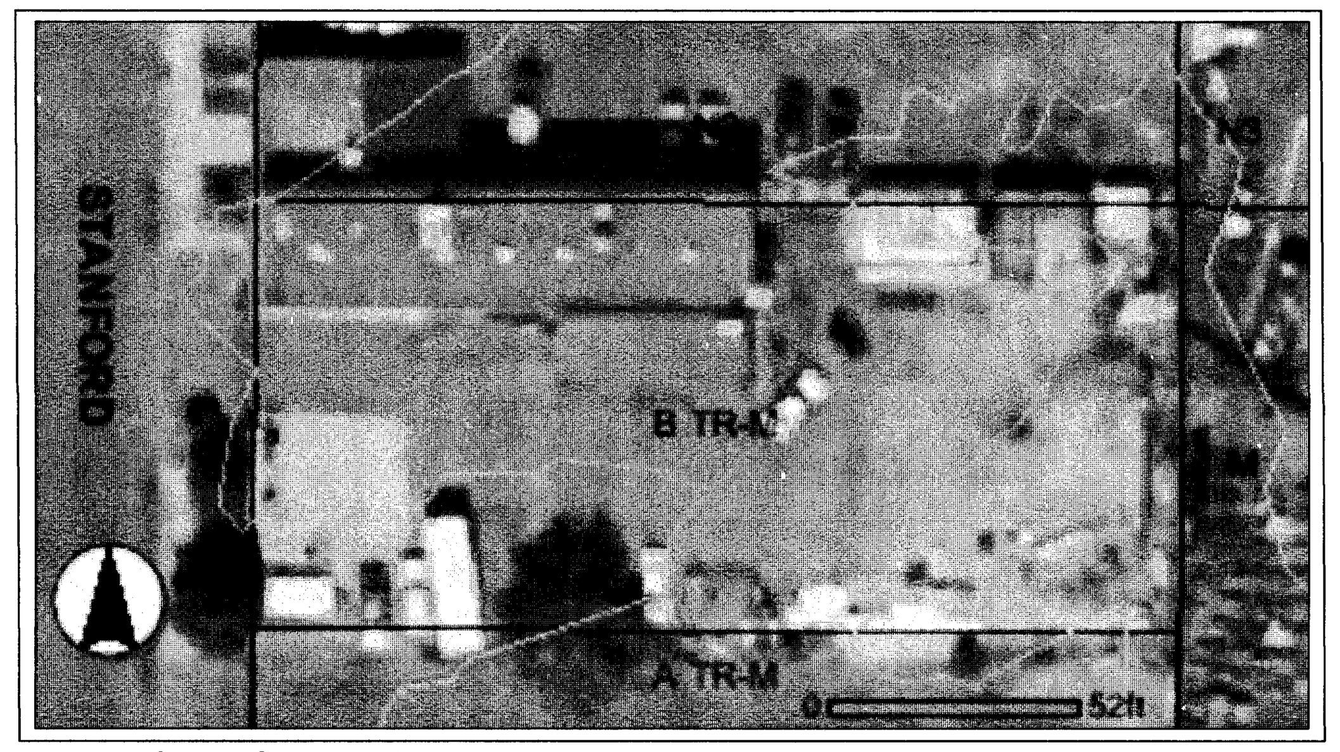
FLOOD INSURANCE RATE MAP (FIRMETTE) **MAP NO. 351**



2004 AERIAL PHOTO

GRADING PLAN LEGEND:

EXISTING	NEW	DESCRIPTION
—5284—	—84—	CONTOUR
84.00	84.00	SPOT ELEVATION
———		PROPERTY LINE
← ← ←	← ← ←	SWALE
←	←	SHEET FLOW
	⇦	ROOF FLOW
	DS○	DOWN SPOUT

TOPO SURVEY LEGEND:

BOC	=	BACK OF CURB	ER	=	EDGE OF ROAD
CC	=	CURB CUT	FIN.FLR	=	FINISH FLOOR
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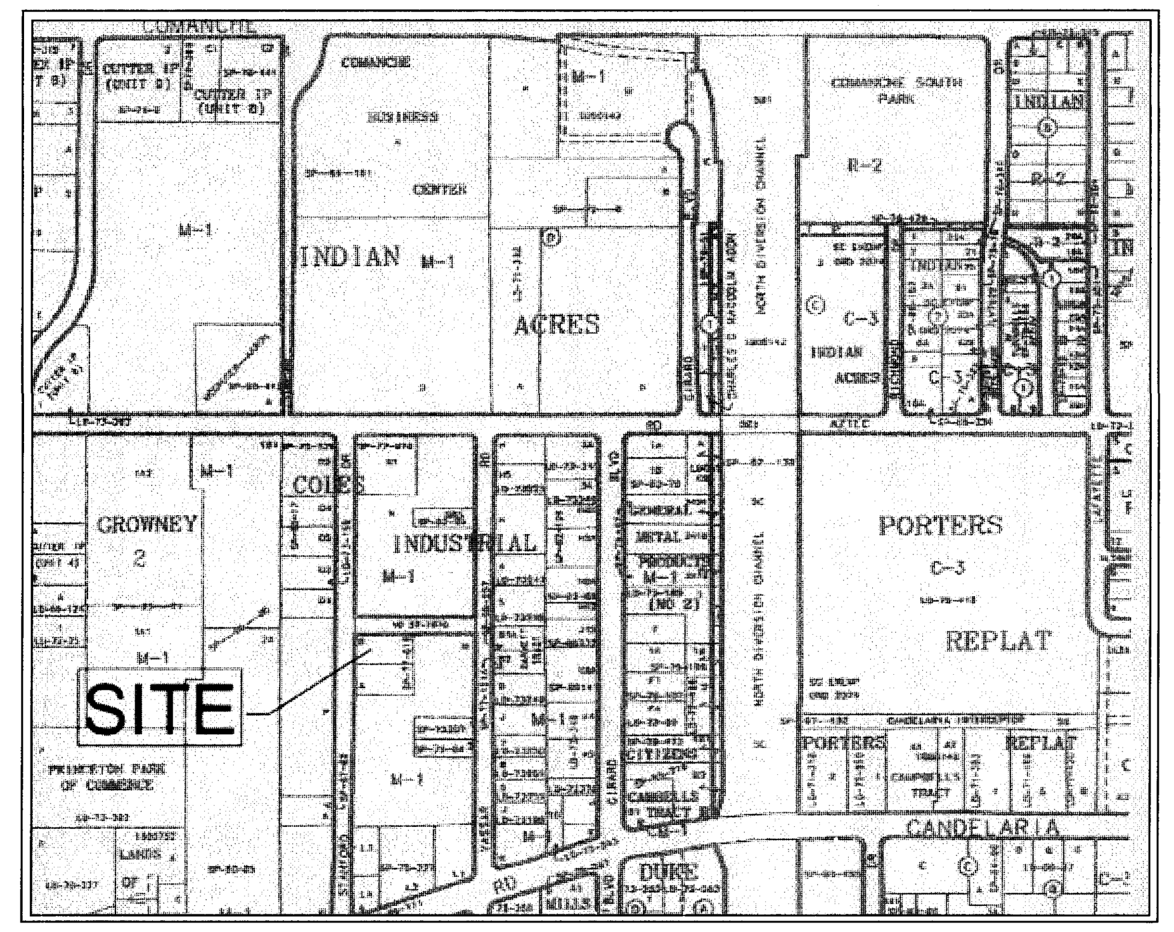

VICINITY MAP **ZONE ATLAS G-16-Z**

CITY OF ALBUQUERQUE
DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY (S. O. 19)
NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR THIS PERMIT.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERFORMED UNDER CONTRACT, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986, AS UPDATED THROUGH REVISION NO. 6.
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5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL FOR SW CULVERTS	NAME	DATE
INSPECTOR:		

TOPOGRAPHIC SURVEY GENERAL NOTES :

1: CONTOUR INTERVAL IS ONE (1) FOOT.

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3: UTILITIES SHOWN HEREON ARE IN THEIR APPROXIMATE LOCATION BASED ONLY ON ABOVE GROUND EVIDENCE FOUND IN THE FIELD AND AS–BUILT INFORMATION PROVIDED BY THE CLIENT. UTILITIES SHOWN HEREON, WHETHER INDICATED AS ABANDONED OR NOT, SHALL BE VERIFIED BY OTHERS FOR EXACT LOCATION AND/ OR DEPTH PRIOR TO EXCAVATION OR DESIGN CONSIDERATIONS.

5: THIS IS NOT A BOUNDARY SURVEY. BEARINGS AND DISTANCES SHOWN HEREON ARE FOR REFERENCE ONLY.

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THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONPLIANCE WITH THE FOLLOWING:

1. NO SEDIMENT-BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.
2. DURING GRADING OPERATIONS AND UNTIL THE PROJECT HAS BEEN COMPLETED, ALL ADJACENT PROPERTY, RIGHTS-OF-WAY, AND EASEMENTS SHALL BE PROTECTED FROM FLOODING BY RUNOFF FROM THE SITE.
3. SHOULD THE CONTRACTOR FAIL TO PREVENT SEDIMENT-BEARING WATER FROM ENTERING PUBLIC RIGHT-OF-WAY, HE SHALL PROMPLTY REMOVE FROM THE PUBLIC RIGHT-OF-WAY ANY AND ALL SEDIMENT ORIGINATING FROM THE SITE.
4. CONTROL OF SEDIMENT-LADEN WATERS WILL BE ACCOMPLISHED BY USE OF A COMPACTED EARTH BERM OF ADEQUATE HEIGHT. THE BERM SHALL BE LOCATED ALONG THE DOWNSTREAM PERIMETER OF THE PROPERTY.

DRAINAGE CONSIDERATIONS:

EXISTING SITE CONDITIONS:

The site is located on the east side of Stanford Drive, NE, approximately half way between Candelaria Road and Aztec Drive. The site is developed as is the property to the north, east and south. There is one existing office/manufacturing building on the site as well as a small booth and existing asphalt pavement and concrete slabs. The original development had a hydrology submittal, G16-D34. These are on microfilm and are difficult to read. Copies have been ordered from Lason Inc. The project was constructed in the early 1980's. A detention pond was called for on the plans and is in place on the site. The pond outlet appears to be a 4" PVC pipe through the curb. Aparently, the pond detains water to a depth in excess of one foot. The limits of the pond encroach on the parking area so that cars must be hurriedly moved every time a significant rain occurs.

EXISTING DRAINAGE BASIN CONDITIONS:

This light industrial area which lies between the North Diversion Channel and Interstate 25, and between Candelaria and Aztec, drains to Aztec and to Candelaria. The site is in the portion of the basin that drains to Aztec. The existance of detention ponding in the area was determined by a simple survey. This was accomplished by piecing together a composite of the on-line City of Albuquerque GIS 2004 aerial photo map of the area between Stanford and the North Diversion Channel and then driving Stanford, Vassar and Girard to locate any drainage pipes through curbs. Remarkably few were found. The above streets each have a high point that divides flow to Aztec or Candelaria. Only the area flowing to Aztec was considered. Only four pipes through curbs were found, including the property at 3312 Stanford NE. The composit map is submitted with this plan together with photos of the three detention areas besides this site. The photos show that in those cases where detention was provided, only a token effort was made to reduce the peak discharge rate. The composite map shows the area to be fully developed, (i.e. no vacant lots) and the percentage of Treatment D is estimated to be near 90%.

