

VICINITY MAP Zone Atlas Page G-13-2

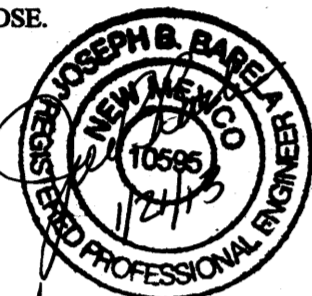
"DRAINAGE CERTIFICATION"

I, JOE B. BARELA, PE, CFM, NMPE #10595, OF THE FIRM JOEB ENGINEERING, INC., HEREBY CERTIFY THAT THIS PROJECT HAS BEEN GRADED AND WILL DRAIN IN SUBSTANTIAL COMPLIANCE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED JANUARY 19, 2012. THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY CHRIS DEHLER, PS UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

THE RECORD INFORMATION PRESENTED HEREON IS NOT NECESSARILY COMPLETE AND INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE OF THE GRADING AND DRAINAGE ASPECTS OF THIS PROJECT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY OTHER PURPOSE.

Joe B. Barela, PE, CFM, NMPE #10595

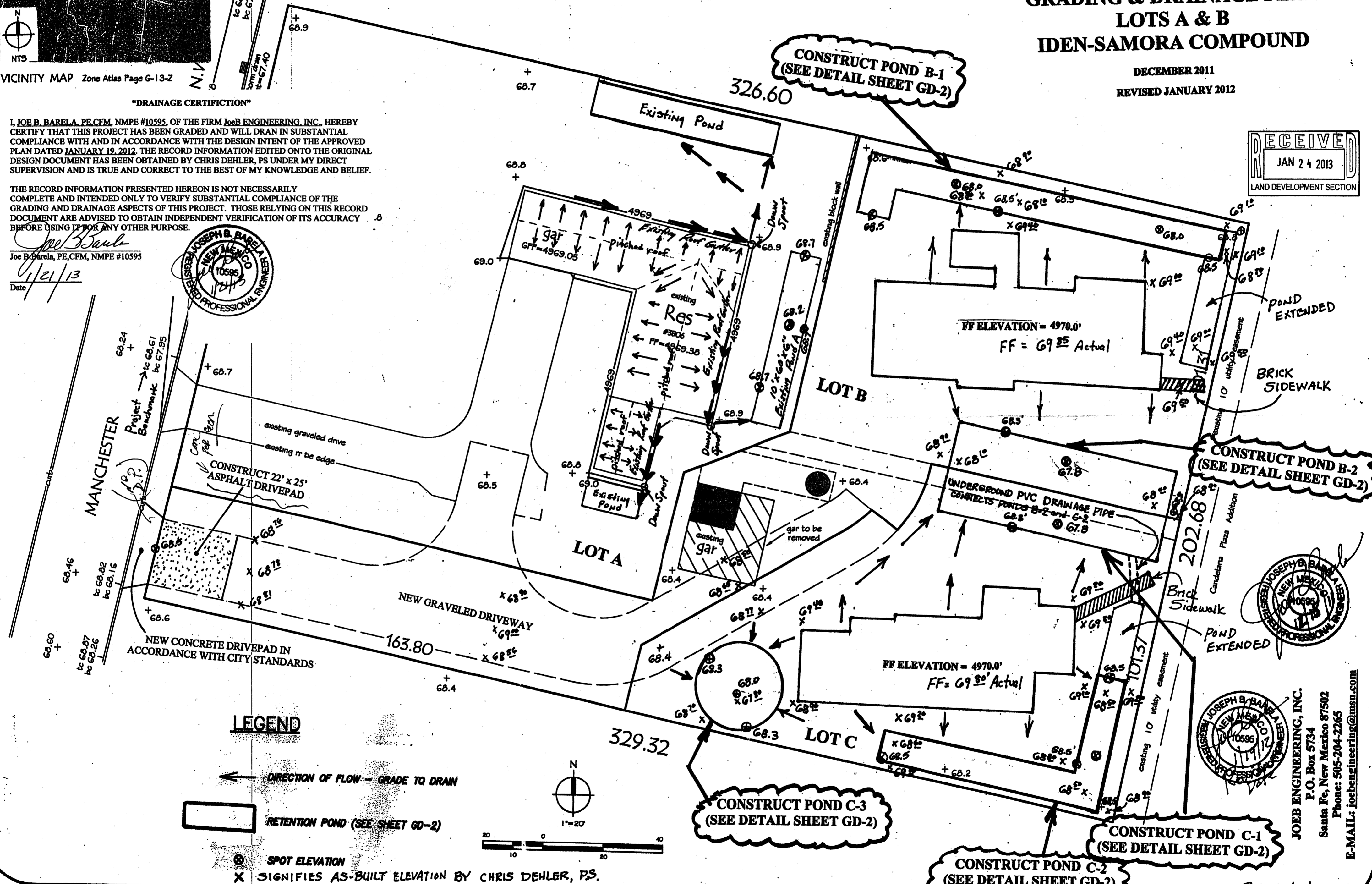
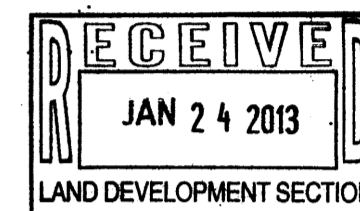
Date 1/21/13



