# CITY OF ALBUQUERQUE

*Planning Department*
Brennon Williams, Director

*Mayor Timothy M. Keller*

June 29, 2020

Donald Duneman
Wilson & Company Inc.
4401 Masthead St NE, Suite 150
Albuquerque, NM, 87109

**RE: 4600 Edith Blvd NE – SWMD Admin. Office and Vehicle Maintenance**
**Drainage Report (Engineer's Stamp 6/16/2020)**
**Hydrology File: G15D202**

Based upon the information provided in your submittal received 6/16/2020, the Conceptual Grading and Drainage Plan and Drainage Report are approved for Building Permit and Work Order. All comments in the Drainage Report have been addressed.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

**Prior to Certificate of Occupancy**

1. An engineer's Certification will be required for each building with site improvements complete according to the approved phasing plan.

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

Sincerely,

Ernest Armijo, P.E.
Principal Engineer, Planning Dept.
Development Review Services

# City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 11/2018)

**Project Title:** SWMD Main. & Admin. Buildings Project Building Permit #: _____ Hydrology File #: G15D202

DRB#: 2019-002046 EPC#: 1010582, 1001515 Work Order#: 7006.92

Legal Description: All or a portion of a northerly portion of Tract 107B1A1, Tract 107B1A1 excl portion to right-of-way & excl a northerly portion, Tract 107B1A2 excl portion to right-of-way, Tract in the SW corner-Tract 107B1B, Tract 108A3A1A, Tract 108A3A1B, and Tract 108A3B, Tracts 108A1A2B1B & 108A1A2B2, Tract 108A1A2B1A, Tract 107B2A2 excl portion to the right-of-way, Tract 107B2A1 excl portion to the right-of-way, MRGCD Map #33.

City Address: 4600 Edith Blvd. NE, Albuquerque, NM

**Applicant:** Wilson & Company, Inc. Contact: Donald Duneman

Address: 4401 Masthead Street NE, Suite 150, Albuquerque, NM 87109

Phone#: 505.948.5125; 505.238.0152 cell Fax#: _____ E-mail: dmduneman@wilsonco.com

**Owner:** City of Albuquerque, Solid Waste Management Department Contact: Jill Holbert

Address: 4600 Edith Blvd. NE, Albuquerque, NM

Phone#: 505.761.8342 Fax#: _____ E-mail: jholbert@cabq.gov

**TYPE OF SUBMITTAL:** _____ PLAT (___# OF LOTS) ____ RESIDENCE X DRB SITE ____ ADMIN SITE

IS THIS A RESUBMITTAL?: X Yes _____ No

**DEPARTMENT:** _____ TRAFFIC/ TRANSPORTATION X HYDROLOGY/ DRAINAGE

Check all that Apply:

**TYPE OF SUBMITTAL:**

____ ENGINEER/ARCHITECT CERTIFICATION
____ PAD CERTIFICATION
____ CONCEPTUAL G & D PLAN
____ GRADING PLAN
____ DRAINAGE MASTER PLAN
X DRAINAGE REPORT
____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
____ ELEVATION CERTIFICATE
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ 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
____ 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
____ FLOODPLAIN DEVELOPMENT PERMIT
____ OTHER (SPECIFY) _____

DATE SUBMITTED: 06/16/20 By: Donald Duneman

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

WILSON &COMPANY
HIGHER RELATIONSHIPS

4401 Masthead Street NE, Suite 150
Albuquerque, NM 87109
505 348 4000 (phone)
505 348 4055 (fax)
wilsonco.com

June 16, 2020

Ernest Armijo, PE
Principal Engineer, Planning Dept.
Development Review Services
City of Albuquerque

Re: G15D202 SWMD Administration & Maintenance Building Project

Dear Mr. Armijo,
Wilson & Company has reviewed the comments provided in an email dated June 15, 2020 on the SWMD Admin. Office & Vehicle Maintenance Project. **Below are the responses to the comments:**

1. StormCAD inlet and manhole numbering does not match up structure numbers on plan sheets. No tables or references explain or tabulate the structure numbers used in the plan and profile sheets. Please provide construction specifications and details for all of the hydraulic structures (build notes). The numbering system (nodes) in the calculations should be shown match those used on the Plan and Profile sheets. **StormCAD labels of manhole and inlets were revised to match the CADD structure numbers on the plan & profile sheets. Please see Appendix D for updated results. Keynotes on updated sheets C-408 to C-412 indicate structure specs. Please refer to Appendix F.**

2. Sheet C-408: This sheet and the corresponding calculations in the report do not match with the Work Order plan set. This includes pipe lengths, slopes, HGL's, and velocities. Please determine which is to be used and make sure all calculations work with chosen layout. **Sheet updated and all information added.**
    - On Detail D5-01 please add roadway identification or call out on overall sheet to identify where this detail sits overall. **Labels and notes added.**
    - Add a north arrow to Detail SD-01 so not to confuse the orientation with Detail D5-01. **North arrow was added.**
    - Call out size and type of manhole on detail of SD-01. **Type and size manhole added.**
    - Inlet structure (104) appears on the plan to be located in the middle of the road, but is called out as a Type "C" which has a curb inlet. **Inlet type was changed to area inlet. See sheets C-408**

3. Sheets C-410 to C-412: Manhole and Inlet labels have not been added. **Structure labels in profile view matching revised StormCAD labels and keynotes in plan view. See sheets C-410 to C-412.**

4. Please specify the Curb type/height on the G&D Plans. I see you added the calculation but the type and height need to be called out on the plans. **Key notes for curb type/heights were specified on sheets C-110 to C-112.**

5. Typical sections should be shown in the north-south direction also. Please indicate what direction the cross section is looking. Each section should show the property line, both the existing and proposed grades, slopes and walls with dimensions, both horizontal and vertical, as necessary to demonstrate

compliance with DPM 22.5.B. **Site sections in the north and south direction were added. See sheets C-302 to C-307 for site section sheets.**

**Prior to Certificate of Occupancy**

6. An engineer's Certification will be required for each building with site improvements complete according to the approved phasing plan. **Engineer's certification will be completed upon completion of each phase of construction.**

Please feel free to contact me, should you have any further questions or comments on these responses. Thank you for your time.

Sincerely,

Donald Duneman, PE
Project Manager
donald.duneman@wilsonco.com
505-238-0152

Attachments:
Drainage Report – PDF Copy

June 2020

# Drainage Analysis
# For
# Maintenance & Administration Building Project
## COA Project Number 700693

City of Albuquerque, NM

WILSON & COMPANY

discipline | intensity | collaboration | shared ownership | solutions

# Drainage Analysis
## for

## SWMD Administration & Maintenance Building Project

**June 2020**


**Prepared by:**

**Wilson & Company, Inc.**
**4401 Masthead Street, NE, Suite 150**
**Albuquerque, New Mexico 87109**
**(505) 348-4000**

**WCI File No: 14-100-132-01**

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## Figures



## Appendices

# DRAINAGE ANALYSIS

## 1. Introduction

The project site is located in northeast Albuquerque at 4600 Edith Blvd. The site is bounded by the Alameda Drain/Edith Blvd. to the west, Comanche Road to the north, Rankin Road to the south, and commercial businesses to the east of the site. See Figure 1, Vicinity Map. The site is not located within a designated FEMA flood plain firm maps 35001C0119G and 35001C0332G. See attached FIRMETT at the end of this section. The drainage report has been prepared in accordance with the latest revision to volume 2 section 22.2 of the City of Albuquerque (COA) Development Process Manual (DPM).


***Figure 1 – Vicinity Map***

## 2. Methodology

The AHYMO S-4 program was used to calculate peak flows and runoff volume for the existing and proposed development. Bentley FlowMaster v8i were utilized to determine roadway and inlet capacities. Bentley CulvertMaster v3.3 was used to analyze ponds outfall pipes. StormCAD v10.1 software was used to analyze and design the underground storm drain systems. See Appendices A to E for results.

## 3. Existing Conditions

The site is 23.8 ac and majority of the site is impervious. The existing site topography generally slopes from east to west. The existing drainage infrastructure diverts all the sites flows through a series of water/oil separators and inlets into two ponds located on the north and south of the site. The larger detention pond to the north has an outlet structure that discharges through a 30 inch Reinforced Concrete Pipe (RCP) into a drainage system in Comanche Road. The construction plans for storm water control improvements for Solid Waste Management Facility COA Project Number 700691 prepared by Applied Engineering and Surveying, Inc. Dated 07/22/03 sheet 2 of 17 shows an outlet from the pond with peak flow of 44.3 cfs and an allowable discharge of 47.6 cfs from the site. The northern three quarters of the site drains into this pond. The remainder of the site drains into the smaller retention pond to the southwest corner of the site.

The commercial businesses to the east of the site also drain from the east to west. The buildings on these commercial sites are approximately 10-15 ft higher than the sites existing grades. The offsite flows will flow directly to the east. The north half drains into the north pond and the south half flows into the south retention pond. The south pond is a shallow pond with rock riprap spillway draining into Rankin Road. The area to the north of the site is Comanche Road which has drainage infrastructure in place to prevent flows from being discharged into the project site. Rankin Road drains east to west and runoff sheet flow to a cattle guard inlet east of intersection of Rankin Road and Edith Blvd. Flows do not enter the property. The area to the west drains east to west and those flows will enter the Alameda Drain. The AHYMO S-4 program was used to calculate existing peak flows and runoff volumes for the 100-yr, 24-hr storm event. See AHYMO summary and input files in Appendix A and Table 1, Existing Basin Data Summary.

| Basin | Total | Total | C | | D | | Peak Discharge (cfs), $Q_{100\ yr\text{-}24\ hr}$ | Volume (ac-ft) $V_{100\ yr\text{-}24\ hr}$ |
|---|---|---|---|---|---|---|---|---|
| | Area (sq ft) | Area (Ac) | % | Ac | % | Ac | | |
| A | 62474.32 | 1.434 | 5 | 0.07 | 95 | 1.36 | 5.9 | 0.267 |
| B | 93252.44 | 2.141 | 5 | 0.11 | 95 | 2.03 | 8.9 | 0.401 |
| C | 48109.31 | 1.104 | 5 | 0.06 | 95 | 1.05 | 4.6 | 0.207 |
| J | 358117.7 | 8.221 | 5 | 0.41 | 95 | 7.81 | 34.5 | 1.556 |
| K | 345257 | 7.926 | 5 | 0.40 | 95 | 7.53 | 33.4 | 1.507 |
| Offsite 1 | 55,490 | 1.274 | 10 | 0.13 | 90 | 1.15 | 5.3 | 0.235 |
| Offsite 2 | 46,468 | 1.067 | 10 | 0.11 | 90 | 0.96 | 4.4 | 0.197 |

***Table 1 – Existing Conditions Basin Data***

## 4. Proposed Conditions

The proposed site will maintain the general flow direction of east to west and south to north. See Grading & Drainage Plan in Appendix F. The AHYMO S-4 program was used to calculate proposed peak flows and runoff volumes for the 100-yr, 24-hr storm event. See AHYMO summary and input files in Appendix A and Table 2, Proposed Basin Data Summary.

| Basin | Total Area (sq ft) | Total Area | C | | D | | Peak Discharge (cfs), $Q_{100\ yr\text{-}24\ hr}$ | Volume (ac-ft) $V_{100\ yr\text{-}24\ hr}$ |
|---|---|---|---|---|---|---|---|---|
| | | | % | Ac | % | Ac | | |
| 201 | 48,732 | 1.119 | 10 | 0.11 | 90 | 1.01 | 4.7 | 0.207 |
| 202 | 78,424 | 1.800 | 10 | 0.18 | 90 | 1.62 | 7.5 | 0.332 |
| 203 | 48,462 | 1.113 | 5 | 0.06 | 95 | 1.06 | 4.3 | 0.195 |
| 204 | 105,306 | 2.417 | 5 | 0.12 | 95 | 2.30 | 10.2 | 0.460 |
| 205 | 54,819 | 1.258 | 5 | 0.06 | 95 | 1.20 | 5.3 | 0.239 |
| 206 | 59,717 | 1.371 | 5 | 0.07 | 95 | 1.30 | 6.0 | 0.271 |
| 207 | 23,213 | 0.533 | 5 | 0.03 | 95 | 0.51 | 2.3 | 0.101 |
| 208 | 38,436 | 0.882 | 5 | 0.04 | 95 | 0.84 | 3.7 | 0.168 |
| 209 | 39,485 | 0.906 | 2 | 0.02 | 98 | 0.89 | 3.9 | 0.176 |
| 210 | 40,798 | 0.937 | 2 | 0.02 | 98 | 0.92 | 4.0 | 0.181 |
| 211 | 71,721 | 1.646 | 5 | 0.08 | 95 | 1.56 | 6.9 | 0.312 |
| 212 | 56,736 | 1.302 | 5 | 0.07 | 95 | 1.24 | 5.5 | 0.248 |
| 213 | 6,289 | 0.144 | 75 | 0.11 | 25 | 0.04 | 0.6 | 0.025 |
| 214 | 38,158 | 0.876 | 75 | 0.66 | 25 | 0.22 | 3.5 | 0.147 |
| 215 | 10,070 | 0.231 | 10 | 0.02 | 90 | 0.21 | 1.0 | 0.042 |
| 216 | 5,758 | 0.132 | 5 | 0.01 | 95 | 0.13 | 0.6 | 0.026 |
| 217 | 12,735 | 0.292 | 20 | 0.06 | 80 | 0.23 | 1.2 | 0.051 |
| 218 | 90,301 | 2.073 | 10 | 0.21 | 90 | 1.87 | 8.6 | 0.382 |
| 219 | 10,416 | 0.239 | 5 | 0.01 | 95 | 0.23 | 1.0 | 0.045 |
| 220 | 38,671 | 0.888 | 15 | 0.13 | 85 | 0.75 | 3.6 | 0.159 |
| 221 | 16,629 | 0.382 | 10 | 0.04 | 90 | 0.34 | 1.6 | 0.071 |
| 222 | 41,098 | 0.943 | 2 | 0.02 | 98 | 0.92 | 4.0 | 0.182 |
| Offsite 1 | 55,490 | 1.274 | 10 | 0.13 | 90 | 1.15 | 5.3 | 0.235 |
| Offsite 2 | 46,468 | 1.067 | 10 | 0.11 | 90 | 0.96 | 4.4 | 0.197 |

***Table 2 – Proposed Conditions Basin Data***

The contour data used in computation of the pond volumes were extracted from graded area using AutoCAD software. CulvertMaster application was used in calculating the pond discharge table. StormCAD was used to design storm systems. The water surface elevation at maximum peak inflow time was extracted from AHYMO model as the starting HGL elevation of pipes draining into the ponds. The pond discharge rating table was developed using CulvertMaster. The tail water elevation was extracted from the StormCAD model and used as input in the culvert discharge rating curve. FlowMaster was used to compute roadway and inlet capacities. See Appendices A to E for calculations.

All the basins except basin 206 will ultimately drain into Pond A located in basin 220. Runoff from basins 201-205 and offsite basins 1 and 2 will be captured and routed through Pond B in basin 204. This pond will be lined to capture any oil from the site runoff. Pond B outlet pipe will ultimately discharge into the new Pond A in basin 220. Pond A outfall will be connected to the existing pond drainage infrastructure that discharges to the storm drain system in Comanche Road. This pond will have a water quality riser to help remove trash and sediment from the runoff. The pond discharge will be 44.3 cfs which will less than the allowable site discharge of 47.6 cfs. The existing 60 inch drainage system in Comanche Road is about 19 ft deep. No data related to hydraulic grade line of this system was found. The pond outfall will tie to the existing 30 inch pipe upstream of the existing system in Comanche Road. The existing retention pond in basin 206 located on the southwest corner will be removed. Runoff from this basin sheet flows to a water quality inlet draining into an underground pond. A new storm drain line will connect the pond outfall to the existing cattle guard inlet at the intersection of Edith Blvd and Rankin Road.

The COA storm water quality volume for the 80$^{th}$ percentile event for the site impervious areas was calculated using 0.26 inch of rainfall depth. This volume was calculated to be 0.23 ac-ft for Pond A, 0.21 ac-ft for Pond B and 0.03 ac-ft for underground Pond C. This retention volume will be accommodated in all ponds. See Table 3, 80$^{th}$ Percentile Volume Calculations.

| Pond | Impervious Area (ac) | $V_{80th\% \text{ (ac-ft)}}$ | Elevation |
|---|---|---|---|
| A | 10.55 | 0.23 | 4989.00 to 4990.86 |
| B | 9.63 | 0.21 | 4994.00 to 4989.00 |
| C | 1.30 | 0.03 | 4984.00 to 4985.00 |
| The required 80th percentile required volume is 0.26 inches of excess precipitation from the impervious area | | | |

***Table 3 – 80th Percentile Volume Calculation***

## 5. Conclusions

The project site was analyzed to determine any increase in runoff in the developed conditions. The existing drainage pattern will be kept, existing ponds modified and one new pond added to capture generated runoff. Runoff from south of the site will drain into Pond B. Pond B outfall and runoff from the north end will drain into Pond A. As in the current conditions, Pond A outfall will be connected to the existing storm system in Comanche Road. The outflow from the pond will be approximately 44 cfs which is less than the allowable discharge of 47.6 cfs. The new underground pond adjacent to Rankin Road will be connected to a new storm system in Rankin Road to convey about 3 cfs which will drain into the existing cattle guard inlet east of the Edith Blvd intersection. All three ponds will accommodate additional volume to capture the 80$^{th}$ percentile runoff due to addition of impervious areas. Regular maintenance of all the storm drain structure is highly recommended.

# National Flood Hazard Layer FIRMette

FEMA


## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

**OTHER AREAS**
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

**GENERAL STRUCTURES**
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/8/2020 at 3:36:36 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

**FIGURE 2**

**APPENDIX A**

```
AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                        - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR) =04/07/2020
INPUT FILE = 32-01\2_Disciplines\Drainage_or_Sitework\Calculations\AHYMO\SWMD - EXIST.txt USER NO.= WilsonCoANMSiteA96476897

                              FROM  TO                   PEAK         RUNOFF              TIME TO    CFS      PAGE =   1
                  HYDROGRAPH   ID   ID         AREA     DISCHARGE      VOLUME      RUNOFF     PEAK     PER
COMMAND       IDENTIFICATION   NO.  NO.      (SQ MI)      (CFS)       (AC-FT)    (INCHES)  (HOURS)    ACRE     NOTATION

*S "EXISTING" CONDITION MODEL FOR SWMD Maintenance & Admin Project
START                                                                                                        TIME=      0.00
LOCATION                    ALBUQUERQUE
*S                  RAINFALL DATA FROM NOAA ATLAS 14
*S*************************************************************************
*S  100 YEAR 24HR STORM
RAINFALL  TYPE= 2 NOAA 14                                                                                    RAIN24=   2.600
COMPUTE NM HYD             A   -     1       0.00220        5.94       0.267      2.27932    1.500    4.216 PER IMP=  95.00
COMPUTE NM HYD             B   -     2       0.00330        8.90       0.401      2.27932    1.500    4.212 PER IMP=  95.00
COMPUTE NM HYD             C   -     3       0.00170        4.59       0.207      2.27932    1.500    4.219 PER IMP=  95.00
COMPUTE NM HYD             J   -     4       0.01280       34.45       1.556      2.27932    1.500    4.206 PER IMP=  95.00
COMPUTE NM HYD             K   -     5       0.01240       33.38       1.507      2.27932    1.500    4.206 PER IMP=  95.00
COMPUTE NM HYD          OFF1   -     6       0.00199        5.29       0.235      2.21326    1.500    4.151 PER IMP=  90.00
COMPUTE NM HYD          OFF2   -     7       0.00167        4.44       0.197      2.21326    1.500    4.153 PER IMP=  90.00
FINISH
```

```
*  SWMD Maintenance & Admin Project Proposed Basins
*  Drainage Basin Analysis
*S "EXISTING" CONDITION MODEL FOR SWMD Maintenance & Admin Project
*
START               TIME=0.0  PUNCH CODE=0 PRINT CODE=0
LOCATION            ALBUQUERQUE
*
* RAINFALL FROM NOAA COA DEVELOPMENT PROCESS MANUAL
*S      RAINFALL DATA FROM NOAA ATLAS 14
*S*************************************************************************
*S  100 YEAR 24HR STORM
RAINFALL                TYPE=2
                        QUARTER=0.00 IN
                        HOUR=   1.77 IN
                        SIX HR= 2.29 IN
                        DAY=    2.60 IN   DT=0.03333

*
*** Sub-BASIN A ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.050   K=0.7
                        LENGTH=105 FT   SLOPE=0.011   K=2.0
*
COMPUTE NM HYD          ID=1   HYD NO=A   DA=0.0022 SQ MI
                        PER A=00 PER B=00 PER C=5 PER D=95
                        TP=0 hr   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
*
*
*
*** Sub-BASIN B ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.020   K=0.7
                        LENGTH=140 FT   SLOPE=0.020   K=2.0
*
COMPUTE NM HYD          ID=2   HYD NO=B   DA=0.0033 SQ MI
                        PER A=00 PER B=00 PER C=5 PER D=95
                        TP=0 hr   MASSRAIN=-1
*
PRINT HYD               ID=2   CODE=1
*
*
*** Sub-BASIN C ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.020   K=0.7
                        LENGTH=100 FT   SLOPE=0.020   K=2.0
*
COMPUTE NM HYD          ID=3   HYD NO=C   DA=0.0017 SQ MI
                        PER A=00 PER B=00 PER C=5 PER D=95
                        TP=0 hr   MASSRAIN=-1
*
PRINT HYD               ID=3   CODE=1
*
*
*** Sub-BASIN J ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.020   K=0.7
                        LENGTH=170 FT   SLOPE=0.020   K=2.0
*
COMPUTE NM HYD          ID=4   HYD NO=J   DA=0.0128 SQ MI
                        PER A=00 PER B=00 PER C=5 PER D=95
                        TP=0 hr   MASSRAIN=-1
*
PRINT HYD               ID=4   CODE=1
```

```
*
*
*** Sub-BASIN K ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.020   K=0.7
                        LENGTH=600 FT   SLOPE=0.020   K=2.0
*
COMPUTE NM HYD          ID=5   HYD NO=K   DA=0.0124 SQ MI
                        PER A=00 PER B=00 PER C=5 PER D=95
                        TP=0 hr   MASSRAIN=-1
*
PRINT HYD               ID=5   CODE=1

*
*
*************************************************************************
*** Sub-BASIN OFF1 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.010   K=0.7
                        LENGTH=200 FT   SLOPE=0.050   K=2.0
*
COMPUTE NM HYD          ID=6   HYD NO=OFF1   DA=0.00199 SQ MI
                        PER A=00 PER B=00 PER C=10 PER D=90
                        TP=0 hr   MASSRAIN=-1
*
PRINT HYD               ID=6   CODE=1
*
*
*** Sub-BASIN OFF2 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.010   K=0.7
                        LENGTH=200 FT   SLOPE=0.050   K=2.0
*
COMPUTE NM HYD          ID=7   HYD NO=OFF2   DA=0.00167 SQ MI
                        PER A=00 PER B=00 PER C=10 PER D=90
                        TP=0 hr   MASSRAIN=-1
*
PRINT HYD               ID=7   CODE=1
*
*
*
FINISH
```

```
AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                        - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR) =04/08/2020
INPUT FILE = 14-100-132-01\2_Disciplines\Drainage_or_Sitework\Calculations\AHYMO\SWMD.txt USER NO.= WilsonCoANMSiteA96476897

                                FROM  TO                    PEAK         RUNOFF              TIME TO    CFS      PAGE =   1
                    HYDROGRAPH   ID   ID         AREA     DISCHARGE      VOLUME      RUNOFF     PEAK     PER
COMMAND       IDENTIFICATION   NO.  NO.      (SQ MI)      (CFS)       (AC-FT)    (INCHES)  (HOURS)    ACRE     NOTATION

*S "PROPOSED" CONDITION MODEL FOR SWMD Maintenance & Admin Project
START                                                                                                          TIME=      0.00
LOCATION                      ALBUQUERQUE
*S                   RAINFALL DATA FROM NOAA ATLAS 14
*S*************************************************************************
*S  100 YEAR 24HR STORM
RAINFALL  TYPE= 2 NOAA 14                                                                                      RAIN24=   2.600
COMPUTE NM HYD          OFF2   -     1       0.00167        4.44       0.197      2.21326    1.500    4.153 PER IMP=  90.00
COMPUTE NM HYD        201.00   -    97       0.00175        4.65       0.207      2.21326    1.500    4.152 PER IMP=  90.00
ADD HYD               201SUM  1&97  12       0.00342        9.09       0.404      2.21308    1.500    4.153
COMPUTE NM HYD        203.00   -     2       0.00160        4.32       0.195      2.27932    1.500    4.220 PER IMP=  95.00
ADD HYD               203SUM 12& 2  10       0.00502       13.41       0.598      2.23414    1.500    4.174
COMPUTE NM HYD          OFF1   -     1       0.00199        5.29       0.235      2.21326    1.500    4.151 PER IMP=  90.00
COMPUTE NM HYD        202.00   -    98       0.00281        7.46       0.332      2.21326    1.500    4.147 PER IMP=  90.00
ADD HYD               202SUM  1&98   3       0.00480       12.74       0.567      2.21314    1.500    4.149
COMPUTE NM HYD        204.00   -     2       0.00378       10.19       0.460      2.27931    1.500    4.211 PER IMP=  95.00
ADD HYD               204SUM  3& 2   1       0.00858       22.93       1.026      2.24226    1.500    4.176
COMPUTE NM HYD        221.00   -     2       0.00060        1.61       0.071      2.21326    1.500    4.181 PER IMP=  90.00
COMPUTE NM HYD        205.00   -     5       0.00197        5.32       0.239      2.27932    1.500    4.217 PER IMP=  95.00
ADD HYD               205SUM  2& 5   4       0.00257        6.92       0.310      2.26367    1.500    4.209
ADD HYD              205SUMA  1& 4   6       0.01115       29.85       1.336      2.24719    1.500    4.184
ADD HYD              205SUMB 10& 6   1       0.01617       43.27       1.934      2.24314    1.500    4.181
ROUTE RESERVOIR        PONDB    1   30       0.01617       41.09       1.858      2.15465    1.567    3.971 AC-FT=    0.383
COMPUTE NM HYD        206.00   -     1       0.00223        6.02       0.271      2.27932    1.500    4.216 PER IMP=  95.00
ROUTE RESERVOIR        PONDC    1    2       0.00223        2.71       0.271      2.27919    1.700    1.901 AC-FT=    0.097
COMPUTE NM HYD        208.00   -     8       0.00138        3.73       0.168      2.27932    1.500    4.222 PER IMP=  95.00
COMPUTE NM HYD        209.00   -     9       0.00142        3.87       0.176      2.31895    1.500    4.260 PER IMP=  98.00
ADD HYD               209SUM  9& 8  11       0.00280        7.60       0.343      2.29921    1.500    4.241
COMPUTE NM HYD        222.00   -    12       0.00147        4.01       0.182      2.31895    1.500    4.260 PER IMP=  98.00
ADD HYD               222SUM 11&12  13       0.00427       11.61       0.525      2.30593    1.500    4.248
COMPUTE NM HYD        215.00   -    14       0.00036        0.97       0.042      2.21326    1.500    4.210 PER IMP=  90.00
ADD HYD               215SUM 14&13  15       0.00463       12.58       0.568      2.29867    1.500    4.245
COMPUTE NM HYD        216.00   -    16       0.00021        0.58       0.026      2.27932    1.500    4.286 PER IMP=  95.00
ADD HYD               216SUM 16&15  17       0.00484       13.15       0.593      2.29780    1.500    4.247
COMPUTE NM HYD        213.00   -     2       0.00023        0.60       0.025      2.01509    1.533    4.064 PER IMP=  75.00
COMPUTE NM HYD        214.00   -    99       0.00137        3.48       0.147      2.01509    1.533    3.964 PER IMP=  75.00
ADD HYD               214SUM 99& 2   3       0.00160        4.07       0.172      2.01481    1.533    3.978
COMPUTE NM HYD        210.00   -     1       0.00146        3.98       0.181      2.31895    1.500    4.260 PER IMP=  98.00
ADD HYD               210SUM  1& 3  31       0.00306        8.05       0.352      2.15982    1.500    4.111
ADD HYD              210SUMA 17&31  18       0.00790       21.20       0.946      2.24435    1.500    4.194
COMPUTE NM HYD        207.00   -     1       0.00083        2.25       0.101      2.27932    1.500    4.237 PER IMP=  95.00
COMPUTE NM HYD        211.00   -    11       0.00257        6.93       0.312      2.27932    1.500    4.214 PER IMP=  95.00
ADD HYD               211SUM  1&11  10       0.00340        9.18       0.413      2.27914    1.500    4.219
COMPUTE NM HYD        212.00   -     3       0.00204        5.51       0.248      2.27932    1.500    4.216 PER IMP=  95.00
ADD HYD               212SUM 10& 3  11       0.00544       14.69       0.661      2.27915    1.500    4.218
COMPUTE NM HYD        218.00   -     1       0.00324        8.60       0.382      2.21326    1.500    4.146 PER IMP=  90.00
ADD HYD               218SUM 18& 1  10       0.01114       29.80       1.328      2.23528    1.500    4.180
COMPUTE NM HYD        219.00   -     1       0.00037        1.01       0.045      2.27932    1.500    4.258 PER IMP=  95.00
ADD HYD               219SUM 10& 1  19       0.01151       30.81       1.373      2.23668    1.500    4.183
```

| COMMAND | HYDROGRAPH IDENTIFICATION | FROM ID NO. | TO ID NO. | AREA (SQ MI) | PEAK DISCHARGE (CFS) | RUNOFF VOLUME (AC-FT) | RUNOFF (INCHES) | TIME TO PEAK (HOURS) | CFS PER ACRE | NOTATION |
|---|---|---|---|---|---|---|---|---|---|---|
| ADD HYD | 219SUMA | 19&11 | 18 | 0.01695 | 45.50 | 2.034 | 2.25031 | 1.500 | 4.194 | |
| COMPUTE NM HYD | 220.00 | - | 20 | 0.00139 | 3.64 | 0.159 | 2.14720 | 1.500 | 4.091 | PER IMP= 85.00 |
| ADD HYD | 220SUM | 18&20 | 21 | 0.01834 | 49.14 | 2.193 | 2.24248 | 1.500 | 4.186 | |
| ADD HYD | POND.IN | 21&30 | 1 | 0.03451 | 89.50 | 4.052 | 2.20133 | 1.533 | 4.052 | |
| ROUTE RESERVOIR | PONDA | 1 | 96 | 0.03451 | 44.75 | 3.821 | 2.07613 | 1.733 | 2.026 | AC-FT= 1.243 |
| COMPUTE NM HYD | 217.00 | - | 6 | 0.00046 | 1.20 | 0.051 | 2.08115 | 1.533 | 4.064 | PER IMP= 80.00 |
| FINISH | | | | | | | | | | |

```
*  SWMD Maintenance & Admin Project Proposed Basins
*  Drainage Basin Analysis
*S "PROPOSED" CONDITION MODEL FOR SWMD Maintenance & Admin Project
*
START               TIME=0.0  PUNCH CODE=0 PRINT CODE=0
LOCATION            ALBUQUERQUE
*
* RAINFALL FROM NOAA COA DEVELOPMENT PROCESS MANUAL
*S      RAINFALL DATA FROM NOAA ATLAS 14
*S**************************************************************************
*S  100 YEAR 24HR STORM
RAINFALL                TYPE=2
                        QUARTER=0.00 IN
                        HOUR=   1.77 IN
                        SIX HR= 2.29 IN
                        DAY=    2.60 IN   DT=0.03333

*** Sub-BASIN OFF2 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.010   K=0.7
                        LENGTH=200 FT   SLOPE=0.050   K=2.0
*
COMPUTE NM HYD          ID=1   HYD NO=OFF2   DA=0.00167 SQ MI
                        PER A=00 PER B=00 PER C=10 PER D=90
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
*
*

*** Sub-BASIN 201 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.050   K=0.7
                        LENGTH=185 FT   SLOPE=0.011   K=2.0
*
COMPUTE NM HYD          ID=97   HYD NO=201   DA=0.00175 SQ MI
                        PER A=00 PER B=00 PER C=10 PER D=90
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=97   CODE=1
*
*
* Total Flow from Basin (OFF2 + 201)
ADD HYD                 ID=12  HYD NO=201SUM ID I=1   ID II=97
PRINT HYD               ID=12  CODE=1
*
*
*** Sub-BASIN 203 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.020   K=0.7
                        LENGTH=190 FT   SLOPE=0.020   K=2.0
*
COMPUTE NM HYD          ID=2   HYD NO=203   DA=0.0016 SQ MI
                        PER A=00 PER B=00 PER C=5 PER D=95
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=2   CODE=1
*
*
* Total Flow from Basin (OFF2+201+203)
ADD HYD                 ID=10  HYD NO=203SUM ID I=12   ID II=2
PRINT HYD               ID=10  CODE=1
*
*
**************************************************************************
*** Sub-BASIN OFF1 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.010   K=0.7
                        LENGTH=200 FT   SLOPE=0.050   K=2.0
*
COMPUTE NM HYD          ID=1   HYD NO=OFF1   DA=0.00199 SQ MI
                        PER A=00 PER B=00 PER C=10 PER D=90
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
```

```
*
*
*** Sub-BASIN 202 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.048   K=0.7
                        LENGTH=240 FT   SLOPE=0.052   K=2.0
*
COMPUTE NM HYD          ID=98   HYD NO=202   DA=0.00281 SQ MI
                        PER A=00 PER B=00 PER C=10 PER D=90
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=98   CODE=1
*
*
* Total Flow from Basin (OFF1+202)
ADD HYD                 ID=3  HYD NO=202SUM ID I=1   ID II=98
PRINT HYD               ID=3  CODE=1
*
*
*** Sub-BASIN 204 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=90 FT   SLOPE=0.050   K=0.7
*
COMPUTE NM HYD          ID=2   HYD NO=204   DA=0.00378 SQ MI
                        PER A=00 PER B=00 PER C=5 PER D=95
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=2   CODE=1
*
*
* Total Flow from Basin (OFF1 +202 + 204)
ADD HYD                 ID=1  HYD NO=204SUM ID I=3   ID II=2
PRINT HYD               ID=1   CODE=1
*
*
*** Sub-BASIN 221 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.045   K=0.7
                        LENGTH=200 FT   SLOPE=0.032   K=2.0
*
COMPUTE NM HYD          ID=2   HYD NO=221   DA=0.0006 SQ MI
                        PER A=00 PER B=00 PER C=10 PER D=90
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=2   CODE=1
*
*

*** Sub-BASIN 205 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.025   K=0.7
                        LENGTH=239 FT   SLOPE=0.014   K=2.0
*
COMPUTE NM HYD          ID=5   HYD NO=205   DA=0.00197 SQ MI
                        PER A=00 PER B=00 PER C=05 PER D=95
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=5   CODE=1
*
*
* Total Flow from Basin (205 + 221)
ADD HYD                 ID=4  HYD NO=205SUM ID I=2   ID II=5
PRINT HYD               ID=4  CODE=1
*
*

* Total Flow from Basin (OFF1 TO 205)
ADD HYD                 ID=6  HYD NO=205SUMA ID I=1   ID II=4
PRINT HYD               ID=6   CODE=1
*
*
* Total Flow TO POND B
ADD HYD                 ID=1  HYD NO=205SUMB ID I=10   ID II=6
PRINT HYD               ID=1   CODE=1
*
```

```
*
****Route HYD 205sum to Sub-Basin  Through a Pipe

****Route Hyd  through POND B
*
ROUTE RESERVOIR         ID=30  HYD NO=PONDB  INFLOW ID=1  CODE=1
                        OUTFLOW (CFS)     STORAGE (AC FT)       ELEV
                        0                       0.0             4994
                        0.01                    0.0626          4995
                        0.02                    0.1469          4996
                        0.03                    0.2561          4997
                        44.36                   0.3932          4998
                        72.44                   0.5613          4999

*
*PRINT HYD              ID=30   CODE=1
*
**********************************************************************
*** Sub-BASIN 206, Sheet Flow Out ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.020   K=0.7
                        LENGTH=187 FT   SLOPE=0.033   K=2.0
*
COMPUTE NM HYD          ID=1   HYD NO=206   DA=0.00223 SQ MI
                        PER A=00 PER B=00 PER C=05 PER D=95
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
*

*
*****Route HYD  to Sub-Basin  Through a Pipe
*COMPUTE RATING CURVE   CID=1   VS NO=1 CODE=-1   SLP=0.023
                        DIA=24 IN   N=0.013
*
*ROUTE MCUNGE           ID=2  HYD NO=206Rt  INFLOW ID=1
*                       DT=0 HR  LENGTH=200 FT
*                       NS=0  SLOPE=0.010
*
*PRINT HYD              ID=2   CODE=1
*
*
**********************************************************************
****Route Hyd  through POND C - Underground
*
ROUTE RESERVOIR         ID=2  HYD NO=PONDC  INFLOW ID=1  CODE=1
                        OUTFLOW (CFS)     STORAGE (AC FT)       ELEV
                        0.0                     0.00            4985.0
                        2.8                     0.10            4986
                        5.3                     0.13            4986.5

*
*PRINT HYD              ID=2    CODE=1




**********************************************************************
*
**** Sub-BASIN 208 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.025   K=0.7
                        LENGTH=485 FT   SLOPE=0.018   K=2.0
*
COMPUTE NM HYD          ID=8   HYD NO=208   DA=0.00138 SQ MI
                        PER A=00 PER B=00 PER C=05 PER D=95
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=8   CODE=1
*
*
*** Sub-BASIN 209 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.018   K=0.7
                        LENGTH=410 FT   SLOPE=0.004   K=2.0
*
```

```
COMPUTE NM HYD          ID=9   HYD NO=209   DA=0.00142 SQ MI
                        PER A=00 PER B=00 PER C=02 PER D=98
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=9   CODE=1
*
*
* Total Flow from Basin (208 + 209)
ADD HYD                 ID=11  HYD NO=209SUM ID I=9   ID II=8
PRINT HYD               ID=11   CODE=1
*
*** Sub-BASIN 222 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=89 FT   SLOPE=0.032   K=0.7
*
COMPUTE NM HYD          ID=12   HYD NO=222   DA=0.00147 SQ MI
                        PER A=00 PER B=00 PER C=2 PER D=98
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=12   CODE=1
*
*
* Total Flow from Basin (208 + 209 + 222)
ADD HYD                 ID=13  HYD NO=222SUM ID I=11   ID II=12
PRINT HYD               ID=13   CODE=1
*
*** Sub-BASIN 215 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.029   K=0.7
                        LENGTH=206 FT   SLOPE=0.003   K=2.0
*
COMPUTE NM HYD          ID=14   HYD NO=215   DA=0.00036 SQ MI
                        PER A=00 PER B=00 PER C=10 PER D=90
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=14   CODE=1
*
*
* Total Flow from Basin (208 TO 215)
ADD HYD                 ID=15  HYD NO=215SUM ID I=14   ID II=13
PRINT HYD               ID=15   CODE=1
*

*** Sub-BASIN 216 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.011   K=0.7
                        LENGTH=479 FT   SLOPE=0.023   K=2.0
*
COMPUTE NM HYD          ID=16   HYD NO=216   DA=0.00021 SQ MI
                        PER A=00 PER B=00 PER C=05 PER D=95
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=16   CODE=1
*
*
* Total Flow from Basin (208 TO 216)
ADD HYD                 ID=17  HYD NO=216SUM ID I=16   ID II=15
PRINT HYD               ID=17   CODE=1
*
*****************************************************************
*** Sub-BASIN 213 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.025   K=0.7
                        LENGTH=50 FT   SLOPE=0.060   K=2.0
*
COMPUTE NM HYD          ID=2   HYD NO=213   DA=0.00023 SQ MI
                        PER A=00 PER B=00 PER C=25 PER D=75
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=2   CODE=1
*
*
*** Sub-BASIN 214 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
```

```
                      NK=2   ISLOPE=1
                      LENGTH=100 FT   SLOPE=0.028   K=0.7
                      LENGTH=90 FT   SLOPE=0.061   K=2.0
*
COMPUTE NM HYD        ID=99   HYD NO=214   DA=0.00137 SQ MI
                      PER A=00 PER B=00 PER C=25 PER D=75
                      TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD             ID=99   CODE=1
*
* Total Flow from Basin (214 + 213)
ADD HYD               ID=3  HYD NO=214SUM ID I=99   ID II=2
PRINT HYD             ID=3   CODE=1
*
*
**********************************************************************
*
****************************************************************
*** Sub-BASIN 210 ****
*
COMPUTE LT TP         LCODE=1   UPLAND/LAG TIME METHOD
                      NK=2   ISLOPE=1
                      LENGTH=300 FT   SLOPE=0.005   K=0.7
*
COMPUTE NM HYD        ID=1   HYD NO=210   DA=0.00146 SQ MI
                      PER A=00 PER B=00 PER C=02 PER D=98
                      TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD             ID=1   CODE=1
*
* Total Flow from Basin (213 + 214 + 210)
ADD HYD               ID=31  HYD NO=210SUM ID I=1   ID II=3
PRINT HYD             ID=31   CODE=1
*
*

* Total Flow from Basin (208 TO 216 TO 210, 213 + 214)
ADD HYD               ID=18  HYD NO=210SUMA ID I=17   ID II=31
PRINT HYD             ID=18   CODE=1
*
****************************************************************

*** Sub-BASIN 207 ****
*
COMPUTE LT TP         LCODE=1   UPLAND/LAG TIME METHOD
                      NK=2   ISLOPE=1
                      LENGTH=100 FT   SLOPE=0.025   K=0.7
                      LENGTH=545 FT   SLOPE=0.015   K=2.0
*
COMPUTE NM HYD        ID=1   HYD NO=207   DA=0.00083 SQ MI
                      PER A=00 PER B=00 PER C=05 PER D=95
                      TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD             ID=1   CODE=1
*
*
*** Sub-BASIN 211 ****
*
COMPUTE LT TP         LCODE=1   UPLAND/LAG TIME METHOD
                      NK=2   ISLOPE=1
                      LENGTH=100 FT   SLOPE=0.055   K=0.7
                      LENGTH=114 FT   SLOPE=0.037   K=2.0
*
COMPUTE NM HYD        ID=11   HYD NO=211   DA=0.00257 SQ MI
                      PER A=00 PER B=00 PER C=5 PER D=95
                      TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD             ID=11   CODE=1
*
*
* Total Flow from Basin (211 + 207)
ADD HYD               ID=10  HYD NO=211SUM ID I=1   ID II=11
PRINT HYD             ID=10   CODE=1
*
*** Sub-BASIN 212 ****
*
COMPUTE LT TP         LCODE=1   UPLAND/LAG TIME METHOD
                      NK=2   ISLOPE=1
                      LENGTH=100 FT   SLOPE=0.005   K=0.7
                      LENGTH=50 FT   SLOPE=0.260   K=2.0
*
COMPUTE NM HYD        ID=3   HYD NO=212   DA=0.00204 SQ MI
                      PER A=00 PER B=00 PER C=5 PER D=95
```

```
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=3   CODE=1
*
*
* Total Flow from Basin (207+211+212)
ADD HYD                 ID=11  HYD NO=212SUM ID I=10   ID II=3
PRINT HYD               ID=11   CODE=1
*

*** Sub-BASIN 218 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.040   K=0.7
                        LENGTH=50 FT   SLOPE=0.040   K=2.0
*
COMPUTE NM HYD          ID=1   HYD NO=218   DA=0.00324 SQ MI
                        PER A=00 PER B=00 PER C=10 PER D=90
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
*
*
* Total Flow from Basins
ADD HYD                 ID=10  HYD NO=218SUM ID I=18   ID II=1
PRINT HYD               ID=10   CODE=1
*

*** Sub-BASIN 219 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.025   K=0.7
                        LENGTH=143 FT   SLOPE=0.019   K=2.0
*
COMPUTE NM HYD          ID=1   HYD NO=219   DA=0.00037 SQ MI
                        PER A=00 PER B=00 PER C=05 PER D=95
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
*
*
* Total Flow from Basins
ADD HYD                 ID=19  HYD NO=219SUM ID I=10   ID II=1
PRINT HYD               ID=19   CODE=1
*
*
*
* Add Flows from West Basins
ADD HYD                 ID=18  HYD NO=219SUMA ID I=19   ID II=11
PRINT HYD               ID=18   CODE=1
*
*
*** Sub-BASIN 220 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=2   ISLOPE=1
                        LENGTH=100 FT   SLOPE=0.016   K=0.7
                        LENGTH=127 FT   SLOPE=0.032   K=2.0
*
COMPUTE NM HYD          ID=20   HYD NO=220   DA=0.00139 SQ MI
                        PER A=00 PER B=00 PER C=15 PER D=85
                        TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD               ID=20   CODE=1
*
*
* Total Flows from All Basins
ADD HYD                 ID=21  HYD NO=220SUM ID I=18   ID II=20
PRINT HYD               ID=21   CODE=1
*
*

* Add Outflow From Pond B
ADD HYD                 ID=1  HYD NO=POND.IN ID I=21   ID II=30
PRINT HYD               ID=1   CODE=1
*

****Route Hyd  through POND A- 27 inch orifice
*
ROUTE RESERVOIR         ID=96  HYD NO=PONDA  INFLOW ID=1  CODE=1
                        OUTFLOW (CFS)     STORAGE (AC FT)       ELEV
```

```
                      0.0                   0.00          4989
                      0.01                  0.1097        4990
                      0.02                  0.2491        4991
                      11.1                  0.4241        4992
                      30.9                  0.6403        4993
                      38.0                  0.8999        4994
                      43.0                  1.0112        4995
                      47.1                  1.5550        4996
                      51.2                  1.9531        4997
*
*PRINT HYD            ID=96   CODE=1
*
*
*** Sub-BASIN 217, Sheet flow Out ****
*
COMPUTE LT TP         LCODE=1   UPLAND/LAG TIME METHOD
                      NK=2   ISLOPE=1
                      LENGTH=100 FT   SLOPE=0.005   K=0.7
                      LENGTH=230 FT   SLOPE=0.004   K=2.0
*
COMPUTE NM HYD        ID=6   HYD NO=217   DA=0.00046 SQ MI
                      PER A=00 PER B=00 PER C=20 PER D=80
                      TP=0.0 hr   MASSRAIN=-1
*
PRINT HYD             ID=6   CODE=1
*
*
*
FINISH
```

