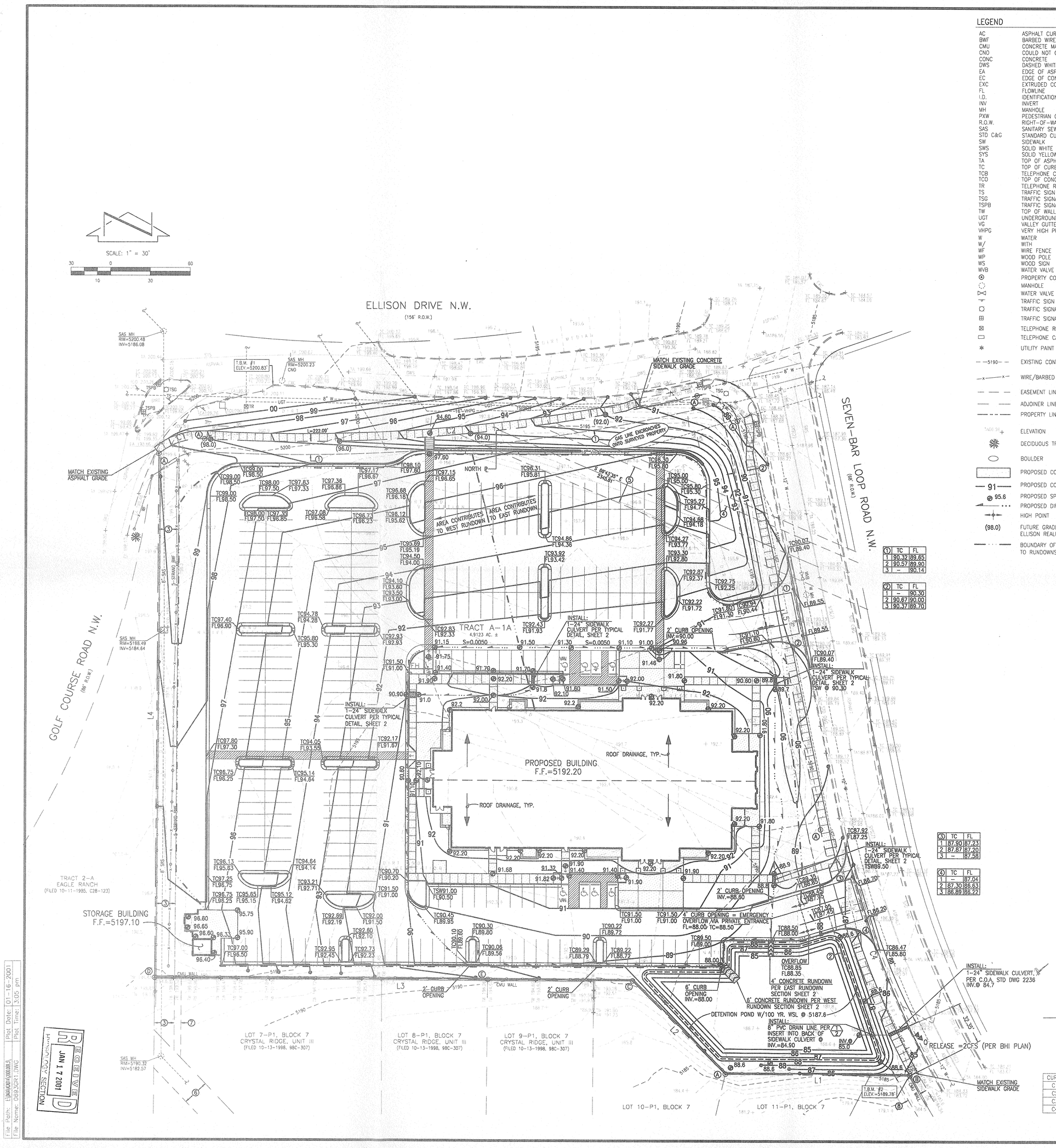


LEGEND

AC	ASPHALT CURB
BWF	BARBED WIRE FENCE
CMU	CONCRETE MASONRY UNIT
CNO	COULD NOT OPEN
CONC	CONCRETE
DWS	DASHED WHITE STRIPE
EA	EDGE OF ASPHALT
EC	EDGE OF CONCRETE
EXC	EXTRUDED CONCRETE CURB
FL	FLOWLINE
I.D.	IDENTIFICATION
INV	INVERT
MH	MANHOLE
PXW	PEDESTRIAN CROSSWALK
R.O.W.	RIGHT-OF-WAY
SAS	SANITARY SEWER
STD C&G	STANDARD CURB AND GUTTER
SW	SIDEWALK
SWS	SOLID WHITE STRIPE
SYS	SOLID YELLOW STRIPE
TA	TOP OF ASPHALT
TC	TOP OF CURB
TCB	TELEPHONE CABINET
TCO	TOP OF CONCRETE
TR	TELEPHONE RISER
TS	TRAFFIC SIGN
TSG	TRAFFIC SIGNAL
TSPB	TRAFFIC SIGNAL PULLBOX
TW	TOP OF WALL
UGT	UNDERGROUND TELEPHONE
VG	VALLEY GUTTER
VHPG	VERY HIGH PRESSURE GAS LINE
W	WATER
W/	WITH
WF	WIRE FENCE
WP	WOOD POLE
WS	WOOD SIGN
WVB	WATER VALVE BOX
	PROPERTY CORNER
	MANHOLE
	WATER VALVE BOX
	TRAFFIC SIGN
	TRAFFIC SIGNAL
	TRAFFIC SIGNAL PULLBOX
	TELEPHONE RISER
	TELEPHONE CABINET
*	UTILITY PAINT MARK
—5190—	EXISTING CONTOUR LINE
—x—x—	WIRE/BARBED WIRE FENCE
	EASEMENT LINE
	ADJOINER LINE
	PROPERTY LINE
5200.34 +	ELEVATION
	DECIDUOUS TREE
	BOULDER
	PROPOSED CONCRETE
—91—	PROPOSED CONTOUR
95.6	PROPOSED SPOT ELEVATION
	PROPOSED DIRECTION OF FLOW
	HIGH POINT
(98.0)	FUTURE GRADE (±) PER GOLF COURSE / ELLISON REALIGNMENT
	BOUNDARY OF AREAS CONTRIBUTING TO RUNDOWNS

CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM 260-1990 (ALBUQUERQUE AREA), 1-800-321-ALERT(2537) (STATEWIDE), FOR LOCATION OF EXISTING UTILITIES.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INTERPRETATIONS IT MAKES WITHOUT FIRST CONTACTING THE ENGINEER AS REQUIRED ABOVE.
3. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
4. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.
5. IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS CONDUCTED ONLY PRELIMINARY INVESTIGATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THIS INVESTIGATION IS NOT CONCLUSIVE, AND MAY NOT BE COMPLETE, THEREFORE, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. 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.
6. 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.
7. BACKFILL COMPACTION SHALL BE ACCORDING TO RESIDENTIAL STREET USE.
8. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
9. THE DESIGN OF PLANTERS AND LANDSCAPED AREAS IS NOT PART OF THIS PLAN. ALL PLANTERS AND LANDSCAPED AREAS ADJACENT TO THE BUILDING(S) SHALL BE PROVIDED WITH POSITIVE DRAINAGE TO AVOID ANY PONDING ADJACENT TO THE STRUCTURE. FOR CONSTRUCTION DETAILS, REFER TO LANDSCAPING PLAN.

EROSION CONTROL MEASURES:

1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY.
2. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.
3. THE CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" PRIOR TO BEGINNING CONSTRUCTION.
4. ANY AREAS OF EXCESS DISTURBANCE (TRAFFIC ACCESS, STORAGE YARD, EXCAVATED MATERIAL, ETC.) SHALL BE RE-SEEDED ACCORDING TO C.O.A. SPECIFICATION 1012 "NATIVE GRASS SEEDING". THIS WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION, THEREFORE, NO SEPARATE PAYMENT WILL BE MADE.

APPROVALS	NAME	DATE
SIDEWALK INSPECTOR		
STORM DRAIN MAINTENANCE		

①	TC	FL
1	90.32	89.65
2	90.57	89.90
3	–	90.14

②	TC	FL
1	–	90.30
2	90.67	90.00
3	90.37	89.70

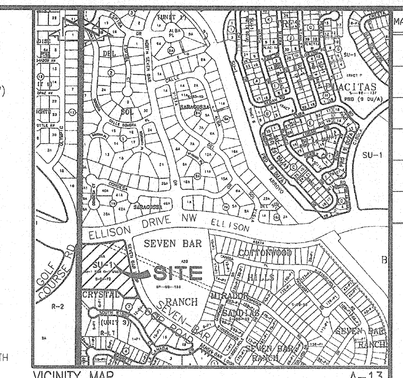
③	TC	FL
1	87.90	87.23
2	87.87	87.20
3	–	87.58