NOTE: SEE SHEET GD-2 FOR GRADING & DRAINAGE DETAILS
SEE SHEET GD-2 FOR GRADING & DRAINAGE NOTES
SEE SHEET GD-2 FOR DRAINAGE ANALYSIS AND GRADING & DRAINAGE CALCULATIONS

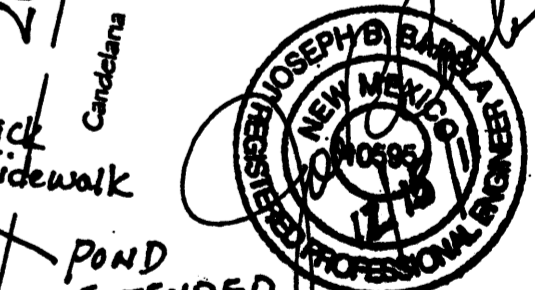
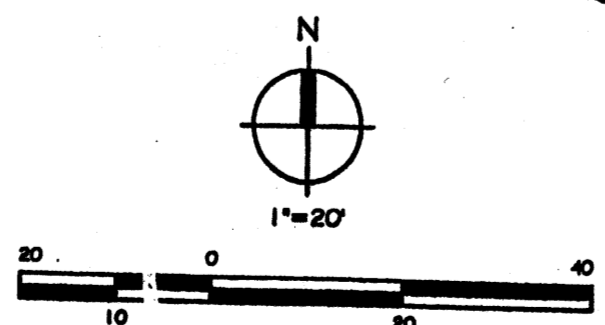
GRADING & DRAINAGE PLAN
LOTS A & B
IDEN-SAMORA COMPOUND

DECEMBER 2011
REVISED JANUARY 2012



LEGEND

- DIRECTION OF FLOW - GRADE TO DRAIN
- RETENTION POND (SEE SHEET GD-2)
- SPOT ELEVATION
- SIGNIFIES AS-BUILT ELEVATION BY CHRIS DEHLER, PS.



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Revised 1/19/12 JTB

G-13/10028



VICINITY MAP Zone Atlas Page G-13-Z

NOTE: SEE SHEET GD-2 FOR GRADING & DRAINAGE DETAILS
SEE SHEET GD-2 FOR GRADING & DRAINAGE NOTES
SEE SHEET GD-2 FOR DRAINAGE ANALYSIS AND GRADING & DRAINAGE CALCULATIONS

GRADING & DRAINAGE PLAN LOTS A & B IDEN-SAMORA COMPOUND

DECEMBER 2011
REVISED JANUARY 2012

CONSTRUCT POND B-1
(SEE DETAIL SHEET GD-2)

CONSTRUCT POND B-2
(SEE DETAIL SHEET GD-2)

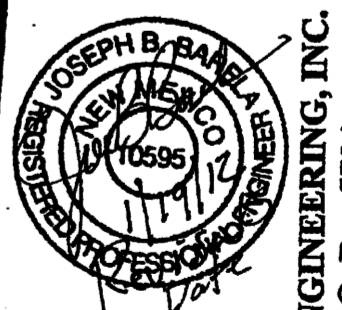
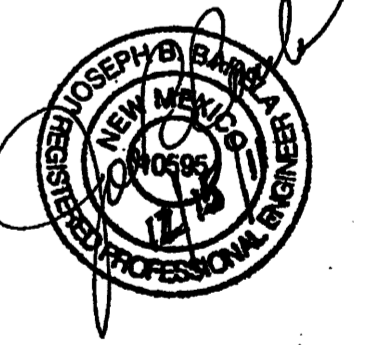
CONSTRUCT POND C-3
(SEE DETAIL SHEET GD-2)

CONSTRUCT POND C-1
(SEE DETAIL SHEET GD-2)

CONSTRUCT POND C-2
(SEE DETAIL SHEET GD-2)

RECEIVED
Revised 1/19/12 JES
JAN 18 2012
HYDROLOGY SECTION

RECEIVED
JAN 19 2012
HYDROLOGY SECTION



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MANCHESTER DRIVE

CONSTRUCT 22' x 25' ASPHALT DRIVEPAD

NEW CONCRETE DRIVEPAD IN ACCORDANCE WITH CITY STANDARDS

NEW GRAVELED DRIVEWAY

Existing Pond

gar

Res

LOT A

LOT B

LOT C

FF ELEVATION = 4970.0'

