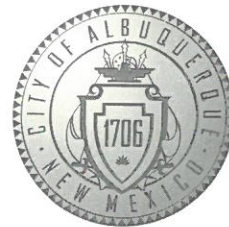


CITY OF ALBUQUERQUE



March 14, 2018

J. Graeme Means, P.E.
High Mesa Consulting Group
6010 B Midway Park Blvd NE
Albuquerque, NM 87109

RE: **Mark 3S Holly Development**
9300 Holly NE
Grading and Drainage Plan
Engineer's Stamp Date 3/8/18 (File: C20D062)

Dear Mr. Means:

Based on the information provided in your submittal received on 3/8/18, this plan is approved for Grading Permit, Building Permit, and Work Order.

Prior to Certificate of Occupancy:

1. The Private Facility Drainage Covenant must be recorded with Bernalillo County and a copy included with the drainage certification.
2. Either a recorded SIA with financial guarantee or City acceptance and close-out of the public Work Order is required.

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: _____ **Building Permit #:** _____ **City Drainage #:** _____
DRB#: _____ **EPC#:** _____ **Work Order#:** _____
Legal Description: _____
City Address: _____

Engineering Firm: _____ **Contact:** _____
Address: _____
Phone#: _____ **Fax#:** _____ **E-mail:** _____

Owner: _____ **Contact:** _____
Address: _____
Phone#: _____ **Fax#:** _____ **E-mail:** _____

Architect: _____ **Contact:** _____
Address: _____
Phone#: _____ **Fax#:** _____ **E-mail:** _____

Other Contact: _____ **Contact:** _____
Address: _____
Phone#: _____ **Fax#:** _____ **E-mail:** _____

Check all that Apply:

DEPARTMENT:

____ HYDROLOGY/ DRAINAGE
 ____ TRAFFIC/ TRANSPORTATION
 ____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

____ ENGINEER/ ARCHITECT CERTIFICATION
 ____ CONCEPTUAL G & D PLAN
 ____ GRADING PLAN
 ____ DRAINAGE MASTER PLAN
 ____ DRAINAGE REPORT
 ____ CLOMR/LOMR
 ____ TRAFFIC CIRCULATION LAYOUT (TCL)
 ____ TRAFFIC IMPACT STUDY (TIS-NIA)
 ____ EROSION & SEDIMENT CONTROL PLAN (ESC)
 ____ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
 ____ CERTIFICATE OF OCCUPANCY
 ____ PRELIMINARY PLAT APPROVAL
 ____ SITE PLAN FOR SUB'D APPROVAL
 ____ SITE PLAN FOR BLDG. PERMIT APPROVAL
 ____ FINAL PLAT APPROVAL
 ____ SIA/ RELEASE OF FINANCIAL GUARANTEE
 ____ FOUNDATION PERMIT APPROVAL
 ____ GRADING PERMIT APPROVAL
 ____ SO-19 APPROVAL
 ____ PAVING PERMIT APPROVAL
 ____ GRADING/ PAD CERTIFICATION
 ____ WORK ORDER APPROVAL
 ____ CLOMR/LOMR
 ____ PRE-DESIGN MEETING
 ____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ____ Yes ____ No

DATE SUBMITTED: _____ **By:** _____

COA STAFF: _____ ELECTRONIC SUBMITTAL RECEIVED: ____

DRAINAGE PLAN

I. EXECUTIVE SUMMARY AND INTRODUCTION

THE PROPOSED MARK 3S HOLLY EXPANSION DEVELOPMENT IS LOCATED WITHIN THE LA CUERVA SECTOR PLAN AREA OF NORTH ALBUQUERQUE ACRES. THE EXPANSION INCORPORATES ADDITIONAL PROPERTY WEST OF THE EXISTING DEVELOPMENT TO EXPAND THE EXISTING SCHOOL CAMPUS. THE SITE DEVELOPMENT PLANS FOR THE PROPOSED EXPANSION WERE APPROVED THROUGH EPC AND DRB AS AN AMENDMENT TO A PREVIOUSLY APPROVED PLAN. A CONCEPTUAL GRADING PLAN WAS INCLUDED IN THE EPC SET AND THIS SUBMITTAL IS CONSISTENT WITH THAT PLAN. MOST OF THE REQUIRED PUBLIC INFRASTRUCTURE IN HOLLY AVENUE NE HAS BEEN CONSTRUCTED BY PREVIOUS PROJECTS DESIGNED AND INSPECTED BY THIS ENGINEER (LOS VIGILS, VINEYARD COURT ESTATES, MARK 3S HOLLY IMPROVEMENTS). THE REMAINING PORTIONS REQUIRED FOR THIS PROJECT ARE THE PERMANENT HALF-WIDTH PAVING AND THE CONSTRUCTION OF TWO STORM INLETS. THE SITE DISCHARGES FREELY TO PUBLIC DRAINAGE IMPROVEMENTS IN HOLLY THAT WERE DESIGNED AND SIZED FOR THIS DISCHARGE. SITE RUNOFF WILL BE DIRECTED TO DEPRESSED WATER QUALITY AREAS PRIOR TO DISCHARGING TO HOLLY. CONCURRENT WITH THE DRB SITE PLAN APPROVALS, A PLATTING ACTION WAS ALSO DONE TO SUPPORT THE LOT LINE ELIMINATIONS, NEW LOTS LINES AND VACATION OF 2 FEET OF HOLLY RIGHT-OF-WAY BEING INCORPORATED INTO THE SITE. THE PURPOSE OF THIS PLAN IS TO OBTAIN BUILDING PERMIT APPROVAL.

II. PROJECT DESCRIPTION:

AS SHOWN BY VICINITY MAP C-20 LOCATED HEREON, THE SITE IS LOCATED IN THE NORTH ALBUQUERQUE ACRES SECTION OF ALBUQUERQUE, ON HOLLY AVE NE BETWEEN VENTURA ST. N.E. AND HOLBROOK STREET N.E. THE EXISTING LEGAL DESCRIPTION IS TRACT A-1 MARK 3S HOLLY DEVELOPMENT. THE SITE IS ZONED SU-2/MIXED USE AND THE PROPOSED DEVELOPMENT IS CONSISTENT WITH THE ZONING AND THE APPROVED SITE DEVELOPMENT PLANS.

AS SHOWN BY PANEL 141 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS, BERNALILLO COUNTY, NEW MEXICO, AND INCORPORATED AREAS, DATED SEPTEMBER 26, 2008, THE SITE DOES NOT LIE WITHIN THE VICINITY OF ANY DESIGNATED FLOOD HAZARD ZONES.