④	TC	FL
1	–	87.04
2	87.30	86.63
3	86.89	86.22

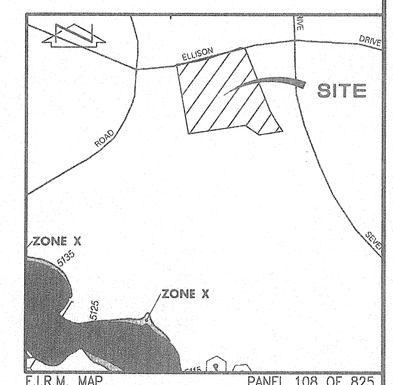
BOUNDARY TABLES

LINE	DIRECTION	DISTANCE
L1	N 89°40'35" W	138.91'
L2	N 44°46'12" W	99.92'
L3	N 89°45'11" W	359.92'
L4	N 00°15'33" E	400.38'
L5	S 11°36'02" E	318.26'

CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA
C1	50.00'	37.00'	N 71°56'08" E	36.16'	42°23'56"
C2	1278.00'	373.40'	N 84°45'54" E	372.07'	16°44'26"
C3	25.00'	40.15'	S 57°36'06" E	35.97'	92°00'26"
C4	684.00'	200.47'	S 19°56'16" E	199.75'	16°47'33"



VICINITY MAP A-13
SCALE: 1" = 750'



F.I.R.M. MAP PANEL 108 OF 825
SCALE: 1" = 500'±

PROJECT BENCHMARK

USGS BRASS TABLET STAMPED "BLACK-2 1977", SET FLUSH WITH GROUND, NEAR THE SOUTHWEST CORNER OF THE INTERSECTION OF GOLF COURSE ROAD N.W. WITH McMAHON BOULEVARD N.W.
ELEVATION = 5213.93 FEET (M.S.L.D.)

T.B.M. #1

CHISELED "□" ON TOP OF CURB AT END OF EXTRUDED CURB
ELEVATION = 5200.83 FEET (M.S.L.D.)

T.B.M. #2

TOP OF P.K. NAIL AND WASHER (NO I.D.) IN TOP OF WALL
ELEVATION = 5189.78 FEET (M.S.L.D.)

LEGAL DESCRIPTION:

TRACT A-1A, SEVEN BAR RANCH

KEYED NOTES

1. 10' PUBLIC UTILITY EASEMENT GRANTED BY PLAT C40-21
2. 10' PUBLIC UTILITY EASEMENT GRANTED BY PLAT 95C-2
3. 15' NEW MEXICO UTILITY, INC. SEWER SERVICE EASEMENT GRANTED BY DOCUMENT FILED 10-21-1983, BOOK MISC. 58-A, PAGE 161, DOC. #83 72565
4. 7' M.S.T.&T. RIGHT-OF-WAY EASEMENT GRANTED BY DOCUMENT FILED 04-21-1965, BOOK R/W 143, PAGE 329, DOC. #50547
5. 30' SOUTHERN UNION GAS COMPANY RIGHT-OF-WAY EASEMENT GRANTED BY DOCUMENT FILED 01-14-1946, BOOK 220, PAGE 547, AND AMENDED BY SUPPLEMENTAL RIGHT-OF-WAY GRANT FILED 03-07-1961, BOOK D585, PAGE 409, DOC. #10263, AS MODIFIED BY RELEASE OF CONVEYANCE FILED 01-12-1989, BOOK MISC. 702-A, PAGE 863, DOC. #892675
6. 20' PUBLIC SANITARY SEWER EASEMENT GRANTED BY PLAT 97C-356 (OFFSITE)
7. ADDITIONAL 5' PUBLIC SANITARY SEWER EASEMENT GRANTED BY PLAT 97C-356 (OFFSITE)
8. 10' PUBLIC UTILITY EASEMENT GRANTED BY PLAT 98C-307 (OFFSITE)

Ⓐ SET #5 REBAR W/CAP STAMPED "NEW MEXICO PS 11184"
Ⓑ FOUND P.K. NAIL W/WASHER (NO I.D.) IN TOP OF WALL
Ⓒ FOUND REBAR W/YELLOW CAP (NO I.D.), TAGGED W/WASHER STAMPED "NMPS 11184"
Ⓓ FOUND #5 REBAR (NO I.D.), TAGGED W/WASHER STAMPED "NMPS 11184"
Ⓔ FOUND REBAR W/CAP STAMPED "PLS 10042" (BENT), 0.24' NORTH OF PROPERTY LINE, NOT HONORED

NOTE:
THIS IS NOT A BOUNDARY SURVEY. APPARENT PROPERTY CORNERS ARE SHOWN FOR ORIENTATION ONLY. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN IS BASED UPON THE SURVEY PERFORMED BY JEFF MORTENSEN & ASSOCIATES, INC., DATED 09/2000.