PROPOSED SITE CONDITIONS:

It is proposed to construct an 80' x 53' metal building on the site as shown. The roof will be sloped to drain west into the parking lot. In view of the above analysis, it is proposed to discharge the site runoff directly into Stanford by means of a sidewalk culvert.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque in cooperation with Bernalillo County, New Mexico and the Metropolitan Arroyo Flood Control Authority, January, 1993.

PRECIPITATION ZONE:

The site is between the Rio Grande River and San Mateo Boulevard. Therefore, it is within the limits of Precipitation Zone 2.

LAND TREATMENT AREAS, ETC.:

The peak discharge per acre and excess precipitation are shown for the four land treatments in Zone 2 in the table below, and the values shown are from the City of Albuquerque D.P.M. Also shown are the existing and proposed land treatment areas.

LAND	q(cfs/ac)		E (in)		Existing Site Areas			Developed Site Areas		
TREAT.	100-yr.	10-yr.	100-yr.	10-yr.	%	Sq.Ft.	Acres	%	Sq.Ft.	Acres
A	1.56	0.38	0.53	0.13	0.0	0	0.0000	0.0	0	0.0000
B	2.28	0.95	0.78	0.28	0.0	0	0.0000	9.7	1,953	0.0448
C	3.14	1.71	1.13	0.52	43.6	8,710	0.2000	8.9	1,775	0.0407
D	4.70	3.14	2.12	1.34	56.4	11,290	0.2591	81.4	16,272	0.3736
Totals					100.0	20,000	0.4591	100.0	20,000	0.4591

PEAK DISCHARGE:

EXISTING CONDITIONS:

Q100 = 0.2000 * 3.14 + 0.2591 * 4.70 = 1.85 cfs
Q10 = 0.2000 * 1.71 + 0.2591 * 3.14 = 1.16 cfs

DEVELOPED CONDITIONS:

Q100 = 0.0448 * 2.28 + 0.0407 * 3.14 + 0.3736 * 4.70 = 1.99 cfs
Q10 = 0.0448 * 0.95 + 0.0407 * 1.71 + 0.3736 * 3.14 = 1.29 cfs

VOLUME, 100-YEAR AND 10-YEAR, 6-HOUR:

EXISTING CONDITIONS:

V100 = (8,710 * 1.13 + 11,290 * 2.12) / 12 = 2,815 cf
V10 = (8,710 * 0.52 + 11,290 * 1.34) / 12 = 1,638 cf

DEVELOPED CONDITIONS:

V100 = (1,953 * 0.78 + 1,775 * 1.13 + 16,272 * 2.12) / 12 = 3,169 cf
V10 = (1,953 * 0.28 + 1,775 * 0.52 + 16,272 * 1.34) / 12 = 1,939 cf

SUMMARY OF ON-SITE VOLUMES AND DISCHARGE RATES:

	V100(CF)	V10(CF)	Q100(CFS)	Q10(CFS)
DEVELOPED	3,169	1,939	1.99	1.29
EXISTING	2,815	1,638	1.85	1.16
INCREASE	354	301	0.14	0.13

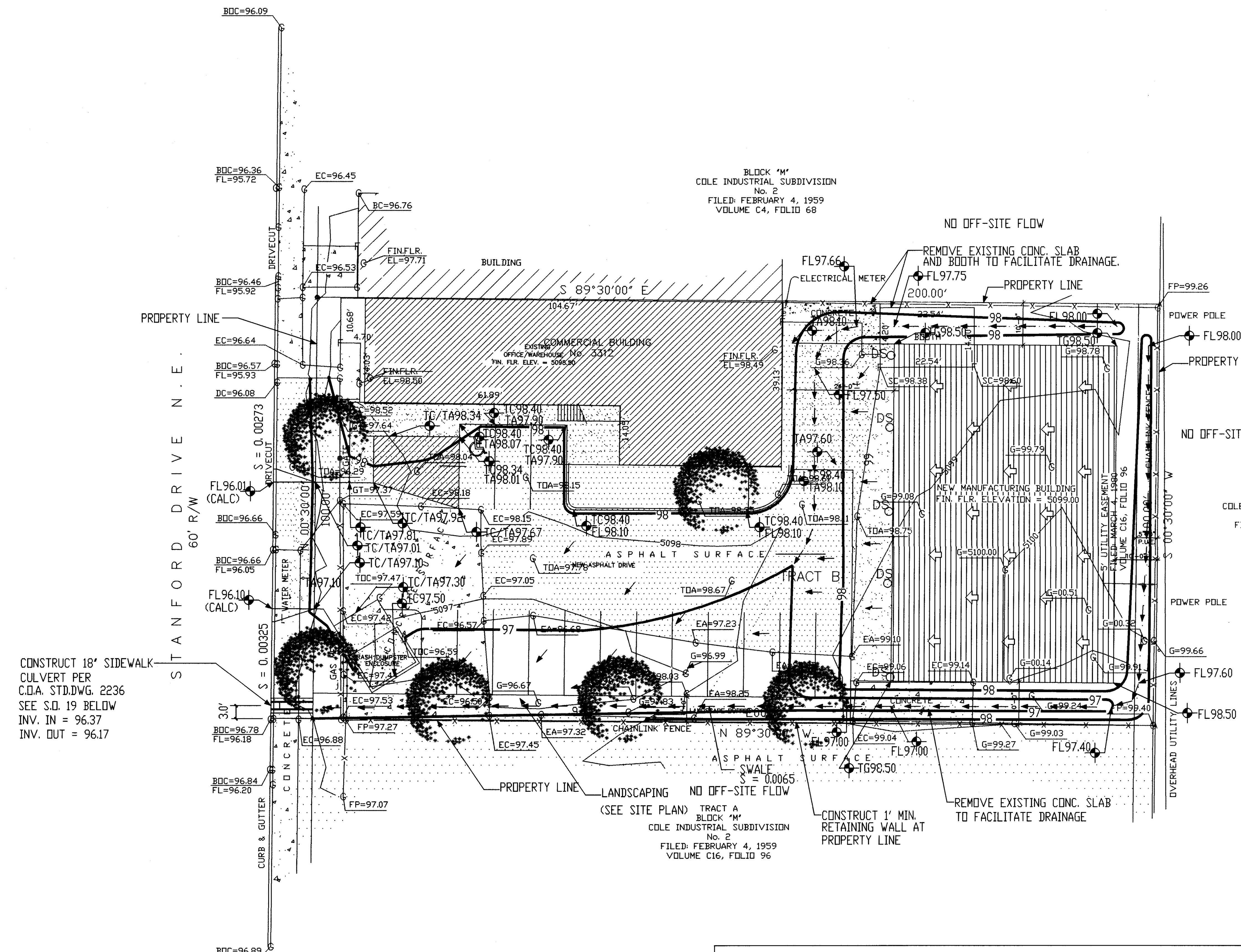
SIDEWALK CULVERT CAPACITY:

Use Weir Equation, $Q = CLH^{3/2}$ Design Q = 1.99 cfs C = 2.65 L = 1.50 H = 0.67'.
$Q = 2.65 \times 1.50 \times 0.67^{3/2} = 2.18$ cfs> 1.99 cfs OK

DOWNSTREAM CAPACITY:

The flow from this site enters Stanford Drive and flows north to Aztec Ave. It then flows west in Aztec Avenue to inlets at the intersection of the I-25 East Frontage Road. The portion of Aztec Ave. between Stanford and Princeton is very flat and therefore does not convey the volume of water that the section west of Princeton conveys. It is believed that allowing unrestricted discharge from this site will not cause increased depth in the critical section of Aztec Ave. for the following reasons:

1. The site is one of the smallest lots in the drainage basin.
2. The site is relatively at the low end of the basin. Runoff from the site will be through the flat portion of Aztec Ave. before the peak flow occurs in that section.
3. The site is an infill site. Future development will have to, in most cases, replace existing pavement or existing buildings.
4. The peak discharge rate for this site very small in comparison with the entire portion of the basin draining to the flat portion of Aztec Ave.



RECEIVED
MAY 1 6 2006
HYDROLOGY SECTION

LEGAL DESCRIPTION
LOT 'B' OF THE NORTH 100 FEET OF THE WEST HALF OF BLOCK 'M'
OF COLE'S INDUSTRIAL SUBDIVISION NO. 2, IN THE CITY OF ALBUQUERQUE, N.M.
AS SHOWN AND DESIGNATED ON THE AMENDED SUMMARY PLAT FILED IN THE OFFICE OF
THE COUNTY CLERK OF BERNALILLO COUNTY, N.M. ON MARCH 4, 1980 IN PLAT
BLOCK VOL. C16, FOLIO 96.

FRANK D. LOVELADY, NEW MEXICO, 6512, REGISTERED PROFESSIONAL ENGINEER

MAY 16 , 2006

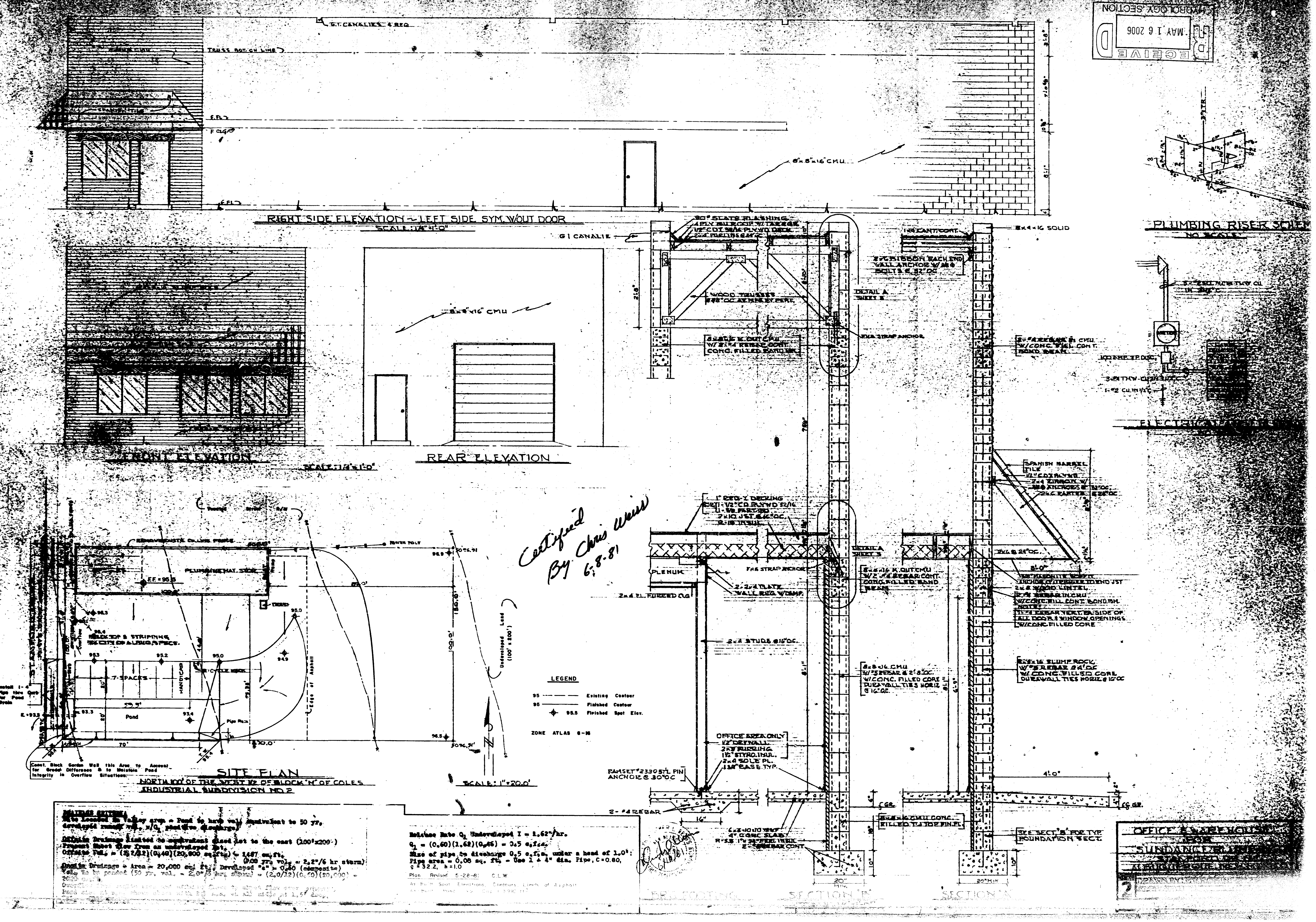
GRADING AND DRAINAGE PLAN
ARRAY TECHNOLOGIES INC.
3312 STANFORD DRIVE NE
ALBUQUERQUE, NEW MEXICO