III. BACKGROUND DOCUMENTS

THE FOLLOWING IS A LIST OF DOCUMENTS RELATED TO THE SITE AND SURROUNDING AREA. THIS LIST MAY NOT BE INCLUSIVE, HOWEVER, REPRESENTS A SUMMARY OF RELEVANT PLANS AND DOCUMENTS WHICH ARE KNOWN TO THE ENGINEER AT THE TIME OF PLAN PREPARATION.

- A. THE "NORTH AND SOUTH DOMINGO BACA ARROYO AND PASEO DEL NORTE CORRIDOR DRAINAGE MANAGEMENT PLAN" PREPARED FOR AMAFCA BY RESOURCE TECHNOLOGY, INC. (RTI) DATED DECEMBER, 1991. THIS PLAN HAS BEEN ADOPTED BY AMAFCA AS A GUIDELINE FOR DRAINAGE MANAGEMENT WITHIN THIS AREA WHICH INCLUDES THE NORTH DOMINGO BACA ARROYO (NDBA). AMAFCA RESOLUTION 1992-3 DATED JANUARY 03, 1992 FORMALLY ADOPTED THIS PLAN WHICH IDENTIFIES THE EXTENSION OF PERMANENT DRAINAGE IMPROVEMENTS WITHIN THE NDBA CORRIDOR, AND ESTABLISHED DEVELOPED DRAINAGE BASIN BOUNDARIES WITHIN THE PLAN AREAS. AS SHOWN BY THIS PLAN, THIS SITE IS IDENTIFIED TO DRAIN TO PUBLIC STORM DRAIN IMPROVEMENTS CONSTRUCTED WITHIN THE HOLLY RIGHT-OF-WAY.
- B. REQUEST FOR LETTER OF MAP REVISION (LOMR) FOR THE NORTH DOMINGO BACA ARROYO CARMEL AVENUE STORM DRAIN EXTENSION PREPARED BY JMA DATED 12/08/2003 AND APPROVED BY FEMA 03/23/2004 (FEMA CASE NUMBER 04-06-671P). THIS LOMR SUPPORTS THE COMPLETED NORTH DOMINGO BACA ARROYO CARMEL AVENUE STORM DRAIN EXTENSION COST SHARE PROJECT BY AMAFCA UPON FEMA APPROVAL, AND IT REMOVED THE ASSOCIATED FLOODPLAIN DESIGNATION FROM THE NDBA WEST OF A POINT MIDBLOCK BETWEEN HOLBROOK STREET AND EUBANK.
- C. DRAINAGE REPORT FOR "LOS VIGILS SUBDIVISION" BY HIGH MESA CONSULTING GROUP FORMERLY KNOWN AS JEFF MORTENSEN & ASSOCIATES, INC, DATED 12/31/2002, HYDROLOGY FILE C20/D41. THIS PLAN THE CONSTRUCTION OF A 45 LOT RESIDENTIAL SUBDIVISION LOCATED TO THE NORTH OF THIS PROJECT ON THE NORTH SIDE OF HOLLY. THE LOS VIGILS PROJECT EXTENDED THE HOLLY STORM DRAIN ACROSS THE FRONTAGE OF THIS SITE AND DESIGNED THE REQUIRED INLETS ON THE SOUTH SIDE WHICH MUST NOW BE CONSTRUCTED. A BASIN MAP, STREET HYDRAULICS AND STORM DRAIN HYDRAULICS ANALYSIS WERE INCLUDED IN THIS SUBMITTAL TO ADDRESS THE EXTENSION OF HOLLY TO HOLBROOK ALL DEVELOPMENT ON HOLLY, INCLUDING THIS SITE.
- D. GRADING PLAN FOR "DESERT RIDGE OFFICE PARK" BY JMA, HYDROLOGY FILE C20/D51. THIS PLAN WAS APPROVED FOR THE UPSTREAM SITE IMMEDIATELY TO THE EAST (PROJECT # 1003277).
- E. DRAINAGE REPORT FOR "VINEYARD COURT ESTATES" BY HIGH MESA CONSULTING GROUP FORMERLY KNOWN AS JEFF MORTENSEN & ASSOCIATES, INC, DATED 08/21/2003. THIS PLAN WAS FOR THE CONSTRUCTION OF A 45 LOT RESIDENTIAL SUBDIVISION LOCATED TO THE NORTHEAST OF THIS PROJECT ON THE NORTH SIDE OF HOLLY. THE VINEYARD COURT ESTATES PROJECT EXTENDED THE HOLLY STORM DRAIN AND STREET IMPROVEMENTS ACROSS ITS FRONTAGE. A BASIN MAP, STREET HYDRAULICS AND STORM DRAIN HYDRAULICS ANALYSIS WERE INCLUDED IN THIS SUBMITTAL TO ADDRESS THE EXTENSION OF HOLLY TO HOLBROOK AND ALL DEVELOPMENT ON HOLLY, INCLUDING THIS SITE.
- F. GRADING AND DRAINAGE PLANS FOR MARK 3S HOLLY DEVELOPMENT BY HIGH MESA CONSULTING GROUP FORMERLY KNOWN AS JEFF MORTENSEN & ASSOCIATES, INC DATED 05/11/2015. THIS PLAN FOLLOWED THE DRAINAGE OF CONCEPT OF FREE DISCHARGE TO THE PERMANENT PUBLIC HOLLY PAVING AND STORM DRAINAGE IMPROVEMENTS WHICH IS CONSISTENT WITH PREVIOUSLY APPROVED PLANS FOR NDBA DEVELOPMENT WHICH INCLUDES THIS SITE. THE DRAINAGE CONCEPTS PRESENTED THEREIN WILL BE CONSISTENT WITH THOSE NOW PROPOSED.

THE PROPOSED CONSTRUCTION DRAINING DIRECTLY AND FREELY TO PERMANENT HOLLY AVENUE NE DRAINAGE IMPROVEMENTS AS PROPOSED AND DESCRIBED HEREIN IS IN ACCORDANCE WITH THE POLICIES AND REQUIREMENTS OF THE ABOVE LISTED DOCUMENTS, AND IS CONSISTENT WITH THE CONCEPTS PREVIOUSLY ESTABLISHED BY THE CITY AND AMAFCA FOR NDBA DEVELOPMENT.