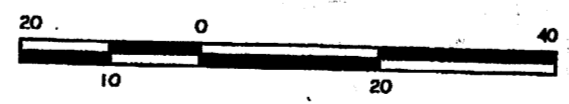
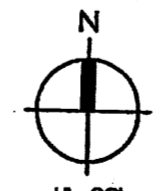
FF ELEVATION = 4970.0'

LEGEND

← DIRECTION OF FLOW - GRADE TO DRAIN

▭ RETENTION POND (SEE SHEET GD-2)

⊙ SPOT ELEVATION



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**DRAINAGE ANALYSIS
For
LOTS A, B & C IDEN-SAMORA COMPOUND**

Existing conditions: The existing lot is a 1.5236 +/- acre lot located within the Manchester Place addition located east of Rio Grande Boulevard and Candelaria Street within the city of Albuquerque. The existing property is bounded by Manchester Drive (a public street) on the west and residential lots on the north, east and south. The property is proposed to be subdivided into 3 smaller lots. Proposed Lot A is fully developed and has an existing residential structure with a pitched roof system. Roof drainage from the existing residence drains into existing ponds located on west, south, north and east sides of the residence. Approximately 800 square feet [23% of the total roof area which = 278 CF of storm water] drains into a roof gutter along the edge of the roof, into a down spout located at the south east corner of the roof, and into an existing retention pond 12' x 50' x 6" deep (300 CF capacity) that contains mature trees, brush, grass and other small vegetation. Proposed Lots B and C will be developed and will consist of 0.5216 +/- acres and 0.3041 +/- acres, respectively.

The existing topography of the site consists of thick native grass and small native brush and mature trees. The ground is flat and presently storm water infiltrates into the ground.

Post-developed condition: It will be necessary to establish floor elevations that will result in backfilling to achieve positive drainage away from the proposed residential structures. Storm water for the post-developed condition will flow from the roofs of each structure into retention ponds located along the northwest and southern boundaries of proposed Lot B, and the northern and southeastern boundaries of Lot C as shown on the grading and drainage plan. A portion of storm water generated from Lot A will flow east into an existing pond and will not flow into Lot B, therefore is not an issue.

GRADING AND DRAINAGE NOTES

Positive storm water drainage away from the new residential structures shall be accomplished at final grading. The Contractor shall ensure that this grading is completed.

The Contractor shall control the disposal of construction debris. Construction debris shall be disposed of in a stabilized area pre-approved by the Contractor. Loose construction debris shall not be allowed to leave the site. Loose debris shall be immediately retrieved and placed in stabilized pre-approved area or dumpster.

If a porta-potty is placed on-site, the porta-potty shall be located in an area away from construction traffic and any area where it will interfere with storm water drainage patterns (either natural or manmade). The Contractor is responsible for its location.

No vehicle an equipment cleaning, fueling, and maintenance shall be done on the building site. The Contractor shall be responsible for spill prevention and control either by his crews or subcontractors. Any spills including gasoline, diesel, grease, lubricants, paints and any other contaminants shall be immediately cleaned and properly disposed of in an area approved by the Contractor.

Ponds shall be vegetated with xeriscape plants and trees as approved by the City. All areas disturbed by grading shall be re-vegetated with a city approved seed mix.

This property is not located within a Special Flood Hazard Boundary per FEMA FIRM No. 35001C0118G dated 9/26/2008. This property lies in Zone X.

Elevations are in NAVD 1988. Bench Mark used = City of Albuquerque Control Station 10-G13A. Elevation = 4970.87 as established by Christopher J. Dehler, P.L.S. A project Benchmark has been established at the top of curb located within Manchester Drive near the southwest corner of the property. Elevation = 4968.61 as established by Christopher J. Dehler, P.L.S.

Soils investigation and compaction testing shall be accomplished by the Contractor at time of construction.

DRAINAGE CALCULATIONS for LOTS A, B & C IDEN-SAMORA COMPOUND

A new residential structure consisting of 3,800 +/- square feet of impervious surfacing is proposed on Lot B. A residential structure consisting of 2,800 +/- square feet of impervious surfacing is proposed on Lot C. Lot A contains an existing residence approximately 3,547 +/- square feet of which 800 square feet (23% of the total) of roof area generating approximately 278 CF of storm water drains towards the eastern side of the residence to an existing 12' x 50' x 6" deep pond with a capacity of 300 CF.

The city of Albuquerque terrain management code requires that post-developed storm water be contained and infiltrated on site. Using the AHYMO procedure for calculating the amount of storm water to be contained yielded the following:

Lot B - 1,211 cubic feet of containment required.
Lot C - 988 cubic feet of containment required.

Thus, storm water for the post-developed condition will be directed towards new retention ponds to be constructed as shown on the grading and drainage plan.