FRANK D. LOVELADY, P.E.
(505) 345-2267 * Fax (505) 345-2115 * 300 ALAMOSA RD. NW * Albuquerque, NM * 87107

JOB NO: 699
DATE: May 16, 2006
REVISIONS

SHEET NO. 1 OF 1

C:\All Proj\Proj676-700\Proj699\3312 STANFORD DR - GP.DWG (MAY 16, 2006)


RECEIVED
MAY 16 2006
HYDROLOGY SECTION
G.I. CANALIES 4 REQ.
TRUSS BOT. CH. LINE
8"x8"x16" CMU
RIGHT SIDE ELEVATION ~ LEFT SIDE SYM. W/OUT DOOR
SCALE: 1/4"=1'-0"
FRONT ELEVATION
SCALE: 1/4"=1'-0"
REAR ELEVATION
G.I. CANALIE
WOOD TRUSSES
DETAIL A SHEET 3
2x4 x 16 SOLID
PLUMBING RISER SCHEMATIC
NO SCALE
ELECTRICAL RISER
SPANISH BARREL TILE
2x4 STUDS @16" O.C.
PLENUM
FHA STRAP ANCHOR
8x8x16 CMU
OFFICE AREA ONLY
RAMSET #23305 PIN ANCHOR @ 30" O.C.
2-#4 REBAR
SEE SECT. "B" FOR TYP. FOUNDATION SECT.
SECTION "B"
SECTION "A"
Certified By Chris Weiss 6-8-81
LEGEND
Existing Contour
Finished Contour
Finished Spot Elev.
ZONE ATLAS 6-16
Pond
7-SPACES
HANDICAP
Undeveloped Land (100' x 200')
Edge of Asphalt
Const. Block Garden Wall this Area to Account for Grade Difference & to Maintain Pond Integrity in Overflow Situations.
SITE PLAN
NORTH 100' OF THE WEST 1/2 OF BLOCK "M" OF COLES INDUSTRIAL SUBDIVISION NO. 2
SCALE: 1"=20.0'
DRAINAGE CRITERIA
Site Located in Valley area - Pond to have vol. equivalent to 50 yr. developed runoff vol. w/Q1 positive discharge.
Offsite Drainage limited to equivalent sized lot to the east (100'x200')
Present Sheet flow from an undeveloped lot.
Offsite Vol. = (2.2/12)(0.40)(20,000 sq.ft.) = 1467 cu.ft.
(100 yr. vol. = 2.2"/6 hr storm)
Onsite Drainage - Area = 20,000 sq. ft., Developed "c" = 0.60 (composite)
Vol. to be ponded (50 yr. vol. = 2.0"/6 hr. storm) = (2.0/12)(0.60)(20,000) =
Release Rate Q1 Undeveloped I = 1.62"/hr.
Q1 = (0.60)(1.62)(0.46) = 0.5 c.f.s.
Size of pipe to discharge 0.5 c.f.s. under a head of 1.0':
Pipe area = 0.08 sq. ft. - Use 1 - 4" dia. Pipe, C = 0.80, g = 32.2, h = 1.0
Plan Revised 5-28-81 C.L.W.
As Built Spot Elevations, Contours, Limits of Asphalt
OFFICE & WAREHOUSE
SUNDANCE
ALBUQUERQUE, N.M.
2

N DIVERSION CHANNEL
N DIVERSION CHANNEL
N DIVERSION CHANNEL
N DIVERSION CHANNEL
143ft
AZTEC
GIRARD
GIRARD
GIRARD
GIRARD
CANDELARIA
AZTEC
VASSAR
VASSAR
VASSAR
VASSAR
AZTEC
CANDELARIA
STANFORD
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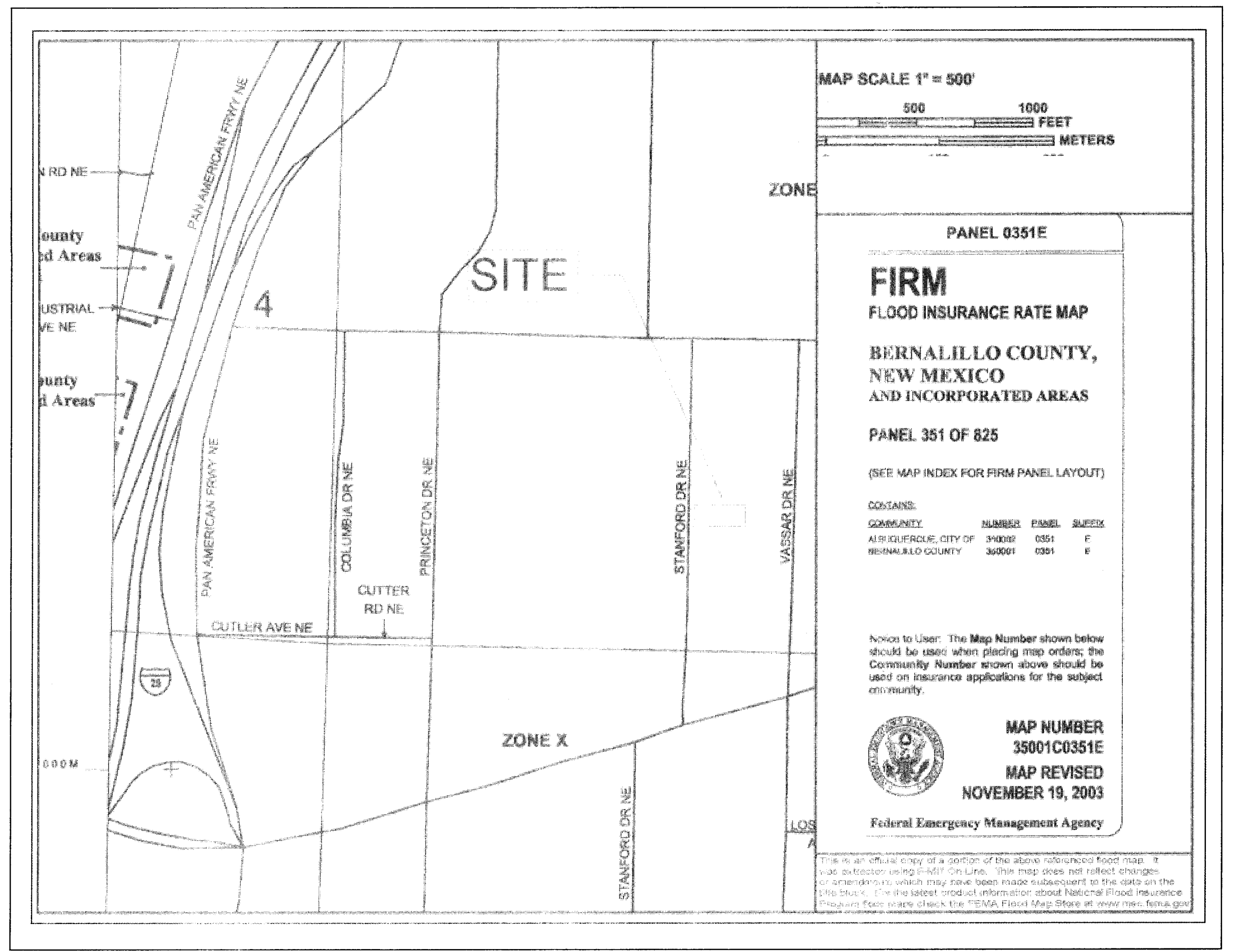
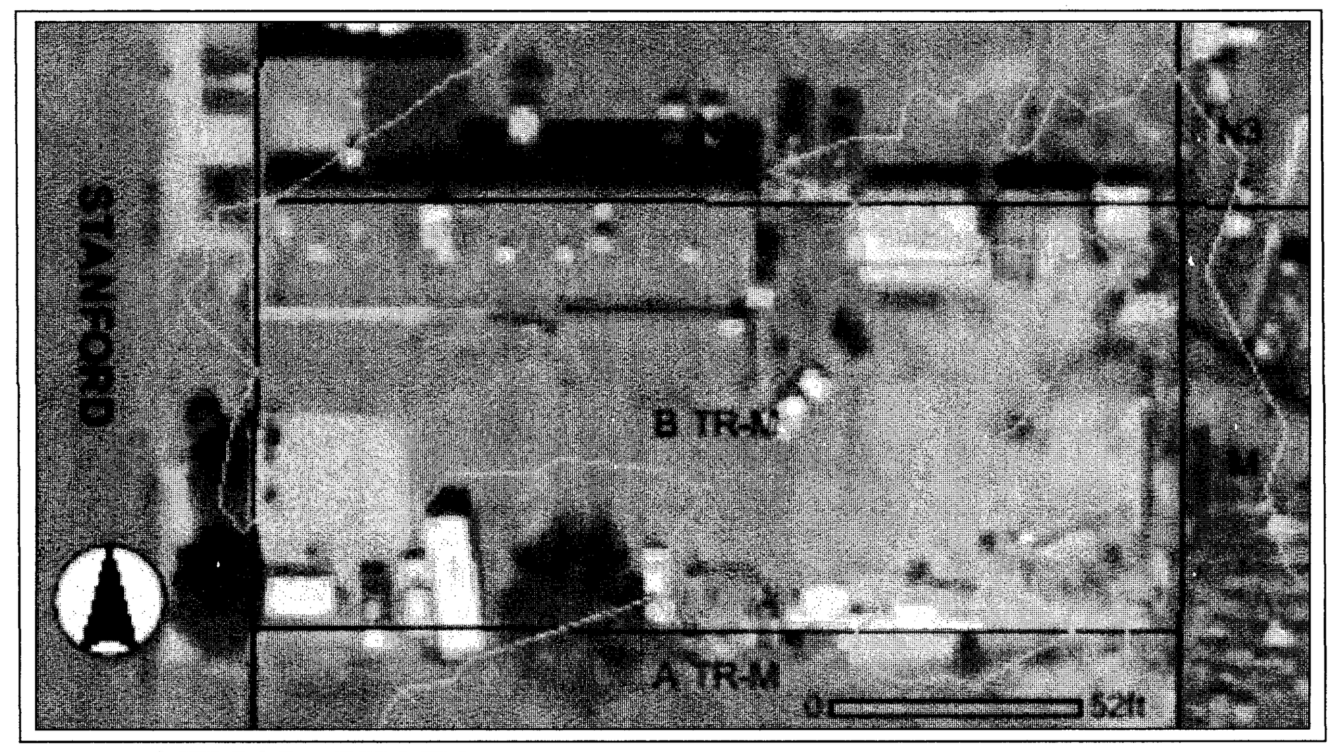
STANFORD
3
4
2
1