IV. EXISTING CONDITIONS:

THE DEVELOPMENT TO BE EXPANDED IS CURRENTLY DEVELOPED AS A MONTESSORI SCHOOL WITH PAVED PARKING, UTILITY AND LANDSCAPING IMPROVEMENTS. THE ADJACENT LOT TO BE EXPANDED INTO WAS PREVIOUSLY DEVELOPED INTO A LANDSCAPING BUSINESS. EXISTING RUNOFF FOR BOTH SITES DRAIN TO HOLLY AVE NE TO EXISTING DOWNSTREAM PUBLIC STORM DRAIN FACILITIES THAT WERE CONSTRUCTED BY LOS VIGILS AND THE PREVIOUS MARK 3S HOLLY DEVELOPMENT (REF. C & H). HOLLY AVE NE TO THE NORTH IS A PUBLIC STREET WITH HALF-WIDTH (NORTH) PERMANENT PAVING IMPROVEMENTS. THE UPSTREAM SECTION OF HOLLY HAS PERMANENT FULL WIDTH IMPROVEMENTS, CONSTRUCTED BY VINEYARD COURT ESTATES, CPN 718781. PASEO DEL NORTE TO THE SOUTH IS A FULLY DEVELOPED PUBLIC STREET WITH A DRAINAGE DITCH, PUBLIC STORM DRAIN, AND PAVED ASPHALT TRAIL.

OFFSITE FLOWS DO NOT ENTER THE SITE FROM THE DEVELOPED SITE TO THE EAST OR FROM THE PUBLIC STREETS TO THE NORTH AND SOUTH WHICH EXHIBIT PARALLEL TOPOGRAPHY. THE UNDEVELOPED SITE TO THE WEST IS TOPOGRAPHICALLY LOWER AND INCAPABLE OF CONTRIBUTING OFFSITE FLOWS.

V. DEVELOPED CONDITIONS

THE PROPOSED IMPROVEMENTS CONSIST OF DEMOLITION AND REMOVAL OF EXISTING LANDSCAPING BUSINESS TO ALLOW FOR EXPANSION OF CURRENT MONTESSORI SCHOOL CAMPUS. THE EXPANSION WILL INCLUDE A NEW INFANT DAYCARE BUILDING WITH PAVED PARKING, UTILITY, AND LANDSCAPING IMPROVEMENTS. THE SITE WILL CONTINUE TO DISCHARGE FREELY INTO HOLLY AVE NE. PRIOR TO DISCHARGING OFF SITE, RUNOFF WILL BE DIRECTED TO LANDSCAPED AREAS DEPRESSED TO THE MAXIMUM EXTENT POSSIBLE TO RETAIN THE 80TH PERCENTILE FIRST FLUSH FOR WATER QUALITY AND ROOF DRAINAGE WILL BE PIPED TO A DIRECT STORM DRAIN CONNECTION BUT WILL FIRST BE ROUTED THROUGH A STORM WATER QUALITY MANHOLE TO TREAT FIRST FLUSH.

AS DEMONSTRATED BY THE STREET HYDRAULIC, STORM DRAIN AND INLET CALCULATIONS AND ANALYSIS CONTAINED WITHIN THE DRAINAGE REPORTS FOR LOS VIGILS AND VINEYARD COURT ESTATES, THE HOLLY STORM DRAIN AND STREET IS DESIGNED TO ACCEPT THE FREE DISCHARGE OF FULLY DEVELOPED RUNOFF FROM THE PROPERTIES FRONTING ON HOLLY, INCLUDING THIS SITE. ALL IMPROVEMENTS PROPOSED HEREIN ARE CONSISTENT WITH THE PREVIOUSLY APPROVED DEVELOPMENT PLANS FOR THIS SECTION OF HOLLY.

VI. GRADING PLAN

THE GRADING PLAN SHOWS: 1) EXISTING GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1 FT INTERVALS FROM THE HMCG TOPO SURVEY DATED 01/10/2017 & 05/16/2017, 2) PROPOSED GRADES INDICATED BY FINISHED FLOOR ELEVATIONS, SPOT ELEVATIONS, AND CONTOURS AT 1 FT INTERVALS, 3) THE LIMIT AND CHARACTER OF THE EXISTING IMPROVEMENTS, 4) THE LIMIT AND CHARACTER OF THE PROPOSED IMPROVEMENTS, AND 5) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES.

VII. CALCULATIONS

THE CALCULATIONS, REPRODUCED FORM THE APPROVED CONCEPTUAL GRADING PLAN AND WHICH APPEAR HEREON, ANALYZE BOTH THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT. THE PROCEDURE FOR 40-ACRE AND SMALLER BASINS, AS SET FORTH IN THE REVISION OF SECTION 22.2, HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY, 1993, HAS BEEN USED TO QUANTIFY THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED. AS DEMONSTRATED BY THE LOMR AND APPROVED DRAINAGE REPORTS PREPARED BY THIS OFFICE TO SUPPORT THE CONSTRUCTED AMAFCA NDBA PROJECT AND FOR LOS VIGILS, VINEYARD COURT ESTATES, AND THE DESERT RIDGE OFFICE PARK PROJECT (SEE REFERENCES), THE PUBLIC STORM DRAIN IN HOLLY IS SIZED FOR FREE DISCHARGE OF FULLY DEVELOPED RUNOFF FROM THIS SITE.

IX. CONCLUSION

1) THE PROPOSED SITE IMPROVEMENTS AND DRAINAGE CONCEPT ARE CONSISTENT WITH THE DEVELOPMENT CRITERIA ESTABLISHED BY PREVIOUSLY APPROVED PLANS FOR NDBA DEVELOPMENT AND THIS SPECIFIC PROJECT. 2) DEVELOPED RUNOFF FROM THIS SITE WILL DRAIN FREELY TO PERMANENT PUBLIC HOLLY PAVING AND STORM DRAINAGE IMPROVEMENTS, WHICH WERE CONSTRUCTED FOR LOS VIGILS AND VINEYARD COURT ESTATES. 3) THERE ARE NO DPM DESIGN VARIANCES, DRAINAGE EASEMENTS OR DRAINAGE COVENANTS ANTICIPATED AT THIS TIME.

CALCULATIONS



I. SITE CHARACTERISTICS

A. PRECIPITATION ZONE = 3
B. P_{E,100} = P₃₆₀ = 2.60

C. TOTAL PROJECT AREA (A_T) = 108,525 SF
2.49 AC

D. LAND TREATMENTS

1. EXISTING LAND TREATMENT

a. BASIN A	AREA (SF/AC)		
Total Area	57,025	1.31	%
Treatment A Area			
Treatment B Area			
Treatment C Area	42,769	0.98	75
Treatment D Area	14,256	0.33	25

b. BASIN B	AREA (SF/AC)		
Total Area	51,500	1.18	%
Treatment A Area			
Treatment B Area	5,150	0.12	10
Treatment C Area	5,150	0.12	10
Treatment D Area	41,200	0.95	80

2. DEVELOPED LAND TREATMENT

a. BASIN A	AREA (SF/AC)		
Total Area	75,515	1.73	%
Treatment A Area			
Treatment B Area			
Treatment C Area	17,300	0.40	23
Treatment D Area	58,215	1.34	77

b. BASIN B	AREA (SF/AC)		
Total Area	33,410	0.77	%
Treatment A Area			
Treatment B Area			
Treatment C Area	5,025	0.12	15
Treatment D Area	28,385	0.65	85

