

WATER BASIS OF DESIGN REPORT

Scottsdale UMC Multifamily

Parcel 173-52-001A

4140 North Miller Road
Scottsdale, AZ 85251

RICK Job No. 7251
October 2, 2025

FINAL Basis of Design Report

☐ APPROVED

☒ APPROVED AS NOTED

☐ REVISE AND RESUBMIT



Disclaimer: If approved, the approval is granted under the condition that the final construction documents submitted for city review will match the information herein. Any subsequent changes in the water or sewer design that materially impact design criteria or standards will require re-analysis, re-submittal, and approval of a revised basis of design report prior to the plan review submission.; this approval is not a guarantee of construction document acceptance. For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

BY Levi Dillon

DATE 11/25/2025

Address the following comments on the within the construction documents submittal:

1) DS&PM 6-1.417, C When the location of a backflow preventer cannot be accommodated adjacent to the meter, the designer shall: Request permission from the Water Resources Department to separate the meter from the backflow preventer. Backfill the water line between the meter box and the backflow preventer with 1-sack controlled low strength material (CLSM) per MAG, Section 728. CLSM shall be placed to the full width of the trench and to 6 inches above top of pipe.

Confirm during plan review that placing adjacent is not possible and make request to Water Resources. This comment applies to all 5 meters proposed.

2) The following notes also apply to cast iron pipe which has unrestrained leaded joints. DS&PM 6-1.408 Fittings installed into asbestos cement pipe (ACP) or PVC pipe within 6-feet of another fitting or joint will require that section of pipe to be removed and replaced with DIP. Existing tees, tapping sleeves and related appurtenances that are not utilized by a development shall be removed by the contractor. A minimum 3-foot section of pipe shall be removed, with no less than 6 feet remaining to the nearest joint. The removed pipe shall be replaced with DIP. DS&PM 6-1.413 (last paragraph)

When more than 3 feet of existing PVC or ACP water lines are exposed during construction and the bedding is disturbed, the water line must be replaced with DIP (minimum Class 350) with mechanical joints or flanged joints to 3 feet past the sides of the exposed crossing trench. Refer to MAG Standard Detail No. 403-3.

3) Refer to appropriate water and sewer COS details on the utility plan

4) Submit a hydrant flow test with the improvement plans. A minimum of 30psi system pressure shall be provided while concurrently satisfying the required fire flow.

4)Address applicable comments provided on the utility plan.



Scottsdale UMC Multifamily

Parcel 173-52-001A
4140 North Miller Road
Scottsdale, AZ 85251

Water Basis of Design Report
COS #: 14-DR-2025

Prepared For:

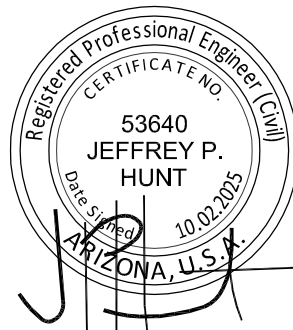
Gorman & Company

608 E Missouri Ave

Phoenix Az, 85012

P: 602-430-8345

Attn: Dan Klocke



Jeff Hunt, P.E.
October 2nd, 2025

Prepared By:

RICK ENGINEERING COMPANY

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Phoenix, Arizona 85029

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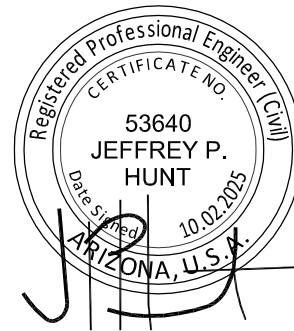
JOB NUMBER 7251

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- A Location Map
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I. INTRODUCTION

1. PROJECT NAME AND LOCATION

The Project is known as 'Scottsdale UMC Multifamily' and is located at 4140 N Miller Road in Scottsdale, Arizona. Refer to Appendix A for a Location Map.

The project site is a portion of a developed parcel bounded by N Miller Road to the east, N 75th St to the west, a condominium complex to the north, and commercial development to the south. The proposed Project consists of two new buildings that make up an 83-unit multifamily residential housing complex and associated paved parking, fire system and drainage infrastructure.

