

WATER SYSTEM REQUIREMENTS		
PHASE	QUANTITY	DESCRIPTION
2	1460 LF	8" DUCTILE IRON WL (INC. VALVE, TEES, BENDS, ETC.)
3	5065 LF	8" DUCTILE IRON WL (INC. VALVE, TEES, BENDS, ETC.)
	1884 LF	12" DUCTILE IRON WL (INC. VALVE, TEES, BENDS, ETC.)
	1	BOOSTER BUILDING (TRANSMISSION)
	1	350,000 CONCRETE WATER STORAGE TANK
	1	BOOSTER BUILDING (DISTRIBUTION)
	2	GENERATOR
	1	SCADA SYSTEM
	2	REDUCER
4	4014 LF	8" DUCTILE IRON WL (INC. VALVE, TEES, BENDS, ETC.)
	1	PRESSURE REDUCING VALVE ASSEMBLY
5	1097 LF	8" DUCTILE IRON WL (INC. VALVE, TEES, BENDS, ETC.)
6	1971 LF	8" DUCTILE IRON WL (INC. VALVE, TEES, BENDS, ETC.)
7	1592 LF	8" DUCTILE IRON WL (INC. VALVE, TEES, BENDS, ETC.)

- LEGEND
- PHASE 2

PHASE 3

PHASE 4

PHASE 5

PHASE 6

PHASE 7

PRESSURE ZONE 1 BOUNDARY

PRESSURE ZONE 2 BOUNDARY

LOWER SYSTEM BOUNDARY

ASSUMPTIONS

1. SCHOOL SITE / BUILDING WILL BE DESIGNED TO ONLY REQUIRE A SINGLE HYDRANT W/ DURATION OF 120 MIN. = 180,000 GAL.

WATER SYSTEM REQUIREMENTS PER PHASE

Phase 1:
The Multi-Family development will be connected to the existing water system in Hillview Way. The pressure in Hillview ranges between 75 and 80 psi. The development will have two connections into Hillview Way and will contain looped 8" Public ductile iron waterline to provide domestic water and fire suppression needs of the 5 Multi-Family Buildings that are currently under construction. Fire Hydrants have been designed to meet International Fire Code (IFC) and City of Missoula Fire Department requirements.

Phase 2:
This phase contains 21 Townhouses that will be connected to the existing water system in Hillview Way. The development will create a lasso line that is connected at Hillview Way and will create a loop along the private access road and back into Local A. This will provide domestic water supply to each townhouse and to public fire hydrants for fire protection. Fire hydrants will be installed to comply with IFC requirements. Domestic services will be stubbed out to each parcel.

Phase 3:
This phase contains an extension of the public water system, and will include booster buildings and a new water storage tank. The system will be designed to provide for the needs of the proposed subdivision and future developable parcels to the east and north of the project site. Future expansion will account for approximately 90,000GPD of additional capacity.

Starting at the connecting to the existing public water supply in Hillview Way, a new line will be extended east to a new booster building (FF Elev. = 3450') that will boost water pressures to allow for filling a water storage tank at (FF Elev. = 3640'). The tank will be 342,000 gallons and will be approximately 24' tall (with the bottom 4' buried to reduce freeze potential). The volume includes 180,000 gallons for fire suppression, 72,772 gallons for domestic use within the subdivision, and an additional 89,194 gallons for future domestic needs.

A booster building will be constructed adjacent to the water storage tank. Booster pumps will generate pressure for the upper portion of the development and have capacity to be adjusted for a higher pressure setting when development occurs on the vacant land to the east. Booster pumps will be designed to provide the required peak flow rate with the largest pump out of commission.

The subdivision will contain two pressure zones. The first will be pressurized by the booster pumps described above. The lower zone will be a gravity system supplied connected to the transmission line between the lower booster building and the water storage tank.

Fire hydrants will be installed to comply with requirements of IFC. Domestic services will be stubbed out to each parcel.

A new SCADA system will be designed and connected to the City of Missoula Water Departments system to allow for monitoring and control of the water system remotely.

Phase 4:
This phase contains 8" public ductile iron piping as well as the single pressure reducing valve is proposed to link the two pressure zones. Fire hydrants will be installed to comply with IFC. Domestic services will be stubbed out to each parcel.

Phase 5:
This phase contains 8" public ductile iron piping along the new roadways. Fire hydrants will be installed to comply with IFC. Domestic services will be stubbed out to each parcel.

Phase 6:
This phase contains 8" public ductile iron piping along the new roadways. Fire hydrants will be installed to comply with IFC. Domestic services will be stubbed out to each parcel.

Phase 7:
This phase contains 8" public ductile iron piping along the new roadways. Fire hydrants will be installed to comply with IFC. Domestic services will be stubbed out to each parcel.

COMBINED FLOW RATES IF MAINTAINED AS SCHOOL SITE.
Q = 64,774 GPD.
IF ALL SINGLE FAMILY.
Q = 98,194 GPD.