FLOOD INSURANCE RATE MAP (FIRMETTE) MAP NO. 351



2004 AERIAL PHOTO

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		PROPERTY LINE
← ← ←	← ← ←	SWALE
←	←	SHEET FLOW
	⇦	ROOF FLOW
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TOPO SURVEY LEGEND:

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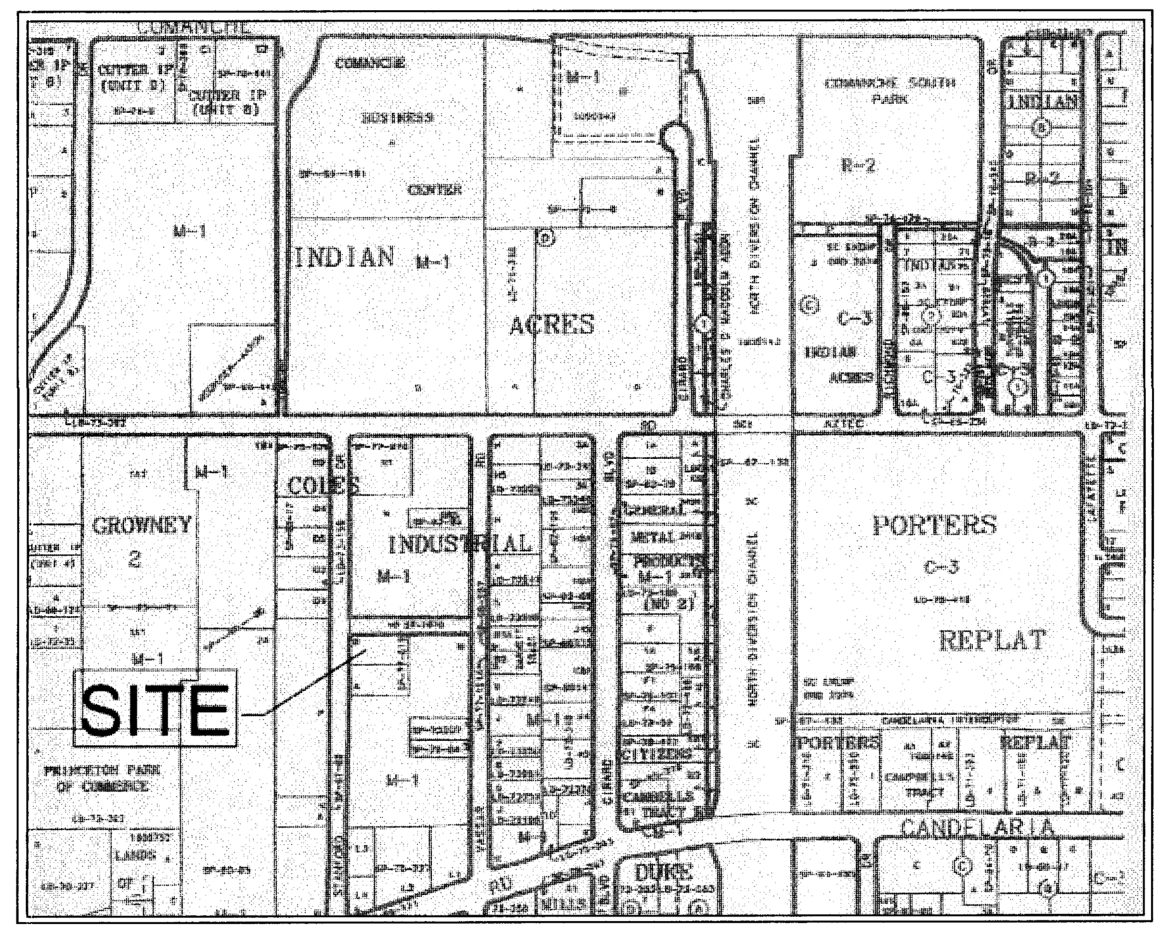

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APPROVAL FOR SW CULVERTS	NAME	DATE
INSPECTOR:		

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DRAINAGE CONSIDERATIONS:

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PRECIPITATION ZONE:

The site is between the Rio Grande River and San Mateo Boulevard. Therefore, it is within the limits of Precipitation Zone 2.

LAND TREATMENT AREAS, ETC.:

The peak discharge per acre and excess precipitation are shown for the four land treatments in Zone 2 in the table below, and the values shown are from the City of Albuquerque D.P.M. Also shown are the existing and proposed land treatment areas.

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Totals					100.0	20,000	0.4591	100.0	20,000	0.4591

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EXISTING CONDITIONS:

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Q10 = 0.2000 * 1.71 + 0.2591 * 3.14 = 1.16 cfs

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V100 = (8,710 * 1.13 + 11,290 * 2.12) / 12 = 2,815 cf
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SUMMARY OF ON-SITE VOLUMES AND DISCHARGE RATES:

	V100(CF)	V10(CF)	Q100(CFS)	Q10(CFS)
DEVELOPED	3,169	1,939	1.99	1.29
EXISTING	2,815	1,638	1.85	1.16
INCREASE	354	301	0.14	0.13

SIDEWALK CULVERT CAPACITY:

Use Weir Equation, $Q = CLH^{3/2}$ Design Q = 1.99 cfs C = 2.65 L = 1.50 H = 0.67'.
$Q = 2.65 \times 1.50 \times 0.67^{3/2} = 2.18$ cfs> 1.99 cfs OK

DOWNSTREAM CAPACITY:

The flow from this site enters Stanford Drive and flows north to Aztec Ave. It then flows west in Aztec Avenue to inlets at the intersection of the I-25 East Frontage Road. The portion of Aztec Ave. between Stanford and Princeton is very flat and therefore does not convey the volume of water that the section west of Princeton conveys. It is believed that allowing unrestricted discharge from this site will not cause increased depth in the critical section of Aztec Ave. for the following reasons:

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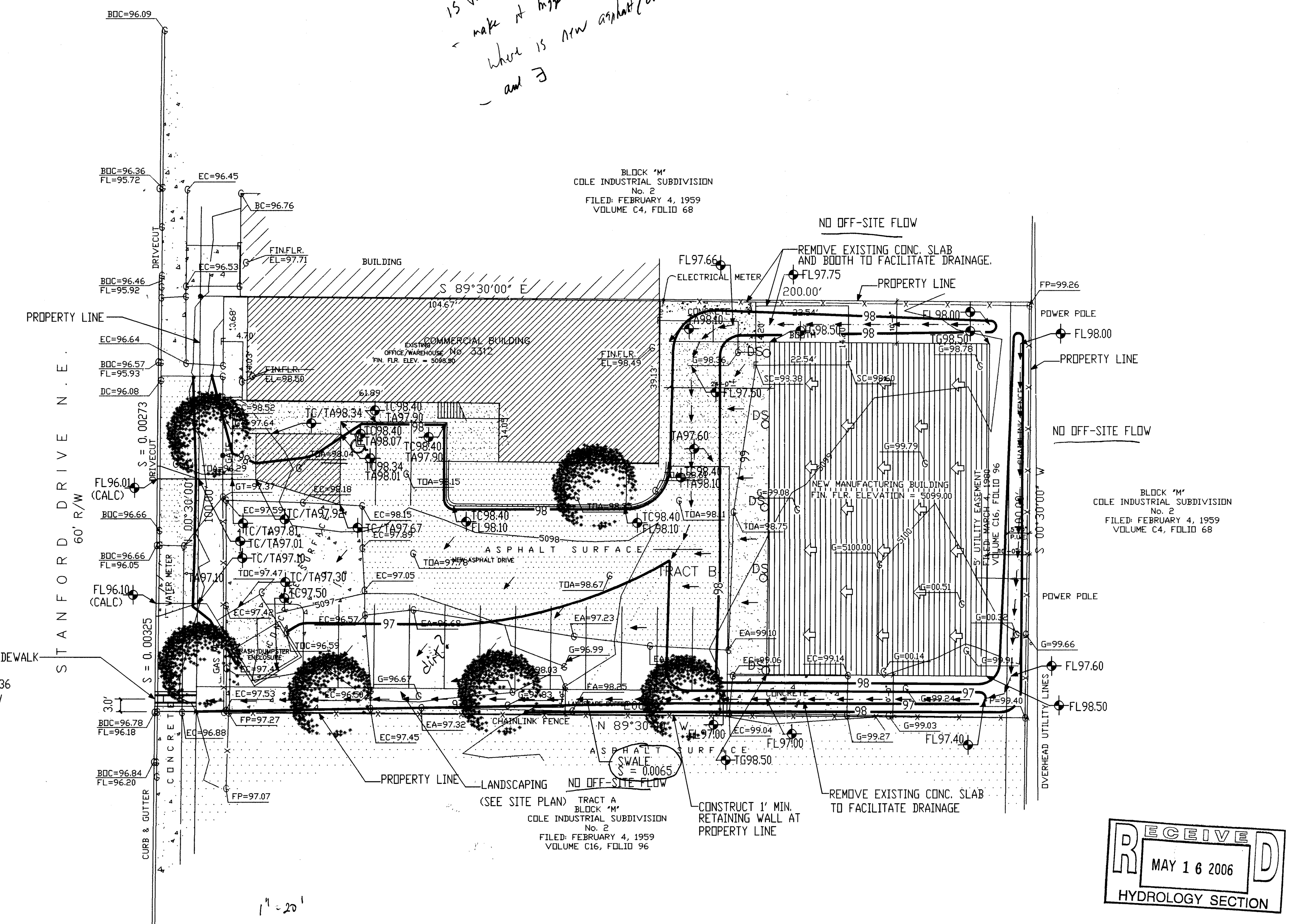


LEGAL DESCRIPTION
LOT 'B' OF THE NORTH 100 FEET OF THE WEST HALF OF BLOCK 'M'
OF COLE'S INDUSTRIAL SUBDIVISION NO. 2, IN THE CITY OF ALBUQUERQUE, N.M.
AS SHOWN AND DESIGNATED ON THE AMENDED SUMMARY PLAT FILED IN THE OFFICE OF
THE COUNTY CLERK OF BERNALILLO COUNTY, N.M. ON MARCH 4, 1980 IN PLAT
BLOCK VOL. C16, FOLIO 96.