The City of Scottsdale is the water service provider for this site.

2. EXISTING STUDIES

No existing studies could be found for this project that would impact the analysis of the proposed water system.

3. GOVERNING JURISDICTIONS

The project lies within the City of Scottsdale service area. The project is governed by and is design in accordance with the following requirements:

- Arizona Administrative Code Title 18 Chapter 5, "Department of Environmental Quality Environmental Reviews and Certification"
- Arizona Department of Environmental Quality, Engineering Bulletin No. 10, "Guidelines for Construction of Water Systems".
- Arizona Department of Environmental Quality, Engineering Bulletin No. 8, "Disinfection of Water Systems".
- City of Scottsdale Design Standards & Policy Manual

and MAG supplements and details

II. EXISTING CONDITIONS

1. WATER SYSTEM

According to utility system maps and as-built records, the existing water infrastructure consists of a two (2) 1-1/2" domestic water meters, backflow preventer and service line extending from the 8" water main within Miller Road to the existing onsite buildings, as well as an 8" backflow preventer 8" fire line that reduces to a 6" fire line to the existing buildings from the 8" water main located along the western, 75th Street, boundary of the project.

provide a hydrant flow test with improvement plan submittal

2. FLOW TEST OF EXISTING SYSTEM

A fire hydrant flow test will be conducted on the 8" main within Miller Road. It is anticipated that the line will yield adequate gpm at an approved static pressure that will be able to serve the project and continue to serve the existing buildings onsite. The test will be attached to the report at time of completion.

III. PROPOSED CONDITIONS

1. PROPOSED WATER SYSTEM

The proposed water system consists of a 166 LF 8-inch ductile iron pipe fire service, 390 LF of 2-inch domestic service line, two (2) new 2" domestic water meters and two (2) existing 1-1/2" domestic water meters, and 4 domestic backflow preventers and one new 1" landscape water meter. The northern building will be served via a new 2" service, meter, and backflow preventer located at the northeast corner of the site. The southern building will be served via a new 2" service, meter, and backflow preventer located at the northeast corner of the building. Both new services connect to the existing 8" main located in Miller Road. Both buildings get fire service from 8" lines that connect to backflow preventers located within their respective fire riser rooms. These 8" lines tie in to one new 8" line that connects to the 8" main in Miller Road. The 2 existing buildings will continue to be served by their existing fire services but relocated domestic meters and backflows will be installed on the east side of the site to accommodate new sidewalk going in. These relocated meters and backflows will connect to existing services within the site. Refer to Appendix B for the Water System Exhibit.

2. DEMANDS

Water demand is a schedule of water requirements and according to ADEQ design guidelines, and, when a water system is to serve fire protection requirements, the total system demand shall be computed by adding the required fire flow in gallons per minute (gpm) for the specified duration to the general service requirements (drinking, cooking, cleansing, toilet flushing, etc). The demands for each component are summarized below.

Domestic

Guidance for demand and peaking flow rates is taken from the 2018 City of Scottsdale Design Standards & Policies Manual.

Proposed Buildings

Building 1

Total Dwelling Units.....	53 DU
Total Site Area.....	4.49 AC
Water Usage (gallons per minute per unit).....	0.27 gpm/DU
Average Daily Demand	14.31 gpm
Max Day Factor	2.0 x ADD
Max Daily Demand	28.62 gpm
Peak Hour Factor	3.5 x ADD
Peak Hour Demand	50.09 gpm

Building 2

Total Dwelling Units.....	29 DU
Total Site Area.....	4.49 AC
Water Usage (gallons per minute per unit).....	0.27 gpm/DU
Average Daily Demand	7.83 gpm
Max Day Factor	2.0 x ADD
Max Daily Demand	15.66 gpm
Peak Hour Factor	3.5 x ADD
Peak Hour Demand	27.41 gpm

Existing Buildings (to remain)

Total Building Area.....	24,400 SF
Water Usage (gallons per minute per unit).....	0.000834 gpm/SF
Average Daily Demand	20.35 gpm
Max Day Factor	2.0 x ADD
Max Daily Demand	40.70 gpm
Peak Hour Factor	3.5 x ADD
Peak Hour Demand	71.23 gpm

The peak daily demand for this project, including existing and proposed buildings, is 149.73 gpm.

