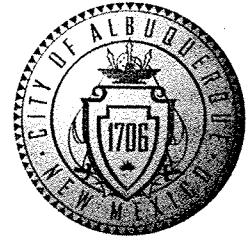


CITY OF ALBUQUERQUE



February 9, 2010

Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe St NE
Albuquerque, NM 87108

**Re: Office/Warehouse, 5454 Venice Ave NE, Grading and Drainage Plan
Engineer's Stamp dated 2-1-10 (B18/D017)**

Dear Mr. Arfman,

Based upon the information provided in your submittal received 2-1-10, the above referenced plan is approved for Building Permit and SO 19 Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

I disagree that the Basin 2 Culvert equation Curb Opening should be modeled as a 6 foot wide weir. It is closer to a 2 foot wide weir with an end treatment on the inlet. After a fairly lengthy search to determine the increase in flow due to the inlet condition, I figure a close approximation was to use a weir length of 4 feet. The resulting capacity was 4.7 cfs, which is greater than 3.7 cfs, therefore it is acceptable.

A separate permit (SO 19) is required for construction within City ROW. A copy of this approval letter must be on hand when applying for the excavation/barricading permit. If there is a Work Order associated with this project, this work is to be included in the Work Order.

To obtain a temporary or permanent CO, Engineer Certification of the Grading Plan per the DPM is required and the sidewalk culvert work in the City ROW must be inspected and accepted. Please contact Duane Schmitz, 235-8016, to schedule an inspection.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge.

This project requires a Topsoil Disturbance Permit since it is disturbing $\frac{3}{4}$ of an acre or more.

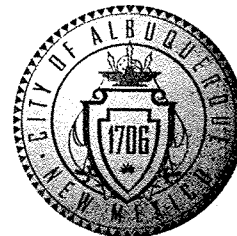
PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

CITY OF ALBUQUERQUE



If you have any questions, you can contact me at 924-3695.

Sincerely,

Curtis A. Cherne

Curtis A. Cherne, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

C: file
Antoinette Baldonado, Excavation and Barricading
Duane Schmitz, Street/Storm Drain Maintenance
Kathy Verhage, DMD

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: Office / Warehouse Development ZONE MAP/DRG.FILE# B18/D017
DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: Lots 4-6, Block 4, Tract A, Unit B, North Albuquerque Acres
CITY ADDRESS: 5454 Venice Ave NE

ENGINEERING FIRM: ISAACSON AND ARFMAN
ADDRESS: 128 MONROE N.E.
CITY, STATE: ALBUQUERQUE, NM

CONTACT: Fred Arfman
PHONE: 268-8828
ZIP CODE: 87108

OWNER: Mechenbier Construction
ADDRESS: 8500 Washington Street NE, Suite A6
CITY, STATE: ALBUQUERQUE, NM

CONTACT: John Mechenbier
PHONE: 314-7700
ZIP CODE: 87113

ARCHITECT: slagleHERR Architects
ADDRESS: 1600 Rio Grande Blvd NE
CITY, STATE: Albuquerque, NM

CONTACT: Bill Kleinschmidt
PHONE: 246-0870
ZIP CODE: 87104

SURVEYOR: Forstbauer Surveying
ADDRESS: 4116 Lomas Blvd. NE
CITY, STATE: Albuquerque, NM

CONTACT: Ron Forstbauer
PHONE: 268-2112
ZIP CODE: 87110

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL
☒ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL G & D PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERT (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT
☐ ENGINEER/ARCHITECT CERT (TCL)
☐ ENGINEER/ARCHITECT CERT (DRB S.P.)
☐ ENGINEER/ARCHITECT CERT (AA)
☐ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL SOUGHT:

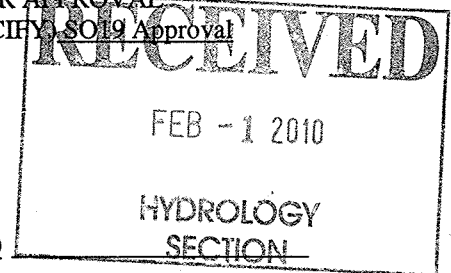
- ☐ SIA/FINANCIAL GUARANTEE RELEASE
☐ RELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ UNDATION PERMIT APPROVAL
☒ BUILDING PERMIT APPROVAL
☐ CRTIFICATE OF OCCUPANCY (PERM)
☐ CRTIFICATE OF OCCUPANCY (TEMP)
☐ GADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☒ OTHER (SPECIFY) SO19 Approval

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☐ NO
☐ COPY PROVIDED

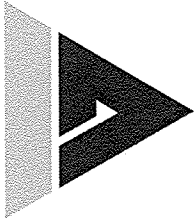
SUBMITTED BY: Fred C. Arfman PE
Isaacson & Arfman, P.A.

DATE: February 1, 2010



Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.



Isaacson & Arfman, P.A.

Consulting Engineering Associates

*Thomas O. Isaacson, PE & LS * Fred C. Arfman, PE * Åsa Nilsson-Weber, PE*

February 1, 2010

Mr. Curtis Cherne, PE
Senior Engineer, Planning Dept.
C.O.A. Hydrology

**RE: OFFICE WAREHOUSE, 5454 VENICE AVE NE, GRADING AND
DRAINAGE PLAN ENGINEER'S STAMP DATED 1-8-10 (B18/D017)**

Dear Mr. Cherne,

In response to your review comments dated January 26, 2010, attached are two copies of the revised Drainage and Grading Plan (sheets CG-101 and CG-102) with revisions as follows:

1. The Basin 2 culvert equation was for one two-foot sidewalk culvert with a six-foot curb opening (6' foot total orifice width) per the detail on sheet CG-102. Please see the attached channel calculation which clarifies that the two-foot culvert will provide adequate capacity for the flow requirement after the initial curb opening.
2. Top of wall information added along length of retaining wall.

Please don't hesitate to call me or Bryan Bobrick, with any questions or comments.

Sincerely,
ISAACSON & ARFMAN P.A.

