

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

January 31, 2019

Hugh W. Floyd, P.E.
Respec
5971 Jefferson St. NE
Albuquerque, NM, 87109

**RE: Legacy NAA Apartments 2
Revised Grading and Drainage Plan
Engineer's Stamp Date: 01/02/18
Hydrology File: C18D083**

Dear Mr. Floyd:

Based upon the information provided in your revised submittal received 01/25/2019, the Grading and Drainage Plan is approved for Building Permit.

PO Box 1293

Please attach a copy of this approved plan in the construction sets for Building Permit processing along with a copy of this letter. Prior to approval in support of Permanent Release of Occupancy by Hydrology, Engineer Certification per the DPM checklist will be required.

Albuquerque

NM 87103

As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Curtis Cherne, PE, ccherne@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

www.cabq.gov

The Payment in Lieu payment of \$ 28,776.00 must be paid prior to Permanent Release of Occupancy approval. Please use the attached City of Albuquerque Treasury Deposit form. The Owner needs to bring three copies of this form to the cashier on the Building Permits side of the ground floor and pay the fee. Once paid, please provide Hydrology with one of the copies showing the receipt.

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

Hydrology Calculations

The following calculations are based on Albuquerque's Development Process Manual, Section 22.2

Runoff Rate:

Treatment Type Areas

Subbasin	Area ₁₀ (ac)	Area ₂₀ (ac)	Area ₃₀ (ac)	Area ₅₀ (ac)	Total (ac)
Subbasin North	0	0.11	0.11	1.62	1.84
Subbasin South	0	0.05	0.05	1.62	1.72
Subbasin West	0	0.23	0.09	0.54	0.85
NAA Allowable	0	1.50	0.71	2.21	4.41

Peak Discharge values based on Zone 3 from Table A-9

Q_A = 1.87 cfs/ac Q_B = 2.60 cfs/ac Q_C = 3.45 cfs/ac Q_D = 5.02 cfs/ac

Peak Discharge calculation for a 100-yr, 24-hr storm event from equation A-10

Subbasin	Discharge (cfs)
Subbasin North	8.8
Subbasin South	9.4
Subbasin West	3.6
Total	20.8
NAA Allowable	17.4

Water Quality:			
Required Water Quality volume for first flush of 0.34"			
Subbasin	Required Volume (cu. ft.)	Drains to	Volume Provided (Cu.Ft)
Subbasin North	1,998	North Underground Pond	Total=5,270 (retained=2,395)
Subbasin South	1,995	South Underground Pond	2,005
Subbasin West	488	West Underground Pond	667
North Roof Drain Building 2	86	North Surface Pond	95
South Roof Drain Building 3	86	South Surface Pond	296
Total	4,655	WQ Ponding TOTAL	8,444
			1,058

```

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*SY JOB NO. = 03231
*SY DATE: DECEMBER 13, 2018
*SY INPUT FILE NAME: NAAANf.hym
*SY OUTPUT FILE NAME: NAAANf.out
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* 24-hr, 100 year storm event
RAINFALL TYPE=13 RAIN QUARTER=0.0 RAIN ONE=2.14
RAIN SIX=2.60 RAIN DAY=3.10 DT=0.05 HRS
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***** COMPUTE SAN PEDRO STORM DRAIN PROJECT (THOMPSON REPORT)
***** BASIN 117.20-NORTH
COMPUTE NM HYD ID=1 HYD NO=SPSD.BASIN.117.2 DA=0.00348 SQ MI
COMPUTE NM HYD PER A=0 PER B=34 PER C=16 PER D=50
TP=0.1333 HR MASS RAIN=1
PRINT HYD ID=1 CODE=20
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***** BASIN 117.30-SOUTH
COMPUTE NM HYD ID=2 HYD NO=SPSD.BASIN.117.3 DA=0.00346 SQ MI
COMPUTE NM HYD PER A=0 PER B=34 PER C=16 PER D=50
TP=0.1333 HR MASS RAIN=1
PRINT HYD ID=2 CODE=20
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*****RESPEC. CALCULATIONS
*****SUBBASIN NORTH
COMPUTE NM HYD ID=3 HYD NO=BasinNorth DA=0.00288 SQ MI
PER A=0 PER B=6 PER C=6 PER D=90
TP=0.1333 HR MASS RAIN=1
D=3 CODE=20
PRINT HYD ID=3 CODE=20
*
***** SUBBASIN SOUTH
COMPUTE NM HYD ID=4 HYD NO=BasinSouth DA=0.00270 SQ MI
PER A=0 PER B=27 PER C=10 PER D=94
TP=0.1333 HR MASS RAIN=1
D=4 CODE=20
PRINT HYD ID=4 CODE=20
*
***** SUBBASIN WEST
COMPUTE NM HYD ID=5 HYD NO=BasinWest DA=0.00134 SQ MI
PER A=0 PER B=27 PER C=10 PER D=63
TP=0.1333 HR MASS RAIN=1
D=5 CODE=20
PRINT HYD ID=5 CODE=20
*
*SY NORTH POND ROUTING = POND RATING CURV
ROUTE RESERVOIR ID=7 HYD=POND1 INFLOW ID=3 CODE=1
OUTFLOW(CFS) STORAGE(AC FT) ELEV(FT)

0.01 0 5222
0.7 0 5222.5
1.7 0 5223
2.2 0 5223.5
2.7 0 5224
3.1 0 5224.5
3.4 0 5225
3.7 0 5225.5
4.0 0 5226
4.3 0 5226.5
4.6 0 5227
4.8 0 5227.5
5.0 0 5228
5.19 .01 5228.49
5.199 .02 5228.499
5.7 .037 5228.5
5.5 .039 5229
5.7 .041 5229.5

```

AHYMO Program Summary Table (AHYMO-S4)						- Ver. S4.82a, Rel: 82a	RUN DATE
(MON,DAY) / (YY) = 12/13/2018							
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AHYMO-S4tempuser05901704							
CFS	PAGE #	FROM TO	AREA	PEAK	RUNOFF	TIME TO PEAK	
PER COMMAND	IDENTIFICATION	ID ID	(SQ MI)	(CFS)	VOLUME (AC-FT)	(INCHES)	
ACRE	NOTATION					(HOURS)	
S	PROJECT NAME: LEGACY NAA APARTMENTS PHASE 2						
S	JOB NO. : 63231						
S	DATE: July 16 2018						
S	INPUT FILE NAME: NAAM.hyt						
S	OUTPUT FILE NAME: NAAM.out						
S							
RAINFALL TYPE=13							
RAIN24= 5.100							
***** COMPUTE SAN PEDRO STORM DRAIN PROJECT (THOMPSON REPORT)							
***** BASIN 117-20-NORTH							
3.894 PER IMP.	HYD SPSP.BASIN.	- 1	0.00348	8.67	0.360	1.94076 1.500	
***** BASIN 117-20-SOUTH							
3.894 PER IMP.	HYD SPSP.BASIN.	- 2	0.00346	8.62	0.358	1.94076 1.500	
***** SUBBASIN NORTH							
COMPUTE NH HYD	BasinInOrth	- 3	0.00288	8.69	0.407	2.64914 1.500	
4.718 PER IMP.	CS BasinSouth	- 4	0.00279	8.34	0.396	2.75109 1.500	
***** SUBBASIN WEST							
4.827 PER IMP.	CS BasinWest	- 5	0.00134	3.57	0.155	1.27270 1.500	
4.164 PER IMP.	CS BasinWest	- 6	0.00288	5.33	0.357	3.62756 1.600	
***** NORTH POND ROUTING							
2.894 AC-FT =	6.038 POND 3	7	0.00288	5.33	0.357	3.62756 1.600	

North Pond Volume Provided

$V = A \cdot L$

$V_{\text{Retention (W)}} = \pi \cdot (20' / 2)^2 \cdot 120' \cdot \frac{1 \text{ Acre}}{43,560 \text{ } f^2} = 0.055 \text{ Acre} \cdot ft$

$V_{\text{Water}} = \pi \cdot \left(\frac{90''}{12'' \cdot 2} \right)^2 \cdot 120' \cdot \frac{1 \text{ Acre}}{43,560 \text{ } f^2} = 0.12 \text{ Acre} \cdot ft$

$V_{\text{Total}} = (\pi \cdot (4')^2 \cdot \left(\frac{10}{12} \right)^2 \cdot 250') \cdot \frac{1}{43,560} = .041 \text{ AC} \cdot \text{FT}$

South Pond Volume Provided

$V_{\text{Retention (W)}} = \pi \cdot \left(\frac{60''}{12'' \cdot 2} \right)^2 \cdot 102' \cdot \frac{1 \text{ Acre}}{43,560} = 0.045 \text{ Acre} \cdot ft$

West Pond Volume Provided

$V_{\text{Retention (W)}} = \pi \cdot \left(\frac{24''}{12'' \cdot 2} \right)^2 \cdot 250' \cdot \frac{1 \text{ Acre}}{43,560} = 0.018 \text{ Acre} \cdot ft$

Orifice Rating Curve for North Pond

$Q_o = 6A\sqrt{2gh}$

$Q_o = \text{Capacity (cfs)}$ 5.7

A = Open area of grate (sq. ft) 0.44

$g = 32.2 \text{ (ft/s}^2)$

H = Head (ft) to orifice centroid 7.125

Orifice Rating Curve

Elev (ft)	Head (ft)	Q (CFS)
5222	0	0.0
5222.5	0.125	0.7
5223	0.625	1.7
5223.5	1.125	2.2
5224	1.625	2.7
5224.5	2.125	3.1
5225	2.625	3.4
5225.5	3.125	3.7
5226	3.625	4.0
5226.5	4.125	4.3
5227	4.625	4.6
5227.5	5.125	4.8
5228	5.625	5.0
5228.5	6.125	5.2
5229	6.625	5.5
5229.5	7.125	5.7

Weir Calculation for 2' Sidewalk Culvert		
Head Water Depth (h):	0.5	ft
Discharge Coeff. (C_w):	3.367	
Length (L):	2	ft
Flow (Q) = $C_w \cdot L \cdot h^{1.5}$		
Flow (Q) =	2.4	cfs

$D = \frac{2 \sqrt{L^2 + W^2}}{\sqrt{1.48 + 0.015 D^2}}$

EXAMPLE
 100' LONG, 10' WIDE
 SUE 5-147

Culvert Station
 Culvert Length
 Culvert Width

Culvert Length = 100 feet

DESIGN OF 36-IN. DIA. PIPE FLOWING FULL

WATER SURFACE ELEVATION (FEET)	WATER DEPTH (FEET)	PIPE INVERT ELEVATION (FEET)
10.0	0.0	5.0
10.5	0.5	5.5
11.0	1.0	6.0
11.5	1.5	6.5
12.0	2.0	7.0
12.5	2.5	7.5
13.0	3.0	8.0
13.5	3.5	8.5
14.0	4.0	9.0
14.5	4.5	9.5
15.0	5.0	10.0

Manning Formula:

Circular Channel, Input

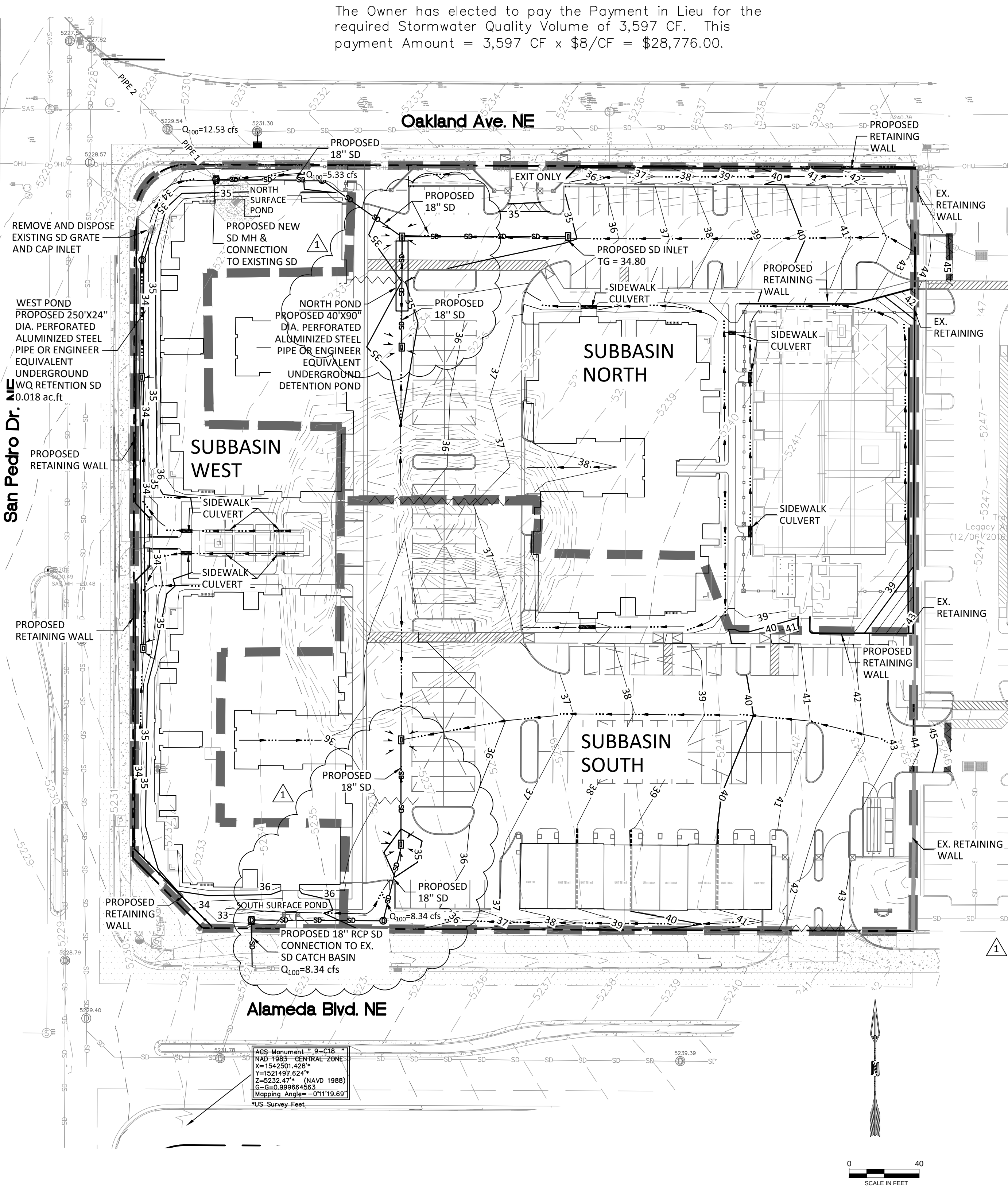
Flow	15.14 cfs
Slope	0.037 ft/ft
Manning's n	0.013
Diameter	30 in

Output

Depth	0.742 ft
Flow Area	1.22 sf
Velocity	12.4 fps
Velocity Head	2.39 ft
Top Width	2.28 ft
Froude Number	2.99
Critical Depth	1.312 ft
Critical Slope	0.00463 ft/ft

Manning Formula:

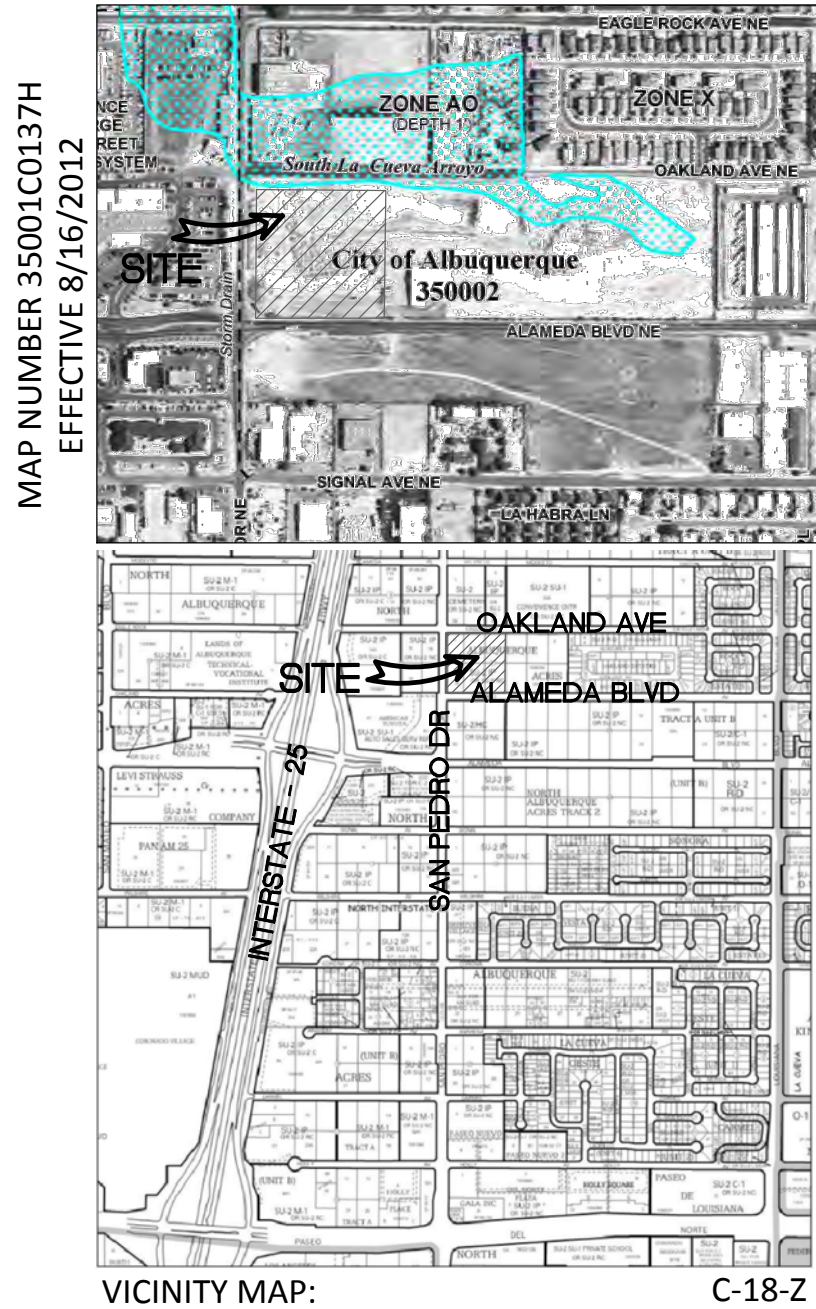
Circular Channel	
Input	
Flow	17.66 cfs
Slope	0.054 ft/ft
Manning's n	0.013
Diameter	30 in
Output	
Depth	0.729 ft
Flow Area	1.39 sf
Velocity	14.8 fps
Velocity Head	3.42 ft
Top Width	2.27 ft
Froude Number	3.61
Critical Depth	1.423 ft
Critical Slope	0.00485 ft/ft



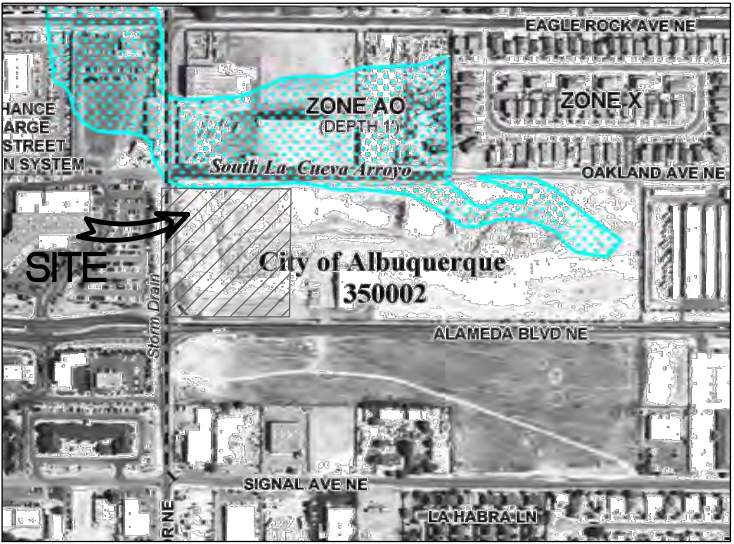
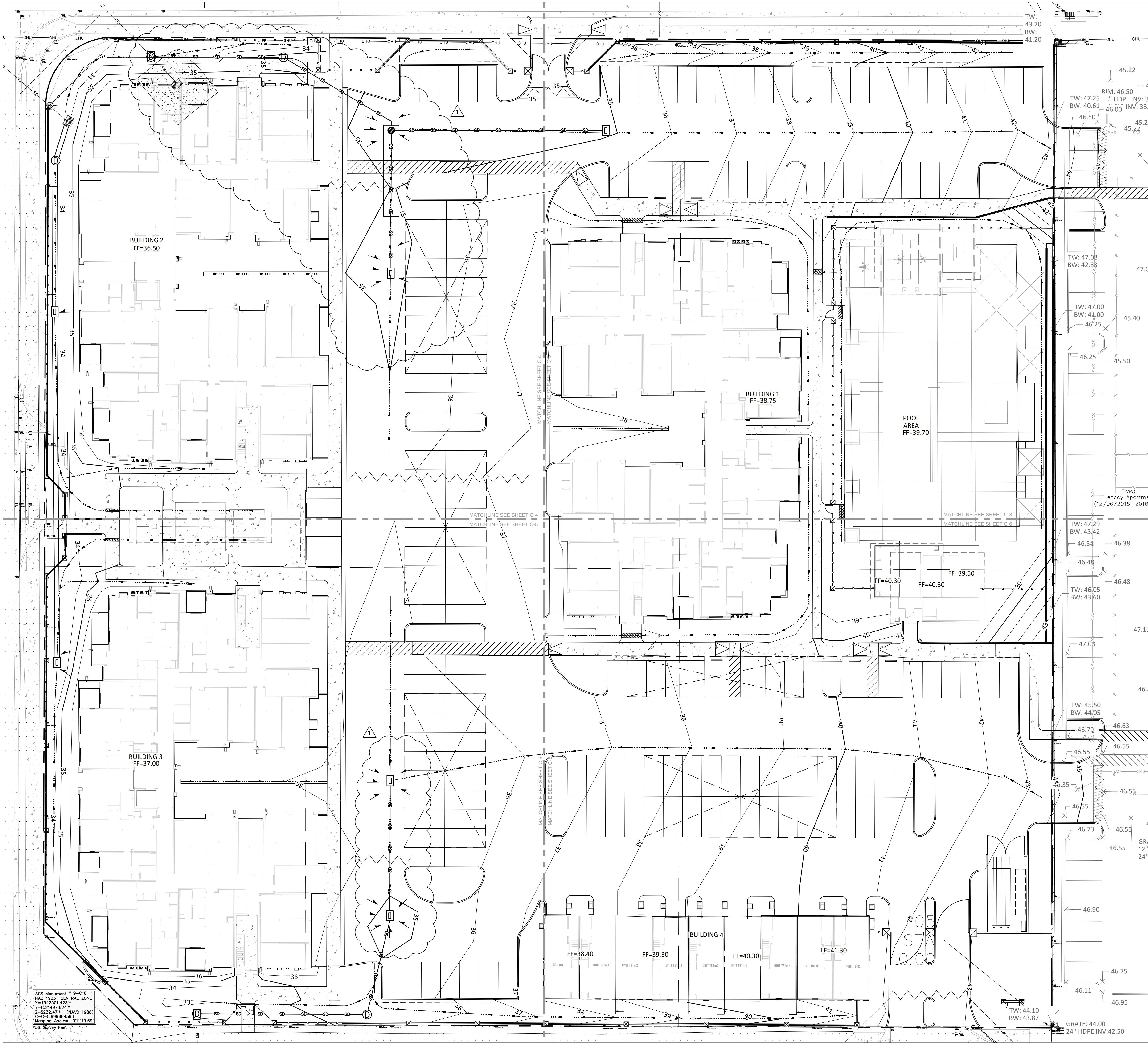
Alameda SD HGL shows elevation of 5230 ft (COA 7663.91). According to outlet control analysis, the developed site addition will be 0.9 ft to HGL (See graph). Total HGL=5230.95, lower than grate elevation, 5231.90.

