CITY OF ALBUQUERQUE

January 27, 2015

Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe St NE
Albuquerque, NM 87108

Re: **Mile High Little League**
Grading and Drainage Plan
Sheets 4, 5, & 6 of 11 With Engineer's Stamp Date 1/21/2015, (K21/D002A)

Dear Mr. Arfman,

Based upon the information provided in your submittal received 1-22-15, the grading and Drainage Plan is approved for Grading and Paving Permit. Please make sure that the grades around handicap parking are adjusted based on the changes on the site plan with Landscape Architect Stamp Date 1/26/2015 (Sheets 7, 8, & 11 of 11).
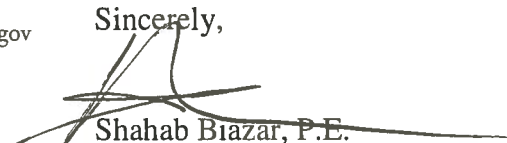
This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge for disturbing one acre or more and a Topsoil Disturbance Permit for disturbing ¾ of an acre or more. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. Please provide Engineer Certification per the DPM checklist once the construction is completed.

If you have any questions, you can contact me at 924-3999.

Sincerely,

Shahab Biazar, P.E.
City Engineer, Planning Department
Development Review Services

C: e-mail

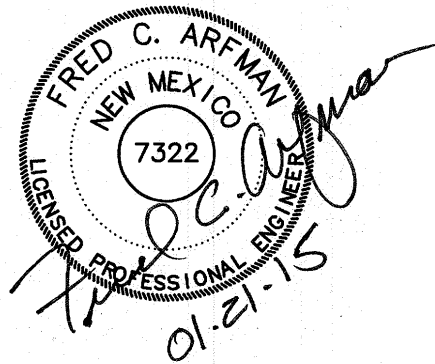JANUARY 21, 2015

Supplemental Information

for

Mile High Little League
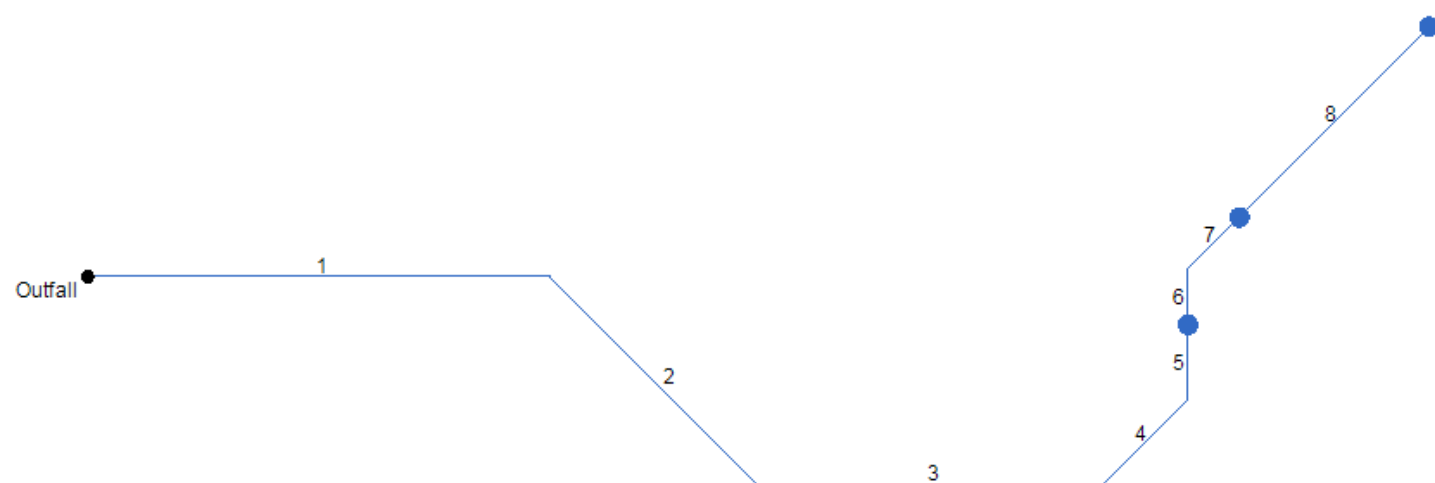# Drainage Improvements

by

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates

Thomas O. Isaacson, PE(RET.) & LS(RET.)
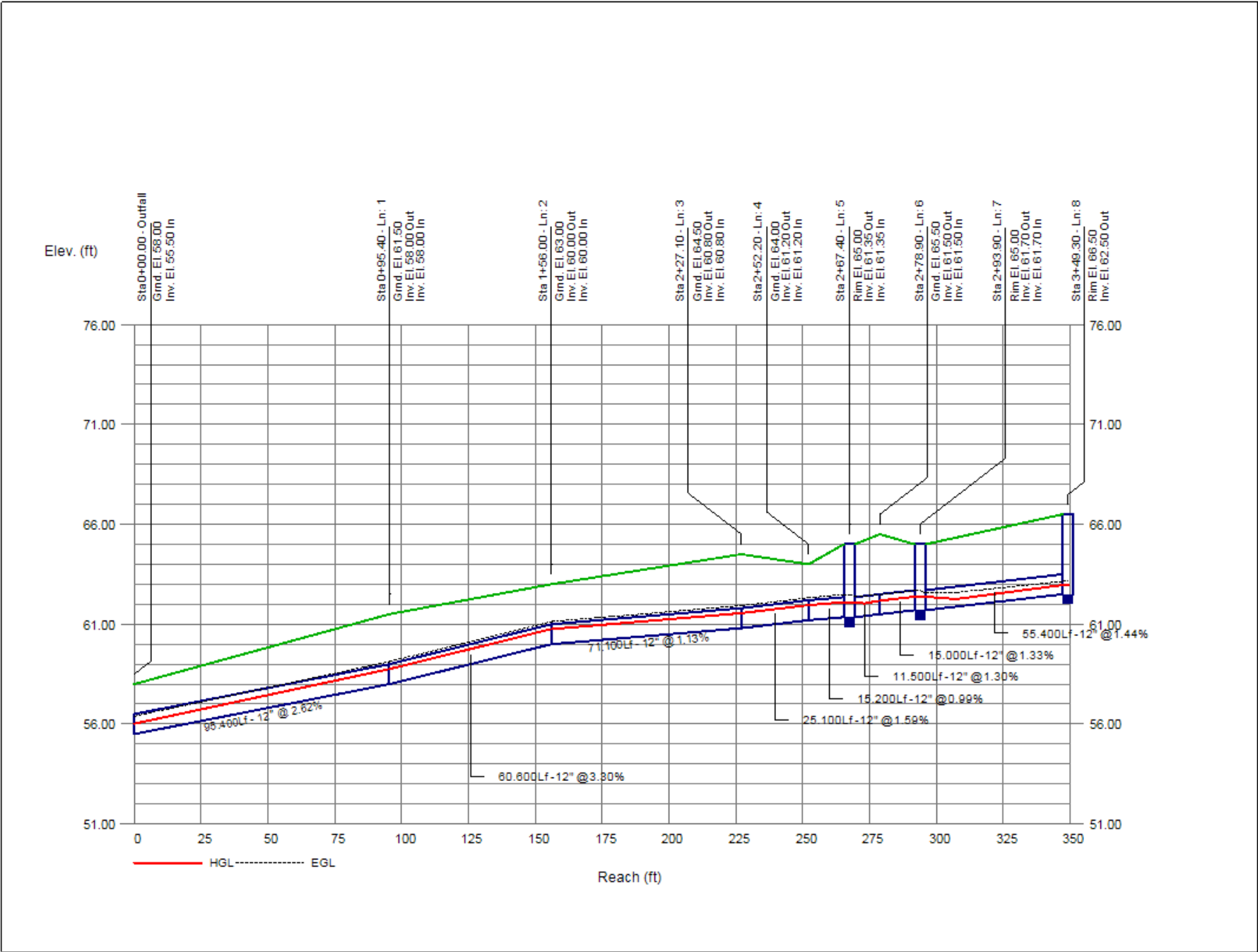Fred C. Arfman, PE
Åsa Nilsson-Weber, PE

2085

Outfall

1

2

3

4

5

6

7

8

Storm Sewers v10.30

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1		3.10	12	Cir	95.400	55.50	58.00	2.621	56.02	58.75	0.28	58.75	End	None
2		3.10	12	Cir	60.600	58.00	60.00	3.300	58.75	60.75	0.28	60.75	1	None
3		3.10	12	Cir	71.100	60.00	60.80	1.125	60.75	61.55	0.28	61.55	2	None
4		3.10	12	Cir	25.100	60.80	61.20	1.594	61.55	61.95	0.28	61.95	3	None
5		3.10	12	Cir	15.200	61.20	61.35	0.987	61.95	62.10	0.19	62.10	4	Generic
6		2.50	12	Cir	11.500	61.35	61.50	1.304	62.10	62.18	n/a	62.18 j	5	None
7		2.50	12	Cir	15.000	61.50	61.70	1.333	62.18	62.38	0.15	62.38	6	Generic
8		1.20	12	Cir	55.400	61.70	62.50	1.444	62.38	62.96	n/a	62.96 j	7	Generic

2085		Number of lines: 8	Run Date: 1/7/2015

NOTES: Return period = 2 Yrs. ; j - Line contains hyd. jump.

