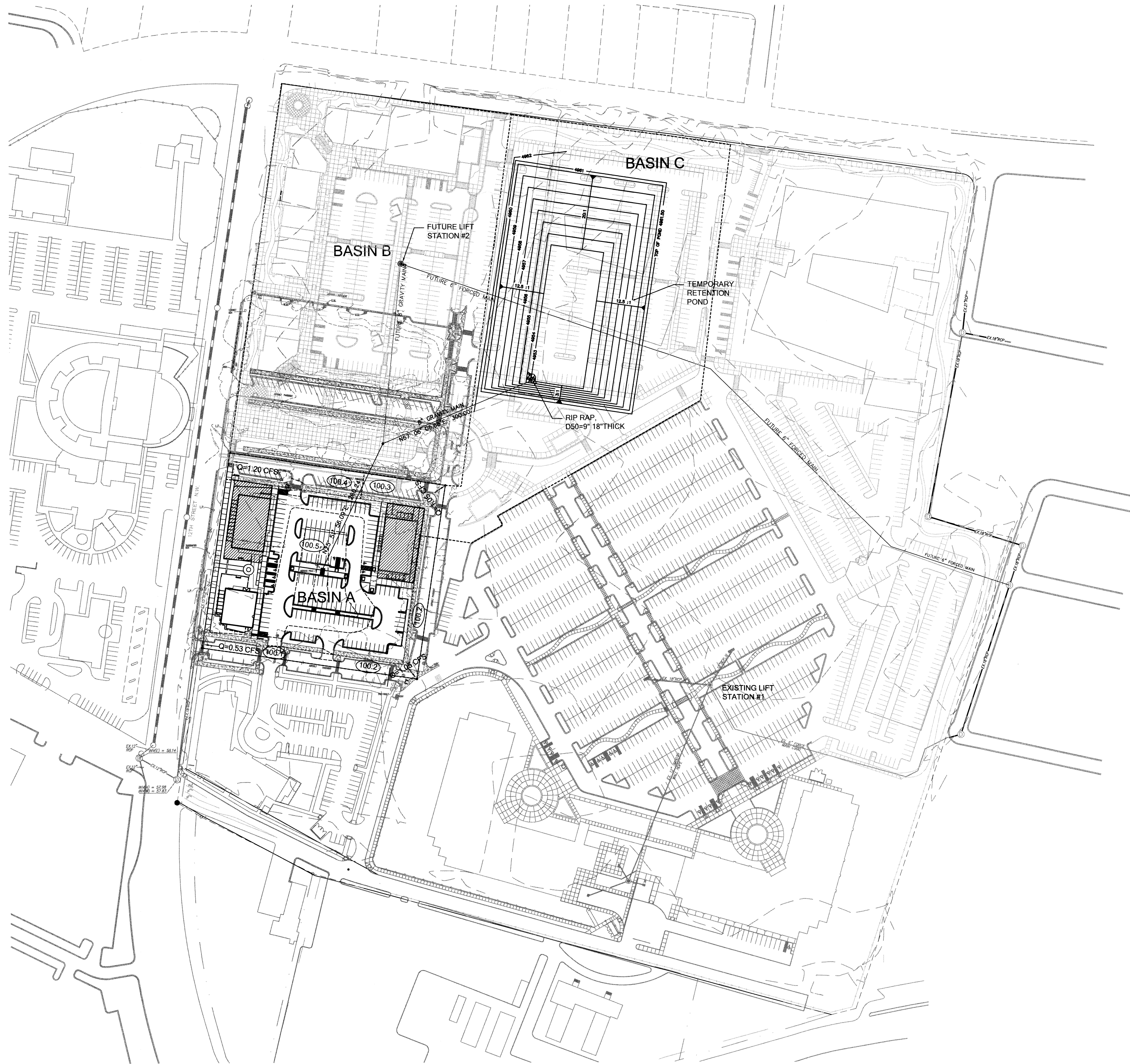






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#### HYDROLOGY NOTES

THE TOTAL SITE IS BOUNDED BY 12TH STREET, INDIAN SCHOOL, MENAUL AND 9TH STREET AND CONSISTS OF 47.4 ACRES. THE PROJECT SITE IS PHASE 4 OF THE PROJECT SITE. THE FIRST 3 BEING THE BIA BUILDINGS PHASES 1 AND 2 AND IPFDC HOTEL (ALL PREPARED BY MARK GOODWIN & ASSOCIATES ON 6-11-03 AND 11-5-14 AND 10-5-06 RESPECTIVELY) THE DRAINAGE MANAGEMENT PLAN FOR ALL PHASES INCLUDES SOME DRAINAGE TO ADJACENT STREETS AND 2 LIFT STATIONS THAT PUMP THE RUNOFF TO THE EXISTING STORM DRAIN IN 9TH ST. LIFT STATION #1 WAS CONSTRUCTED DURING PHASE 1. LIFT STATION #2 WILL BE CONSTRUCTED DURING PHASE 5 OR PHASE 6. THIS PLAN IS PHASE 4. A TEMPORARY RETENTION POND WILL BE CONSTRUCTED TO RETAIN 2 TIMES THE 100YR-24 STORM.

THE PROJECT SITE (PHASE 4) CONSISTS OF 3.46 ACRES. NO OFFSITE FLOWS ENTER THIS SITE. THE SITE IS NOT IN A 100YR FLOOD ZONE PER MAP 35001C00331D.

THE DEVELOPED FLOW FOR THIS ENTIRE SITE IS 14.23cfs. THE HYDROLOGY WAS CALCULATED PER COA DPM USING AHYMO.  $P_2=2.60"$  FROM NOAA 14. THE RESULTS ARE SUMMARIZED IN THE HYDROLOGY TABLE ON THIS SHEET.

