CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

June 8, 2016

Ron Bohannan, PE
Tierra West, LLC
5571 Midway Park Pl NE
Albuquerque, NM 87109

RE: **Main Event, Albuquerque Carpenters Training Center (File: G16-D149)**
4040 Pan American Freeway NE 87107
Interim Grading Plan and Drainage Plan, Engineer's Stamp Date 5-27-2015

Dear Mr. Bohannan:

Based upon the information provided in your submittal received 5-27-14, the above referenced plan is approved for Building Permit based on the following comments:

While this interim plan did not show how the interim drainage was to function, this is the plan used for the Engineer's Certification. For this reason, this interim plan is being approved.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

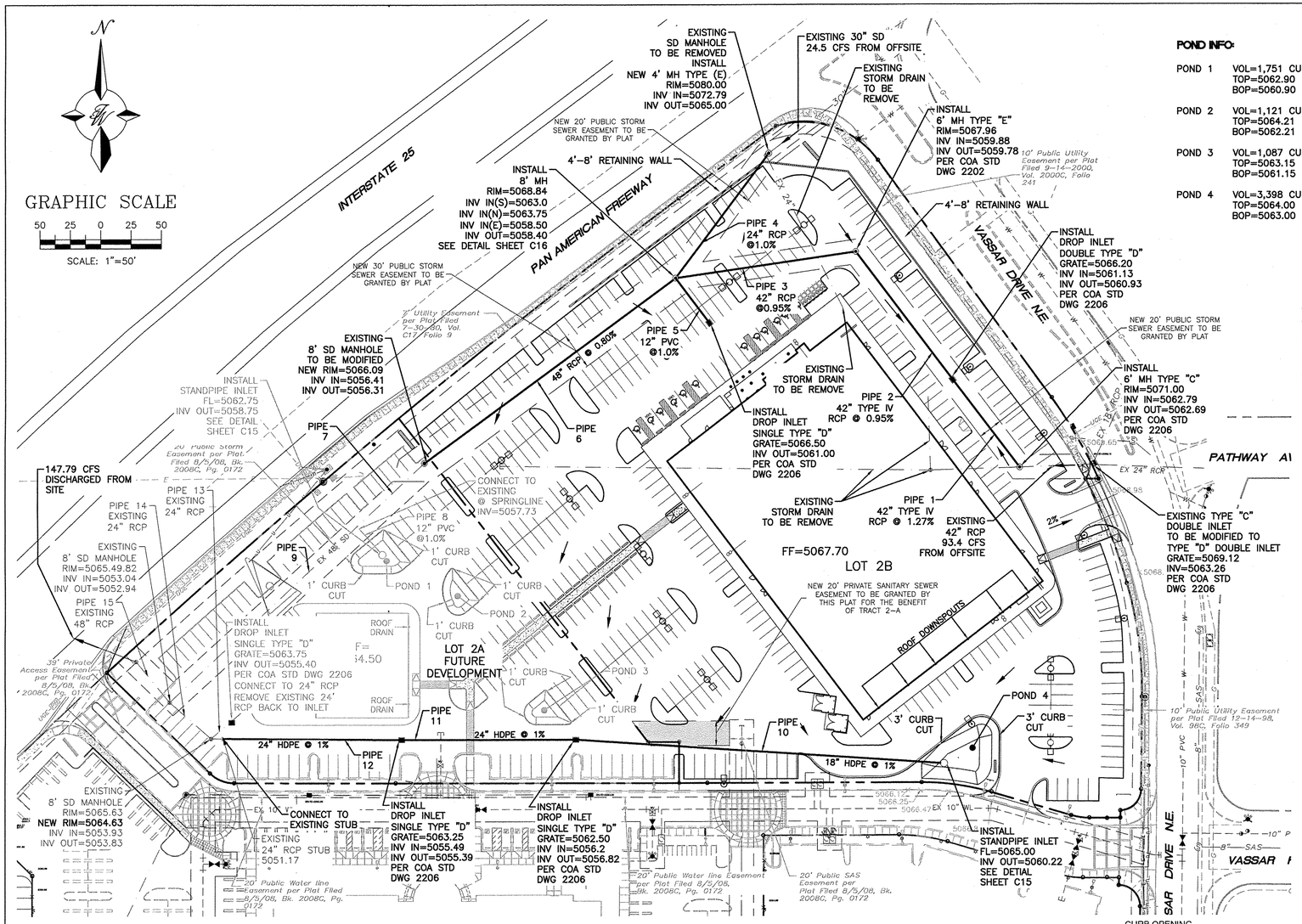
Orig: Drainage file
c.pdf recipient

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov



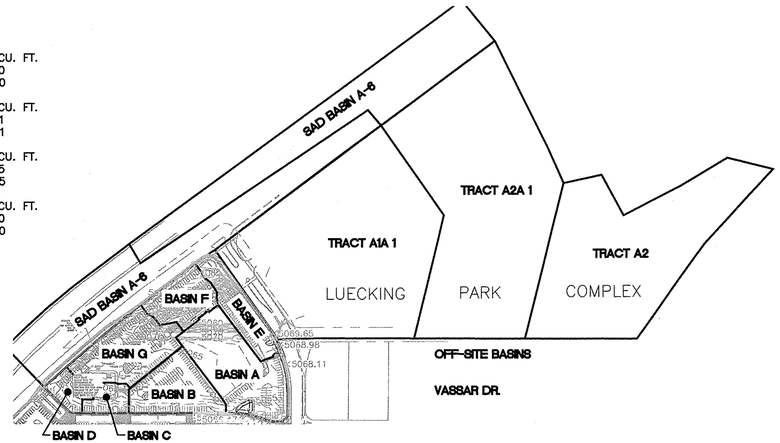
POND INFO:

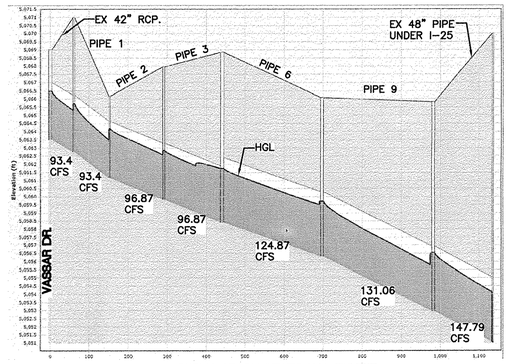
POND 1 VOL=1,751 CU. FT. TOP=5062.90 BOP=5060.90

POND 2 VOL=1,121 CU. FT. TOP=5064.21 BOP=5062.21

POND 3 VOL=1,087 CU. FT. TOP=5063.15 BOP=5061.15