FRANK D. LOVELADY
NEW MEXICO
8312
REGISTERED PROFESSIONAL ENGINEER
MAY 16, 2006

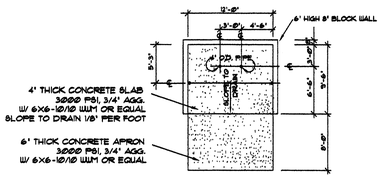
GRADING AND DRAINAGE PLAN
ARRAY TECHNOLOGIES INC.
3312 STANFORD DRIVE NE
ALBUQUERQUE, NEW MEXICO

FRANK D. LOVELADY, P.E.
(505) 345-2267 * Fax (505) 345-2115 * 300 ALAMOSA RD. NW * Albuquerque, NM * 87107

JOB NO: 699
DATE: May 16, 2006
REVISIONS

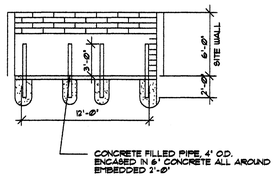
SHEET NO. 1 OF 1

C:\All Proj\Proj676-700\Proj699\3312 STANFORD DR - GR.DWG (MAY 16, 2006)



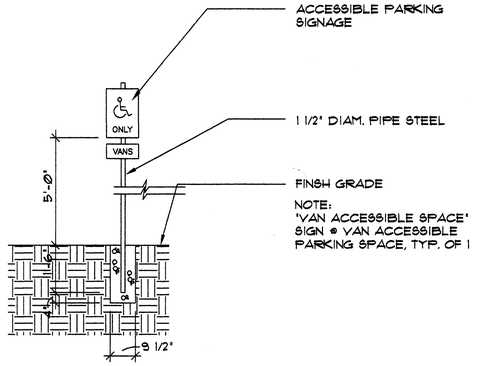
1 ENCLOSURE PLAN

SCALE : 1" = 1'-0"



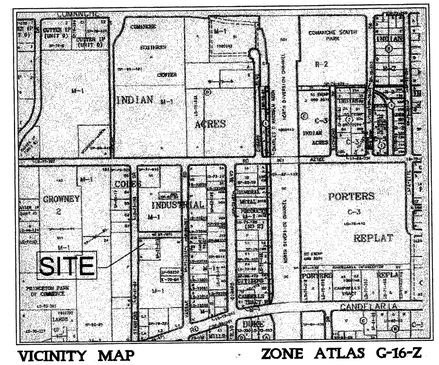
2 ENCLOSURE SECTION

SCALE : 3/8" = 1'-0"



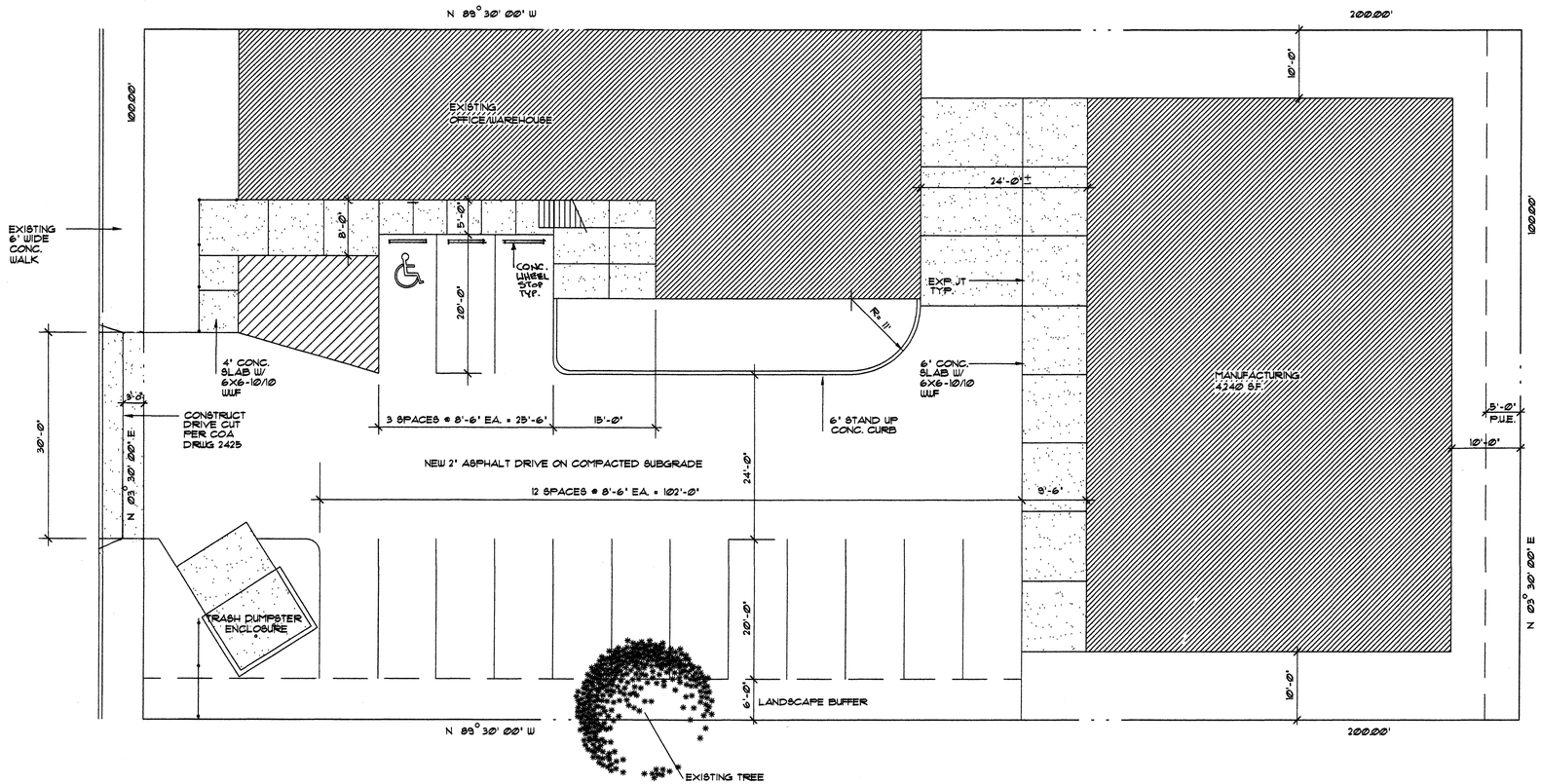
3 SIGN DETAIL

NOT TO SCALE



VICINITY MAP ZONE ATLAS C-16-Z

STATE OF NEW MEXICO
GEORGE L. SANDERS
No. 10661
ALBUQUERQUE
REGISTERED ARCHITECT
5/31/06



1 SITE PLAN

SCALE: 1" = 10'-0"

5' 0' 10' 30' NORTH

SCALE IN FEET

STANFORD DRIVE N.E.

PARKING REQUIREMENTS

EXISTING BUILDING		
1ST FLOOR OFFICE - 846 S.F. 1 PARKING SPACE PER 200 S.F. =		4.23 SPACES
2ND FLOOR OFFICE - 822 S.F. 1 PARKING SPACE PER 200 S.F. =		4.11 SPACES
WAREHOUSE - 3,656 S.F. 1 PARKING SPACE PER 2000 S.F. =		1.828 SPACES
NEW BUILDING		
MANUFACTURING - 4,180 S.F. 1 PARKING SPACE PER 1000 S.F. =		4.18 SPACES
TOTAL REQUIRED		15 SPACES
TOTAL PROVIDED	REG CAR	14 SPACES
TOTAL PROVIDED	HANDICAP	1 SPACE
TOTAL PROVIDED		15 SPACES

BICYCLE: 1 SPACE PER 20 CARS TOTAL: 1 REQ. 1 PROVIDED

LEGAL DESCRIPTION
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TRAFFIC CIRCULATION LAYOUT APPROVED
Signed 2-27-07 Date

RECEIVED
FEB 27 2007
HYDROLOGY SECTION

ARRAY TECHNOLOGIES
3312 STANFORD N.E.
ALBUQUERQUE, NEW MEXICO

SANDERS & ASSOCIATES ARCHITECTS, P.C. 5921 LOMAS BLVD. N.E. SUITE B ALBUQUERQUE N.M. 87110 (505) 255-5040 FAX (505) 255-5040

project no. 0607
C-1
3 of 20
date 5 - 31 - 06

GRADING PLAN LEGEND:

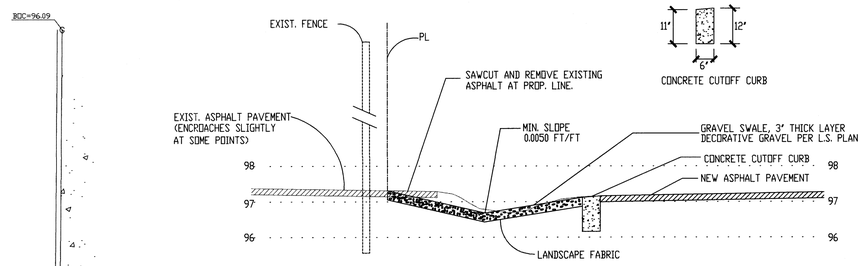
EXISTING	NEW	DESCRIPTION
5284	84	CONTOUR
84.00	84.00	SPOT ELEVATION
		PROPERTY LINE
		SWALE
		SHEET FLOW
		ROOF FLOW
DS○		DOWN SPOUT

TOPO SURVEY LEGEND:

BOC	= BACK OF CURB	ER	= EDGE OF ROAD
CC	= CURB CUT	FIN.FLR	= FINISH FLOOR
DI	= DRAINAGE INLET	FL	= FLOW LINE
EA	= EDGE OF ASPHALT	FND	= FOUND
EC	= EDGE OF CONCRETE	FP	= FENCE POST
EL	= ELEVATION	G	= GROUND
EOW	= EDGE OF WALL	INV	= INVERT

HATCHING LEGEND:

- EXISTING ON-SITE BUILDING
- EXISTING OFF-SITE BUILDING
- EXISTING OFF-SITE ASPHALT
- EXISTING SIDEWALK ON STANFORD DR.
- NEW CONCRETE
- NEW BUILDING
- PAVEMENT STRIPING



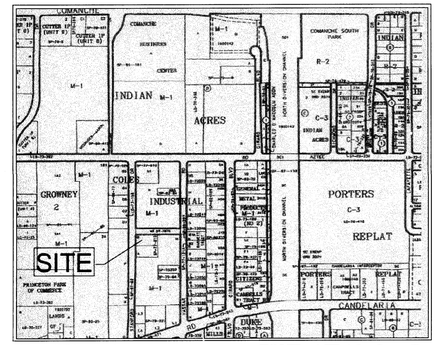
SECTION A-A

1/2" = 1' - 0"