25% (75% reduction)

Fire

The required fire flow for the project is provided by the 2018 International Fire Code (IFC). The required flow is based on construction type of the structure and the square footage of the building. The code allows for a 75% of the fire required flow if automatic sprinklers are provided, with a minimum flow of 1,500 gpm for 2 hours with a minimum pressure of 20 psi. The following is based on data found in Appendix B of the IFC:

Building Construction Type	VB
Automatic Sprinklers	Yes
Total Building Area	25,940 SF
Required Fire Flow (unreduced)	4,250 gpm
Allowable Reduction for automatic sprinklers	75%
Required Fire Flow (reduced, minimum COS value)	1,500.00 gpm

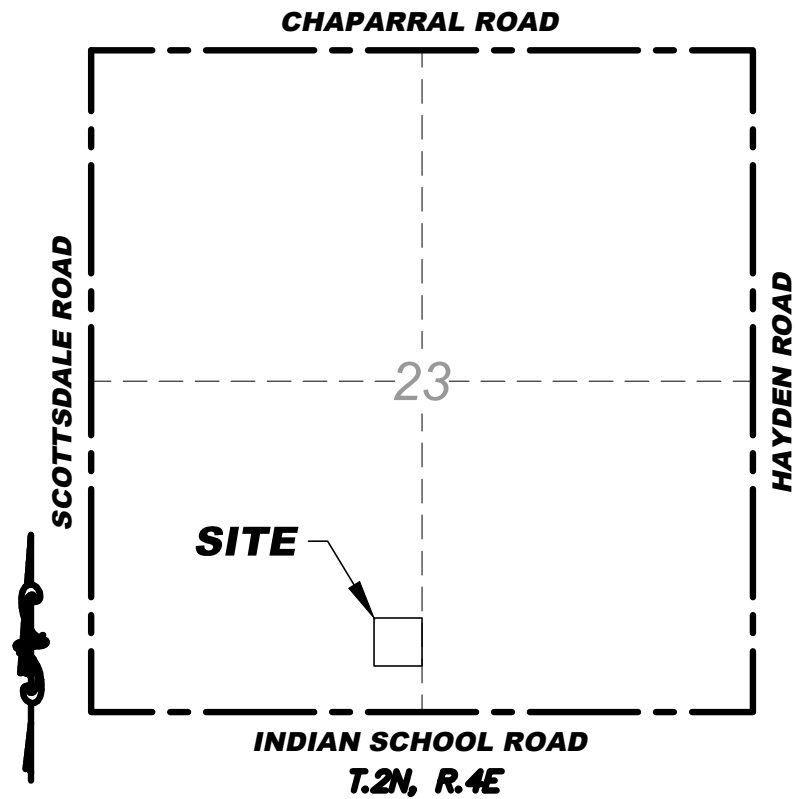
COS requires 30psi

should be largest building??

IV. CONCLUSION

The fire flow test results will show that the resultant pressure under fire flow condition is capable of providing the project with the required fire flow under max day demands (MDD) while maintaining a system pressure of at least 20 psi at all points.