IA-RPT

Line No.	Flow Rate (cfs)	Line Size (in)	Line Length (ft)	Line Slope (%)	Invert Dn (ft)	Invert Up (ft)	HGL Dn (ft)	HGL Up (ft)	HGL Jnct (ft)	Flow Rate (cfs)	Gnd/Rim El Dn (ft)	Gnd/Rim El Up (ft)	Junct Type	Known Q (cfs)	n-val Pipe	Minor Loss (ft)	Total Runoff (cfs)	Vel Dn (ft/s)	Vel Up (ft/s)
1	3.10	12	95.400	2.62	55.50	58.00	56.02	58.75	58.75	3.10	58.00	61.50	None	0.00	0.012	0.28	0.00	7.51	4.88
2	3.10	12	60.600	3.30	58.00	60.00	58.75	60.75	60.75	3.10	61.50	63.00	None	0.00	0.012	0.28	0.00	4.88	4.88
3	3.10	12	71.100	1.13	60.00	60.80	60.75	61.55	61.55	3.10	63.00	64.50	None	0.00	0.012	0.28	0.00	4.88	4.88
4	3.10	12	25.100	1.59	60.80	61.20	61.55	61.95	61.95	3.10	64.50	64.00	None	0.00	0.012	0.28	0.00	4.88	4.88
5	3.10	12	15.200	0.99	61.20	61.35	61.95	62.10	62.10	3.10	64.00	65.00	Generic	0.60	0.012	0.19	0.00	4.88	4.88
6	2.50	12	11.500	1.30	61.35	61.50	62.10	62.18 j	62.18	2.50	65.00	65.50	None	0.00	0.012	n/a	0.00	3.94	4.42
7	2.50	12	15.000	1.33	61.50	61.70	62.18	62.38	62.38	2.50	65.50	65.00	Generic	1.30	0.012	0.15	0.00	4.42	4.42
8	1.20	12	55.400	1.44	61.70	62.50	62.38	62.96 j	62.96	1.20	65.00	66.50	Generic	1.20	0.012	n/a	0.00	2.12	3.39

2085

Number of lines: 8

Date: 1/7/2015

NOTES: ** Critical depth

Storm Sewer Profile

Elev. (ft)

Vertical labels (left to right):

- Sta 0+00.00 - Outfall / Grnd. El.58.00 / Inv. El.55.50 In
- Sta 0+95.40 - Ln: 1 / Grnd. El.61.50 / Inv. El.58.00 Out / Inv. El.58.00 In
- Sta 1+56.00 - Ln: 2 / Grnd. El.63.00 / Inv. El.60.00 Out / Inv. El.60.00 In
- Sta 2+27.10 - Ln: 3 / Grnd. El.64.50 / Inv. El.60.80 Out / Inv. El.60.80 In
- Sta 2+52.20 - Ln: 4 / Grnd. El.64.00 / Inv. El.61.20 Out / Inv. El.61.20 In
- Sta 2+67.40 - Ln: 5 / Rim El.65.00 / Inv. El.61.35 Out / Inv. El.61.35 In
- Sta 2+78.90 - Ln: 6 / Grnd. El.65.50 / Inv. El.61.50 Out / Inv. El.61.50 In
- Sta 2+93.90 - Ln: 7 / Rim El.65.00 / Inv. El.61.70 Out / Inv. El.61.70 In
- Sta 3+49.30 - Ln: 8 / Rim El.66.50 / Inv. El.62.50 Out

Pipe segment labels:

- 95.400Lf - 12" @ 2.62%
- 60.600Lf - 12" @ 3.30%
- 71.100Lf - 12" @ 1.13%
- 25.100Lf - 12" @ 1.59%
- 15.200Lf - 12" @ 0.99%
- 11.500Lf - 12" @ 1.30%
- 15.000Lf - 12" @ 1.33%
- 55.400Lf - 12" @ 1.44%

Legend: ——— HGL --------- EGL

Reach (ft)

Storm Sewers

Area draining through 'U' shaped concrete channel

FIRST FLUSH POND 2
TOP AREA = 340 SF
4:1 SIDE SLOPE
OVERFLOW ELEVATION = 5567.00
DEPTH = 1.0'
VOLUME = 611 CF

Basin		DESCRIPTION	Draining through 'U' shaped concrete channels
Area of basin flows =	12013	SF = 0.3	Ac.

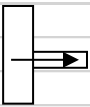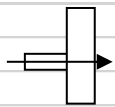|				
The following calculations are based on Treatment areas as shown in table to the right			LAND TREATMENT	
Sub-basin Weighted Excess Precipitation (see formula above)			A =	0%
Weighted E	=	2.64 in.	B =	0%
Sub-basin Volume of Runoff (see formula above)			C =	0%
V_{360}	=	2643 CF	D =	100%
Sub-basin Peak Discharge Rate: (see formula above)			FIRST FLUSH VOL.	
Q_P	=	1.4 cfs		340 CF

The 100% paved drainage basin draining through the 'u' shaped concrete channels will generate 1.4 cfs (at the entrance to the westernmost channel). This represents a depth of 0.38' within the proposed channel.
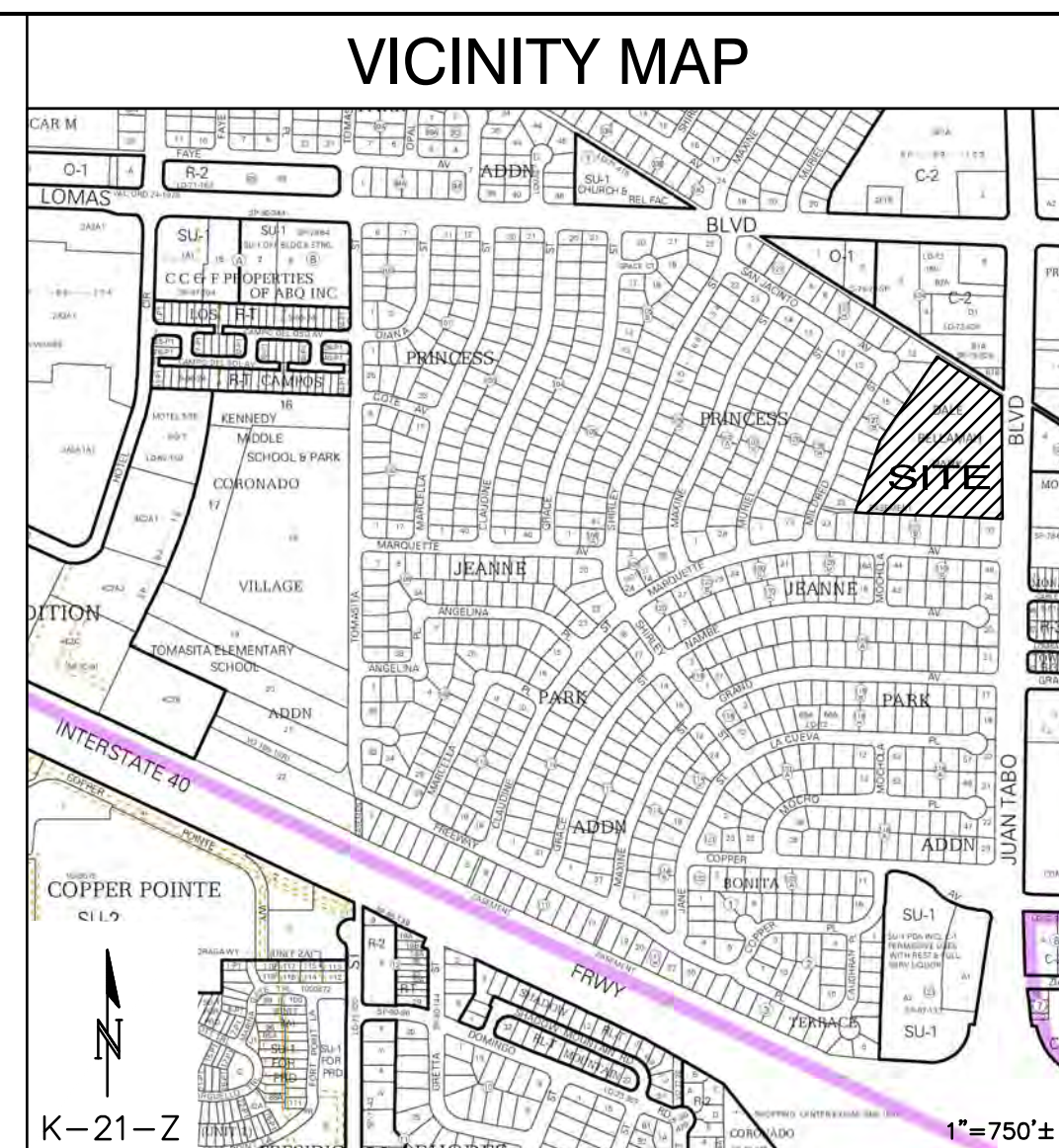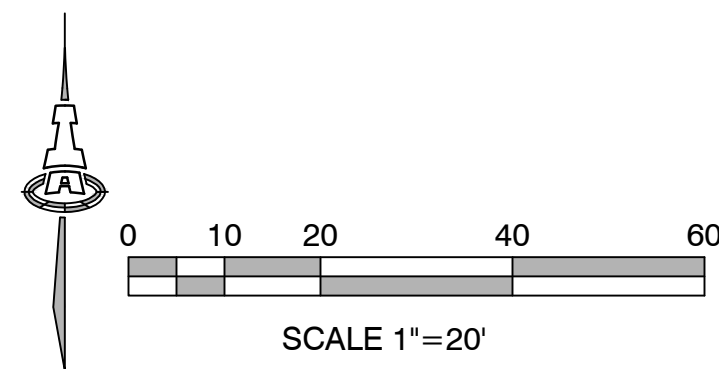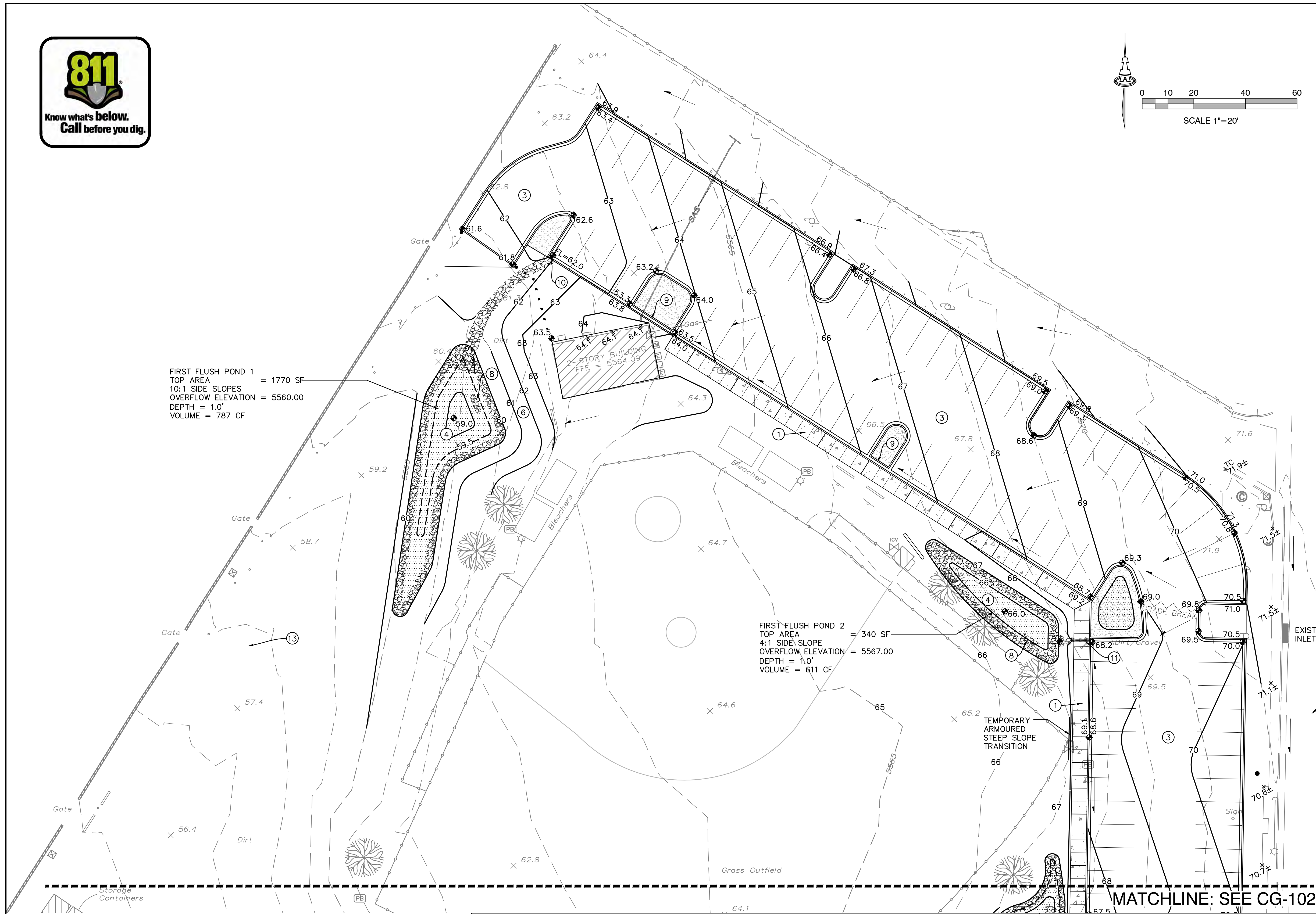
Channel Report