San Pedro SD HGL shows elevation of 5230 ft (COA 5304.91), the developed site has no effect on the HGL. (See graph).

Oakland SD HGL shows elevation of 5234.5 ft (COA 742484), pipe is at inlet control. See Manning's calcs for pipe's capacity.



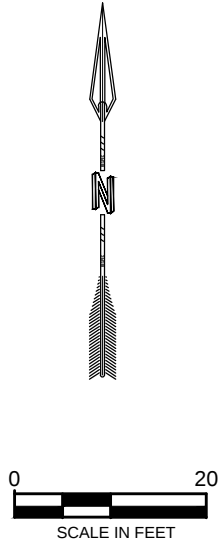
SITE DRAINAGE



MAP NUMBER 35001C0137H
EFFECTIVE 8/16/2012



LEGEND	
	PROPERTY LINE
	EXIST ELEVATION
	EXISTING RETAINING WALL
	EXIST SD
	EXIST SD MANHOLE
	EXIST SD INLET
	PROPOSED RETAINING WALL
	PROPOSED HIGH POINT
	PROPOSED FLOW LINE
	PROPOSED SD
	PROPOSED SD INLET
	PROPOSED UNDERGROUND POND
	PROPOSED SIDEWALK CULVERT
	PROPOSED SD MANHOLE
	PROPOSED FINISHED FLOOR ELEVATION
	PROPOSED ELEVATION
	PROPOSED SPEED BUMP



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1/2/19	RESIZE UNDERGROUND SD

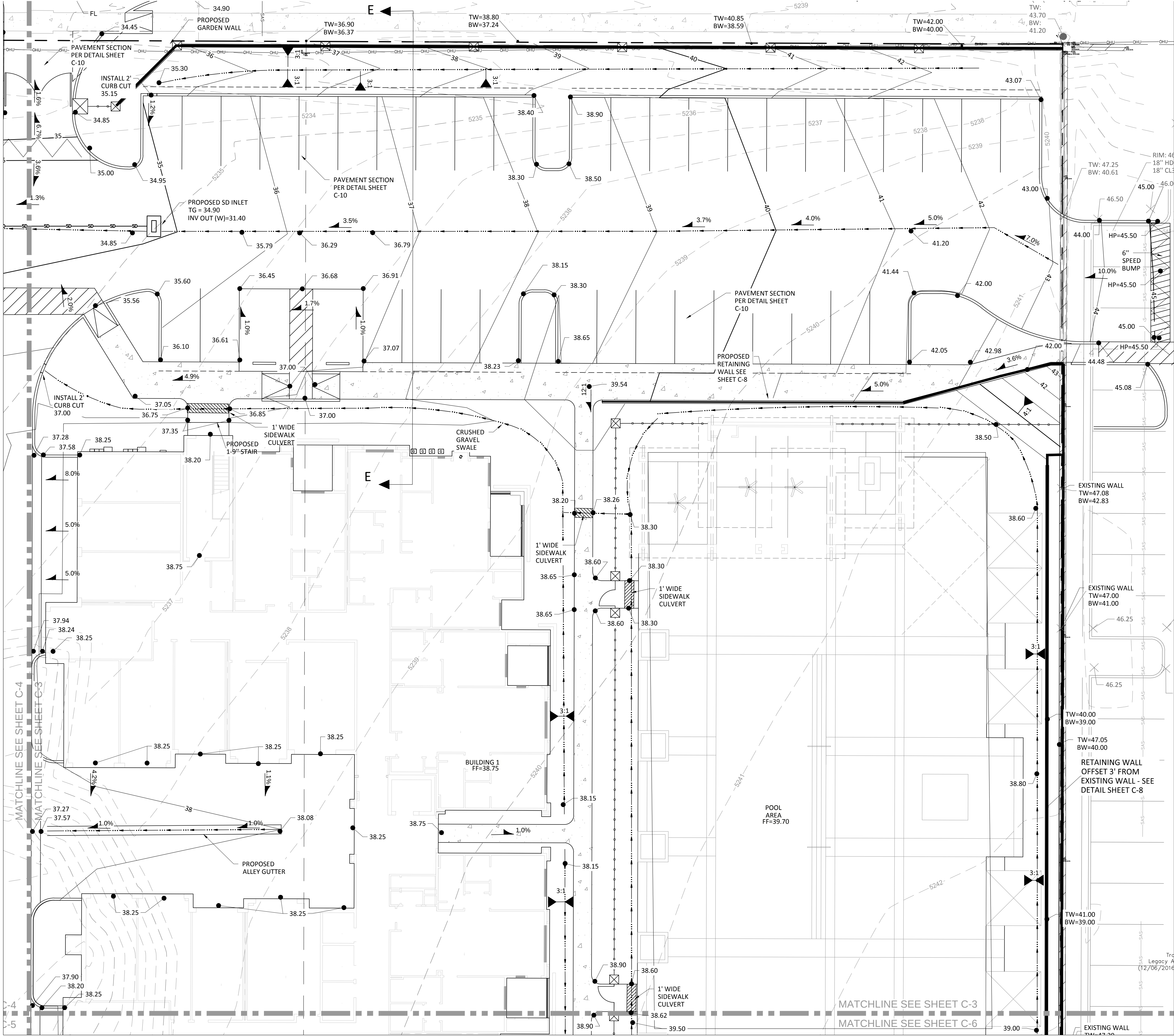
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DATE: JANUARY 24, 2019 ORB # 17-219

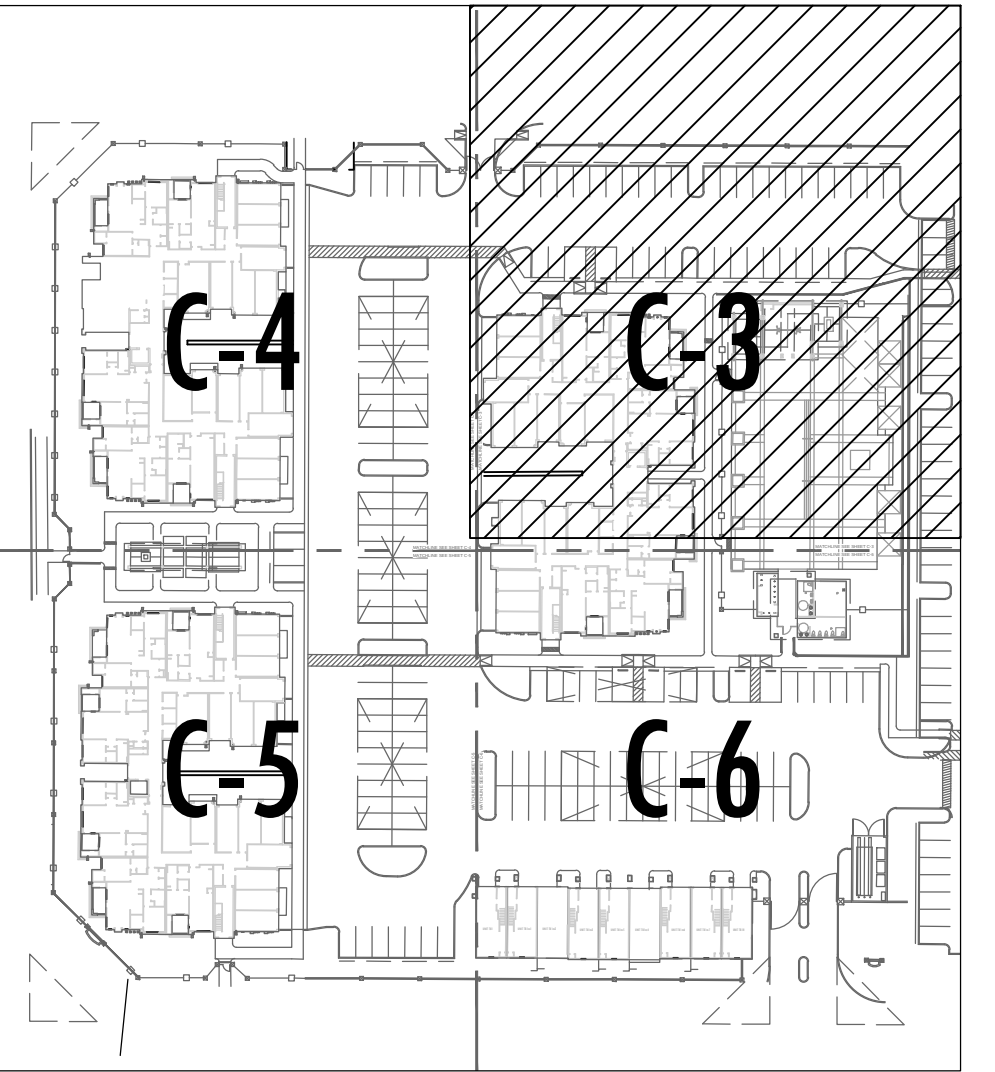
C-2

SITE GRADING - OVERALL

FILE: L:\Active Projects\03231- Kossam Alameda Louis Apts\3. DWG\PRIVATE PLANS\4--GRADING.dwg USER: bethony.march DATE: Jan. 31 2019 TIME: 10:08 am



NOTE: ALL PROPOSED SPOT ELEVATIONS
INDICATE FLOW LINE SPOT ELEVATIONS



LEGEND	
	PROPERTY LINE
	EXIST ELEVATION
	EXISTING RETAINING WALL
	EXIST SD
	EXIST SD MANHOLE
	EXIST SD INLET
	PROPOSED RETAINING WALL
	PROPOSED HIGH POINT
	PROPOSED FLOW LINE
	PROPOSED SD
	PROPOSED SD INLET
	PROPOSED UNDERGROUND POND
	PROPOSED SIDEWALK CULVERT
	PROPOSED SD MANHOLE
	PROPOSED FINISHED FLOOR ELEVATION
	PROPOSED ELEVATION
	PROPOSED SPEED BUMP