PARTS OF THE PROJECT SITE ARE ALREADY DEVELOPED. THE DRAINAGE BASINS FROM THESE DEVELOPED SECTIONS WILL NOT BE CHANGED (BASINS 100.1-100.4). THE REMAINING RUNOFF (BASIN 100.5) WILL BE CAPTURED BY A TYPE "D" INLET IN SUMP CONDITION AND THEN CONVEYED BY AN 8" GRAVITY LINE TO THE TEMPORARY RETENTION POND IN BASIN C. BASIN C WILL ALSO RETAIN THE VOLUMES FROM SUBBASIN 100.3. WHEN PHASE 5 IS CONSTRUCTED, EITHER THE TEMPORARY POND WILL BE REMOVED AND A LIFT STATION WILL BE INSTALLED OR THE TEMPORARY POND WILL NEED TO BE INCREASED IN VOLUME TO RETAIN THE ADDITIONAL DEVELOPED FLOWS.

THE PARKING LOT OF THE PROJECT SITE WILL ACT AS A DETENTION POND WITH TYPE "D" INLETS IN SUMP CONDITION. THE STORM WATER WILL BE RELEASED AT A RATE OF 1.60cfs TO THE TEMPORARY POND.

THE MAXIMUM WATER SURFACE ELEVATION IN TEMP POND= 4956.47'.  
TOTAL STORAGE IN TEMP POND= 114 ac-ft  
SINCE THE OUTLET ELEVATION AND MWSL IS LOWER THAN THE INVERT OF THE SUMP INLET IN THE PROJECT SITE, NO STORMWATER WILL BACK UP INTO THE PROJECT SITE.

