

# SYCAMORE TO PENASQUITOS TL23071 LINE SEGMENT B TL23071 UNDERGROUND

## GENERAL NOTES

- LOCATIONS OF ALL UNDERGROUND FACILITIES ARE TAKEN FROM AVAILABLE MAPS AND RECORDS. ACTUAL FIELD LOCATIONS OF ALL UTILITIES MUST BE VERIFIED BY CONTRACTOR PRIOR TO TRENCHING. CONTACT USA DIG ALERT, 1-800-227-2600, PRIOR TO DIGGING. UNDERGROUND FACILITY ELEVATIONS & LOCATIONS SHOWN ON THE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION LOCATED DURING DESIGN. NOTE THAT THE DEPTH OF UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO SURFACE OR UNDERGROUND FACILITIES WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS.
- ALL WORK SHALL COMPLY WITH ENGINEERING DRAWINGS, SPECIFICATION NO. TE-0100 & TE-0107, CONTRACT DOCUMENTS AND ALL APPLICABLE PROVISIONS OF THE SDG&E UNDERGROUND STANDARDS HANDBOOK, LATEST REVISION.
- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF G.O. 128, & SHALL COMPLY WITH ALL STATE AND LOCAL TRAFFIC CONTROL REGULATIONS. CONTRACTOR SHALL FOLLOW ALL PROVISIONS OF PERMITS, WHETHER FROM CITY, COUNTY, STATE, OR OTHER DISTRICTS OR AGENCIES
- ANY DEVIATION FROM ENGINEERING DRAWINGS MUST BE APPROVED BY SDG&E PRIOR TO CONSTRUCTION. MAINTAIN AND UPDATE THE AS-BUILT RECORDS TO DOCUMENT ALL FIELD CHANGES.
- PROFILE SECTIONS ON THE PLAN AND PROFILE DRAWINGS ARE ALONG CENTER LINE OF TRENCH.
- PROVIDE NECESSARY ANCHORING TO PREVENT CONDUITS FROM FLOATING WHILE THEY ARE BEING ENCASED IN CONCRETE. WHEN REQUIRED, USE ONLY PLASTIC STRAPS TO SECURE CONDUITS UNLESS OTHERWISE APPROVED. NO FERROUS METAL SHALL ENCIRCLE ANY INDIVIDUAL DUCT OR GROUP OF DUCTS.
- A CABLE MARKING TAPE SHALL BE INSTALLED ALONG THE ENTIRE LENGTH OF EACH 230KV DUCT BANK. CABLE MARKING TAPE SHALL BE 12 INCHES WIDE, RED PLASTIC STRIP, WITH WORDS "CAUTION ELECTRIC LINE BURIED BELOW" PRINTED IN BLACK. TAPE SHALL BE INSTALLED FLAT AND DIRECTLY ABOVE THE DUCT BANK WITH THE PRINTED SIDE UP. CABLE MARKING TAPE SHALL BE TERRA TAPE EXTRA-STRETCH AS MANUFACTURED BY REEF INDUSTRIES, INC., HOUSTON, TEXAS, OR EQUAL.
- MINIMUM DEPTH OF BACKFILL ABOVE TOP OF CONDUIT SHALL BE 36" UNLESS NOTED OTHERWISE.
- CLEARANCE BETWEEN EXISTING UTILITIES AND DUCT BANKS SHALL BE A MINIMUM OF 1' UNLESS OTHERWISE NOTED.
- CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS DURING CONSTRUCTION.
- CONDUITS TO BE SWABBED UNTIL THEY ARE CLEAR OF ALL DEBRIS BY USING MECHANICAL METHODS AND VERIFIED BY SDG&E CONTRACT ADMINISTRATOR; CONTRACTOR TO BLOW AIR AND INSTALL PULL ROPE, DOCUMENT AND MARK PHASING ON VAULT WALLS TO IDENTIFY PHASING ALONG ENTIRE ROUTE.
- CONTRACTOR TO REPAIR AND REPLACE PAVEMENT STRIPING TO PRIOR CONDITIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF ALL GROUND SURFACES DISTURBED DURING CONSTRUCTION. REPLACEMENT OF LANDSCAPING & IRRIGATION SHALL BE COMPARABLE TO THAT REMOVED, REPLANTING SHALL BE FINISHED WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION.
- IN MAKING OPEN CUT ROAD CROSSINGS, THE CONTRACTOR SHALL NOT BLOCK MORE THAN ONE HALF OF THE ROAD AT A TIME. ONE LANE OF TRAFFIC IN EACH DIRECTION MUST BE MAINTAINED AT ALL TIMES.
- THE MINIMUM BENDING RADIUS OF CONDUITS SHALL BE 60 FEET FOR HORIZONTAL BENDS, EXCEPT AS OTHERWISE NOTED ON DRAWINGS, OR APPROVED BY ENGINEER. INFORM ENGINEER OF ANY PROPOSED CHANGES IN BENDS OR ALIGNMENT BEFORE PROCEEDING.
- CONTRACTOR TO FIELD FIT ALL 3313 HANDHOLES AT EVERY 230KV VAULT LOCATION.
- INSTALL UNDERGROUND WARNING SIGNS PER SDG&E STANDARD DRAWING 39001 ON-SITE.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A PERMIT FOR TEMPORARY CONSTRUCTION DEWATERING. A PERMIT IS REQUIRED FROM THE REGIONAL WATER QUALITY CONTROL BOARD FOR ANY DISCHARGE OF GROUNDWATER TO THE ENVIRONMENT. THE CONTRACTOR SHALL COMPLY WITH REGIONAL WATER QUALITY CONTROL BOARD WASTE DISCHARGE PERMIT REQUIREMENTS, AS APPLICABLE. BEFORE STARTING DEWATERING OPERATIONS, THE CONTRACTOR SHALL OBTAIN AUTHORIZATION, AS REQUIRED, FOR THE DISPOSAL OF GROUNDWATER. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAMPLING, TESTING, MONITORING, AND REPORTING REQUIREMENTS.
- EXISTING TRAFFIC LOOP DETECTORS MAY BE DAMAGED DURING CONSTRUCTION AND MUST BE REPLACED BY CONTRACTOR AS SOON AS POSSIBLE. THOSE SIGNALS PLACED ON RED FLASHING OR TIMED OPERATION MUST BE COORDINATED WITH SIGNAL OWNER.

### LEGEND

—SL—	EXISTING STREET LIGHT CABLING
—E—	EXISTING ELECTRICAL PACKAGE
—RW—	EXISTING RECYCLED WATER
—CATV—	EXISTING CABLE/TV UTILITIES
—OHE—	EXISTING OVERHEAD UTILITIES
—G—	EXISTING GAS LINE
—W—	EXISTING WATER LINE
—T—	EXISTING TELEPHONE LINE
—SS—	EXISTING SEWER LINE
—SD—	EXISTING STORM DRAIN LINE
—X—	EXISTING FENCE
—	EXISTING CURB & GUTTER
—	EXISTING PCC SIDEWALK
—	EXISTING AC SURFACE
—	PROPOSED 230KV CL TRENCH
—	RIGHT OF WAY
—	EXISTING EASEMENT

### VAULT DISTANCES TL23071

FROM	TO	LENGTH
STA. 09+95.58 CABLE POLE #Z100258	STA. 15+10.00 VAULT # M121304	514.42'
STA. 15+10.00 VAULT # M121304	STA. 35+90.00 VAULT #M121305	2080.00'
STA. 35+90.00 VAULT #M121305	STA. 56+83.00 VAULT #M121306	2093.00'
STA. 56+83.00 VAULT #M121306	STA. 69+59.00 VAULT #M121307	1276.00'
STA. 69+59.00 VAULT #M121307	STA. 86+75.00 VAULT #M121308	1716.00'
STA. 86+75.00 VAULT #M121308	STA. 102+50.00 VAULT #M121309	1575.00'
STA. 102+50.00 VAULT #M121309	STA. 119+82.00 VAULT #M121310	1732.00'
STA. 119+82.00 VAULT #M121310	STA. 137+26.00 VAULT #M121311	1744.00'
STA. 137+26.00 VAULT #M121311	STA. 154+04.00 VAULT #M121312	1678.00'
STA. 154+04.00 VAULT #M121312	STA. 165+18.00 VAULT #M121313	1114.00'
STA. 165+18.00 VAULT #M121313	STA. 167+85.65 CABLE POLE #Z100259	267.65'

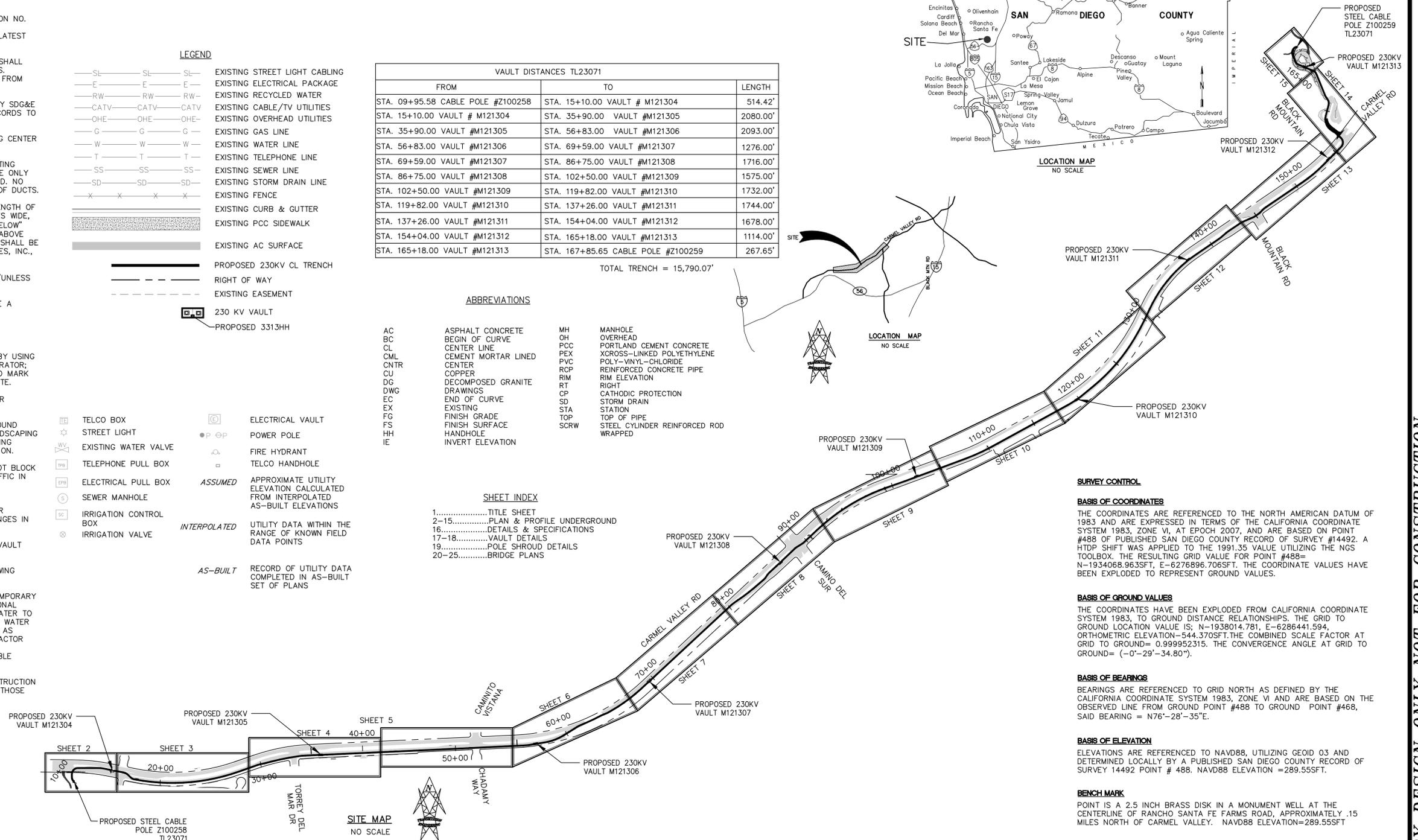
TOTAL TRENCH = 15,790.07'