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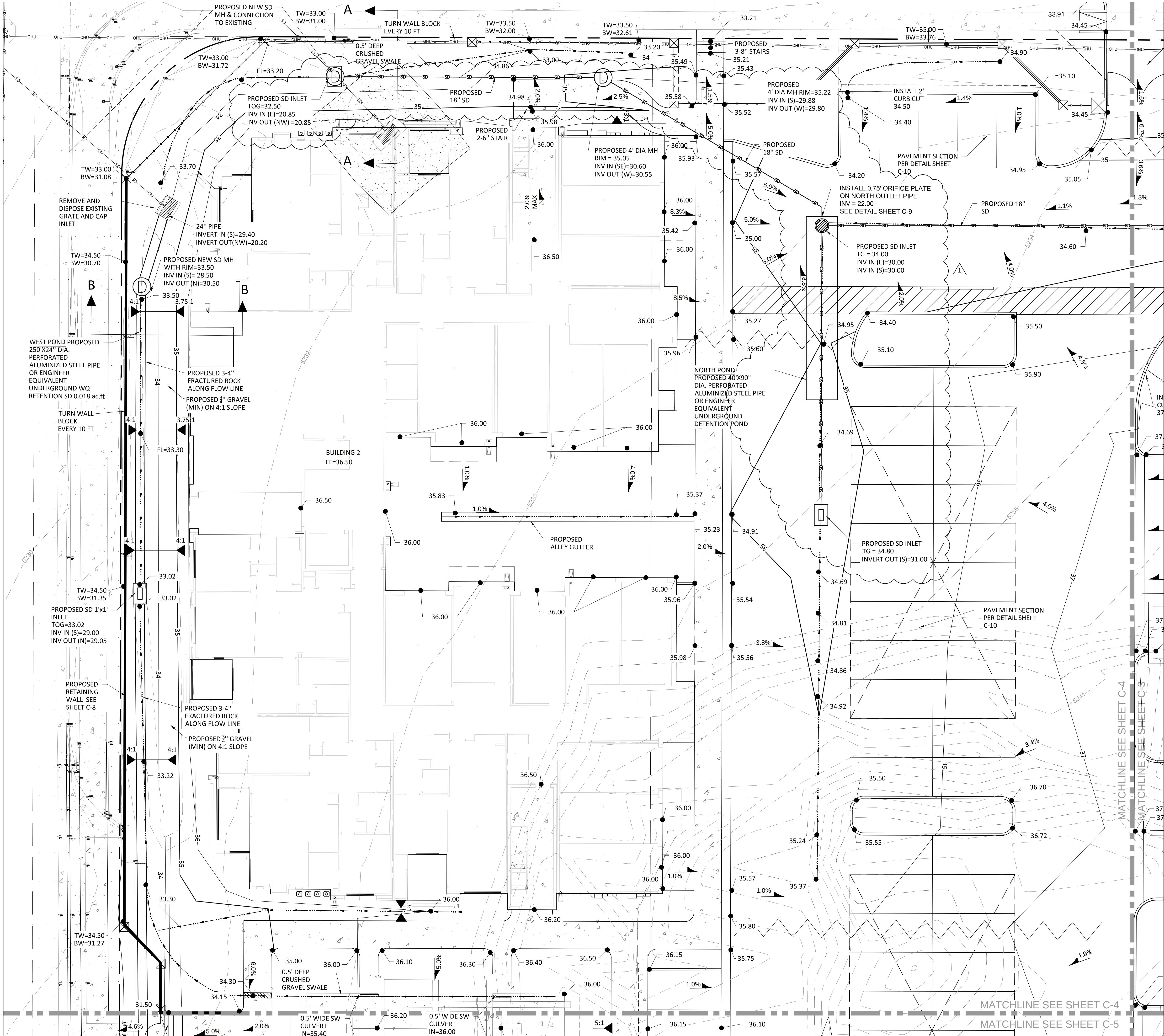
REVISIONS

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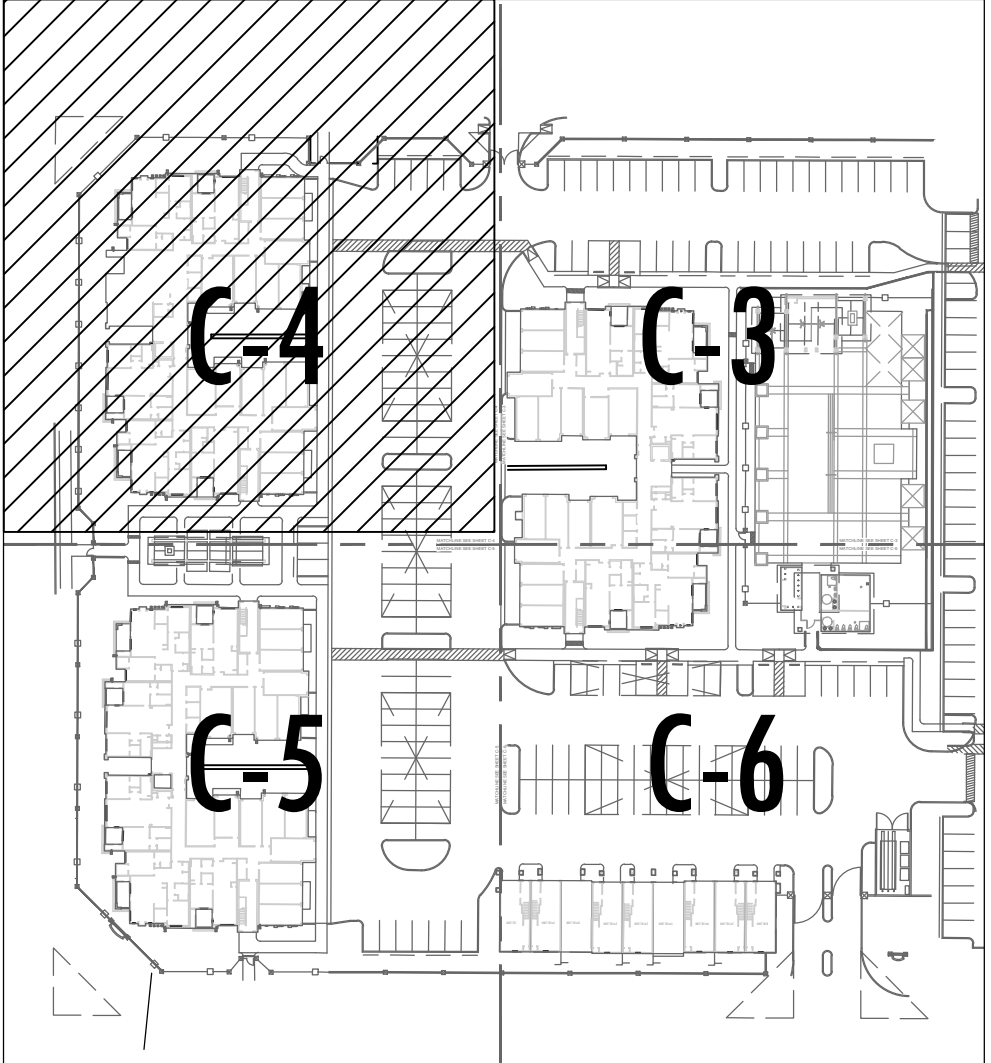
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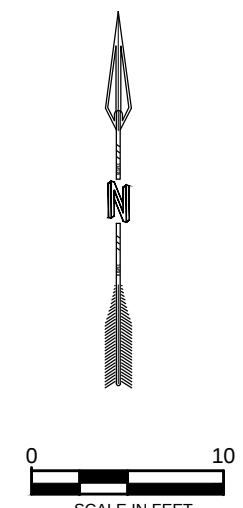
C-3
SITE GRADING



NOTE: ALL PROPOSED SPOT ELEVATIONS
INDICATE FLOW LINE SPOT ELEVATIONS



LEGEND	
	PROPERTY LINE
	EXIST ELEVATION
	EXISTING RETAINING WALL
	EXIST SD
	EXIST SD MANHOLE
	EXIST SD INLET
	PROPOSED RETAINING WALL
	PROPOSED HIGH POINT
	PROPOSED FLOW LINE
	PROPOSED SD
	PROPOSED SD INLET
	PROPOSED UNDERGROUND POND
	PROPOSED SIDEWALK CULVERT
	PROPOSED SD MANHOLE
	PROPOSED FINISHED FLOOR ELEVATION
	PROPOSED ELEVATION
	PROPOSED SPEED BUMP



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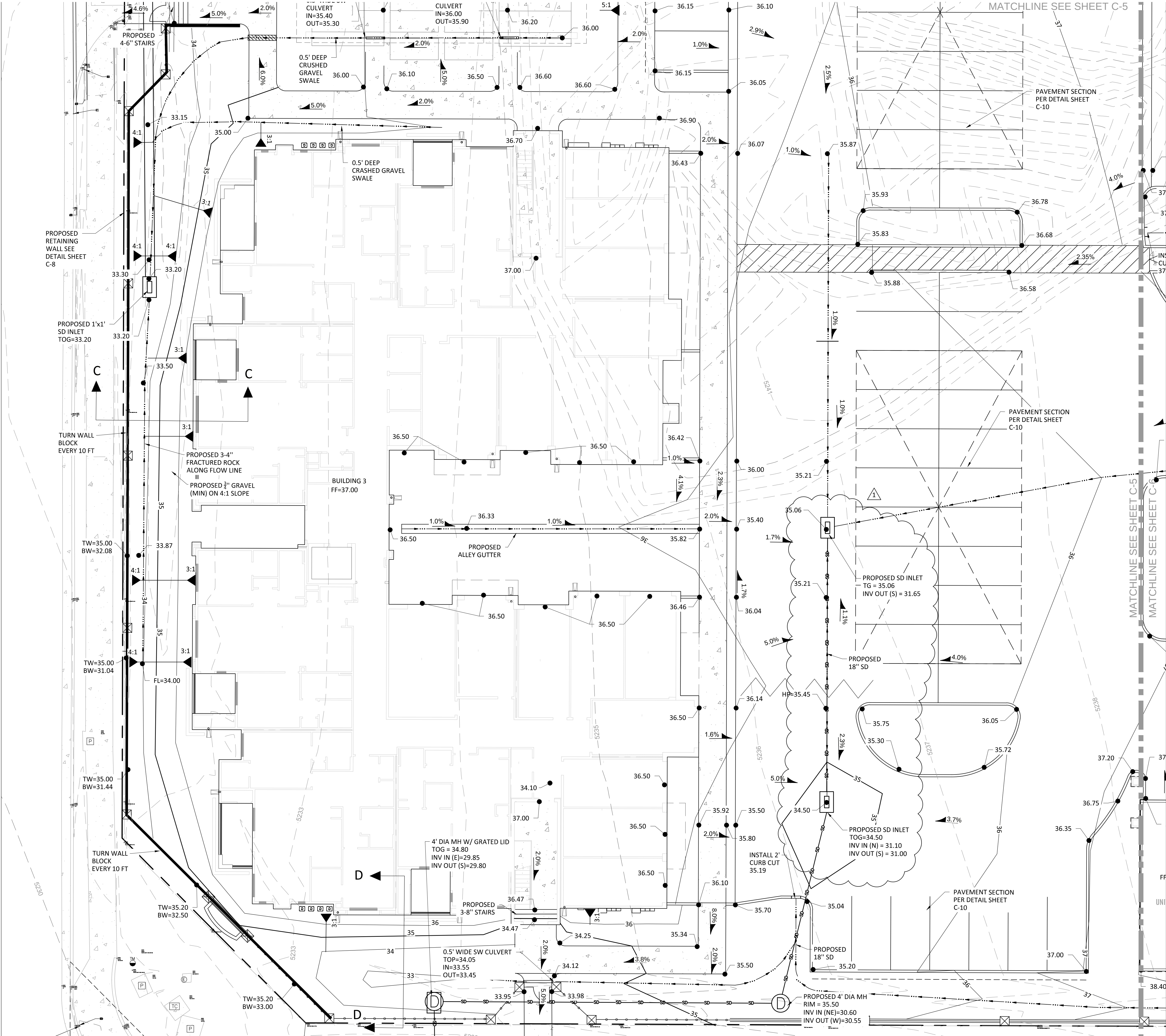
	1/2/19	RESIZE UNDERGROUND SD