Mile High Little League – 12" wide 'u' shaped concrete channel

Rectangular		Highlighted	
Bottom Width (ft)	= 1.00	Depth (ft)	= 0.38
Total Depth (ft)	= 0.50	Q (cfs)	= 1.400
		Area (sqft)	= 0.38
Invert Elev (ft)	= 63.50	Velocity (ft/s)	= 3.68
Slope (%)	= 1.00	Wetted Perim (ft)	= 1.76
N-Value	= 0.014	Crit Depth, Yc (ft)	= 0.40
		Top Width (ft)	= 1.00
Calculations		EGL (ft)	= 0.59
Compute by:	Known Q		
Known Q (cfs)	= 1.40		
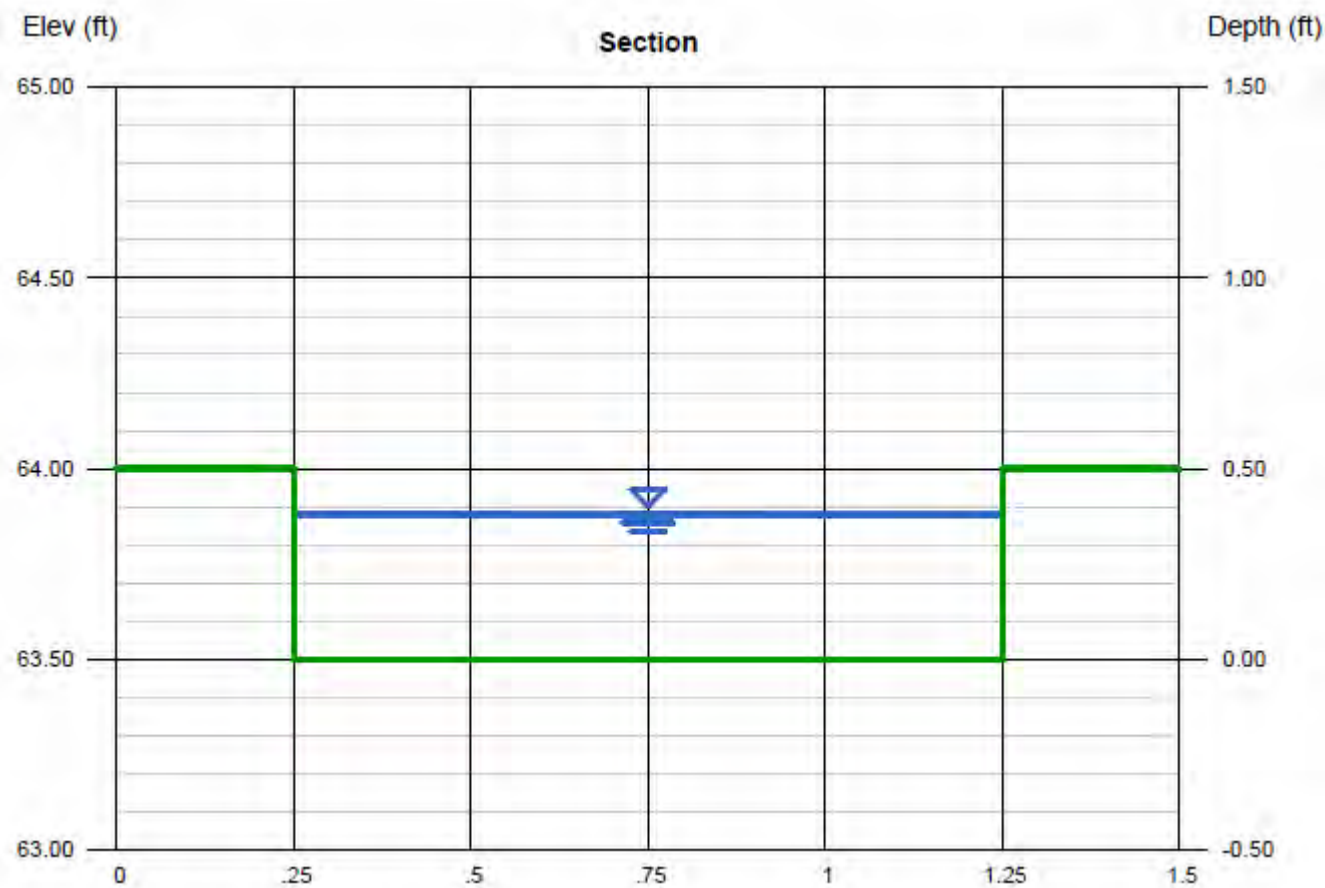
ORIFICE EQUATION - RECTANGULAR							
Rectangular Area	144 sq.in.		1.00 sq.ft.				
Width	24 in		2.00 ft				
Height	6 in		0.50 ft				
Headwater Elevation	0.5 feet		0.25 Actual H to centerline of culvert				
C	0.6		C values	Rounded	Sharp	Tube Out	Tube In
g	32.2 f/s^2			0.98	0.61	0.80	0.51
Q = C*A*((2*g*H)^0.5)	=	2.44 cfs	for 1 sq.ft. orifice				

The 2' wide openings will pass 2.44 cfs at full capacity (6" depth).

811
Know what's below.
Call before you dig.

SCALE 1"=20'
0 10 20   40   60

VICINITY MAP

K-21-Z   1"=750'±

PROJECT DATA

PROPERTY: THE SITE IS A DEVELOPED LITTLE LEAGUE PARK PROPERTY LOCATED WITHIN C.O.A. VICINITY MAP K-21. THE SITE IS BOUND TO THE EAST BY JUAN TABO BLVD., AND TO THE NORTH, WEST AND SOUTH BY DEVELOPED PROPERTY.

PROPOSED IMPROVEMENTS: THE PROPOSED IMPROVEMENTS INCLUDE ASPHALT PAVED ACCESS AND PARKING, WITH ASSOCIATED LANDSCAPING AND DRAINAGE IMPROVEMENTS.