### ABBREVIATIONS

AC	ASPHALT CONCRETE	MH	MANHOLE
BC	BEGIN OF CURVE	OH	OVERHEAD
CL	CENTER LINE	PCC	PORTLAND CEMENT CONCRETE
CML	CEMENT MORTAR LINED	XLPE	X-CROSS-LINKED POLYETHYLENE
CNTR	CENTER	PVC	POLY-VINYL-CHLORIDE
CU	COPPER	RCP	REINFORCED CONCRETE PIPE
DG	DECOMPOSED GRANITE	RIM	RIM ELEVATION
DWG	DRAWINGS	RT	RIGHT
EC	END OF CURVE	CP	CATHODIC PROTECTION
EX	EXISTING	SD	STORM DRAIN
FG	FINISH GRADE	STA	STATION
FS	FINISH SURFACE	TOP	TOP OF PIPE
HH	HANDHOLE	SCRW	STEEL CYLINDER REINFORCED ROD WRAPPED
IE	INVERT ELEVATION		

### SHEET INDEX

- TITLE SHEET
- PLAN & PROFILE UNDERGROUND
- DETAILS & SPECIFICATIONS
- VAULT DETAILS
- POLE SHROUD DETAILS
- BRIDGE PLANS



### SURVEY CONTROL

#### BASIS OF COORDINATES

THE COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 AND ARE EXPRESSED IN TERMS OF THE CALIFORNIA COORDINATE SYSTEM 1983, ZONE VI, AT EPOCH 2007, AND ARE BASED ON POINT #488 OF PUBLISHED SAN DIEGO COUNTY RECORD OF SURVEY #14492. A HTPD SHIFT WAS APPLIED TO THE 1991.35 VALUE UTILIZING THE NGS TOOLBOX. THE RESULTING GRID VALUE FOR POINT #488 = N=1934068.963SFT, E=6276896.706SFT. THE COORDINATE VALUES HAVE BEEN EXPLODED TO REPRESENT GROUND VALUES.

#### BASIS OF GROUND VALUES

THE COORDINATES HAVE BEEN EXPLODED FROM CALIFORNIA COORDINATE SYSTEM 1983, TO GROUND DISTANCE RELATIONSHIPS. THE GRID TO GROUND LOCATION VALUE IS: N=1938014.781, E=6286441.594, ORTHOMETRIC ELEVATION=544.3705FT. THE COMBINED SCALE FACTOR AT GRID TO GROUND= 0.999952315. THE CONVERGENCE ANGLE AT GRID TO GROUND= (-0'-29"-34.80").

#### BASIS OF BEARINGS

BEARINGS ARE REFERENCED TO GRID NORTH AS DEFINED BY THE CALIFORNIA COORDINATE SYSTEM 1983, ZONE VI AND ARE BASED ON THE OBSERVED LINE FROM GROUND POINT #488 TO GROUND POINT #468, SAID BEARING = N76°-28'-35"E.

#### BASIS OF ELEVATION

ELEVATIONS ARE REFERENCED TO NAVD88, UTILIZING GEOID 03 AND DETERMINED LOCALLY BY A PUBLISHED SAN DIEGO COUNTY RECORD OF SURVEY 14492 POINT # 488. NAVD88 ELEVATION = 289.555FT.

#### BENCH MARK

POINT IS A 2.5 INCH BRASS DISK IN A MONUMENT WELL AT THE CENTERLINE OF RANCHO SANTA FE FARMS ROAD, APPROXIMATELY .15 MILES NORTH OF CARMEL VALLEY. NAVD88 ELEVATION=289.555FT

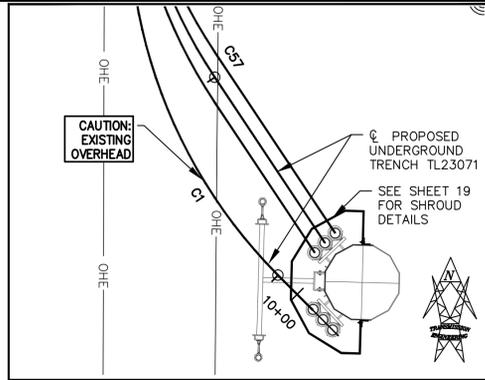
DRAWN BY:	NVS	E
DATE:	4/21/15	D
THO. BROS.:	--	C
PROJ. NO.:	----	B
CONST. NO.:	--	A

PLAN & PROFILE	A								
HORIZONTAL:	N/A								
VERTICAL:									

TL23071  
SYCAMORE TO PENASQUITOS  
230KV LINE, SEGMENT B  
POLE Z100258 TO POLE Z100259  
DRAWING NUMBER  
NV5-1

PRELIMINARY DESIGN ONLY NOT FOR CONSTRUCTION

PHASING TO BE FIELD VERIFIED  
TL23071

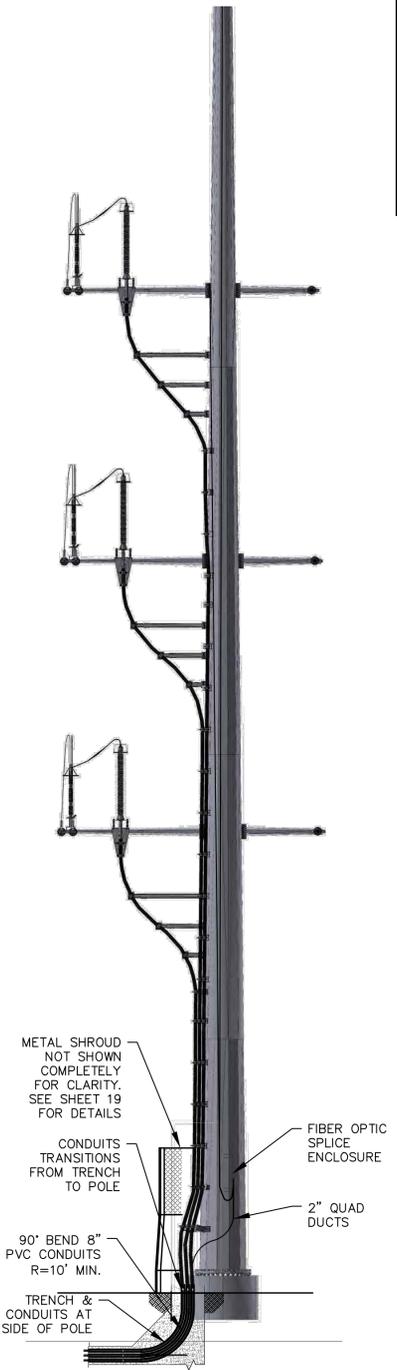
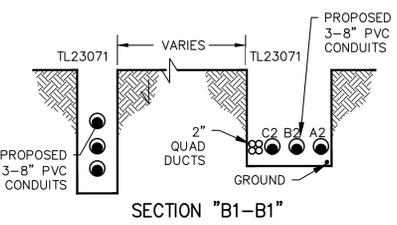
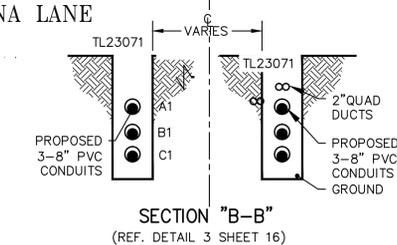
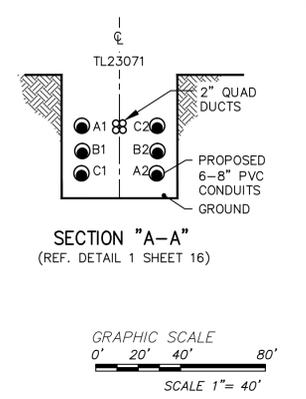
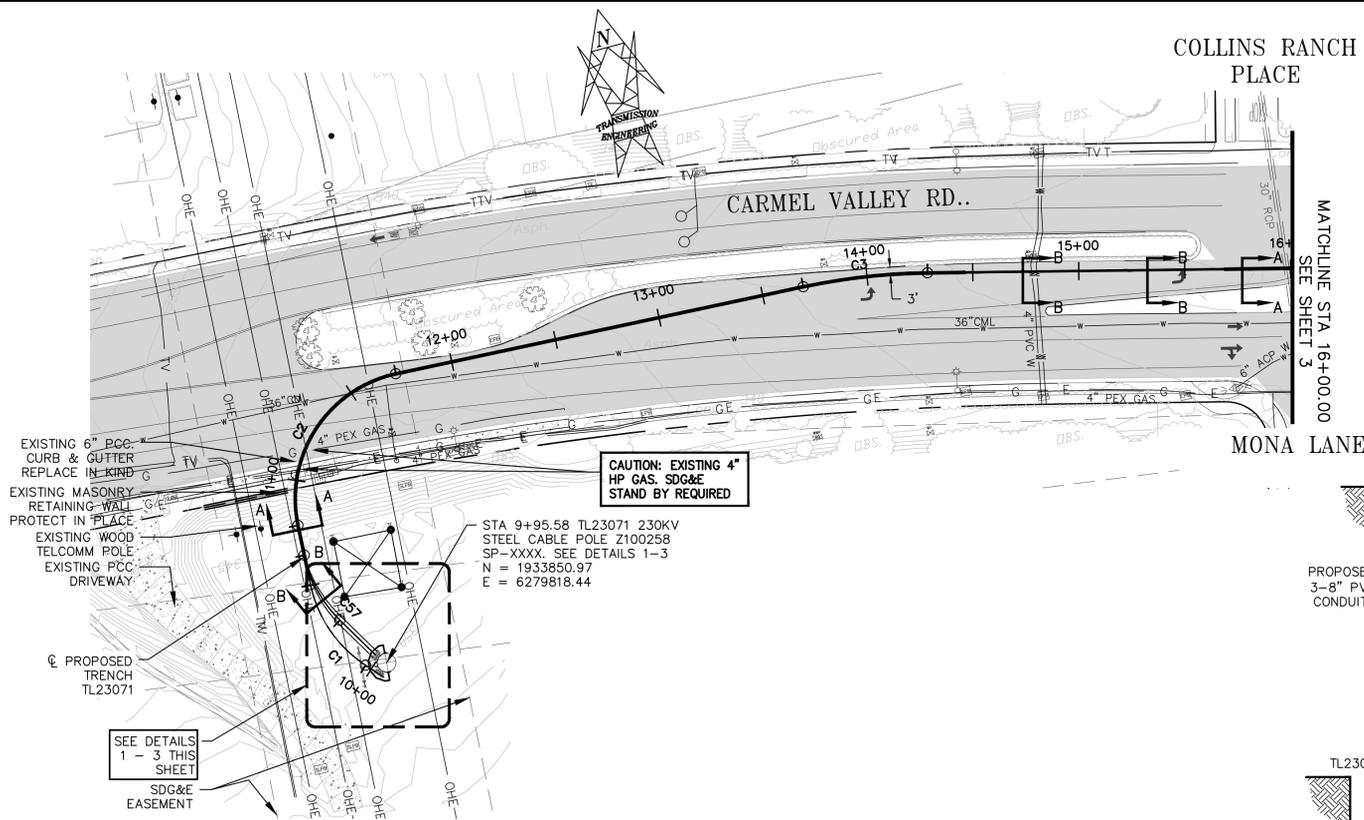


