

NOTE:
THE WESTERN LANES OF WEST ROAD WILL NOT BE CONSTRUCTED UNTIL FUTURE DEVELOPMENT SOUTH OF THE SITE WARRANTS THE WIDENING. AT THAT TIME THE OUTFALL STRUCTURE WILL NEED TO BE SIGNIFICANTLY MODIFIED INCLUDING EXTENDING THE 96" STORM DRAIN.

NOTE:
THIS PLAN DEPICTS INFRASTRUCTURE WHICH IS REQUIRED FOR OVERALL STORM WATER MANAGEMENT. THIS PLAN DOES NOT ESTABLISH WHICH INDIVIDUAL PARTIES WHO ARE FINANCIALLY RESPONSIBLE FOR EACH ELEMENT.

CONCEPTUAL DRAINAGE MANAGEMENT PLAN

I. INTRODUCTION

The purpose of this submittal is to present a grading and drainage plan for the proposed UNM Student Housing Project. The site is located along the south side of Avenida Cesar Chavez just west of the University Arena (referred to hereafter as "the Pit"). There is vacant land to the south and the AMAFCA South Diversion Channel to the west. The project will include 18 student housing buildings, a common community center building, and a maintenance building. With this submittal we are seeking Hydrology approval for DRB final plat approval and DRC work order approval. There will be a separate Building Permit Submittal to the City of Albuquerque hydrology department and AMAFCA for review and approval; however Building permits will be issued by the state of New Mexico Construction Industries Division (CID).

II. EXISTING HYDROLOGIC CONDITIONS

The site is approximately 18.5 acres and is currently undeveloped. The land slopes significantly from the east to west toward the existing South Diversion Channel. The majority of the drainage enters the channel via an inlet structure south of the site. There is significant grade change from The Pit parking lot down to the site which will be addressed in the proposed grades with tieback slopes and various water harvesting areas. In addition, a portion of The Pit tract outfalls directly onto the site from the east, which will also be addressed with the proposed conditions along with the Pit renovation project also underway.

III. PROPOSED HYDROLOGIC CONDITIONS

The site itself has been broken up into 5 basins and the offsite basins into 4 (See TABLE 1 - UNM STUDENT HOUSING BASINS PROPERTIES) not including the Pit renovations (see COA hydro file #L15/D059). The site will ultimately outfall to the south diversion channel via storm drain after being treated within a Median Water Quality Swale (MWQS). The proposed conditions described herein will briefly discuss the onsite drainage schemes and go into more detail concerning the offsite discharge as well as storm water quality. All onsite storm drainage, inlet calculations, roof drain coordination, etc. will be addressed in the Building Permit Submittal.

Storm Water Quality

The proximity of the site and the outfall to AMAFCA's South Diversion Channel has required specific measures to be taken to ensure the quality of water entering the channel. Onsite measures such as bioswales, water harvesting areas and detention ponds will be constructed and detailed with the onsite building permit submittal. The entire site, along with a number of surrounding offsite basins, will ultimately outfall to the Median Water Quality Swale (referred to hereafter as MWQS) located within the West Road. This MWQS will act as a filter of the storm drainage from the site prior to entering the South Diversion Channel by slowing the water down to remove the total suspended solids load, and by vegetative filtering.

The MWQS was analyzed as two separate sections, the north side and the south side. Both have a number of basins contributing to either side and each section has a direct outfall to the South Diversion Channel via storm drain inlets and storm drainage. The entire MWQS is sloped 0.1% to 0.5% toward an inlet located at the north and south ends of the median. The storm drainage outfalls directly from the site are located as close to the highpoint of this swale as possible in order to allow for maximum exposure to the MWQS, and thus maximum use of the vegetative filtration that will be located within the swales. Refer to TABLE 1, INLET TABLE, MWQS Volume and STORM DRAIN PIPES for hydrologic calculations. Further, the pipes that outfall into the MWQS; IN-P1, IN-P2, IN-P3, IN-P4 AND IN-P5 will outfall into a small "forebay" consisting of headwalls on either side, a concrete bottom and curbs on the side. This will allow for an area to catch sediment and remove that sediment via maintenance prior to its entry into the MWQS. The inlet top of grate elevations have been set approximately 6" higher than the swale bottom to allow for infiltration of the smaller storm events and nuisance flows to occur.

The northern portion of the MWQS will have two basins contributing to the swale via storm drain (IN-P1, IN-P2) from the Student Housing Site. In addition to these basins, the West Road will outfall directly into the swale via surface flow (BASIN C). INLET A will accept these three basins and be conveyed directly to the South Diversion Channel (via OUT-P2). Offsite Basin B will outfall directly to OUT-P2 upon development and will require onsite water quality measures prior to entering the storm drain pipe capped for future use (labeled OUT-P1). During the interim this site will pond the undeveloped flows via a berm located along the southern and western sides of the tract.

The southern portion of the MWQS will have two basins contributing to the swale via storm drain (IN-P3, IN-P4) from the Student Housing Site. In addition to these basins, the West Road will outfall directly into the swale via surface flow (BASIN D). INLET B will accept these three basins as well as a number of offsite basins to the east. ARENA BASIN 2 is outlined within the COA submittal for the ARENA RENOVATION provided by Molzen and Corbin (COA HYDRO FILE #L15/D059). This basin will outfall into a pond within the Pit parking area and ultimately discharge 20CFS into a private storm drainage system to be constructed within the road south of the Student Housing Site (referred to hereafter as "South Road"). BASIN E encompasses the area south of the Pit site that is not accounted for in the hydrology submittal for the ARENA RENOVATIONS. It was broken up into sub-basins and will enter the new private storm drainage system within the South Road at various locations and inlets and eventually outfall directly to the MWQS (IN-P6). Due to storm drain cover restraints and capacity issues, there will be 2-24" HDPE pipes entering the MWQS at IN-P6. These two pipes have a capacity of 55.41CFS where as the basins contributing to this storm drain have a required Q=57.47CFS. The remaining 2.06CFS will outfall into the West Road and drain into the MWQS via surface flow similar to BASIN D. INLET B has been sized to accept all the basins mentioned and convey them directly to the South Diversion Channel.

