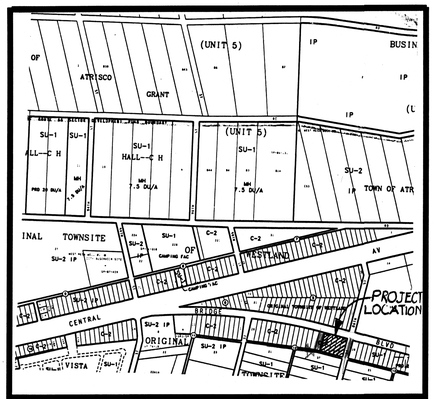
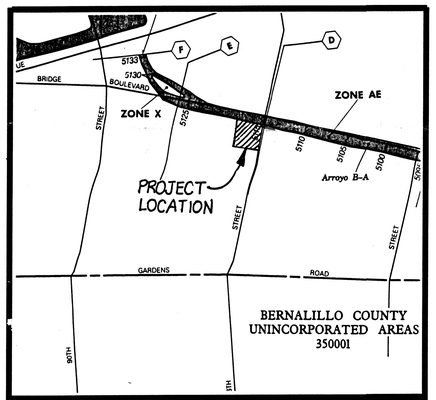
LOT 1–A, BLOCK 12, ORIGINAL TOWNSITE OF WESTLAND

DRAINAGE PLAN FOR CASTIGLIONE STORAGE BUILDINGS



VICINITY MAP (ZA K–9)



FLOOD INSURANCE RATE MAP
35001C0328 D

BFE: 5125'

DRAINAGE PLAN

THE FOLLOWING ITEMS CONCERNING CASTIGLIANO STORAGE BUILDINGS, GRADING AND DRAINAGE PLAN ARE CONTAINED HEREON:

1. VICINITY MAP
2. GRADING AND DRAINAGE PLAN
3. FLOODMAP
4. DRAINAGE CALCULATIONS

EXITING CONDITIONS

AS SHOWN BY THE VICINITY MAP, THE SITE CONTAINS APPROXIMATELY 1.3422 ACRES AND IS LOCATED ON 86TH STREET AND BRIDGE BOULEVARD SW. THE SITE CURRENTLY IS UNDEVELOPED. THE SITE TOPOGRAPHY SLOPES FROM A WEST TO EAST DIRECTION TOWARDS 86TH STREET AND NORTH TOWARDS BRIDGE BOULEVARD. THE SITE IS SPARSELY COVERED WITH NATIVE VEGETATION AND SAGE BRUSH.

ACCORDING TO THE FLOOD INSURANCE RATE MAP, PANEL 35001C0328 D, DATED SEPTEMBER 20, 1996, THIS SITE DOES NOT LIE IN A DESIGNATED FLOODPLAIN. HOWEVER, A FLOODPLAIN DOES EXIST ALONG THE RIGHT–OF–WAY OF BRIDGE BOULEVARD.

PROPOSED CONDITIONS

AS SHOWN BY THE PLAN, THE PROJECT CONSISTS OF THE DEVELOPMENT OF THIS PROPERTY INTO AN SELF STORAGE UNIT COMPLEX WITH A CARETAKERS UNIT. THE PLAN SHOWS THE CONTOURS AND ELEVATIONS REQUIRED TO PROPERLY GRADE THE REQUIRED PAVING AND DRAINAGE IMPROVEMENTS. ALL DRAINAGE FLOWS IN THE DEVELOPED STATE WILL DRAIN TO THE NORTHEAST CORNER OF THE SITE WHERE A TYPE "D" INLET IS TO BE CONSTRUCTED AND WILL BE TIED INTO A 18" STORM DRAIN THAT WILL DISCHARGE INTO A STORM DRAIN SYSTEM THAT IS TO BE CONSTRUCTED THIS YEAR BY THE CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT. ALL DRIVEWAYS AND PARKING AREAS WILL BE PAVED, LANDSCAPING IS TO BE PROVIDED PER ZONING REQUIREMENTS.

THE CALCULATIONS WHICH APPEAR HEREON, ANALYZE BOTH THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100–YEAR, 6 HOUR RAINFALL RUNOFF FOR PEAK FLOWS AND STORM DURATION FOR VOLUME REQUIREMENTS. THE PROCEDURE FOR 40 ACRE AND SMALLER BASINS AS SET FORTH IN THE REVISION OF SECTION 22.7 HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY 1993. THIS D.P.M. PROCEDURE IS USED FOR ANALYZING ONSITE FLOWS.

DOWNSTREAM CAPACITY

AT THIS TIME BRIDGE BOULEVARD HAS 24 FEET WIDE OF PAVEMENT WITH ROADSIDE SWALES THAT FLOW IN A WEST TO EAST DIRECTION. THE FLOW EVENTUALLY DISCHARGES INTO THE AMOLE CONCRETE CHANNEL. THE CITY PROPOSES TO EXTEND A STORM SEWER FROM THE EXISTING AMOLE CHANNEL TO ALMOST 86TH STREET, THE PLAN IS TO BEGIN CONSTRUCTION IN EARLY 1998 FOR THIS PHASE OF THE STORM SEWER. EVENTUALLY THE CITY HAS PLANS TO CONTINUE THIS STORM SEWER AND CONNECT INTO THE RETENTION POND LOCATED NEAR THE NW CORNER OF 98TH AND CENTRAL.

AT A RECENT MEETING WITH DAN HOGAN AND STEVE BOBERG FROM THE CITY PUBLIC WORKS HYDROLOGY DEPARTMENT, THE OWNER OF THIS PROPERTY HAS AGREED TO PLACE A $5000 FINANCIAL GUARANTEE WITH THE CITY THAT WOULD ALLOW THIS DEVELOPMENT TO TIE INTO THIS NEW STORM DRAIN SYSTEM THAT IS TO BE CONSTRUCTED BY THE CITY IN 1998. THE CITY WILL BE CONSTRUCTING A INLET ON BRIDGE BOULEVARD WHICH IS AT THE NORTHEAST CORNER OF THIS SITE, THE CITY WILL EXTEND A 18" STORM DRAIN STUB OUT FROM THE INLET TO THE PROPERTY LINE, IT IS THIS STUB OUT THAT THIS DEVELOPMENT WILL BE CONNECTED INTO. THIS GUARANTEE WOULD WAIVE THE REQUIREMENT OF A PERMANENT RETENTION POND AT THIS LOCATION. IF THIS DEVELOPMENT SHOULD BE CONSTRUCTED PRIOR TO THE CITY STORM DRAIN SYSTEM AVAILABLE, THIS DEVELOPMENT WILL BE REQUIRED TO CONSTRUCT A TEMPORARY RETENTION POND AT THE NORTHEAST CORNER FOR A TEMPORARY CERTIFICATION OF OCCUPANCY. ONCE THE CONNECTION IS MADE INTO THE PERMANENT STORM DRAIN SYSTEM, A PERMANENT CERTIFICATION COULD PROBABLY BE ISSUED BY THE CITY OF ALBUQUERQUE.

EROSION CONTROL

TEMPORARY EROSION CONTROL WILL BE REQUIRED DURING THE CONSTRUCTION PHASE TO PROTECT DOWNSTREAM PROPERY AND IMPROVEMENTS FROM SEDIMENT AND UNCONTROLLED RUNOFF. AS SHOWN BY THE DETAIL INCLUDED WITH THE PLAN, TEMPORARY EROSION CONTROL MEASURES WILL BE PROVIDED WHICH CONSIST OF A 1 FOOT HIGH BY 4 FOOT WIDE BERM ALONG THE EAST SIDE OF THE PROJECT BOUNDARIES TO HOLD RUNOFF DURING CONSTRUTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROPERLY MAINTAIN THESE FACILITIES DURING THE CONSTRUCTION PHASE OF THE PROJECT.

