CITY OF ALBUQUERQUE

October 13, 2004

Mark Johnson, P.E.
Bury+Partners, Inc.
10000 San Pedro Ave. Suite 100
San Antonio, TX 78216

Re: Cottonwood Corners Chick-fil-A, Grading and Drainage Plan
Engineer's Stamp dated 8-31-04 (A14-D007H)

Dear Mr. Johnson,

Based upon the information provided in your submittal received 8-26-04, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. If you have any questions regarding this permit please feel free to call the DMD Storm Drainage Design section at 768-3654 (Charles Caruso).

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro
Engineering Associate, Planning Dept.
Development and Building Services

C: Charles Caruso, DMD Storm Drainage Design
File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

Bury Partners
ENGINEERING SOLUTIONS

DESIGN NOTES AND COMPUTATIONS

SHEET NO. OF

$Q = CA\sqrt{2gh}$

$0.78\ ft^3/s = (0.6)(0.083\ ft^2)\sqrt{2(32.2\ ft/s^2)h}$

$h = 3.8093\ ft$

$Q = 0.78\ cfs$ ✓

$C = 0.6$

$g = 32.2\ ft/s^2$

$A = 0.083\ ft^2$

$\frac{0.083\ ft^2}{1\ ft^2} \left/ \frac{144\ in^2}{1\ ft^2}\right. \rightarrow A = 11.952\ in^2$

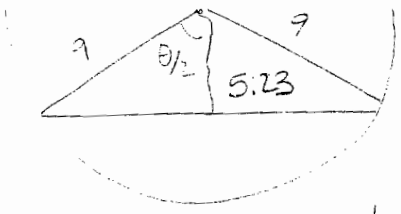
$A = 0.27\ ft^2$ ~~144~~

4.08

5.09
~~5.08~~
~~5.1~~
~~5.2~~
~~5.2~~
~~5.25~~
~~5.23~~ ~~5.5~~

$\cos\frac{\theta}{2} = \frac{5.23}{9}$

$\theta = 108.94°$



$A = 0.3261\ ft^2$

$h = 0.246 = 2.96\ in$

Try: $h = 4$, $Q = .81$
$h = 3$, $Q = 0.416$
$h = 3.5$, $Q = 0.628$
$h = 3.75$, $Q = 0.71$
$h = 3.80$, $Q = 0.73$
$h = 3.9$, $Q = 0.77$
$h = 3.92$, $Q = 0.781$
$h = 3.91$, $Q = 0.778$

$\cos\frac{\theta}{2} = \frac{9-h}{9}$

$2 \cdot \cos^{-1}\left(\frac{9-h}{9}\right) = \theta$

PREPARED BY DATE CHECKED BY DATE PROJECT NUMBER

Bury Partners
ENGINEERING SOLUTIONS

DESIGN NOTES AND COMPUTATIONS

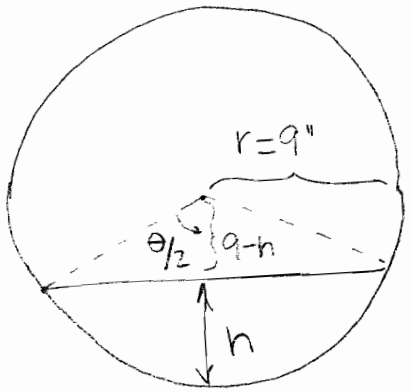
SHEET NO. OF

~~REMARKS~~

$Q = CA\sqrt{2gh}$

known: $Q = 0.78$ cfs
$C = 0.6$
$g = 32.2\ ft^2/s$
$A = ?$
$h = ?$

$$\text{Area} = \frac{r^2}{2}\left(\frac{\pi\theta}{180} - \sin(180-\theta)\right)$$



by trial and error:

when $h = 3.92 \rightarrow Q = 0.781$ cfs

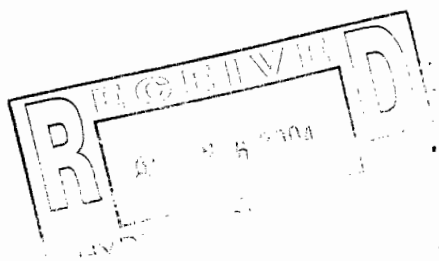
" $h = 3.91 \rightarrow Q = 0.778$ cfs

$$\cos(\theta/2) = \frac{9-h}{9}$$

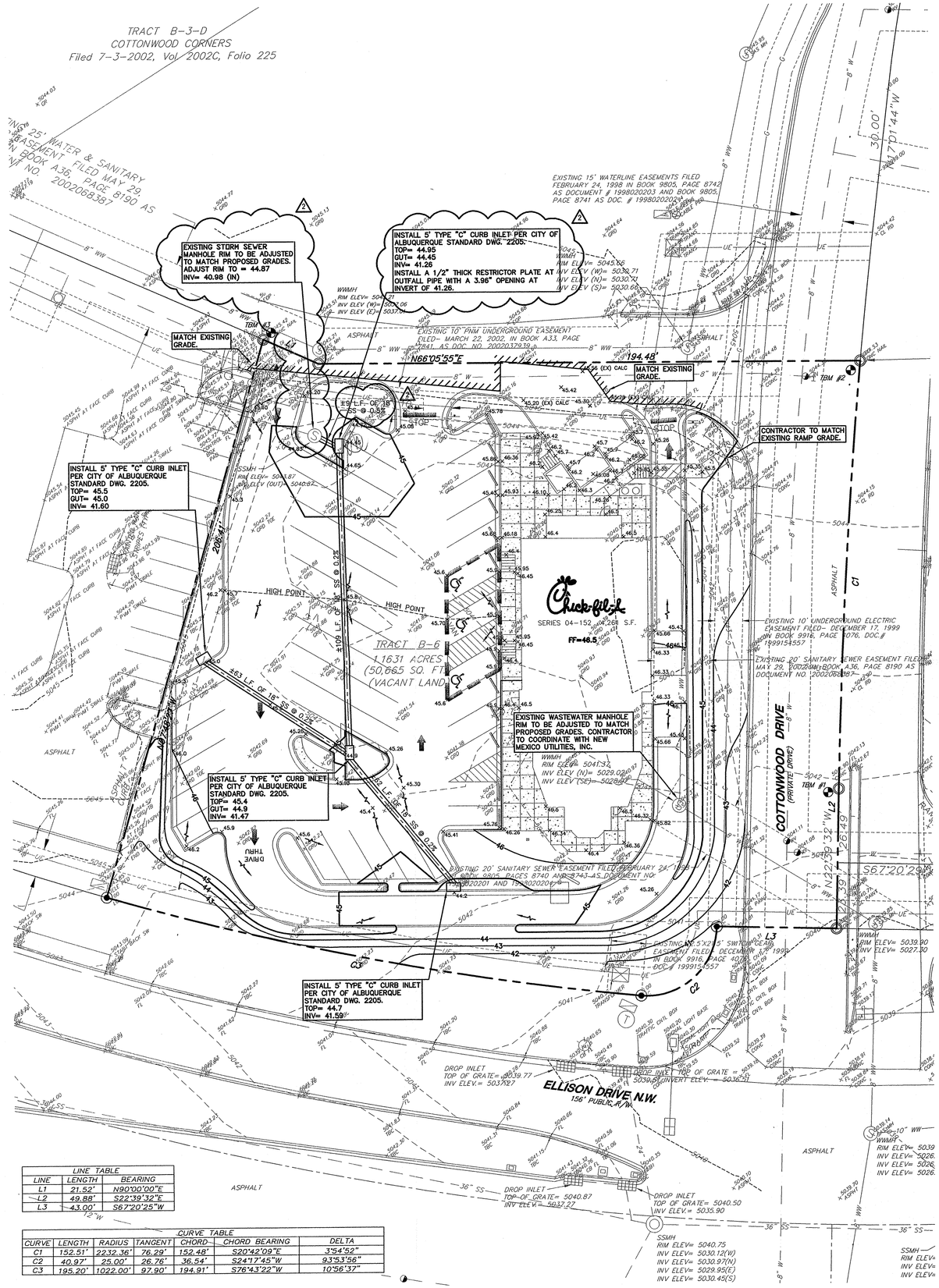
$$\theta = 2\left[\cos^{-1}\left(\frac{9-h}{9}\right)\right]$$

$\therefore$ $h = 3.91$ in ≈ 0.3258 ft

elev. of beginning of steel plate = 41.59 ft



PREPARED BY DATE CHECKED BY DATE PROJECT NUMBER



LINE TABLE		
LINE	LENGTH	BEARING
L1	21.52'	N90°00'00"E
L2	49.88'	S22°39'32"E
L3	43.00'	S67°20'25"W

CURVE TABLE						
CURVE	LENGTH	RADIUS	TANGENT	CHORD	CHORD BEARING	DELTA
C1	152.51'	2232.36'	76.29'	152.48'	S20°42'09"E	3°54'52"
C2	40.97'	25.00'	26.76'	36.54'	S24°17'45"W	93°53'56"
C3	195.20'	1022.00'	97.90'	194.91'	S76°43'22"W	10°56'37"

Date: Nov 12, 2004, 1:13pm User ID: mwolf
File: G:\049\128\049128GRP.dwg

LEGEND

FLOW DIRECTION

HANDICAP ACCESSIBLE AREA CONTRACTOR TO ENSURE 2% SLOPE IN ALL DIRECTIONS.

MATCH EXISTING PAVEMENT GRADES

HYDROLOGY CALCULATIONS

DATA:

ZONE I
100 EVENT
T_C = 0.2 HR.

AREA = 1.16 AC.
LAND TREATMENT = D
E= EXCESS PRECIPITATION ("D") = 1.97in.
Q_P = PEAK DISCHARGE (0.2 HR) = 4.37 cfs/acre

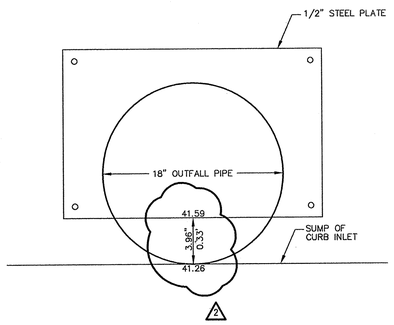
CALCULATIONS:

$V_{360} = \frac{1.97\ \text{in.}(1.16\ \text{ac.})}{12\ \text{in./ft.}} = 0.19\text{ac.-ft.}$

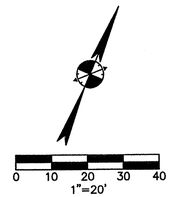
$V_{1440} = 0.19\ \text{ac.-ft.} + 1.16\ \text{ac.}(2.66\ \text{in.} - 2.20\text{in.})/12\text{in./ft.}$
$= 0.234\text{ac.-ft.}$

$Q_p = 1.16\text{ac.}(4.37\ \text{cfs/ac.}) = 5.07\ \text{cfs}$

RESTRICTION PER CITY COMMENTS = 0.67 cfs/acre x 1.1631 acres= 0.78 cfs ALLOWED



RESTRICTOR DETAIL
SCALE: N.T.S.



GRADING NOTES

1. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL MAKE CERTAIN THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
2. BARRICADING, TRAFFIC CONTROL, AND PROJECT SIGNS SHALL CONFORM TO "STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION BARRICADING AND CONSTRUCTION STANDARDS" AND THE CITY OF ALBUQUERQUE SPECIFICATIONS.
3. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCEMENT OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES. MINOR ADJUSTMENT TO FINISH GRADE TO ACCOMPLISH SPOT DRAINAGE IS ACCEPTABLE, IF NECESSARY, UPON PRIOR APPROVAL OF THE ENGINEER. PAVING INSTALLED SHALL "FLUSH OUT" AT ANY JUNCTURE WITH EXISTING PAVING.
4. ALL PROPOSED CONTOURS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND DESIGNATED GRADIENT ARE TO BE USED IN THE EVENT OF ANY DISCREPANCIES.
5. REFER TO SITE PLAN FOR HORIZONTAL DIMENSIONS.
6. UNLESS NOTED OTHERWISE, ALL PARKING LOT GRADES ARE TO GUTTER OF INVERT. ADD 0.5' TO GUTTER GRADE FOR TOP OF CURB GRADE.
7. SITE PREPARATION AND GRADING, FOUNDATION EXCAVATION AND FILL COMPACTION SHALL BE PERFORMED IN ACCORDANCE WITH THE GEOTECHNICAL INVESTIGATION REPORT.
8. EARTHWORK FOR ALL BUILDING FOUNDATIONS AND SLABS SHALL BE IN ACCORDANCE WITH ARCHITECTURAL BUILDING PLANS AND SPECIFICATIONS.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES DURING THE CONSTRUCTION OF THIS PROJECT.
10. SIDEWALKS ADJACENT TO THE PROPOSED BUILDING SHALL HAVE A CROSS SLOPE OF 2% AWAY FROM THE BUILDING.

STORM SEWER NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE STANDARDS.
2. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL MAKE CERTAIN THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
3. BARRICADING, TRAFFIC CONTROL, AND PROJECT'S SIGNS SHALL CONFORM TO "STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION BARRICADING AND CONSTRUCTION STANDARDS" AND THE CITY OF ALBUQUERQUE SPECIFICATIONS.
4. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCEMENT OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
5. THE LOCATION OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD SURVEYS AND LOCAL UTILITY COMPANY RECORDS. IT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES TO LOCATE THEIR UTILITIES PRIOR TO STARTING CONSTRUCTION. (SEE PS1 FOR UTILITY CONTACTS)
6. THE CONTRACTOR SHALL VERIFY ALL EXISTING INVERTS AND RIM ELEVATIONS PRIOR TO CONSTRUCTION.
7. DURING THE CONSTRUCTION OF THESE IMPROVEMENTS, ANY INTERPRETATION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND ANY MATTER WHICH REQUIRES THE APPROVAL OF THE OWNER MUST BE APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR HIS DESIGNEE BEFORE ANY CONSTRUCTION INVOLVING THAT DECISION COMMENCES. ASSUMPTIONS ABOUT WHAT THESE DECISIONS MIGHT BE WHICH ARE MADE DURING THE BIDDING PHASE WILL HAVE NO BEARING ON THE DECISION.
8. FOR ADJUSTMENT OF NEW MEXICO UTILITIES, INC. APPURTENANCES OR TO VERIFY LOCATIONS OF EXISTING WATER AND WASTEWATER MAINS IN AREA, CONTACT BOB GAY AT (505) 989-2661 AT LEAST (3) THREE WORKING DAYS PRIOR TO CONSTRUCTION.
9. CONSTRUCTION OF STREETS, ALLEYS, SIDEWALKS, DRIVEWAYS, AND STORM WATER FACILITIES IN THE PUBLIC EASEMENT OR RIGHT-OF-WAY MUST BE CONSTRUCTED IN CONFORMANCE WITH THE CITY OF ALBUQUERQUE STANDARD CONSTRUCTION DETAILS.
10. ANY EXISTING PAVEMENT, CURBS AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
11. CONTRACTOR SHALL OBTAIN A RIGHT-OF-WAY PERMIT BY THE CITY OF ALBUQUERQUE AND NMDOT FOR WORKING WITHIN THE PUBLIC RIGHT-OF-WAY.
12. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES TO LOCATE EXISTING FACILITIES. THESE INCLUDE BUT MAY NOT BE LIMITED TO THE FOLLOWING: (SEE SHEET PS1 FOR CONTACT INFORMATION)
    A. PUBLIC SERVICE COMPANY OF NEW MEXICO ALBUQUERQUE WEST SIDE (ELECTRIC)
    B. PUBLIC SERVICE COMPANY OF NEW MEXICO ALBUQUERQUE WEST SIDE (GAS)
    C. QWEST COMMUNICATIONS (TELEPHONE)
    D. NEW MEXICO UTILITIES, INC. (WATER/WASTEWATER)
13. PRIOR TO BEGINNING CONSTRUCTION, THE OWNER OR HIS AUTHORIZED REPRESENTATIVE SHALL CONDUCT A PRE-CONSTRUCTION CONFERENCE BETWEEN THE CITY OF ALBUQUERQUE, CONSULTING ENGINEER, CONTRACTOR(S), UTILITY COMPANIES AND ANY OTHER AFFECTED PARTIES. CONTRACTOR SHALL NOTIFY THE CITY OF ALBUQUERQUE AT LEAST 48 HOURS PRIOR TO CONFERENCE.
14. DURING CONSTRUCTION, THE OWNER SHALL PROVIDE A QUALIFIED GEOTECHNICAL LAB TO PERFORM MATERIALS TESTING DURING THE CONSTRUCTION.
15. ALL PRIVATE STORM SEWER PIPE SHALL BE AS FOLLOWS, UNLESS INDICATED ON THE PLANS: (ALL PIPES SHALL HAVE A MANNING'S "N" VALUE OF 0.013)
    A) 12" THRU 48" RCP, D-LOAD DESIGN
    B) 6" THRU 12" PVC, SDR 35 OR SCH. 40
    C) NOT USED
    D) NOT USED
    E) 6" THRU 36", HDPE

LEASE/LEGAL DESCRIPTION:

TRACT "B-6" OF TRACTS A THRU I, COTTONWOOD CORNERS, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, AS THE SAME IS SHOWN AND DESIGNATED ON THE REPLAT THEREOF, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON MARCH 3, 2000, IN PLAT BOOK 2000C, FOLIO 68.

REFERENCE BENCHMARK:

TBM #1 CONCRETE NAIL AND BRASS DISK ON EAST BOUNDARY OF TRACT.
ELEVATION = 5041.90

TBM #2 CONCRETE NAIL AND BRASS DISK AT NORTHEAST CORNER OF TRACT.
ELEVATION = 5044.53

TBM #3 CONCRETE NAIL AND BRASS DISK AT NORTHEAST CORNER OF TRACT.
ELEVATION = 5045.42

REV	DATE	BY	REVISION
1			
2			
3			
4			
5	08-12-04	MRJ	CITY COMMENTS
6	6-14-04	WOS	CITY COMMENTS

Chick-fil-A
CHICK FILA
5200 BUFFINGTON RD.
ATLANTA, GEORGIA
30349- 2998

Bury+Partners
Consulting Engineers and Surveyors
San Antonio, Texas tel 210/525-9090 fax 210/525-0529

NEW MEXICO 15985 REGISTERED PROFESSIONAL ENGINEER
MARK R. JOHNSON
12/14/04

STORE #: 1688
PROJECT TITLE
CHICK-FIL-A
NWC Ellison Drive NW and Cottonwood Drive
Albuquerque, New Mexico
PROJECT MANAGER: William O. Schock, P.E.
JOB NO.: 50049-128.30
DRAWN BY: MW
SHEET TITLE
Grading & Drainage Plan

DATE: 2/12/04
SCALE: 1"=20'
SHEET C-3