Offsite Drainage

With the renovation of The Pit (including new parking lots), The Pit site will contain it's drainage utilizing a combination of surface flow and storm drainage. The tie-back slope (BASIN A) will be the only offsite drainage affecting the Student Housing site. The Pit will take appropriate precautions to prevent drainage from the new parking lots to the north to outfall down this new tie back slope onto the Student Housing property and route it around the site. The drainage from BASIN A will be routed through the Student Housing site and treated like the onsite drainage. In addition, this tie-back slope will be graded such that there are intermediate water harvesting areas along the slope to slow this drainage from causing significant erosion.

The northern half of The Pit site will continue to drain into Cesar Chavez via surface flow and then ultimately into the South Diversion Channel. Upon development of the Pit parking, this drainage will be diverted directly to the existing 96" storm drain along the northern half of the site. The Pit intends to seek LEED Certification for the new renovations and in doing so will require the parking lot runoff to be treated prior to entering the existing storm drain.

BASIN 5 is the only onsite basin that will outfall directly into Cesar Chavez via a sidewalk culvert. A 24" sidewalk culverts will be installed with the current COA work order to address this minor flow.

Floodplain

In accordance with FEMA Community Map Panel #35001C0334G, the site is located adjacent to a floodplain but not within the flood plain. The flood plain to the west is contained within the channel, and the flood plain to the north is contained within the road.

IV. CONCLUSION

The 100yr peak discharge from the site will be routed through a series of water quality mitigation measures before outfalling to the South Diversion Channel. These flows were computed in accordance with section 22.2 of the Development Process Manual. This drainage management plan provides for an approach which will safely manage flow from a 100yr storm event and meets city and AMAFCA requirements. A final grading and drainage plan and final drainage management plan with additional onsite hydraulic calculations and more detail will be submitted to the COA and AMAFCA for building permit review and approval. With this submittal we are seeking Hydrology approval for DRB Final Plat approval and DRC Work Order approval.

TABLE 1 - UNM STUDENT HOUSING BASIN PROPERTIES

Proposed Ultimate Development Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 2																
Basin ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages				Q(100yr) (cfs/sec.)	Q(100yr) (CFS)	WT E (Inches)	V(100-yr) (CF)	V(100-yr) CF	Q(2yr) (cfs/sec.)	Q(2yr) (CFS)	WT E (Inches)	V(2yr) (CF)	V(2yr-avr) CF
Onsite Basins																
1	90818	2.08	0.0%	5.0%	5.0%	90.0%	4.50	9.38	2.00	15183	26061	1.72	3.58	0.72	5445	8170
2	324285	7.44	0.0%	0.0%	15.0%	85.0%	4.47	33.25	1.97	53277	90030	1.70	12.64	0.69	18754	27943
3	172002	3.95	0.0%	0.0%	15.0%	85.0%	4.47	17.63	1.97	28259	47752	1.70	6.70	0.69	9947	14821
4	143908	3.30	0.0%	0.0%	15.0%	85.0%	4.47	14.75	1.97	23643	39952	1.70	5.61	0.69	8323	12400
5	35611	0.82	0.0%	40.0%	40.0%	20.0%	3.11	2.54	1.19	3525	4475	0.72	0.59	0.23	671	608
Offsite Basins																
A (Tie-back Slope)	132447	3.04	0.0%	50.0%	50.0%	0.0%	2.71	8.24	0.06	10541	10541	0.43	1.31	0.09	938	938
B (Commercial Site)	202429	4.65	0.0%	0.0%	15.0%	85.0%	4.47	25.75	1.97	33257	56199	1.70	7.89	0.69	11707	17443
C (West Road - N)	115157	2.64	0.0%	0.0%	35.0%	65.0%	4.15	10.98	1.77	17019	28699	1.48	3.92	0.57	6432	7927
D (West Road - S)	68700	1.58	0.0%	0.0%	35.0%	65.0%	4.15	6.55	1.77	10153	16107	1.48	2.34	0.57	3240	4729
E (Parking/Playing Fields)																
E1	28983	0.67	0.0%	0.0%	5.0%	95.0%	4.62	3.08	2.07	5001	8672	1.81	1.20	0.76	1831	2748
E2	247260	5.68	0.0%	40.0%	15.0%	45.0%	3.50	19.88	1.44	29578	44414	0.99	5.80	0.39	7954	11862
E3	118880	2.73	10.0%	15.0%	15.0%	60.0%	3.79	10.34	1.61	15965	25475	1.25	3.40	0.50	4848	7326
E4	24401	0.56	75.0%	25.0%	0.0%	0.0%	1.74	0.97	0.59	1205	1205	0.02	0.01	0.01	10	10
E5 (South Rd)	30376	0.70	0.0%	0.0%	5.0%	95.0%	4.62	3.22	2.07	5241	9089	1.81	1.26	0.76	1919	2861
POND 2 OUTFALL SEE COA HYDRO FOLDER #L15/D059 FOR BASIN 2 PROPERTIES.																
NORTHERN OUTFALL TO CHANNEL																
74.37 36° @ 2.35% Q = 75.85CFS, VEL = 15.88FPS																
SOUTHERN OUTFALL TO CHANNEL																
104.65 36° @ 4.0% Q = 104.85CFS, VEL = 20.94FPS																
NORTHERN OUTFALL TO CHANNEL 2YR TOTAL Q =																
28.03																
SOUTHERN OUTFALL TO CHANNEL 2YR TOTAL Q =																
33.13																

