MARIPOSA GRANDE PAVING PLAN

FOR

WESTWING BUSINESS PARK

12300 W. MARIPOSA GRANDE
SUN CITY, ARIZONA 85373

A PORTION OF THE SOUTH HALF OF SECTION 12, TOWNSHIP 4 NORTH, RANGE 1 WEST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.

B202117141

Maricopa County Planning & Development Department
OWNER'S COPY
APPROVAL TO CONSTRUCT
Approval of plans and specifications shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of the Maricopa County codes and regulations.

INSPECTION NOTICE
THE COUNTY'S INTERACTIVE VOICE RECORDING (IVR) SYSTEM CURRENTLY USED TO REQUEST INSPECTIONS WILL BE RETIRED ON MAY 24, 2024. CUSTOMERS MUST SCHEDULE INSPECTIONS VIA THE COUNTY'S WEBSITE AT

WWW.MARICOPA.GOV/PLANNING

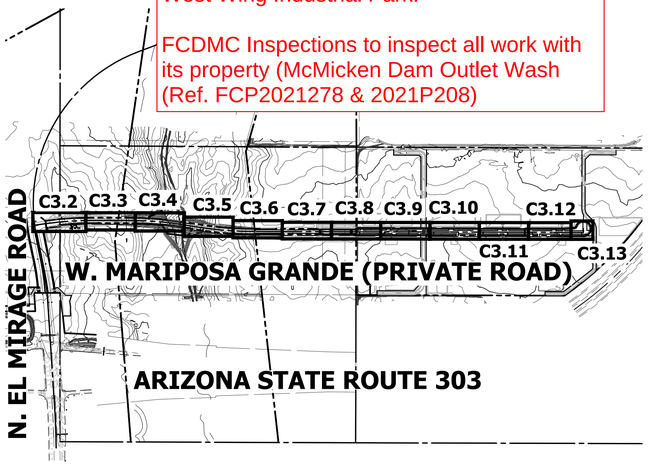
THIS WEBSITE IS ACTIVE AND IMMEDIATE USE IS ENCOURAGED.

NOTIFY INSPECTOR PRIOR TO START OF WORK

Inspection Notes:

MCDOT Inspections to inspect W. Mariposa Grande (Private Road) Improvements from El Mirage Road, east to its terminus in the West Wing Industrial Park.

FCDMC Inspections to inspect all work with its property (McMicken Dam Outlet Wash (Ref. FCP2021278 & 2021P208)

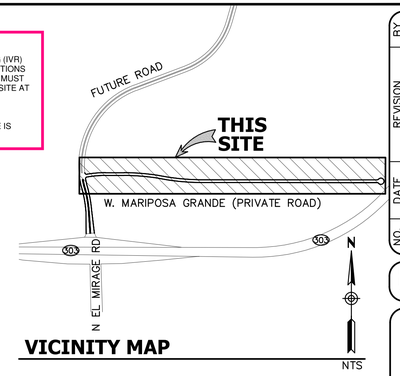


NTS

KEY MAP

SHEET INDEX

	SHEET
OFFSITE PAVING PLAN & PROFILE COVER SHEET & NOTES	C3.0–C3.1
PAVING PLAN & PROFILE FOR PRIVATE ROAD	C3.2–C3.13
ROADSIDE GRADING	C3.14
CULVERT PLAN & PROFILE AND DETAILS	C3.15–C3.17



VICINITY MAP

NTS

OWNER/DEVELOPER

WESTWING BUSINESS PARK, LLC
P.O. BOX 7670
SURPRISE, AZ 85374
PHONE: (623) 910–4365
CONTACT: SILAS ECK
EMAIL: SILAS.ECK@CAXINVESTMENTS.COM

TOTAL SITE AREA : 75.758 AC

APN #: 503-53-045C, 503-53-025U & 503-53-025K

CIVIL ENGINEER

HUNTER ENGINEERING, INC.
10446 N. 74TH STREET, SUITE #140
SCOTTSDALE, ARIZONA 85258
EMAIL: DLEONE@HUNTERENGINEERINGPC.COM
PHONE: (480) 991–3985
CONTACT: DAN LEONE

BASIS OF BEARING

BASIS OF BEARING FOR THIS SURVEY IS A BEARING OF SOUTH 89°55'48" EAST, ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 12, TOWNSHIP 4 NORTH, RANGE 1 WEST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.

EARTHWORK QUANTITIES

FILL: 5,955 CY
CUT: 3,321 CY
NET: 2,634 CY (FILL)

EARTHWORK PROVIDED FOR PERMITTING PURPOSES ONLY CONTRACTOR TO PROVIDE OWN CALCULATIONS FOR CONSTRUCTION PURPOSES.

EARTHWORK ESTIMATE TAKES NO SHRINKAGE OR SWELL INTO ACCOUNT.

THIS EARTHWORK CALCULATION COVERS ONLY THE OFFSITE PORTION OF THE PROJECT. SEE PLAN SHEET C6.0 FOR ONSITE EARTHWORK CALCULATION.

BENCHMARK

EAST QUARTER CORNER S.11,T.4N.,R.1W., FOUND STONE 0.2' UP MARKED 'X' ON TOP ¼ ON WEST.
ELEVATION 1307.674 (NAVD88).

CERTIFICATION:

"I HEREBY CERTIFY THAT THIS DESIGN IS BASED ON ACCURATE FIELD DATA WHICH HAS BEEN CHECKED IN THE FIELD WITHIN 180 DAYS PRIOR TO SUBMISSION FOR CITY APPROVAL."

BY: _____ DATE _____

RECORD DRAWING

I CERTIFY THAT THE LOCATIONS, ELEVATIONS, DEPTHS, AND RECORD DRAWING COMMENTS ACCURATELY REFLECT THE EXISTING FIELD CONDITIONS AND MATERIALS ACTUALLY USED DURING CONSTRUCTION. THIS CERTIFICATION IS BASED ON INFORMATION OBTAINED UNDER MY DIRECT SUPERVISION AND IS CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME _____ DATE _____

REGISTRATION NO. _____ EXP. DATE _____

REVD. BY: _____
ENGINEERING DEPARTMENT

AS-BUILT STATEMENTS:

I HEREBY CERTIFY THAT I HAVE REVIEWED THE "AS-BUILT" FOR THE ABOVE REFERENCED PROJECT AND CERTIFY THAT THE PROJECT HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED IMPROVEMENT PLANS AND REVISIONS THAT IT WILL FUNCTION AS DESIGNED AND PERMITTED.

_____ _____
REGISTERED CIVIL ENGINEER DATE

I HEREBY CERTIFY THAT THE "RECORD DRAWING" MEASUREMENTS AS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED ARE CORRECT TO THE BEST OF MY KNOWLEDGE.

_____ _____
REGISTERED SURVEYOR DATE

EXISTING LEGEND

MONUMENT LINE	
PROPERTY LINE	
EASEMENT LINE	
RIGHT-OF-WAY LINE	
SANITARY SEWER LINE	--8" PVC SS--
WATER LINE	--8" DIP W--
MAJOR CONTOUR	1134
MINOR CONTOUR	1132
OVERHEAD ELECTRICAL	--OHE--
SPOT ELEVATION	34.00P
FIRE HYDRANT	
WATER VALVE	
WATER METER BOX	
TELEPHONE RISER	T
ELECTRICAL RISER	E
LIGHT POLE	
SANITARY SEWER MANHOLE	S
BACKFLOW PREVENTOR	
SIGN	
POWER POLE	

PROPOSED LEGEND

SAWCUT LINE	
GRADE BREAK	
CONTOUR	23
SEWER LINE	
WATER LINE	
STORM LINE	
DIRECTION OF SLOPE	
CATCH BASIN	
SPOT ELEVATION	34.00P
SECTION CALLOUT	
FIRE DEPARTMENT CONNECTION	
DRYWELL PLUS	
WATER VALVE	
WATER METER	
BACKFLOW PREVENTOR	
CONCRETE	
LIGHT PAVEMENT SECTION (AUTOMOBILE PARKING)	
HEAVY PAVEMENT SECTION	

ESTIMATED QUANTITIES

ASPHALT PAVING 4" AC ON 10" ABC	12,119 SY
SCUPPER WITH CONCRETE SPILLWAY	8 EA
CONCRETE SIDEWALK	21,334 SF
CONCRETE CURB & GUTTER	4,259 LF
STREET LIGHT	10 EA
18" RGRCP CLASS V STORM PIPE	544 LF
"U" TYPE HEADWALL	4 EA
RIP RAP D50=6"	361 CY
SINGLE BARREL 10'X4' BOX CULVERT	1 EA
DOUBLE BARREL 8'X4' BOX CULVERT	1 EA

DESIGN DATA

ROADWAY CLASSIFICATION: RURAL LOCAL ROAD
POSTED SPEED: 35 MPH

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION (MCDOT) GENERAL NOTES FOR RIGHT-OF-WAY PERMITS

1. ALL WORK SHALL CONFORM TO THE REVISED EDITION OF THE UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION PUBLISHED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) AS AUTHORIZED AND MODIFIED BY THE MOST CURRENT MCDOT SUPPLEMENT TO THE MAG UNIFORM STANDARD SPECIFICATIONS AND DETAILS AND NON-CONFLICTING PROJECT SPECIAL PROVISIONS. ALL WORK MUST ALSO COMPLY WITH RESOLUTION 2001-01 MARICOPA COUNTY RESOLUTION FOR PERMITS TO WORK IN DEDICATED RIGHT-OF-WAY AND RESOLUTION 2001-02 MARICOPA COUNTY RESOLUTION FOR STREET IMPROVEMENTS, INSTALLATION OF UTILITIES AND TRAFFIC CONTROL. ANY EXCEPTIONS MUST RECEIVE EXPLICIT APPROVAL FROM MCDOT AND SHALL BE IDENTIFIED ON THE PLANS AS HAVING EXPLICIT APPROVAL FROM MCDOT. ALL CLEAR ZONE HAZARDS SHALL BE MITIGATED IN A MANOR APPROVED BY MCDOT AT NO COST TO THE COUNTY.
2. THE ENGINEERING DESIGNS ON THESE PLANS ARE ONLY APPROVED BY MCDOT IN CONCEPT AND NOT IN DETAIL. CONSTRUCTION QUANTITIES ON THESE PLANS ARE NOT VERIFIED BY MCDOT. APPROVAL OF THESE PLANS ARE FOR PERMIT PURPOSES ONLY AND SHALL NOT PREVENT MCDOT FROM REQUIRING CORRECTION OF ERRORS IN THE PLANS WHERE SUCH ERRORS ARE SUBSEQUENTLY FOUND TO BE IN VIOLATION OF ANY LAW, ORDINANCE, HEALTH, SAFETY, THE MCDOT ROADWAY DESIGN MANUAL, OR OTHER DESIGN ISSUES.
3. AN APPROVED SET OF PLANS SHALL BE ON THE SITE DURING CONSTRUCTION AND AVAILABLE TO MCDOT AND OTHER INSPECTORS.
4. ALL BOX CULVERTS CONSTRUCTED IN THE PUBLIC RIGHT-OF-WAY SHALL COMPLY WITH ARIZONA DEPARTMENT OF TRANSPORTATION (ADOT) LATEST DESIGN SPECIFICATIONS AND STANDARDS. MINIMUM CLEAR HEIGHT OF BOX CULVERT SHALL BE 4 FEET.
5. CONTRACTOR TO OBTAIN MCDOT PERMITS PRIOR TO CONSTRUCTION WITHIN COUNTY RIGHT-OF-WAY, AND ALL NECESSARY PERMITS FROM OTHER AGENCIES AND FROM LOCAL GOVERNMENTS FOR WORK WITHIN THEIR JURISDICTION.
6. CONTRACTOR SHALL NOTIFY THE MCDOT INSPECTION DEPT. AT LEAST 24 HOURS IN ADVANCE OF ANY CONSTRUCTION AT (602) 506-8606.
7. CONTRACTOR PERFORMING CONSTRUCTION OR EXCAVATING OPERATIONS IS RESPONSIBLE FOR LOCATING AND RELOCATING AT "BLUE STAKE" ALL UTILITIES IN CONFLICT AT NO EXPENSE TO MARICOPA COUNTY. THE CONTRACTOR SHALL CONTACT (602) 263-1100 PRIOR TO BEGINNING CONSTRUCTION.
8. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY REQUIRED PERMITS FOR EARTH MOVING FROM MARICOPA COUNTY DUST COMPLIANCE DIVISION (602) 506-6010 PRIOR TO CONDUCTING EXCAVATION OPERATIONS. A COPY OF THE PERMIT AND DUST CONTROL PLAN SHALL BE SUBMITTED TO THE COUNTY ENGINEER PRIOR TO COMMENCEMENT OF ANY EARTHMOVING ACTIVITIES.
9. PRIOR TO CONDUCTING EXCAVATION OPERATIONS, THE CONTRACTOR SHALL OBTAIN FROM THE ARIZONA STATE HISTORICAL PRESERVATION OFFICER (602) 542-4009, RECOMMENDATIONS REGARDING THE NEED FOR CULTURAL RESOURCES (ARCHAEOLOGICAL) CLEARANCE. ALL DISCOVERIES OF HUMAN REMAINS, CULTURAL ARTIFACTS, OR PALEONTOLOGICAL REMAINS SHALL BE REPORTED TO THE ARIZONA STATE MUSEUM AND MCDOT. UPON DISCOVERY, CONTRACTOR SHALL CEASE OPERATIONS IN THE VICINITY OF THE FIND AND PROTECT THE DISCOVERY AREA FROM FURTHER DISTURBANCE UNTIL THE FIND CAN BE PROFESSIONALLY INVESTIGATED BY THE ARIZONA STATE MUSEUM AND MCDOT.
10. EXCEPT UNDER EMERGENCY CONDITIONS, ROADS SHALL NOT BE CLOSED FOR CONSTRUCTION ACTIVITY UNLESS PRIOR APPROVAL IS OBTAINED FROM THE MCDOT TRANSPORTATION DIRECTOR OR HIS REPRESENTATIVE.
11. PRIOR TO MOVING OR DESTROYING PROTECTED NATIVE PLANT SPECIES, THE CONTRACTOR SHALL FILE A FORMAL NOTICE OF INTENT WITH THE ARIZONA DEPARTMENT OF AGRICULTURE NATIVE PLANTS (602) 542-6408.
12. PRIOR TO INSTALLATION OF CURB, GUTTER, SIDEWALK, BASE COURSE AND WEARING SURFACE, SUBMIT SOIL TEST(S) OF SUBGRADE AND REVISED PAVEMENT DESIGN/CALCULATIONS TO MCDOT FOR REVIEW AND APPROVAL. IF SUBGRADE STABILIZATION IS REQUIRED, THE AREA STABILIZED SHALL BE FROM BACK OF SIDEWALK TO BACK OF SIDEWALK AND MATCH THE STABILIZATION DEPTH OF THE PAVEMENT STRUCTURE.
13. ASPHALT MIX DESIGN SHALL BE SUBMITTED TO MCDOT A MINIMUM OF 48 HOURS PRIOR TO PLACING ANY ASPHALT COURSES. (TRENCH WORK EXCLUDED.) ALL PAVED TURNOUTS SHALL HAVE THE SAME ASPHALT AND BASE REQUIREMENTS AS THE ADJACENT ROADWAY UNLESS NOTED OTHERWISE.
14. ALL COMPACTION AND BACKFILL WITHIN COUNTY RIGHT-OF-WAY SHALL CONFORM TO THE MCDOT SUPPLEMENT TO MAG SPECIFICATION SECTION 601. BACKFILL UNDER EXISTING PAVEMENT, CURB AND GUTTER, ROADWAY SHOULDERS, AND UNPAVED ROADWAYS SHALL CONSIST OF ONE-HALF (1/2) OR ONE SACK CLSM. UNPAVED ROADWAY AREAS INCLUDE THE TRAVELED WAY PLUS FIVE FEET BEYOND THE TRAVELED WAY.
15. ALL STRUCTURES, SUCH AS MANHOLES, VALVE BOX & COVERS, AND MONITORING WELLS MUST BE MARKED WITH AT LEAST TWO REFLECTIVE YELLOW FLEX POSTS WHEN STRUCTURES ARE LOCATED OUTSIDE THE TRAVELED WAY AND WITHIN THE RIGHT-OF-WAY. (APPLIES ONLY WHEN THERE IS NO CURB).
16. PAVEMENT WIDENING AND PAVEMENT REPLACEMENT SHALL CONFORM TO REQUIREMENTS OF SPECIFICATION SECTION 336. PAVEMENT CUTS SHALL NOT BE LOCATED WITHIN A LANE WHEEL PATH. THE LANE WHEEL PATH IS THE ENTIRE LANE WIDTH EXCEPT THE AREA WITHIN ONE FOOT OF A LANE LINE STRIPE AND EXCEPT THE CENTER TWO FEET OF THE TRAVEL LANE.
17. ALL EXISTING PAVEMENT MARKINGS, TRAFFIC SIGNS AND SIGNAL EQUIPMENT THAT NEED TO BE REMOVED, REPLACED, WORK WILL BE DONE BY THE CONTRACTOR AT HIS EXPENSE. ALL RELOCATED OR REPAIRED BECAUSE OF CONTRACTOR SALVAGED SIGNS SHALL BE DELIVERED TO THE TRAFFIC OPS BUILDING AT 2909 W. DURANGO ST. ARRANGEMENTS CAN BE MADE FOR DELIVERY BY CALLING (602) 506-8662. ALL NEW STREET NAME SIGNS SHALL BE PROVIDED AND INSTALLED BY PERMITTEE AT NO EXPENSE TO MARICOPA COUNTY.
18. PAVEMENT MARKING, SIGNING AND SIGNAL WORK WILL BE INSPECTED AND SHALL MEET COUNTY STANDARDS BEFORE RELEASE OF BOND.
19. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS WITHIN THE RIGHT-OF-WAY TO A CONDITION EQUAL TO OR BETTER THAN PRIOR EXISTING CONDITIONS OF ALL WASTE MATERIAL WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. OF ALL WASTE MATERIAL WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

FEMA CLASSIFICATION

THE CURRENT FEMA FLOOD INSURANCE RATE MAP (FIRM) FOR THIS AREA, MAP NUMBER 04013C 1230L (EFFECTIVE REVISED DATE OCTOBER 16, 2013), DESIGNATES THE PROPERTY WITHIN FLOOD HAZARD ZONE X (SHADED) AND ZONE AE.

ZONE: X (SHADED) IS DEFINED AS AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT, OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD.

ZONE: AE IS DEFINED AS SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD, BASE FLOOD ELEVATIONS DETERMINED.

ENGINEER'S DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISE RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION R4-30-301 OF THE RULES OF ARIZONA STATE BOARD OF TECHNICAL REGISTRATION, AND THAT THE DESIGN IS CONSISTED WITH THE CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF THE PROJECT DRAWINGS AND SPECIFICATIONS BY MARICOPA COUNTY IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN

ABBREVIATIONS

APN	ASSESSOR PARCEL NUMBER	F/C	FACE OF CURB	PAE	PUBLIC ACCESS EASEMENT	TEL	TELEPHONE
B/C	BACK OF CURB	FF	FINISH FLOOR	PDE	PUBLIC DRAINAGE EASEMENT	TS	TRAFFIC SIGNAL
BOT	BOTTOM	FG	FINISH GRADE	℄	PROPERTY LINE	TW	TOP OF WALL
C	CONCRETE	FL	FLOWLINE	PUE	PUBLIC UTILITY EASEMENT	UGFO	UNDERGROUND FIBER OPTIC
℄	CENTERLINE	FT/FT	FOOT PER FOOT	PUFE	PUBLIC UTILITY FACILITIES EASEMENT	UGE	UNDERGROUND ELECTRIC
CF	CUBIC FEET	G	GUTTER	PVMT	PAVEMENT	UGT	UNDERGROUND TELEPHONE
CFS	CUBIC FEET PER SECOND	GB	GRADE BREAK	P/C	PAVEMENT/CONCRETE	UTS	UNDERGROUND TRAFFIC SIGNAL
CY	CUBIC YARD	GR	GRATE	RCW	RECLAIMED WATER	VCP	VITRIFIED CLAY PIPE
DE	DRAINAGE EASEMENT	HP	HIGH POINT	R/W	RIGHT OF WAY	VG	VALLEY GUTTER
DW	DRYWELL	HW	HIGH WATER	SD	STORM DRAIN	VNAE	VEHICULAR NON-ACCESS EASEMENT
EA	EACH	IE	INVERT ELEVATION	SF	SQUARE FEET	VOL	VOLUME
EL	ELEVATION	IRR	IRRIGATION	SS	SANITARY SEWER	VP	VOLUME PROVIDED
EP	EDGE OF PAVEMENT	LF	LINEAR FEET	S/W	SIDEWALK	VR	VOLUME REQUIRED
ESMT	EASEMENT	ML	MATCH LINE	STA	STATION	W	WATER
EX	EXISTING	NTS	NOT TO SCALE	SY	SQUARE YARDS		
EG	EXISTING GRADE	P	PAVEMENT	TC	TOP OF CURB		

UTILITY REVIEW

1. THESE PLANS HAVE BEEN SUBMITTED TO THE FOLLOWING UTILITY COMPANIES. WHERE THE WORK TO BE DONE CONFLICTS WITH ANY OF THESE UTILITIES, THE CONFLICTS SHALL BE RESOLVED AS SPECIFIED IN THE SPECIAL PROVISIONS AND/OR AS OTHERWISE NOTED ON THESE PLANS. CONFLICTS ARISING DURING THE COURSE OF CONSTRUCTION FROM UNFORESEEN CIRCUMSTANCES SHALL BE REPORTED TO THE INTERESTED UTILITY COMPANY AND BE RESOLVED BY THEM AND THE DESIGN ENGINEER.
2. THE CITY WILL NOT PARTICIPATE IN THE COST OF CONSTRUCTION OR UTILITY RELOCATION.

UTILITY	UTILITY COMPANY	NAME OF COMPANY REPRESENTATIVE	PHONE NUMBER	DATE SENT	DATE SIGNED
CATV, FIBER	COX COMMUNICATIONS	KIRSTEN VELDMAN	800-778-9140	03-03-22	05-02-22
COAX, FIBER	CENTURYLINK	CONFLICT LIAISON	815-245-9640	03-03-22	03-24-22
ELECTRIC	APS	CONTROL DESK	623-975-5757	03-03-22	03-21-22
GAS	TRANSWESTERN PIPELINE	JOHN STEVENSON	713-989-2833	03-03-22	PENDING

NO.	DATE	REVISION	BY

PURPOSE: FINAL SUBMITTAL

DESIGN BY: DJL
DRAWN BY: DHK
CHECKED BY: DJL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET SUITE 140
SCOTTSDALE, AZ 85258
P 480 951 3985

Registered Professional Engineer
CERTIFICATE NO.
54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA, U.S.A.