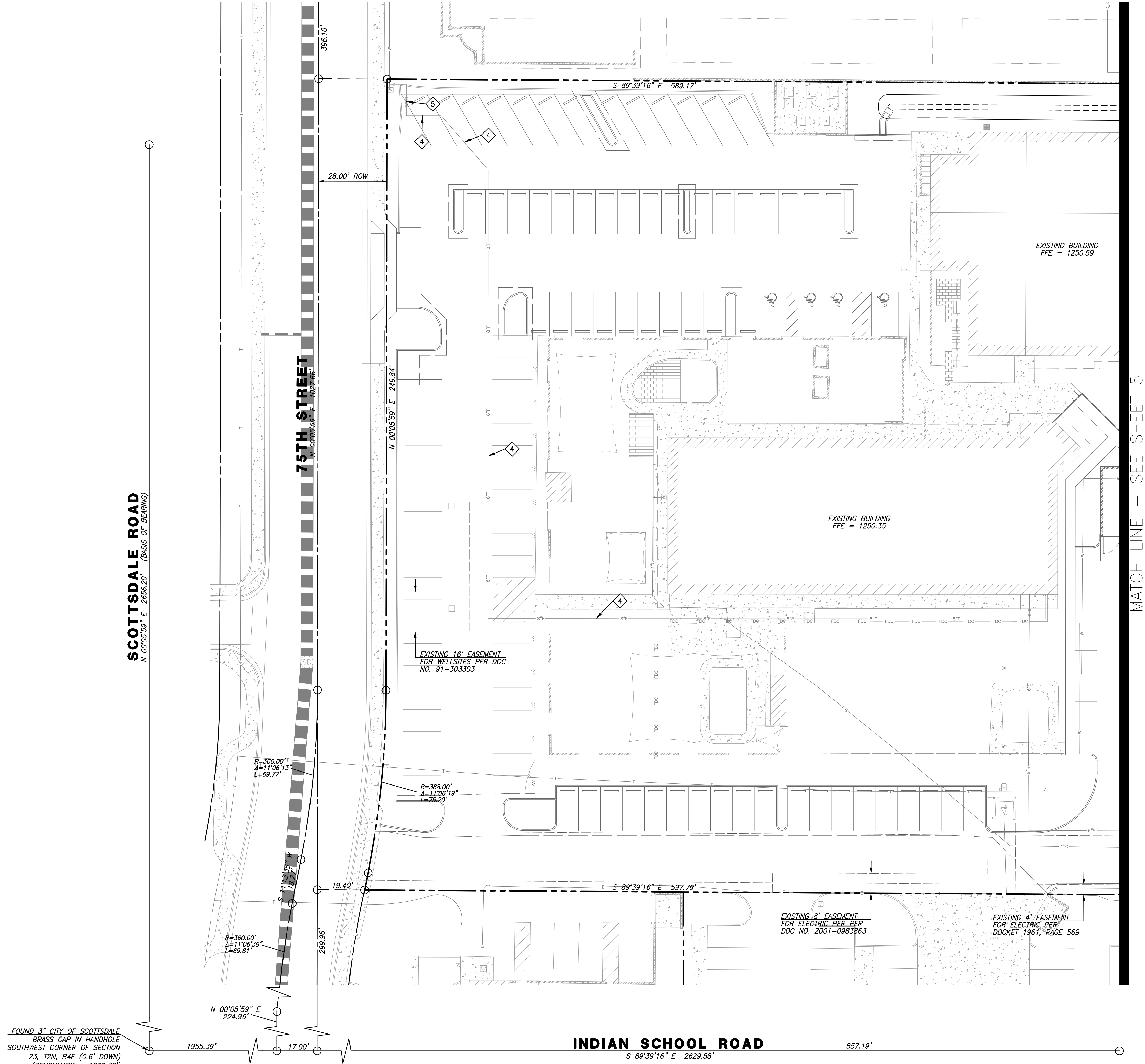
ATTACHMENT A
LOCATION MAP



VICINITY MAP

N.T.S.

ATTACHMENT B
PRELIMINARY UTILITY PLAN



- WATER KEYNOTES**
- 1 NEW 2" SERVICE AND METER FOR DOMESTIC WATER SERVICE.
 - 2 NEW 2" DOMESTIC WATER LINE.
 - 3 NEW RPPB DOMESTIC BACKFLOW PREVENTER PER CITY OF SCOTTSDALE DETAIL 2354.
 - 4 EXISTING 1-1/2" SERVICE TO REMAIN. RELOCATE METER TO OUTSIDE PUBLIC SIDEWALK AND PRESERVE SERVICE TO EXISTING BUILDING.
 - 5 EXISTING DOMESTIC WATER LINE TO REMAIN.
 - 6 NEW 1" SERVICE AND METER FOR IRRIGATION SERVICE.