INLET TABLE				
INLET #	CONTRIBUTING BASIN	INLET TYPE	ACTUAL FLOW	AVAIL. HEAD
INLET 1	BASIN 1	COA TYPE T7	9.38	0.67
INLET 2	BASIN 4	COA TYPE T7	14.75	1.00
INLET A	BASINS 1,2,C	1-4" NMICOT MEDIAN DROP INLET SERIAL 623	53.61	2.22
INLET B	BASINS 3,4,D,E	2-4" NMICOT MEDIAN DROP INLET SERIAL 623	104.65	2.80

STORM DRAIN PIPES				
PIPE #	Size in.	Slope	Contributing Basin(s)	Capacity
PIPES OUTFALLING INTO MWQS				
IN-P1	24	1.00%	1	22.62
IN-P2	24	2.00%	2	31.99
IN-P3	24	1.00%	3	22.62
IN-P4	24	0.50%	4	18.00
IN-P5	24	1.00%	5	22.62
PIPES OUTFALLING DIRECTLY INTO SOUTH DIVERSION CHANNEL				
OUT-P1	24	2.00%	1, 2, C	31.99
OUT-P2	48	2.35%	2, 3, 4, D	102.25
OUT-P3	36	4.00%	3, 4, E, F, Pond 2	133.40

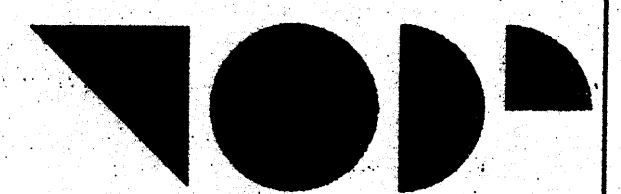
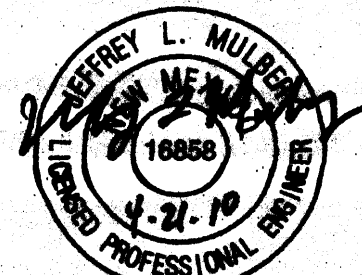
THE 2.06CFS NOT IN THE PIPE WILL BY PASS INLETS AND SURFACE DRAIN DIRECTLY INTO WEST ROAD

MWQS Volume		
Elev.	Storage Volume (cu ft)	Storage Volume (Ac-ft)
INLET A	0036.50	0.00
0036.75	167.00	0.0038
0036.90	797.87	0.0183
0036.25	1780.71	0.0409
0036.50	3186.33	0.0734
0036.75	5053.23	0.1160
0037.00	7886.02	0.1800
0037.25	10230.42	0.2346
0037.50	13612.46	0.3125
0037.75	17571.00	0.4024

NO. 08-2028-02

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ENGINEERING & SPATIAL DATA
ADVANCED TECHNOLOGIES

COMPLETION DATE
April 20, 2010

$Q = C_a \sqrt{2gh}$
 $Q = 1.49(28.8)^{1/2}(322)^{2/3}$
 $= 232 cfs$
 $C_a = 9.7(32.8)^{1/4} = 28.6$
 $C = 0.6$

Proj. Mgr. JLM
Dwn By: MJB
Rev. Date: Description:

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rec'd
4-21-10

CONCEPTUAL
DRAINAGE
MANAGEMENT PLAN

C-001

SOUTH DIVERSION CHANNEL

WEST ROAD

SITE CONCEPTUAL GRADING NOTES

1. ADDITIONAL AREA DRAINS WITHIN PLAZA AREAS AND LANDSCAPE AREAS WILL BE REQUIRED. LOCATION, SIZE, AND CONNECTION PIPE ALIGNMENTS TO BE DETERMINED UPON FURTHER DESIGN.
2. ADDITIONAL SMALL RETAINING WALLS AND/OR STEEP WALLS WITHIN BUILDING AREAS WILL BE REQUIRED. DETAILS TO BE DETERMINED UPON FURTHER DESIGN.
3. RETAINING WALL, HEIGHTS AND LOCATIONS, SHOWN ARE CONCEPTUAL AND ALTERNATE OPTIONS ARE TO BE CONSIDERED.

GRADING KEYNOTES

1. INSTALL STORM DRAIN, SIZE PER PLAN
2. INSTALL STORM DRAIN TYPE 'C' INLET
3. INSTALL STORM DRAIN TYPE 'D' INLET
4. INSTALL FLARED END SECTION
5. INSTALL MANHOLE
6. OUTFALL TO MEDIAN WATER QUALITY SWALE
7. SEE PIT PLANS FOR INLET AND MANHOLE CONSTRUCTION

LEGEND

---	PROPERTY LINE
---	EXISTING CONTOURS
5301	EXISTING GROUND SPOT ELEVATION
X 5301.15	EXISTING ELECTRICAL POLE
65.23	PROPOSED SPOT ELEVATION
5-2.0%	TO-TOP OF CURB, TO-BOTTOM LINE
---	TO-TOP OF WALL, TO-BOTTOM OF WALL
---	EX-EXISTING, TO-TOP OF GRADE
---	PROPOSED DIRECTION OF FLOW
---	WATER BLOCK
---	PROPOSED RETAINING WALL
---	PROPOSED INDEX CONTOURS
---	PROPOSED INTER CONTOURS
---	PROPOSED CURB & GUTTER
---	EASEMENT
---	EXISTING TREE
---	PROPOSED LIGHTING
---	PROPOSED STORM DRAIN LINE
---	PROPOSED STORM DRAIN MANHOLE
---	PROPOSED STORM DRAIN INLET
---	EXISTING STORM DRAIN MANHOLE
---	LIMITS OF GRADING

NOTE: THIS PLAN IS FOR ROUGH GRADING (EARTHMOVING) ONLY. THIS PLAN SHALL NOT BE USED FOR CONSTRUCTION OF ANY HARDSCAPE OR UNDERGROUND UTILITIES. GRADES SHOWN HEREON ARE CONCEPTUAL AND SUBJECT TO CHANGE.