CONTACT ARIZONA 811 AT LEAST 2 FULL WORKING DAYS BEFORE YOU BEGIN EXCAVATION
AR ZONA811
CALL 811 OR CLICK AZBLUESTAKE.COM

THESE PLANS ARE NOT APPROVED FOR CONSTRUCTION WITHOUT AN APPROVED SIGNATURE FROM THE GOVERNING MUNICIPALITY.

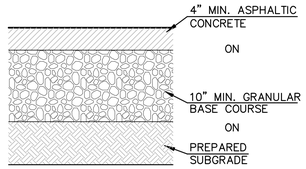
PROJECT NAME: WESTWING BUSINESS PARK

HE NO.: SILA001
SCALE: NTS

SHEET:
C3.0

COVER SHEET FOR WESTWING BUSINESS PARK 12300 W. MARIPOSA GRANDE SUN CITY, ARIZONA 85373

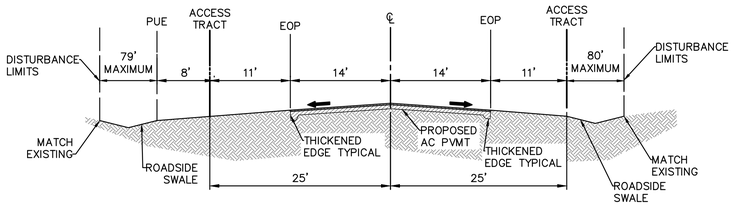
MARICOPA COUNTY CASE NO: Z2020029



NOTE:
ALL PAVEMENT CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE GEOTECHNICAL REPORT PREPARED BY: RAMM ENGINEERING, INC., PROJECT# G27322, DATED 09/02/21. SEE GEOTECH REPORT FOR COMPACTION AND SUBGRADE SPECIFICATIONS.

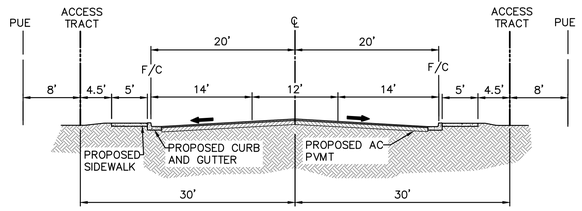
1 PAVEMENT SECTION

N.T.S



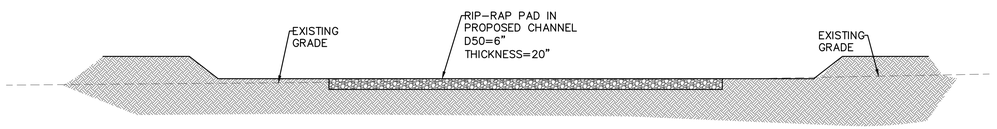
2 PROPOSED ROADWAY CROSS SECTION

N.T.S



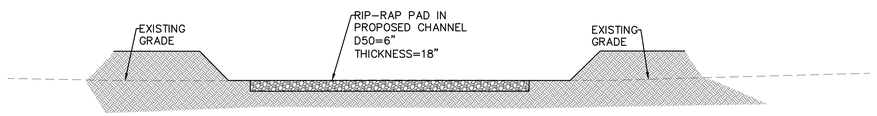
3 PROPOSED ROADWAY CROSS SECTION

N.T.S



4 CULVERT #1 UPSTREAM CROSS SECTION

N.T.S



5 CULVERT #1 DOWNSTREAM CROSS SECTION

N.T.S

PERCENT OF GRADATION SMALLER THAN	STONE SIZE RANGE WHEN D50=6 INCHES (FT)
100	0.75 TO 0.85
85	0.6 TO 0.7
50	0.5 TO 0.575
15	0.2 TO 0.3

1. ALL RIPRAP SHALL BE ANGULAR TYPE.
2. SPECIFIC WEIGHT FOR ALL RIPRAP SHALL BE 165 LB/FT^3
3. FILTER FABRIC BLANKET TO BE INSTALLED BENEATH RIPRAP.

6 RIPRAP REQUIREMENTS

N.T.S

NOTIFY INSPECTOR PRIOR TO START OF WORK

Maricopa County
Planning & Development Department
OWNER'S COPY
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NO.	DATE	REVISION	BY

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P 480 991 3985

Registered Professional Engineer (Civil)
CERTIFICATE NO. 54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA, U.S.A.

DETAILS AND TYPICAL SECTIONS FOR WESTWING BUSINESS PARK 12300 W. MARIPOSA GRANDE SUN CITY, ARIZONA 85373

MARICOPA COUNTY CASE NO: Z2020029

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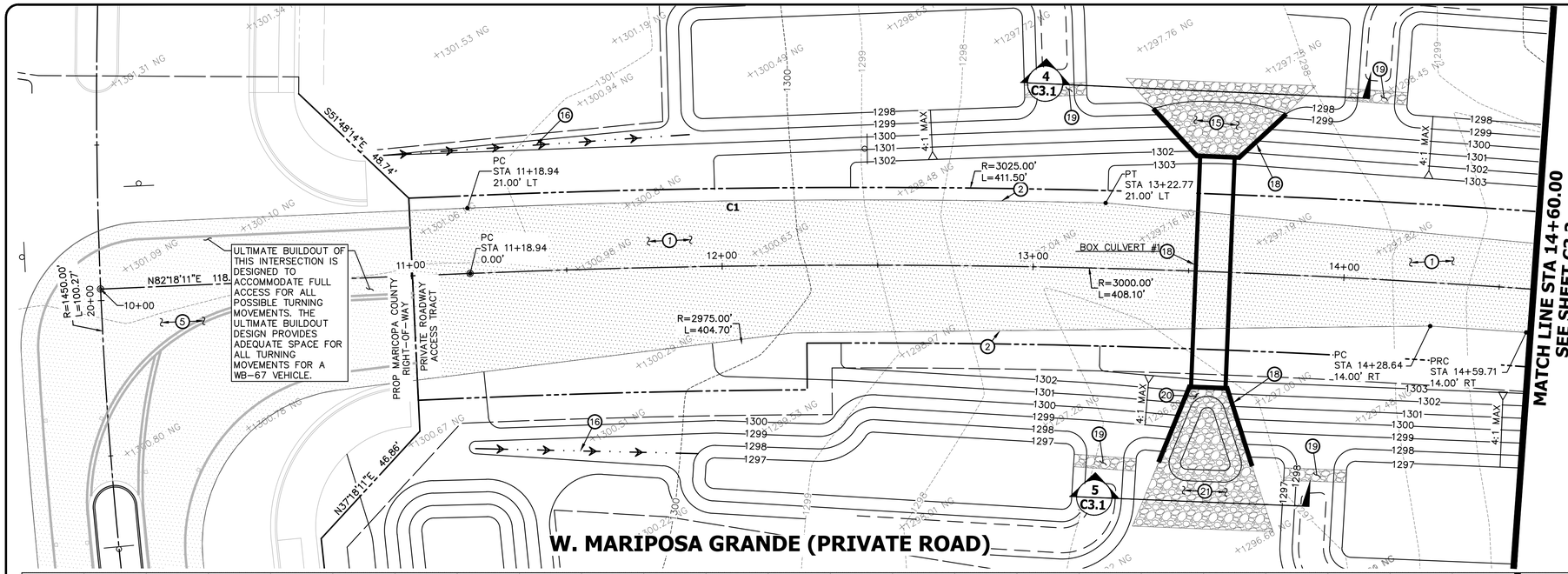
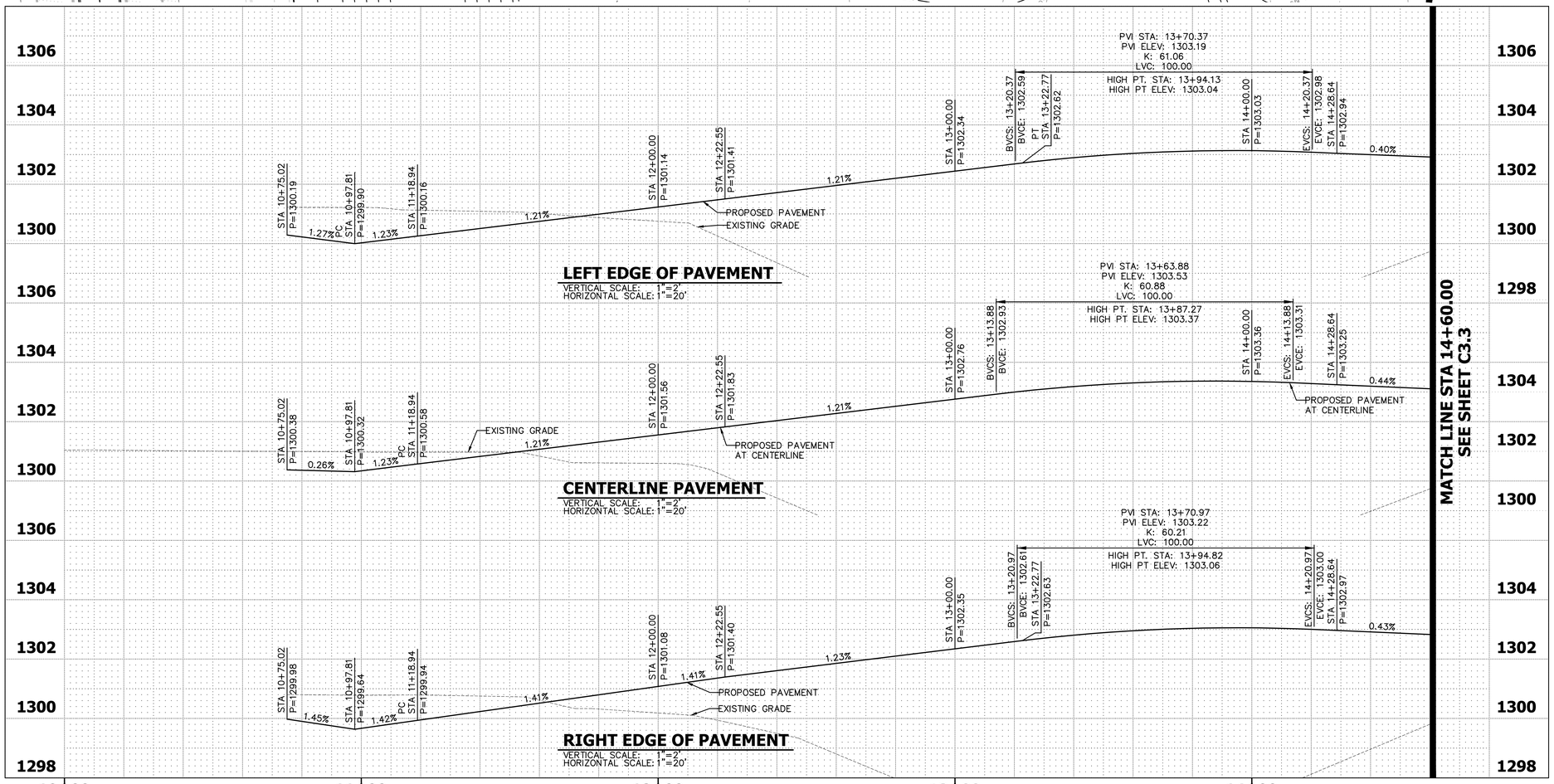
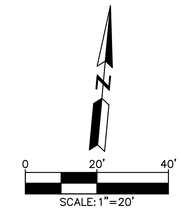
PROJECT NAME: WESTWING BUSINESS PARK

HE NO.: SILA001
SCALE: NTS

SHEET: C3.1







CONSTRUCTION NOTES

1. CONSTRUCT PAVEMENT SECTION MIN. 4" AC ON 10" ABC PER RECOMMENDATION BY THE GEOTECH REPORT PREPARED BY RAMM ENGINEERING, DATED 9/2/21, PROJECT# G27322. SEE DETAIL 1 ON SHEET C3.1.
2. CONSTRUCT ASPHALT PAVEMENT THICKENED EDGE PER MAG STD DTL 201, TYPE A.
3. PROTECT EXISTING UTILITIES IN PLACE DURING CONSTRUCTION.
4. SEE UTILITY PLANS FOR CROSSING INFORMATION.
5. FOR CONTINUATION OF ROADWAY CONSTRUCTION, SEE SHEETS C2.0–C2.4.
6. FOR WATER AND SEWER CONSTRUCTION DETAILS, SEE SHEETS C5.0–C5.19.
7. CONSTRUCT SCUPPER WITH CONCRETE SPILLWAY PER MAG STD DTL 206–1, 206–2 & 206–3. INSTALL SAFETY RAILING PER MAG STD DTL 145. OPENING WIDTH PER PLAN.
8. CONSTRUCT CONCRETE SIDEWALK PER MAG STD DTL 230. WIDTH PER PLAN.
9. CONSTRUCT CONCRETE CURB AND GUTTER PER MAG STD DTL 220–1, TYPE "A".
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LEGEND

SEE SHEET C3.0

GENERAL NOTES

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NOTES

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CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	3021.00'	205.26'	3°53'35"
C2	2986.00'	97.94'	1°52'45"

NOTIFY INSPECTOR PRIOR TO START OF WORK

Maricopa County Planning & Development Department

OWNER'S COPY

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NO.	DATE	REVISION	BY

PURPOSE: FINAL SUBMITTAL

DESIGN BY: DJL
DRAWN BY: DHK
CHECKED BY: DJL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET
SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE NO.
54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA, U.S.A.

PAVING PLAN AND PROFILE
PRIVATE ROAD BEGIN TO STA 14+60.00
WESTWING BUSINESS PARK
12300 W. MARIPOSA GRANDE
SUN CITY, ARIZONA 85373

MARICOPA COUNTY CASE NO: Z2020029

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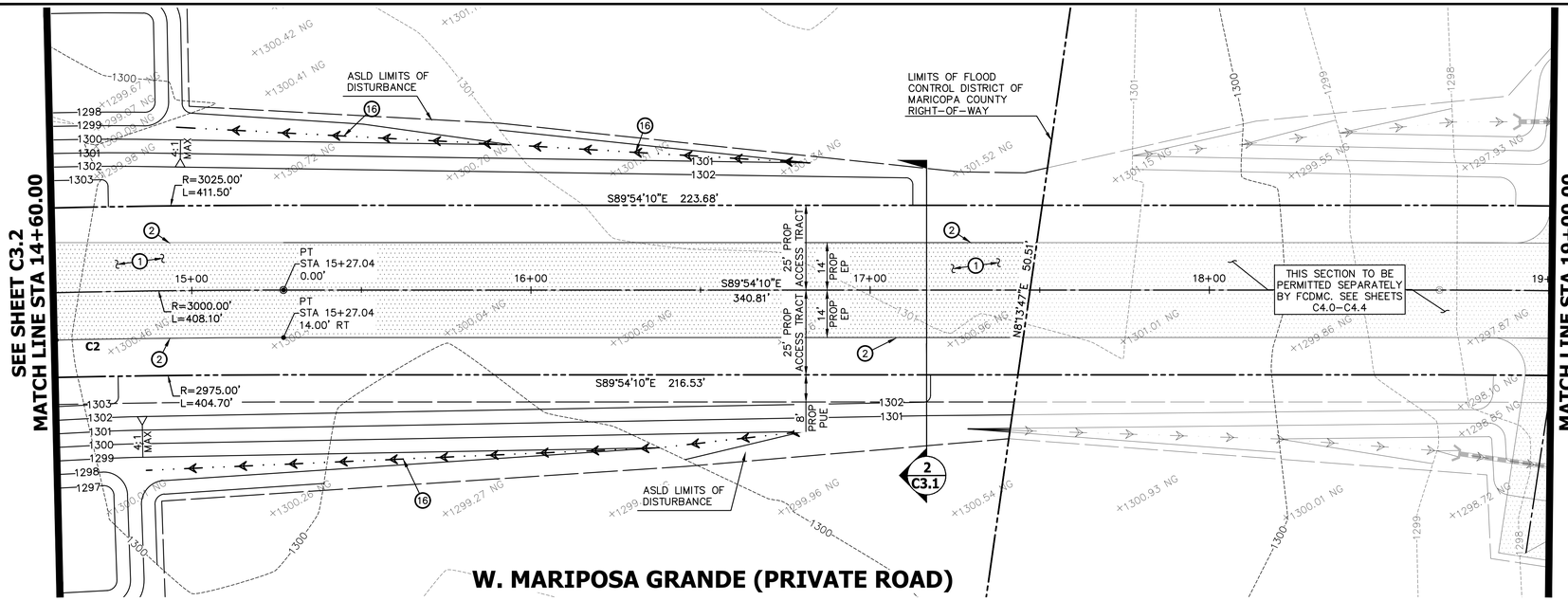
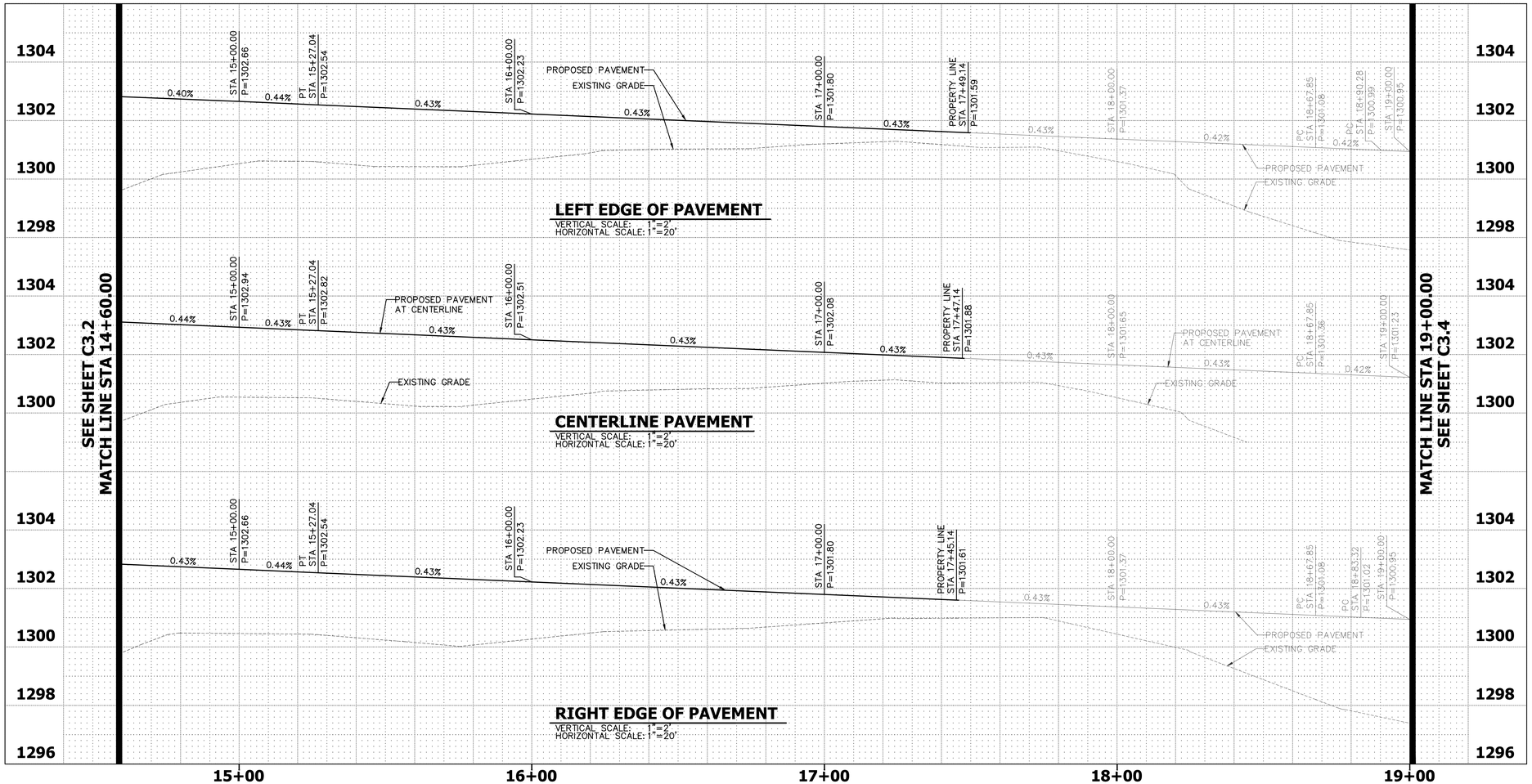
PROJECT NAME: WESTWING BUSINESS PARK

HE NO.: SILA001
SCALE: 1"=20'

SHEET: C3.2





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DRAWN BY: DHK
CHECKED BY: DJL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE NO.
54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA, U.S.A.