Cushing Terrell

cushingterrell.com
800.757.9522

MISSOULA, MONTANA
WILDROOT

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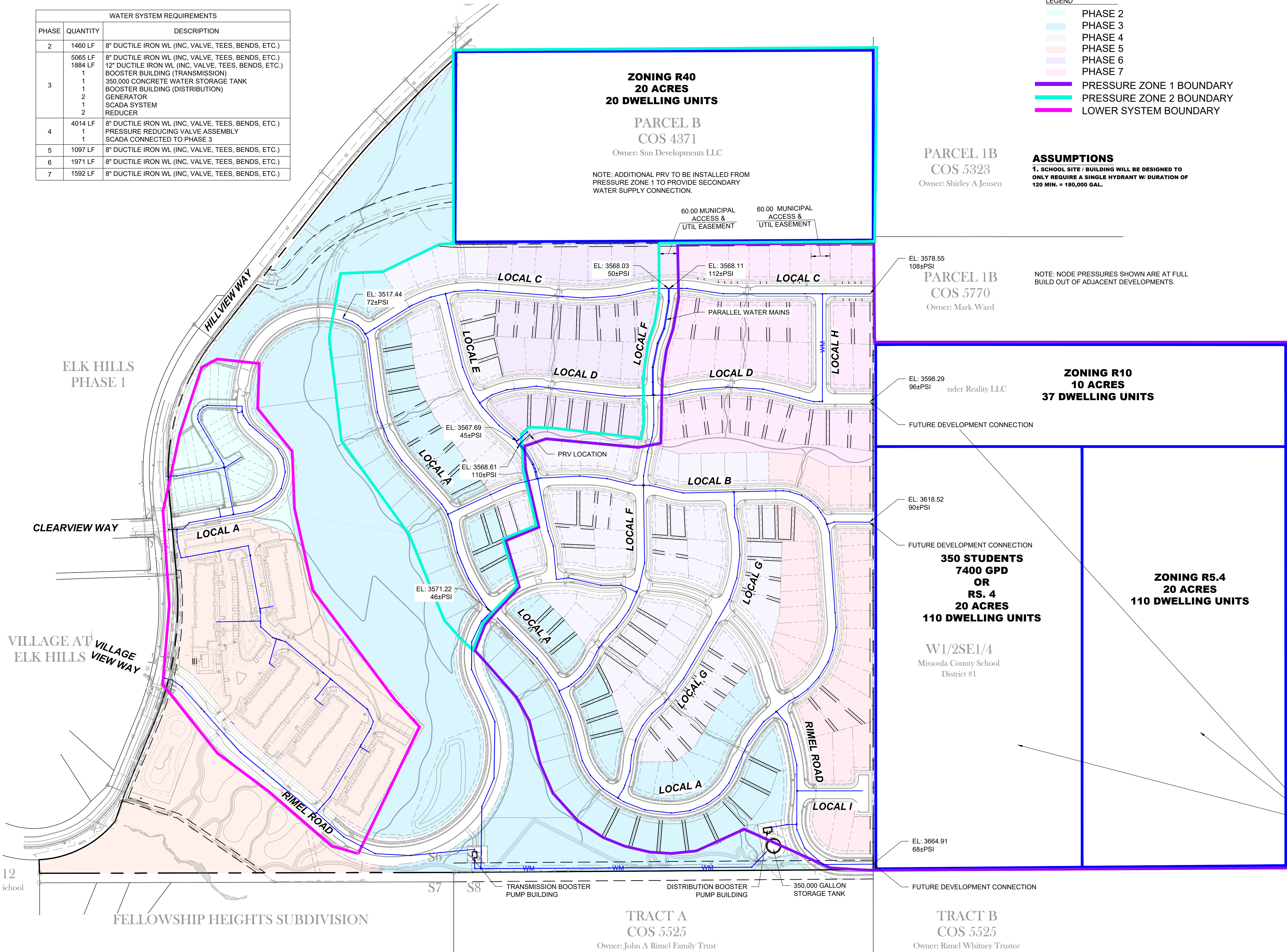
PRELIMINARY PLAT

05.10.2024
DRAWN BY | MASCIA
CHECKED BY |
REVISIONS

OVERALL WATER PLAN

X400

NOT FOR CONSTRUCTION - EXHIBIT



12
school

FELLOWSHIP HEIGHTS SUBDIVISION



1
X400

OVERALL WATER PLAN



SCALE: 1" = 150'

TRACT A
COS 5525

Owner: John A Rimel Family Trust

TRACT B
COS 5525

Owner: Rimel Whitney Trustee

PARCEL 1B
COS 5323

Owner: Shirley A Jensen

PARCEL 1B
COS 5770

Owner: Mark Ward

NOTE: NODE PRESSURES SHOWN ARE AT FULL BUILD OUT OF ADJACENT DEVELOPMENTS.