NOTE: SEE COA WORK ORDER #566582 FOR WEST ROAD AND CESAR CHAVEZ CONSTRUCTION.

NO. 08-2028-02
University of New Mexico Student Housing
Albuquerque, NM

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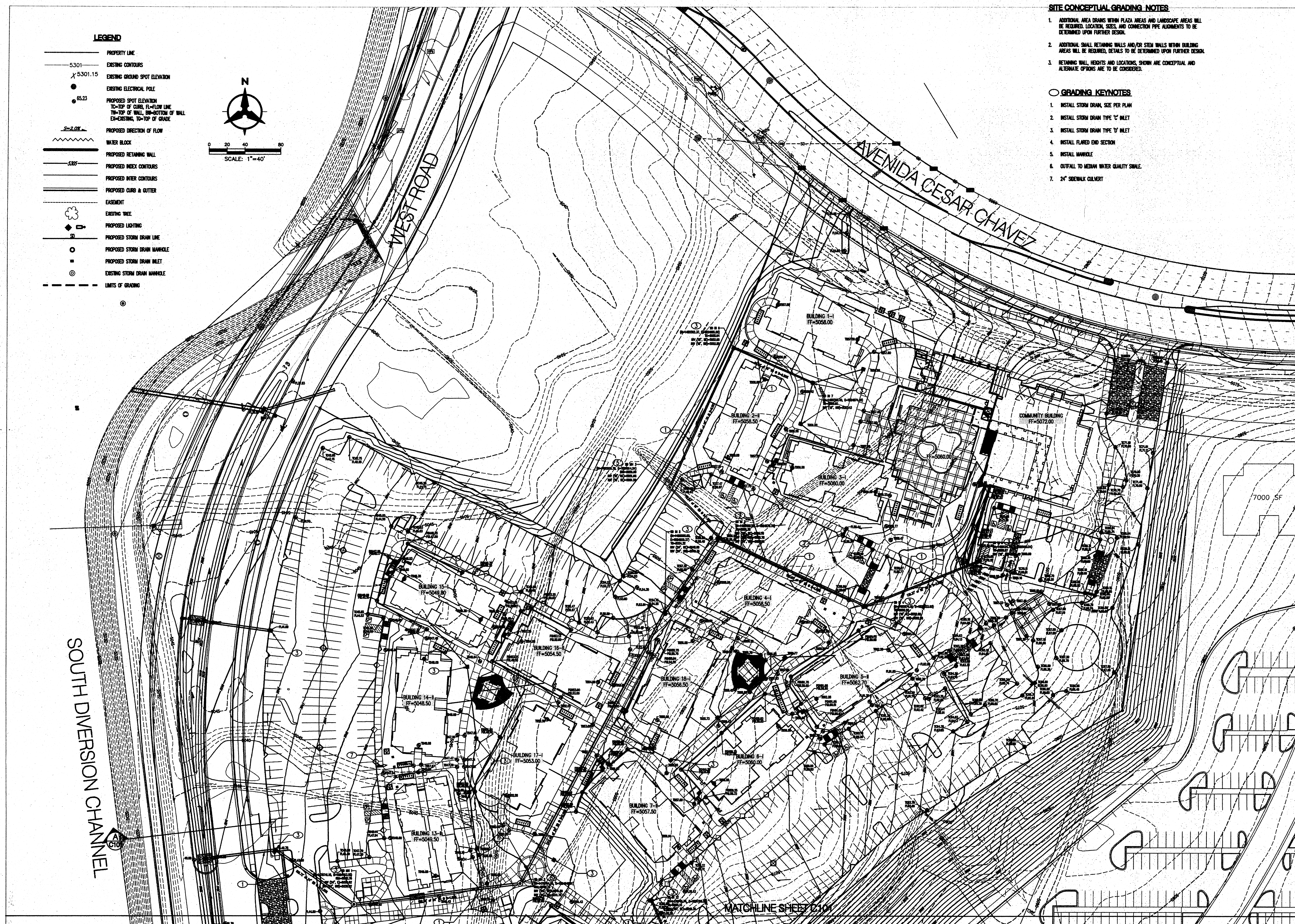
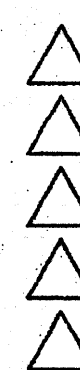
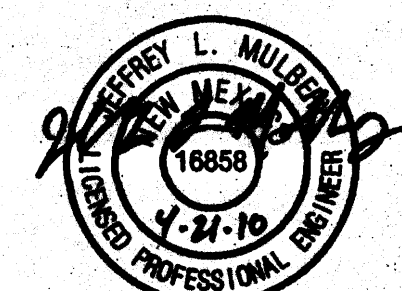
COMPLETION DATE
APRIL 21, 2010

