CITY OF ALBUQUERQUE

Planning Department
Suzanne Lubar, Director

Mayor Richard J. Berry

October 5, 2015

Dennis Lorenz, P.E.
Lorenz Design & Consulting
2501 Rio Grande Blvd. NW Suite A
Albuquerque, New Mexico 87107

RE: **Jackson-Wink MMA Academy**
301 Martin Luther King Jr. Ave. NE
Grading and Drainage Plan
Engineers Stamp Date 5/8/15 (K14D005)
Certification Dated: 6/16/15

Dear Mr. Lorenz,

Based on the Certification received 8/31/2015, the site is acceptable for permanent release of Certificate of Occupancy by Hydrology.

If you have any questions you can contact me at 924-3695 or Rudy Rael at 924-3977.

Sincerely,

Abiel Carrillo, P.E.
City Engineer
Planning and Development Services

RR/AC
C: File

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE REPORT
FOR
JACKSON WINK MMA ACADEMY

301 Martin Luther King Jr NE
Albuquerque, New Mexico 87103

Prepared For:

Mike Winkeljohn
301 Martin Luther King Jr NE
Albuquerque, New Mexico 87103

Prepared by:

LORENZ
DESIGN & CONSULTING, LLC
Civil Engineering | Construction Management

February 2015

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APPENDIX INDEX

PURPOSE AND SCOPE

This project involves the re-development of the subject property for Jackson Wink MMA Academy, a training center for mixed martial arts. The project proposes site improvements to support the development, including access, grading, drainage and utility improvements.

The purpose of this report is to outline the criteria for re-development of the site and demonstrate that this project will not negatively impact the project site, or upstream and downstream properties. This report is prepared and submitted in support of a building permit application.

The scope of this report is to provide analysis of the existing and improved conditions utilizing state of the art technological storm drainage modeling tools, thereby demonstrating the before and after behavior of the project site during rainfall events. It will be demonstrated that this project will be developed in accordance with the City of Albuquerque, Development Process Manual, Volume 2, the City of Albuquerque Drainage Ordinance, and the approved drainage master plan for the watershed.

EXISTING CONDITIONS

The 1.50-acre project site is fully developed. Site improvements consist of a 16,080-square foot building with site improvements constructed to support the previous property use. The site is bounded north by developed residential property, on the east by developed office property, on the south by Martin Luther King Jr Blvd, and on the west by Broadway Blvd.

All site flows drain west to Broadway by paving improvements and landscaped yard swales. The site was developed in 1978 when commercial properties were required to retain developed storm water. As a result this site retains approximately 13,460-cf within four (4) existing retention ponds. The ponds are not equipped with drains or constructed overflow spillways. The ponds appear to overflow to the west, and eventually to Broadway over the sidewalks or through the drivepads.

No off-site flows enter the property. The upstream boundaries of the site are sealed by solid perimeter walls.

As shown by FIRM Panel 35001C0334G, this property is not located within a mapped 100 year floodplain.

DRAINAGE MASTERPLANS

The property was originally developed as an office building in the 1970's. The Drainage Master Plan, prepared by Kent Trauernicht, a New Mexico Licensed Architect,

recommended on-site retention ponding in accordance with the City's drainage criteria at the time. This project was designed to retain approximately 13,460-cf of excess runoff within four (5) on-site retention ponds. The site also accepted runoff from the parcel to the east, which was undeveloped at the time.

The Drainage Master Plan is provided in the Appendix for review.

PROPOSED CONDITIONS

As shown by the Grading and Drainage Plan (see back pocket), the property is to be re-developed by upgrading and expanding the existing building, and re-constructing the site improvements. The existing parking lot will be resurfaced and re-striped. Additional parking will be provided by expanding the existing parking lot. Two (2) of the redundant retention ponds will be removed to allow for expansion of the parking lot. The existing pond located in the northeast corner of the site will remain in its current condition. The existing pond located at the southwest corner of the site will be re-built and equipped with an outfall drain connection an existing public storm inlet.

A Pre-design conference with City Hydrology Staff established the maximum discharge rate from the site at 2.75 cfs/acre (4.13 cfs total), or existing conditions (4.40 cfs/acre, or 6.60 cfs total). We have selected the latter, which will be managed by the re-constructed ponds at the Northwest southwest corners of the site.

As shown by the Developed Drainage Basins Map, Figure 3, the developed site is divided into 5 drainage basins. Each drainage basin is described below:

Basin A is an existing closed basin that drains to a landscaped retention pond.

Basin B is consists of the building roof and the landscaped area along the north side of the building draining to Pond B.

Basin C is a proposed parking lot draining to Pond C. Flows from Ponds B and C drain to Broadway thru a 24" sidewalk culvert.

Basin D is a small basin that will free discharge thru the drivepad at AP-4.

Basin E is the largest onsite basin. It consists of the front parking lot and public areas. It drains to Pond E which will be converted to a detention pond by connecting a 12' storm drain to the existing storm inlet at Martin Luther King Jr Blvd.

As shown by the AHYMO output files and the Pond Routing Calculations, by converting the existing retention ponds to detention ponds the total developed discharge from the site is calculated at 4.97 cfs, less than the existing peak discharge of 6.18 cfs.

90th Percentile Storm

In accordance with the City of Albuquerque Drainage Ordinance, effective May 12, 2014, all new development projects are required to manage the runoff which occurs during the 90th percentile storm event. In order to comply with this criteria, where practical, all surface drainage shall be routed through landscaped areas before release into downstream drainage facilities. Calculations are provided to demonstrate the First Flush storage proposed on-site.

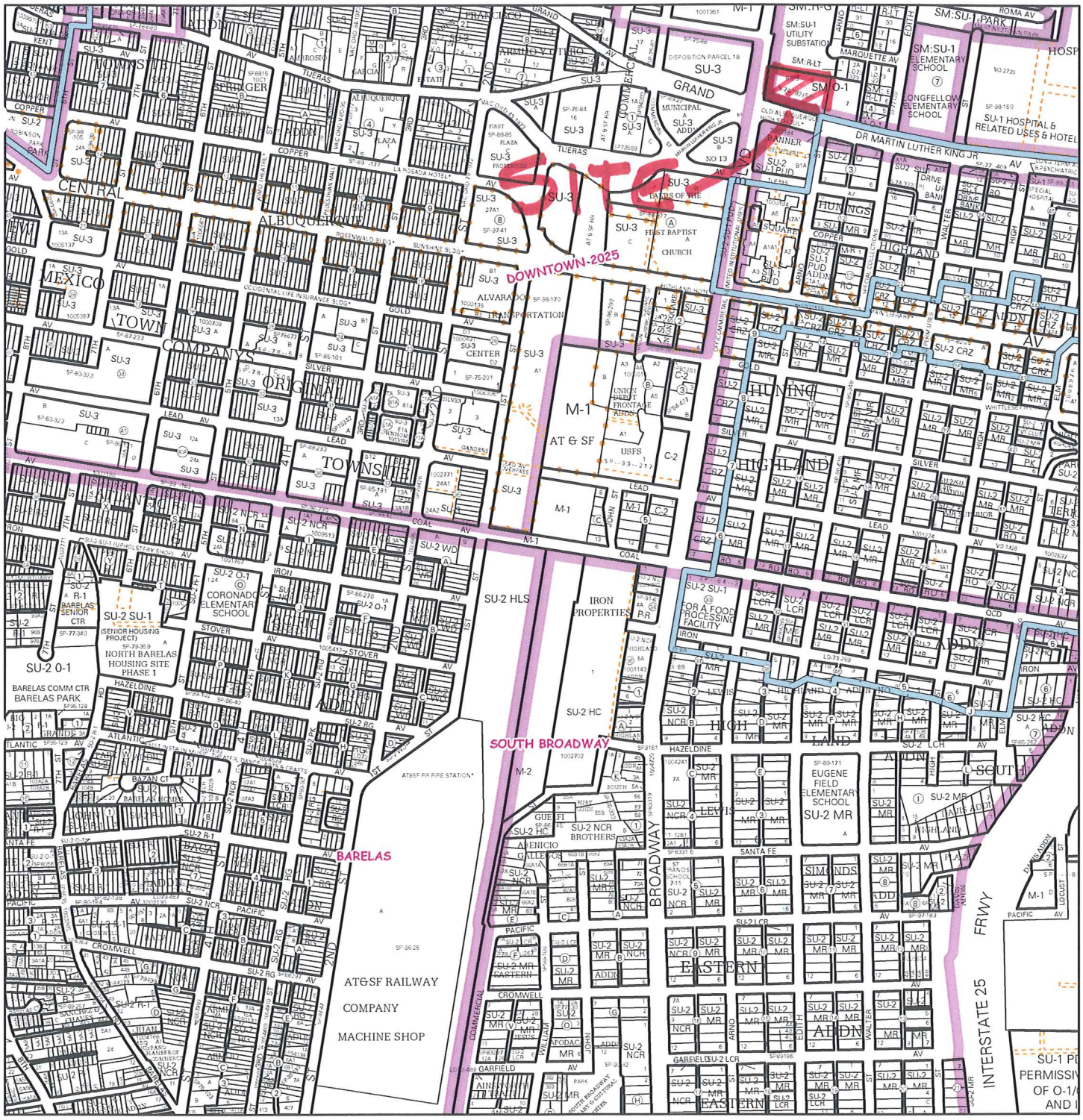
CALCULATIONS

Hydrology

The calculations contained herein define the 100-year/6-hour rainfall event falling within the project site and contributing off-site areas under existing and developed conditions. The hydrology is per the City of Albuquerque, Development Process Manual, Chapter 22, Volume 2, 1997 Revision. The AHYMO 97 model is used to determine peak runoff. The calculations are presented to demonstrate the capacity and function of all proposed storm drainage improvements.

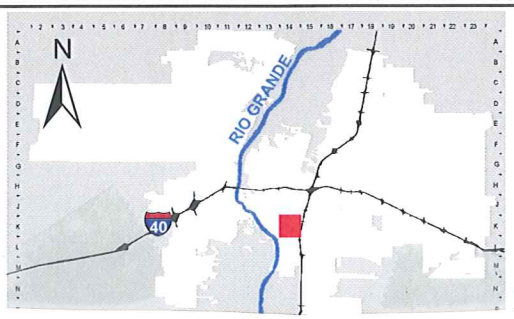
APPENDIX

MAPS



For more current information and details visit: http://www.cabq.gov/gis

Albuquerque Geographic Information System



Zone Atlas Page:

K-14-Z

Selected Symbols

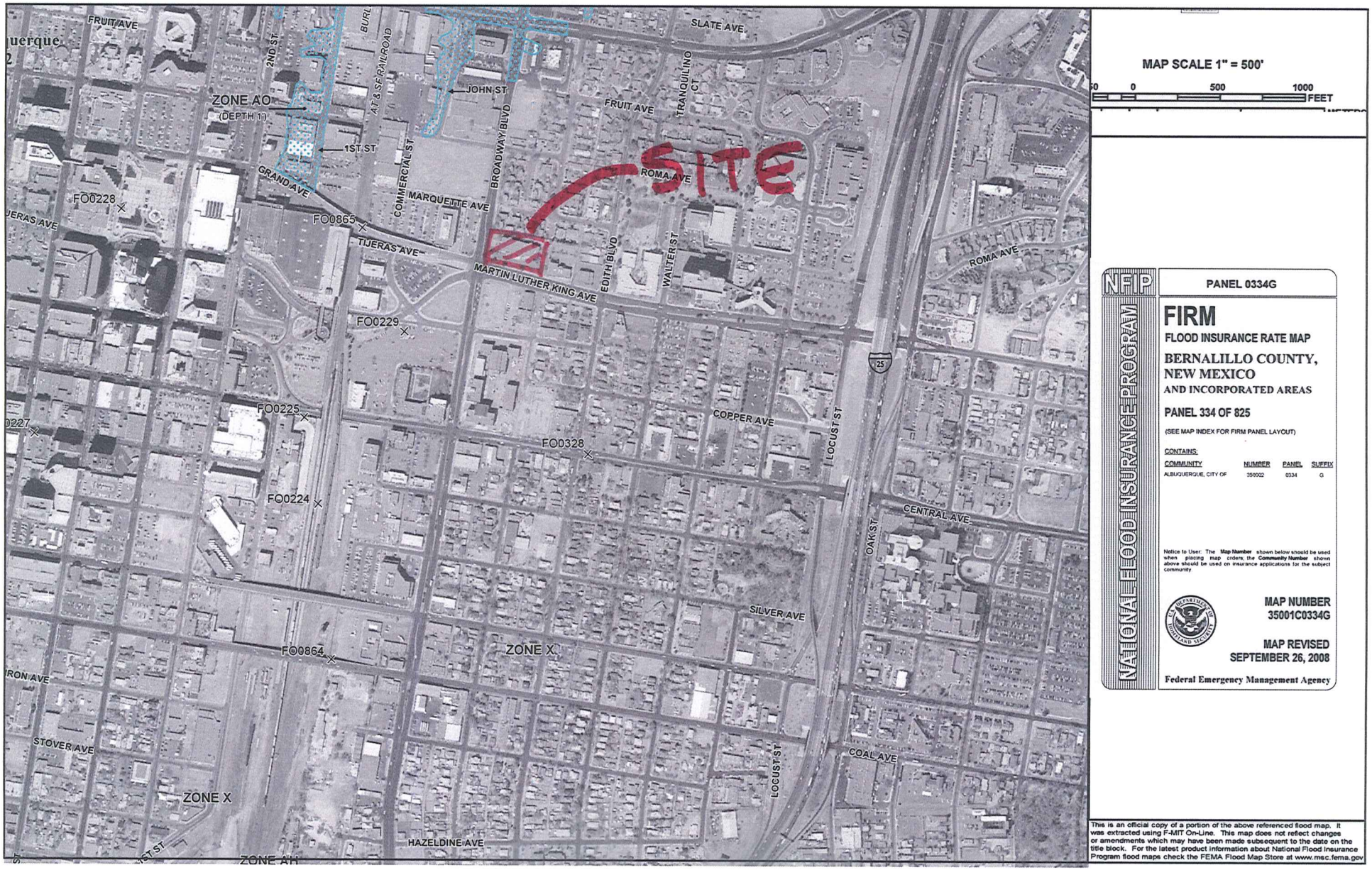
- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone
- Petroglyph Mon.

