LOOP NO. 13

(TXDOT MAP SAT 052101AA)

SHEET 1 OF 2

10' ROW DEDICATION-

REGISTERED PROFESSIONAL LAND SURVEYOR

(0.144 ACRE)

2044-00, 12044-01, & 9153-20

12044-03;

A.D. 20

DATE OF PREPARATION: October 19, 2022

COUNTY OF BEXAR

THE OWNER OF LAND SHOWN ON THIS PLAT, IN PERSON OR THROUGH A DULY AUTHORIZED AGENT, DEDICATES TO THE USE OF THE PUBLIC, EXCEPT AREAS IDENTIFIED AS PRIVATE OR PART OF AN ENCLAVE OR PLANNED UNIT DEVELOPMENT, FOREVER ALL STREETS, ALLEYS, PARKS, WATERCOURSES, DRAINS, EASEMENTS AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESSED.

OWNER/DEVELOPER: K.B. HOME LONE STAR INC 4800 FREDERICKSBURG RD SAN ANTONIO, TEXAS 78229 BY: JASON TOWNSLEY

(210) 349-1111

STATE OF TEXAS COUNTY OF BEXAR

SEAL OF OFFICE THIS

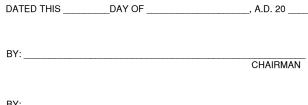
BEFORE ME, THE UNDERSIGNED AUTHORITY ON THIS DAY PERSONALLY APPEARED JASON TOWNSLEY KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED. GIVEN UNDER MY HAND AND

DAY OF

NOTARY PUBLIC, BEXAR COUNTY, TEXAS

THIS SUBDIVISION IS SUBJECT TO A MASTER TREE PLAN (TRE-APP-APP21-38800974 WHICH REQUIRES COMPLIANCE BY THE OWNERS OF ALL PROPERTY WITHIN THE PLAT BOUNDARY, AND THEIR EMPLOYEES AND CONTRACTORS, AND SHALL BE BINDING ON ALL SUCCESSORS IN TITLE EXCEPT FOR OWNERS OF SINGLE-FAMILY RESIDENTIAL LOTS SUBDIVIDED HEREUNDER FOR WHICH CONSTRUCTION OF RESIDENTIAL STRUCTURE HAS BEEN COMPLETED. THE MASTER TREE PLAN IS ON FILE AT THE CITY OF SAN ANTONIO ARBORISTS OFFICE. NO TREES OR UNDERSTORY SHALL BE REMOVED WITHOUT PRIOR APPROVAL OF THE CITY ARBORIST OFFICE PER 35-477(H).

THIS PLAT OF <u>SPANISH TRAILS-UNIT 1 WEST</u> HAS BEEN SUBMITTED TO AND CONSIDERED BY THE PLANNING COMMISSION OF THE CITY OF SAN ANTONIO, TEXAS, IS HEREBY APPROVED BY SUCH COMMISSION IN ACCORDANCE WITH STATE OR LOCAL LAWS AND REGULATIONS; AND/OR WHERE ADMINISTRATIVE EXCEPTION(S) AND/OR VARIANCE(S) HAVE BEEN GRANTED.



PLAT NO. 22-11800038 SUBDIVISION PLAT

BEING A TOTAL OF 18.452 ACRE TRACT OF LAND, INCLUDING A 0.144 ACRE

RIGHT-OF-WAY DEDICATION, AND 0.886 OF AN ACRE OF OFFSITE EASEMENTS,

ESTABLISHING LOTS 1-7, BLOCK 7, LOTS 1-48 AND 901-902, BLOCK 13, LOTS 1-16

PLATTING FOR THIS PLAT. ALL IMPACT FEES MUST BE PAID PRIOR TO WATER INCHES ABOVE FINAL ADJACENT GRADE.

COMMON AREA MAINTENANCE THE MAINTENANCE OF ALL PRIVATE STREETS, OPEN SPACE, GREENBELTS.