OFFSITE FLOWS

PER THE ATTACHED EXHIBIT "A" OFFSITE DRAINAGE BASIN MAP, APPROXIMATELY 3.17 ACRES DRAINS TOWARS THIS SITE FROM THE WEST. IT IS THE INTENT OF THIS PLAN IN THE INTERIM TO DETAIN THE 10–YEAR VOLUME IMMEDIATELY WEST OF THIS PROPOSED SITE. THE REASON FOR THE BASIS OF THE 10YEAR VOUME IS THAT THIS LAND COULD BE DEVELOPED IN THE NEAR FUTURE, WHERE IT WILL BE REQUIRED TO DRAIN TOWARDS BRIDGE BOULEVARD. IF THIS POND SHOULD HAVE A STORM GREATER THAN 10YEARS THAN THIS STORAGE BUILDING SITE WILL BE IN A POSITION TO ACCEPT THESE OFFSITE FLOWS. THE PROPOSED TYPE "D" INLET AND 18" STORM DRAIN HAVE BEEN SIZED TO ALSO ACCEPT THESE OFFSITE FLOWS IN ITS EXISTING CONDITION. INCIDENTALLY THE LOT IMMEDIATELY WEST OF THIS DEVELOPMENT IS THE SAME OWNER FOR THIS PROPOSED. SEE THE FOLLOWING CALCULATIONS FOR THE BASIS OF THE OFFSITE FLOWS.

DRAINAGE CALCULATIONS

1. PRECIPITATION ZONE = 1

2. DESIGN STORM = DEPTH (INCHES) AT 100–YEAR STORM
   6–HOUR = 2.20 INCHES
   10 DAY = 3.67 INCHES

3. PEAK DISCHARGE (CFS/ACRE) FOR 100–YEAR, ZONE 1, TABLE A–9:
   Q = 1.29 CFS/ACRE SOIL UNCOMPACTED "A"
   Q = 2.03 CFS/ACRE LANDSCAPED "B"
   Q = 2.87 CFS/AC COMPACTED SOIL "C"
   Q = 4.37 CFS/ACRE IMPERVIOUS AREA "D"
   FOR WATERSHEDS LESS THAN OR EQUAL TO 40 ACRES

4. EXCESS PRECIPITATION, E (INCHES), FOR 100–YEAR, 6 HOUR STORM, ZONE 1, TABLE A–8
   E = 0.44 INCHES SOIL UNCOMPACTED "A"
   E = 0.67 INCHES LANDSCAPED "B"
   E = 0.99 INCHES COMPACTED SOIL "C"
   E = 1.97 INCHES IMPERVIOUS AREA 'D"

5. EXCESS PRECIPITATION, E (INCHES), FOR 10–YEAR, 6 HOUR STORM, ZONE 1, TABLE A–8:
   E = 0.08 INCHES SOIL UNCOMPACTED "A"
   E = 0.22 INCHES LANDSCAPED "B"
   E = 0.44 INCHES COMPACTED SOIL "C"
   E = 1.24 INCHES IMPERVIOUS AREA 'D"

6. EXISTING CONDITIONS ONSITE,
   TOTAL ONSITE AREA = 1.34 ACRES

TREATMENT	AREA(ACRES)
A	1.34
B	0
C	0
D	0

TYPE "A" SOILS SINCE UNDISTURBED
Q(EXISTING) = (1.29 X 1.34) = 1.73CFS EXISTING ONSITE FLOW
V(EXISTING–6HR) = ((0.44 X 1.34) / 12) X 43,560 = 2,140CF
= 0.049AC–FT EXISTING ONSITE VOLUME

7. PROPOSED CONDITIONS
   TOTAL IMPERVIOUS AREA PROPOSED (INCLUDES ROOFS, ANDPAVED DRIVEWAYS = 45,302 SF = 1.11 AC
   TOTAL IMPERVIOUS "D" = 1.11 AC(PROPOSED)
   LANDSCAPED AREA "B" = 13,068 SF = 0.23AC

TREATMENT	AREA(ACRES)
A	0
B	0.23(LANDSCAPED AREAS)
C	0
D	1.11(ROOFS & PAVING)

Q(PROPOSED) = (2.03 X 0.23) + (4.37 X 1.11)
= 5.3CFS PROPOSED ONSITE FLOW
V(PROPOSED) = ((0.67 X 0.23) + (1.97 X 1.11)) / 12 =
= 0.195 AC–FT PROPOSED ONSITE VOLUME
= 8,497 CF FULLY DEVELOPED CONDITIONS
Q(INCREASE DUE TO THIS DEVELOPMENT) = 5.3 – 1.7 = 3.6 CFS
V(INCREASE DUE TO THIS DEVELOPMENT) = 0.195AC–FT – 0.049AC–FT=
0.146AC–FT = 6360CF (6 HOUR VOLUME)

8. EXISTING CONDITIONS OFFSITE
   TOTAL OFFSITE AREA DRAINING TOWARDS THIS SITE = 3.17 ACRES

TREATMENT	AREA(ACRES)
A	3.17
B	0
C	0
D	0

TYPE "A" SOILS SINCE UNDISTURBED
Q(EXISTING) = (1.29 X 3.17) = 4.1CFS EXISTING OFFSITE FLOW (100–YEAR)
USE THIS OFFSITE FLOW AND ONSITE FLOW FOR SIZING INLET
V(EXISTING–6HR–10YEAR) = ((0.08 X 3.17) / 12) X 43,560 = 921CF
= 0.021AC–FT, 10–YEAR VOLUME FOR OFFSITE FLOWS

9. SIZE TYPE "D" INLET AT NORTHEAST CORNER
   CHECK WEIR CAPACITY OF INLET:
   Q = C*L*H**3/2,
   C = 3.0 FOR BROAD CRESTED WEIRS
   H = 0.5 FEET CURB HEIGHT
   L = (2*2') + (2*3.33') = 10.67FT LENGTH OF GRATE OPENING
   Q = 4.1CFS(OFFSITE) + 5.3CFS(ONSITE) = 9.4CFS REQUIRED CAPACITY
   Q = 3.0 * 10.67 * (0.5)**3/2 = 11.3CFS > 9.4CFS (ONSITE + OFFSITE FLOW) OK

   CHECK ORIFICE OF GRATE OPENING:
   Q = CA(2gH)**1/2
   GRATE AREA = (25SQ.IN * 40SQ.IN) = 1000SQIN
   NET GRATE AREA (DELETE BARS) = (13BARS * 40IN *0.5IN) + (9BARS * 25IN * 0.5IN) – (1000SQ.IN.) = 628SQIN = 4.4SQFT

   C = 0.65, A = 4.4SQFT, H = 0.5FT
   Q = 0.65 * 4.4 * (2 * 32.2 * 0.5)**0.5 = 16.2CFS > 9.4CFS OK

   CHECK ORIFICE OF PIPE OUTLET CAPACITY:
   18IN DIAMETER PIPE
   H = 4.5 FEET FROM GRATE TO CENTER OF PIPE
   A = (* (1.5)**2) = 1.8SQFT, C = 0.65
   Q = 0.65 * (1.8SQFT) (2 * 32.2 * 4.5)**1/2 = 19.9CFS > 9.4 CFS OK

10. CHECK ONSITE SWALE CAPACITY
    MINIMUM DEPTH FROM SWALE TO FINISH FLOOR HEIGHT = 0.33 FEET WORST CASE

    Q = 9.4 CFS (ONSITE AND INTERIM–OFFSITE FLOWS)
    AVERAGE SWALE SLOPE = 2.0%
    MANNING "N" = 0.17 PAVEMENT
    SIDE SLOPES = 10 FEET HORIZONTAL/0.33 FEET VERTICAL
    USE CHANNEL ANALYSIS PROGRAM:
    WATER SURFACE DEPTH = 0.30 FEET < 0.33 FEET OK BASED ON WORST CASE DURING
    INTERIM, WHEN LAND TO THE WEST DEVELOPS THE WATER SURFACE DEPTH WILL BE LESS VELOCITY = 3.49 FPS

UTILITY PRECAUTIONS
The contractor shall inform itself of the location of any utility line, pipeline, or underground utility line in or near the area of the work in advance of and during excavation work. The contractor is fully responsible for any and all damage caused by its failure to locate, identify and preserve any and all existing utilities, pipelines, and underground utility lines. In planning and conducting excavation, the contractor shall comply with state statutes, municipal and local ordinances, rules and regulations, if any, pertaining to the location of these lines and facilities.