II. HYDROLOGY

A. EXISTING CONDITION

1. BASIN A

a. VOLUME

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$
$$E_W = ((0.00 * 0.66) + (0.00 * 0.92) + (0.98 * 1.29) + (0.33 * 2.36)) / 1.31 = 1.56 \text{ IN}$$
$$V_{100} = (E_W / 12) A_T = (1.56 / 12) 1.31 = 0.1703 \text{ AC-FT} = 7,420 \text{ CF}$$

b. PEAK DISCHARGE

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$
$$Q_p = Q_{100} = ((0.00 * 1.87) + (0.00 * 2.6) + (0.98 * 3.45) + (0.33 * 5.02)) = 5.0 \text{ CFS}$$

2. BASIN B

a. VOLUME

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$
$$E_W = ((0.00 * 0.66) + (0.12 * 0.92) + (0.12 * 1.29) + (0.95 * 2.36)) / 1.18 = 2.11 \text{ IN}$$
$$V_{100} = (E_W / 12) A_T = (2.11 / 12) 1.18 = 0.2075 \text{ AC-FT} = 9,040 \text{ CF}$$

b. PEAK DISCHARGE

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$
$$Q_p = Q_{100} = ((0.00 * 1.87) + (0.12 * 2.6) + (0.12 * 3.45) + (0.95 * 5.02)) = 5.5 \text{ CFS}$$

B. DEVELOPED CONDITION

1. BASIN A

a. VOLUME

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$
$$E_W = ((0.00 * 0.66) + (0.00 * 0.92) + (0.40 * 1.29) + (1.34 * 2.36)) / 1.73 = 2.11 \text{ IN}$$
$$V_{100} = (E_W / 12) A_T = (2.11 / 12) 1.73 = 0.3042 \text{ AC-FT} = 13,250 \text{ CF}$$

b. PEAK DISCHARGE

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$
$$Q_p = Q_{100} = ((0.00 * 1.87) + (0.00 * 2.6) + (0.40 * 3.45) + (1.34 * 5.02)) = 8.1 \text{ CFS}$$

2. BASIN B

a. VOLUME

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$
$$E_W = ((0.00 * 0.66) + (0.00 * 0.92) + (0.12 * 1.29) + (0.65 * 2.36)) / 0.77 = 2.20 \text{ IN}$$
$$V_{100} = (E_W / 12) A_T = (2.20 / 12) 0.77 = 0.1412 \text{ AC-FT} = 6,150 \text{ CF}$$

b. PEAK DISCHARGE

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$
$$Q_p = Q_{100} = ((0.00 * 1.87) + (0.00 * 2.6) + (0.12 * 3.45) + (0.65 * 5.02)) = 3.7 \text{ CFS}$$

C. COMPARISON

1. BASIN A

a. VOLUME

$$\Delta V_{100} = 13,250 - 7,420 = 5830.00 \text{ CF}$$

78.6% (INCREASE)

b. PEAK DISCHARGE

$$\Delta Q_{100} = 8.1 - 5.0 = 3.10 \text{ CFS}$$

62.0% (INCREASE)

2. BASIN B

a. VOLUME

$$\Delta V_{100} = 6,150 - 9,040 = -2890.00 \text{ CF}$$

-32.0% (DECREASE)

b. PEAK DISCHARGE

$$\Delta Q_{100} = 3.7 - 5.5 = -1.80 \text{ CFS}$$

-32.7% (DECREASE)

3. COMBINED OVERALL

a. VOLUME

$$\Delta V_{100} = 19,400 - 16,460 = 2940.00 \text{ CF}$$

17.9% (INCREASE)

b. PEAK DISCHARGE

$$\Delta Q_{100} = 11.8 - 10.5 = 1.30 \text{ CFS}$$

12.4% (INCREASE)

c. DISCHARGE RATE

$$11.8 \text{ CFS} / 2.49 \text{ AC} = 4.74 \text{ CFS/AC (4.86 CFS/AC ALLOWABLE)}$$