Fred C. Arfman, PE
FCA/bjb
Attachments

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc.

Friday, Jan 29 2010

<Name>

Rectangular

Bottom Width (ft) = 2.00

Total Depth (ft) = 0.50

Invert Elev (ft) = 10.00

Slope (%) = 4.66

N-Value = 0.012

Calculations

Compute by: Known Q

Known Q (cfs) = 3.70

Highlighted

Depth (ft) = 0.22

Q (cfs) = 3.700

Area (sqft) = 0.44

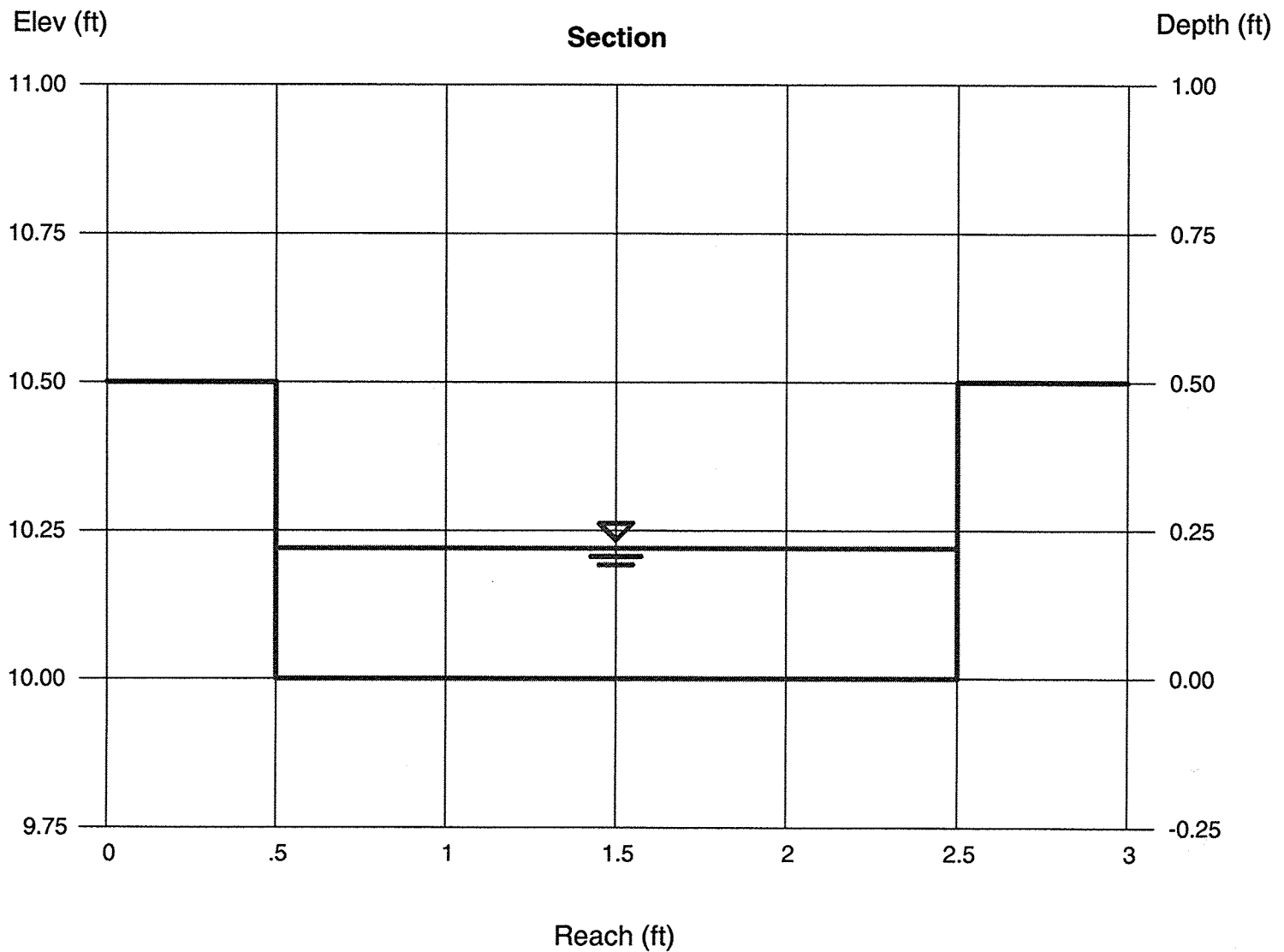
Velocity (ft/s) = 8.41

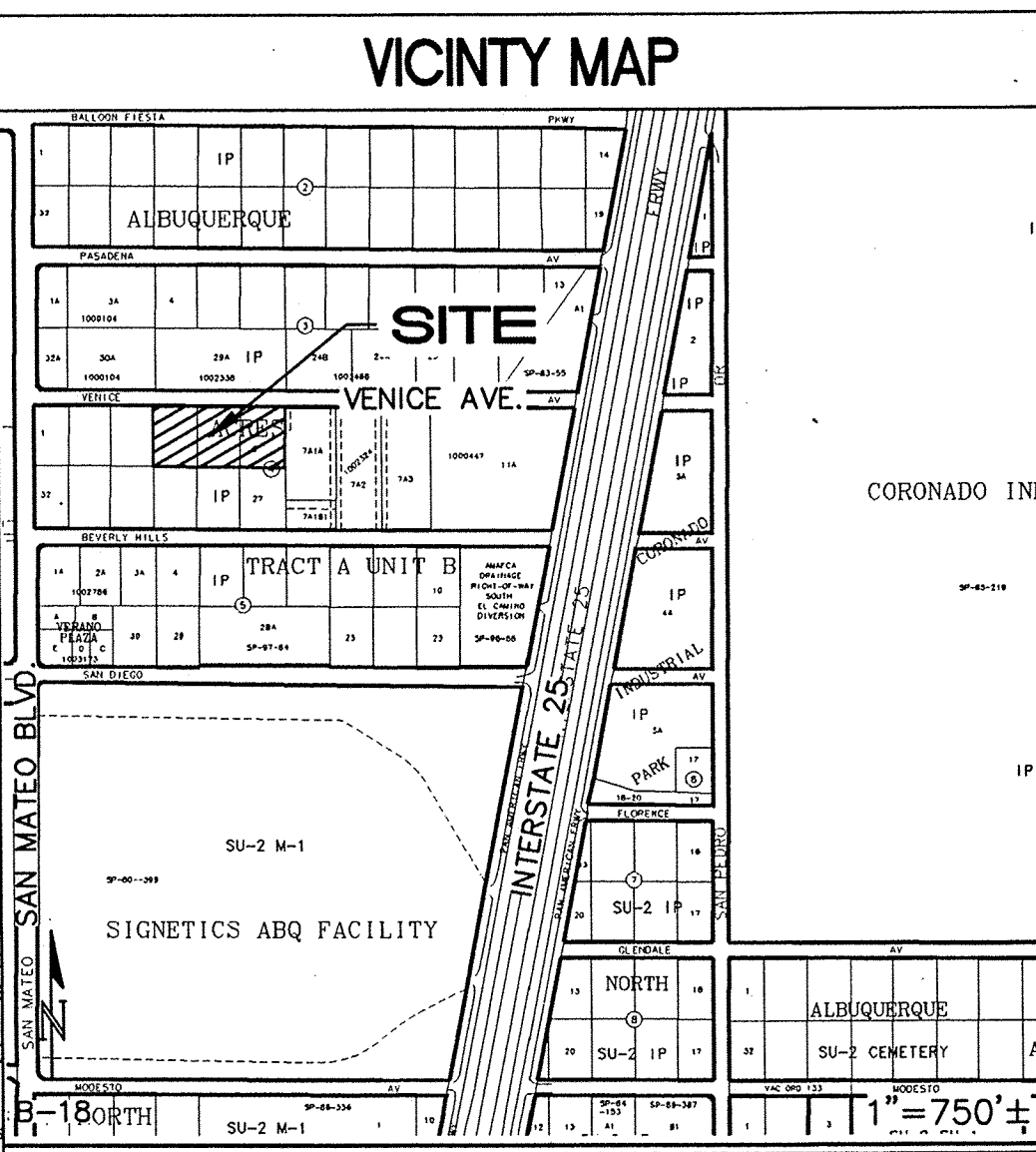
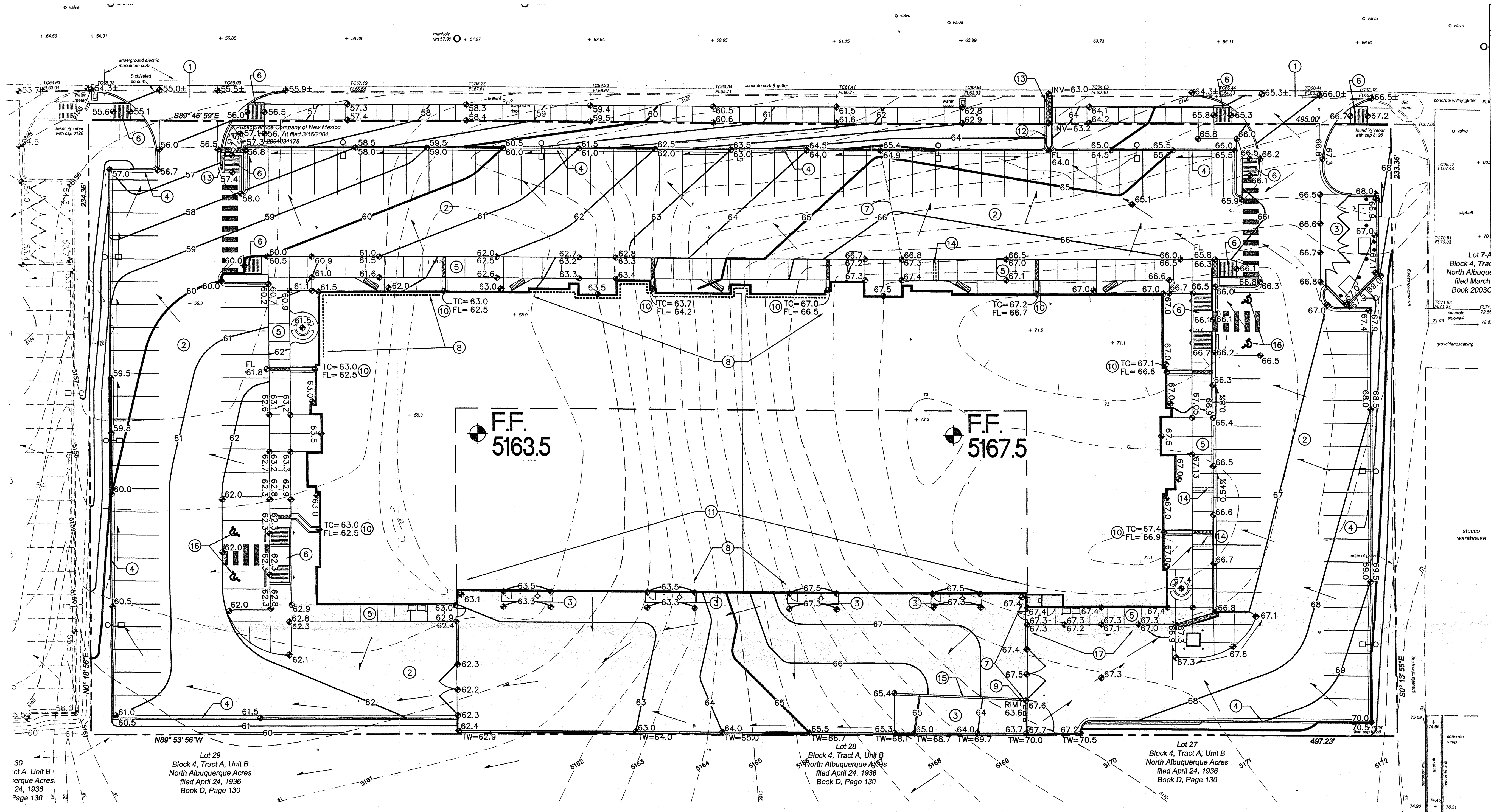
Wetted Perim (ft) = 2.44