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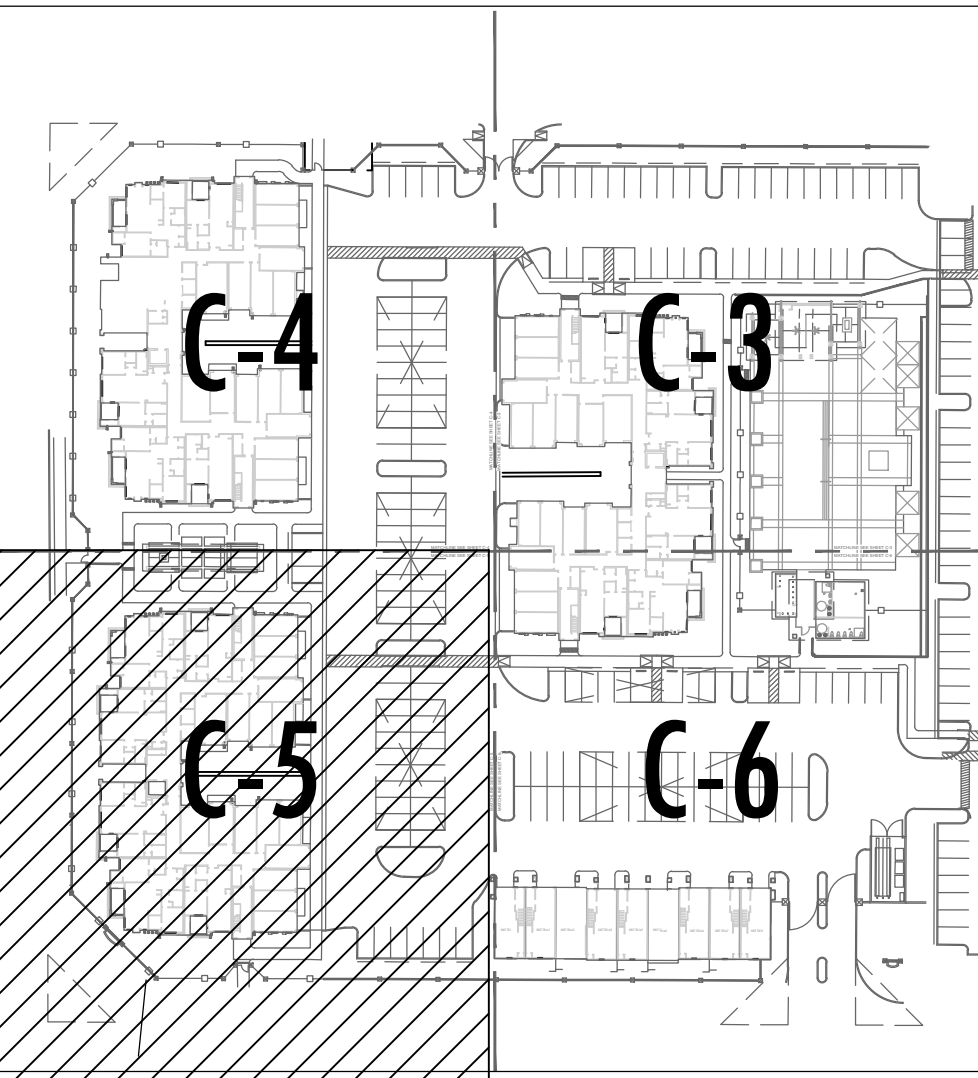
DATE: JANUARY 24, 2019 ORB # 17-219

C-4
SITE GRADING

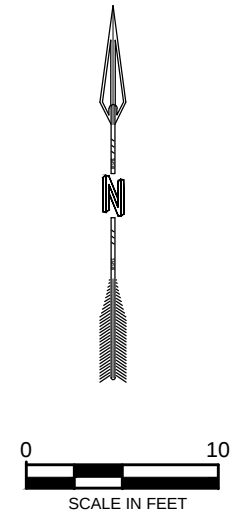
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NOTE: ALL PROPOSED SPOT ELEVATIONS
INDICATE FLOW LINE SPOT ELEVATIONS



LEGEND	
	PROPERTY LINE
	EXIST ELEVATION
	EXISTING RETAINING WALL
	EXIST SD
	EXIST SD MANHOLE
	EXIST SD INLET
	PROPOSED RETAINING WALL
	PROPOSED HIGH POINT
	PROPOSED FLOW LINE
	PROPOSED SD
	PROPOSED SD INLET
	PROPOSED UNDERGROUND POND
	ROPOSED SIDEWALK CULVERT
	PROPOSED SD MANHOLE
	PROPOSED FINISHED FLOOR ELEVATION
	PROPOSED ELEVATION
	PROPOSED SPEED BUMP



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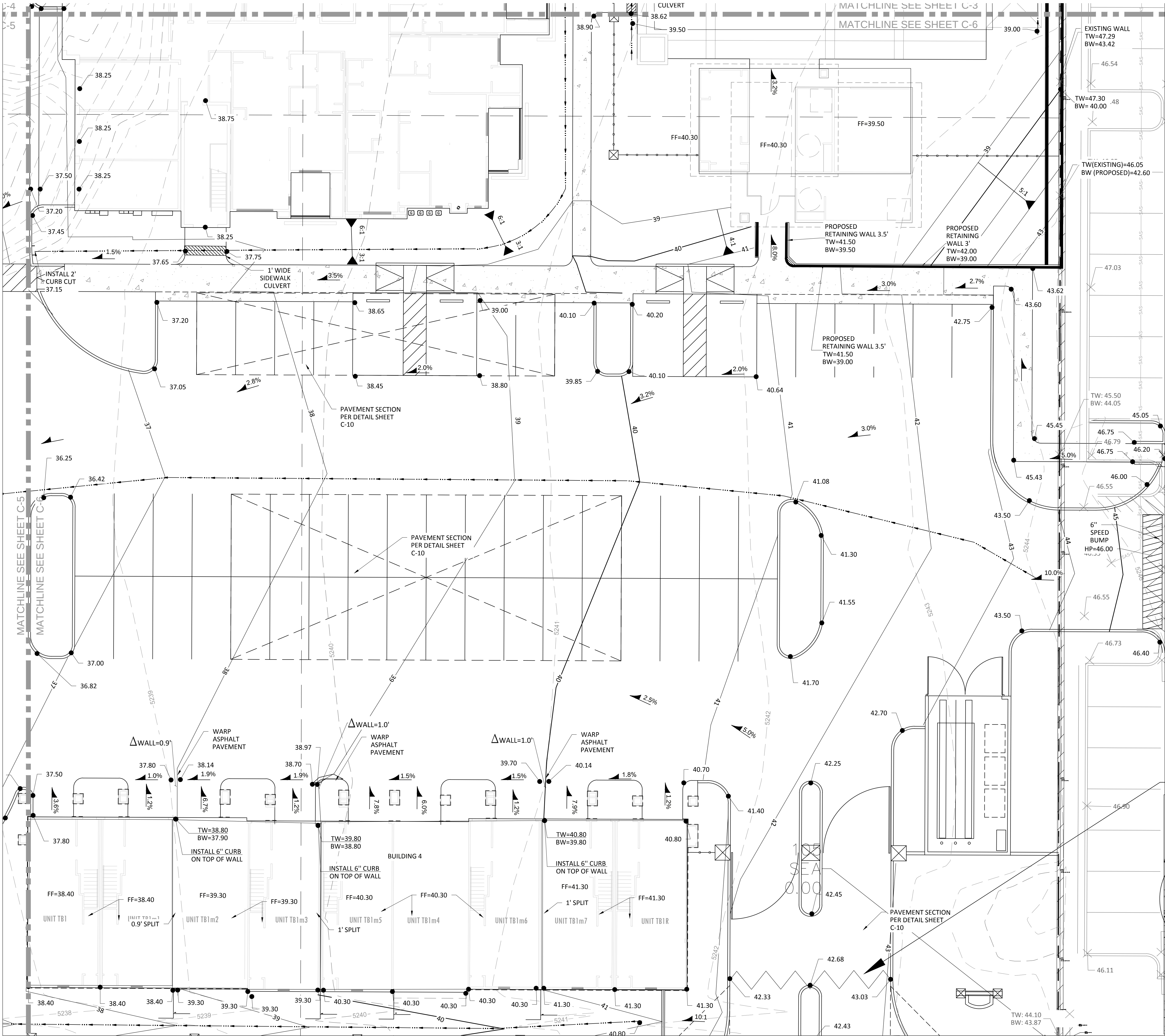
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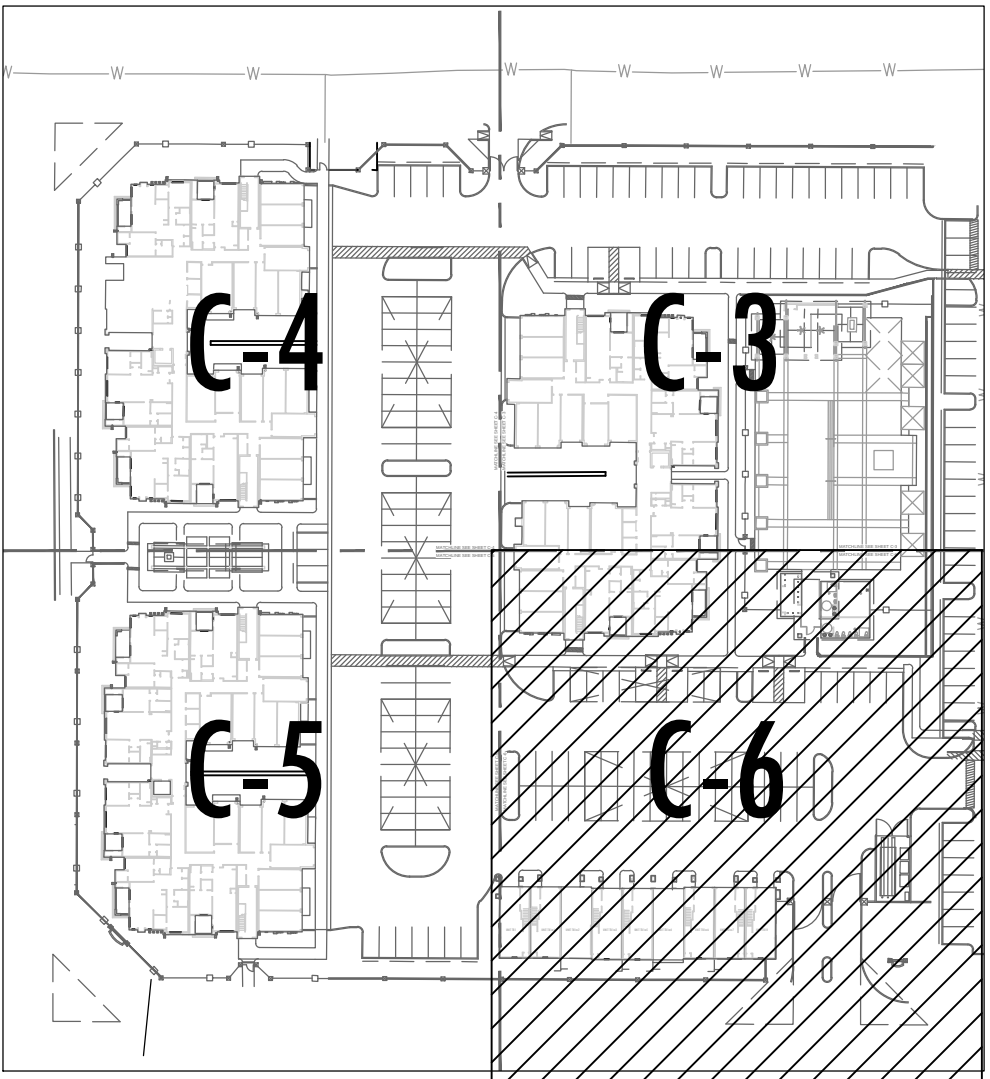
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SITE GRADING

