CITY OF ALBUQUERQUE

Hydrology Section Planning Department
David S. Campbell, Director

Timothy M. Keller, Mayor

March 6, 2019

Verlyn Miller, P.E.
Miler Engineering Consultants
3500 Comanche NE, Building F
Albuquerque, NM, 87107

RE: Fire Station #9
Conceptual Grading and Drainage Plan and Drainage Report
Engineer's Stamp Date: 03/20/2019
Hydrology File: H20D043

Mr. Miller,

Based upon the information provided in your submittal received 3/20/2019, the Conceptual Grading and Drainage Plan is approved for Site Plan only. **Prior to approval for Building Permit, and Work Order the following comments will need to be addressed.**

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

1. At the south channel entrance please specify an unobstructed opening in the perimeter wall for the required height. Provide details of a self-cleaning screen if any is proposed to cover the opening.
2. Please label the Stormwater Quality Volume (SWQV) required, the SWQV provided, the BMP elevation, and the 100 Year elevation on the plan view of each BMP Pond.
   a. Basins boundaries need to be shown on the G&D Plan around the area draining to each BMP, and the BMP should be sized for the required SWQV of the area draining to it.
   b. Credit in excess of the required SWQV for the area draining to each BMP is not allowed. An additional BMP pond or infiltration trench is recommended in the northwest corner of the site to provide onsite treatment of all the required SWQV for this site, or the owner may elect "Payment in lieu" of construction of the required SWQV. How is Basin B SWQV being provided?
   c. The 100 year elevation of each BMP pond should be far enough below the top of dam elevation to allow freeboard for construction tolerances and settlement.
   d. The crest elevation of the overflow spillway should be set far enough above the required BMP elevation to allow freeboard for construction tolerances and settlement.
   e. Please specify the width and depth of each structure along with the peak 100 year flow rate and the weir depth calculation for each spillway and rundown into the ponds. Please correct key notes 7 and 16 to match the weir calculations.

3. Thanks for adding the typical sections on Sheet C-503, see comments below:
   a. Show the existing block wall in Section A-A and show the existing ground on the adjacent lot at about the same elevation as the invert of the new channel. Please consider allowing low flows from the channel to seep into the area between the channel and the wall on the property line. The plan view shows the existing wall centered on the lot line but the section shows the wall entirely on this site. Is the existing wall to remain? Will there be any grade change across the wall? New wall footings must not encroach into adjacent property without written permission from the neighbor.
   b. In Section B-B the soil against the wall will likely be saturated so please note that the structural design should accommodate saturated soil.
   c. Please show the perimeter wall in section C-C and consider adding 2' of retaining to flatten the slope between the wall and the building. The existing slope exceeds 3:1. Please specify the slope between the wall and the building on the section and spot elevations to the plan view on both sides of the wall. Adjust contours accordingly. on the plan view so that the slope does not exceed 3:1.
   d. There appears to be 1' to 2' foot of retainage across the wall in Section D-D that should be reflected in the section. Spot elevations on both sides of the wall should be added to the plan. The landscape strip between the wall and the parking lot could easily be graded flat to provide more SWQV if the south pond is not big enough.
   e. Since note 20 on sheet C-100 refers to City Standard Specifications please consider replacing some of the details on sheets C-501 and C-502 with notes that reference the city standard drawing such as Sidewalk Culvert DWG 2236, Typical Lining for Drainage Easements DWG 2260, Paving DWG 2407, and/or C&G DWG 2415 etc. These drawing can be included by reference rather than including the details in the plans.
4. Additional grading information is needed:
   a. The height of the water block on the east driveway should be increased to 0.87' minimum per DWG 2426 and should be measured perpendicular to the flow.
   b. Contours need to reflect the grade change across C&G.
   c. Contour 75 should not cross the west driveway but should instead connect to the existing 75 contour in the street.
   d. More spot elevations are needed around the building, in the front and east parking lot, and along Menaul Blvd at C&G and back of sidewalk.
   e. The grade 76.3 at the front parking sidewalk culvert appears too high to drain.
   f. Consider reducing all of the pond slopes to 3:1 or specify stabilization techniques on the G&D Plan per DPM 22.5(A).
5. Recommend bringing DRC plans to at least 50% complete before seeking G&D approval for Building Permit and Work Order so the interface between this site and the Public Infrastructure is understood better.

Prior to Certificate of Occupancy (CO):

6. Please provide a Drainage Covenant for the BMP Ponds prior to Certificate of Occupancy. Please submit this on the 4th floor of Plaza de Sol with a $25 check payable to Bernalillo County.
7. Please provide an Engineer's Certification to Hydrology for approval prior to CO.

If you have any questions, please contact me at 924-3986 or e-mail jhughes@cabq.gov.

Sincerely,

James D. Hughes, P.E.
Principal Engineer, Planning Dept.
Development and Review Services

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: COA Fire Station #9 Building Permit #: _____ Hydrology File #: H20D043

DRB#: _____ EPC#: 18-EPC-40037 Work Order#: _____

Legal Description: Port of Parcel D within Lt 23 Blk 31 Snow Heights Addn.

City Address: 9500 Snow Heights Circle NE, Albuquerque, NM 87112

Applicant: City of Albuqueque Contact: _____

Address: 1 Civic Plaza NW, Albuquerque, NM 87102

Phone#: 505-768-3000 Fax#: 505-768-3019 E-mail: _____

Other Contact: Miller Engineering Consultants, Inc. Contact: Verlyn A. Miller

Address: 3500 Comanche NE, Bldg. F, Albuquerque, NM 87107

Phone#: 505-888-7500 Fax#: 505-888-3800 E-mail: vmiller@mecnm.com

TYPE OF DEVELOPMENT: _____ PLAT (# of lots) _____ RESIDENCE __X__ DRB SITE ___ ADMIN SITE

IS THIS A RESUBMITTAL? __X__ Yes _____ No

DEPARTMENT _____ TRANSPORTATION __X__ HYDROLOGY/DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

____ ENGINEER/ARCHITECT CERTIFICATION
____ PAD CERTIFICATION
__X__ CONCEPTUAL G & D PLAN
____ GRADING PLAN
__X__ DRAINAGE REPORT
____ DRAINAGE MASTER PLAN
____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
____ ELEVATION CERTIFICATE
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ STREET LIGHT LAYOUT
____ OTHER (SPECIFY) _____
____ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY

____ PRELIMINARY PLAT APPROVAL
____ SITE PLAN FOR SUB'D APPROVAL
__X__ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL

____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
__X__ GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR
____ FLOODPLAIN DEVELOPMENT PERMIT
____ OTHER (SPECIFY) _____

DATE SUBMITTED: 3/20/19 By: _____

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

MILLER ENGINEERING CONSULTANTS
Engineers • Planners

LETTER OF TRANSMITTAL

TO COA
Planning Department
Development & Building Services
Division – Design Review
600 2nd Street NW
Albuquerque, NM 87102

DATE 3/20/19	JOB NO. E-18-012
ATTENTION:	
RE: COA Fire Station #9	

Transmitted herein are the attached documents (noted below):