D. BASIN A RUNDOWN OVERFLOW CALCULATIONS

$$Q_{REQ} = 6.4 \text{ CFS}$$

$$Q_{CAP} = C^* L^* H^{(3/2)}$$

$$C = 3.0, L = 4 \text{ FT}, H = 0.67 \text{ FT (8" CURB)}$$

$$Q_{CAP} = 3.0^* 4.0^* 0.67^{(3/2)}$$

$$Q_{CAP} = 6.58 \text{ CFS} > Q_{REQ} = 6.4 \text{ CFS}$$

E. FIRST FLUSH CALCULATIONS -SEE SHEET CG-101-B

LEGEND

AC	ASPHALT CURB	FL	FLOWLINE
AL	AREA LIGHT	INV	INVERT
BBC	BRICK BUILDING COLUMN	MC	MOTORCYCLE SPACES
BCSW	BURIED CONCRETE SIDEWALK	TA	TOP OF ASPHALT PAVEMENT
BTM	BOTTOM	TC	TOP OF CURB
C&G	CURB AND CUTTER	TG	TOP OF GRATE
CF	LANDSCAPING CRUSHER FINES	+ 95.05	EXISTING SPOT ELEVATION
CM	POURED CONCRETE MOUND	89.00	PROPOSED SPOT ELEVATION
CMU	CONCRETE MASONRY UNIT WALL	89.00	EXISTING FLOWLINE
CND	ELECTRIC CONDUIT	5590	PROPOSED FLOWLINE
CNC	CONCRETE	92	EXISTING CONTOUR
CRW	CMU RETAINING WALL	92	PROPOSED CONTOUR
CSW	CONCRETE SIDEWALK	92	EXISTING DIRECTION OF FLOW
DYS	PAINTED DOUBLE YELLOW TRAFFIC STRIPE	92	PROPOSED DIRECTION OF FLOW
E/P/M	ELECTRIC LINE BY PAINT MARK	92	RIGHT OF WAY LINE
EA	EDGE OF ASPHALT	92	PUBLIC EASEMENT LINE
EM	ELECTRIC METER	92	
EO	ELECTRIC OUTLET	92	
FH	FIRE HYDRANT	92	
FL	FLOWLINE	92	
G/PM	GAS LINE BY PAINT MARK	92	
GA	GATE	92	
GRV	LANDSCAPING GRAVEL	92	
GTS	GATE STOP POST	92	
GW	GUY WIRE ANCHOR	92	
GWAP	GUY WIRE ANCHOR POLE	92	
INV	PIPE INVERT	92	
IVB	IRRIGATION VALVE BOX	92	
KSW	KEYSTONE WALL	92	
LS	LANDSCAPING IMPROVEMENTS	92	
LSD	LANDSCAPING DIVIDER	92	
MED	MEDIAN	92	
MH	MANHOLE	92	
MLP	METAL LIGHT POLE	92	
OHC(1)	OVERHEAD COMMUNICATION (# OF LINES)	92	
OHE(1)	OVERHEAD ELECTRIC (3 OF LINES)	92	
OHG(2)	OVERHEAD GUY WIRE (# OF LINES)	92	
PG	PIPE GATE	92	
PS	PAINTED PARKING STALL STRIPE	92	
PVC	POLYVINYL CHLORIDE PIPE	92	
RPC	REINFORCED CONCRETE PIPE	92	
ROH	ROOT OVERHANG	92	
RR	LANDSCAPING RIVER ROCK	92	
RRT	LANDSCAPING RAILROAD TIES	92	
SAS	SANITARY SEWER	92	
SAS/PM	SANITARY SEWER BY PAINT MARK	92	
SB	PAINTED TRAFFIC STOP BAR	92	
SD/PM	STORM DRAIN BY PAINT MARK	92	
SDI	STORM DRAIN INLET	92	
SDMH	STORM DRAIN MANHOLE	92	
SOP	SERVICE DROP POLE	92	
SF	SILT FENCE (IN POOR CONDITION)	92	
SGN	CMU SIGN	92	
SLGT	SLIDING GATE	92	
SLP	SYNTHETIC LIGHT POLE	92	
SP	STEEL POLE	92	
STC	SEPTIC TANK COVER	92	
STS	STONE SIGN ON STUCCO WALL	92	
STW	STUCCO WALL	92	
SWS	PAINTED SOLID WHITE TRAFFIC STRIPE	92	
SYD	PAINTED SOLID YELLOW TRAFFIC STRIPE	92	
TA	TOP OF ASPHALT	92	
TC	TOP OF CURB	92	
TCO	TOP OF CONCRETE	92	
TG	TOP OF GRATE	92	
TS	TRAFFIC SIGN	92	
TW	TOP OF WALL	92	
TYP	TYPICAL	92	
UPT	POSSIBLE UNDERGROUND PROPANE TANK	92	
VG	CONCRETE VALLEY GUTTER	92	
W/PM	WATER LINE BY PAINT MARK	92	
WCR	CONCRETE WHEELCHAIR RAMP	92	
WF	WOOD LIGHT POLE	92	
WLP	WOOD LIGHT POLE	92	
WMB	WOOD METER BOX	92	
WPP	WOOD POWER POLE	92	
WVB	WOOD VALVE BOX	92	
WVC	WOOD VALVE BOX	92	
WWC	WOOD VALVE BOX	92	
XC	EXTRUDED CONCRETE CURB	92	
1.0' Ø	TREE TRUNK DIAMETER	92	

CONFEROUS TREE

SMALL CONFEROUS TREE

DECIDUOUS TREE

SMALL DECIDUOUS TREE

SHRUB

SMALL SHRUB

YUCCA

LANDSCAPING BOULDER

PAINTED UTILITY LINE MARK

INDEX OF DRAWINGS

SHEET	DESCRIPTION
C-100	DRAINAGE PLAN, CALCULATIONS, VICINITY MAP, LEGEND AND INDEX OF DRAWINGS
C003	PREVIOUSLY CERTIFIED GRADING PLAN (FOR INFORMATION ONLY)
CG-101-A	GRADING AND DRAINAGE PLAN
CG-101-B	FIRST FLUSH BASIN PLAN AND CALCULATIONS
CU-101	WATER AND SANITARY SEWER PLAN
CP-501	PAVING SECTIONS AND DETAILS
CU-501	WATER AND SANITARY SECTIONS AND DETAILS
ESC-101	EROSION AND SEDIMENT CONTROL PLAN
ESC-102	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS



01-30-2018
03-08-2018



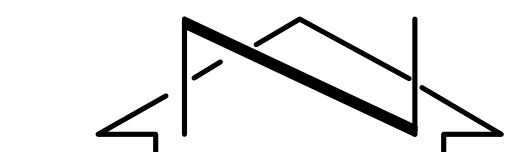
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COVER SHEET

MARK 3S HOLLY DEVELOPMENT

File Path: P:\DWG\2017\20170104\4\BNC\RTI Plot Date: 03-08-2018
File Name: 170144_C-100_R1.DWG Plot Time: 11:25:55 pm

COPPERLEAF
TRAIL N.E.



SCALE: 1" = 20'

LOT 39-P1
LOS VIGILS
(FILED 05-01-2003, 2003C-118)

LOT 38-P1
LOS VIGILS
(FILED 05-01-2003, 2003C-118)

LOT 37-P1
LOS VIGILS
(FILED 05-01-2003, 2003C-118)

LOT 36-P1
LOS VIGILS
(FILED 05-01-2003, 2003C-118)

LOT 35-P1
LOS VIGILS
(FILED 05-01-2003, 2003C-118)

EXISTING FROM
RECORD PLAN
(2006.070.9)

LO-
INEYARD CO
(FILED 11-14-20)