LEGAL: DALE BELLAMAH / MILE HIGH LITTLE LEAGUE PARK, ALBUQUERQUE, NM

ADDRESS: 725 JUAN TABO BLVD. NE

BENCHMARK: ELEVATION = THE ELEVATIONS SHOWN HERON ARE REFERRED TO NAVD 88, AND HAVE BEEN ADJUSTED TO THE CITY OF ALBUQUERQUE BENCHMARK "20-K22" (PUBLISHED ELEVATION USED FOR "20-K22" = 5569.607').
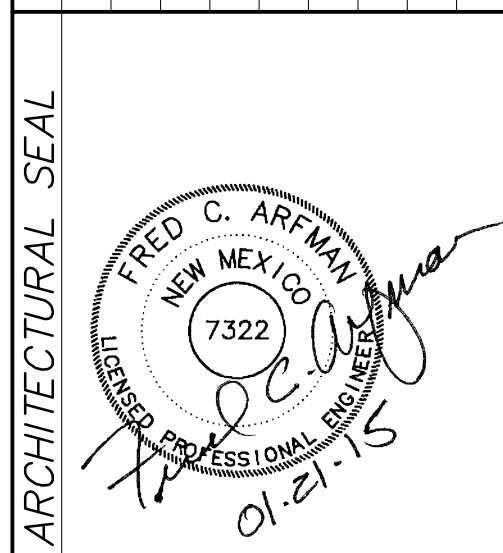
OFF-SITE: NO OFF-SITE DRAINAGE IMPACTS THIS PROPERTY.

FLOOD HAZARD: PER BERNALILLO COUNTY FIRM MAP NUMBER 35001C0359G, EFFECTIVE ON 09/26/2008, THE SITE IS LOCATED WITHIN FLOODZONE 'X' DESIGNATED AS AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN.

DRAINAGE PLAN CONCEPT: FIRST FLUSH RETENTION BASINS WILL BE CONSTRUCTED THROUGHOUT THE PROPERTY. A NEW STORM DRAIN SYSTEM WILL BE INSTALLED TO COLLECT RUNOFF FROM A PORTION OF THE NEW PAVEMENT AND ROUTE IT THROUGH THE PROPERTY TO REDUCE EROSION. THE STORM DRAIN WILL DISCHARGE INTO A SHALLOW WATER HARVESTING BASIN WHICH WILL OVERFLOW INTO THE HISTORIC DRAINAGE SWALES TO FOLLOW EXISTING FLOWPATHS. OVERALL PROPERTY RUNOFF WILL CONTINUE TO BE CARRIED TO THE SOUTHWEST CORNER OF THE PROPERTY TO ENTER THE EXISTING DRAINAGE EASEMENT WHICH DISCHARGES FLOW TO MILDRED STREET NE. THE ADDITION OF STORMWATER RETENTION PONDS AND DEPRESSED LANDSCAPING WILL HELP TO REDUCE THE OVERALL DISCHARGE FROM THE PROPERTY.

FIRST FLUSH POND 1
TOP AREA = 1770 SF
10:1 SIDE SLOPES
OVERFLOW ELEVATION = 5560.00
DEPTH = 1.0'
VOLUME = 787 CF

FIRST FLUSH POND 2
TOP AREA = 340 SF
4:1 SIDE SLOPE
OVERFLOW ELEVATION = 5567.00
DEPTH = 1.0'
VOLUME = 611 CF

TEMPORARY ARMOURED STEEP SLOPE TRANSITION

EXISTING INLET

2-STORY BUILDING FFE = 5564.09'

Bleachers
Grass Outfield
Storage Containers
Dirt

MATCHLINE: SEE CG-102

KEYED NOTES

THESE KEYED NOTES ARE FOR USE ON GRADING AND DRAINAGE PLANS (NORTH AND SOUTH)

1. NEW PEDESTRIAN WALK AT ELEVATIONS SHOWN. ALL WALKS TO BE ADA ACCESSIBLE (5% MAX SLOPE, 2% MAX CROSS-SLOPE).

2. SLOPES WITHIN HANDICAP PARKING AREA TO MEET ADA REQUIREMENTS. MAX. SLOPE = 2% IN ANY DIRECTION.

3. NEW PAVED PARKING WITH CONCRETE CURB AND GUTTER AT ELEVATIONS SHOWN.

4. CONSTRUCT SHALLOW (12" DEPTH) FIRST FLUSH RETENTION POND THIS LOCATION. INSTALL ANGULAR ROCK TO DEFINE PERIMETER.

5. CONSTRUCT ANGULAR ROCK LINED STILLING BASIN.

6. GRADE TRANSITION SLOPES TO ACHIEVE GRADE DIFFERENCES SHOWN. MAXIMUM SLOPE = 5:1. SEE LANDSCAPE PLANS.

7. CONSTRUCT CONCRETE HEADWALL AT NEW STORM DRAIN OUTLET. SEE DRAINAGE DETAIL SHEET.

8. INSTALL PERCOLATION PIT THIS AREA. SEE DRAINAGE DETAIL SHEET.

9. 1' WIDE (BOTTOM WIDTH) 'U' SHAPED CONCRETE CHANNEL THROUGH PARKING ISLAND TO PASS FLOW.

10. PROVIDE 2' WIDE OPENING IN CURB TO PASS CONCENTRATED FLOW

11. NEW 1.0' WIDE CONCRETE SIDEWALK CULVERT AT RIM/FLOWLINE ELEVS SHOWN PER C.O.A. STD. DWG. 2236.

12. INSTALL STORM DRAIN SYSTEM THIS AREA. SEE DRAINAGE DETAIL SHEET FOR SIZES / SLOPES / INLET INFORMATION.

13. EXISTING STORM DRAIN SWALES DIRECT ALL SITE DISCHARGE TO EXISTING DRAINAGE CHANNEL AT SOUTHWEST CORNER OF PROPERTY.

14. CONSTRUCT NEW CONCRETE DUMPSTER PAD.

LEGEND

— — — EXISTING CONTOUR (1' INCREMENTS)
→ FLOW DIRECTION
—72— PROPOSED CONTOUR (1' INCREMENTS)
▨▨▨ PROPOSED EROSION CONTROL
▬ ▬ ▬ PROPOSED STORM DRAIN

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
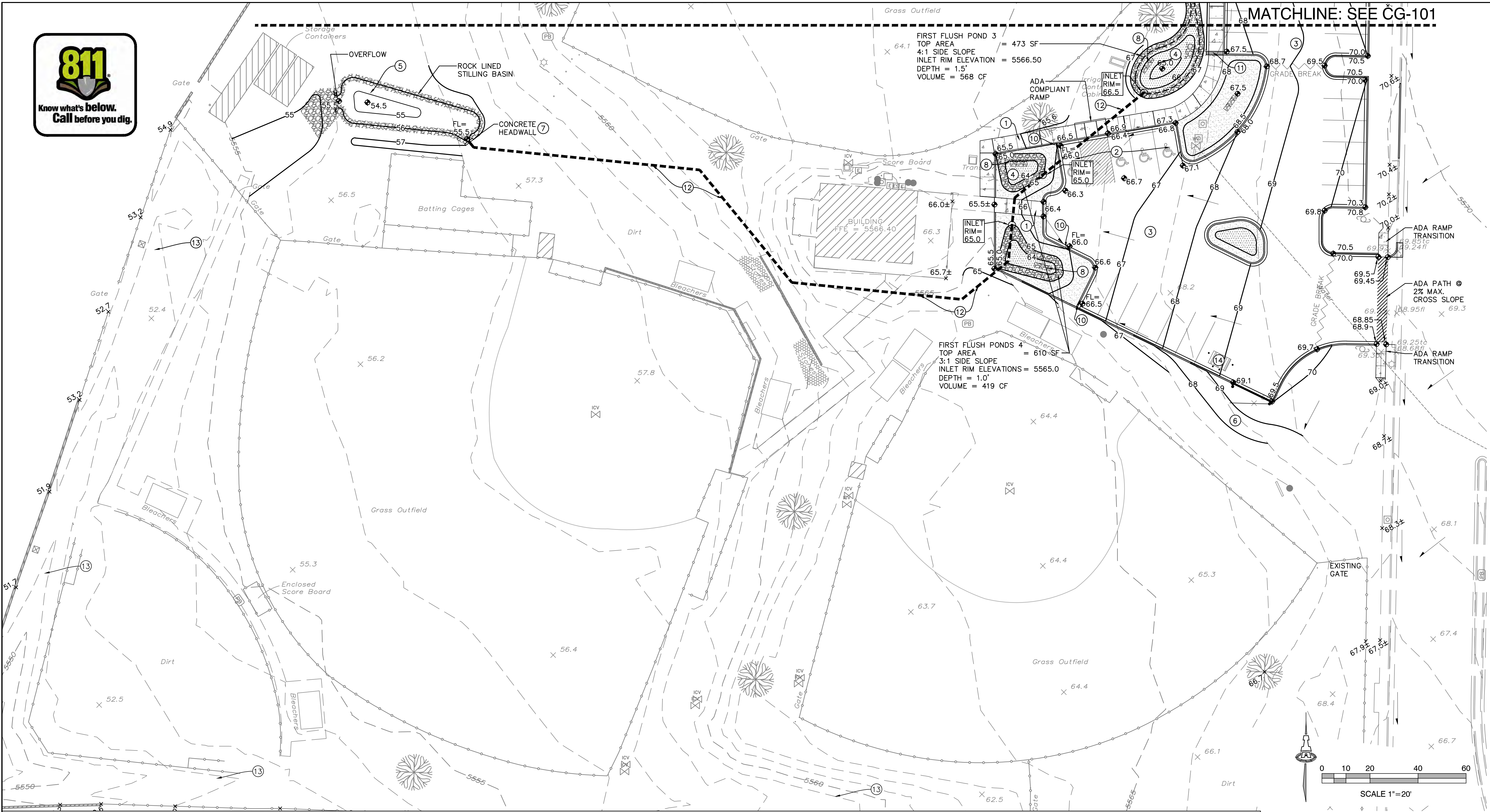Ph. 505-268-8828 www.iacivil.com
2085 CG-101.dwg   Jan 21,2015