PLAN VIEW  
DUCTS TRANSITION AT STEEL POLE Z100258  
TL23071 DETAIL 1  
CABLE POLE RISER  
SCALE 1"=10'

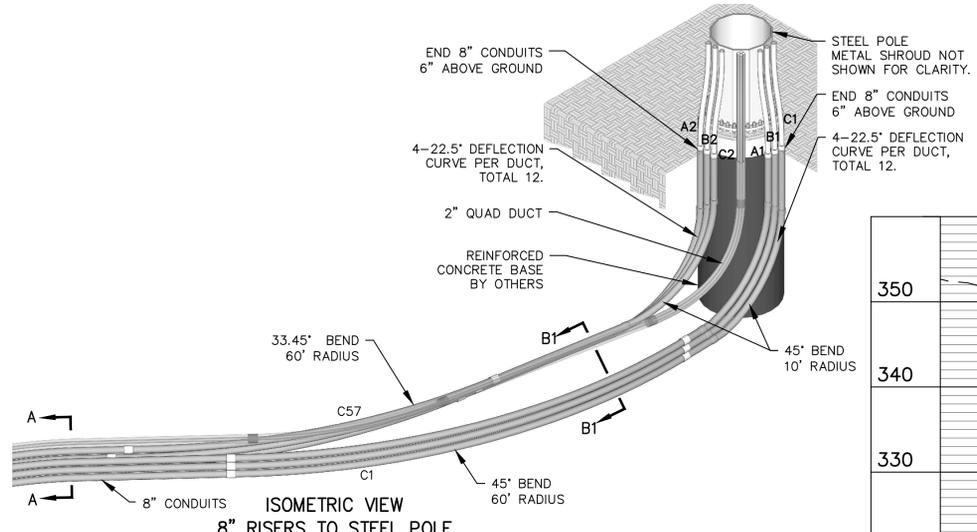
CURVE TABLE					
CURVE	STATION	DELTA	RADIUS	LENGTH	BC (N,E)
C1	BC 10+03.19 EC 10+50.32	045°00'00"	60.00'	47.12'	1933851.8162, 6279808.5176
C2	BC 10+78.83 EC 11+73.08	090°00'00"	60.00'	94.25'	1933922.7550, 6279790.9440
C3	BC 13+69.60 EC 14+28.64	011°16'28"	300.00'	59.03'	1933982.7550, 6280047.4696
C57	BC 501+25.39 EC 501+60.73	033°45'00"	60.00'	35.34'	1933875.0542, 6279801.0558

TRENCH NOTES

STA. 09+95 TO 10+51, SECTION B1-B1  
STA. 10+51 TO 14+39, SECTION A-A  
STA. 14+39 TO 14+98, SECTION B-B  
STA. 14+98 TO 15+25, DETAIL D  
STA. 15+25 TO 15+66, SECTION B-B  
STA. 15+66 TO 16+00, SECTION A-A

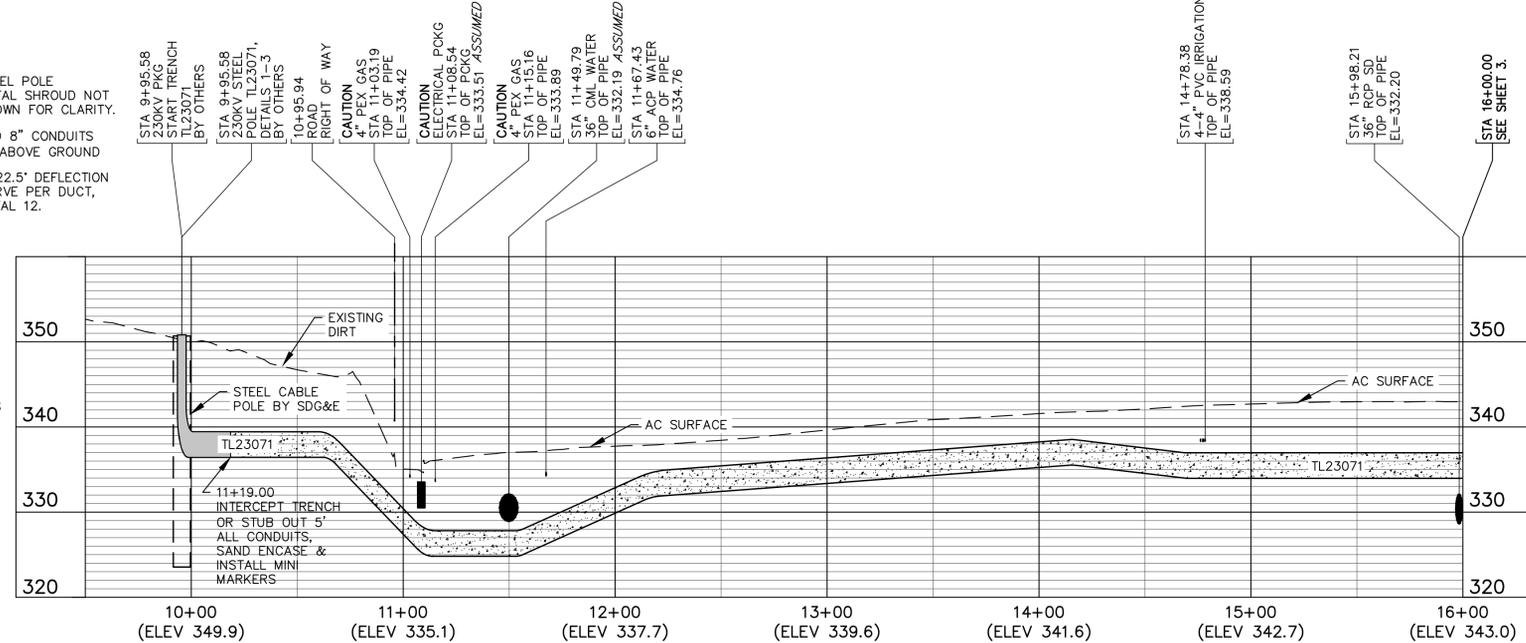


ELEVATION VIEW  
DETAIL "2"  
230KV STEEL CABLE POLE.  
NOT TO SCALE



ISOMETRIC VIEW  
8" RISERS TO STEEL POLE  
DETAIL 3  
LOOKING EAST  
NO SCALE

SCALE IS ACCURATE FOR 24"x36" SHEET  
PLOT. REPRODUCTIONS ON ANY OTHER SIZE  
SHEET DOES NOT REPRESENT TRUE SCALE.



DRAWN BY:	NVS	<b>E</b>
DATE:	4/21/15	<b>D</b>
THO. BROS.:	---	<b>C</b>
PROJ. NO.:	-----	<b>B</b>
CONST. NO.:	---	<b>A</b>
PLAN & PROFILE		<b>A</b>
HORIZONTAL: 1"=40'		---
VERTICAL: 1"=10'		---

REV	BUDGET	CONST ORDER	CHANGE	DWN	CHKD	APPY	DATE

**SDGE** SAN DIEGO GAS & ELECTRIC  
TRANSMISSION ENGINEERING

PLAN & PROFILE  
TL23071

SCALE: 1"=40' HOR. SHEET 2 OF 25

TL23071  
SYCAMORE TO PENASQUITOS  
230KV LINE, SEGMENT B  
POLE Z100258 TO POLE Z100259

DRAWING NUMBER  
NV5-2

**NIVIS** NOLTE VERTICAL INC.

1970 AVENUE OF SCIENCE, SUITE 800 SAN DIEGO, CA 92108  
619.592.0000 TEL. 619.592.6400 FAX WWW.NIVIS.COM

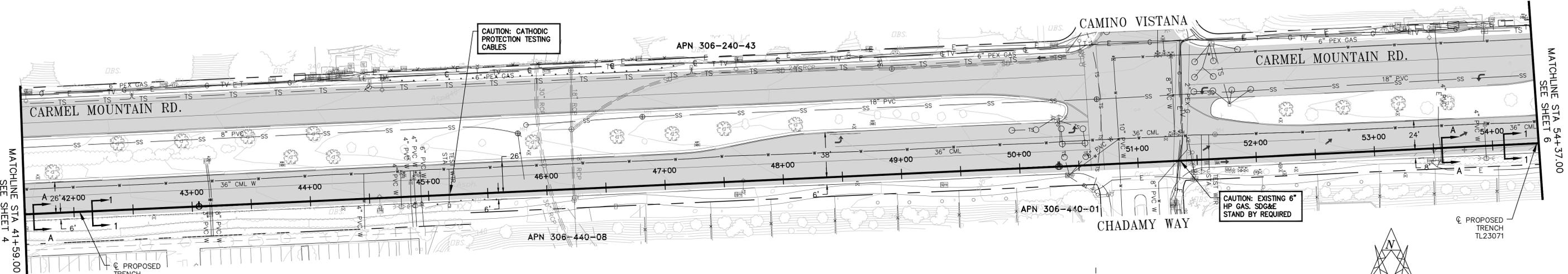
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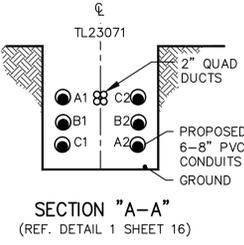
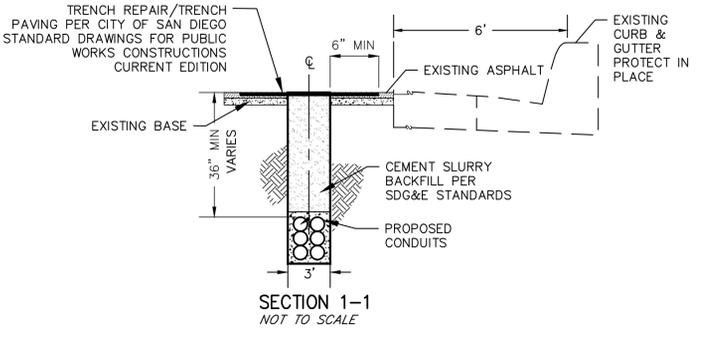






