CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

NORTH DOMINGO BACA PARK PHASE 5
MASTER GRADING PLAN

Introduction

The project site is located in the Northeast Heights of Albuquerque between Corona and Carmel, west of Wyoming Boulevard, and east of Kinney Dam. The site is currently undeveloped. There is an existing police and fire station located on the northeast corner of the site at the intersection of Corona and Wyoming Boulevard. However, this facility is not part of the park development. A twin concrete box culvert (CBC) was recently constructed to convey flows from the Window G Channel (at Wyoming Boulevard) through the site to the Kinney Dam (an AMAFCA facility). This eliminated all flood plains that existing on the site prior to the construction of the box culvert. The existing terrain generally slopes to the west and the ground cover is primarily desert vegetation.

Proposed Development

The information shown on this Master Drainage Plan (MDP) is the proposed grading and layout for Phase 5 of the overall park project. Phase 5 will be split into two phases, 5A and 5B. 5A will consist of the dog run area on the west side of the site and the new parking lot south of Corona. 5B will consist of the play area east of the Corona parking lot and the skate park located east of the play area. This MDP addresses the grading of the entire site. Grading and drainage plans for each phase of the project will be submitted to COA Hydrology Development for review prior to the start of construction for that phase.

Hydrology

Chapter 22 of the City of Albuquerque (COA) Development Process Manual (DPM) was used to determine the proposed conditions hydrology for the project site. The design storm is the 100-yr, 6-hour event. The DPM allows the use of the Rational Method for determining runoff rates and volumes for areas that are 40-acre or less in size. This analysis uses the Rational Method. A cfs/acre and excess precipitation coefficient is used to determine the discharge and volume, respectively, depending on the location of the project. The project site is located in zone 3 (between San Mateo and Eubank).

The project site was sub-divided into 22 basins designated 1 through 22 with limits as shown. The total area of the basins is approximately 10 acres. Basins 1 through 18 and 20 will drain to existing and proposed storm drain systems and then into the existing CBC located on the site. Basins 21 and 22 will drain to the existing Kinney Dam via historic drainage paths. Only Drainage Basin 19 will drain to Corona with the flow from this basin being 0.4 cfs.

Proposed Storm Drain Systems

The inlets, both proposed and existing, are shown on the plan and labeled as such. There are five storm drain systems proposed for the site. Two of these systems use existing catch basins, manholes, and storm drain pipe in their layouts. The other three systems are new systems. Each system is designated on the plan by a letter (e.g. "A") for the system and a number for each storm drain pipe that comprises that system. All systems intercept the flows from the site and convey these flows to the recently constructed box culvert. New connections to the existing box culvert will be connected with the storm drain inverts placed above the 100-year water surface elevation in the box culvert. Table 2 shows the system designations and all the properties of the pipes within each system. All pipes are sized to carry the flow that will reach the system at each leg. The exception to this is System "E". Pipe "E4" (an existing 18-inch RCP) has less full flow capacity than is reaching the pipe. However, the invert of the pipe is 4.5 feet below the grate elevation. Therefore, the system will operate under pressure and will convey the flows.

Table 1 - COA DPM Hydrology Data, Proposed Conditions

Hydrology Calcs using COA DPM, Chapter 22, Section 2

Precipitation Zone: 3 (from Table A-1)

Excess Precipitation, E (in): (from Table A-8, 100-yr storm)

	Land Treatment		
A	B	C	D
0.66	0.92	1.29	2.36

Peak Discharge, Q (cfs/acre): (from Table A-9, 100-yr storm)