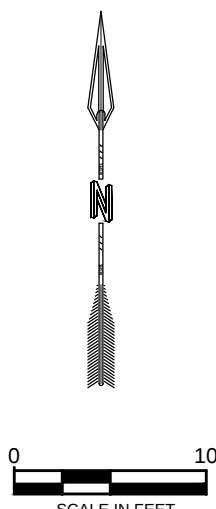
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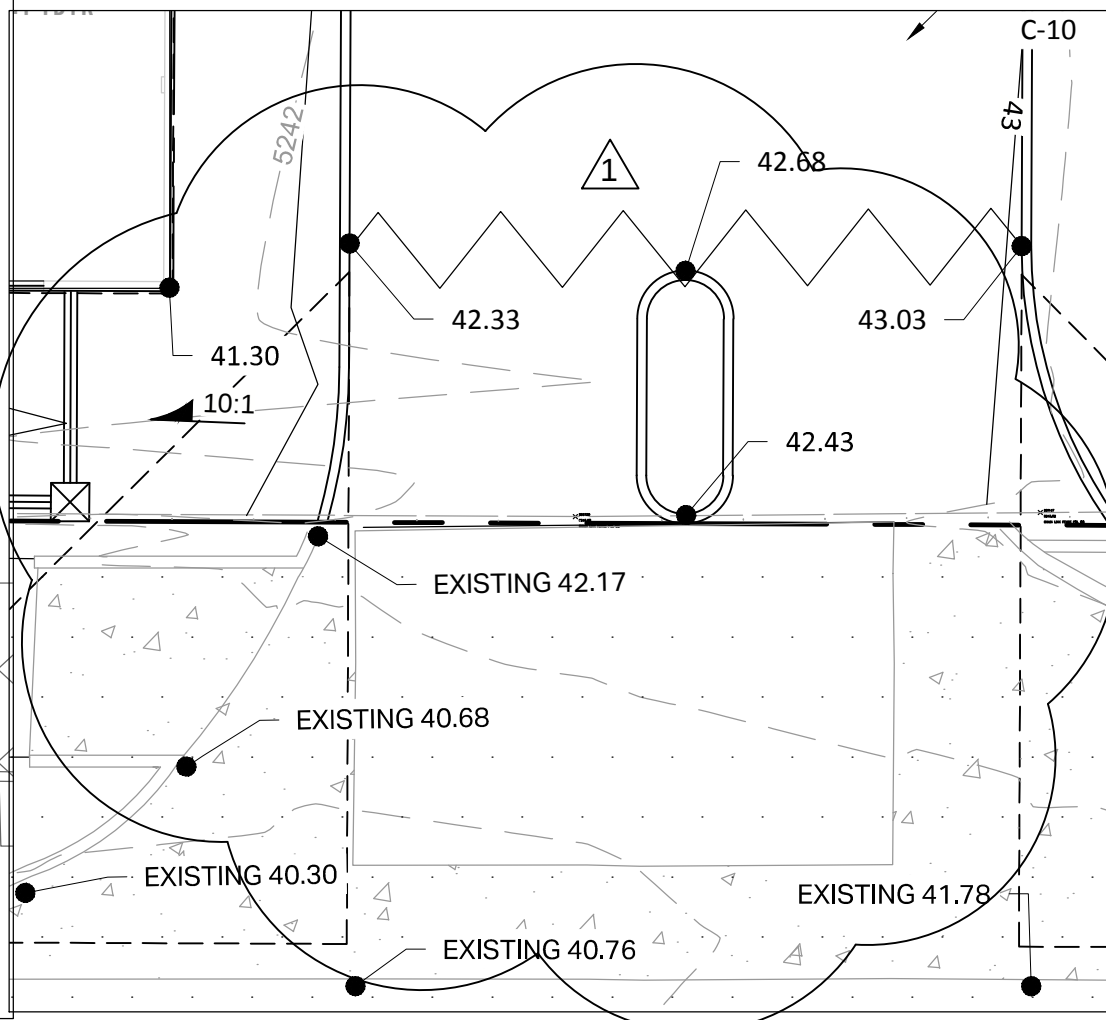
NOTE: ALL PROPOSED SPOT ELEVATIONS INDICATE FLOW LINE SPOT ELEVATIONS



LEGEND	
	PROPERTY LINE
	EXIST ELEVATION
	EXISTING RETAINING WALL
	EXIST SD
	EXIST SD MANHOLE
	EXIST SD INLET
	PROPOSED RETAINING WALL
	PROPOSED HIGH POINT
	PROPOSED FLOW LINE
	PROPOSED SD
	PROPOSED SD INLET
	PROPOSED UNDERGROUND POND
	PROPOSED SIDEWALK CULVERT
	PROPOSED SD MANHOLE
	PROPOSED FINISHED FLOOR ELEVATION
	PROPOSED ELEVATION
	PROPOSED SPEED BUMP



SOUTHDRIVEWAY CONNECTION



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1	Driveway modifications 12.14.18

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C-6

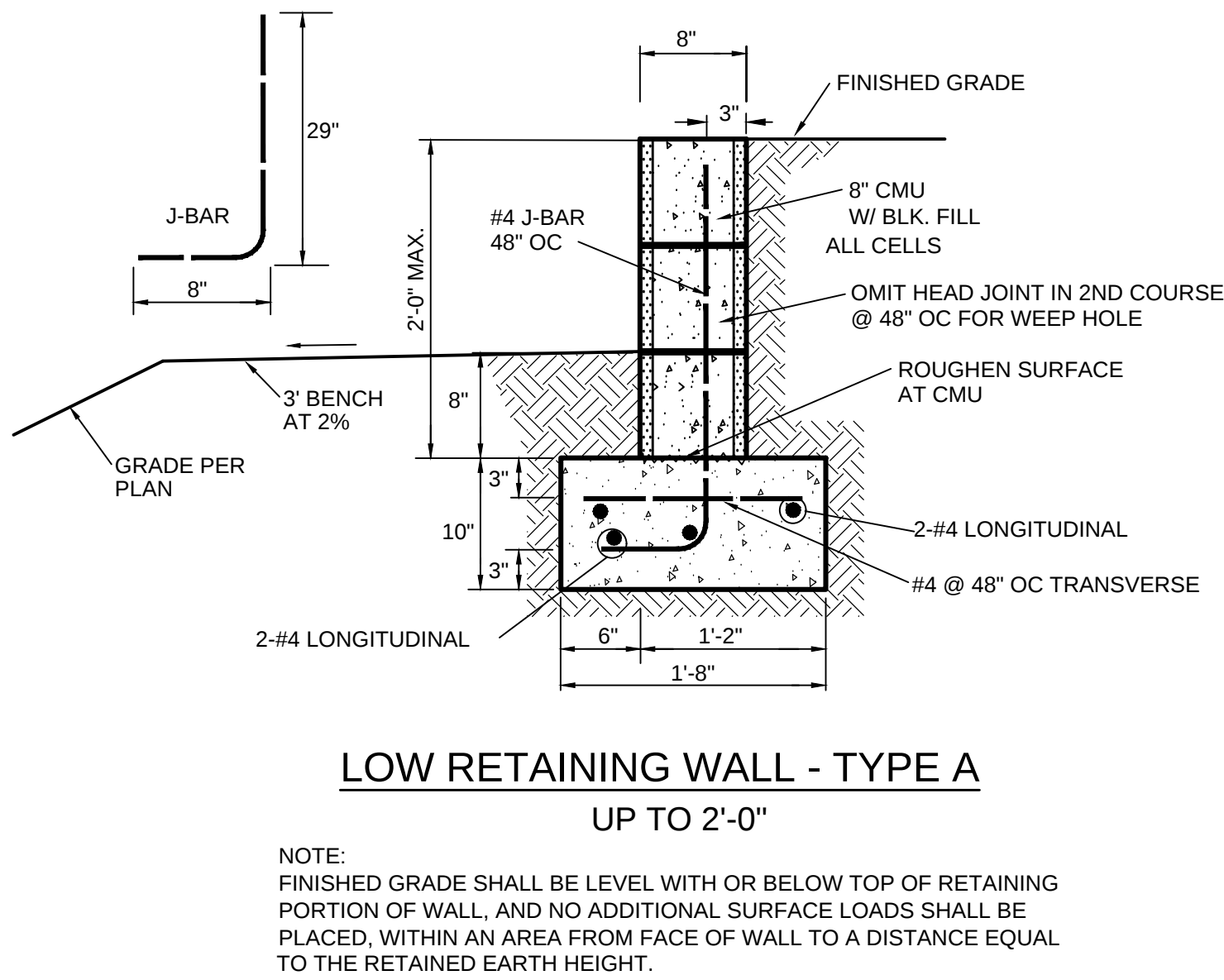
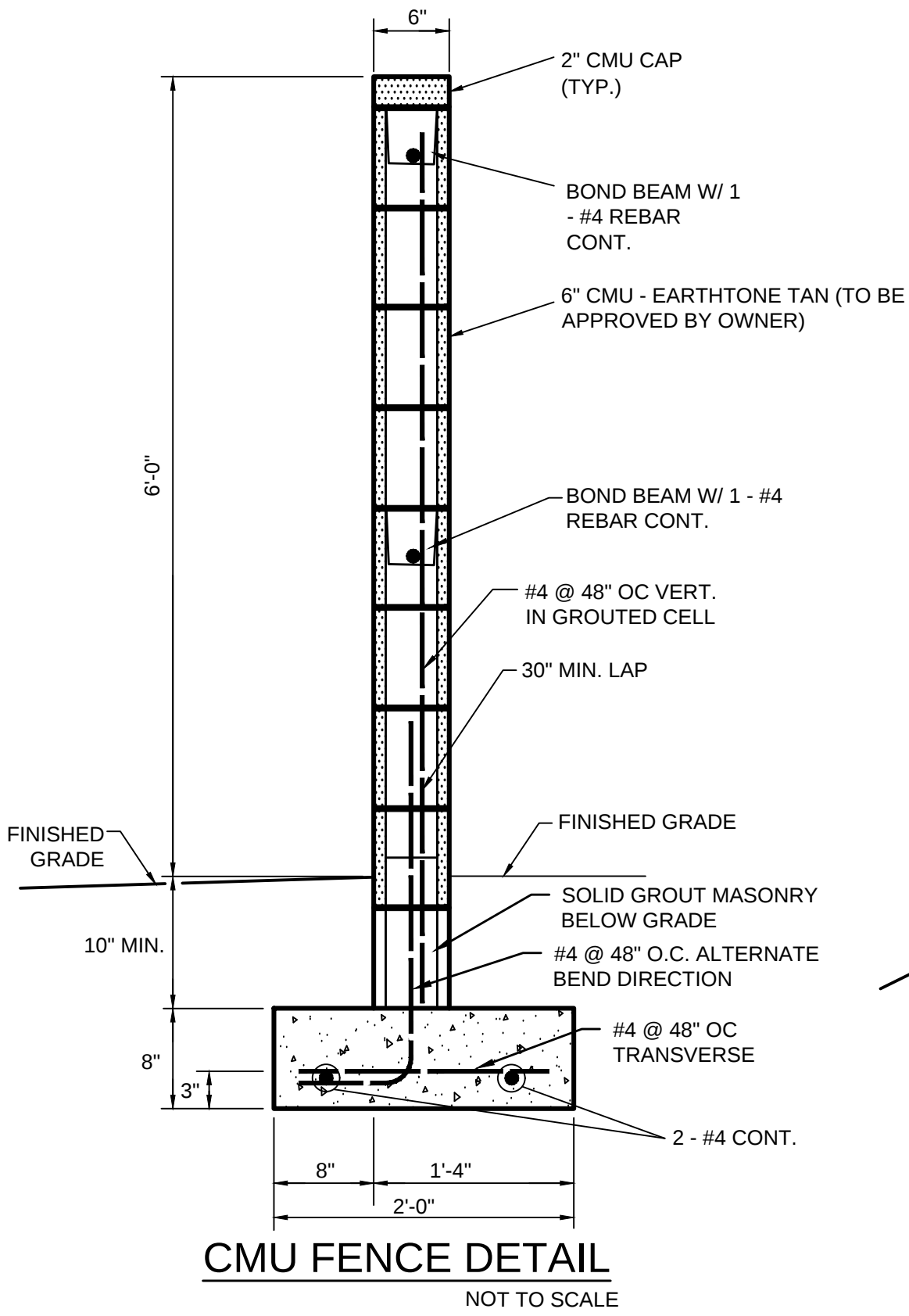
SITE GRADING