COPIES	DATE	NO.	DESCRIPTION
1			COA Building and Grading Permit
2			Conceptual Grading & Drainage Plans Set
2			Drainage Report
1			PDF electronic copy sent to COA
1			Email of COA electronic copy
1			Transmittal Letter

THESE ARE TRANSMITTED as checked below:

☒ For Approval ☐ For Your Use ☐ As Requested ☐ For Review & Comment

☐ Other:

REMARKS: Project Engineer: Verlyn Miller

Copy Sent To: VA
MEC File

SIGNED: _____

3500 Comanche Road NE, Building F · Albuquerque, NM 87107-4546
Phone 505-888-7500 · Fax 505-888-3800 · www.mecnm.com

SUPPLEMENTAL DRAINAGE CALCULATIONS

Grading & Drainage Hydrology Report

AFD FIRE STATION #9
9500 SNOW HEIGHTS CIRCLE NE
ALBUQUERQUE, NM 87112

March 20, 2019

Prepared For: City of Albuquerque
Capital Implementation Program
Albuquerque, NM

Prepared By:

MILLER ENGINEERING CONSULTANTS
Engineers • Planners

3500 Comanche NE, Bldg. F
Albuquerque, New Mexico 87107
Phone: (505) 888-7500
Fax: (505) 888-3800

Worksheet for Rectangular Channel - 1

SOUTH CHANNEL

Project Description		
Flow Element:	Rectangular Channel	
Friction Method:	Manning Formula	
Solve For:	Normal Depth	
Input Data		
Roughness Coefficient:	0.015	
Channel Slope:	0.00660	ft/ft
Bottom Width:	8.00	ft
Discharge:	44.00	ft^3/s
Results		
Normal Depth:	0.86	ft
Flow Area:	6.88	ft^2
Wetted Perimeter:	9.72	ft
Top Width:	8.00	ft
Critical Depth:	0.98	ft
Critical Slope:	0.00442	ft/ft
Velocity:	6.39	ft/s
Velocity Head:	0.64	ft
Specific Energy:	1.50	ft
Froude Number:	1.22	
Flow Type:	Supercritical	
GVF Input Data		
Downstream Depth:	0.00	ft
Length:	0.00	ft
Number Of Steps:	0	
GVF Output Data		
Upstream Depth:	0.00	ft
Profile Description:	N/A	
Profile Headloss:	0.00	ft
Downstream Velocity:	0.00	ft/s
Upstream Velocity:	0.00	ft/s
Normal Depth:	0.86	ft
Critical Depth:	0.98	ft
Channel Slope:	0.00660	ft/ft
Critical Slope:	0.00442	ft/ft

Worksheet for Rectangular Channel - 1

NORTH CHANNEL

Project Description		
Flow Element:	Rectangular Channel	
Friction Method:	Manning Formula	
Solve For:	Normal Depth	
Input Data		
Roughness Coefficient:	0.013	
Channel Slope:	0.00670	ft/ft
Bottom Width:	15.00	ft
Discharge:	22.00	ft^3/s
Results		
Normal Depth:	0.33 ✓ 8" CURB	ft
Flow Area:	5.02	ft^2
Wetted Perimeter:	15.67	ft
Top Width:	15.00	ft
Critical Depth:	0.41	ft
Critical Slope:	0.00357	ft/ft
Velocity:	4.38	ft/s
Velocity Head:	0.30	ft
Specific Energy:	0.63 ✓ 8" CURB	ft
Froude Number:	1.34	
Flow Type:	Supercritical	
GVF Input Data		
Downstream Depth:	0.00	ft
Length:	0.00	ft
Number Of Steps:	0	
GVF Output Data		
Upstream Depth:	0.00	ft
Profile Description:	N/A	
Profile Headloss:	0.00	ft
Downstream Velocity:	0.00	ft/s
Upstream Velocity:	0.00	ft/s
Normal Depth:	0.33	ft
Critical Depth:	0.41	ft
Channel Slope:	0.00670	ft/ft
Critical Slope:	0.00357	ft/ft

Worksheet for Broad Crested Weir - 1

NORTH CHANNEL

Project Description		
Flow Element:	Broad Crested Weir	
Solve For:	Headwater Elevation	

Input Data		
Discharge:	21.88	ft³/s
Crest Elevation:	100.00	ft
Tailwater Elevation:	0.00	ft
Crest Surface Type:	Paved	
Crest Breadth:	10.00	ft
Crest Length:	12.00	ft

Results		
Headwater Elevation:	100.71	ft
Headwater Height Above Crest:	0.71 → D = 8.5"	ft
Tailwater Height Above Crest:	-100.00	ft
Weir Coefficient:	3.03	US
Submergence Factor:	1.00	
Adjusted Weir Coefficient:	3.03	US
Flow Area:	8.56	ft²
Velocity:	2.56	ft/s
Wetted Perimeter:	13.43	ft
Top Width:	12.00	ft

Worksheet for Broad Crested Weir - 1

SOUTH CHANNEL

Project Description		
Flow Element:	Broad Crested Weir	
Solve For:	Headwater Elevation	

Input Data		
Discharge:	40.00	ft³/s
Crest Elevation:	100.00	ft
Tailwater Elevation:	0.00	ft
Crest Surface Type:	Paved	
Crest Breadth:	10.00	ft
Crest Length:	17.00	ft

Results		
Headwater Elevation:	100.84	ft
Headwater Height Above Crest:	0.84 ⟹ 10" DEPTH	ft
Tailwater Height Above Crest:	-100.00	ft
Weir Coefficient:	3.03	US
Submergence Factor:	1.00	
Adjusted Weir Coefficient:	3.03	US
Flow Area:	14.35	ft²
Velocity:	2.79	ft/s
Wetted Perimeter:	18.69	ft
Top Width:	17.00	ft

Worksheet for Broad Crested Weir - 1

RUNDOWN

Project Description		
Flow Element:	Broad Crested Weir	
Solve For:	Crest Length	

Input Data		
Discharge:	5.00	ft³/s
Headwater Elevation:	100.50	ft
Crest Elevation:	100.00	ft
Tailwater Elevation:	0.00	ft
Crest Surface Type:	Paved	
Crest Breadth:	10.00	ft

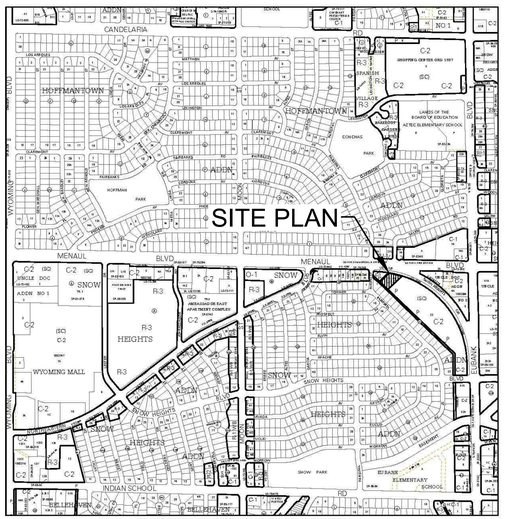
Results		
Crest Length:	4.70	ft
Headwater Height Above Crest:	0.50	ft
Tailwater Height Above Crest:	-100.00	ft
Weir Coefficient:	3.01	US
Submergence Factor:	1.00	
Adjusted Weir Coefficient:	3.01	US
Flow Area:	2.35	ft²
Velocity:	2.13	ft/s
Wetted Perimeter:	5.70	ft
Top Width:	4.70	ft