	Land Treatment		
A	B	C	D
1.87	2.60	3.45	5.02

100-YR STORM HYDROLOGY

Basin	Area (SF)	Area (acres)	Land Treatment Percent				Volume, V (acre-ft)	Discharge, Q (cfs)
			A	B	C	D		
	(a)			(b)			(c)	(d)
1	15213	0.349	0	55	45	0	0.0316	1.0
2	11728	0.269	0	75	15	10	0.0251	0.8
3	19906	0.457	0	20	10	70	0.0748	2.0
4	22672	0.520	0	0	20	80	0.0931	2.4
5	15796	0.363	0	75	15	10	0.0338	1.1
6	29293	0.672	0	0	0	10	0.0596	1.9
7	2760	0.063	0	80	10	10	0.0058	0.2
8	11760	0.270	0	80	10	10	0.0248	0.8
9	13894	0.319	0	25	50	25	0.0389	1.2
10	13623	0.313	0	25	50	25	0.0382	1.1
11	17413	0.400	0	70	20	10	0.0379	1.2
12	23311	0.535	0	15	65	20	0.0846	1.9
13	10464	0.240	0	0	100	0	0.0258	0.8
14	68465	1.572	0	0	20	80	0.2811	7.4
15	31988	0.734	0	85	15	0	0.0597	2.0
16	8478	0.195	0	85	15	0	0.0158	0.5
17	18969	0.435	0	75	15	10	0.0406	1.3
18	10047	0.231	0	90	5	5	0.0194	0.6
19	6132	0.141	0	95	5	0	0.0110	0.4
20	47759	1.096	0	90	5	5	0.0923	3.0
21	31667	0.727	0	85	5	10	0.0658	2.1
22	7041	0.162	0	90	5	5	0.0136	0.4
TOTAL	438388	10.064					1.1533	34.3

NOTES:
(a) Areas determined using Basin Map.
(b) Land Treatment Percent visually estimated from Basin Map.
(c) Volume determined using the following equations a-5 and a-6 from the DPM:
Volume, $V = (((E_A*A_A + E_B*A_B + E_C*A_C + E_D*A_D)/A_{TOTAL})*A_{TOTAL})/12$
(d) Discharge determined using the following equation a-10 from the DPM:
Discharge, $Q = Q_{PA}*A_A + Q_{PB}*A_B + Q_{PC}*A_C + Q_{PD}*A_O$

Table 2 - Storm Drain Data

Name/System	Size (in.)	Material	Existing/Proposed	Length (ft)	Slope (ft/ft)	Flow in Pipe (cfs)	Capacity of Pipe (cfs)	Capacity > Flow?
System "A"								
A1	18	PVC	Proposed	53	0.0139	1.3	5.5	Yes
A2	18	RCP	Existing	210	0.0100	1.9	10.5	Yes
A3	18	RCP	Existing	47	0.0100	4.9	10.5	Yes
A4	18	RCP	Existing	36	0.0150	4.9	12.9	Yes
System "B"								
B1	12	PVC	Proposed	89	0.0050	0.8	3.3	Yes
B2	18	PVC	Proposed	82	0.0100	10.2	13.7	Yes
B3	18	PVC	Proposed	85	0.0100	10.7	13.7	Yes
B4	24	DIP	Proposed	10	0.0100	10.7	24.5	Yes
System "C"								
C1	12	PVC	Proposed	76	0.0100	0.8	4.6	Yes
C2	12	PVC	Proposed	139	0.0100	2.0	4.6	Yes
C3	12	PVC	Proposed	85	0.0050	1.1	3.3	Yes
C4	24	PVC	Proposed	175	0.0100	5.0	29.4	Yes
C5	24	DIP	Proposed	10	0.0100	5.0	24.5	Yes
System "D"								
D1	12	PVC	Proposed	160	0.0100	1.1	4.6	Yes
D2	12	PVC	Proposed	61	0.0100	1.1	4.6	Yes
D3	18	DIP	Proposed	24	0.0100	4.1	11.4	Yes
System "E"								
E1	2-24	RCP	Existing	N/A	N/A	11.9	N/A	N/A
E2	12	PVC	Proposed	116	0.0100	1.0	4.6	Yes
E3	12	PVC	Proposed	24	0.0200	3.4	6.5	Yes
E4*	18	RCP	Existing	136	0.0100	17.3	10.5	No
E5	18	RCP	Existing	27	0.0380	17.5	20.5	Yes

* System will operate under pressure.