RECEIVED
DEC 11 2002
HYDROLOGY SECTION

FILE 971102

DRAINAGE & GRADING PLAN
FOR
CASTIGLIONE STORAGE BUILDINGS
ALBUQUERQUE, NEW MEXICO

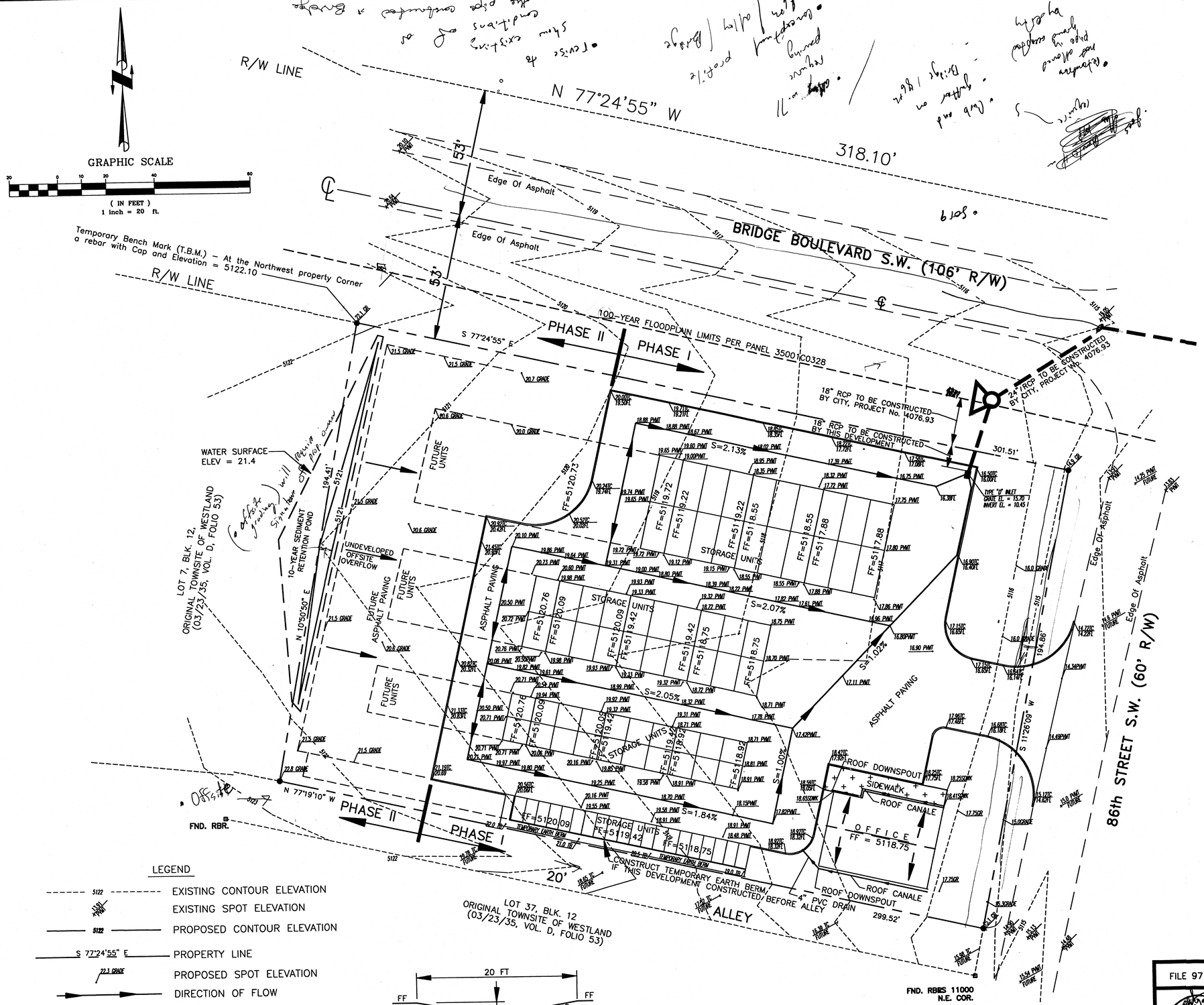
Aldaz Engineering & Surveying, Inc.
1605 BLAIR DRIVE NE
ALBUQUERQUE, NEW MEXICO 87112 PH: (505)237–1456

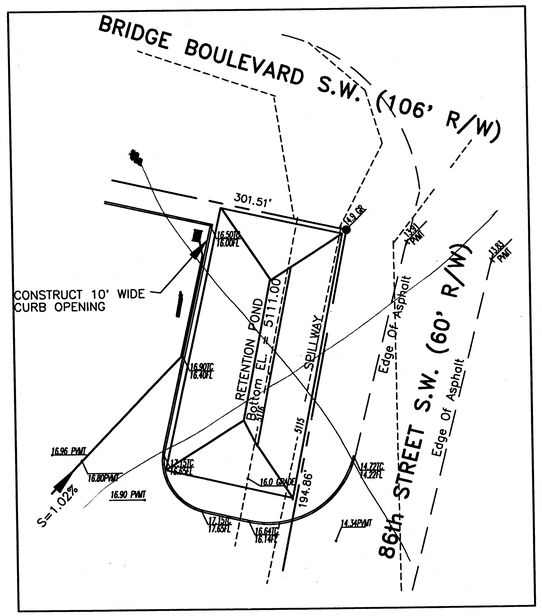
DATE/REVISIONS:

SHEET NUMBER:
2 OF 2

DRAINAGE AND GRADING PLAN FOR CASTIGLIONE STORAGE BUILDINGS
LOT 1-A, BLOCK 12
ORIGINAL TOWNSITE OF WESTLAND
BERNALILLO COUNTY, NEW MEXICO

OCTOBER 1997

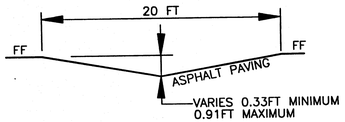




TEMPORARY RETENTION POND REQUIRED IF TEMPORARY CERTIFICATION OF OCCUPANCY REQUIRED PRIOR TO PERMANENT CONNECTION INTO BRIDGE STORM DRAIN SYSTEM

LEGEND

5122	EXISTING CONTOUR ELEVATION
13.50 XPMT	EXISTING SPOT ELEVATION
5122	PROPOSED CONTOUR ELEVATION
S 77°24'55" E	PROPERTY LINE
22.1 GRADE	PROPOSED SPOT ELEVATION
	DIRECTION OF FLOW
19.17TC	TOP OF CURB ELEVATION
18.87FL	CURB FLOW LINE ELEVATION
20.45 PMT	PROPOSED PAVEMENT ELEVATION
20.45 PMT FUTURE	FUTURE PAVEMENT ELEVATION



TYPICAL ASPHALT SWALE

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PROPERTY BENCHMARK
ASC 3-1/2" Aluminum Cap Rivetted to a pipe 0.20 feet above ground and is stamped "7-K9, 1989" located on the Center Median of Central Avenue. The station is 530 feet east of centerline of 90th Street, Elevation = 5137.363 feet MSLD

RECEIVED
DEC 11 2002
HYDROLOGY SECTION

FILE 971103	DRAINAGE & GRADING PLAN FOR CASTIGILIONE STORAGE BUILDINGS ALBUQUERQUE, NEW MEXICO	DATE/REVISIONS:
		SHEET NUMBER: 1 OF 2

Aldaz Engineering & Surveying, Inc.
1605 BLAIR DRIVE NE
ALBUQUERQUE, NEW MEXICO 87112 PH: (505)237-1456