RETAINING WALL GENERAL NOTES

1. COMPACT SUBGRADE TO 95% MIN. RELATIVE DENSITY (12" MIN. DEPTH) PER ASTM D1557. IF CLAY OR LOOSE SAND IS ENCOUNTERED, CONTACT THE ENGINEER BEFORE PROCEEDING.
2. COMPACT BACKFILL TO 90% MIN. RELATIVE DENSITY PER ASTM D1557. CONTRACTOR IS RESPONSIBLE FOR METHOD OF PLACEMENT AND COMPACTION OF BACKFILL MATERIAL TO ENSURE THAT LOADS SUFFICIENT TO CAUSE DAMAGE TO WALL ARE NOT EXCEEDED.
3. MAINTAIN 2" MINIMUM CLEARANCE BETWEEN ALL REINFORCING BARS AND OUTSIDE SURFACE OF FORMED CONCRETE, 3" BETWEEN BARS AND OUTSIDE SURFACE OF CONCRETE POURED AGAINST EARTH.
4. ALL BLOCKS ARE TO BE GROUTED SOLID WITH CONCRETE BLOCK FILL.
5. CONCRETE FOR FOOTINGS AND FILLING OF CELLS SHALL MEET OR EXCEED 3,000 P.S.I. AT 28 DAYS, WITH 3/4" MAXIMUM SIZE AGGREGATE, AND A MAXIMUM SLUMP OF 5".
6. MASONRY MORTAR SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM C 270, TYPE M.
7. WALL BLOCKS ARE TO BE STANDARD MASONRY UNITS (8"x8"x16" OR AS OTHERWISE INDICATED).
8. INSTALL 9 GA., GALV. DUR-O-WAL (OR APPROVED EQUAL) EVERY OTHER COURSE (16" OC), OR BOND BEAM WITH 2-#4 REBAR EVERY THIRD COURSE (24" OC, MAX.).
9. REINFORCING STEEL SPLICES SHALL HAVE 24" MIN. LAPS.
10. THE TOP COURSE OF BLOCK SHALL USE 2" SOLID MASONRY UNITS AS CAPS, UNLESS A 6" CMU PARTY WALL IS TO BE INSTALLED ON TOP OF A RETAINING WALL.
11. DRAIN BLOCKS FOR PARTY WALLS SHALL CONSIST OF STANDARD MASONRY UNITS TURNED FACE DOWN. THEY SHALL BE INSTALLED THROUGH THE 6" PARTY WALL ABOVE THE RETAINING WALL SECTION AFTER THE RETAINING WALL SECTION IS COMPLETE AND BACKFILLED, AND AT LOCATIONS SPECIFIED BY THE OWNER.
12. ALL WALLS FACING PUBLIC ROW MUST BE SPRAYED WITH ANTI-GRAFITTI COATING. USE PROSOCO DEFACER ERASER OR APPROVED EQUAL. (AT OWNERS DIRECTION).
13. IF WALL IS TO BE CONSTRUCTED WITH PILASTERS (TO BE SPECIFIED BY OWNER), THEN CONSTRUCT PILASTERS AT 16' ON CENTERS (MAXIMUM), AND AS APPROPRIATE FOR CORNERS, JUNCTIONS, ANGLE POINTS AND ENDS. PILASTER BLOCKS ARE TO BE SIZED APPROPRIATELY FOR THE INTENDED APPLICATION. THE TOP OF PILASTERS SHALL HAVE 2" SOLID MASONRY UNITS OF APPROPRIATE SIZE UNLESS CMU PARTY WALL IS TO BE INSTALLED ON TOP OF RETAINING WALL.
14. ALL CMU AND MORTAR COLOR SHALL BE AT THE OWNERS DIRECTION.
15. IF NO PILASTERS ARE TO BE CONSTRUCTED THE APPROPRIATE EXPANSION / CONTRACTION JOINTS SHALL BE PROVIDED AT 16' O.C. MAXIMUM SPACING.
16. ALL WALLS SHOWN HERE ON HAVE BEEN DESIGNED TO ACCEPT A 6" (MAX.) CMU PARTY WALL.
17. EXTEND #4 BARS AT 48" O.C. WITH MINIMUM INBEDMENT OF 16" IN RETENTION WALL FOR LOCATIONS TO INCLUDE CMU PARTY WALLS.
18. WATERPROOFING SHALL BE HYDROCIDIC LIQUID MEMBRANE HLM 5000 OR APPROVED EQUAL, AND SHALL BE APPLIED FROM FINISHED GRADE TO TOP OF FOUNDATION.
19. PARTY WALL DETAILS NOT INCLUDED, TO BE PROVIDED BY OWNER.

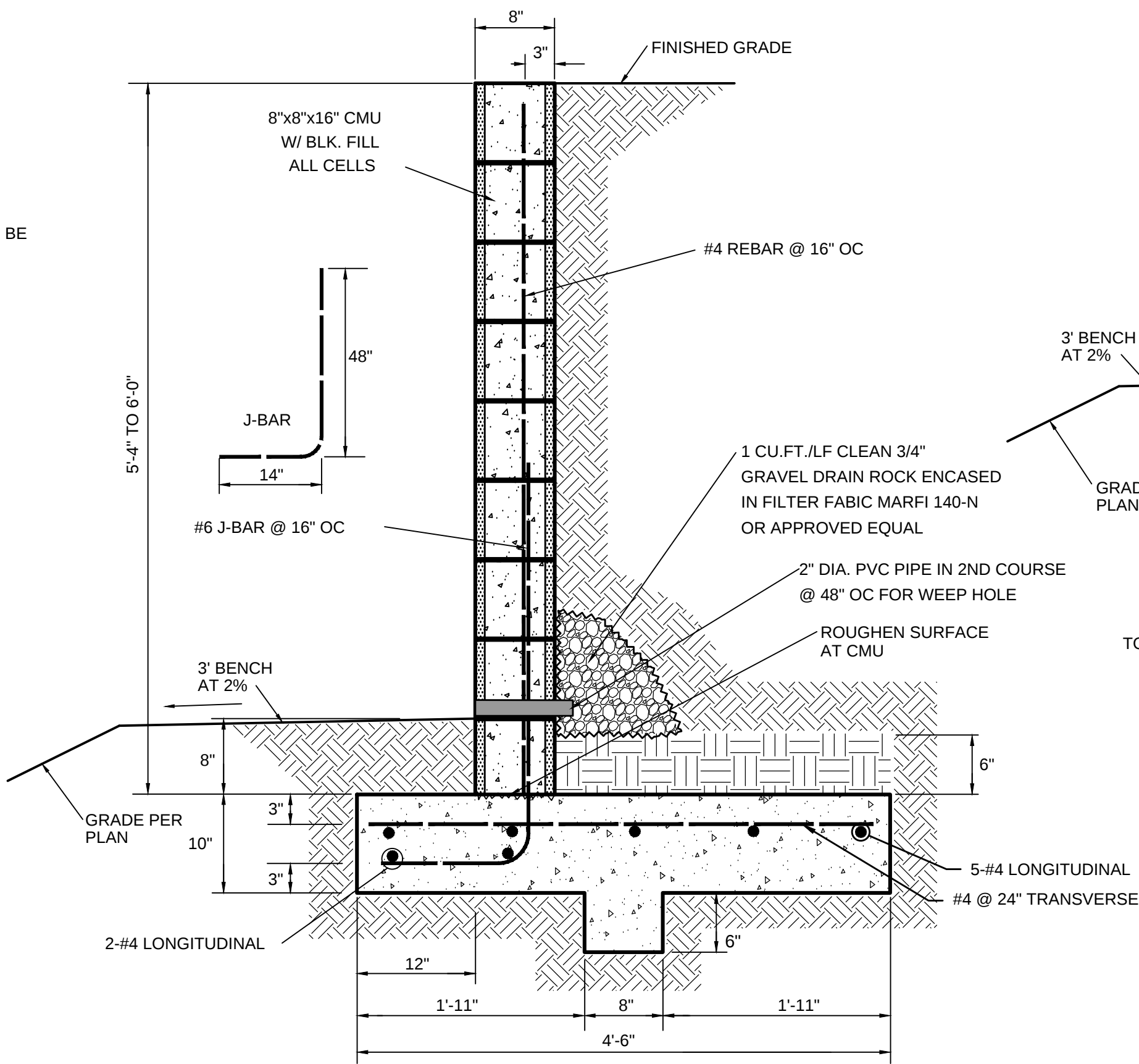
CMU FENCE GENERAL NOTES

1. COMPACT SUBGRADE TO 95% MIN. RELATIVE DENSITY (12" MIN. DEPTH) PER ASTM D1557. IF CLAY OR LOOSE SAND IS ENCOUNTERED, CONTACT THE ENGINEER BEFORE PROCEEDING.
2. COMPACT BACKFILL TO 90% MIN. RELATIVE DENSITY PER ASTM D1557. CONTRACTOR IS RESPONSIBLE FOR METHOD OF PLACEMENT AND COMPACTION OF BACKFILL MATERIAL TO ENSURE THAT LOADS SUFFICIENT TO CAUSE DAMAGE TO WALL ARE NOT EXCEEDED.
3. MAINTAIN 2" MINIMUM CLEARANCE BETWEEN ALL REINFORCING BARS AND OUTSIDE SURFACE OF FORMED CONCRETE, 3" BETWEEN BARS AND OUTSIDE SURFACE OF CONCRETE POURED AGAINST EARTH.
4. ALL CELLS WITH REBAR AND ALL MASONRY BELOW GRADE ARE TO BE GROUTED SOLID WITH CONCRETE BLOCK FILL.
5. CONCRETE FOR FOOTINGS AND FILLING OF CELLS SHALL MEET OR EXCEED 3,000 P.S.I. AT 28 DAYS, WITH 3/4" MAXIMUM SIZE AGGREGATE, AND A MAXIMUM SLUMP OF 5".
6. MASONRY MORTAR SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM C 270, TYPE M.
7. WALL BLOCKS ARE TO BE STANDARD MASONRY UNITS
8. REINFORCING STEEL SPLICES SHALL HAVE 24" MIN. LAPS.
9. THE TOP COURSE OF BLOCK SHALL BE 2" SOLID MASONRY UNIT CAPS.
10. DRAIN BLOCKS FOR PARTY WALLS SHALL CONSIST OF STANDARD MASONRY UNITS TURNED FACE DOWN. THEY SHALL BE INSTALLED THROUGH THE 6" PARTY WALL AT LOCATIONS SHOWN ON PLAN AND/OR SPECIFIED BY THE OWNER.
11. ALL WALLS FACING PUBLIC ROW MUST BE SPRAYED WITH ANTI-GRAFITTI COATING. USE PROSOCO DEFACER ERASER OR APPROVED EQUAL. (AT OWNERS DIRECTION).
12. IF WALL IS TO BE CONSTRUCTED WITH PILASTERS (TO BE SPECIFIED BY OWNER), THEN:
 - A. CONSTRUCT PILASTERS AT 16' ON CENTERS (MAXIMUM), AND AS APPROPRIATE FOR CORNERS, JUNCTIONS, ANGLE POINTS AND ENDS. PILASTER BLOCKS ARE TO BE SIZED APPROPRIATELY FOR THE INTENDED APPLICATION.
 - B. PILASTERS SHALL HAVE 2" SOLID MASONRY UNITS OF APPROPRIATE SIZE.
 - C. PROVIDE 1 "J-BAR" AND VERTICAL BAR, IF NORMAL SPACING DOES NOT DO SO, OF SPECIFIED SIZE AT EACH PILASTER
 - D. ALL PILASTER CELLS ARE TO BE GROUTED WITH CONCRETE BLOCK FILL.
13. IF NO PILASTERS ARE TO BE CONSTRUCTED THEN:
 - A. PROVIDE APPROPRIATE EXPANSION/CONTRACTION JOINTS AT 16' O.C. MAXIMUM SPACING.
 - B. PROVIDE "J-BAR" AND VERTICAL BAR OF SPECIFIED SIZE, IF NORMAL SPACING DOES NOT DO SO, AND GROUT FILL FIRST CELL ON EITHER SIDE OF EXPANSION/CONTRACTION JOINTS.
 - C. DISCONTINUE BOND BEAM AT EXPANSION/CONTRACTION JOINTS.
14. ALL CMU AND MORTAR COLOR SHALL BE AT THE OWNERS DIRECTION UNLESS OTHERWISE SPECIFIED HEREIN.
15. WALL, INCLUDING FOOTING, SHALL NOT EXTEND ACROSS ANY PROPERTY LINE OR RIGHT-OF-WAY WITHOUT THE WRITTEN CONSENT OF THE ADJACENT PROPERTY OWNER OR RIGHT-OF-WAY AUTHORITY.