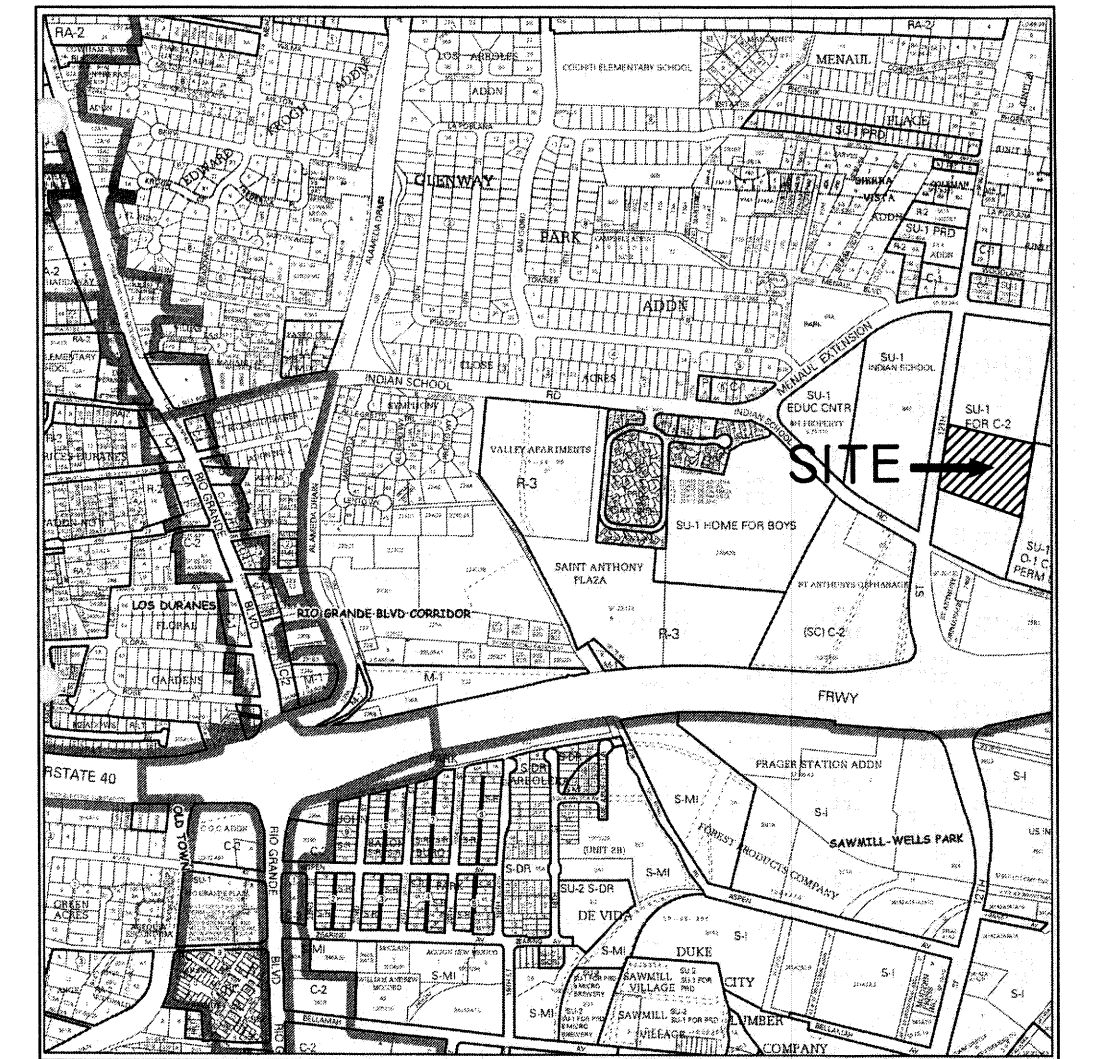
#### BASIN DATA

BASIN	SUBBASIN	BASIN OUTLET	AREA (acres)	% LAND TREATMENT TYPES				Q (cfs)	Vol (ac-ft)
				A	B	C	D		
Onsite Basin A			3.46	0	0	12	88	14.23	0.63
	100.1	12th St.	0.12	0	0	0	100	0.53	0.02
	100.2	Existing Lift Station	0.25	0	0	14	86	1.05	0.05
	100.3	NE Corner	0.21	0	0	12	88	0.88	0.04
	100.4	12th St.	0.29	0	0	12	88	1.2	0.05
	100.5	New Sump Inlet	2.58	0	0	10	90	10.69	0.48
Basin B (Unveloped)	existing	Basin B (No change from EX cond)	9.63	0	0	90	10	21.88	0.68
Basin B (Developed)	future	Future Lift Station	9.63	0	0	12	88	28.91	1.29
Basin C (Unveloped)	existing	Temporary Pond	6.40	0	0	100	0	19.07	0.55
Basin (100.5+100.3) + Basin C (Undev)		Temporary Pond	9.20	-	-	-	-	0	1.04