CITY OF ALBUQUERQUE
DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY (S. D. 19)
NOTICE TO CONTRACTORS

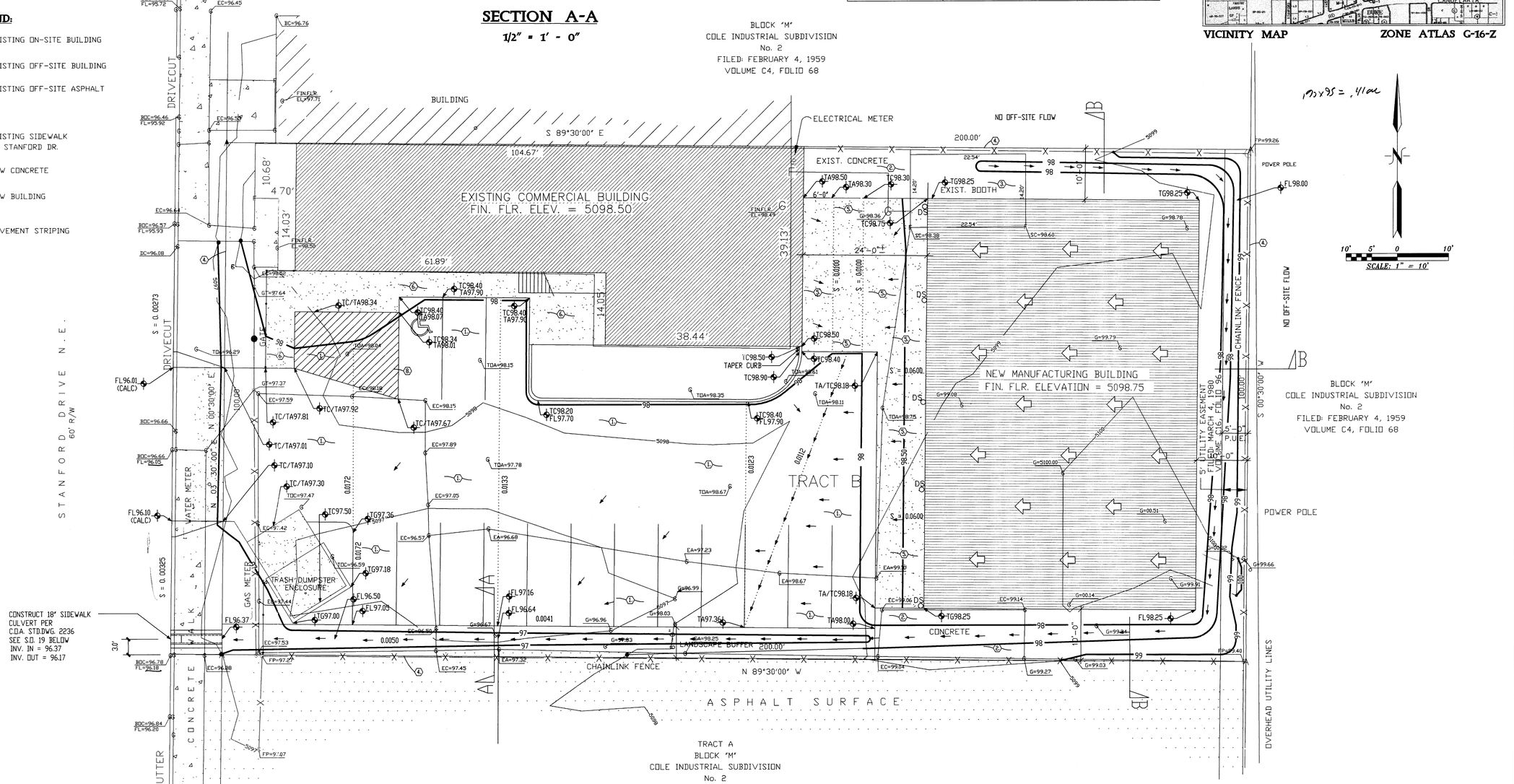
1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR THIS PERMIT.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERFORMED UNDER CONTRACT, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986, AS UPDATED THROUGH REVISION NO. 6.
3. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, INC., 260-1990, FOR LOCATION FOR EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS. 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 THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL FOR SW CULVERTS	NAME	DATE
INSPECTOR:		



VICINITY MAP ZONE ATLAS G-16-Z

BLOCK "M"
COLE INDUSTRIAL SUBDIVISION
No. 2
FILED: FEBRUARY 4, 1959
VOLUME C4, FOLIO 68



SECTION B-B

1/2" = 1' - 0"

KEYED NOTES

1. NEW ASPHALT PAVEMENT
2. REMOVE EXISTING CONCRETE SLAB.
3. REMOVE EXISTING BOOTH.
4. PROPERTY LINE.
5. NEW CONCRETE SLAB.
6. NEW CONCRETE SIDEWALK.
7. NEW DRIVEPAD PER C. O. A. STD. DWG. 2425.
8. STRIPING. SEE SITE PLAN.

RECEIVED
JUN 09 2006
HYDROLOGY SECTION

SCALE: 1" = 10'

FRANK D. LOVELADY
NEW MEXICO
16512
REGISTERED PROFESSIONAL ENGINEER
JUNE 9, 2006

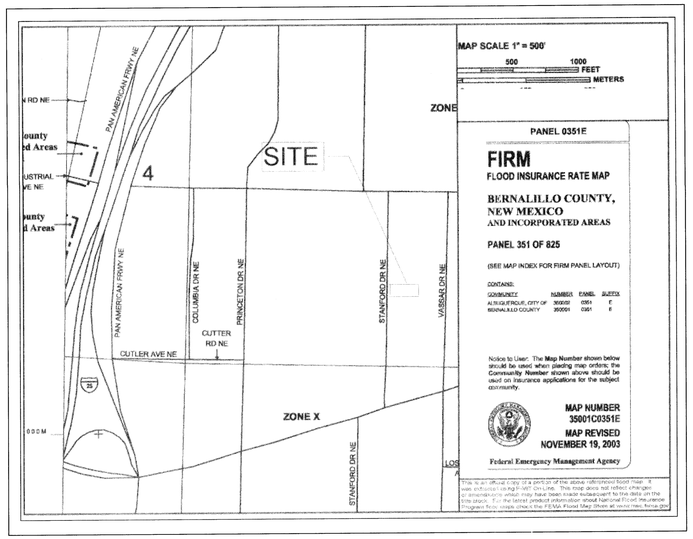
GRADING AND DRAINAGE PLAN
ARRAY TECHNOLOGIES INC.
3312 STANFORD DRIVE NE
ALBUQUERQUE, NEW MEXICO

FRANK D. LOVELADY, P.E.
(505) 345-2267 • Fax (505) 345-2115 • 300 ALAMOSA RD. NW • Albuquerque, NM • 87107

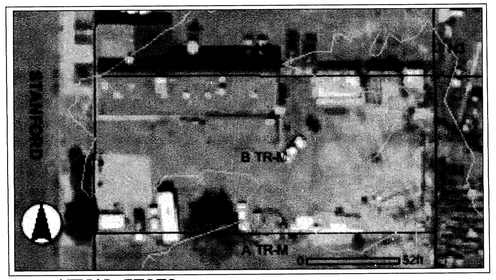
JOB NO: 699
DATE: June 9, 2006
REVISIONS

SHEET NO. 1 OF 2

C:\All Proj\Proj676-700\Proj699\GP.DWG (JUNE 9, 2006)



FLOOD INSURANCE RATE MAP (FIRMETTE) MAP NO. 351



2004 AERIAL PHOTO

TOPOGRAPHIC SURVEY GENERAL NOTES :

1: CONTOUR INTERVAL IS ONE (1) FOOT.

2: ELEVATIONS ARE BASED ON CITY OF ALBUQUERQUE STATION No. "11–H16", HAVING AN ELEVATION OF 5097.88 .

3: UTILITIES SHOWN HEREON ARE IN THEIR APPROXIMATE LOCATION BASED ONLY ON ABOVE GROUND EVIDENCE FOUND IN THE FIELD AND AS–BUILT INFORMATION PROVIDED BY THE CLIENT. UTILITIES SHOWN HEREON, WHETHER INDICATED AS ABANDONED OR NOT, SHALL BE VERIFIED BY OTHERS FOR EXACT LOCATION AND/ OR DEPTH PRIOR TO EXCAVATION OR DESIGN CONSIDERATIONS.

5: THIS IS NOT A BOUNDARY SURVEY. BEARINGS AND DISTANCES SHOWN HEREON ARE FOR REFERENCE ONLY.

EROSION CONTROL NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE FOLLOWING:

1. NO SEDIMENT–BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.
2. DURING GRADING OPERATIONS AND UNTIL THE PROJECT HAS BEEN COMPLETED, ALL ADJACENT PROPERTY, RIGHTS–OF–WAY, AND EASEMENTS SHALL BE PROTECTED FROM FLOODING BY RUNOFF FROM THE SITE.
3. SHOULD THE CONTRACTOR FAIL TO PREVENT SEDIMENT–BEARING WATER FROM ENTERING PUBLIC RIGHT–OF–WAY, HE SHALL PROMPLTY REMOVE FROM THE PUBLIC RIGHT–OF–WAY ANY AND ALL SEDIMENT ORIGINATING FROM THE SITE.
4. CONTROL OF SEDIMENT–LADEN WATERS WILL BE ACCOMPLISHED BY USE OF A COMPACTED EARTH BERM OF ADEQUATE HEIGHT. THE BERM SHALL BE LOCATED ALONG THE DOWNSTREAM PERIMETER OF THE PROPERTY.

DRAINAGE CONSIDERATIONS:

EXISTING SITE CONDITIONS:

The site is located on the east side of Stanford Drive, NE, approximately half way between Candelaria Road and Aztec Drive. The site is developed as is the property to the north, east and south. There is one existing office/manufacturing building on the site as well as a small booth and existing asphalt pavement and concrete slabs. The original development had a hydrology submittal, G16–D34. These are on microfilm and are difficult to read. Copies have been ordered from Lason Inc. The project was constructed in the early 1980's. A detention pond was called for on the plans and is in place on the site. The pond outlet appears to be a 4" PVC pipe through the curb. Aparently, the pond detains water to a depth in excess of one foot. The limits of the pond encroach on the parking area so that cars must be hurriedly moved every time a significant rain occurs.

EXISTING DRAINAGE BASIN CONDITIONS:

This light industrial area which lies between the North Diversion Channel and Interstate 25, and between Candelaria and Aztec, drains to Aztec and to Candelaria. The site is in the portion of the basin that drains to Aztec. The existance of detention ponding in the area was determined by a simple survey. This was accomplished by piecing together a composite of the on–line City of Albuquerque GIS 2004 aerial photo map of the area between Stanford and the North Diversion Channel and then driving Stanford, Vassar and Girard to locate any drainage pipes through curbs. Remarkably few were found. The above streets each have a high point that divides flow to Aztec or Candelaria. Only the area flowing to Aztec was considered. Only four pipes through curbs were found, including the property at 3312 Stanford NE. The composit map is submitted with this plan together with photos of the three detention areas besides this site. The photos show that in those cases where detention was provided, only a token effort was made to reduce the peak discharge rate. The composite map shows the area to be fully developed, (i.e. no vacant lots) and the percentage of Treatment D is estimated to be near 90%.

PROPOSED SITE CONDITIONS:

It is proposed to construct an 80' x 53' metal building on the site as shown. The roof will be sloped to drain west into the parking lot. In view of the above analysis, it is proposed to discharge the site runoff directly into Stanford by means of a sidewalk culvert.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque in cooperation with Bernalillo County, New Mexico and the Metropolitan Arroyo Flood Control Authority, January, 1993.

PRECIPITATION ZONE:

The site is between the Rio Grande River and San Mateo Boulevard. Therefore, it is within the limits of Precipitation Zone 2.