THE NUMBER OF WASTEWATER EQUIVALENT DWELLING UNITS (EDU'S) PAID FOR PARKS, TREE SAVE AREAS, INCLUDING LOT 901-902, BLOCK 13, NCB 10780, THIS SUBDIVISION PLAT ARE KEPT ON FILE UNDER THE PLAT NUMBER AT THE SAN DRAINAGE EASEMENTS AND EASEMENTS OF ANY OTHER NATURE WITHIN THIS SUBDIVISION SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNERS, OR THE PROPERTY OWNERS' ASSOCIATION, OR ITS SUCCESSORS OR ASSIGNS AND NOT THE RESPONSIBILITY OF THE CITY OF SAN ANTONIO OR BEXAR COUNTY

RESIDENTIAL FIRE FLOW:

RESIDENTIAL FINISHED FLOOR

THE PUBLIC WATER MAIN SYSTEM HAS BEEN DESIGNED FOR A MINIMUM FIRE FLOW TRACT OF LAND RECORDED IN DOCUMENT NUMBER 20210354816 OF THE OFFICIAL DEMAND OF 1000 GPM AT 25 PSI RESIDUAL PRESSURE TO MEET THE CITY OF SAN PUBLIC RECORDS OF BEXAR COUNTY, TEXAS, OUT OF THE NOPOMUCINO ANTONIO'S FIRE FLOW REQUIREMENTS FOR THE RESIDENTIAL DEVELOPMENT. THE MONTOYA SURVEY NUMBER 21, ABSTRACT 469, IN NEW CITY BLOCK 10780, IN THE FIRE FLOW REQUIREMENTS FOR INDIVIDUAL STRUCTURES WILL BE REVIEWED CITY OF SAN ANTONIO, BEXAR COUNTY, TEXAS PRIOR TO BUILDING PERMIT APPROVAL IN ACCORDANCE WITH THE PROCEDURES SET FORTH BY THE CITY OF SAN ANTONIO DIRECTOR OF DEVELOPMENT SERVICES. AND THE SAN ANTONIO FIRE DEPARTMENT FIRE MARSHAL

OPEN SPACE:

WATER AND/OR WASTEWATER IMPACT FEES WERE NOT PAID AT THE TIME OF RESIDENTIAL FINISHED FLOOR ELEVATIONS MUST BE A MINIMUM OF EIGHT (8)

LOT 901-902, BLOCK 13, NCB 10780, IS DESIGNATED AS OPEN SPACE AND AS A COMMON AREA.

TxDOT NOTES:

FOR RESIDENTIAL DEVELOPMENT DIRECTLY ADJACENT TO STATE RIGHT-OF-WAY. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR ADEQUATE SET-BACK AND/OR SOUND ABATEMENT MEASURES FOR FUTURE NOISE

2. MAXIMUM ACCESS POINTS TO STATE HIGHWAY FROM THIS PROPERTY WILL BE REGULATED AS DIRECTED BY "ACCESS MANAGEMENT MANUAL". THIS PROPERTY IS ELIGIBLE FOR A MAXIMUM TOTAL OF $\underline{1}$ ACCESS POINT(S) ALONG $\underline{\text{STATE LOOP } 13}$ (SOUTH W. W. WHITE ROAD), BASED ON THE OVERALL PLATTED HIGHWAY

3. IF SIDEWALKS ARE REQUIRED BY APPROPRIATE CITY ORDINANCE, A SIDEWALK PERMIT MUST BE APPROVED BY TXDOT PRIOR TO CONSTRUCTION WITHIN STATE RIGHT-OF-WAY. LOCATIONS OF SIDEWALKS WITHIN STATE RIGHT-OF-WAY SHALL BE DIRECTED BY TXDOT.

FRONTAGE OF 622.95 LINEAR FEET.

THE OWNER DEDICATES THE SANITARY SEWER AND/OR WATER MAINS TO THE SAN ANTONIO WATER SYSTEM UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY THE SAN ANTONIO WATER SYSTEM.