jma
JEFF MORTENSEN & ASSOCIATES, INC.
☐ 4600-B MIDWAY PARK BLVD. NE.
☐ ALBUQUERQUE ☐ NEW MEXICO 87109
☐ ENGINEERS ☐ SURVEYORS (505) 345-4256
FAX: 505 345-4254 Email: jmainc@swcp.com

2000.069.3

MARK	DATE	REVISION

RECEIVED JAN 17 2001 HYDROLOGY SECTION

The CHURCH of JESUS CHRIST of LATTER-DAY SAINTS
ALBUQUERQUE WEST STAKE CENTER
4500 7-BAR LOOP ROAD N.W., ALBUQUERQUE, NEW MEXICO 87114

SANDERS ROGERS ARCHITECTS, P.C. Architecture Landscape Architecture Interior Design
301 GOLD AVENUE S.W. SUITE 202 ALBUQUERQUE N.M. 87102 (505) 247-1168 FAX (505) 247-0262

RECEIVED JAN 17 2001 HYDROLOGY SECTION

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER
01-16-2001
STAMP

PROJECT FOR
THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS

PROJECT NAME
ALBUQUERQUE WEST STAKE CENTER

PROJECT ADDRESS
4500 7-BAR LOOP ROAD N.W.
ALBUQUERQUE N.M. 87114

SHEET TITLE
GRADING PLAN
(FOR BUILDING PERMIT)

PROJECT DESIGNATION

PROPERTY NUMBER	SHEET NO.
545-1949	
DEVELOPMENT NUMBER	
LE98-346T	
DATE	SHEET __ OF __
2 FEB. 01	

File Path: L:\MAPDATA\0069.A
File Name: 0693GR1.DWG
Plot Date: 01-16-2001
Plot Time: 3:05 pm

RECEIVED JAN 17 2001 HYDROLOGY SECTION

DRAINAGE PLAN

I. EXECUTIVE SUMMARY AND INTRODUCTION:

THIS IS AN UNDEVELOPED SITE WITHIN AN INFILL AREA LOCATED AT THE SOUTHWEST CORNER OF GOLF COURSE ROAD NW AND ELLISON DRIVE NW ON THE WEST SIDE (NORTHWEST MESA). PROPOSED IMPROVEMENTS CONSIST OF A NEW CHURCH WITH ASSOCIATED PARKING AND LANDSCAPING. SITE DRAINAGE IS PREDOMINATELY NORTHWEST TO SOUTHEAST. EXISTING MINOR OFFSITE FLOWS ENTER THE SITE FROM THE NORTH AND WEST FROM THE BORDERING PUBLIC RIGHT OF WAY. THESE FLOWS WILL BE ACCEPTED IN THE DEVELOPED CONDITION, BUT WILL BE PONDED ALONG WITH THE DEVELOPED RUNOFF IN A DETENTION POND AT THE SOUTHEAST CORNER OF THE SITE. FLOWS WILL BE DISCHARGED FROM THE POND AT A CONTROLLED RATE OF 2.0 CFS THROUGH A DRAINPIPE AND A SIDEWALK DRAIN ONTO SEVEN BAR LOOP ROAD NW, WHICH DRAINS INTO THE BLACK DIVERSION CHANNEL. DISCHARGE FROM THIS SITE IS LIMITED TO A RATE OF 2.0 CFS BY A PREVIOUSLY APPROVED CONCEPTUAL DRAINAGE PLAN. THE DOWNSTREAM DISCHARGE CAPACITY WAS QUANTIFIED AT 66.3 CFS IN SEVEN BAR LOOP ROAD AT ITS INTERSECTION WITH THE BLACK DIVERSION CHANNEL. THE BLACK DIVERSION CHANNEL WAS DETERMINED TO HAVE A CAPACITY OF 119 CFS AT THE AFOREMENTIONED INTERSECTION BY THAT PLAN. THIS PLAN SEEKS BUILDING PERMIT APPROVAL.

II. PROJECT DESCRIPTION:

AS SHOWN BY CITY ZONE MAP A-13, THIS SITE IS ZONED SU-1 AND IS LOCATED AT THE SOUTHEAST CORNER OF GOLF COURSE ROAD NW AND ELLISON DRIVE NW. THE LEGAL DESCRIPTION IS: TRACT A-1A, SEVEN BAR RANCH. AS SHOWN BY PANEL 108 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS FOR BERNALILLO COUNTY, NEW MEXICO, AND INCORPORATED AREAS, DATED SEPTEMBER 20, 1996, THIS SITE DOES NOT LIE WITHIN, NOR UPSTREAM OF A DESIGNATED FLOOD HAZARD ZONE.