ZONING R10
10 ACRES
37 DWELLING UNITS

EL: 3578.55
106±PSI

FUTURE DEVELOPMENT CONNECTION

EL: 3598.29
96±PSI

FUTURE DEVELOPMENT CONNECTION

350 STUDENTS
7400 GPD
OR
RS. 4
20 ACRES
110 DWELLING UNITS

W1/2SE1/4
Missoula County School
District #1

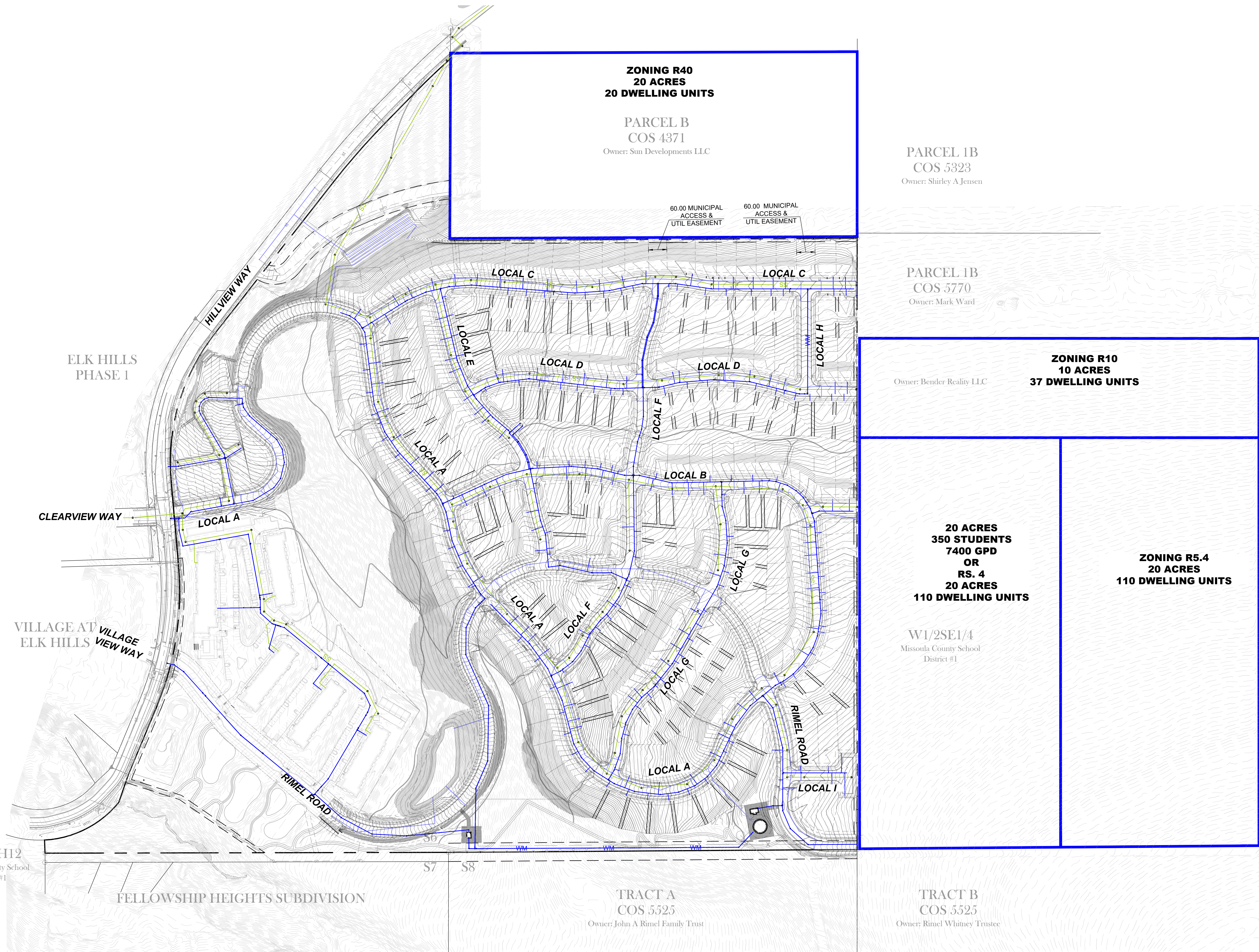
ZONING R5.4
20 ACRES
110 DWELLING UNITS

EL: 3618.52
90±PSI

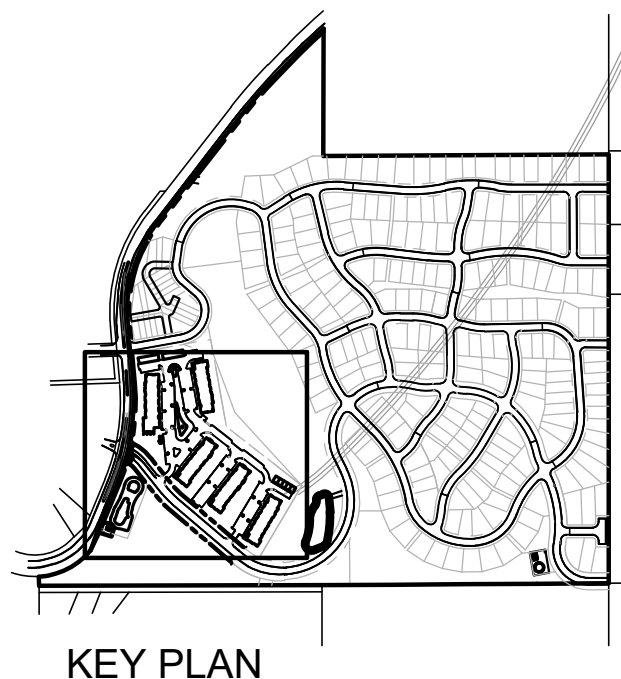
FUTURE DEVELOPMENT CONNECTION

EL: 3684.91
68±PSI

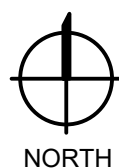
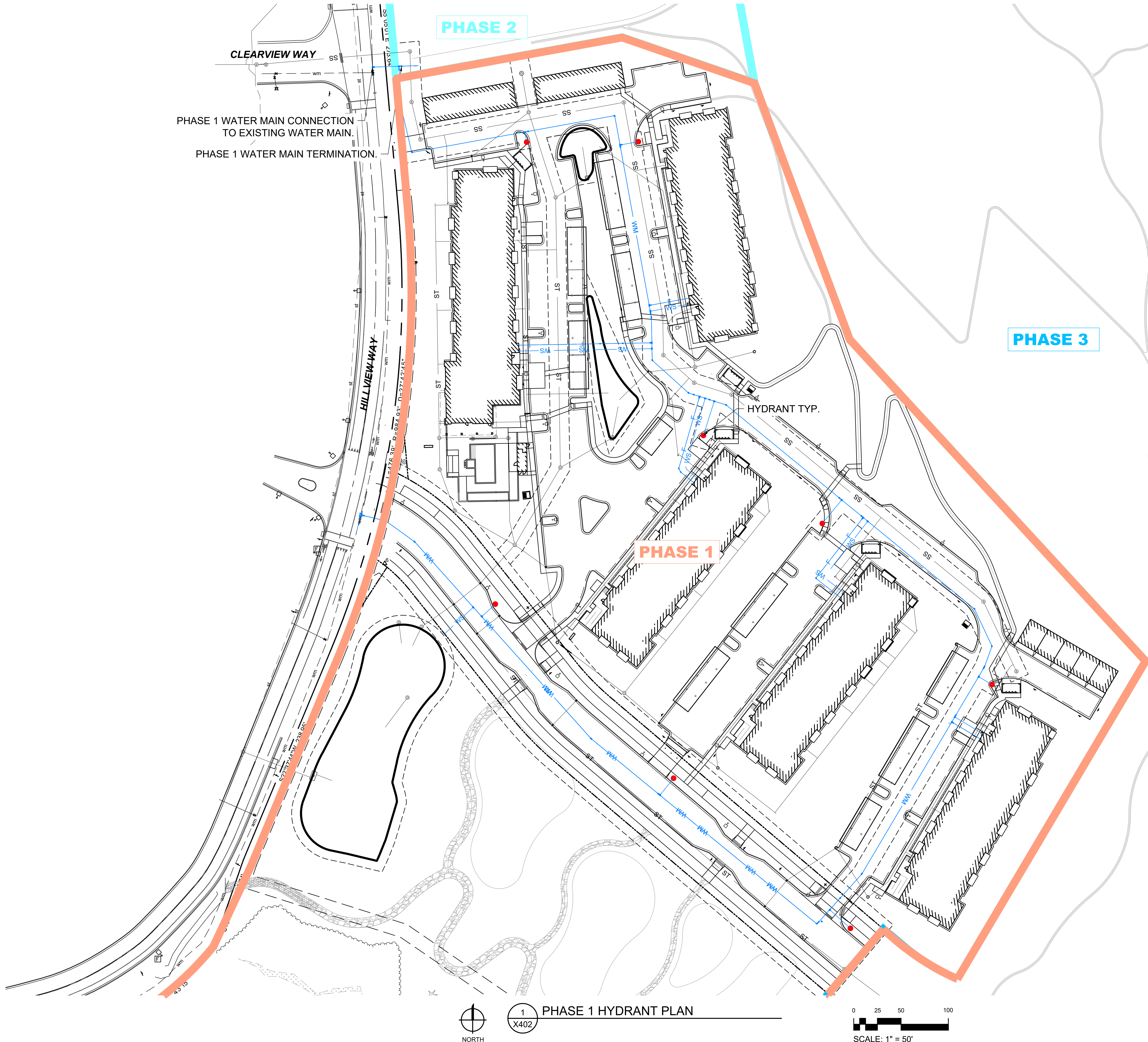
	Upper System											
	UNIT TYPE	UNITS	Total No. of People/ Residence	Total No. of People	Avg. Demand per Residence (gpcpd)	Avg. Demand (gpd)	Avg. Demand per Residence (gpm)	Avg. Demand (gpm)	Max Day Demand per Residence (gpm)	Max Day Demand (gpm)	Peak Hour Demand per Residence (gpm)	Peak Hour Demand (gpm)
Zone 1	Single Family	155	2.3	357	140	49,910	0.22	34.1	1.27	196.85	4	620.00
Zone 2	Single Family	71	2.3	163	140	22,862	0.22	15.62	1.27	90.17	4	284.00
Adj. Dev.	Single Family	277	2.3	637	140	89,194	0.22	60.94	1.27	351.79	4	1108.00
	TOTAL	503				161,966		110.66		638.81		2012.00