Map amended through: 9/2/2014

LOCATION MAP

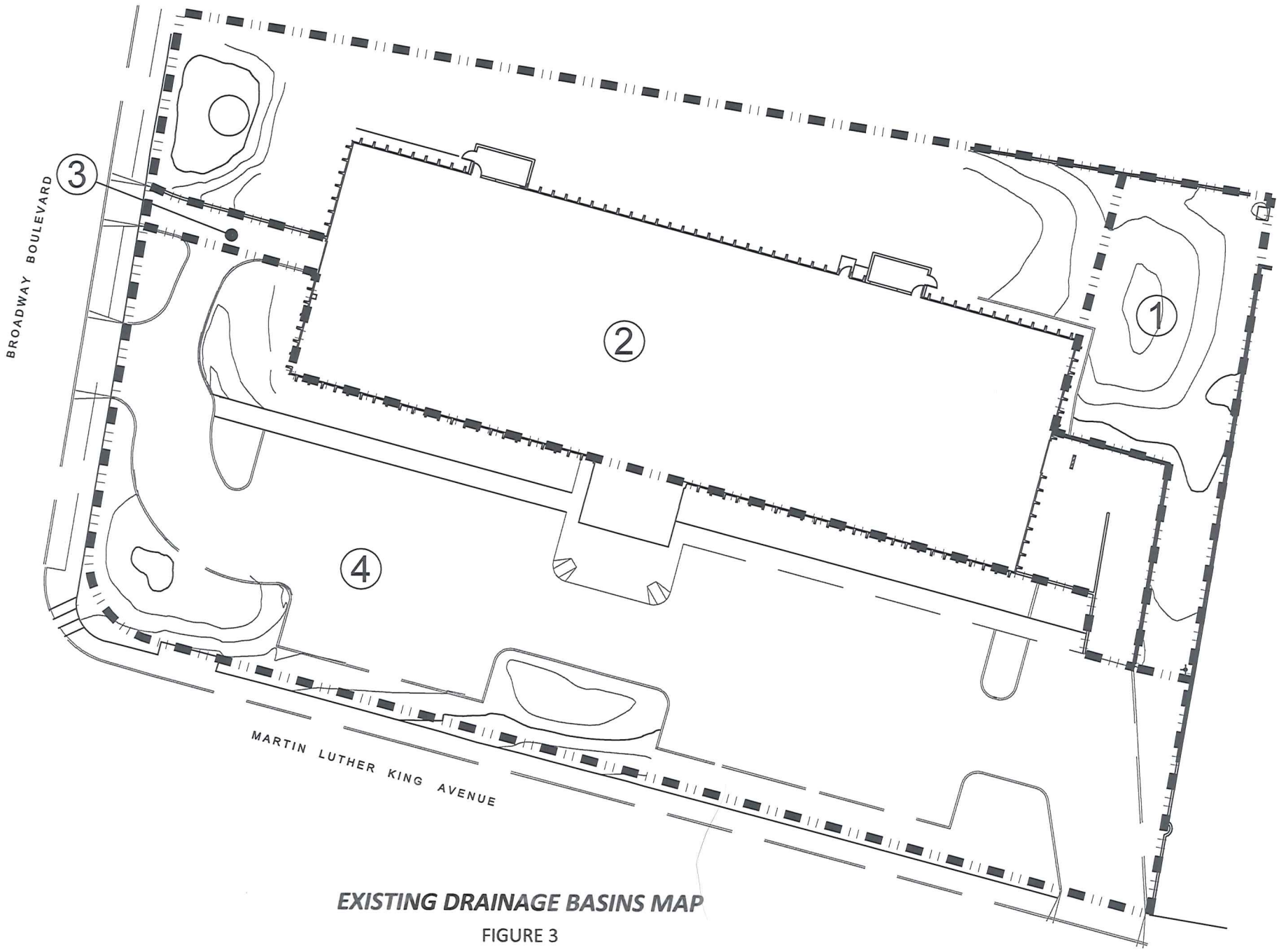
FIGURE 1

Feet: 750 1,500



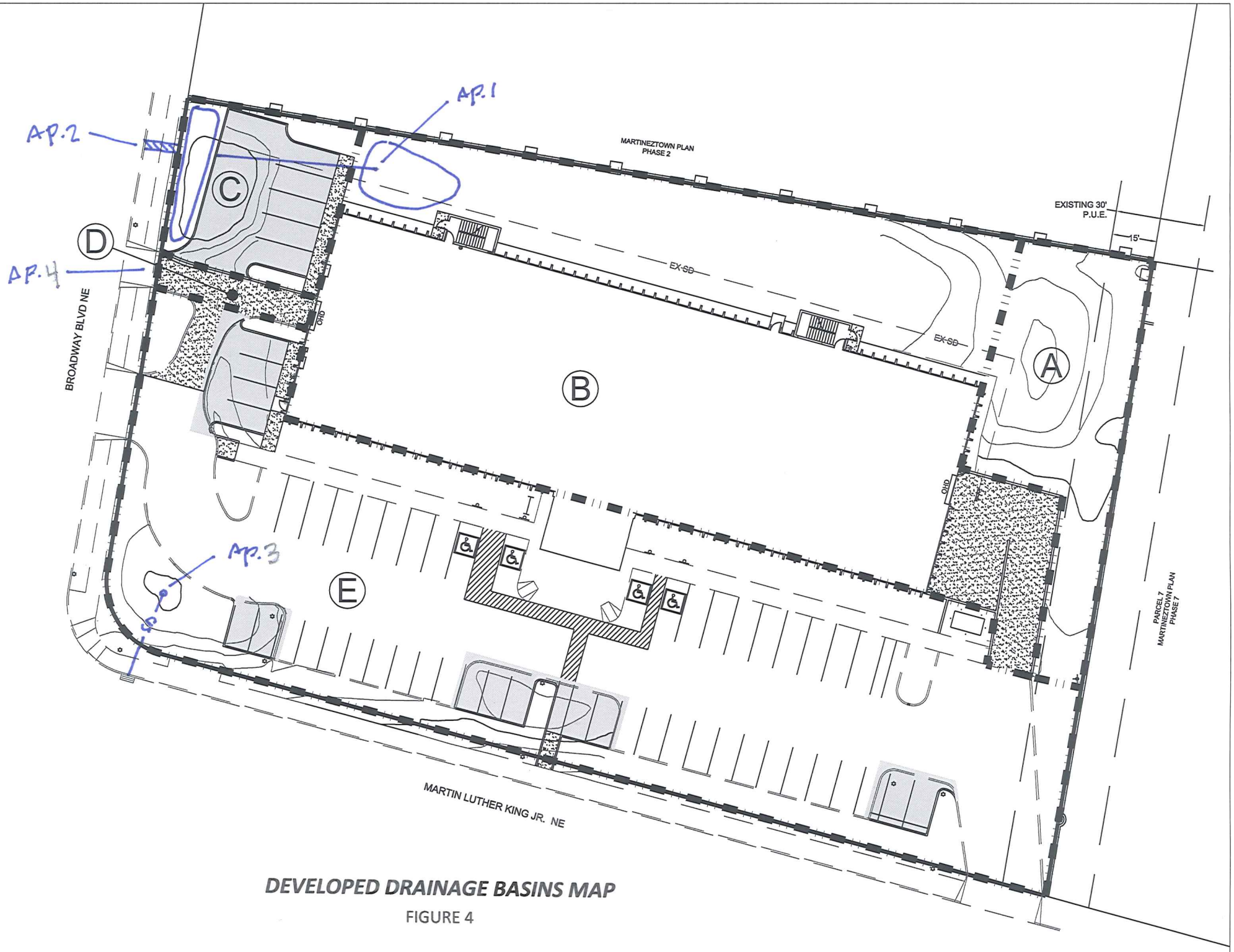
FIRM PANEL

FIGURE 2



EXISTING DRAINAGE BASINS MAP

FIGURE 3



DEVELOPED DRAINAGE BASINS MAP

FIGURE 4

STORM DRAIN FACITILITIES MAP

FIGURE 5

CALCULATIONS

PONDING CRITERIA

SITE PONDING CRITERIA

I. FIRST FLUSH

By ordinance the site is required to retain the 90th percentile rainfall depth. In order to comply with this criteria, where practical, all surface areas will be routed through landscaped areas before release to downstream public drainage facilities. This is a re-developing site that is fully landscaped. Surface areas were constricted to drain directly to on-site retention ponds. The proposed plan will rout runoff through one existing retention pond, one reconstructed detention pond and two new detention ponds. The re-constructed pond bottoms will be placed 4' below the outlet structures. Storage in excess of the 90th percentile rainfall will be provided as illustrated below.

90th percentile depth	0.44"
Less initial abstraction	0.10"
Total retained depth	034"

Ponding requirement = Ad(0.34") = 0.96 ac(43,560 sf/ac)(0.34"?12"/ft) = 1,184 cf

First Flush storage provided:

Pond A	392 cf
Pond B	26 cf
Pond C	40 cf
Pond E	112 cf
Total	570 cf

This site is re-developing and must accept many of the existing surface improvements as they are. It must also be noted that all roof drainage is routed overland through Basin "B" which is landscaped with established sod. Initial abstraction and infiltration will be must higher than typical and is not considered in the requirement. Given these reasons the site complies with the Ordinance to the maximum extent possible.

II. DETENTION POND CRITERIA

The DMP for this site recommended on-site retention ponding in accordance with the drainage criteria at the time of development. Pre-design meetings with City staff established the allowable discharge rate at either the calculated existing discharge or 2.75 cfs/acre. AS determined by Ahymo, the existing conditions discharge from the site (assuming no retention storage) is 6.18 cfs, or 4.12 cfs/acre.

Since the site is fully developed and re-developing, most of the historic drainage patterns and improvements will remain. The existing retention pond in Basin "A" will remain. The proposed parking lot at the northwest corner of the site requires the existing retention pond to be eliminated. New detention ponds B and C will be constructed to manage Basins "B" and "C" flows.

On-site Basin "D" will free discharge 0.11 cfs thru the west drivepad. Basin "E" will drain through reconstructed detention Pond E. Pond E will be converted to a detention pond by connecting a 12" Storm drain to an existing storm inlet at Martin Luther King Jr.

The proposed detention pond capacities are summarized below:

POND B - STORAGE INDICATION TABLE

ELEVATION feet	Q OUT cfs	AREA sf	VOLUME acre feet
4966.00	0.0	0	0.0000
4967.00	2.1	140	0.0032
4968.00	4.0	540	0.0124

As illustrated by the AHYMO Output file, the discharge from Pond B is calculated at 2.32 cfs, with a maximum water surface elevation of 4967.11 feet.

POND C - STORAGE INDICATION TABLE

ELEVATION feet	Q OUT cfs	AREA sf	VOLUME acre feet
4964.50	0.00	0	0.0000
4965.20	2.75	122	0.0028

As illustrated by the AHYMO Output file, the discharge from Pond C is calculated at 2.63 cfs, with a maximum water surface elevation of 4965.17 feet.

POND E - STORAGE INDICATION TABLE

ELEVATION feet	Q OUT cfs	AREA sf	VOLUME acre feet
4965.00	0.0	0	0.0000
4966.00	2.1	923	0.0212
4966.20	2.4	1343	0.0308

As illustrated by the AHYMO Output file, the discharge from Pond E is calculated at 2.23 cfs, with a maximum water surface elevation of 4966.09 feet.