CLEAR VISION:

CLEAR VISION AREAS MUST BE FREE OF VISUAL OBSTRUCTIONS IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, OR LATEST REVISION THEREOF

EASEMENTS FOR FLOODPLAINS;

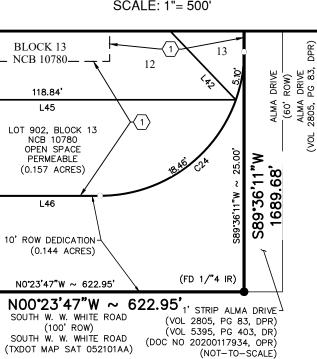
THE DRAINAGE EASEMENTS WERE DELINEATED TO CONTAIN THE LESSER OF THE BOUNDARIES OF THE 1% ANNUAL CHANCE (100-YEAR) FLOOD ZONE ESTABLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) IN ACCORDANCE WITH DEIRM PANEL 48029C0420G, DATED SEPTEMBER 29, 2010, OR THE 1% ANNUAL CHANCE (100-YEAR) ULTIMATE DEVELOPMENT CONDITION WATER SURFACE ELEVATION; OR THE 4% ANNUAL CHANCE (25-YEAR) ULTIMATE DEVELOPMENT FLOODPLAIN PLUS FREEBOARD. CONSTRUCTION, IMPROVEMENTS, OR STRUCTURES WITHIN THE DRAINAGE EASEMENTS AND FLOODPLAIN ARE PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL FROM THE FLOODPLAIN ADMINISTRATOR OF THE CITY OF SAN ANTONIO OR BEXAR COUNTY.

DRAINAGE EASEMENT ENCROACHMENTS:

NO STRUCTURE, FENCES, WALLS OR OTHER OBSTRUCTIONS THAT IMPEDE DRAINAGE SHALL BE PLACED WITHIN THE LIMITS OF THE DRAINAGE EASEMENTS SHOWN ON THIS PLAT. NO LANDSCAPING OR OTHER TYPE OF MODIFICATIONS, WHICH ALTER THE CROSS-SECTIONS OF THE DRAINAGE EASEMENTS. AS APPROVED. SHALL BE ALLOWED WITHOUT THE APPROVAL OF THE DIRECTOR OF TCI OR DIRECTOR OF PUBLIC WORKS. THE CITY OF SAN ANTONIO AND BEXAR COUNTY SHALL HAVE THE RIGHT OF INGRESS AND EGRESS OVER THE GRANTOR'S ADJACENT PROPERTY TO REMOVE ANY IMPEDING OBSTRUCTIONS PLACED WITHIN THE LIMITS OF SAID DRAINAGE EASEMENT AND TO MAKE ANY MODIFICATIONS OR IMPROVEMENTS WITHIN SAID DRAINAGE EASEMENTS.

SHEET 2 OF 2 SHEET 1 OF 2

INDEX MAP





- COORDINATES SHOWN ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 NAD83 (NA2011) EPOCH 2010.00 FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE DISPLAYED IN GRID VALUES DERIVED FROM THE NGS COOPERATIVE CORS NETWORK
- BEARINGS ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 NAD83 (NA2011) EPOCH 2010.00, FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED

STATE OF TEXAS

I HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN THIS PLAT TO THE MATTERS OF STREETS, LOTS AND DRAINAGE LAYOUT. TO THE BEST OF MY KNOWLEDGE THIS PLAT CONFORMS TO ALL REQUIREMENTS OF THE UNIFIED DEVELOPMENT CODE, EXCEPT FOR THOSE VARIANCES GRANTED BY THE SAN ANTONIO PLANNING COMMISSION.

STATE OF TEXAS COUNTY OF BEXAR

I HEREBY CERTIFY THAT THE ABOVE PLAT CONFORMS TO THE MINIMUM STANDARDS SET FORTH BY THE TEXAS BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS ACCORDING TO AN ACTUAL SURVEY MADE ON THE GROUND BY: PAPE-DAWSON ENGINEERS, INC.

