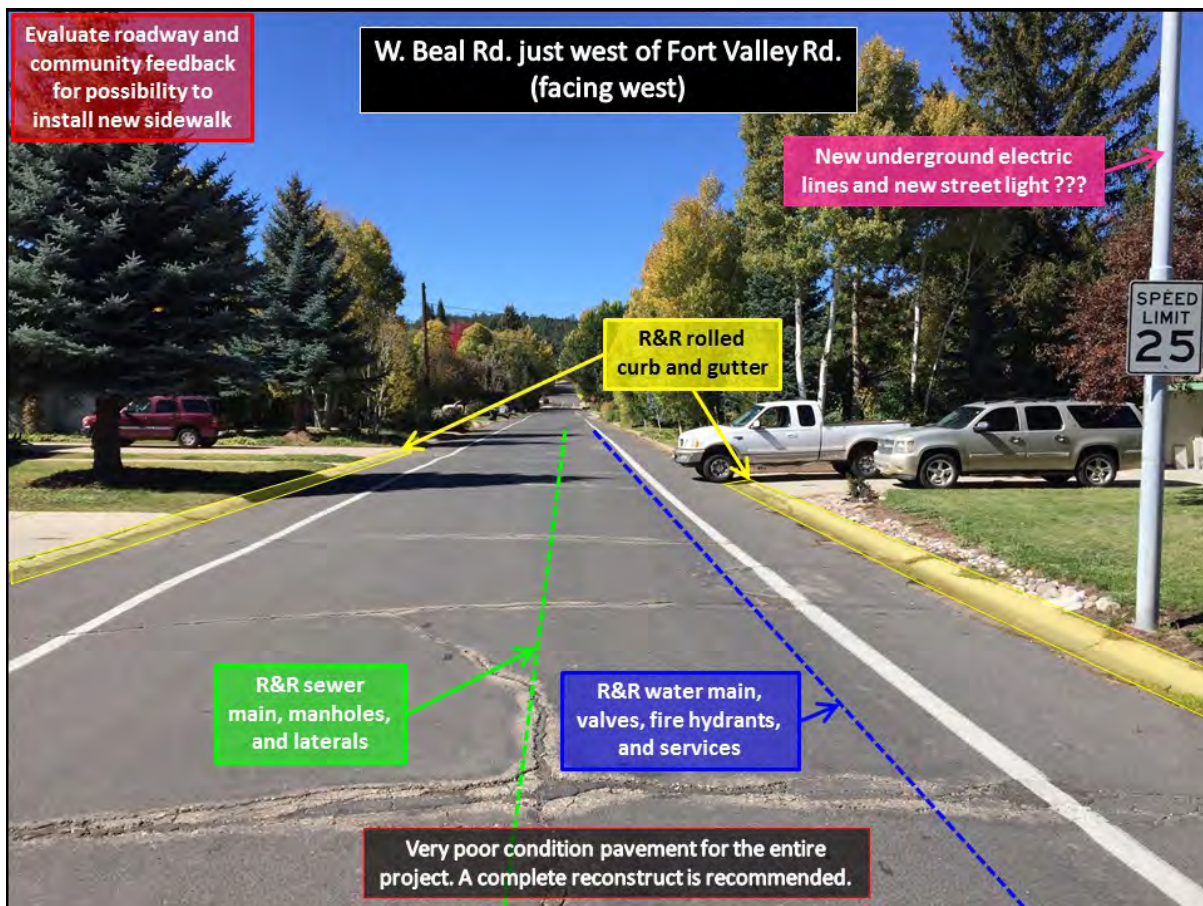


Figure 8. R&R water/sewer mains & appurtenances, pavement section, rolled curb and gutter, and street light??? .

N. Navajo Dr.

Pictures and Descriptions

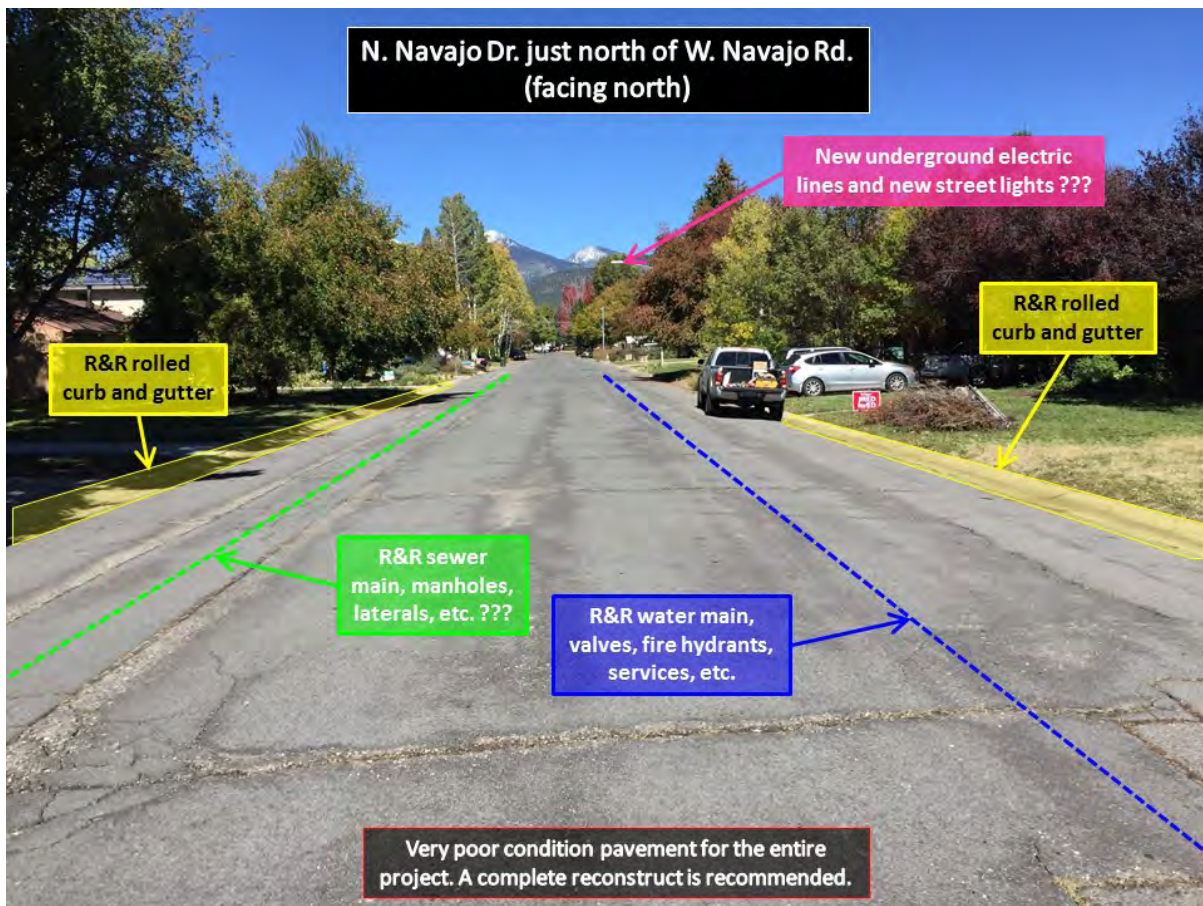


Figure 9. R&R water/sewer??? mains & appurtenances, pavement section, rolled curb and gutter, and street lights???.