Crit Depth, Yc (ft) = 0.48

Top Width (ft) = 2.00

EGL (ft) = 1.32





LEGEND	
---	EXISTING CONTOUR
---	PROPOSED CONTOUR
55.5	PROPOSED SPOT ELEVATION
→	FLOW ARROW
FF = 67.5	FINISH FLOOR ELEVATION
FL=54.0	FLOWLINE ELEVATION
INV=72.5	INVERT ELEVATION
TW=57.5	TOP OF RETAINING WALL ELEVATION

MECHENBIER
CONSTRUCTION INC.
OFFICE/ WAREHOUSE
DEVELOPMENT AT
5454 VENICE AVE. N.E.

SLAGLE
HERR

1600 RIO GRANDE NW
ALBUQUERQUE
NEW MEXICO 87104
fax 505 246 0437

Kc 930 = 0.5
Kc 400 = 0.2

RECEIVED
FEB -1 2010
FRED C. ARFMAN
NEW MEXICO
7322
REGISTERED PROFESSIONAL ENGINEER
02-01-10

KEYED NOTES

1. CONSTRUCT SITE ENTRANCE PER C.O.A. STANDARDS. MATCH EXISTING FLOWLINE ELEVATIONS TO PROVIDE A SMOOTH RIDING TRANSITION. CONSTRUCT CONCRETE VALLEY GUTTER / HANDICAP RAMPS (PER C.O.A. STD. DWG. 2426) MATCHING EXISTING TOP OF WALK / FLOWLINE ELEVATIONS. TRANSITION CURB HEIGHT FROM 8" TO 6" OVER LENGTH OF RADIUS. SEE ARCHITECTURAL FOR DIMENSIONS / DETAILS / DEMOLITION OF EXISTING CURBS.
2. PROPOSED ASPHALT PAVING. SEE ARCHITECTURAL FOR SECTIONS, PARKING LAYOUT, DIMENSIONS, STRIPING, ETC.
3. PROPOSED CONCRETE PAVING. SEE ARCHITECTURAL FOR JOINT INFORMATION, DIMENSIONS, ETC.
4. CONSTRUCT 6" HIGH MEDIAN CURB AND GUTTER AT ALL ON-SITE LOCATIONS. SEE SHEET CG-102 FOR DETAIL.
5. CONSTRUCT TURNED DOWN CONCRETE WALK THIS AREA. SEE ARCHITECTURAL FOR DETAIL.
6. CONSTRUCT ADA ACCESS RAMP. SEE ARCHITECTURAL FOR RAMP LOCATIONS / DIMENSIONS AND ADDITIONAL INFORMATION.
7. PAVING HIGH POINT THIS AREA.
8. CONSTRUCT STEM WALL TRANSITIONS AS REQUIRED TO ACHIEVE GRADE DIFFERENCES SHOWN. SEE ARCHITECTURAL FOR ADDITIONAL INFORMATION (DESIGN BY OTHERS).
9. CONSTRUCT LOADING DOCK SUMP PUMP INLET THIS AREA. SEE DETAIL SHEET CG-102. NOTE: ELECTRICITY REQUIRED. SEE ARCHITECTURAL.
10. ROOF FLOW TO NORTH, EAST AND WEST TO BE PASSED TO ASPHALT PAVEMENT VIA 'U' SHAPED CONCRETE CHANNEL WITH COVERED SIDEWALK CULVERT. FLOWLINE ELEVATION (FL) AND TOP OF CHANNEL CURB (TC) AT BUILDING SHOWN. MINIMUM SLOPE = 1% TO ASPHALT.
11. ROOF FLOW TO SOUTH SIDE TO BE COLLECTED AND RELEASED DIRECTLY TO PAVEMENT. SEE ARCHITECTURAL FOR SPECIFIC OUTFALL POINTS.
12. CONSTRUCT 2' WIDE (BOTTOM WIDTH) 'U' SHAPED CONCRETE RUNDOWN WITH 2' CURB RADII TO PASS FLOW. SEE SHEET CG-102 FOR DETAIL.
13. CONSTRUCT 2' WIDE (BOTTOM WIDTH) COVERED SIDEWALK CULVERT PER C.O.A. STD. DWG. 2236 TO PASS FLOW. SLOPE = 2% SEPARATE PERMIT REQUIRED FOR CONSTRUCTION WITHIN PUBLIC R.O.W. (SEE S.O.19 NOTICE THIS SHEET).
14. INSTALL TWO 2 IN. PIPES THROUGH WALK THIS AREA TO PASS FLOW TO PAVEMENT.
15. DOCK RETAINING WALL. DESIGN BY OTHERS.
16. CONSTRUCT HC PARKING PAVEMENT TO ADA STANDARDS. MAX. 2% SLOPE IN ANY DIRECTION.
17. TRANSITION ASPHALT / CONCRETE WALK RELATIONSHIP (0" TO 5") AT ELEVATIONS SHOWN TO MAINTAIN POSITIVE DRAINAGE TO SIDEWALK CULVERT.