LOTS B & C OF IDEN-SAMORA COMPOUND

HYDROLOGY ANALYSIS

FROM SECTION 22.2 (HYDROLOGY) OF THE DPM, CITY OF ALBUQUERQUE

100 YR-6 HR STORM DEPTH = 2.35 INCHES 2.35

100 YR-10 DAY STORM DEPTH = 3.95 INCHES 3.95

NOTE: SITE IS VERY FLAT WITH NO FLOW GOING IN, NO FLOW GOING OUT.

FROM TABLE A-8 (DPM) FOR ZONE 2, EXCESS PRECIPITATION

LAND TREATMENT A = 0.53 INCHES UNDISTURBED, FALLOW FIELDS

LAND TREATMENT B = 0.78 INCHES LANDSCAPING

LAND TREATMENT C = 1.13 INCHES GRAVEL DRIVEWAY

LAND TREATMENT D = 2.12 INCHES ROOF TOPS, CONCRETE PADS

LOT B (PRE-DEVELOPMENT)	22721 SF	22721	
LAND TREATMENT A	11953 SF	11953	0.53
LAND TREATMENT B	9851 SF	9851	0.78
LAND TREATMENT D	936 SF	936	2.12

16003.19 0.704335

WEIGHTED E = 0.70 INCHES 1333.599

LOT B (POST DEVELOPMENT)	22721 SF	22721	
LAND TREATMENT B	14247 SF	14247	0.78
LAND TREATMENT C	4674 SF	4674	1.13
LAND TREATMENT D	3800 SF	3800	2.12

24450.28 1.076105

WEIGHTED E = 1.08 INCHES

EXCESS VOLUME = 2038 CF 2037.523

6 HR STORAGE = 704 CF 703.9242

LOT B 10 DAY POND STORAGE = 1211 CF 1210.591

LOT C (PRE-DEVELOPMENT) 13247 SF 13246.6

LAND TREATMENT A 13127 SF 13127 0.53

LAND TREATMENT B 120 SF 120 0.78

7050.91

WEIGHTED E = 0.53 INCHES 0.532281

EXCESS VOLUME = 588 CF 587.5758

LOT C (POST DEVELOPMENT) 13246.6

LAND TREATMENT B 9467 SF 9467 0.78

LAND TREATMENT C 980 SF 980 1.13

LAND TREATMENT D 2800 SF 2800 2.12

14427.66 1.08916

WEIGHTED E = 1.09 INCHES

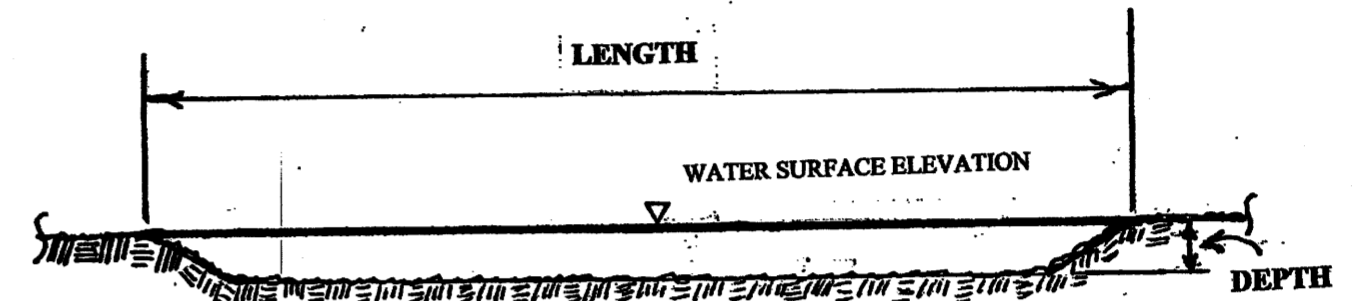
EXCESS VOLUME = 1202 CF 1202.305

6 HR STORAGE = 615 CF 614.7292

LOT C 10 DAY POND STORAGE = 988 CF 988.0625

**GRADING & DRAINAGE DETAILS
LOTS A & B
IDEN-SAMORA COMPOUND**

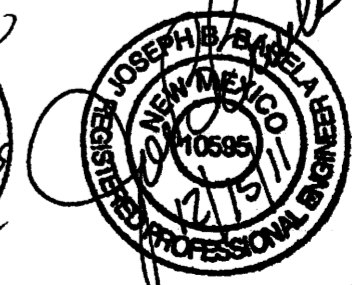
DECEMBER 2011
REVISED JANUARY 2012



**RETENTION POND DETAIL
NTS**

RETENTION POND DIMENSIONS					
POND IDENTIFICATION	LENGTH (FEET)	WIDTH (FEET)	DEPTH (INCHES)	CAPACITY (CUBIC FEET)	WATER SURFACE ELEVATION (FEET)
B-1	130	10	6	650	68.0
B-2	75	15	6	562.5	68.3
C-1	75	15	5	469	68.3
C-2	105	10	4	350	68.5
C-3	N/A	30	3	176	68.3

