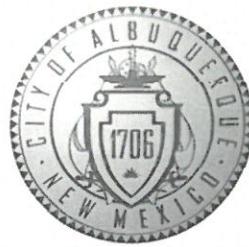


CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

June 18, 2018

Cesar Segovia
Rogue Architects
513 Main St Suite 300
Fort Worth, TX 76102

**Re: McDonalds - 8315 Montgomery Blvd NE
Tract A-1-F of the Los Pastores Shopping Center
Grading and Drainage Plan - Engineer's Stamp dated: missing (F19D013A)**

Dear Mr. Segovia,

Based on the application received 6/18/2018, the above referenced plan cannot be approved for building permit until the following comments are addressed.

1. DRB approval is required if this site includes "Major Infrastructure", and solving the adjacent alley drainage problem may require Major Infrastructure. An approved drainage design and analysis is required prior to determining if DRB approval is required.
2. An engineer's stamp and signature are required on the G&D Plan. If the purpose of this plan is just DRB approval of the Amended Site Plan then the sheet title must be changed to "Conceptual Grading and Drainage Plan" and it must be labeled "Not for Construction" in big bold letters. Then a separate more detailed Grading and Drainage Plan must be approved by Hydrology prior to Building Permit. Both G&D plans must be stamped by a NM Professional Engineer.
3. The alley drainage solution must be shown on this plan. The existing alley is graded with a 15% cross slope and does not have drainage capacity to prevent public storm water from entering the private lots west of the alley. A solution to the problem must be approved by both Hydrology and Transportation prior to approval of the G&D Plan for this development. The solution must be identified on this plan. If the improvements are to be constructed as part of a separate project they should be so noted. The engineering design and analysis of the solution may either be included on the McDonalds G&D Plan or the engineering design and analysis of the solution may be included on the separate G&D Plans for the Los Pastores Shopping Center which currently has an open Work Order to build the alley. The two plans must agree and cross reference each other.
4. A revision to the Los Pastores Shopping Center G&D Plan has been submitted but has not been reviewed by hydrology. It includes construction of a variable height curb, drive pads, and gravel driveways on the private lots west of the alley. Written approval will be required from all of those lot owners and the Transportation and DRC and a Change Order must be approved before it can be approved as the solution to the alley drainage problem, so this solution may take quite a while to get approved and it may not work at all. Solutions that don't involve the neighbors involve some kind of modification to the McDonalds Site Plan, either by changing the cross slope of the alley lowering the west side of the McDonalds site or by adding a pond outfall pipe through the McDonalds site to Montgomery Blvd. Matt

PO Box 1293

Albuquerque

NM 87103

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Planning Department
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Corte said that he has pictures of a headwall in the old pond that indicates a piped pond outfall existed before the Los Pastores Shopping Center, and that same pipe may be incorporated into the alley drainage solution for this project.

5. Any portion of the peak 100 year flow rate that drains into Montgomery Blvd. will have to do so through appropriately sized sidewalk culverts. No flow is allowed over the Montgomery Blvd sidewalk. Sidewalk culverts may be constructed with an SO-19 Permit if a Work Order is not required for other required infrastructure. To do so, the standard SO-19 Permit notes must be added to the G&D Plan along with hydraulic calculations, standard details, and construction notes. If a Work Order is required then the Sidewalk culverts must be constructed as part of the Work Order and an SO-19 Permit will not be allowed.
6. The proposed development plan for the McDonalds must either conform to the previously approved Drainage Management Plan for Tract A-1-F of the Los Pastores Shopping Center or a revised plan is required to determine new peak flow rates in the alley west of McDonalds and in Montgomery Blvd. using AHYMO instead of the simplified 100 year 6 hour runoff calculations in tables on sheets 8.0 and 8.2. If the proposed development plan is revised to conform to the previously approved Drainage Management Plan then the tables on sheets 8.0 and 8.2 must state the runoff rates and volumes associated with land treatments A, B, C, and D.
7. The drainage summary on sheet 8.1 says basin A-1 drains into the offsite detention pond but there is not sufficient detail to see how that drainage enters the pond. Instead it appears that the drainage enters Pond 1. A typical section is required thru the north and west boundary in association with Basin A-1 and Pond 1. The sections must include horizontal and vertical dimensions to the property line and show both existing and proposed grade.
8. Basin A-3 drains to 3 different ponds and basin A-6 drains to two different ponds. The drainage basin boundaries and areas must be revised to accurately identify the area draining to each first flush pond. The first flush requirements apply to all redeveloped impervious area on this site. Each pond should be sized for 0.26" of runoff from the impervious area draining to it. The City doesn't give credit for extra volume in a pond over and above that which is required for the impervious area draining into it. A waiver may be requested for redeveloped impervious surfaces not meeting the required first flush volume. The waiver request must state the area of impervious and the first flush volume and be located next to the pond volume calculations on the G&D Plan. If the waiver is granted the developer will be required to pay \$8.00/CF in lieu of constructing the required volume.
9. Details of each pond are required including typical sections, dimensions, and spot elevations. Volume calculations must be added to the plan for each pond based on the area of each contour using the conic method of volume calculations.
10. The term Bio Retention is inappropriate and should be replaced with the term First Flush everywhere, unless planting specifications consistent with Bio Retention are shown on the landscape plan and provided to hydrology for review and comment.

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11. Retaining walls, if any, must be clearly identified on the plan. Typical sections are required around the perimeter of the property especially at retaining walls. Existing and proposed spot elevations are required around the perimeter of the site at about 25' intervals.
12. Existing Spot elevations are not legible. The minimum font size is 0.10". Dots show up instead of text around the perimeter of the site. The drainage summary on sheet 8.1 also has dots instead of text.
13. Details of all drainage structures must be shown on the plan including pond spillways, curbs, curb cuts, inlets, headwalls, and sidewalk culverts. Hydraulic capacity calculations are required for all inlet, curb cuts, curbs carrying drainage, and pond spillways. Both the first flush elevation and the 100 year elevation must be identified for all ponds. Storm drains must be shown on the Grading sheet 7.0 including pipe sizes and material.
14. HGL calculations are required for the storm drain pipes and the HGL must be shown on a profile of each pipe specifying the pipe material, slope, invert elevations, and lengths, flow rate, and velocity.
15. A Private Drainage Easement and Drainage Covenant is required for the offsite storm drain on Tract A-1-E. It is near other easements which need to be shown and labeled on the plan as well as any conflicting utilities. Label Tract A-1-E, Access A, and A-1-D.
16. A Private Facility Drainage Covenant is required for the first flush ponds. The original notarized form, pond exhibits (legible on 8.5x11 paper), and recording fee (\$25, payable to City of Albuquerque) must be turned into DRC (4th, Plaza del Sol) for routing. Please contact Charlotte LaBadie (clabadie@cabq.gov, 924-3996) or Madeline Carruthers (mtafoya@cabq.gov, 924-3997) regarding the routing and recording process for covenants.

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NM 87103

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The standard SO-19 notes and Private Facility Drainage Covenant may be downloaded from the Hydrology Section web site <https://www.cabq.gov/planning/development-review-services/hydrology-section>.

If you have any questions, you can contact me at 924-3986 or E-mail at jhughes@cabq.gov.

Sincerely,

A handwritten signature in blue ink that reads "James D. Hughes".

James D. Hughes, P.E.
Principal Engineer, Planning Dept.
Development and Review Services

****THIS PERMIT IS UNDER FASTRAX REVIEW****



City of Albuquerque

Planning Department
Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 11/2016)

FASTRAX REVIEW PERMIT

Project Title: McDonalds - Montgomery

Building Permit #: BP-2018-12163

Hydrology File #: F19D013A

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: _____

City Address: 8315 Montgomery Blvd, Albuquerque NM

Applicant: Rogue Architects Contact: Cesar Segovia

Address: 513 Main St, Suite 300, Fort Worth TX 76102

Phone#: 817-529-6874 Fax#: _____ E-mail: cesar@roguearchitects.com

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

- HYDROLOGY/ DRAINAGE
 TRAFFIC/ TRANSPORTATION

TYPE OF SUBMITTAL:

ENGINEER/ARCHITECT CERTIFICATION

CONCEPTUAL G & D PLAN

GRADING PLAN

DRAINAGE MASTER PLAN

DRAINAGE REPORT

CLOMR/LOMR

TRAFFIC CIRCULATION LAYOUT

TRAFFIC IMPACT STUDY (TIS)

OTHER (SPECIFY) _____

PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

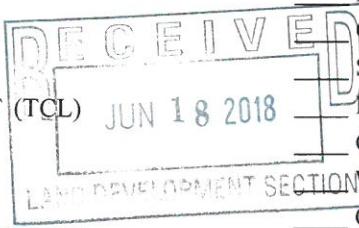
- BUILDING PERMIT APPROVAL
 CERTIFICATE OF OCCUPANCY

 PRELIMINARY PLAT APPROVAL
 SITE PLAN FOR SUB'D APPROVAL
 SITE PLAN FOR BLDG. PERMIT APPROVAL
 FINAL PLAT APPROVAL

 SIA/ RELEASE OF FINANCIAL GUARANTEE
 FOUNDATION PERMIT APPROVAL
 GRADING PERMIT APPROVAL

 SO-19 APPROVAL
 PAVING PERMIT APPROVAL
 GRADING/ PAD CERTIFICATION
 WORK ORDER APPROVAL

 CLOMR/LOMR



IS THIS A RESUBMITTAL?: Yes No

OTHER (SPECIFY) _____

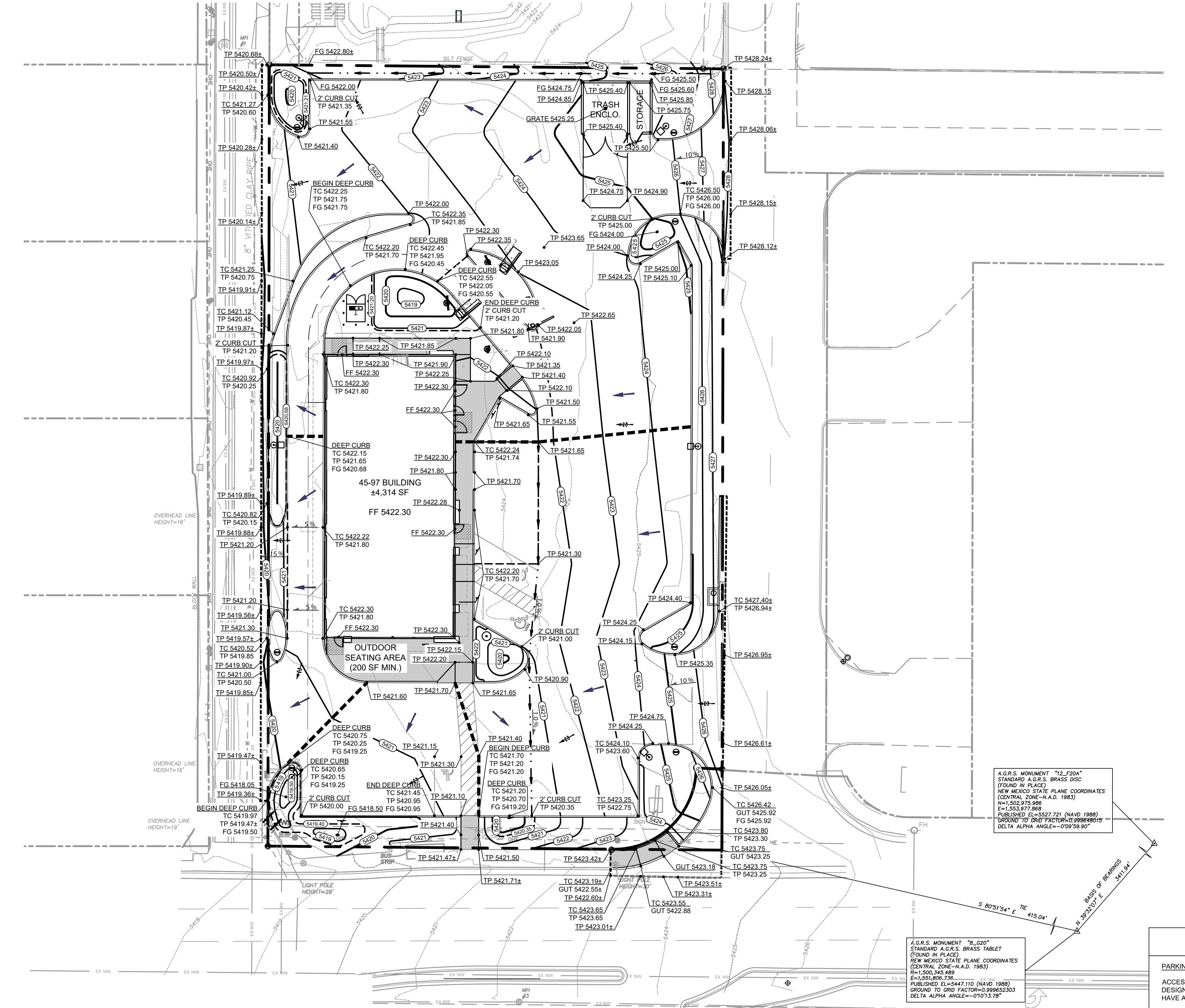
DATE SUBMITTED: 06/11/2018

By: Cesar Segovia

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____



Know what's below.
Call before you dig.

STANDARD ACCESSIBILITY REQUIREMENTS

STANDARD ACCESSIBILITY REQUIREMENTS

BENCHMARK

BENCHMARK 1
A.G.R.S. MONUMENT "12_F20A"
STANDARD A.G.R.S. BRASS DISC (FOUND IN PLACE)
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1983)
 $N=1,502,975.986$, $E=1,553,977.868$
PUBLISHED EL=5527.721 (NAVD 1988)
GROUND TO GRID FACTOR= 0.999648015
DELTA ALPHA ANGLE=-0°09'59.90"

BENCHMARK 1
A.G.R.S. MONUMENT "8_G20"
STANDARD A.G.R.S. BRASS TABLET (FOUND IN PLACE)
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1983)
 $N=1,500,345.489$, $E=1,551,806.736$
PUBLISHED EL=5447.110 (NAVD 1988)
GROUND TO GRID FACTOR= 0.999652303
DELTA ALPHA ANGLE=-0°10'13.78"

GEND

= TOP OF CURB
= TOP OF PAVEMENT
= FINISHED GRADE
= FINISHED FLOOR
MATCH EXISTING GRADE

FORMATION

THESE PLANS ARE SUBJECT TO REVIEW & APPROVAL BY JURISDICTIONAL ENTITIES.



LEGEND

TOP OF CURB
TOP OF PAVEMENT
FINISHED GRADE
SHED FLOOR
EXISTING GRADE

SWALE

GRADE BREAK

RIDGE LINE

EXISTING CONTOUR

PROPOSED CONTOUR

LEVEL LANDING @ 2% MAX SLOPE
IN ANY DIRECTION

PLAN APPROVALS		MTN. SOUTHWEST FIELD EXECUTION TEAM		MCDONALD'S L/C: 30-0031
SIGNATURE (2 REQUIRED)	DATE	OFFICE	ADDRESS	
REGIONAL MGR.		KROC DRIVE - OAK BROOK, ILLINOIS 60521		
CONST. MGR.				
OPERATIONS DEPT.				
REAL ESTATE DEPT.				
CO-SIGN SIGNATURES				
CONTRACTOR				
OWNER				

DESIGNED MAR 2018 BY HJM

DRAWN MAR 2018 BY HJM

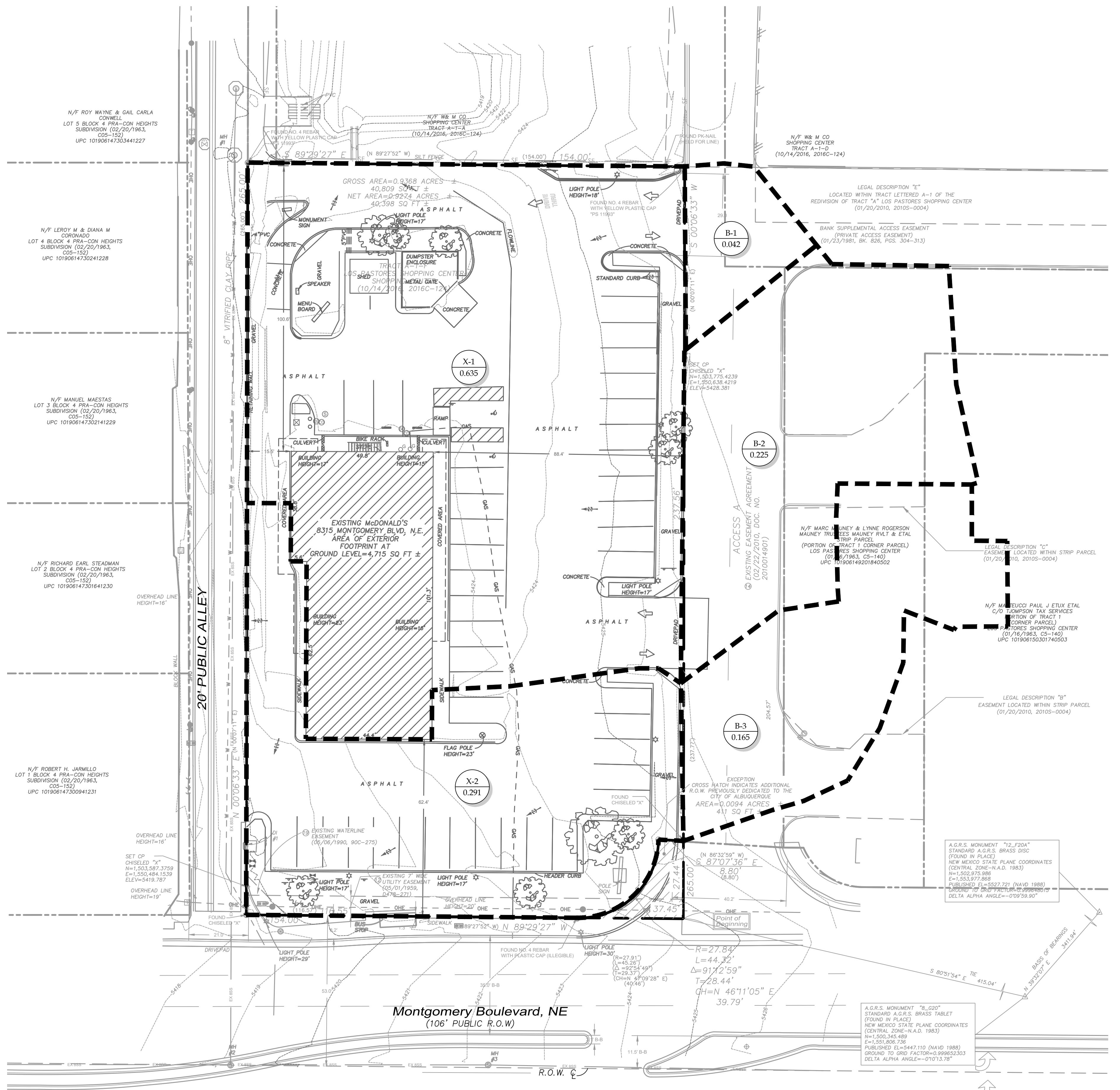
CHECKED 04/04/2018 BY DWL

AS-BUILT

GRADING PLAN C7.0

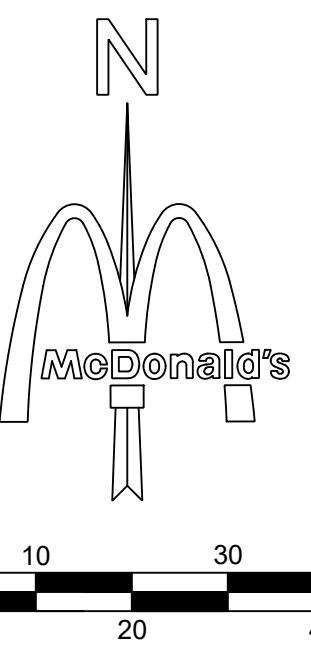
**8315 MONTGOMERY BLVD. NE
ALBUQUERQUE, NM**

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW, AGENCY APPROVAL, AND COMMENT UNDER THE AUTHORITY OF G. ROBERT ADAMS, P.E. REGISTRATION No. 15142, ON 06/08/18 THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES



PRE-DEVELOPMENT 100-YEAR, 6-HOUR RUNOFF CALCULATIONS							
Drainage Area Number	Area (ac)	Land Treatment Condition			Excess Precipitation (in)	Volume (ac/ft)	Peak Discharge (cfs)
		A	B	C			
X-1	0.635	0.000	0.000	0.067	0.568	2.25	0.12
X-2	0.291	0.000	0.000	0.084	0.207	2.05	0.05
B-1	0.042	0.000	0.000	0.006	0.036	2.20	0.01
B-2	0.225	0.000	0.000	0.034	0.191	2.20	0.04
B-3	0.165	0.000	0.000	0.025	0.140	2.20	0.03
Total	1.357	0.000	0.000	0.216	1.141	2.19	0.25
							6.47

Note: Calculations in accordance with the City of Albuquerque Development Process Manual. The site is in Precipitation Zone 3.

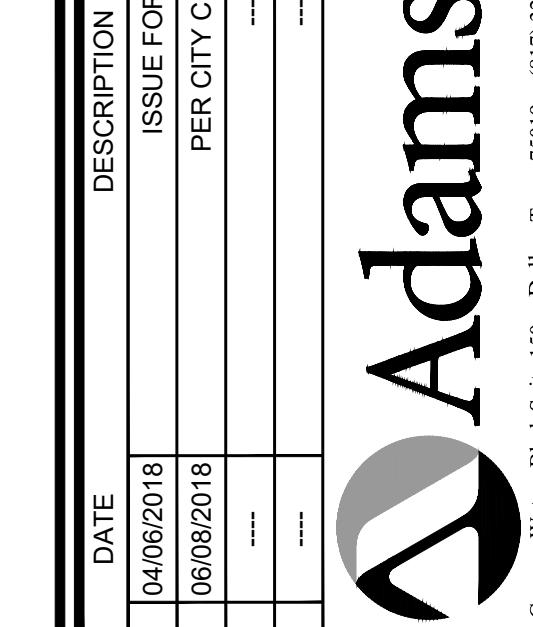


SCALE: 1" = 20'

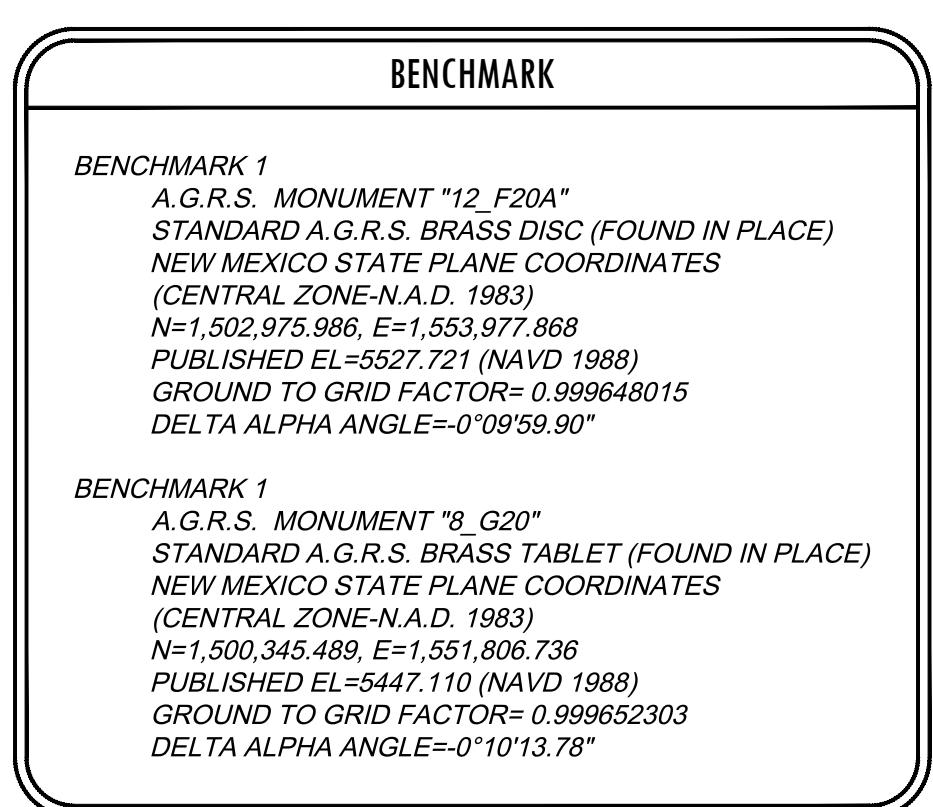
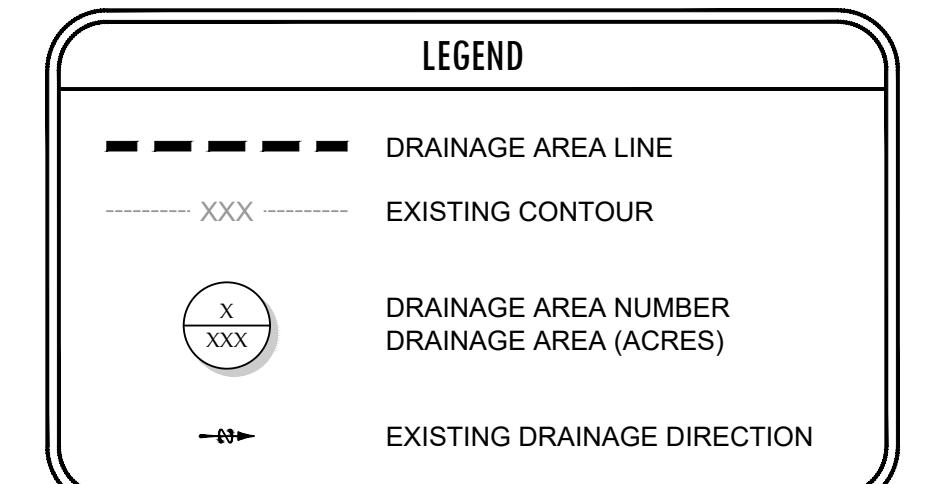
THESE PLANS ARE SUBJECT TO REVIEW & APPROVAL BY JURISDICTIONAL ENTITIES.

OWNER INFORMATION

MCDONALD'S USA, LLC
MOUNTAIN SOUTHWEST FIELD EXECUTION TEAM
511 E. JOHN F. KENNEDY Fwy., STE. 375
IRVING, TX 75062
CONTACT: LEE MORRIS



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Know what's below.
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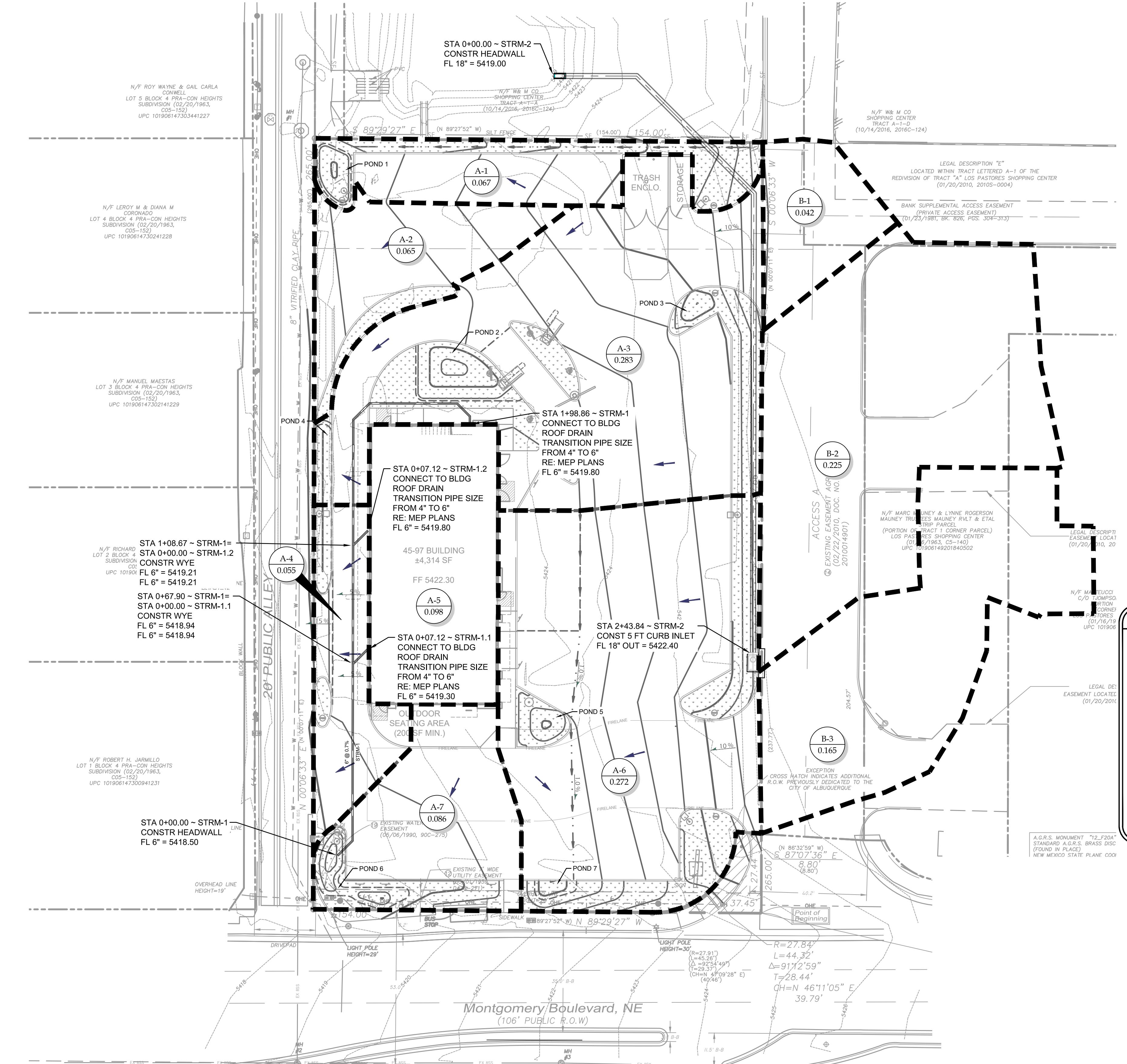
PLAN APPROVALS		SIGNATURE (2 REQUIRED)	DATE
OFFICE	MTN. SOUTHWEST FIELD EXECUTION TEAM	McDonald's USA, LLC:	30/03/2018
ADDRESS	KROC DRIVE - OAK BROOK, ILLINOIS 60521		
REGIONAL MGR			TJR
CONST. MGR			***
CONSTR. DEPT.			***
REAL ESTATE DEPT.			***
CO-SIGN SIGNATURES			
CONTRACTOR			ADAMS
OWNER			RODRIGUEZ

DESIGNED	MAR 2018	TJR
DRAWN	MAR 2018	TJR
CHECKED	04/04/2018	DWL
AS-BUILT		

PRE-DEVELOPED DRAINAGE PLAN

C8.0

Copyright 2018, Adams Engineering



The diagram features the McDonald's golden arches logo with the word "McDonald's" written across it. A vertical line extends from the top of the arches through the center of the "O" in "McDonald's" to point directly upwards, indicating the cardinal direction North. Below the logo is a horizontal scale bar consisting of three black segments separated by two white segments. The first white segment contains the number "10", the second black segment contains the number "20", the third white segment contains the number "30", and the fourth black segment contains the number "40".

THESE PLANS ARE SUBJECT TO REVIEW & APPROVAL BY JURISDICTIONAL ENTITIES.

OWNER INFORMATION

MCDONALD'S USA, LLC
MOUNTAIN SOUTHWEST
FIELD EXECUTION TEAM
1 E. JOHN CARPENTER FRWY, STE. 375
IRVING, TX 75062
(214) 533-7382
CONTACT: LEE MORRIS

LEGEND

- — — — DRAINAGE AREA LINE
 - XXX ----- EXISTING CONTOUR
 - XXX — PROPOSED CONTOUR
 -  DRAINAGE AREA NUMBER
DRAINAGE AREA (ACRES)
 - PROPOSED DRAINAGE DIRECTION

BENCHMARK

BENCHMARK 1
A.G.R.S. MONUMENT "12_F20A"
STANDARD A.G.R.S. BRASS DISC (FOUND IN PLACE)
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1983)
 $N=1,502,975.986$, $E=1,553,977.868$
PUBLISHED EL=5527.721 (NAVD 1988)
GROUND TO GRID FACTOR= 0.999648015
DELTA ALPHA ANGLE=-0°09'59.90"

BENCHMARK 1
A.G.R.S. MONUMENT "8_G20"
STANDARD A.G.R.S. BRASS TABLET (FOUND IN PLACE,
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1983)
 $N=1,500,345.489, E=1,551,806.736$
PUBLISHED EL=5447.110 (NAVD 1988)
GROUND TO GRID FACTOR= 0.999652303
DELT A ALPH ANGL F=-0°10'13.78"



Know what's below.
Call 811.

DRAINAGE SUMMARY REPORT

SITE LOCATION - THE SITE IS LOCATED ON AN APPROXIMATELY 0.927 ACRES AT THE NORTHWEST CORNER OF MONTGOMERY BLVD, S.E. AND WYOMING BLVD, S.E. THE SITE IS BORDERED TO THE EAST BY "WELLS FARGO BANK" AND TO THE WEST BY AN ALLEYWAY. PROPOSED CONSTRUCTION WILL INCLUDE A MCDONALD'S RESTAURANT AND ASSOCIATED PAVING, GRADING, LANDSCAPING, UTILITY, AND STORMWATER MANAGEMENT INFRASTRUCTURE.

METHODOLOGY - THE PROPOSED STORMWATER MANAGEMENT SYSTEM WAS EVALUATED ACCORDING TO CHAPTER 22 OF THE CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL. THE SITE IS IN PRECIPITATION ZONE 3. THE 100-YEAR, 6-HOUR FREQUENCY RAINFALL EVENT WAS USED TO CALCULATE PEAK DISCHARGE RATES AND RUNOFF VOLUMES UNDER EXISTING AND PROPOSED CONDITIONS.

EXISTING CONDITIONS - REFER TO SHEET C8.0 FOR THE PRE-DEVELOPED DRAINAGE PLAN FOR THIS SITE. STORMWATER RUNOFF GENERALLY DRAINS NORTHWARD TOWARDS THE DETENTION POND OR SOUTHWEST ACROSS THE SITE UNDER EXISTING CONDITIONS. SHEET C8.0 IDENTIFIES FIVE DRAINAGE DIVIDES FOR THIS SITE. AREA X-1 CONSISTS OF 0.635 ACRES FLOWING OFFSITE TO THE DETENTION POND. AREA X-2 CONTAINS 0.291 ACRES DRAINING SOUTHWEST. OFFSITE AREAS B-1 (0.042 AC) AND B-2 (0.225 AC) DRAINS ONTO X-1. AREA B-3 (0.165) DRAINS ONTO X-2. PEAK DISCHARGE RATE AND RUNOFF VOLUME CALCULATIONS FOR EXISTING CONDITIONS ARE PROVIDED ON SHEET C8.0.

PROPOSED CONDITIONS - REFER TO SHEET C8.1 FOR THE POST-DEVELOPED DRAINAGE PLAN. TEN DRAINAGE BASINS ARE IDENTIFIED UNDER PROPOSED CONDITIONS. AREA A-1 (0.067 AC) DRAINS INTO THE OFFSITE DETENTION POND. AREAS A-2 (0.065 AC), A-3 (0.283 AC), A-4 (0.055 AC), A-5 (0.098 AC), A-6 (0.272 AC), AND A-7 (0.086 AC) ALL FILTER THROUGH BIO-RETENTION PONDS BEFORE FLOWING OFFSITE. REFER TO SHEET C8.1 TO SEE THE DRAINAGE BASINS AND CORRESPONDING BRP. AREA B-1 (0.042 AC) DRAINS ONTO A-3. AREA B-2 (0.225 AC) IS CAPTURED BY CURB INLET AND IS PIPED DIRECTLY TO THE OFFSITE DETENTION POND. AREA B-3 (0.165 AC) FLOWS ONTO A-6. THE TOTAL FLOW OFF-SITE OF 4.38 CFS AT THE 100-YEAR STORM EVENT IS LESS THAN THE EXISTING FLOW OF 4.41 CFS. TOTAL REQUIRED BIO-RETENTION (0.34") IS 936 CUBIC FEET WITH AN OVERALL TOTAL PROPOSED STORAGE OF 1281 CUBIC FEET.

CONCLUSIONS - THE OVERALL AMOUNT OF IMPERVIOUS AREA AT THIS SITE WILL BE SIMILAR UNDER THE PROPOSED CONDITIONS AS THE EXISTING SITE. HOWEVER, WATER FLOWING THROUGH THE SITE DRAINS TO BIO-RETENTION PONDS BEFORE EXITING. FURTHER, UNDER SMALLER STORM EVENTS, NEARLY ALL FLOW IS RETAINED AND INFILTRATED ON-SITE WHILE EVEN THE 100-YEAR STORM FLOWS OFF THE SITE ARE KEPT BELOW EXISTING VOLUMETRIC FLOW RATE. BECAUSE OF THE IMPROVEMENTS, QUALITY AND QUANTITY OF FLOW IS IMPROVED WHEN COMPARED TO THE EXISTING SITE.

EXISTING VOLUMETRIC FLOW RATE. BECAUSE OF THE IMPROVEMENTS, QUALITY AND QUANTITY OF FLOW IS IMPROVED WHEN COMPARED TO THE EXISTING SITE.

OFFICE	MTN. SOUTHWEST FIELD EXECUTION TEAM	McDONALD'S L/C: 30-0031
ADDRESS	KROC DRIVE - OAK BROOK, ILLINOIS 60521	
 <p>McDonald's USA, LLC</p> <p>These drawings and specifications are the confidential and proprietary property of McDonald's USA, LLC and shall not be copied or reproduced without written authorization. The contract documents were prepared for use on this specific site in conjunction with its issue date and are not suitable for use on a different site or at a later time. Use of these drawings for reference or example on another project requires the services of properly licensed architects and engineers. Reproduction of the contract documents for reuse on another project is not authorized.</p>		
<p>8315 MONTGOMERY BLVD. NE ALBUQUERQUE, NM</p>		

PLAN APPROVALS		CO-SIGN SIGNATURES	
	SIGNATURE (2 REQUIRED)	DATE	
L MGR.			
GR.			
NS DEPT.			
ATE DEPT.			
TOR			

	DATE	BY
DESIGNED	MAR 2018	TJR
DRAWN	MAR 2018	TJR
CHECKED	04/04/2018	DWL
AS-BUILT		
POST-DEVELOPED DRAINAGE PLAN		
C8 1		

100-YEAR, 6-HOUR HYDRAULIC CALCULATIONS																						
Line ID	Upstream Station	Downstream Station	Pipe Length	Pipe Slope	Drainage Area Designation	Time at Inlet	Time in Pipe	Cumulative Time	Peak Flow	Cumulative Peak Flow	Pipe Diameter	Friction Slope	Hydraulic Gradient		Velocity In	Velocity Out	V1^2/2g	V2^2/2g	Loss Coefficient	Velocity Head Loss	Upstream Invert Elev.	Downstream Invert Elev.
													Upstream	Downstream	(ft/sec)	(ft/sec)	(ft)	(ft)	"K"	(ft)	(ft)	(ft)
-	-	-	(ft)	(ft/r)	-	(min)	(min)	(min)	(cfs)	(cfs)	(in)	(ft/ft)	-	-	(ft/sec)	(ft/sec)	(ft)	(ft)	"K"	(ft)	(ft)	(ft)
STRM-1.2	0+07.12	0+00.00	7.12	0.0828	A-5	5.00	0.16	5.16	0.1	0.1	6	0.0007	5419.49	5419.48	0.00	0.75	0.00	0.01	0.35	0.01	5418.49	5418.10
STRM-1.1	0+07.12	0+00.00	7.12	0.0500	A-5	5.00	0.16	5.16	0.1	0.1	6	0.0007	5419.46	5419.45	0.00	0.75	0.00	0.01	0.35	0.01	5418.49	5418.10
STRM-1	1+98.86	1+08.67	90.19	0.0065	A-5	5.00	1.50	6.50	0.2	0.2	6	0.0012	5419.60	5419.48	0.00	1.00	0.00	0.02	0.35	0.02	5419.18	5419.21
STRM-1	1+08.67	0+67.90	40.77	0.0065	STRM-1.2	6.50	0.90	7.40	0.1	0.3	6	0.0007	5419.48	5419.45	1.00	0.75	0.02	0.01	0.35	0.00	5419.21	5418.94
STRM-1	0+67.90	0+00.00	67.90	0.0065	STRM-1.1	7.40	1.50	8.91	0.1	0.5	6	0.0007	5419.45	5419.40	0.75	0.75	0.01	0.01	0.35	0.01	5418.94	5418.50
STRM-2	2+43.84	0+00.00	243.84	0.0139	B-2	5.00	6.68	11.68	1.1	1.1	18	0.0001	0.02	0.00	0.00	0.61	0.00	0.01	0.35	0.01	5422.40	5419.00

BIORETENTION VOLUME CALCULATIONS		
	SF / CF	ac / ac-ft
Total On-site Impervious Area =	33039.69	0.758
Required Retention Volume (0.34" / acre) =	936	0.021
Retention Volume Provided =	1281	0.029

FIRST FLUSH VOLUME CALCULATIONS				
Pond #	Drainage Areas	Impervious Area (Ac)	FF Required Volume (cf)	FF Provided Volume (cf)
1	A-1	0.037	46	141
2	A-3, B-1	0.087	108	754
3	A-3, B-1	0.087	108	40
4	A-3, B-1	0.087	108	114
5	A-6	0.074	91	59
6	A-5, A-7	0.167	206	137
7	A-6, B-3	0.214	264	37
Off-Site	A-2, A-4	0.107	132	-
Total	All	0.861	1062	1281

BIO-RETENTION POND 1 STAGE-STORAGE VOLUME					
Elevation	Area	Avg. Area	Inc. Depth	Inc. Volume	Total Volume
	(sq. ft.)	(sq. ft.)	(ft.)	(cu. Ft.)	(cu. ft.)
5419.95	0.0		4.8	0.1	0.0
5420.00	9.6				0.2
		104.0	1.0	104.0	
5421.00	154.5				104.2
		176.5	0.2	37.1	
5421.21	198.4				141.3

BIO-RETENTION POND 2 STAGE-STORAGE VOLUME					
Elevation	Area	Avg. Area	Inc. Depth	Inc. Volume	Total Volume
	(sq. ft.)	(sq. ft.)	(ft.)	(cu. Ft.)	(cu. ft.)
5418.95	0.0		20.1	0.1	1.0
5419.00	40.2				
		270.6	1.0	270.6	
5420.00	251.7				271.6
		376.3	1.0	376.3	
5421.00	500.9				647.9
		530.4	0.2	106.1	
5421.20	559.8				753.9

BIO-RETENTION POND 3 STAGE-STORAGE VOLUME					
Elevation	Area	Avg. Area	Inc. Depth	Inc. Volume	Total Volume
	(sq. ft.)	(sq. ft.)	(ft.)	(cu. Ft.)	(cu. ft.)
5423.95	0.0		0.1	0.1	0.0
5424.00	0.1				0.0
		40.5	1.0	40.5	
5425.00	80.8				40.5

POST-DEVELOPMENT 100-YEAR, 6-HOUR RUNOFF CALCUL							