S.O.19 : NOTICE TO CONTRACTORS

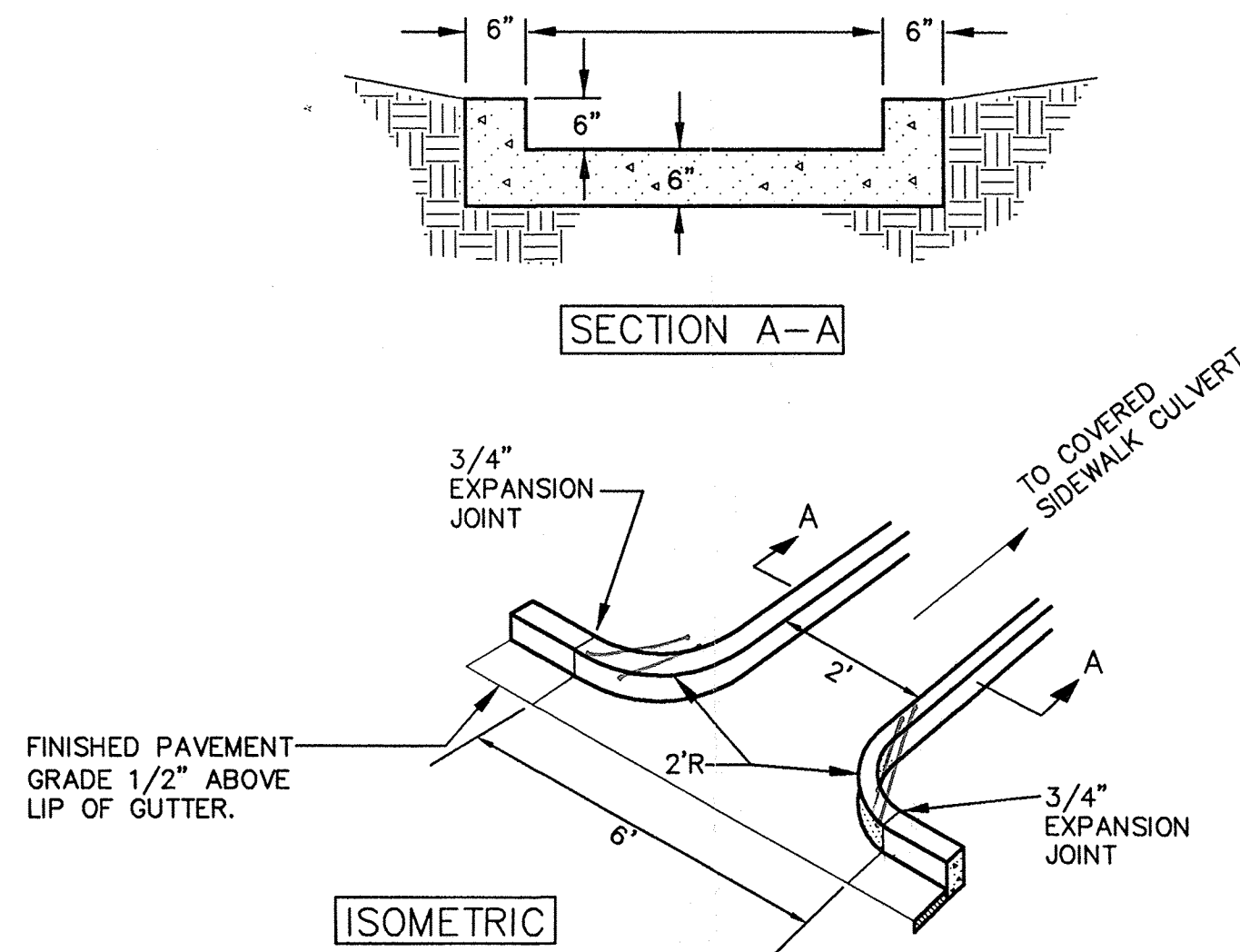
1. AN EXCAVATION / CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN THE CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986 EDITION AS REVISED THROUGH UPDATE #7 AMENDMENT 1.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM (260-1990) FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. 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	NAME	DATE
INSPECTOR		

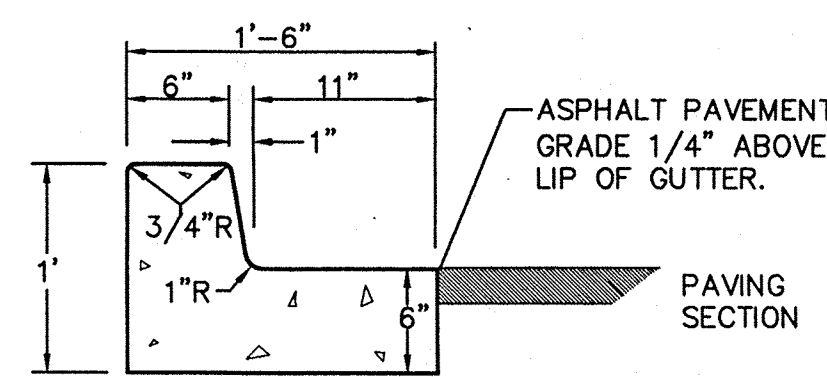
ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph. 505-268-8828 Fax. 505-268-2632
1745 CG-101.dwg Feb. 01, 2010