POND 4 VOL=3,398 CU. FT. TOP=5064.00 BOP=5063.00





PUBLIC STORM SEWER HGL EXHIBIT

Pipe Capacity

Pipe	D (in)	Slope (%)	Area (ft^2)	R	Q Provided (cfs)	Q Required (cfs)	Velocity (ft/s)
1	42	1.27	9.62	0.875	113.69	93.40	9.71
2	42	0.95	9.62	0.875	98.33	96.87	10.07
3	42	0.95	9.62	0.875	98.33	96.87	10.07
4	24	1.25	3.14	0.500	25.36	24.50	7.80
5	12	1.00	0.79	0.250	3.57	3.44	4.38
6	48	0.80	12.57	1.000	128.82	124.81	9.93
7	48	1.17	12.57	1.000	155.79	124.81	9.93
8	12	3.40	0.79	0.250	6.59	6.25	7.96
9	48	1.17	12.57	1.000	155.79	131.06	10.43
10	18	1.00	1.77	0.375	10.53	8.62	4.88
11	24	1.00	3.14	0.500	22.68	13.73	4.37
12	24	1.00	3.14	0.500	22.68	15.27	4.86
13	24	6.97	3.14	0.500	59.89	1.46	0.46
14	24	1.98	3.14	0.500	31.92	16.73	5.33
15	48	2.65	12.57	1.000	234.46	147.79	11.76

Manning's Equation:
Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- RETAINING WALL
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE

CAUTION:
ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF ANY PROJECT.

FRIST FLUSH CALCULATIONS:

5.93 ACRES OF IMPERVIOUS AREA = 258,311 SQ. FT
258,311 SQ. FT * (0.34"/12) = 7,319 CU. FT = 0.168 AC-FT OF VOLUME REQUIRED TO BE RETAINED ON-SITE.