The total developed discharge from the project site is as follows:

Pond C (AP-2)	2.63 cfs
Pond E (AP-3)	2.23 cfs
Basin "D" (AP-4)	0.11 cfs
Total	4.97 cfs<Q100 Existing (6.18 cfs)

DRAINAGE STRUCTURE CAPACITIES

LORENZ
DESIGN & CONSULTING, LLC
Civil Engineering | Construction Management

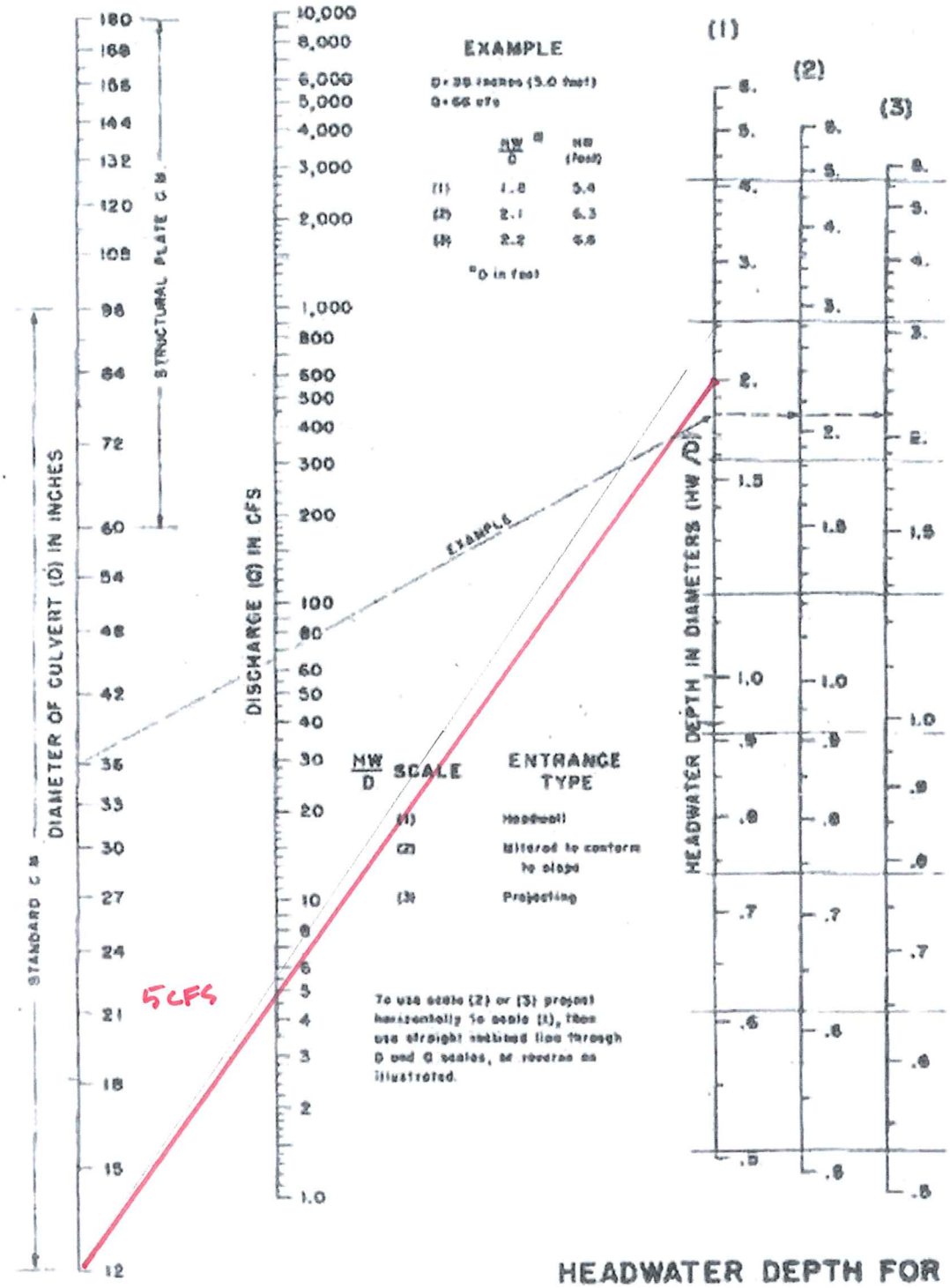
PROJECT: Jackson Wink MMA Academy
DATE: 02-13-2015 PAGE: 1

SIDEWALK CULVERT WIDTHS

POND 'C' OUTLET

ANALYSIS POINT	STRUCTURE TYPE	Q100 cfs	H ft	L FT
AP-2	24" SWC	2.23	0.67	2.0

2



HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN 1963

Q100 POND B = 2.45 CFS < 5 CFS ✓
POND E = 2.23 CFS

Free Online Manning Pipe Flow Calculator

Manning Formula Uniform Pipe Flow at Given Slope and Depth

Can you help me translate this calculator to your language or host this calculator at your web site?

Printable Title

Printable Subtitle

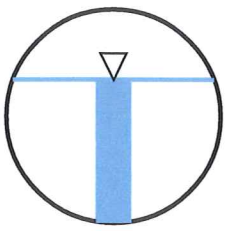
Q100 POND B = 2.45 cfs
POND C = 2.23 cfs < 3.98 cfs

Set units: m | mm | ft | inches

Pipe diameter, d_0	1 ft
Manning roughness, n ?	.013
Pressure slope (possibly ? equal to pipe slope), S_0	2 % rise/run
Percent of (or ratio to) full depth (100% or 1 if flowing full)	67 %

Results:

Flow, q	3.9768	cfs
Velocity, v	7.1095	ft/sec
Velocity head, h_v	0.7856	ft
Flow area	0.5594	ft^2
Wetted perimeter	1.9177	ft
Hydraulic radius	0.2917	ft
Top width, T	0.9404	ft
Froude number, F	1.63	
Shear stress (tractive force), tau	0.8367	psf



Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way?

Last Modified 02/13/2015 16:50:00

AHYMO INPUT FILE

```
*************************************************************************
*                        JACKSON - WINK MMA ACADEMY
*                            PROJECT HYDROLOGY
*************************************************************************
START               TIME=0.0  PUNCH CODE=0
LOCATION            ALBUQUERQUE
RAINFALL            TYPE=1  RAIN QUARTER=0.0  RAIN ONE=2.01
                    RAIN SIX=2.35  RAIN DAY=2.75  DT=0.03333 HRS
*************************************************************************
************************
* EXISTING CONDITIONS  *
************************
* SITE - 1.50 ACRES
COMPUTE NM HYD      ID=1  HYD NO=EX-SITE  DA=0.002344 SQ MI
                    PER A=0 PER B=27 PER C=12  PER D=61
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=1  CODE=20
* BASIN 1 - 0.11 ACRES
COMPUTE NM HYD      ID=2  HYD NO=BASIN-1  DA=0.000172 SQ MI
                    PER A=0 PER B=100 PER C=0 PER D=0
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=2  CODE=20
* BASIN 2 - 0.67 ACRES
COMPUTE NM HYD      ID=3  HYD NO=BASIN-2  DA=0.001047 SQ MI
                    PER A=0 PER B=50 PER C=0  PER D=50
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=3  CODE=20
* BASIN 3 - 0.02 ACRES
COMPUTE NM HYD      ID=4  HYD NO=BASIN-3  DA=0.000031 SQ MI
                    PER A=0 PER B=0 PER C=0  PER D=100
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=4  CODE=20
* BASIN 4 - 0.70 ACRES
COMPUTE NM HYD      ID=5  HYD NO=BASIN-4  DA=0.001094 SQ MI
                    PER A=0 PER B=0 PER C=32  PER D=68
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=5  CODE=20
************************
* PROPOSED CONDITIONS  *
************************
* SITE - 1.50 ACRES
COMPUTE NM HYD      ID=6  HYD NO=PRO-SITE  DA=0.002344 SQ MI
                    PER A=0 PER B=23 PER C=13  PER D=64
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=6  CODE=20
* BASIN A - 0.11 ACRES
COMPUTE NM HYD      ID=7  HYD NO=BASIN-A  DA=0.000172 SQ MI
                    PER A=0 PER B=100 PER C=0 PER D=0
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=7  CODE=20
* BASIN B - 0.60 ACRES
COMPUTE NM HYD      ID=8  HYD NO=BASIN-B  DA=0.000938 SQ MI
                    PER A=0 PER B=38 PER C=0  PER D=62
                    TP=0.1333 HR  MASS RAIN=-1
```

```
PRINT HYD           ID=8  CODE=20
* BASIN C - 0.07 ACRES
COMPUTE NM HYD      ID=9  HYD NO=BASIN-C  DA=0.000109 SQ MI
                    PER A=0 PER B=0 PER C=30  PER D=70
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=9  CODE=20
* BASIN D - 0.02 ACRES
COMPUTE NM HYD      ID=10  HYD NO=BASIN-D  DA=0.000031 SQ MI
                    PER A=0 PER B=0 PER C=0  PER D=100
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=10  CODE=20
* BASIN E - 0.70 ACRES
COMPUTE NM HYD      ID=11  HYD NO=BASIN-E  DA=0.001094 SQ MI
                    PER A=0 PER B=0 PER C=25  PER D=75
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD           ID=11  CODE=20
*****************************************************************
* ROUTE BASIN B THROUGH POND B AT AP-1 THRU
* 12 INCH SD TO POND C.
*****************************************************************
ROUTE RESERVOIR     ID=12 HYD NO=POND.B.OUT  INFLOW ID=8  CODE=10
                    OUT (CFS)   STORAGE (AC-FT)    ELEV (FT)
                    0.0           0                  66.0
                    2.1           0.0032             67.0
                    4.0           0.0124             68.0
PRINT HYD           ID=12 CODE=20
ADD HYD             ID=13 HYD NO=HYD-AP-2    ID I=9 ID II=12
PRINT HYD           ID=13 CODE=20
*****************************************************************
* ROUTE BASINS B AND C THROUGH POND C AT AP-2 THRU
* 24 INCH SW CULVERT TO BROADWAY
*****************************************************************
ROUTE RESERVOIR     ID=14 HYD NO=POND.C.OUT  INFLOW ID=13  CODE=10
                    OUT (CFS)   STORAGE (AC-FT)    ELEV (FT)
                    0.0           0                  64.5
                    2.75          0.0028             65.2
PRINT HYD           ID=14 CODE=20
*****************************************************************
* ROUTE BASIN E THROUGH POND E AT AP-3 THRU
* 12 INCH SD TO EXISTING STORM INLET AT MLK JR.
*****************************************************************
ROUTE RESERVOIR     ID=15 HYD NO=POND.C.OUT  INFLOW ID=11  CODE=10
                    OUT (CFS)   STORAGE (AC-FT)    ELEV (FT)
                    0.0           0                  65.0
                    2.1           0.0212             66.0
                    2.4           0.0308             66.2
PRINT HYD           ID=15 CODE=20
FINISH
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AHYMO OUTPUT FILES

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4) - Ver. S4.01a, Rel: 01a RUN DATE (MON/DAY/YR) =02/12/2015
INPUT FILE = P:\14-034 - Jackson Wink Academy MMA Gym\Drainage\Wink.1.DAT USER NO.= Lorenz-NMSingleA33825816

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	
START										TIME=	0.00
LOCATION		ALBUQUERQUE									
RAINFALL TYPE= 1 NOAA 14										RAIN6=	2.350
COMPUTE NM HYD	EX-SITE	-	1	0.00234	6.18	0.211	1.68405	1.533	4.120	PER IMP=	61.00
COMPUTE NM HYD	BASIN-1	-	2	0.00017	0.31	0.009	0.95319	1.533	2.858	PER IMP=	0.00
COMPUTE NM HYD	BASIN-2	-	3	0.00105	2.56	0.085	1.52818	1.533	3.823	PER IMP=	50.00
COMPUTE NM HYD	BASIN-3	-	4	0.00003	0.11	0.003	2.10318	1.500	5.308	PER IMP=	100.00
COMPUTE NM HYD	BASIN-4	-	5	0.00109	3.10	0.106	1.81783	1.533	4.425	PER IMP=	68.00
COMPUTE NM HYD	PRO-SITE	-	6	0.00234	6.28	0.215	1.72120	1.533	4.188	PER IMP=	64.00
COMPUTE NM HYD	BASIN-A	-	7	0.00017	0.31	0.009	0.95319	1.533	2.858	PER IMP=	0.00
COMPUTE NM HYD	BASIN-B	-	8	0.00094	2.45	0.083	1.66618	1.533	4.076	PER IMP=	62.00
COMPUTE NM HYD	BASIN-C	-	9	0.00011	0.33	0.011	1.83567	1.533	4.700	PER IMP=	70.00
COMPUTE NM HYD	BASIN-D	-	10	0.00003	0.11	0.003	2.10318	1.500	5.308	PER IMP=	100.00
COMPUTE NM HYD	BASIN-E	-	11	0.00109	3.16	0.110	1.88025	1.533	4.519	PER IMP=	75.00
ROUTE RESERVOIR	POND.B.OUT	8	12	0.00094	2.32	0.083	1.66586	1.567	3.870	AC-FT=	0.004
ADD HYD	HYD-AP-2	9&12	13	0.00105	2.63	0.094	1.68335	1.567	3.920		
ROUTE RESERVOIR	POND.C.OUT	13	14	0.00105	2.63	0.094	1.68335	1.567	3.924	AC-FT=	0.003
ROUTE RESERVOIR	POND.C.OUT	11	15	0.00109	2.24	0.110	1.88000	1.633	3.193	AC-FT=	0.026
FINISH											