NOT FOR CONSTRUCTION - PRELIMINARY DESIGN



KEY PLAN



NORTH

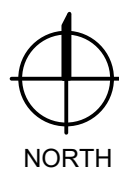
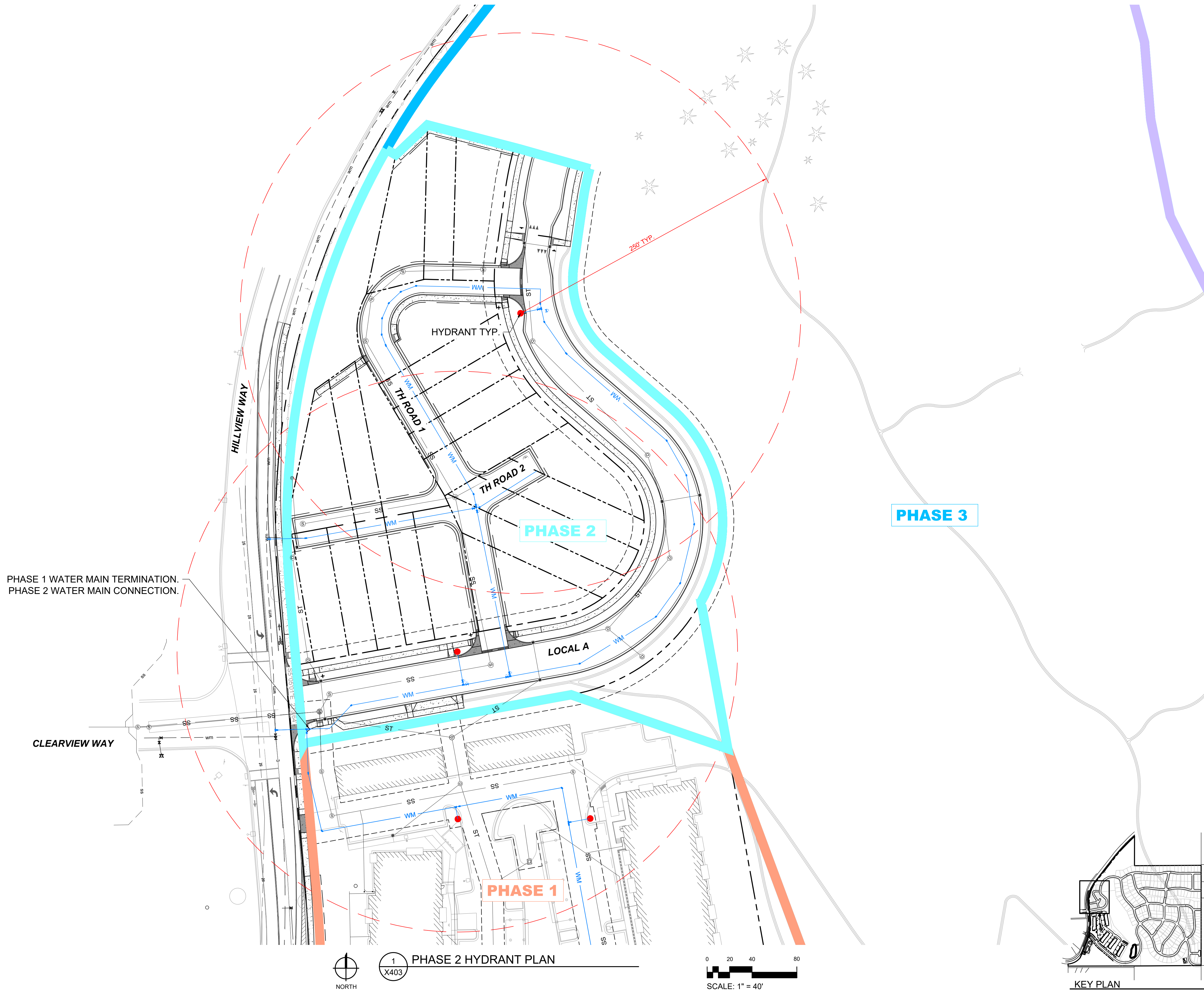
1
X402

PHASE 1 HYDRANT PLAN



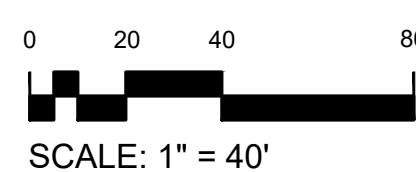
SCALE: 1" = 50'