> MATCHLINE "A"- SEE SHEET 1 OF 2 REGISTERED PROFESSIONAL LAND SURVEYOR

UNPLATTED 89.251 AC

KB HOME LONE

(DOC NO

PLAT NOTES APPLY TO EVERY PAGE OF THIS MULTIPLE PAGE PLAT

> SEE THIS SHEET FOR LINE AND CURVE TABLES

SHEET 2 OF 2

EASEMENT," "SANITARY SEWER EASEMENT" AND/OR "RECYCLED WATER EASEMENT" FOR THE PURPOSE OF INSTALLING, CONSTRUCTING, RECONSTRUCTING, MAINTAINING, REMOVING, INSPECTING, PATROLLING, AND ERECTING UTILITY INFRASTRUCTURE AND SERVICE FACILITIES FOR THE REASONS DESCRIBED ABOVE. CPS ENERGY AND SAWS SHALL ALSO HAVE THE RIGHT SINCLAIR RD TO RELOCATE SAID INFRASTRUCTURE AND SERVICE FACILITIES WITHIN EASEMENT AND RIGHT-OF-WAY AREAS, TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS OVER GRANTOR'S ADJACENT LANDS FOR THE PURPOSE OF ACCESSING SUCH INFRASTRUCTURE AND SERVICE FACILITIES AND THE RIGHT TO REMOVE FROM SAID LANDS ALL TREES OR PARTS THEREOF, OR OTHER OBSTRUCTIONS WHICH ENDANGER OR MAY INTERFERE WITH THE EFFICIENCY OF WATER, SEWER, GAS, AND/OR ELECTRIC INFRASTRUCTURE AND SERVICE K-BER SQUARE FACILITIES. NO BUILDING, STRUCTURE, CONCRETE SLABS, OR WALLS WILL BE PLACED WITHIN EASEMENT AREAS WITHOUT AN ENCROACHMENT AGREEMENT WITH THE RESPECTIVE UTILITY. OF CPS ENERGY OR SAWS INFRASTRUCTURE AND SERVICE FACILITIES, LOCATED WITHIN SAID EASEMENTS, DUE TO GRADE CHANGES OR GROUND ELEVATION ALTERATIONS SHALL BE CHARGED TO THE PERSON OR PERSONS DEEMED RESPONSIBLE FOR SAID GRADE CHANGES OR GROUND FI EVATION AI TERATIONS. E SOUTHCROSS FLECTRIC GAS WATER SEWER DRAINAGE TELEPHONE CARLE TV FASEMENTS OR ANY DESCRIBED HEREON. WIDE ELECTRIC AND GAS EASEMENTS WHEN LOTS ARE SERVED ONLY BY UNDERGROUND ELECTRIC AND GAS FACILITIES **LOCATION MAP**

CITY OF

SAN ANTONIO

CPS/SAWS/COSA UTILITY

THE CITY OF SAN ANTONIO AS PART OF ITS ELECTRIC, GAS, WATER, AND WASTEWATER

SYSTEMS - CITY PUBLIC SERVICE BOARD (CPS ENERGY) AND SAN ANTONIO WATER SYSTEM (SAWS) - IS HEREBY DEDICATED EASEMENTS AND RIGHTS-OF-WAY FOR UTILITY, TRANSMISSION

AND DISTRIBUTION INFRASTRUCTURE AND SERVICE FACILITIES IN THE AREAS DESIGNATED ON

. ANY CPS ENERGY OR SAWS MONETARY LOSS RESULTING FROM MODIFICATIONS REQUIRED

THIS PLAT DOES NOT AMEND, ALTER, RELEASE OR OTHERWISE AFFECT ANY EXISTING

OTHER EASEMENTS FOR UTILITIES UNLESS THE CHANGES TO SUCH EASEMENTS ARE

. CONCRETE DRIVEWAY APPROACHES ARE ALLOWED WITHIN THE FIVE (5) AND TEN (10) FOOT

ROOF OVERHANGS ARE ALLOWED WITHIN THE FIVE (5) AND TEN (10) FOOT WIDE ELECTRIC

CURVE TABLE

S10°07'55"E

N44°36'13"E

N44°36'12"E

S44°36'11"W

S45°23'49"E

S45°23'47"E

N44°36'13"E

S45°23'48"E

N46*57'17"E

S1°57'35"W

S45°23'31"E

N44°36'29"E

N1*57'35"E

N43°02'43"W

S69°14'32"W

N50'39'22"W

N14*42'17"E

N45°24'04"W

S44°36'13"W

S44°36'12"W

S45*23'48"E

N44*36'11"E

N45°23'49"W

S45°23'48"E

N: 13687098.20

NOPOMUCINO MONTOYA

ABSTRACT 469

NEW CITY BLOCK 10780

CHORD BEARING CHORD LENGTH

5.07

7.07'