```
    AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
         RUN DATE (MON/DAY/YR) = 02/12/2015
         START TIME (HR:MIN:SEC) = 11:43:40     USER NO.= Lorenz-NMSingleA33825816
         INPUT FILE = P:\14-034 - Jackson Wink Academy MMA Gym\Drainage\Wink.1.DAT

**************************************************************************
*                       JACKSON - WINK MMA ACADEMY
*                           PROJECT HYDROLOGY
**************************************************************************
START              TIME=0.0  PUNCH CODE=0
LOCATION           ALBUQUERQUE
     City of Albuquerque soil infiltration values (LAND FACTORS) used for computations.
     Land Treatment     Initial Abstr.(in)    Unif. Infilt.(in/hour)
          A             0.65                  1.67
          B             0.50                  1.25
          C             0.35                  0.83
          D             0.10                  0.04

RAINFALL           TYPE=1  RAIN QUARTER=0.0  RAIN ONE=2.01
                   RAIN SIX=2.35  RAIN DAY=2.75  DT=0.03333 HRS

               6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
               DT =   0.033330 HOURS       END TIME =     5.999400 HOURS
                 0.0000  0.0015  0.0030  0.0046  0.0063  0.0080  0.0099
                 0.0117  0.0138  0.0159  0.0180  0.0226  0.0272  0.0321
                 0.0372  0.0424  0.0480  0.0537  0.0595  0.0654  0.0713
                 0.0776  0.0838  0.0904  0.0974  0.1044  0.1124  0.1204
                 0.1340  0.1534  0.1727  0.1987  0.2246  0.2558  0.2921
                 0.3284  0.3829  0.4374  0.5117  0.6058  0.7000  0.9502
                 1.2011  1.3965  1.5355  1.6746  1.7448  1.8147  1.8717
                 1.9157  1.9597  1.9903  2.0208  2.0473  2.0696  2.0919
                 2.1089  2.1258  2.1380  2.1455  2.1529  2.1595  2.1661
                 2.1721  2.1775  2.1829  2.1879  2.1928  2.1977  2.2024
                 2.2072  2.2095  2.2118  2.2141  2.2163  2.2185  2.2206
                 2.2227  2.2247  2.2267  2.2287  2.2307  2.2326  2.2345
                 2.2363  2.2382  2.2399  2.2417  2.2435  2.2452  2.2469
                 2.2485  2.2502  2.2518  2.2534  2.2550  2.2565  2.2581
                 2.2596  2.2610  2.2625  2.2640  2.2654  2.2668  2.2682
                 2.2697  2.2710  2.2724  2.2738  2.2751  2.2765  2.2778
                 2.2791  2.2804  2.2817  2.2830  2.2843  2.2856  2.2868
                 2.2881  2.2893  2.2905  2.2917  2.2929  2.2941  2.2953
                 2.2965  2.2977  2.2988  2.3000  2.3012  2.3023  2.3034
                 2.3045  2.3057  2.3068  2.3079  2.3090  2.3100  2.3111
                 2.3122  2.3132  2.3143  2.3153  2.3164  2.3174  2.3184
                 2.3195  2.3205  2.3215  2.3225  2.3235  2.3245  2.3255
                 2.3264  2.3274  2.3284  2.3293  2.3303  2.3312  2.3322
                 2.3331  2.3341  2.3350  2.3359  2.3368  2.3377  2.3386
                 2.3395  2.3404  2.3413  2.3422  2.3431  2.3440  2.3448
                 2.3457  2.3466  2.3474  2.3483  2.3491  2.3500
```

```
**************************************************************************
************************
* EXISTING CONDITIONS  *
************************
* SITE - 1.50 ACRES
COMPUTE NM HYD       ID=1  HYD NO=EX-SITE  DA=0.002344 SQ MI
                     PER A=0 PER B=27 PER C=12  PER D=61
                     TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   5.6451    CFS   UNIT VOLUME =   0.9973       B =   526.28      P60 = 2.0100
     AREA =     0.001430 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.124506HR    TP =  0.133300HR    K/TP RATIO =  0.934025     SHAPE CONSTANT, N =  3.786679
     UNIT PEAK =   2.3364    CFS   UNIT VOLUME =   0.9945       B =   340.69      P60 = 2.0100
     AREA =     0.000914 SQ MI    IA =   0.45385 INCHES    INF =   1.12077 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD            ID=1  CODE=20

                                    HYDROGRAPH FROM AREA EX-SITE

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      1.5          2.666      0.1          4.000      0.0          5.333      0.0
     0.667      0.0          2.000      0.8          3.333      0.0          4.666      0.0          5.999      0.0

    RUNOFF VOLUME =     1.68405 INCHES     =       0.2105 ACRE-FEET
    PEAK DISCHARGE RATE =       6.18 CFS  AT   1.533 HOURS   BASIN AREA =  0.0023 SQ. MI.


* BASIN 1 - 0.11 ACRES
COMPUTE NM HYD       ID=2  HYD NO=BASIN-1  DA=0.000172 SQ MI
                     PER A=0 PER B=100 PER C=0 PER D=0
                     TP=0.1333 HR  MASS RAIN=-1

     K =  0.132088HR    TP =  0.133300HR    K/TP RATIO =  0.990905     SHAPE CONSTANT, N =  3.562974
     UNIT PEAK =  0.41923    CFS   UNIT VOLUME =   0.9666       B =   324.90      P60 = 2.0100
     AREA =     0.000172 SQ MI    IA =   0.50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD            ID=2  CODE=20

                                    HYDROGRAPH FROM AREA BASIN-1

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
```

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	0.667	0.0	1.333	0.0	2.000	0.0		

RUNOFF VOLUME = 0.95319 INCHES = 0.0087 ACRE-FEET
PEAK DISCHARGE RATE = 0.31 CFS AT 1.533 HOURS BASIN AREA = 0.0002 SQ. MI.

```
* BASIN 2 - 0.67 ACRES
COMPUTE NM HYD      ID=3  HYD NO=BASIN-2  DA=0.001047 SQ MI
                    PER A=0 PER B=50 PER C=0  PER D=50
                    TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   2.0668    CFS   UNIT VOLUME =   0.9941       B =   526.28      P60 = 2.0100
     AREA =     0.000524 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.132088HR    TP =  0.133300HR    K/TP RATIO =  0.990905     SHAPE CONSTANT, N =  3.562974
     UNIT PEAK =   1.2760    CFS   UNIT VOLUME =   0.9900       B =   324.90      P60 = 2.0100
     AREA =     0.000524 SQ MI    IA =   0.50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD           ID=3  CODE=20
```

HYDROGRAPH FROM AREA BASIN-2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.333	0.6	2.666	0.0	4.000	0.0	5.333	0.0
0.667	0.0	2.000	0.3	3.333	0.0	4.666	0.0	5.999	0.0

RUNOFF VOLUME = 1.52818 INCHES = 0.0853 ACRE-FEET
PEAK DISCHARGE RATE = 2.56 CFS AT 1.533 HOURS BASIN AREA = 0.0010 SQ. MI.

```
* BASIN 3 - 0.02 ACRES
COMPUTE NM HYD      ID=4  HYD NO=BASIN-3  DA=0.000031 SQ MI
                    PER A=0 PER B=0 PER C=0  PER D=100
                    TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =  0.12239    CFS   UNIT VOLUME =   0.9033       B =   526.28      P60 = 2.0100
     AREA =     0.000031 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD           ID=4  CODE=20
```

HYDROGRAPH FROM AREA BASIN-3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	0.667	0.0	1.333	0.0	2.000	0.0		

RUNOFF VOLUME = 2.10318 INCHES = 0.0035 ACRE-FEET
PEAK DISCHARGE RATE = 0.11 CFS AT 1.500 HOURS BASIN AREA = 0.0000 SQ. MI.

* BASIN 4 - 0.70 ACRES
COMPUTE NM HYD ID=5 HYD NO=BASIN-4 DA=0.001094 SQ MI
PER A=0 PER B=0 PER C=32 PER D=68
TP=0.1333 HR MASS RAIN=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 2.9370 CFS UNIT VOLUME = 0.9955 B = 526.28 P60 = 2.0100
AREA = 0.000744 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

K = 0.107446HR TP = 0.133300HR K/TP RATIO = 0.806046 SHAPE CONSTANT, N = 4.440407
UNIT PEAK = 1.0073 CFS UNIT VOLUME = 0.9879 B = 383.54 P60 = 2.0100
AREA = 0.000350 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=5 CODE=20

HYDROGRAPH FROM AREA BASIN-4

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.333	0.8	2.666	0.0	4.000	0.0	5.333	0.0
0.667	0.0	2.000	0.4	3.333	0.0	4.666	0.0	5.999	0.0

RUNOFF VOLUME = 1.81783 INCHES = 0.1061 ACRE-FEET
PEAK DISCHARGE RATE = 3.10 CFS AT 1.533 HOURS BASIN AREA = 0.0011 SQ. MI.

****
* PROPOSED CONDITIONS *
****
* SITE - 1.50 ACRES
COMPUTE NM HYD ID=6 HYD NO=PRO-SITE DA=0.002344 SQ MI
PER A=0 PER B=23 PER C=13 PER D=64
TP=0.1333 HR MASS RAIN=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428

```
     UNIT PEAK =   5.9227    CFS   UNIT VOLUME =   0.9976       B =   526.28      P60 = 2.0100
     AREA =     0.001500 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.123189HR    TP =  0.133300HR    K/TP RATIO =  0.924150     SHAPE CONSTANT, N =  3.829069
     UNIT PEAK =   2.1752    CFS   UNIT VOLUME =   0.9943       B =   343.61      P60 = 2.0100
     AREA =     0.000844 SQ MI    IA =   0.44583 INCHES    INF =   1.09833 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD           ID=6  CODE=20

                                    HYDROGRAPH FROM AREA PRO-SITE

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      1.6          2.666      0.1          4.000      0.0          5.333      0.0
     0.667      0.0          2.000      0.8          3.333      0.0          4.666      0.0          5.999      0.0

    RUNOFF VOLUME =     1.72120 INCHES     =       0.2152 ACRE-FEET
    PEAK DISCHARGE RATE =       6.28 CFS  AT   1.533 HOURS   BASIN AREA =  0.0023 SQ. MI.


* BASIN A - 0.11 ACRES
COMPUTE NM HYD      ID=7  HYD NO=BASIN-A  DA=0.000172 SQ MI
                    PER A=0 PER B=100 PER C=0 PER D=0
                    TP=0.1333 HR  MASS RAIN=-1

     K =  0.132088HR    TP =  0.133300HR    K/TP RATIO =  0.990905     SHAPE CONSTANT, N =  3.562974
     UNIT PEAK =  0.41923    CFS   UNIT VOLUME =   0.9666       B =   324.90      P60 = 2.0100
     AREA =     0.000172 SQ MI    IA =   0.50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD           ID=7  CODE=20

                                    HYDROGRAPH FROM AREA BASIN-A

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          0.667      0.0          1.333      0.0          2.000      0.0

    RUNOFF VOLUME =     0.95319 INCHES     =       0.0087 ACRE-FEET
    PEAK DISCHARGE RATE =       0.31 CFS  AT   1.533 HOURS   BASIN AREA =  0.0002 SQ. MI.