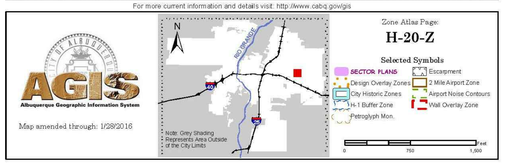
W = 5'

Worksheet for Rectangular Weir - 1

SPILLWAYS $w = 5'$

Project Description		
Flow Element:	Rectangular Weir	
Friction Method:	Manning Formula	
Solve For:	Discharge	
Input Data		
Headwater Elevation:	0.50	ft
Crest Elevation:	0.00	ft
Tailwater Elevation:	0.00	ft
Weir Coefficient:	2.60	US
Crest Length:	5.00	ft
Number of Contractions:	0	
Results		
Discharge:	4.60 $> Q_{100}$ ∴ O.K.	ft^3/s
Headwater Height Above Crest:	0.50	ft
Tailwater Height Above Crest:	0.00	ft
Flow Area:	2.50	ft^2
Velocity:	1.84	ft/s
Wetted Perimeter:	6.00	ft
Top Width:	5.00	ft





C1 VICINITY MAP

ZONE ATLAS MAP H-17-C

SITE LOCATION

THE PROPOSED SITE IS LOCATED ON SNOW HEIGHTS CIRCLE STREET AND MENAUL BOULEVARD. THE SITE CURRENTLY CONSISTS OF A VACANT LOT WITH NO DEVELOPMENT. THE SITE IS BOUND BY MENUAL BLVD. AND SNOW HEIGHTS CIRCLE ON THE NORTH SIDE, RESIDENTIAL DEVELOPMENT ON THE SOUTH SIDE, AN EXISTING COMMERCIAL DEVELOPMENT ON THE EAST AND WEST SIDES. THE PROPOSED DEVELOPMENT WILL INCLUDE A NEW FIRE STATION.

EXISTING ON SITE CONDITIONS

THE EXISTING SITE IS CURRENTLY UNDEVELOPED AND IS COVERED WITH SPARSE VEGETATIVE COVER. THE LACK OF VEGETATION SUGGESTS THAT THE SITE IS EXPERIENCING DISTURBANCE FROM HUMAN ACTIVITY. THERE IS A SMALL LOW POINT AT THE WESTERN PORTION OF SITE WITH AN EXISTING DRAIN INLET. IT IS UNKNOWN IF THE INLET IS CONNECTED TO ANYTHING, IT APPEARS TO BE POSSIBLY CONNECTED TO SOME TYPE OF FRENCH DRAIN. EXISTING STORM WATER FLOWS SHEET FLOW WEST TOWARD THE EXISTING LOW POINT. THERE IS A SIGNIFICANT OFFSITE DRAINAGE BASIN OF APPROXIMATELY 10 ACRES THAT DISCHARGE TO THE SOUTHWEST CORNER OF THE SITE. THE OFFSITE FLOWS ARE ROUTED THROUGH THE WESTERN PORTION OF THE SITE NORTH TO THE ADJACENT PROPERTY AND EVENTUALLY DOWNSTREAM TO PARSIFAL STREET.

PROPOSED CONDITIONS

THE PROPOSED IMPROVEMENTS WILL INCLUDE A NEW FIRE STATION, DRIVEWAY, ASSOCIATED PARKING, AND CONCRETE HARDSCAPE. SITE DRAINAGE WILL BE ROUTED VIA OVERLAND FLOW TOWARD TWO WATER HARVEST AREAS (WATER QUALITY PONDS) LOCATED NEAR THE WESTERN EDGE OF THE SITE. THESE WATER HARVESTING AREAS WILL BE USED TO MANAGE THE 90TH PERCENTILE STORM EVENTS (REQUIRED VOLUME = (0.34 IN. * 36,590 SF)/12 = 1036 CF). OVERFLOW FROM THE PONDING AREAS WILL SPILL THROUGH A CONCRETE SPILLWAY ON THE PROPOSED RETAINING WALL SECTION. OFFSITE DRAINAGE TO THE SITE WILL BE COLLECTED IN A NEW TRAPEZOIDAL CONCRETE CHANNEL SYSTEM AND ROUTED THROUGH THE SITE TO ITS HISTORICAL LOCATION.

CONCLUSION

THE INCREASED RUNOFF FROM THE PROPOSED BUILDING ADDITION IS ESTIMATED AT 0.059 ACRE–FEET AND 0.69 CFS DURING THE 100–YEAR EVENT. THE INCREASED RUNOFF FROM THE PROPOSED PROJECT WILL BE RETAINED BY THE TWO WATER HARVEST PONDING AREAS, WHICH WILL HELP ALLEVIATE INCREASED FLOW DOWNSTREAM. THE INCREASE IN STORM WATER RUNOFF FROM THE PROPOSED PROJECT IS MINIMAL SHOULD NOT ADVERSELY IMPACT ADJACENT OR DOWNSTREAM PROPERTIES, PARTICULARLY WITH THE WATER HARVEST PONDS IN PLACE. THIS PLAN DOES NOT CHANGE HISTORICAL DRAINAGE PATTERNS.

THE PROPOSED WATER HARVEST AREAS VOLUME IS APPROXIMATELY 2200 CUBIC FEET, WHICH IS GREATER THAN THE REQUIRED FIRST FLUSH VOLUME OF 1036 CUBIC FEET. ALL ROOF DRAINAGE AND PROPOSED ASPHALT PARKING AREAS WILL DISCHARGE INTO WATER HARVEST AREAS LOCATED AT THE WEST SIDE OF THE PROJECT SITE.

THE DRAINAGE PATTERNS TO DOWNSTREAM PROPERTIES WILL REMAIN UNCHANGED FROM EXISTING CONDITIONS.

GENERAL NOTES:

1. EXISTING TOPOGRAPHIC DATA SHOWN ON THESE PLANS WAS PROVIDED BY CSI CARTESIAN SURVEYS, INC. MILLER ENGINEERING CONSULTANTS HAS UNDERTAKEN NO FIELD VERIFICATION OF THIS INFORMATION.
2. ACS STA A–438 BENCH MARK THE TOP OF A STAINLESS STEEL ROD SET BENEATH A 5–1/2" NGS ACCESS COVER STAMPED "A–438 1984" SET FLUSH WITH THE GROUND, LOCATED IN THE NORTHWEST QUADRANT OF MENAUL BOULEVARD AND THE A.T. & S.F. RAILROAD TRACKS INTERSECTION. ELEV. 4975.35 (NAVD 1988)