**APPENDIX B**

# Worksheet for Irregular Section - Basin 201&202 Combined

## Project Description

| | |
|---|---|
| Friction Method | Manning Formula |
| Solve For | Normal Depth |

## Input Data

| | | |
|---|---|---|
| Channel Slope | 0.00800 | ft/ft |
| Discharge | 21.80 | ft³/s |

Section Definitions

| Station (ft) | Elevation (ft) |
|---|---|
| 0+00 | 5011.00 |
| 0+00 | 5010.50 |
| 0+96 | 5007.76 |
| 1+03 | 5007.76 |
| 2+91 | 5009.00 |

Roughness Segment Definitions

| Start Station | Ending Station | Roughness Coefficient |
|---|---|---|
| (0+00, 5011.00) | (2+91, 5009.00) | 0.017 |

## Options

| | |
|---|---|
| Current Roughness Weighted Method | Pavlovskii's Method |
| Open Channel Weighting Method | Pavlovskii's Method |
| Closed Channel Weighting Method | Pavlovskii's Method |

## Results

| | | |
|---|---|---|
| Normal Depth | 0.28 | ft |
| Elevation Range | 5007.76 to 5011.00 ft | |
| Flow Area | 9.40 | ft² |
| Wetted Perimeter | 59.66 | ft |
| Hydraulic Radius | 0.16 | ft |
| Top Width | 59.65 | ft |
| Normal Depth | 0.28 | ft |
| Critical Depth | 0.29 | ft |

# Worksheet for Irregular Section - Basin 201&202 Combined

## Results

| | | | |
|---|---|---|---|
| Critical Slope | | 0.00750 | ft/ft |
| Velocity | | 2.32 | ft/s |
| Velocity Head | | 0.08 | ft |
| Specific Energy | | 0.37 | ft |
| Froude Number | | 1.03 | |
| 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 | | |
| Profile Headloss | 0.00 | ft |
| Downstream Velocity | Infinity | ft/s |
| Upstream Velocity | Infinity | ft/s |
| Normal Depth | 0.28 | ft |
| Critical Depth | 0.29 | ft |
| Channel Slope | 0.00800 | ft/ft |
| Critical Slope | 0.00750 | ft/ft |

# Worksheet for Irregular Section - Basin 203

## Project Description

| | |
|---|---|
| Friction Method | Manning Formula |
| Solve For | Normal Depth |

## Input Data

| | | |
|---|---|---|
| Channel Slope | 0.04500 | ft/ft |
| Discharge | 13.41 | ft³/s |

Section Definitions

| Station (ft) | Elevation (ft) |
|---|---|
| 0+00 | 5002.50 |
| 0+00 | 5002.00 |
| 0+66 | 5005.00 |

Roughness Segment Definitions

| Start Station | Ending Station | Roughness Coefficient |
|---|---|---|
| (0+00, 5002.50) | (0+00, 5002.00) | 0.013 |
| (0+00, 5002.00) | (0+66, 5005.00) | 0.016 |

## Options

| | |
|---|---|
| Current Roughness Weighted Method | Pavlovskii's Method |
| Open Channel Weighting Method | Pavlovskii's Method |
| Closed Channel Weighting Method | Pavlovskii's Method |

## Results

| | | |
|---|---|---|
| Normal Depth | 0.42 | ft |
| Elevation Range | 5002.00 to 5005.00 ft | |
| Flow Area | 1.96 | ft² |
| Wetted Perimeter | 9.73 | ft |
| Hydraulic Radius | 0.20 | ft |
| Top Width | 9.29 | ft |
| Normal Depth | 0.42 | ft |
| Critical Depth | 0.62 | ft |
| Critical Slope | 0.00577 | ft/ft |

# Worksheet for Irregular Section - Basin 203

## Results

| | | | |
|---|---|---|---|
| Velocity | | 6.83 | ft/s |
| Velocity Head | | 0.73 | ft |
| Specific Energy | | 1.15 | ft |
| Froude Number | | 2.62 | |
| 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 | | |
| Profile Headloss | 0.00 | ft |
| Downstream Velocity | Infinity | ft/s |
| Upstream Velocity | Infinity | ft/s |
| Normal Depth | 0.42 | ft |
| Critical Depth | 0.62 | ft |
| Channel Slope | 0.04500 | ft/ft |
| Critical Slope | 0.00577 | ft/ft |

# Worksheet for Irregular Section - Basin 204

## Project Description

| | |
|---|---|
| Friction Method | Manning Formula |
| Solve For | Normal Depth |

## Input Data

| | | |
|---|---|---|
| Channel Slope | 0.04000 | ft/ft |
| Discharge | 22.93 | ft³/s |

Section Definitions

| Station (ft) | Elevation (ft) |
|---|---|
| 0+00 | 5009.00 |
| 0+63 | 5001.50 |
| 0+63 | 5002.17 |
| 0+64 | 5002.17 |

Roughness Segment Definitions

| Start Station | Ending Station | Roughness Coefficient |
|---|---|---|
| (0+00, 5009.00) | (0+63, 5002.17) | 0.016 |
| (0+63, 5002.17) | (0+64, 5002.17) | 0.013 |

## Options

| | |
|---|---|
| Current Roughness Weighted Method | Pavlovskii's Method |
| Open Channel Weighting Method | Pavlovskii's Method |
| Closed Channel Weighting Method | Pavlovskii's Method |

## Results

| | | |
|---|---|---|
| Normal Depth | 0.77 | ft |
| Elevation Range | 5001.50 to 5009.00 ft | |
| Flow Area | 2.61 | ft² |
| Wetted Perimeter | 8.33 | ft |
| Hydraulic Radius | 0.31 | ft |
| Top Width | 7.52 | ft |
| Normal Depth | 0.77 | ft |
| Critical Depth | 1.10 | ft |

# Worksheet for Irregular Section - Basin 204

## Results

| | | | |
|---|---|---|---|
| Critical Slope | | 0.00506 | ft/ft |
| Velocity | | 8.77 | ft/s |
| Velocity Head | | 1.20 | ft |
| Specific Energy | | 1.97 | ft |
| Froude Number | | 2.62 | |
| 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 | | |
| Profile Headloss | 0.00 | ft |
| Downstream Velocity | Infinity | ft/s |
| Upstream Velocity | Infinity | ft/s |
| Normal Depth | 0.77 | ft |
| Critical Depth | 1.10 | ft |
| Channel Slope | 0.04000 | ft/ft |
| Critical Slope | 0.00506 | ft/ft |

# Worksheet for Irregular Section - Basin 205

## Project Description

| | |
|---|---|
| Friction Method | Manning Formula |
| Solve For | Normal Depth |

## Input Data

| | | |
|---|---|---|
| Channel Slope | 0.02130 | ft/ft |
| Discharge | 6.92 | ft³/s |

Section Definitions

| Station (ft) | Elevation (ft) |
|---|---|
| 0+00 | 0.50 |
| 0+00 | 0.00 |
| 0+32 | 0.00 |
| 0+32 | 0.50 |

Roughness Segment Definitions

| Start Station | Ending Station | Roughness Coefficient |
|---|---|---|
| (0+00, 0.50) | (0+32, 0.50) | 0.017 |

## Options

| | |
|---|---|
| Current Roughness Weighted Method | Pavlovskii's Method |
| Open Channel Weighting Method | Pavlovskii's Method |
| Closed Channel Weighting Method | Pavlovskii's Method |

## Results

| | | |
|---|---|---|
| Normal Depth | 0.09 | ft |
| Elevation Range | 0.00 to 0.50 ft | |
| Flow Area | 2.74 | ft² |
| Wetted Perimeter | 31.87 | ft |
| Hydraulic Radius | 0.09 | ft |
| Top Width | 31.70 | ft |
| Normal Depth | 0.09 | ft |
| Critical Depth | 0.11 | ft |
| Critical Slope | 0.00846 | ft/ft |

# Worksheet for Irregular Section - Basin 205

## Results

| | | | |
|---|---|---|---|
| Velocity | | 2.53 | ft/s |
| Velocity Head | | 0.10 | ft |
| Specific Energy | | 0.19 | ft |
| Froude Number | | 1.52 | |
| 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 | | |
| Profile Headloss | 0.00 | ft |
| Downstream Velocity | Infinity | ft/s |
| Upstream Velocity | Infinity | ft/s |
| Normal Depth | 0.09 | ft |
| Critical Depth | 0.11 | ft |
| Channel Slope | 0.02130 | ft/ft |
| Critical Slope | 0.00846 | ft/ft |

# Worksheet for IIrregular Section - Basin 206

## Project Description

| | |
|---|---|
| Friction Method | Manning Formula |
| Solve For | Normal Depth |

## Input Data

| | | |
|---|---|---|
| Channel Slope | 0.04440 | ft/ft |
| Discharge | 6.00 | ft³/s |

Section Definitions

| Station (ft) | Elevation (ft) |
|---|---|
| 0+00 | 4991.50 |
| 0+00 | 4991.00 |
| 0+94 | 4995.00 |

Roughness Segment Definitions

| Start Station | Ending Station | Roughness Coefficient |
|---|---|---|
| (0+00, 4991.50) | (0+00, 4991.00) | 0.013 |
| (0+00, 4991.00) | (0+94, 4995.00) | 0.016 |

## Options

| | |
|---|---|
| Current Roughness Weighted Method | Pavlovskii's Method |
| Open Channel Weighting Method | Pavlovskii's Method |
| Closed Channel Weighting Method | Pavlovskii's Method |

## Results

| | | |
|---|---|---|
| Normal Depth | 0.31 | ft |
| Elevation Range | 4991.00 to 4995.00 ft | |
| Flow Area | 1.09 | ft² |
| Wetted Perimeter | 7.49 | ft |
| Hydraulic Radius | 0.15 | ft |
| Top Width | 7.17 | ft |
| Normal Depth | 0.31 | ft |
| Critical Depth | 0.44 | ft |
| Critical Slope | 0.00646 | ft/ft |

# Worksheet for IIrregular Section - Basin 206

## Results

| | | | |
|---|---|---|---|
| Velocity | | 5.48 | ft/s |
| Velocity Head | | 0.47 | ft |
| Specific Energy | | 0.77 | ft |
| Froude Number | | 2.47 | |
| 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 | | |
| Profile Headloss | 0.00 | ft |
| Downstream Velocity | Infinity | ft/s |
| Upstream Velocity | Infinity | ft/s |
| Normal Depth | 0.31 | ft |
| Critical Depth | 0.44 | ft |
| Channel Slope | 0.04440 | ft/ft |
| Critical Slope | 0.00646 | ft/ft |

# Worksheet for Irregular Section - Basin 211 & 212

## Project Description

| | |
|---|---|
| Friction Method | Manning Formula |
| Solve For | Normal Depth |

## Input Data

| | | |
|---|---|---|
| Channel Slope | 0.01000 | ft/ft |
| Discharge | 6.93 | ft³/s |

Section Definitions

| Station (ft) | Elevation (ft) |
|---|---|
| 0+00 | 5000.00 |
| 0+00 | 4999.50 |
| 0+89 | 5001.00 |

Roughness Segment Definitions

| Start Station | Ending Station | Roughness Coefficient |
|---|---|---|
| (0+00, 5000.00) | (0+00, 4999.50) | 0.013 |
| (0+00, 4999.50) | (0+89, 5001.00) | 0.016 |

## Options

| | |
|---|---|
| Current Roughness Weighted Method | Pavlovskii's Method |
| Open Channel Weighting Method | Pavlovskii's Method |
| Closed Channel Weighting Method | Pavlovskii's Method |

## Results

| | | |
|---|---|---|
| Normal Depth | 0.30 | ft |
| Elevation Range | 4999.50 to 5001.00 ft | |
| Flow Area | 2.66 | ft² |
| Wetted Perimeter | 18.08 | ft |
| Hydraulic Radius | 0.15 | ft |
| Top Width | 17.78 | ft |
| Normal Depth | 0.30 | ft |
| Critical Depth | 0.32 | ft |
| Critical Slope | 0.00698 | ft/ft |

# Worksheet for Irregular Section - Basin 211 & 212

## Results

| | | | |
|---|---|---|---|
| Velocity | | 2.60 | ft/s |
| Velocity Head | | 0.11 | ft |
| Specific Energy | | 0.40 | ft |
| Froude Number | | 1.19 | |
| 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 | | |
| Profile Headloss | 0.00 | ft |
| Downstream Velocity | Infinity | ft/s |
| Upstream Velocity | Infinity | ft/s |
| Normal Depth | 0.30 | ft |
| Critical Depth | 0.32 | ft |
| Channel Slope | 0.01000 | ft/ft |
| Critical Slope | 0.00698 | ft/ft |

# Worksheet for Irregular Section - Basin 218

## Project Description

| | |
|---|---|
| Friction Method | Manning Formula |
| Solve For | Normal Depth |

## Input Data

| | | |
|---|---|---|
| Channel Slope | 0.02860 | ft/ft |
| Discharge | 14.00 | ft³/s |

Section Definitions

| Station (ft) | Elevation (ft) |
|---|---|
| 0+00 | 5001.17 |
| 0+00 | 5000.67 |
| 0+50 | 5002.00 |

Roughness Segment Definitions

| Start Station | Ending Station | Roughness Coefficient |
|---|---|---|
| (0+00, 5001.17) | (0+00, 5000.67) | 0.013 |
| (0+00, 5000.67) | (0+50, 5002.00) | 0.016 |

## Options

| | |
|---|---|
| Current Roughness Weighted Method | Pavlovskii's Method |
| Open Channel Weighting Method | Pavlovskii's Method |
| Closed Channel Weighting Method | Pavlovskii's Method |

## Results

| | | |
|---|---|---|
| Normal Depth | 0.38 | ft |
| Elevation Range | 5000.67 to 5002.00 ft | |
| Flow Area | 2.73 | ft² |
| Wetted Perimeter | 14.71 | ft |
| Hydraulic Radius | 0.19 | ft |
| Top Width | 14.32 | ft |
| Normal Depth | 0.38 | ft |
| Critical Depth | 0.51 | ft |
| Critical Slope | 0.00604 | ft/ft |

# Worksheet for Irregular Section - Basin 218

## Results

| | | | |
|---|---|---|---|
| Velocity | | 5.13 | ft/s |
| Velocity Head | | 0.41 | ft |
| Specific Energy | | 0.79 | ft |
| Froude Number | | 2.07 | |
| 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 | | |
| Profile Headloss | 0.00 | ft |
| Downstream Velocity | Infinity | ft/s |
| Upstream Velocity | Infinity | ft/s |
| Normal Depth | 0.38 | ft |
| Critical Depth | 0.51 | ft |
| Channel Slope | 0.02860 | ft/ft |
| Critical Slope | 0.00604 | ft/ft |

# Worksheet for Rankin Road

## Project Description

| | |
|---|---|
| Friction Method | Manning Formula |
| Solve For | Normal Depth |

## Input Data

| | | |
|---|---|---|
| Channel Slope | 0.04800 | ft/ft |
| Discharge | 64.00 | ft³/s |

Section Definitions

| Station (ft) | Elevation (ft) |
|---|---|
| 0+00 | 0.67 |
| 0+01 | 0.67 |
| 0+01 | 0.00 |
| 0+03 | 0.13 |
| 0+15 | 0.36 |
| 0+27 | 0.13 |
| 0+29 | 0.00 |
| 0+29 | 0.67 |
| 0+29 | 0.67 |

Roughness Segment Definitions

| Start Station | Ending Station | Roughness Coefficient |
|---|---|---|
| (0+00, 0.67) | (0+03, 0.13) | 0.013 |
| (0+03, 0.13) | (0+27, 0.13) | 0.016 |
| (0+27, 0.13) | (0+29, 0.67) | 0.013 |

## Options

| | |
|---|---|
| Current Roughness Weighted Method | Pavlovskii's Method |
| Open Channel Weighting Method | Pavlovskii's Method |
| Closed Channel Weighting Method | Pavlovskii's Method |

## Results

| | | |
|---|---|---|
| Normal Depth | 0.48 | ft |
| Elevation Range | 0.00 to 0.67 ft | |
| Flow Area | 7.50 | ft² |
| Wetted Perimeter | 28.98 | ft |
| Hydraulic Radius | 0.26 | ft |
| Top Width | 28.00 | ft |

# Worksheet for Rankin Road

## Results

| | | | |
|---|---|---|---|
| Normal Depth | | 0.48 | ft |
| Critical Depth | | 0.77 | ft |
| Critical Slope | | 0.00465 | ft/ft |
| Velocity | | 8.53 | ft/s |
| Velocity Head | | 1.13 | ft |
| Specific Energy | | 1.62 | ft |
| Froude Number | | 2.90 | |
| 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 | | |
| Profile Headloss | 0.00 | ft |
| Downstream Velocity | Infinity | ft/s |
| Upstream Velocity | Infinity | ft/s |
| Normal Depth | 0.48 | ft |
| Critical Depth | 0.77 | ft |
| Channel Slope | 0.04800 | ft/ft |
| Critical Slope | 0.00465 | ft/ft |

# Worksheet for Basin 201-Dbl D_Sag

## Project Description

| | |
|---|---|
| Solve For | Spread |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 9.10 | ft³/s |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.03 | ft/ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 6.66 | ft |
| Local Depression | | 1.00 | in |
| Local Depression Width | | 2.37 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |

## Results

| | | |
|---|---|---|
| Spread | 16.97 | ft |
| Depth | 0.58 | ft |
| Gutter Depression | 0.08 | ft |
| Total Depression | 0.16 | ft |
| Open Grate Area | 6.23 | ft² |
| Active Grate Weir Length | 8.74 | ft |

# Worksheet for Basin 202-Dbl D_Sag

## Project Description

| | |
|---|---|
| Solve For | Spread |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 12.70 | ft³/s |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.03 | ft/ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 6.66 | ft |
| Local Depression | | 1.00 | in |
| Local Depression Width | | 2.37 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |

## Results

| | | |
|---|---|---|
| Spread | 21.07 | ft |
| Depth | 0.71 | ft |
| Gutter Depression | 0.08 | ft |
| Total Depression | 0.16 | ft |
| Open Grate Area | 6.23 | ft² |
| Active Grate Weir Length | 8.74 | ft |

# Worksheet for Basin 203-Sgl C_Sag

## Project Description

| | |
|---|---|
| Solve For | Spread |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 5.20 | ft³/s |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.04 | ft/ft |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 3.95 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 3.95 | ft |
| Opening Height | | 0.50 | ft |
| Curb Throat Type | Horizontal | | |
| Throat Incline Angle | | 90.00 | degrees |

## Options

| | |
|---|---|
| Calculation Option | Use Both |

## Results

| | | |
|---|---|---|
| Spread | 7.08 | ft |
| Depth | 0.31 | ft |
| Gutter Depression | 0.06 | ft |
| Total Depression | 0.25 | ft |
| Open Grate Area | 3.12 | ft² |
| Active Grate Weir Length | 5.41 | ft |

# Worksheet for Basin 204-1 Sgl C

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 22.93 | ft³/s |
| Slope | | 0.04000 | ft/ft |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.01 | ft/ft |
| Roughness Coefficient | | 0.013 | |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 3.95 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 3.95 | ft |

## Options

| | |
|---|---|
| Calculation Option | Use Both |
| Grate Flow Option | Exclude None |

## Results

| | | | |
|---|---|---|---|
| Efficiency | | 29.40 | % |
| Intercepted Flow | | 6.74 | ft³/s |
| Bypass Flow | | 16.19 | ft³/s |
| Spread | | 30.76 | ft |
| Depth | | 0.35 | ft |
| Flow Area | | 3.48 | ft² |
| Gutter Depression | | 0.13 | ft |
| Total Depression | | 0.32 | ft |
| Velocity | | 6.59 | ft/s |
| Splash Over Velocity | | 7.39 | ft/s |
| Frontal Flow Factor | | 1.00 | |
| Side Flow Factor | | 0.01 | |
| Grate Flow Ratio | | 0.25 | |
| Equivalent Cross Slope | | 0.03051 | ft/ft |
| Active Grate Length | | 1.67 | ft |
| Length Factor | | 0.02 | |
| Total Interception Length | | 93.57 | ft |

# Worksheet for Basin 204.2-Dbl C_Sag

## Project Description

| | |
|---|---|
| Solve For | Spread |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 16.19 | ft³/s |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.05 | ft/ft |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 7.40 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 6.66 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 7.40 | ft |
| Opening Height | | 0.50 | ft |
| Curb Throat Type | Horizontal | | |
| Throat Incline Angle | | 90.00 | degrees |

## Options

| | |
|---|---|
| Calculation Option | Use Both |

## Results

| | | |
|---|---|---|
| Spread | 9.18 | ft |
| Depth | 0.48 | ft |
| Gutter Depression | 0.03 | ft |
| Total Depression | 0.21 | ft |
| Open Grate Area | 6.23 | ft² |
| Active Grate Weir Length | 8.74 | ft |

# Worksheet for Basin 204-1 Sgl C

## Messages

| | |
|---|---|
| Messages | Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m). |
| Notes | |
| Each Side | |

# Worksheet for Basin 206-Sgl C_Sag

## Project Description

| | |
|---|---|
| Solve For | Spread |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 6.40 | ft³/s |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.05 | ft/ft |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 3.95 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 3.95 | ft |
| Opening Height | | 0.50 | ft |
| Curb Throat Type | Horizontal | | |
| Throat Incline Angle | | 90.00 | degrees |

## Options

| | |
|---|---|
| Calculation Option | Use Both |

## Results

| | | |
|---|---|---|
| Spread | 6.94 | ft |
| Depth | 0.36 | ft |
| Gutter Depression | 0.04 | ft |
| Total Depression | 0.23 | ft |
| Open Grate Area | 3.12 | ft² |
| Active Grate Weir Length | 5.41 | ft |

# Worksheet for Basin 207-1-Dbl C

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 5.52 | ft³/s |
| Slope | | 0.00300 | ft/ft |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.01 | ft/ft |
| Roughness Coefficient | | 0.013 | |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 7.40 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 6.66 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 7.40 | ft |

## Options

| | |
|---|---|
| Calculation Option | Use Both |
| Grate Flow Option | Exclude None |

## Results

| | | | |
|---|---|---|---|
| Efficiency | | 65.13 | % |
| Intercepted Flow | | 3.60 | ft³/s |
| Bypass Flow | | 1.92 | ft³/s |
| Spread | | 23.26 | ft |
| Depth | | 0.36 | ft |
| Flow Area | | 2.87 | ft² |
| Gutter Depression | | 0.13 | ft |
| Total Depression | | 0.32 | ft |
| Velocity | | 1.92 | ft/s |
| Splash Over Velocity | | 10.50 | ft/s |
| Frontal Flow Factor | | 1.00 | |
| Side Flow Factor | | 0.25 | |
| Grate Flow Ratio | | 0.31 | |
| Equivalent Cross Slope | | 0.02536 | ft/ft |
| Active Grate Length | | 3.33 | ft |
| Length Factor | | 0.15 | |
| Total Interception Length | | 26.43 | ft |

## Messages

| | |
|---|---|
| Messages | Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m). |

# Worksheet for Basin 207-2-Sgl C

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 4.42 | ft³/s |
| Slope | | 0.00300 | ft/ft |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.01 | ft/ft |
| Roughness Coefficient | | 0.013 | |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 3.95 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 3.95 | ft |

## Options

| | |
|---|---|
| Calculation Option | Use Both |
| Grate Flow Option | Exclude None |

## Results

| | | |
|---|---|---|
| Efficiency | 55.45 | % |
| Intercepted Flow | 2.45 | ft³/s |
| Bypass Flow | 1.97 | ft³/s |
| Spread | 21.19 | ft |
| Depth | 0.34 | ft |
| Flow Area | 2.41 | ft² |
| Gutter Depression | 0.13 | ft |
| Total Depression | 0.32 | ft |
| Velocity | 1.84 | ft/s |
| Splash Over Velocity | 7.39 | ft/s |
| Frontal Flow Factor | 1.00 | |
| Side Flow Factor | 0.07 | |
| Grate Flow Ratio | 0.34 | |
| Equivalent Cross Slope | 0.04176 | ft/ft |
| Active Grate Length | 1.67 | ft |
| Length Factor | 0.13 | |
| Total Interception Length | 17.85 | ft |

## Messages

Notes

Bypass to Basin 2017

# Worksheet for Basin 208-Sgl C

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 4.20 | ft³/s |
| Slope | | 0.02800 | ft/ft |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.01 | ft/ft |
| Roughness Coefficient | | 0.013 | |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 3.95 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 3.95 | ft |

## Options

| | |
|---|---|
| Calculation Option | Use Both |
| Grate Flow Option | Exclude None |

## Results

| | | |
|---|---|---|
| Efficiency | 68.52 | % |
| Intercepted Flow | 2.88 | ft³/s |
| Bypass Flow | 1.32 | ft³/s |
| Spread | 12.29 | ft |
| Depth | 0.25 | ft |
| Flow Area | 0.92 | ft² |
| Gutter Depression | 0.13 | ft |
| Total Depression | 0.32 | ft |
| Velocity | 4.57 | ft/s |
| Splash Over Velocity | 7.39 | ft/s |
| Frontal Flow Factor | 1.00 | |
| Side Flow Factor | 0.01 | |
| Grate Flow Ratio | 0.58 | |
| Equivalent Cross Slope | 0.06264 | ft/ft |
| Active Grate Length | 1.67 | ft |
| Length Factor | 0.09 | |
| Total Interception Length | 26.77 | ft |

## Messages

Notes

Each Side

# Worksheet for Basin 209-Sgl C_Sag

## Project Description

| | |
|---|---|
| Solve For | Spread |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 5.77 | ft³/s |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.05 | ft/ft |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 3.95 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 3.95 | ft |
| Opening Height | | 0.50 | ft |
| Curb Throat Type | Horizontal | | |
| Throat Incline Angle | | 90.00 | degrees |

## Options

| | |
|---|---|
| Calculation Option | Use Both |

## Results

| | | |
|---|---|---|
| Spread | 6.43 | ft |
| Depth | 0.33 | ft |
| Gutter Depression | 0.04 | ft |
| Total Depression | 0.23 | ft |
| Open Grate Area | 3.12 | ft² |
| Active Grate Weir Length | 5.41 | ft |

# Worksheet for Basin 210-Sgl C

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 1.48 | ft³/s |
| Slope | | 0.02100 | ft/ft |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.01 | ft/ft |
| Roughness Coefficient | | 0.013 | |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 3.95 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 3.95 | ft |

## Options

| | |
|---|---|
| Calculation Option | Use Both |
| Grate Flow Option | Exclude None |

## Results

| | | |
|---|---|---|
| Efficiency | 93.83 | % |
| Intercepted Flow | 1.39 | ft³/s |
| Bypass Flow | 0.09 | ft³/s |
| Spread | 6.87 | ft |
| Depth | 0.20 | ft |
| Flow Area | 0.40 | ft² |
| Gutter Depression | 0.13 | ft |
| Total Depression | 0.32 | ft |
| Velocity | 3.70 | ft/s |
| Splash Over Velocity | 7.39 | ft/s |
| Frontal Flow Factor | 1.00 | |
| Side Flow Factor | 0.02 | |
| Grate Flow Ratio | 0.83 | |
| Equivalent Cross Slope | 0.08270 | ft/ft |
| Active Grate Length | 1.67 | ft |
| Length Factor | 0.17 | |
| Total Interception Length | 13.41 | ft |

## Messages

Notes

Each Side

# Worksheet for Basin 211-Dbl C_Sag

## Project Description

| | |
|---|---|
| Solve For | Spread |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 7.70 | ft³/s |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.02 | ft/ft |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 7.40 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 6.66 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 7.40 | ft |
| Opening Height | | 0.50 | ft |
| Curb Throat Type | Horizontal | | |
| Throat Incline Angle | | 90.00 | degrees |

## Options

| | |
|---|---|
| Calculation Option | Use Both |

## Results

| | | | |
|---|---|---|---|
| Spread | | 5.65 | ft |
| Depth | | 0.29 | ft |
| Gutter Depression | | 0.10 | ft |
| Total Depression | | 0.29 | ft |
| Open Grate Area | | 6.23 | ft² |
| Active Grate Weir Length | | 8.74 | ft |

# Worksheet for Basin 212-Dbl C_Sag

## Project Description

| | |
|---|---|
| Solve For | Spread |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 6.10 | ft³/s |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.02 | ft/ft |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 7.40 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 6.66 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 7.40 | ft |
| Opening Height | | 0.50 | ft |
| Curb Throat Type | Horizontal | | |
| Throat Incline Angle | | 90.00 | degrees |

## Options

| | |
|---|---|
| Calculation Option | Use Both |

## Results

| | | |
|---|---|---|
| Spread | 5.12 | ft |
| Depth | 0.25 | ft |
| Gutter Depression | 0.10 | ft |
| Total Depression | 0.29 | ft |
| Open Grate Area | 6.23 | ft² |
| Active Grate Weir Length | 8.74 | ft |

# Worksheet for Basin 214-Sgl D_Sag

## Project Description

| | |
|---|---|
| Solve For | Spread |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 4.54 | ft³/s |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.04 | ft/ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Local Depression | | 1.00 | in |
| Local Depression Width | | 2.37 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |

## Results

| | | |
|---|---|---|
| Spread | 11.32 | ft |
| Depth | 0.50 | ft |
| Gutter Depression | 0.05 | ft |
| Total Depression | 0.13 | ft |
| Open Grate Area | 3.12 | ft² |
| Active Grate Weir Length | 5.41 | ft |

# Worksheet for Basins 215-Sgl C

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 1.24 | ft³/s |
| Slope | | 0.01500 | ft/ft |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.01 | ft/ft |
| Roughness Coefficient | | 0.013 | |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 3.95 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 3.95 | ft |

## Options

| | |
|---|---|
| Calculation Option | Use Both |
| Grate Flow Option | Exclude None |

## Results

| | | |
|---|---|---|
| Efficiency | 95.33 | % |
| Intercepted Flow | 1.18 | ft³/s |
| Bypass Flow | 0.06 | ft³/s |
| Spread | 6.82 | ft |
| Depth | 0.20 | ft |
| Flow Area | 0.40 | ft² |
| Gutter Depression | 0.13 | ft |
| Total Depression | 0.32 | ft |
| Velocity | 3.13 | ft/s |
| Splash Over Velocity | 7.39 | ft/s |
| Frontal Flow Factor | 1.00 | |
| Side Flow Factor | 0.03 | |
| Grate Flow Ratio | 0.83 | |
| Equivalent Cross Slope | 0.08287 | ft/ft |
| Active Grate Length | 1.67 | ft |
| Length Factor | 0.20 | |
| Total Interception Length | 11.24 | ft |

## Messages

| | |
|---|---|
| Messages | Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m). |

# Worksheet for Basin 218-Dbl C

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 14.05 | ft³/s |
| Slope | | 0.03000 | ft/ft |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.01 | ft/ft |
| Roughness Coefficient | | 0.013 | |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 7.40 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 6.66 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 7.40 | ft |

## Options

| | |
|---|---|
| Calculation Option | Use Both |
| Grate Flow Option | Exclude None |

## Results

| | | | |
|---|---|---|---|
| Efficiency | | 44.56 | % |
| Intercepted Flow | | 6.26 | ft³/s |
| Bypass Flow | | 7.79 | ft³/s |
| Spread | | 21.23 | ft |
| Depth | | 0.34 | ft |
| Flow Area | | 2.42 | ft² |
| Gutter Depression | | 0.13 | ft |
| Total Depression | | 0.32 | ft |
| Velocity | | 5.81 | ft/s |
| Splash Over Velocity | | 10.50 | ft/s |
| Frontal Flow Factor | | 1.00 | |
| Side Flow Factor | | 0.04 | |
| Grate Flow Ratio | | 0.34 | |
| Equivalent Cross Slope | | 0.02691 | ft/ft |
| Active Grate Length | | 3.33 | ft |
| Length Factor | | 0.05 | |
| Total Interception Length | | 75.33 | ft |