Capacity of a Single 'D' Storm Drop Inlet

Capacity of the grate:

L = 40" - 2(2" ends) - 7(½" middle bars)
= 32 1/2"
= 2.7083'

W = 25" - 13(½" middle bars)
= 18.5"
= 1.54'

Area = 2.7083' x 1.54'
= 4.18 ft²

Effective Area = 4.18- 4.18 (0.5 clogging factor)
= 2.09 ft² at the grate

Orifice Equation
Q = CA sqrt(2gH)
Q = 0.6*2.09*sqrt(2*32.2*0.67)
Q = 8.24 cfs

CURB OPENING

Orifice Equation:

$Q = CA\sqrt{2gH}$

Where:
C = 0.6
A = 0.50*1 = .50 ft²
g = 32.2
H = Height of water measured from center of orifice

$Q = 0.6 * 0.50\sqrt{2 * 32.2 * 0.2917}$
Q=1.30 cfs

6" 12" 6"

Weighted E Method

On-Site Basins

Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	100-Year Weighted E (ac-ft)	100-Year Volume (ac-ft)	100-Year Flow cfs	10-Year Weighted E (ac-ft)	10-Year Volume (ac-ft)	10-Year Flow cfs
A	83,352	1.91	0%	0	8%	0.15	0%	0.00	92%	1.76	2.013	0.321	8.62	1.255	0.200	5.67
B	49,888	1.15	0%	0	10%	0.11	0%	0.00	90%	1.03	1.986	0.190	5.11	1.234	0.118	3.35
C	14,756	0.34	0%	0	6%	0.02	0%	0.00	94%	0.32	2.040	0.058	1.54	1.276	0.036	1.02
D	15,034	0.35	0%	0	19%	0.07	0%	0.00	81%	0.28	1.865	0.054	1.46	1.139	0.033	0.94
E	36,072	0.83	0%	0	22%	0.18	0%	0.00	78%	0.65	1.825	0.126	3.45	1.107	0.076	2.20
F	34,539	0.79	0%	0	15%	0.12	0%	0.00	85%	0.67	1.919	0.127	3.44	1.181	0.078	2.23
G	63,131	1.45	0%	0	16%	0.23	0%	0.00	84%	1.22	1.906	0.230	6.25	1.170	0.141	4.04
													29.88			

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Excess Precipitation, E (inches)	Zone 2	100-Year	10 - Year
	E_a	0.53	0.13
	E_b	0.78	0.28
	E_c	1.13	0.52
	E_d	2.12	1.34

Peak Discharge (cfs/acre)	Zone 2	100-Year	10 - Year
	Q_a	1.56	0.38
	Q_b	2.28	0.95
	Q_c	3.14	1.71
	Q_d	4.70	3.14

ENGINEER'S SEAL
RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER
RONALD R. BOHANNAN P.E. #7868

MAIN EVENT
PAN AM FREEWAY AND VASSAR AV.