DRAINAGE AND GRADING PLAN FOR CASTIGLIONE STORAGE BUILDINGS
LOT 1-A, BLOCK 12
ORIGINAL TOWNSITE OF WESTLAND
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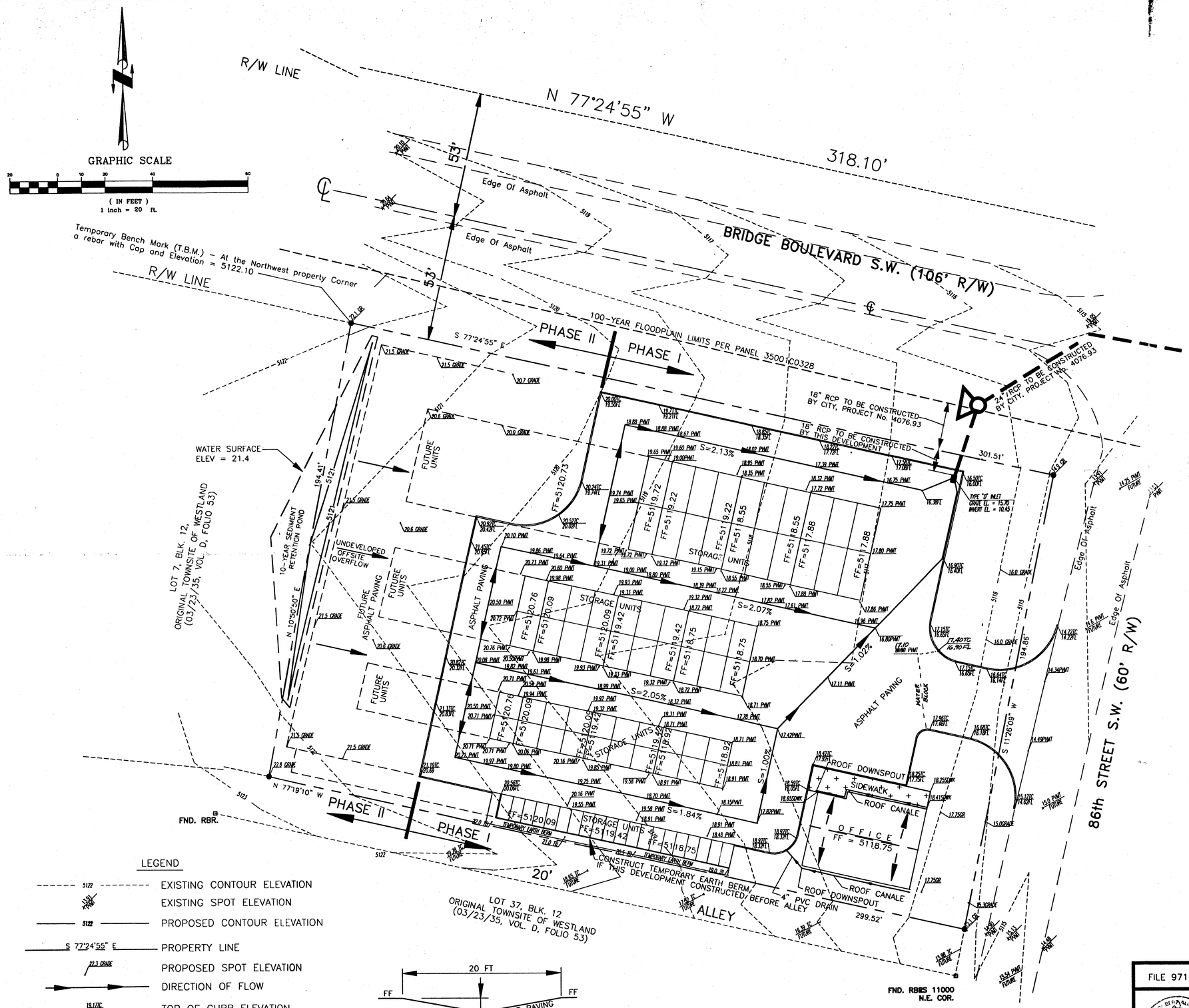
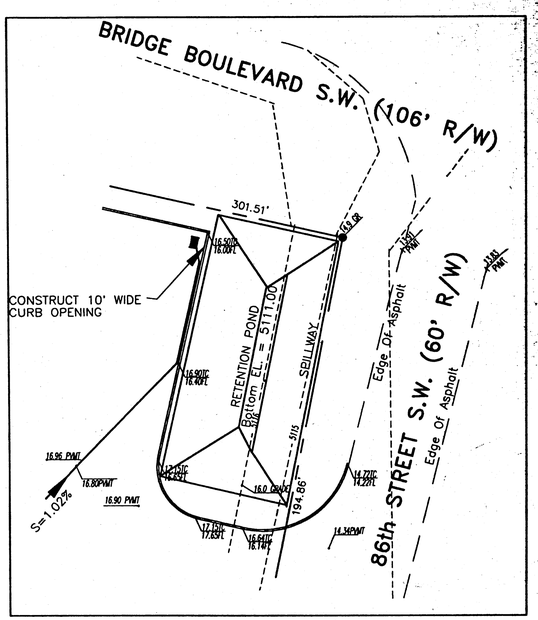
OCTOBER 1997





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DRB 97-303

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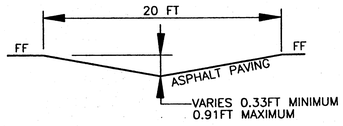

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LOT 1-A, BLOCK 12, ORIGINAL TOWNSITE OF WESTLAND

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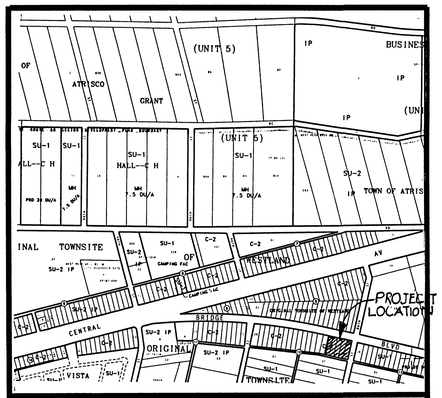
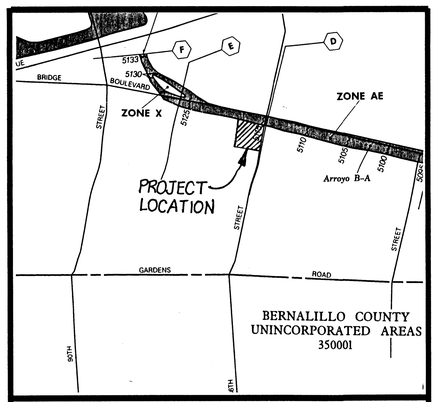


VICINITY MAP (ZA K-9)



FLOOD INSURANCE RATE MAP
35001C0328 D

DRAINAGE PLAN

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   Q = 2.87 CFS/AC COMPACTED SOIL "C"
   Q = 4.37 CFS/ACRE IMPERVIOUS AREA "D"
   FOR WATERSHEDS LESS THAN OR EQUAL TO 40 ACRES

4. EXCESS PRECIPITATION, E (INCHES), FOR 100-YEAR, 6 HOUR STORM, ZONE 1, TABLE A-8:
   E = 0.44 INCHES SOIL UNCOMPACTED "A"
   E = 0.67 INCHES LANDSCAPED "B"
   E = 0.99 INCHES COMPACTED SOIL "C"
   E = 1.97 INCHES IMPERVIOUS AREA 'D"

5. EXCESS PRECIPITATION, E (INCHES), FOR 10-YEAR, 6 HOUR STORM, ZONE 1, TABLE A-8:
   E = 0.08 INCHES SOIL UNCOMPACTED "A"
   E = 0.22 INCHES LANDSCAPED "B"
   E = 0.44 INCHES COMPACTED SOIL "C"
   E = 1.24 INCHES IMPERVIOUS AREA 'D"

6. EXISTING CONDITIONS ONSITE,
   TOTAL ONSITE AREA = 1.34 ACRES

TREATMENT	AREA(ACRES)
A	1.34
B	0
C	0
D	0

TYPE "A" SOILS SINCE UNDISTURBED
Q(EXISTING) = (1.29 X 1.34) = 1.73CFS EXISTING ONSITE FLOW
V(EXISTING-6HR) = ((0.44 X 1.34) / 12) X 43,560 = 2,140CF
= 0.049AC-FT EXISTING ONSITE VOLUME

7. PROPOSED CONDITIONS ONSITE
   TOTAL IMPERVIOUS AREA PROPOSED (INCLUDES ROOFS, ANDPAVED DRIVEWAYS = 45,302 SF = 1.04 AC
   TOTAL IMPERVIOUS "D" = 1.04 AC(PROPOSED)
   LANDSCAPED AREA "B" = 13,068 SF = 0.31AC