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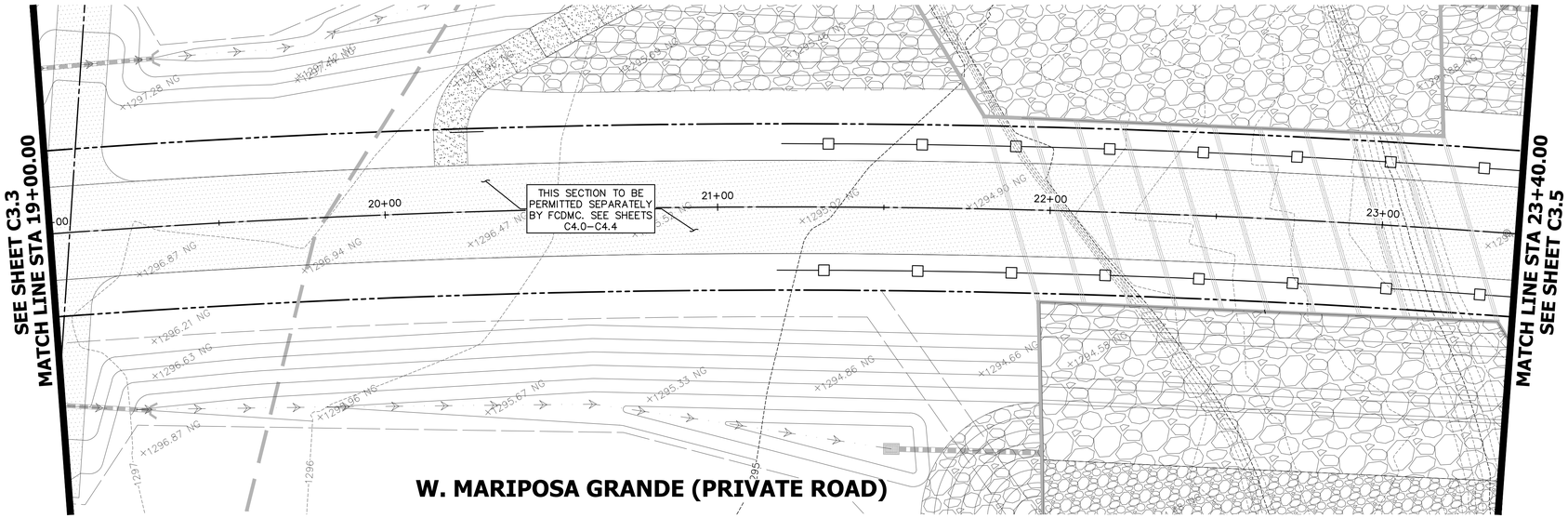
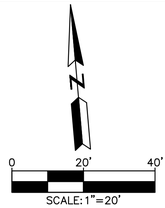
HE NO.: SILA001
SCALE: 1"=20'

SHEET: C3.3





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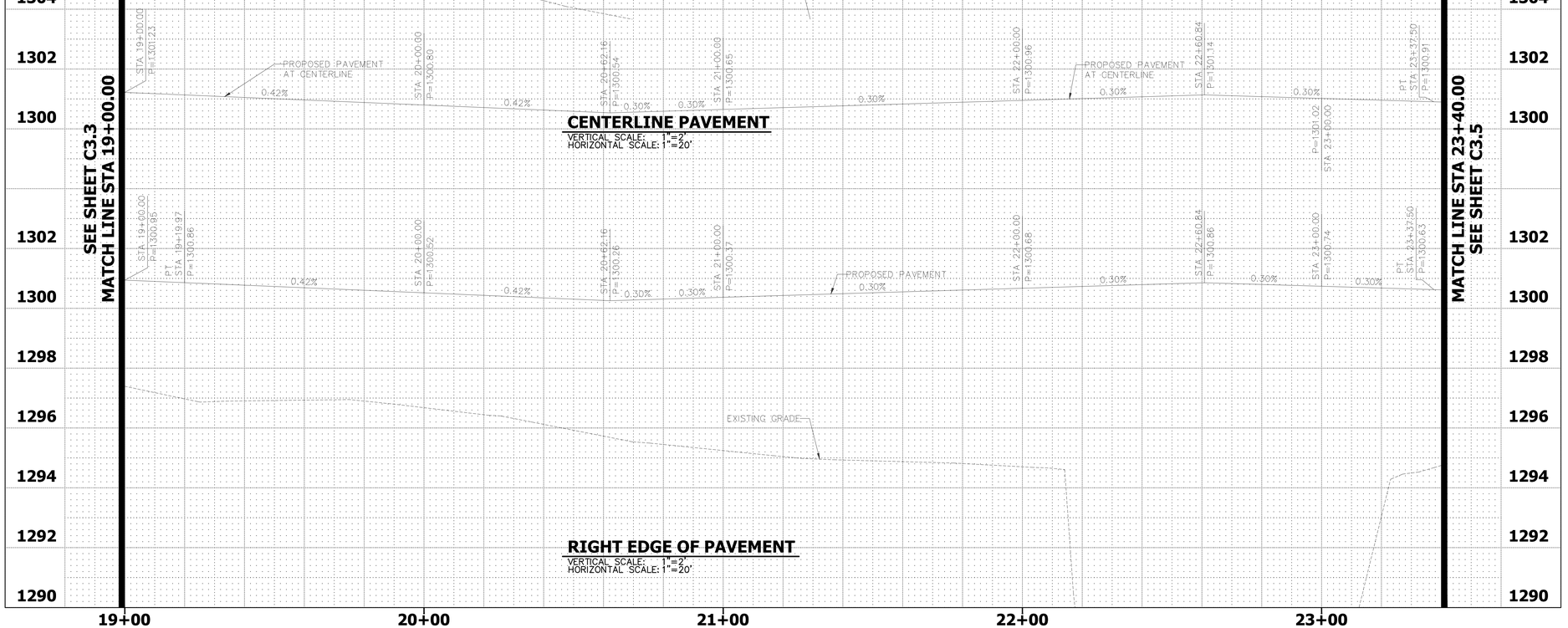

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PURPOSE: FINAL SUBMITTAL

DESIGN BY: DJL
DRAWN BY: DHK
CHECKED BY: DJL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET
SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE NO.
54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA, U.S.A.

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PRIVATE ROAD STA 19+00.00 TO STA 23+40.00
WESTWING BUSINESS PARK
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SUN CITY, ARIZONA 85373

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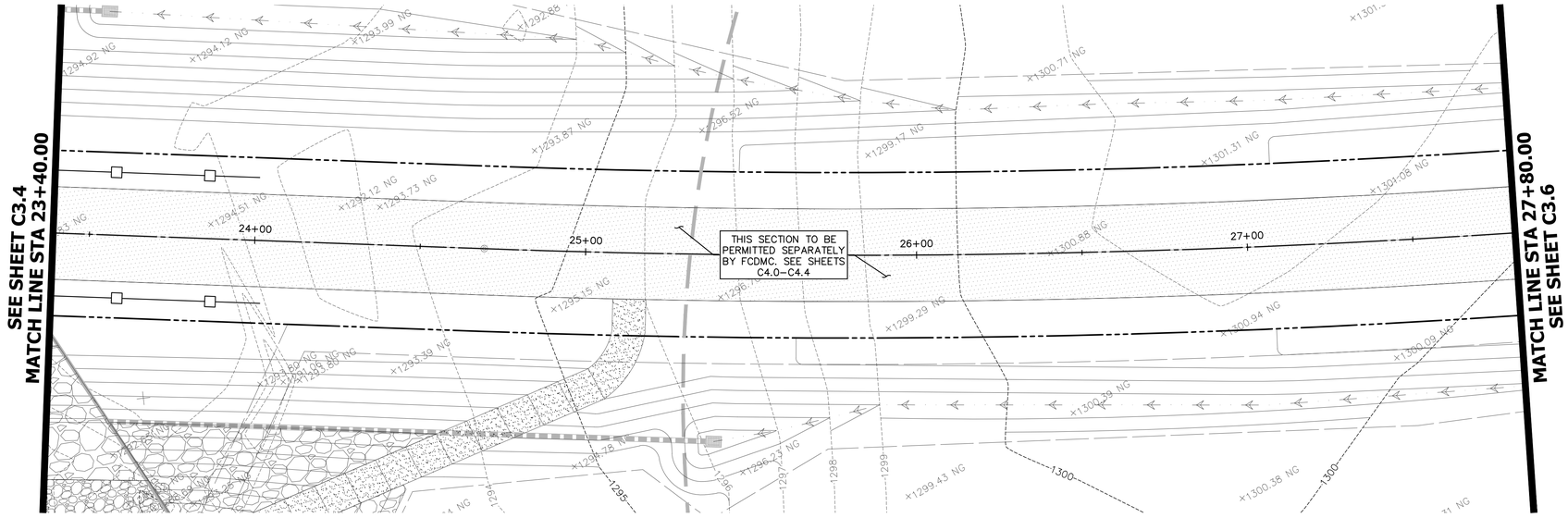
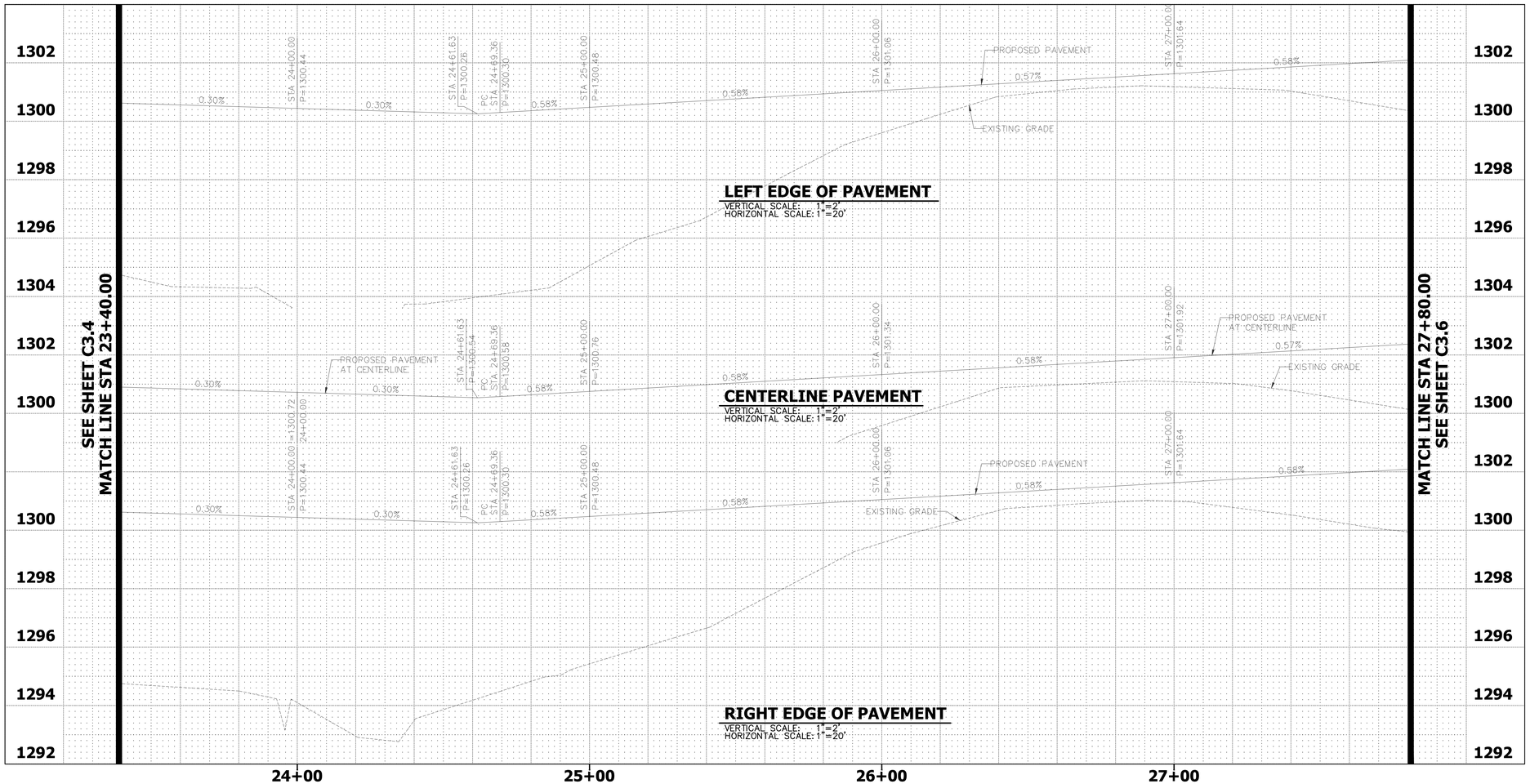
PROJECT NAME: WESTWING BUSINESS PARK

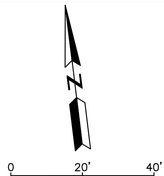
HE NO.: SILA001
SCALE: 1"=20'

SHEET:
C3.4



W. MARIPOSA GRANDE (PRIVATE ROAD)





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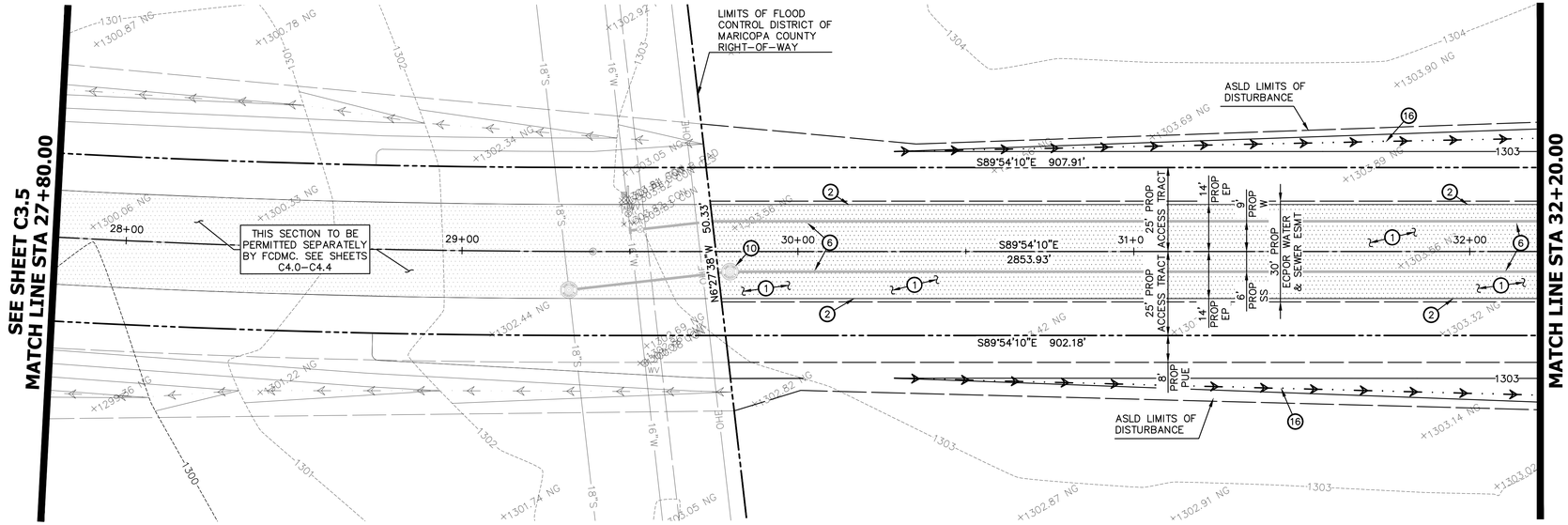
SHEET: C3.5



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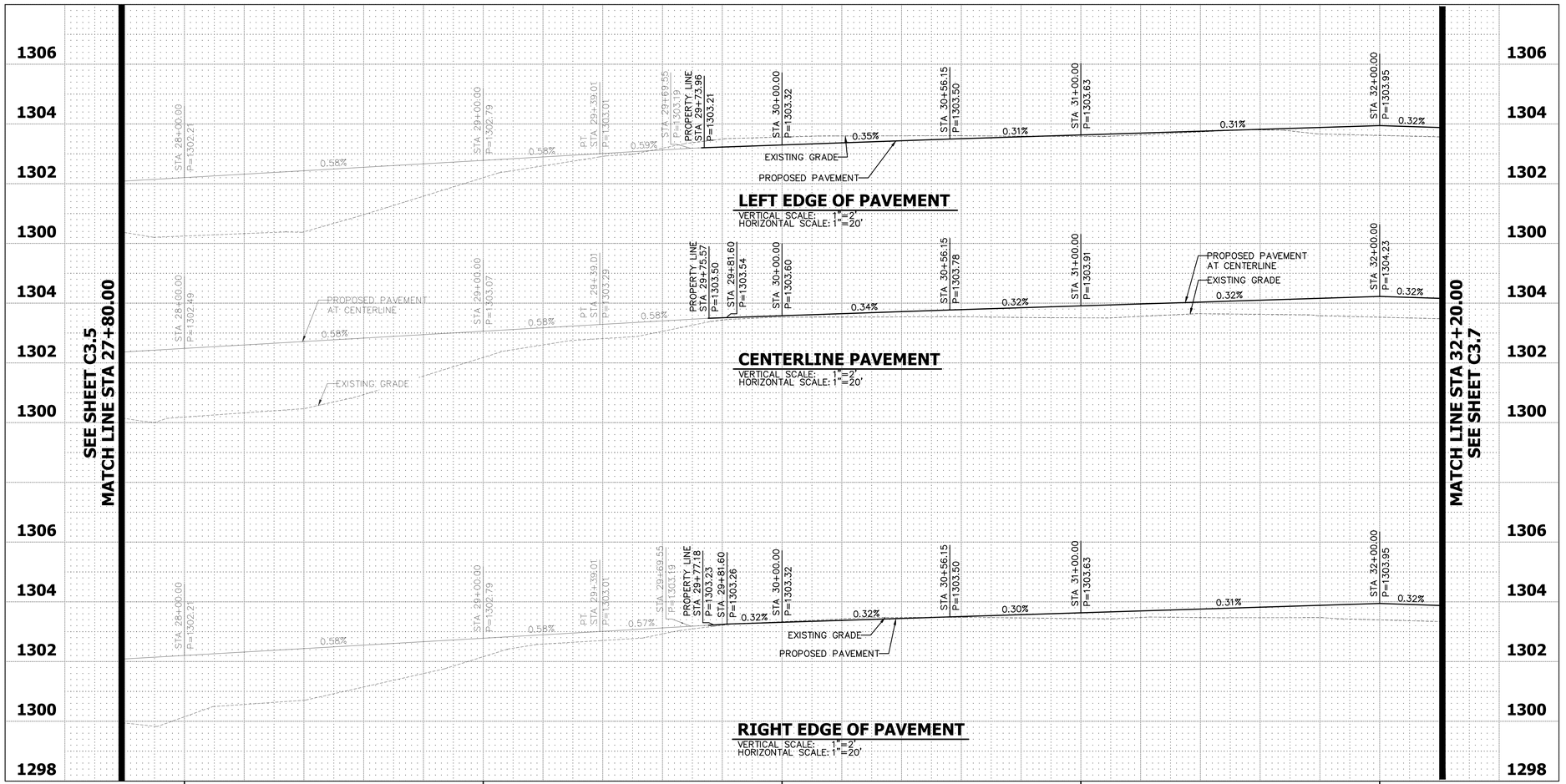

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NO.	DATE	REVISION	BY

PURPOSE: FINAL SUBMITTAL

DESIGN BY: DJL
DRAWN BY: DHK
CHECKED BY: DJL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET
SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE No.
54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA U.S.A.

PAVING PLAN AND PROFILE
PRIVATE ROAD STA 27+80.00 TO STA 32+20.00
WESTWING BUSINESS PARK
12300 W. MARIPOSA GRANDE
SUN CITY, ARIZONA 85373

MARICOPA COUNTY CASE NO: Z2020029

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AR ZONA811 (ARIZONA STAKE, INC.)
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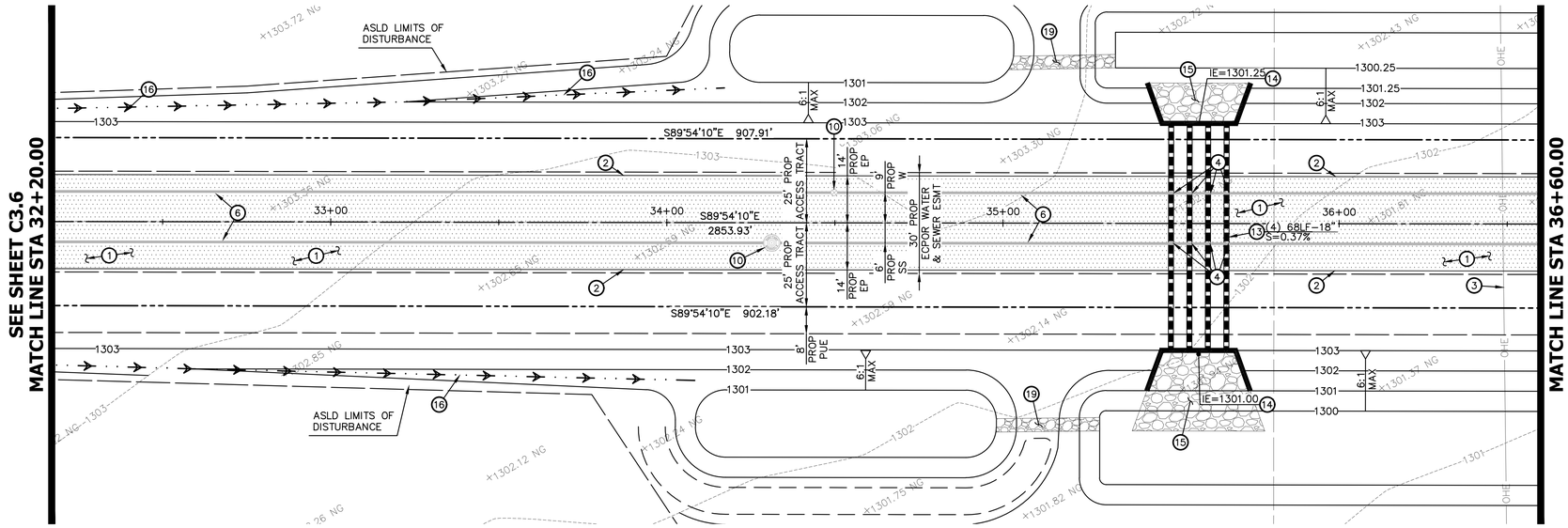
PROJECT NAME: WESTWING BUSINESS PARK

HE NO.: SILA001
SCALE: 1"=20'