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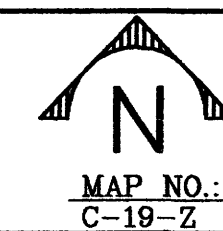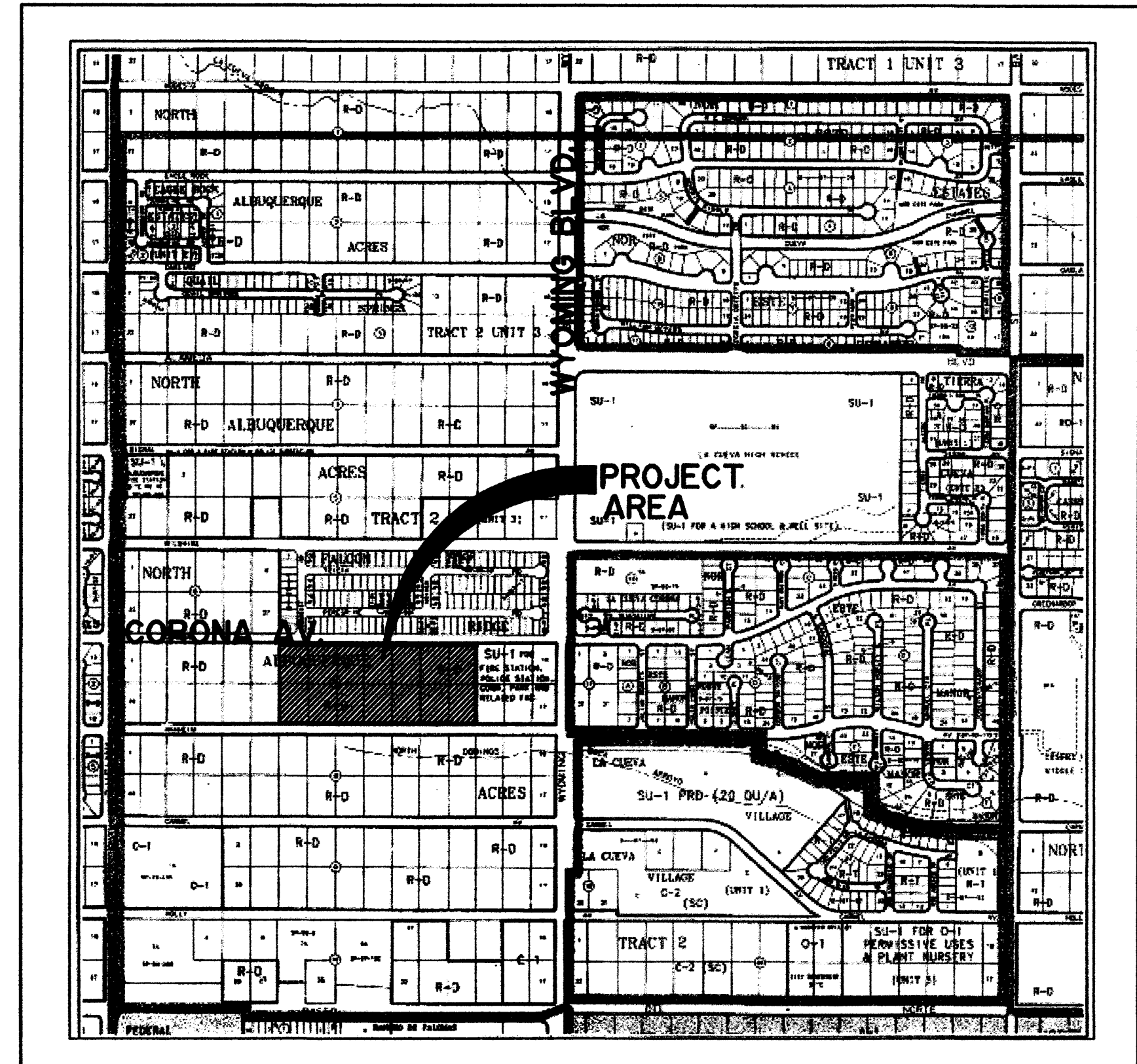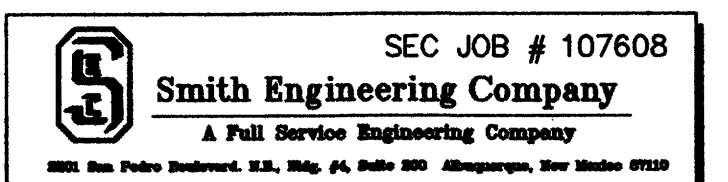
REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE
ENGINEERS STAMP & SIGNATURE		APPROVED		ENGINEER		DATE	APPROVED FOR CONSTRUCTION
		DRC Chairman					
		Transportation					
		Water/Wastewater				DEC 19 2008	
		Hydrology					
		C I P					
		AMAFCA					
		Constr. Coord.				CITY ENGINEER	DATE