III. BACKGROUND DOCUMENTS:

THE FOLLOWING IS A LIST OF PREVIOUSLY PREPARED DOCUMENTS FOR THIS SITE. THIS LIST MAY NOT BE INCLUSIVE, HOWEVER, REPRESENTS A SUMMARY OF THOSE PLANS AND DOCUMENTS WHICH ARE KNOWN TO THIS PREPARER.

A. TOPOGRAPHIC SURVEY OF TRACT A-1A FOR SANDERS ROGERS ARCHITECTS, PC PREPARED BY JEFF MORTENSEN & ASSOCIATES, INC. ALBUQUERQUE NEW MEXICO, DATED SEPTEMBER 2000. TOPOGRAPHIC AND BOUNDARY INFORMATION SHOWN HEREON HAS BEEN TAKEN FROM THIS SURVEY.

B. CONCEPTUAL DRAINAGE PLAN (A13/D8) FOR PROPOSED PLATTING OF TRACTS A-1A, A-2B, AND A-2A SEVEN BAR RANCH. PREPARED BY BOHHANAN-HUSTON, INC (BHI) BEARING ENGINEER'S STAMP DATE OF 11-29-94.

C. CONCEPTUAL GRADING AND DRAINAGE PLAN (A13/D8) FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT APPROVAL, PREPARED BY JEFF MORTENSEN & ASSOCIATES, INC., BEARING ENGINEER'S STAMP DATED 11-27-2000

IV. EXISTING CONDITIONS:

AT PRESENT, THE SITE IS UNDEVELOPED WITH NO ONSITE OR OFFSITE DRAINAGE FACILITIES. THE SITE IS BOUNDED ON THE EAST BY SEVEN BAR LOOP ROAD AND ON THE NORTH BY ELLISON DRIVE, BOTH OF WHICH ARE FULLY DEVELOPED PUBLIC ROADS. THE SITE IS BOUNDED ON THE WEST BY GOLF COURSE ROAD NW, WHICH DOES NOT HAVE CURB AND GUTTER, AND ON THE SOUTH BY A DEVELOPED RESIDENTIAL SUBDIVISION. THE SITE IS TOPOGRAPHICALLY LOWER THAN BOTH ELLISON AND GOLF COURSE ROADS, AND ONLY RECEIVES MINOR OFFSITE SHEET FLOW FROM THE BORDERING PUBLIC RIGHT-OF-WAY. THE SITE IS TOPOGRAPHICALLY HIGHER THAN THE SUBDIVISION, BUT ONSITE AND OFFSITE FLOWS ARE PREVENTED FROM ENTERING THE SUBDIVISION BY THE EXISTING CMU WALL ALONG THE SOUTHERN BOUNDARY OF THE SITE. THE SITE DRAINS VIA SHEET FLOW FROM NORTHWEST TO SOUTHEAST, AND BY CONCENTRATED FLOW WEST TO EAST ALONG THE CMU WALL AND EXITS ONTO SEVEN BAR LOOP ROAD AT THE SOUTHEAST CORNER OF THE SITE, WHICH DRAINS TO THE BLACK DIVERSION CHANNEL. AT PRESENT THERE IS SUFFICIENT CAPACITY FOR THIS SITE AND TRACT 2-A, THE UNDEVELOPED SITE IMMEDIATELY TO THE EAST ACROSS SEVEN BAR LOOP ROAD. HOWEVER, TH/? SITE IS ALSO IN THE PROCESS OF BEING DEVELOPED. THE PROPOSED DEVELOPMENT OF THIS SITE AT THIS TIME REQUIRES A DECREASED RELEASE OF PEAK DISCHARGE FROM THIS SITE IN ACCORDANCE WITH PREVIOUSLY APPROVED PLANS.