#### TEMPORARY POND VOLUMES

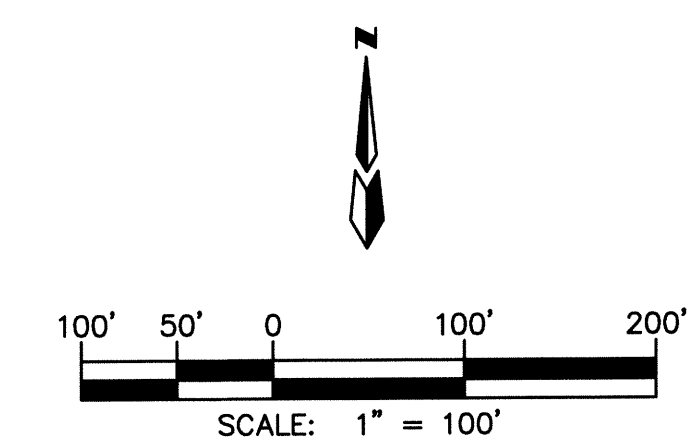
	Elev. (feet)	Surface Area (SF)	Surface Area (acres)	Incr. Volume (acre ft.)	Total Volume (acre ft.)	Total Volume (cubic ft.)
	60	117,130	2.69	2.50	10.69	465,832
	59	100,500	2.31	2.13	8.20	357,105
	58	85,050	1.95	1.79	6.07	264,496
	57	70,800	1.63	1.48	4.29	186,740
	56	57,750	1.33	1.19	2.81	122,487
	55	45,900	1.05	0.93	1.62	70,771
	54	35,250	0.81	0.70	0.70	30,396
Pond Bottom =	53	25,800	0.59			

TOTAL RETENTION VOLUME REQUIRED  
= 2 x 1.04 ac-ft  
= 2.08 ac-ft  
THE POND HAS CAPACITY AT ELEV=4955.50 WHICH IS LOWER THAN THE INVERT AT BASIN A(100.5)=4959.00 AND THEREFORE THE STORM WATER WILL NOT "BACK UP" INTO THE PROJECT SITE PARKING LOT.