GRADING AND DRAINAGE PLAN

CG-101

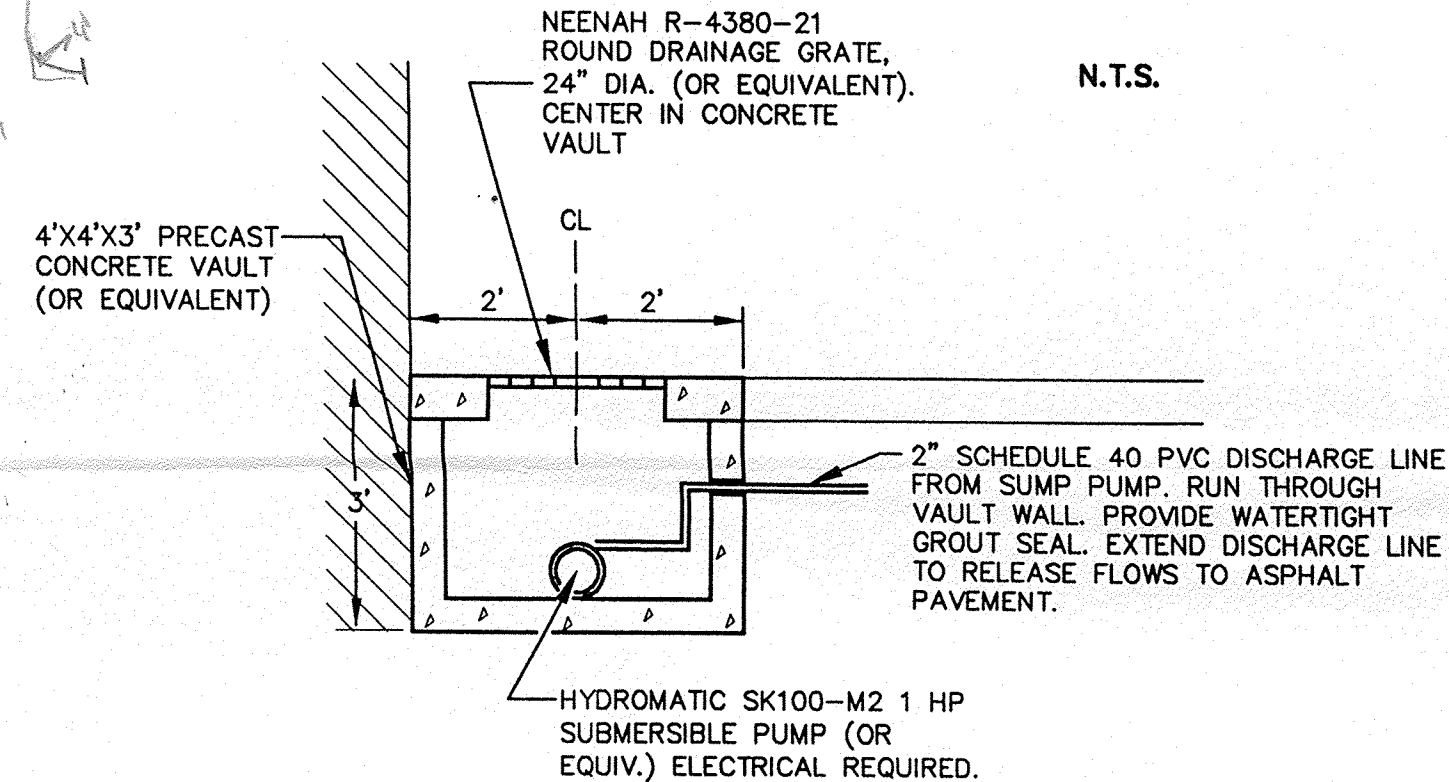


1 CURB CUT / RUNDOWN
N.T.S.



- GENERAL NOTES
- PROVIDE CONST. CONTROL JOINTS @ 6' O.C. MAX. AND 1/2" EXPANSION JOINTS @ 48' O.C. MAX
 - EDGES SHOULD BE REMOVED WITH 3/8" EDGING TOOL
 - MEDIAN C & G REQUIRE FULL FORM ON ALL FACES

2 MEDIAN CURB AND GUTTER
N.T.S.



3 LOADING DOCK SUMP PUMP
N.T.S.

EROSION CONTROL NOTES

- ALL COBBLE EROSION PROTECTION TO BE 6" AVG. DIA. ANGULAR FACED ROCK OVER PERMANENT EROSION CONTROL MATERIAL.
- OWNER SHALL INSPECT AND MAINTAIN DRAINAGE AND WATER HARVESTING IMPROVEMENTS ON AN ON-GOING BASIS. IN ADDITION, OWNER SHALL INSTALL / MAINTAIN ADDITIONAL EROSION PROTECTION ELEMENTS BASED ON ACTUAL EROSION PATTERNS WHICH DEVELOP OVER TIME.
- ALL DRAINAGE IMPROVEMENTS SHOWN ON THE APPROVED GRADING AND DRAINAGE PLAN MUST BE COMPLETED BEFORE AN ENGINEER'S CERTIFICATION CAN BE ISSUED.

PROJECT NOTES

PROPERTY: THE SITE IS A 2.7 ACRE UNDEVELOPED COMMERCIAL PROPERTY LOCATED WITHIN C.O.A. VICINITY MAP B-18. THE SITE IS BOUND TO THE EAST, WEST AND SOUTH BY DEVELOPED COMMERCIAL PROPERTIES AND TO THE NORTH BY VENICE BLVD.

PROPOSED IMPROVEMENTS: INCLUDE APPROX. 39,100 SF COMMERCIAL BUILDING WITH ASSOCIATED ASPHALT PAVED ACCESS, PARKING, AND LANDSCAPING.

LEGAL: LOTS NUMBERED FOUR (4), FIVE (5), AND SIX (6) IN BLOCK NUMBERED FOUR (4), OF TRACT A, UNIT B, NORTH ALBUQUERQUE ACRES, BERNALILLO COUNTY, NEW MEXICO, AS THE SAME ARE SHOWN AND DESIGNATED ON THE PLAT THEREOF, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON APRIL 24, 1936 IN PLAT BOOK D, FOLIO 130.

BENCHMARK: CITY OF ALBUQUERQUE 6-B17. AN ALUMINUM DISK ON CONCRETE CURB, WNW QUADRANT OF SAN MATEO BLVD. NE & SAN DIEGO AVE. NE ELEVATION: 5153.322 NAVD88.

OFF-SITE: SITE NOT AFFECTED BY OFF-SITE DRAINAGE

FLOOD HAZARD: PER BERNALILLO COUNTY FIRM MAP #129, THE SITE IS LOCATED WITHIN FLOODZONE 'X' DESIGNATED AS AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN.

DRAINAGE PLAN CONCEPT: ALL SITE FLOW WILL FREE DISCHARGE TO THE ADJACENT PUBLIC STREET. DISCHARGE TO VENICE BLVD. WILL CONTINUE WEST A SHORT DISTANCE AND ENTER THE EXISTING STORM DRAIN SYSTEM.

FORMER LANDFILL: THE SUBJECT PROPERTY IS LOCATED ON A FORMER LANDFILL. CERTAIN PRECAUTIONARY MEASURES MAY NEED TO BE TAKEN TO ENSURE THE HEALTH AND SAFETY OF THE PUBLIC. RECOMMENDATIONS MADE BY A PROFESSIONAL ENGINEER WITH EXPERTISE IN LANDFILLS AND LANDFILL GAS ISSUES (AS REQUIRED BY THE MOST CURRENT VERSION OF THE INTERIM GUIDELINES FOR DEVELOPMENT WITHIN CITY DESIGNATED LANDFILL BUFFER ZONES) SHALL BE CONSULTED.