NOT FOR CONSTRUCTION - PRELIMINARY DESIGN

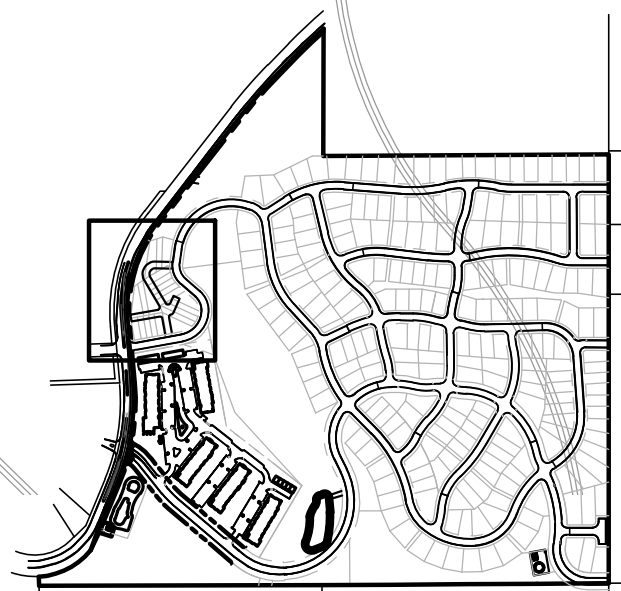


1
X403

PHASE 2 HYDRANT PLAN

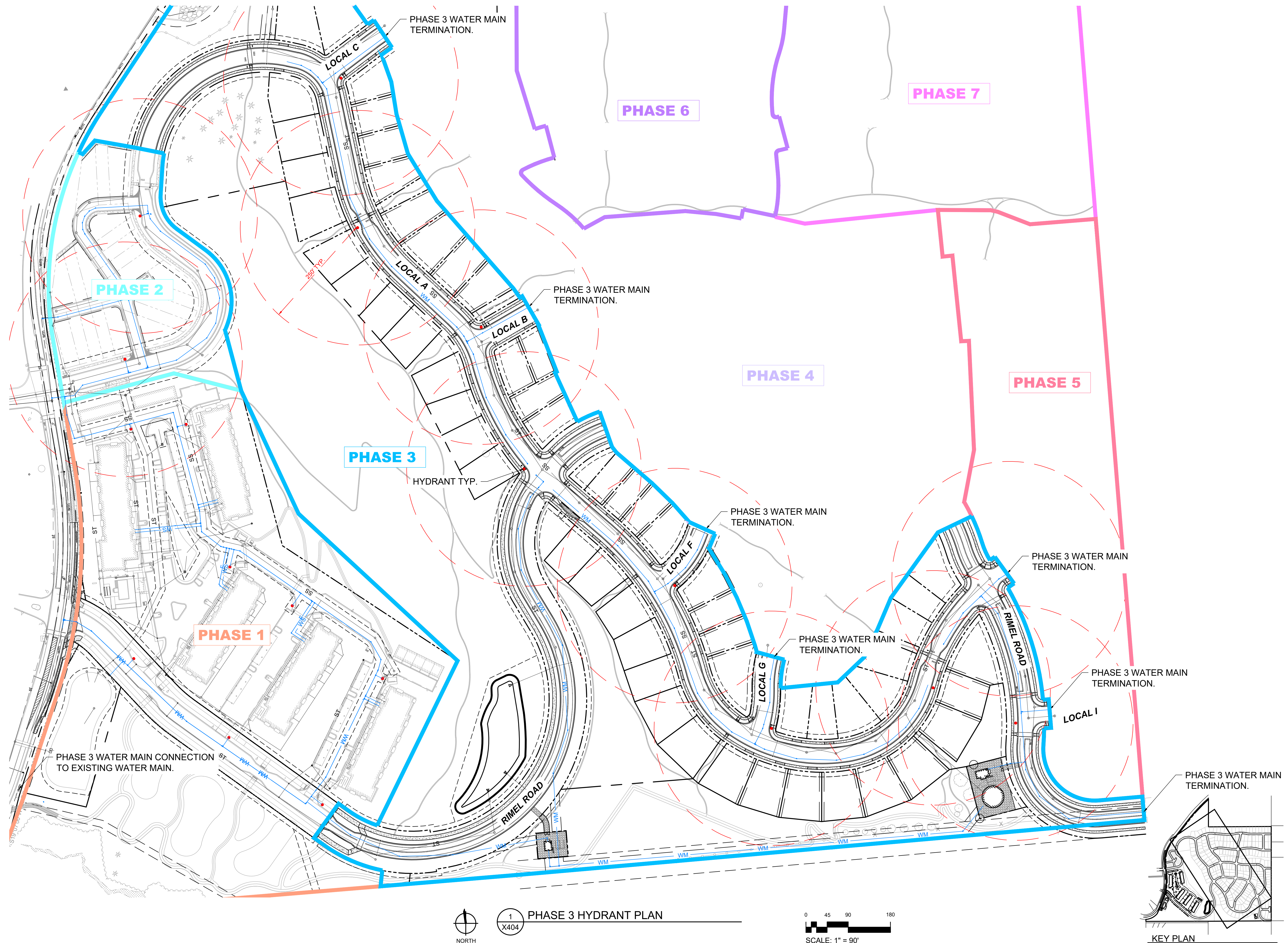


SCALE: 1" = 40'