Total Capacity in Lot B = 1,212.5 CF > 1,211 CF required
Total Capacity in Lot C = 995 CF > 988 CF required



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Revised 1/19/12

NOTE:
 SEE SHEET GD-2 FOR GRADING & DRAINAGE DETAILS
 SEE SHEET GD-2 FOR GRADING & DRAINAGE NOTES
 SEE SHEET GD-2 FOR DRAINAGE ANALYSIS AND GRADING &
 DRAINAGE CALCULATIONS

GRADING & DRAINAGE PLAN LOTS A & B IDEN-SAMORA COMPOUND

DECEMBER 2011

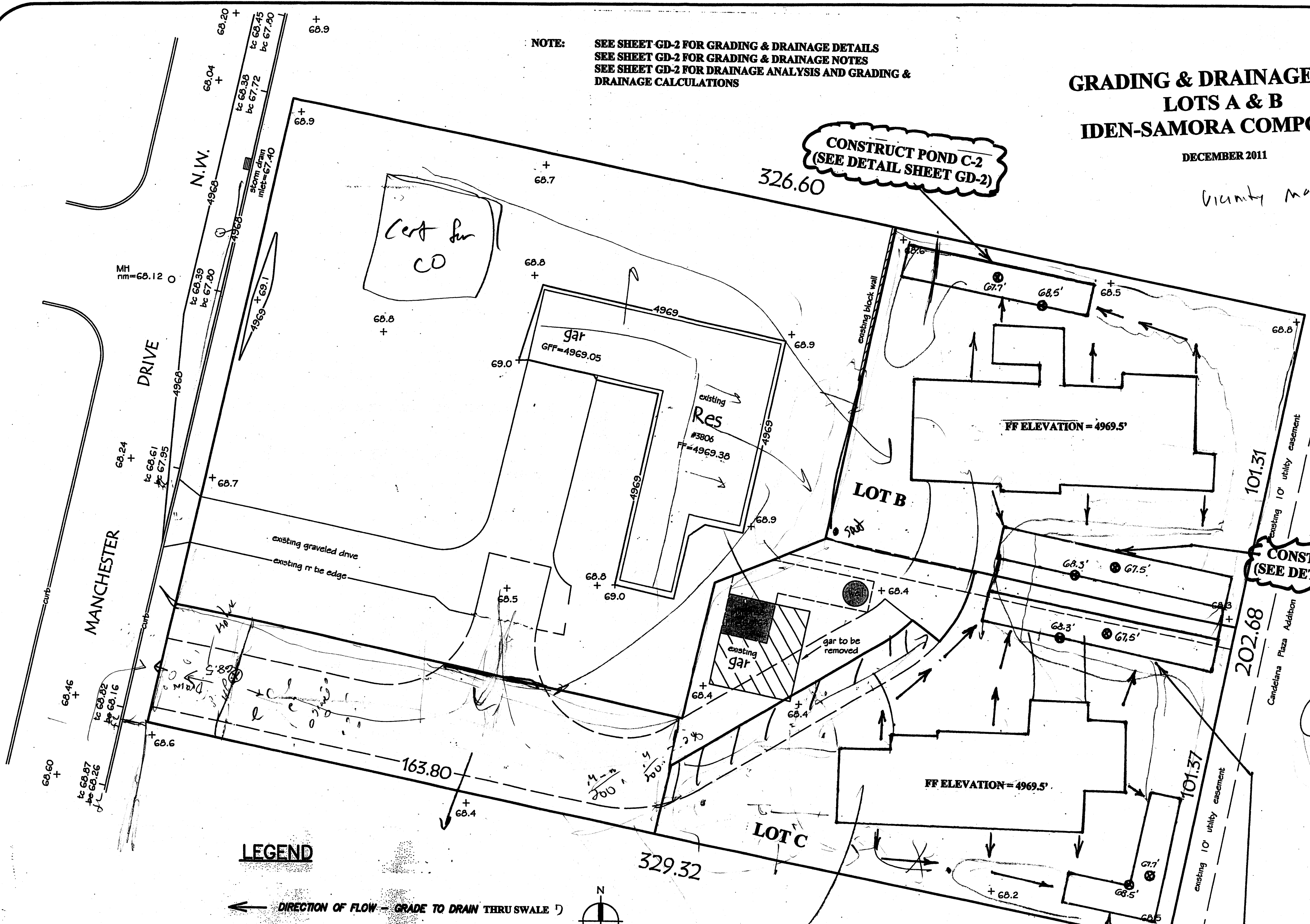
vicinity map

**CONSTRUCT POND C-2
 (SEE DETAIL SHEET GD-2)**

**CONSTRUCT POND C-1
 (SEE DETAIL SHEET GD-2)**

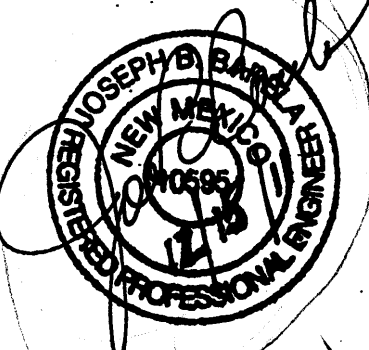
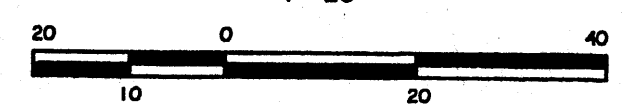
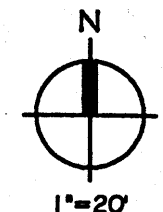
**CONSTRUCT POND B-1
 (SEE DETAIL SHEET GD-2)**

**CONSTRUCT POND B-2
 (SEE DETAIL SHEET GD-2)**



LEGEND

- DIRECTION OF FLOW - GRADE TO DRAIN THRU SWALE
- RETENTION POND (SEE SHEET GD-2)
- SPOT ELEVATION



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JAN - 3 2012
SHEET GD-1
 HYDROLOGY
 SECTION

DRAINAGE ANALYSIS for LOTS A & B - IDEN SAMORA COMPOUND

Existing conditions: The existing lot is a 1.5236 +/- acre lot located within the Manchester Place addition located east of Rio Grande Boulevard and Candelaria Street within the city of Albuquerque. The existing property is bounded by Manchester Drive (a public street) on the west and residential lots on the north, east and south. The property is proposed to be subdivided into 3 smaller lots. Proposed Lot A has an existing residential structure and will not be developed. Proposed Lots B and C will be developed and will consist of 0.5216 +/- acres and 0.3041 +/- acres, respectively.

The existing topography of the site consists of thick native grass and small native brush. The ground is flat and presently storm water infiltrates into the ground.