SHEET:
C3.6



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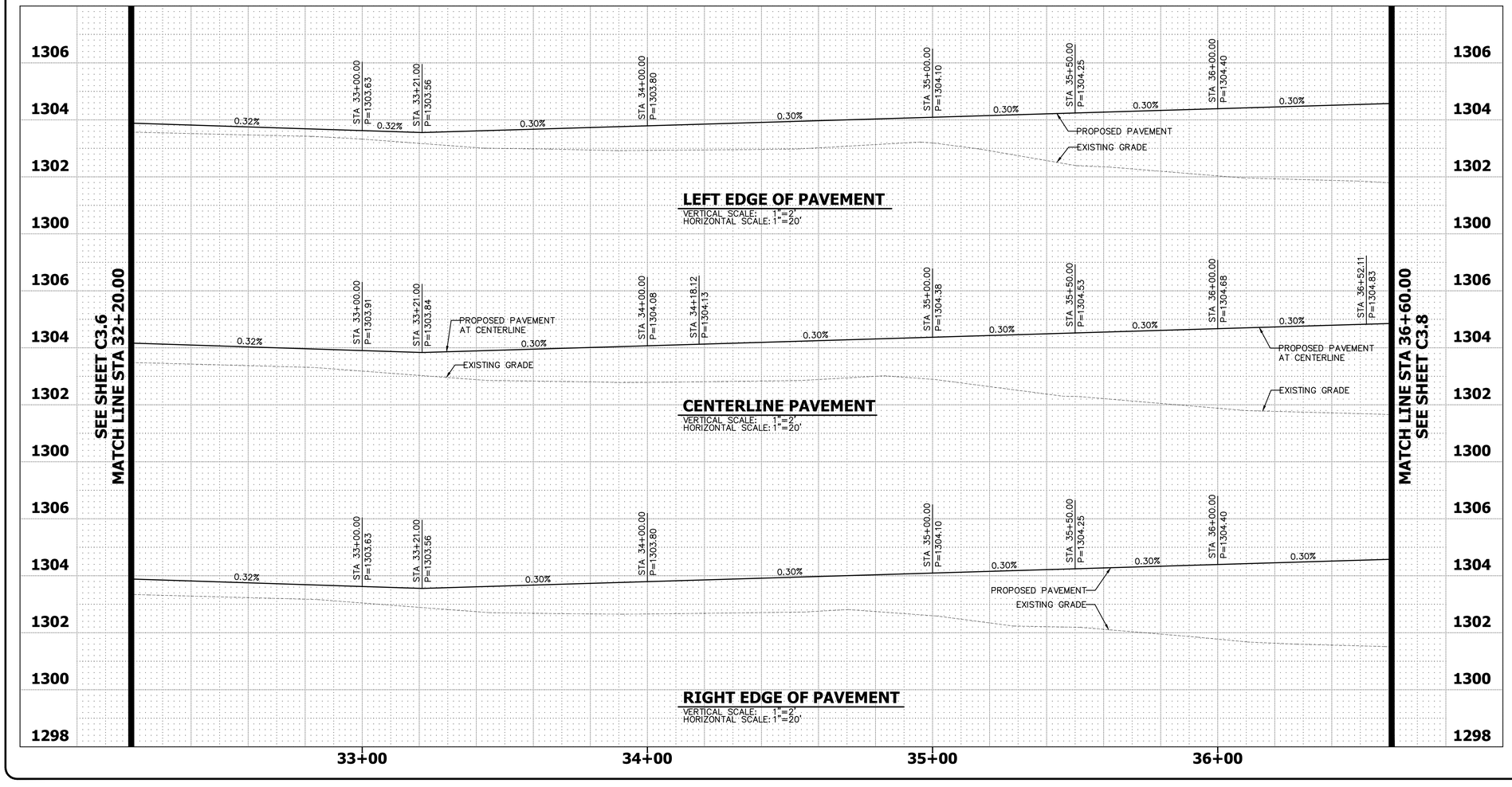

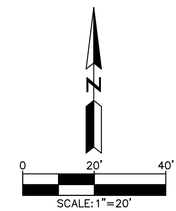

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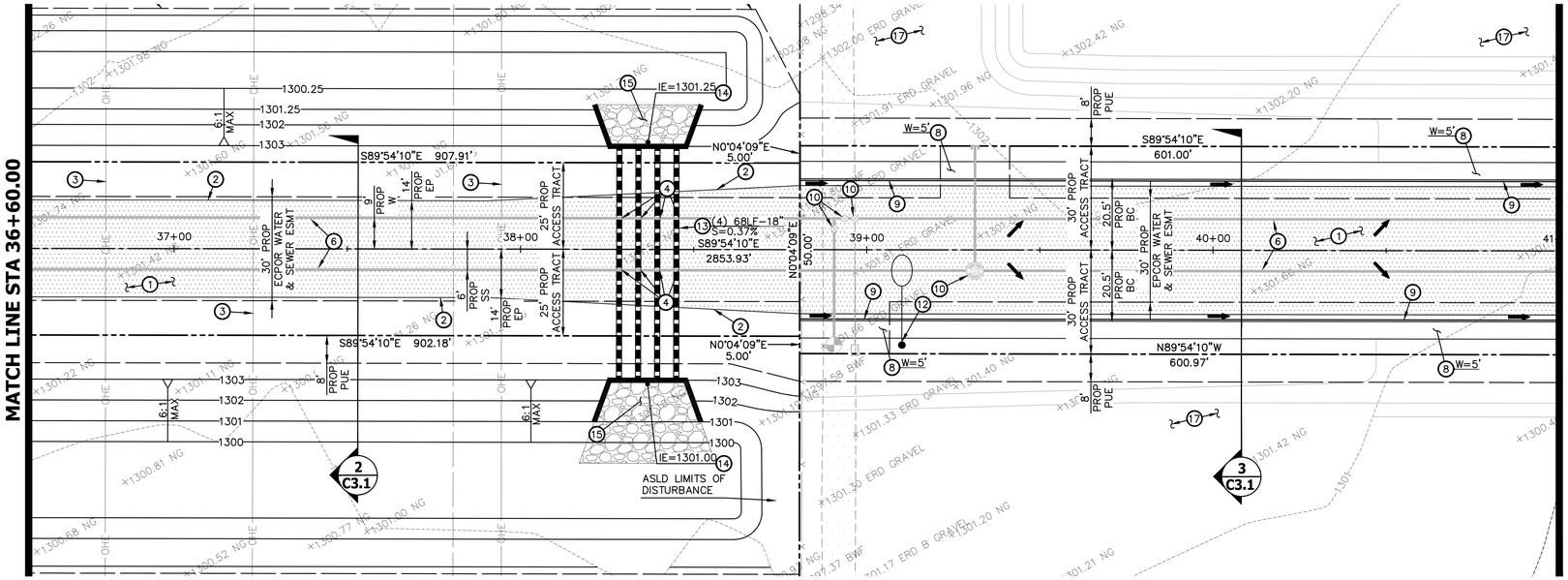
HE NO.: SILA001
SCALE: 1"=20'

SHEET: C3.7



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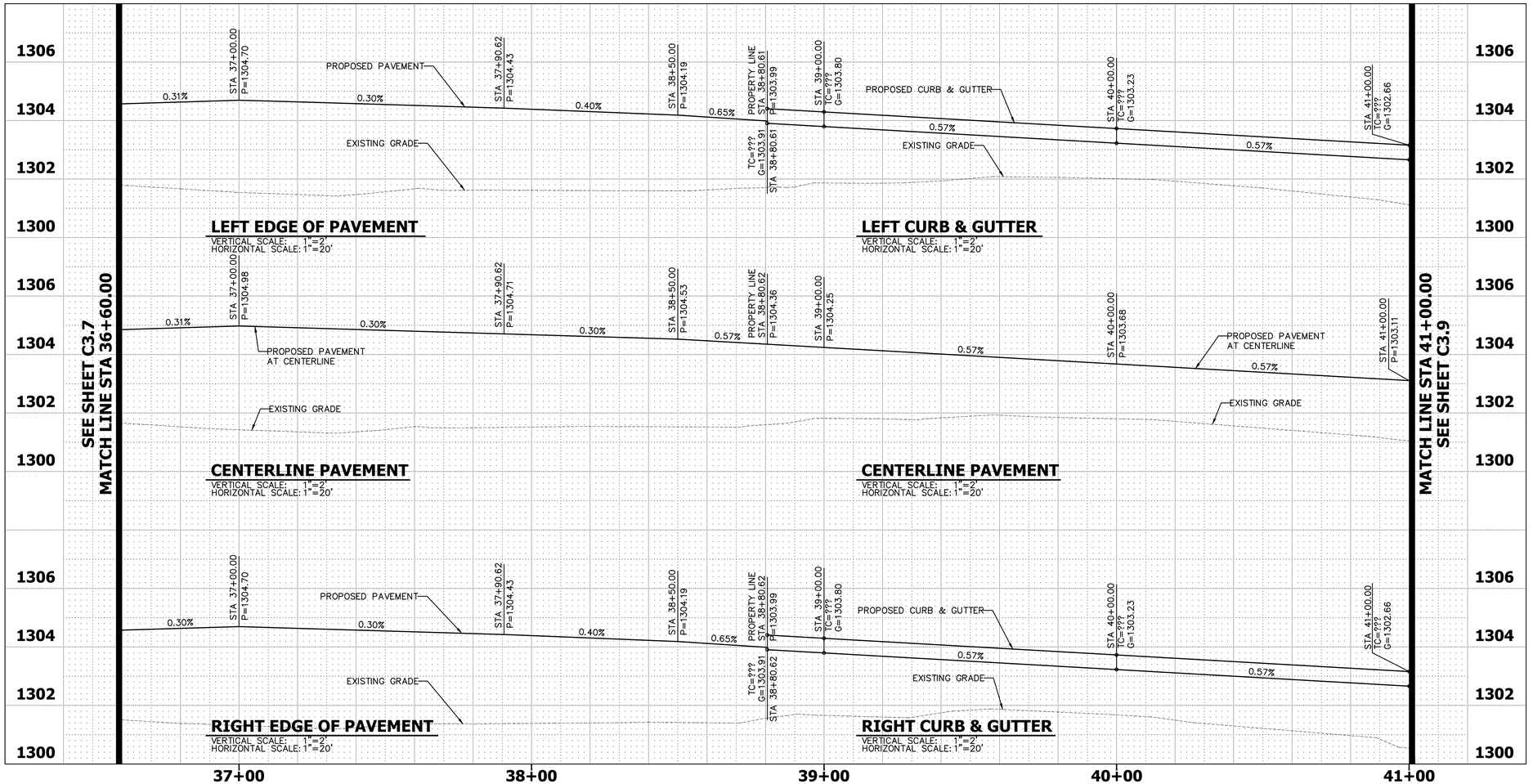

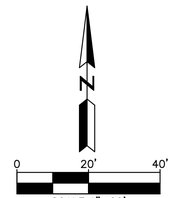

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DRAWN BY: DHK
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HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE No.
54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA, U.S.A.

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HE NO.: SILA001
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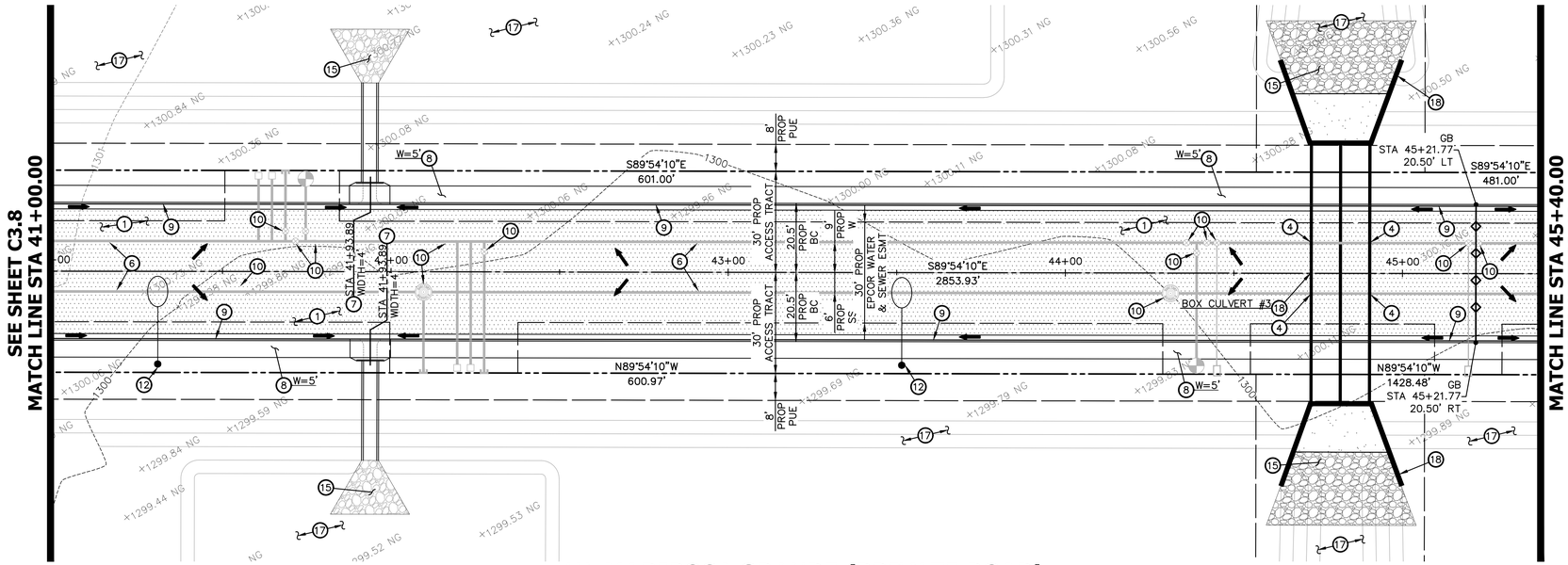
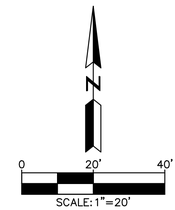
SHEET: C3.8





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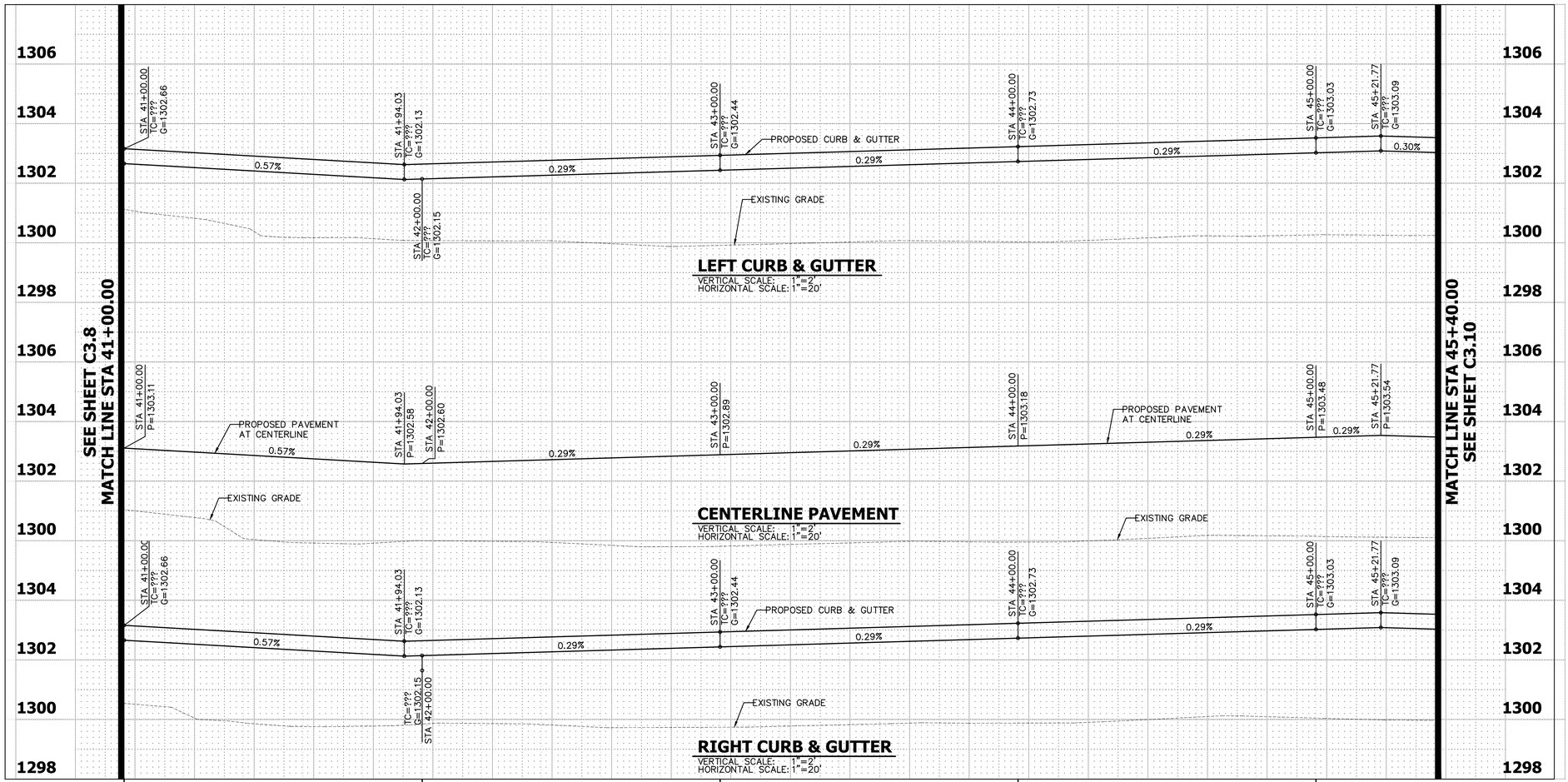

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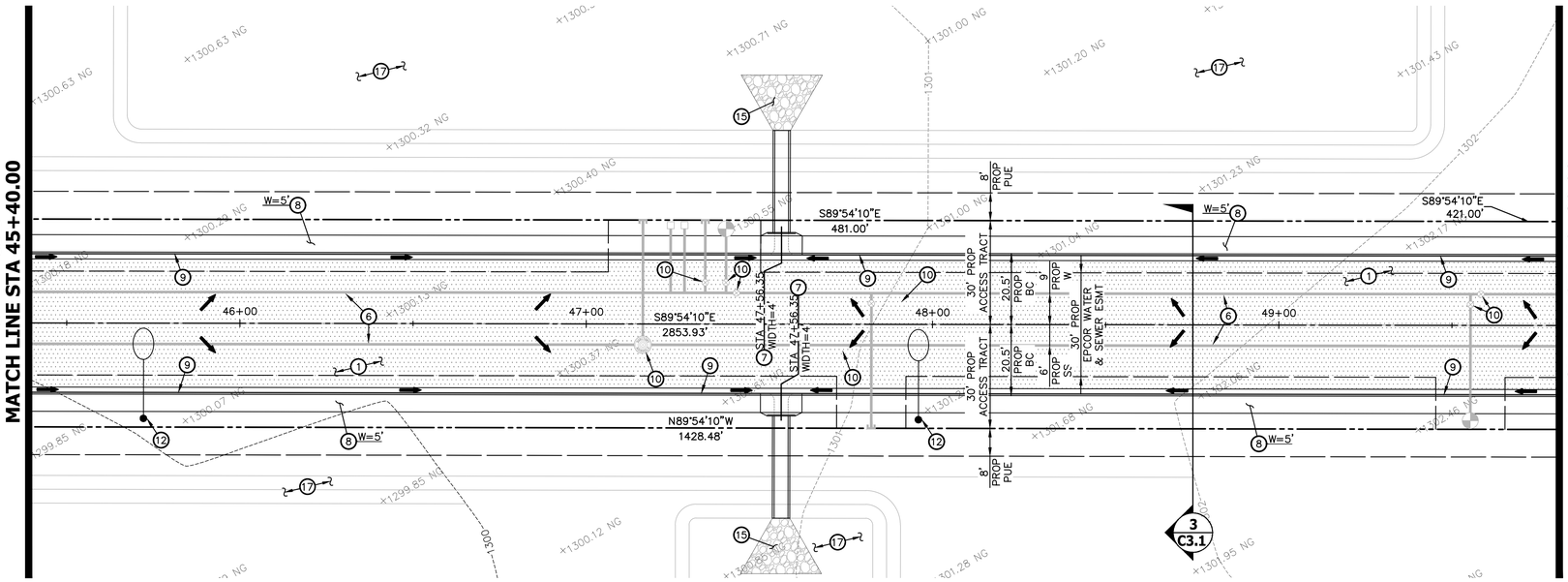
PROJECT NAME: WESTWING BUSINESS PARK

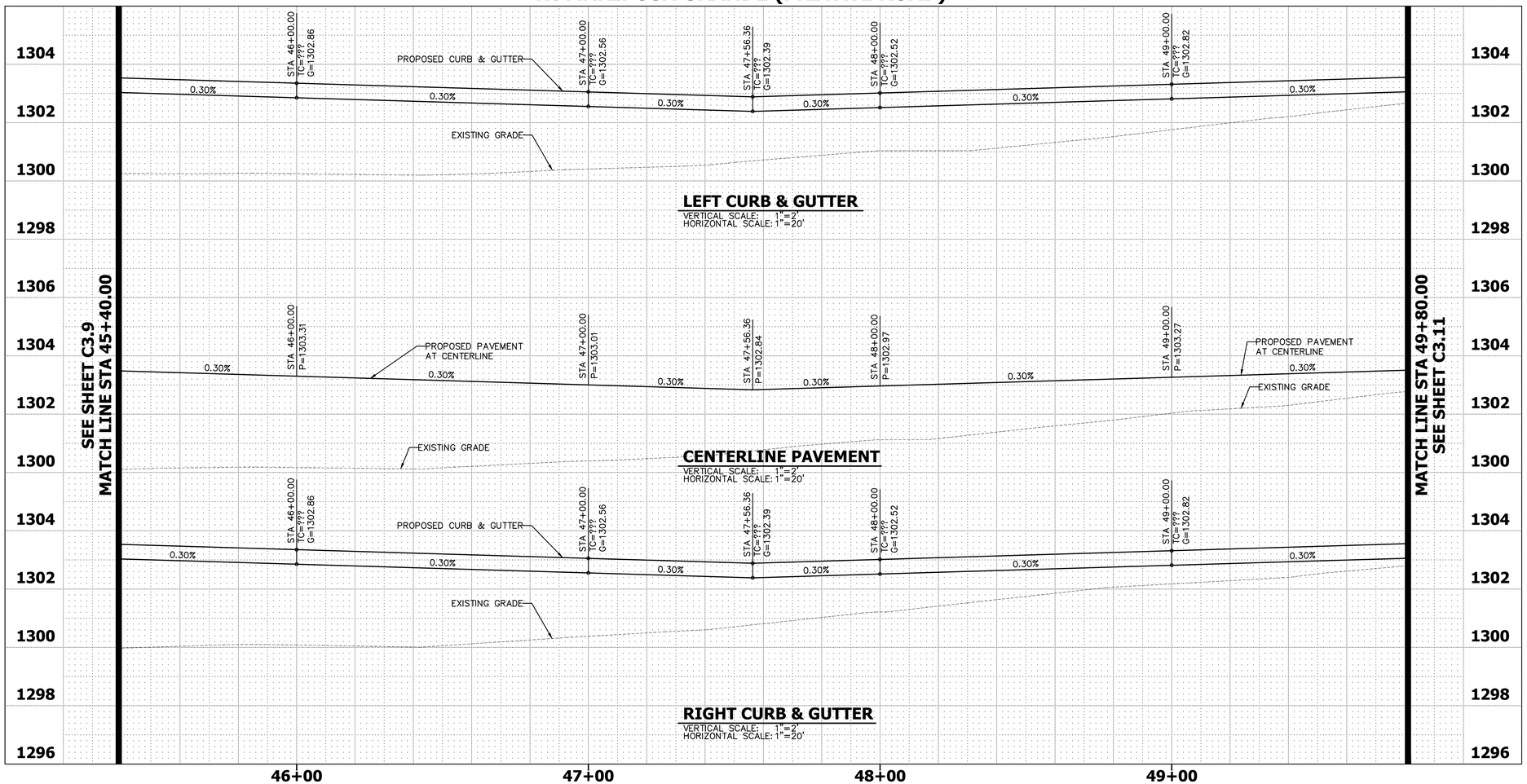
HE NO.: SILA001
SCALE: 1"=20'

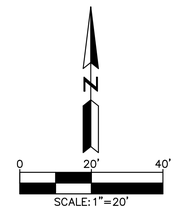
SHEET: C3.9

PAVING PLAN AND PROFILE PRIVATE ROAD STA 41+00.00 TO STA 45+40.00 WESTWING BUSINESS PARK 12300 W. MARIPOSA GRANDE SUN CITY, ARIZONA 85373

MARICOPA COUNTY CASE NO: Z2020029







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HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET
SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE NO.
54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA, U.S.A.