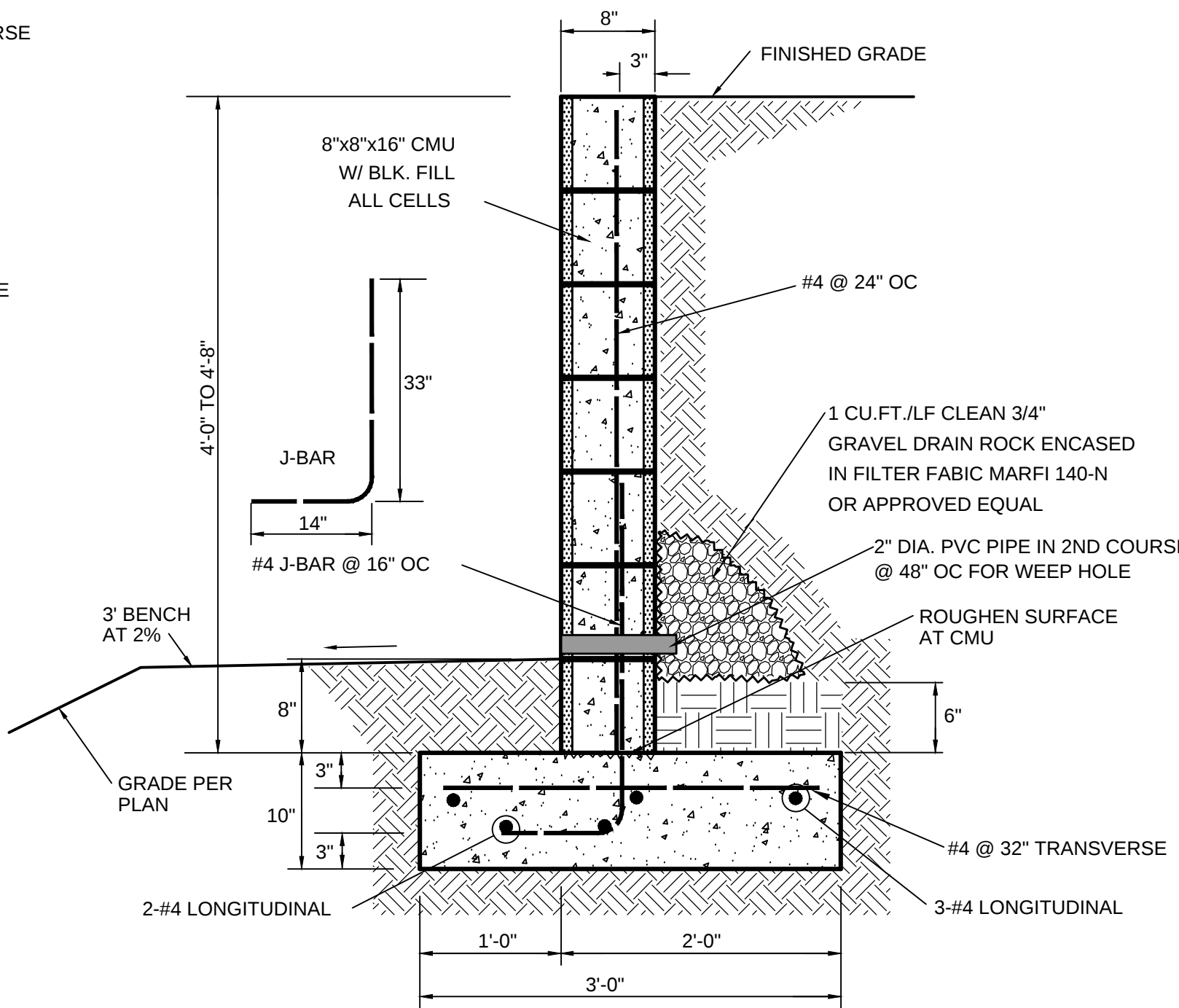
RETAINING WALLS WITH PILASTERS

1. IF WALL IS TO BE CONSTRUCTED WITH PILASTERS (TO BE SPECIFIED BY OWNER), THEN CONSTRUCT PILASTER AT 16' ON CENTERS (MAXIMUM), AND AS APPROPRIATE FOR CORNERS, JUNCTIONS, ANGLE POINTS AND ENDS. PILASTER BLOCKS ARE TO BE SIZED APPROPRIATELY FOR THE INTENDED APPLICATION.
2. THE TOP OF PILASTERS SHALL HAVE 2" SOLID MASONRY UNITS OF APPROPRIATE SIZE UNLESS CMU PARTY WALL IS TO BE INSTALLED ON TOP OF RETAINING WALL..
3. ALL PILASTER CELLS ARE TO BE GROUTED SOLID WITH CONCRETE.
4. PROVIDE ONE J-BAR OF SPECIFIC SIZE FOR EACH.
5. PROVIDE ADDITIONAL BAR(S) AS SPECIFIED FOR WALL AT EACH PILASTER IF NORMAL OPENING DOES NOT DO SO.
6. PROVIDE 2-#4 BARS AT EACH PILASTER WITH MINIMUM INBEDMENT OF 16" IN RETAINING WALL FOR LOCATIONS TO INCLUDE CMU PARTY WALL.



RETAINING WALL - TYPE D

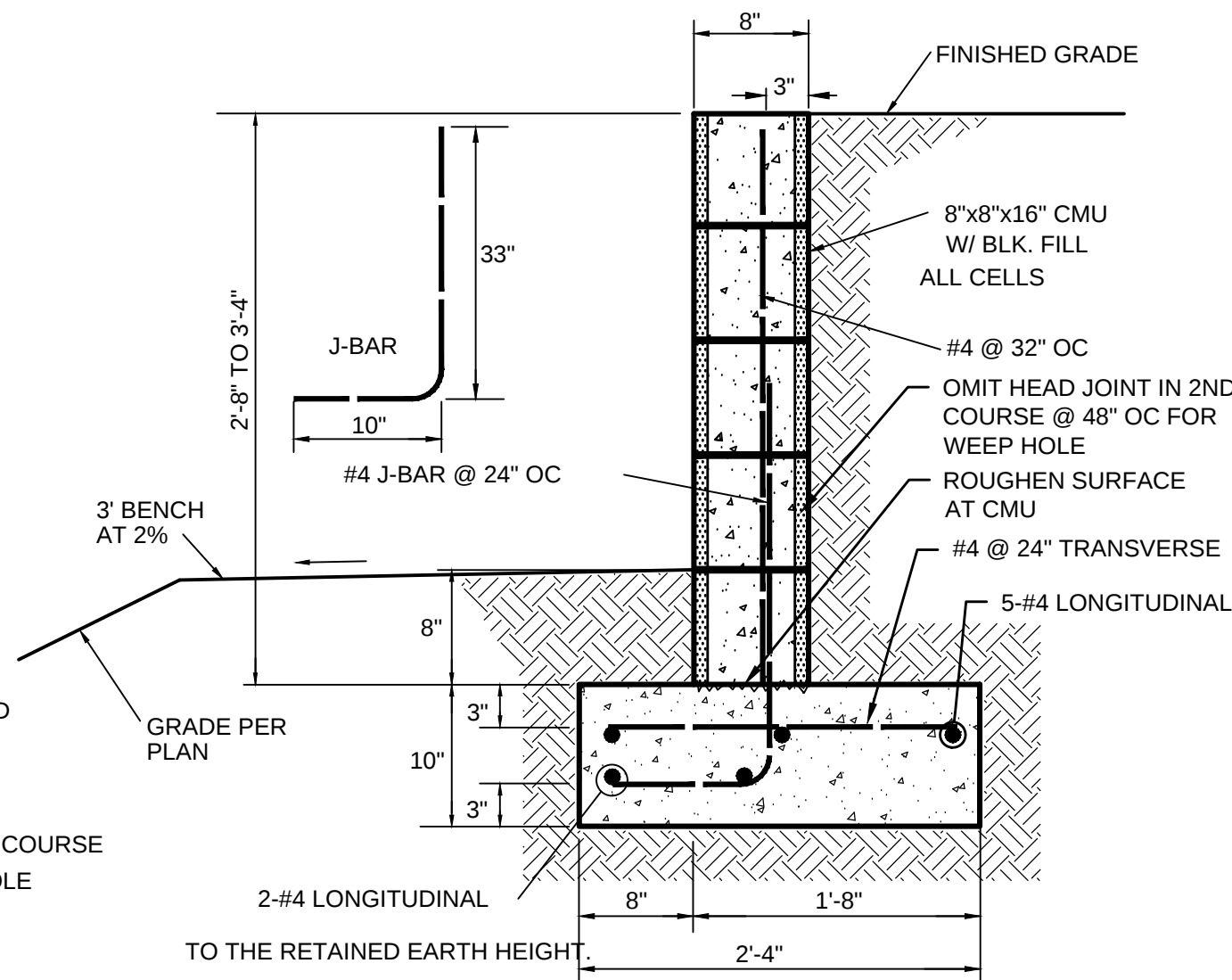
5'-4" TO 6'-0"



RETAINING WALL - TYPE C

4'-0" TO 4'-8"

NOTE:
FINISHED GRADE SHALL BE LEVEL WITH OR BELOW TOP OF RETAINING PORTION OF WALL, AND NO ADDITIONAL SURFACE LOADS SHALL BE PLACED, WITHIN AN AREA FROM FACE OF WALL TO A DISTANCE EQUAL TO THE RETAINED EARTH HEIGHT.



RETAINING WALL - TYPE B

2'-0" TO 3'-4"

NOTE:
FINISHED GRADE SHALL BE LEVEL WITH OR BELOW TOP OF RETAINING PORTION OF WALL, AND NO ADDITIONAL SURFACE LOADS SHALL BE PLACED, WITHIN AN AREA FROM FACE OF WALL TO A DISTANCE EQUAL TO THE RETAINED EARTH HEIGHT.



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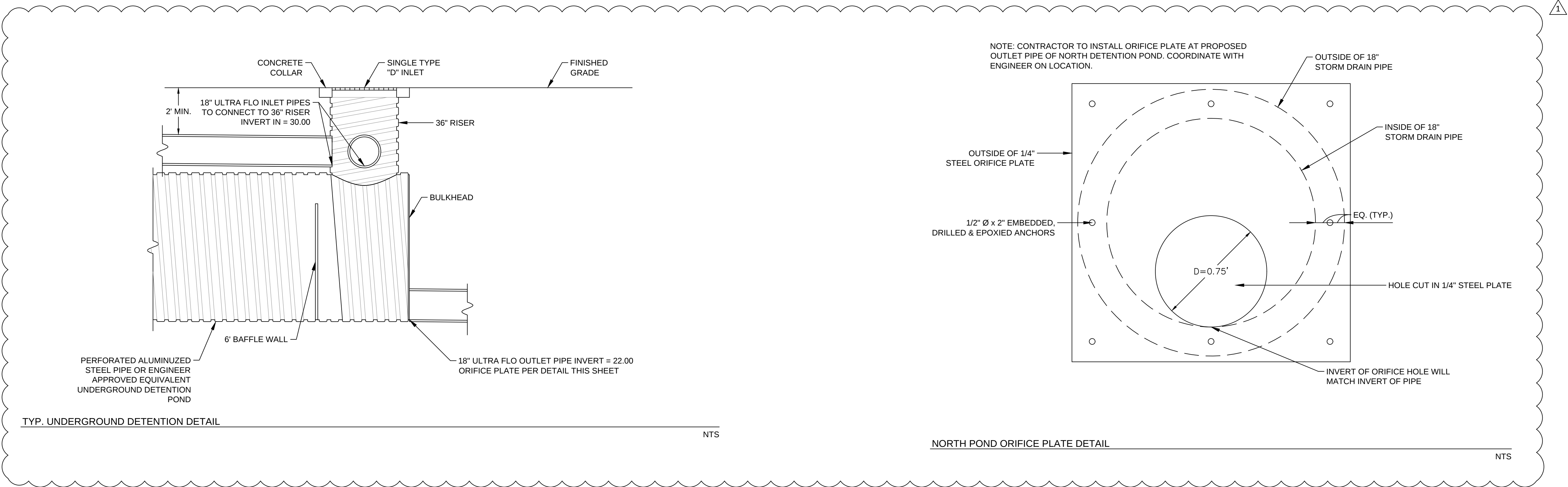
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C-8

WALL DETAILS



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C-9

STORM DRAIN DETAILS