V. DEVELOPED CONDITIONS:

THE PROPOSED DEVELOPMENT CONSISTS OF NEW BUILDING CONSTRUCTION WITH ASSOCIATED PAVED PARKING AND LANDSCAPING IMPROVEMENTS. THERE WILL BE NO CHANGE IN THE MANNER, PEAK RATE OF DISCHARGE OR VOLUME OF OFFSITE FLOWS. ONSITE FLOWS WILL INCREASE, AS A RESULT OF DEVELOPMENT, BUT THE PROPOSED ONSITE DRAINAGE PATTERN WILL MIMIC HISTORIC PATTERNS. OFFSITE AND DEVELOPED ONSITE RUNOFF WILL BE DIRECTED TO A DETENTION POND, SIZED TO CONTAIN THE 100-YEAR DESIGN STORM VOLUME, AND DESIGNED FOR THE CONTROLLED RELEASE OF FLOWS DISCHARGED FROM THIS SITE. THE PROPOSED POND, LOCATED AT THE SOUTHEAST CORNER OF THE SITE, WILL DRAIN THROUGH A DRAINPIPE AND A PROPOSED SIDEWALK DRAIN ONTO SEVEN BAR LOOP ROAD. MAINTENANCE OF THE POND, DRAINPIPE, AND SIDEWALK DRAIN WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE V100 WATER SURFACE LEVEL IN THE POND IS 5187.6 FEET. THE MAXIMUM ELEVATION OF THE POND IS 5188.0 FEET ALLOWING FREEBOARD OF 0.4 FEET. THE POND IS SIZED TO INTERCEPT ALL DEVELOPED ONSITE AND OFFSITE FLOWS AND DISCHARGE ALL RUNOFF THROUGH THE DRAIN PIPE. IN THE EVENT THE DRAINPIPE BECOMES CLOGGED, THE WATER SURFACE WILL REACH THE CURB OPENING AT THE TOP OF THE EASTERNMOST CONCRETE RUNDOWN AND WILL OVERFLOW VIA THE SOUTHERN PRIVATE ENTRANCE UNTIL THE DRAINPIPE IS CLEARED, AND NORMAL CONTROLLED DISCHARGE CAN RESUME. IT IS THE INTENT OF THIS GRADING AND DRAINAGE PLAN THAT THE PEAK DISCHARGE RESULTING FROM THE PROPOSED IMPROVEMENTS NOT EXCEED 2.0 CFS.

VI. GRADING PLAN:

A GRADING PLAN HAS BEEN PREPARED IN SUPPORT OF THIS DRAINAGE SUBMITTAL. THE GRADING PLAN SHOWS: 1) EXISTING GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'0" INTERVALS, 2) PROPOSED GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'0" INTERVALS, 3) THE LIMIT AND CHARACTER OF THE EXISTING IMPROVEMENTS, 4) THE LIMIT AND CHARACTER OF THE PROPOSED IMPROVEMENTS, 5) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES. THE GRADING PLAN APPEARS ON SHEET 1 OF THIS SUBMITTAL.

VII. CALCULATIONS:

THE CALCULATIONS, WHICH APPEAR HEREON, ANALYZE BOTH THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT. THE PROCEDURE FOR 40-ACRE AND SMALLER BASINS, AS SET FORTH IN THE REVISION OF SECTION 22.2, HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY, 1993, HAS BEEN USED TO QUANTIFY THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED. AS SHOWN BY THESE CALCULATIONS, THERE WILL BE AN INCREASE IN THE PEAK RATE OF DISCHARGE AND THE VOLUME OF RUNOFF GENERATED BY THIS SITE. AS FURTHER DEMONSTRATED BY ORIFICE, HYDROGRAPH, CONCRETE RUNDOWN CAPACITY AND POND VOLUME CALCULATIONS, THE PROPOSED DETENTION POND WILL RESTRICT THE PEAK RATE OF DISCHARGE FROM THIS SITE TO 2.0 CFS WHICH IS A NET DECREASE IN THE PEAK RATE OF DISCHARGE GENERATED BY THIS SITE.

VIII. CONCLUSION:

THE PROPOSED DEVELOPMENT OF THIS SITE IS CONSISTENT WITH THE REQUIREMENTS OF THE PREVIOUSLY APPROVED CONCEPTUAL DRAINAGE PLAN RESTRICTING THE PEAK RATE OF DISCHARGE FROM THIS PARCEL TO 2.0 CFS. THIS RESTRICTION IS ACCOMPLISHED BY CONTROLLED RELEASE FROM A PROPOSED ONSITE PRIVATE DETENTION POND, SIZED TO HOLD THE 100-YEAR, 6-HOUR RAINFALL EVENT. THERE ARE NO PUBLIC INFRASTRUCTURE, DPM DESIGN VARIANCES, OR NEW EASEMENTS REQUIRED BY THIS PROJECT. SITE RUNOFF WILL CONTINUE TO DRAIN IN A MANNER CONSISTENT WITH EXISTING PATTERNS WITH A SIGNIFICANT DECREASE IN THE PEAK RATE OF DISCHARGE. THE DISCHARGE FROM THIS FACILITY WILL NOT HAVE AN ADVERSE IMPACT ON THE EXISTING CAPACITY IN SEVEN BAR LOOP ROAD, OR OTHER EXISTING OR PROPOSED DOWNSTREAM DEVELOPMENTS.