PAVING PLAN AND PROFILE
PRIVATE ROAD STA 45+40.00 TO STA 49+80.00
WESTWING BUSINESS PARK
12300 W. MARIPOSA GRANDE
SUN CITY, ARIZONA 85373
MARICOPA COUNTY CASE NO: Z2020029

CONTACT ARIZONA 811 AT LEAST 2 FULL WORKING DAYS BEFORE YOU BEGIN EXCAVATION
AR ZONA811
ARIZONA BLUE STAKE, INC.
CALL 811 OR CLICK ARIZONA811.COM

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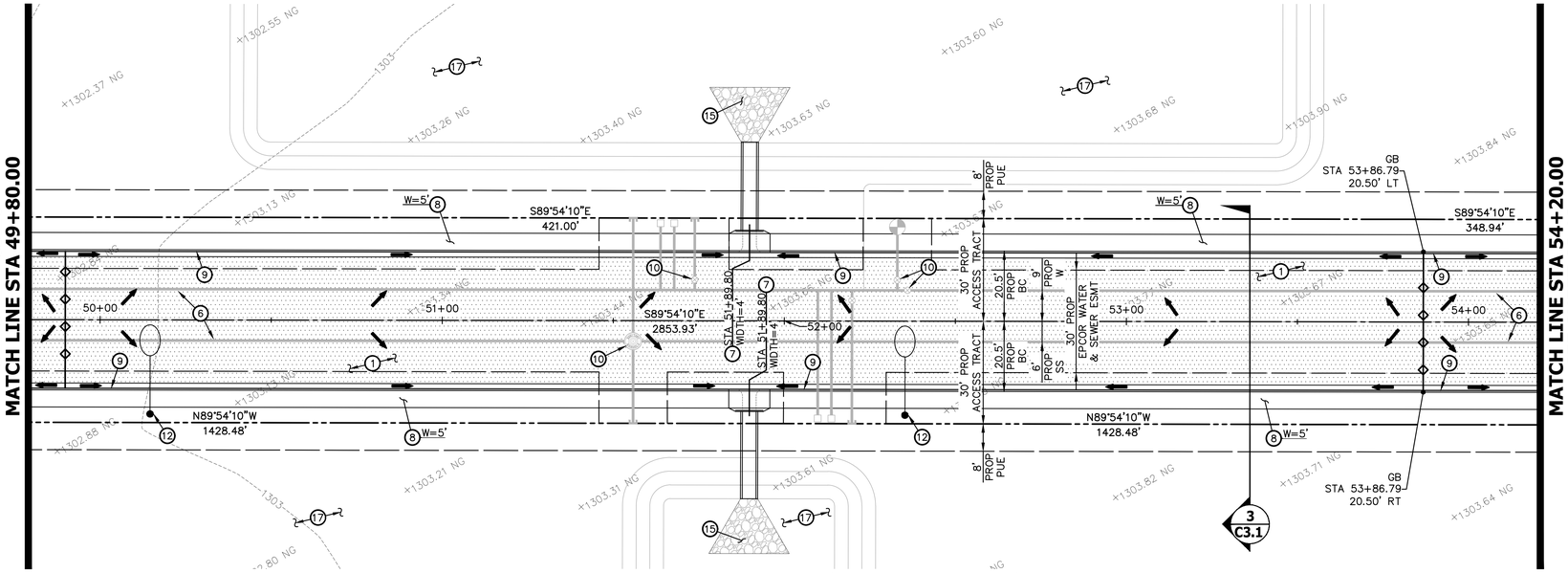
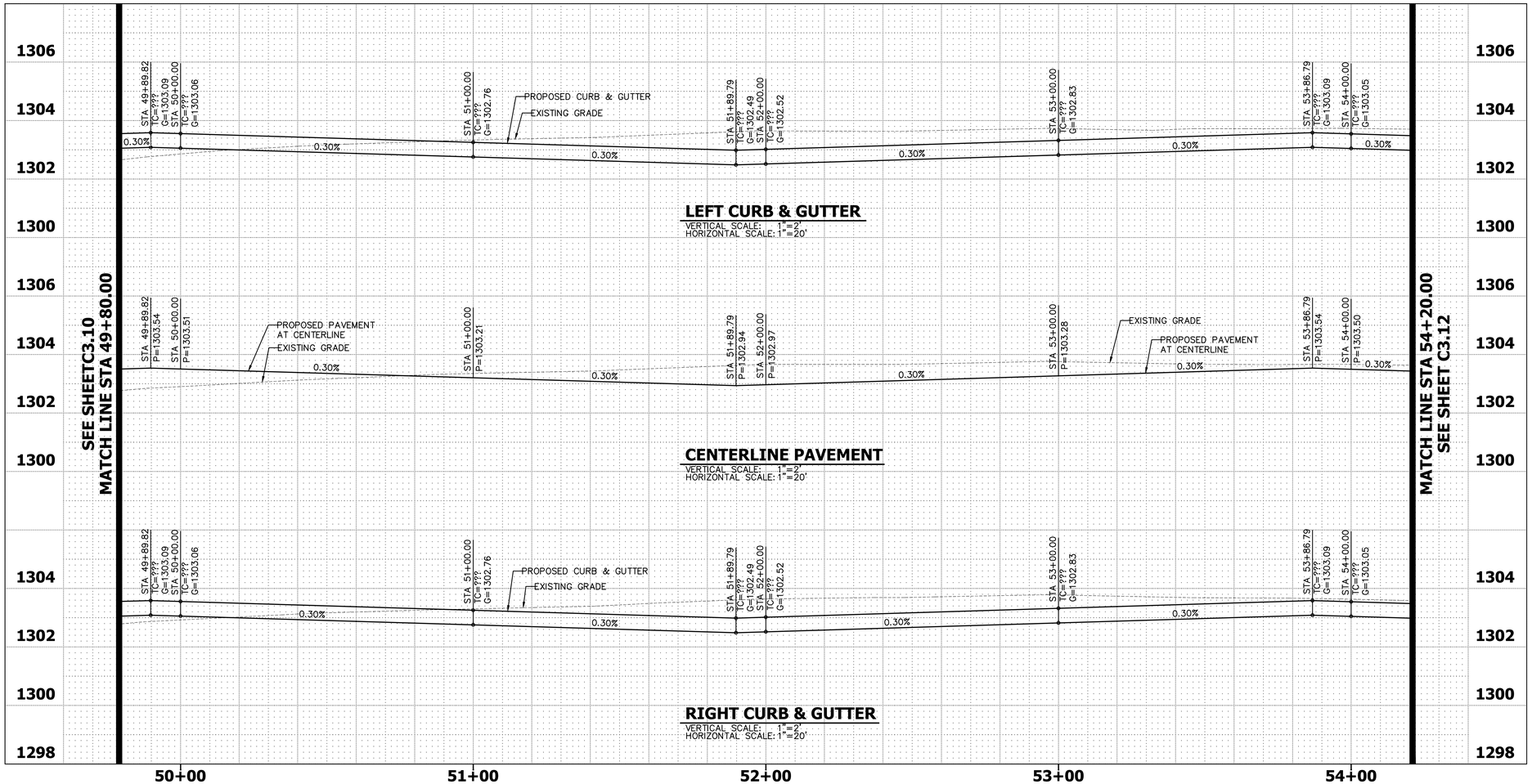
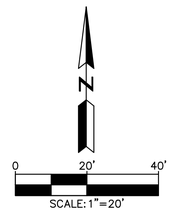
PROJECT NAME: WESTWING BUSINESS PARK

HE NO.: SILA001
SCALE: 1"=20'

SHEET: C3.10







CONSTRUCTION NOTES

1. CONSTRUCT PAVEMENT SECTION MIN. 4" AC ON 10" ABC PER RECOMMENDATION BY THE GEOTECH REPORT PREPARED BY RAMM ENGINEERING, DATED 9/2/21, PROJECT# G27322. SEE DETAIL 1 ON SHEET C3.1.
2. CONSTRUCT ASPHALT PAVEMENT THICKENED EDGE PER MAG STD DTL 201, TYPE A.
3. PROTECT EXISTING UTILITIES IN PLACE DURING CONSTRUCTION.
4. SEE UTILITY PLANS FOR CROSSING INFORMATION.
5. FOR CONTINUATION OF ROADWAY CONSTRUCTION, SEE SHEETS C2.0–C2.4.
6. FOR WATER AND SEWER CONSTRUCTION DETAILS, SEE SHEETS C5.0–C5.19.
7. CONSTRUCT SCUPPER WITH CONCRETE SPILLWAY PER MAG STD DTL 206–1, 206–2 & 206–3. INSTALL SAFETY RAILING PER MAG STD DTL 145. OPENING WIDTH PER PLAN.
8. CONSTRUCT CONCRETE SIDEWALK PER MAG STD DTL 230. WIDTH PER PLAN.
9. CONSTRUCT CONCRETE CURB AND GUTTER PER MAG STD DTL 220–1, TYPE "A".
10. ADJUST RIM TO FINISH GRADE PER MAG STD DTL 422 FOR SANITARY SEWER MANHOLES AND MAG STD DTL 391–1, TYPE A FOR WATER VALVES.
11. CONSTRUCT CURB OPENING CATCH BASIN PER MAG STD DTL 530. INVERT PER PLAN.
12. PROPOSED STREET LIGHTING. SEE SEPARATE STREET LIGHT PLANS FOR DETAIL.
13. INSTALL RGRCP CLASS V STORM PIPE PER MAG STD SPECIFICATIONS WITH FITTINGS PER PLAN. LENGTH, SLOPE, FITTING AND SIZE PER PLAN. BACKFILL PER PIPE MANUFACTURER'S SPECIFICATIONS.
14. CONSTRUCT HEADWALL TYPE "U" PER MAG STD DTL 501–1, MODIFIED PER PLAN.
15. PROVIDE INDIGENOUS STONE RIP RAP PER PLAN. RIP RAP SHALL BE D50=6", THICKNESS=20". SEE DETAIL 6 ON SHEET C3.1 FOR MORE DETAILED RIPRAP DESIGN INFORMATION AND REQUIREMENTS. FILTER FABRIC BLANKET CLASS A TO BE INSTALLED BENEATH RIPRAP.
16. CONSTRUCT DRAINAGE CHANNEL WITH SIDE SLOPES AND WIDTH PER PLAN.
17. FOR ONSITE GRADING AND DRAINAGE PLAN CONSTRUCTION DETAILS, SEE SHEETS C6.0–C6.6.
18. FOR BOX CULVERT AND HEADWALL DETAILS, SEE SHEETS C3.15–C3.17.
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LEGEND

SEE SHEET C3.0

GENERAL NOTES

SEE SHEET C3.1

NOTES

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Maricopa County
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NO.	DATE	REVISION	BY

PURPOSE: FINAL SUBMITTAL

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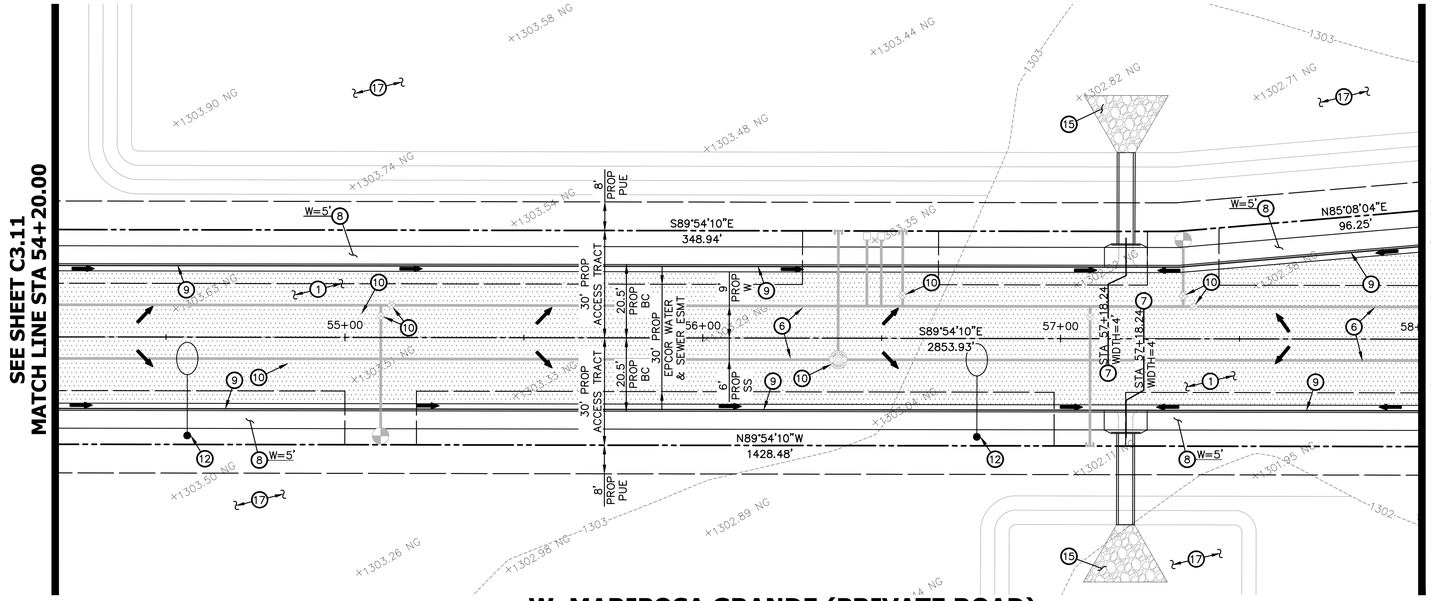
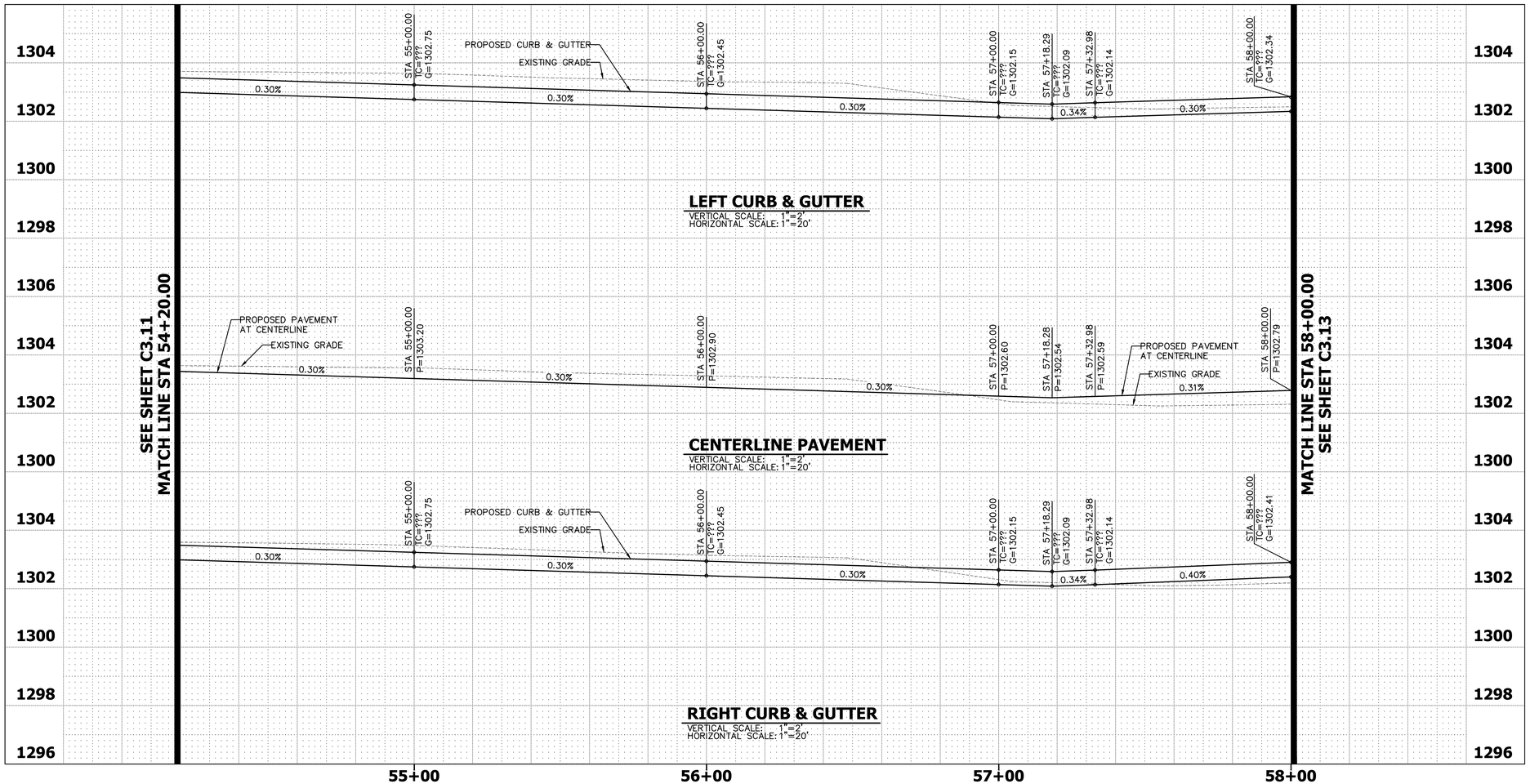
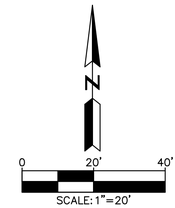
PROJECT NAME: WESTWING BUSINESS PARK

HE NO.: SILA001
SCALE: 1"=20'

SHEET: C3.11







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PURPOSE: FINAL SUBMITTAL

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DRAWN BY: DHK
CHECKED BY: DJL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET
SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE No.
54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA, U.S.A.

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PRIVATE ROAD STA 54+20.00 TO STA 58+00.00
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12300 W. MARIPOSA GRANDE
SUN CITY, ARIZONA 85373

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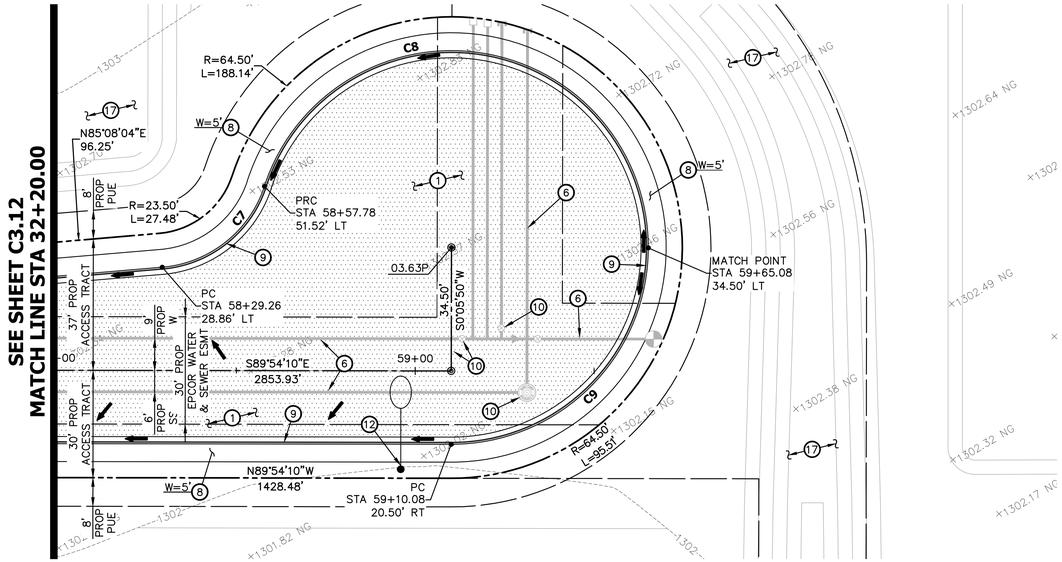
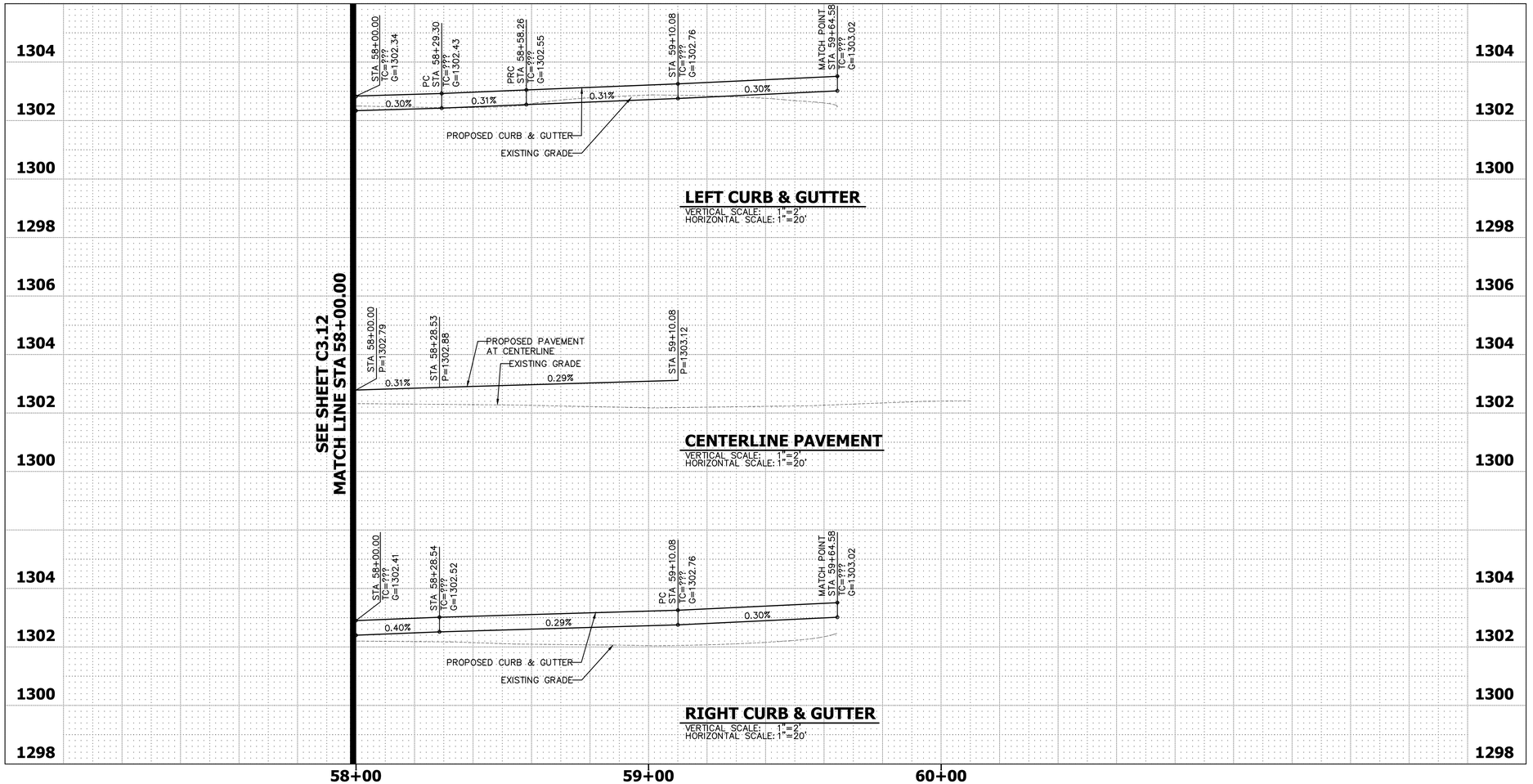
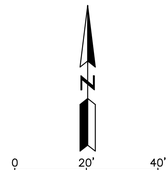
HE NO.: SILA001
SCALE: 1"=20'