EXISTING INFORMATION FROM
REFERENCED SURVEY

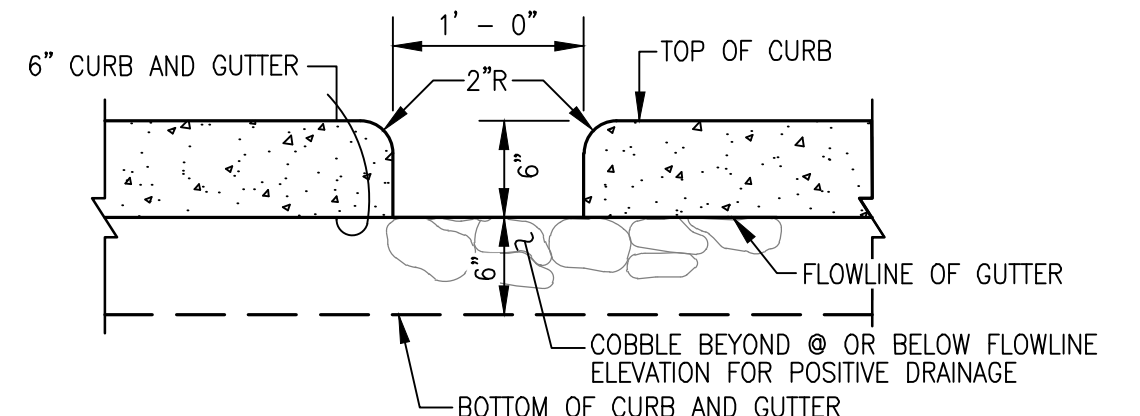
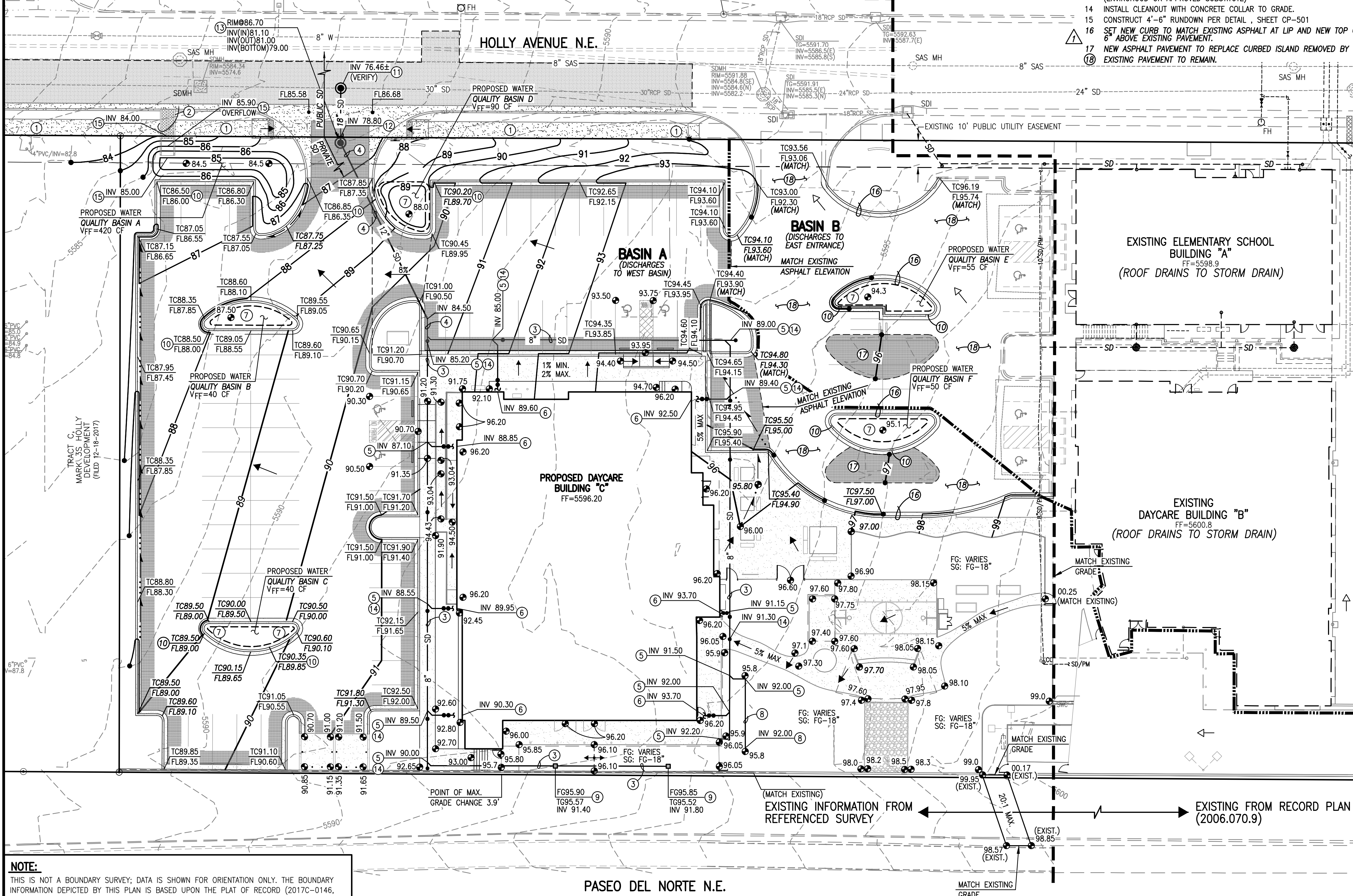
T.B.M. #2
ELEV. = 5592.04'

KEYED NOTES:

- HOLLY IMPROVEMENTS TO BE CONSTRUCTED BY CITY WORK ORDER.
- 2-24" SIDEWALK CULVERTS BY SEPARATE PERMIT (WORK ORDER).
- INSTALL 8" HDPE (SMOOTH INTERIOR) STORM DRAIN.
- INSTALL 12" HDPE (SMOOTH INTERIOR) STORM DRAIN.
- INSTALL WYE/BEND COMBINATION WITH CLEANOUT AND CONCRETE COLLAR TO GRADE.
- INSTALL DOUBLE CLEANOUT AT BUILDING CONNECTION REFER TO PLUMBING PLANS FOR CONTINUATION.
- DEPRESSED LANDSCAPING FOR WATER QUALITY.
- INSTALL PERFORATED PIPE WRAPPED WITH FILTER FABRIC.
- INSTALL 18" NYLOPLAST STORM INLET
- CONSTRUCT 12" CURB OPENING
- NEW STORM DRAIN MANHOLE BY SEPARATE PERMIT (WORK ORDER)
- REMOVE AND DISPOSE OF 12" PLUG; BEGIN NEW PRIVATE STORM DRAIN LINE.
- INSTALL 30" ADS NYLOPLAST STORM INLET WITH OIL/DEBRIS/WATER SEPARATOR (ENVIROHOOD OR APPROVED SUBSTITUTE)
- INSTALL CLEANOUT WITH CONCRETE COLLAR TO GRADE.
- CONSTRUCT 4'-6" RUNDOWN PER DETAIL, SHEET CP-501
- SET NEW CURB TO MATCH EXISTING ASPHALT AT LIP AND NEW TOP OF CURB 6" ABOVE EXISTING PAVEMENT.
- NEW ASPHALT PAVEMENT TO REPLACE CURBED ISLAND REMOVED BY THIS PROJECT.
- EXISTING PAVEMENT TO REMAIN.