## Messages

| | |
|---|---|
| Messages | Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m). |
| Notes | |
| Each Side | |

# Worksheet for Basins 219-1-Dbl C

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | |
|---|---|---|
| Discharge | 8.91 | ft³/s |
| Slope | 0.01500 | ft/ft |
| Gutter Width | 2.50 | ft |
| Gutter Cross Slope | 0.06 | ft/ft |
| Road Cross Slope | 0.01 | ft/ft |
| Roughness Coefficient | 0.013 | |
| Local Depression | 2.25 | in |
| Local Depression Width | 7.40 | ft |
| Grate Width | 2.08 | ft |
| Grate Length | 6.66 | ft |
| Grate Type | P-50 mm (P-1-7/8") | |
| Clogging | 50.00 | % |
| Curb Opening Length | 7.40 | ft |

## Options

| | |
|---|---|
| Calculation Option | Use Both |
| Grate Flow Option | Exclude None |

## Results

| | | |
|---|---|---|
| Efficiency | 51.85 | % |
| Intercepted Flow | 4.62 | ft³/s |
| Bypass Flow | 4.29 | ft³/s |
| Spread | 20.27 | ft |
| Depth | 0.33 | ft |
| Flow Area | 2.22 | ft² |
| Gutter Depression | 0.13 | ft |
| Total Depression | 0.32 | ft |
| Velocity | 4.02 | ft/s |
| Splash Over Velocity | 10.50 | ft/s |
| Frontal Flow Factor | 1.00 | |
| Side Flow Factor | 0.08 | |
| Grate Flow Ratio | 0.36 | |
| Equivalent Cross Slope | 0.02775 | ft/ft |
| Active Grate Length | 3.33 | ft |
| Length Factor | 0.08 | |
| Total Interception Length | 49.62 | ft |

## Messages

| | |
|---|---|
| Messages | Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m). |

# Worksheet for Basin 219-2-Sgl C

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 4.29 | ft³/s |
| Slope | | 0.01500 | ft/ft |
| Gutter Width | | 2.50 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.01 | ft/ft |
| Roughness Coefficient | | 0.013 | |
| Local Depression | | 2.25 | in |
| Local Depression Width | | 3.95 | ft |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |
| Curb Opening Length | | 3.95 | ft |

## Options

| | |
|---|---|
| Calculation Option | Use Both |
| Grate Flow Option | Exclude None |

## Results

| | | |
|---|---|---|
| Efficiency | 62.88 | % |
| Intercepted Flow | 2.70 | ft³/s |
| Bypass Flow | 1.59 | ft³/s |
| Spread | 14.55 | ft |
| Depth | 0.28 | ft |
| Flow Area | 1.22 | ft² |
| Gutter Depression | 0.13 | ft |
| Total Depression | 0.32 | ft |
| Velocity | 3.51 | ft/s |
| Splash Over Velocity | 7.39 | ft/s |
| Frontal Flow Factor | 1.00 | |
| Side Flow Factor | 0.02 | |
| Grate Flow Ratio | 0.50 | |
| Equivalent Cross Slope | 0.05576 | ft/ft |
| Active Grate Length | 1.67 | ft |
| Length Factor | 0.10 | |
| Total Interception Length | 24.01 | ft |

## Messages

Notes

Each Side

# Worksheet for Grate Inlet On Grade - Rankin

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Discharge | | 64.00 | ft³/s |
| Slope | | 0.04800 | ft/ft |
| Gutter Width | | 0.00 | ft |
| Gutter Cross Slope | | 0.06 | ft/ft |
| Road Cross Slope | | 0.02 | ft/ft |
| Roughness Coefficient | | 0.013 | |
| Grate Width | | 2.08 | ft |
| Grate Length | | 3.33 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |

## Options

| | |
|---|---|
| Grate Flow Option | Exclude None |

## Results

| | | |
|---|---|---|
| Efficiency | 14.24 | % |
| Intercepted Flow | 9.11 | ft³/s |
| Bypass Flow | 54.89 | ft³/s |
| Spread | 23.64 | ft |
| Depth | 0.47 | ft |
| Flow Area | 5.59 | ft² |
| Gutter Depression | 0.00 | ft |
| Total Depression | 0.00 | ft |
| Velocity | 11.45 | ft/s |
| Splash Over Velocity | 7.39 | ft/s |
| Frontal Flow Factor | 0.63 | |
| Side Flow Factor | 0.01 | |
| Grate Flow Ratio | 0.22 | |
| Active Grate Length | 1.67 | ft |

# Worksheet for Ditch Inlet On Grade - 1

## Project Description

| | |
|---|---|
| Solve For | Efficiency |

## Input Data

| | | | |
|---|---|---|---|
| Roughness Coefficient | | 0.013 | |
| Slope | | 0.01500 | ft/ft |
| Left Side Slope | | 0.10 | ft/ft (H:V) |
| Right Side Slope | | 0.10 | ft/ft (H:V) |
| Bottom Width | | 24.00 | ft |
| Discharge | | 64.00 | ft³/s |
| Grate Width | | 24.00 | ft |
| Grate Length | | 2.00 | ft |
| Grate Type | P-50 mm (P-1-7/8") | | |
| Clogging | | 50.00 | % |

## Options

| | |
|---|---|
| Grate Flow Option | Exclude None |

## Results

| | | | |
|---|---|---|---|
| Efficiency | | 86.76 | % |
| Intercepted Flow | | 55.53 | ft³/s |
| Bypass Flow | | 8.47 | ft³/s |
| Flow Area | | 8.98 | ft² |
| Wetted Perimeter | | 24.75 | ft |
| Top Width | | 24.07 | ft |
| Velocity | | 7.12 | ft/s |
| Splash Over Velocity | | 5.66 | ft/s |
| Frontal Flow Factor | | 0.87 | |
| Side Flow Factor | | 0.66 | |
| Grate Flow Ratio | | 1.00 | |
| Active Grate Length | | 1.00 | ft |
| Critical Depth | | 0.60 | ft |
| Critical Slope | | 0.00309 | ft/ft |
| Froude Number | | 2.06 | |
| Flow Type | Supercritical | | |
| Specific Energy | | 1.16 | ft |
| Velocity Head | | 0.79 | ft |
| Depth | | 0.37 | ft |

## Messages

| | |
|---|---|
| Messages | Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m). |

Inlet Calculations

| Basin ID | Flows (cfs) | | | Inlet Type | Notes |
|---|---|---|---|---|---|
| | Total | Intercepted | Bypass | | |
| Offsite 1 | 4.94 | 0 | 4.94 | - | Sheet flow to basin 201 |
| Offsite 2 | 5.9 | 0 | 5.90 | - | Sheet flow to basin 202 |
| 201 | 10.12 | 10.12 | 0.00 | Double D | Sump inlet |
| 202 | 14.20 | 14.20 | 0.00 | Double D | Sump inlet |
| 203 | 5.20 | 5.20 | 0.00 | Single C | Sump inlet |
| 204-1 | 22.93 | 6.74 | 16.19 | Single C | Inlet at grade |
| 204-2 | 16.19 | 16.19 | 0.00 | Double C | Sump inlet |
| 205 | 9.02 | 6.00 | 3.02 | Single C | Inlets at grade, each side, 205 and 221 |
| 206 | 6.40 | 6.40 | 0.00 | Single C | Sump inlet |
| 207-1 | 5.52 | 3.60 | 1.92 | Double C | bypass to second inlet |
| 207-2 | 4.42 | 2.45 | 1.97 | Single C | to Edith |
| 208 | 4.20 | 2.88 | 1.32 | Single C | bypass to basin 205 |
| 209 | 5.77 | 5.77 | 0.00 | Single C | Sump inlet, 209 and third of 210 runoff |
| 210 | 1.47 | 1.39 | 0.08 | Single C | third of runoff , rest to basin 215 |
| 211 | 7.70 | 7.70 | 0.00 | Double C | Sump inlet |
| 212 | 6.10 | 6.10 | 0.00 | Double C | Sump inlet |
| 213 | 0.66 | 0.00 | 0.66 | - | to Basin 214 |
| 214 | 4.54 | 4.54 | 0.00 | Single C | Sump inlet |
| 215 | 1.24 | 1.18 | 0.06 | Single C | bypass of 210 and Basins 215, 216 |
| 216 | 0.60 | 0.00 | 0.60 | - | to Basin 215 and Edith |
| 217 | 1.33 | 0.00 | 1.33 | - | to Edith |
| 218 | 14.05 | 6.26 | 7.79 | Single C | Basins 219 |
| 219-1 | 8.91 | 4.62 | 4.29 | Double C | bypass of 218 and Basin 219 |
| 219-2 | 4.29 | 2.70 | 1.59 | Single C | bypass to Edith |
| 220 | 4.10 | 4.10 | 0.00 | - | Pond |
| 221 | 1.78 | 0.00 | 1.78 | - | to Basin 205 |
| 222 | 4.45 | 0.00 | 4.45 | - | sheet flow to Basin 218 |
| Rankin Rd | 64.00 | 9.11 | 54.89 | Single D | sheet flow to Cattle Guard Inlet |

**APPENDIX C**

# Culvert Calculator Report
# Pond A Outlet

Comments: Maximum Allowable Discharge = 47.6 cfs

Solve For: Discharge

| Culvert Summary | | | | | |
|---|---|---|---|---|---|
| Allowable HW Elevation | 4,997.00 | ft | Headwater Depth/Height | 3.56 | |
| Computed Headwater Elev | 4,997.00 | ft | Discharge | 51.20 | cfs |
| Inlet Control HW Elev. | 4,997.00 | ft | Tailwater Elevation | 4,989.19 | ft |
| Outlet Control HW Elev. | 4,995.11 | ft | Control Type | Inlet Control | |

| Grades | | | | | |
|---|---|---|---|---|---|
| Upstream Invert | 4,989.00 | ft | Downstream Invert | 4,984.42 | ft |
| Length | 48.60 | ft | Constructed Slope | 0.094239 | ft/ft |

| Hydraulic Profile | | | | | |
|---|---|---|---|---|---|
| Profile | CompositePressureProfileS1S2 | | Depth, Downstream | 1.40 | ft |
| Slope Type | N/A | | Normal Depth | 1.18 | ft |
| Flow Regime | N/A | | Critical Depth | 2.18 | ft |
| Velocity Downstream | 19.73 | ft/s | Critical Slope | 0.024098 | ft/ft |

| Section | | | | | |
|---|---|---|---|---|---|
| Section Shape | Circular | | Mannings Coefficient | 0.013 | |
| Section Material | Concrete | | Span | 2.25 | ft |
| Section Size | 27 inch | | Rise | 2.25 | ft |
| Number Sections | 1 | | | | |

| Outlet Control Properties | | | | | |
|---|---|---|---|---|---|
| Outlet Control HW Elev. | 4,995.11 | ft | Upstream Velocity Head | 2.62 | ft |
| Ke | 0.50 | | Entrance Loss | 1.31 | ft |

| Inlet Control Properties | | | | | |
|---|---|---|---|---|---|
| Inlet Control HW Elev. | 4,997.00 | ft | Flow Control | Submerged | |
| Inlet Type | Square edge w/headwall | | Area Full | 4.0 | ft² |
| K | 0.00980 | | HDS 5 Chart | 1 | |
| M | 2.00000 | | HDS 5 Scale | 1 | |
| C | 0.03980 | | Equation Form | 1 | |
| Y | 0.67000 | | | | |

# Rating Table Report
# Pond A Outlet

| Range Data: | | | |
|---|---|---|---|
| | Minimum | Maximum | Increment |
| Allowable HW E | 4,989.00 | 4,997.00 | 1.00 ft |

| HW Elev. (ft) | Discharge (cfs) |
|---|---|
| 4,989.00 | 0.00 |
| 4,990.00 | 3.69 |
| 4,991.00 | 12.84 |
| 4,992.00 | 24.17 |
| 4,993.00 | 32.13 |
| 4,994.00 | 37.81 |
| 4,995.00 | 42.74 |
| 4,996.00 | 47.16 |
| 4,997.00 | 51.20 |

# Culvert Calculator Report
# POND B Outlet

Solve For: Discharge

| Culvert Summary | | | | | |
|---|---|---|---|---|---|
| Allowable HW Elevation | 4,999.00 | ft | Headwater Depth/Height | 1.50 | |
| Computed Headwater Eleva | 4,999.00 | ft | Discharge | 72.89 | cfs |
| Inlet Control HW Elev. | 4,998.37 | ft | Tailwater Elevation | 4,997.38 | ft |
| Outlet Control HW Elev. | 4,999.00 | ft | Control Type | Outlet Control | |

| Grades | | | | | |
|---|---|---|---|---|---|
| Upstream Invert | 4,993.75 | ft | Downstream Invert | 4,993.54 | ft |
| Length | 53.70 | ft | Constructed Slope | 0.003911 | ft/ft |

| Hydraulic Profile | | | | | |
|---|---|---|---|---|---|
| Profile | PressureProfile | | Depth, Downstream | 3.84 | ft |
| Slope Type | N/A | | Normal Depth | N/A | ft |
| Flow Regime | N/A | | Critical Depth | 2.67 | ft |
| Velocity Downstream | 7.58 | ft/s | Critical Slope | 0.006051 | ft/ft |

| Section | | | | | |
|---|---|---|---|---|---|
| Section Shape | Circular | | Mannings Coefficient | 0.013 | |
| Section Material | Concrete | | Span | 3.50 | ft |
| Section Size | 42 inch | | Rise | 3.50 | ft |
| Number Sections | 1 | | | | |

| Outlet Control Properties | | | | | |
|---|---|---|---|---|---|
| Outlet Control HW Elev. | 4,999.00 | ft | Upstream Velocity Head | 0.89 | ft |
| Ke | 0.50 | | Entrance Loss | 0.45 | ft |

| Inlet Control Properties | | | | | |
|---|---|---|---|---|---|
| Inlet Control HW Elev. | 4,998.37 | ft | Flow Control | Submerged | |
| Inlet Type | Square edge w/headwall | | Area Full | 9.6 | ft² |
| K | 0.00980 | | HDS 5 Chart | 1 | |
| M | 2.00000 | | HDS 5 Scale | 1 | |
| C | 0.03980 | | Equation Form | 1 | |
| Y | 0.67000 | | | | |

# Rating Table Report
# POND B Outlet

| Range Data: | | | |
|---|---|---|---|
| | Minimum | Maximum | Increment |
| Allowable HW E | 4,994.00 | 4,999.00 | 1.00 ft |

| HW Elev. (ft) | Discharge (cfs) |
|---|---|
| 4,994.00 | 0.00 |
| 4,995.00 | 0.00 |
| 4,996.00 | 0.00 |
| 4,997.00 | 0.00 |
| 4,998.00 | 45.09 |
| 4,999.00 | 72.89 |

# Culvert Calculator Report
## POND C Outlet

Solve For: Discharge

| Culvert Summary | | | | | |
|---|---|---|---|---|---|
| Allowable HW Elevation | 4,986.44 | ft | Headwater Depth/Height | 0.96 | |
| Computed Headwater Eleva | 4,986.44 | ft | Discharge | 5.30 | cfs |
| Inlet Control HW Elev. | 4,986.29 | ft | Tailwater Elevation | 4,984.70 | ft |
| Outlet Control HW Elev. | 4,986.44 | ft | Control Type | Entrance Control | |

| Grades | | | | | |
|---|---|---|---|---|---|
| Upstream Invert | 4,985.00 | ft | Downstream Invert | 4,982.52 | ft |
| Length | 35.40 | ft | Constructed Slope | 0.070056 | ft/ft |

| Hydraulic Profile | | | | | |
|---|---|---|---|---|---|
| Profile | CompositePressureProfileS1S2 | | Depth, Downstream | 2.18 | ft |
| Slope Type | N/A | | Normal Depth | 0.44 | ft |
| Flow Regime | N/A | | Critical Depth | 0.89 | ft |
| Velocity Downstream | 3.00 | ft/s | Critical Slope | 0.005902 | ft/ft |

| Section | | | | | |
|---|---|---|---|---|---|
| Section Shape | Circular | | Mannings Coefficient | 0.013 | |
| Section Material | Concrete | | Span | 1.50 | ft |
| Section Size | 18 inch | | Rise | 1.50 | ft |
| Number Sections | 1 | | | | |

| Outlet Control Properties | | | | | |
|---|---|---|---|---|---|
| Outlet Control HW Elev. | 4,986.44 | ft | Upstream Velocity Head | 0.37 | ft |
| Ke | 0.50 | | Entrance Loss | 0.18 | ft |

| Inlet Control Properties | | | | | |
|---|---|---|---|---|---|
| Inlet Control HW Elev. | 4,986.29 | ft | Flow Control | N/A | |
| Inlet Type | Square edge w/headwall | | Area Full | 1.8 | ft² |
| K | 0.00980 | | HDS 5 Chart | 1 | |
| M | 2.00000 | | HDS 5 Scale | 1 | |
| C | 0.03980 | | Equation Form | 1 | |
| Y | 0.67000 | | | | |

# Rating Table Report
# POND C Outlet

| Range Data: | | | |
|---|---|---|---|
| | Minimum | Maximum | Increment |
| Allowable HW E | 4,985.00 | 4,986.50 | 0.50 ft |

| HW Elev. (ft) | Discharge (cfs) |
|---|---|
| 4,985.00 | 0.00 |
| 4,985.50 | 0.78 |
| 4,986.00 | 2.82 |
| 4,986.50 | 5.66 |

**APPENDIX D**

SWMD STORMCAD CONDUIT TABLE

| Label | Start Node | Stop Node | Length (User Defined) (ft) | Slope (Calculated) (ft/ft) | Section Type | Diameter (in) | Rise (ft) | Span (ft) | Flow (cfs) | Capacity (Full Flow) (cfs) | Velocity (ft/s) | Invert (Start) (ft) | Invert (Stop) (ft) | Elevation Ground (Start) (ft) | Elevation Ground (Stop) (ft) | Energy Grade Line (In) (ft) | Energy Grade Line (Out) (ft) | Hydraulic Grade Line (In) (ft) | Hydraulic Grade Line (Out) (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-1 | CB 01 | CB 104 | 60 | 0.01 | Circle | 18 | | | 2.5 | 10.5 | 4.88 | 4,985.01 | 4,984.41 | 4,990.80 | 4,986.99 | 4,985.83 | 4,985.45 | 4,985.61 | 4,985.39 |
| P-2 | CB 104 | MH 02 | 14.2 | 0.02 | Circle | 18 | | | 13.67 | 14.75 | 7.74 | 4,982.40 | 4,982.12 | 4,986.99 | 4,986.63 | 4,985.07 | 4,984.83 | 4,984.14 | 4,983.90 |
| P-3 | CB-04 | MH-05 | 83.3 | 0.005 | Circle | 24 | | | 10.12 | 16.07 | 3.22 | 5,004.50 | 5,004.08 | 5,007.78 | 5,008.78 | 5,007.12 | 5,006.96 | 5,006.96 | 5,006.79 |
| P-4 | CB-21 | MH-2 | 48.6 | 0.094 | Circle | 30 | | | 44.8 | 125.91 | 23.48 | 4,989.00 | 4,984.42 | 4,997.00 | 4,998.85 | 4,992.69 | 4,990.59 | 4,991.22 | 4,989.30 |
| P-4.1 | MH-05 | MH-65 | 170.3 | 0.007 | Circle | 24 | | | 10.12 | 18.91 | 3.22 | 5,004.08 | 5,002.89 | 5,008.78 | 5,008.77 | 5,006.77 | 5,006.43 | 5,006.61 | 5,006.27 |
| P-5 | MH-65 | MH-06 | 222.8 | 0.005 | Circle | 30 | | | 24.32 | 28.95 | 4.95 | 5,002.89 | 5,001.78 | 5,008.77 | 5,008.77 | 5,006.16 | 5,005.38 | 5,005.78 | 5,005.00 |
| P-6 | MH-06 | MH-63 | 149.4 | 0.01 | Circle | 30 | | | 24.32 | 40.96 | 8.7 | 5,001.78 | 5,000.29 | 5,008.77 | 5,007.39 | 5,004.21 | 5,003.38 | 5,003.46 | 5,003.00 |
| P-7 | CB-10 | MH-11 | 212.9 | 0.006 | Circle | 24 | | | 5.2 | 17.47 | 1.66 | 4,997.02 | 4,995.75 | 5,002.10 | 5,001.89 | 4,999.36 | 4,999.25 | 4,999.32 | 4,999.21 |
| P-8 | CB-24 | O-7 | 12.5 | 0.025 | Circle | 18 | | | 6.02 | 16.57 | 3.41 | 4,985.44 | 4,985.13 | 4,990.80 | 4,991.00 | 4,987.72 | 4,987.68 | 4,987.54 | 4,987.50 |
| P-8.1 | MH-11 | CB-102 | 233.1 | 0.006 | Circle | 24 | | | 5.2 | 17.53 | 1.66 | 4,995.75 | 4,994.35 | 5,001.89 | 5,001.49 | 4,999.22 | 4,999.10 | 4,999.18 | 4,999.05 |
| P-9 | MH-2 | O-6 | 80.9 | 0.05 | Circle | 30 | | | 44.8 | 91.88 | 9.13 | 4,984.42 | 4,980.36 | 4,998.85 | 4,998.90 | 4,989.18 | 4,988.21 | 4,987.89 | 4,986.92 |
| P-10 | CB-102 | CB-87 | 20 | 0.006 | Circle | 24 | | | 10.9 | 17.52 | 3.47 | 4,994.35 | 4,994.23 | 5,001.49 | 5,001.42 | 4,999.02 | 4,998.97 | 4,998.83 | 4,998.79 |
| P-15 | MH-30 | MH-20 | 300.7 | 0.004 | Circle | 42 | | | 41.1 | 63.81 | 4.27 | 4,993.29 | 4,992.08 | 4,999.92 | 4,999.15 | 4,997.36 | 4,996.86 | 4,997.08 | 4,996.57 |
| P-17 | MH-20 | MH-91 | 49.7 | 0.004 | Circle | 42 | | | 58.5 | 63.82 | 6.08 | 4,992.08 | 4,991.88 | 4,999.15 | 4,999.04 | 4,996.54 | 4,996.37 | 4,995.97 | 4,995.80 |
| P-18 | MH-91 | MH-22 | 245.4 | 0.004 | Circle | 48 | | | 60.95 | 90.77 | 7.74 | 4,991.88 | 4,990.90 | 4,999.04 | 5,000.25 | 4,996.06 | 4,995.63 | 4,995.68 | 4,995.26 |
| P-19 | MH-22 | MH-49 | 59.8 | 0.004 | Circle | 48 | | | 60.95 | 91 | 4.85 | 4,990.90 | 4,990.66 | 5,000.25 | 5,000.71 | 4,995.33 | 4,995.22 | 4,994.97 | 4,994.86 |
| P-20 | CB-103 | CB-51 | | 0.018 | Circle | 12 | | | 2.7 | 4.84 | 3.44 | 4,996.96 | 4,996.56 | 4,999.93 | 5,000.56 | 4,998.79 | 4,998.66 | 4,998.60 | 4,998.48 |
| P-20 | MH 02 | CB-Exist Cattle Guard Inlet | 178.8 | 0.01 | Circle | 24 | | | 13.67 | 22.51 | 7.51 | 4,982.12 | 4,980.35 | 4,986.63 | 4,983.35 | 4,984.29 | 4,984.67 | 4,983.98 | 4,983.35 |
| P-21 | CB-Exist Cattle Guard Inlet | O-5-Existing MH at Edith | 97.2 | 0.015 | Ellipse | | 2.2 | 3.6 | 66.67 | 65.57 | 10.93 | 4,978.35 | 4,976.88 | 4,983.35 | 4,981.41 | 4,984.18 | 4,982.66 | 4,982.33 | 4,980.80 |
| P-22 | CB-26 | CB-25 | 30.6 | 0.02 | Circle | 24 | | | 3 | 31.67 | 6.34 | 4,996.10 | 4,995.50 | 5,000.93 | 5,000.77 | 4,997.91 | 4,997.91 | 4,997.90 | 4,997.90 |
| P-23 | H-1 | MH-30 | 53.7 | 0.004 | Circle | 42 | | | 41.1 | 62.89 | 4.27 | 4,993.50 | 4,993.29 | 4,999.00 | 4,999.92 | 4,997.75 | 4,997.66 | 4,997.47 | 4,997.38 |
| P-24 | CB-25 | O-2 | 24.8 | 0.02 | Circle | 24 | | | 6 | 32.13 | 1.91 | 4,995.50 | 4,995.00 | 5,000.77 | 4,999.00 | 4,997.88 | 4,997.87 | 4,997.83 | 4,997.81 |
| P-26 | MH-58 | MH-33 | 197.4 | 0.01 | Circle | 18 | | | 8.65 | 10.49 | 6.63 | 5,002.01 | 5,000.04 | 5,007.81 | 5,006.88 | 5,003.78 | 5,002.46 | 5,003.38 | 5,002.09 |
| P-27 | CB-34 | MH-20 | 61.4 | 0.02 | Circle | 24 | | | 13.8 | 32.03 | 4.39 | 4,994.03 | 4,992.80 | 4,999.24 | 4,999.15 | 4,997.09 | 4,996.86 | 4,996.79 | 4,996.56 |
| P-28 | CB-35 | MH-20 | 12.1 | 0.05 | Circle | 18 | | | 3.6 | 23.48 | 2.04 | 4,993.33 | 4,992.73 | 4,999.03 | 4,999.15 | 4,996.78 | 4,996.77 | 4,996.72 | 4,996.71 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-29 | MH-33 | MH -36 | 54.1 | 0.01 | Circle | 24 | | | 8.65 | 22.61 | 2.75 | 5,000.04 | 4,999.50 | 5,006.88 | 5,006.34 | 5,002.27 | 5,002.19 | 5,002.15 | 5,002.07 |
| P-30 | MH -36 | MH-42 | 93.7 | 0.02 | Circle | 24 | | | 14.58 | 31.96 | 9.94 | 4,999.50 | 4,997.63 | 5,006.34 | 5,005.23 | 5,001.50 | 5,000.58 | 5,000.88 | 5,000.24 |
| P-31 | MH-42 | MH-38 | 128 | 0.02 | Circle | 24 | | | 15.76 | 31.74 | 10.08 | 4,997.63 | 4,995.11 | 5,005.23 | 5,003.28 | 4,999.73 | 4,997.98 | 4,999.06 | 4,997.59 |
| P-32 | MH-38 | O-4 | 68.4 | 0.02 | Circle | 24 | | | 15.76 | 32.01 | 10.15 | 4,995.11 | 4,993.74 | 5,003.28 | 4,997.00 | 4,997.21 | 4,996.23 | 4,996.54 | 4,994.77 |
| P-33 | CB-40 | CB-79 | 70.9 | 0.02 | Circle | 18 | | | 4.54 | 14.82 | 7.37 | 5,001.35 | 4,999.94 | 5,006.67 | 5,005.43 | 5,002.72 | 5,002.59 | 5,002.58 | 5,002.48 |
| P-34 | CB-79 | MH -36 | 21.8 | 0.02 | Circle | 18 | | | 5.93 | 14.92 | 3.36 | 4,999.94 | 4,999.50 | 5,005.43 | 5,006.34 | 5,002.28 | 5,002.21 | 5,002.11 | 5,002.04 |
| P-36 | CB-43 | MH-42 | 60.7 | 0.03 | Circle | 18 | | | 1.18 | 18.19 | 5.8 | 5,001.19 | 4,999.37 | 5,005.46 | 5,005.23 | 5,001.74 | 5,000.45 | 5,001.60 | 5,000.44 |
| P-38 | MH-44 | O-3 | 87.7 | 0.009 | Circle | 54 | | | 74.53 | 185.49 | 11.03 | 4,990.28 | 4,989.50 | 5,001.25 | 4,999.00 | 4,994.26 | 4,994.14 | 4,993.77 | 4,993.79 |
| P-42 | MH-49 | MH-44 | 95.9 | 0.004 | Circle | 48 | | | 74.53 | 90.43 | 8.04 | 4,990.66 | 4,990.28 | 5,000.71 | 5,001.25 | 4,994.93 | 4,994.69 | 4,994.33 | 4,994.14 |
| P-43 | CB-50 | MH-49 | 20.8 | 0.02 | Circle | 18 | | | 6.26 | 14.94 | 8.08 | 4,996.55 | 4,996.13 | 5,000.55 | 5,000.71 | 4,997.94 | 4,997.69 | 4,997.52 | 4,996.87 |
| P-44 | CB-51 | MH-49 | 14.1 | 0.02 | Circle | 18 | | | 7.32 | 14.82 | 8.37 | 4,996.56 | 4,996.28 | 5,000.56 | 5,000.71 | 4,998.09 | 4,997.93 | 4,997.61 | 4,997.12 |
| P-47 | MH-86 | CB-87 | 35.1 | 0.02 | Circle | 30 | | | 24.32 | 57.91 | 4.95 | 4,994.93 | 4,994.23 | 5,002.14 | 5,001.42 | 4,999.17 | 4,999.05 | 4,998.79 | 4,998.67 |
| P-48 | MH-63 | MH-86 | 126.8 | 0.042 | Circle | 30 | | | 24.32 | 84.31 | 14.85 | 5,000.29 | 4,994.93 | 5,007.39 | 5,002.14 | 5,002.72 | 4,999.41 | 5,001.97 | 4,999.03 |
| P-49 | CB-87 | O-1 | 22.6 | 0.01 | Circle | 36 | | | 46.02 | 67.21 | 6.51 | 4,994.23 | 4,994.00 | 5,001.42 | 4,999.00 | 4,998.58 | 4,998.47 | 4,997.92 | 4,997.81 |
| P-55 | CB-64 | MH-65 | 82.1 | 0.005 | Circle | 24 | | | 14.2 | 15.98 | 4.52 | 5,004.00 | 5,003.59 | 5,007.51 | 5,008.77 | 5,006.82 | 5,006.49 | 5,006.50 | 5,006.18 |
| P-75 | CB-92 | MH-91 | 14.4 | 0.02 | Circle | 18 | | | 2.45 | 14.92 | 1.39 | 4,992.17 | 4,991.88 | 4,998.91 | 4,999.04 | 4,996.16 | 4,996.15 | 4,996.13 | 4,996.13 |
| P-78 | CB-94 | MH-58 | 46.9 | 0.01 | Circle | 18 | | | 5.77 | 10.52 | 3.27 | 5,002.48 | 5,002.01 | 5,006.00 | 5,007.81 | 5,004.33 | 5,004.18 | 5,004.16 | 5,004.02 |
| P-80 | MH-100 | MH-58 | 236.7 | 0.01 | Circle | 18 | | | 2.88 | 10.51 | 5.07 | 5,004.38 | 5,002.01 | 5,007.72 | 5,007.81 | 5,005.27 | 5,004.13 | 5,005.02 | 5,004.09 |
| P-81 | CB-97 | MH-100 | 74.5 | 0.03 | Circle | 18 | | | 2.88 | 18.19 | 7.52 | 5,006.62 | 5,004.38 | 5,010.18 | 5,007.72 | 5,007.50 | 5,005.47 | 5,007.26 | 5,005.40 |
| P-82 | CB-89 | CB-34 | 60.4 | 0.02 | Circle | 24 | | | 7.7 | 32.01 | 2.45 | 4,995.24 | 4,994.03 | 4,999.24 | 4,999.24 | 4,997.36 | 4,997.29 | 4,997.26 | 4,997.19 |

SWMD STORMCAD MANHOLE TABLE

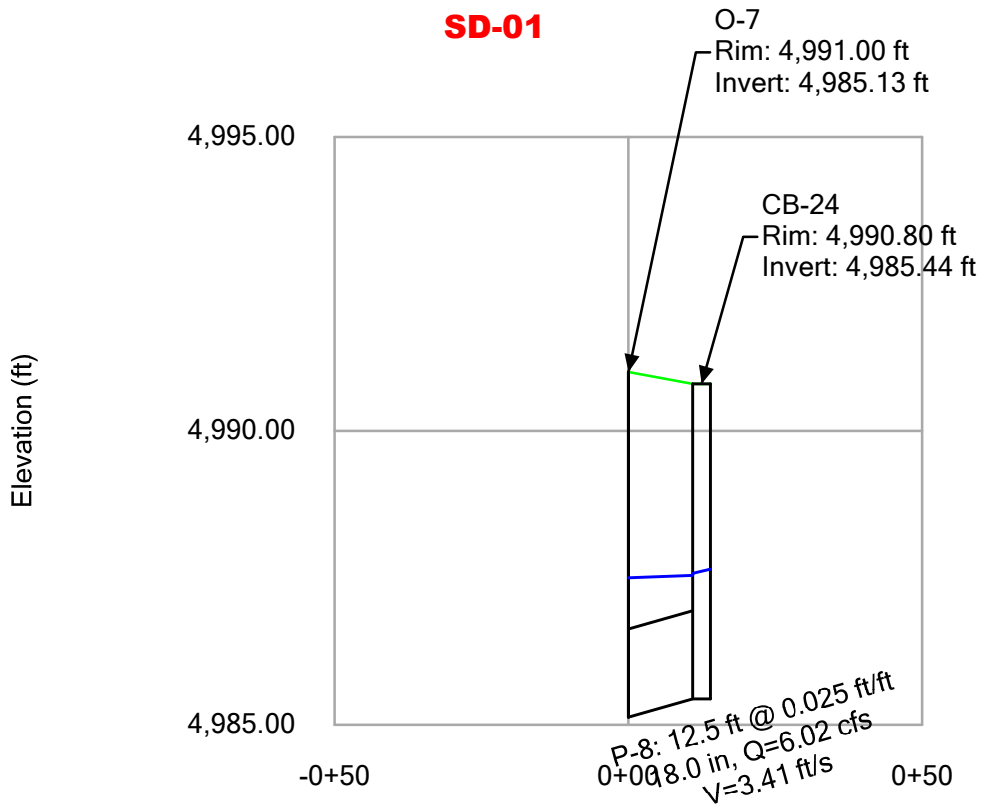
| Label | Elevation (Ground) (ft) | Elevation (Rim) (ft) | Elevation (Invert in 1) (ft) | Elevation (Invert in 2) (ft) | Hydraulic Grade Line (In) (ft) | Hydraulic Grade Line (Out) (ft) |
|---|---|---|---|---|---|---|
| MH-58 | 5,007.81 | 5,007.81 | 5,002.01 | 5,002.01 | 5,003.71 | 5,003.50 |
| MH-100 | 5,007.72 | 5,007.72 | 5,004.38 | (N/A) | 5,005.20 | 5,005.07 |
| MH-33 | 5,006.88 | 5,006.88 | 5,000.04 | (N/A) | 5,002.19 | 5,002.18 |
| MH -36 | 5,006.34 | 5,006.34 | 4,999.50 | 4,999.50 | 5,001.52 | 5,001.10 |
| MH-42 | 5,005.23 | 5,005.23 | 4,997.63 | 4,999.37 | 4,999.78 | 4,999.30 |
| MH-38 | 5,003.28 | 5,003.28 | 4,995.11 | (N/A) | 4,997.16 | 4,996.78 |
| MH-05 | 5,008.78 | 5,008.78 | 5,004.08 | (N/A) | 5,006.73 | 5,006.64 |
| MH-65 | 5,008.77 | 5,008.77 | 5,002.89 | 5,003.59 | 5,005.99 | 5,005.86 |
| MH-06 | 5,008.77 | 5,008.77 | 5,001.78 | (N/A) | 5,004.48 | 5,003.72 |
| MH-63 | 5,007.39 | 5,007.39 | 5,000.29 | (N/A) | 5,002.48 | 5,002.23 |
| MH-86 | 5,002.14 | 5,002.14 | 4,994.93 | (N/A) | 4,998.88 | 4,998.87 |
| MH-11 | 5,001.89 | 5,001.89 | 4,995.75 | (N/A) | 4,999.19 | 4,999.18 |
| MH-44 | 5,001.25 | 5,001.25 | 4,990.28 | (N/A) | 4,993.98 | 4,993.87 |
| MH-49 | 5,000.71 | 5,000.71 | 4,990.66 | 4,996.13 | 4,994.49 | 4,994.45 |
| MH-22 | 5,000.25 | 5,000.25 | 4,990.90 | (N/A) | 4,995.12 | 4,995.04 |
| MH-30 | 4,999.92 | 4,999.92 | 4,993.29 | (N/A) | 4,997.27 | 4,997.13 |
| MH-20 | 4,999.15 | 4,999.15 | 4,992.08 | 4,992.80 | 4,996.17 | 4,996.08 |
| MH-91 | 4,999.04 | 4,999.04 | 4,991.88 | 4,991.88 | 4,995.76 | 4,995.76 |
| MH-2 | 4,998.85 | 4,998.85 | 4,984.42 | (N/A) | 4,988.78 | 4,988.14 |
| MH 02 | 4,986.63 | 4,986.63 | 4,982.12 | (N/A) | 4,984.15 | 4,984.04 |

SWMD STORMCAD CATCH BASIN TABLE

| Label | Elevation (Rim) (ft) | Flow (Total Out) (cfs) | Elevation (Invert) (ft) | Elevation (Invert in 2) (ft) | Hydraulic Grade Line (In) (ft) | Hydraulic Grade Line (Out) (ft) |
|---|---|---|---|---|---|---|
| CB-10 | 5,002.10 | 5.2 | 4,997.02 | (N/A) | 4,999.34 | 4,999.33 |
| CB-87 | 5,001.42 | 46.02 | 4,994.23 | 4,994.23 | 4,998.24 | 4,998.05 |
| CB-26 | 5,000.93 | 3 | 4,996.10 | (N/A) | 4,997.91 | 4,997.90 |
| CB-25 | 5,000.77 | 6 | 4,995.50 | (N/A) | 4,997.85 | 4,997.84 |
| CB-89 | 4,999.24 | 7.7 | 4,995.24 | (N/A) | 4,997.30 | 4,997.28 |
| CB-34 | 4,999.24 | 13.8 | 4,994.03 | (N/A) | 4,996.95 | 4,996.85 |
| CB-35 | 4,999.03 | 3.6 | 4,993.04 | (N/A) | 4,996.75 | 4,996.73 |
| CB-92 | 4,998.91 | 2.45 | 4,992.17 | (N/A) | 4,996.15 | 4,996.14 |
| CB-50 | 5,000.55 | 6.26 | 4,996.55 | (N/A) | 4,997.89 | 4,997.66 |
| CB-51 | 5,000.56 | 7.32 | 4,996.56 | (N/A) | 4,998.11 | 4,997.78 |
| CB-43 | 5,005.46 | 1.18 | 5,001.19 | (N/A) | 5,001.69 | 5,001.63 |
| CB-40 | 5,006.67 | 4.54 | 5,001.35 | (N/A) | 5,002.68 | 5,002.61 |
| CB-79 | 5,005.43 | 5.93 | 4,999.94 | (N/A) | 5,002.41 | 5,002.11 |
| CB-94 | 5,006.00 | 5.77 | 5,002.48 | (N/A) | 5,004.23 | 5,004.19 |
| CB-97 | 5,010.18 | 2.88 | 5,006.62 | (N/A) | 5,007.39 | 5,007.31 |
| CB-04 | 5,007.78 | 10.12 | 5,004.50 | (N/A) | 5,007.00 | 5,006.99 |
| CB-64 | 5,007.51 | 14.2 | 5,004.00 | (N/A) | 5,006.58 | 5,006.56 |
| CB 01 | 4,990.80 | 2.5 | 4,985.01 | (N/A) | 4,985.61 | 4,985.61 |
| CB-102 | 5,001.49 | 10.9 | 4,994.35 | (N/A) | 4,998.89 | 4,998.87 |
| CB-103 | 4,999.93 | 2.7 | 4,996.96 | (N/A) | 4,998.68 | 4,998.64 |
| CB-21 | 4,997.00 | 44.8 | 4,989.00 | (N/A) | 4,992.13 | 4,991.58 |
| CB 104 | 4,986.99 | 13.67 | 4,982.40 | (N/A) | 4,984.50 | 4,984.33 |
| CB-Exist Cattle Guard Inlet | 4,983.35 | 66.67 | 4,977.35 | (N/A) | 4,982.70 | 4,982.70 |
| CB-24 | 4,990.80 | 6.02 | 4,985.44 | (N/A) | 4,987.65 | 4,987.58 |