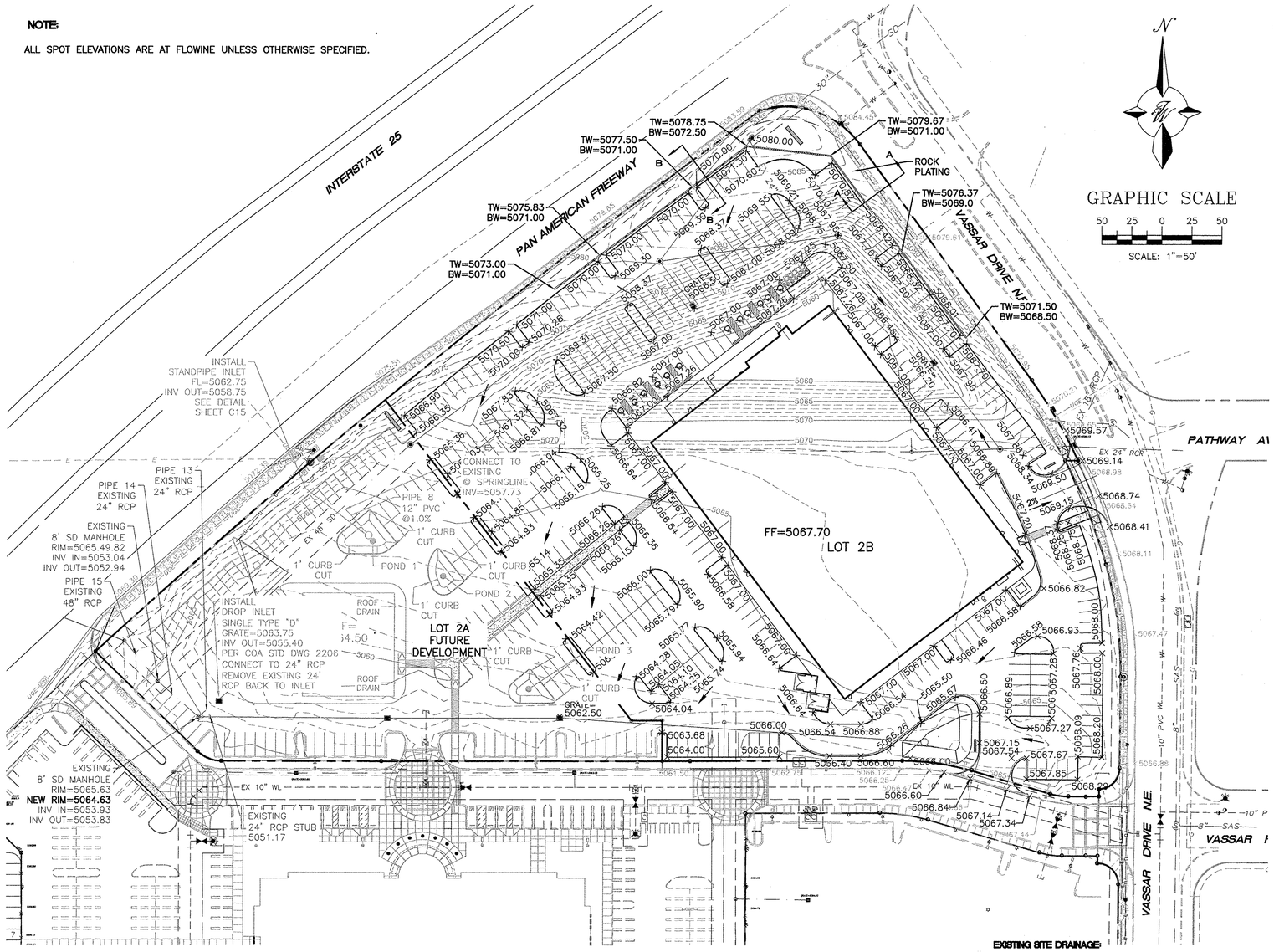
INTERIM DRAINAGE PLAN - LOT 2B

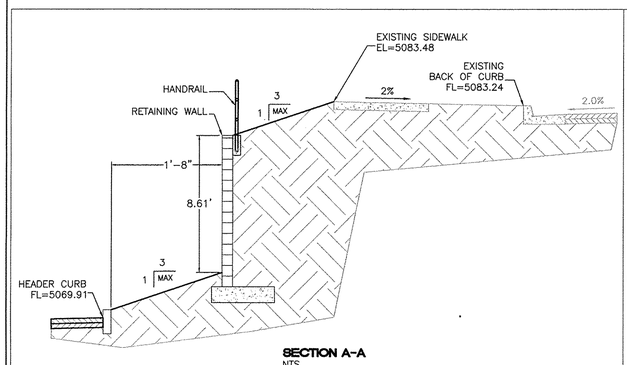
TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrawestllc.com

DRAWN BY: BJF
DATE: 05/25/16
2015015_GRB-INTERIM
SHEET # C6A
JOB # 2015015

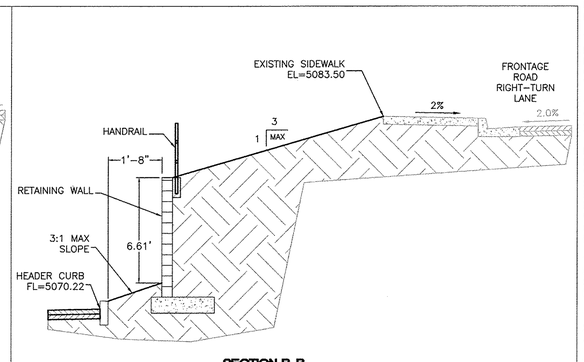
NOTE:

ALL SPOT ELEVATIONS ARE AT FLOWINE UNLESS OTHERWISE SPECIFIED.