TREATMENT	AREA(ACRES)
A	0
B	0.30(POND & LANDSCAPED AREAS)
C	0
D	1.04

Q(PROPOSED) = (2.03 X 0.30) + (4.37 X 1.04)
= 5.2CFS PROPOSED ONSITE FLOW
V(PROPOSED) = ((0.67 X 0.30) + (1.97 X 1.04)) / 12 =
= 0.188 AC-FT PROPOSED ONSITE VOLUME
= 8,167 CF FULLY DEVELOPED CONDITIONS
Q(INCREASE DUE TO THIS DEVELOPMENT) = 5.15 - 1.73 = 3.42 CFS
V(INCREASE DUE TO THIS DEVELOPMENT) = 0.188AC-FT - 0.049AC-FT=
0.139AC-FT = 6055CF (6 HOUR VOLUME)

8. EXISTING CONDITIONS OFFSITE
   TOTAL ONSITE AREA = 3.17 ACRES

TREATMENT	AREA(ACRES)
A	3.17
B	0
C	0
D	0

TYPE "A" SOILS SINCE UNDISTURBED
Q(EXISTING) = (1.29 X 3.17) = 4.1CFS EXISTING OFFSITE FLOW (100-YEAR)
USE THIS OFFSITE FLOW AND ONSITE FLOW FOR SIZING SPILLWAY
V(EXISTING-6HR-10YEAR) = ((0.08 X 3.17) / 12) X 43,560 = 921CF
= 0.021AC-FT, 10-YEAR VOLUME FOR OFFSITE FLOWS
914.76 cuft

9. SIZE WEIR TO RETENTION POND
   Q = C*L*H**3/2
   Q = 4.1CFS(OFFSITE) + 5.3CFS(ONSITE) = 9.4CFS
   C = 3 FOR BROAD CRESTED WEIRS
   H = 0.5 FEET CURB HEIGHT
   L = (Q/C*H**3/2) = (9.4 / 3. * 0.5**1.5) = 8.9 FEET
   USE 10 FOOT WIDTH FOR WEIR OPENING

10. SIZE CONCRETE SPILLWAY FOR RETENTION POND
    Q = C*L*H**3/2
    Q = 4.1CFS(OFFSITE) + 5.3CFS(ONSITE) = 9.4CFS
    C = 3 FOR BROAD CRESTED WEIRS
    H = 0.5 FEET SPILLWAY HEIGHT
    L = (Q/C*H**3/2) = (9.4 / 3. * 0.5**1.5) = 8.9 FEET
    USE 10 FOOT WIDTH FOR SPILLWAY OPENING

UTILITY PRECAUTIONS
The contractor shall inform itself of the location of any utility line, pipeline, or underground utility line in or near the area of the work in advance of and during excavation work. The contractor is fully responsible for any and all damage caused by its failure to locate, identify and preserve any and all existing utilities, pipelines, and underground utility lines. In planning and conducting excavation, the contractor shall comply with state statutes, municipal and local ordinances, rules and regulations, if any, pertaining to the location of these lines and facilities.

RECEIVED
DEC 12 1997
HYDROLOGY SECTION

FILE 971102

GILBERT ALDAZ
NEW MEXICO
10848
REGISTERED PROFESSIONAL ENGINEER

DRAINAGE & GRADING PLAN
FOR
CASTIGLIONE STORAGE BUILDINGS
ALBUQUERQUE, NEW MEXICO

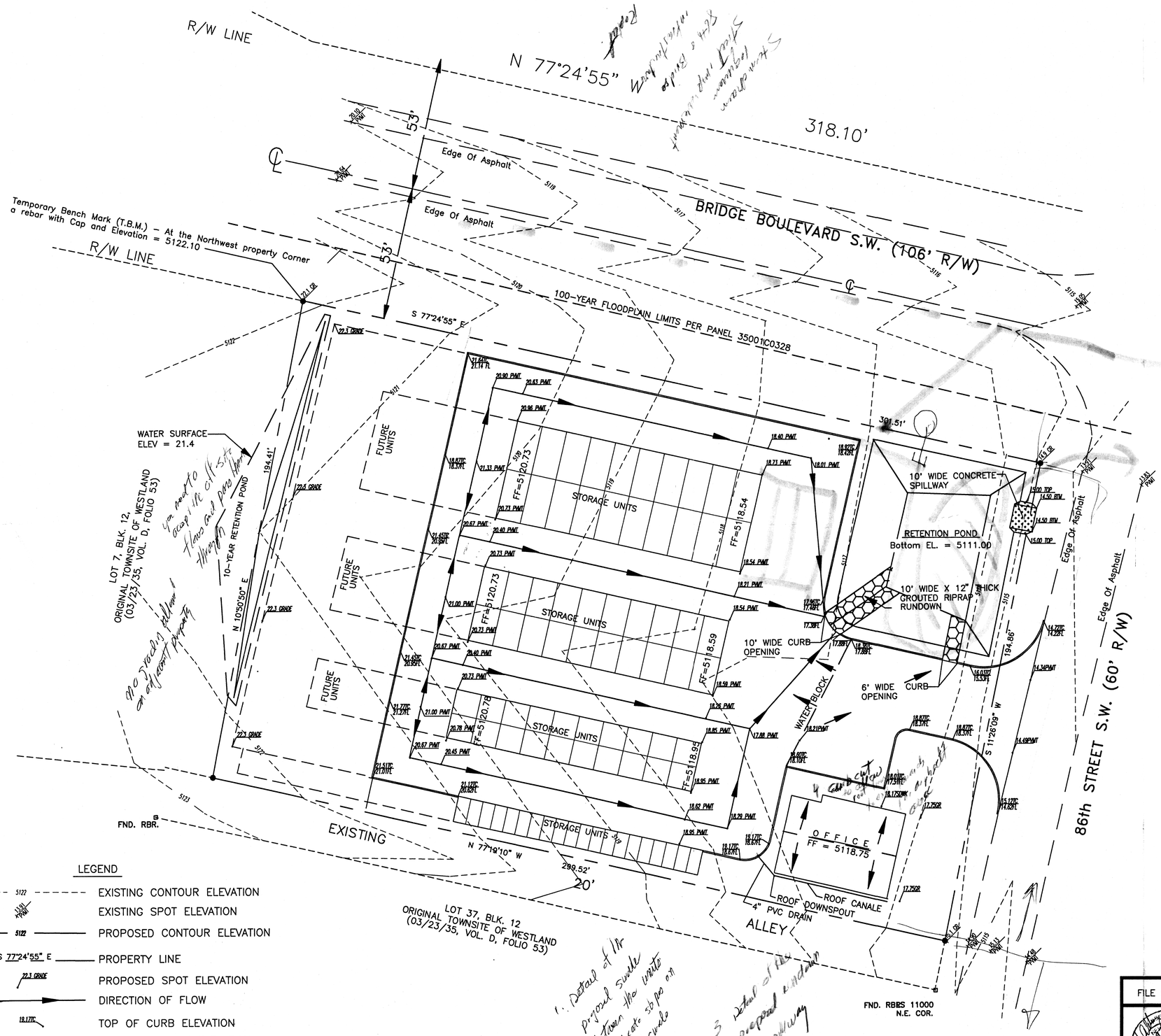
DATE/REVISIONS:

SHEET NUMBER:
2 OF 2

Aldaz Engineering & Surveying, Inc.
1605 BLAIR DRIVE NE
ALBUQUERQUE, NEW MEXICO 87112 PH: (505)237-1456

DRAINAGE AND GRADING PLAN FOR CASTIGLIONE STORAGE BUILDINGS
LOT 1–A, BLOCK 12
ORIGINAL TOWNSITE OF WESTLAND
BERNALILLO COUNTY, NEW MEXICO

OCTOBER 1997



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

UTILITY PRECAUTIONS

THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.