21.21

21.21

21.21

21.21'

21.21'

21.21

20.32

5.73

14.14

14.14

10.65

22.07

10.44

98.62

10.42'

21.21

21.21

21.21

35.36

21.21

21.21

21.21'

£ 2159912.30

5.10'

7.85

23.56

23.56

23.56

23.56'

23.56'

23.56

22.33

5.73

15.71

15.71'

10.65

24.79

10.66

140.43

10.54

23.56

23.56'

23.56

39.27

23.56

23.56

AND GAS EASEMENTS WHEN ONLY UNDERGROUND ELECTRIC AND GAS FACILITIES ARE

PROPOSED OR EXISTING WITHIN THOSE FIVE (5) AND TEN (10) FOOT WIDE EASEMENTS.

19*28'16"

90'00'00"

89*59'58"

90'00'00'

90'00'00'

90'00'00"

90'00'00"

90'00'02"

8517'48"

4*41'36"

90°00'36"

89*59'24"

4'41'36"

94°42'12"

40°43'18

160*55'29"

3012'09"

89*59'26'

89*59'58"

90'00'02"

90*00'00'

90'00'02"

15.00' | 90'00'00'

90°00'00"

CURVE # | RADIUS | DELTA

15.00'

5.00'

15.00'

15.00'

15.00'

15.00'

15.00'

15.00'

15.00'

70.00'

10.00'

10.00'

130.00

15.00'

15.00'

50.00'

20.00'

15.00'

15.00'

15.00'

25.00'

15.00'

15.00'

C1

C3

C4

C5

C6

C7

С8

C9

C10

C11

C12

C13

C14

C15

C16

C17

C18

C19

C20

C21

C22

C23

THIS PLAT AS "ELECTRIC EASEMENT," "ANCHOR EASEMENT," "SERVICE EASEMENT," "OVERHANG EASEMENT," "UTILITY EASEMENT," "GAS EASEMENT," "TRANSFORMER EASEMENT," "WATER

SAWS IMPACT FEE:

ANTONIO WATER SYSTEM

SAWS HIGH PRESSURE

SAWS WASTEWATER EDU:

METER SET AND/OR WASTEWATER SERVICE CONNECTION.

WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO.

RESIDENTIAL FINISHED FLOOR ELEVATION

10.00

109.14

10.00

60.00

52.50'

94.66

115.11

35.33

20.00

15.00'

103.08

64.43

64.68

35.00

40.65

81.82

132.54

218.24

68.02

44.18

200.00

30.92

115.00'

PER PANEL # 48029C0420G

S418'23"W ~ 252.29'

ADMINISTRATOR OF THE CITY OF SAN ANTONIO

LINE TABLE

LINE # | BEARING | LENGTH

N89*36'13"E

N89°36'13"E

N89°36'13"E

N0°23'47"W

N89°36'11"E

S0°23'47"E

N89°36'11"E

S2°05'34"W

N89*36'11"E

N89*36'11"F

S0°23'49"E

N75°34'01"E

N89°36'11"E

S85°40'58"E

S4*19'02"W

N85°40'58"W

S1°07'36"W

S85°41'37"E

S5°59'32"W

S17°51'24"W

S4°42'23"W

S0°23'49"E

N89*36'11"E

N0°23'49"W

_L19---

(VAR WIDTH ROW)

AGUAYO ROAD

N0°23'49"W

35.00

N418'23"E

L26

NOPOMUCINO MONTO

SURVEY NO 21

ABSTRACT 469

NEW CITY BLOCK 1078

UNPLATTED 89.251 AC

KB HOME LONE STAR, INC.