CAUTION: CATHODIC PROTECTION TESTING CABLES

CAUTION: EXISTING 6\"/>

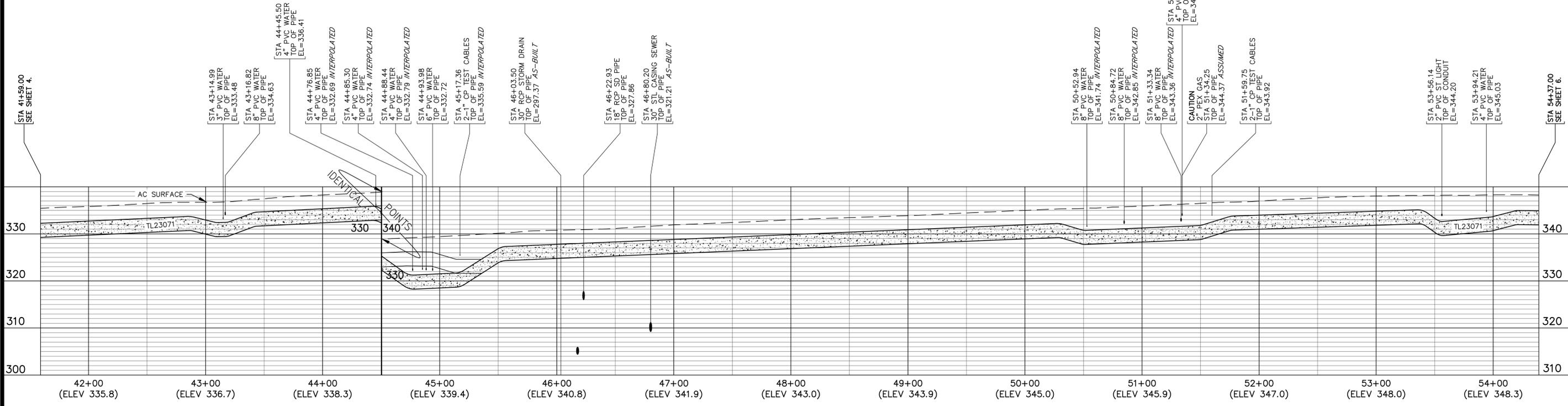


TRENCH NOTES  
STA. 41+59 TO 54+37, SECTION A-A



GRAPHIC SCALE  
0' 20' 40' 80'  
SCALE 1"= 40'

SCALE IS ACCURATE FOR 24"x36" SHEET PLOT. REPRODUCTIONS ON ANY OTHER SIZE SHEET DOES NOT REPRESENT TRUE SCALE.



**NIVIS**  
NOLTE VERITICATIVE  
1670 AVENUE OF SCIENCE, SUITE 300 SAN DIEGO, CA 92108  
602.860.0500 TEL 602.860.0400 FAX WWW.NIVIS.COM

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DATE:	4/21/15	<b>D</b>																		
THO. BROS.:	--	<b>C</b>																		
PROJ. NO.:	-----	<b>B</b>																		
CONST. NO.:	--	<b>A</b>																		
PLAN & PROFILE																				
HORIZONTAL: 1"=40'																				
VERTICAL: 1"=10'																				
REV	BUDGET	CONST ORDER	CHANGE	DWN	CHKD	APPY	DATE													

**SAN DIEGO GAS & ELECTRIC**  
TRANSMISSION ENGINEERING

**PLAN & PROFILE**  
TL23071

SCALE: 1"=40' HOR. SHEET 5 OF 25

TL23071  
SYCAMORE TO PENASQUITOS  
230KV LINE, SEGMENT B  
POLE Z100258 TO POLE Z100259

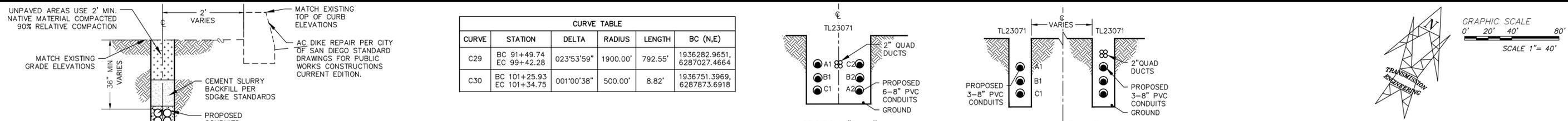
DRAWING NUMBER  
NV5- 5

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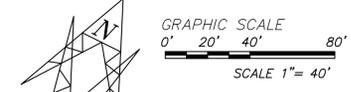






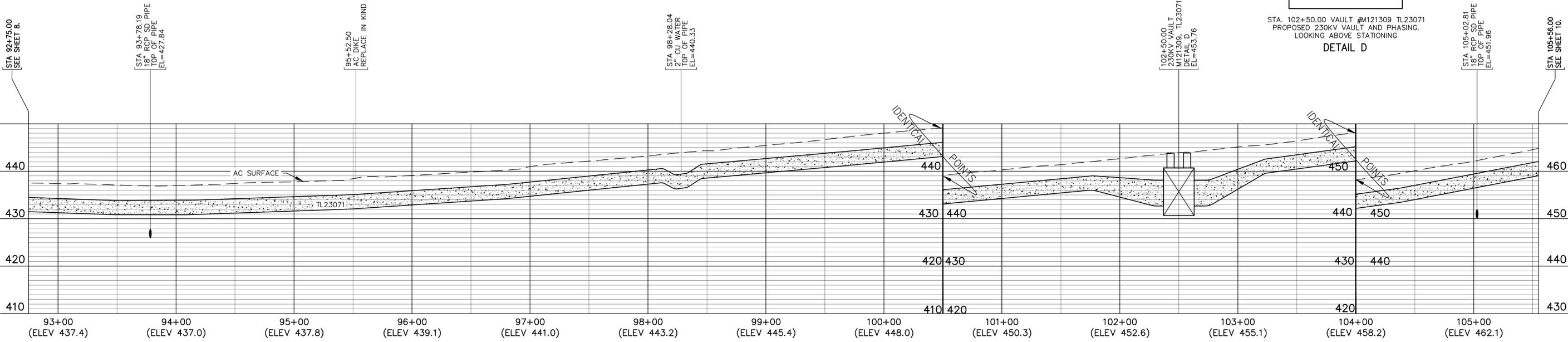
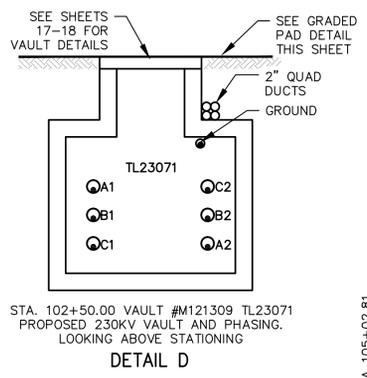


CURVE TABLE					
CURVE	STATION	DELTA	RADIUS	LENGTH	BC (N,E)
C29	BC 91+49.74 EC 99+42.28	023°53'59"	1900.00'	792.55'	1936282.9651, 6287027.4664
C30	BC 101+25.93 EC 101+34.75	001°00'38"	500.00'	8.82'	1936751.3969, 6287873.6918



SCALE IS ACCURATE FOR 24"x36" SHEET PLOT. REPRODUCTIONS ON ANY OTHER SIZE SHEET DOES NOT REPRESENT TRUE SCALE.

**TRENCH NOTES**  
 STA. 092+75 TO 101+77, SECTION A-A  
 STA. 101+77 TO 102+37, SECTION B-B  
 STA. 102+37 TO 102+63, DETAIL D  
 STA. 102+63 TO 103+23, SECTION B-B  
 STA. 103+23 TO 105+56, SECTION A-A



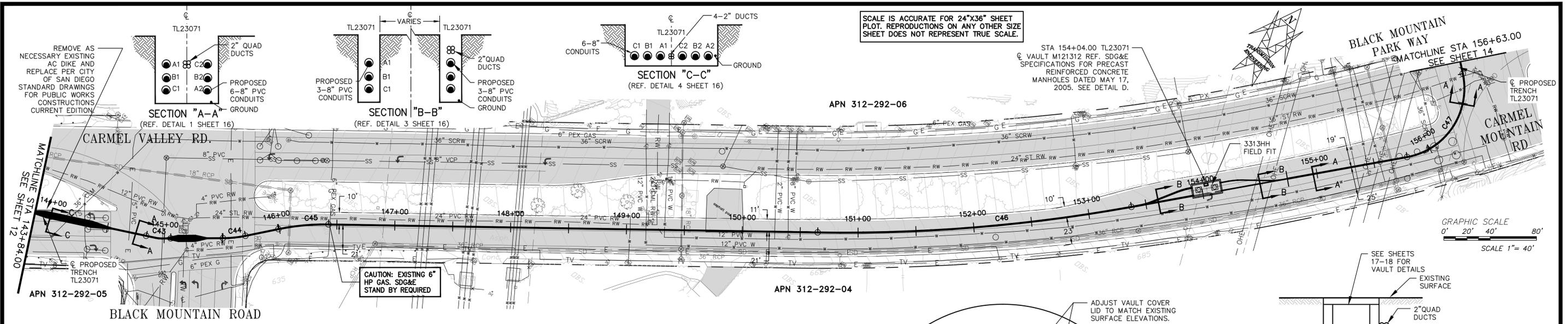
<p><b>NIVIS</b> NOLTE VERITICATIVE 1670 AVENUE OF SCIENCE, SUITE 300 SAN DIEGO, CA 92108 619.386.0000 TEL. 619.386.0400 FAX WWW.NIVIS.COM</p>	<p><b>UNDERGROUND SERVICE ALERT</b> OF SOUTHERN CALIFORNIA CALL TOLL FREE 1-800-227-2800 TWO WORKING DAYS BEFORE YOU DIG</p>	DRAWN BY: NV5 DATE: 4/21/15 THO. BROS. --- PROJ. NO. --- CONST. NO. ---	E D C B A	TRENCH-SUBSTRUCTURES, CABLE INSTALLATION & TERMINATIONS CHANGE	DWN CHD APPY DATE	<p><b>SAN DIEGO GAS &amp; ELECTRIC</b> TRANSMISSION ENGINEERING PLAN &amp; PROFILE TL23071</p>	SCALE: 1"=40' HOR. SHEET 9 OF 25	TL23071 SYCAMORE TO PENASQUITOS 230KV LINE, SEGMENT B POLE Z100258 TO POLE Z100259 DRAWING NUMBER NV5-9
		PLAN & PROFILE HORIZONTAL: 1"=40' VERTICAL: 1"=10' REV BUDGET CONST ORDER						