VICINITY MAP

ZONE ATLAS H-13-Z



A.I.S. RETAIL

OVERALL STORM DRAIN DESIGN

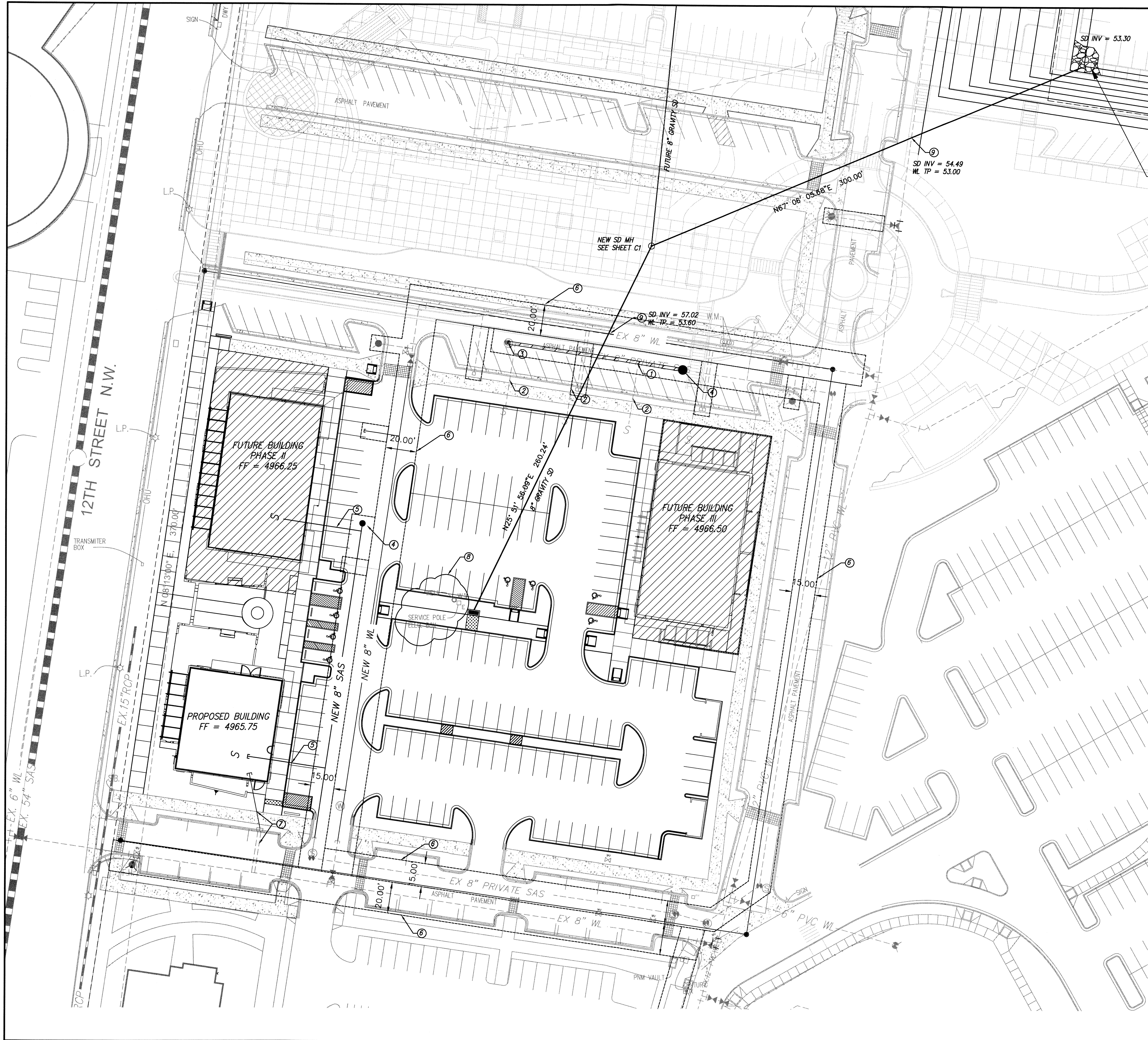


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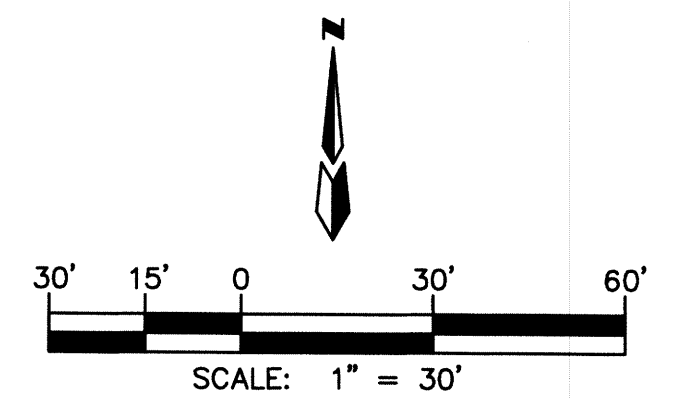
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Scale: SEE SCALE Date: 11/30/14 Job: A12041





# KEYED UTILITY NOTES

1. FIELD VERIFY EXISTING 8" SAS LINE PRIOR TO CONSTRUCTION. REMOVE PER PLAN.
2. FIELD VERIFY EXISTING SAS SERVICE LINE PRIOR TO CONSTRUCTION. REMOVE PER PLAN.
3. REMOVE EXISTING SAS MANHOLE
4. INSTALL NEW SAS MANHOLE
5. INSTALL NEW SAS SERVICE.
6. PRIVATE UTILITY EASEMENT
7. FIELD VERIFY EXISTING WATER SERVICE LINE AND METER PRIOR TO CONSTRUCTION. EXTEND NEW WATER SERVICE LINE TO BUILDING.
8. RELOCATE/ABANDON EXISTING UTILITIES AS NEEDED.
9. NEW STORM DRAIN AND EXISTING WATER LINE INTERSECTION. FIELD VERIFY WATER LINE TOP OF PIPE PRIOR TO CONSTRUCTION.



## A.I.S. RETAIL SITE UTILITY PLAN

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