- FIRE LINE KEYNOTES**
- 1 CONNECT TO EXISTING 8" WATER MAIN USING CUT-IN TEE FOR FIRE SERVICE. INSTALL PER CITY OF SCOTTSDALE DETAIL 2362-2.
 - 2 NEW 8" DIP FIRE LINE.
 - 3 NEW 8" FIRE BACKFLOW PREVENTER IN RISER ROOM.
 - 4 EXISTING FIRE LINE TO REMAIN
 - 5 EXISTING BACKFLOW PREVENTER TO REMAIN.

- PRIVATE SEWER KEYNOTES**
- 1 CONNECT TO EXISTING 8" PVC SEWER MAIN PER MAG DETAIL 440-3.
 - 2 NEW 6" PVC SDR-35 SEWER LINE.
 - 3 CONNECT TO BUILDING SANITARY SEWER.

PRELIMINARY IMPROVEMENT PLAN PREPARED FOR:
SCOTTSDALE UMC MULTIFAMILY
4140 NORTH MILLER ROAD
SCOTTSDALE, ARIZONA 85251
CITY OF SCOTTSDALE
ONSITE UTILITY PLAN



DRAWING NO.
UT1
SHEET NO. 4 OF 6

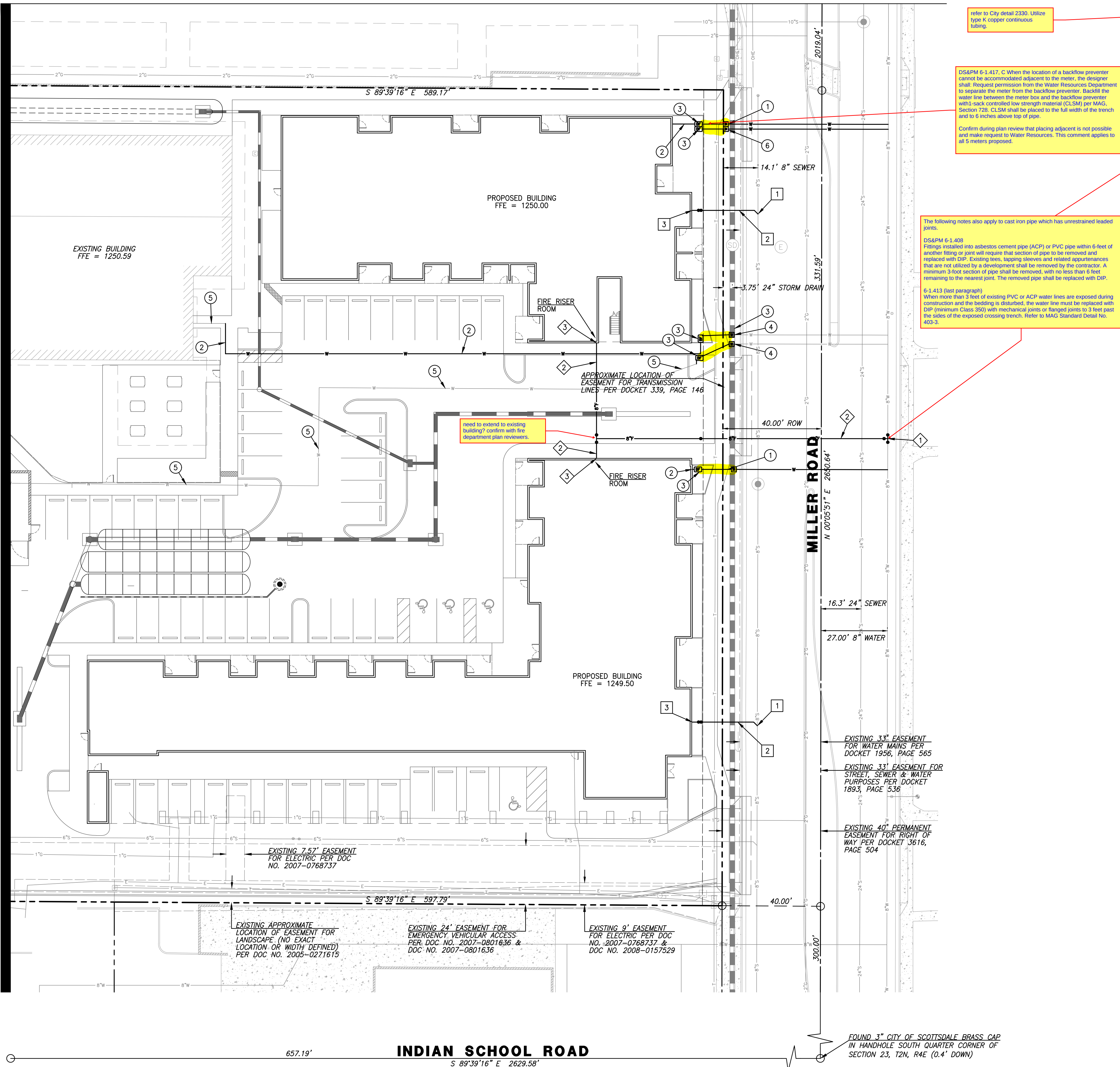
RICK
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PHOENIX, AZ 85029
SAN DIEGO ORANGE RIVERSIDE SACRAMENTO SAN LUIS OBISPO
SANTA CLARITA PHOENIX TUCSON LAS VEGAS DENVER