LAND TREATMENT AREAS, ETC.:

The peak discharge per acre and excess precipitation are shown for the four land treatments in Zone 2 in the table below, and the values shown are from the City of Albuquerque D.P.M. Also shown are the existing and proposed land treatment areas.

LAND TREAT.	q(cfs/ac) 100-yr.	q(cfs/ac) 10-yr.	E (in) 100-yr.	E (in) 10-yr.	Existing %	Existing Site Areas Sq.Ft.	Existing Site Areas Acres	Developed %	Developed Site Areas Sq.Ft.	Developed Site Areas Acres
A	1.56	0.38	0.53	0.13	0.0	0	0.0000	0.0	0	0.0000
B	2.28	0.95	0.78	0.28	0.0	0	0.0000	9.7	1,953	0.0448
C	3.14	1.71	1.13	0.52	43.6	8,710	0.2000	8.9	1,775	0.0407
D	4.70	3.14	2.12	1.34	56.4	11,290	0.2591	81.4	16,272	0.3736
Totals					100.0	20,000	0.4591	100.0	20,000	0.4591

PEAK DISCHARGE:

EXISTING CONDITIONS:
Q100 = 0.2000 * 3.14 + 0.2591 * 4.70 = 1.85 cfs
Q10 = 0.2000 * 1.71 + 0.2591 * 3.14 = 1.16 cfs

DEVELOPED CONDITIONS:
Q100 = 0.0448 * 2.28 + 0.0407 * 3.14 + 0.3736 * 4.70 = 1.99 cfs
Q10 = 0.0448 * 0.95 + 0.0407 * 1.71 + 0.3736 * 3.14 = 1.29 cfs

VOLUME, 100-YEAR AND 10-YEAR, 6-HOUR:

EXISTING CONDITIONS:
V100 = (8,710 * 1.13 + 11,290 * 2.12) / 12 = 2,815 cf
V10 = (8,710 * 0.52 + 11,290 * 1.34) / 12 = 1,638 cf

DEVELOPED CONDITIONS:
V100 = (1,953 * 0.78 + 1,775 * 1.13 + 16,272 * 2.12) / 12 = 3,169 cf
V10 = (1,953 * 0.28 + 1,775 * 0.52 + 16,272 * 1.34) / 12 = 1,939 cf

SUMMARY OF ON-SITE VOLUMES AND DISCHARGE RATES:

	V100(CF)	V10(CF)	Q100(CFS)	Q10(CFS)
DEVELOPED	3,169	1,939	1.99	1.29
EXISTING	2,815	1,638	1.85	1.16
INCREASE	354	301	0.14	0.13

SIDEWALK CULVERT CAPACITY:

Use Weir Equation, $Q = CLH^{3/2}$ Design Q = 1.99 cfs C = 2.65 L = 1.50 H = 0.67'.
$Q = 2.65 \times 1.50 \times 0.67^{3/2} = 2.18$ cfs > 1.99 cfs OK

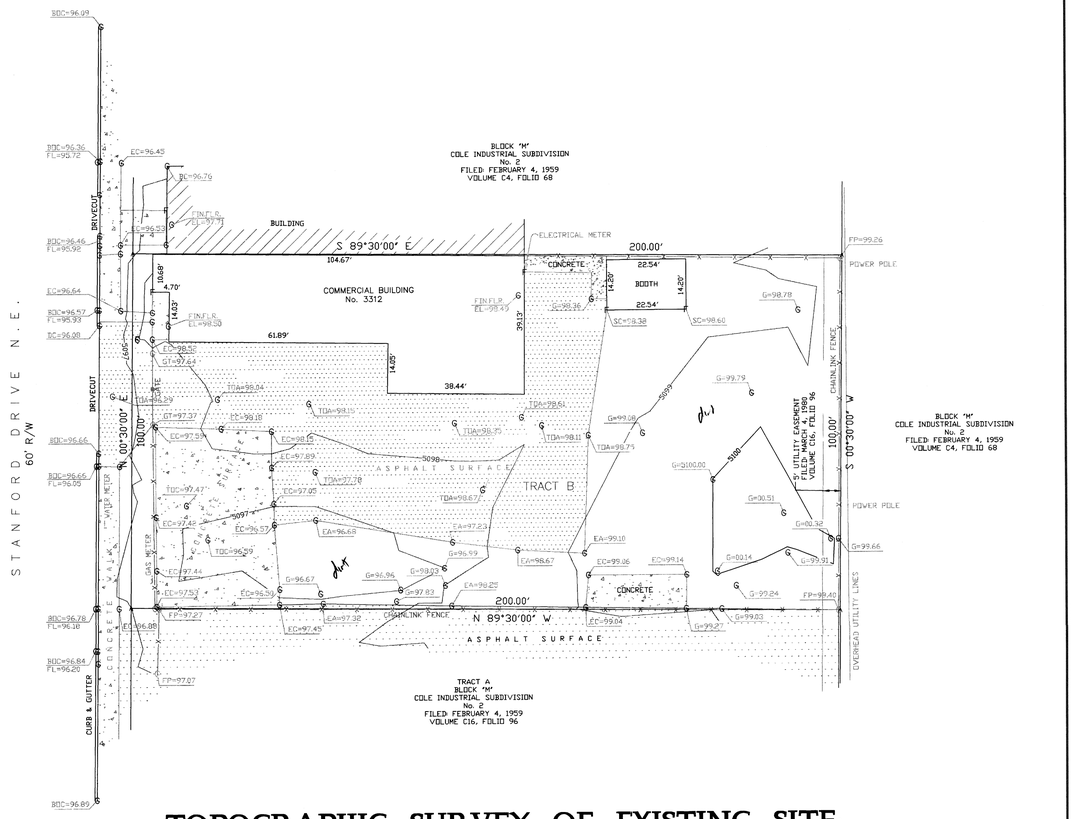
DOWNSTREAM CAPACITY:

The flow from this site enters Stanford Drive and flows north to Aztec Ave. It then flows west in Aztec Avenue to inlets at the intersection of the I–25 East Frontage Road. The portion of Aztec Ave. between Stanford and Princeton is very flat and therefore does not convey the volume of water that the section west of Princeton conveys. It is believed that allowing unrestricted discharge from this site will not cause increased depth in the critical section of Aztec Ave. for the following reasons:

1. The site is one of the smallest lots in the drainage basin.
2. The site is relatively at the low end of the basin. Runoff from the site will be through the flat portion of Aztec Ave. before the peak flow occurs in that section.
3. The site is an infill site. Future development will have to, in most cases, replace existing pavement or existing buildings.
4. The peak discharge rate for this site very small in comparison with the entire portion of the basin draining to the flat portion of Aztec Ave.

OFF-SITE FLOW:

A portion of the parking lot of the adjacent lot on the south appears to drain across the south property line and into the swale. This off–site flow is accepted. The area is approximately 10' x 100' = 1000 sf = 0.0230 ac
Q = 0.0230 x 4.70 = 0.11 cfs



TOPOGRAPHIC SURVEY OF EXISTING SITE:

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RECEIVED
JUN 09 2006
HYDROLOGY SECTION

FRANK D. LOVELADY
NEW MEXICO
6512
REGISTERED PROFESSIONAL ENGINEER
JUNE 9, 2006

CALCULATIONS AND MISCELLANEOUS
ARRAY TECHNOLOGIES INC.
3312 STANFORD DRIVE NE
ALBUQUERQUE, NEW MEXICO

FRANK D. LOVELADY, P.E.
(505) 345-2267 * Fax (505) 345-2115 * 300 ALAMOSA RD. NW * Albuquerque, NM * 87107

JOB NO: 699
DATE: JUNE 9, 2006
REVISIONS

SHEET NO. 2 OF 2

C:\All Proj\Proj#s-700\Proj#699\3312 STANFORD DR - CALCS.DWG (JUNE 9, 2006)

GRADING PLAN LEGEND:

EXISTING	NEW	DESCRIPTION
5284	84	CONTOUR
84.00	84.00	SPOT ELEVATION
		PROPERTY LINE
		SWALE
		SHEET FLOW
		ROOF FLOW
DS	DS	DOWN SPOUT

TOPO SURVEY LEGEND:

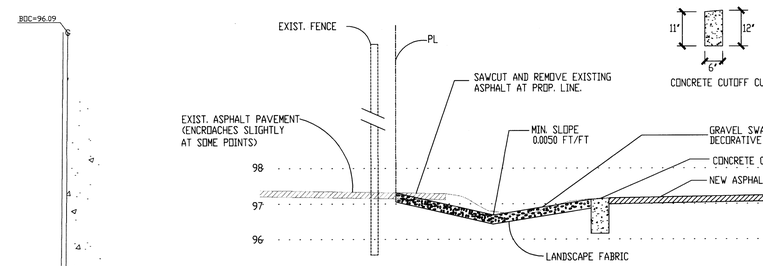
BOC = BACK OF CURB		ER = EDGE OF ROAD	
CC = CURB CUT		FIN.FLR = FINISH FLOOR	
DI = DRAINAGE INLET		FL = FLOW LINE	
EA = EDGE OF ASPHALT		FND = FOUND	
EC = EDGE OF CONCRETE		FP = FENCE POST	
EL = ELEVATION		G = GROUND	
EDW = EDGE OF WALL		INV = INVERT	

LEGEND FOR CERT. SURVEY:

FL 97.50 / TA 97.41 — INDICATES SPOT ELEV. UNCHANGED / INDICATES AS-CONSTRUCTED SPOT ELEV.

HATCHING LEGEND:

- EXISTING ON-SITE BUILDING
- EXISTING OFF-SITE BUILDING
- EXISTING OFF-SITE ASPHALT
- EXISTING SIDEWALK ON STANFORD DR.
- NEW CONCRETE
- NEW BUILDING
- PAVEMENT STRIPING



SECTION A-A

1/2" = 1' - 0"