Proj Mgr: JF
Dwn By: RCC
Rev. Date: Description:
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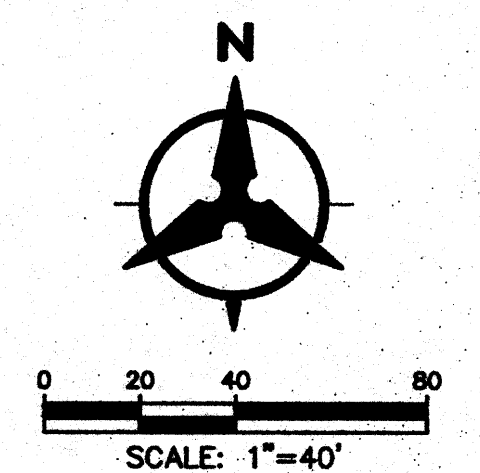
CONCEPTUAL
GRADING PLAN

C-101

Wed, 21-Apr-2010 11:13 am, Plotted by: MBALSKOVITS
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- LEGEND**
- PROPERTY LINE
 - EXISTING CONTOURS
 - EXISTING GROUND SPOT ELEVATION
 - EXISTING ELECTRICAL POLE
 - PROPOSED SPOT ELEVATION
 - TO-TOP OF CURB, FL-LOW LINE
 - TO-TOP OF WALL, BR-BOTTOM OF WALL
 - EX-EXISTING, TO-TOP OF GRADE
 - PROPOSED DIRECTION OF FLOW
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 - PROPOSED RETAINING WALL
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 - PROPOSED INTER CONTOURS
 - PROPOSED CURB & GUTTER
 - EASEMENT
 - EXISTING TREE
 - PROPOSED LIGHTING
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 - PROPOSED STORM DRAIN INLET
 - EXISTING STORM DRAIN MANHOLE
 - LIMITS OF GRADING



SITE CONCEPTUAL GRADING NOTES

1. ADDITIONAL AREA DRAINS WITHIN PLAZA AREAS AND LANDSCAPE AREAS WILL BE REQUIRED. LOCATION, SIZES, AND CONNECTION PIPE ALIGNMENTS TO BE DETERMINED UPON FURTHER DESIGN.
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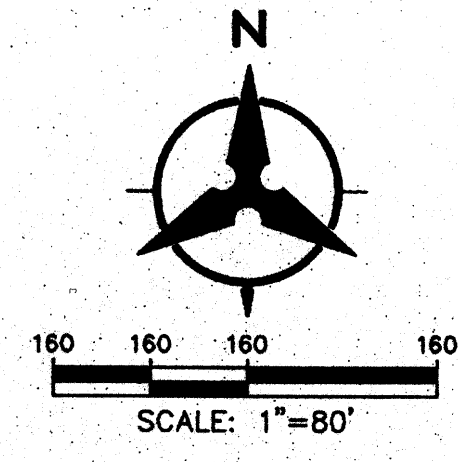
GRADING KEYNOTES

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2. INSTALL STORM DRAIN TYPE "C" INLET
3. INSTALL STORM DRAIN TYPE "D" INLET
4. INSTALL FLARED END SECTION
5. INSTALL MANHOLE
6. OUTFALL TO MEDIAN WATER QUALITY SHALE
7. 24" SIDEWALK CULVERT

NOTE: SEE COA WORK ORDER #66582 FOR WEST ROAD AND CESAR CHAVEZ CONSTRUCTION.

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RECEIVED
FEB 19 2010
HYDROLOGY SECTION



MINOR MODIFICATIONS TO THE
OUTFALL STRUCTURE WILL BE
REQUIRED TO CONSTRUCT THE
EASTERN LANES OF WEST ROAD.
THE MODIFICATIONS WILL AFFECT
THE UPPER PORTION OF THE
EASTERN SLOPE PAVING ONLY.
ANY HYDRAULIC IMPACT WILL BE
NEGIGIBLE.

OUTFALL TO CHANNEL
Q_{max} = 78.67 CFS
Q_{min} = 28.80 CFS
V = 12.74 FPS

MEDIAN WATER
QUALITY SWALE

OUTFALL TO MEDIAN
WATER QUALITY SWALE

SOUTH DIVERSION CHANNEL

OUTFALL TO MEDIAN
WATER QUALITY SWALE

West Road
Q_{max} = 72.00 CFS
Q_{min} = 1.58 CFS

OUTFALL TO CHANNEL
Q_{max} = 111.28 CFS
Q_{min} = 38.04 CFS
V = 12.21 FPS

THE WESTERN LANES OF
WEST ROAD TO BE
CONSTRUCTED IN THE
FUTURE.

MANNING'S N = 0.030 SLOPE = 0.001

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	4.0	3.0	14.0	0.0			
2.0	12.0	0.0	4.0	26.0	0.0			

WSEL	DEPTH	FLOW	FLOW	NETTED	FLOW	TOPWD	TOTAL
FT.	INCH	AREA	RATE	PER	VEL	PLUS	ENERGY
FT.		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.250	0.250	0.688	0.359	3.581	0.521	3.500	0.254
0.500	0.500	1.375	1.333	5.162	0.782	5.000	0.506
0.750	0.750	2.063	2.030	6.743	0.950	6.500	0.764
1.000	1.000	2.750	2.705	8.325	1.115	8.000	1.019
1.250	1.250	3.438	3.361	9.906	1.265	9.500	1.275
1.500	1.500	4.125	4.031	11.487	1.404	11.000	1.531
1.750	1.750	4.813	4.696	13.068	1.538	12.500	1.787
2.000	2.000	5.500	5.375	14.649	1.661	14.000	2.043
2.250	2.250	6.188	6.045	16.230	1.782	15.500	2.299
2.500	2.500	6.875	6.715	17.811	1.898	17.000	2.556
2.750	2.750	7.563	7.385	19.392	2.010	18.500	2.813
3.000	3.000	8.250	8.056	20.974	2.119	20.000	3.070
3.250	3.250	8.938	8.722	22.555	2.225	21.500	3.327
3.500	3.500	9.625	9.385	24.136	2.329	23.000	3.584
3.750	3.750	10.313	10.026	25.717	2.430	24.500	3.842
4.000	4.000	11.000	10.619	27.298	2.529	26.000	4.099