SHEET: C3.12



W. MARIPOSA GRANDE (PRIVATE ROAD)





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LEGEND

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GENERAL NOTES

SEE SHEET C3.1

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CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C7	33.00'	38.59'	67°00'24"
C8	55.00'	160.43'	167°07'27"
C9	55.00'	81.45'	84°50'43"

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NO.	DATE	REVISION	BY

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DRAWN BY: DHK
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CIVIL AND SURVEY
10446 NORTH 74TH STREET SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

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54944
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PAVING PLAN AND PROFILE PRIVATE ROAD STA 58+00.00 TO END
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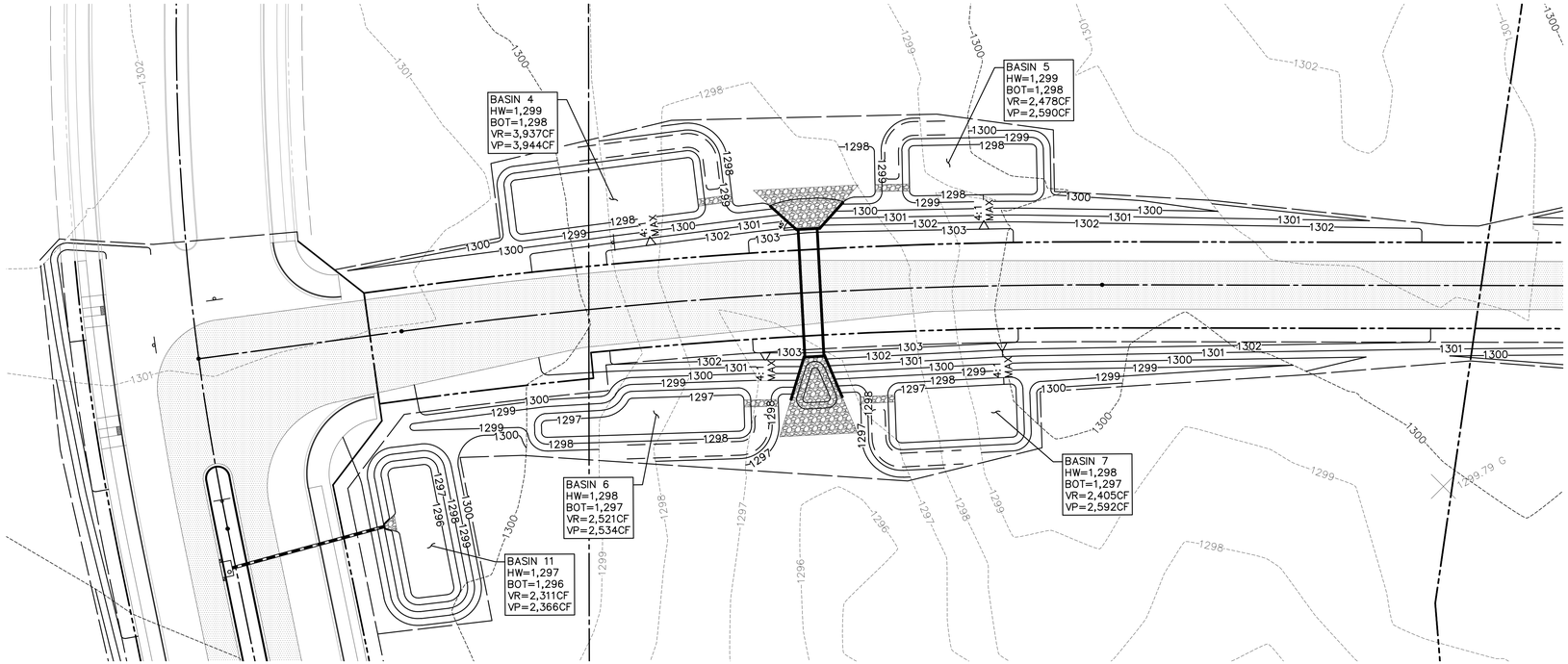
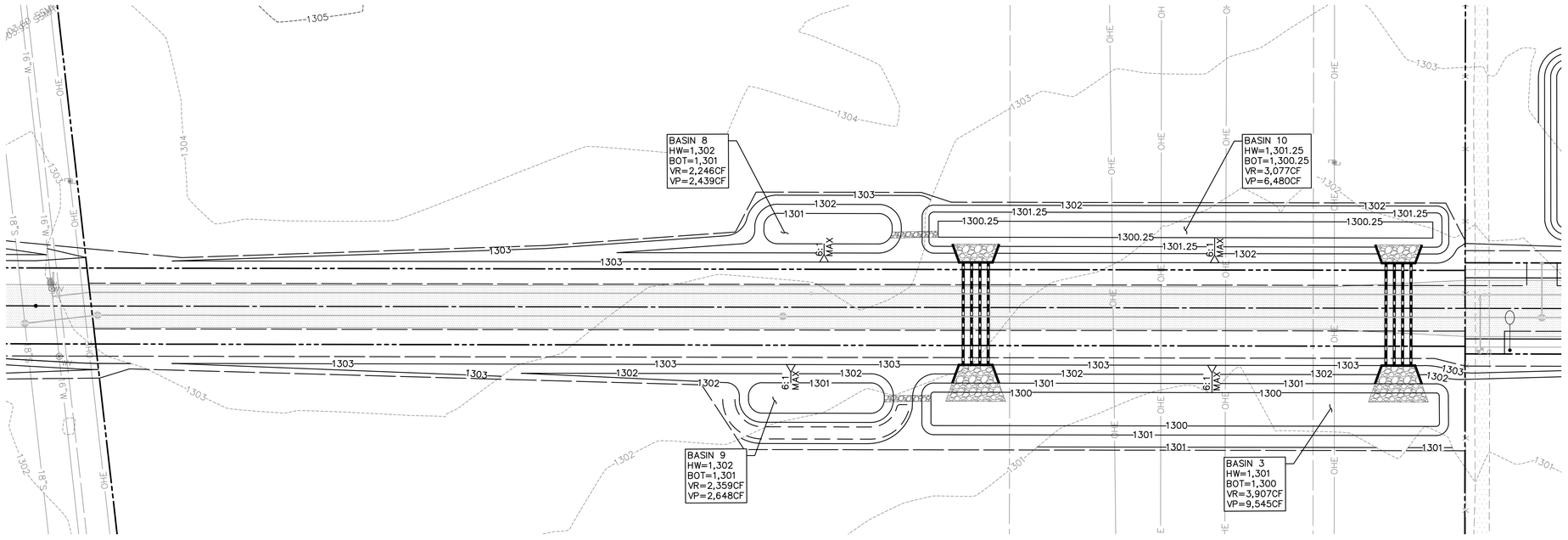
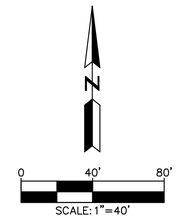
PROJECT NAME: WESTWING BUSINESS PARK

HE NO.: SILA001
SCALE: 1"=20'

SHEET: C3.13







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ARIZONA, U.S.A.

ROADSIDE GRADING FOR WESTWING BUSINESS PARK
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SUN CITY, ARIZONA 85373

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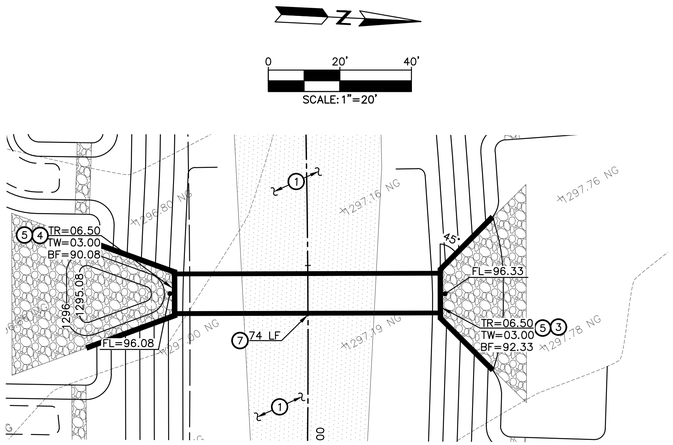
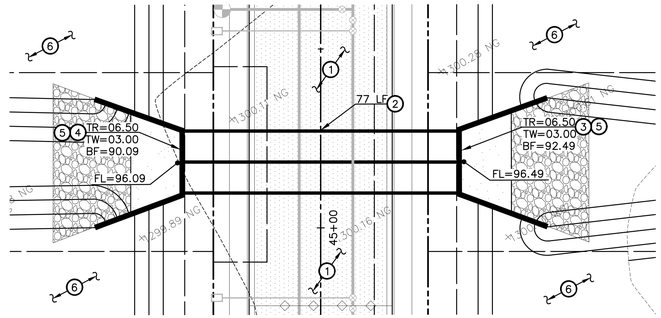
PROJECT NAME: WESTWING BUSINESS PARK

HE NO.: SILA001
SCALE: 1"=40'

SHEET:
C3.14



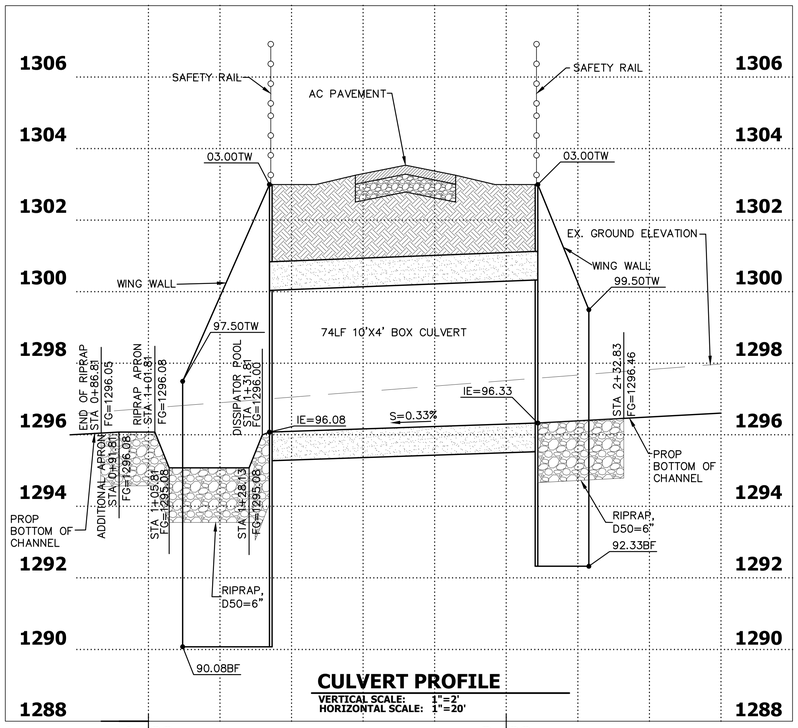
BOX CULVERT #1



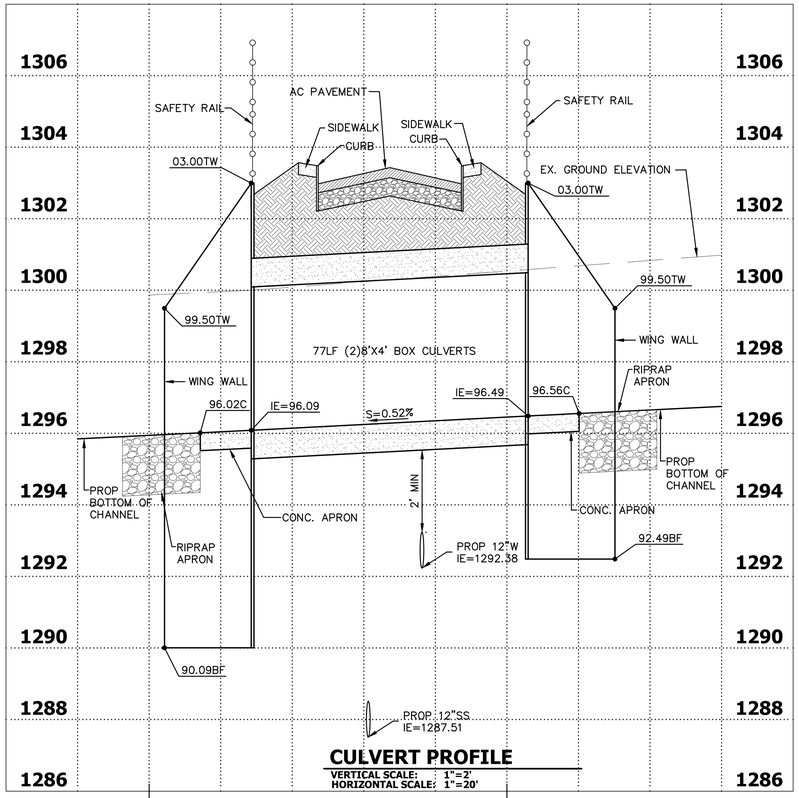
BOX CULVERT #3

CONSTRUCTION NOTES

1. SEE COLLECTOR ROAD PAVING PLAN SHEETS C3.2–C3.13 FOR DETAIL.
2. CONSTRUCT 8'X4' DOUBLE BARREL BOX CULVERT PER ADOT STD DTL SD 6.02 (1 OF 2). LENGTH PER PLAN. SEE DETAILS ON SHEETS C3.15–C3.16. ANY DEVIATION FROM ADOT AND MAG CONSTRUCTION STANDARDS WILL REQUIRE WRITTEN APPROVAL.
3. INSTALL INLET HEADWALL WITH APRON PER ADOT STD DTL SD 6.08 (3 OF 8), SD 6.09 (2 OF 3), SD 6.11 (1 OF 4), SD 6.11 (3 OF 4). MODIFY WINGWALL PER PLAN, WINGWALL ANGLE SHALL BE 70°. SEE DETAILS ON SHEETS C3.15–C3.16.
4. INSTALL OUTLET HEADWALL WITH APRON PER ADOT STD DTL NO. SD 6.08 (1 OF 8), SD 6.09 (2 OF 3), SD 6.11 (1 OF 4), SD 6.11 (3 OF 4). MODIFY WINGWALL PER PLAN, WINGWALL ANGLE SHALL BE 70° EXCEPT WHERE NOTED. SEE DETAILS ON SHEETS C3.16–C3.17.
5. INSTALL SAFETY RAIL PER MAG STD DTL 145.
6. SEE ONSITE GRADING AND DRAINAGE PLANS FOR DETAILS.
7. CONSTRUCT 10'X4' ONE BARREL BOX CULVERT PER ADOT STD DTL SD 6.01 (5 OF 5). LENGTH PER PLAN. SEE DETAILS ON SHEETS C3.15–C3.16, ANY DEVIATION FROM ADOT AND MAG CONSTRUCTION STANDARDS WILL REQUIRE WRITTEN APPROVAL.



CULVERT PROFILE
VERTICAL SCALE: 1"=2'
HORIZONTAL SCALE: 1"=20'



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Approval of plans and specifications shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of the Maricopa County codes and regulations.

NO.	DATE	REVISION	BY

PURPOSE: **FINAL SUBMITTAL**

DESIGN BY: DJL
DRAWN BY: DHK
CHECKED BY: DJL

HUNTER ENGINEERING
CIVIL AND SURVEY
10446 NORTH 74TH STREET SUITE 140
SCOTTSDALE, AZ 85258
P 480 991 3985

Registered Professional Engineer
CERTIFICATE NO.
54944
DANIEL J. LEONE
Signed 4/12/24
ARIZONA U.S.A.

CULVERT PLAN AND PROFILE FOR WESTWING BUSINESS PARK 12300 W. MARIPOSA GRANDE SUN CITY, ARIZONA 85373

MARICOPA COUNTY CASE NO: Z2020029

CONTACT ARIZONA 811 AT LEAST 2 FULL WORKING DAYS BEFORE YOU BEGIN EXCAVATION
AR ZONA811
CALL 811 OR CLICK AZONA811.COM

THESE PLANS ARE NOT APPROVED FOR CONSTRUCTION WITHOUT AN APPROVED SIGNATURE FROM THE GOVERNING MUNICIPALITY.

PROJECT NAME: WESTWING BUSINESS PARK

HE NO.: SILA001
SCALE: 1"=20'

SHEET: **C3.15**

TABLE NO. I
0'-10' FILL

Span "S"	Height "H"	Slab "T"	Walls "W"	aa Bar Size	aa Spacing	aa Length	cc Number +	cc Bar Size	cc Spacing	cc Length	gg Number +	gg Bar Size	gg Spacing	gg Length	hh Number +	hh Bar Size	hh Spacing	hh Length	F
6'	3' 5⅞"	9"	9"	5	12"	4'-4	20	5	6"	7'-2	14	5	6"	5'-2	2'-6				
	4' 5⅞"	9"	9"	5	12"	5'-1	24	5	6"	7'-2	14	5	6"	5'-8	2'-6				
	5' 5⅞"	9"	9"	5	12"	5'-11	24	5	6"	7'-2	14	5	6"	6'-3	2'-6				
	6' 5⅞"	9"	9"	5	12"	6'-8	24	5	6"	7'-2	14	5	6"	6'-8	2'-6				
	7' 5⅞"	9"	9"	5	12"	7'-5	28	5	6"	7'-2	14	5	6"	7'-2	2'-6				
8'	3' 10"	11"	5	12"	4'-5	20	5	6"	9"-6	18	4	6"	6'-2	3'-4					
	4' 10"	11"	5	12"	5'-5	24	5	6"	9"-6	20	4	6"	6'-8	3'-4					
	5' 10"	11"	5	12"	6'-5	24	5	6"	9"-6	20	4	6"	7'-2	3'-4					
	6' 10"	11"	5	12"	7'-5	28	5	6"	9"-6	20	4	6"	7'-8	3'-4					
	7' 10"	11"	5	12"	8'-5	32	6	8"	9"-6	22	4	6"	8'-2	3'-4					
	8' 10"	11"	5	12"	9'-5	32	6	8"	9"-6	22	4	6"	8'-8	3'-4					
10'	3' 10⅝"	13"	5	12"	4'-5	20	6	8"	11"-10	22	5	6"	7'-4	4'-4					
	4' 10⅝"	13"	5	12"	5'-5	24	6	8"	11"-10	22	5	6"	7'-10	4'-4					
	5' 10⅝"	13"	5	12"	6'-5	24	6	8"	11"-10	24	5	6"	8'-4	4'-4					
	6' 10⅝"	13"	5	12"	7'-5	28	6	7"	11"-10	24	5	6"	8'-10	4'-4					
	7' 10⅝"	13"	5	12"	8'-5	32	6	7"	11"-10	26	5	6"	9'-4	4'-4					
	8' 10⅝"	13"	5	12"	9'-5	32	6	7"	11"-10	26	5	6"	9'-10	4'-4					
	9' 10⅝"	13"	5	12"	10'-5	36	6	7"	11"-10	28	5	6"	10'-4	4'-4					
12'	10' 11⅜"	15"	5	12"	11'-5	40	6	7"	11"-10	28	5	6"	10'-10	4'-4					
	8' 11⅜"	15"	5	9"	10'-8	36	7	7"	14'-2	38	6	6"	10'-11	4'-8					
	9' 11⅜"	15"	5	9"	11'-8	40	7	7"	14'-2	40	6	6"	11'-5	4'-8					
	10' 11⅜"	15"	5	9"	12'-8	44	7	6"	14'-2	42	6	6"	11'-11	3'-9					
	11' 11⅜"	15"	5	9"	12'-9	44	7	6"	14'-2	44	6	6"	12'-5	3'-9					
	12' 12"	15"	5	8"	13'-9	44	7	6"	14'-2	46	6	6"	12'-5	4'-8					