* BASIN B - 0.60 ACRES
COMPUTE NM HYD      ID=8  HYD NO=BASIN-B  DA=0.000938 SQ MI
                    PER A=0 PER B=38 PER C=0  PER D=62
```

TP=0.1333 HR MASS RAIN=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 2.2960 CFS UNIT VOLUME = 0.9941 B = 526.28 P60 = 2.0100
AREA = 0.000582 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

K = 0.132088HR TP = 0.133300HR K/TP RATIO = 0.990905 SHAPE CONSTANT, N = 3.562974
UNIT PEAK = 0.86878 CFS UNIT VOLUME = 0.9845 B = 324.90 P60 = 2.0100
AREA = 0.000356 SQ MI IA = 0.50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=8 CODE=20

HYDROGRAPH FROM AREA BASIN-B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.333	0.6	2.666	0.0	4.000	0.0	5.333	0.0
0.667	0.0	2.000	0.3	3.333	0.0	4.666	0.0	5.999	0.0

RUNOFF VOLUME = 1.66618 INCHES = 0.0834 ACRE-FEET
PEAK DISCHARGE RATE = 2.45 CFS AT 1.533 HOURS BASIN AREA = 0.0009 SQ. MI.

* BASIN C - 0.07 ACRES
COMPUTE NM HYD ID=9 HYD NO=BASIN-C DA=0.000109 SQ MI
PER A=0 PER B=0 PER C=30 PER D=70
TP=0.1333 HR MASS RAIN=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 0.30124 CFS UNIT VOLUME = 0.9610 B = 526.28 P60 = 2.0100
AREA = 0.000076 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

K = 0.107446HR TP = 0.133300HR K/TP RATIO = 0.806046 SHAPE CONSTANT, N = 4.440407
UNIT PEAK = 0.94086E-01CFS UNIT VOLUME = 0.8782 B = 383.54 P60 = 2.0100
AREA = 0.000033 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=9 CODE=20

HYDROGRAPH FROM AREA BASIN-C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.333	0.1	2.666	0.0	4.000	0.0	5.333	0.0

```
     0.667       0.0          2.000       0.0          3.333       0.0          4.666       0.0          5.999       0.0

    RUNOFF VOLUME =      1.83567 INCHES      =        0.0107 ACRE-FEET
    PEAK DISCHARGE RATE =        0.33 CFS  AT    1.533 HOURS    BASIN AREA =  0.0001 SQ. MI.


* BASIN D - 0.02 ACRES
COMPUTE NM HYD       ID=10  HYD NO=BASIN-D  DA=0.000031 SQ MI
                     PER A=0 PER B=0 PER C=0  PER D=100
                     TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =  0.12239    CFS   UNIT VOLUME =   0.9033       B =   526.28      P60 = 2.0100
     AREA =     0.000031 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD            ID=10  CODE=20

                                        HYDROGRAPH FROM AREA BASIN-D

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000       0.0          0.667       0.0          1.333       0.0          2.000       0.0

    RUNOFF VOLUME =      2.10318 INCHES      =        0.0035 ACRE-FEET
    PEAK DISCHARGE RATE =        0.11 CFS  AT    1.500 HOURS    BASIN AREA =  0.0000 SQ. MI.


* BASIN E - 0.70 ACRES
COMPUTE NM HYD       ID=11  HYD NO=BASIN-E  DA=0.001094 SQ MI
                     PER A=0 PER B=0 PER C=25  PER D=75
                     TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.2394    CFS   UNIT VOLUME =   0.9961       B =   526.28      P60 = 2.0100
     AREA =     0.000821 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.107446HR    TP =  0.133300HR    K/TP RATIO =  0.806046     SHAPE CONSTANT, N =  4.440407
     UNIT PEAK =  0.78693    CFS   UNIT VOLUME =   0.9833       B =   383.54      P60 = 2.0100
     AREA =     0.000274 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD            ID=11  CODE=20

                                        HYDROGRAPH FROM AREA BASIN-E
```

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.333	0.9	2.666	0.0	4.000	0.0	5.333	0.0
0.667	0.0	2.000	0.4	3.333	0.0	4.666	0.0	5.999	0.0

RUNOFF VOLUME = 1.88025 INCHES = 0.1097 ACRE-FEET
PEAK DISCHARGE RATE = 3.16 CFS AT 1.533 HOURS BASIN AREA = 0.0011 SQ. MI.

```
*****************************************************************
* ROUTE BASIN B THROUGH POND B AT AP-1 THRU
* 12 INCH SD TO POND C.
*****************************************************************
ROUTE RESERVOIR     ID=12 HYD NO=POND.B.OUT  INFLOW ID=8  CODE=10
                    OUT (CFS)   STORAGE (AC-FT)    ELEV (FT)
                    0.0           0                  66.0
                    2.1           0.0032             67.0
                    4.0           0.0124             68.0

  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
```

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	66.00	0.000	0.00
0.33	0.00	66.00	0.000	0.00
0.67	0.00	66.00	0.000	0.00
1.00	0.07	66.03	0.000	0.06
1.33	0.59	66.25	0.001	0.52
1.67	1.41	66.75	0.002	1.57
2.00	0.33	66.17	0.001	0.36
2.33	0.10	66.05	0.000	0.10
2.67	0.02	66.01	0.000	0.03
3.00	0.01	66.00	0.000	0.01
3.33	0.00	66.00	0.000	0.00

```
 PEAK DISCHARGE =        2.323 CFS - PEAK OCCURS AT HOUR    1.57
 MAXIMUM WATER SURFACE ELEVATION =       67.118
 MAXIMUM STORAGE =        0.0043 AC-FT      INCREMENTAL TIME=    0.033330HRS

PRINT HYD           ID=12 CODE=20
```

HYDROGRAPH FROM AREA POND.B.OUT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.333	0.5	2.666	0.0	4.000	0.0	5.333	0.0
0.667	0.0	2.000	0.4	3.333	0.0	4.666	0.0	5.999	0.0

RUNOFF VOLUME = 1.66586 INCHES = 0.0833 ACRE-FEET

```
    PEAK DISCHARGE RATE =       2.32 CFS  AT   1.567 HOURS   BASIN AREA =  0.0009 SQ. MI.


ADD HYD             ID=13 HYD NO=HYD-AP-2    ID I=9 ID II=12
PRINT HYD           ID=13 CODE=20

                                    HYDROGRAPH FROM AREA HYD-AP-2

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      0.6          2.666      0.0          4.000      0.0          5.333      0.0
     0.667      0.0          2.000      0.4          3.333      0.0          4.666      0.0          5.999      0.0

    RUNOFF VOLUME =     1.68335 INCHES     =       0.0940 ACRE-FEET
    PEAK DISCHARGE RATE =       2.63 CFS  AT   1.567 HOURS   BASIN AREA =  0.0010 SQ. MI.


**********************************************************************
* ROUTE BASINS B AND C THROUGH POND C AT AP-2 THRU
* 24 INCH SW CULVERT TO BROADWAY
**********************************************************************
ROUTE RESERVOIR     ID=14 HYD NO=POND.C.OUT  INFLOW ID=13  CODE=10
                    OUT (CFS)   STORAGE (AC-FT)    ELEV (FT)
                    0.0           0                  64.5
                    2.75          0.0028             65.2

  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

    TIME      INFLOW    ELEV      VOLUME    OUTFLOW
    (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

     0.00       0.00     64.50      0.000      0.00
     0.33       0.00     64.50      0.000      0.00
     0.67       0.00     64.50      0.000      0.00
     1.00       0.07     64.51      0.000      0.06
     1.33       0.60     64.64      0.001      0.56
     1.67       1.76     65.00      0.002      1.95
     2.00       0.39     64.60      0.000      0.41
     2.33       0.11     64.53      0.000      0.11
     2.67       0.03     64.51      0.000      0.03
     3.00       0.01     64.50      0.000      0.01
     3.33       0.00     64.50      0.000      0.00
 PEAK DISCHARGE =        2.629 CFS - PEAK OCCURS AT HOUR    1.57
 MAXIMUM WATER SURFACE ELEVATION =       65.169
 MAXIMUM STORAGE =         0.0027 AC-FT      INCREMENTAL TIME=    0.033330HRS