   TBM FOUND 1/2" REBAR WITH CAP "LS 11463" ELEV. 4965.21
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES DURING THE CONSTRUCTION PHASE.
4. CONTRACTOR SHALL OBTAIN A GRADING PERMIT FROM THE CITY OF ALBUQUERQUE, PRIOR TO ANY GRADING OR CONSTRUCTION.
5. TWO WORKING DAYS PRIOR TO ANY EXCAVATION CONTRACTOR MUST CONTACT LINE LOCATING SERVICE 260–1990 FOR LOCATION OF EXISTING UTILITIES.
6. ALL EMBANKMENTS SHALL BE PLACED AND COMPACTED IN LIFTS OF MAXIMUM OF 8". THE EMBANKMENTS SHALL BE WETTED AND COMPACTED TO 95% OPTIMUM DENSITY PER ASTM D1557 AND 95% UNDER ALL STRUCTURES INCLUDING DRIVEWAYS AND PARKING LOTS.
7. THE CONTRACTOR SHALL FIELD VERIFY LOCATION AND SIZE OF ALL UTILITIES PRIOR TO CONSTRUCTION.
8. ALL WORK PERFORMED SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY OF ALBUQUERQUE STORM DRAINAGE REGULATIONS. ALL WORK PERFORMED SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY OF ALBUQUERQUE "GRADING AND DRAINAGE DESIGN REQUIREMENTS AND POLICIES FOR LAND DEVELOPMENT."
9. THE OWNER, CONTRACTOR AND/OR BUILDER SHALL COMPLY WITH ALL APPROPRIATE LOCAL, STATE AND FEDERAL REGULATIONS AND REQUIREMENTS.
10. THE CONTRACTOR SHALL TAKE ALL APPROPRIATE AND REASONABLE MEASURES TO PREVENT SEDIMENT OR POLLUTANT LADEN STORM WATER FROM EXITING THE SITE DURING CONSTRUCTION. STORMWATER MAY BE DISCHARGED IN A MANNER, WHICH COMPLIES WITH THE APPROVED GRADING AND DRAINAGE PLAN.
11. THE CONTRACTOR SHALL TAKE ALL APPROPRIATE MEASURES TO PREVENT THE MOVEMENT OF CONSTRUCTION RELATED SEDIMENT, DUST, MUD, POLLUTANTS, DEBRIS, WASTE, ETC FROM THE SITE BY WIND, STORM FLOW OR ANY OTHER METHOD EXCLUDING THE INTENTIONAL, LEGAL TRANSPORTATION OF SAME IN A MANNER ACCEPTABLE BY THE CITY.
12. THE CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE THE AREAS SHOWN AS "SLOPE LIMITS" ON THE GRADING AND DRAINAGE PLAN.
13. SEE ARCHITECTURAL DRAWINGS FOR SIDEWALK AND HANDICAPPED RAMPS, DETAILS AROUND THE BUILDING.
14. THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER FOR CLARIFICATION IF THERE ARE ANY SPOT ELEVATIONS ON THE GRADING AND DRAINAGE PLAN WHICH APPEAR TO BE AMBIGUOUS OR DO NOT MEET THE INTENT OF THE GRADING AND DRAINAGE PLAN.
15. THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER FOR CLARIFICATION IF THERE ARE SIDEWALKS OR CONCRETE FLATWORK WHICH DOES NOT MEET ADA ACCESSIBILITY REQUIREMENTS. ALL SIDEWALKS SHALL HAVE A MAXIMUM CROSS SLOPE OF 2.0%, ALL SIDEWALKS SHALL HAVE A MAXIMUM LONGITUDINAL SLOPE OF 5.0%, AND ALL RAMPS SHALL HAVE A MAXIMUM LONGITUDINAL SLOPE OF 15:1.
16. ALL SIDEWALKS AND CONCRETE FLATWORK SHALL HAVE A MINIMUM OF 0.5% SLOPE. CONTRACTOR SHALL CONTACT PROJECT ENGINEER IF THERE ARE SIDEWALKS OR CONCRETE FLATWORK WHICH DO NOT MEET THIS REQUIREMENT.
17. THE CONTRACTOR SHALL SUBMIT MATERIAL SUBMITTALS, CUT SHEETS AND SHOP DRAWINGS FOR ALL CIVIL RELATED ITEMS FOR REVIEW PRIOR TO CONSTRUCTION.
18. THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS (UPDATE 8, AMENDMENT 1)
19. ALL EXISTING MANHOLES, VALVES AND METERS SHALL BE ADJUSTED TO NEW FINISH GRADE.

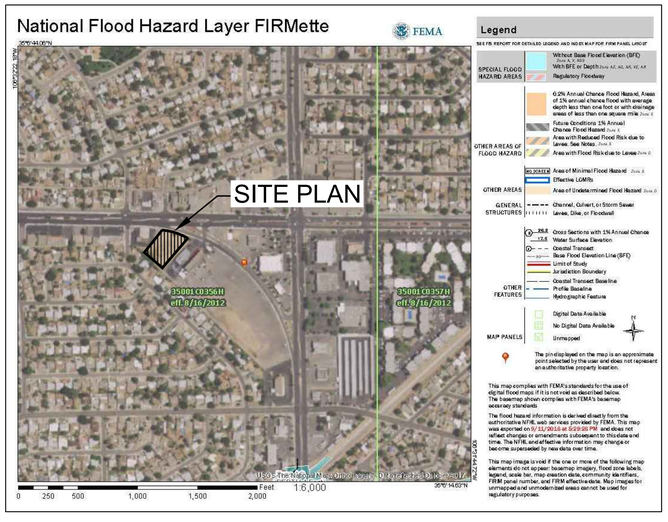
SPECIAL ORDER 19

DRAINAGE FACILITIES WITHIN THE CITY RIGHT–OF–WAY NOTICE TO CONTRACTOR

1) AN EXCAVATION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT–OF–WAY.

B1 OFF SITE-1 MAP

ZONE ATLAS MAP H-20-C



A1 FLOOD ZONE MAP

FLOOD ZONE MAP: 35001C0356H

DRAINAGE DATA

HYDROLOGY

Precipitation Zone 3 - 100-year Storm P(360) = 2.6 in P(1440) = 3.1 in

Basin	Basin Area (Ac)	Land Treatment Factors (Acres) A	B	C	D	Ew (in)	V(100-6) (af)	V(100-24) (af)	Q(100) (cfs)
Existing Conditions									
OS-1	8.10	0.00	0.00	0.81	7.29	2.25	1.521	1.825	39.39
OS-2	4.50	0.00	0.00	0.45	4.05	2.25	0.845	1.014	21.88
Site	1.20	0.00	0.00	0.80	0.40	1.65	0.165	0.181	4.77
Total	**13.80**								**66.04**
Proposed Conditions									
A	1.00	0.00	0.00	0.31	0.69	2.03	0.169	0.198	4.53
B	0.20	0.00	0.00	0.05	0.15	2.09	0.035	0.041	0.93
Total	**1.20**								**5.46**

FIRST FLUSH CALCULATIONS

V_{FF} = (0.34 IN *36,590 SF)/12

V_{FF} = 1036 CF

VOLUME PROVIDED = 2200 CF

Pond Rating Table	
North Pond	
Pond Rating Table	**Spillway Crest = 5472.5**
Side Slope	**3:1**
Depth (ft)	**Area (sq ft)**	**Volume (cubic fet)**	**Cum Volume (cubic feet)**
70.5	**900**	**0**	**0**
71.5	**1100**	**1000**	**1000**
72.5	**1300**	**1200**	**2200**
Pond Invert		**70.5**	
Spillway Crest		**72.5**	
WSE (First Flush)		**71.5**	
WSE (100-year)		**72.5**	