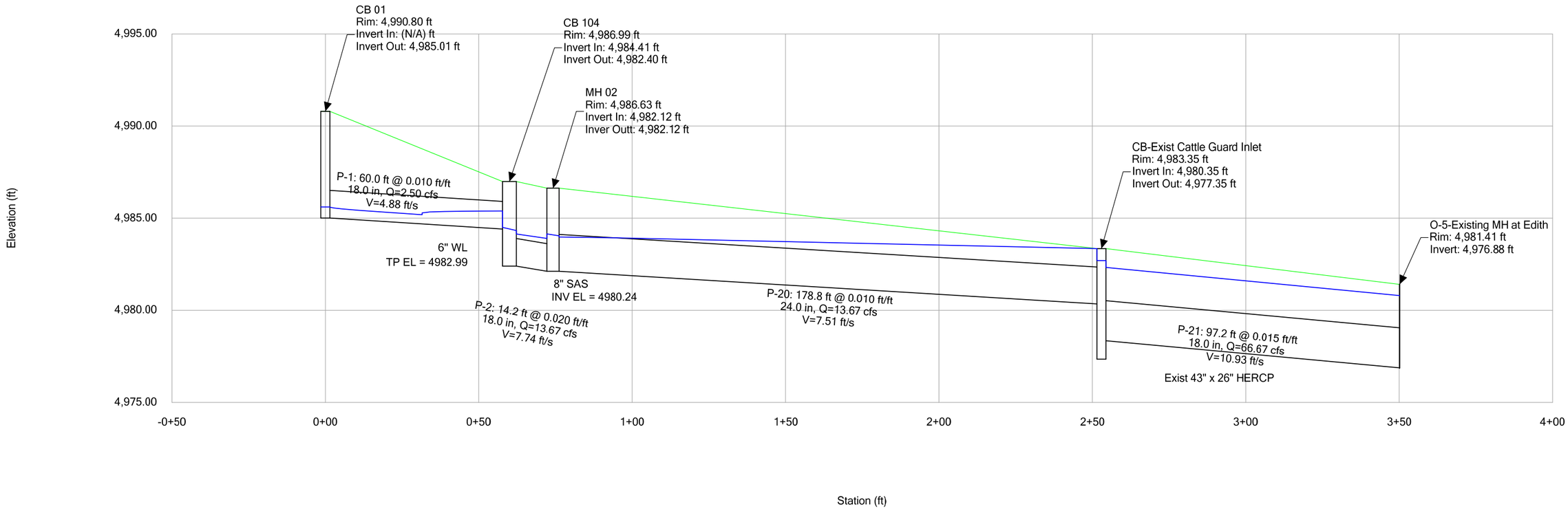
# Profile Report

## Engineering Profile - Profile - Basin 206 to Pond C (SWMD SD.stsw)

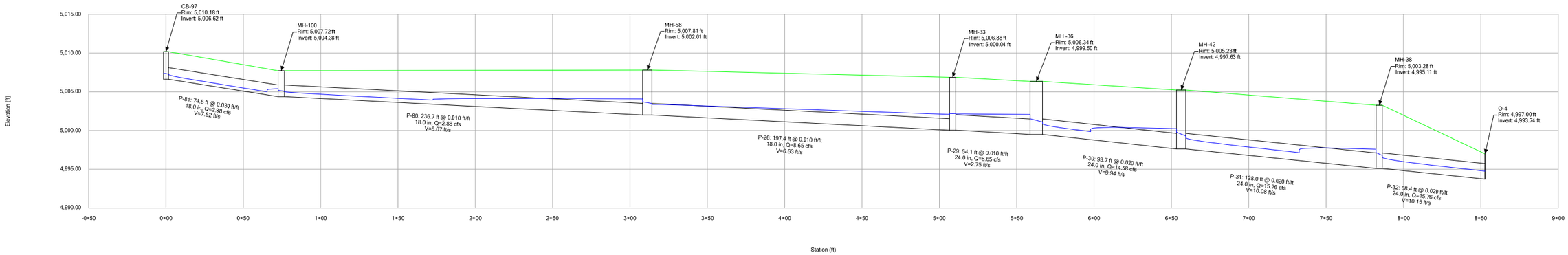


# Profile Report
## Engineering Profile - Profile - Basin 206 (SWMD SD.stsw)

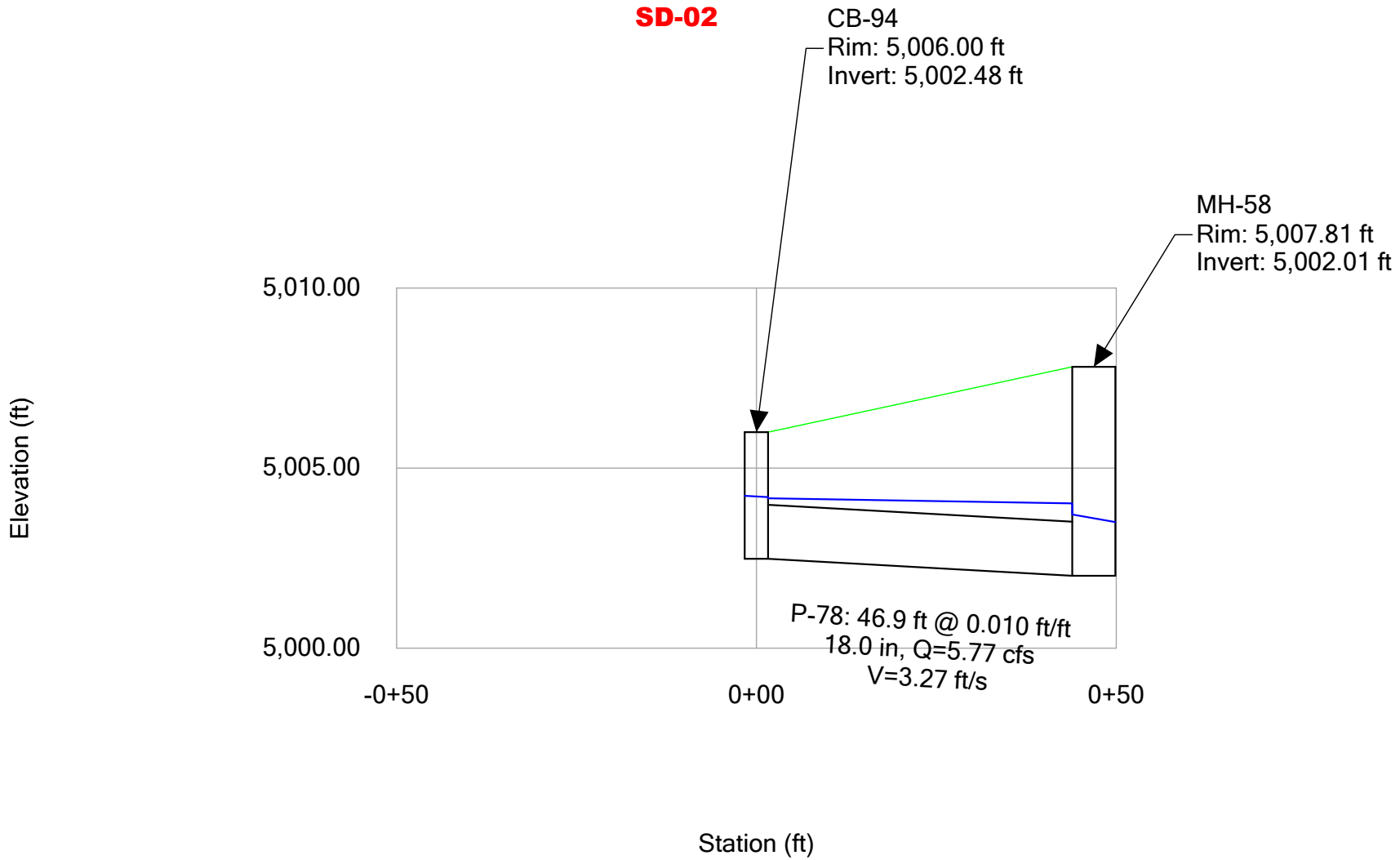
## SD-01



# Profile Report
# Engineering Profile - Profile - Basin 208 to Pond A (SWMD SD.stsw)
## SD-02

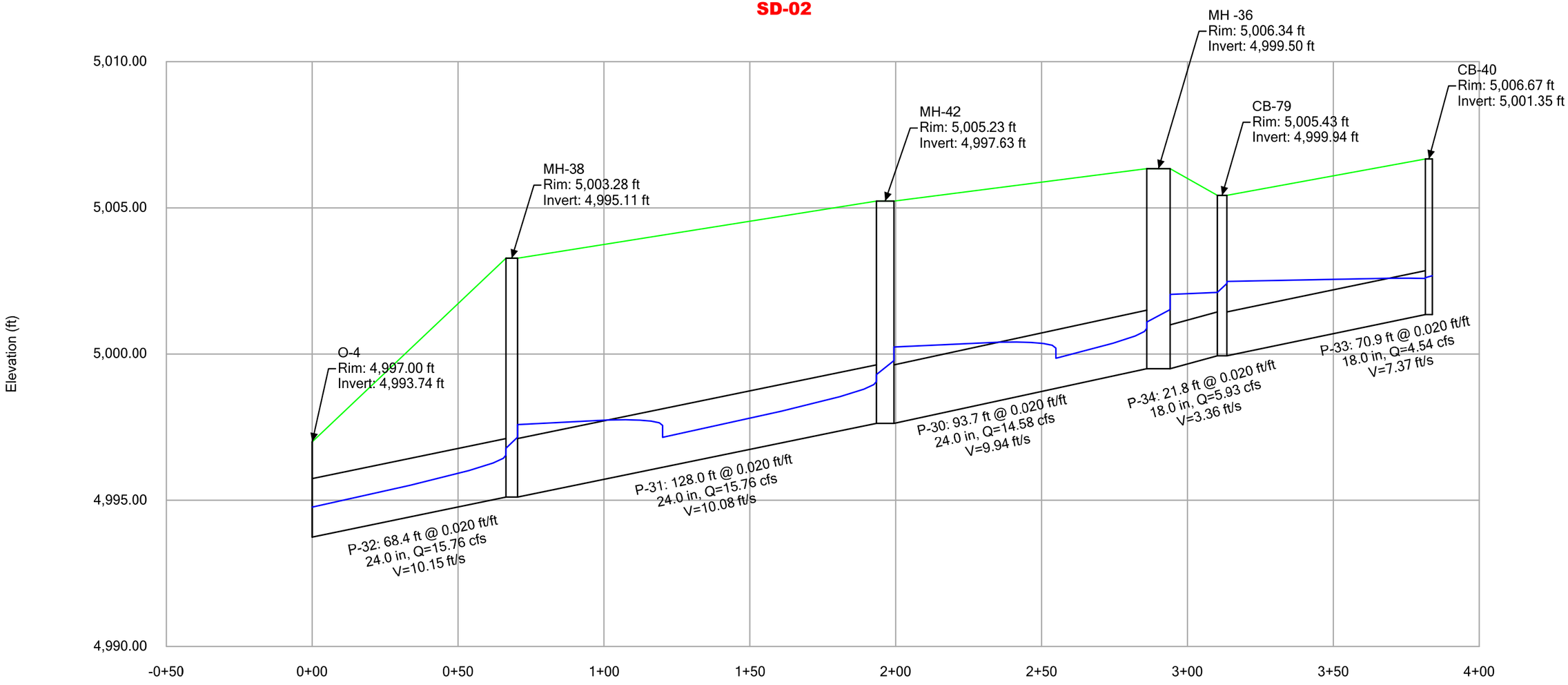


# Profile Report
## Engineering Profile - Basin 209 (SWMD SD.stsw)
### SD-02

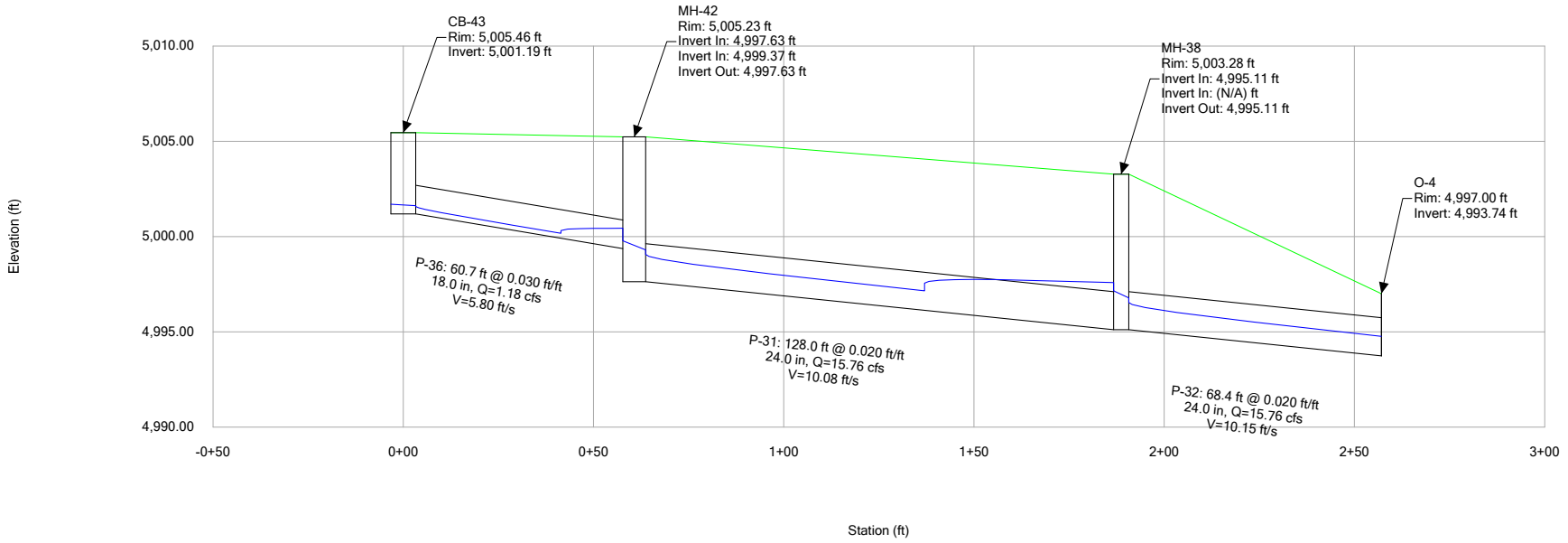


# Profile Report
## Engineering Profile - Profile - Basin 214 to Pond A (SWMD SD.stsw)

**SD-02**

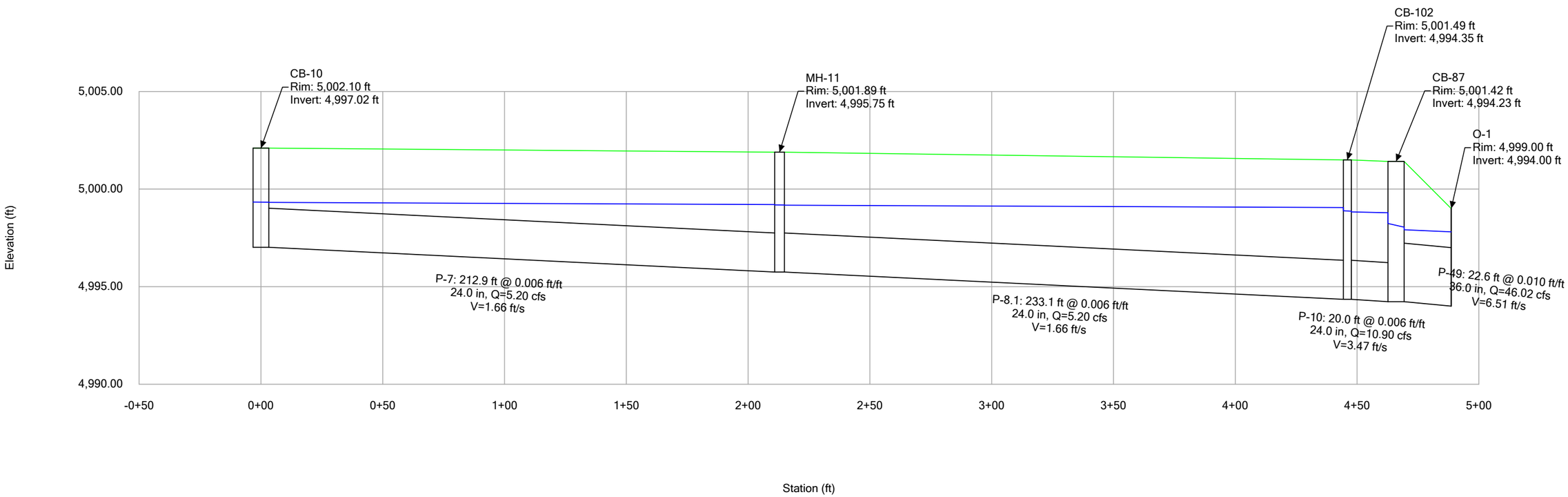


# Profile Report
## Engineering Profile - Profile - Basin 215 to Pond A (SWMD SD.stsw)
## SD-02

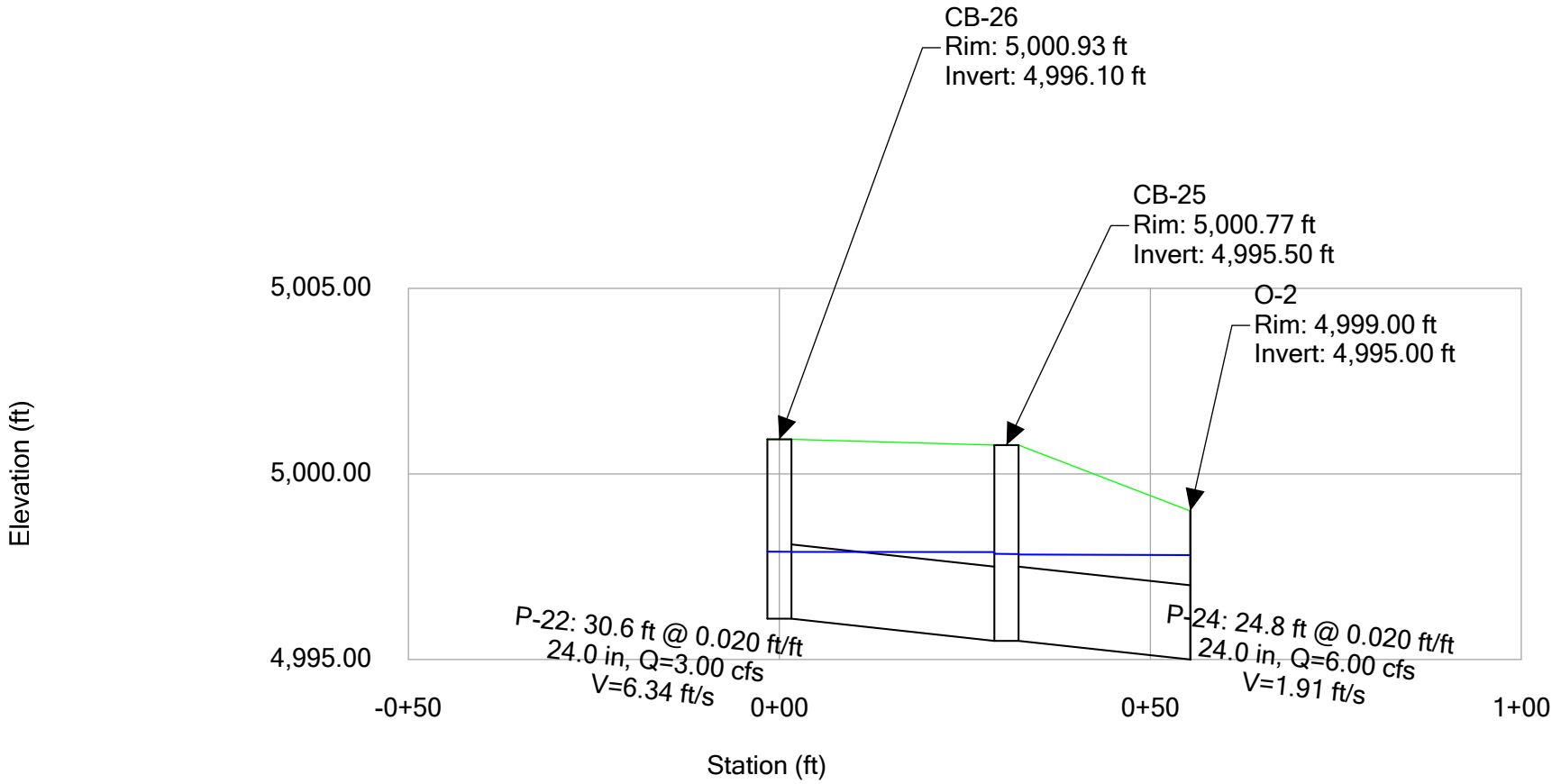


# Profile Report
## Engineering Profile - Profile - Basin 203 to Pond B (SWMD SD.stsw)

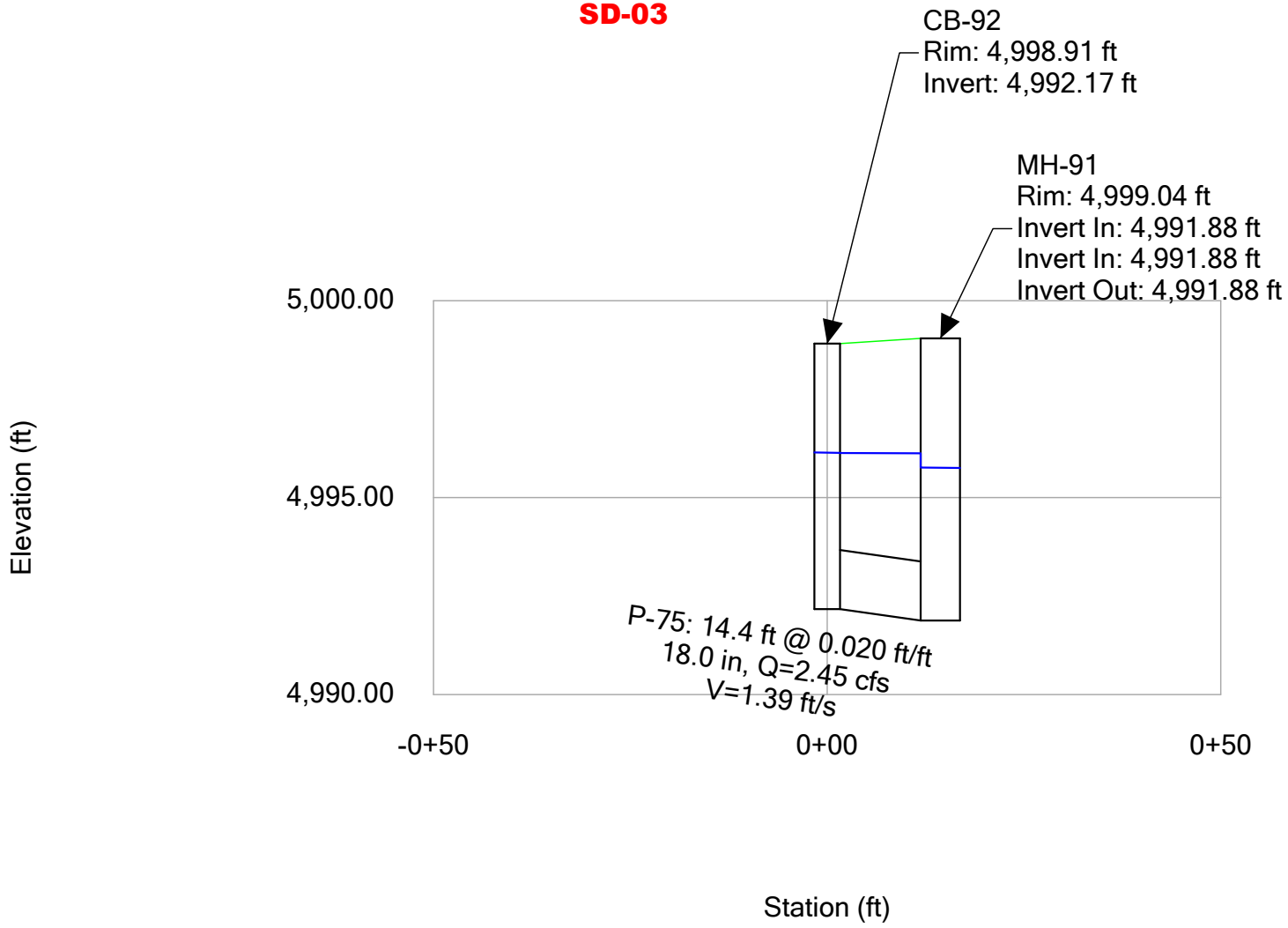
**SD-03**



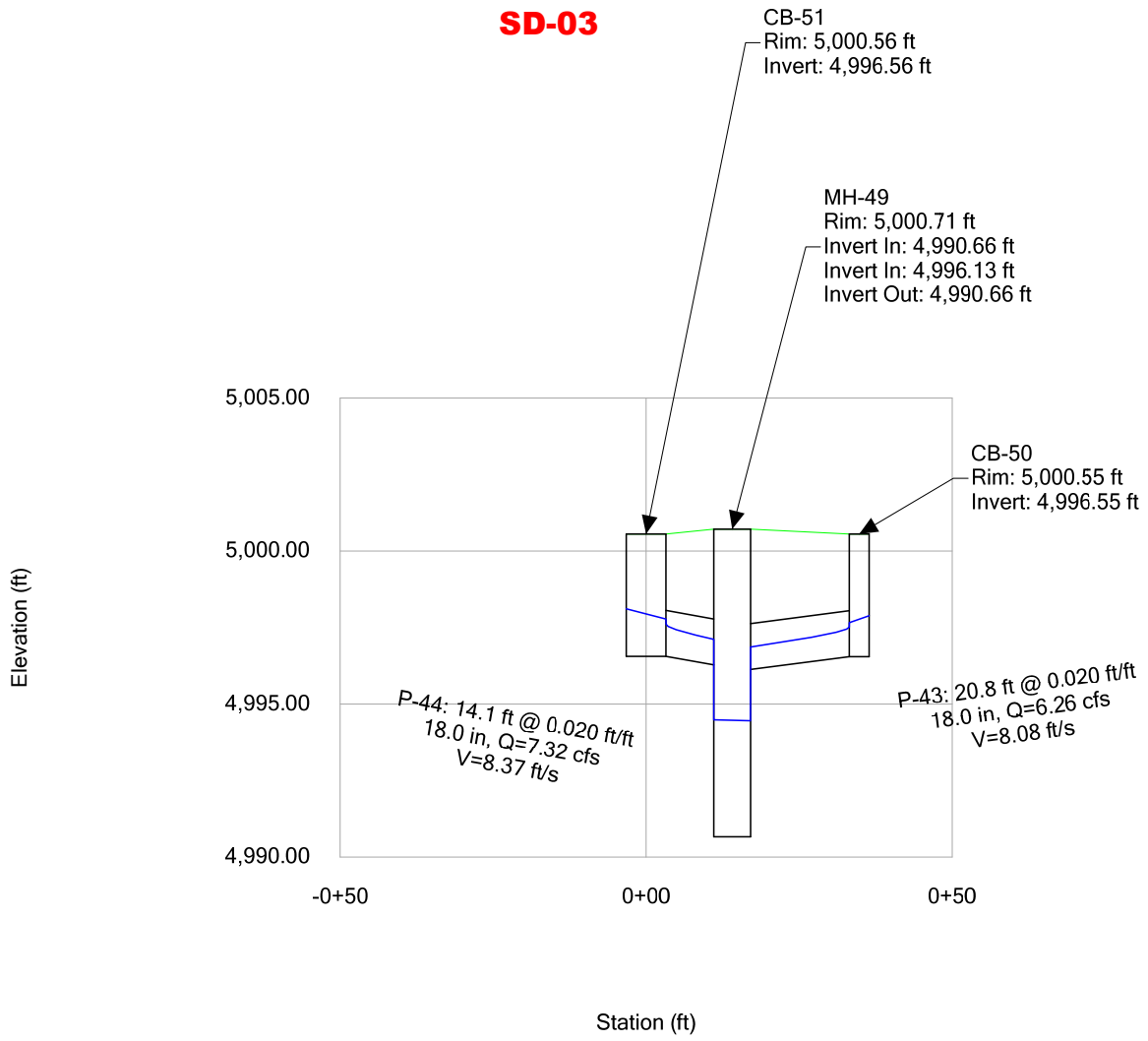
# Profile Report
## Engineering Profile - Profile - Basin 205 to Pond B (SWMD SD.stsw)
## SD-03



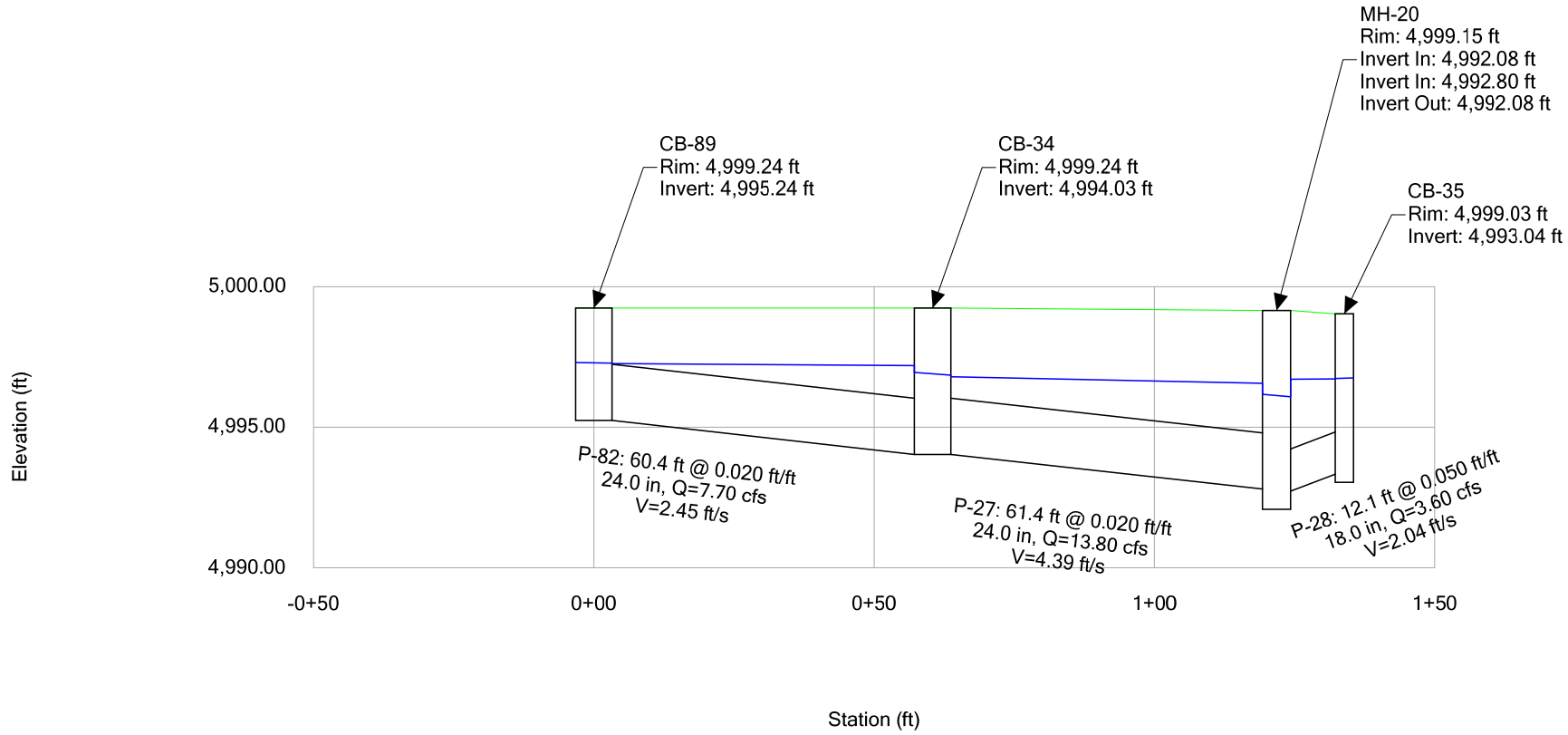
# Profile Report
## Engineering Profile - Profile - Basin 207 (SWMD SD.stsw)
## SD-03



# Profile Report
## Engineering Profile - Profile - Basin 219 (SWMD SD.stsw)
## SD-03

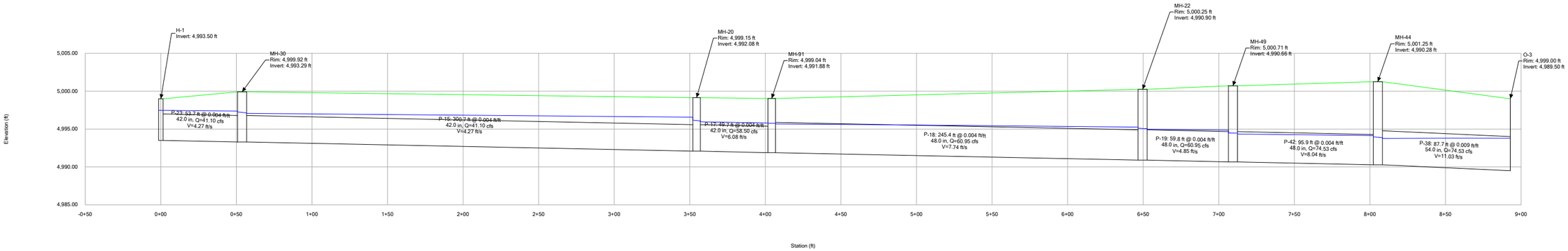


# Profile Report
## Engineering Profile - Profile - Basins 211 to 212 (SWMD SD.stsw)
## SD-03

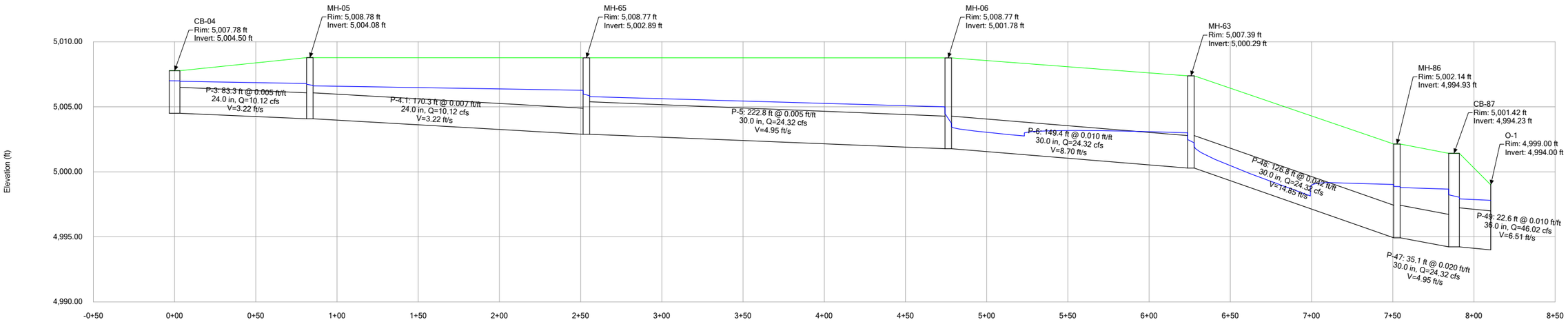


# Profile Report
# Engineering Profile - Profile - Pond B to Pond A (SWMD SD.stsw)

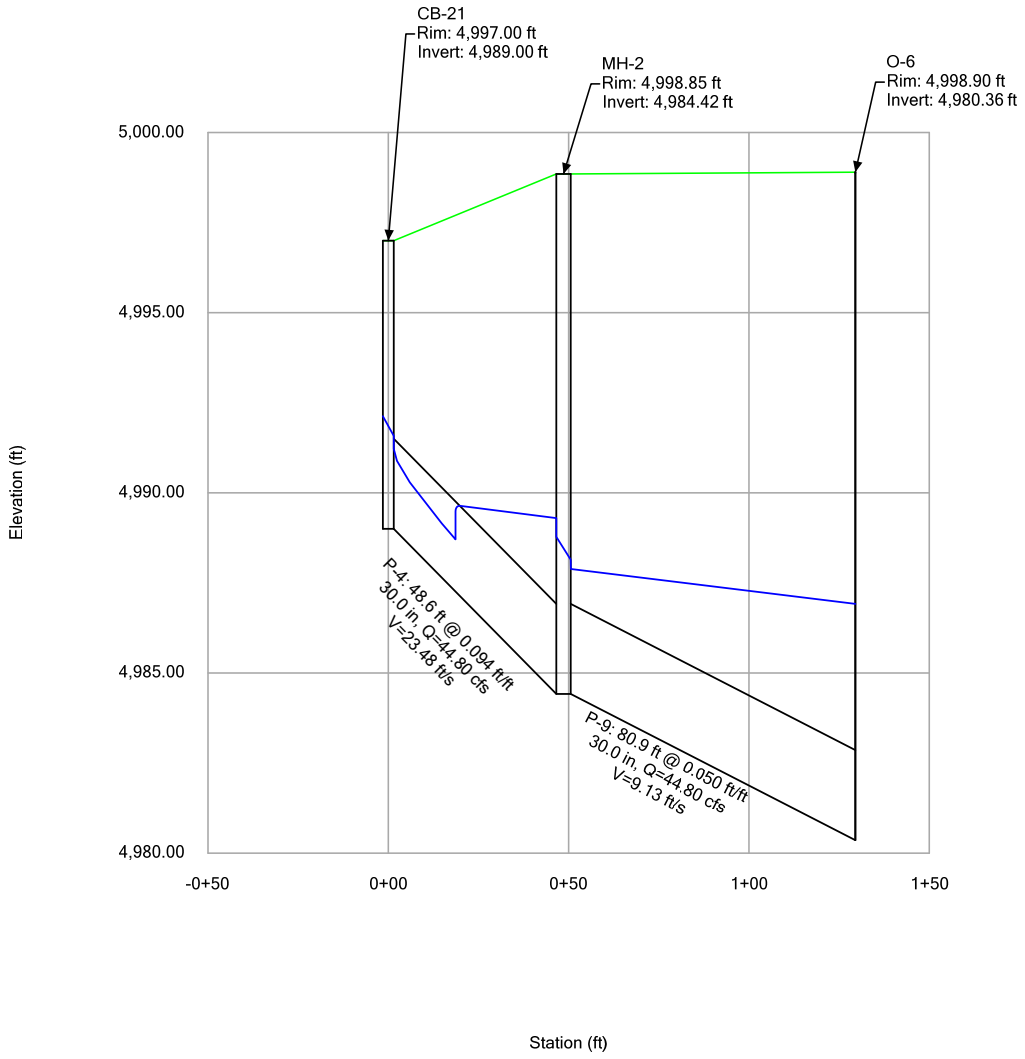
## SD-03



# Profile Report
# Engineering Profile - Profile - Basin 201 to Pond B (SWMD SD.stsw)
## SD-04



# Profile Report
## Engineering Profile - Profile - Pond A Outfall (SWMD SD.stsw)



**APPENDIX E**

| Pond Calculations | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pond | Peak Flow (cfs) | | Volume (ac-ft) | | Elevation (ft) | | |
| | In | Out | Prv'd | Req'd | Top | Bottom | WSEL |
| A | 90 | 44.8 | 1.95 | 1.24 | 4997 | 4989 | 4995.4 |
| B | 43 | 41.1 | 0.56 | 0.38 | 4999 | 4994 | 4997.9 |
| C | 6 | 2.7 | 0.13 | 0.10 | 4986.5 | 4985 | 4986.0 |
| Starting HGL elevation for pipes draining into Ponds A & B were extracted from AHYMO, Pond A WSEL = 4993.79 Peak Inflow @ 1.53 hr and Pond B WSEL= 4997.81, Peak Inflow @ 1.50 hr | | | | | | | |
| Tailwater elevations were extracted from StormCAD which were used as input in CulvertMaster to attain pond discharge rates | | | | | | | |
| 80th percentile volume is additional and is not included in provided volume | | | | | | | |