MRWM
LANDSCAPE ARCHITECTS
Morrow Reardon Wilkinson Miller, Ltd.
210 La Veta NE   PHONE 505 268 2266
Albuquerque, NM 87108   WEB   mrwmla.com

CITY OF ALBUQUERQUE
STRATEGIC PLANNING AND DESIGN
PARKS AND RECREATION DEPARTMENT

MILE HIGH LITTLE LEAGUE SITE IMPROVEMENTS
GRADING AND DRAINAGE PLAN - NORTH

	DESIGNED BY	BJB
	DRAWN BY	BJB
	CHECKED BY	FCA

Design Review Committee   City Engineer Approval

City Project No.   Zone Map No.   Sheet Of
902202   K-21   4   11

RECORD DRAWINGS DATE:

811
Know what's below.
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OVERFLOW
ROCK LINED
STILLING BASIN
CONCRETE
HEADWALL
Storage Containers
Gate
Grass Outfield
Batting Cages
Bleachers
Dirt
Gate
Enclosed Score Board
Bleachers
Grass Outfield
Grass Outfield
Dirt
Scale Board

FIRST FLUSH POND 3
TOP AREA = 473 SF
4:1 SIDE SLOPE
INLET RIM ELEVATION = 5566.50
DEPTH = 1.5'
VOLUME = 568 CF

ADA COMPLIANT RAMP

INLET RIM= 65.0
INLET RIM= 66.5
INLET RIM= 65.0

BUILDING FFE = 5566.40

FIRST FLUSH PONDS 4
TOP AREA = 610 SF
3:1 SIDE SLOPE
INLET RIM ELEVATIONS = 5565.0
DEPTH = 1.0'
VOLUME = 419 CF

ADA RAMP TRANSITION
ADA PATH @ 2% MAX. CROSS SLOPE
ADA RAMP TRANSITION
EXISTING GATE
GRADE BREAK

SCALE 1"=20'
0 10 20 40 60

GENERAL NOTES

A. ALL WORK DETAILED ON THESE PLANS AND PERFORMED UNDER THIS CONTRACT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT. WHERE APPLICABLE, CITY OF ALBUQUERQUE STANDARDS APPLY.

B. THE CONTRACTOR SHALL ABIDE BY ALL STATE, LOCAL, AND FEDERAL LAWS, CODES, RULES AND REGULATIONS WHICH APPLY TO THE CONSTRUCTION OF THESE IMPROVEMENTS, INCLUDING EPA AND ADA REQUIREMENTS.

C. ALL SUBGRADE, OVEREXCAVATION, BACKFILL, AND FILL SHALL BE PLACED AND / OR COMPACTED PER THE GEOTECHNICAL REPORT AND CITY OF ALBUQUERQUE SPECIFICATIONS.

D. COORDINATE WORK WITH SITE PLAN, PAVING PLAN, DEMOLITION PLAN, AND LANDSCAPE PLAN.

E. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING OBSTRUCTIONS, AND CONDITION OF ALL EXISTING INFRASTRUCTURE PRIOR TO CONSTRUCTION. REPORT ALL DISCREPANCIES TO THE LANDSCAPE ARCHITECT AND VERIFY THE INTENT BEFORE PROCEEDING.

F. CONTRACTOR SHALL OBTAIN ALL REQUIRED INSPECTIONS OF THE WORK.

G. CONSTRUCTION ACTIVITY SHALL BE LIMITED TO THE PROPERTY AND/OR PROJECT LIMITS. ANY DAMAGE TO ADJACENT STRUCTURES RESULTING FROM THE CONSTRUCTION PROCESS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL BE RESPONSIBLE FOR DOCUMENTING EXISTING CONDITIONS PRIOR TO CONSTRUCTION.

H. CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS. EQUIPMENT SHALL ONLY OBSTRUCT DESIGNATED TRAFFIC LANES IF APPROPRIATE BARRICADING PERMITS HAVE BEEN OBTAINED.

I. THE CONTRACTOR SHALL PROVIDE A CONSTRUCTION TRAFFIC CONTROL AND SIGNING PLAN THAT CONFORMS TO THE LATEST EDITION OF THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND LOCAL REQUIREMENTS. THE CONTRACTOR SHALL OBTAIN BARRICADING PERMITS FROM THE APPROPRIATE AUTHORITIES PRIOR TO ANY CONSTRUCTION WORK ON / ADJACENT TO EXISTING STREETS.

J. THE CONTRACTOR SHALL MAINTAIN ALL BARRICADING AND CONSTRUCTION SIGNING AT ALL TIMES. THE CONTRACTOR SHALL VERIFY THE PROPER LOCATION OF ALL BARRICADING AT THE END AND BEGINNING OF EACH DAY.

K. PAVEMENT GRADES IN MARKED HANDICAPPED PARKING AREAS SHALL NOT EXCEED 2.0% IN ANY DIRECTION. FOR ALL ACCESSIBLE ROUTES, MAXIMUM ALLOWABLE CROSS SLOPE IS 2.0% AND MAXIMUM LONGITUDINAL SLOPE WITHOUT RAMP IS 5.0%. FOLLOW ALL ADA ACCESSIBILITY GUIDELINES OR CITY CODES, WHICHEVER IS MORE STRINGENT.

L. ALL TRASH, DEBRIS, & SURFACE VEGETATION SHALL BE CLEARED AND LEGALLY DISPOSED OF OFFSITE.

M. PROPOSED SPOT AND CONTOUR ELEVATIONS SHOWN REPRESENT TOP OF FINISH MATERIAL (I.E. TOP OF CONCRETE, TOP OF CONCRETE BUILDING PAD, TOP OF PAVEMENT MATERIAL, TOP OF LANDSCAPING MATERIAL, ETC.). CONTRACTOR SHALL GRADE, COMPACT SUBGRADE AND DETERMINE EARTHWORK ESTIMATES BASED ON ELEVATIONS SHOWN MINUS FINISH MATERIAL THICKNESSES.

N. MAXIMUM UNPROTECTED SLOPES SHALL BE 4:1.

O. EXISTING UTILITY LINES ARE SHOWN IN AN APPROXIMATE MANNER ONLY AND MAY BE INCOMPLETE OR OBSOLETE. SUCH LINES MAY OR MAY NOT EXIST WHERE SHOWN OR NOT SHOWN. CONTRACTOR SHALL CONTACT NM-811 FOR UTILITY LINE SPOTS TWO WORKING DAYS PRIOR TO CONDUCTING SITE FIELD WORK. CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL UTILITIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF NECESSARY DRY UTILITY ADJUSTMENTS.

P. A CURRENT STORMWATER CONTROL PERMIT, INCLUDING AN EROSION SEDIMENT CONTROL PLAN (E.S.C.) FOR EROSION AND SEDIMENT CONTROL IS REQUIRED FOR ALL CONSTRUCTION, DEMOLITION CLEARING, AND GRADING OPERATIONS THAT DISTURB THE SOIL ON ONE ACRE OR MORE OF LAND. OWNER WILL COORDINATE.

Q. POST-CONSTRUCTION MAINTENANCE FOR PRIVATE STORMWATER FACILITIES WILL BE THE RESPONSIBILITY OF THE FACILITIES OWNER. PERIODIC INSPECTION AND CERTIFICATIONS OF THE FACILITIES MAY BE REQUIRED BY THE CITY ENGINEER.

R. STORMWATER CONTROL MEASURES SHOWN ON THIS PLAN ARE REQUIRED TO PROVIDE MANAGEMENT OF 'FIRST FLUSH' (DEFINED AS THE 90TH PERCENTILE STORM EVENT OR 0.44" OF STORMWATER WHICH DISCHARGES DIRECTLY TO A PUBLIC STORM DRAINAGE SYSTEM).

S. ADJUST ANY RIMS OF EXISTING UTILITY FEATURES AS NECESSARY TO MATCH NEW GRADES. UTILITIES IN PAVED AREAS SHALL BE HS-25 TRAFFIC RATED.

T. PAVING AND ROADWAY GRADES SHALL BE ±0.1' FROM PLAN ELEVATIONS.

U. WHERE GRADES BETWEEN NEW AND EXISTING ARE SHOWN AS 'MATCH' OR '±', TRANSITIONS SHALL BE SMOOTH.

V. ALL EROSION PROTECTION TO BE FRACTURED FACE ROCK (F.F. ROCK) DEFINED AS 6" AVG. DIA. ANGULAR FACED ROCK PLACED OVER GEOTEX 501 NON-WOVEN GEOTEXTILE (O.E.). NOTE: IF OWNER DOES NOT WANT LOOSE ROCK, GROUTED ROCK OR WIRE ENCLOSED ROCK MAY BE SUBSTITUTED AT ALL AREAS REFERENCING F.F. ROCK EROSION PROTECTION. OWNER'S OPTION.

W. SIDESLOPES STEEPER THAN 5:1 MUST HAVE PERMANENT EROSION CONTROL (F.F. ROCK) INSTALLED, TYPICAL. NO SLOPE SHALL BE STEEPER THAN 3:1.