TABLE NO. II
10'-15' FILL

Span "S"	Height "H"	Slab "T"	Walls "W"	aa Bar Size	aa Spacing	aa Length	cc Number +	cc Bar Size	cc Spacing	cc Length	gg Number +	gg Bar Size	gg Spacing	gg Length	hh Number +	hh Bar Size	hh Spacing	hh Length	F
6'	3'	9"	9"	5	12"	4'-4	20	5	6"	7'-2	14	5	6"	5'-2	2'-6				
	4'	9"	9"	5	12"	5'-1	24	5	6"	7'-2	14	5	6"	5'-8	2'-6				
	5'	9"	9"	5	12"	6'-1	24	5	6"	7'-2	14	5	6"	6'-3	2'-6				
	6'	9"	9"	5	12"	7'-1	28	5	6"	7'-2	14	5	6"	6'-8	2'-6				
	7'	9"	9"	5	12"	8'-1	32	5	6"	7'-2	14	5	6"	7'-2	2'-6				
8'	3'	10⅝"	11"	5	12"	4'-4	20	6	8"	9"-6	18	5	6"	5'-7	2'-8				
	4'	10⅝"	11"	5	12"	5'-4	24	6	8"	9"-6	18	5	6"	6'-1	2'-8				
	5'	10⅝"	11"	5	12"	6'-4	24	6	8"	9"-6	18	5	6"	6'-8	2'-8				
	6'	10⅝"	11"	5	12"	7'-4	28	6	7"	9"-6	18	5	6"	7'-3	2'-8				
	7'	10⅝"	11"	5	12"	8'-4	32	6	7"	9"-6	18	5	6"	7'-9	2'-8				
	8'	10⅝"	11"	5	12"	9'-4	32	6	7"	9"-6	18	5	6"	8'-3	2'-8				
10'	3'	12⅝"	13"	5	12"	4'-4	20	7	7"	11"-10	22	6	7"	5'-11	3'-2				
	4'	12⅝"	13"	5	12"	5'-4	24	7	7"	11"-10	22	6	7"	6'-5	3'-2				
	5'	12⅝"	13"	5	12"	6'-4	24	7	7"	11"-10	22	6	7"	7'-1	3'-2				
	6'	12⅝"	13"	5	12"	7'-4	28	7	7"	11"-10	22	6	7"	7'-7	3'-2				
	7'	12⅝"	13"	5	12"	8'-10	32	7	7"	11"-10	22	6	7"	8'-2	3'-4				
	8'	12⅝"	13"	5	12"	9'-11	32	7	7"	11"-10	22	6	7"	8'-8	3'-6				
	9'	12⅝"	13"	5	12"	10'-11	36	7	7"	11"-10	22	6	7"	9'-3	3'-6				
12'	10'	15⅝"	15"	5	12"	11'-11	40	8	7"	14'-2	26	6	7"	9'-9	3'-9				
	8'	15⅝"	15"	5	10"	10'-3	32	8	7"	14'-2	26	6	7"	9'-7	3'-9				
	9'	15⅝"	15"	5	10"	11'-3	36	8	7"	14'-2	26	6	7"	10'-3	3'-9				
	10'	15⅝"	15"	5	10"	12'-4	40	8	7"	14'-2	26	6	7"	10'-10	3'-9				
	11'	15⅝"	15"	5	9"	12'-4	40	8	7"	14'-2	26	6	6"	11'-4	3'-9				
	12'	15⅝"	15"	5	8"	14'-0	44	7	6"	14'-2	26	6	6"	11'-8	3'-9				

TABLE NO. III
15'-20' FILL

Span "S"	Height "H"	Slab "T"	Walls "W"	aa Bar Size	aa Spacing	aa Length	cc Number +	cc Bar Size	cc Spacing	cc Length	gg Number +	gg Bar Size	gg Spacing	gg Length	hh Number +	hh Bar Size	hh Spacing	hh Length	F
6'	3'	9"	9"	5	12"	4'-4	20	6	8"	7'-2	14	5	6"	5'-2	2'-6				
	4'	9"	9"	5	12"	5'-3	24	6	8"	7'-2	14	5	6"	5'-8	2'-6				
	5'	9"	9"	5	12"	6'-3	24	6	8"	7'-2	14	5	6"	6'-3	2'-6				
	6'	9"	9"	5	12"	7'-3	28	6	8"	7'-2	14	5	6"	6'-9	2'-6				
	7'	9"	9"	5	12"	8'-5	32	6	8"	7'-2	14	5	6"	7'-4	2'-6				
8'	3'	10⅝"	11"	5	12"	4'-4	20	6	8"	9"-6	18	5	6"	5'-7	2'-8				
	4'	10⅝"	11"	5	12"	5'-4	24	7	8"	9"-6	18	5	6"	6'-1	2'-8				
	5'	10⅝"	11"	5	12"	6'-4	24	7	8"	9"-6	18	5	6"	6'-8	2'-8				
	6'	10⅝"	11"	5	12"	7'-4	28	7	8"	9"-6	18	5	6"	7'-3	2'-8				
	7'	10⅝"	11"	5	12"	8'-4	32	7	8"	9"-6	18	5	6"	7'-9	2'-8				
	8'	10⅝"	11"	5	12"	9'-4	32	7	8"	9"-6	18	5	6"	8'-3	2'-8				
10'	3'	12⅝"	13"	5	12"	4'-4	20	7	8"	11"-10	22	6	7"	5'-11	3'-2				
	4'	12⅝"	13"	5	12"	5'-4	24	7	8"	11"-10	22	6	7"	6'-5	3'-2				
	5'	12⅝"	13"	5	12"	6'-4	24	7	8"	11"-10	22	6	7"	7'-1	3'-2				
	6'	12⅝"	13"	5	12"	7'-4	28	7	8"	11"-10	22	6	7"	7'-7	3'-2				
	7'	12⅝"	13"	5	12"	8'-10	32	7	7"	11"-10	22	6	7"	8'-2	3'-4				
	8'	12⅝"	13"	5	12"	9'-11	32	7	7"	11"-10	22	6	7"	8'-8	3'-6				
	9'	12⅝"	13"	5	12"	10'-11	36	7	7"	11"-10	22	6	7"	9'-3	3'-6				
12'	10'	15⅝"	15"	5	12"	11'-11	40	8	7"	14'-2	26	6	7"	9'-9	3'-9				
	8'	15⅝"	15"	5	10"	10'-3	32	8	7"	14'-2	26	6	7"	9'-7	3'-9				
	9'	15⅝"	15"	5	10"	11'-3	36	8	7"	14'-2	26	6	7"	10'-3	3'-9				
	10'	15⅝"	15"	5	10"	12'-4	40	8	7"	14'-2	26	6	7"	10'-10	3'-9				
	11'	15⅝"	15"	5	9"	12'-4	40	8	7"	14'-2	26	6	6"	11'-4	3'-9				
	12'	15⅝"	15"	5	8"	14'-0	44	7	6"	14'-2	26	6	6"	11'-8	3'-9				

TABLE NO. IV
20'-25' FILL

Span "S"	Height "H"	Slab "T"	Walls "W"	aa Bar Size	aa Spacing	aa Length	cc Number +	cc Bar Size	cc Spacing	cc Length	gg Number +	gg Bar Size	gg Spacing	gg Length	hh Number +	hh Bar Size	hh Spacing	hh Length	F
6'	3'	9"	9"	5	12"	4'-3	20	6	8"	7'-2	14	5	6"	5'-2	2'-6				
	4'	9"	9"	5	12"	5'-3	24	6	8"	7'-2	14	5	6"	5'-8	2'-6				
	5'	9"	9"	5	12"	6'-3	24	6	8"	7'-2	14	5	6"	6'-3	2'-6				
	6'	9"	9"	5	12"	7'-3	28	6	8"	7'-2	14	5	6"	6'-9	2'-6				
	7'	9"	9"	5	12"	8'-5	32	6	8"	7'-2	14	5	6"	7'-4	2'-6				
8'	3'	10⅝"	11"	5	12"	4'-4	20	6	8"	9"-6	18	5	6"	5'-7	2'-8				
	4'	10⅝"	11"	5	12"	5'-4	24	7	8"	9"-6	18	5	6"	6'-1	2'-8				
	5'	10⅝"	11"	5	12"	6'-4	24	7	8"	9"-6	18	5	6"	6'-8	2'-8				
	6'	10⅝"	11"	5	12"	7'-4	28	7	8"	9"-6	18	5	6"	7'-3	2'-8				
	7'	10⅝"	11"	5	12"	8'-4	32	7	8"	9"-6	18	5	6"	7'-9	2'-8				
	8'	10⅝"	11"	5	12"	9'-4	32	7	8"	9"-6	18	5	6"	8'-3	2'-8				
10'	3'	12⅝"	13"	5	12"	4'-4	20	7	8"	11"-10	22	6	7"	5'-11	3'-2				
	4'	12⅝"	13"	5	12"	5'-4	24	7	8"	11"-10	22	6	7"	6'-5	3'-2				
	5'	12⅝"	13"	5	12"	6'-4	24	7	8"	11"-10	22	6	7"	7'-1	3'-2				
	6'	12⅝"	13"	5	12"	7'-4	28	7	8"	11"-10	22	6	7"	7'-7	3'-2				
	7'	12⅝"	13"	5	12"	8'-10	32	7	7"	11"-10	22	6	7"	8'-2	3'-4				
	8'	12⅝"	13"	5	12"	9'-11	32	7	7"	11"-10	22	6	7"	8'-8	3'-6				
	9'	12⅝"	13"	5	12"	10'-11	36	7	7"	11"-10	22	6	7"	9'-3	3'-6				
12'	10'	15⅝"	15"	5	12"	11'-11	40	8	7"	14'-2	26	6	7"	9'-9	3'-9				
	8'	15⅝"	15"	5	10"	10'-3	32	8	7"	14'-2	26	6	7"	9'-7	3'-9				
	9'	15⅝"	15"	5	10"	11'-3	36	8	7"	14'-2	26	6	7"	10'-3	3'-9				
	10'	15⅝"	15"	5	10"	12'-4	40	8	7"	14'-2	26	6	7"	10'-10	3'-9				
	11'	15⅝"	15"	5	9"	12'-4	40	8	7"	14'-2	26	6	6"	11'-4	3'-9				
	12'	15⅝"	15"	5	8"	14'-0	44	7	6"	14'-2	26	6	6"	11'-8	3'-9				

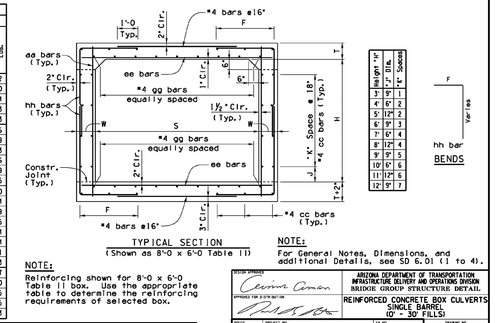
+ Total number of bars in the cross-section.

TABLE NO. V
25'-30' FILL

Span "S"	Height "H"	Slab "T"	Walls "W"	aa Bar Size	aa Spacing	aa Length	cc Number +	cc Bar Size	cc Spacing	cc Length	gg Number +	gg Bar Size	gg Spacing	gg Length	hh Number +	hh Bar Size	hh Spacing	hh Length	F
6'	3' 10⅝"	9"	9"	5	12"	4'-5	20	6	7"	7'-2	14	5	6"	5'-4	2'-6				
	4' 11"	9"	9"	5	12"	5'-6	24	6	7"	7'-2	14	5	6"	6'-0	2'-6				
	5' 11"	9"	9"	5	12"	6'-7	24	6	7"	7'-2	14	5	6"	6'-5	2'-6				
	6' 11"	9"	9"	5	12"	7'-7	28	6	7"	7'-2	14	5	6"	6'-11	2'-6				
	7' 13"	11"	5	10"	4'-10	20	7	7"	9"-6	18	5	6"	5'-10	2'-8					
8'	3' 10⅝"	11"	5	10"	5'-10	24	7	7"	9"-6	18	5	6"	6'-4	2'-8					
	4' 13⅝"	11"	5	10"	7'-0	24	7	7"	9"-6	18	5	6"	6'-11	2'-8					
	5' 13⅝"	11"	5	10"	8'-0	28	7	7"	9"-6	18	5	6"	7'-5	2'-8					
	6' 13⅝"	11"	5	10"	9'-0	32	7	7"	9"-6	18	5	6"	7'-11	2'-8					
	7' 13⅝"	11"	5	10"	10'-0	32	7	7"	9"-6	18	5	6"	8'-5	2'-8					
10'	3' 10⅝"	13"	5	6"	5'-4	20	8	7"	11"-10	22	6	6"	6'-9	3'-4					
	4' 16"	13"	5	6"	6'-4	24	8	7"	11"-10	22	6	6"	7'-6	3'-4					
	5' 16"	13"	5	6"	7'-4	24	8	7"	11"-10	22	6	6"	8'-0	3'-4					
	6' 16"	13"	5	10"	8'-5	28	8	7"	11"-10	22	6	6"	8'-5	3'-4					
	7' 16"	13"	5	10"	9'-5	32	8	7"	11"-10	22	6	6"	8'-10	3'-4					
	8' 16"	13"	5	10"	10'-5	32	8	7"	11"-10	22	6	6"	9'-4	3'-4					
12'	10' 16⅜"	15"	5	10"	11'-5	36	8	7"	11"-10	22	6	7"	9'-10	3'-4					
	11' 16⅜"	15"	5	10"	12'-6	40	8	7"	11"-10	22	6	7"	10'-4	3'-4					
	12' 16⅜"	15"	5	10"	13'-6	44	8	7"	11"-10	22	6	7"	10'-9	3'-4					
	13' 16⅜"	15"	5	10"	14'-6	44	8	7"	11"-10	22	6	7"	11'-3	3'-5					

QUANTITIES PER LINEAR FOOT OF BARREL

Span "S"	Height "H"	Table I Concrete C.Y.	Table I Reinf. Steel Lbs.	Table II Concrete C.Y.	Table II Reinf. Steel Lbs.	Table III Concrete C.Y.	Table III Reinf. Steel Lbs.	Table IV Concrete C.Y.	Table IV Reinf. Steel Lbs.	Table V Concrete C.Y.	Table V Reinf. Steel Lbs.
6'	3'	0.662	83.9	0.593	109.1	0.639	111.8	0.685	112.5	0.708	118.2
	4'	0.718	95.3	0.648	118.0	0.694	120.8	0.741	121.5	0.787	128.0
	5'	0.773	109.7	0.704	124.3	0.750	127.7	0.796	128.7	0.843	134.4
	6'	0.829	118.5	0.759	133.2	0.806	136.6	0.852	137.7	0.898	143.3
	7'	0.884	125.9	0.815	142.1	0.861	145.6	0.908	146.7	0.954	152.5
8'	3'	0.881	112.7	0.820	131.1	0.911	144.9	1.002	156.3	1.063	159.6
	4'	0.949	121.5	0.888	140.7	0.979	153.9	1.070	163.9	1.131	168.9
	5'	1.016	126.2	0.986	155.7	1.047	161.2	1.138	171.2	1.229	162.3
	6'	1.084	133.7	1.054	165.0	1.145	171.0	1.206	180.8	1.297	170.6
	7'	1.152	145.6	1.122	174.4	1.213	179.9	1.274	189.7	1.365	178.9
	8'	1.220	150.4	1.190	181.0	1.281	186.2	1.372	196.2	1.433	184.5
10'	3'	1.076	157.6	1.114	196.0	1.264	186.9	1.377	198.7	1.527	242.0
	4'	1.156	166.6	1.194	210.3	1.344	210.2	1.457	248.3	1.607	263.4
	5'	1.237	181.7	1.274	219.1	1.424	218.1	1.537	262.7	1.687	241.9
	6'	1.317	190.7	1.392	206.4	1.505	227.3	1.655	268.5	1.767	246.5
	7'	1.397	200.9	1.472	214.5	1.585	225.5	1.735	252.1	1.848	255.4
	8'	1.477	211.1	1.552	221.3	1.703	233.5	1.815	259.1	1.928	262.4
	9'	1.558	221.8	1.670	231.9	1.783	243.2	1.896	268.8	2.008	272.1
	10'	1.675	231.4	1.751	241.6	1.863	252.8	2.013	291.3	2.126	295.3
12'	8'	1.863	305.6	2.003	287.4	2.182	303.8	2.361	327.1	2.585	345.7
	9'	1.961	317.0	2.096	297.8	2.275	314.1	2.498	353.2	2.677	354.0
	10'	2.054	333.9	2.188	308.1	2.412	325.5	2.591	361.8	2.770	363.5
	11'	2.191	344.6	2.281	319.3	2.505	356.4	2.684	375.8	2.863	382.5
	12'	2.284	375.7	2.418	355.9	2.597	372.8	2.776	418.9	3.000	429.3



Height "H"	"K" Spaces
3'	1
4'	2
5'	2
6'	3
7'	4
8'	4
9'	5
10'	6
11'	6
12'	7

NOTE:
Reinforcing shown for 8'-0 x 6'-0 Table I box. Use the appropriate table to determine the reinforcing requirements of selected box.

NOTE:
For General Notes, Dimensions, and additional Details, see SD 6.01 (1 to 4).

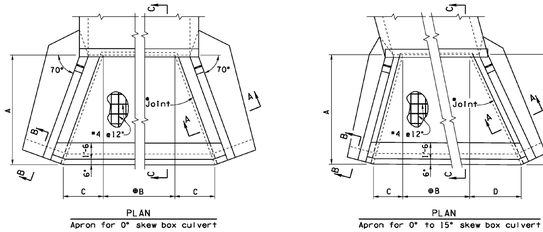
New box culverts shall not be constructed using 3' or 4' heights without special approval from ADOT Bridge Group. Tables referencing these sizes are provided for extension of existing box culverts only.

DESIGN APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR ELECTRONIC SIGN	REINFORCED CONCRETE BOX CULVERTS SINGLE BARREL 10' - 30' FILLS)
DATE / PROJECT NO. / TR NO.	STANDARD NO. SD 6.01 (5 of 5)
LOCATION	SHEET NO. OF

28-JAN-2016 16:26 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Structures\SD 6.01-6.11 Series\SD6.01-1 to 5\sd601-5.1916.dgn

TABLE NO. I
0'-10' FILL

Span "S"	Height "H"	Slab "T"	Walls "W"	aa Bar Size	aa Spacing	aa Length	bb Bar Size	bb Spacing	bb Length	cc Number +	cc Bar Size	cc Spacing	cc Length	ee Number +	ee Bar Size	ee Spacing	ee Length	ff Number +	ff Bar Size	ff Spacing	ff Length	gg Number +	gg D	hh Bar Size	hh Spacing	hh Length	F
6'	3' 5⅞"	9"	9"	5	12"	4'-4	5	12"	4'-1	5	12"	4'-3	20	6	8"	7'-2	14	5	6"	5'-2	2'-6						
	4' 5⅞"	9"	9"	5	12"	5'-1	5	12"	4'-1	5	12"	5'-3	24	6	8"	7'-2	14	5	6"	5'-8	2'-6						
	5' 5⅞"	9"	9"	5	12"	6'-1	5	12"	4'-1	5	12"	6'-3	24	6	8"	7'-2	14	5	6"	6'-3	2'-6						
	6' 5⅞"	9"	9"	5	12"	7'-1	5	12"	4'-1	5	12"	7'-3	28	6	8"	7'-2	14	5	6"	6'-9	2'-6						
	7' 5⅞"	9"	9"	5	12"	8'-1	5	12"	4'-1	5	12"	8'-5	32	6	8"	7'-2	14	5	6"	7'-4	2'-6						
8'	3' 10⅝"	11"	5	12"	4'-4	5	12"	4'-0	5	12"	4'-2	20	6	8"	9"-6	18	5	6"	5'-7	2'-8							
	4' 10⅝"	11"	5	12"	5'-4	5	12"	4'-0	5	12"	5'-4	24	6	8"	9"-6	18	5	6"	6'-1	2'-8							
	5' 10⅝"	11"	5	12"	6'-4	5	12"	4'-0	5	12"	6'-4	24	6	8"	9"-6	18	5	6"	6'-8	2'-8							
	6' 10⅝"	11"	5	12"	7'-4	5	12"	4'-0	5	12"	7'-4	28	6	8"	9"-6	18	5	6"	7'-3	2'-8							
	7' 10⅝"	11"	5	12"	8'-4	5	12"	4'-0	5	12"	8'-4	32	6	8"	9"-6	18	5	6"	7'-9	2'-8							
	8' 10⅝"	11"	5	12"	9'-4	5	12"	4'-0	5	12"	9'-4	32	6	8"	9"-6	18	5	6"	8'-3	2'-8							
10'	3' 12⅝"	13"	5	12"	4'-4	5	12"	4'-0	5	12"	4'-4	20	7	8"	11"-10	22	6	7"	5'-11	3'-2							
	4' 12⅝"	13"	5	12"	5'-4	5	12"	4'-0	5	12"	5'-4	24	7	8"	11"-10	22	6	7"	6'-5	3'-2							
	5' 12⅝"	13"	5	12"	6'-4	5	12"	4'-0	5	12"	6'-4	24	7	8"	11"-10	22	6	7"	7'-1	3'-2							
	6' 12⅝"	13"	5	12"	7'-4	5	12"	4'-0	5	12"	7'-4	28	7	8"	11"-10	22	6	7"	7'-7	3'-2							
	7' 12⅝"	13"	5	12"	8'-10	5	12"	4'-0	5	12"	8'-5	32	7	7"	11"-10	22	6	7"	8'-2	3'-4							
	8' 12⅝"	13"	5	12"	9'-11	5	12"	4'-0	5	12"	9'-11	32	7	7"	11"-10	22	6	7"	8'-8	3'-6							
	9' 12⅝"	13"	5	12"	10'-11	5	12"	4'-0	5	12"	10'-11	36	7	7"	11"-10	22	6	7"	9'-3	3'-6							
12'	10' 15⅝"	15"	5	12"	11'-11	5	12"	4'-0	5	12"	11'-11	40	8	7"	14'-2	26	6	7"	9'-9	3'-9							
	8' 15⅝"	15"	5	10"	10'-3	5	12"	4'-0	5	12"	10'-3	32	8	7"	14'-2	26	6	7"	9'-7	3'-9							
	9' 15⅝"	15"	5	10"	11'-3	5	12"	4'-0	5	12"	11'-3	36	8	7"	14'-2	26	6	7"	10'-3	3'-9							
	10' 15⅝"	15"	5	10"	12'-4	5	12"	4'-0	5	12"	12'-4	40	8	7"	14'-2



Span	0° Skew	5° Skew	10° Skew	15° Skew	20° Skew	25° Skew	30° Skew	35° Skew	40° Skew	45° Skew
3'	6'-8"	6'-8½"	6'-9½"	6'-10½"	7'-1½"	7'-4½"	7'-8½"	8'-1½"	8'-8½"	9'-5½"
8'	8'-9"	8'-9⅝"	8'-10⅝"	9'-0⅝"	9'-3⅞"	9'-7⅞"	10'-1⅞"	10'-8⅝"	11'-5⅝"	12'-4⅝"
10'	10'-11"	10'-11⅝"	11'-1"	11'-3⅝"	11'-7⅞"	12'-0⅝"	12'-7⅝"	13'-3⅞"	14'-3"	15'-5⅝"
12'	13'-1"	13'-1⅜"	13'-3⅜"	13'-6⅝"	13'-11⅞"	14'-5⅜"	15'-1⅜"	15'-11⅝"	17'-1"	18'-6"

Ⓐ Dimension varies with number of barrels. △ equals length to be added to dimension "B" for each additional barrel.