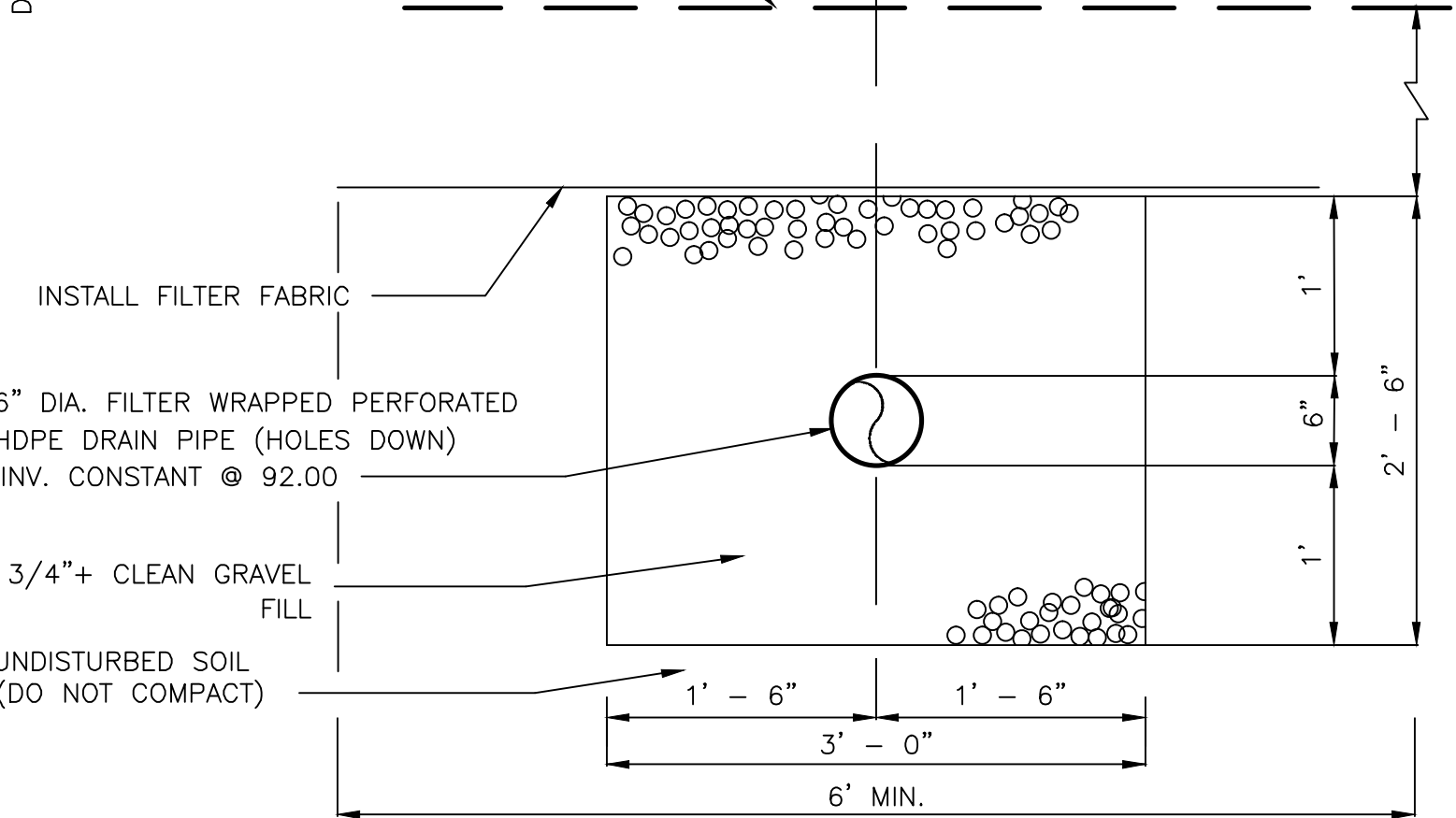
CONSTRUCTION NOTES:

- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, 811, FOR DESIGNATION (LINE-SPOTTING) OF EXISTING UTILITIES.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS, SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INTERPRETATIONS IT MAKES WITHOUT FIRST CONTACTING THE ENGINEER AS REQUIRED ABOVE.
- ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
- ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.
- UTILITY INFORMATION SHOWN HEREON IS BASED UPON ONSITE SURFACE EVIDENCE, REVIEW OF AVAILABLE ABCWUA AND CITY OF ALBUQUERQUE RECORD DRAWINGS AND DISTRIBUTION MAPS AND UTILITY LINE-SPOTS PROVIDED BY HIGH MESA CONSULTING GROUP (2016.059.1 AND 2016.059.2). IN ADDITION, UTILITY LINE-SPOTS WERE REQUESTED VIA THE NEW MEXICO ONE CALL SERVICE (TICKET NOS. 16DE20007 AND 17AP210205). UTILITY LINES THAT APPEAR ON THESE DRAWINGS ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS CONDUCTED ONLY PRELIMINARY INVESTIGATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THIS INVESTIGATION IS NOT CONCLUSIVE, AND MAY NOT BE COMPLETE. THEREFORE, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE 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. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.
- THE DESIGN OF PLANTERS AND LANDSCAPED AREAS IS NOT PART OF THIS PLAN. ALL PLANTERS AND LANDSCAPED AREAS ADJACENT TO THE BUILDING(S) SHALL BE PROVIDED WITH POSITIVE DRAINAGE TO AVOID ANY PONDING ADJACENT TO THE STRUCTURE. FOR CONSTRUCTION DETAILS, REFER TO LANDSCAPING PLAN.
- THE GRADES INDICATED ON THIS PLAN ARE FINISHED GRADES UNLESS OTHERWISE INDICATED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LEAVING SUBGRADE AT ELEVATIONS THAT SHALL ACCOMMODATE PROPOSED IMPROVEMENTS AS INDICATED ON THE PLANS INCLUDING, BUT NOT LIMITED TO, SURFACE DRAINAGE STRUCTURES, PAVING AND LANDSCAPING SURFACING.
- AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR THIS PERMIT.
- BACKFILL COMPACTION SHALL BE ACCORDING TO MAJOR LOCAL STREET USE.
- CONTRACTOR SHALL REFER TO GEOTECHNICAL REPORT FOR EARTHWORK REQUIREMENTS, AS APPLICABLE.



CURB CUT SECTION

SCALE: 1" = 1'-0"



TYPICAL PERFORATED PIPE SECTION

SCALE: 1" = 1'

NOTE:

THIS IS NOT A BOUNDARY SURVEY; DATA IS SHOWN FOR ORIENTATION ONLY. THE BOUNDARY INFORMATION DEPICTED BY THIS PLAN IS BASED UPON THE PLAT OF RECORD (2017C-0146, RECORDED 12-18-2017).

UNLESS OTHERWISE NOTED THE TOPOGRAPHIC AND UTILITY INFORMATION DEPICTED HEREON IS BASED UPON THE EXISTING TOPOGRAPHIC AND UTILITY SURVEY PREPARED BY THIS FIRM, NMPS NO. 11184, DATED 01/10/2017 (2016.059.1), ALSO A PARTIAL TOPOGRAPHIC AND UTILITY SURVEY PREPARED BY THIS FIRM, NMPS NO. 11184, DATED 05/16/2017 (2016.059.2), AND ALSO A TOPOGRAPHIC SURVEY PREPARED BY THIS FIRM, NMPS NO. 11184, DATED 10/24/2006 (2006.070.1), AND ALSO THE RECORD DRAWINGS PREPARED BY THIS FIRM, NMPE 13676, DATED 09/27/2007 (2006.070.9).