Post-developed condition: It will be necessary to establish floor elevations that will result in backfilling to achieve positive drainage away from the proposed residential structures. Storm water for the post-developed condition will flow from the roofs of each structure into gutters, into down spouts, into drainage swales and ultimately into retention ponds located along the northwest and southern boundaries of proposed Lot B, and the northern and southeastern boundaries of Lot C as shown on the grading and drainage plan.

GRADING AND DRAINAGE NOTES

Positive storm water drainage away from the new residential structures shall be accomplished at final grading. The Contractor shall ensure that this grading is completed.

Ponds shall be vegetated with xeriscape plants and trees as approved by the City. All areas disturbed by grading shall be re-vegetated with a city approved seed mix.

The Contractor shall control the disposal of construction debris. Construction debris shall be disposed of in a stabilized area pre-approved by the Contractor. Loose construction debris shall not be allowed to leave the site. Loose debris shall be immediately retrieved and placed in stabilized pre-approved area or dumpster.

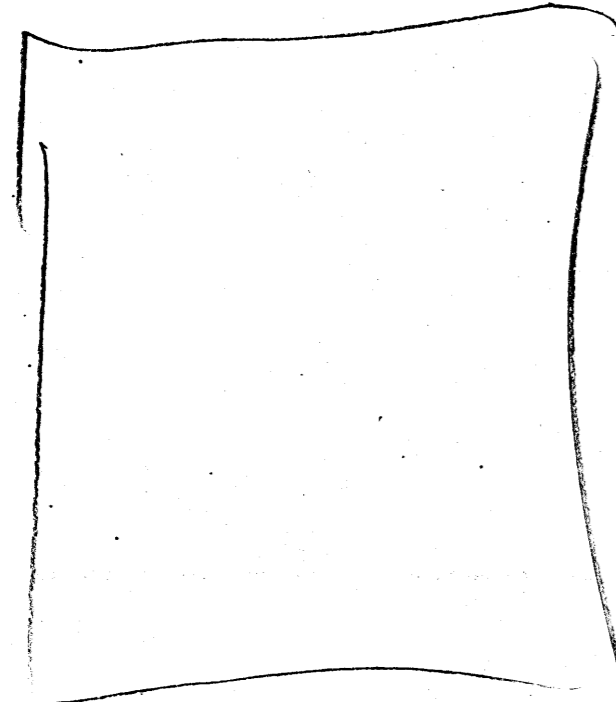
If a porta-potty is placed on-site, the porta-potty shall be located in an area away from construction traffic and any area where it will interfere with storm water drainage patterns (either natural or manmade). The Contractor is responsible for its location.

No vehicle an equipment cleaning, fueling, and maintenance shall be done on the building site. The Contractor shall be responsible for spill prevention and control either by his crews or subcontractors. Any spills including gasoline, diesel, grease, lubricants, paints and any other contaminants shall be immediately cleaned and properly disposed of in an area approved by the Contractor.

All final fill and/or cut slopes shall be no steeper than 3:1.