CALCULATIONS

SITE CHARACTERISTICS

1. PRECIPITATION ZONE = 1
2. $P_{6,100} = P_{360} = 2.20$
3. TOTAL AREA (A_T) = 214,000 SF/4.91 AC
4. EXISTING LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
A	214,000/4.91	100

5. DEVELOPED LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
B	53,660/1.23	25
D	160,340/3.68	75

6. EXISTING CONDITION

A. VOLUME

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(0.44)(4.91)]/4.91 = 0.44$ IN

$V_{100} = (E_W/12)A_T$

$V_{100} = (0.44/12)4.91 = 0.1800$ AC FT = 7,840 CF

B. PEAK DISCHARGE

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = (1.29)(4.91) = 6.3$ CFS

7. DEVELOPED CONDITION

A. VOLUME

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(0.67)(1.23)+(1.97)(3.68)]/4.91 = 1.64$ IN

$V_{100} = (E_W/12)A_T$

$V_{100} = (1.64/12)4.91 = 0.6710$ AC FT = 29,230 CF

B. PEAK DISCHARGE

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = Q_{100} = (2.03)(1.23)+(4.37)(3.68) = 18.6$ CFS

8 .CONCRETE RUNDOWN CAPACITY (UTILIZING WEIR EQUATION)

$Q=CLH^{3/2}$

WHERE:

A. $Q_{(WEST;\ 10\ DAY)} = 0.657(0.45*Q_{100}) = 5.5$ CFS

(NOTE: APPROX 45% OF RUNOFF IS CONVEYED TO WEST RUNDOWN)
C=2.61
H=0.5
L=5.95 FT. THEREFORE: WEST RUNDOWN = 6 FT. WIDE

B. $Q_{(EAST;\ 10\ DAY)} = 0.657(0.30*Q_{100}) = 3.6$ CFS

(NOTE: APPROX 30% OF RUNOFF IS CONVEYED TO EAST RUNDOWN)
C=2.61
H=0.5
L=3.90 FT. THEREFORE: EAST RUNDOWN = 4 FT. WIDE

9. DISCHARGE CALCULATIONS

A. PIPE INLET CAPACITY (ORIFICE EQUATION)

Q=CA(2gh)1/2

WHERE:
A=0.27SF (8" PIPE W/ 7" ORIFICE PLATE)
g=32.2 FPS
c=0.6
h=2.2 FT
Q=2.0 CFS

B. PIPE DISCHARGE CAPACITY (UTILIZING FLOWMASTER BY HAESTAD METHODS WITH HAZEN-WILLIAMS EQUATION)

WHERE:
P_1=0.00 PSI
P_2=0.00 PSI
Z_1=87.50 FT
Z_2=85.25 FT
L= 25.00 FT
C= 150.00
DIAMETER = 8 IN.
Q=6.1 CFS

* THEREFORE: PIPE INLET CAPACITY GOVERNS

10. POND VOLUME

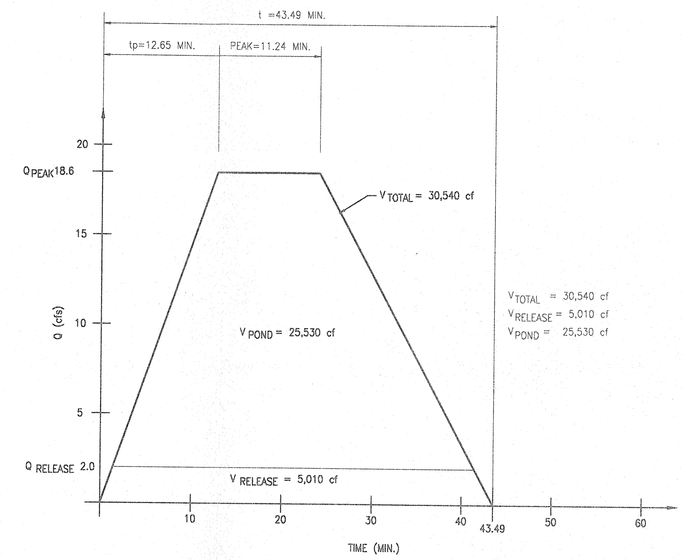
AVERAGE END-AREA METHOD

ELEV (ft)	AREA (sf)	VOL (cf)	Σ VOL (cf)
5,185	7,820		
		8,500	8,500
5,186	9,080		
		9,800	18,300
5,187	10,500		
		11,190	29,490
5,188	11,870		

Vpond = 29,490 Vreq'd = 25,530
Vpond > Vreq'd
V_{100} WATER SURFACE LEVEL = 5,187.6
B
V_{MAX} WATER SURFACE LEVEL = 5,188.0
FREE BOARD = 0.4'