(DOC NO

OPR)

620

[≥

289.36

20210354816,

L2

L3

L4

L5

L7

L8

L9

L10

L11

L12

L13

L14

L15

L16

L17

L18

L19

L20

L21

L22

L23

L24

TO CODDI AIN

L6

A PORTION OF THE TRACT IS BELOW THE GROUND ELEVATION OF 643 FEET WHERE

THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS,

THE OWNER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE

RESIDENTIAL STRUCTURES ARE NOT ALLOWED WITHIN THE CITY OF SAN ANTONIO

RESIDENTIAL STRUCTURES SHALL BE NO LESS THAN ONE FOOT ABOVE THE BASE

ULTIMATE DEVELOPMENT FLOODPLAIN). THE LOWEST ADJACENT GRADE SHALL BE

FLOOD ELEVATION OF THE REGULATORY FLOODPLAIN (CITY OF SAN ANTONIO

AT OR ABOVE THE BASE FLOOD ELEVATION PRE-CONSTRUCTION FLEVATION

CERTIFICATES MAY BE REQUIRED PRIOR TO PERMIT APPROVAL, AND

POST-CONSTRUCTION ELEVATION CERTIFICATES MAY BE REQUIRED PRIOR TO

L25

L26

L27

L28

L29

L30

L31

L32

L33

L35

L36

L37

L38

L39

L40

L41

L42

L43

L45

L46

L47

30.49

S0°23'49"E

16.81

60'

60'

STRIP RESERVATION

(VOL 5395, PG 403, DR) (DOC NO 20200117934, OPR)

1' STRIP RESERVATION

(NOT-TO-SCALE)

(VOL 2805, PG 83, DPR)

(VOL 5395, PG 403, DR)

(DOC NO 20200117934, OPR)

__ (VOL 2805, PG 83, DPR

(NOT-TO-SCALE)

LINE TABLE

LINE # | BEARING | LENGTH

N4°18'23"E

N7**°**29'10"E

N7°29'10"E

N89*36'13"E

N89'36'13"E

S0°23'49"E

S1°07'36"W

S0°23'13"E

N0°23'13"W

S89*36'13"W

S85°41'37"E

S2*05'34"W

N0°23'49"W

S0°23'49"E

S4°42'47"W

N4°42'47"E

N45*56'25"E

S89*36'13"W

S89*36'13"W

N0°23'47"W 523.09'

S0°23'47"E 507.95'

L44 S89*36'13"W

L48 N0°23'49"W

L34 N4"18'23"E

9.52'

54.72

60.00

50.00'

51.81'

17.39

60.93

95.00

126.16

115.11

115.00

115.46

115.46

164.95

115.00

115.00

115.00'

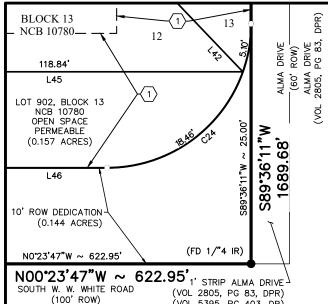
OCCUPANCY OF RESIDENTIAL BUILDINGS, AS DETERMINED BY THE FLOODPLAIN

ULTIMATE DEVELOPMENT FLOODPLAIN. FINISHED FLOOR ELEVATIONS FOR

OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE

NOT-TO-SCALE

SCALE: 1"= 500'





SURVEYOR'S NOTES:

- . MONUMENTS WERE FOUND OR SET AT EACH CORNER OF THE SURVEY BOUNDARY OF THE SUBDIVISION AS NOTED. MONUMENTS AND LOT MARKERS WILL BE SET WITH IRON ROD WITH CAP MARKED "PAPE-DAWSON" OR MAG NAIL WITH DISK MARKED "PAPE-DAWSON" AFTER THE COMPLETION OF UTILITY INSTALLATION AND STREET CONSTRUCTION UNLESS NOTED OTHERWISE.
- DIMENSIONS SHOWN ARE SUBFACE COMBINED SCALE FACTOR: 0.99983 FOR THE SOUTH CENTRAL ZONE.

COUNTY OF BEXAR

LICENSED PROFESSIONAL ENGINEER