X. CONTRACTOR SHALL COMPLY WITH LOCAL REGULATIONS FOR RESEEDING OF DISTURBED AREAS. RESEEDING INSPECTION IS NOT INCLUDED AS PART OF ENGINEER'S CERTIFICATION OF SUBSTANTIAL COMPLIANCE.

Y. POND AND STORM DRAIN DESIGN PARAMETERS (TOP OF POND, BOTTOM OF POND, RIMS, INVERTS, PIPE SIZES, AREA OF POND, ETC.) TO BE STRICTLY ADHERED TO FOR CERTIFICATION PURPOSES.

Z. ENGINEER RECOMMENDS THAT OWNER MAINTAIN EROSION PROTECTION ELEMENTS. ENGINEER RECOMMENDS THAT OWNER INSPECT SITE YEARLY AND AFTER EACH RAINFALL TO IDENTIFY NEW AREAS OF EROSION AND INSTALL ADDITIONAL EROSION PROTECTION AS NEEDED BASED ON ACTUAL OCCURRENCES.

AA. MEASURES REQUIRED FOR EROSION AND SEDIMENT CONTROL SHALL BE INCIDENTAL TO THE PROJECT COST.

AB. IF THE SITE IS SMALL ENOUGH NOT TO REQUIRE A SWPPP/NPDES PERMIT (LESS THAN ONE ACRE), THE CONTRACTOR SHALL STILL BE RESPONSIBLE FOR USING EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S) TO ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PUBLIC RIGHT-OF-WAY.

MRWM
LANDSCAPE ARCHITECTS
Morrow Reardon Wilkinson Miller, Ltd.
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CITY OF ALBUQUERQUE
STRATEGIC PLANNING AND DESIGN
PARKS AND RECREATION DEPARTMENT

MILE HIGH LITTLE LEAGUE SITE IMPROVEMENTS
DRAINAGE AND GRADING PLAN – SOUTH

ISAACSON & ARFMAN, P.A.
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2085 CG-101.dwg   Jan 21,2015

Design Review Committee
City Engineer Approval
City Project No.   902202
Zone Map No.   K-21
Sheet 5 Of 11

DESIGNED BY: B.JB
DRAWN BY: B.JB
CHECKED BY: FCA

STORM DRAIN DESIGN

CONCRETE HEADWALL
12"ø OUTLET
INV=55.50

12"ø 4 LF
2.0%

12"ø 94.5 LF
2.58%

12"ø 45'BEND
INV=55.57

12"ø 45'BEND
INV=58.00

12"ø 80.6 LF
3.30%

12"ø 45'BEND
INV=60.00

12"ø 45'BEND
INV=60.80

12"ø 71.1 LF
1.13%

I#1 RIM=66.5
     INV=62.5

12"ø 55.4 LF
1.44%

I#2 RIM=65.0
     INV=61.7

12"ø 45'BEND
INV=61.50

12"ø 15 LF
1.42%

I#3 RIM=65.0
     INV=61.35

12"ø 11.5 LF
1.31%

12"ø 15.2 LF
0.99%

12"ø 25.1 LF
1.59%

12"ø 45'BEND
INV=61.20

GRADE BREAK

GRADE BREAK

CALCULATIONS

Based on Drainage Design Criteria for City of Albuquerque Section 22.2, DPM, Vol 2, dated Jan., 1993

BASIN NO.	1		DESCRIPTION	TO STORM DRAIN SYSTEM
Area of basin flows =	27366	SF		0.6 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)		
Weighted E	2.30	in.
Sub-basin Volume of Runoff (see formula above)		
V360	5248	CF
Sub-basin Peak Discharge Rate (see formula above)		
Qp	3.1	cfs

AREA DRAINING TO STORM DRAIN SYSTEM = 0.6
ACRES = 3.1 CFS

LAND TREATMENT	
A =	0%
B =	22%
C =	22%
D =	66%

FIRST FLUSH RETENTION PONDS
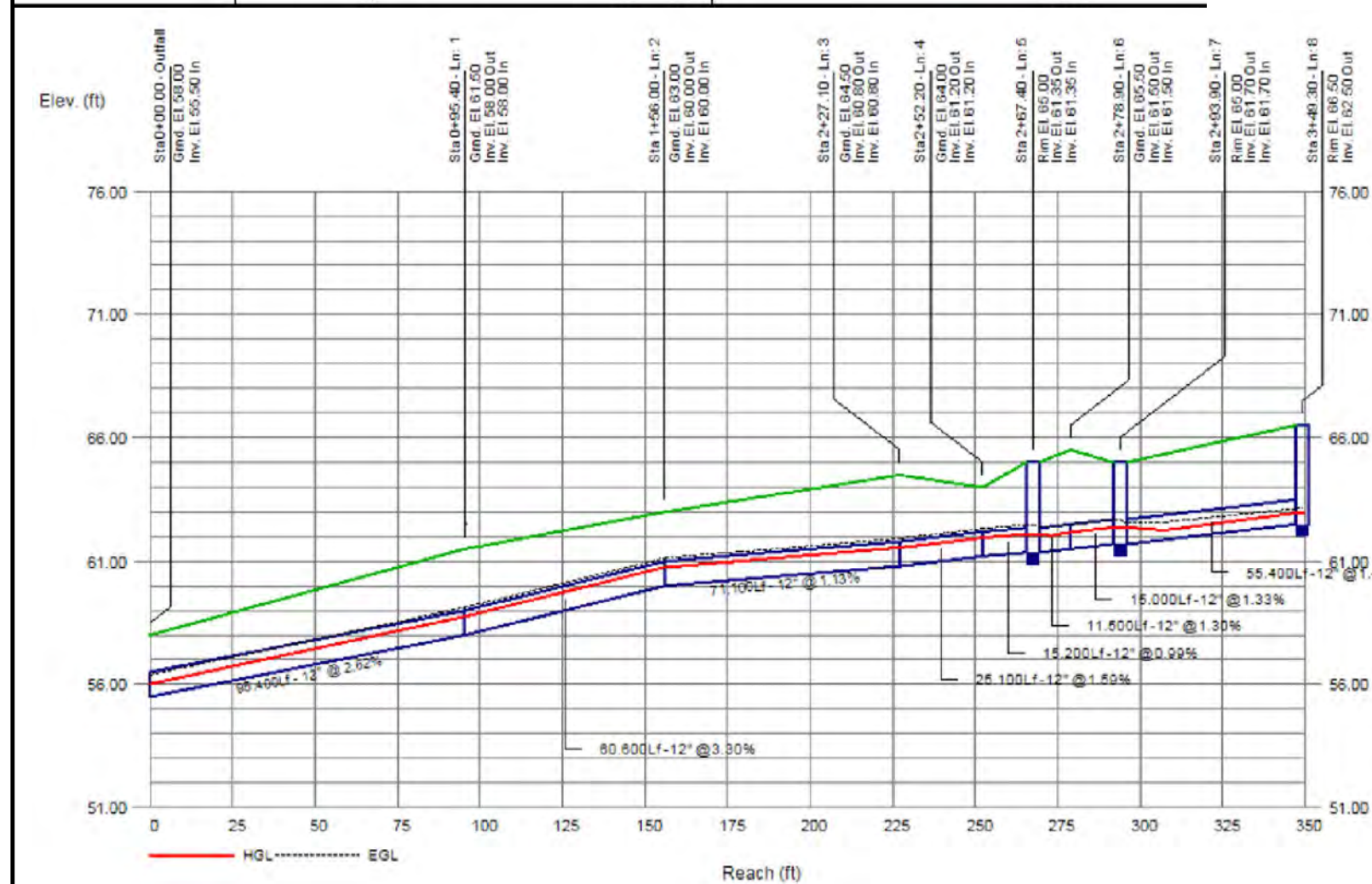
FF POND 1
Contour	Area	Volume
5560.00	1772	
5559.50	622	599 CF
5559.00	130	188 CF
TOTAL VOL.		787 CF

FF POND 2
Contour	Area	Volume
5567.00	882	
5566.00	340	611 CF
TOTAL VOL.		611 CF

FF POND 3
Contour	Area	Volume
5566.50	473	
5565.00	284	568 CF
TOTAL VOL.		568 CF

FF POND 4
Contour	Area	Volume
5565.00	609	
5564.00	229	419 CF
TOTAL VOL.		419 CF

ON-SITE

AREA OF DISTURBED: 65556 SF = 1.5

100-year, 6-hour

HISTORIC FLOWS:

	Treatment SF	%
Area A	0	0%
Area B	3277.8	5%
Area C	9833.4	15%
Area D	52444.8	80%
Total Area	65556	100%

DEVELOPED FLOWS:

	Treatment SF	%
Area A	0	0%
Area B	13760	21%
Area C	13760	21%
Area D	38036	58%
Total Area	65556	100%

EXCESS PRECIP:
Precip. Zone 4

$E_A = 0.80$
$E_B = 1.08$
$E_C = 1.46$
$E_D = 2.64$

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted } E = \frac{E_A A_A + E_B A_B + E_C A_C + E_D A_D}{A_A + A_B + A_C + A_D}$$

Historic E =	2.39 in.	Developed E =	2.06 in.