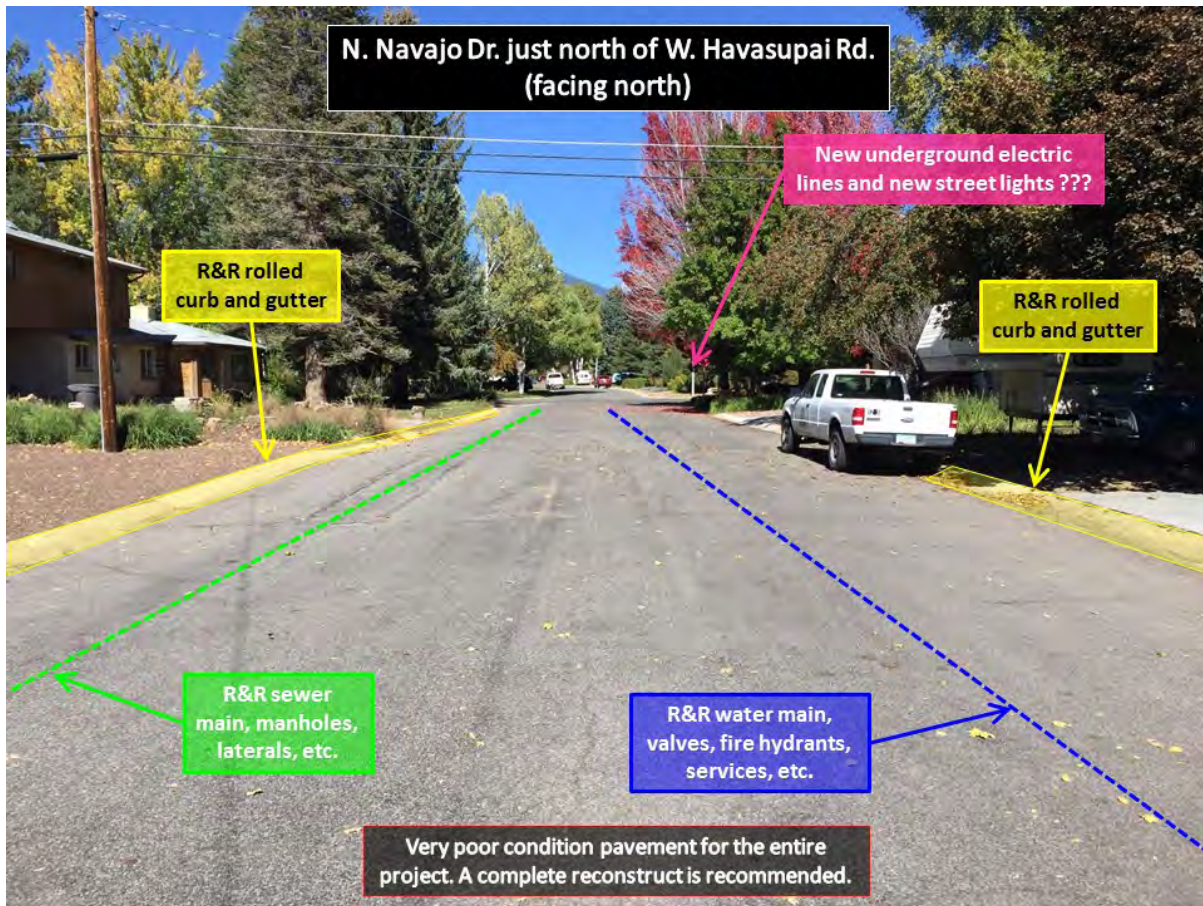


Figure 10. R&R water/sewer mains & appurtenances, pavement section, rolled curb and gutter, and street lights???

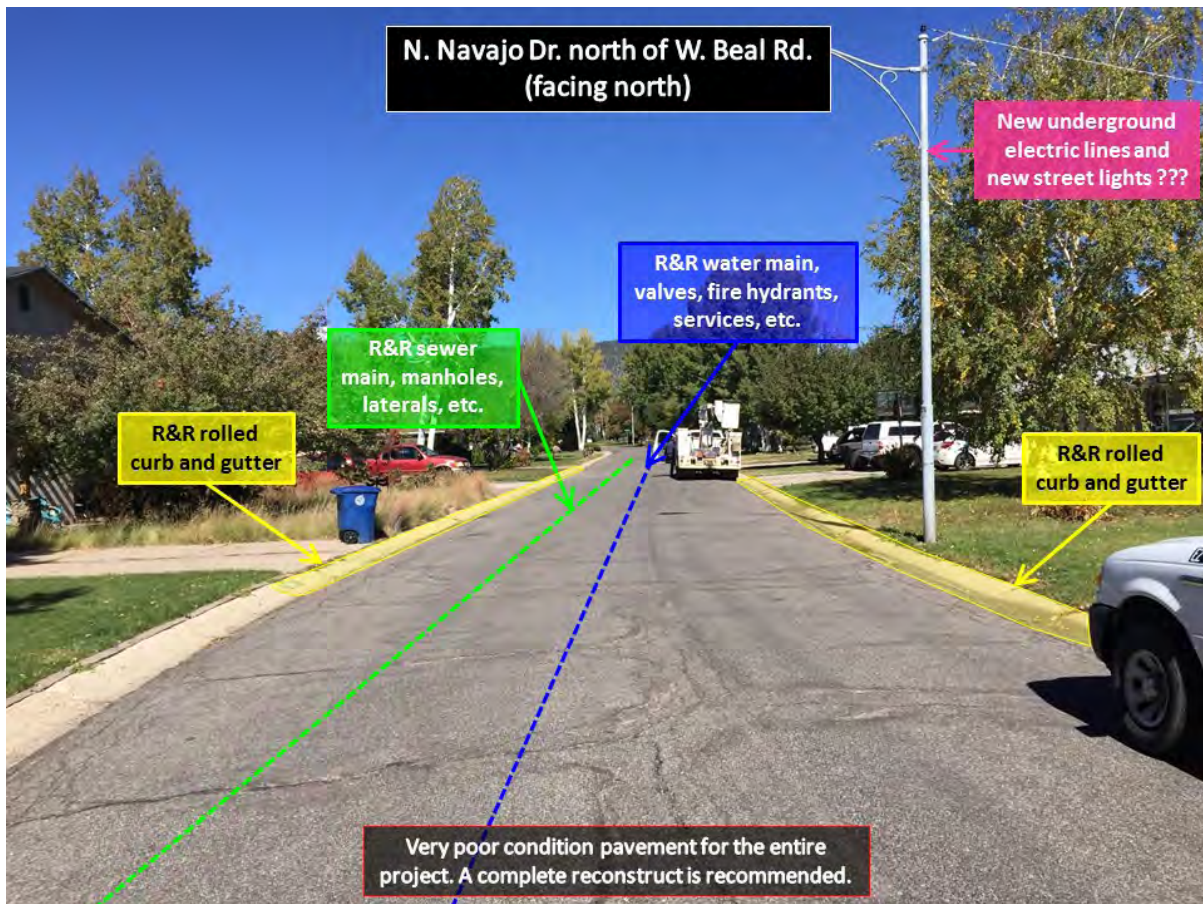


Figure 11. R&R water/sewer mains & appurtenances, pavement section, rolled curb and gutter, and street lights???