CONCRETE CUTOFF CURB

CITY OF ALBUQUERQUE
DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY (S.O. 19)
NOTICE TO CONTRACTORS

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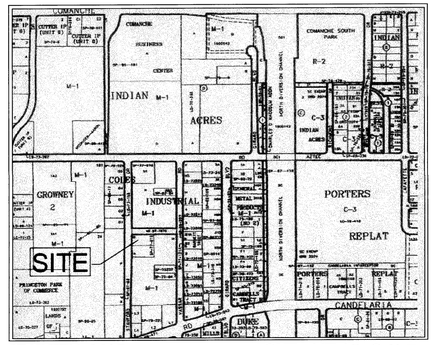
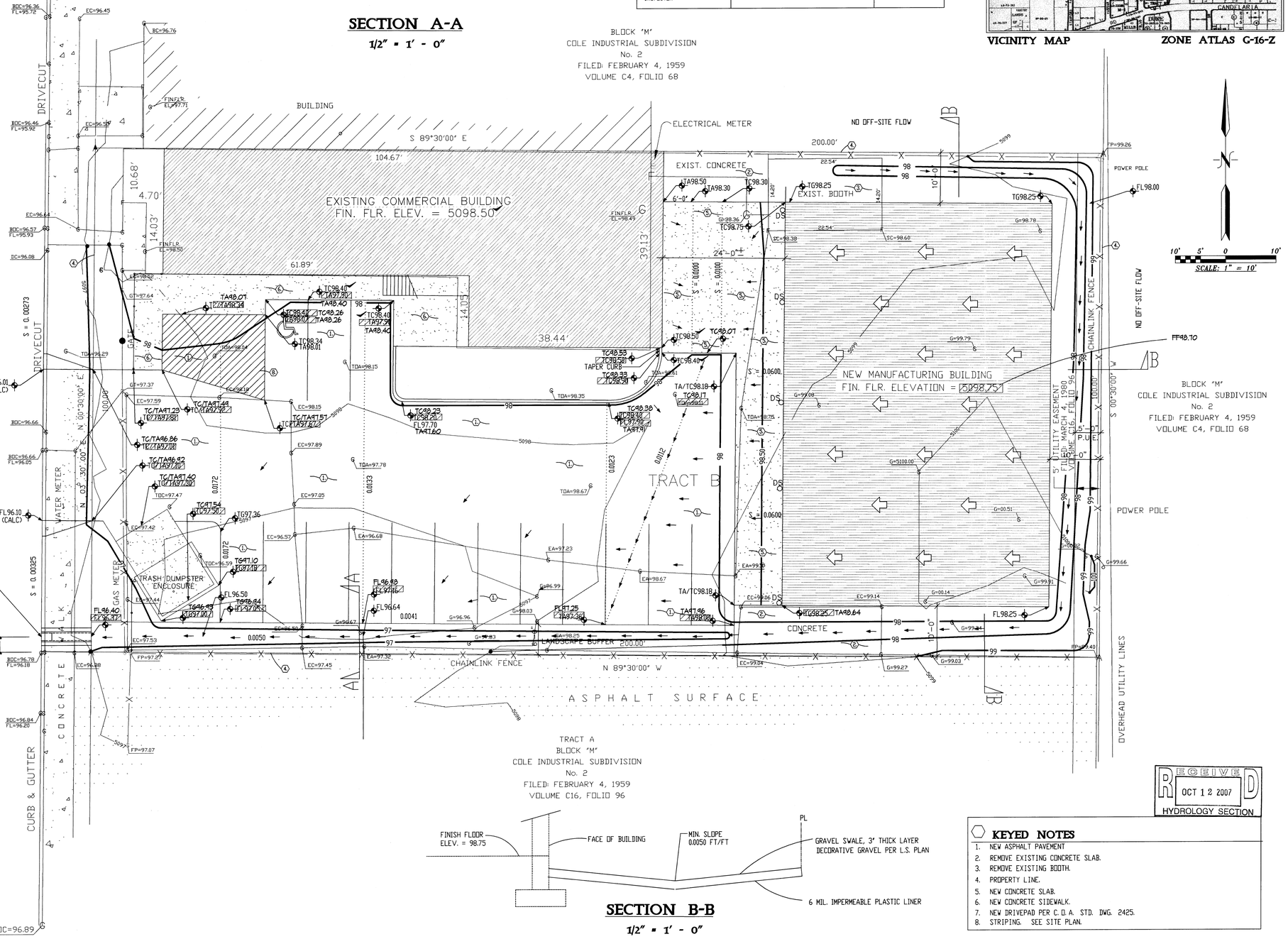
APPROVAL FOR SW CULVERTS	NAME	DATE
INSPECTOR:		



VICINITY MAP — ZONE ATLAS G-16-Z

BLOCK "M"
COLE INDUSTRIAL SUBDIVISION
No. 2
FILED: FEBRUARY 4, 1959
VOLUME C4, FOLIO 68



CERTIFICATION WITH VERFICATION BY ENGINEER OF RECORD

I, FRANK D. LOVELADY, NMPE 6512 OF THE FIRM FRANK D. LOVELADY P.E. HEREBY CERTIFY THAT THIS PROJECT HAS BEEN GRADED AND WILL DRAIN IN SUBSTANTIAL COMPLINACE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED 06-09-2006. THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBAINED BY WAYJOHN SURVEYING COMPANY.

I FURTHER CERTIFY THAT I HAVE PERSONALLY VISITED THE PROJECT SITE ON 10-11-07 AND HAVE DETERMINED BY VISUAL INSPECTION THAT THE SURVEY DATA PROVIDED IS REPRESENTATIVE OF ACTUAL SITE CONDITIONS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS CERTIFICATION IS SUBMITTED IN SUPPORT OF A REQUEST FOR PERMANANT CERTIFICATE OF OCCUPANCY.

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.

FRANK D. LOVELADY
NMPE 6512

April 12, 2007
DATE

FRANK D. LOVELADY — NEW MEXICO — 6512 — REGISTERED PROFESSIONAL ENGINEER

SECTION B-B

1/2" = 1' - 0"

RECEIVED
OCT 12 2007
HYDROLOGY SECTION

KEYED NOTES

1. NEW ASPHALT PAVEMENT
2. REMOVE EXISTING CONCRETE SLAB.
3. REMOVE EXISTING BOOTH.
4. PROPERTY LINE.
5. NEW CONCRETE SLAB.
6. NEW CONCRETE SIDEWALK.
7. NEW DRIVEPAD PER C.O.A. STD. DWG. 2425.
8. STRIPING. SEE SITE PLAN.

FRANK D. LOVELADY, P.E.
(505) 345-2267 * Fax (505) 345-2115 * 300 ALAMOSA RD. NW * Albuquerque, NM * 87107

GRADING AND DRAINAGE PLAN
ARRAY TECHNOLOGIES INC.
3312 STANFORD DRIVE NE
ALBUQUERQUE, NEW MEXICO

FRANK D. LOVELADY — NEW MEXICO — 6512 — REGISTERED PROFESSIONAL ENGINEER
JUNE 9, 2006
REVISED 10/11/07

JOB NO: 699
DATE: October 11, 2007
REVISIONS

SHEET NO. 1 OF 1

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GRADING PLAN LEGEND:

EXISTING	NEW	DESCRIPTION
5284	84	CONTOUR
84.00	84.00	SPOT ELEVATION
		PROPERTY LINE
		SWALE
		SHEET FLOW
		ROOF FLOW
DS	DS	DOWN SPOUT

TOPO SURVEY LEGEND:

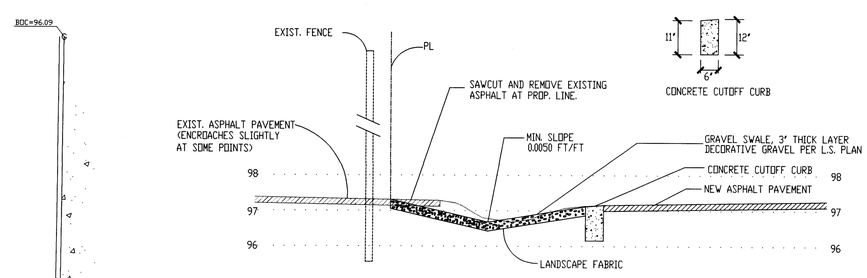
BOC = BACK OF CURB		ER = EDGE OF ROAD	
CC = CURB CUT		FIN.FLR = FINISH FLOOR	
DI = DRAINAGE INLET		FL = FLOW LINE	
EA = EDGE OF ASPHALT		FND = FOUND	
EC = EDGE OF CONCRETE		FP = FENCE POST	
EL = ELEVATION		G = GROUND	
EOW = EDGE OF WALL		INV = INVERT	

LEGEND FOR CERT. SURVEY:

EL.97.99 ✓ / TA97.41 — INDICATES SPOT ELEV. UNCHANGED
INDICATES AS-CONSTRUCTED SPOT ELEV.

HATCHING LEGEND:

- EXISTING ON-SITE BUILDING
- EXISTING OFF-SITE BUILDING
- EXISTING OFF-SITE ASPHALT
- EXISTING SIDEWALK ON STANFORD DR.
- NEW CONCRETE
- NEW BUILDING
- PAVEMENT STRIPING



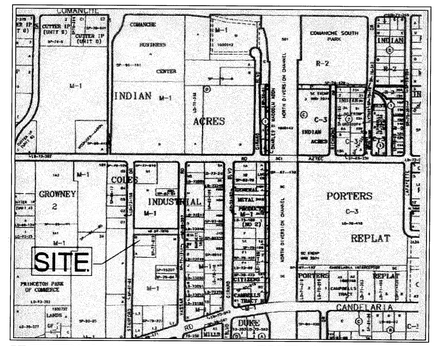
SECTION A-A

1/2" = 1' - 0"

CITY OF ALBUQUERQUE
DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY (S.O. 19)
NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR THIS PERMIT.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERFORMED UNDER CONTRACT, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986, AS UPDATED THROUGH REVISION NO. 6.
3. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, INC., 260-1990, FOR LOCATION FOR EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS. 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 THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL FOR SW CULVERTS	NAME	DATE
INSPECTOR:		



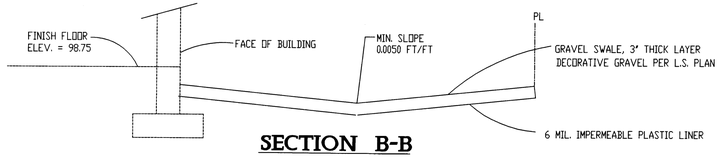
VICINITY MAP — ZONE ATLAS G-16-Z

BLOCK "M"
COLE INDUSTRIAL SUBDIVISION
No. 2
FILED: FEBRUARY 4, 1959
VOLUME C4, FOLIO 68

RECEIVED
NOV 30 2007
HYDROLOGY SECTION

RECEIVED
NOV 30 2007
HYDROLOGY SECTION

TRACT A
BLOCK "M"
COLE INDUSTRIAL SUBDIVISION
No. 2
FILED: FEBRUARY 4, 1959
VOLUME C16, FOLIO 96



SECTION B-B

1/2" = 1' - 0"

KEYED NOTES

1. NEW ASPHALT PAVEMENT
2. REMOVE EXISTING CONCRETE SLAB.
3. REMOVE EXISTING BOOTH.
4. PROPERTY LINE.
5. NEW CONCRETE SLAB.
6. NEW CONCRETE SIDEWALK.
7. NEW DRIVEPAD PER C.O.A. STD. DWG. 2425.
8. STRIPING. SEE SITE PLAN.

CERTIFICATION WITH VERFICATION BY ENGINEER OF RECORD

I, FRANK D. LOVELADY, NMPE 6512 OF THE FIRM FRANK D. LOVELADY P.E. HEREBY CERTIFY THAT THIS PROJECT HAS BEEN GRADED AND WILL DRAIN IN SUBSTANTIAL COMPLINACE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED 06-09-2006. THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBAINED BY WAYJOHN SURVEYING COMPANY.

I FURTHER CERTIFY THAT I HAVE PERSONALLY VISITED THE PROJECT SITE ON 11-30-07 AND HAVE DETERMINED BY VISUAL INSPECTION THAT THE SURVEY DATA PROVIDED IS REPRESENTATIVE OF ACTUAL SITE CONDITIONS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS CERTIFICATION IS SUBMITTED IN SUPPORT OF A REQUEST FOR PERMANANT CERTIFICATE OF OCCUPANCY.

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.

FRANK D. LOVELADY
NMPE 6512

November 30, 2007
DATE

FRANK D. LOVELADY — NEW MEXICO — 6512 — REGISTERED PROFESSIONAL ENGINEER

FRANK D. LOVELADY — NEW MEXICO — 6512 — REGISTERED PROFESSIONAL ENGINEER
JUNE 9, 2006
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