MILLER ENGINEERING CONSULTANTS
Engineers • Planners
3500 COMANCHE, NE
BUILDING F
ALBUQUERQUE, NM 87107
(505)888–7500
(505)888–3800 (FAX)
WWW.MECNM.COM

City of Albuquerque Electronic Stamp

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE:

BENCH MARKS

AS-BUILT INFORMATION
CONTRACTOR DATE
WORK STAKED BY DATE
INSPECTOR'S ACCEPTANCE BY DATE
FIELD VERIFICATION BY DATE
DRAWINGS CORRECTED BY DATE

MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

VERLYN A. MILLER
NEW MEXICO
14507
REGISTERED PROFESSIONAL ENGINEER
SEAL

NOT FOR CONSTRUCTION

NO.	DATE	REMARKS	BY
	SEPT. 26, 2018		

DESIGN
Designed By: DATE:
Drawn By: DATE:
Checked By: DATE:

VIGIL & ASSOCIATES
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CITY OF ALBUQUERQUE
CAPITAL IMPLEMENTATION PROGRAM

AFD FIRE STATION 9

9500 SNOW HEIGHTS CIRCLE NE,
ALBUQUERQUE, NM 87112

file name:

Drawing Title

GRADING AND DRAINAGE HYDROLOGY REPORT

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
			7/10/18	

Issue Date: **MARCH 20, 2019**

City Project No. **5476.91**

Sheet **C-100**

PROJECT NO:

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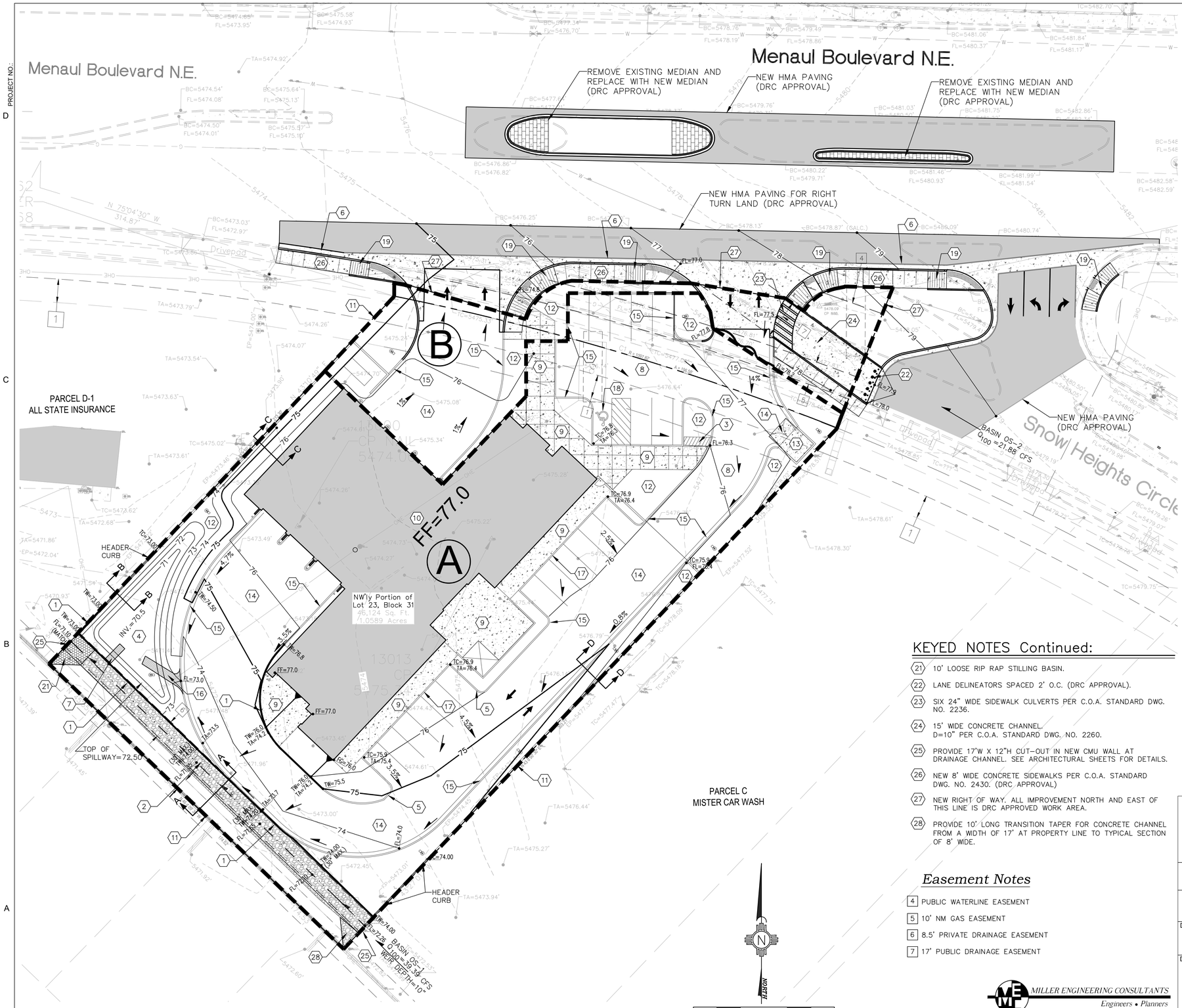

A1 GRADING AND DRAINAGE PLAN
SCALE: 1" = 20'

SCALE: 1"=20'
CONTOUR INTERVAL=1'

LEGEND:

•38.00 FG	PROPOSED SPOT ELEVATIONS (FINISHED GRADE)		
•MATCH (95.19)	MATCH EXISTING ELEVATIONS		
TCON	TOP OF CONCRETE	TBC	TOP OF BASE COURSE
FL	FLOW LINE, CURB	TC	TOP OF CURB
INV	INVERT	TG	TOP OF GRATE
FG	FINISH GRADE	TA	TOP OF ASPHALT
			FLOW ARROW

GRADE BREAK–HIGH POINT
SWALE
SD STORM DRAIN LINE
5895 PROPOSED MAJOR CONTOUR
PROPOSED MINOR CONTOUR
5895 EXISTING MAJOR CONTOUR
EXISTING MINOR CONTOUR
TOP OF CUT SLOPE

KEYED NOTES:

1. NEW RETAINING WALL SEE DETAIL SHEET C–501
2. NEW CONCRETE CHANNEL. SEE SECTION A–A SHEET C–501. S=0.4%, W=8', D=18". PER C.O.A. STANDARD DWG. NO. 2260.
3. 24" WIDE SIDEWALK CULVERT PER C.O.A. STANDARD DETAIL DWG. NO. 2236.
4. FIRST FLUSH POND #1 SEE DETAIL SHEET C–501. INV=70.5 SPILLWAY=72.5, VOL=2200CF, D=24".
5. NEW ROLLOVER CURB AND GUTTER. SEE DETAIL SHEET C–501.
6. NEW CURB AND GUTTER. SEE C.O.A. STANDARD DWG. NO. 2415. (DRC APPROVAL)
7. PROVIDE 3' WIDE X 6" DEEP CUT–OUT IN TOP OF WALL FOR OVERFLOW EMERGENCY SPILLWAY. SEE DETAIL SHEET C–501.
8. NEW HEAVY DUTY HOT MIX ASPHALT PAVEMENT SECTION. SEE SECTION DETAILS ON SHEET C–501.
9. NEW CONCRETE SIDEWALK/FLATWORK. SEE ARCHITECTURAL PLANS FOR DETAILS. CONTRACTOR SHALL SUBMIT A JOINT PATTERN TO THE PROJECT ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
10. NEW BUILDING SEE ARCHITECTURAL PLANS FOR DETAILS.
11. LOCATION OF PROPERTY LINE.
12. LANDSCAPE AREA SEE ARCHITECTURAL PLANS FOR DETAILS.
13. NEW TRASH ENCLOSURE SEE ARCHITECTURAL PLANS FOR DETAILS.
14. NEW HEAVY DUTY CONCRETE PAVING SEE DETAIL SHEET C–501.
15. NEW STANDARD CURB AND GUTTER. SEE DETAIL SHEET C–501.
16. NEW 3' WIDE RIP RAP RUNDOWN SEE DETAIL SHEET C–501.
17. NEW THICKENED EDGE ON CONCRETE SIDEWALK. SEE DETAIL SHEET C–501.
18. NEW HANDICAPPED PARKING SPACES 2% MINIMUM SLOPE IN EACH DIRECTION.
19. NEW HANDICAP RAMP SEE C.O.A. STANDARD DWG. NO. 2418. (DRC APPROVAL)
20. NEW ROLL OVER CURB SEE DETAL SHEET C–501.

KEYED NOTES Continued:

21. 10' LOOSE RIP RAP STILLING BASIN.
22. LANE DELINEATORS SPACED 2' O.C. (DRC APPROVAL).
23. SIX 24" WIDE SIDEWALK CULVERTS PER C.O.A. STANDARD DWG. NO. 2236.
24. 15' WIDE CONCRETE CHANNEL. D=10" PER C.O.A. STANDARD DWG. NO. 2260.
25. PROVIDE 17'W X 12"H CUT–OUT IN NEW CMU WALL AT DRAINAGE CHANNEL. SEE ARCHITECTURAL SHEETS FOR DETAILS.
26. NEW 8' WIDE CONCRETE SIDEWALKS PER C.O.A. STANDARD DWG. NO. 2430. (DRC APPROVAL)
27. NEW RIGHT OF WAY. ALL IMPROVEMENT NORTH AND EAST OF THIS LINE IS DRC APPROVED WORK AREA.
28. PROVIDE 10' LONG TRANSITION TAPER FOR CONCRETE CHANNEL FROM A WIDTH OF 17' AT PROPERTY LINE TO TYPICAL SECTION OF 8' WIDE.

Easement Notes

4. PUBLIC WATERLINE EASEMENT
5. 10' NM GAS EASEMENT
6. 8.5' PRIVATE DRAINAGE EASEMENT
7. 17' PUBLIC DRAINAGE EASEMENT

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VERLYN A. MILLER — NEW MEXICO — 14507 — 3/20/19 — REGISTERED PROFESSIONAL ENGINEER

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	SEPT. 20, 2018		

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CITY OF ALBUQUERQUE
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AFD FIRE STATION 9
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Drawing Title
CONCEPTUAL GRADING AND DRAINAGE PLAN

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
			7/10/18	

Issue Date: **MARCH 20, 2019**
City Project No. **5476.91**
Sheet **C-101**

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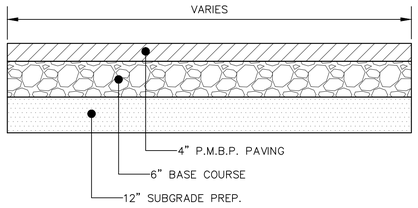
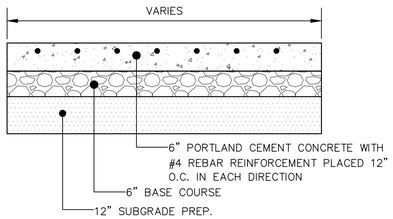


D1 HEAVY DUTY ASPHALT PAVING DETAIL
SCALE: NOT TO SCALE



D2 HEAVY DUTY CONCRETE PAVING SECTION
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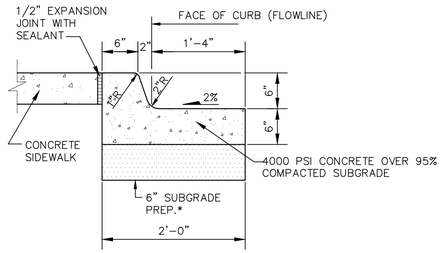
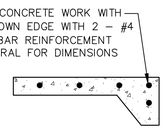


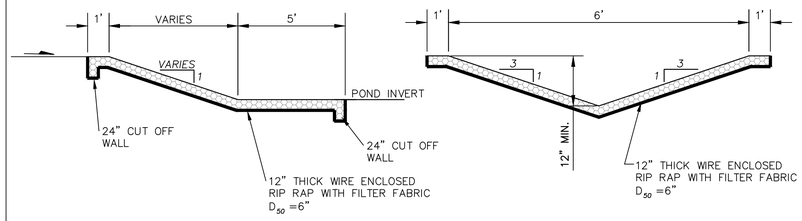
NOTES:
1. SEE PLAN FOR SIDEWALK JOINT PATTERN.
2. CONSTRUCT 1/2" EXPANSION JOINTS WITH SEALANT @40'-0" O.C. MAX.
3. CONSTRUCT 1 1/2" DEEP TOOLED CONTROL JOINTS @5'-0" O.C. MAX.
4. MATCH TOP OF EXISTING SIDEWALK AND MAINTAIN EXISTING FLOW LINE.

D3 TYPICAL CURB AND GUTTER SECTION
SCALE: NOT TO SCALE

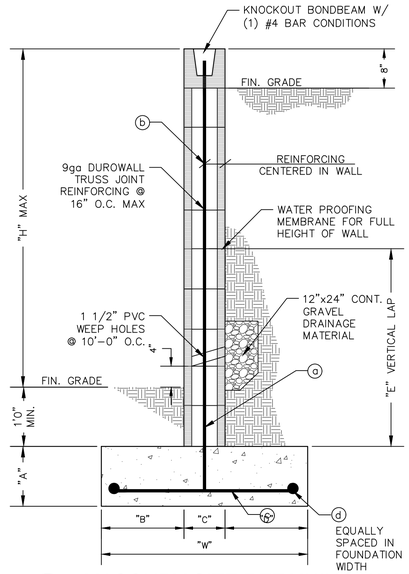
TERMINATE ALL CONCRETE WORK WITH 8" MIN. TURN DOWN EDGE WITH 2 – #4 CONTINUOUS REBAR REINFORCEMENT SEE ARCHITECTURAL FOR DIMENSIONS