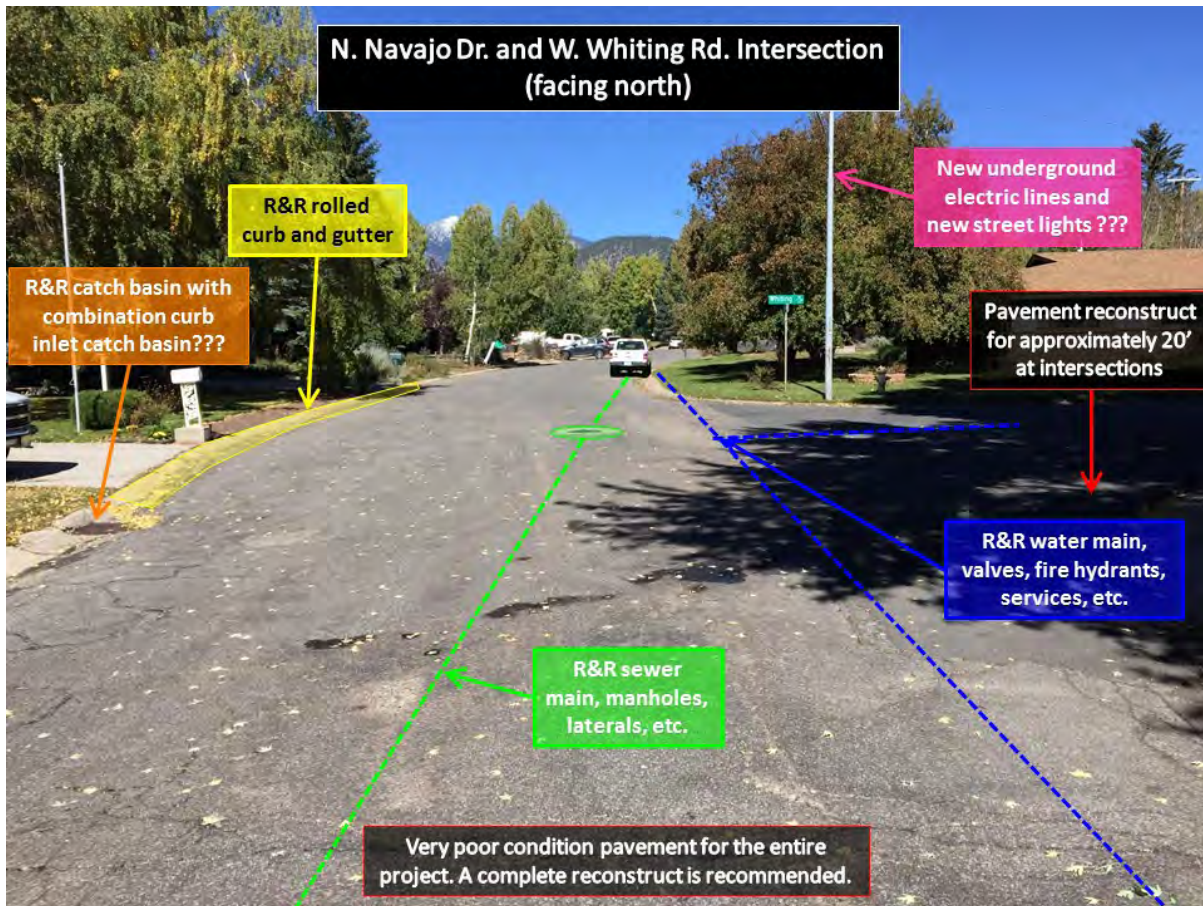


Figure 12. R&R water/sewer mains & appurtenances, pavement section, catch basin???, and street lights??? .