* Street GRADES TO INCLUDE STORM DRAIN FOR 86th

LEGEND

- 5122 — EXISTING CONTOUR ELEVATION
- 5121 — EXISTING SPOT ELEVATION
- 5122 — PROPOSED CONTOUR ELEVATION
- S 77°24'55" E — PROPERTY LINE
- 22.3 GRADE — PROPOSED SPOT ELEVATION
- DIRECTION OF FLOW
- 19.17TC — TOP OF CURB ELEVATION
- 18.87FL — CURB FLOW LINE ELEVATION
- 20.45 PMT — PROPOSED PAVEMENT ELEVATION

PROPERTY BENCHMARK
ASC 3–1/2" Aluminum Cap Rivetted to a pipe 0.20 feet above ground and is stamped "7–K9, 1989" located on the Center Median of Central Avenue. The station is 530 feet east of centerline of 90th Street, Elevation = 5137.363 feet MSLD

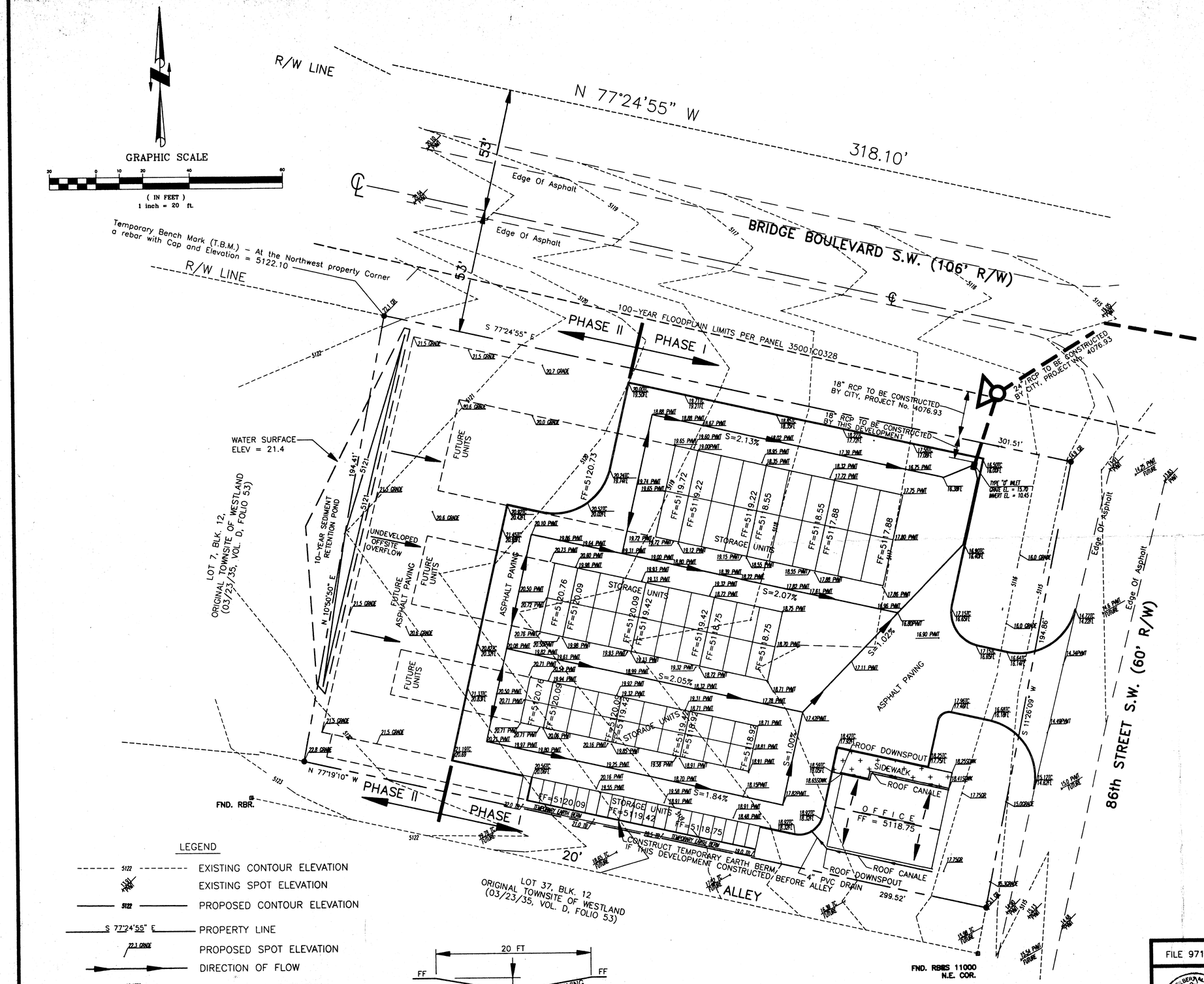
RECEIVED DEC 1 2 1997 HYDROLOGY SECTION

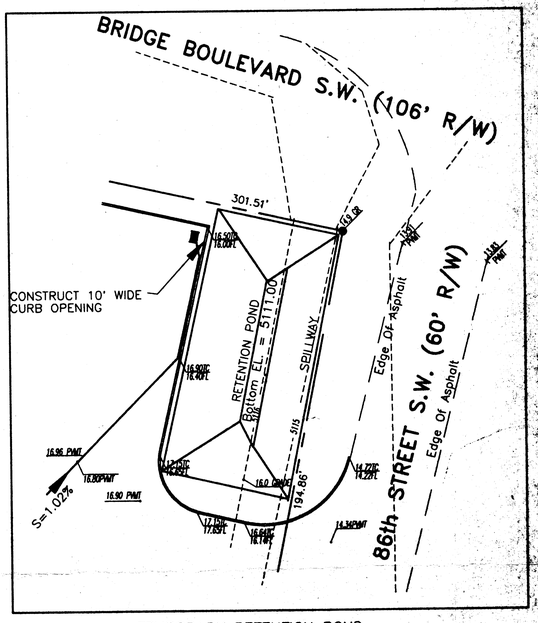
FILE 971101	DRAINAGE & GRADING PLAN FOR CASTIGILIONE STORAGE BUILDINGS ALBUQUERQUE, NEW MEXICO	DATE/REVISIONS:
	Aldaz Engineering & Surveying, Inc. 1605 BLAIR DRIVE NE ALBUQUERQUE, NEW MEXICO 87112 PH: (505)237–1456	SHEET NUMBER: 1 OF 2

ROBERT ALDAZ NEW MEXICO 10848 REGISTERED PROFESSIONAL ENGINEER

DRAINAGE AND GRADING PLAN FOR CASTIGLIONE STORAGE BUILDINGS
LOT 1-A, BLOCK 12
ORIGINAL TOWNSITE OF WESTLAND
BERNALILLO COUNTY, NEW MEXICO

OCTOBER 1997

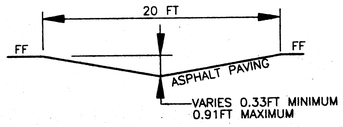




TEMPORARY RETENTION POND REQUIRED IF TEMPORARY CERTIFICATION OF OCCUPANCY REQUIRED PRIOR TO PERMANENT CONNECTION INTO BRIDGE STORM DRAIN SYSTEM

LEGEND

- 5122 — EXISTING CONTOUR ELEVATION
- 19.1 PVMT — EXISTING SPOT ELEVATION
- 5122 — PROPOSED CONTOUR ELEVATION
- S 77°24'55" E — PROPERTY LINE
- 22.3 GRADE — PROPOSED SPOT ELEVATION
- DIRECTION OF FLOW
- 19.17TC — TOP OF CURB ELEVATION
- 18.67FL — CURB FLOW LINE ELEVATION
- 20.45 PMT — PROPOSED PAVEMENT ELEVATION
- 20.45 PMT FUTURE — FUTURE PAVEMENT ELEVATION



TYPICAL ASPHALT SWALE

UTILITY PRECAUTIONS

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PROPERTY BENCHMARK
ASC 3-1/2" Aluminum Cap Rivetted to a pipe 0.20 feet above ground and is stamped "7-K9, 1989" located on the Center Median of Central Avenue. The station is 530 feet east of centerline of 90th Street, Elevation = 5137.363 feet MSLD