On-Site Volume of Runoff: $V360 = E*A / 12$

Historic V_{360} =	13029 CF	Developed V_{360} =	11280 CF

On-Site Peak Discharge Rate: $Qp = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D / 43,560$

For Precipitation Zone 4

$Q_{PA} = 2.20$ $Q_{PC} = 3.73$
$Q_{PB} = 2.92$ $Q_{PD} = 5.25$

Historic Q_p =	7.4 CFS	Developed Q_p =	6.7 CFS

TOTAL FIRST FLUSH RETENTION VOLUME =
(65556 SF * 58% * 0.34" / 12 = 1077 CF

REQUIRED FIRST FLUSH RETENTION POND VOLUME = 1077 CF
PROVIDED FIRST FLUSH RETENTION POND VOLUME = 2385 CF

CALCULATION KEYMAP

AREA INCLUDED IN CALCULATIONS

FIRST FLUSH POND #1
FIRST FLUSH POND #2
FIRST FLUSH POND #3
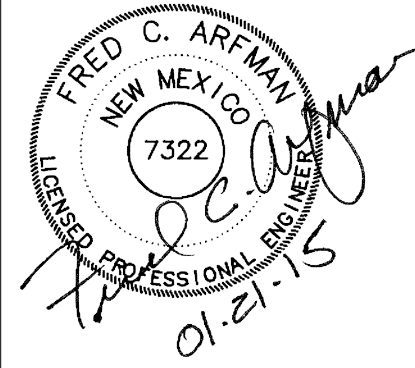FIRST FLUSH POND #4

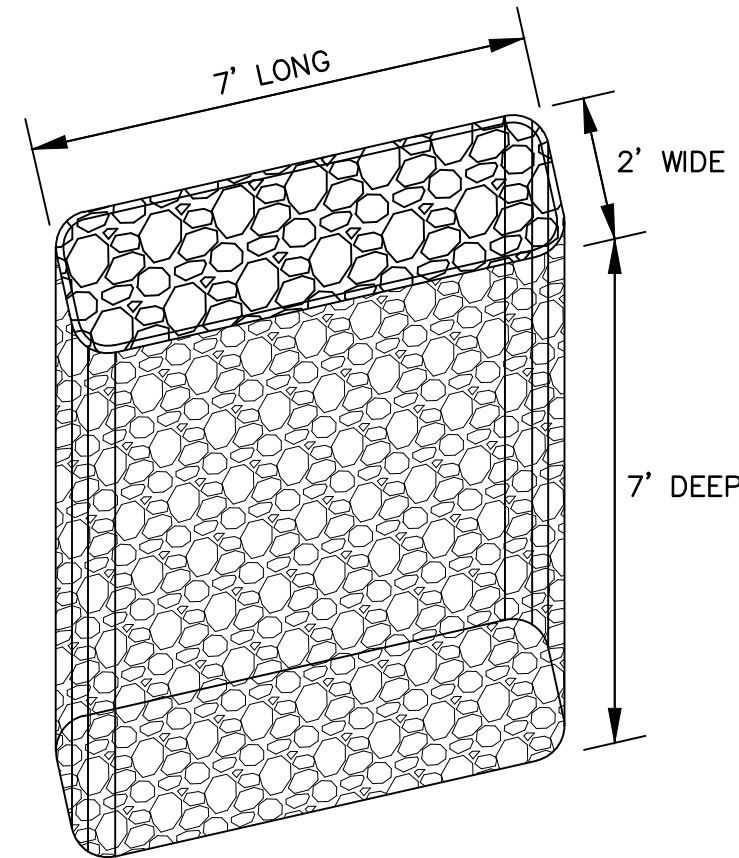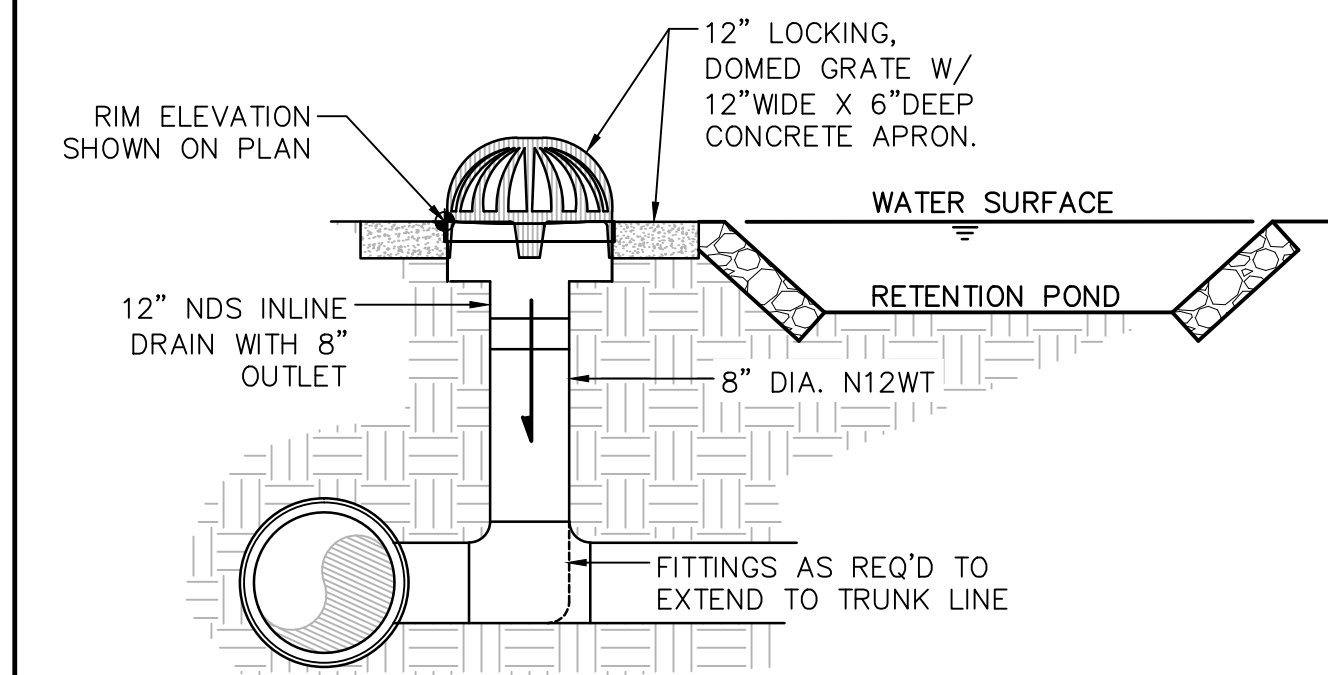## STORM DRAIN LEGEND
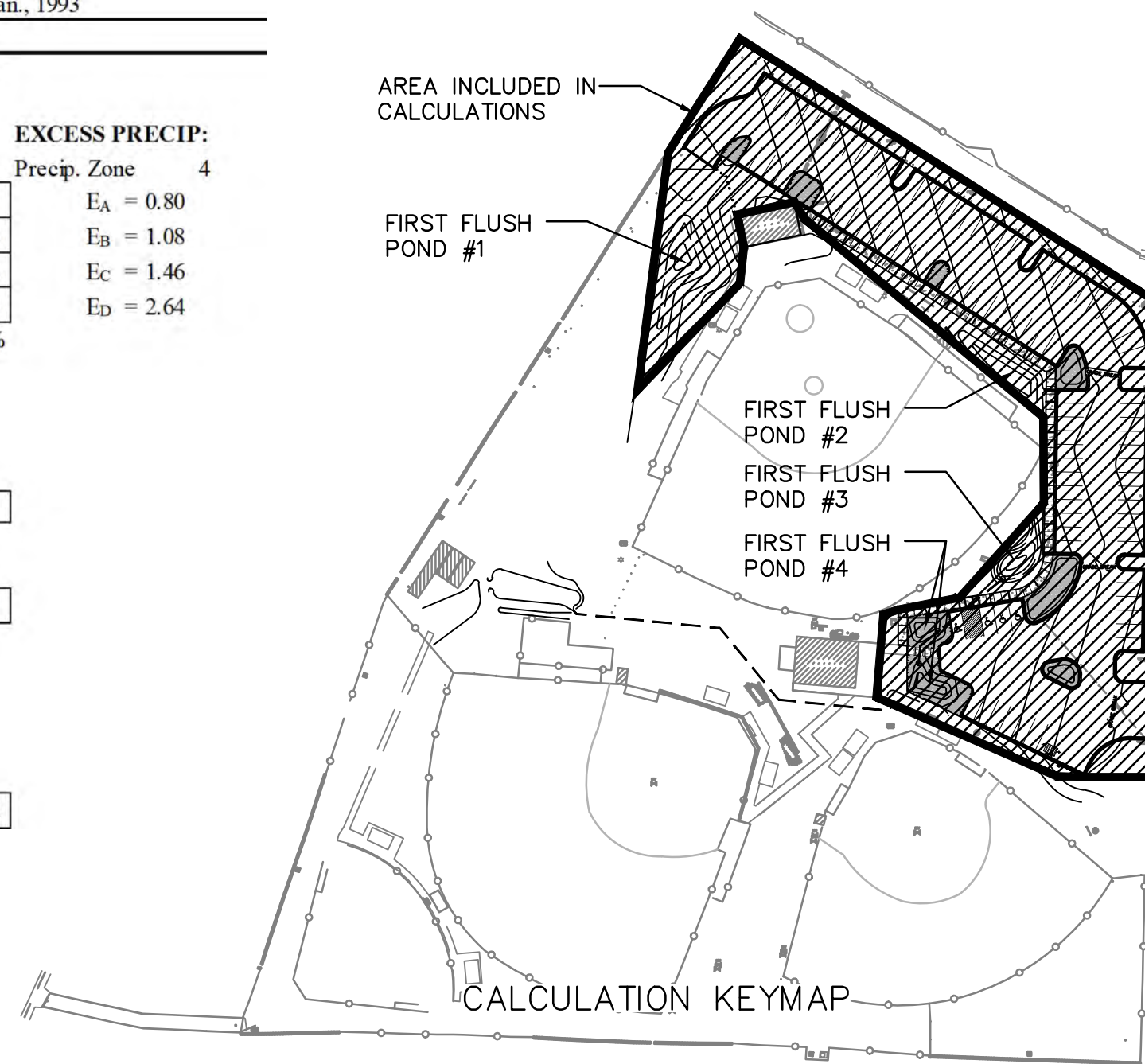
I# INLINE DRAIN WITH DOME GRATE
ALL INLETS:
- 12" DIAMETER ADS INLINE DRAIN WITH 8" OUTLET
- 12" LOCKING DOMED GRATE
- 12" WIDE X 6" DEEP CONCRETE COLLAR