PROJECT NO.
713893

SHEET NO. _____ DRAWING NO. 1 OF 4

CORONA AVENUE

BASIN 19
BASIN 18
BASIN 17
BASIN 21
BASIN 20
BASIN 22
BAS

GRATE ELEV.=42.00
INV. : 39.50
GRATE ELEV.=43.50
INV. : 40.24

GRATE ELEV.=39.92
PROPOSED ELEV.=43.50
INV. : 38.94

SYSTEM "A"

RIM = 51.80
INV. : 45.20

MATCH LINE
SEE SHEET 3

KEYED NOTES

1. EXISTING DROP INLET.
2. EXISTING STORM DRAIN.
3. EXISTING BOX CULVERT.
4. EXISTING MANHOLE.
5. PROPOSED DROP INLET.
6. PROPOSED STORM DRAIN.
7. EXISTING STORMCEPTOR MANHOLE. ADJUST RIM TO NEW GRADE.
8. PROPOSED PCC CURB & GUTTER.
9. PROPOSED PCC CONCRETE SIDEWALK.
10. PROPOSED POROUS CONCRETE PAVING.
11. PROPOSED ASPHALT PAVING.
12. PROPOSED CULVERT.
13. PROPOSED SIDEWALK CULVERT.
14. PROPOSED OVERFLOW WEIR IN LANDSCAPED AREAS.
15. PROPOSED PARKING BUMPER.
16. PROPOSED PARKING LOT LIGHTS.
17. PROPOSED SEATING AREAS.
18. PROPOSED RUNOFF HARVESTING AREAS.
19. PROPOSED TURF AREA.
20. PROPOSED PCC SKATE PARK.
21. PROPOSED PLAY STRUCTURE.
22. PROPOSED RAISED CURB TO COLLECT RUNOFF AT INLET.
23. PROPOSED DOG RUN AREA WITH MULCH.
24. PROPOSED FENCE.
25. PROPOSED GRASS AREA.
26. PROPOSED PLANTING AREA WITH LANDSCAPE GRAVEL.
27. PROPOSED MANHOLE.
28. PROPOSED BOULDER SEATING AREA.

NOTE:
PROPOSED TREES LEFT OFF FOR CLARITY.

LEGEND:

– – –	EXISTING TOPOGRAPHY
◯	EXISTING MANHOLE
▦	EXISTING INLET
====	EXISTING STORM DRAIN
∿	WATERBLOCK
◄	FLOW ARROW
—5345—	PROPOSED TOPOGRAPHY
▦	PROPOSED INLET
——	PROPOSED STORM DRAIN
▓▓	PROPOSED SIDEWALK CULVERT
A3	PROPOSED STORM DRAIN DESIGNATOR
●	PROPOSED MANHOLE

N

15' 0   30'   60'
SCALE: 1" = 30'

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

TITLE:
NORTH DOMINGO BACA PARK, PHASE 5
MASTER GRADING PLAN

DEC 19 2008

Design Review Committee	City Engineer Approval

REMARKS
REVISIONS
DESIGN

DESIGNED BY	RCC	DATE 05/07
DRAWN BY	RCC	DATE 05/07
CHECKED BY	PJC	DATE 05/07

Project No.	Zone Map No.	Sheet No.	Drawing No.	Of
713893	C-19-Z		2	4

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NOTE:
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CORONA AVENUE