Off-site flows for lot A?

Show calculations for pond volume



DRAINAGE CALCULATIONS for LOTS A & B IDEN-SAMORA COMPOUND

A new residential structure consisting of 3,800 +/- square feet of impervious surfacing is proposed on Lot B. A residential structure consisting of 2,800 +/- square feet of impervious surfacing is proposed on Lot C.

The city of Albuquerque terrain management code requires that post-developed storm water be contained and infiltrated on site. Using the AHYMO procedure for calculating the amount of storm water to be contained yielded the following:

Lot B - 704 cubic feet of containment required.
Lot C - 616 cubic feet of containment required.

Thus, storm water for the post-developed condition will be directed towards new retention ponds to be constructed as shown on the grading and drainage plan.

LOTS B & C OF IDEN-SAMORA COMPOUND
HYDROLOGY ANALYSIS
FROM SECTION 22.2 (HYDROLOGY) OF THE DPM, CITY OF ALBUQUERQUE
100 YR-6 HR STORM DEPTH = 2.35 INCHES
NOTE: SITE IS VERY FLAT WITH NO FLOW GOING IN, NO FLOW GOING OUT.
FROM TABLE A-8 (DPM) (FOR ZONE 2) EXCESS PRECIPITATION
LAND TREATMENT A = 0.53 INCHES UNDISTURBED, FALLOW FIELDS
LAND TREATMENT B = 0.78 INCHES LANDSCAPING
LAND TREATMENT C = 1.13 INCHES GRAVEL DRIVEWAY
LAND TREATMENT D = 2.12 INCHES ROOF TOPS, CONCRETE PADS

LOT B (PRE-DEVELOPMENT)	22721 SF	22721	
LAND TREATMENT A	11953 SF	11953	0.53
LAND TREATMENT B	9851 SF	9851	0.78
LAND TREATMENT D	936 SF	936	2.12
		16003.19	0.704335

WEIGHTED E = 0.70 INCHES
EXCESS VOLUME = 1332 CF
1333.599

LOT B (POST-DEVELOPMENT)	22721 SF	22721	
LAND TREATMENT B	14247 SF	14247	0.78
LAND TREATMENT C	4674 SF	4674	1.13
LAND TREATMENT D	3800 SF	3800	2.12
		24450.28	1.076109

WEIGHTED E = 1.08 INCHES
EXCESS VOLUME = 2038 CF
REQUIRED STORAGE = 704 CF
2037.523
703.9242

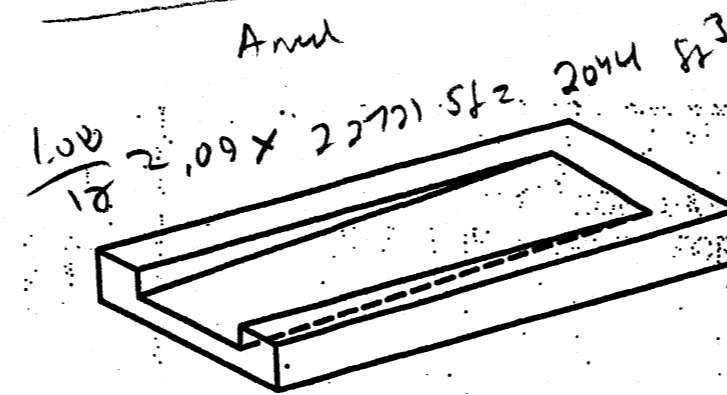
LOT C (PRE-DEVELOPMENT)	13247 SF	13246.6	
LAND TREATMENT A	13127 SF	13127	0.53
LAND TREATMENT B	120 SF	120	0.78
		7050.91	
		0.532281	
		587.5758	

WEIGHTED E = 0.53 INCHES
EXCESS VOLUME = 588 CF

LOT C (POST-DEVELOPMENT)	13246.6	13246.6	
LAND TREATMENT B	9467 SF	9467	0.78
LAND TREATMENT C	980 SF	980	1.13
LAND TREATMENT D	2800 SF	2800	2.12
		14427.66	1.08916