PROJECT NO: 7251
DATE: 10/02/2025
DRAWN/DESIGNED BY: JH
CHECKED BY: CN



NO.	BY	DATE	REVISION

MATCH LINE — SEE SHEET 4



refer to City detail 2330. Utilize type K copper continuous tubing.

DS&PM 6-1.417, C When the location of a backflow preventer cannot be accommodated adjacent to the meter, the designer shall Request permission from the Water Resources Department to separate the meter from the backflow preventer. Backfill the water line between the meter box and the backflow preventer with 1-sack controlled low strength material (CLSM) per MAG, Section 728. CLSM shall be placed to the full width of the trench and to 6 inches above top of pipe.

Confirm during plan review that placing adjacent is not possible and make request to Water Resources. This comment applies to all 5 meters proposed.

The following notes also apply to cast iron pipe which has unrestrained leaded joints.

DS&PM 6-1.408
Fittings installed into asbestos cement pipe (ACP) or PVC pipe within 6-feet of another fitting or joint will require that section of pipe to be removed and replaced with DIP. Existing tees, tapping sleeves and related appurtenances that are not utilized by a development shall be removed by the contractor. A minimum 3-foot section of pipe shall be removed, with no less than 6 feet remaining to the nearest joint. The removed pipe shall be replaced with DIP.

6-1.413 (last paragraph)
When more than 3 feet of existing PVC or ACP water lines are exposed during construction and the bedding is disturbed, the water line must be replaced with DIP (minimum Class 350) with mechanical joints or flanged joints to 3 feet past the sides of the exposed crossing trench. Refer to MAG Standard Detail No. 403-3.

need to extend to existing building? confirm with fire department plan reviewers.

FOUND 3" CITY OF SCOTTSDALE BRASS CAP IN HANDHOLE SOUTH QUARTER CORNER OF SECTION 23, 12N, R4E (0.4' DOWN)

- WATER KEYNOTES**
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 - NEW 2" DOMESTIC WATER LINE.
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SCOTTSDALE UMC MULTIFAMILY
4140 NORTH MILLER ROAD
SCOTTSDALE, ARIZONA 85251
CITY OF SCOTTSDALE



DRAWING NO.
UT2
SHEET NO. 5 OF 6

ONSITE UTILITY PLAN

PROJECT NO: 7251
DATE: 10/02/2025
DRAWN/DESIGNED BY: JH
CHECKED BY: CN

NO.	BY	DATE	REVISION