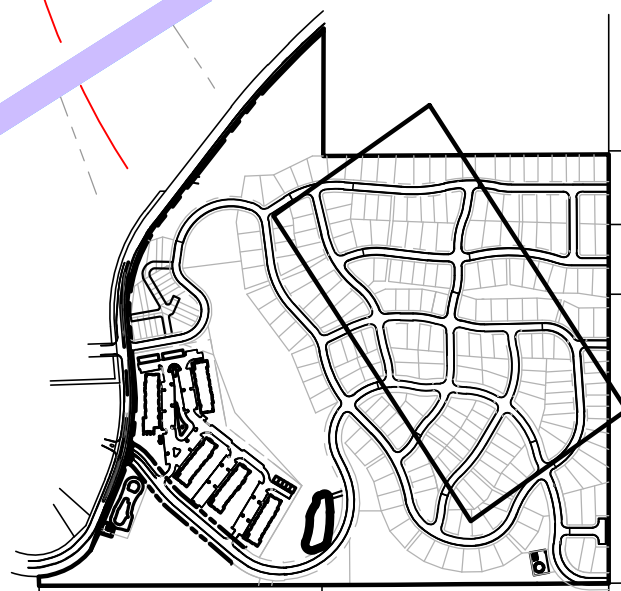


KEY PLAN

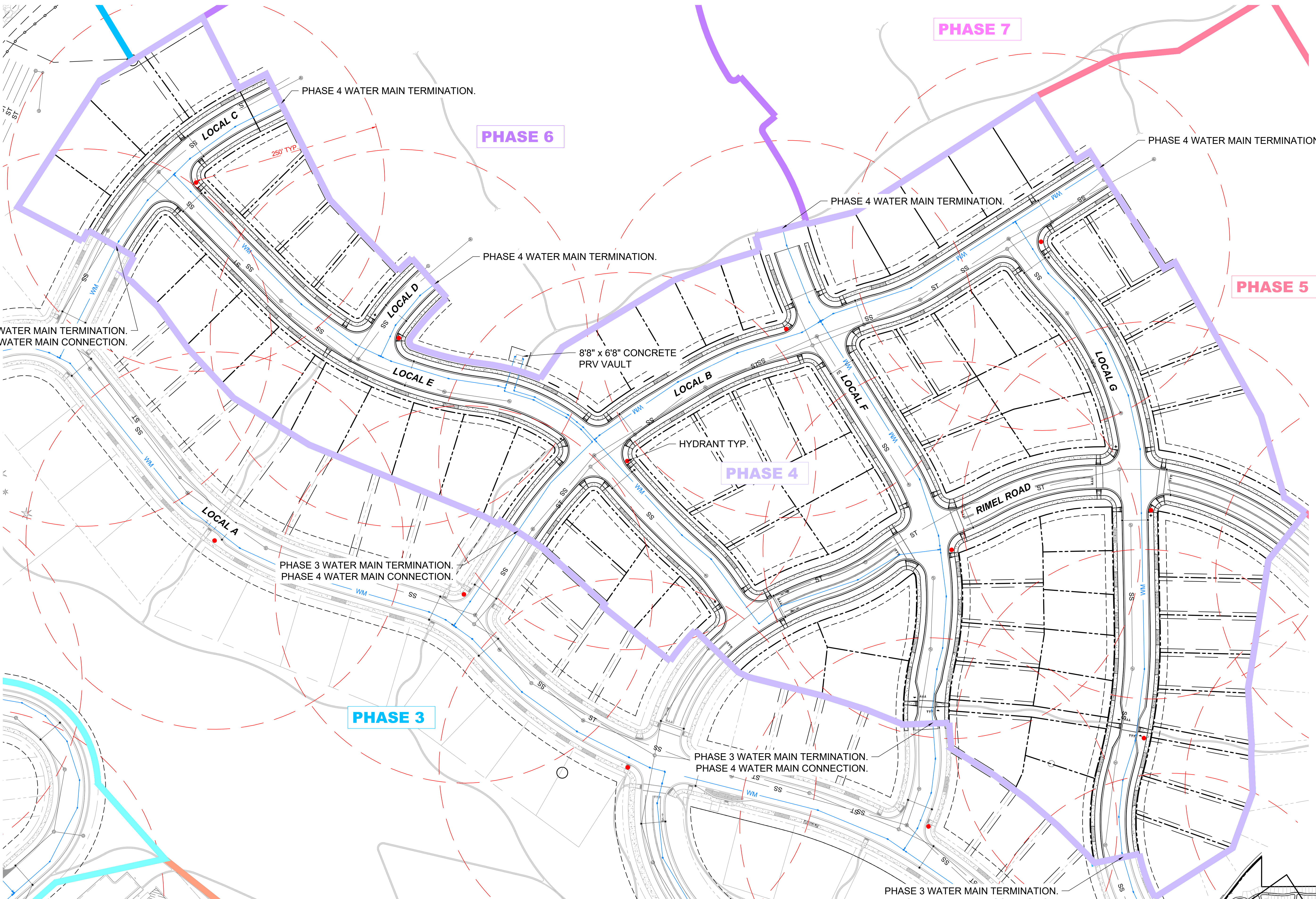
NOT FOR CONSTRUCTION - PRELIMINARY DESIGN



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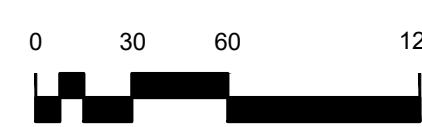
KEY PLAN