SECTION A-A
NTS



SECTION B-B
NTS

GRAPHIC SCALE
50 25 0 25 50
SCALE: 1"=50'

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- SCREEN WALL
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR
- x 5048.25 EXISTING SPOT ELEVATION

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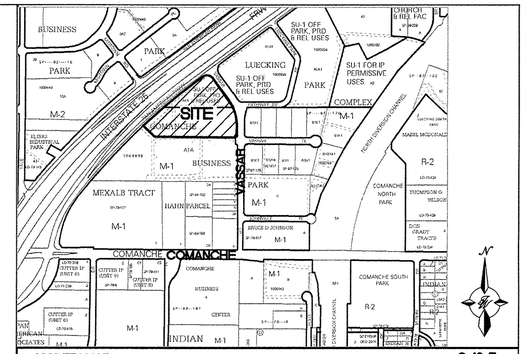
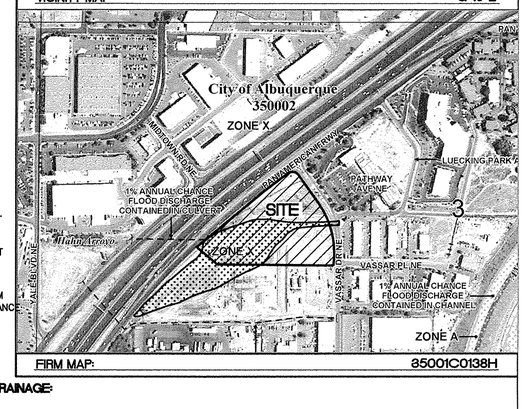


VICINITY MAP: G-16-Z



FIRM MAP: 35001C0138H

EXISTING SITE DRAINAGE:

THE 6.82 ACRE SITE IS LOCATED AT THE SOUTHEAST CORNER OF PAN AMERICAN FREEWAY AND VASSAR DRIVE NE. THE SITE IS BOUNDED ON THE NORTH AND WEST BY PAN AMERICAN FREEWAY, ON THE EAST BY VASSAR DRIVE NE AND ON THE SOUTH BY AN INDUSTRIAL/MANUFACTUREING DEVELOPMENT.

THE SITE IS CURRENTLY VACANT WITH ONE THIRD OF THE PROPERTY BEING A TEMPORARY RETENTION POND FOR THE PATHWAY OFFICE PARK (G16/D114) AND THE REMAINING TWO THIRDS DRAINING FROM EAST TO WEST TO A TEMPORARY DESILTING POND AND STORM SEWER INLET WHERE THE WATER IS THEN CONVEYED BY STORM SEWER AND OPEN CHANNEL TO THE GRIEGOS POND THAT WAS CONSTRUCTED WITH SAD 216.

THERE ARE OFF-SITE FLOWS ENTERING THE POND FROM THE PATHWAY OFFICE PARK DEVELOPMENT AS WELL AS MINIMAL FLOWS FROM THE PAN AMERICAN FREEWAY. THIS SITE IS LOCATED IN A SHADED "X" ZONE AS SHOWN ON FIRM MAP #35001C0138H.