Ponds Discharge Rating Table

| Pond A - 27" Orifice | | | | | |
|---|---|---|---|---|---|
| Elev | Contour Area (sf) | Vol (cf) | Vol (ac-ft) | Pipe Outflow (cfs) | * Actual Outflow (cfs) |
| 4989 | 4,198 | 0 | 0.0000 | 0 | 0 |
| 4990 | 5,387 | 4,780 | 0.1097 | 3.69 | 0 |
| 4991 | 6,784 | 10,850 | 0.2491 | 12.84 | 0 |
| 4992 | 6,498 | 18,475 | 0.4241 | 24.17 | 11.06 |
| 4993 | 10,362 | 27,891 | 0.6403 | 32.11 | 30.89 |
| 4994 | 12,258 | 39,200 | 0.8999 | 37.79 | 38.2 |
| 4995 | 14,265 | 52,464 | 1.2044 | 42.73 | 44.31 |
| 4996 | 16,303 | 67,737 | 1.5550 | 47.14 | 47.14 |
| 4997 | 18,396 | 85,075 | 1.9531 | 51.18 | 51.18 |
| * Indicates the lesser of the riser and pipe outflow | | | | | |

| Pond B | | | | |
|---|---|---|---|---|
| Elev | Contour Area (sf) | Vol (cf) | Vol (ac-ft) | Outflow (cfs) |
| 4994 | 2,297 | 0 | 0.0000 | 0 |
| 4995 | 3,176 | 2,725 | 0.0626 | 0 |
| 4996 | 4,193 | 6,398 | 0.1469 | 0 |
| 4997 | 5,344 | 11,155 | 0.2561 | 0 |
| 4998 | 6,626 | 17,129 | 0.3932 | 45.1 |
| 4999 | 8,039 | 24,450 | 0.5613 | 72.9 |

| Pond C | | | |
|---|---|---|---|
| Elev | Vol (cf) | Vol (ac-ft) | Outflow (cfs) |
| 4985 | 0 | 0.0000 | 0 |
| 4986 | 4,356 | 0.1000 | 2 |
| 4986.5 | 5,663 | 0.1300 | 5.3 |

| 80th Percentile Volume Calculation | | | |
|---|---|---|---|
| Pond | Impervious Area (ac) | $V^{80th\%}$ (ac-ft) | Elevation |
| A | 10.55 | 0.23 | 4989.00 to 4990.86 |
| B | 9.63 | 0.21 | 4994.00 to 4990.70 |
| C | 1.30 | 0.03 | 4985.00 to 4984.00 |
| The required 80th percentile required volume is 0.26 inches of excess precipitation from the impervious area | | | |

**SWMD Maintenance & Admin Buildings Project**

CONCRETE RISER

| | | | |
|---|---|---|---|
| INVERT OF PERFORATION(S) | 4990.86 | Total Outflow (Needed) = | 45.45 cfs |
| DIAM OF PERFORATION(S) (in) | 6 | Total Outflow (provided) = | 46.54 |

| # PERFORATIONS | | | 1 | 2 | 3 | 5 | 6 | 12 |
|---|---|---|---|---|---|---|---|---|
| ELEVATION | A (sf) | h (ft) | Q (cfs) | Q (cfs) | Q (cfs) | Q (cfs) | Q (cfs) | Q (cfs) |
| | | | | | | | | |
| 4991.5 | 0.20 | 0.39 | 0.61 | 1.22 | 1.83 | 3.05 | 3.66 | 7.32 |
| 4992 | 0.20 | 0.89 | 0.92 | 1.84 | 2.76 | *4.61* | 5.53 | 11.06 |
| 4993 | 0.20 | 1.89 | 1.34 | 2.69 | 4.03 | 6.72 | 8.06 | 16.12 |
| 4994 | 0.20 | 2.89 | 1.66 | 3.32 | 4.98 | 8.30 | 9.96 | 19.93 |
| 4995 | 0.20 | 3.89 | 1.93 | 3.85 | 5.78 | 9.63 | 11.56 | 23.12 |
| 4995.4 | *0.20* | *4.29* | *2.02* | *4.05* | 6.07 | 10.12 | 12.14 | 24.28 |
| 4996.1 | 0.20 | 4.99 | 2.18 | 4.36 | 6.55 | 10.91 | 13.09 | 26.19 |

2nd row of holes

| | |
|---|---|
| INVERT OF PERFORATION(S) | 4991.91 |
| DIAM OF PERFORATION(S) (in) | 6 |

| # PERFORATIONS | | | 1 | 2 | 4 | 5 | 6 | 11 |
|---|---|---|---|---|---|---|---|---|
| ELEVATION | A (sf) | h (ft) | Q (cfs) | Q (cfs) | Q (cfs) | Q (cfs) | Q (cfs) | Q (cfs) |
| | | | | | | | | |
| 4992.5 | 0.20 | 0.34 | 0.57 | 1.14 | 2.28 | 2.85 | *3.42* | *6.27* |
| 4993 | 0.20 | 1.89 | 1.34 | 2.69 | 5.37 | 6.72 | *8.06* | *14.77* |
| 4994 | 0.20 | 2.89 | 1.66 | 3.32 | 6.64 | 8.30 | *9.96* | *18.27* |
| 4995 | 0.20 | 3.89 | 1.93 | 3.85 | 7.71 | 9.63 | *11.56* | *21.19* |
| 4995.4 | 0.20 | 4.29 | 2.02 | 4.05 | 8.09 | 10.12 | *12.14* | 22.26 |
| 4996.1 | 0.20 | *4.99* | 2.18 | 4.36 | 8.73 | 10.91 | *13.09* | *24.01* |
| 4997.1 | 0.20 | 5.99 | *2.39* | *4.78* | *9.56* | *11.95* | *14.35* | *26.30* |

** MAXIMUM WATER SURFACE ELEVATION*

# CULTEC Stormwater Design Calculator

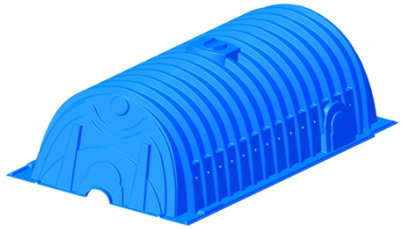
| Date: | May 08, 2020 |
|---|---|

**Project Information:**

SWMD POND C

**Calculations Performed By:**

## RECHARGER 330XLHD



| Recharger 330XLHD Chamber Specifications | | |
|---|---|---|
| Height | **30.5** | inches |
| Width | **52.0** | inches |
| Length | **8.50** | feet |
| Installed Length | **7.00** | feet |
| Bare Chamber Volume | **52.21** | cu. feet |
| Installed Chamber Volume | **92.41** | cu. feet |

| Breakdown of Storage Provided by Recharger 330XLHD Stormwater System | | |
|---|---|---|
| Within Chambers | **2,595.73** | cu. feet |
| Within Feed Connectors | **-** | cu. feet |
| Within Stone | **2,235.75** | cu. feet |
| **Total Storage Provided** | **4,831.5** | **cu. feet** |
| Total Storage Required | 4356.00 | cu. feet |

## Materials List

| Recharger 330XLHD | | |
|---|---|---|
| **Total Number of Chambers Required** | **48** | **pieces** |
| Starter Chambers | **8** | pieces |
| Intermediate Chambers | **32** | pieces |
| End Chambers | **8** | pieces |
| HVLV FC-24 Feed Connectors | **14** | pieces |
| CULTEC No. 410 Non-Woven Geotextile | **634** | sq. yards |
| CULTEC No. 4800 Woven Geotextile | **84** | feet |
| Stone | **207** | cu. yards |

*Based on 2 Internal Manifolds*

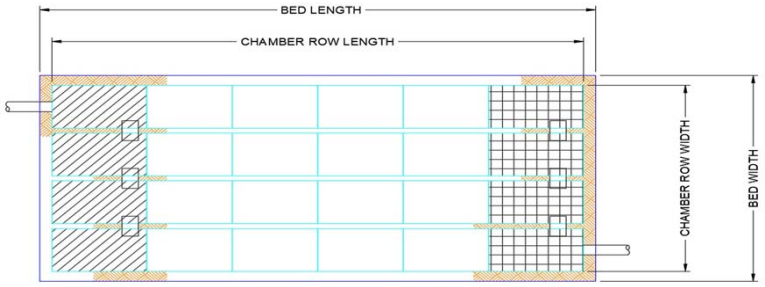
**CULTEC, Inc.**
**P.O. Box 280**
**Brookfield, CT 06804 USA**

**Phone: 203-775-4416**
**www.cultec.com**
**tech@cultec.com**



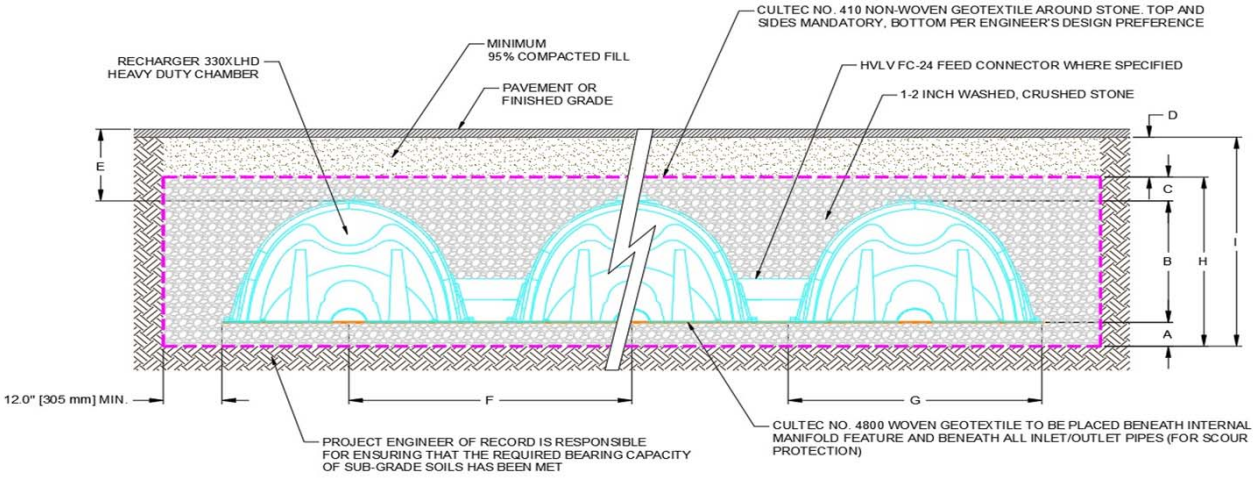
*Created on : 5/8/2020*

# Bed Detail




| Bed Layout Information | | |
|---|---|---|
| Number of Rows Wide | **8** | pieces |
| Number of Chambers Long | **6** | pieces |
| Chamber Row Width | **39.92** | feet |
| Chamber Row Length | **43.50** | feet |
| Bed Width | **41.92** | feet |
| Bed Length | **45.50** | feet |
| Bed Area Required | **1907.21** | sq. feet |
| Length of Separator Row | **N/A** | feet |

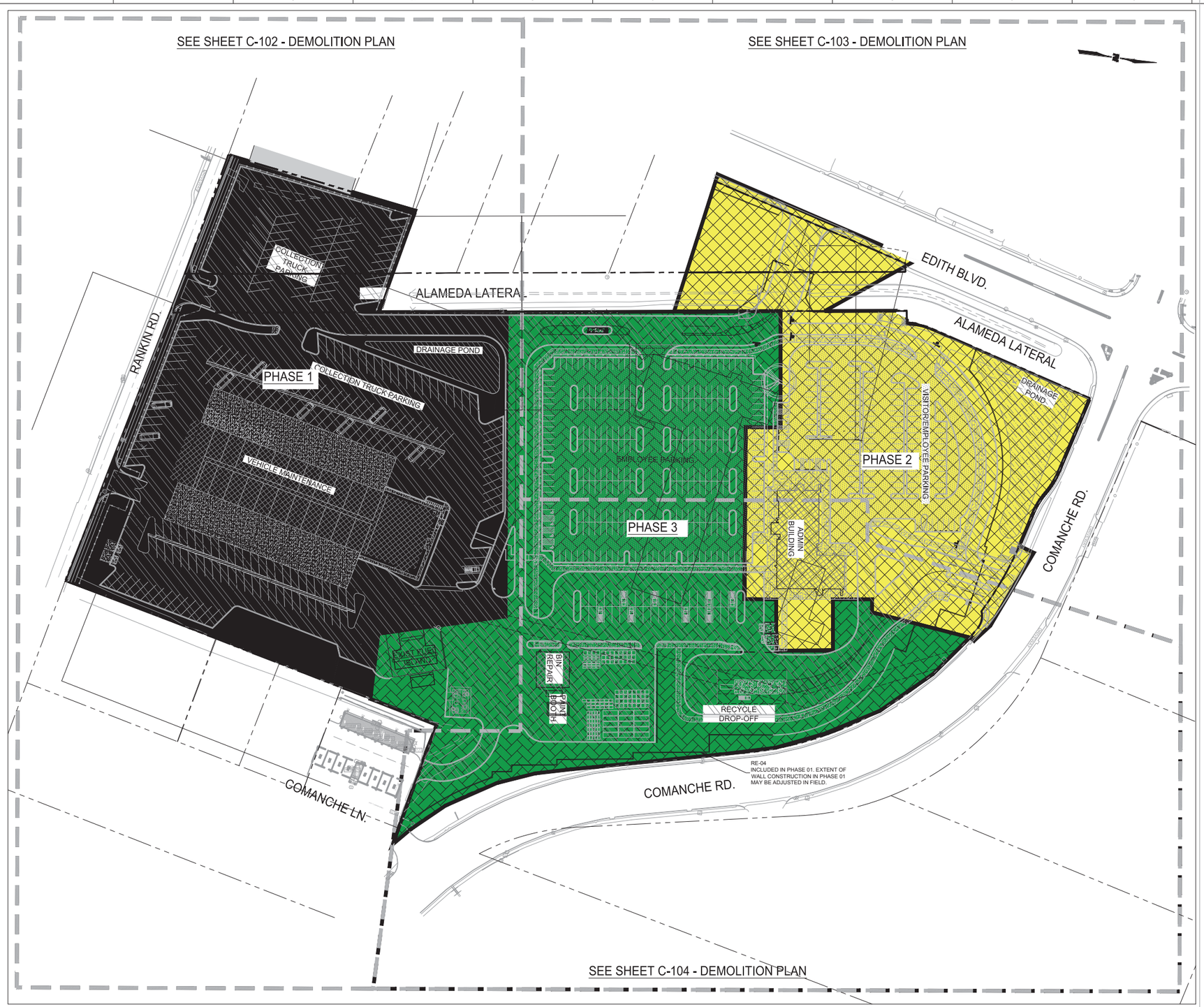
*Bed detail for reference only. Not project specific. Not to scale.*




*Conceptual graphic only. Not job specific.*

| Cross Section Table Reference | | | |
|---|---|---|---|
| **A** | Depth of Stone Base | **9.0** | inches |
| **B** | Chamber Height | **30.5** | inches |
| **C** | Depth of Stone Above Units | **12.0** | inches |
| **D** | Depth of 95% Compacted Fill | **10.0** | inches |
| **E** | Max. Depth Allowed Above the Chamber | **12.00** | feet |
| **F** | Chamber Width | **52.0** | inches |
| **G** | Center to Center Spacing | **5.08** | feet |
| **H** | Effective Depth | **4.29** | feet |
| **I** | Bed Depth | **5.13** | feet |

**APPENDIX F**




OVERALL DEMOLITION PLAN & PHASING

0 60' 120'

1"=60'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. IF THIS SHEET IS NOT 30"x42", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
3. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
4. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

PHASE 1

DEMOLITION OF EXISTING STORAGE BUILDINGS

PERFORM EARTHWORK AND RE-GRADING OF SITE INCLUDING RETAINING WALLS

CONSTRUCT RANKIN ROAD WIDENING

CONSTRUCT VEHICLE MAINTENANCE BUILDING

INSTALL UTILITIES (WATER, SAS, GAS, ELECTRIC, STORM DRAIN)

INSTALL NEW PAVEMENT (ASPHALT AND PCC)

PHASE 2

DEMOLITION OF EXISTING ADMINISTRATION BUILDING AND VEHICLE MAINTENANCE BUILDINGS

PERFORM EARTHWORK AND RE-GRADING OF SITE INCLUDING RETAINING WALLS AND DRAINAGE POND

CONSTRUCT ADMINISTRATION BUILDING & GUARD SHACK

INSTALL UTILITIES (WATER, SAS, GAS, ELECTRIC, STORM DRAIN)

INSTALL NEW PAVEMENT (ASPHALT & PCC), CURB & GUTTER, SIDEWALK

PHASE 3

DEMOLITION OF EXISTING CURB & GUTTER, AND OTHER APPURTENANCES

PERFORM EARTHWORK AND RE-GRADING OF SITE INCLUDING GARDEN WALLS AND RETAINING WALLS

CONSTRUCT BIN REPAIR/WELD SHOP BUILDING AND RECYCLING AREA

INSTALL UTILITIES (WATER, SAS, GAS, ELECTRIC, STORM DRAIN)

INSTALL NEW PAVEMENT (ASPHALT & PCC), CURB & GUTTER, SIDEWALK

Project Revision

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS-ENGINEERS

WILSON & COMPANY

MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**
PROJECT NO. 700693

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
4600 EDITH BLVD NE
ALBUQUERQUE, NM 87107

ONE ALBUQUERQUE

RONALD M. DUNEMAN NEW MEXICO 17120 REGISTERED PROFESSIONAL ENGINEER



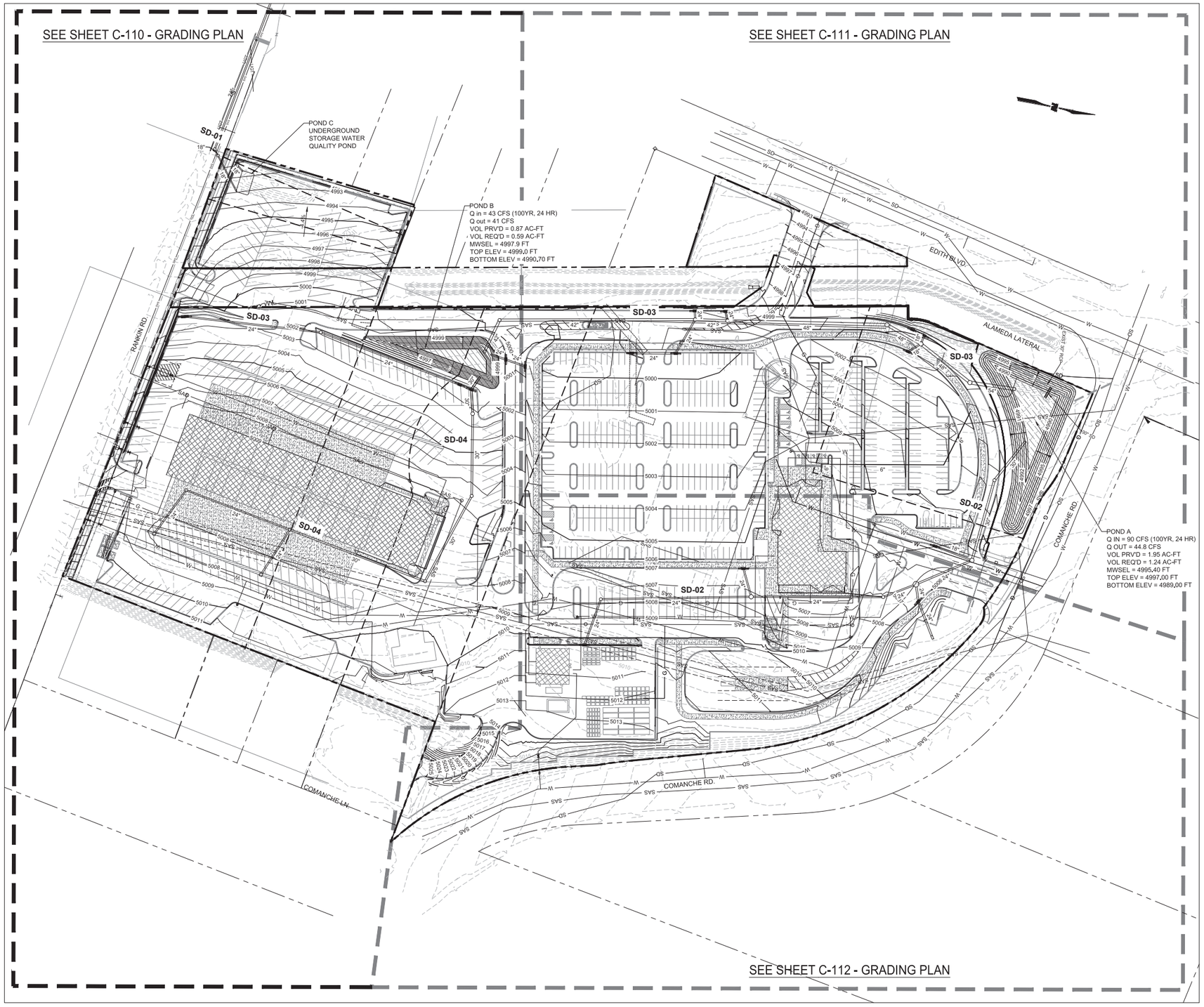
**OVERALL DEMOLITION PLAN & PHASING**

| | |
|---|---|
| DATE: AS NOTED | SCALE: AS NOTED |
| DWN: RAP | CHK: SDG |

JRMA Project No.
4907-B
W&C - 14-100-132-01

**C-101**

F-1




GRADING PLAN

0 60' 120'

1"=60'-0"

## GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
4. SEE SHEETS C-408 - C-412 FOR STORM DRAIN PLAN AND PROFILES.
5. SEE SHEETS C-302 - C-304 FOR SITE CROSS SECTIONS.
6. SEE SHEETS C-110 - C-112 FOR GRADING AND DRAINAGE DETAILS
7. SEE SHEET C-408 FOR SD-01 PLAN AND PROFILE.
8. SEE SHEET C-409 FOR SD-02 PLAN AND PROFILE.
9. SEE SHEET C-410 & C-411 FOR SD-03 PLAN AND PROFILE.
10. SEE SHEET C-412 FOR SD-04 PLAN AND PROFILE.
11. SEE SHEET C-510 FOR UNDERGROUND STORAGE FACILITY.

**Project Revision**

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS-ENGINEERS

WILSON & COMPANY

MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

RONALD M. DUNCAN NEW MEXICO 17720 REGISTERED PROFESSIONAL ENGINEER



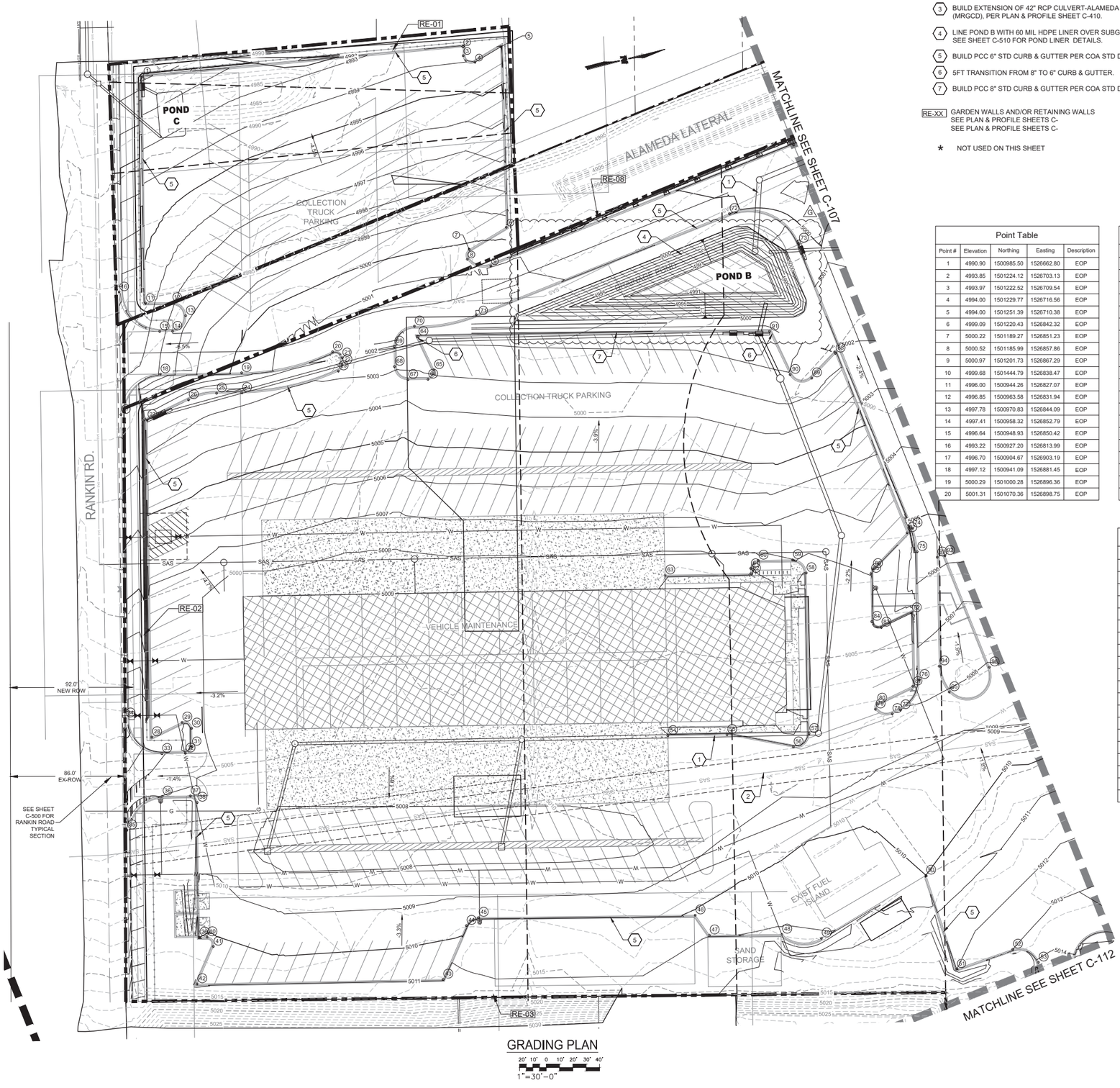
**OVERALL GRADING PLAN**

| | |
|---|---|
| AS NOTED | AS NOTED |
| DATE | SCALE |
| DAP | SOG |
| DWN | CHK |

**JRMA Project No.**
**4907-B**
**W&C - 14-100-132-01**

**C-109**

F-2




GRADING PLAN

20' 10' 0 10' 20' 30' 40'

1"=30'-0"

## KEYED NOTES

1. BUILD STORM DRAIN SYSTEM INFRASTRUCTURE, PER STORM DRAIN PLAN & PROFILE SHEETS C-408 THROUGH C-412
2. EXISTING ABCWUA 48" SANITARY SEWER INTERCEPTOR LINE TO REMAIN. CONTRACTOR SHALL PROTECT LINE.
3. BUILD EXTENSION OF 42" RCP CULVERT-ALAMEDA LATERAL (MRGCD), PER PLAN & PROFILE SHEET C-410.
4. LINE POND B WITH 60 MIL HDPE LINER OVER SUBGRADE PREP. SEE SHEET C-510 FOR POND LINER DETAILS.
5. BUILD PCC 6" STD CURB & GUTTER PER COA STD DWG 2415B.
6. 5FT TRANSITION FROM 8" TO 6" CURB & GUTTER.
7. BUILD PCC 8" STD CURB & GUTTER PER COA STD DWG 2415A.

RE-XX GARDEN WALLS AND/OR RETAINING WALLS SEE PLAN & PROFILE SHEETS C- SEE PLAN & PROFILE SHEETS C-

* NOT USED ON THIS SHEET

## GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
4. SEE SHEET C-510 FOR POND C DETAILS.

### Point Table

| Point # | Elevation | Northing | Easting | Description |
|---|---|---|---|---|
| 1 | 4990.90 | 1500985.50 | 1526662.80 | EOP |
| 2 | 4993.85 | 1501224.12 | 1526703.13 | EOP |
| 3 | 4993.97 | 1501222.52 | 1526709.54 | EOP |
| 4 | 4994.00 | 1501229.77 | 1526716.56 | EOP |
| 5 | 4994.00 | 1501251.39 | 1526710.38 | EOP |
| 6 | 4999.09 | 1501220.43 | 1526842.32 | EOP |
| 7 | 5000.22 | 1501189.27 | 1526851.23 | EOP |
| 8 | 5000.52 | 1501185.99 | 1526857.86 | EOP |
| 9 | 5000.97 | 1501201.73 | 1526867.29 | EOP |
| 10 | 4999.68 | 1501444.79 | 1526838.47 | EOP |
| 11 | 4996.00 | 1500944.26 | 1526827.07 | EOP |
| 12 | 4996.85 | 1500963.58 | 1526831.94 | EOP |
| 13 | 4997.78 | 1500970.83 | 1526844.09 | EOP |
| 14 | 4997.41 | 1500958.32 | 1526852.79 | EOP |
| 15 | 4996.64 | 1500948.93 | 1526850.42 | EOP |
| 16 | 4993.22 | 1500927.20 | 1526813.99 | EOP |
| 17 | 4996.70 | 1500904.67 | 1526903.19 | EOP |
| 18 | 4997.12 | 1500941.09 | 1526881.45 | EOP |
| 19 | 5000.29 | 1501000.28 | 1526896.36 | EOP |
| 20 | 5001.31 | 1501070.36 | 1526898.75 | EOP |

### Point Table

| Point # | Elevation | Northing | Easting | Description |
|---|---|---|---|---|
| 21 | 5002.10 | 1501076.10 | 1526904.90 | EOP |
| 22 | 5002.28 | 1501074.77 | 1526910.20 | EOP |
| 23 | 5002.46 | 1501070.74 | 1526913.91 | EOP |
| 24 | 5002.63 | 1500996.61 | 1526910.91 | EOP |
| 25 | 5002.44 | 1500978.17 | 1526906.28 | EOP |
| 26 | 5002.23 | 1500956.56 | 1526905.68 | EOP |
| 27 | 5002.31 | 1500922.69 | 1526912.19 | EOP |
| 28 | 5007.25 | 1500864.43 | 1527142.89 | EOP |
| 29 | 5007.50 | 1500889.24 | 1527138.11 | EOP |
| 30 | 0.00 | 1500895.03 | 1527144.25 | EOP |
| 31 | 5007.00 | 1500891.67 | 1527157.55 | EOP |
| 32 | 5007.16 | 1500885.61 | 1527161.18 | EOP |
| 33 | 5006.87 | 1500868.51 | 1527156.90 | EOP |
| 34 | 5003.29 | 1500848.89 | 1527124.09 | EOP |
| 35 | 5008.20 | 1500828.32 | 1527205.54 | EOP |
| 36 | 5008.14 | 1500860.63 | 1527187.89 | EOP |
| 37 | 5008.47 | 1500881.01 | 1527193.04 | EOP |
| 38 | 5008.73 | 1500884.63 | 1527199.10 | EOP |
| 39 | 0.00 | 1500860.07 | 1527297.22 | EOP |
| 40 | 5010.06 | 1500865.69 | 1527298.63 | EOP |

### Point Table

| Point # | Elevation | Northing | Easting | Description |
|---|---|---|---|---|
| 41 | 5010.17 | 1500868.40 | 1527306.59 | EOP |
| 42 | 0.00 | 1500849.31 | 1527330.63 | EOP |
| 43 | 5010.86 | 1501028.49 | 1527375.12 | EOP |
| 44 | 5009.80 | 1501055.85 | 1527340.66 | EOP |
| 45 | 5009.62 | 1501066.16 | 1527337.19 | EOP |
| 46 | 5010.12 | 1501223.84 | 1527377.55 | EOP |
| 47 | 5010.52 | 1501230.24 | 1527394.82 | EOP |
| 48 | 5011.14 | 1501282.96 | 1527408.36 | EOP |
| 49 | 5011.04 | 1501310.86 | 1527418.82 | EOP |
| 50 | 5010.48 | 1501398.84 | 1527393.53 | EOP |
| 51 | 0.00 | 1501402.94 | 1527467.28 | EOP |
| 52 | 5013.56 | 1501447.43 | 1527463.99 | EOP |
| 53 | 5014.13 | 1501463.52 | 1527478.36 | EOP |
| 54 | 5008.79 | 1501238.88 | 1527242.21 | EOP |
| 55 | 5008.75 | 1501281.91 | 1527252.93 | EOP |
| 56 | 5008.76 | 1501327.64 | 1527274.77 | EOP |
| 57 | 5008.96 | 1501341.65 | 1527268.16 | EOP |
| 58 | 5008.53 | 1501370.81 | 1527151.08 | EOP |
| 59 | 5008.01 | 1501363.52 | 1527138.96 | EOP |
| 60 | 5008.17 | 1501338.45 | 1527132.72 | EOP |

### Point Table

| Point # | Elevation | Northing | Easting | Description |
|---|---|---|---|---|
| 61 | 5008.52 | 1501331.38 | 1527136.97 | EOP |
| 62 | 5008.68 | 1501330.43 | 1527140.82 | EOP |
| 63 | 5008.71 | 1501268.00 | 1527125.28 | EOP |
| 64 | 5001.75 | 1501135.34 | 1526904.53 | EOP |
| 65 | 5002.84 | 1501140.29 | 1526931.56 | EOP |
| 66 | 5003.14 | 1501134.16 | 1526937.31 | EOP |
| 67 | 5003.44 | 1501119.57 | 1526933.63 | EOP |
| 68 | 5002.88 | 1501112.32 | 1526921.49 | EOP |
| 69 | 5001.93 | 1501115.99 | 1526906.89 | EOP |
| 70 | 5001.58 | 1501134.65 | 1526896.12 | EOP |
| 71 | 0.00 | 1501181.67 | 1526899.88 | EOP |
| 72 | 5000.14 | 1501384.86 | 1526875.78 | EOP |
| 73 | 5000.73 | 1501429.29 | 1526910.78 | EOP |
| 74 | 5005.12 | 1501456.46 | 1527139.24 | EOP |
| 75 | 5005.50 | 1501455.33 | 1527157.23 | EOP |
| 76 | 5007.53 | 1501432.10 | 1527250.48 | EOP |
| 77 | 5008.12 | 1501412.51 | 1527268.62 | EOP |
| 78 | 5008.14 | 1501405.78 | 1527269.87 | EOP |
| 79 | 5008.22 | 1501394.49 | 1527263.25 | EOP |
| 80 | 5008.43 | 1501396.78 | 1527259.34 | EOP |

### Point Table

| Point # | Elevation | Northing | Easting | Description |
|---|---|---|---|---|
| 81 | 5008.30 | 1501426.10 | 1527253.89 | EOP |
| 82 | 5008.00 | 1501439.38 | 1527200.57 | EOP |
| 83 | 5008.00 | 1501414.61 | 1527205.17 | EOP |
| 84 | 5008.30 | 1501408.84 | 1527199.05 | EOP |
| 85 | 5007.97 | 1501417.54 | 1527164.11 | EOP |
| 86 | 5008.00 | 1501419.80 | 1527161.04 | EOP |
| 87 | 5007.33 | 1501451.71 | 1527141.66 | EOP |
| 88 | 5002.60 | 1501434.58 | 1526997.61 | EOP |
| 89 | 5002.63 | 1501412.63 | 1527010.94 | EOP |
| 90 | 5002.04 | 1501397.61 | 1527004.20 | EOP |
| 91 | 5001.40 | 1501391.13 | 1526968.86 | EOP |
| 92 | 5005.81 | 1501474.69 | 1527165.56 | EOP |
| 93 | 5005.76 | 1501468.80 | 1527165.19 | EOP |
| 94 | 5007.53 | 1501449.06 | 1527244.45 | EOP |
| 95 | 5008.07 | 1501451.36 | 1527265.16 | EOP |
| 96 | 5008.08 | 1501485.32 | 1527254.96 | EOP |

**Project Revision**

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS-ENGINEERS

WILSON & COMPANY

MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

# CITY OF ALBUQUERQUE

**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE



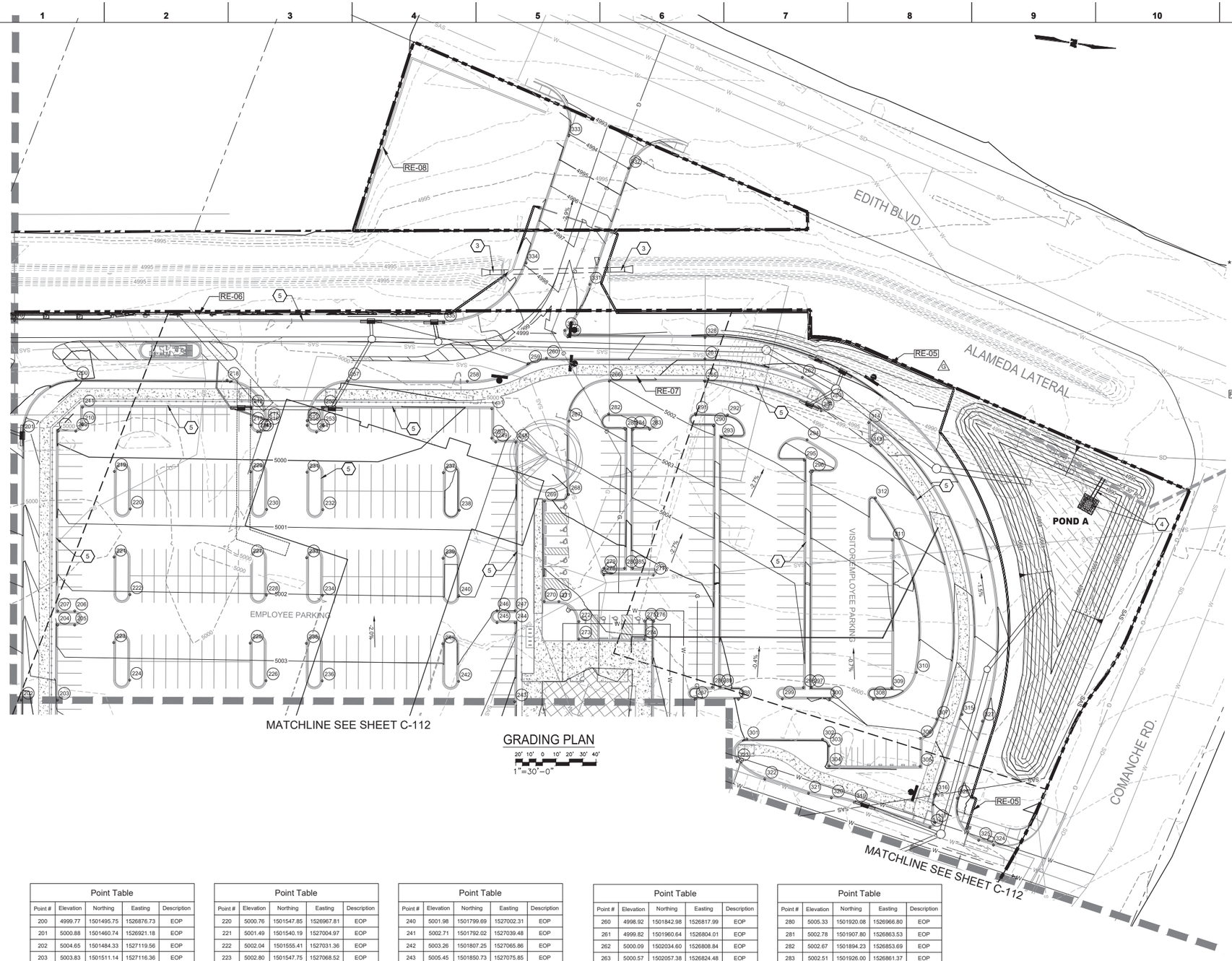
## GRADING PLAN

| | | | |
|---|---|---|---|
| AS NOTED | DAP | AS NOTED | DDG |
| DATE | | SCALE | |
| DWN | | CHK | |

**JRMA Project No.**
**4907-B**
**W&C - 14-100-132-01**

**C-110**

F-3




## GRADING PLAN

20' 10' 0 10' 20' 30' 40'
1"=30'-0"

### GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

### KEYED NOTES

1. BUILD STORM DRAIN SYSTEM INFRASTRUCTURE, PER STORM DRAIN PLAN & PROFILE SHEETS C-408 THROUGH C-412
2. * EXISTING ABCWUA 48" SANITARY SEWER INTERCEPTOR LINE TO REMAIN. CONTRACTOR SHALL PROTECT LINE.
3. BUILD EXTENSION OF 42" RCP CULVERT-ALAMEDA LATERAL (MRGCD), PER PLAN & PROFILE SHEET C-410.
4. BUILD CONCRETE RISER STRUCTURE. SEE SHEET C-502 FOR POND A OUTLET STRUCTURE DETAILS. INSTALL APPROXIMATELY 20 LF OF 30 INCH RCP STORM DRAIN, INV ELEV = 4989.00, S = ±9.0 %, CONNECT TO THE EXISTING 30 INCH RCP. FIELD VERIFY LOCATION & EXISTING PIPE INVERT ELEVATION. MATCH EXISTING INVERT.
5. BUILD PCC 6" STD CURB & GUTTER PER COA STD DWG 2415B.