RECEIVED
MAR 2 1998
HYDROLOGY SECTION

FILE 971103

GILBERT ALDAZ NEW MEXICO REGISTERED PROFESSIONAL ENGINEER

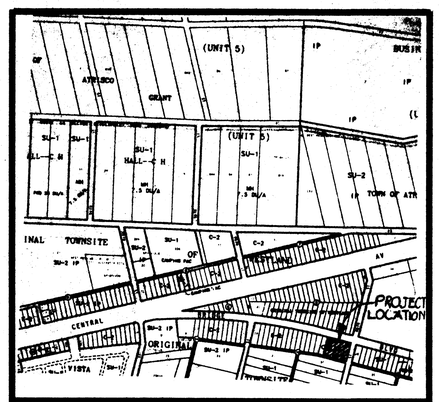
DRAINAGE & GRADING PLAN
FOR
CASTIGILIONE STORAGE BUILDINGS
ALBUQUERQUE, NEW MEXICO

Aldaz Engineering & Surveying, Inc.
1605 BLAIR DRIVE NE
ALBUQUERQUE, NEW MEXICO 87112 PH: (505)237-1456

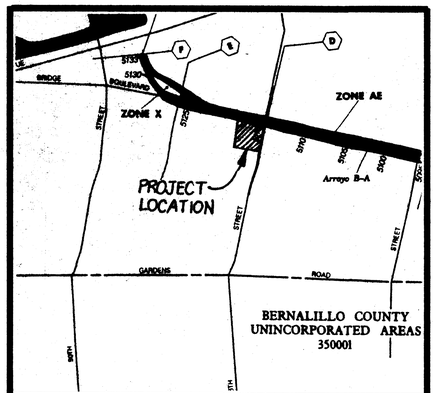
DATE/REVISIONS:

SHEET NUMBER:
1 OF 2

LOT 1–A, BLOCK 12, ORIGINAL TOWNSITE OF WESTLAND
DRAINAGE PLAN FOR CASTIGLIONE STORAGE BUILDINGS



VICINITY MAP (ZA K–9)



FLOOD INSURANCE RATE MAP
35001C0328 D

DRAINAGE PLAN

THE FOLLOWING ITEMS CONCERNING CASTIGLIANO STORAGE BUILDINGS, GRADING AND DRAINAGE PLAN ARE CONTAINED HEREON:

1. VICINITY MAP
2. GRADING AND DRAINAGE PLAN
3. FLOODMAP
4. DRAINAGE CALCULATIONS

EXITING CONDITIONS

AS SHOWN BY THE VICINITY MAP, THE SITE CONTAINS APPROXIMATELY 1.3422 ACRES AND IS LOCATED ON 86TH STREET AND BRIDGE BOULEVARD SW. THE SITE CURRENTLY IS UNDEVELOPED. THE SITE TOPOGRAPHY SLOPES FROM A WEST TO EAST DIRECTION TOWARDS 86TH STREET AND NORTH TOWARDS BRIDGE BOULEVARD. THE SITE IS SPARSELY COVERED WITH NATIVE VEGETATION AND SAGE BRUSH.

ACCORDING TO THE FLOOD INSURANCE RATE MAP, PANEL 35001C0328 D, DATED SEPTEMBER 20, 1996, THIS SITE DOES NOT LIE IN A DESIGNATED FLOODPLAIN. HOWEVER, A FLOODPLAIN DOES EXIST ALONG THE RIGHT–OF–WAY OF BRIDGE BOULEVARD.

PROPOSED CONDITIONS

AS SHOWN BY THE PLAN, THE PROJECT CONSISTS OF THE DEVELOPMENT OF THIS PROPERTY INTO AN SELF STORAGE UNIT COMPLEX WITH A CARETAKERS UNIT. THE PLAN SHOWS THE CONTOURS AND ELEVATIONS REQUIRED TO PROPERLY GRADE THE REQUIRED PAVING AND DRAINAGE IMPROVEMENTS. ALL DRAINAGE FLOWS IN THE DEVELOPED STATE WILL DRAIN TO THE NORTHEAST CORNER OF THE SITE WHERE A TYPE "D" INLET IS TO BE CONSTRUCTED AND WILL BE TIED INTO A 18" STORM DRAIN THAT WILL DISCHARGE INTO A STORM DRAIN SYSTEM THAT IS TO BE CONSTRUCTED THIS YEAR BY THE CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT. ALL DRIVEWAYS AND PARKING AREAS WILL BE PAVED, LANDSCAPING IS TO BE PROVIDED PER ZONING REQUIREMENTS.

THE CALCULATIONS WHICH APPEAR HEREON, ANALYZE BOTH THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100–YEAR, 6 HOUR RAINFALL RUNOFF FOR PEAK FLOWS AND STORM DURATION FOR VOLUME REQUIREMENTS. THE PROCEDURE FOR 40 ACRE AND SMALLER BASINS AS SET FORTH IN THE REVISION OF SECTION 22.7 HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY 1993. THIS D.P.M. PROCEDURE IS USED FOR ANALYZING ONSITE FLOWS.

DOWNSTREAM CAPACITY

AT THIS TIME BRIDGE BOULEVARD HAS 24 FEET WIDE OF PAVEMENT WITH ROADSIDE SWALES THAT FLOW IN A WEST TO EAST DIRECTION. THE FLOW EVENTUALLY DISCHARGES INTO THE AMOLE CONCRETE CHANNEL. THE CITY PROPOSES TO EXTEND A STORM SEWER FROM THE EXISTING AMOLE CHANNEL TO ALMOST 86TH STREET, THE PLAN IS TO BEGIN CONSTRUCTION IN EARLY 1998 FOR THIS PHASE OF THE STORM SEWER. EVENTUALLY THE CITY HAS PLANS TO CONTINUE THIS STORM SEWER AND CONNECT INTO THE RETENTION POND LOCATED NEAR THE NW CORNER OF 98TH AND CENTRAL.

AT A RECENT MEETING WITH DAN HOGAN AND STEVE BOBERG FROM THE CITY PUBLIC WORKS HYDROLOGY DEPARTMENT, THE OWNER OF THIS PROPERTY HAS AGREED TO PLACE A $5000 FINANCIAL GUARANTEE WITH THE CITY THAT WOULD ALLOW THIS DEVELOPMENT TO TIE INTO THIS NEW STORM DRAIN SYSTEM THAT IS TO BE CONSTRUCTED BY THE CITY IN 1998. THE CITY WILL BE CONSTRUCTING A INLET ON BRIDGE BOULEVARD WHICH IS AT THE NORTHEAST CORNER OF THIS SITE, THE CITY WILL EXTEND A 18" STORM DRAIN STUB OUT FROM THE INLET TO THE PROPERTY LINE, IT IS THIS STUB OUT THAT THIS DEVELOPMENT WILL BE CONNECTED INTO. THIS GUARANTEE WOULD WAIVE THE REQUIREMENT OF A PERMANENT RETENTION POND AT THIS LOCATION. IF THIS DEVELOPMENT SHOULD BE CONSTRUCTED PRIOR TO THE CITY STORM DRAIN SYSTEM AVAILABLE, THIS DEVELOPMENT WILL BE REQUIRED TO CONSTRUCT A TEMPORARY RETENTION POND AT THE NORTHEAST CORNER FOR A TEMPORARY CERTIFICATION OF OCCUPANCY. ONCE THE CONNECTION IS MADE INTO THE PERMANENT STORM DRAIN SYSTEM, A PERMANENT CERTIFICATION COULD PROBABLY BE ISSUED BY THE CITY OF ALBUQUERQUE.

EROSION CONTROL

TEMPORARY EROSION CONTROL WILL BE REQUIRED DURING THE CONSTRUCTION PHASE TO PROTECT DOWNSTREAM PROPERY AND IMPROVEMENTS FROM SEDIMENT AND UNCONTROLLED RUNOFF. AS SHOWN BY THE DETAIL INCLUDED WITH THE PLAN, TEMPORARY EROSION CONTROL MEASURES WILL BE PROVIDED WHICH CONSIST OF A 1 FOOT HIGH BY 4 FOOT WIDE BERM ALONG THE EAST SIDE OF THE PROJECT BOUNDARIES TO HOLD RUNOFF DURING CONSTRUTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROPERLY MAINTAIN THESE FACILITIES DURING THE CONSTRUCTION PHASE OF THE PROJECT.