GENERAL NOTES

- ALL TRASH, DEBRIS, & SURFACE VEGETATION SHALL BE CLEARED AND LEGALLY DISPOSED OF OFFSITE.
- ALL SUBGRADE, OVEREXCAVATION, AND FILL SHALL BE PLACED AND / OR COMPACTED PER THE GEOTECHNICAL REPORT AND CITY OF ALBUQUERQUE SPECIFICATIONS.
- FINAL GRADES SHOWN REPRESENT TOP OF FINISH MATERIAL (I.E. TOP OF CONCRETE, TOP OF BUILDING PAD, TOP OF PAVEMENT MATERIAL, TOP OF LANDSCAPING MATERIAL, ETC.). CONTRACTOR SHALL GRADE, COMPACT SUBGRADE AND DETERMINE EARTHWORK ESTIMATES BASED ON ELEVATIONS SHOWN MINUS MATERIAL THICKNESSES.
- MAXIMUM SLOPES SHALL BE 3:1 AND MINIMUM SLOPES SHALL BE 1% UNLESS OTHERWISE NOTED.
- FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, 260-1990, FOR LOCATION OF EXISTING UTILITIES. 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.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION. REPORT ALL DISCREPANCIES TO THE ARCHITECT / ENGINEER AND VERIFY THE ARCHITECT / ENGINEER'S INTENT BEFORE PROCEEDING.
- OWNER HAS ESTABLISHED PROPERTY BOUNDARY CORNERS. CONTRACTOR SHALL LOCATE AND PRESERVE ALL BOUNDARY CORNERS AND REPLACE ANY LOST OR DISTURBED CORNERS AT CONTRACTOR'S SOLE EXPENSE.
- OWNER WILL PROVIDE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND INSPECTION. CONTRACTOR SHALL COMPLY WITH THE BEST MANAGEMENT PRACTICES (BMP'S) AS SPECIFIED IN THE SWPPP, AND WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.
- COORDINATE WORK WITH SITE PLAN, UTILITY PLAN AND LANDSCAPE PLAN.
- ADJUST RIMS OF EXISTING UTILITY FEATURES AS NECESSARY TO MATCH NEW GRADES, TYPICAL.
- ALL NEW PAVEMENT SURFACES SHALL BE CONSTRUCTED WITH POSITIVE SLOPE AWAY FROM BUILDINGS TO DRAIN TOWARD EXISTING AND / OR PROPOSED DRAINAGE PATHS. WHERE NEW GRADES ARE SHOWN AS 'MATCH' OR '±', TRANSITIONS SHALL BE SMOOTH AND LEVEL. ANY NEW PAVING SURFACE HOLDING WATER (BIRDBATH) SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S SOLE EXPENSE.
- ALL AREAS REFERENCING EROSION PROTECTION SHALL BE 6" AVG. DIA. FRACTURED FACE ROCK (F.F. ROCK) PLACED OVER GEOTEX 50 NON-WOVEN GEOTEXTILE.
- SIDESLOPES STEEPER THAN 3:1 BUT LESS THAN 2:1 MUST HAVE PERMANENT EROSION CONTROL (FRACTURED FACE ROCK [F.F. ROCK] INSTALLED. NO SLOPE SHALL BE STEEPER THAN 2:1.
- ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RESEED WITH NATIVE GRASS PER C.O.A. SPECIFICATIONS SECTION 1012 (FOR SANDY SOILS) OR AS SPECIFIED ON THE LANDSCAPE PLAN.
- OWNER SHALL MAINTAIN EROSION PROTECTION ELEMENTS. OWNER SHALL INSPECT SITE YEARLY AND AFTER EACH RAINFALL TO IDENTIFY NEW AREAS OF EROSION AND INSTALL ADDITIONAL EROSION PROTECTION AS NEEDED BASED ON ACTUAL OCCURRENCES.

CALCULATIONS

Based on Drainage Design Criteria for City of Albuquerque Section 22.2, DPM, Vol 2, dated Jan., 1993

ON-SITE			
AREA OF SITE:	116017.75	SF	= 2.7
100-year, 6-hour			
HISTORIC FLOWS:			
Treatment SF	%		
Area A =	0	0%	
Area B =	0	0%	
Area C =	116017.75	100%	
Area D =	0	0%	
Total Area =	116017.75	100%	
DEVELOPED FLOWS:			
Treatment SF	%		
Area A =	0	0%	
Area B =	5801	5%	
Area C =	11602	10%	
Area D =	98615	85%	
Total Area =	116017.75	100%	
EXCESS PRECIP:			
Precip. Zone			
E _A =	0.66		
E _B =	0.92		
E _C =	1.29		
E _D =	2.36		
On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)			
Weighted E =	$E_A A_A + E_B A_B + E_C A_C + E_D A_D$		
	$A_A + A_B + A_C + A_D$		
Historic E	= 1.29 in.	Developed E	= 2.18 in.
On-Site Volume of Runoff: V ₃₆₀ = E ² A / 12			
Historic V ₃₆₀	= 12472 CF	Developed V ₃₆₀	= 21086 CF
On-Site Peak Discharge Rate: Q _p = Q _{PA} A _A + Q _{PB} A _B + Q _{PC} A _C + Q _{PD} A _D / 43,560			
For Precipitation Zone 3			
Q _{PA}	= 1.87	Q _{PC}	= 3.45
Q _{PB}	= 2.60	Q _{PD}	= 5.02
Historic Q _p	= 9.2 CFS	Developed Q _p	= 12.6 CFS

ALL SITE DISCHARGE WILL FREE DISCHARGE TO TO VENICE AVE. ALL DISCHARGE WILL ENTER THE EXISTING PUBLIC STORM DRAIN SYSTEM.