RE-XX GARDEN WALLS AND/OR RETAINING WALLS
SEE PLAN & PROFILE SHEETS C-
SEE PLAN & PROFILE SHEETS C-

* NOT ON THIS SHEET

| Point Table | | | | |
|---|---|---|---|---|
| Point # | Elevation | Northing | Easting | Description |
| 200 | 4999.77 | 1501495.75 | 1526876.73 | EOP |
| 201 | 5000.88 | 1501460.74 | 1526921.18 | EOP |
| 202 | 5004.65 | 1501484.33 | 1527119.56 | EOP |
| 203 | 5003.83 | 1501511.14 | 1527116.36 | EOP |
| 204 | 5002.76 | 1501504.50 | 1527060.57 | EOP |
| 205 | 5002.55 | 1501517.17 | 1527059.07 | EOP |
| 206 | 5002.38 | 1501515.93 | 1527048.64 | EOP |
| 207 | 5002.22 | 1501503.26 | 1527050.15 | EOP |
| 208 | 4999.81 | 1501487.38 | 1526916.59 | EOP |
| 209 | 4999.65 | 1501500.29 | 1526915.05 | EOP |
| 210 | 4999.55 | 1501504.67 | 1526909.50 | EOP |
| 211 | 4999.39 | 1501503.13 | 1526896.59 | EOP |
| 212 | 4999.32 | 1501628.25 | 1526881.71 | EOP |
| 213 | 4999.45 | 1501629.79 | 1526894.62 | EOP |
| 214 | 4999.45 | 1501635.34 | 1526898.99 | EOP |
| 215 | 4999.44 | 1501637.33 | 1526898.76 | EOP |
| 216 | 4999.89 | 1501641.70 | 1526893.20 | EOP |
| 217 | 4999.72 | 1501641.28 | 1526889.67 | EOP |
| 218 | 4999.72 | 1501607.96 | 1526863.42 | EOP |
| 219 | 5000.21 | 1501532.63 | 1526941.42 | EOP |

| Point Table | | | | |
|---|---|---|---|---|
| Point # | Elevation | Northing | Easting | Description |
| 220 | 5000.76 | 1501547.85 | 1526967.81 | EOP |
| 221 | 5001.49 | 1501540.19 | 1527004.97 | EOP |
| 222 | 5002.04 | 1501555.41 | 1527031.36 | EOP |
| 223 | 5002.80 | 1501547.75 | 1527068.52 | EOP |
| 224 | 5003.33 | 1501562.97 | 1527094.91 | EOP |
| 225 | 5002.74 | 1501649.03 | 1527056.48 | EOP |
| 226 | 5003.30 | 1501664.25 | 1527082.87 | EOP |
| 227 | 5001.46 | 1501641.48 | 1526992.93 | EOP |
| 228 | 5002.02 | 1501656.70 | 1527019.31 | EOP |
| 229 | 5000.18 | 1501633.92 | 1526929.37 | EOP |
| 230 | 5000.74 | 1501649.14 | 1526955.76 | EOP |
| 231 | 5000.17 | 1501675.62 | 1526924.42 | EOP |
| 232 | 5000.73 | 1501690.85 | 1526950.80 | EOP |
| 233 | 5001.45 | 1501683.18 | 1526987.97 | EOP |
| 234 | 5002.01 | 1501698.40 | 1527014.35 | EOP |
| 235 | 5002.73 | 1501690.74 | 1527051.52 | EOP |
| 236 | 5003.29 | 1501705.96 | 1527077.91 | EOP |
| 237 | 5000.37 | 1501776.91 | 1526912.37 | EOP |
| 238 | 5000.76 | 1501792.13 | 1526938.76 | EOP |
| 239 | 5001.43 | 1501784.47 | 1526975.92 | EOP |

| Point Table | | | | |
|---|---|---|---|---|
| Point # | Elevation | Northing | Easting | Description |
| 240 | 5001.98 | 1501799.69 | 1527002.31 | EOP |
| 241 | 5002.71 | 1501792.02 | 1527039.48 | EOP |
| 242 | 5003.26 | 1501807.25 | 1527065.86 | EOP |
| 243 | 5005.45 | 1501850.73 | 1527075.85 | EOP |
| 244 | 5003.79 | 1501843.76 | 1527017.21 | EOP |
| 245 | 5003.29 | 1501830.35 | 1527018.81 | EOP |
| 246 | 5003.00 | 1501829.29 | 1527009.87 | EOP |
| 247 | 5003.00 | 1501842.69 | 1527008.28 | EOP |
| 248 | 5001.15 | 1501827.82 | 1526883.16 | EOP |
| 249 | 5000.87 | 1501812.92 | 1526884.93 | EOP |
| 250 | 5000.78 | 1501809.59 | 1526882.30 | EOP |
| 251 | 5000.38 | 1501806.99 | 1526860.46 | EOP |
| 252 | 4999.24 | 1501681.87 | 1526875.33 | EOP |
| 253 | 4999.25 | 1501683.41 | 1526888.24 | EOP |
| 254 | 4999.26 | 1501679.03 | 1526893.80 | EOP |
| 255 | 4999.76 | 1501671.49 | 1526889.66 | EOP |
| 256 | 4999.64 | 1501671.08 | 1526886.16 | EOP |
| 257 | 4999.50 | 1501697.33 | 1526852.83 | EOP |
| 258 | 4999.27 | 1501786.31 | 1526842.27 | EOP |
| 259 | 4999.00 | 1501829.99 | 1526823.56 | EOP |

| Point Table | | | | |
|---|---|---|---|---|
| Point # | Elevation | Northing | Easting | Description |
| 260 | 4998.92 | 1501842.98 | 1526817.99 | EOP |
| 261 | 4999.82 | 1501960.64 | 1526804.01 | EOP |
| 262 | 5000.09 | 1502034.60 | 1526808.84 | EOP |
| 263 | 5000.57 | 1502057.38 | 1526824.48 | EOP |
| 264 | 5000.51 | 1502051.50 | 1526832.04 | EOP |
| 265 | 5001.00 | 1501962.65 | 1526820.89 | EOP |
| 266 | 5002.03 | 1501891.65 | 1526829.33 | EOP |
| 267 | 5003.23 | 1501865.40 | 1526862.66 | EOP |
| 268 | 5004.64 | 1501871.88 | 1526917.14 | EOP |
| 269 | 5005.13 | 1501854.60 | 1526924.23 | EOP |
| 270 | 5006.25 | 1501863.45 | 1526998.71 | EOP |
| 271 | 5006.20 | 1501874.37 | 1526997.41 | EOP |
| 272 | 5006.10 | 1501891.04 | 1527010.54 | EOP |
| 273 | 5006.05 | 1501892.57 | 1527023.45 | EOP |
| 274 | 5006.05 | 1501941.23 | 1527017.67 | EOP |
| 275 | 5005.85 | 1501939.64 | 1527004.25 | EOP |
| 276 | 5005.90 | 1501946.59 | 1527003.43 | EOP |
| 277 | 5005.23 | 1501942.02 | 1526969.23 | EOP |
| 278 | 5005.58 | 1501905.28 | 1526973.60 | EOP |
| 279 | 5005.48 | 1501904.69 | 1526968.63 | EOP |

| Point Table | | | | |
|---|---|---|---|---|
| Point # | Elevation | Northing | Easting | Description |
| 280 | 5005.33 | 1501920.08 | 1526966.80 | EOP |
| 281 | 5002.78 | 1501907.80 | 1526863.53 | EOP |
| 282 | 5002.67 | 1501894.23 | 1526853.69 | EOP |
| 283 | 5002.51 | 1501926.00 | 1526861.37 | EOP |
| 284 | 5002.69 | 1501913.76 | 1526862.82 | EOP |
| 285 | 5005.28 | 1501926.04 | 1526966.09 | EOP |
| 286 | 5005.31 | 1501996.08 | 1527047.02 | EOP |
| 287 | 5005.60 | 1501984.38 | 1527057.55 | EOP |
| 288 | 5004.94 | 1502016.51 | 1527053.66 | EOP |
| 289 | 5005.18 | 1502002.04 | 1527046.32 | EOP |
| 290 | 5001.82 | 1501973.01 | 1526852.89 | EOP |
| 291 | 5001.73 | 1501958.54 | 1526845.55 | EOP |
| 292 | 5001.53 | 1501982.56 | 1526843.60 | EOP |
| 293 | 5001.99 | 1501979.97 | 1526860.62 | EOP |
| 294 | 5001.22 | 1502043.82 | 1526854.80 | EOP |
| 295 | 5001.62 | 1502043.54 | 1526870.19 | EOP |
| 296 | 5001.74 | 1502050.50 | 1526877.92 | EOP |
| 297 | 5003.94 | 1502069.56 | 1527038.29 | EOP |
| 298 | 5004.05 | 1502063.61 | 1527039.00 | EOP |
| 299 | 5004.36 | 1502049.03 | 1527049.40 | EOP |

| Point Table | | | | |
|---|---|---|---|---|
| Point # | Elevation | Northing | Easting | Description |
| 300 | 5003.97 | 1502084.19 | 1527045.22 | EOP |
| 301 | 5004.99 | 1502026.33 | 1527082.31 | EOP |
| 302 | 5004.64 | 1502082.57 | 1527075.62 | EOP |
| 303 | 5004.59 | 1502088.12 | 1527080.00 | EOP |
| 304 | 5004.50 | 1502089.89 | 1527094.88 | EOP |
| 305 | 5004.50 | 1502157.42 | 1527086.85 | EOP |
| 306 | 5004.10 | 1502154.96 | 1527066.16 | EOP |
| 307 | 5003.75 | 1502165.38 | 1527050.32 | EOP |
| 308 | 5003.67 | 1502116.54 | 1527041.37 | EOP |
| 309 | 5003.52 | 1502129.15 | 1527031.21 | EOP |
| 310 | 5003.30 | 1502146.17 | 1527017.47 | EOP |
| 311 | 5002.11 | 1502116.10 | 1526921.48 | EOP |
| 312 | 5001.59 | 1502099.85 | 1526891.73 | EOP |
| 313 | 5000.74 | 1502091.56 | 1526853.42 | EOP |
| 314 | 5000.48 | 1502087.88 | 1526836.50 | EOP |
| 315 | 5003.95 | 1502183.83 | 1527044.56 | EOP |
| 316 | 5004.91 | 1502171.82 | 1527105.96 | EOP |
| 317 | 5005.17 | 1502173.73 | 1527127.11 | EOP |
| 318 | 0.00 | 1502170.36 | 1527131.15 | EOP |
| 319 | 5005.06 | 1502111.82 | 1527119.70 | EOP |

| Point Table | | | | |
|---|---|---|---|---|
| Point # | Elevation | Northing | Easting | Description |
| 320 | 5005.24 | 1502094.44 | 1527118.36 | EOP |
| 321 | 5005.41 | 1502077.07 | 1527117.03 | EOP |
| 322 | 5005.32 | 1502043.33 | 1527110.43 | EOP |
| 323 | 5005.15 | 1502021.15 | 1527099.96 | EOP |
| 324 | 0.00 | 1502219.03 | 1527138.64 | EOP |
| 325 | 0.00 | 1502207.63 | 1527136.41 | EOP |
| 326 | 5004.72 | 1502187.90 | 1527107.07 | EOP |
| 327 | 5003.79 | 1502199.53 | 1527047.64 | EOP |
| 328 | 4999.66 | 1501958.75 | 1526788.12 | EOP |
| 329 | 4998.72 | 1501856.86 | 1526800.23 | EOP |
| 330 | 4998.32 | 1501853.94 | 1526795.70 | EOP |
| 331 | 4997.44 | 1501868.22 | 1526759.20 | EOP |
| 332 | 4993.99 | 1501886.55 | 1526669.56 | EOP |
| 333 | 4994.06 | 1501839.32 | 1526650.94 | EOP |
| 334 | 4997.94 | 1501819.23 | 1526749.18 | EOP |
| 335 | 4998.88 | 1501763.21 | 1526800.70 | EOP |

F-4

**Project Revision**
BID SET 06.17.2020

JRMA ARCHITECTS-ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

DONALD M. DUNEMAN NEW MEXICO 17121 PROFESSIONAL ENGINEER 6/17/20

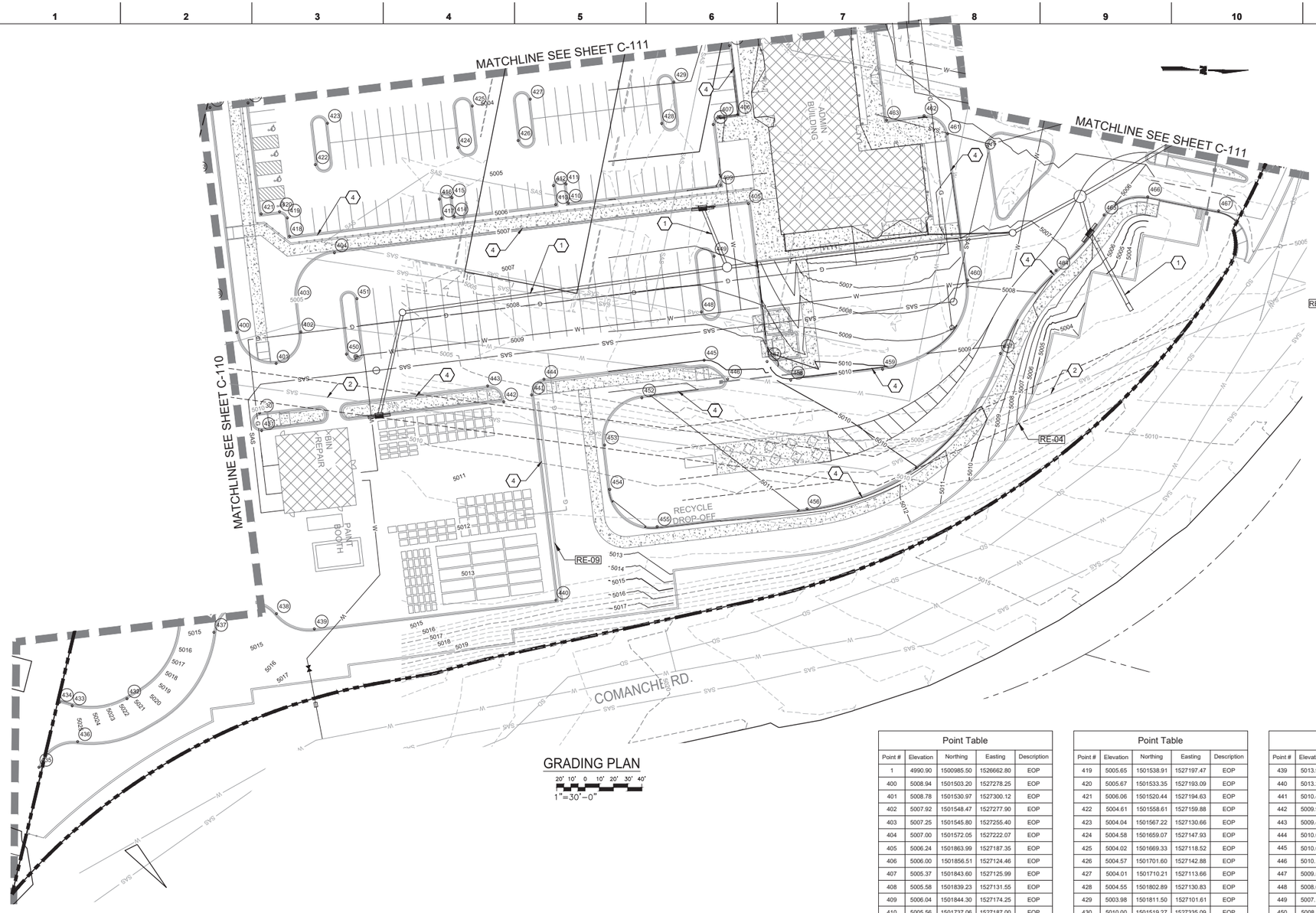


**GRADING PLAN**

AS NOTED (SCALE) AS NOTED
DATE DAP DWN
SCALE SQG CHK

**JRMA Project No.**
**4907-B**
**W&C - 14-100-132-01**

**C-111**




GRADING PLAN

20' 10' 0 10' 20' 30' 40'

1"=30'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

KEYED NOTES

1. BUILD STORM DRAIN SYSTEM INFRASTRUCTURE, PER STORM DRAIN PLAN & PROFILE SHEETS C-408 THROUGH C-412
2. EXISTING ABCWUA 48" SANITARY SEWER INTERCEPTOR LINE TO REMAIN. CONTRACTOR SHALL PROTECT LINE.
3. BUILD EXTENSION OF 42" RCP CULVERT-ALAMEDA LATERAL (MRGCD), PER PLAN & PROFILE SHEET C-410.
4. BUILD PCC 6" STD CURB & GUTTER PER COA STD DWG 2415B.

RE-XX GARDEN WALLS AND/OR RETAINING WALLS
SEE PLAN & PROFILE SHEETS C-
SEE PLAN & PROFILE SHEETS C-

Point Table

| Point # | Elevation | Northing | Easting | Description |
|---|---|---|---|---|
| 1 | 4990.90 | 1500985.50 | 1526662.80 | EOP |
| 400 | 5008.94 | 1501503.20 | 1527278.25 | EOP |
| 401 | 5008.78 | 1501530.97 | 1527300.12 | EOP |
| 402 | 5007.92 | 1501548.47 | 1527277.90 | EOP |
| 403 | 5007.25 | 1501545.80 | 1527255.40 | EOP |
| 404 | 5007.00 | 1501572.05 | 1527222.07 | EOP |
| 405 | 5006.24 | 1501863.99 | 1527187.35 | EOP |
| 406 | 5006.00 | 1501856.51 | 1527124.46 | EOP |
| 407 | 5005.37 | 1501843.60 | 1527125.99 | EOP |
| 408 | 5005.58 | 1501839.23 | 1527131.55 | EOP |
| 409 | 5006.04 | 1501844.30 | 1527174.25 | EOP |
| 410 | 5005.56 | 1501737.06 | 1527187.00 | EOP |
| 411 | 5005.28 | 1501735.46 | 1527173.59 | EOP |
| 412 | 5005.24 | 1501726.53 | 1527174.66 | EOP |
| 413 | 5005.51 | 1501728.12 | 1527188.06 | EOP |
| 414 | 5005.57 | 1501656.63 | 1527196.56 | EOP |
| 415 | 5005.56 | 1501655.03 | 1527183.16 | EOP |
| 416 | 5005.56 | 1501646.09 | 1527184.22 | EOP |
| 417 | 5005.56 | 1501647.69 | 1527197.62 | EOP |
| 418 | 5005.96 | 1501540.44 | 1527210.38 | EOP |

Point Table

| Point # | Elevation | Northing | Easting | Description |
|---|---|---|---|---|
| 419 | 5005.65 | 1501538.91 | 1527197.47 | EOP |
| 420 | 5005.67 | 1501533.35 | 1527193.09 | EOP |
| 421 | 5006.06 | 1501520.44 | 1527194.63 | EOP |
| 422 | 5004.61 | 1501558.61 | 1527159.88 | EOP |
| 423 | 5004.04 | 1501567.22 | 1527130.66 | EOP |
| 424 | 5004.58 | 1501659.07 | 1527147.93 | EOP |
| 425 | 5004.02 | 1501669.33 | 1527118.52 | EOP |
| 426 | 5004.57 | 1501701.60 | 1527142.88 | EOP |
| 427 | 5004.01 | 1501710.21 | 1527113.66 | EOP |
| 428 | 5004.55 | 1501802.89 | 1527130.83 | EOP |
| 429 | 5003.98 | 1501811.50 | 1527101.61 | EOP |
| 430 | 5010.00 | 1501519.27 | 1527335.09 | EOP |
| 431 | 5010.00 | 1501520.71 | 1527347.51 | EOP |
| 432 | 5021.32 | 1501425.77 | 1527536.65 | EOP |
| 433 | 5025.38 | 1501387.12 | 1527541.68 | EOP |
| 434 | 0.00 | 1501378.16 | 1527539.19 | EOP |
| 435 | 0.00 | 1501363.65 | 1527584.99 | EOP |
| 436 | 5024.78 | 1501390.96 | 1527566.89 | EOP |
| 437 | 5014.67 | 1501487.07 | 1527489.79 | EOP |
| 438 | 5013.75 | 1501531.22 | 1527476.65 | EOP |

Point Table

| Point # | Elevation | Northing | Easting | Description |
|---|---|---|---|---|
| 439 | 5013.94 | 1501557.92 | 1527487.37 | EOP |
| 440 | 5013.23 | 1501728.31 | 1527467.13 | EOP |
| 441 | 5010.46 | 1501711.10 | 1527322.35 | EOP |
| 442 | 5009.98 | 1501691.53 | 1527327.19 | EOP |
| 443 | 5009.44 | 1501680.13 | 1527315.96 | EOP |
| 444 | 5010.00 | 1501719.85 | 1527311.24 | EOP |
| 445 | 5010.00 | 1501832.81 | 1527297.81 | EOP |
| 446 | 5010.14 | 1501849.41 | 1527311.14 | EOP |
| 447 | 5009.50 | 1501877.24 | 1527298.78 | EOP |
| 448 | 5008.68 | 1501830.78 | 1527263.81 | EOP |
| 449 | 5007.10 | 1501839.86 | 1527224.46 | EOP |
| 450 | 5008.71 | 1501580.55 | 1527293.56 | EOP |
| 451 | 5007.45 | 1501587.98 | 1527254.41 | EOP |
| 452 | 5011.07 | 1501788.89 | 1527324.36 | EOP |
| 453 | 5011.58 | 1501762.63 | 1527357.69 | EOP |
| 454 | 5011.91 | 1501766.35 | 1527388.97 | EOP |
| 455 | 5011.93 | 1501799.68 | 1527415.22 | EOP |
| 456 | 5010.94 | 1501905.41 | 1527402.68 | EOP |
| 457 | 5009.06 | 1502041.81 | 1527293.04 | EOP |
| 458 | 5009.70 | 1501893.90 | 1527311.90 | EOP |

Point Table

| Point # | Elevation | Northing | Easting | Description |
|---|---|---|---|---|
| 459 | 5009.25 | 1501958.65 | 1527304.22 | EOP |
| 460 | 5007.88 | 1502018.74 | 1527241.34 | EOP |
| 461 | 5006.23 | 1502004.59 | 1527138.14 | EOP |
| 462 | 5006.55 | 1501987.95 | 1527125.29 | EOP |
| 463 | 5006.36 | 1501961.45 | 1527128.45 | EOP |
| 464 | 5007.37 | 1502081.04 | 1527234.40 | EOP |
| 465 | 5006.22 | 1502114.88 | 1527195.41 | EOP |
| 466 | 5005.99 | 1502145.69 | 1527182.56 | EOP |
| 467 | 5005.62 | 1502195.69 | 1527192.43 | EOP |

**Project Revision**

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS-ENGINEERS

WILSON & COMPANY

MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

RONALD M. DUNEMAN NEW MEXICO 17706 PROFESSIONAL ENGINEER



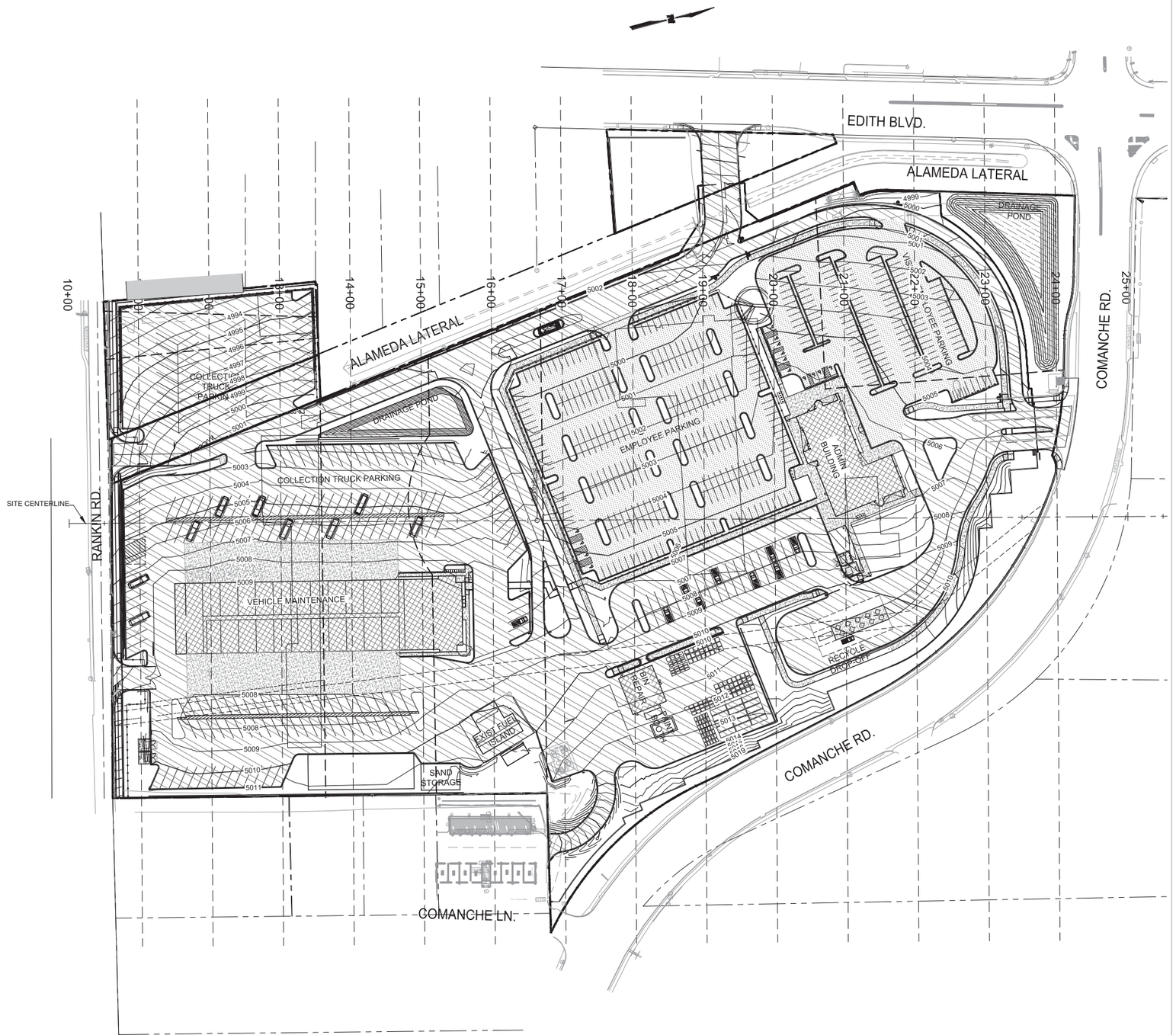
**GRADING PLAN**

| | |
|---|---|
| AS NOTED | AS NOTED |
| DATE | SCALE |
| DAP | SQG |
| DWN | CHK |

**JRMA Project No. 4907-B**
**W&C - 14-100-132-01**

**C-112**

F-5




EAST - WEST
SITE CROSS
SECTION OVERALL

0 60' 120'
1"=60'-0"

F-6

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

Project Revision

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**
PROJECT NO. 700693

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
4600 EDITH BLVD NE
ALBUQUERQUE, NM 87107

ONE ALBUQUERQUE

RONALD M. DUNGMAN
NEW MEXICO
17120
REGISTERED PROFESSIONAL ENGINEER
7/1/20

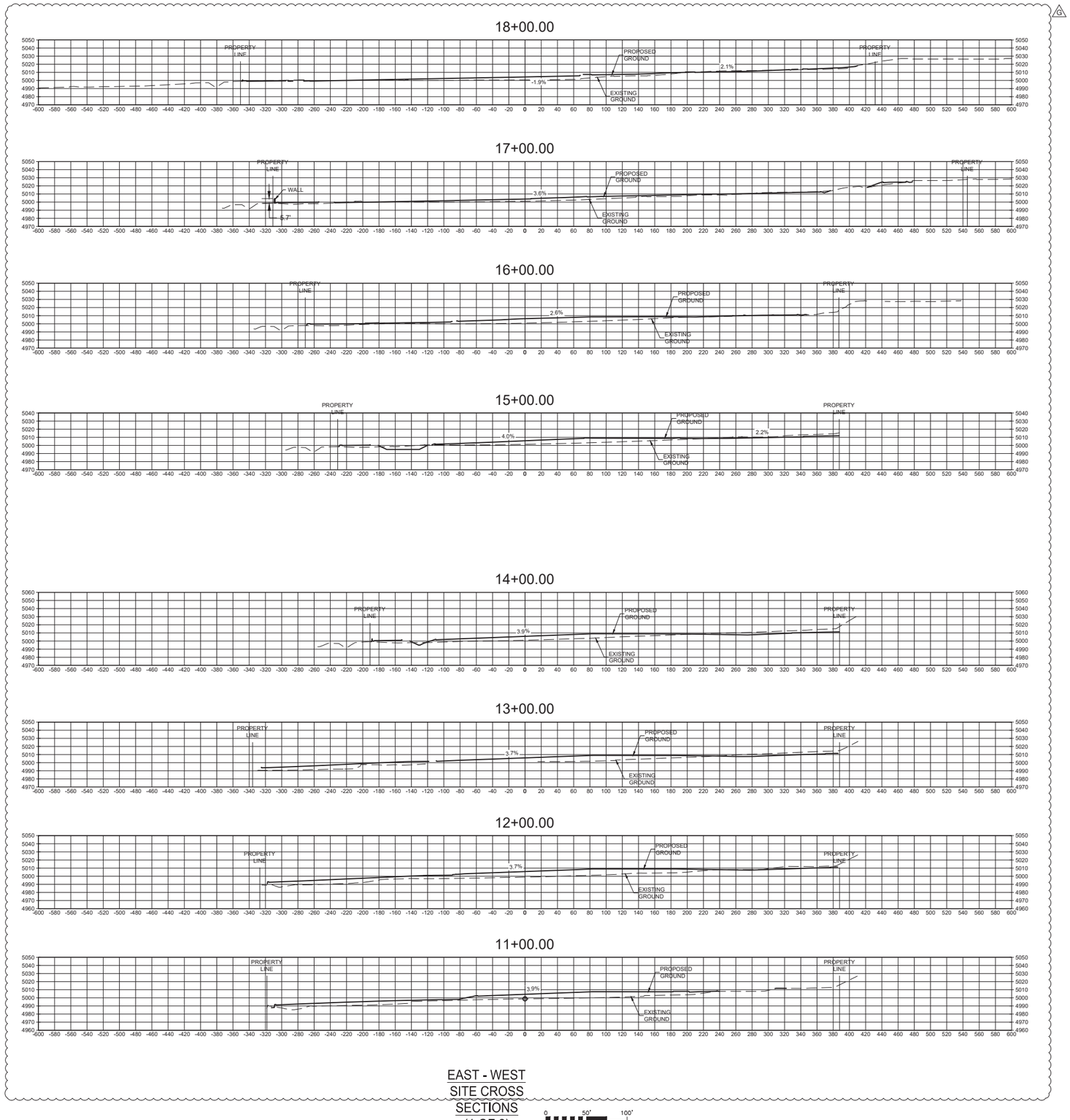


**EAST - WEST SITE CROSS SECTION OVERALL**

| | |
|---|---|
| AS NOTED | AS NOTED |
| DAP | SCG |
| DWN | CHK |

JRMA Project No.
4907-B
W&C - 14-100-132-01

**C-302**




EAST - WEST SITE CROSS SECTIONS (1 OF 2)

0 50' 100'
1"=50'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

**Project Revision**

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505 268 2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

RONALD M. DUNEMAN NEW MEXICO 12184 PROFESSIONAL ENGINEER



**EAST - WEST SITE CROSS SECTIONS (1 OF 2)**

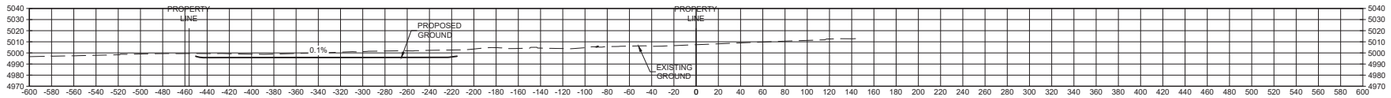
| | |
|---|---|
| AS NOTED | AS NOTED |
| DATE | SCALE |
| DAP | SGG |
| DWN | CHK |

**JRMA Project No. 4907-B**
**W&C - 14-100-132-01**
**C-303**

## GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

### 24+00.00

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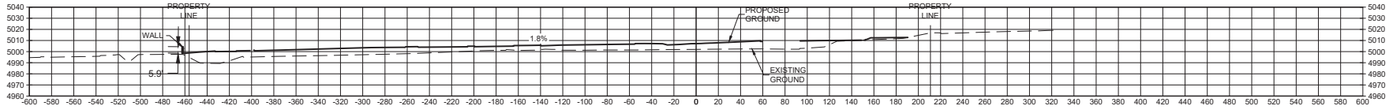


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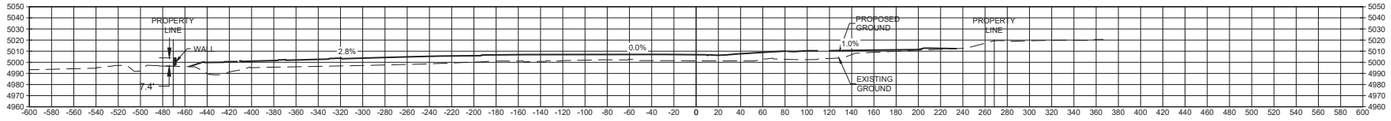


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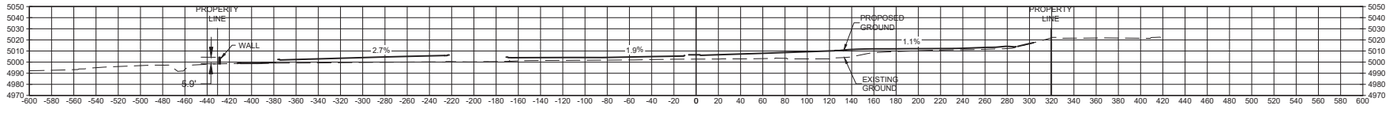
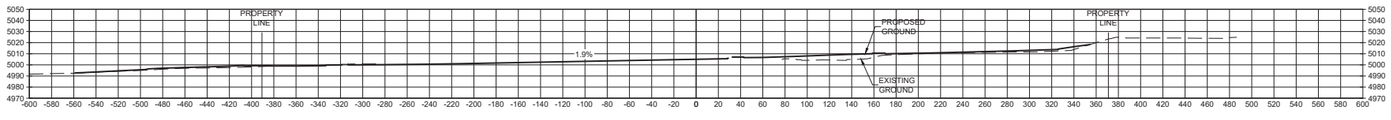