HIGH MESA Consulting Group
Engineers, Surveyors & Subcontract Utility Consultants

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GRADING AND DRAINAGE PLAN MARK 3S HOLLY DEVELOPMENT

DESIGNED BY: R.J.C.

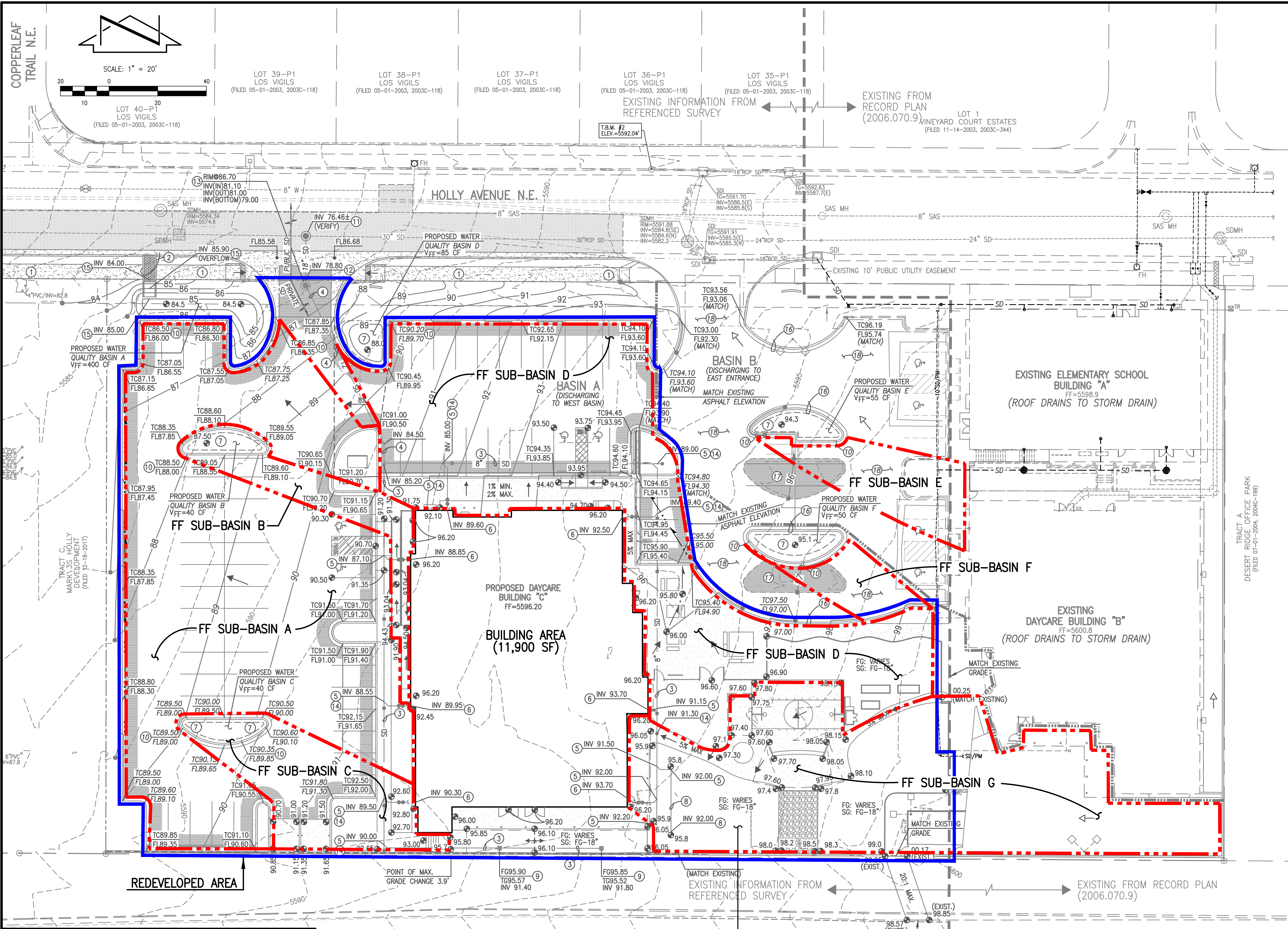
DRAWN BY: S.C.C./J.Y.R.

APPROVED BY: G.M.

NO.	DATE	BY	REVISIONS	JOB NO.
1	02/18	GM	COA HYDROLOGY COMMENTS	2017.014.4
				DATE 01-2018
				SHEET CG-101-A



01-30-2018
03-08-2018



FIRST FLUSH BASIN CALCULATIONS:

1. REDEVELOPED AREA
a. REDEVELOPED AREA = 59,695 SF
b. PVIOUS AREA = 10,920 SF
c. REDEVELOPED IMPVIOUS AREA = 59,695 SF - 10,920 SF = 48,775 SF

2. FIRST FLUSH VOLUME - REDEVELOPED AREA
 $V_{FF REQ'D} = (0.26/12)(48,775 SF) = 1,060 CF$

3. PONDING / RETENTION AREA VOLUMES & IMPVIOUS FF CONTRIBUTION

AREA	$V_{POND CAP}$	A_{IMP}	$V_{IMP, FF} = (0.26/12)(A_{IMP})$	$V_{IMP, 100-YR}$
A =	410 CF	17,580 SF	380 CF	3,460 CF
B =	40 CF	1,490 SF	33 CF	290 CF
C =	40 CF	2,420 SF	53 CF	475 CF
D =	90 CF	12,460 SF	270 CF	2,450 CF
E =	55 CF	2,040 SF	45 CF	400 CF
F =	50 CF	1,150 SF	25 CF	230 CF
G =	810 CF*	4,550 SF	100 CF	900 CF

$V_{TOTAL POND} = 1,480 CF > V_{FF REQ'D} = 1,060 CF$

A_{IMP} = IMPVIOUS AREA DISCHARGING TO POND
 $V_{IMP, FF}$ = FIRST FLUSH VOLUME GENERATED BY IMPVIOUS AREA
 $V_{IMP, 100-YR}$ = 100-YR VOLUME GENERATED BY IMPVIOUS AREA TO EACH POND

*BASIN G IS A PROPOSED FIBER MULCH PLAY AREA WITH 18" DEPTH OF MULCH.
a. AREA = 3600 SF
b. VOLUME = 0.3 (AIR VOIDS) x 3600 SF x 0.75 FT (AVG DEPTH)
VOLUME = 810 CF

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