MEDIAN WATER QUALITY SWALE (MWQS) CALCULATIONS
SECTION 'A' CROSS SECTION ANALYZED

MAX. 2YR STORM EVENT FOR NORTHERN MWQS (Q=17.57CFS)
MAX. 2YR STORM EVENT FOR SOUTHERN MWQS (Q=28.00CFS)
MAX. 100YR STORM EVENT FOR NORTHERN MWQS (Q=40.21CFS)
MAX. 100YR STORM EVENT FOR SOUTHERN MWQS (Q=67.87CFS)

CONCEPTUAL DRAINAGE MANAGEMENT PLAN

I. INTRODUCTION

The purpose of this submittal is to present a conceptual grading and drainage plan for the proposed UNM Student Housing Project. The site is located along the south side of Avenida Cesar Chavez just west of the University Arena (AKA "The Pit"). There is vacant land to the south and the AMAFCA South Diversion Channel to the west. The project will include 18 student housing buildings, a common community center building, and a maintenance building. With this submittal we are seeking Hydrology approval for DRB preliminary/final plot approval. Building permits will be issued by the state of New Mexico Construction Industries Division (CID). In addition there will be a separate submittal to the City of Albuquerque hydrology department and AMAFCA for review and approval.

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The site is approximately 18.5 acres and is currently undeveloped. The land slopes significantly from the east to west toward the existing South Diversion Channel. Drainage enters the channel via an inlet structure south of the site. There is significant grade change from The Pit parking lot down to the site which will be addressed in the proposed grades with tieback slopes and some retaining walls. Currently a portion of The Pit tract outfalls directly onto the site from the east with little or no erosion or storm water mitigation.

III. PROPOSED HYDROLOGIC CONDITIONS

The site has been broken up into 5 basins (See TABLE 1 - UNM STUDENT HOUSING BASINS PROPERTIES). Via storm drain and surface flow, the site will ultimately outfall to the south diversion channel.

Storm Water Quality

First, the flows will be conveyed through bioswales, allowing the majority of the total suspended solids, sediment and other "first flush" pollutants to settle out. This will be accomplished by conveying a portion of the storm drain system (BASINS 1, 2 & 3) directly to the median of the private access road along the west side of the site ("West Road"), which is noted as a "median water quality swale" (see section B). This bioswale will be sloped 0.1% to 0.5% toward an inlet located at the low point of the median. The storm drainage outfalls directly from the site are located as close to the highpoint of this swale as possible in order to allow for maximum exposure to the water quality swale, and thus maximum use of the vegetative filtration that will be located within the swales. The remaining basin (BASIN 4) will surface flow across the southern parking lot, through curb openings and into an onsite bioswale (see section 2A). This swale will outfall into each driveway entry, and then into the "median water quality swale". The West Road (BASINS D & E) will have an inverted crown and will also drain through curb openings to the "median water quality swale". Storm drainage pipe and curb openings will be sized to accommodate all flows.

Secondly, the water that is conveyed through the median bioswale will ultimately be collected in one of two inlets that will outfall directly into the channel. At these locations, a water quality manhole will be installed as an "end of pipe" treatment. This will further minimize sediment, floatables, and other pollutants which would otherwise enter the channel.

Offsite Drainage

With the renovation of The Pit (including new parking lots), The Pit site will contain it's drainage utilizing a combination of surface flow and storm drainage. The tie-back slope (BASIN A) will be the only offsite drainage affecting the site. The Pit will take appropriate precautions to prevent drainage from the new parking lots to outfall down this new tie back slope onto the Student Housing property and route it around the site. The drainage from BASIN A will be routed through the Student Housing site and treated like the onsite drainage.

The northern half of The Pit site will continue to drain into Cesar Chavez via surface flow and then ultimately into the South Diversion Channel. Upon development of The Pit parking, this drainage will be diverted directly to the existing 96" storm drain along the northern half of the site. The Pit intends to seek LEED Certification for the new renovations and in doing so will require the parking lot runoff to be treated prior to entering the existing storm drain.

The southern half of The Pit site (Basin E) currently outfalls across the new Student Housing Tract into the South Diversion Channel. Upon development of the Student Housing tract, a storm drainage system will be constructed to accept the flows from this Basin, preventing them from entering the Site. In addition a portion of a roadway (referred to hereafter as South Road) will be constructed which will also aid in conveying drainage from The Pit Parking lot to the South Diversion Channel. Prior to entering the channel, this drainage will enter the new Median Water Quality Swale either by direct storm drainage or via surface flow into new curb openings. The outfall

Floodplain

In accordance with FEMA Community Map Panel #35001C03346, the site is located adjacent to a floodplain but not within the flood plain. The flood plain to the west is contained within the channel, and the flood plain to the north is contained within the road.

IV. CONCLUSION

The 100yr peak discharge from the site will be routed through a series of water quality mitigation measures before outfalling to the South Diversion Channel. These flows were computed in accordance with section 22.2 of the Development Process Manual. This conceptual drainage management plan provides for an approach which will safely manage flow from a 100yr storm event and meets city requirements. A final grading and drainage plan and final drainage management plan with additional hydraulic calculations and more detail will be submitted to the COA prior to building permit approval and to AMAFCA prior to AMAFCA approval of construction plans for the connections to the South Diversion Channel. With this submittal we are seeking Hydrology approval for DRB Preliminary/Final Plot approval.

Handwritten calculations:

$$A = \frac{1}{2}bh(2) + 2(4) = \frac{1}{2}(4)(10) + 8 = 28$$
$$16 \times 100' = 1600'$$
$$56 \times 120' = 6720'$$

This table is based on the DPM Section 22.2, Zone: 2																
Basin ID	Area (SQ. FT.)	Area (AC.)	Land Treatment Percentages				Q(100yr) (cfs/ac.)	Q(100yr) (CFS)	WT E (Inches)	V(100-yr) (CF)	V(100-yr) CF	Q(2yr) (cfs/ac.)	Q(2yr) (CFS)	WT E (Inches)	V(2yr-4yr) (CF)	V(2yr-20yr) CF
Onsite Basins																
1	90818	2.08	0.0%	0.0%	15.0%	85.0%	4.47	9.31	1.97	14921	25213	1.70	3.54	0.69	5252	7825
2	323271	7.42	0.0%	0.0%	15.0%	85.0%	4.47	33.14	1.97	53111	89748	1.70	12.60	0.69	18696	27855
3	172002	3.95	0.0%	0.0%	15.0%	85.0%	4.47	17.63	1.97	28259	47762	1.70	6.70	0.69	9947	14821
4	143908	3.30	0.0%	0.0%	15.0%	85.0%	4.47	14.75	1.97	23643	39952	1.70	5.61	0.69	8323	12400
5	36825	0.84	0.0%	0.0%	15.0%	85.0%	4.47	3.75	1.97	6017	10168	1.70	1.43	0.69	2118	3156
Offsite Basins																
A (Tie-back Slope)	127595	2.93	0.0%	50.0%	50.0%	0.0%	2.71	7.94	0.96	10154	10154	0.43	1.26	0.09	904	904
B (Commercial Site)	202429	4.65	0.0%	0.0%	15.0%	85.0%	4.47	20.75	1.97	33257	56199	1.70	7.89	0.69	11707	17443
C (West Road - N)	121892	2.79	0.0%	0.0%	35.0%	65.0%	4.15	11.60	1.77	17985	28532	1.48	4.14	0.57	5740	8376
D (West Road)	68700	1.58	0.0%	0.0%	35.0%	65.0%	4.15	6.55	1.77	10153	16107	1.48	2.34	0.57	3240	4729
E (Parking/Playing Fields)	701444	16.10	0.0%	0.0%	65.0%	35.0%	3.69	59.36	1.48	86307	119041	1.16	18.65	0.37	21862	30045
NORTHERN OUTFALL TO CHANNEL 10.61' 36" @ 1.5% Q = 58.00CFS, VEL = 12.74FPS																
SOUTHERN OUTFALL TO CHANNEL 10.23' 72" @ 1.1% Q = 113.74CFS, VEL = 12.21FPS																
NORTHERN OUTFALL TO CHANNEL 2YR TOTAL Q = 28.17																
SOUTHERN OUTFALL TO CHANNEL 2YR TOTAL Q = 34.56																

Handwritten calculations:

$$\text{Basin 1, 2, 3, 4, 5} = 9.5 + 33.14 + 11.6 + 14.75 + 3.75 = 72.74$$
$$56.24 \text{ CFS} + 210.77 = 267.01$$

THIS AREA IS SLATED FOR PLAYING FIELDS TO BE CONSTRUCTED AT LATER DATE. THE BASIN ANALYSIS ASSUMED BASIN E UNDER DEVELOPED CONDITIONS WITH THE PLAYING FIELDS COMPLETED.

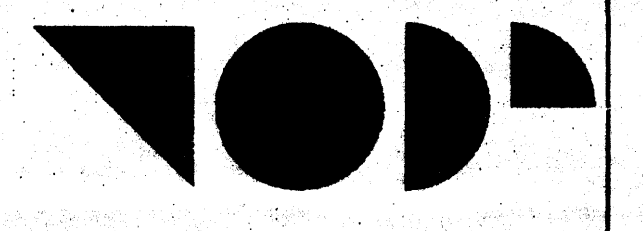
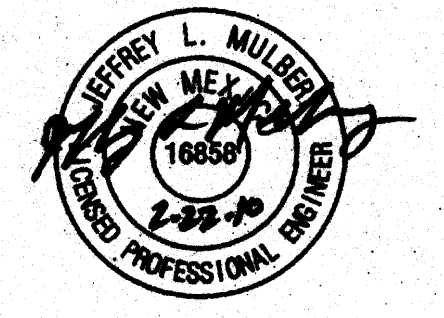
NOTE: INLETS AND STORM DRAIN WILL BE REQUIRED TO CONVEY THE RUNOFF FROM BASIN E. IT IS ASSUMED THAT STORM WATER MITIGATION WILL BE INCLUDED WITH THE BUILDOUT OF THIS BASIN.

NOTE: THE WESTERN LANES OF "WEST ROAD" WILL NOT BE CONSTRUCTED UNTIL FUTURE DEVELOPMENT SOUTH OF THE SITE WARRANTS THE WIDENING. AT THAT TIME THE OUTFALL STRUCTURE WILL NEED TO BE SIGNIFICANTLY MODIFIED INCLUDING EXTENDING THE 96" STORM DRAIN.

NOTE: THIS PLAN DEPICTS INFRASTRUCTURE WHICH IS REQUIRED FOR OVERALL STORM WATER MANAGEMENT. THIS PLAN DOES NOT ESTABLISH WHICH INDIVIDUAL PARTIES WHO ARE FINANCIALLY RESPONSIBLE FOR EACH ELEMENT.