### 19+00.00




EAST - WEST SITE CROSS SECTIONS (2 OF 2)

0 50' 100'
1"=50'-0"

**Project Revision**

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS ENGINEERS

WILSON & COMPANY

MRWM LANDSCAPE ARCHITECTS mrwmla.com 505 268 2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

RONALD M. DUNEMAN NEW MEXICO 12784 REGISTERED PROFESSIONAL ENGINEER

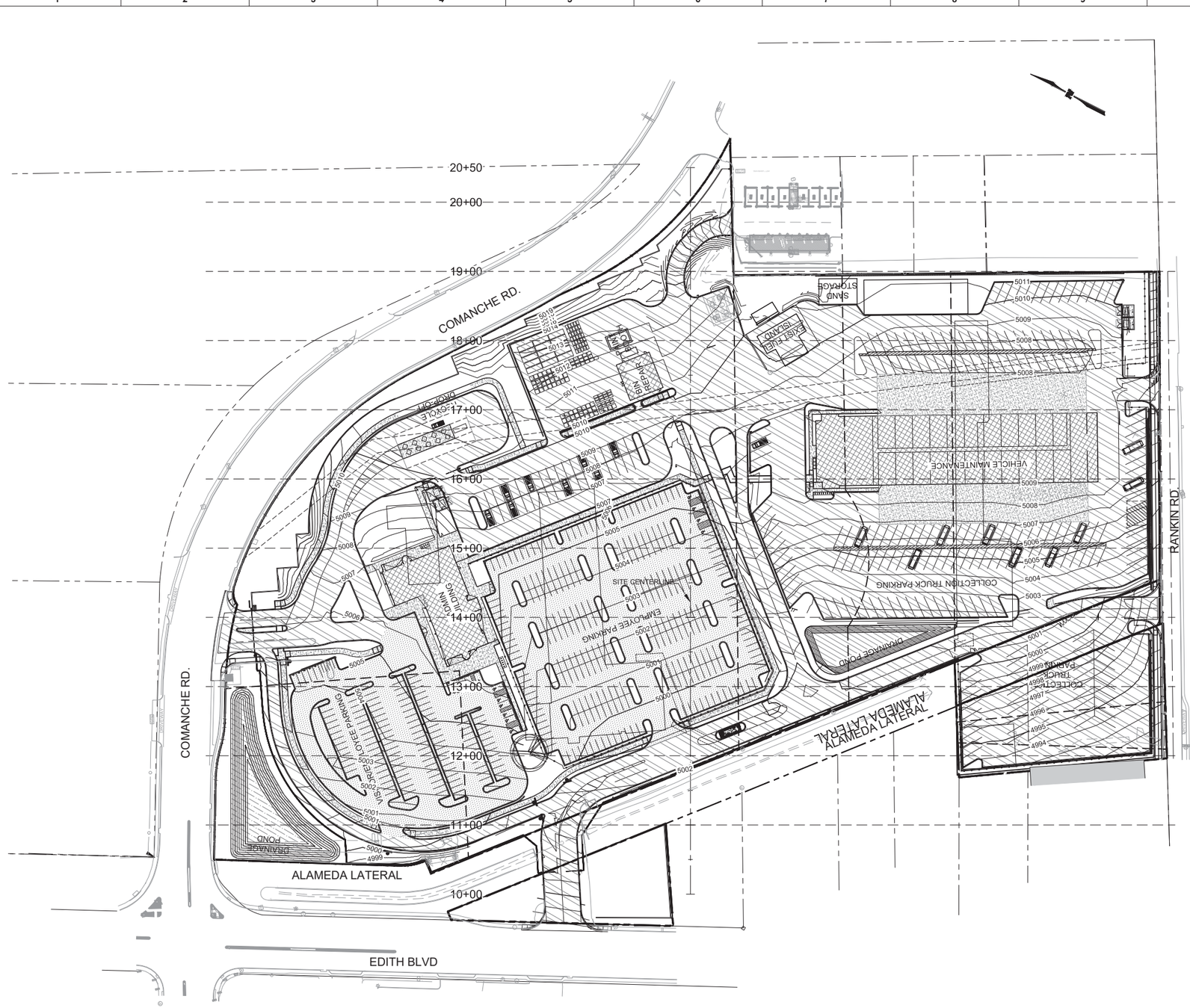


**EAST - WEST SITE CROSS SECTIONS (2 OF 2)**

| | |
|---|---|
| AS NOTED | AS NOTED |
| DES'N MP | SCALE SDG |
| DWN | CHK |

**JRMA Project No. 4907-B**
**W&C - 14-100-132-01**

**C-304**




NORTH - SOUTH SITE CROSS SECTION OVERALL

0 60' 120'
1"=60'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

Project Revision

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505 268 2266

**CITY OF ALBUQUERQUE**
PROJECT NO. 700693

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
4600 EDITH BLVD NE
ALBUQUERQUE, NM 87107

ONE ALBUQUERQUE

RONALD M. DUNGMAN NEW MEXICO 17120 REGISTERED PROFESSIONAL ENGINEER 7/17/20



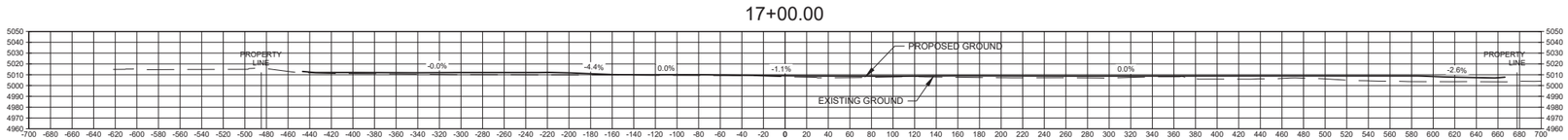
**NORTH - SOUTH SITE CROSS SECTION OVERALL**

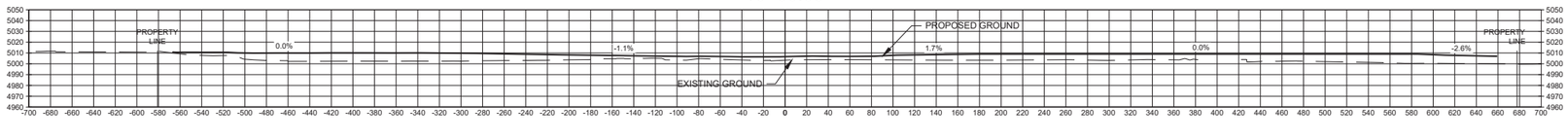
| | |
|---|---|
| AS NOTED | AS NOTED |
| DAP | SCG |
| DWN | CHK |

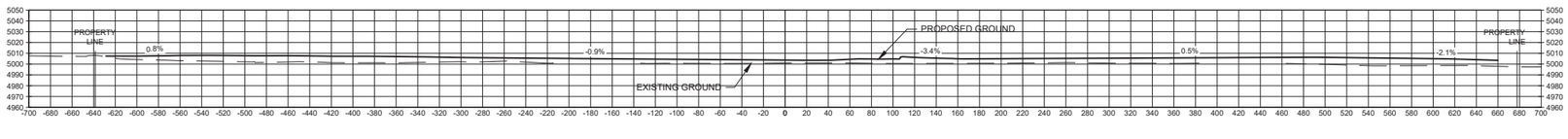
JRMA Project No.
4907-B
W&C - 14-100-132-01

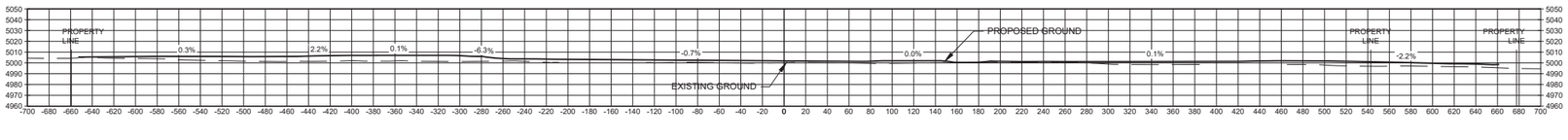
**C-305**

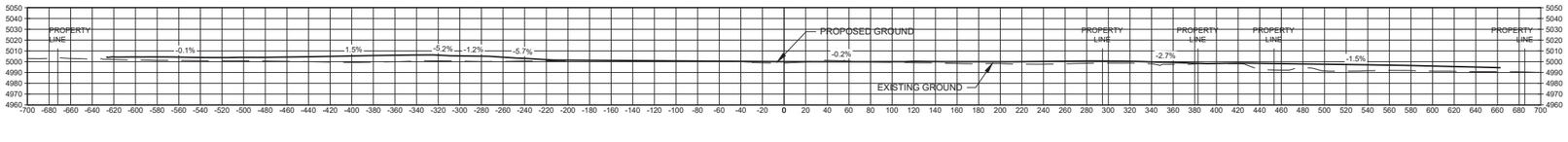
F-9

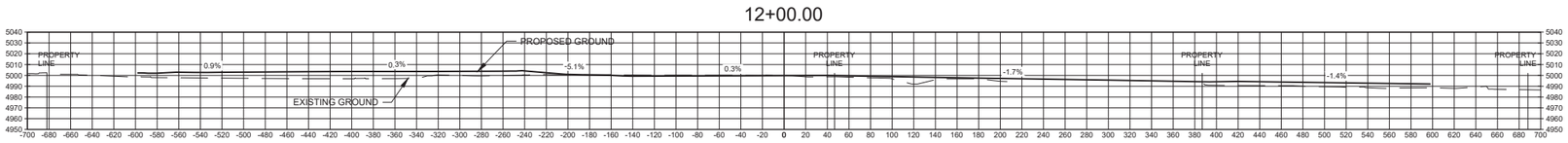


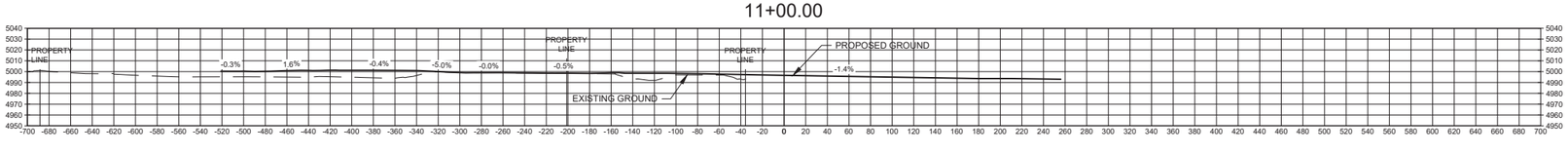



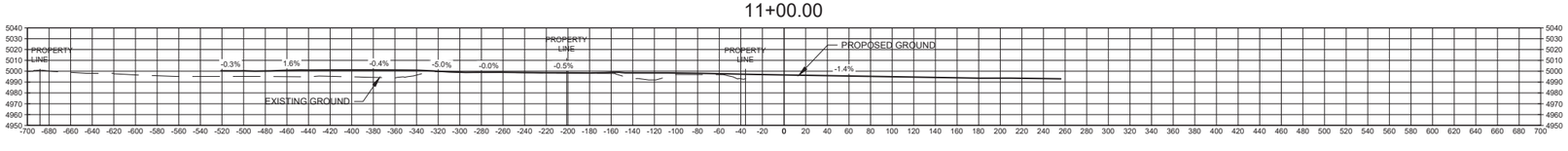




NORTH - SOUTH
SITE CROSS SECTIONS
(1 OF 2)

0 50' 100'
1"=50'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

Project Revision

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505 268 2266

**CITY OF ALBUQUERQUE**
PROJECT NO. 700693

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
4600 EDITH BLVD NE
ALBUQUERQUE, NM 87107

ONE ALBUQUERQUE

RONALD M. DUNEMAN NEW MEXICO 17712 PROFESSIONAL ENGINEER



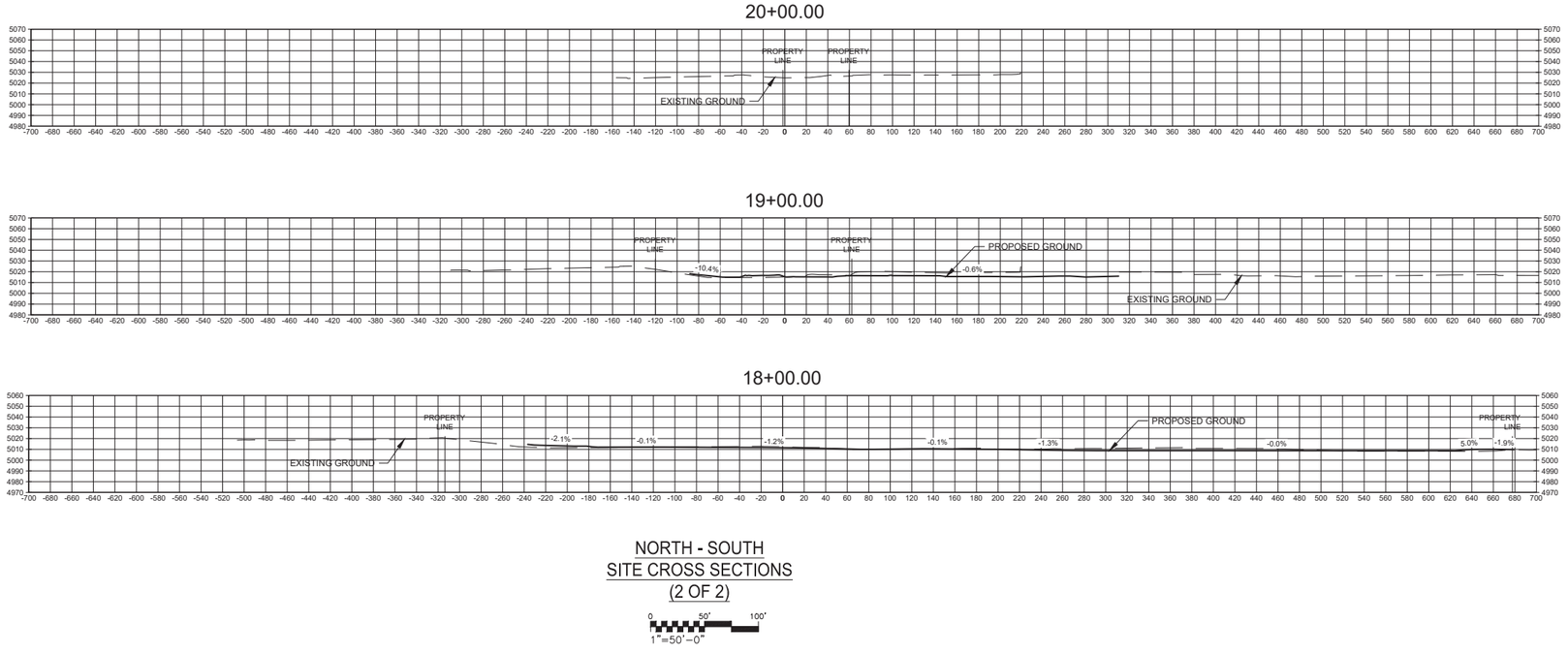
**NORTH - SOUTH SITE CROSS SECTIONS (1 OF 2)**

| | |
|---|---|
| AS NOTED | AS NOTED |
| DATE DAP | SCALE SGG |
| DWN | CHK |

JRMA Project No.
4907-B
W&C - 14-100-132-01

**C-306**

F-10




NORTH - SOUTH
SITE CROSS SECTIONS
(2 OF 2)

0 50' 100'
1"=50'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

**Project Revision**

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505 268 2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

RONALD M. DUNEMAN NEW MEXICO 17120 REGISTERED PROFESSIONAL ENGINEER

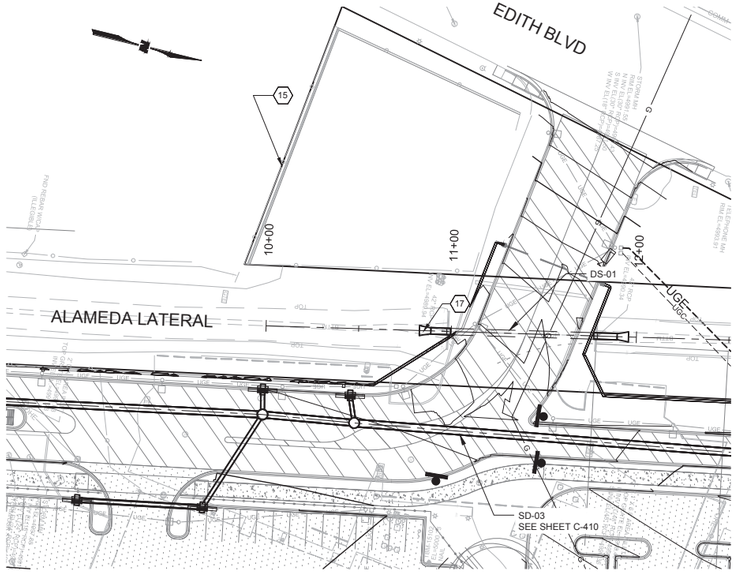


**NORTH - SOUTH SITE CROSS SECTIONS (2 OF 2)**

| | |
|---|---|
| AS NOTED | AS NOTED |
| DATE | SCALE |
| DAP | SGG |
| DWN | CHK |

**JRMA Project No. 4907-B**
**W&C - 14-100-132-01**

**C-307**




DS-01 DRAIN STRUCTURE PLAN

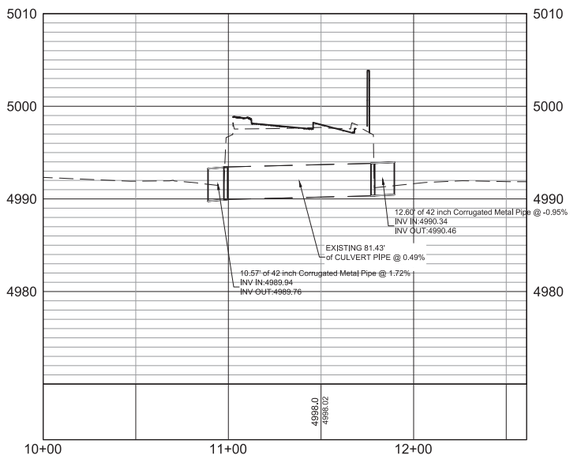
20' 10' 0 10' 20' 30' 40'
1"=30'-0"

SEE SHEET C-109 FOR LOCATION


SD-01 STORM DRAIN PLAN

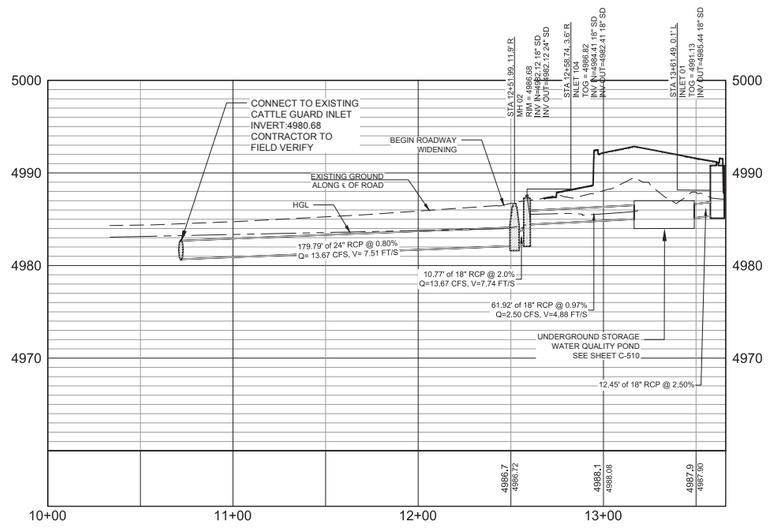
20' 10' 0 10' 20' 30' 40'
1"=30'-0"

SEE SHEET C-109 FOR LOCATION
NOTE: RANKIN STORM DRAIN SHOWN FOR INFORMATION ONLY. SEE WORK ORDER PLANS PROJECT NUMBER 7006.92.




ALAMEDA LATERAL
DS-01 DRAIN STRUCTURE PPOFILE

20' 10' 0 10' 20' 30' 40'
1"=30'-0"




SD-01 DRAIN STRUCTURE PPOFILE

20' 10' 0 10' 20' 30' 40'
1"=30'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

KEYED NOTES

* 1 BUILD 4' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
* 2 BUILD 6' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
* 3 BUILD 8' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
4 BUILD STORM DRAIN INLET, TYPE "C" PER COA STD DWG 2205
* 5 BUILD STORM DRAIN INLET, TYPE "A" PER COA STD DWG 2201
* 6 BUILD STORM DRAIN INLET, SINGLE, TYPE "D" PER COA STD DWG 2206
* 7 BUILD STORM DRAIN INLET, MEDIAN STORM INLET PER COA STD DWG 2273
* 8 DRAINAGE POND - SEE GRADING PLAN AND SHEET C-510 FOR DETAILS
* 9 EXISTING STORM DRAIN INLET TO REMAIN IN PLACE
* 10 EXISTING STORM DRAIN MANHOLE TO REMAIN IN PLACE
* 11 ADJUST EXISTING MANHOLE TO GRADE
12 BUILD SIDEWALK CULVERT WITH STEEL GRATE PER COA STD DWG 2236
* 13 PROPOSED SAS LINE. SEE SHEETS C-404, C-405, AND C-406 FOR PLAN & PROFILES AND ADDITIONAL DETAILS.
* 14 PROPOSED WATER LINE. SEE SHEETS C-406 & C-407 FOR PLAN & PROFILES AND ADDITIONAL DETAILS.
15 PROPERTY LINE
* 16 6" ROOF DRAIN PIPE
17 EXTEND EXISTING 42" CULVERT
18 INSTALL 1 - TYPE 'D' SINGLE INLET PER COA STD DWG 2206
19 INSTALL 1 - 6' DIA TYPE 'C' STORM MANHOLE PER COA STD DWG 2208

* NOT USED ON THIS SHEET

Project Revision
BID SET 06.17.2020

JRMA ARCHITECTS-ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS

**CITY OF ALBUQUERQUE**
PROJECT NO. 700693

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
4600 EDITH BLVD NE
ALBUQUERQUE, NM 87107

ONE ALBUQUERQUE

DONALD M. DUNEMAN NEW MEXICO 17706 REGISTERED PROFESSIONAL ENGINEER 7/22



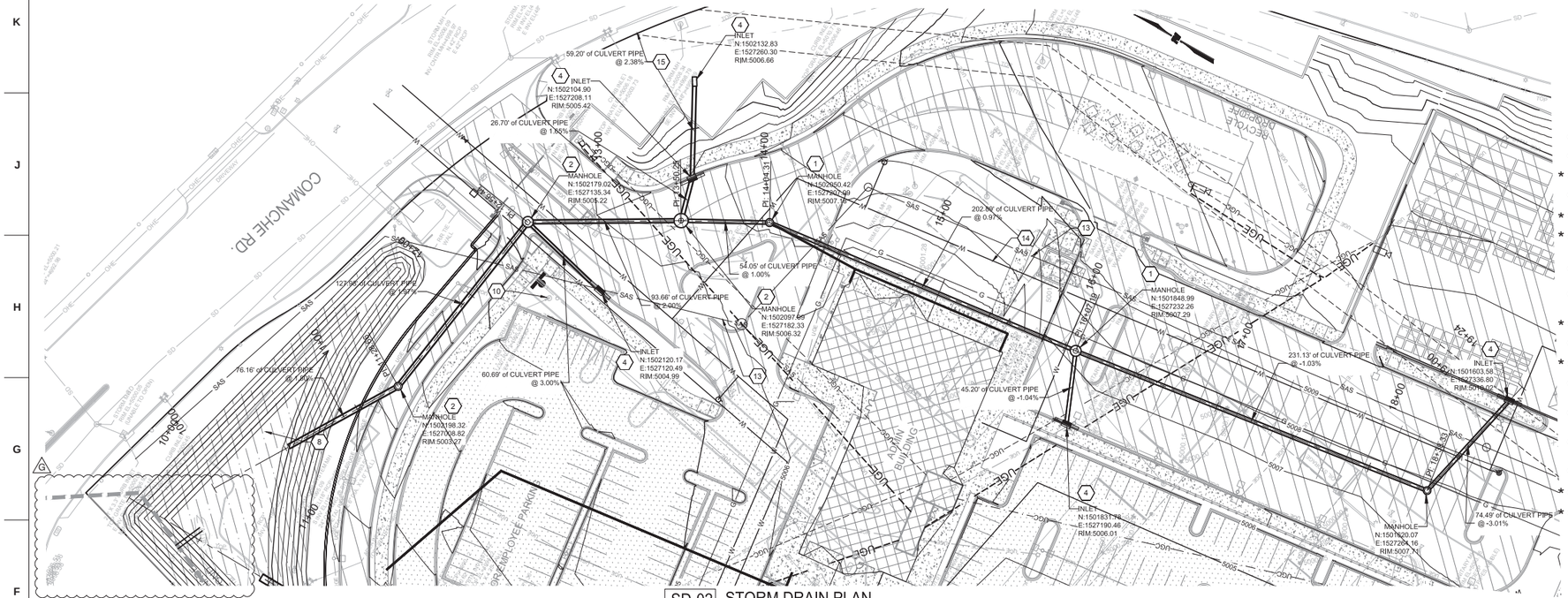
**STORM DRAIN PLAN & PROFILE SD-01**

AS NOTED DATE | AS NOTED SCALE
DWN | CHK

JRMA Project No. 4907-B
W&C - 14-100-132-01

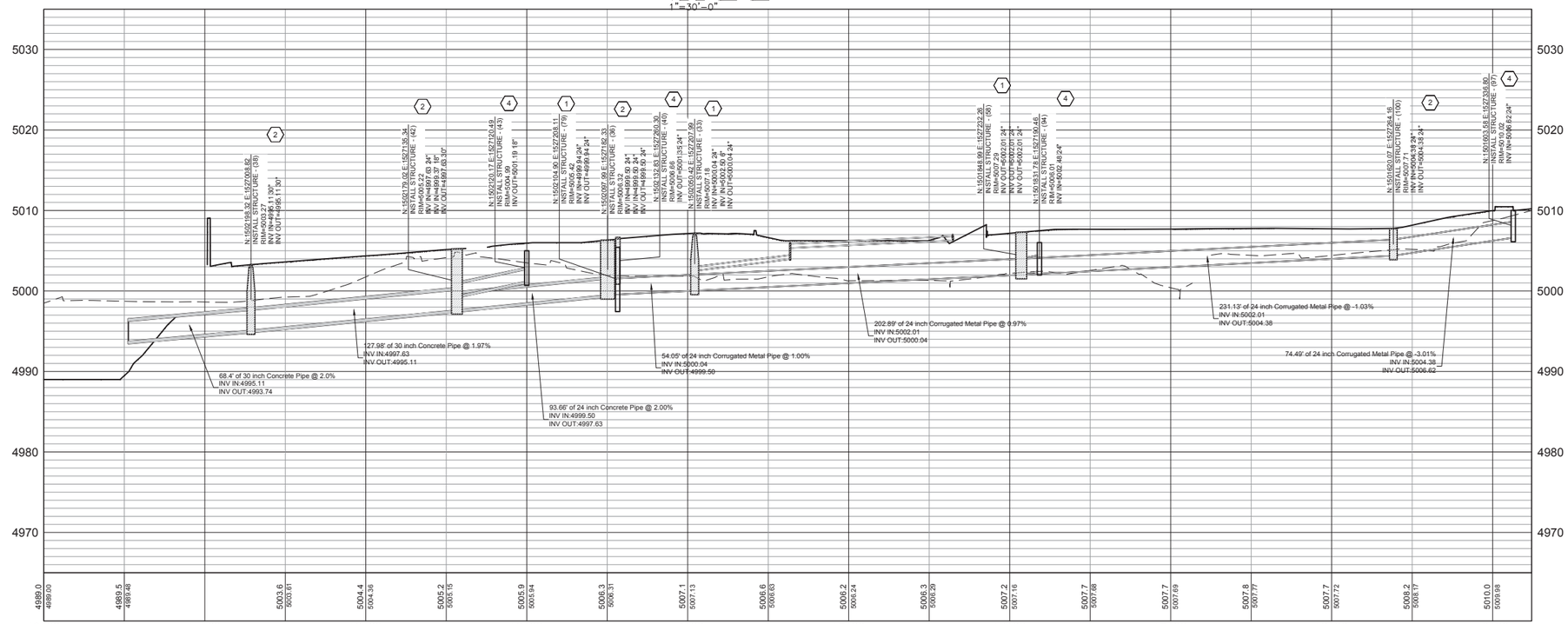
**C-408**

F-12




SD-02 STORM DRAIN PLAN

20' 10' 0 10' 20' 30' 40'
1"=30'-0"




SD-02 STORM DRAIN PROFILE

20' 10' 0 10' 20' 30' 40'
1"=30'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

KEYED NOTES

1. BUILD 4' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
2. BUILD 6' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
* 3. BUILD 8' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
4. BUILD STORM DRAIN INLET, TYPE "C" PER COA STD DWG 2205
* 5. BUILD STORM DRAIN INLET, TYPE "A" PER COA STD DWG 2201
* 6. BUILD STORM DRAIN INLET, SINGLE, TYPE "D" PER COA STD DWG 2206
7. BUILD STORM DRAIN INLET, DOUBLE, TYPE "C" PER COA STD DWG 2205
8. DRAINAGE POND - SEE GRADING PLAN AND SHEET C-505 FOR DETAILS
* 9. EXISTING STORM DRAIN INLET TO REMAIN IN PLACE
10. EXISTING STORM DRAIN MANHOLE TO REMAIN IN PLACE
* 11. ADJUST EXISTING MANHOLE TO GRADE
12. BUILD SIDEWALK CULVERT WITH STEEL GRATE PER COA STD DWG 2236
13. PROPOSED SAS LINE. SEE SHEETS C-404, C-405, AND C-406 FOR PLAN & PROFILES AND ADDITIONAL DETAILS.
14. PROPOSED WATER LINE. SEE SHEETS C-406 & C-407 FOR PLAN & PROFILES AND ADDITIONAL DETAILS.
15. PROPERTY LINE
* 16. 6" ROOF DRAIN PIPE
* 17. BUILD PRINCIPAL SPILLWAY STRUCTURE PER SHEET C-502

* NOT USED ON THIS SHEET

Project Revision
BID SET 06.17.2020

JRMA ARCHITECTS-ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**
PROJECT NO. 700693

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
4600 EDITH BLVD NE
ALBUQUERQUE, NM 87107

ONE ALBUQUERQUE

DONALD M. DUNCAN NEW MEXICO 17706 REGISTERED PROFESSIONAL ENGINEER



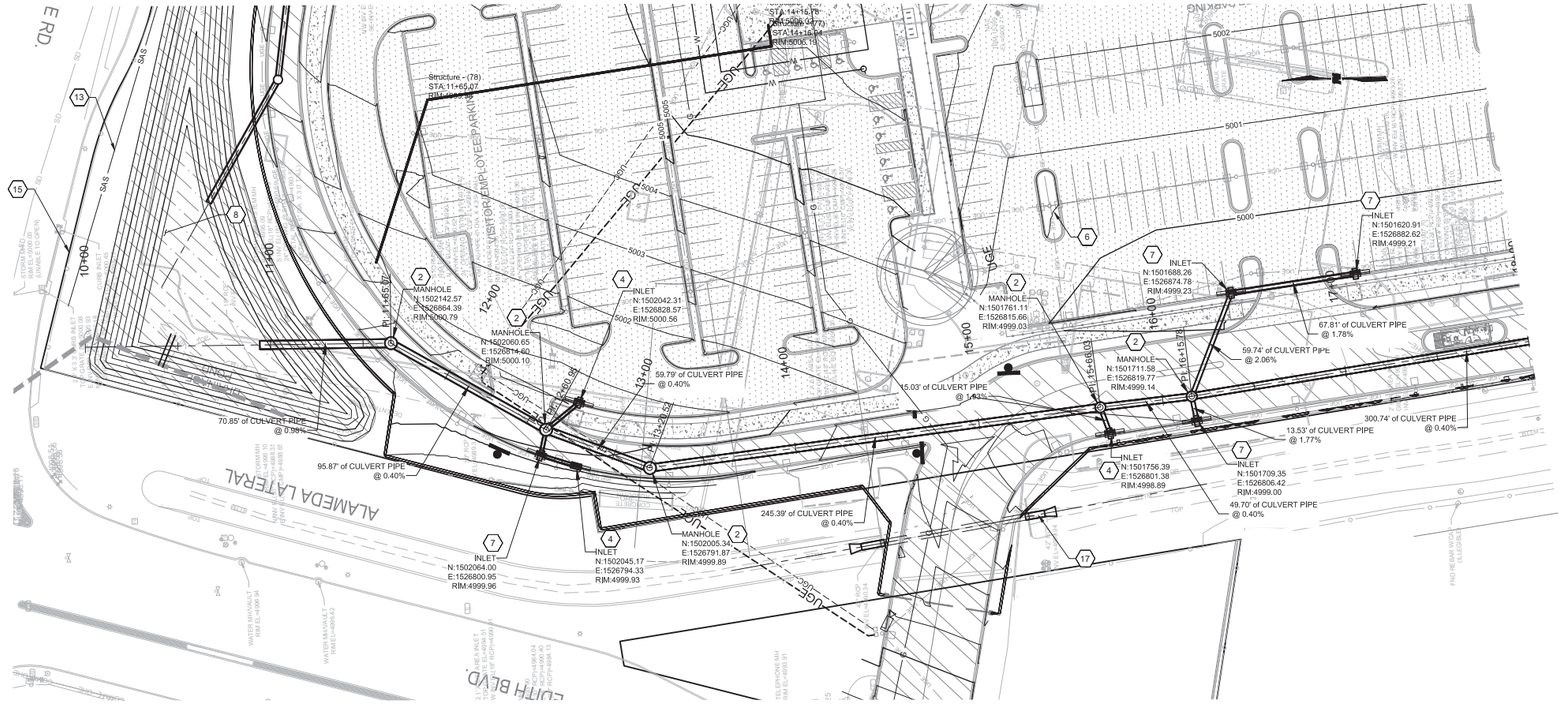
**STORM DRAIN PLAN & PROFILE SD-02**

AS NOTED DATE | AS NOTED SCALE
DWN | CHK

JRMA Project No. 4907-B
W&C - 14-100-132-01

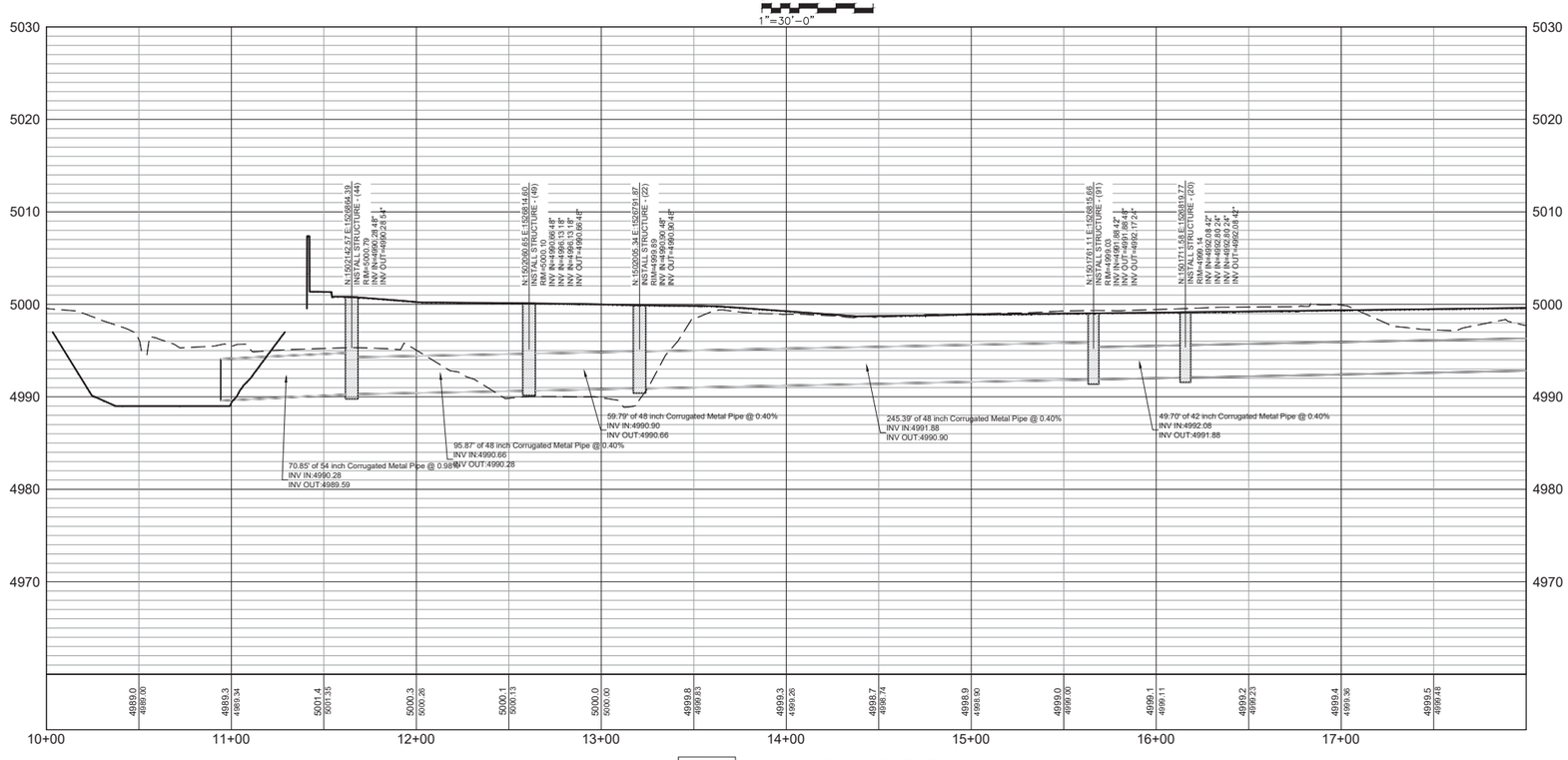
**C-409**

F-13




SD-03 STORM DRAIN PLAN

20' 10' 0 10' 20' 30' 40'
1"=30'-0"




SD-03 STORM DRAIN PROFILE

20' 10' 0 10' 20' 30' 40'
1"=30'-0"

## GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

## KEYED NOTES

1. BUILD 4' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
2. BUILD 6' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
* 3. BUILD 8' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
4. BUILD STORM DRAIN INLET, TYPE "C" PER COA STD DWG 2205
5. BUILD STORM DRAIN INLET, TYPE "A" PER COA STD DWG 2201
6. BUILD STORM DRAIN INLET, SINGLE, TYPE "D" PER COA STD DWG 2206
7. BUILD STORM DRAIN INLET, DOUBLE, TYPE "C" PER COA STD DWG 2205
8. DRAINAGE POND - SEE GRADING PLAN AND SHEET C-505 FOR DETAILS
* 9. EXISTING STORM DRAIN INLET TO REMAIN IN PLACE
* 10. EXISTING STORM DRAIN MANHOLE TO REMAIN IN PLACE
* 11. ADJUST EXISTING MANHOLE TO GRADE
* 12. BUILD SIDEWALK CULVERT WITH STEEL GRATE PER COA STD DWG 2236
13. PROPOSED SAS LINE. SEE SHEETS C-404, C-405, AND C-406 FOR PLAN & PROFILES AND ADDITIONAL DETAILS.
* 14. PROPOSED WATER LINE. SEE SHEETS C-406 & C-407 FOR PLAN & PROFILES AND ADDITIONAL DETAILS.
15. PROPERTY LINE
* 16. 6" ROOF DRAIN PIPE
17. EXTEND EXISTING 42" CULVERT PER SHEET C-408

* NOT USED ON THIS SHEET

**Project Revision**

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS-ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS
mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

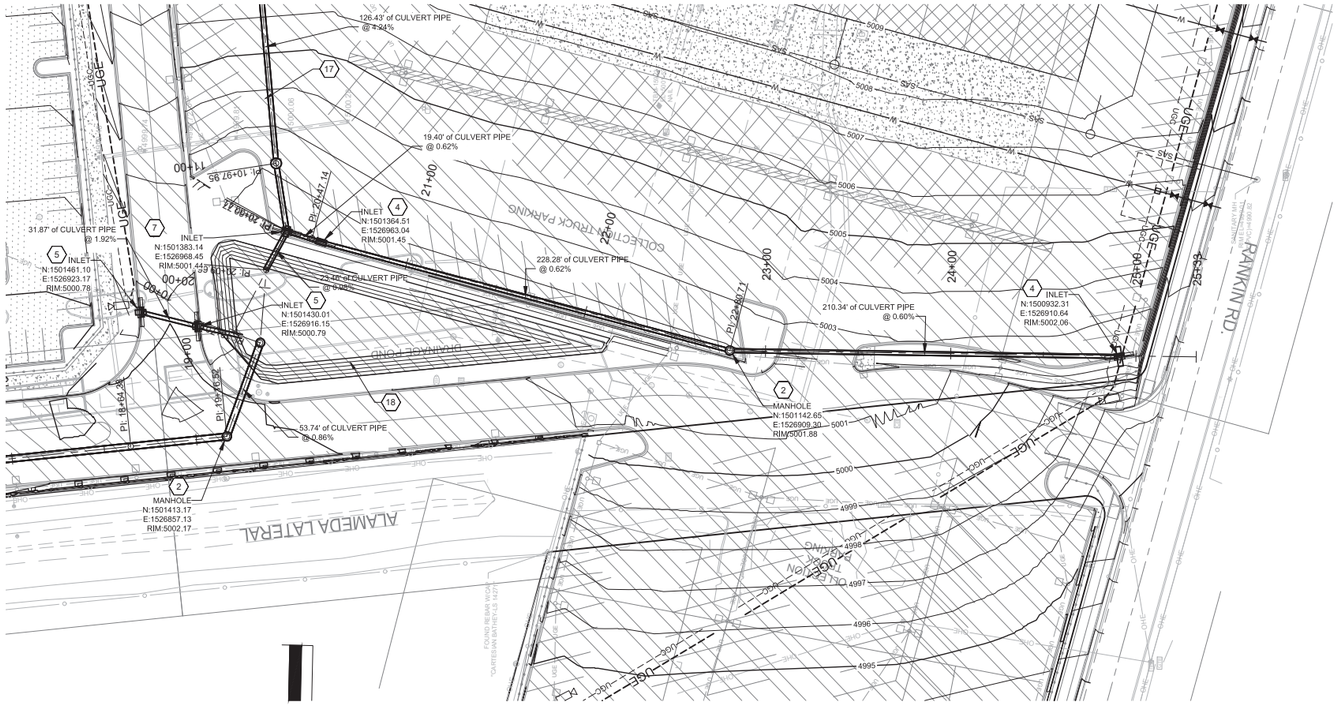
RONALD M. DUNEMAN NEW MEXICO 17706 PROFESSIONAL ENGINEER
6.17.20



**STORM DRAIN PLAN & PROFILE SD-03 (1 OF 2)**

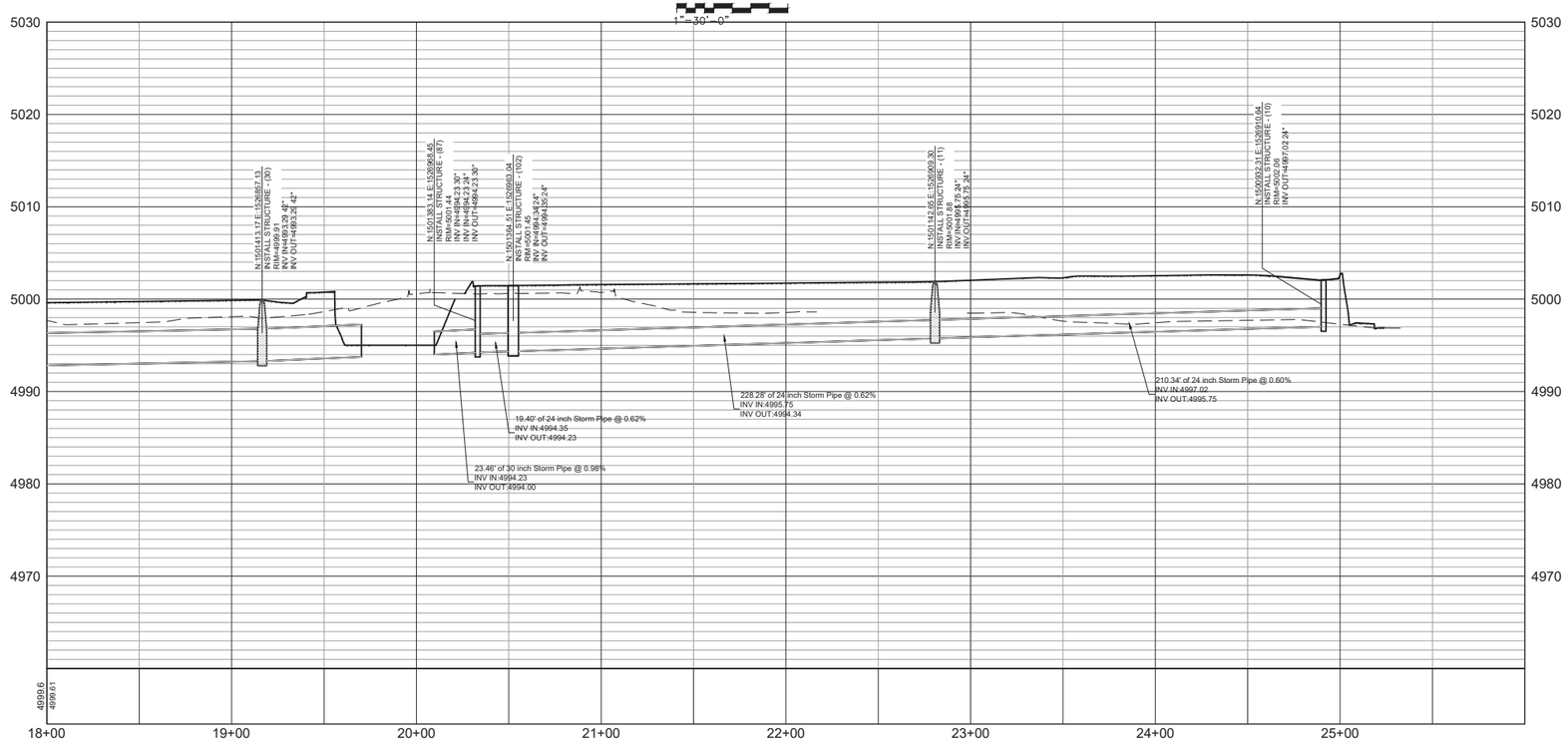
| AS NOTED | AS NOTED |
|---|---|
| DATE | SCALE |
| DWN | CHK |

**JRMA Project No. 4907-B**
**W&C - 14-100-132-01**
**C-410**




SD-03 STORM DRAIN PLAN

20' 10' 0 10' 20' 30' 40'
1"=30'-0"




SD-03 STORM DRAIN PROFILE

20' 10' 0 10' 20' 30' 40'
1"=30'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

KEYED NOTES

1. BUILD 4' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
2. BUILD 6' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
* 3. BUILD 8' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
4. BUILD STORM DRAIN INLET, TYPE "C" PER COA STD DWG 2205
5. BUILD STORM DRAIN INLET, TYPE "A" PER COA STD DWG 2201
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7. BUILD STORM DRAIN INLET, DOUBLE, TYPE "C" PER COA STD DWG 2205
* 8. DRAINAGE POND - SEE GRADING PLAN AND SHEET C-505 FOR DETAILS
* 9. EXISTING STORM DRAIN INLET TO REMAIN IN PLACE
* 10. EXISTING STORM DRAIN MANHOLE TO REMAIN IN PLACE
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* 14. PROPOSED WATER LINE. SEE SHEETS C-406 & C-407 FOR PLAN & PROFILES AND ADDITIONAL DETAILS.
* 15. PROPERTY LINE
* 16. 6" ROOF DRAIN PIPE
17. SEE SHEET C-412 FOR INFORMATION
18. BUILD PRINCIPAL SPILLWAY STRUCTURE PER SHEET C-502

* NOT USED ON THIS SHEET

Project Revision
1 BID SET 06.17.2020

JRMA ARCHITECTS-ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

RONALD M. DUNEMAN NEW MEXICO 17122 PROFESSIONAL ENGINEER 06/17/2020

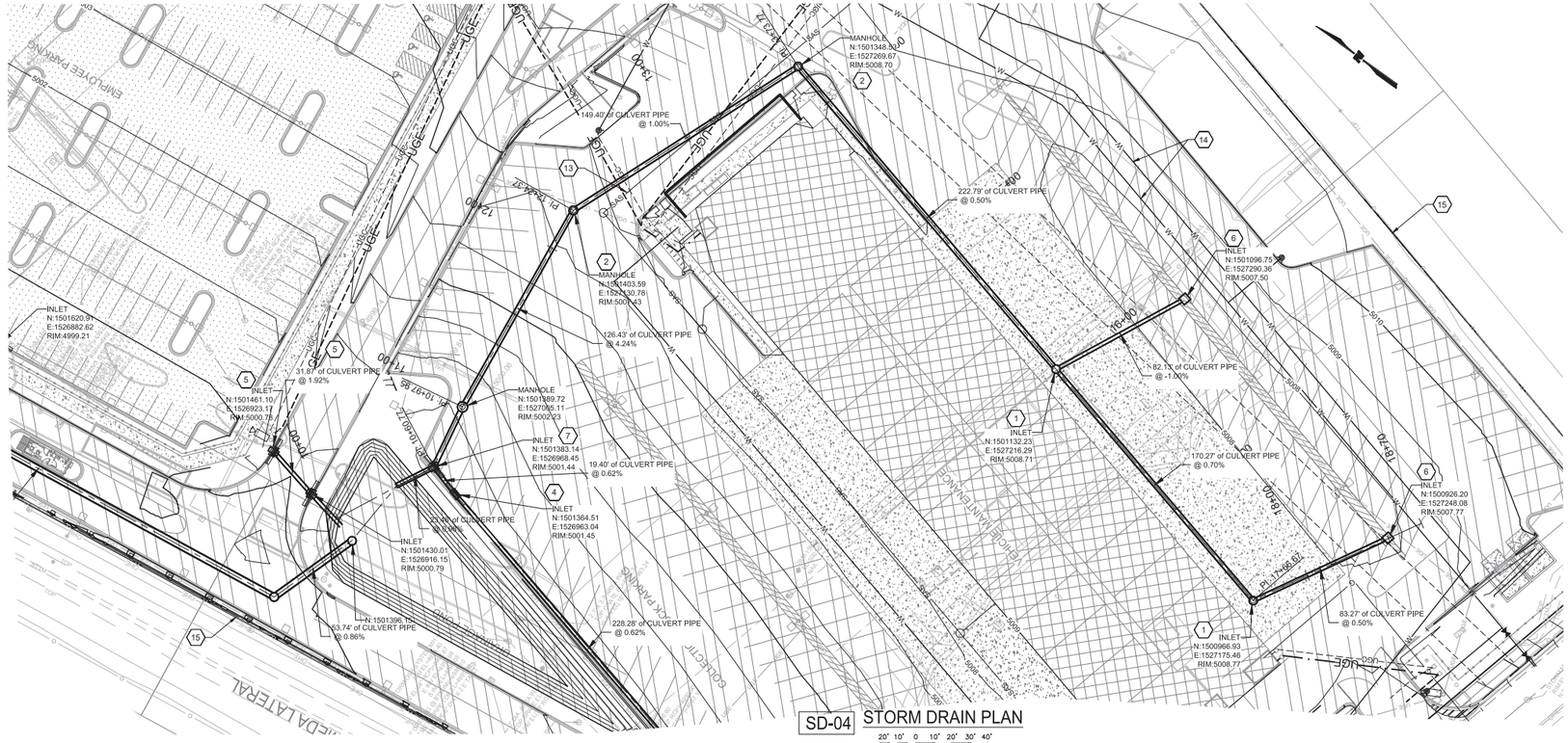


**STORM DRAIN PLAN & PROFILE SD-03 (2 OF 2)**

AS NOTED DATE | AS NOTED SCALE
DWN | CHK

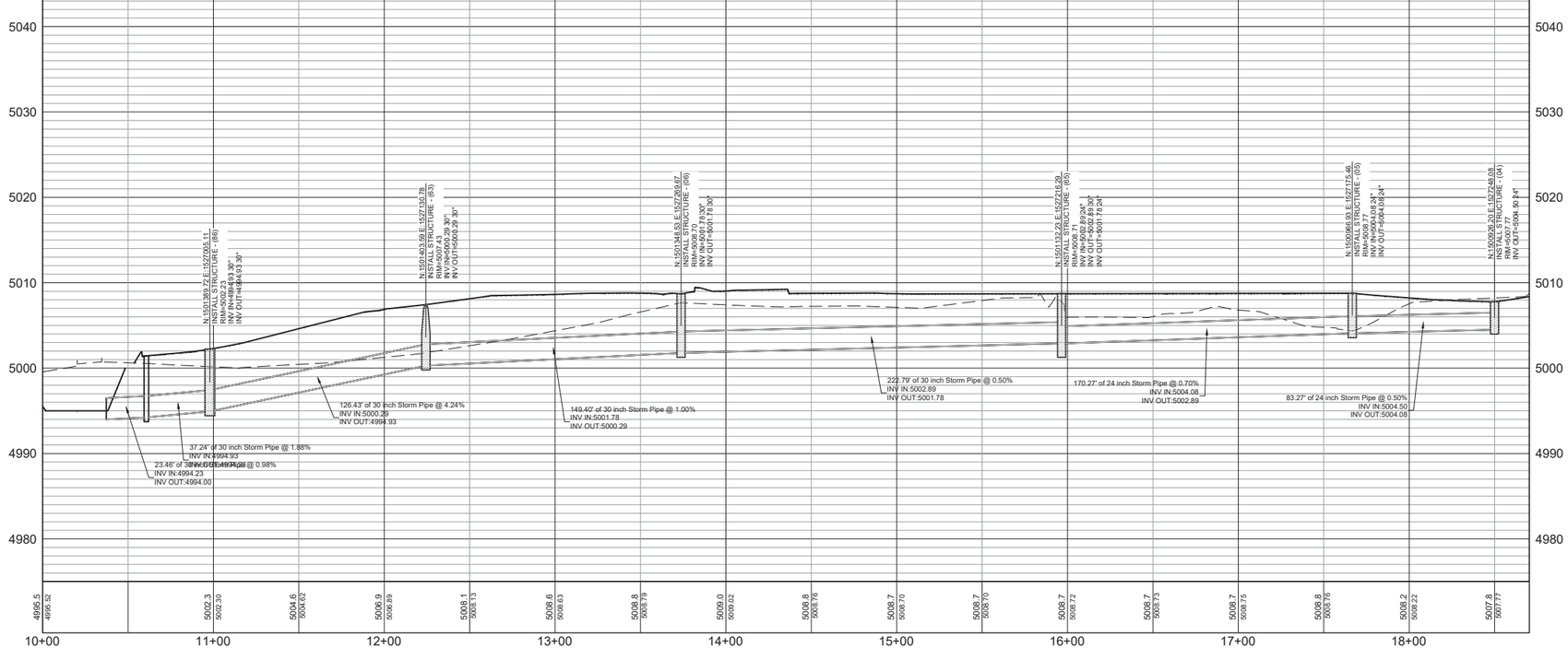
**JRMA Project No. 4907-B**
**W&C - 14-100-132-01**

**C-411**




SD-04 STORM DRAWING PLAN

20' 10' 0 10' 20' 30' 40'
1"=30'-0"




SD-04 STORM DRAIN PROFILE

20' 10' 0 10' 20' 30' 40'
1"=30'-0"

## GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

## KEYED NOTES

1. BUILD 4' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
2. BUILD 6' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
* 3. BUILD 8' DIA. MANHOLE TYPE "C" PER COA STD DWG 2208
4. BUILD STORM DRAIN INLET, TYPE "C" PER COA STD DWG 2205
5. BUILD STORM DRAIN INLET, TYPE "A" PER COA STD DWG 2201
6. BUILD STORM DRAIN INLET, DOUBLE, TYPE "D" PER COA STD DWG 2206
7. BUILD STORM DRAIN INLET, DOUBLE, TYPE "C" PER COA STD DWG 2205
8. DRAINAGE POND - SEE GRADING PLAN AND SHEET C-502 FOR DETAILS
* 9. EXISTING STORM DRAIN INLET TO REMAIN IN PLACE
* 10. EXISTING STORM DRAIN MANHOLE TO REMAIN IN PLACE
* 11. ADJUST EXISTING MANHOLE TO GRADE
* 12. BUILD SIDEWALK CULVERT WITH STEEL GRATE PER COA STD DWG 2236
13. PROPOSED SAS LINE. SEE SHEETS C-404, C-405, AND C-406 FOR PLAN & PROFILES AND ADDITIONAL DETAILS.
14. PROPOSED WATER LINE. SEE SHEETS C-406 & C-407 FOR PLAN & PROFILES AND ADDITIONAL DETAILS.
15. PROPERTY LINE
* 16. 6" ROOF DRAIN PIPE

* NOT USED ON THIS SHEET

**Project Revision**

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS-ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

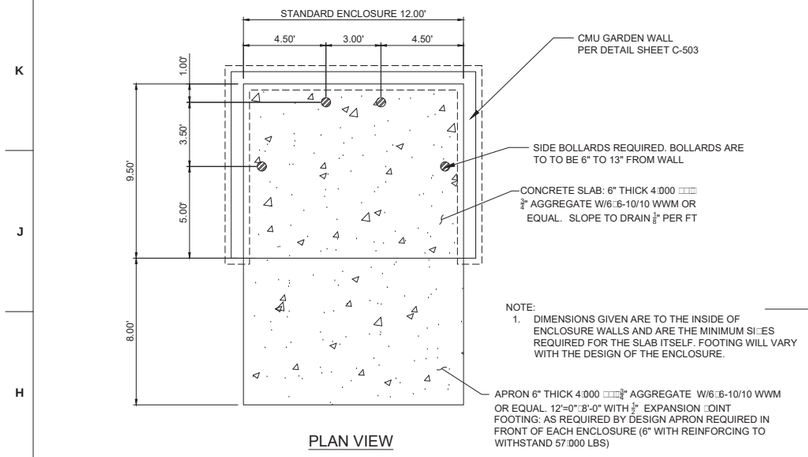
RONALD M. DUNEGAN NEW MEXICO 17120 REGISTERED PROFESSIONAL ENGINEER



**STORM DRAIN PLAN & PROFILE SD-04**

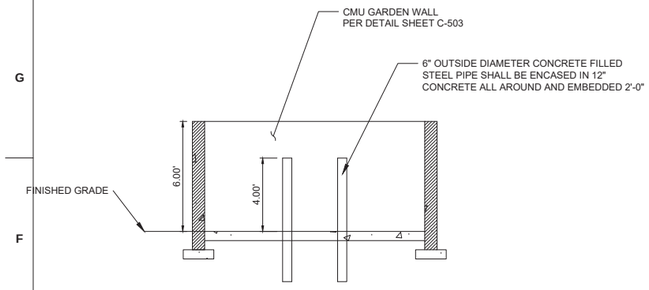
| | |
|---|---|
| AS NOTED | AS NOTED |
| DATE | SCALE |
| DWN | CHK |

**JRMA Project No. 4907-B**
**W&C - 14-100-132-01**
**C-412**




PLAN VIEW

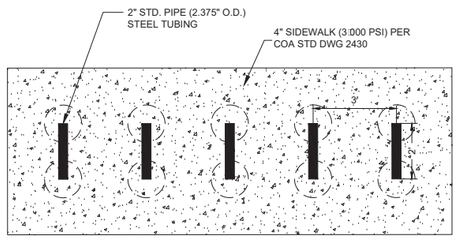
NOTE:
1. DIMENSIONS GIVEN ARE TO THE INSIDE OF ENCLOSURE WALLS AND ARE THE MINIMUM SI□ES REQUIRED FOR THE SLAB ITSELF. FOOTING WILL VARY WITH THE DESIGN OF THE ENCLOSURE.



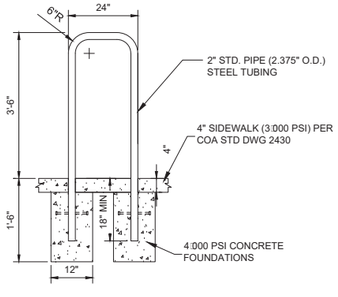

SECTION VIEW

## TRASH ENCLOSURE DETAIL

SCALE: NONE




PLAN VIEW

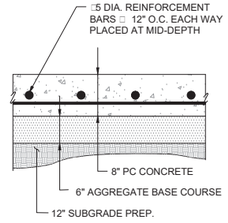



SECTION VIEW

## BICYCLE RACK DETAILS

SCALE: NONE

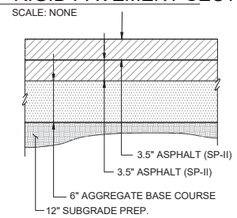
1. POST PAINT SHALL BE SHERWIN WILLIAMS 6069 FRENCH ROAST OR APPROVED EQUAL




NOTES:
1. SEE COA STD DWG 2451 TYPE 5 EXPANSION □OINT AND TYPE 6 TRANSITION □OINT IN CONCRETE PAVING DETAILS.
2. 4□000 PSI CONCRETE
3. USE FOR 37-FTX55-FT SAND STORAGE AREA

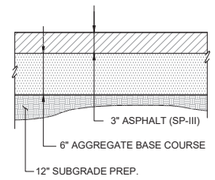
## RIGID PAVEMENT SECTION - 8" CONCRETE PAVEMENT

SCALE: NONE



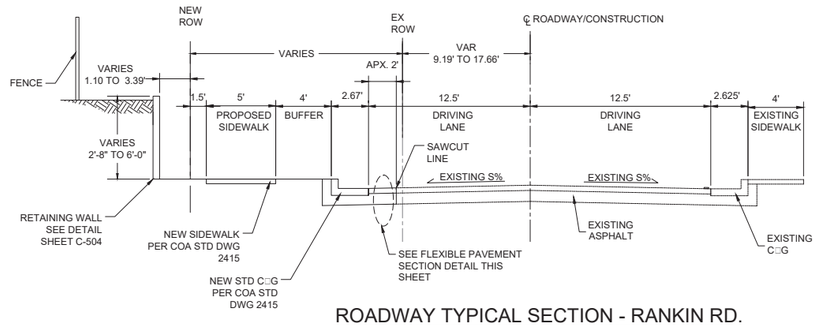

## FLEXIBLE PAVEMENT SECTION

SCALE: NONE



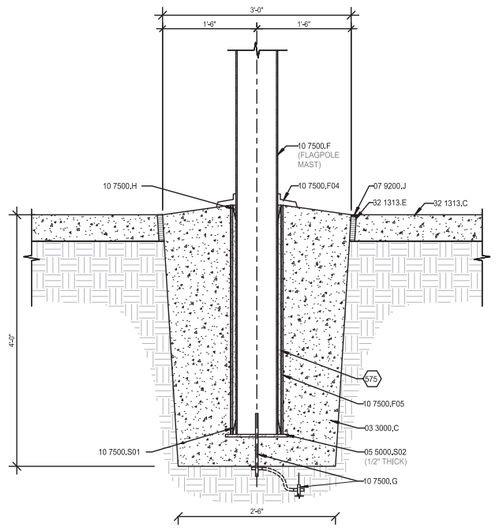

## PARKING LOT PAVEMENT DETAIL

SCALE: NONE



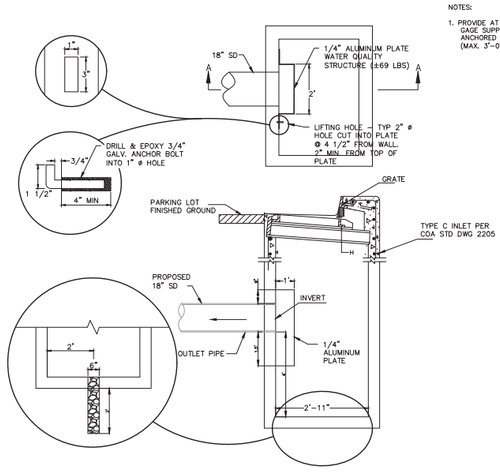

## ROADWAY TYPICAL SECTION - RANKIN RD.

SCALE: .25'=1'




## FLAGPOLE BASE SECTION DETAIL

SCALE: NTS




NOTES:
1. PROVIDE AT LEAST ONE 3"X.090 GAGE SUPPORT BRACKET ANCHORED CONCRETE WALL (MAX. 3'-0" VERTICAL SPACING).

## WATER QUALITY STORM DRAIN INLET DETAIL

SCALE: NTS

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. IF THIS SHEET IS NOT 30"□42"□THEN IT IS A REDUCED SI□E PLOT. USE GRAPHIC SCALE ACCORDINGLY.
3. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
4. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
5. COORDINATE WITH CITY SOLID WASTE DEPARTMENT TO SCHEDULE A CONCRETE PRE-POUR INSPECTION FOR ALL 4 TRASH ENCLOSURES.

**Project Revision**

| | | |
|---|---|---|
| 1 | DRB SUBMITTAL | 01.25.2019 |
| 2 | 50% OWNER REVIEW | 02.06.2019 |
| 3 | 95% OWNER REVIEW | 11.20.2019 |
| 4 | BDLG. DEPT. SUBMIT. | 03.10.2020 |
| 5 | BDLG. DEPT. RESUB. | 04.08.2020 |
| 6 | BDLG. DEPT. RESUB. | 04.28.2020 |
| 7 | BDLG. DEPT. RESUB. | 05.14.2020 |

JRMA ARCHITECTS ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS mrwmla.com 505 268 2266

**CITY OF ALBUQUERQUE**
**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
**4600 EDITH BLVD NE**
**ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

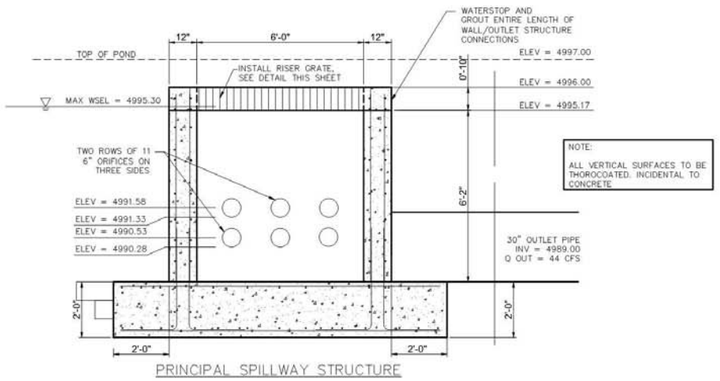
RONALD M. BUNDMAN NEW MEXICO (17616) PROFESSIONAL ENGINEER 5/14/20
5/14/2020



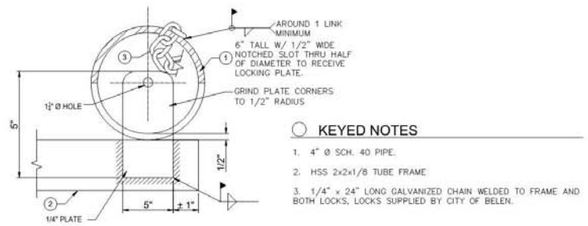
**CIVIL DETAILS**

AS NOTED DATE AS NOTED SCALE
DWN CHK

**JRMA Project No. 4907-B**
**W&C - 14-100-132-01**
**C-500**



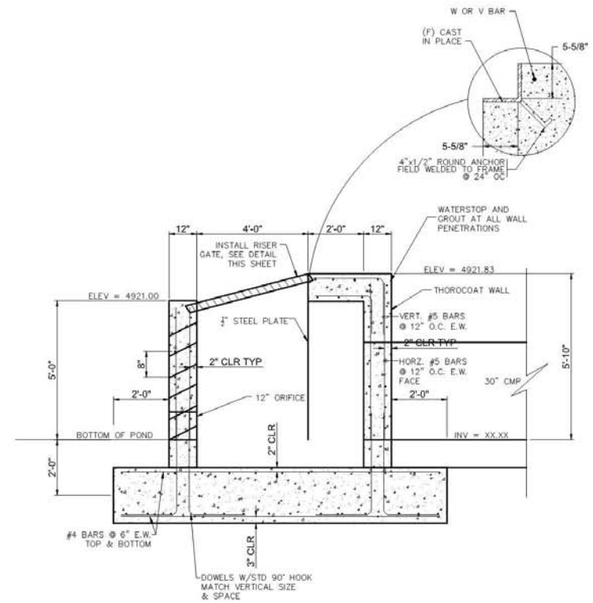

PRINCIPAL SPILLWAY STRUCTURE



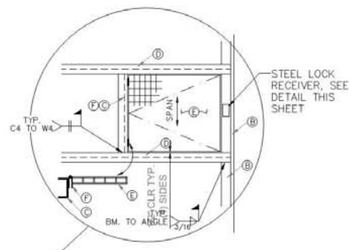

## KEYED NOTES

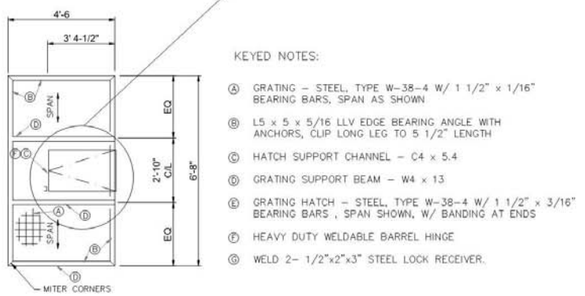
1. 4" Ø SCH. 40 PIPE.
2. HSS 2x2x1/8 TUBE FRAME
3. 1/4" x 24" LONG GALVANIZED CHAIN WELDED TO FRAME AND BOTH LOCKS, LOCKS SUPPLIED BY CITY OF BELEN.

STEEL LOCK RECEIVER




PRINCIPAL SPILLWAY SECTION




KEYED NOTES:

- Ⓐ GRATING – STEEL, TYPE W–38–4 W/ 1 1/2" x 1/16" BEARING BARS, SPAN AS SHOWN
- Ⓑ L5 x 5 x 5/16 LLV EDGE BEARING ANGLE WITH ANCHORS, CLIP LONG LEG TO 5 1/2" LENGTH
- Ⓒ HATCH SUPPORT CHANNEL – C4 x 5.4
- Ⓓ GRATING SUPPORT BEAM – W4 x 13
- Ⓔ GRATING HATCH – STEEL, TYPE W–38–4 W/ 1 1/2" x 3/16" BEARING BARS , SPAN SHOWN, W/ BANDING AT ENDS
- Ⓕ HEAVY DUTY WELDABLE BARREL HINGE
- Ⓖ WELD 2– 1/2"x2"x3" STEEL LOCK RECEIVER.

RISER GRATE–PLAN

(A1) PRINCIPAL SPILLWAY STRUCTURE DETAIL
NTS

**Project Revision**

| | | |
|---|---|---|
| A | DRB SUBMITTAL | 01.25.2019 |
| B | 50% OWNER REVIEW | 02.06.2019 |
| C | 95% OWNER REVIEW | 11.20.2019 |
| D | BDLG. DEPT. SUBMIT. | 03.10.2020 |
| E | BDLG. DEPT. RESUB. | 04.08.2020 |

JRMA ARCHITECTS ENGINEERS
WILSON & COMPANY
MRWM LANDSCAPE ARCHITECTS
mrwmla.com 505.268.3266

**CITY OF ALBUQUERQUE**
PROJECT NO. 700693

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**
4600 EDITH BLVD NE
ALBUQUERQUE, NM 87107

ONE ALBUQUERQUE

Donald M. Dingman, New Mexico, 17616, Professional Engineer
4/8/2020



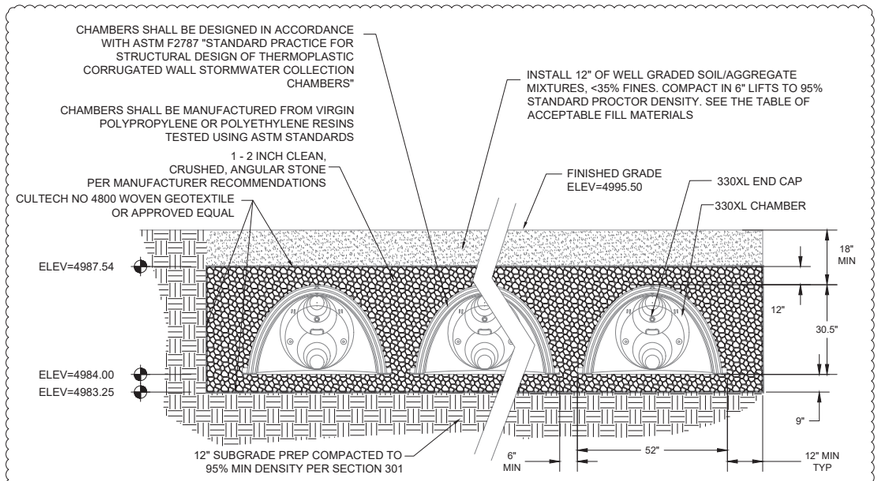
**DRAINAGE DETAILS**

AS NOTED DES. DAP
AS NOTED SCALE DSTG
DWN CHK

JRMA Project No. 4907-B
W&C - 14-100-132-01

**C-502**

F-18




CULTEC CROSS SECTION A-A

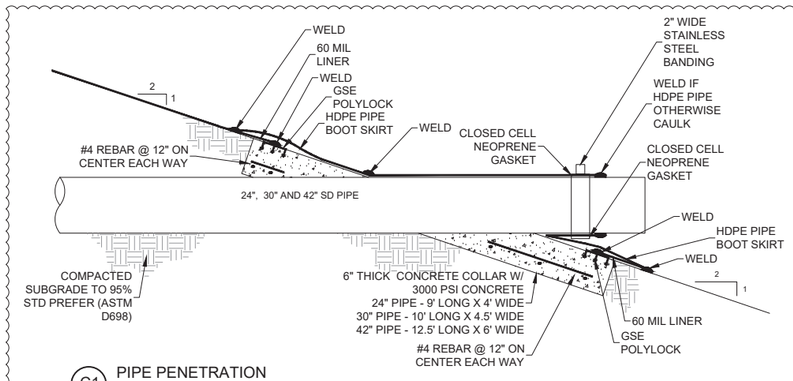
N.T.S.

NOTE:

CONTRACTOR RESPONSIBLE FOR TESTING SUBGRADE SOILS FOR ALLOWABLE BEARING PRESSURE. ALLOWABLE BEARING PRESSURE TO MEET OR EXCEED 1500 PSF.

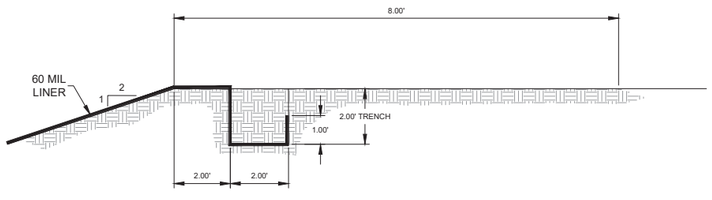
CONTRACTOR ALSO RESPONSIBLE FOR DETERMINING GROUND WATER SURFACE ELEVATIONS. IF ANY PORTION OF THIS CROSS-SECTION EXTENDS INTO THE GROUND WATER, THE CONTRACTOR SHALL STOP WORK AND CONTACT THE ENGINEER OF RECORD IMMEDIATELY.

CHAMBERS SHALL BE CULTEC 330XLHD OR APPROVED EQUAL.



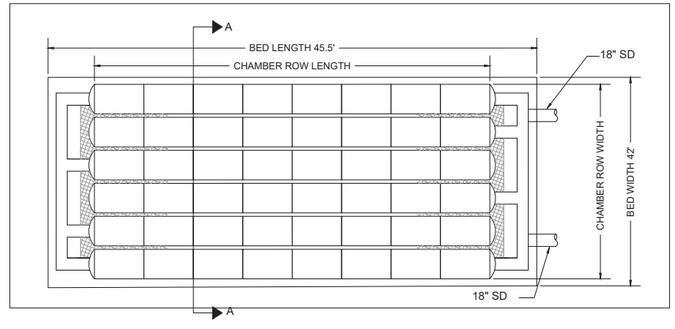

C1 PIPE PENETRATION

SCALE: NTS




A1 LINER ANCHOR

SCALE: NTS




CULTEC 330XLHD CHAMBER LAYOUT

N.T.S.



Project Revision

| | | |
|---|---|---|
| 1 | BID SET | 06.17.2020 |

JRMA ARCHITECTS ENGINEERS

WILSON & COMPANY

MRWM LANDSCAPE ARCHITECTS mrwmla.com 505.268.2266

**CITY OF ALBUQUERQUE**

**PROJECT NO. 700693**

**MAINTENANCE & ADMINISTRATION BUILDING PROJECT**

**4600 EDITH BLVD NE ALBUQUERQUE, NM 87107**

ONE ALBUQUERQUE

DONALD M. DUNEMAN NEW MEXICO 17706 REGISTERED PROFESSIONAL ENGINEER



**UNDERGROUND STORAGE & WATER QUALITY DETAILS**

| | |
|---|---|
| AS NOTED | AS NOTED |
| DATE | SCALE |
| DAP | SGG |
| DWN | CHK |

**JRMA Project No. 4907-B**
**W&C - 14-100-132-01**

**C-510**