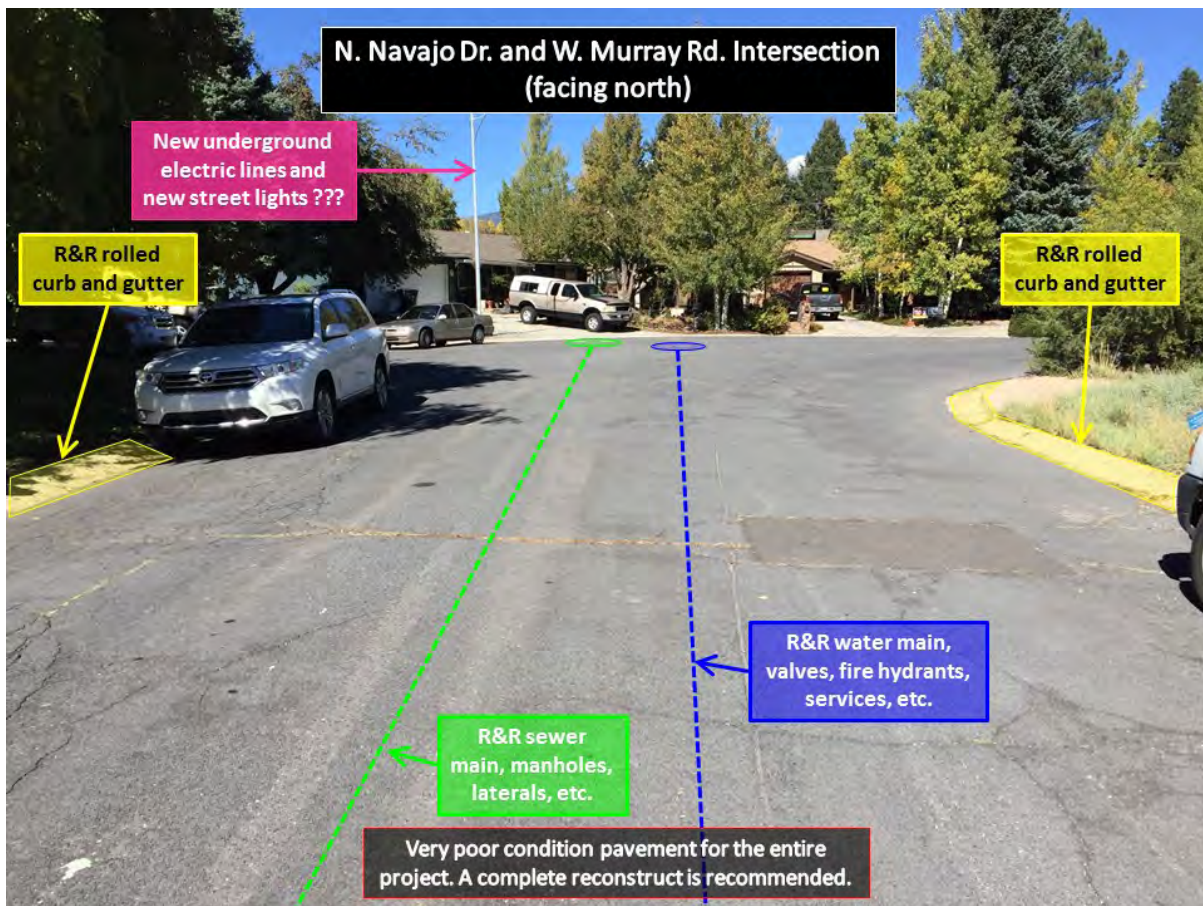


Figure 13. R&R water/sewer mains & appurtenances, pavement section, rolled curb and gutter, and street lights??? .

W. Navajo Rd.

Pictures and Descriptions

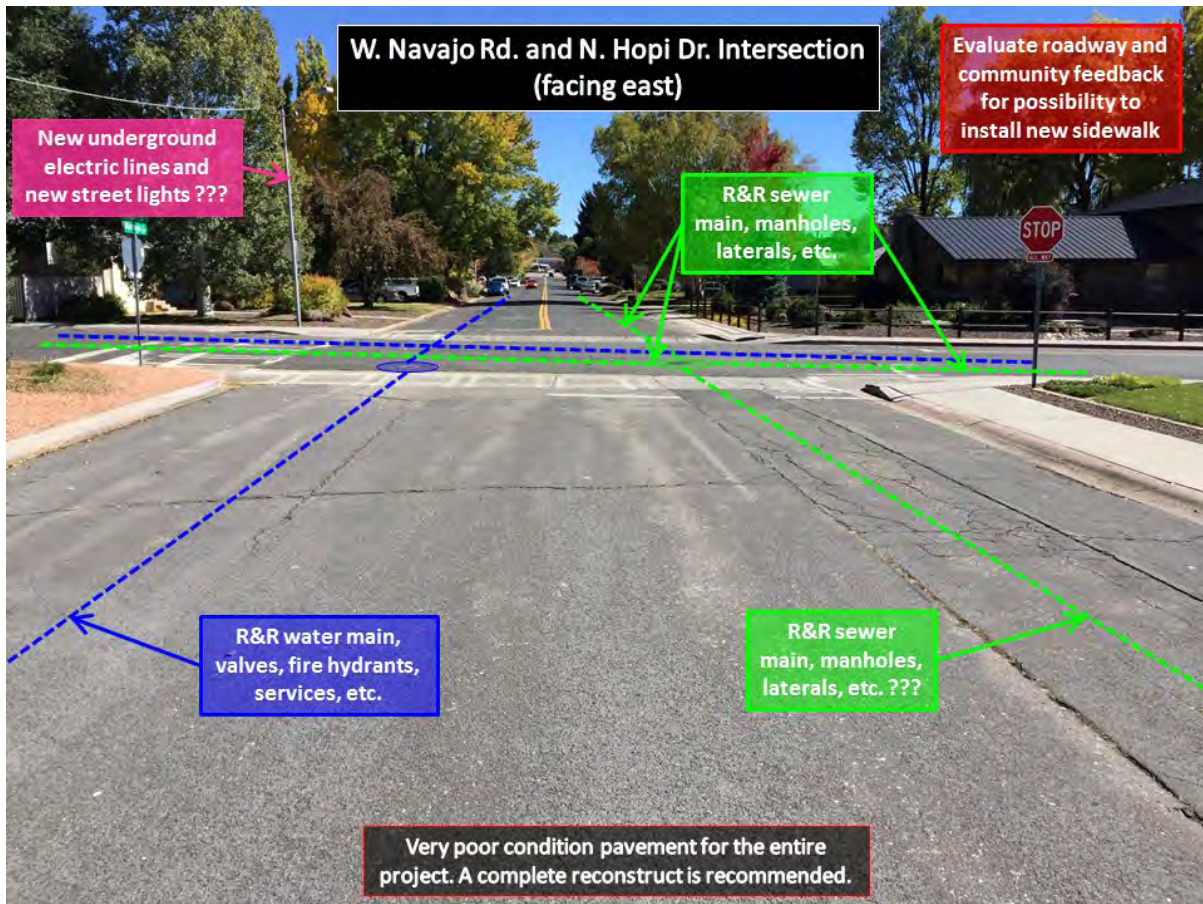


Figure 14. R&R water/sewer??? mains & appurtenances, pavement section, and street lights???

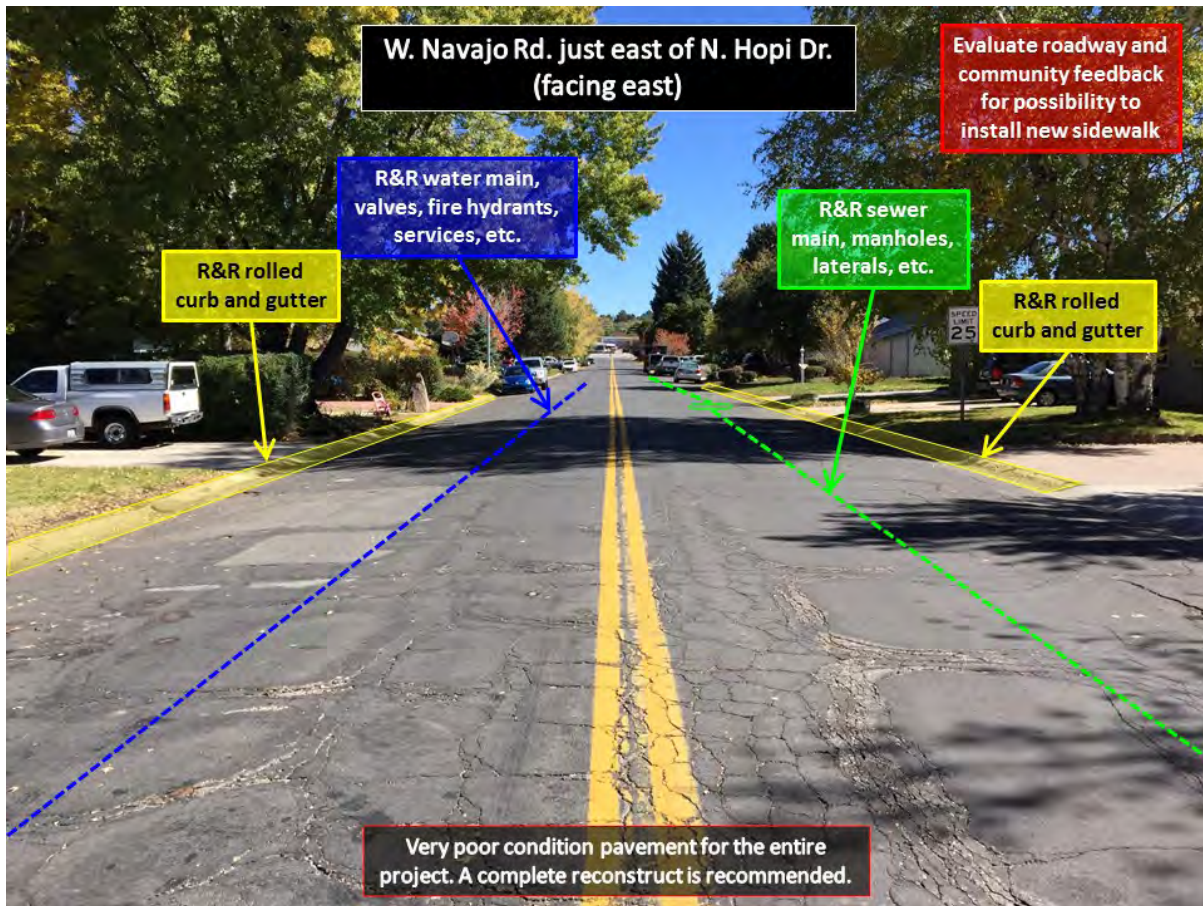


Figure 15. R&R water/sewer mains & appurtenances, pavement section, and rolled curb and gutter.

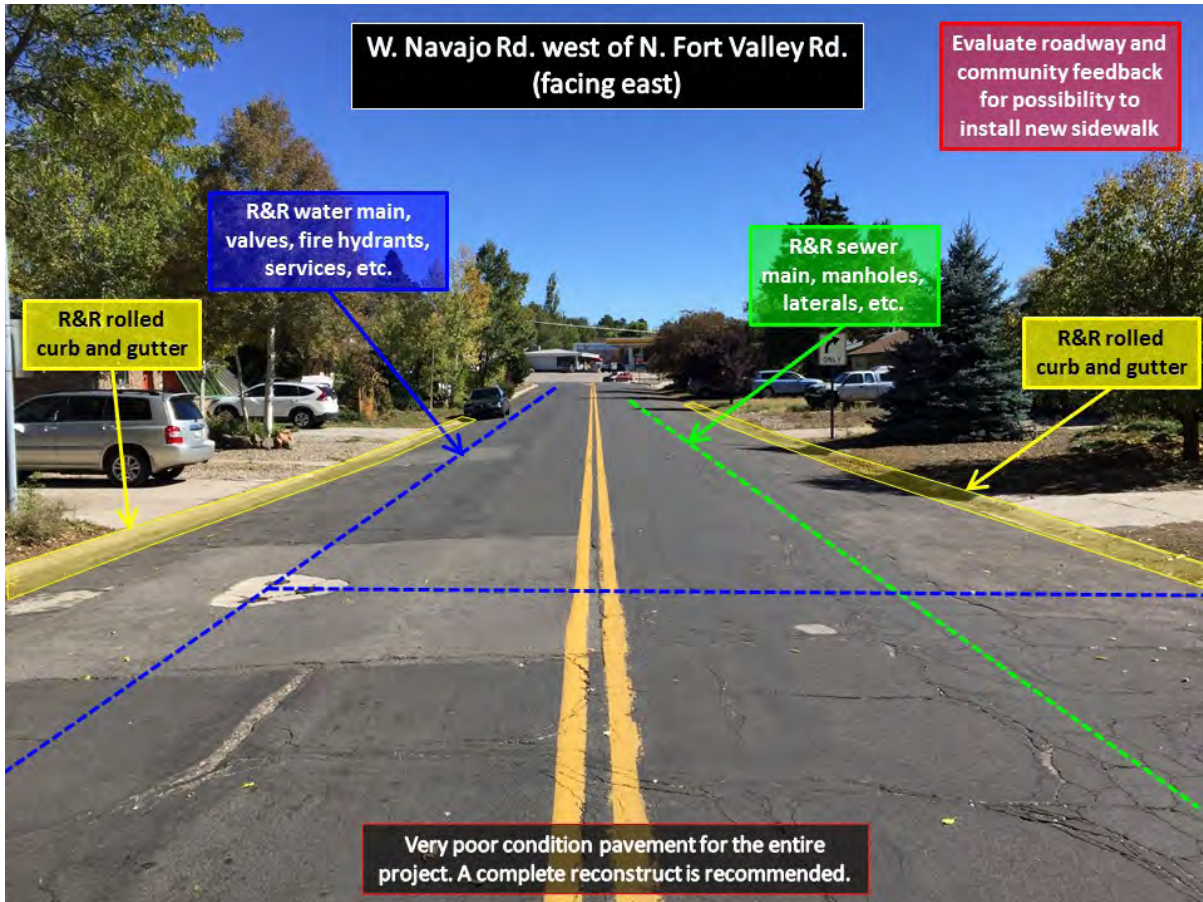


Figure 16. R&R water/sewer mains & appurtenances, pavement section, and rolled curb and gutter.