NORTH

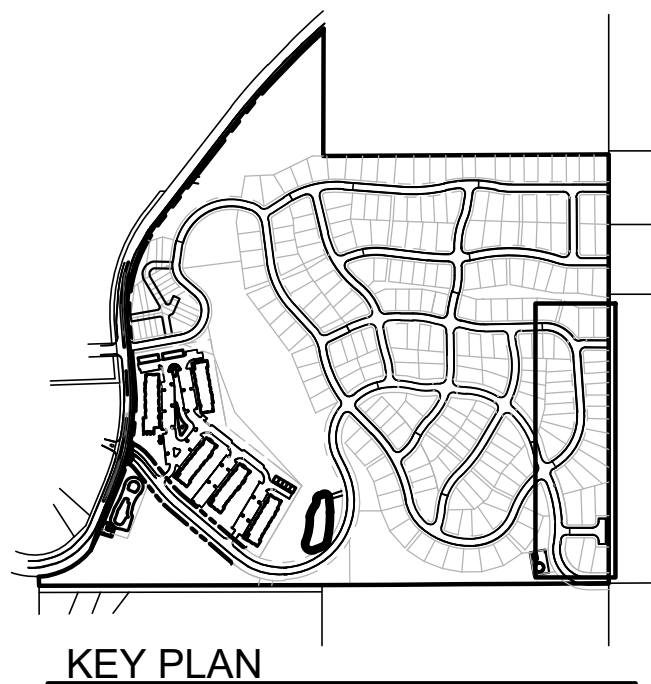
1
X405

PHASE 4 HYDRANT PLAN

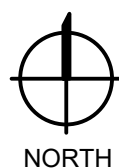
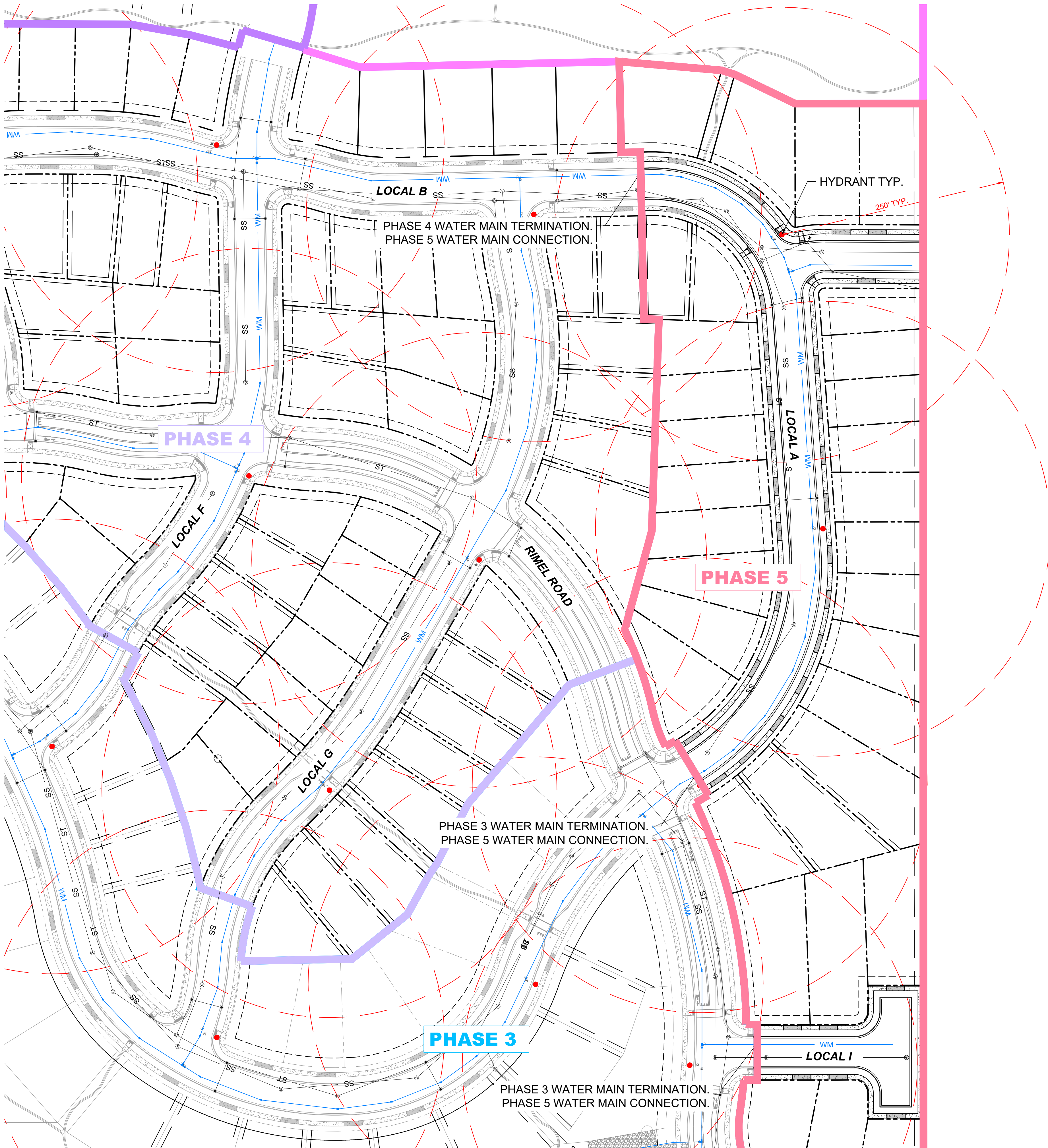


SCALE: 1" = 60'