PRELIMINARY DESIGN ONLY NOT FOR CONSTRUCTION







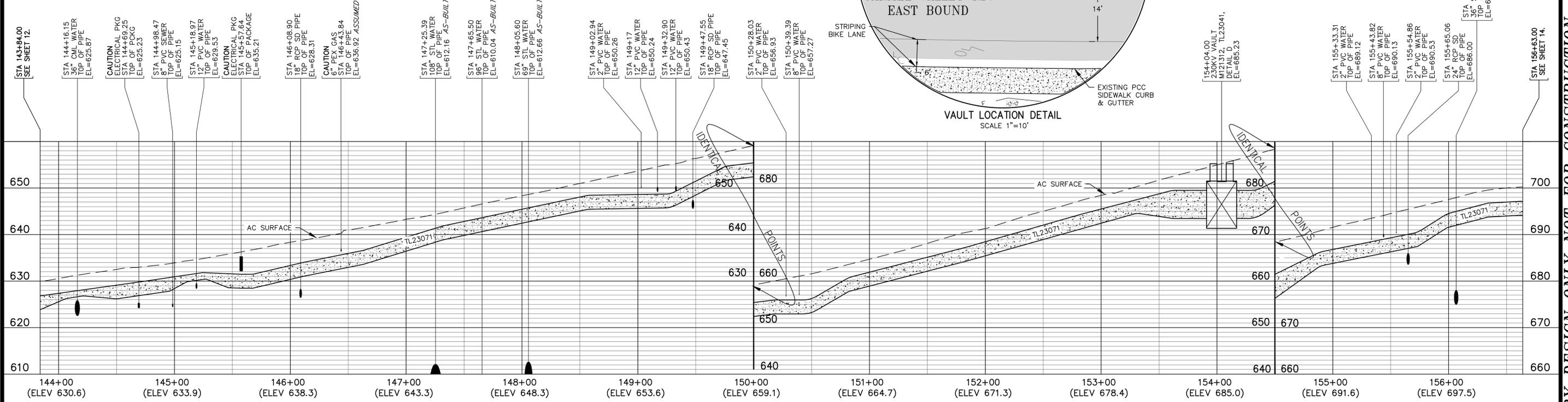
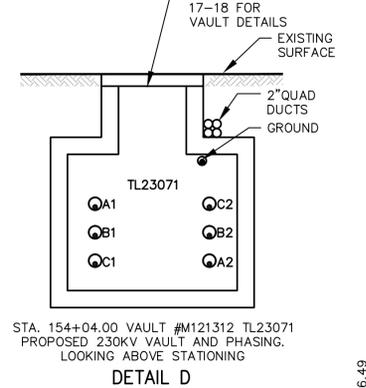
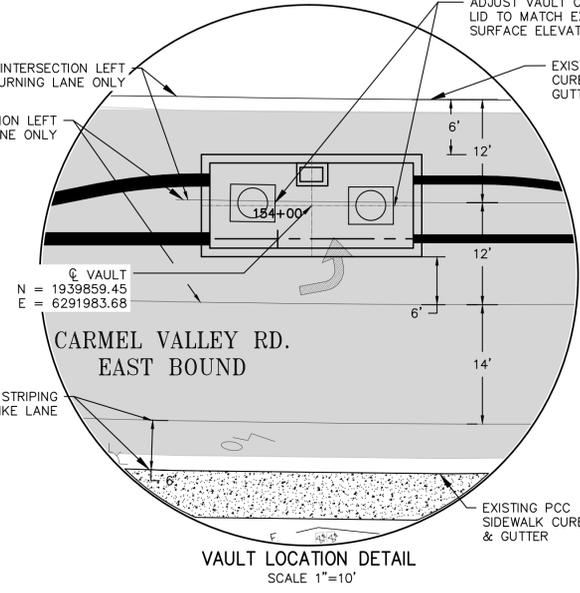


**CURVE TABLE**

CURVE	STATION	DELTA	RADIUS	LENGTH	BC (N,E)
C43	BC 144+84.27 EC 145+05.65	012°14'43"	100.00'	21.37'	1939301.1426, 6291257.0415
C44	BC 145+50.66 EC 145+70.29	011°15'00"	100.00'	19.63'	1939337.5176, 6291312.4277
C45	BC 145+99.35 EC 146+42.80	012°26'49"	200.00'	43.45'	1939371.4273, 6291347.2411
C46	BC 150+65.15 EC 153+37.34	011°08'22"	1400.00'	272.19'	1939636.0449, 6291730.1948
C47	BC 155+79.14 EC 156+75.47	091°58'52"	60.00'	96.32'	1939980.9937, 6292109.8539

**TRENCH NOTES**

STA. 143+84 TO 144+60, SECTION C-C  
 STA. 144+60 TO 153+31, SECTION A-A  
 STA. 153+91 TO 154+17, DETAIL D  
 STA. 154+17 TO 154+77, SECTION B-B  
 STA. 154+77 TO 153+63, SECTION A-A



**NVIS**  
NORTHERN INVESTIGATIVE SERVICES, INC.  
1670 AVENUE OF SCIENCE, SUITE 500  
SAN DIEGO, CA 92108  
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DRAWN BY:	NVS	E
DATE:	4/21/15	D
THO. BROS.:	--	C
PROJ. NO.:	----	B
CONST. NO.:	--	A

PLAN & PROFILE  
 HORIZONTAL: 1"=40'  
 VERTICAL: 1"=10'

**SAN DIEGO GAS & ELECTRIC**  
**TRANSMISSION ENGINEERING**

**SDGE**

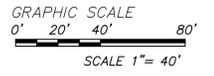
PLAN & PROFILE  
 TL23071

SCALE: 1"=40' HOR. SHEET 13 OF 25

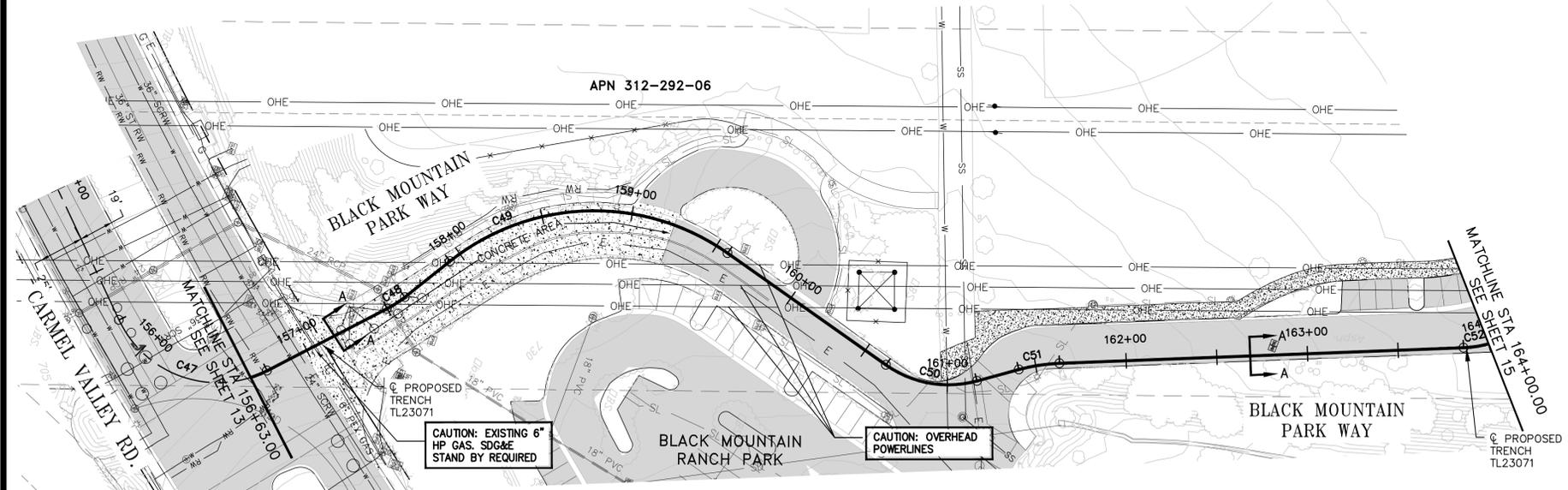
TL23071  
 SYCAMORE TO PENASQUITOS  
 230KV LINE, SEGMENT B  
 POLE Z100258 TO POLE Z100259

DRAWING NUMBER  
 NV5- 13

PRELIMINARY DESIGN ONLY NOT FOR CONSTRUCTION

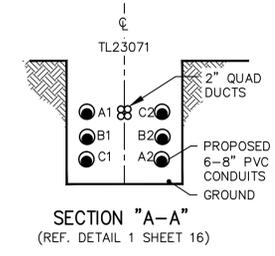
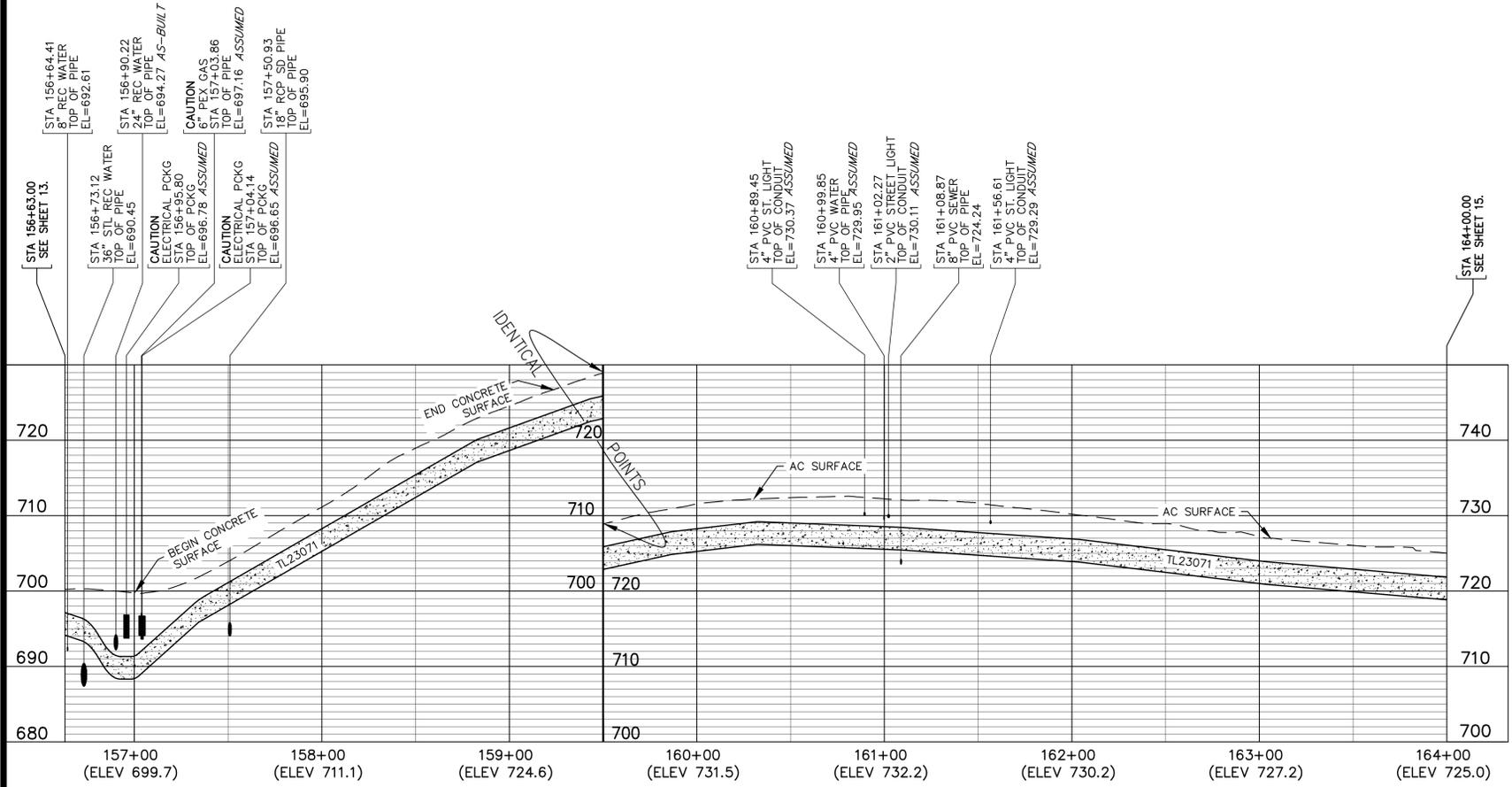


SCALE IS ACCURATE FOR 24"x36" SHEET PLOT. REPRODUCTIONS ON ANY OTHER SIZE SHEET DOES NOT REPRESENT TRUE SCALE.