BASIN 13
BASIN 14
BASIN 15
BASIN 16
BASIN 17
BASIN 18
BASIN 11

24" DIP STORM DRAIN INVERT=45.10
HGL ELEV. IN BOX=45.10

24" DIP STORM DRAIN INVERT=55.20
HGL ELEV. IN BOX=55.20

MATCH LINE SEE SHEET 2
MATCH LINE SEE SHEET 4

PIPE PENETRATION DETAIL
NOT TO SCALE

- 3 #5 HOOPS EQ. SP. PROVIDE MIN. 24" LOOP ON HOOP STEEL
- EXISTING TWIN 10'X6' CBC (REINFORCED)
- PROPOSED STORM DRAIN
- STORM DRAIN O.D.=16"
- NEW SD INVERT SEE LAYOUT PLANS
- 25' #5 DOWELS @ 6" O.C. EPOXY 4" INTO WALL
- 12" SUBGRADE COMPACTED TO 90% UNDER COLLAR PER ASTM D-1557

LEGEND:

Symbol	Description
– – –	EXISTING TOPOGRAPHY
◯	EXISTING MANHOLE
▦	EXISTING INLET
=======	EXISTING STORM DRAIN
∿	WATERBLOCK
►	FLOW ARROW
5345	PROPOSED TOPOGRAPHY
▦	PROPOSED INLET
═══	PROPOSED STORM DRAIN
▨	PROPOSED SIDEWALK CULVERT
A3	PROPOSED STORM DRAIN DESIGNATOR
●	PROPOSED MANHOLE

SCALE: 1" = 30'

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NOTE:
PROPOSED TREES LEFT OFF FOR CLARITY.

29. PROPOSED SHADE STRUCTURES (3).
30. SEATING AREAS.

LEGEND:

- EXISTING TOPOGRAPHY
- EXISTING MANHOLE
- EXISTING INLET
- EXISTING STORM DRAIN
- WATERBLOCK
- FLOW ARROW
- 5345 PROPOSED TOPOGRAPHY
- PROPOSED INLET
- PROPOSED STORM DRAIN
- PROPOSED SIDEWALK CULVERT
- PROPOSED STORM DRAIN DESIGNATOR
- PROPOSED MANHOLE

MATCH LINE
SEE SHEET 3

CORONA AVENUE

SPEED LIMIT 25

WYOMING BOULEVARD

BASIN 8
BASIN 11
BASIN 9
SYSTEM "C"
BASIN 12
BASIN 10
BASIN 5
BASIN 6
SYSTEM "D"
BASIN 3
BASIN 1
BASIN 7
BASIN 4
BASIN 2
SYSTEM "E"

EXISTING POLICE & FIRE STATION

GRATE ELEV.=68.25 INV.=58.44
GRATE ELEV.=68.75 INV.=59.20
GRATE ELEV.=73.25 INV.=64.39
EXIST. GRATE ELEV.=75.10 INV.=70.59
GRATE ELEV.=77.75 INV.=71.25
GRATE ELEV.=68.25 INV.=63.40
GRATE ELEV.=68.75 INV.=62.79
GRATE ELEV.=75.85 INV.=69.03
GRATE ELEV.=75.75 INV.=70.09
GRATE ELEV.=85.50 INV.=72.50

18" DIP STORM DRAIN INVERT=62.55
HGL ELEV. IN BOX=62.55

8" x 18" BOX CULVERT INV.=68.00

SCALE: 1" = 30'
15' 0 30' 60'

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107608

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT

DEC 19 2008

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MASTER GRADING PLAN

Design Review Committee   City Engineer Approval

DESIGNED BY   RCC   DATE 05/07
DRAWN BY   RCC   DATE 05/07
CHECKED BY   PJC   DATE 05/07

REMARKS
REVISIONS
DESIGN

Project No. 713893
Zone Map No. C-19-Z
Sheet No.
Drawing No. 4   Of 4

ENGINEERS SEAL
SURVEY INFORMATION
FIELD NOTES
AS BUILT INFORMATION
MICRO-FILM INFORMATION