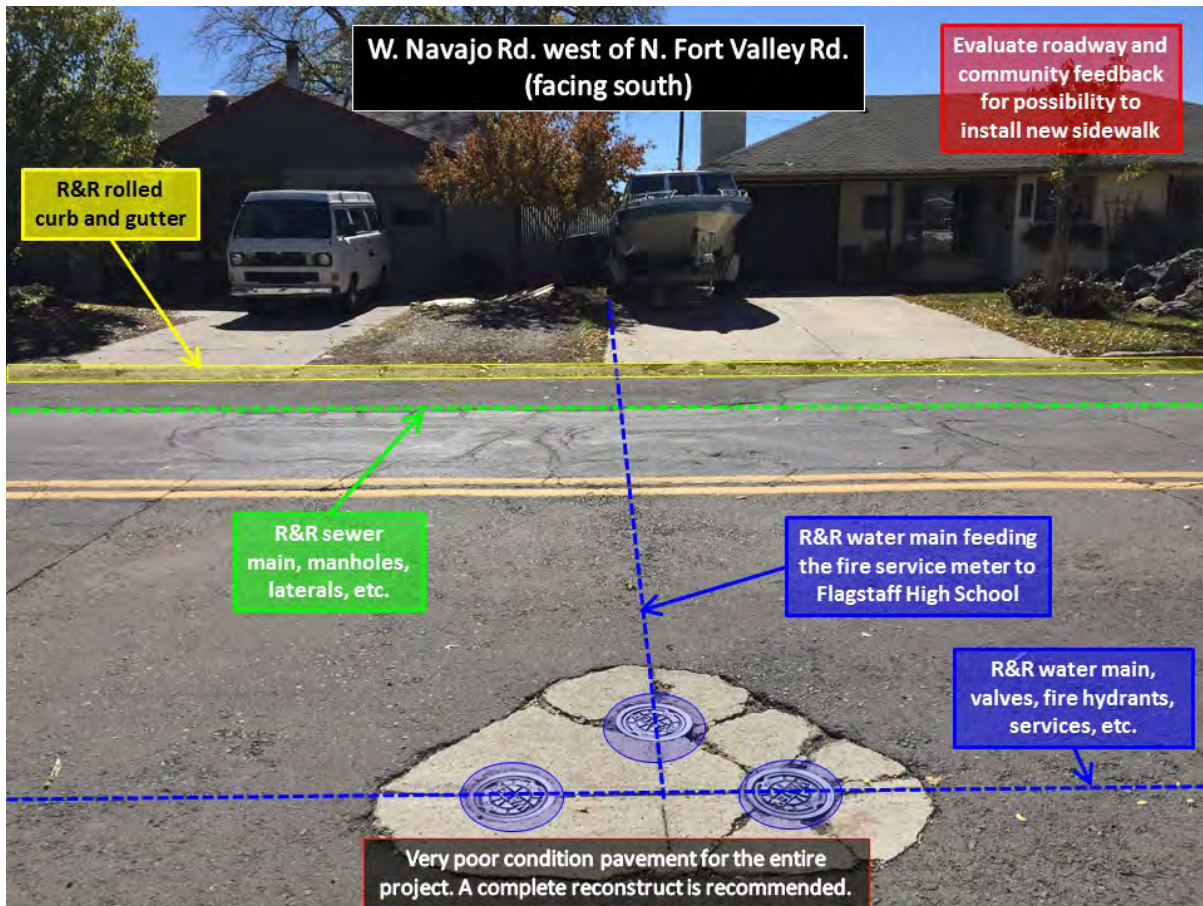


Figure 17. R&R water main and appurtenances that feed the fire service meter to Flagstaff High School.



Figure 18. R&R water main and appurtenances, pavement section, and rolled curb and gutter.



EXHIBIT B

March 20, 2019

Peak Engineering, Inc.
Julie Leid
110 N. Agassiz Street
Flagstaff, AZ 86001

RE: Right-of-Way and topographical survey of several streets as part of the Coconino Estates, Phase 1 project, City of Flagstaff, Coconino County, Arizona.

Dear Ms. Leid,

We appreciate the opportunity to offer you survey services for the above mentioned projects.

Per our meeting on February 19, 2019, we are proposing the following survey services. This project consists of the Right-of-Way and topographic surveying for the following streets: Navajo Road from Highway 180, West and North to Murray Road; Whipple Road, Navajo Drive to McMillan Road; and Beal Road from Highway 180 to Rockridge Road.

We will survey existing control for each of the subdivisions involved to determine the Right-of-Way boundaries along the extent of the project. We will search for or re-establish the centerline monuments along Navajo Drive, Navajo Road, Beal Road and Rockridge Roads.

This project will also consist of establishing survey control along the extent of the project as well as survey the existing visible street improvements, including trees, along the above mentioned streets, as well as approximately a half block of the cross streets. We will also survey the existing driveways, garages, sidewalks, landscaping, such as fences and garden edges, and finish floors of the existing houses.

We will also survey the public utility surface appurtenances; but will not conduct the survey of the potholes or the measure downs of the utilities below the surface.

Also, as part of this project, we will conduct topographic surveys of two separate locations of Flagstaff High School for connection/disconnection of waterline purposes, if needed. Also, if needed, we will draft a legal description and exhibit for a proposed waterline easement over Flagstaff High School property.

We will conduct the survey utilizing the City of Flagstaff Low Distortion coordinate system and NAVD 88 Vertical Datum. We will deliver an ASCII files of the surveyed points, a digital and a hard copy at a scale of 1" = 20'.

We propose to conduct each the above mentioned survey services for the following fixed fees.

PRE-ENGINEERING PHASE: **SEPARATE PROPOSAL**

Right-of-Way/Control:

40 hours @ \$160	\$ 6,400.00
<u>24 hours @ \$110</u>	<u>\$ 2,640.00</u>

Subtotal: **\$ 9,040.00**

Topography:

100 hours @ \$160	\$16,000.00
<u>40 hours @ \$110</u>	<u>\$ 4,400.00</u>

Subtotal: **\$20,400.00**

Ownership/Annotation

<u>32 hours @ \$110</u>	<u>\$ 3,520.00</u>
-------------------------	--------------------

Subtotal: **\$ 3,520.00**

Pre-Engineering Phase Cost: **\$32,960.00**

ENGINEERING PHASE:

Flagstaff High topographic survey:

8 hours @ \$160	\$ 1,280.00
<u>4 hours @ \$110</u>	<u>\$ 440.00</u>

Subtotal: **\$ 1,720.00**

Miscellaneous survey (If needed):

30 hours @ \$160	\$ 4,800.00
<u>16 hours @ \$110</u>	<u>\$ 1,760.00</u>

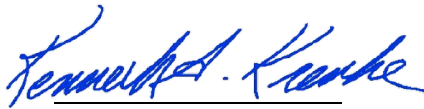
Subtotal: **\$ 6,560.00**

Legal description & Exhibit (If needed):

6 hours @ \$ 110	\$ 660.00
------------------	-----------

Engineering Phase Cost: **\$ 8,940.00**

If the above scope of work and the costs involved are agreeable to you, please sign below and return this letter. Again, we appreciate the opportunity to propose on this project.



Kenneth A. Krenke
Partner

Accepted this _____ day of _____, 2019.

Julie Leid
for Peak Engineering

March 5, 2019

Rev. March 15, 2019

Rev. March 21, 2019

Julie Leid
Peak Engineering, Inc.
110 N. Agassiz Street
Flagstaff, AZ 86001

Dear Julie,

Thank you for requesting this proposal for professional services in conjunction with the City of Flagstaff, Coconino Estates Phase 1 Improvements. Peak Engineering, Inc. (PEI), is the prime consultant providing civil engineering services for the project. JE Fuller (JEF) will provide support services to PEI as outlined in the scope below.