CURVE TABLE					
CURVE	STATION	DELTA	RADIUS	LENGTH	BC (N/E)
C48	BC 157+49.82 EC 157+61.53	011°10'49"	60.00'	11.71'	1940117.8147, 6292053.5097
C49	BC 157+93.27 EC 159+57.33	073°26'12"	128.00'	164.06'	1940141.5331, 6292017.1778
C50	BC 160+63.98 EC 161+16.60	050°14'49"	60.00'	52.62'	1940386.7767, 6291988.4438
C51	BC 161+40.55 EC 161+63.20	012°58'42"	100.00'	22.65'	1940456.5205, 6291965.7516
C52	BC 163+86.08 EC 164+33.21	045°00'00"	60.00'	47.12'	1940682.7140, 6291870.6923

TRENCH NOTES  
 STA. 156+88 TO 164+00, SECTION A-A



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 NIVIS ASSOCIATES, INC.  
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**UNDERGROUND SERVICE ALERT**  
 OF SOUTHERN CALIFORNIA  
 CALL TOLL FREE 1-800-227-2800  
 TWO WORKING DAYS BEFORE YOU DIG

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DATE: 4/21/15	D																			
THO. BROS. ---	C																			
PROJ. NO. -----	B																			
CONST. NO. ---	A																			
PLAN & PROFILE																				
HORIZONTAL: 1"=40'																				
VERTICAL: 1"=10'																				
REV	BUDGET	CONST ORDER	CHANGE	DWN	CHKD	APPY	DATE													

**SDGE** SAN DIEGO GAS & ELECTRIC  
 TRANSMISSION ENGINEERING

PLAN & PROFILE  
 TL23071

SCALE: 1"=40' HOR. SHEET 14 OF 25

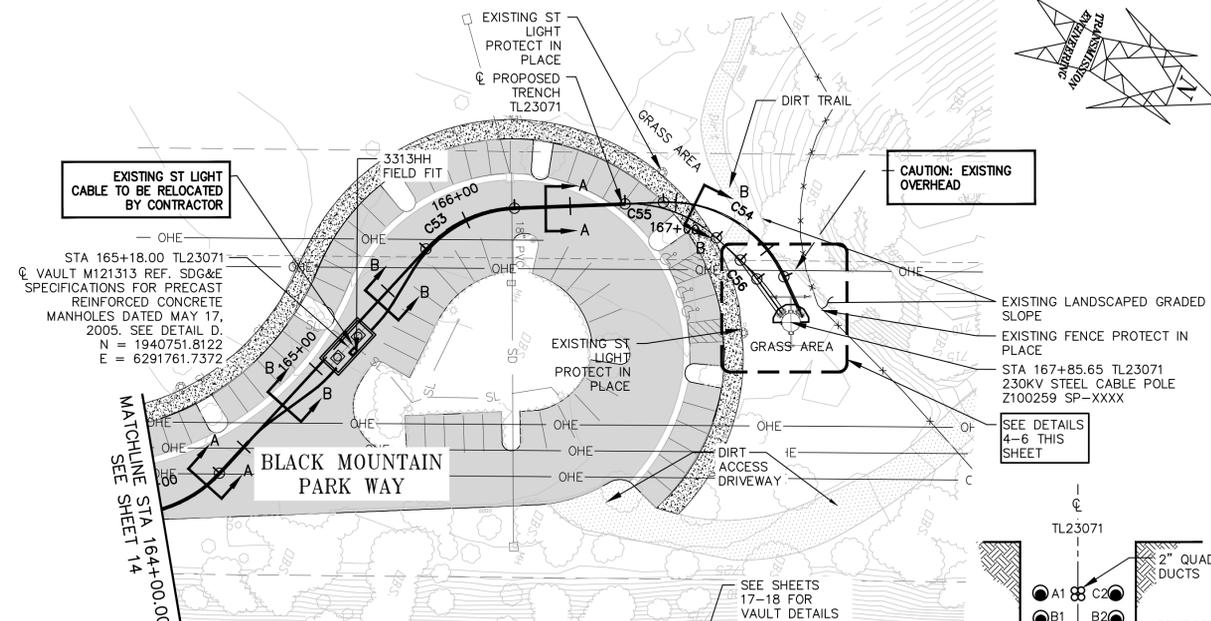
TL23071  
 SYCAMORE TO PENASQUITOS  
 230KV LINE, SEGMENT B  
 POLE Z100258 TO POLE Z100259

DRAWING NUMBER  
 NV5- 14

PRELIMINARY DESIGN ONLY NOT FOR CONSTRUCTION

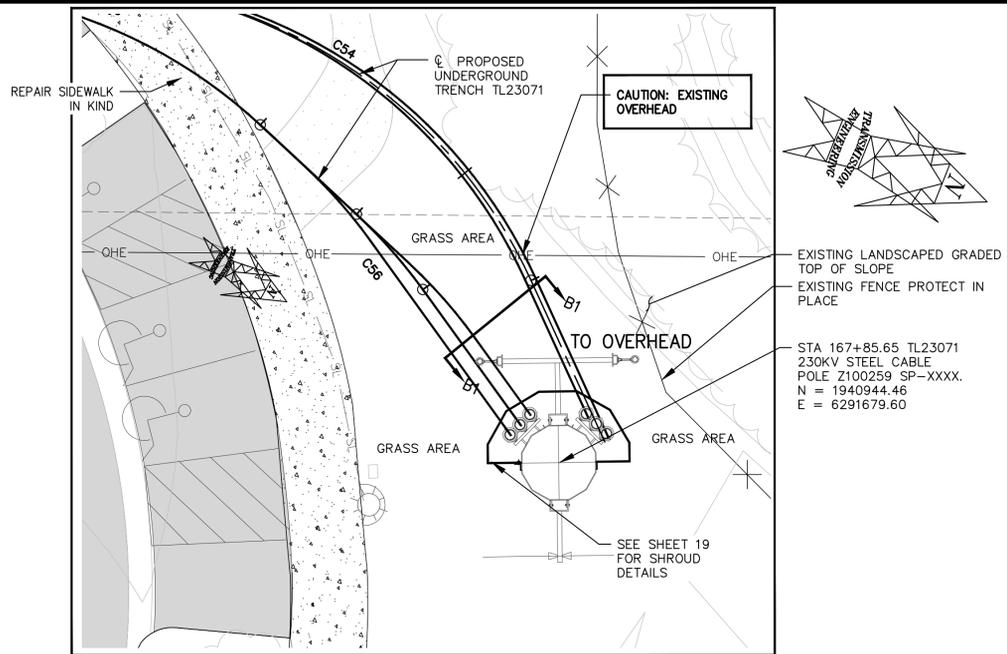
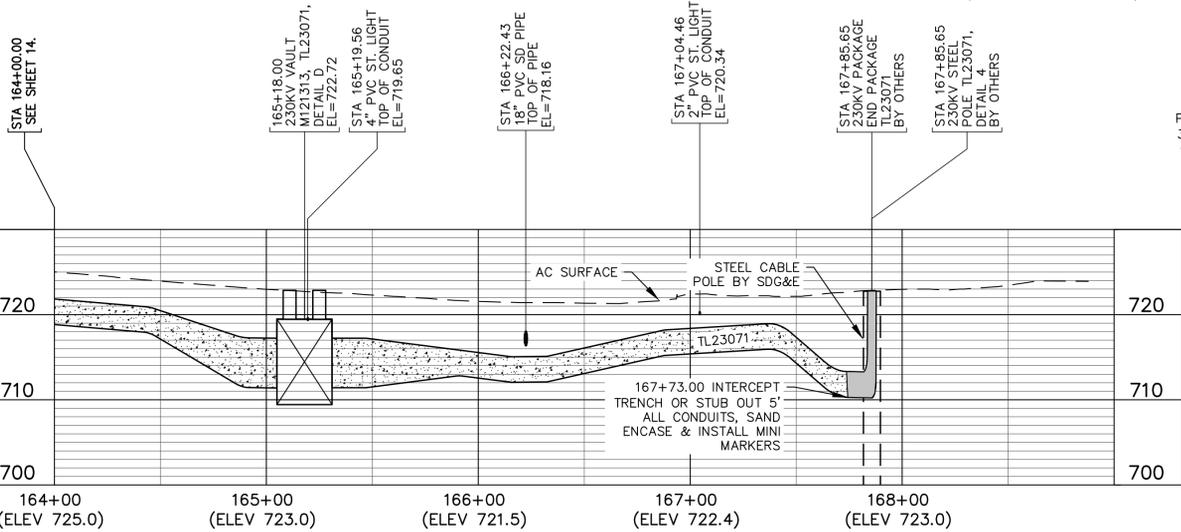
SCALE IS ACCURATE FOR 24"x36" SHEET  
PLOT. REPRODUCTIONS ON ANY OTHER SIZE  
SHEET DOES NOT REPRESENT TRUE SCALE.

GRAPHIC SCALE  
0' 20' 40' 80'  
SCALE 1" = 40'

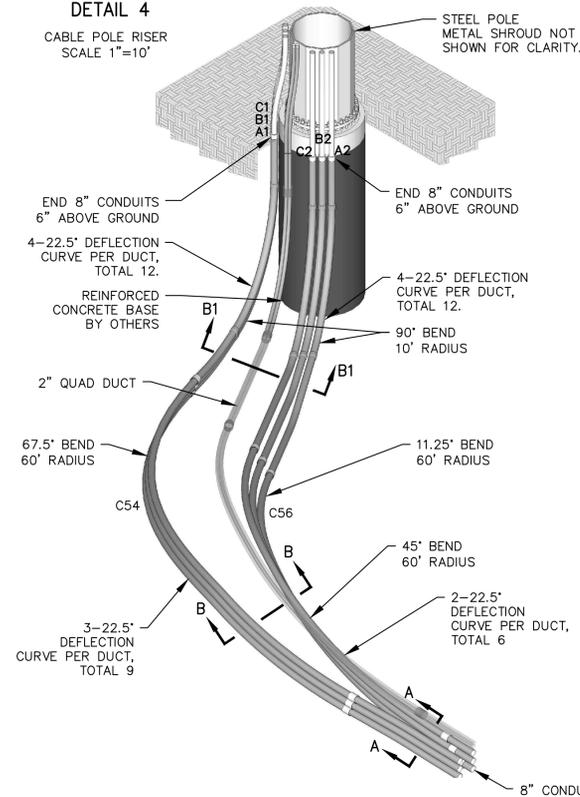


CURVE TABLE					
CURVE	STATION	DELTA	RADIUS	LENGTH	BC (N,E)
C53	BC 165+76.66 EC 166+23.76	044°58'30"	60.00'	47.10'	1940770.9504, 6291706.1493
C54	BC 166+94.11 EC 167+64.86	067°33'54"	60.00'	70.75'	1940868.6935, 6291647.2510
C55	BC 266+76.11 EC 267+23.22	044°59'17"	60.00'	47.11'	1940851.9229, 6291654.1390
C56	BC 267+38.68 EC 267+50.48	011°16'27"	60.00'	11.81'	1940912.0807, 6291660.3752