NOT FOR CONSTRUCTION - PRELIMINARY DESIGN



KEY PLAN



NORTH

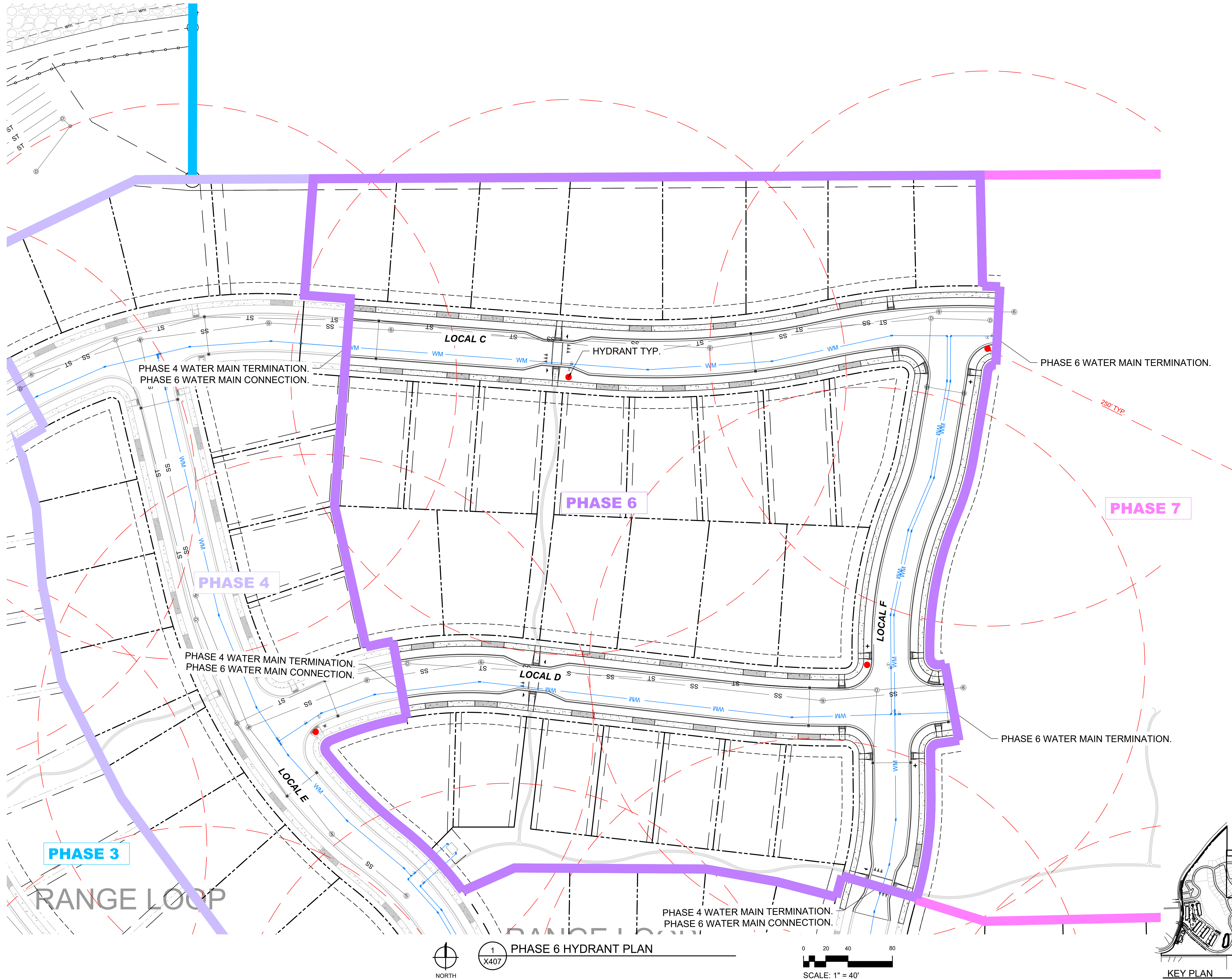


1
X406

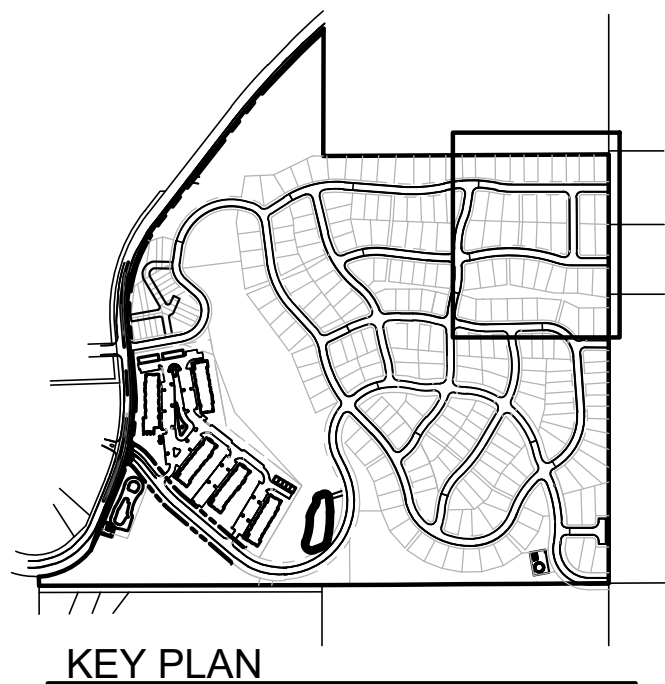
PHASE 5 HYDRANT PLAN

0 30 60 120
SCALE: 1" = 60'

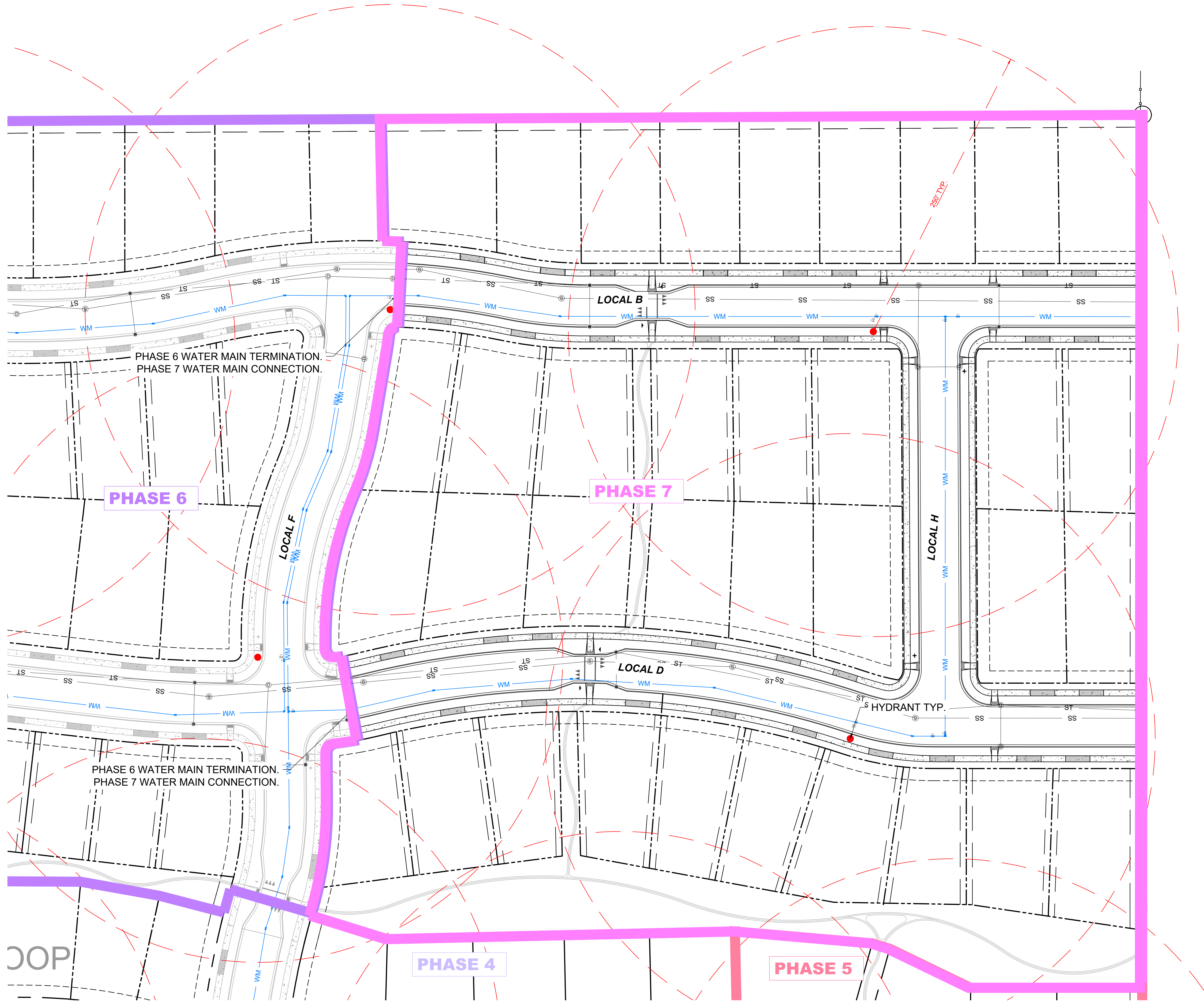
NOT FOR CONSTRUCTION - PRELIMINARY DESIGN



NOT FOR CONSTRUCTION - PRELIMINARY DESIGN



KEY PLAN

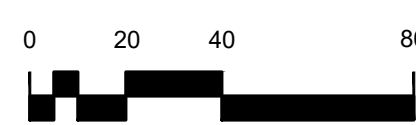


NORTH



1
X408

PHASE 7 HYDRANT PLAN



SCALE: 1" = 40'