C1 NEW THICKENED EDGE DETAIL
SCALE: NOT TO SCALE



B1 RIP RAP RUNDOWN DETAIL
SCALE: NOT TO SCALE

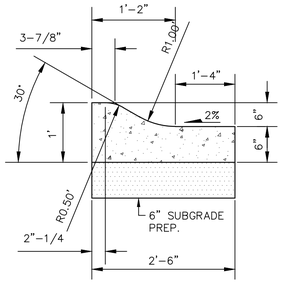


MASONRY SITE RETAINING WALL NOTES
1. ALL MASONRY CELLS SHALL BE SOLID GROUTED W/ 2000psi GROUT FROM TOP TO BOTTOM OF WALL CLEANOUTS SHALL BE PROVIDED AT THE BOTTOM OF WALL WHERE GROUT PLACEMENT EXCEEDS 4'-0" IN HEIGHT.
2. LONGITUDINAL FOOTING REINFORCEMENT SHALL BE EQUALLY SPACED IN FOOTING WIDTH
3. WALL EXPANSION JOINTS SHALL BE INSTALLED AT A MAX. OF 20'-0" O.C.
4. ALL MASONRY SHALL BE TYPE 1 UNITS WITH TYPE M MORTAR. f'm=1900psi FULLY GROUTED ON THE NET AREA AND f'm=1900psi FULLY GROUTED ON GROSS AREA.
5. LAP ALL REINF. 40 BAR DIAMETERS OR 24" MINIMUM UNLESS OTHERWISE NOTED.
6. CONTRACTOR RESPONSIBLE FOR LATERAL BRACING OF CMU WALL DURING CONSTRUCTION.
7. CONCRETE COMPRESSIVE STRENGTH SHALL BE f'c=2500 psi @ 28 DAYS.
8. REINFORCING STEEL SHALL BE GRADE 60ksi.
9. MINIMUM COMPACTION UNDER FOOTINGS SHALL BE AT 95% OF OPTIMUM PER ASTM D 1557 FOR A DEPTH OF 12" BELOW FOOTINGS.
10. MOISTURE CONTENT SHALL BE +/– 2% OF OPTIMUM.
11. BACKFILL ADJACENT TO WALLS SHALL BE COMPACTED WITH RELATIVELY LIGHT, HAND OPERATED EQUIPMENT TO PREVENT OVER STRESSING THE WALL AND EXCESSIVE LATERAL DEFLECTIONS.

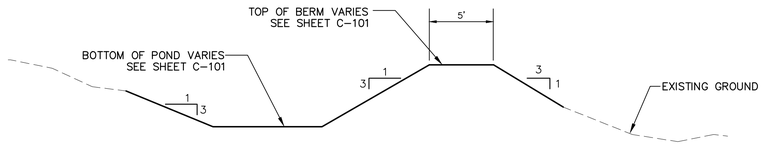
MASONRY SITE RETAINING WALL SCHEDULE

WALL TYPE	"H"	"W"	"A"	"B"	"C"	"D"	"E"	"a"	"b"	"c"	"d"
①	3'–0"	2'–0"	1'–0"	0'–8"	0'–8"	0'–8"	2'–6"	#4@24"	#4@48"	#4@16"	(3)#4
②	4'–0"	2'–7"	1'–0"	0'–11"	0'–8"	0'–11"	2'–6"	#4@24"	#4@48"	#4@16"	(3)#4
③	5'–0"	3'–2"	1'–0"	1'–3"	0'–8"	1'–3"	2'–6"	#5@8"	#4@48"	#4@16"	(4)#4

B3 MASONRY SITE RETAINING WALL DETAIL
SCALE: NOT TO SCALE



A1 CONCRETE ROLL OVER CURB
SCALE: NOT TO SCALE



COMPACT BERN/POND AREAS TO 95% MAX. DRY DENSITY

A2 TYPICAL WATER HARVEST AREA SECTION
SCALE: NOT TO SCALE

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CAPITAL IMPLEMENTATION PROGRAM

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Drawing Title: MISCELLANEOUS DETAILS

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
			7/10/18	

Issue Date: **MARCH 20, 2019**

City Project No.: **5476.91**

Sheet: **C-501**

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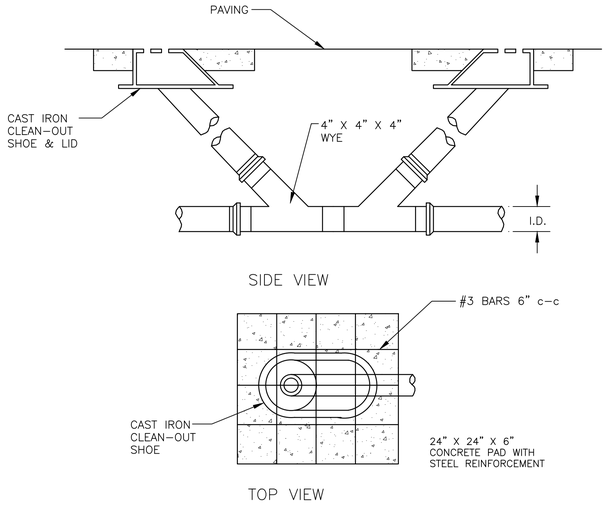
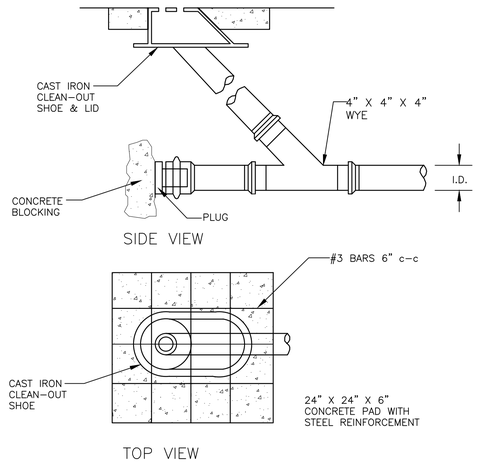


B1 TYPICAL DOUBLE SAS CLEAN-OUT

SCALE: NOT TO SCALE



B3 TYPICAL SINGLE SAS CLEAN-OUT

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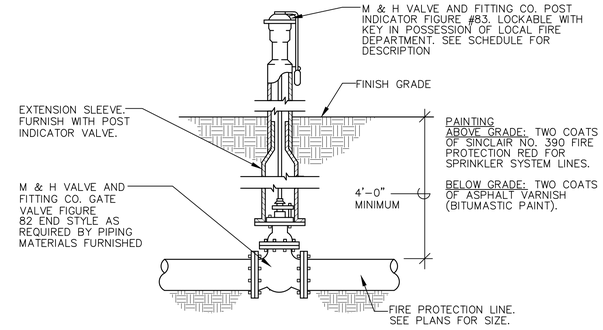
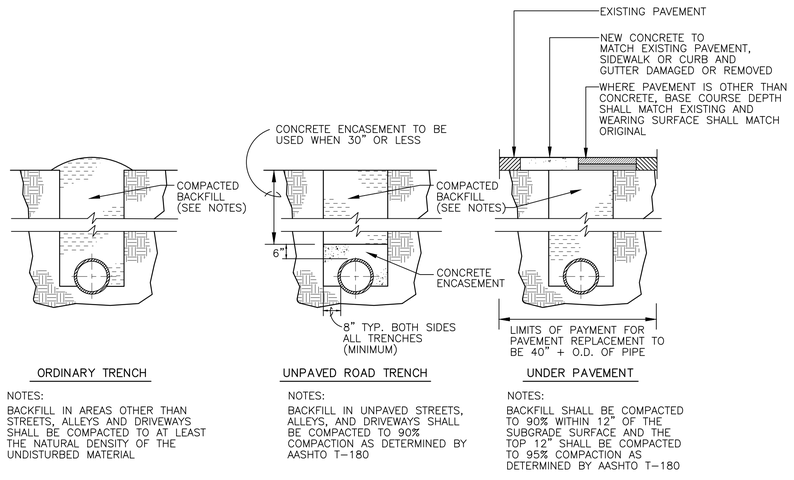