**TRENCH NOTES**  
 STA. 164+00 TO 164+45, SECTION A-A  
 STA. 164+45 TO 165+05, SECTION B-B  
 STA. 165+05 TO 165+31, DETAIL D  
 STA. 165+31 TO 165+91, SECTION B-B  
 STA. 165+91 TO 167+47, SECTION A-A



DUCTS TRANSITION AT STEEL  
POLE Z100259 TL23071  
DETAIL 4



DETAIL 6  
ISOMETRIC VIEW 8" RISERS TO  
STEEL POLE  
LOOKING NORTH  
NO SCALE

PHASING TO BE FIELD VERIFIED  
TL23071



DETAIL 5  
230KV STEEL CABLE POLE.  
NO SCALE

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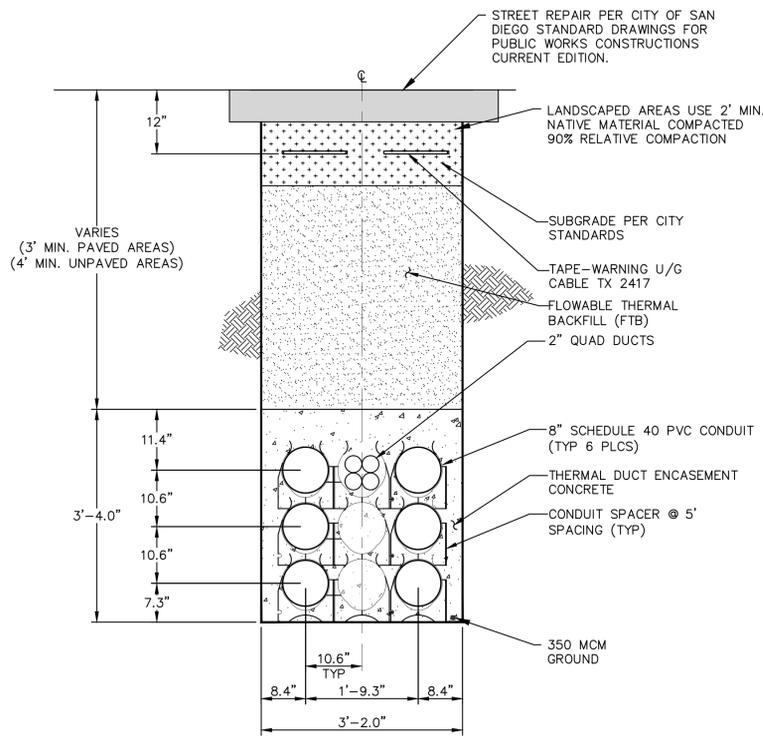
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DATE: 4/21/15	D																			
THO. BROS. ---	C																			
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CONST. NO. ---	A																			
PLAN & PROFILE																				
HORIZONTAL: 1"=40'																				
VERTICAL: 1"=10'																				
REV	BUDGET	CONST ORDER	CHANGE	DWN	CHKD	APPY	DATE													

**SDGE** SAN DIEGO GAS & ELECTRIC  
TRANSMISSION ENGINEERING  
PLAN & PROFILE  
TL23071  
SCALE: 1"=40' HOR. SHEET 15 OF 25

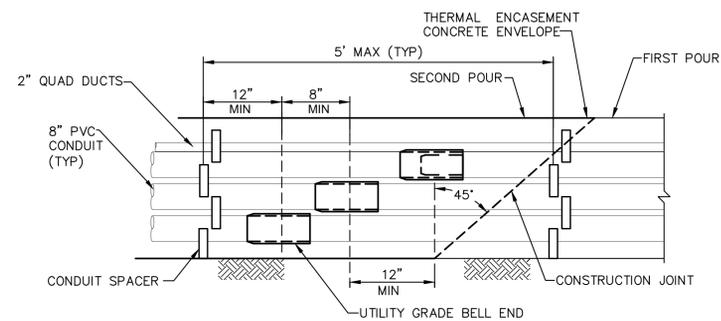
TL23071  
SYCAMORE TO PENASQUITOS  
230KV LINE, SEGMENT B  
POLE Z100258 TO POLE Z100259  
DRAWING NUMBER  
NV5- 15

PRELIMINARY DESIGN ONLY NOT FOR CONSTRUCTION

SCALE IS ACCURATE FOR 24"x36" SHEET  
PLOT. REPRODUCTIONS ON ANY OTHER SIZE  
SHEET DOES NOT REPRESENT TRUE SCALE.



DETAIL 1  
STANDARD CONDUIT PACKAGE  
NOT TO SCALE

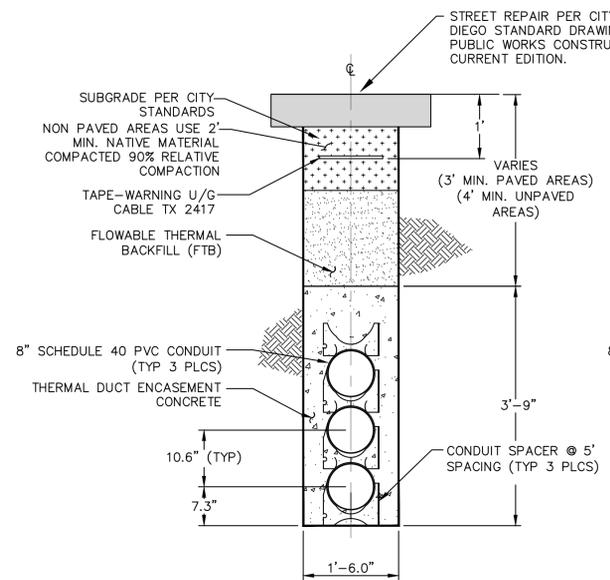


(FOR CLARITY, GROUND RETURN CONDUCTOR IS NOT SHOWN)  
NOT TO SCALE

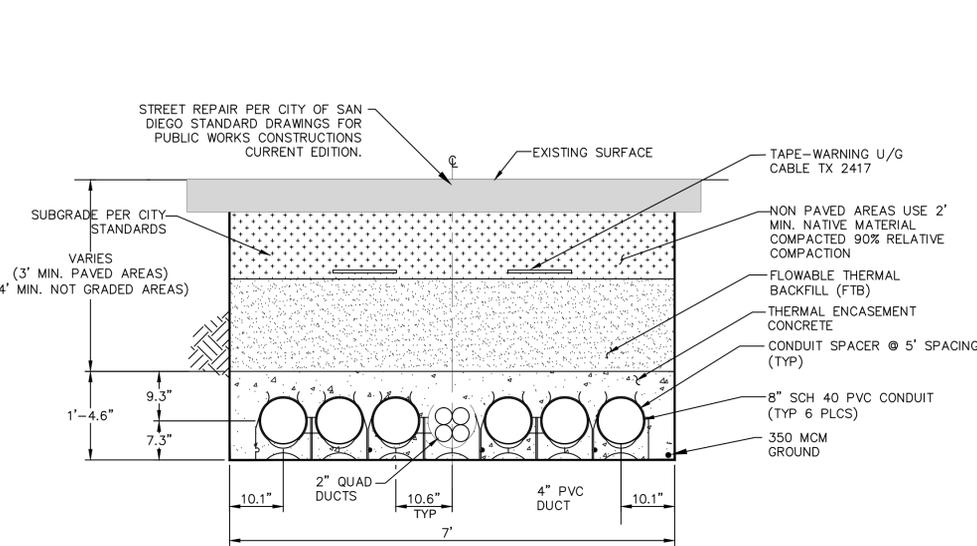
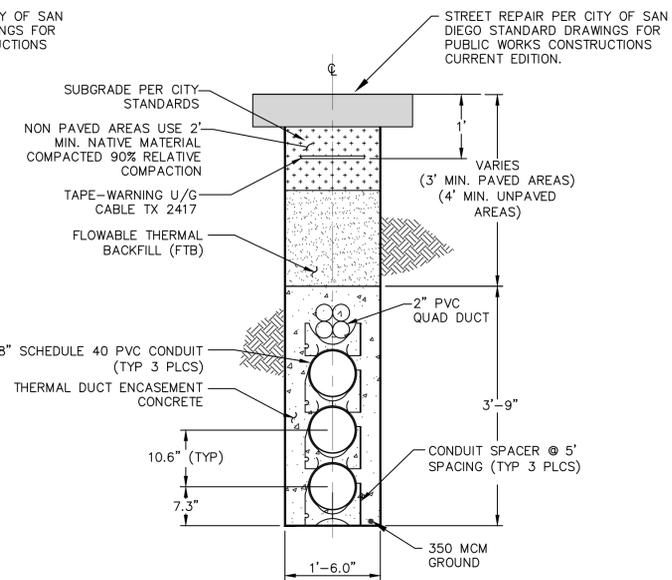
DETAIL 2  
TYPICAL COUPLING DETAIL FOR DUCT ENCASEMENT  
NOT TO SCALE

**NOTES:**

- FOR GENERAL NOTES, SEE SHEET 1.
- SEE SDG&E TRANSMISSION ENGINEERING CONSTRUCTION SPECIFICATION GENERAL REQUIREMENTS, SECTION TE-0107, 7.0 CABLE INSTALLATION IN CONDUIT, TITLE 7.1.2 CONDUIT PROVING, FOR MANDREL SPECIFICATIONS AND INSTRUCTIONS.
- WHEN DISTANCE BETWEEN EDGE OF TRENCH AND LIP OF GUTTER IS 2' OR LESS, ASPHALT PAVING SHALL BE REPLACED TO LIP OF GUTTER.
- THERMAL CONCRETE FOR ENCASEMENT SHALL MEET PROJECT SPECIFICATIONS. MIX DESIGN SHALL BE TESTED AND APPROVED PRIOR TO INSTALLATION.
- FLOWABLE THERMAL BACKFILL (FTB) SHALL BE PLACED DIRECTLY ABOVE THE CONCRETE ENCASEMENT.
- PRIOR TO INSTALLING THERMAL CONCRETE MIX OR THERMAL BACKFILL, TWO (2) TEST BATCH SAMPLES SHALL BE SENT FOR THERMAL TESTING AND APPROVAL BY TESTING ENGINEERS.
- FOR EVERY 1,000 FEET OF ENCASEMENT INSTALLED, SDG&E SHALL COLLECT TWO (2) TEST CYLINDERS EACH OF ENCASEMENT CONCRETE & FTB BACKFILL FOR CORRESPONDING TESTING AND APPROVAL. SDG&E SHALL BE RESPONSIBLE FOR SENDING TEST CYLINDERS TO TESTING ENGINEERS.
- A MINIMUM OF 3 INCHES SEPARATION SHALL BE MAINTAINED BETWEEN THE 8" CONDUITS. NON-METALLIC SPACERS AS MANUFACTURED BY CARLON, UNDERGROUND DEVICES INC. OR APPROVED EQUIVALENT SHALL BE USED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING THE ENTIRE LENGTH OF TRENCH. SHORING SHALL COMPLY WITH CAL-OSHA SECTION 1541.1 REQUIREMENTS.
- LANDSCAPED TRENCHING AREAS SHALL HAVE MINIMUM 6" AND MAXIMUM 1'-6" PLANTING SOIL OR CLEAN BACKFILL OVER FLOWABLE THERMAL BACKFILL (FTB) WITH TAPE-WARNING U/G CABLE TX 24117 AT 12" DEPTH AS INDICATED IN DETAILS. INSTALL UNDERGROUND WARNING SIGN PER SDG&E DWG39001.
- REFER TO SDG&E TRANSMISSION ENGINEERING SPECIFICATIONS NUMBER TE-107. ALL UNDERGROUND CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE BEFORE MENTIONED TECHNICAL SPECIFICATION AND THE CONSTRUCTION SUPPLEMENTAL SPECIFICATION TE-100.
- CONTRACTOR SHALL VERIFY AND ENSURE THAT NO METALLIC LOOPS OR TIES ARE TO BE UTILIZED TO SECURE CONDUIT PACKAGES.