BASED ON THE APPROVED DRAINAGE REPORT FOR THE CARPENTERS TRAINING CENTER (G16/D145) THIS PROJECT MAY DISCHARGE A TOTAL OF 159.55 CFS WHICH TAKES INTO ACCOUNT ALL OF THE STORM WATER ENTERING THE TEMPORARY RETENTION POND AS WELL AS FLOWS FROM INTERSTATE 25. PLEASE SEE THE BASIN MAP ON SHEET C6 FOR ALL OF THE BASINS DRAINING THROUGH THE PIPE UNDER INTERSTATE 25. THE INFORMATION PERTAINING TO THE AMOUNT OF DISCHARGE ALLOWED FROM THIS PARCEL IS DETAILED ON PAGE 12 OF THE CARPENTERS TRAINING CENTER REPORT. ALL OF THE FLOWS WILL PASS THROUGH AN EXISTING 48" RCP UNDER INTERSTATE 25 WHICH HAS A CAPACITY FOR 161 CFS. THIS PIPE DAYLIGHTS INTO A PONDING AREA WEST OF THE INTERSTATE AND EVENTUALLY DRAINS INTO THE GRIEGOS POND.

THE TEMPORARY RETENTION POND RECEIVES 24.5 CFS FROM A STORM SEWER THAT RUNS ALONG INTERSTATE 25 AND ANOTHER 93.4 CFS FROM THE STORM SEWER IN VASSAR DRIVE. ONCE A CONNECTION IS MADE BETWEEN THOSE STORM SEWERS AND THE ONE UNDER INTERSTATE 25 THE POND MAY BE RECLAIMED FOR DEVELOPMENT.

THE CARPENTERS TRAINING CENTER REPORT SHOWS A HIGHER FLOW RATE (159.55 CFS) THAN THE SAD 216 REPORT (101 CFS) DUE TO USING THE RAW BASIN DRAINAGE NUMBERS WITHOUT ROUTING THEM ALONG WITH A CHANGE IN THE PERCENTAGE OF LAND TREATMENTS FROM 15% "A", 15% "B", 70% "D" TO 20% "B" AND 80% "D". THE INCREASE IN FLOW PROVIDES A MORE CONSERVATIVE FLOW AMOUNT TO ENSURE ALL OF THE DOWNSTREAM DRAINAGE FACILITIES HAVE CAPACITY FOR THE UPLAND FLOWS AS IDENTIFIED IN SAD 216. THE CHANGE IN LAND TREATMENT NUMBERS DID INCREASE THE VOLUME GENERATED FROM THIS AREA AND THAT IS CAPTURED IN A PONDING AREA BETWEEN INTERSTATE 25 AND YALE BOULEVARD AS DISCUSSED ON PAGE 12 OF THE CARPENTERS TRAINING CENTER DRAINAGE REPORT.

PROPOSED SITE DRAINAGE:

THIS SITE WILL BE DEVELOPED WITH A ENTERTAINMENT/RESTAURANT BUILDING ON THE PAD ALONG VASSAR DRIVE AND A FUTURE RESTAURANT PAD SITE ALONG THE PAN AMERICAN FREEWAY. THE TEMPORARY RETENTION POND WILL BE ELIMINATED AND THE EXISTING 42-INCH PUBLIC STORM SEWER WILL BE REROUTED AND CONNECTED TO AN EXISTING 48-INCH PUBLIC STORM SEWER CONSTRUCTED WITH THE CARPENTERS TRAINING CENTER DEVELOPMENT (G16/D145). THE SITE WILL UTILIZE LOW IMPACT DEVELOPMENT (LID) WHERE POSSIBLE ALLOWING SURFACE STORM WATER TO FLOW THROUGH LANDSCAPED AREAS PRIOR TO DISCHARGING TO THE STORM SEWER. THERE ARE SEVEN PROPOSED BASINS AS SHOWN ON THE PROPOSED BASIN MAP ON SHEET C6.

BASIN A CONSISTS OF THE BUILDING WITH ALL OF THE ROOF DRAINAGE FLOWING TO THE BACK OF THE BUILDING AND CONVEYED TO THE PARKING LOT VIA EXTERNAL ROOF DRAINS. THESE FLOWS ALONG WITH THE PARKING LOT FLOWS WILL DRAIN TO A LANDSCAPED PONDING AREA WITH A STAND PIPE SO THAT TRASH AND SEDIMENT CAN BE CAPTURED PRIOR TO THE STORM WATER ENTERING A STORM SEWER SYSTEM. THIS BASIN WILL GENERATE A 100-YEAR PEAK FLOW OF 8.62 CFS.