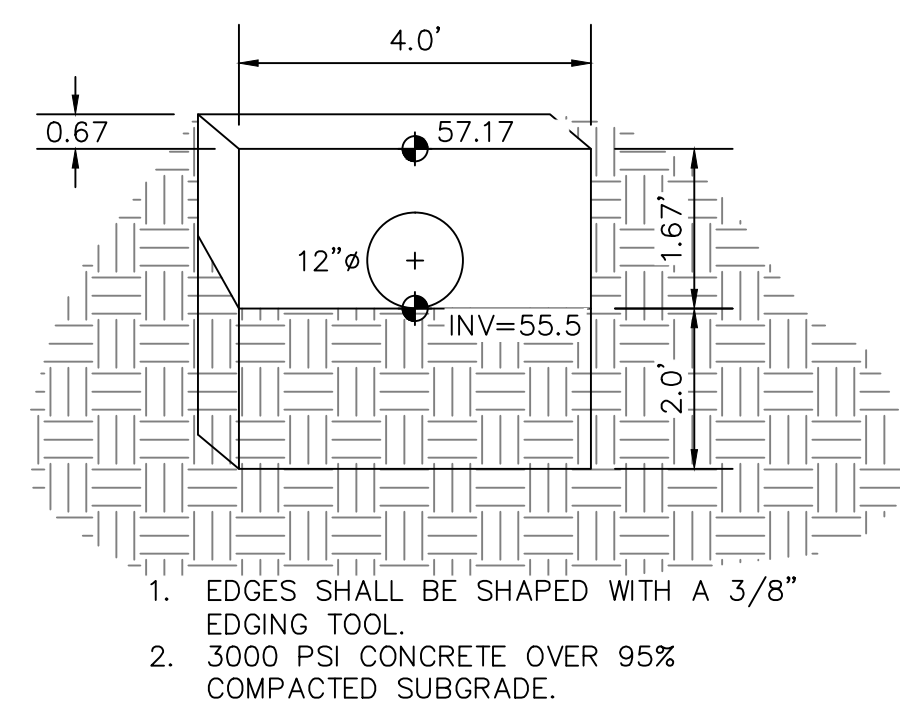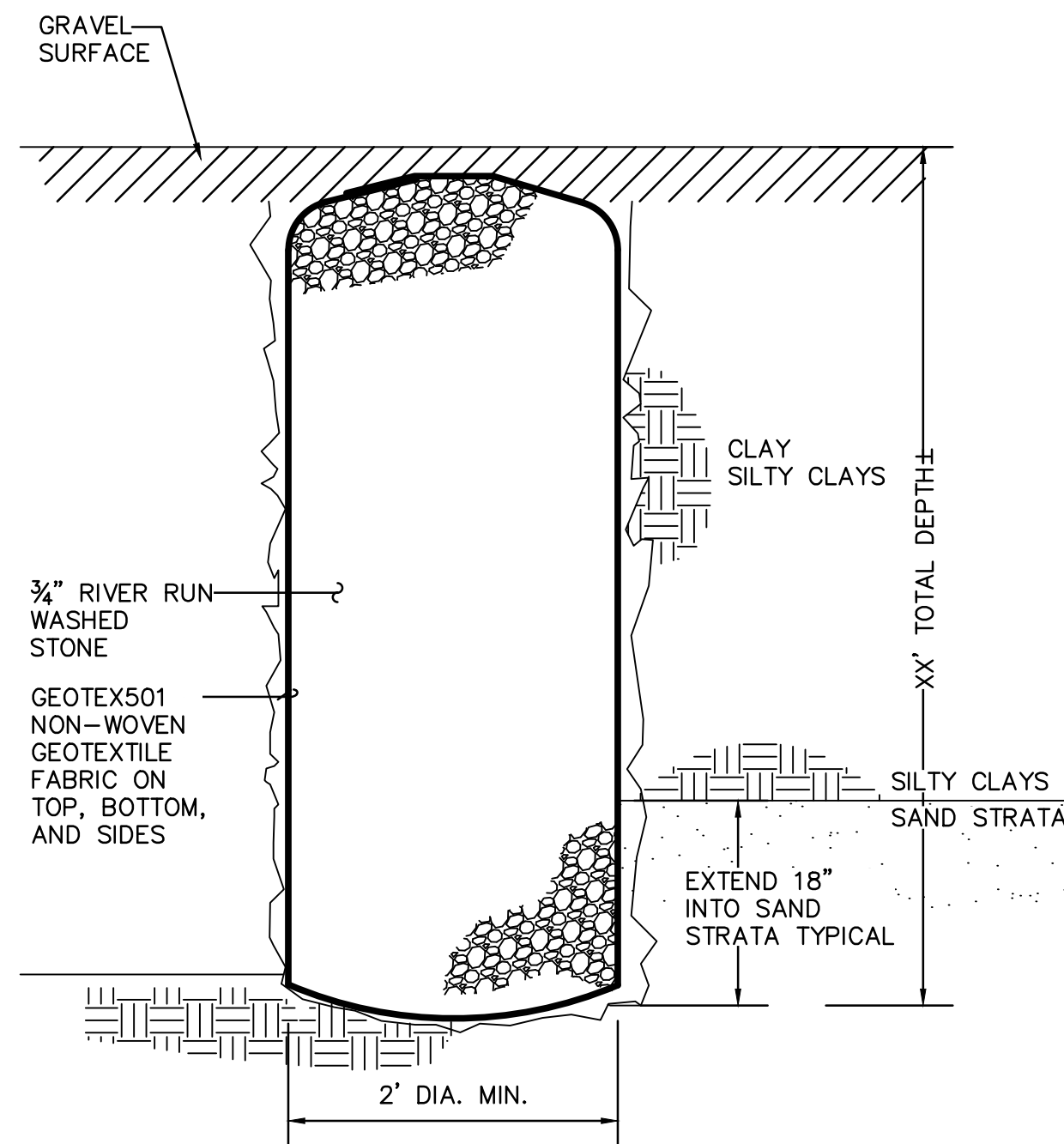NOTE: RIM ELEVATIONS SHOWN REPRESENT WATER SURFACE OF RETENTION POND. INSTALL ALL INLETS AT RIM AND INVERT ELEVATIONS SHOWN.

GENERAL NOTES

A. ALL PRIVATE STORM DRAIN LINES AND FITTINGS TO BE ADS N-12WT (WATERTIGHT) UNLESS NOTED.

B. INSTALL ALL STORM DRAIN INLETS AND PIPE PER MANUFACTURER'S SPECIFICATIONS AND DETAILS.

C. STORM DRAIN SYSTEM WILL REQUIRE REGULAR MAINTENANCE TO ENSURE PROPER FUNCTIONING DURING STORM EVENTS. ENGINEER RECOMMENDS THAT OWNER PUT IN PLACE INSPECTION AND MAINTENANCE REQUIREMENTS SCHEDULED TO OCCUR MONTHLY AND AFTER EACH STORM EVENT.

D. NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS ENCOUNTERED DURING CONSTRUCTION.

E. ALL CONCRETE COLLARS PER COA STD DWG #2461.

A3 'U' SHAPED CHANNEL
SCALE: N.T.S.

6" 1'-0" 6"
6"
6"

1. EDGES SHALL BE SHAPED WITH A 3/8" EDGING TOOL.
2. CONSTRUCTION CONTROL JOINTS AT 6' O.C.

A4 INLINE DRAIN INLET
SCALE: N.T.S.

NOTE: RIM ELEVATIONS SHOWN REPRESENT WATER SURFACE OF RETENTION POND. INSTALL ALL INLETS AT RIM AND INVERT ELEVATIONS SHOWN.

RIM ELEVATION SHOWN ON PLAN

12" LOCKING, DOMED GRATE W/ 12" WIDE X 6" DEEP CONCRETE APRON.

WATER SURFACE

12" NDS INLINE DRAIN WITH 8" OUTLET

8" DIA. N12WT

RETENTION POND

FITTINGS AS REQ'D TO EXTEND TO TRUNK LINE

I#

B4 PERCOLATION TRENCH
SCALE: N.T.S.

LOCATE CLAY LAYER BELOW SURFACE GRADE. MAY VARY BASED ON LOCATION OF INFILTRATION PIT.

7' LONG
2' WIDE
7' DEEP

TYPICAL DIMENSIONS

GRAVEL SURFACE

CLAY SILTY CLAYS

¾" RIVER RUN WASHED STONE

GEOTEX501 NON-WOVEN GEOTEXTILE FABRIC ON TOP, BOTTOM, AND SIDES

"XX" TOTAL DEPTH±

SILTY CLAYS SAND STRATA

EXTEND 18" INTO SAND STRATA TYPICAL

2' DIA. MIN.

D3 CONCRETE HEADWALL
SCALE: N.T.S.

4.0'
0.67
57.17
12"ø
INV=55.5
1.67
2.0'

1. EDGES SHALL BE SHAPED WITH A 3/8" EDGING TOOL.
2. 3000 PSI CONCRETE OVER 95% COMPACTED SUBGRADE.