B4 POST INDICATOR VALVE DETAIL

SCALE: NOT TO SCALE



NOTES:

BACKFILL IN AREAS OTHER THAN STREETS, ALLEYS AND DRIVEWAYS SHALL BE COMPACTED TO AT LEAST THE NATURAL DENSITY OF THE UNDISTURBED MATERIAL

NOTES:

BACKFILL IN UNPAVED STREETS, ALLEYS, AND DRIVEWAYS SHALL BE COMPACTED TO 90% COMPACTION AS DETERMINED BY AASHTO T–180

NOTES:

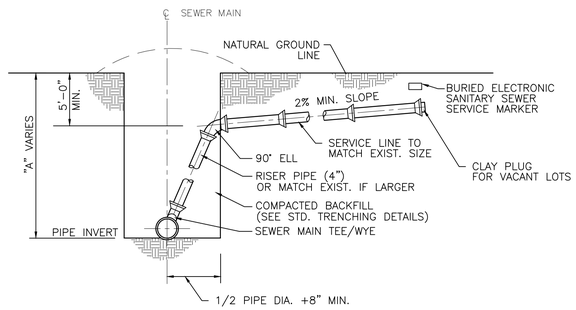
BACKFILL SHALL BE COMPACTED TO 90% WITHIN 12" OF THE SUBGRADE SURFACE AND THE TOP 12" SHALL BE COMPACTED TO 95% COMPACTION AS DETERMINED BY AASHTO T–180

NOTE:

SEE PIPE BEDDING REQUIREMENTS IN SPECS.

A1 TYPICAL SEWER TRENCH DETAILS

SCALE: NOT TO SCALE



NOTES:

WHEN "A" IS LESS THAN 7'–0", DELETE RISER PIPE. USE 45° ELL IN PLACE OF 90° ELL. TURN SEWER MAIN TEE TOWARD SERVICE SIDE AT A 45° AND USE 1 CU. FT. CONC. BLOCKING AT TEE.

A3 TYPICAL SEWER SERVICE CONNECTION DETAIL

SCALE: NOT TO SCALE

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SURVEY INFORMATION

FIELD NOTES

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Drawing Title

MISCELLANEOUS DETAILS

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
			7/10/18	

Issue Date: **MARCH 20, 2019**

City Project No. **5476.91**

Sheet **C-502**

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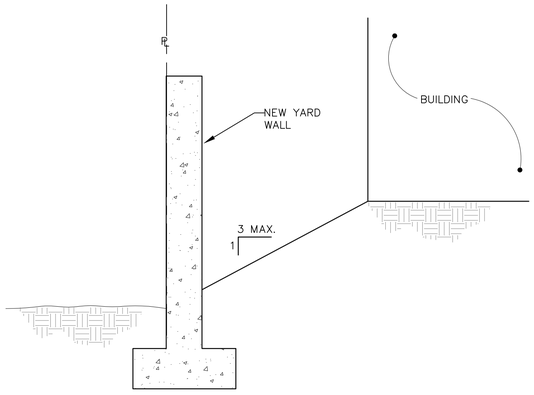
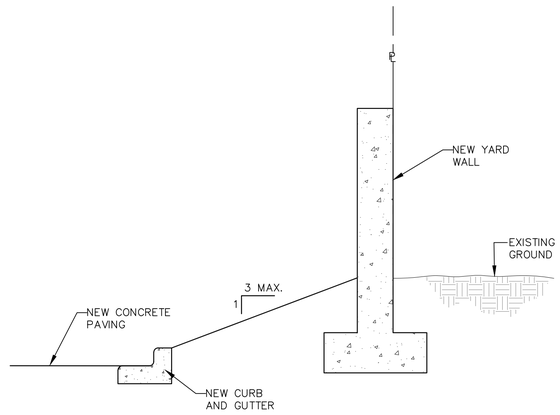
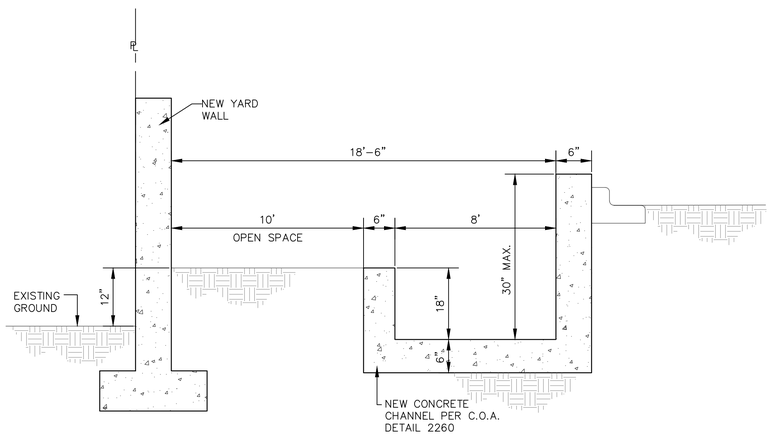


B1 DETAIL "C-C"
SCALE: NOT TO SCALE



B3 DETAIL "D-D"
SCALE: NOT TO SCALE



A1 CONCRETE CHANNEL DETAIL "A-A"
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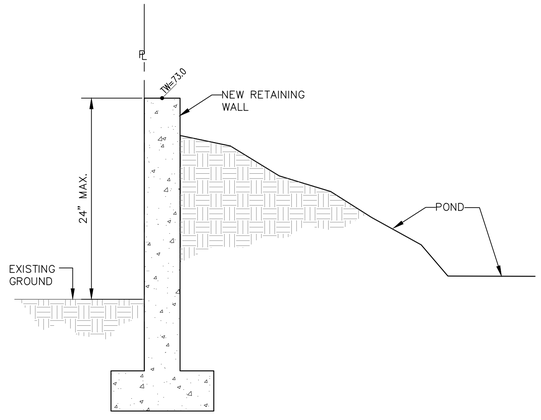

A3 DETAIL "B-B"
SCALE: NOT TO SCALE

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3/20/19

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Drawing Title
MISCELLANEOUS DETAILS

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
			7/10/18	

Issue Date:	City Project No.	Sheet
MARCH 20, 2019	**5476.91**	C-503

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