PRINT HYD           ID=14 CODE=20
```

HYDROGRAPH FROM AREA POND.C.OUT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.333	0.6	2.666	0.0	4.000	0.0	5.333	0.0
0.667	0.0	2.000	0.4	3.333	0.0	4.666	0.0	5.999	0.0

RUNOFF VOLUME = 1.68335 INCHES = 0.0940 ACRE-FEET
PEAK DISCHARGE RATE = 2.63 CFS AT 1.567 HOURS BASIN AREA = 0.0010 SQ. MI.

****
* ROUTE BASIN E THROUGH POND E AT AP-3 THRU
* 12 INCH SD TO EXISTING STORM INLET AT MLK JR.
****
ROUTE RESERVOIR ID=15 HYD NO=POND.C.OUT INFLOW ID=11 CODE=10

OUT (CFS)	STORAGE (AC-FT)	ELEV (FT)
0.0	0	65.0
2.1	0.0212	66.0
2.4	0.0308	66.2

* * * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	65.00	0.000	0.00
0.33	0.00	65.00	0.000	0.00
0.67	0.00	65.00	0.000	0.00
1.00	0.10	65.02	0.000	0.03
1.33	0.87	65.23	0.005	0.49
1.67	1.80	66.08	0.025	2.21
2.00	0.44	65.38	0.008	0.80
2.33	0.12	65.10	0.002	0.22
2.67	0.02	65.03	0.001	0.05
3.00	0.01	65.01	0.000	0.01
3.33	0.01	65.00	0.000	0.01
3.67	0.00	65.00	0.000	0.00
4.00	0.01	65.00	0.000	0.01
4.33	0.01	65.00	0.000	0.01
4.67	0.01	65.00	0.000	0.01
5.00	0.01	65.00	0.000	0.01
5.33	0.01	65.00	0.000	0.01
5.67	0.01	65.00	0.000	0.01
6.00	0.01	65.01	0.000	0.01
6.33	0.00	65.00	0.000	0.00

PEAK DISCHARGE = 2.235 CFS - PEAK OCCURS AT HOUR 1.63
MAXIMUM WATER SURFACE ELEVATION = 66.090
MAXIMUM STORAGE = 0.0255 AC-FT INCREMENTAL TIME= 0.033330HRS

PRINT HYD ID=15 CODE=20

HYDROGRAPH FROM AREA POND.C.OUT

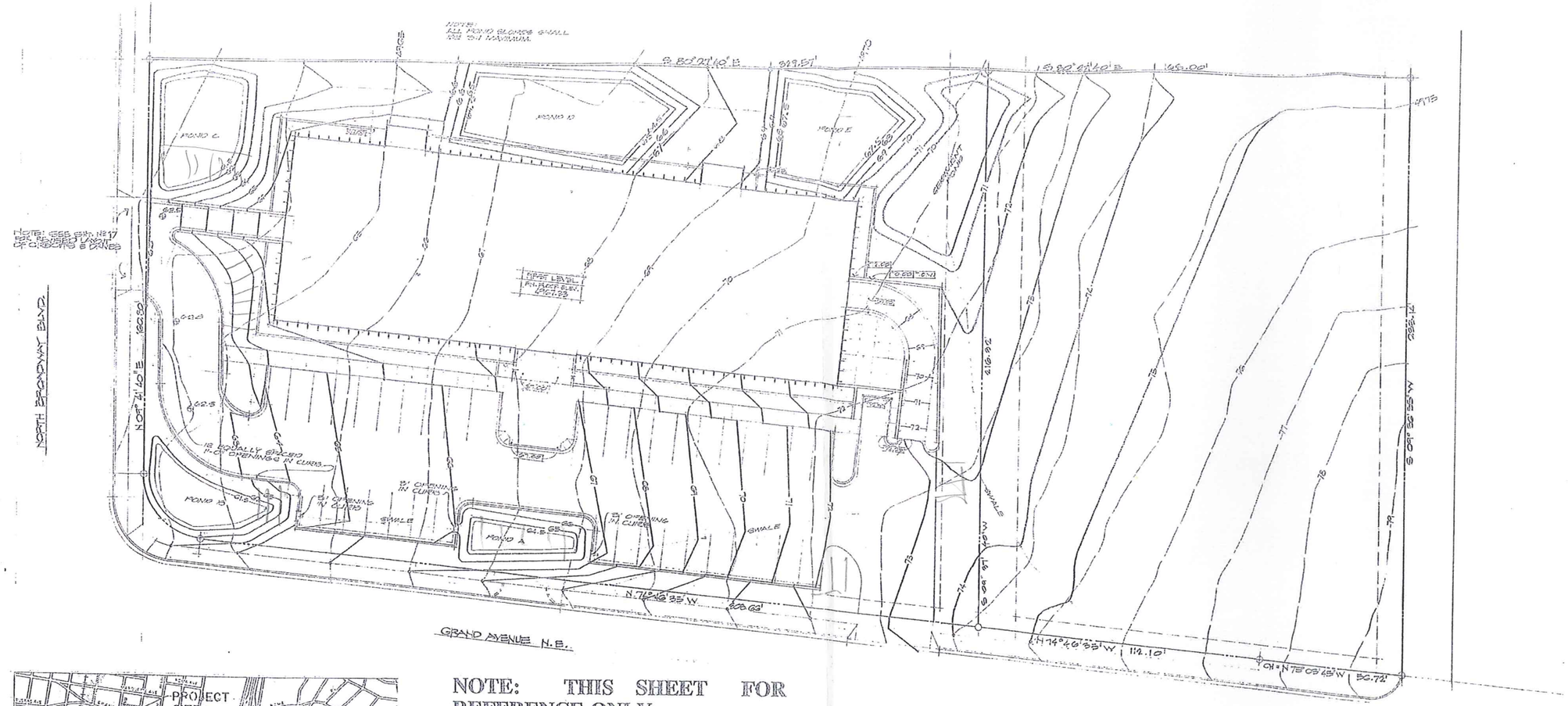
TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.333	0.5	2.666	0.1	4.000	0.0	5.333	0.0
0.667	0.0	2.000	0.8	3.333	0.0	4.666	0.0	5.999	0.0

RUNOFF VOLUME = 1.88000 INCHES = 0.1097 ACRE-FEET
PEAK DISCHARGE RATE = 2.24 CFS AT 1.633 HOURS BASIN AREA = 0.0011 SQ. MI.

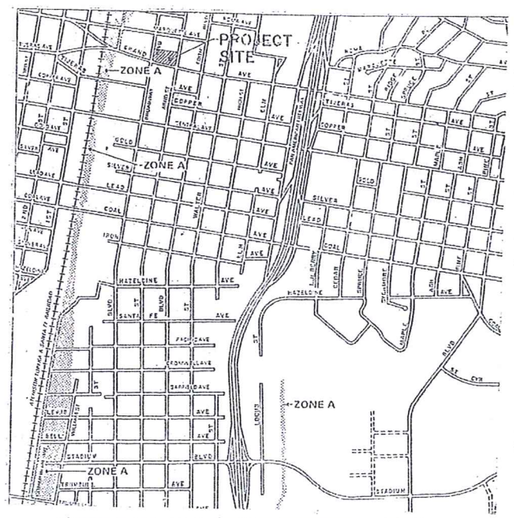
FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:43:40

DRAINAGE MASTERPLAN



GRADING - SITE PLAN | SCALE: 1"=20'-0"



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NOTE: THIS SHEET FOR REFERENCE ONLY

DRAINAGE PLAN

The following items concerning the FBI Building Drainage Plan are contained hereon:

1. Vicinity Map
2. Flood Hazard Map
3. Site Plan
4. Calculations

The proposed building is located at the northeast corner of the intersection of Grand Avenue, N.E. and Broadway Boulevard, N.E. The building will have offices on the second floor and a parking garage on the ground level. There will be additional parking adjacent to the building. This drainage plan does not provide for any development of the eastern portion of the property.

The natural slope of the land is from east to west at approximately 3 percent. The project: (1) does not lie in a flood plain, (2) does not lie adjacent to a natural or artificial water course, and (3) has no drainage easements on the property.

The land to the north is multi-family units with a block wall separating the two sites. The site is higher than the two bordering streets, and a paved alley along the east boundary intercepts runoff from the east; therefore, the property does not receive any significant flows from upland properties. Erosion will not result from upland runoff or from the proposed construction activities. This development will not block any drainage from adjacent properties.

The grading plan shows: (1) existing contours at 1'0" intervals, (2) proposed contours, (3) swales, (4) continuity between existing and proposed contours, (5) that the elevation at the property line will match the existing sidewalk, (6) that all runoff will be conveyed into ponding areas before leaving the site and (7) that retaining walls are required adjacent to the driveway ramp.

The above will retain in excess of [illegible] percent of the runoff that results from a 10 year frequency storm. The ponds are 15 inches in depth and therefore do not require fencing.

CALCULATIONS

Area of Parcel = 65,100 sf

Impervious Area = 43,495 sf