Note To Designer:
Engineering principles must be fully applied. Results must be signed and sealed by professional engineer. Contents which may cover but do not govern the work must be attached.

NOTE:
For General Notes, Dimensions, and additional Details, see SD 6.01 (1 & 2 of 5). For Apron Dimensions and Quantities see SD 6.11 (2 to 4).

DESIGN APPROVED	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR SIGN BLOCK	REINFORCED CONCRETE BOX CULVERTS OUTLET APRON DETAILS
DATE / PROJECT NO. / FA NO.	SD 6.11 (1 of 4)
LOCATION	SHEET NO. OF

22-JAN-2016 18:54 G:\Bridge\CADD\Standards\SD.Sheets\SD 6 Drainage Structures\SD 6.01-6.11 Series\SD611-1 to 4\sd611-1.8116.dgn

NO.	DATE	REVISION	BY
1	4/15/16	ADDED 3.5' Height for skewed box structures only	DJL
2	4/15/16	ADDED 3.5' Height for skewed box structures only	DJL
3	4/15/16	ADDED 3.5' Height for skewed box structures only	DJL
4	4/15/16	ADDED 3.5' Height for skewed box structures only	DJL

INLET WINGS

Span	Height	0° Skew			5° Skew			10° Skew			15° Skew			20° Skew			25° Skew			30° Skew			35° Skew			40° Skew			45° Skew		
		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.	
		① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s
6'	3'	5.41	0.86	394	80	5.47	0.87	405	80	5.53	0.88	409	81	5.80	0.89	436	83	6.14	0.92	462	85	6.53	0.95	487	88	6.62	1.00	503	93	6.60	1.05	496	98
	4'	7.11	0.86	516	80	7.46	0.87	540	80	7.57	0.88	544	81	7.97	0.89	583	83	8.38	0.92	602	85	8.81	0.95	640	88	9.05	1.00	671	93	9.03	1.05	660	98
	5'	9.32	0.86	666	80	9.86	0.87	688	80	9.83	0.88	698	81	10.44	0.89	752	83	11.03	0.92	796	85	11.65	0.95	840	88	11.97	1.00	862	93	12.11	1.13	879	105
	6'	11.95	0.86	846	80	12.18	0.87	861	80	12.60	0.88	883	81	13.07	0.89	910	83	14.06	0.92	978	85	14.73	0.95	1025	88	14.89	1.00	1041	93	15.07	1.05	1059	98
	7'	14.99	0.86	1144	80	15.23	0.87	1169	80	15.67	0.88	1191	81	16.32	0.89	1165	83	17.26	0.92	1238	85	18.19	0.95	1306	88	18.38	1.00	1338	93	18.41	1.05	1340	98
	3'	5.70	1.13	440	105	5.77	1.14	453	106	5.83	1.15	457	107	6.11	1.17	493	109	6.46	1.21	522	112	6.86	1.25	549	116	6.97	1.31	559	121	6.96	1.38	560	128
	4'	7.41	1.13	541	105	7.76	1.14	565	106	7.88	1.15	570	107	8.28	1.17	613	109	8.71	1.21	635	112	9.15	1.25	670	116	9.40	1.31	697	121	9.40	1.38	696	128
	5'	9.62	1.13	641	105	9.86	1.14	668	106	10.19	1.15	724	107	10.76	1.17	782	109	11.39	1.21	829	112	11.99	1.25	874	116	12.13	1.31	880	121	12.30	1.38	898	128
	6'	12.25	1.13	908	105	12.48	1.14	922	106	12.91	1.15	949	107	13.39	1.17	985	109	14.39	1.21	1058	112	15.07	1.25	1108	116	15.24	1.31	1118	121	15.45	1.38	1144	128
	7'	15.29	1.13	1169	105	15.54	1.14	1194	106	15.99	1.15	1217	107	16.64	1.17	1202	109	17.59	1.21	1272	112	18.54	1.25	1331	116	18.75	1.31	1361	121	18.79	1.38	1376	128
8'	3'	7.23	1.40	514	130	7.32	1.41	530	131	7.40	1.43	535	132	7.75	1.45	576	135	8.19	1.49	610	139	8.70	1.55	642	144	8.84	1.62	657	150	8.84	1.71	655	159
	4'	9.41	1.40	680	130	9.86	1.41	744	131	10.01	1.43	751	132	10.56	1.45	807	135	11.20	1.49	856	139	11.89	1.55	901	144	12.13	1.62	922	150	12.12	1.71	920	159
	5'	12.25	1.40	846	130	12.48	1.41	922	131	12.91	1.43	949	132	13.39	1.45	985	135	14.39	1.49	1058	139	15.07	1.55	1108	144	15.24	1.62	1118	150	15.45	1.71	1144	159
	6'	15.29	1.40	1169	130	15.54	1.41	1194	131	15.99	1.43	1217	132	16.64	1.45	1202	135	17.59	1.49	1272	139	18.54	1.55	1331	144	18.75	1.62	1361	150	18.79	1.71	1376	159
	7'	17.93	1.40	1376	130	18.25	1.41	1403	131	18.85	1.43	1433	132	19.53	1.45	1418	135	20.71	1.49	1498	139	21.76	1.55	1561	144	22.00	1.62	1604	150	22.06	1.71	1618	159
	3'	7.75	1.68	588	157	7.87	1.69	607	157	7.98	1.71	614	158	8.39	1.74	659	162	8.87	1.79	698	167	9.43	1.86	735	173	9.57	1.94	752	180	9.57	2.06	749	191
	4'	10.14	1.68	778	157	10.37	1.69	827	157	10.52	1.71	843	158	11.00	1.74	923	162	11.63	1.79	978	167	12.36	1.86	1029	173	12.55	1.94	1053	180	12.55	2.06	1049	191
	5'	13.16	1.68	968	157	13.46	1.69	1047	157	13.66	1.71	1072	158	14.28	1.74	1187	162	15.09	1.79	1258	167	16.04	1.86	1323	173	16.29	1.94	1354	180	16.29	2.06	1349	191
	6'	16.18	1.68	1159	157	16.55	1.69	1267	157	16.80	1.71	1301	158	17.56	1.74	1451	162	18.55	1.79	1538	167	19.72	1.86	1617	173	20.03	1.94	1655	180	20.03	2.06	1649	191
	7'	19.20	1.68	1350	157	19.64	1.69	1487	157	19.94	1.71	1530	158	20.84	1.74	1715	162	22.01	1.79	1818	167	23.40	1.86	1911	173	23.77	1.94	1956	180	23.77	2.06	1949	191
	3'	8.27	1.96	662	184	8.40	1.97	684	184	8.52	1.99	693	185	8.96	2.02	743	189	9.47	2.07	787	194	10.07	2.14	829	200	10.22	2.23	848	207	10.22	2.36	844	219
	4'	10.87	1.96	877	184	11.07	1.97	932	184	11.23	1.99	950	185	11.83	2.02	1040	189	12.52	2.07	1103	194	13.32	2.14	1163	200	13.52	2.23	1189	207	13.52	2.36	1183	219
	5'	14.08	1.96	1092	184	14.34	1.97	1180	184	14.54	1.99	1207	185	15.31	2.02	1337	189	16.19	2.07	1419	194	17.23	2.14	1497	200	17.49	2.23	1530	207	17.49	2.36	1522	219
	6'	17.29	1.96	1307	184	17.61	1.97	1428	184	17.85	1.99	1464	185	18.79	2.02	1634	189	19.86	2.07	1735	194	21.14	2.14	1831	200	21.46	2.23	1871	207	21.46	2.36	1861	219
	7'	20.50	1.96	1522	184	20.88	1.97	1676	184	21.16	1.99	1721	185	22.27	2.02	1931	189	23.54	2.07	2051	194	25.05	2.14	2165	200	25.43	2.23	2212	207	25.43	2.36	2200	219
10'	3'	8.79	2.24	736	210	8.93	2.25	760	210	9.06	2.27	772	211	9.53	2.30	826	215	10.07	2.36	874	221	10.71	2.44	921	228	10.87	2.54	942	236	10.87	2.69	938	249
	4'	11.56	2.24	975	210	11.77	2.25	1035	210	11.94	2.27	1056	211	12.58	2.30	1156	215	13.31	2.36	1226	221	14.17	2.44	1292	228	14.39	2.54	1321	236	14.39	2.69	1316	249
	5'	14.97	2.24	1214	210	15.22	2.25	1310	210	15.44	2.27	1340	211	16.28	2.30	1486	215	17.22	2.36	1578	221	18.33	2.44	1664	228	18.61	2.54	1700	236	18.61	2.69	1694	249
	6'	18.38	2.24	1453	210	18.67	2.25	1585	210	18.94	2.27	1625	211	19.98	2.30	1816	215	21.13	2.36	1930	221	22.49	2.44	2036	228	22.83	2.54	2079	236	22.83	2.69	2072	249
	7'	21.79	2.24	1692	210	22.12	2.25	1860	210	22.43	2.27	1910	211	23.68	2.30	2146	215	25.04	2.36	2282	221	26.65	2.44	2408	228	27.05	2.54	2458	236	27.05	2.69	2450	249
	3'	9.31	2.51	775	220	9.46	2.52	794	221	9.59	2.55	794	223	10.12	2.59	805	228	10.77	2.67	825	235	10.40	2.77	824	243	10.57	2.89	849	254	10.60	3.06	874	298
	4'	12.54	2.51	949	220	12.72	2.52	956	221	12.76	2.55	958	223	12.83	2.59	967	228	13.73	2.67	980	235	13.14	2.77	978	243	13.51	2.89	1021	254	13.55	3.06	1047	298
	5'	15.56	2.51	1160	220	15.87	2.52	1179	221	15.91	2.55	1177	223	15.97	2.59	1211	228	16.57	2.67	1210	235	16.54	2.77	1223	243	16.79	2.89	1264	254	16.82	3.06	1289	298
	6'	19.14	2.51	1396	220	19.17	2.52	1389	221	19.44	2.55	1434	223	19.72	2.59	1452	228	20.16	2.67	1488	235	20.13	2.77	1495	243	20.36	2.89	1520	254	20.65	3.06	1573	298
	7'	22.88	2.51	1617	220	23.01	2.52	1636	221	23.29	2.55	1710	223	23.61	2.59	1738	228	24.32	2.67	1784	235	24.10	2.77	1754	243	24.38	2.89	1799	254	24.46	3.06	1839	298
	8'	31.56	2.51	2011	220	31.75	2.52	1988	221	32.13	2.55	2018	223	32.27	2.59	2032	228	33.13	2.67	2072	235	33.19	2.77	2097	243	33.53	2.89	2154	254	34.10	3.06	2193	298
	3'	9.84	2.79	814	233	9.99	2.80	834	233	10.12	2.82	834	235	10.68	2.87	846	240	11.37	2.96	867	247	12.14	3.07	866	255	12.33	3.20	891	267	12.33	3.39	886	281
	4'	13.24	2.79	1000	233	13.43	2.80	1004	233	13.47	2.82	1006	235	13.55	2.87	1016	240	14.49	2.96	1029	247	13.81	3.07	1027	255	14.19	3.20	1070	267	14.24	3.39	1064	281
	5'	16.43	2.79	1224	233	16.75	2.80	1241	233	16.82	2.82	1241	235	16.91	2.87	1257	240	17.98	2.96	1274	247	17.49	3.07	1274	255	17.98	3.20	1324	267	18.04	3.39	1317	281
	6'	20.21	2.79	1472	233	20.51	2.80	1479	233	20.61	2.82	1479	235	20.72	2.87	1498	240	22.01	2.96	1519	247	21.43	3.07	1521	255	22.02	3.20	1578	267	22.09	3.39	1570	281
	7'	24.15	2.79	1720	233	24.51	2.80	1717	233	24.63	2.82	1717	235	24.76	2.87	1740	240	26.31	2.96	1764	247	25.61	3.07	1768	255	26.32	3.20	1833	267	26.41	3.39	1824	281
12'	3'	10.37	3.07	853	246	10.53	3.08	874	246	10.67	3.10	874	248	11.26	3.15	887	253	11.99	3.25	909	260	12.80	3.37	908	269	13.00	3.52	934	281	13.00	3.72	929	296
	4'	13.96	3.07	1049	246	14.16	3.08	1053	246	14.20	3.10	1055	248	14.29	3.15	1067	253	15.28	3.25	1080	260	14.56	3.37	1077	269	14.96	3.52	1123	281	15.01	3.72	1117	296
	5'	17.32	3.07	1284	246	17.66	3.08	1302	246	17.73	3.10	1302	248	17.83	3.15	1318	253	18.96	3.25	1337	260	18.44	3.37	1337	269	18.93	3.52	1387	281	18.98	3.72	1380	296
	6'	21.31	3.07	1545	246	21.71	3.08	1551	246	21.80	3.10	1551	248	21.93	3.15	1569	253	23.32	3.25	1594	260	22.68	3.37	1597	269	23.28	3.52	1652	281	23.34	3.72	1643	296
	7'	25.46	3.07	1806	246	25.93	3.08	1800	246	26.04	3.10	1800	248	26.19	3.15	1820	253	27.86	3.25	1851	260	27.09	3.37	1857	269	27.81	3.52	1917	281	27.89	3.72	1907	296

△c = Inlet or outlet concrete quantity per additional barrel. △s = Inlet or outlet steel quantity per additional barrel.

NOTES:
All quantities are for headwalls of barrels shown in Table No. 1 (0-10' Fill).
Quantities are shown for single barrel culvert only. Multi-barrel culvert headwall quantities are obtained by adding, for each additional barrel, △s and △c to the inlet and outlet quantities.

OUTLET WINGS

Span	Height	0° Skew			5° Skew			10° Skew			15° Skew			20° Skew			25° Skew			30° Skew			35° Skew			40° Skew			45° Skew		
		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.		Conc. C.Y.	Steel lbs.	
		① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s	① lbl.	△c	① lbl.	△s
6'	3'	8.58	1.55	639	135	8.74	1.56	657	135	8.75	1.58	658	137	8.96	1.61	667	140	9.17	1.65	685	143	9.16	1.71	678	148	9.29	1.79	703	156	9.25	1.90	695	165
	4'	11.47	1.55	852	135	11.66	1.56	877	135	11.50	1.58	845	137	11.65	1.61	853	140	11.97	1.65	867	143	11.89	1.71	862	148	12.21	1.79	905	156	12.18	1.90	893	165
	5'	14.49	1.55	1043	135	14.71	1.56	1062	135	14.74	1.58	1060	137	14.78	1.61	1062	140	15.34	1.65	1098	143	15.28	1.71	1099	148	15.43	1.79	1120	156	15.62	1.90	1131	165
	6'	17.97	1.55	1241	135	17.99	1.56	1235	135	18.26	1.58	1278	137	18.51	1.61	1281	140	18.92	1.65	1314	143	18.85	1.71	1317	148	19.04	1.79	1342	156	19.26	1.90	1362	165
	7'	21.70	1.55	1491	135	21.82	1.56	1512	135	22.09	1.58	1541	137	22.38	1.61	1611	140	23.06	1.65	1606	143	22.81	1.71	1631	148	23.03	1.79	1672	156	23.30	1.90	1693	165
8'	3'	9.12	2.02	706	177	9.29	2.03	723	178	9.31	2.05	726	180	9.53	2.09	751	184	9.76	2.15	770	189	9.76	2.23	764	196	9.91	2.34	776	204	9.91	2.47	783	216
	4'	11.96	2.02	877	177	12.14	2.03	883	178	12.17	2.05	885	180	12.23	2.09	908	184	12.56	2.15	919	189	12.50	2.23	915	196	12.85	2.34	947	204	12.85	2.47	952	216
	5'	15.06	2.02	1105	177	15.29	2.03	1102	178	15.31	2.05	1100	180	15.36	2.09	1117	184	15.94	2.15	1154	189	15.90	2.23	1155	196	16.08	2.34	1177	204	16.30	2.47	1190	216
	6'	18.55	2.02	1316	177	18.57	2.03	1310	178	18.84	2.05	1360	180	18.11	2.09	1385	184	19.53	2.15	1419	189	19.48	2.23	1423	196	19.69	2.34	1435	204	19.94	2.47	1470	216
	7'	22.28	2.02	1534	177	22.41	2.03	1553	178	22.68	2.05	1625	180	22.99	2.09	1670	184	23.68	2.15	1712	189	23.44	2.23	1679	196	23.69	2.34	1711	204	23.74	2.47	1733	216
	8'	30.30	2.02	2111	177	30.47	2.03	2101	178	31.48	2.05	2150	180	31.62	2.09	2158	184	32.45	2.15	2186	189	32.50	2.23	2162	196	32.81	2.34	2206	204	33.25	2.47	2244	216
	3'	9.68	2.51	775	220	9.86	2.52	794	221	9.89	2.55	794	223	10.12	2.59	805	228	10.37	2.67	825	235	10.40	2.77	824	243	10.57	2.89	849	254	10.60	3.06	874	298
	4'	12.54	2.51	949	220	12.72	2.52	956	221	12.76	2.55	958	223	12.83	2.59	967	228	13.73	2.67	980	235	13.14	2.77	978	243	13.51	2.89	1021	254	13.55	3.06	1047	298
	5'	15.56	2.51	1160	220	15.87	2.52	1179	221	15.91	2.55	1177	223	15.97	2.59	1211	228	16.57	2.67	1210	235	16.54	2.77	1223	243	16.79	2.89	1264	254	16.82	3.06	1289	298
	6'	19.14	2.51	1396	220	19.17	2.52	1389	221	19.44	2.55	1434	223	19.72	2.59	1452	228	20.16	2.67	1488	235	20.13	2.77	1495	243	20.36	2.89	1520	254	20.65	3.06	1573	298
	7'	22.88	2.51	1617	220	23.01	2.52	1636	221	23.29	2.55	1710	223	23.61	2.59	1738	228	24.32	2.67	1784	235	24.10	2.77	1754	243	24.38	2.89	1799	254	24.46	3.06	1839	298
	8'	31.56	2.51	2011	220	31.75	2.52	1988	221	32.13	2.55	2018	223	32.27	2.59	2032	228	33.13	2.67	2072	235	33.19	2.77	2097	243	33.53	2.89	2154	254	34.10	3.06	2193	298
	3'	9.84	2.79	814	233	9.99	2.80	834	233	10.12	2.82	834	235	10.68	2.87	846	240	11.37	2.96	867	247	12.14	3.07	866	255	12.33	3.20	891	267	12.33	3.39	886	281
	4'	13.24	2.79	1000	233	13.43	2.80	1004	233	13.47	2.82	1006	235	13.55	2.87	1016	240	14.49	2.96	1029	247	13.81	3.07	1027	255	14.19	3.20	1070	267	14.24	3.39	1064	281
	5'	16.43	2.79	1224	233	16.75	2.80	1241	233	16.82	2.82	1241	235	16.91	2.87	1257	240	17.98	2.96	1274	247	17.49	3.07	1274	255	17.98	3.20	1324	267	18.04	3.39	1317	281
	6'	20.21	2.79	1472	233	20.51	2.80	1479	233	20.61	2.82	1479	235	20.72	2.87	1498	240	22.01	2.96	1519	247	21.43	3.07	1521	255	22.02	3.20	1578	267	22.09	3.39	1570	281
	7'	24.15	2.79	1720	233	24.51	2.80	1717	233	24.63	2.82	1717	235	24.76	2.87	1740	240	26.31	2.96	1764	247	25.61	3.07	1768	255	26.32	3.20	1833	267	26.41	3.39	1824	281
10'	3'	10.37	3.07	853	246	10.53	3.08	874	246	10.67	3.10	874	248	11.26	3.15	887	253	11.99	3.25	909	260	12.80	3.37	908	269	13.00	3.52	934	281	13.00	3.72	929	296
	4'	13.96	3.07	1049	246	14.16	3.08	1053	246	14.20	3.10	1055	248	14.29	3.15	1067	253	15.28	3.25	1080	260	14.56	3.37	1077	269	14.96	3.52	1123	281	15.01	3.72	1117	296
	5'	17.32	3.07	1284	246	17.66	3.08	1302	246	17.73	3.10	1302	248	17.83	3.15	1318	253	18.96	3.25	1337	260	18.44	3.37	1337	269	18.93	3.52	1387	281	18.98	3.72	1380	296
	6'	21.31	3.07	1545	246	21.71	3.08	1551	246	21.80	3.10	1551	248	21.93	3.15	1569	253	23.32	3.25	1594	260	22.68	3.37	1597	269	23.28	3.52	1652	281	23.34	3.72	1643	296
	7'	25.46	3.07	1806	246	25.93	3.08	1800	246	26.04	3.10	1800	248	26.19	3.15	1820	253	27.86	3.25	1851	260	27.09	3.37	1857	269	27.81	3.52	1917	281	27.89	3.72	1907	296
12'	3'	10.37	3.07	853	246	10.53	3.08	874	246	10.67	3.10	874	248	11.26	3.15	887	253	11.99	3.25	909	260	12.80	3.37	908	269	13.00	3.52	934	281	13.00	3.72	929	296
	4'	13.96	3.07	1049	246	14.16	3.08	1053	246	14.20	3.10	1055	248	14.29	3.15	1067	253	15.28	3.25	1080	260	14.56	3.37	1077	269	14.96	3.52	1123	281	15.01	3.72	1117	296
	5'	17.32	3.07	1284	246	17.66	3.08	1302	246	17.73	3.10	1302	248	17.83	3.15	1318	253	18.96	3.25	1337	260	18.44	3.37	1337	269	18.93	3.52	1387	281	18.98	3.72	1380	296
	6'	21.31	3.07	1545	246	21.71	3.08	1551	246	21.80	3.10	1551	248	21.93	3.15	1569	253	23.32	3.25	1594	260	22.68	3.37	1597	269	23.28	3.52	1652	281	23.34	3.72	1643	296
	7'	25.46	3.07	1806	246	25.93	3.08	1800	246	26.04	3.10	1800	248	26.19	3.15	1820	253	27.86	3.25	1851	260	27.09	3.37	1857	269	27.81	3.52	1917	281	27.89	3.