DETAIL 3  
VERTICAL CONDUIT PACKAGE  
NOT TO SCALE



DETAIL 4  
(HORIZONTAL-FLAT)  
CONDUIT PACKAGE  
NOT TO SCALE



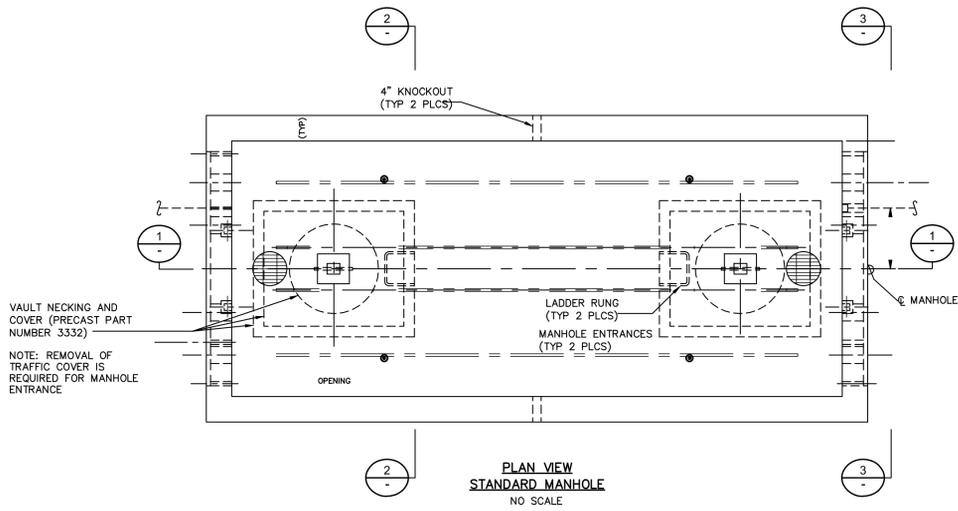
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PLAN & PROFILE		TRENCH-SUBSTRUCTURES, CABLE INSTALLATION & TERMINATIONS																					
HORIZONTAL: 1"=40'																							
VERTICAL: 1"=10'																							
REV	BUDGET	CONST ORDER	CHANGE																	DWN	CHKD	APPV	DATE



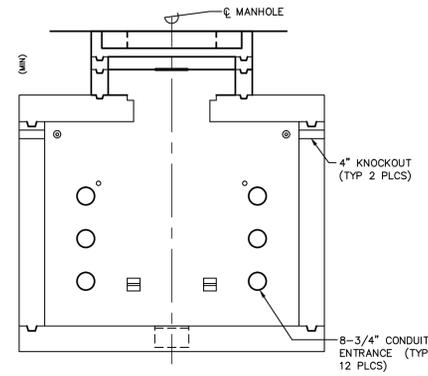
TL23071  
SYCAMORE TO PENASQUITOS  
230KV LINE, SEGMENT B  
POLE Z100258 TO POLE Z100259  
DRAWING NUMBER  
NV5-16

SHEET 16 OF 25

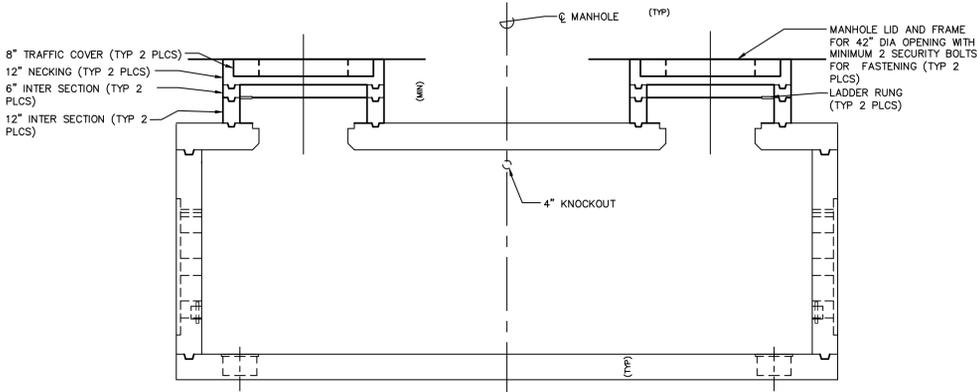
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PLAN VIEW  
STANDARD MANHOLE  
NO SCALE

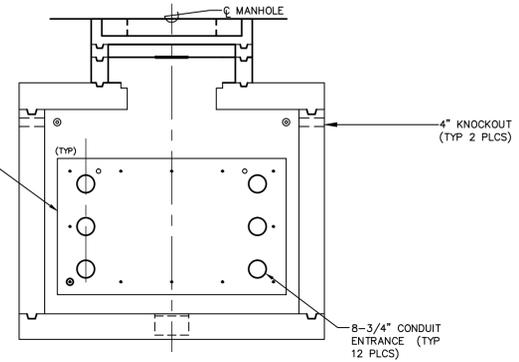


SECTION 2  
NO SCALE

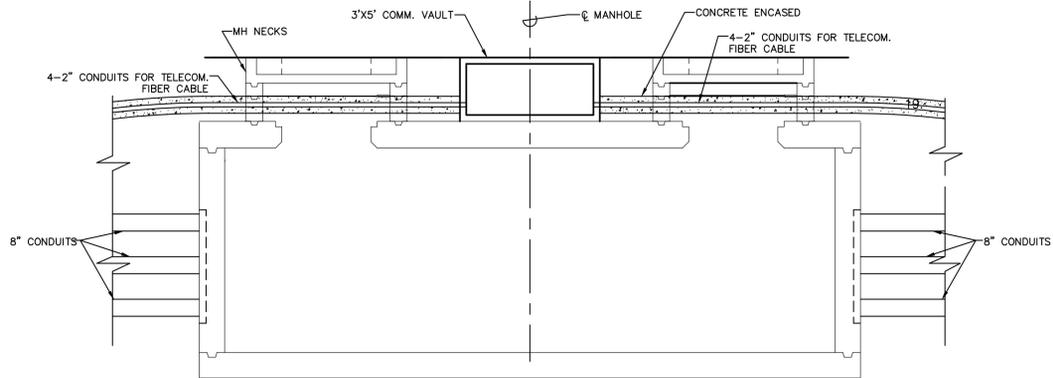


SECTION 1  
NO SCALE

2" DEEP x 9'-0" x 5'-4" INDENT  
ON OUTSIDE WALL AROUND  
ENDBELLS (TYPICAL 2 PLCS)



SECTION 3  
NO SCALE



DETAIL D  
COMM. FIBER CABLE DETAIL  
NO SCALE

MANHOLE NOTE  
PLAN VIEW AND SECTIONS OF THE  
MANHOLE IS FOR REFERENCE ONLY,  
SEE SDG&E SPECIFICATIONS FOR  
PRECAST REINFORCED CONCRETE  
MANHOLES DATED MAY 17, 2005.



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PLAN & PROFILE		TRENCH-SUBSTRUCTURES, CABLE INSTALLATION & TERMINATIONS																					
HORIZONTAL: 1"=40'																							
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REV	BUDGET	CONST ORDER	CHANGE																	DWN	CHKD	APPY	DATE

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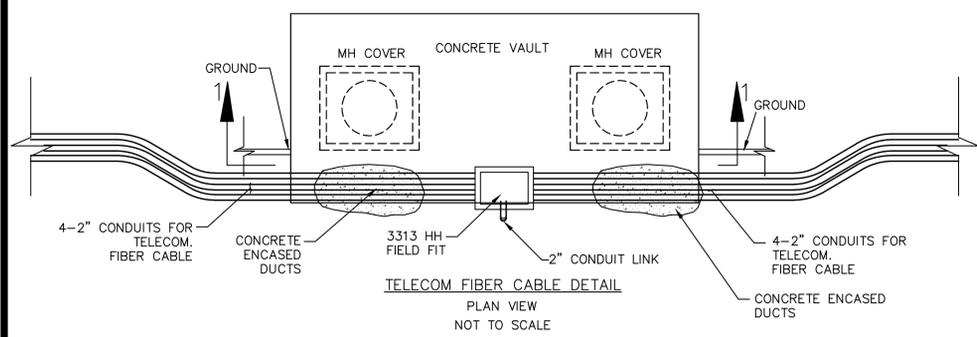
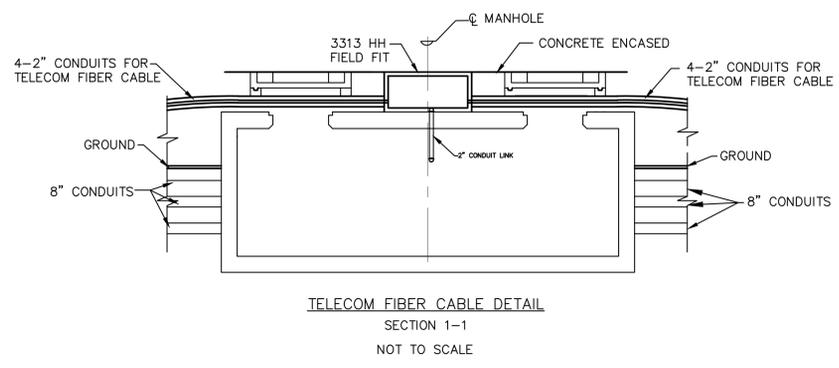
VAULT DETAILS  
TL23071

SCALE: 1"=40' HOR. SHEET 17 OF 25

TL23071  
SYCAMORE TO PENASQUITOS  
230KV LINE, SEGMENT B  
POLE Z100258 TO POLE Z100259

DRAWING NUMBER  
NV5- 17

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CONST. NO.	--	A																		
PLAN & PROFILE																				
HORIZONTAL: 1"=40'																				
VERTICAL: 1"=10'																				
REV	BUDGET	CONST ORDER	CHANGE	DWN	CHKD	APPY	DATE													

**SDGE** SAN DIEGO GAS & ELECTRIC  
TRANSMISSION ENGINEERING

VAULT DETAILS  
TL23071

SCALE: 1"=40' HOR. SHEET 18 OF 25

TL23071  
SYCAMORE TO PENASQUITOS  
230KV LINE, SEGMENT B  
POLE Z100258 TO POLE Z100259

DRAWING NUMBER  
NV5- 18

PRELIMINARY DESIGN ONLY NOT FOR CONSTRUCTION