Required Pond Volume = 65,100 x 0.18 = 11,718 cf

POND VOLUMES

Note: Entire roof slopes to north.

Pond A

$\left(\frac{2.3 + 1.3}{2}\right)$ 1 (400) + $\left(\frac{1.3 + 0.8}{2}\right)\frac{1}{2}$ 400 = 930 cf

Pond B

$\left(\frac{2.7 + 1.5}{2}\right)$ 400 (1) = 840 cf

Pond C

$\left(\frac{4.0 + 2.9}{2}\right)$ 400 (1) = 1,380 cf

Pond BC

14.5 (400) $\frac{1}{2}$ = 2,900 cf

Pond D

$\left(\frac{5.8 + 4.8}{2}\right)$ 400 (1) + $\left(\frac{3.8 + 3.8}{2}\right)$ 400 $\left(\frac{1}{2}\right)$ = 2,180 cf

Pond E

$\left(\frac{4.8 + 3.6}{2}\right)$ 400 (1) + $\left(\frac{3.6 + 2.7}{2}\right)$ 400 $\left(\frac{1}{2}\right)$ = 2,310 cf

Sediment Pond

$\left(\frac{5.8 + 3.8}{2}\right)$ 400 (1) = 1,920 cf

Total Pond Volume = 13,460 cf

PROJECT SITE

VICINITY MAP H-14-Z

BANES SOUTHWEST
4522 SECOND ST NW
ALBUQUERQUE, NEW MEXICO 87108
PHONE (505) 344-9461 FAX 344-9425

REVISION

DEA OF ALBUQUERQUE
301 GRAND AVE NE
ALBUQUERQUE, NEW MEXICO

FOR REFERENCE ONLY

18

DATE
04309
PROJECT

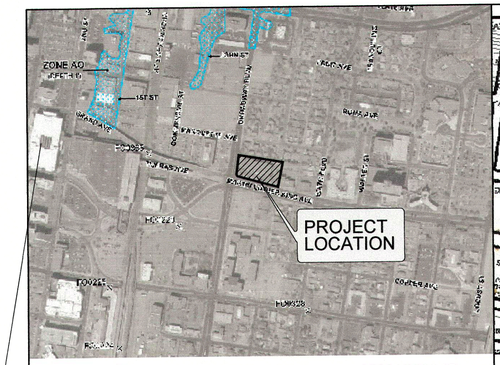
EXHIBITS

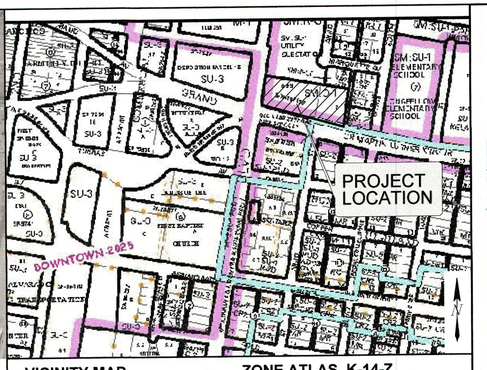
DRAINAGE FACILITIES WITHIN CITY RIGHT-OF WAY
NOTICE TO CONTRACTOR

1. AN EXCAVATION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", 1986 EDITION, AS AMENDED THROUGH UPDATE NO. 7.
3. THREE WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234 FOR THE LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THE FACILITY SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY BEING SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVALS : _____

INSPECTOR DATE





KEYED NOTES

1. EXISTING CONCRETE STANDARD CURB AND GUTTER.
2. EXISTING PUBLIC SIDEWALK.
3. EXISTING DRIVEPAD TO REMAIN.
4. EXISTING ASPHALT PAVEMENT TO BE RECONDITIONED PER GEOTECHNICAL EVALUATION.
5. EXISTING CONCRETE TURNDOWN SIDEWALK.
6. EXISTING CONCRETE RETAINING WALL.
7. EXISTING HANDICAP RAMP.
8. EXISTING CONCRETE PAVEMENT.
9. EXISTING CONCRETE CURB.
10. EXISTING TRENCH DRAIN.
11. EXISTING STORM DRAIN.
12. EXISTING REFUSE PAD.
13. EXISTING LIGHT POLE TO REMAIN.
14. EXISTING LIGHT POLE TO BE RELOCATED.
15. RELOCATED LIGHT POLE.
16. DIRECTION OF ROOF DRAINAGE-TYPICAL.
17. EXISTING LANDSCAPING TO REMAIN. SEE LANDSCAPE PLAN.
18. EXISTING CURB BLOCKOUTS (9) AT POND INLET TO REMAIN.
19. NEW 4-INCH WHITE PARKING STRIPE - TYP.
20. NEW HANDICAP PARKING SYMBOL PER CODE-TYP.
21. NEW PREDSTRIAN ACCESSIBLE ROUTE STRIPED PER CODE.
22. INTALL HANDICAP PARKING SIGN ASSEMBLY. SEE SHEET C-2 FOR DETAILS - TYP.
23. INSTALL BIKE RACK.
24. REMOVE & DISPOSE EXISTING LANDSCAPING, CONCRETE CURBS AND PAVEMENT TO LIMITS SHOWN. INSTALL NEW ASPHALT PAVEMENT. SEE SHEEET C-2 FOR DETAILS.
25. REMOVE AND REPLACE EXISTING CONCRETE PAVEMENT AS NECESSARY TO LIMITS SHOWN. SEE SHEET C-2 FOR DETAILS.
26. CONSTRUCT 6-INCH CONCRETE CURB. SEE SHEET C-2.0.
27. CONSTRUCT TURN DOWN SIDEWALK. SEE SHEET C-2.0.
28. CONSTRUCT HANDICAP RAMP AT PEDESTRIAN LINK. SEE SHEET C-2 FOR DETAILS.
29. REMOVE & DISPOSE EXISTING DAMAGED SIDEWALK. REPLACE WITH HANDICAP RAMP. SEE SHEET C-2 FOR DETAILS.
30. CONSTRUCT 24-INCH SIDEWALK CULVERT PER COA STD DWG 2236.
31. CONSTRUCT 12" STORM DRAIN WITH END SECTIONS.
32. CONSTRUCT 12" STORM DRAIN @ S=3.0%.
33. CONSTRUCT CMP STAND PIPE. SEE SHEET C-2.0 FOR DETAIL.
34. CONNECT 12" STORM DRAIN TO EXISTING STORM INLET PER COA STD DWG 2237.
35. REMOVE & DISPOSE EXISTING STORM DRAIN TO LIMIT SHOWN.
36. CUT EXISTING STORM DRAIN. INSTALL END SECTION @ NEW POND BOTTOM.

LEGEND

ITEM	EXISTING	PROPOSED
CURB AND GUTTER		
HEADER CURB		
CURB ELEVATIONS	TOP CONC. ELEV / FLOWLINE ELEV	TOP CONC. ELEV / FLOWLINE ELEV
SPOT ELEV.	× 4977.60	◆ 16.7
RIGHT OF WAY		
EASEMENT		
CENTERLINE		
TOP OF ASPHALT ELEV.	TA 16.2	TA 16.2
FLOWLINE ELEV	EX FL 16.2	FL 16.2
NEW PAVING		
DRAINAGE SWALE		
DIRECTION OF FLOW		
CONCRETE		
BLOCK WALL		
STORM INLET		
TREE		
DOWNSPOUT		DS
STORM DRAIN	36" SD	36" SD