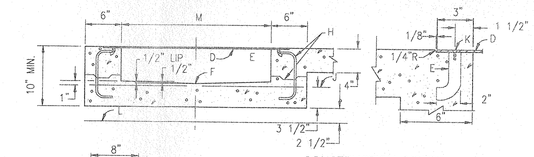
11. COMPARISON

ΔV_{100} = 29,230 - 7,840 = 21,390 CF (INCREASE)
ΔQ_{100} = 6.3 - 2.0 = 4.3 cfs (DECREASE)



HYDROGRAPH
HORIZONTAL SCALE: 1" = 8 MINUTES
VERTICAL SCALE: 1" = 4 cfs

2 cfs / 4.91 = 0.4 cfs/in

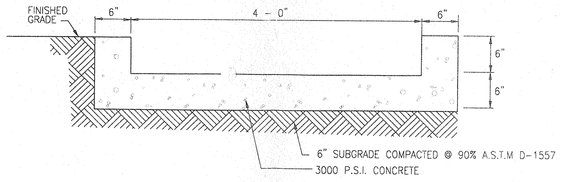


DOWEL DETAIL

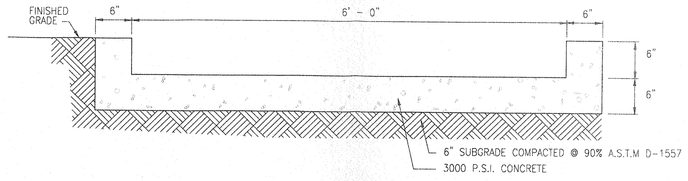
CONSTRUCTION NOTES:

A. JOIN NEAREST SCORE LINE OR WEAKENED PLANE JOINT, PLACE 1/2" EXPANSION JOINT MATERIAL.
B. SIDEWALK OR SETBACK, (VARIABLE).
C. 3" RADIUS, (TYPICAL).
D. 3/8" CHECKERED STEEL PLATE.
E. ROD ANCHOR 1" x 5"
F. "V" INVERT
G. SIDEWALK GRADE
H. DOWEL AND JOINT, (OPTIONAL).
J. GUTTER FLOWLINE ELEV.
K. 3/8" x 1" F.H. C'SUNK STAINLESS STEEL MACHINE SCREW.
L. BOTTOM OF GUTTER
M. DRAIN WIDTH: 24" MAX. 12" MIN.
N. SLOPE 1/4" PER FT. MIN.

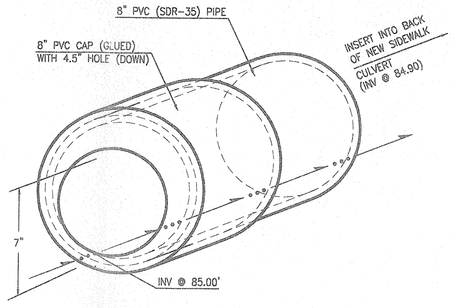
TYPICAL SIDEWALK CULVERT DETAILS
NOT TO SCALE



EAST RUNDOWN SECTION
SCALE: 1" = 1' - 0"



WEST RUNDOWN SECTION
SCALE: 1" = 1' - 0"



ISOMETRIC DETAIL 1/1
SCALE: 1"=3"

jma
JEFF MORTENSEN & ASSOCIATES, INC.
6010-B MIDWAY PARK BLVD. NE.
ALBUQUERQUE NEW MEXICO 87109
ENGINEERS SURVEYORS (505) 345-4250
FAX: 505 345-4254 Email: jmainc@swcp.com

2000.069.3

MARK	DATE	REVISION

The CHURCH of JESUS CHRIST of LATTER-DAY SAINTS
ALBUQUERQUE WEST STAKE CENTER
4500 7-BAR LOOP ROAD N.W., ALBUQUERQUE, NEW MEXICO 87114

SANDERS ROGERS ARCHITECTS, P.C. Architecture Landscape Architecture Interior Design
301 GOLD AVENUE S.W. SUITE 202 ALBUQUERQUE N.M. 87102 (505) 247-1168 FAX (505) 247-0262

JEFF REY G. MORTENSEN NEW MEXICO 8547 PROFESSIONAL ENGINEER
01-16-2001
STAMP

PROJECT FOR
THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS

PROJECT NAME
ALBUQUERQUE WEST STAKE CENTER

PROJECT ADDRESS
4500 7-BAR LOOP ROAD N.W.
ALBUQUERQUE N.M. 87114

SHEET TITLE
GRADING PLAN (FOR BUILDING PERMIT)

PROJECT DESIGNATION

PROPERTY NUMBER	SHEET NO.
545-1949	
DEVELOPMENT NUMBER	
LE98-346T	
DATE	
2 FEB. 01	SHEET __ OF __

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