WEIGHTED E = 1.09 INCHES
EXCESS VOLUME = 1502 CF
REQUIRED STORAGE = 616 CF
1202.305
614.7292

Lot B Weighted E = E_AA_A + E_BA_B + E_CA_C + E_DA_D
Annul



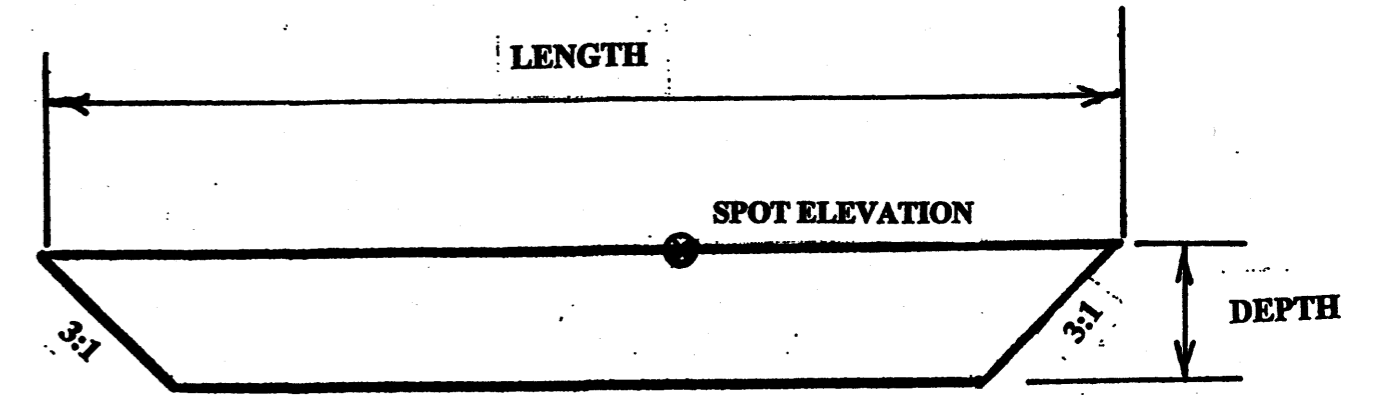
$V_{10} = \frac{1.08}{12} + 3000(3.75 - 2.35) = 507$

SPLASH PAD DETAIL
NTS

NOTE: PLACE SPLASH PAD AT END OF EACH DOWNSPOUT DRAIN

GRADING & DRAINAGE DETAILS
LOTS A & B
IDEN-SAMORA COMPOUND

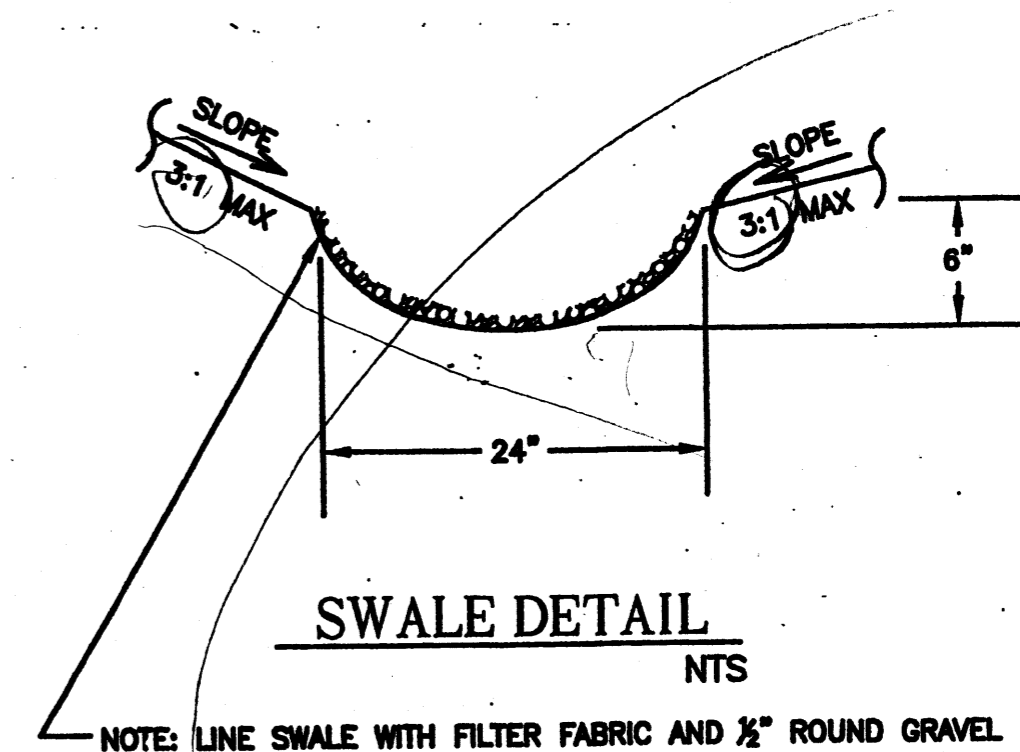
DECEMBER 2011



RETENTION POND DETAIL
NTS

RETENTION POND DIMENSIONS				
POND IDENTIFICATION	LENGTH (FEET)	WIDTH (FEET)	DEPTH (INCHES)	CAPACITY (CUBIC FEET)
C-1	75	10	9	562.5
C-2	50	10	9	375
B-1	75	10	9	562.5
B-2	60	10	9	450

Total Capacity in Lot C = 937.5 CF > 616 CF required (321.5 CF of free board)
Total Capacity in Lot B = 1,012.5 CF > 704 CF required (308.5 CF of free board)



SWALE DETAIL
NTS



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