OFFSITE FLOWS

PER THE ATTACHED EXHIBIT "A" OFFSITE DRAINAGE BASIN MAP, APPROXIMATELY 3.17 ACRES DRAINS TOWARS THIS SITE FROM THE WEST. IT IS THE INTENT OF THIS PLAN IN THE INTERIM TO DETAIN THE 10–YEAR VOLUME IMMEDIATELY WEST OF THIS PROPOSED SITE. THE REASON FOR THE BASIS OF THE 10YEAR VOUME IS THAT THIS LAND COULD BE DEVELOPED IN THE NEAR FUTURE, WHERE IT WILL BE REQUIRED TO DRAIN TOWARDS BRIDGE BOULEVARD. IF THIS POND SHOULD HAVE A STORM GREATER THAN 10YEARS THAN THIS STORAGE BUILDING SITE WILL BE IN A POSITION TO ACCEPT THESE OFFSITE FLOWS. THE PROPOSED TYPE "D" INLET AND 18" STORM DRAIN HAVE BEEN SIZED TO ALSO ACCEPT THESE OFFSITE FLOWS IN ITS EXISTING CONDITION. INCIDENTALLY THE LOT IMMEDIATELY WEST OF THIS DEVELOPMENT IS THE SAME OWNER FOR THIS PROPOSED. SEE THE FOLLOWING CALCULATIONS FOR THE BASIS OF THE OFFSITE FLOWS.

DRAINAGE CALCULATIONS

1. PRECIPITATION ZONE = 1

2. DESIGN STORM = DEPTH (INCHES) AT 100–YEAR STORM
   6–HOUR = 2.20 INCHES
   10 DAY = 3.67 INCHES

3. PEAK DISCHARGE (CFS/ACRE) FOR 100–YEAR, ZONE 1, TABLE A–9:
   Q = 1.29 CFS/ACRE SOIL UNCOMPACTED "A"
   Q = 2.03 CFS/ACRE LANDSCAPED "B"
   Q = 2.87 CFS/AC COMPACTED SOIL "C"
   Q = 4.37 CFS/ACRE IMPERVIOUS AREA "D"
   FOR WATERSHEDS LESS THAN OR EQUAL TO 40 ACRES

4. EXCESS PRECIPITATION, E (INCHES), FOR 100–YEAR, 6 HOUR STORM, ZONE 1, TABLE A–8
   E = 0.44 INCHES SOIL UNCOMPACTED "A"
   E = 0.67 INCHES LANDSCAPED "B"
   E = 0.99 INCHES COMPACTED SOIL "C"
   E = 1.97 INCHES IMPERVIOUS AREA 'D"

5. EXCESS PRECIPITATION, E (INCHES), FOR 10–YEAR, 6 HOUR STORM, ZONE 1, TABLE A–8:
   E = 0.08 INCHES SOIL UNCOMPACTED "A"
   E = 0.22 INCHES LANDSCAPED "B"
   E = 0.44 INCHES COMPACTED SOIL "C"
   E = 1.24 INCHES IMPERVIOUS AREA 'D"

6. EXISTING CONDITIONS ONSITE,
   TOTAL ONSITE AREA = 1.34 ACRES

TREATMENT	AREA(ACRES)
A	1.34
B	0
C	0
D	0

   TYPE "A" SOILS SINCE UNDISTURBED
   Q(EXISTING) = (1.29 X 1.34) = 1.73CFS EXISTING ONSITE FLOW
   V(EXISTING–6HR) = ((0.44 X 1.34) / 12) X 43,560 = 2,140CF
   = 0.049AC–FT EXISTING ONSITE VOLUME

7. PROPOSED CONDITIONS
   TOTAL IMPERVIOUS AREA PROPOSED (INCLUDES ROOFS, ANDPAVED DRIVEWAYS = 45,302 SF = 1.11 AC
   TOTAL IMPERVIOUS "D" = 1.11 AC(PROPOSED)
   LANDSCAPED AREA "B" = 13,068 SF = 0.23AC

TREATMENT	AREA(ACRES)
A	0
B	0.23(LANDSCAPED AREAS)
C	0
D	1.11(ROOFS & PAVING)

   Q(PROPOSED) = (2.03 X 0.23) + (4.37 X 1.11)
   = 5.3CFS PROPOSED ONSITE FLOW
   V(PROPOSED) = ((0.67 X 0.23) + (1.97 X 1.11)) / 12 =
   = 0.195 AC–FT PROPOSED ONSITE VOLUME
   = 8,497 CF FULLY DEVELOPED CONDITIONS
   Q(INCREASE DUE TO THIS DEVELOPMENT) = 5.3 – 1.7 = 3.6 CFS
   V(INCREASE DUE TO THIS DEVELOPMENT) = 0.195AC–FT – 0.049AC–FT=
   0.146AC–FT = 6360CF (6 HOUR VOLUME)

8. EXISTING CONDITIONS OFFSITE
   TOTAL OFFSITE AREA DRAINING TOWARDS THIS SITE = 3.17 ACRES

TREATMENT	AREA(ACRES)
A	3.17
B	0
C	0
D	0

   TYPE "A" SOILS SINCE UNDISTURBED
   Q(EXISTING) = (1.29 X 3.17) = 4.1CFS EXISTING OFFSITE FLOW (100–YEAR)
   USE THIS OFFSITE FLOW AND ONSITE FLOW FOR SIZING INLET
   V(EXISTING–6HR–10YEAR) = ((0.08 X 3.17) / 12) X 43,560 = 921CF
   = 0.021AC–FT, 10–YEAR VOLUME FOR OFFSITE FLOWS

9. SIZE TYPE "D" INLET AT NORTHEAST CORNER
   CHECK WEIR CAPACITY OF INLET:
   Q = C*L*H**3/2,
   C = 3.0 FOR BROAD CRESTED WEIRS
   H = 0.5 FEET CURB HEIGHT
   L = (2*2') + (2*3.33') = 10.67FT LENGTH OF GRATE OPENING
   Q = 4.1CFS(OFFSITE) + 5.3CFS(ONSITE) = 9.4CFS REQUIRED CAPACITY
   Q = 3.0 * 10.67 * (0.5)**3/2 = 11.3CFS > 9.4CFS (ONSITE + OFFSITE FLOW) OK

   CHECK ORIFICE OF GRATE OPENING:
   Q = CA(2gH)**1/2
   GRATE AREA = (25SQ.IN * 40SQ.IN) = 1000SQIN
   NET GRATE AREA (DELETE BARS) = (13BARS * 40IN *0.5IN) + (9BARS * 25IN * 0.5IN) – (1000SQ.IN.) = 628SQIN = 4.4SQFT

   C = 0.65, A = 4.4SQFT, H = 0.5FT
   Q = 0.65 * 4.4 * (2 * 32.2 * 0.5)**0.5 = 16.2CFS > 9.4CFS OK

   CHECK ORIFICE OF PIPE OUTLET CAPACITY:
   18IN DIAMETER PIPE
   H = 4.5 FEET FROM GRATE TO CENTER OF PIPE
   A = (* (1.5)**2) = 1.8SQFT, C = 0.65
   Q = 0.65 * (1.8SQFT) (2 * 32.2 * 4.5)**1/2 = 19.9CFS > 9.4 CFS OK

10. CHECK ONSITE SWALE CAPACITY
    MINIMUM DEPTH FROM SWALE TO FINISH FLOOR HEIGHT = 0.33 FEET WORST CASE

    Q = 9.4 CFS (ONSITE AND INTERIM–OFFSITE FLOWS)
    AVERAGE SWALE SLOPE = 2.0%
    MANNING "N" = 0.17 PAVEMENT
    SIDE SLOPES = 10 FEET HORIZONTAL/0.33 FEET VERTICAL
    USE CHANNEL ANALYSIS PROGRAM:
    WATER SURFACE DEPTH = 0.30 FEET < 0.33 FEET OK BASED ON WORST CASE DURING
    INTERIM, WHEN LAND TO THE WEST DEVELOPS THE WATER SURFACE DEPTH WILL BE LESS VELOCITY = 3.49 FPS

UTILITY PRECAUTIONS
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FILE 971102

GILBERT ALDAZ — NEW MEXICO — 10848 — REGISTERED PROFESSIONAL ENGINEER

DRAINAGE & GRADING PLAN
FOR
CASTIGLIONE STORAGE BUILDINGS
ALBUQUERQUE, NEW MEXICO

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