PROJECT UNDERSTANDING

The City of Flagstaff is utilizing road repair and street safety improvement funds for this improvement project. This will generally limit the scope of the improvements to improving existing infrastructure. There is limited existing drainage infrastructure in the neighborhood, so the scope of drainage improvements is limited based on the funding source. It is our understanding that the City would like to understand the existing drainage patterns and determine the existing capacity of the roadways and stormdrain infrastructure. The City would like to understand the conveyance impacts due to the proposed cross section changes and the benefits of replacing roll curb with vertical curb to increase the capacity of the roads and the extent of additional drainage infrastructure necessary to convey the 10-year event within the curblines. Based on this information, the City will determine if additional funds could be allocated to the project for the stormwater infrastructure. The drainage study will be included in the beginning phases of the project and for the purpose of this scope and fee, additional drainage infrastructure will not be included in the design phases. The main drainage scope elements are:

N. Navajo Drive

- Evaluate condition of existing catch basin and CMP at Navajo/Whiting
- Determine if valley gutters are necessary at intersections
- Determine current capacity of roadway and if rolled curb needs to be replaced with vertical based on capacity and the impacts of the proposed typical sections
- Determine strategy if 10-year storm is not contained in the roadway

W. Beal Road – N. Rockridge Road to N. Fort Valley

- Evaluate condition of existing catch basins and CMPs east of Rock Ridge Rd./Beal Rd and Navajo Dr./Beal Rd. and reconfigure catch basins if necessary
- Determine strategy if 10-year storm is not contained in the roadway
- Determine if valley gutters are necessary or need to be replaced at intersections
- Determine current capacity of roadway and if rolled curb needs to be replaced with vertical based on capacity and the impacts of the proposed typical sections

W. Navajo Road – N. Navajo Drive to N. Fort Valley Road

- Determine if valley gutters are necessary or need to be replaced at intersections
- Determine current capacity of roadway and if rolled curb needs to be replaced with vertical based on capacity and the impacts of the proposed typical sections
- Determine strategy if 10-year storm is not contained in the roadway

SCOPE OF WORK

Task A

Task A-3 - Design Concept Report and 30% Plans (Full Project Area)

JE Fuller will prepare several drainage design sheets which will be included in the PEI 30% planset. The drainage design will focus on replacement of existing stormdrain and catchbasins within the project limits.

JE Fuller will prepare a Drainage Analysis which will be included as an appendix to the Design Concept Report. The analysis will include the following:

- Determination of existing drainage patterns and flow rates for the 2-, 10, 25, and 100-year events.
- Identification of drainage problem areas which are defined as:
 - Locations where the 100-year inundation limits go beyond the right of way
 - Locations where the 10-year inundation limits exceeds the back of curb
 - Areas where there is ponding
 - Drainage problems expressed by the community through past drainage complaints
- Existing roadway and culvert capacity calculations
- Proposed roadway capacity calculations with use of a 4" roll curb or a 6" vertical curb and the proposed typical section
- Identification of locations that still have drainage problems as defined above after integration of a 4" roll curb and the proposed typical section
- Identification of locations that still have drainage problems as defined above after integration of a 6" curb and the proposed typical section
- Schematic stormdrain layout to contain 10-year flows within the curb lines with 4" roll curb and the proposed typical section
- Schematic stormdrain layout to contain 10-year flows within the curb lines with 6" vertical curb and the proposed typical section
- Schematic CAD Layout of the proposed improvements in order to convey the 10-year event in the roadway.

JE Fuller will hold a stormwater workshop with the stormwater department to review the findings. If the City chooses to expand the stormwater infrastructure within the project limits based on the DCR, JE Fuller will work with the City to determine the scope and effort required to design the expansion.

Deliverables:

- *Up to four- 20 scale plan sheets (no profiles) to include in the PEI planset*
- *Drainage Analysis to be included as an appendix to the DCR*

Task A-4 – Stakeholder and Public Involvement

JE Fuller will attend up to three public meetings in support of the project.

Task B – South Phase**Task B-1 - 60% Design Documents**

JE Fuller will prepare 60% design sheets for the City's original scope of drainage improvements within the South Phase area. We anticipate up to three 20 scale plan and profile sheets showing the proposed drainage improvements. A preliminary drainage report will be prepared for the improvements which will include a summary of the existing drainage conditions, roadway capacity calculations, and catchbasin/stormdrain capacity calculations.

Deliverables:

- *Up to three 20 scale plan and profile sheets to include in the PEI planset*
- *Preliminary Phase 1 Drainage Report*

Task B-2 - Final 1 Plans

JE Fuller will prepare Final 1 Plans for the drainage improvements within the South Phase area. The sheet index will match the 60% plans. The drainage report will be finalized.

Deliverables:

- *Up to three 20 scale plan and profile sheets to include in the PEI planset*
- *Final Phase 1 Drainage Report*

Task B-3 - Final 2 Plans

JE Fuller will prepare Final 2 Plans for the drainage improvements within the South Phase area and update the final drainage report if necessary

Deliverables:

- *Up to three 20 scale plan and profile sheets to include in the PEI planset*
- *Revised final drainage report if necessary*

Task B-4 – Beal & Rio de Flag Utilities at Bridge (OPTIONAL)

JE Fuller will perform scour calculations for the proposed sewer replacement in the Rio de Flag channel. The scour calculations will be summarized in a technical memorandum and will be provided to PEI for use in the sewer design. This task does not include design of scour protection for the sewer.

JE Fuller will participate in up to four (4) coordination meetings with City staff, the USACE and/or the USACE's design engineer.

Task C – North Phase

Task C-1 - 60% Design Documents

JE Fuller will prepare 60% design sheets for the City's original scope of drainage improvements within the North Phase area. We anticipate up to three 20 scale plan and profile sheets showing the proposed drainage improvements. A preliminary drainage report will be prepared for the improvements which will include a summary of the existing drainage conditions, roadway capacity calculations, and catchbasin/stormdrain capacity calculations.

Deliverables:

- *Up to three 20 scale plan and profile sheets to include in the PEI planset*
- *Preliminary Phase 2 Drainage Report*

Task C-2 - Final 1 Plans

JE Fuller will prepare Final 1 Plans for the drainage improvements within the North Phase area. The sheet index will match the 60% plans. The drainage report will be finalized.

Deliverables:

- *Up to three 20 scale plan and profile sheets to include in the PEI planset*
- *Final Phase 2 Drainage Report*

Task C-3 - Final 2 Plans

JE Fuller will prepare Final 2 design sheets for the drainage improvements within the Phase 2 area and update the final drainage report if necessary

Deliverables:

- *Up to three 20 scale plan and profile sheets to include in the PEI planset*
- *Revised final drainage report if necessary*

Task D – Construction Phase Services (Allowance)

JE Fuller will provide bidding and construction phase support if requested.

FEE

JE Fuller’s Lump Sum by Task fee, including printing and reimbursable expenses, is summarized in the table below.