BASIN B CONSISTS OF THE SOUTHWEST PARKING LOT WHERE SURFACE STORM WATER WILL BE ROUTED THROUGH LANDSCAPING PRIOR TO DISCHARGING TO A DROP INLET AT A 100-YEAR PEAK FLOW OF 5.11 CFS.

BASIN C CONSISTS OF A PART OF THE FUTURE RESTAURANT PAD. THIS BASIN WILL GENERATE A DEVELOPED 100-YEAR PEAK FLOW OF 1.54 CFS AND WILL DISCHARGE INTO A DROP INLET.

BASIN D CONSISTS OF A PORTION OF THE FUTURE RESTAURANT PAD AND WILL GENERATE A DEVELOPED 100-YEAR PEAK FLOW OF 1.46 CFS WHICH DISCHARGES INTO A DROP INLET.

BASIN E CONSISTS OF A PARKING LOT WHERE THE TEMPORARY RETENTION POND IS BEING RECLAIMED. AN EXISTING 42-INCH PUBLIC STORM SEWER (93.4 CFS) ENTERS THIS BASIN FROM THE WEST AND WILL BE REALIGNED TO THE NORTH TO INTERCEPT AN EXISTING PUBLIC 24-INCH STORM SEWER (24.5 CFS) THAT ENTERS THE SITE FROM THE NORTH. THIS BASIN WILL GENERATE A 100-YEAR PEAK FLOW OF 3.45 CFS AND DISCHARGE TO A DROP INLET CONNECTED TO THE 42-INCH STORM SEWER.

BASIN F CONSISTS OF A PARKING LOT GENERATING A 100-YEAR PEAK FLOW OF 3.44 CFS WHICH DISCHARGES TO A DROP INLET.

BASIN G CONSISTS OF A PARKING LOT AND THE REMAINING PORTION OF THE FUTURE RESTAURANT PAD. THE REALIGNED 42-INCH PUBLIC STORM SEWER WILL BE CONNECTED TO AN EXISTING 48-INCH PUBLIC STORM SEWER THAT WAS DESIGNED TO CONTAIN ALL OF THE DEVELOPED FLOW FROM THIS PROPERTY AS WELL AS FROM THE PATHWAY OFFICE PARK. THIS BASIN GENERATES A 100-YEAR PEAK FLOW OF 6.25 CFS.

ALL OF THE STORM SEWER CONSTRUCTED WITH THIS PROJECT WILL BE CONNECTED TO AN EXISTING 48-INCH STORM SEWER CONSTRUCTED WITH THE CARPENTERS TRAINING CENTER PROJECT. THE PREVIOUSLY APPROVED DRAINAGE REPORT FOR CARPENTERS CENTER ESTIMATED A TOTAL DEVELOPED DISCHARGE THROUGH THAT PIPE OF 159.55 CFS. THIS PROJECT WILL GENERATE A TOTAL DEVELOPED 100-YEAR FLOW OF 29.88 CFS AND COMBINED WITH THE 117.9 CFS FROM THE PATHWAY OFFICE PARK DEVELOPMENT WILL DISCHARGE A 100-YEAR FLOW OF 147.79 CFS WHICH IS LESS THAN THE 159.55 CFS PREVIOUSLY APPROVED. THE PROPOSED STORM SEWER WAS ANALYZED USING STORMCAD AND A PROFILE IS PROVIDED ON SHEET C6. AS SHOWN IN THAT PROFILE THE HGL FOR THE SYSTEM STAYS WELL WITHIN THE STORM SEWER.

IN ORDER TO MEET THE FIRST FLUSH REQUIREMENTS STORM WATER WILL BE ROUTED THROUGH LANDSCAPED AREAS WHERE POSSIBLE. THERE ARE SMALL RETENTION PONDS LOCATED IN BASINS A, B AND G TO RETAIN THE REQUIRED VOLUME BASED ON THE CALCULATIONS SHOWN SHEET C6.

ENGINEER'S SEAL RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER	MAIN EVENT PAN AM FREEWAY AND VASSAR AV. INTERIM GRADING PLAN FOR LOT 2B	DRAWN BY BJF DATE 05/25/16 2015015_GRB-INTERIM SHEET # C5A
RONALD R. BOHANNAN P.E. #7868	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	JOB # 2015015