DRAINAGE PLAN NOTES

1. **LDC recommends that the Owner obtain a Geotechnical Evaluation of the on-site soils prior to foundation/structural design.**
2. **This Plan recommends positive drainage away from all structures to prohibit ponding of runoff which may cause structural settlement. Future alteration of grades adjacent to the proposed structures is not recommended.**
3. **Irrigation within 10 feet of any proposed structure is not recommended. Introduction of irrigation water into subsurface soils adjacent to the structure could cause settlement.**
4. **This Plan is prepared to establish on-site drainage and grading criteria only. LDC assumes no responsibility for subsurface analysis, foundation/structural design, or utility design.**
5. **Local codes may require all footings to be placed in natural undisturbed soil. If the Contractor plans to place footings on engineered fill, a certification by a registered Professional Engineer will be required. If the contractor wishes LDC to prepare the Certification, we must be notified PRIOR to placement of the fill.**
6. **LDC recommends that the Owner obtain the services of a Geotechnical Engineer to test and inspect all earthwork aspects of the project.**
7. **The property boundary shown on this Plan is given for information only to describe the project limits. Property boundary information shown hereon does not constitute a boundary survey. A boundary survey performed by a licensed New Mexico Registered Professional Surveyor is recommended prior to construction.**
8. **All spot elevations are finished grade or top of pavement, unless noted otherwise.**
9. **The City of Albuquerque has received its EPA MS4 Permit for stormwater quality with an effective date of March 1, 2012.**

PROJECT DATA

SURVEY:

TOPOGRAPHIC SURVEY PERFORMED AND COMPILED BY HARRIS SURVEYING, INC., 2412 MONROE STREET NE ALBUQUERQUE, NEW MEXICO JANUARY 2015.

PROPERTY ADDRESS:

301 MARTIN LUTHER KING JR. BLVD NE, ALBUQUERQUE, NEW MEXICO

LEGAL DESCRIPTION:

PARCELS 8 & 9, PLAT OF MARTINEZ PLAN PHASE 7

PROJECT BENCHMARK

ACS MONUMENT "22_K14" HAVING AN ELEVATION OF 4,966.352.

LORENZ
DESIGN & CONSULTING, LLC
Civil Engineering | Construction Management
2501 Rio Grande Blvd NW, Suite A Albuquerque, New Mexico 87104
Ph: 505-880-0088 Fax: 505-242-6665

JACKSON WINK ACADEMY MMA GYM
GRADING AND DRAINAGE PLAN
ALBUQUERQUE, NM

PROJECT #14-034

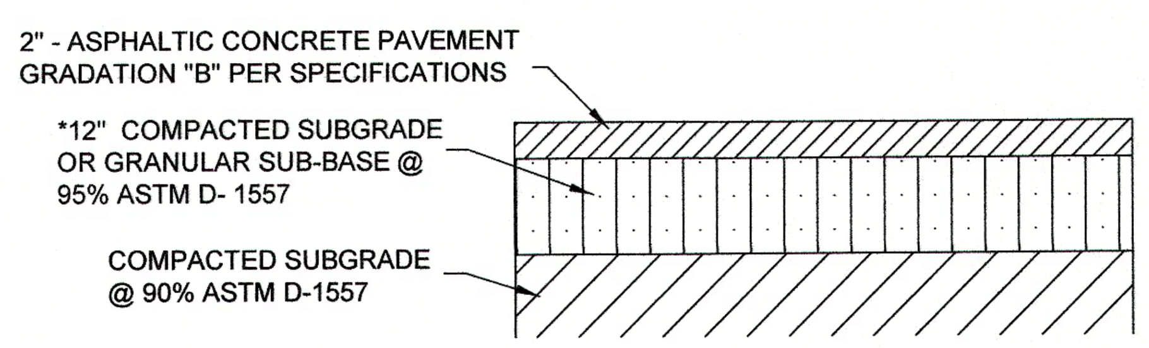
REVISION DATE

DENNIS A. LORENZ NEW MEXICO 9744 REGISTERED PROFESSIONAL ENGINEER

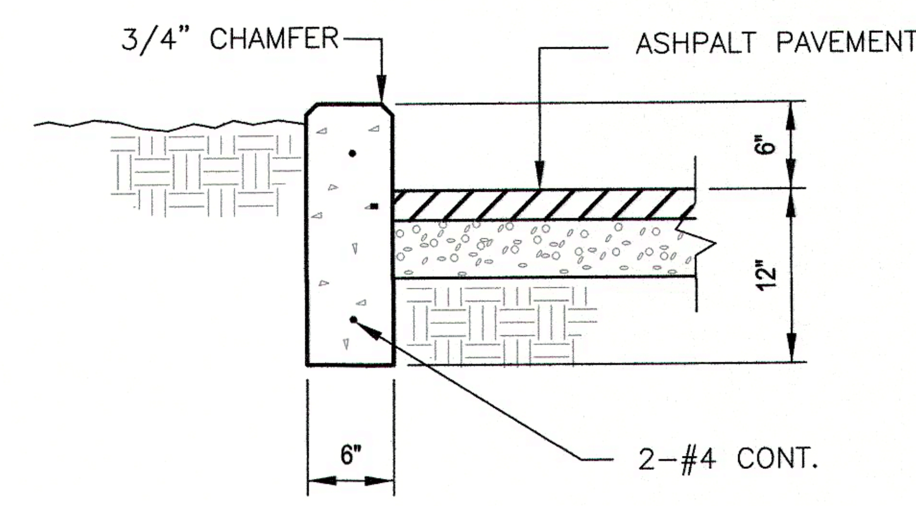
RBA ARCHITECTURE PLANNING DESIGN
RBA Architecture, NM 87102
Albuquerque, New Mexico
www.rbaabq.com

DATE
02/12/2015

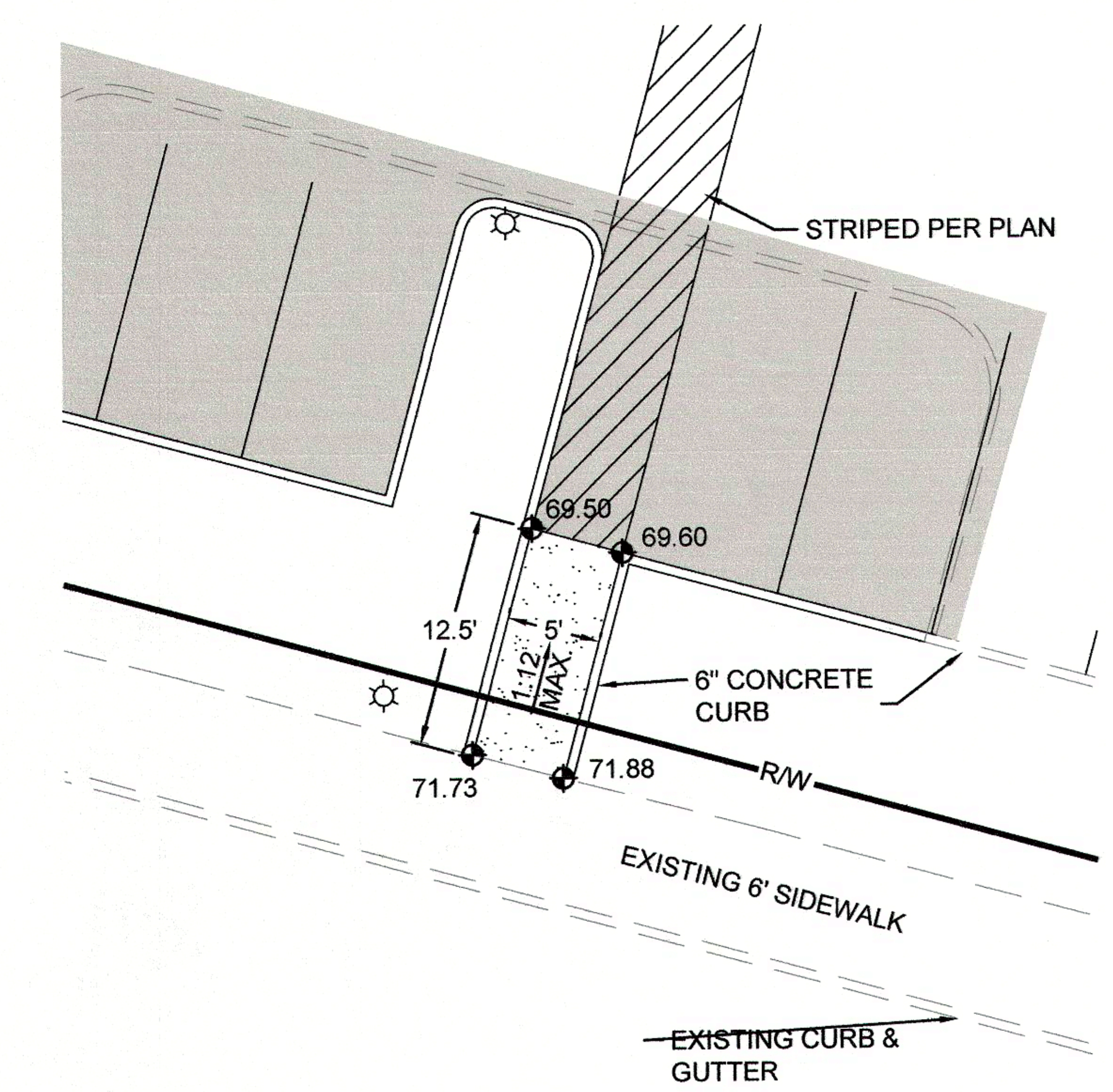
SHEET NUMBER
C-1.0



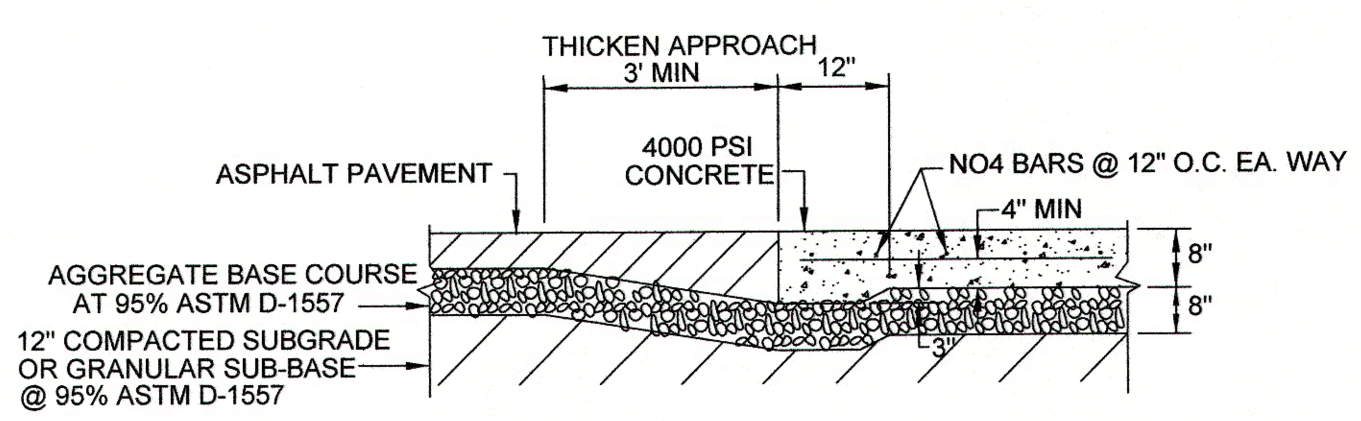
ASPHALT PAVEMENT SECTION (A / C-2.0)
AUTO/PICKUP TRUCK NTS



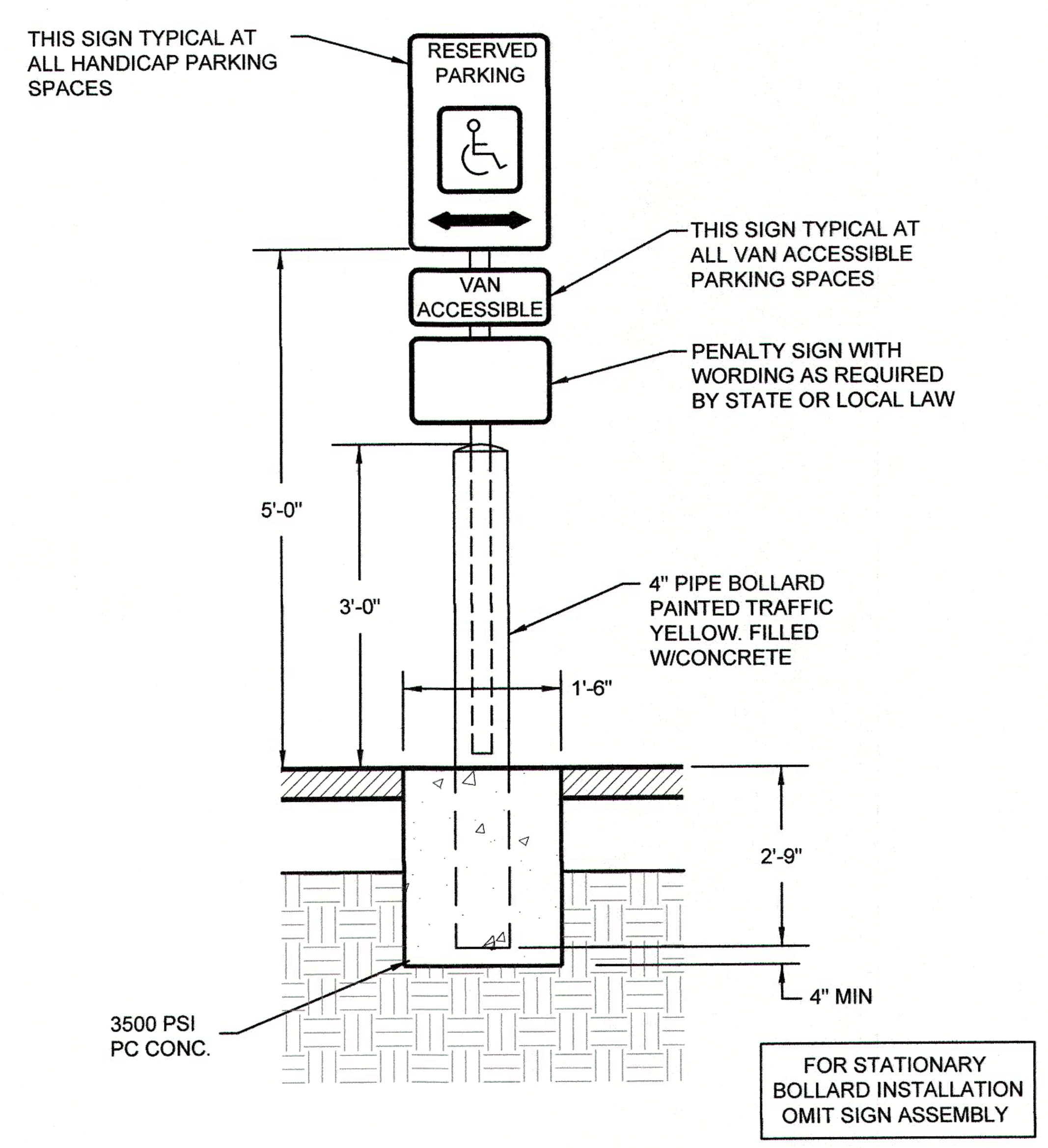
HEADER CURB DETAIL (E / C-2.0)
NTS



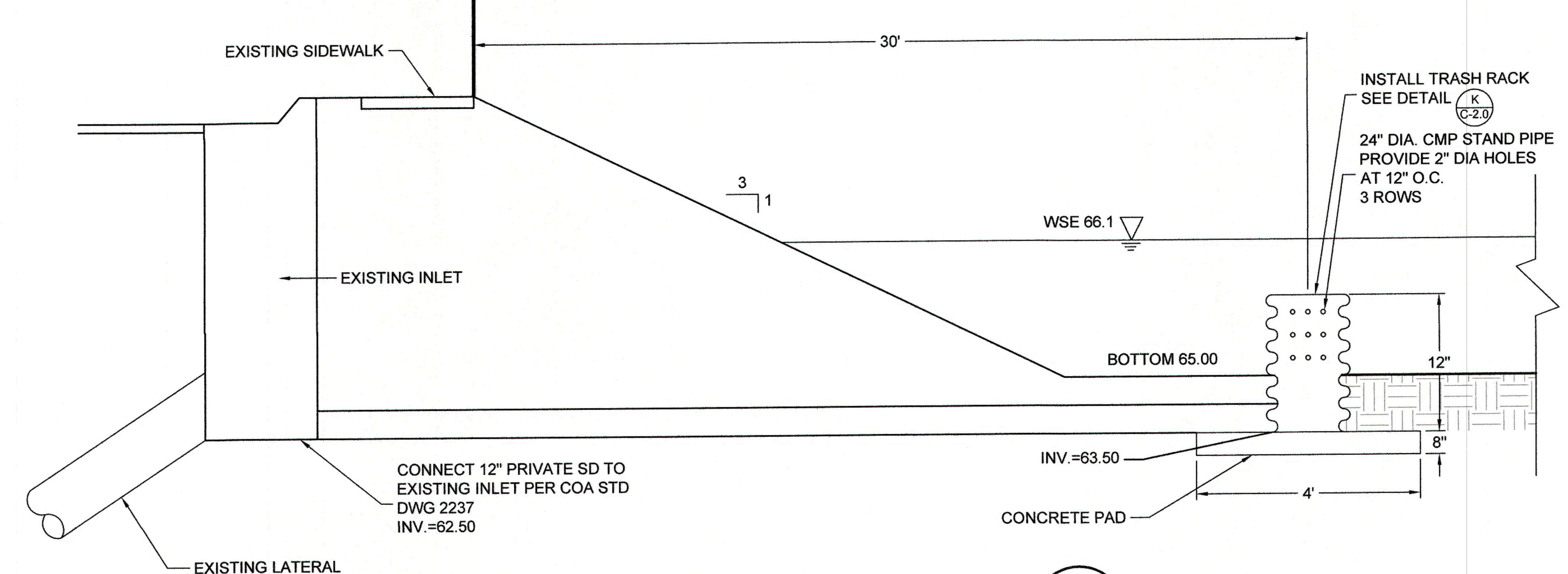
HANDICAP ACCESS RAMP - 2 (H / C-2.0)
NTS



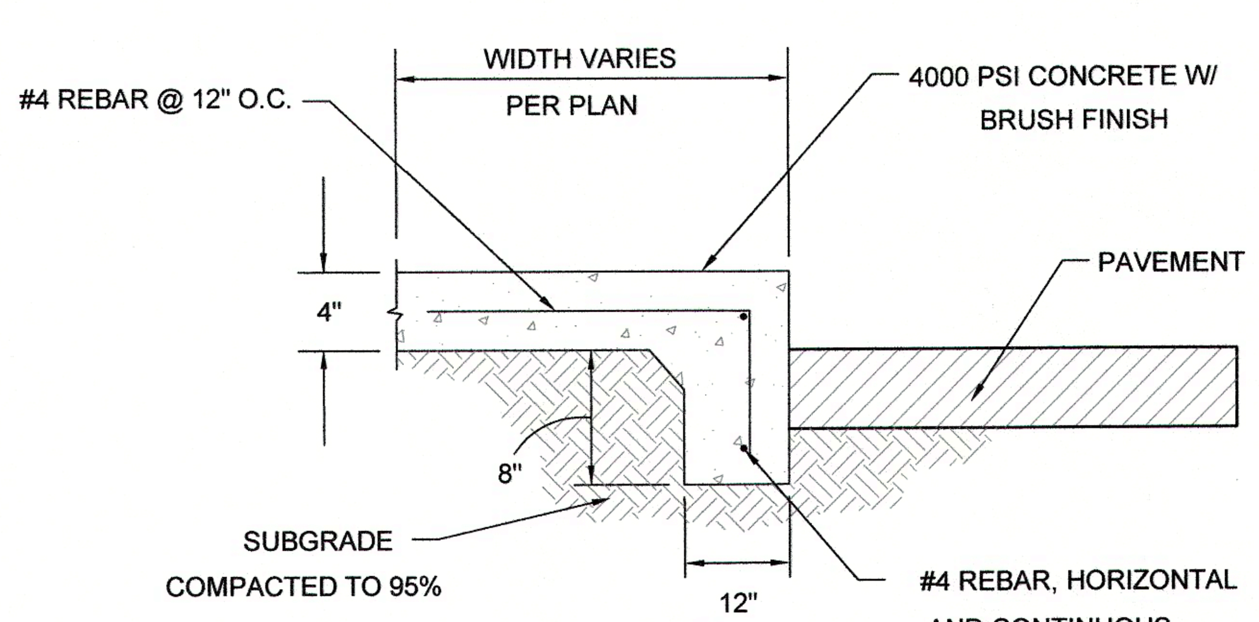
CONCRETE PAVEMENT SECTION (B / C-2.0)
NTS



HC SIGN ASSEMBLY / BOLLARD DETAIL (F / C-2.0)
NTS

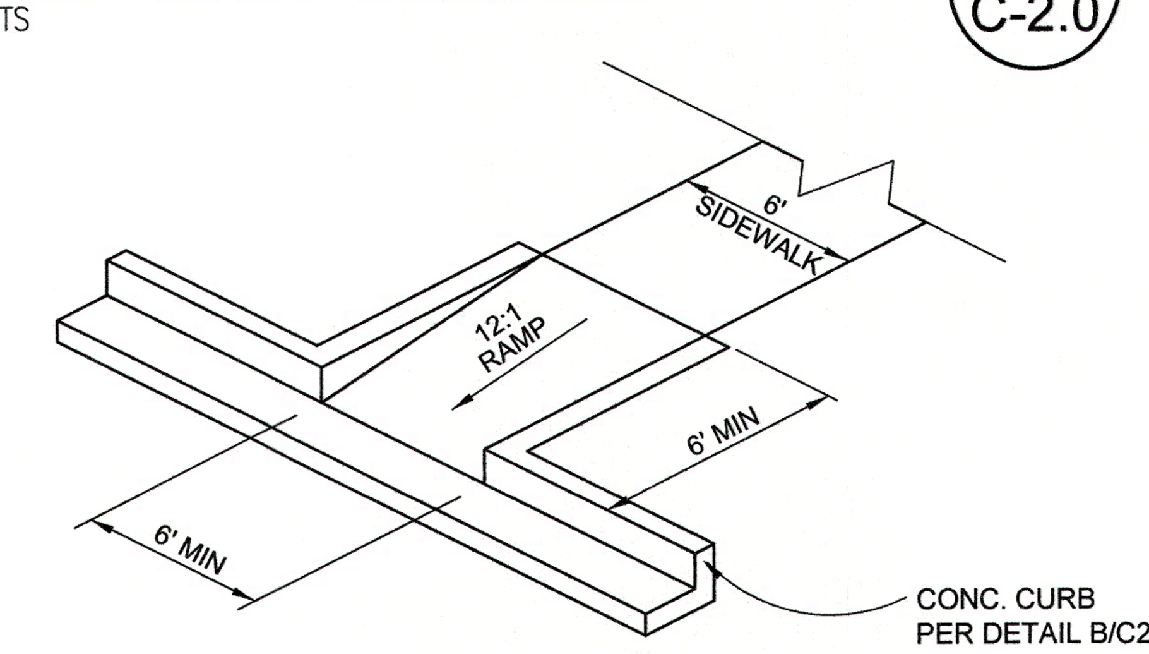


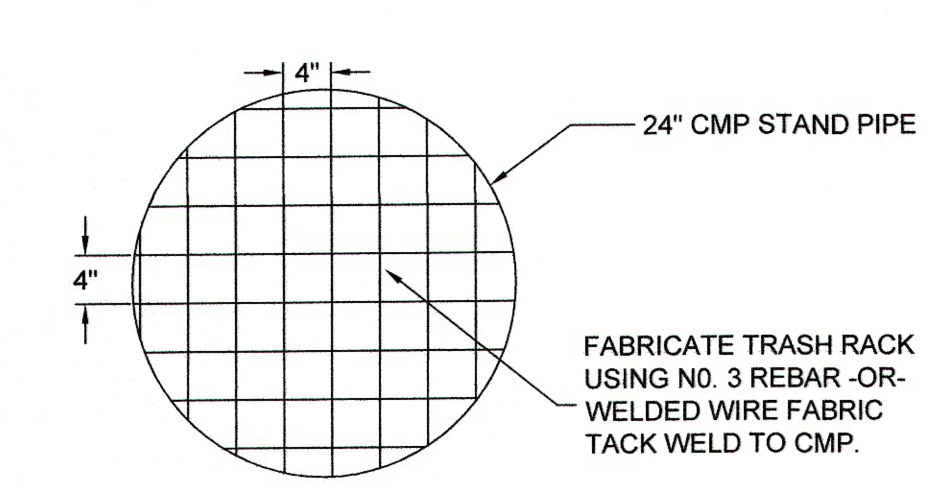
POND OUTLET DETAIL (J / C-2.0)
NTS

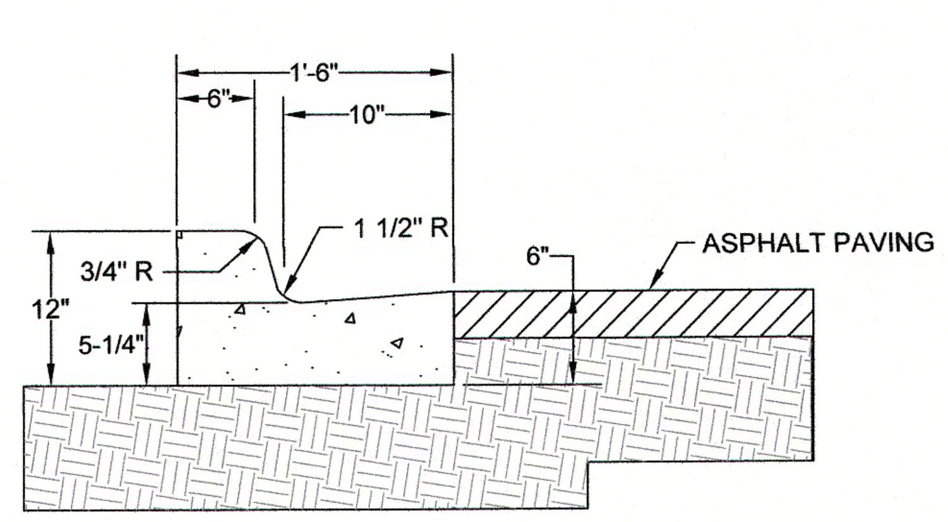


1. CONTROL JOINTS SHALL BE PLACED @ 5' O.C.
2. EXPANSION JOINTS SHALL BE PLACED @ 20' O.C

TURN DOWN SIDEWALK (C / C-2.0)
NTS







CONCRETE CURB AND GUTTER (D / C-2.0)
NTS

HANDICAP ACCESS RAMP - 1 (G / C-2.0)
NTS

TRASH RACK DETAIL (K / C-2.0)
NTS

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2501 Rio Grande Blvd NW, Suite A Albuquerque, New Mexico 87104
Ph: 505-888-6088 Fax: 505-242-6655

JACKSON WINK ACADEMY MMA GYM
SITE DETAILS
ALBUQUERQUE, NM
PROJECT #14-034

REVISION DATE

RBA

DATE 02/06/2015

SHEET NUMBER C-2.0