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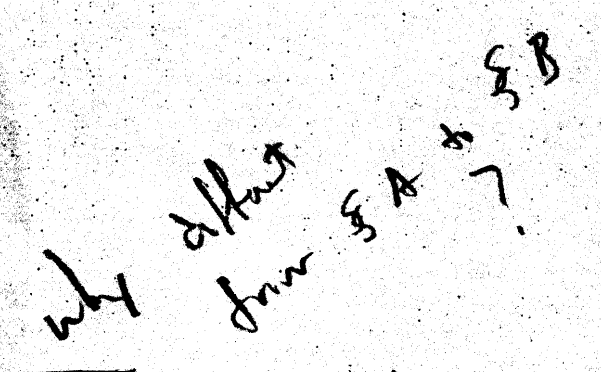
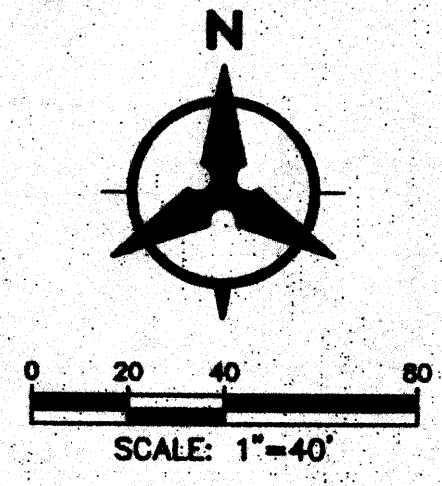
COMPLETION DATE
February 22, 2010

Proj Mgr: JLM
Dwn By: MJB
Rev. Date: Description:
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Schematic Design
Complete

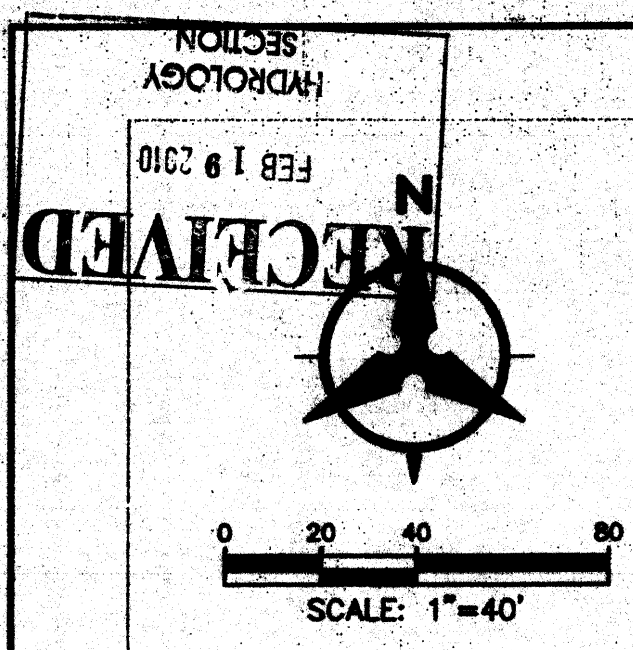
CONCEPTUAL DRAINAGE MANAGEMENT PLAN
C-001

SOUTH DIVERSION CHANNEL



1. INSTALL STORM DRAIN, SIZE PER PLAN
2. INSTALL STORM DRAIN TYPE 'C' INLET
3. INSTALL STORM DRAIN TYPE 'D' INLET
4. INSTALL FLARED END SECTION
5. INSTALL MANHOLE

C-101



SOUTH DIVERSION CHANNEL

CAPPED FOR FUTURE USE

MATCHLINE SHEET C-101

SITE CONCEPTUAL GRADING NOTES

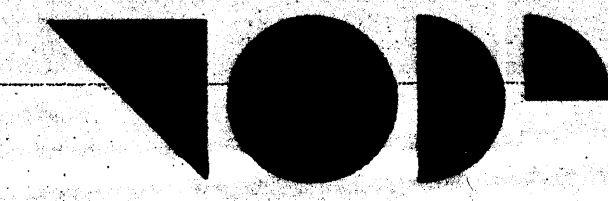
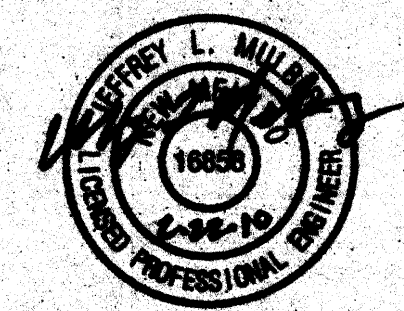
1. ADDITIONAL AREA DRAINAGE WITHIN PLAZA AREAS AND LANDSCAPE AREAS WILL BE REQUIRED. LOCATION, SIZE, AND CONNECTION PIPE ALIGNMENTS TO BE DETERMINED UPON FURTHER DESIGN.
2. ADDITIONAL SMALL RETAINING WALLS AND/OR STEEP WALLS WITHIN BUILDING AREAS WILL BE REQUIRED. DETAILS TO BE DETERMINED UPON FURTHER DESIGN.
3. RETAINING WALL HEIGHTS AND LOCATIONS, SHOWN ARE CONCEPTUAL AND ALTERNATE OPTIONS ARE TO BE CONSIDERED.

GRADING KEYNOTES

1. INSTALL STORM DRAIN, SIZE PER PLAN
2. INSTALL STORM DRAIN TYPE 'C' INLET
3. INSTALL STORM DRAIN TYPE 'U' INLET
4. INSTALL FLARED END SECTION
5. INSTALL MANHOLE

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COMPLETION DATE
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2-22-10

Proj Mgr.: JF
Dwn By: RCC
Rev. Date: Description:
▲
▲
▲
▲
▲

Schematic Design
Complete

**CONCEPTUAL
GRADING PLAN**

C-100