Table 1. Fee by Task

Task	Lump Sum Fee
Task A-3 - Design Concept Report and 30% Plans (Full Project Area)	\$47,590
Task A-4 – Stakeholder and Public Involvement	\$1,440
Task B-1 - 60% Design Documents	\$16,535
Task B-2 - Final 1 Plans	\$15,165
Task B-3 - Final 2 Plans	\$5,925
Task B-4 – Beal Bridge Utilities (Optional)	\$4,840
Task C-1 - 60% Design Documents	\$16,535
Task C-2 - Final 1 Plans	\$15,165
Task C-3 - Final 2 Plans	\$5,925
Task D – Construction Phase Services (Allowance)	\$4,000
TOTAL	\$133,120

SCHEDULE

JE Fuller will follow the schedule of the design team.

ASSUMPTIONS

- The DCR may identify locations to expand the existing stormdrain system. If the City chooses to expand the scope of the drainage improvements based on the DCR, design services for those additional improvements will be an additional service.
- Scour protection design for the sewer in the Rio de Flag is not included. Design of drainage improvements within the Rio de Flag are not included.

We appreciate the opportunity to work with you on this great project. If you have any questions, please do not hesitate to contact me.

Sincerely,

JE Fuller Hydrology & Geomorphology, Inc.



Joseph Loverich, P.E, CFM

Vice President

March 18, 2019

Julie Leid
Peak Engineering, Inc.
PO Box 790
Flagstaff, AZ 86002

**RE: Proposal for Geotechnical Investigation
Coconino Estates
Beal Road, Navajo Road, and Navajo Drive
Flagstaff, AZ
Proposal No. 68150SF**

Dear Ms. Leid:

We are pleased to provide our cost estimate to conduct a soil investigation at the above referenced site that will satisfy site development and foundation design requirements. All work on this project will be carried out under the overall supervision of a registered Professional Engineer in the state of Arizona.

We understand that construction will consist of utility replacement/upgrades and rehabilitation/reconstruction of roadways in the Coconino Estates subdivision. Utility installation will most likely involve directional boring/tunneling under the Rio de Flag at Beal Road and from Navajo Road to the Flagstaff High School recreation fields. Structural loads are expected to be light to moderate and no special considerations regarding settlement tolerances are known at this time. Adjacent areas will be landscaped or paved to support moderate passenger and light truck traffic.

We will drill and sample sufficient test borings to adequately determine subsoil conditions and provide samples for laboratory testing. Sufficient laboratory tests will be conducted to properly classify the soils encountered and provide data for engineering design. The geotechnical investigation will be split into two phases. The first phase will focus on roadway rehabilitation/reconstruction with borings excavated deep enough for general utility installation. The second phase will involve borings conducted to obtain information for the directional boring/tunneling. For Phase 1, we presently anticipate drilling 10 structural borings to depths of 10 feet below existing ground surface, or refusal, whichever comes first. The asphalt at all boring locations will be cored for thickness determination and photographic log. For Phase 2, anticipated to be conducted at approximately 60% design, we anticipate 4 borings to depths of 10 to 25 feet below existing grade. Rock coring will be conducted if necessary to achieve the depths of 10 and 25 feet. Access to the boring locations by conventional truck-mounted drilling equipment is assumed to be free and unencumbered for both phases. S&A will arrange for public utilities to be located through Arizona 811 and obtain necessary right-of-way permits and traffic control as required by the City of Flagstaff.

We will analyze the data obtained from field and laboratory testing and prepare a separate report for each phase presenting all data obtained, together with our conclusions and recommendations regarding:

1. Groundwater conditions, if any, to the depths which will influence design and/or construction of the proposed improvements.
2. Pavement design to provide economy and adequate service.
3. Suitability of site soils for use as compacted fill and preferred earthwork methods, including clearing, stripping, excavation and construction of engineered fill.
4. Local excavation and trenching conditions and stability considerations.
5. Potential corrosiveness of subsoil materials and procedures to minimize the effects thereof.

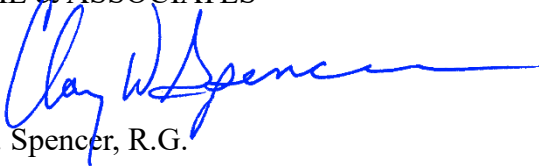
Charges for our services have been determined on the basis of our standard Fee and Rate Schedule, a copy of which is attached and made a part hereof. We propose to provide the services set forth herein for Phase 1 as a lump sum amount. Since Phase 2 may involve rock coring and has many unknowns at this time, we propose to do the scope indicated for Phase 2 as a time and materials, not to exceed amount.

Phase 1	\$10,200.00 (lump sum)
Phase 2	\$8,400.00 (not to exceed)

These amounts include all testing, engineering and reimbursable expenses, 2 hard copies and an electronic copy (pdf format) of each report. Should we be informed that additional hard copies of the reports are needed after it has been finalized, there will be an additional charge of \$25.00 per report. Time from authorization to proceed to final report submittal at this time is on the order of 4 to 6 weeks following our receipt of this signed proposal (authorization to proceed). This time frame does not include delays due to inclement weather or delays in the field not caused by Speedie & Associates and subcontractors.

We appreciate the opportunity to submit this proposal for your consideration. If the terms set forth are satisfactory, please attach this proposal to your standard subconsultant agreement, and return it for our records.

Respectfully submitted,
SPEEDIE & ASSOCIATES



Clay W. Spencer, R.G.

ENGINEERING SERVICES
Northern Arizona 2018 Fee and Rate Schedule

Fees for services will be based upon the time worked on the project at the following rates:

Title	Rate Per Hour
Principal	\$ 150.00
Project Manager	110.00
Sr. Geologist/Engineer	110.00
Project Engineer/Geologist	100.00
Environmental Specialist	90.00
Special Inspector (Architectural)	85.00
Special Inspector (Structural/Geotechnical)	85.00
Staff Engineer/Geologist	85.00
Sr. Engineering Technician	75.00
Draftsman	65.00
Materials Testing Technician	55.00
Clerical/Administrative	50.00

REIMBURSABLE EXPENSES

Light Truck Mileage Rate: \$0.50 per mile

The following items are reimbursable to the extent of actual expenses plus 25%:

1. Transportation, lodging and subsistence for out of town travel
2. Special mailings and shipping charges
3. Special materials and equipment unique to the project
4. Duplication or reprinting/copying reports

TEST BORINGS AND FIELD INVESTIGATIONS

On projects requiring test borings, test pits, or other explorations, the services of reputable contractors to perform such work shall be obtained.

SUBCONTRACTORS/SUBCONSULTANTS CHARGES

Any charges for subcontractors/subconsultants are subject to a 25% handling fee if invoiced by Speedie & Associates or such charges can be directly paid by the CLIENT.

SPECIAL RATES

The following rates may be subject to a 35% increase:

- Overtime – time over 8 hours per weekday and on Saturday
- Sunday and Holidays
- Rush orders
- Night Shift

EXPERT WITNESS

Deposition and testimony; 4-hour minimum, \$250.00 per hour.

The following Terms and Conditions are included and hereto made a part of this agreement.