MECHENBIER
CONSTRUCTION INC
OFFICE/WAREHOUSE
DEVELOPMENT AT
5454 VENICE AVE. N.E.

slagle
HERR

1600 rio grande nw
albuquerque
new mexico 87104
fax 505 246 0637

RECEIVED
FEB -1 2010
HYDROLOGY
SECTION
FRED C. ARFMAN
NEW MEXICO
7322
LICENSED PROFESSIONAL ENGINEER
20.01.10 revisions:

BASIN 1 CULVERT EQUATION

CURB OPENING CAPACITY CALCULATION

Weir equation: $Q = CLH^{3/2}$

Constant C = 3.33

Curb height H = 0.5 feet

Opening Length L = 2.00 feet

Q = 2.4 cfs

BASIN 2 CULVERT EQUATION

CURB OPENING CAPACITY CALCULATION

Weir equation: $Q = CLH^{3/2}$

Constant C = 3.33

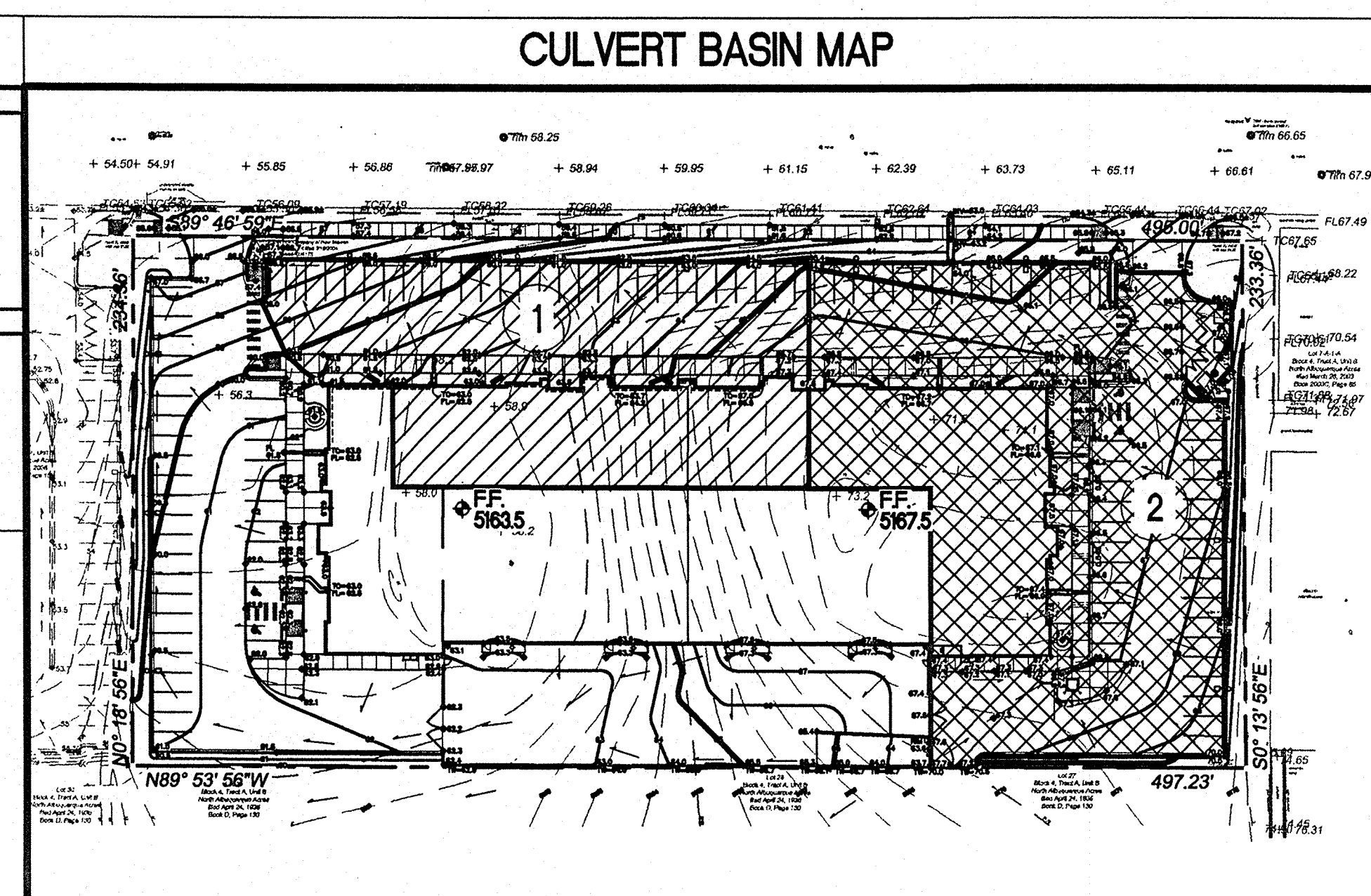
Curb height H = 0.5 feet

Opening Length L = 6.00 feet

Q = 7.1 cfs

CULVERT BASINS

BASIN NO.	DESCRIPTION	Area of basin flows =	0.5 Ac	LAND TREATMENT
1	21422 SF	The following calculations are based on Treatment areas as shown in table to the right		
	Sub-basin Weighted Excess Precipitation (see formula above)			
	Weighted E = 2.18 in.			
	Sub-basin Volume of Runoff (see formula above)			
	V ₃₆₀ = 3893 CF			
	Sub-basin Peak Discharge Rate: (see formula above)			
	Q _p = 2.3 cfs			
2	33798 SF	The following calculations are based on Treatment areas as shown in table to the right		
	Sub-basin Weighted Excess Precipitation (see formula above)			
	Weighted E = 2.18 in.			
	Sub-basin Volume of Runoff (see formula above)			
	V ₃₆₀ = 6143 CF			
	Sub-basin Peak Discharge Rate: (see formula above)			
	Q _p = 3.7 cfs			



ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph. 505-268-8828 Fax. 505-268-2632
1745 CG-101.dwg Feb 01, 2010

GRADING AND DRAINAGE PLAN

CG-102

date:
02/01/10
sheet: