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DU-013



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SCVWD 66" Central Pipeline Design Unit 013 Ready for Construction Revision 1

SVBX C700

Thursday, January 17, 2013

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B130-F436

AGENCIES, ORGANIZATIONS ETC.	
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ACFC & WCD	ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
ACI	AMERICAN CONCRETE INSTITUTE
ACWD	ALAMEDA COUNTY WATER DISTRICT
AGA	AMERICAN GAS ASSOCIATION
AIR	AIR PRODUCTS
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APCO	ASSOCIATED PUBLIC SERVICE COMMUNICATIONS OFFICERS
API	AMERICAN PETROLEUM INSTITUTE
AREMA	AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AT&T	AMERICAN TELEPHONE & TELEGRAPH
AWS	AMERICAN WELDING SOCIETY
BART	SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT
BNSF	BURLINGTON NORTHERN SANTA FE
B OF A	BANK OF AMERICA
CALTRANS	CALIFORNIA DEPARTMENT OF TRANSPORTATION
CGS	CALIFORNIA GEOLOGICAL SURVEY
CHEV	CHEVRON CORPORATION
COF	CITY OF FREMONT
COM	CITY OF MILPITAS
COMCAST	COMCAST CABLE COMMUNICATIONS
CPUC	CALIFORNIA PUBLIC UTILITY COMMISSION
CPUC GO	CALIFORNIA PUBLIC UTILITY COMMISSION GENERAL ORDER
CSC	CITY OF SANTA CLARA
CSJ	CITY OF SAN JOSE
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
FDX	FEDERAL EXPRESS
FGCS	FEDERAL GEODETIC CONTROL SUBCOMMITTEE
ICG	ICG COMMUNICATIONS, INC.
JPB	PENINSULA CORRIDOR JOINT POWERS BOARD
KND, KM	KINDER MORGAN, INC.
L3, LVL3	LEVEL 3 COMMUNICATIONS
MCI	MCI TELECOMMUNICATIONS
MCWD	MILPITAS CITY WATER DISTRICT
MFN	METROMEDIA FIBER NETWORK, INC.
MFS	METROPOLITAN FIBER SYSTEMS
MSD	MILPITAS SANITARY DISTRICT
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION AGENCY
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
OWT	ONE WORLD TELECOMMUNICATIONS
PG&E	PACIFIC GAS & ELECTRIC COMPANY
QWEST	QWEST COMMUNICATIONS, INC.
SBC	SBC COMMUNICATIONS, INC. (NOW AT&T)
SBWR	SOUTH BAY WATER RECYCLING (CSJ)
SCC	SANTA CLARA COUNTY
SCCTA	SANTA CLARA COUNTY TRANSPORTATION AGENCY
SCSD	SANTA CLARA SEWER DISTRICT
SCVWD	SANTA CLARA VALLEY WATER DISTRICT
S.F.	SAN FRANCISCO
SFWD	SAN FRANCISCO WATER DEPARTMENT
SJSU	SAN JOSE STATE UNIVERSITY
SJWC	SAN JOSE WATER COMPANY
SPR	SPRINT NEXTEL CORPORATION
SPTC	SOUTHERN PACIFIC TRANSPORTATION COMPANY
SVBX	BART SILICON VALLEY BERRYESSA EXTENSION PROJECT
SVE	SILICON VALLEY ELECTRIC
SVP	SILICON VALLEY POWER
SVRT	SILICON VALLEY RAPID TRANSIT PROJECT
TBE	TAMPA BAY ENGINEERING
TCI	TCI CABLE VISION OF CALIFORNIA
WIL	WILLIAM TEL. COMMUNICATIONS
UL	UNDERWRITERS LABORATORY
UPRR	UNION PACIFIC RAILROAD COMPANY
USC&GS	UNITED STATES COAST AND GEODETIC SURVEY
USD	UNION SANITARY DISTRICT
USPS	UNITED STATES POSTAL SERVICE
VRZ	VERIZON COMMUNICATIONS
VTA, SCVTA	SANTA CLARA VALLEY TRANSPORTATION AUTHORITY
XO	XO COMMUNICATIONS

SPECIAL CHARACTERS	
Q	CENTER LINE
Q & S	AND
*F	DIAMETER
Q	TEMPERATURE - FARENHEIT SCALE
L	AT (ITEM SPACINGS ONLY, IE #8@12")
01,02	ANGLE (MEMBER SIZE IE L4X4X5/16)
2/C	VITAL REPEATER
3/C	TWO-CONDUCTOR CABLE
	THREE-CONDUCTOR CABLE
- A -	
A	AMPERE, AMBER
AFF	ABOVE FINISHED FLOOR
A/D	ANALOG-TO-DIGITAL CONVERTER
AATC	ADVANCED AUTOMATIC TRAIN CONTROL
AAV	AUTOMATIC AIR VENT
AB	AGGREGATE BASE, ANCHOR BOLT, ARRESTOR BLOCK
ABM	AIR-BLOWN MORTAR
ABN	ABANDON(ED)
ABS	ACRYLONITRILE-BUTADIENE-STYRENE, AUTOMATIC BLOCK SIGNAL
ABT	ANCHOR BOLT
ABUT	ABUTMENT
AC	AIR COMPRESSOR, AIR CURTAIN, AIR CONDITIONING, ASPHALT CONCRETE, ALTERNATING CURRENT
ACB	AIR CIRCUIT BREAKER
ACCP	AIR CONDITIONING CONTROL PANEL
ACD	ACCESS DOOR
ACI	AUTOMATIC CALLER IDENTIFICATION
ACK	ACKNOWLEDGE
ACO	ALTERNATING CURRENT OUTPUT
ACOUS	ACOUSTICAL
ACP	ASBESTOS CEMENT PIPE, AC PANEL, AUXILIARY CONTROL PANEL, AUXILIARY COMM ROOM
ACR	ACCESS CONTROL SYSTEM
ACS	ACOUSTICAL TREATMENT
ACTR	AIR CONDITIONING UNIT
ACU	ASBESTOS CEMENT WATER PIPE
ACWP	AREA DRAIN, ADDENDUM
AD	ADDITIONAL
ADD'L	ADJACENT, ADJUSTABLE
ADJ	ADD/DROP MULTIPLEXER
ADM	AUTOMATIC ELECTRONIC IDENTIFICATION (SYSTEM)
AEI	AIR FILTER, AUDIO FREQUENCY, ANTI-FREEZE REEL
AF	AUTOMATIC FARE COLLECTION
AFC	ABOVE FINISH FLOOR
AFF	ADD FARE MACHINE
AFM	ABOVE GROUND
AG	AHEAD
AH, AHD	AIR HANDLING UNIT
AHU	ADDITIONAL INFO, ANALOG INPUT
AI	ALARM
AL	ALIGNMENT
ALUM	ALUMINUM
ALU	AUTOMATIC LEVEL CONTROL UNIT
ALT	ALTERNATE, ALTERNATIVE
AM	AMMETER, AMPLITUDE MODULATION
AMB	AMBIENT
AMP	AMPLIFIER
ANCH	ANCHOR
ANN	ANNUNCIATOR
ANS	AMBIENT NOISE SENSOR
ANT	ANTENNA
AO	ANALOG OUTPUT
AOV	ANGLE OF VIEW
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
APN	ASSESSOR PARCEL NUMBER
APP	APPROACH
APPROX	APPROXIMATE
APT	ACOUSTICAL PANEL CEILING
ARA	AREA OF RESCUE ASSISTANCE
ARCH	ARCHITECTURAL
ARS	ACCELERATION RESPONSE SPECTRUM
ARV	AIR RELEASE VALVE
AS	AGGREGATE SUBBASE, AMMETER SWITCH
ASPH	ASPHALT
ASR	APPROACH LOCKING STICK RELAY, AUTOMATIC SPRINKLER RISER
AT	AMMETER TRANSDUCER
ATC	AUTOMATIC TRAIN CONTROL
ATO	AUTOMATIC TRAIN OPERATION

ATP	AUTOMATIC TRAIN PROTECTION
ATR	AIR TEMPERATURE RISE
ATS	AUTOMATIC TRANSFER SWITCH
ATTS	AUXILIARY TRAIN TRACKING SYSTEM
AUX	AUXILIARY
AVE	AVENUE
AVG	AVERAGE
AVI	AUTOMATIC VEHICLE IDENTIFICATION
AVV	AIR VACUUM VALVE
AWG	AMERICAN WIRE GAUGE
- B -	
B	DC VOLTAGE - POSITIVE
B, BOT	BOTTOM
B/O	BOTTOM OF
B12	POS. 12VDC
B28	POS. 28VDC
BAT	BATTERY
BB	BACK BONE, BEGINNING OF BRIDGE
BBC	BILL-TO-BILL CHANGER
BC	BARE COPPER, BOTTOM OF CURB, BEGIN CURVE
BCM	BILL CHANGE MACHINE
BCR	BEGIN CURB RETURN
BCU	BARE COPPER
BD	BALANCING DAMPER, BY-PASS DAMPER, BOARD
BDA	BI-DIRECTIONAL AMPLIFIER
BDD	BACKDRAFT DAMPER
BER	BIT ERROR RATE
BFD	BLACK ROLL FIBER DUCT
BFP	BACK FLOW PREVENTER
BFS	BART FACILITY STANDARD
BGS	BELOW GROUND SURFACE
BHP	BRAKE HORSE POWER
BIT	BINARY DIGIT
BITUM	BITUMINOUS
BK	BACK
BKF	BACKFILL
BKR	BREAKER
BLDG	BUILDING
BLKG	BLOCKING
BLKS	BLOCKS
BLS	BLUE LIGHT STATION, BLUE LIGHT SWITCH STATION
BLVD	BOULEVARD
BM	BEAM, BENCHMARK
BO	BLOW OFF
BOC	BOTTOM OF CONCRETE
BOD	BOTTOM OF DUCT
BORI	BIDIRECTIONAL OPTICAL RF INTERFACE
BOS	BOTTOM OF SLAB
BOW	BACK OF WALK
BP	BART POLICE
BPS	BITS PER SECOND
BR	BRIDGE
BRG(S)	BEARING(S)
BRKR	BREAKER
BRR	BROKEN RAIL RELAY
BS	BOTTOM OF SLOPE
BSI	BAYSTATE SUBSURFACE INVESTIGATION
BSS	BUS SIGNAL SYSTEM
BTM	BUS TRANSFER MACHINE
BTS	BASE TRANSCIEVER STATION
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BV	BUTTERFLY VALVE
BVC	BEGIN VERTICAL CURVE
BW	BARBED WIRE, BACK OF WALK, BANDWIDTH
BX	AC VOLTAGE
BX12	POSITIVE 12V AC
- C -	
C	CELSIUS, CONDUIT, COIL, COMBINER, CONDUCTOR, COVER
C&G	CURB AND GUTTER
C/B	COVER BOARD
C/R	CONTACT RAIL
C/W	COMPLETE WITH
CA	COMPRESSED AIR, COMPRESSED AIR REEL, CABLE
CAB	CABINET, TRAIN SPEED SIGNAL
CAL	CALIPER
CAP	CAPACITOR, CAPACITY, CORRUGATED ALUMINUM PIPE
CAT	CATEGORY (AS IN CAT 5 CABLE)
CATV, CTV	CABLE TELEVISION
CB	CATCH BASIN, CIRCUIT BREAKER, CONVERTER BLOCK

CC	CENTRAL CONTROL/CONTROLLER, COOLING COIL, CENTER OF CIRCULAR CURVE
C-C	CENTER TO CENTER
CCF	CENTRAL CONTROL FACILITY (REMOTELY LOCATED)
CCN	COMMUNICATIONS CABLE NETWORK
CCP	CENTRAL CONTROL PANEL
CCS	CENTRAL CONTROL SYSTEM
CCS83	CALIFORNIA COORDINATE SYSTEM 1983 (RELATES TO NAD83)
CCTL	CORROSION CONTROL TEST LEADS
CCTV	CLOSED CIRCUIT TV CAMERA, CLOSED CIRCUIT TELEVISION
CD	CONDENSATE DRAIN, CONCRETE DUCT
CDB	CENTRAL DISPLAY BOARD
CEC	CALIFORNIA ELECTRICAL CODE
CEG	CEILING EXHAUST GRILLE
CEM	CEMENT
CER	CERAMIC
CF	CUBIC FOOT/FEET, CONTROL RELAY, FORWARD (SUPPLY)
CF/DA	CALL FORWARD/DON'T ANSWER (TELEPHONE FEATURE)
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFT	CONTACT FIBER TRANSCIEVER
CG	CENTER OF GRAVITY, CEILING GRILLE, CHASSIS GREASE REEL
CH	CHANNEL
CH BK	CHANNEL BANK
CHFU	CONTROL FUSE - HV SIDE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CAST IRON
CIC	COMMUNICATIONS INTERFACE CABINET
CIP	CAST IRON PIPE, CAST IN PLACE
CJ	CONSTRUCTION JOINT, CONTROL JOINT
CKT	CIRCUIT
CL	CEMENT LINED, CENTERLINE, CHAIN LINK
CL&C	CEMENT LINED AND COATED
CLF	CHAIN LINK FENCE
CLG	CEILING
CLKG	CAULKING
CLO	CLOSET
CLR	CLEAR, CLEARANCE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CND	CONDUIT
CNTR	CONTROL
CO	COUNTER
CO1	CLEANOUT, COUNTY, CROSSOVER, CONVENIENCE OUTLET, CARBON MONOXIDE SENSOR, CONDUIT ONLY
COAX	SUPERVISORY CENTRAL CONTROL BOARD COAXIAL CABLE
COL(S)	COLUMN(S)
COMM	COMMUNICATION(S)
COMP	COMPUTER, COMPOSITE
COMPT	COMPARTMENT
CONC	CONCRETE
COND	CONDENSATE, CONDENSING, CONDITIONED
CONN	CONNECT, CONNECTION
CONST	CONSTRUCT, CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
CONV	CONVENTIONAL
COORD	COORDINATE
CORP	CORPORATION
CORR	CORRIDOR
CORS	CONTINUOUSLY OPERATING REFERENCE STATIONS
CP	CONCRETE PIPE, CONTROL POINT, COMPLETE PENETRATION, CROSS PASSAGE, CONTROL PANEL
CPB	CORRIDOR PROTECTION BARRIER
CPL	CALIFORNIA PLUMBING CODE
CPNG	CONDUIT, PLASTIC
CPP	COUPLING
CPT	CORRUGATED PLASTIC PIPE
CPU	CARPET
CPU/PD	CENTRAL PROCESSING UNIT
CR	CENTRAL PROCESSOR UNIT/POLYNOMIAL DIVIDER
CRD	CARD READER, CROWN, CONTACT RAIL
CRG	CEILING RETURN DIFFUSER
CRK	CEILING RETURN GRILLE
CRT	CREEK
CS	CATHODE RAY TUBE
CSA	CONTACT SWITCH, CONTROL SWITCH, POINT OF CHANGE FROM CIRCULAR CURVE TO SPIRAL CONSTRUCTION STAGING AREA

CSAR	CAB STEERING RELAY A
CSB	CUSTOMER SERVICE BUILDING
CSBR	CAB STEERING RELAY B
CSO	CEILING SUPPLY DIFFUSER
CSEX	CODE SYSTEM EMULATOR, EXTENDED
CSP	CORRUGATED STEEL PIPE
CSR	CAB STEERING RELAY, CEILING SUPPLY REGISTER
CSU	CHANNEL SERVICE UNIT
CT	CERAMIC TILE, CURRENT TRANSFORMER, COURTESY TELEPHONE, COURT
CTC	CENTRALIZED TRAIN CONTROL, COMMUNICATIONS TERMINAL CABINET
CTCSS	CONTINUOUS TONE CODED SQUELCH SYSTEM
CTR	CENTER, COMMUNICATIONS TERMINATION ROOM
CTSK	COUNTERSUNK
CU	CONDENSING UNIT, COPPER
CULV	CULVERT
CV	CHECK VALVE, CURVE
CW	COLD WATER, CREOSOTED WOOD
CWR	CONTINUOUS WELDED RAIL
CX	CURRENT SENSOR
CXFU	CONTROL FUSE - LV SIDE
CY	CUBIC YARD(S)
- D -	
D	DEPTH, DRAIN, DRAINAGE
D/A	DIGITAL-TO-ANALOG CONVERTER
D/F	DISTRICT FURNISHED
D/L	DOWN LINK
DA	DISTRIBUTION AMPLIFIER
DACS	DIGITAL ACCESS AND CROSS CONNECT
DAS	DATA ACQUISITION SYSTEM
DB	DRY BULB, DUCTBANK
dB	DECIBEL
DBC	DIRECT BURIED CABLE
DBL	DOUBLE
DBO	DOUBLE BREAK OUTPUT
DC	DIRECT CURRENT, DEGREE OF CURVE
DCC	DATA COMMUNICATIONS CHANNEL
DCN	DATA COMMUNICATIONS NETWORK
DCP	DAMPER CONTROL PANEL
DD	DOWN DRAIN
DDCVA	DOUBLE DETECTOR CHECK VALVE
DDS	DYNAMIC (TRAIN) DESTINATION SIGN
DEG	DUCT EXHAUST GRILLE, DEGREE
DEL	DELINEATORS, DELETE
DEPT	DEPARTMENT
DET	DETAIL, DETOUR, DETECTOR
DF	DIRECT FIXATION, DRINKING FOUNTAIN, DEGREES FAHRENHEIT
DFE	DISTRICT FURNISHED EQUIPMENT
DFM	DISTRICT FURNISHED MATERIAL, DISTRIBUTION FEEDER MAIN
DG	DOOR GRILLE
DGAC	DENSE GRADED ASPHALT CONCRETE
DI	DUCTILE IRON, DIGITAL INPUT, DRAINAGE INLET, DIRECT INPUT
DIA	DIAMETER
DIAG	DIAGONAL
DID	DIRECT INWARD DIALING
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIPIS	DOOR INTERLOCK PROTECTION ISOLATION SCHEME
DIR	DIRECT, DIRECTION
DISP	DISPENSER
DIST	DISTRIBUTION, DISTRICT, DISTANCE
DL	DEAD LOAD, DOOR LOUVER
DMH	DRAINAGE MANHOLE
DMOD	DEMODULATE
DMP	DESIGNATED MATCHING PRODUCT
DN	DOWN
DO	DIGITAL OUTPUT, DOOR OPENING, DITTO
DOD	DIRECT OUTWARD DIALING
DP	DIFFERENTIAL PRESSURE, DISTRIBUTION PANEL
DR	DOOR, DRIVE
DRWY	DRIVEWAY
DS	DISCONNECT SWITCH, DOWNSPOUT, DESK SET UNIT
DSO	DIGITAL SIGNAL (LEVEL 0)
DS1	DIGITAL SIGNAL (LEVEL 1)
DSM	DEEP SOIL MIX
DSS	DESTINATION SIGN SYSTEM
DSU	DESTINATION SIGN UNIT, DATA SERVICE UNIT
DSX	DIGITAL CROSSCONNECT
DTMF	DUAL TONE MULTIFREQUENCY

DTR	DETOUR
DTS	DATA TRANSMISSION SYSTEM, DIGITAL TRANSMISSION SYSTEM
DTSJ	DOWNTOWN SAN JOSE
DW	DOMESTIC WATER
DWG(S)	DRAWING(S)
DX	DIRECT EXPANSION

Santa Clara Valley Transportation Authority
NO EXCEPTION TAKEN
MAKE CORRECTIONS NOTED
AMEND AND RESUBMIT
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: DB11002F
 By: [Signature] Date: 02/26/13

- NOTES:**
- ABBREVIATIONS SHOULD ONLY BE USED WHEN SPACE LIMITATIONS ON THE DRAWING DOES NOT ALLOW FOR THE FULL TEXT.
 - SOME ABBREVIATIONS ARE CONSIDERED COMMON OR WIDESPREAD AND CAN BE USED UNIVERSALLY. I.E., TYP FOR TYPICAL; UNO FOR UNLESS NOTED OTHERWISE.
 - ABBREVIATIONS WITH MULTIPLE DEFINITIONS SHOULD BE READ IN RELATION TO THE ITEM, AND DISCIPLINE OF THE DRAWING ON WHICH IT OCCURS.
 - ABBREVIATIONS MAY BE COMBINED WHEN NEEDED I.E. DIP-CL (DUCTILE IRON PIPE, CEMENT LINED), NS&FS (NEAR SIDE AND FAR SIDE)

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REV	DATE	BY	SUB	APP	DESCRIPTION
1	20130117				READY FOR CONSTRUCTION
0	20121019				READY FOR CONSTRUCTION

DESIGNED BY
J. STREEPER
 DRAWN BY
K. MULLER
 CHECKED BY
B. WAGNER
 IN CHARGE
J. STREEPER
 DATE
 20130117



Skanska
Shimmick
Herzog
 1435 California Circle
 Milpitas, California 95035
 A Joint Venture

HMM
 LOCKWOOD, ANDREWS & NEWSON, INC.
T-Y-LIN INTERNATIONAL
 SUBMITTED [Signature] APPROVED [Signature]



LINE, TRACK, STATIONS, AND SYSTEMS
 GENERAL ABBREVIATIONS
 SHEET 1 OF 4

CADD FILENAME	C700-S-DL-X200.dwg
SIZE	D NONE
CONTRACT NO.	C700
REV.	1
AREA CODE	DL
SHEET NO.	X200
PAGE NO.	0003

Table with 2 columns: Abbreviation and Description. Includes entries like E (EAST, SUPERELEVATION IN INCHES), E&M (EAR AND MOUTH), EA (EACH, EXHAUST AIR), etc.

Table with 2 columns: Abbreviation and Description. Includes entries like EWT (ENTERING WATER TEMPERATURE), EXC (EXCAVATION), EXH (EXHAUST), etc.

Table with 2 columns: Abbreviation and Description. Includes entries like FSD (COMBINATION FIRE SMOKE DETECTOR), FSK (FREQUENCY SHIFT KEYING), FSV (FIRE SPRINKLER VALVE), etc.

Table with 2 columns: Abbreviation and Description. Includes entries like HI (HIGH), HM (HOLLOW METAL), HMA (HOT MIX ASPHALT CONCRETE), etc.

Table with 2 columns: Abbreviation and Description. Includes entries like JKFLD (JACKFIELD), JMP (JUMPER), JP (JOINT POLE), etc.

Table with 2 columns: Abbreviation and Description. Includes entries like M (MAIN CONTACTOR, METER, MEDIUM), MAE (MAINTENANCE EASEMENT), MCTB (MOTOR CONTROL TERMINAL BOX), etc.

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Table with 5 columns: REV, DATE, BY, SUB, APP. Shows revision history for drawing 20130117.

Professional Engineer seal for J. Streep, No. 4445, State of California.

Skanska Shimmick Herzog logo and address: 1436 California Circle, Milpitas, California 95035.

HMM logo and address: Lockwood, Andrews & Newman, Inc., 1100 S. Bascom Avenue, Suite 200, San Jose, CA 95128.

T-Y-LIN INTERNATIONAL logo and address: 10000 N. Wolfe Rd., Cupertino, CA 95014.

BART SILICON VALLEY logo.

LINE, TRACK, STATIONS, AND SYSTEMS. GENERAL ABBREVIATIONS SHEET 2 OF 4. CADD FILENAME: C700-S-DL-X201.dwg. CONTRACT NO. C700. SHEET NO. DL X201. REV. 1. PAGE NO. 0004.

San Jose Valley Transportation Authority. NO EXCEPTIONS TAKEN. MAKE CORRECTIONS NOTED. AMEND AND RESUBMIT. Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing. Contract No. 10110027. Date: 02/26/13.

<p align="center">- N -</p> <p>N NORTH, NEUTRAL (N) NEW N/A NOT APPLICABLE N/R NON-RELATED N12 NEGATIVE 12V DC N28 NEGATIVE 28V DC NAD27 NORTH AMERICAN DATUM OF 1927 (HORIZONTAL) NAD83 NORTH AMERICAN DATUM OF 1983 (HORIZONTAL) NAVD88 NORTH AMERICAN VERTICAL DATUM OF 1988 NB NEGATIVE BUS, NORTH BOUND NC NOISE CRITERIA, NORMALLY CLOSED NE NORTHEAST NEC NATIONAL ELECTRIC CODE NEG NEGATIVE NEG RET NEGATIVE RETURN NE'LY NORTHEASTERLY NGS NATIONAL GEODETIC SURVEY NIC NOT IN CONTRACT NIT NITROGEN GAS LINE NK NECK N'LY NORTHERLY nm NANOMETER NMC NON-METALLIC CONDUIT NMS NETWORK MANAGEMENT SYSTEM NO NORMALLY OPEN, NUMBER NO(S) NUMBERS NOM NOMINAL NON-ESS NON-ESSENTIAL NOR NORMAL NOTC NORMALLY OPEN TIME CLOSED NS NEAR SIDE NTS NOT TO SCALE NV NON-VITAL NVI NON-VITAL INPUT NVO NON-VITAL OUTPUT NVR NETWORK VIDEO RECORDER NW NORTHWEST NWCR SWITCH NORMAL CORRESPONDENCE RELAY NW'LY NORTHWESTERLY NWPR NORMAL SWITCH REPEATER RELAY NX AC VOLTAGE NX12 12VAC NXTGEN ARCHITECTURE OF BART'S NEXT GENERATION EQUIPMENT</p>		<p align="center">- P -</p> <p>OSP OUTSIDE PLANT OSYT NEWHALL YARD CONTROL TOWER OTDR OPTICAL TIME DOMAIN REFLECTOMETER OTE OVER TRACK EXHAUST OTM OTHER TRACK MATERIAL OTN OPTICAL TRANSPORT NETWORK OV OUTLET VELOCITY, OUTSIDE VELOCITY OVC OVERCROSSING</p> <p>P POWER LINE, PAINT, NON-VITAL REPEATER P LAM PLASTIC LAMINATE P&S POWER AND SUPPORT P&W POWER AND WAY P.B., PB PULLBOX OR PUSH BUTTON P/L PROPERTY LINE P/O PART OF PA PUBLIC ADDRESS, PLANTING AREA PABX, PBX PRIVATE AUTOMATIC BRANCH EXCHANGE PAE PEDESTRIAN ACCESS EASEMENT PART PARTNERS PATS PROPERTY ACQUISITION TRACKING SYSTEM PB PULL BOX, PUSH BUTTON PC PERSONAL COMPUTER, PRECAST, PRECAST CONCRETE, POINT OF CURVATURE, POINT OF CHANGE FROM TANGENT TO CIRCULAR CURVE PCC PORTLAND CEMENT CONCRETE, POINT OF COMPOUND CURVATURE PCF POINT OF CURVATURE, POUND PER CUBIC FOOT PCM PARKING CONTROL MACHINE, PULSE CODE MODULATION PCR PORTAL COMMUNICATIONS ROOM PCTL PRECAST TUNNEL LINING PCV PRESSURE CONTROL VALVE PCVC POINT OF COMPOUND VERTICAL CURVE PD PRESSURE DROP, PUMP DISCHARGE PDN PLANTER DRAIN PDU PROTOCOL DATA UNIT PE POLYETHYLENE PIPE, PNEUMATIC-ELECTRIC PED PEDESTRIAN PERF PERFORATED PERM PERMEABLE PERM MTL PERMEABLE MATERIAL PET, PETRO. PETROLEUM LINE PT POINT OF FROG PG PROFILE GRADE PGA PEAK GROUND ACCELERATION PGL PROFILE GRADE LINE PGT PRIME GROUND TERMINAL PH PHASE, POTHOLE PI PHASE PIDS PORTAL INTRUSION DETECTION SYSTEM PIN PROPERTY IDENTIFICATION NUMBER PIP POURED-IN-PLACE PITO POINT OF INTERSECTION OF TURNOUT PIV POST INDICATOR VALVE PWC POINT OF INTERSECTION OF TWO PROFILE TANGENTS PL PIPE LINE, PLATE, PROPERTY LINE, PLATFORM, PLASTIC PLAS PLASTER PLC PROGRAMMABLE LOGIC CONTROLLER, PLASTIC COATED PLP PLASTIC PIPE PLUM PLUMBING PLY PLYWOOD PM POST MILE PNL PANEL PNEU PNEUMATIC POE PEDESTRIAN OVERCROSSING, POINT ON CIRCULAR CURVE, POINT OF CONNECTION POS POINT OF EQUATION, POWER OVER ETHERNET POSITIVE OR POSITION, POINT ON SPIRAL POT POINT ON TANGENT POVC POINT ON VERTICAL CURVE POVT POINT ON VERTICAL TANGENT PP POWER POLE, NON-VITAL REPEATER PPL PREFORMED PERMEABLE LINER PPP OPERATING SYSTEM PPTIM PLC PANEL TERMINAL INTERFACE MODULE</p>		<p align="center">- Q -</p> <p>PR PAIR(S), PRESSURE PRC POINT OF REVERSE CURVATURE PREP PREPARATION PRI PRIMARY PRKG PARKING PROP PROPERTY, PROPOSED PROT PROTECTOR PRS PAIRS PRV PRESSURE REDUCING VALVE PRVAL PRESSURE RELIEF VALVE PRVC POINT ON REVERSE VERTICAL CURVE ps PICO SECOND PS POINT OF SWITCH, POSITION SWITCH, POWER SUPPLY, PUMP STATION, PRE-STRESSED PS/L PROTECTOR SHELF/L BLOCK PSE PUBLIC SERVICE EASEMENT PSI POUNDS PER SQUARE INCH PSIG POUNDS PER SQUARE INCH GAUGE PSTN PUBLIC SWITCHED TELEPHONE NETWORK PSUE PUBLIC SERVICE UTILITY EASEMENT PT POINT, POINT OF TANGENT, POINT OF CHANGE FROM CIRCULAR CURVE TO TANGENT, POTENTIAL TRANSFORMER, PORCELAIN TILE, PETROLEUM PTD/R PAPER TOWEL DISPENSER & RECEPTACLE PTEAC PERMIT TO ENTER AND CONSTRUCT PTM PLATFORM TRIP MODULE PTS PLATFORM TRIP STATION PTT PUSH TO TALK PTZ PAN, TILT AND ZOOM PU POWER UNIT PUE PUBLIC UTILITY EASEMENT PVC POLYVINYL CHLORIDE (CONDUIT) OR (PIPE), POINT OF VERTICAL CURVE PVI POST VALVE INDICATOR PVMT PAVEMENT PWR POWER</p>		<p align="center">- R -</p> <p>R RADIUS, RESISTOR, RISER, RING, ROUTER (R) RELOCATE OR REMOVE AND SALVAGE R NO. RACK NUMBER R/C RATE OF CHANGE R/R RUNNING RAIL R/W RIGHT-OF-WAY R1 RING 1 RA RETURN AIR RAA RESCUE ASSISTANCE AREA RAC RIGHT ACTIVE CHANNEL RAD RETURN AIR DAMPER, RADIUS RAT REMOTE ATO TERMINAL RB RESILIENT RUBBER BASE RBC REINFORCED BOX CULVERT RBM RAILBOUND MANGANESE FROG RC REINFORCED CONCRETE, REMOTE CONTROL, RIGHT CABLE RCB REINFORCED CONCRETE BOX RCP REINFORCED CONCRETE PIPE RCR ROUTE CHECK RELAY RCV RECEIVE, REMOTE CONTROL VALVE RD RECEIVER RD ROAD, ROOF DRAIN, ROUND RDC RADIO DISTRIBUTION CABINET RDWY ROADWAY RE RED ASPECT LAMP REBAR REINFORCEMENT BAR RECT RECTIFIER, RECTANGULAR REF REFERENCE REINF REINFORCED, REINFORCING, REINFORCEMENT REL RELOCATE REM REMOTE REQ, REQD REQUIRED RES RESISTOR RESIL RESILIENT RET RETURN REV REVISION, REVERSE RF RADIO FREQUENCY, RETURN FAN RGB RED, GREEN, BLUE VIDEO COLORS RGS RIGID GALVANIZED STEEL RH RADIANT HEATER, RIGHT HAND, RELATIVE</p>		<p align="center">- S -</p> <p>S SOUTH, SLOPE SO. SOUTH S.I.C. SUPPORT IN PLACE S1 SVRT MAIN LINE TRACK (SB) S2 SVRT MAIN LINE TRACK (NB) S3 SVRT POCKET OR STORAGE TRACK S4 SPECTRAL ACCELERATION SA SUPPLY AIR, SURGE ARRESTER SAB STATION AGENTS BOOTH SAN SANITARY SAR SOUND ATTENUATOR SAT SATURATION SB SOUTH BOUND SBGR STEEL BEAM GUARDRAIL SBO SINGLE BREAK OUTPUT SC SOLID CORE, POINT OF CHANGE FROM SPIRAL TO CIRCULAR CURVE SCAC SELF CONTAINED AIR CONDITIONER SCADA SUPERVISORY CONTROL AND DATA ACQUISITION SCD SEAT COVER DISPENSER, SMOKE CONTROL DAMPER SCS SMOKE CONTROL SENSOR SCH SCHEDULE SCHP SELF CONTAINED HEAT PUMP SCN SYSTEMWIDE CABLE NETWORK SCNB SHORT CIRCUITING TERMINATION BLOCK SD SOAP DISPENSER, STORM DRAIN, TUNNEL ISOLATION DAMPER, SUBWAY DAMPER SDCB STORM DRAIN CATCH BASIN OR DRAINAGE INLET SDE STORM DRAIN EASEMENT SDMH STORM DRAIN MANHOLE SDP SPLITTER DAMPER, SMOKE/FIRE DAMPER WITH ACCESS PANEL SE SOUTHEAST SEC SECOND, SECONDARY SECT SECTION, SECTIONALIZING SE'LY SOUTHEASTERLY SES SECTIONALIZING STATION SF SQUARE FEET, SUPPLY FAN SG SUBGRADE, SUPPLY GRILLE SH SHIELD, SHUNT SHG SHOWER GANG SHH SHOWER HANDICAP SHC SENSIBLE HEATING CAPACITY SHL SHOULDER SHR SHOWER SHT SHEET SIG SIGNAL SIM SIMILAR</p>		<p>SJW TEST SAN JOSE WATER CO TEST STATION SL STREET LIGHT SLC LEFT CIRCUIT (34.5KV TPSS) SLPA SIGNAGE/LIGHTING/PUBLIC ADDRESS SPEAKERS SLR SEALER SLV SHORT LEG VERTICAL S'LY SOUTHERLY SM SINGLE MODE (FIBER CABLE), SOLID MANGANESE FROG, SWITCH MACHINE SMF SINGLE MODE FIBER SMH SANITARY MANHOLE SND SANITARY NAPKIN DISPENSER SNF SWING NOSE FROG, MOVABLE POINT FROG SNR SANITARY NAPKIN RECEPTACLE SNT STATION NETWORK TERMINAL SOE SUPPORT OF EXCAVATION SOL SOLENOID SOM SOMASTIC COATED PIPE SONET SYNCHRONOUS OPTICAL NETWORK SORS SEQUENTIAL OCCUPANCY RELEASE SYSTEM SOV SHUT-OFF VALVE SP STEEL PIPE, SUMP PUMP, STATIC PRESSURE, SPARE, SPLICE SP1, SP2 BART SPUR TRACK SPA SPACES, SPACING SPD SANITARY PRESSURE DISCHARGE SPDT SINGLE POLE DOUBLE THROW SPEC SPECIFICATION SPECS SPECIFICATIONS SPK SPEAKER SPO POINT OF ORIGIN OF COMPOUND SPIRAL SPRK SPRINKLER SPRR COMM SOUTHERN PACIFIC RAILROAD COMMUNICATION SPSC SWITCH POWER SUPPLY CABINET, SWITCH MACHINE POWER SUPPLY CABINET SPST SINGLE POLE SINGLE THROW SPT SPRINT COMMUNICATIONS SPTC SOLDIER PILE TREMIE CONCRETE SPWG STATIC PRESSURE WATER GAUGE SQ SQUARE SQ.FT. SQUARE FOOT (FEET) SQYD,SY SQUARE YARD SR SUPPLY REGISTER SRC RIGHT CIRCUIT (34.5KV TPSS) SS SELECTOR SWITCH, STAINLESS STEEL, SANITARY SEWER, SUBSTATION, POINT OF CHANGE FROM ONE SPIRAL TO ANOTHER SSCO SANITARY SEWER CLEANOUT SSE SUBSURFACE EASEMENT, SANITARY SEWER EASEMENT SSK SERVICE SINK SSMH, SMH SANITARY SEWER MANHOLE SSR SOUTH STICK RELAY SSS SYSTEM SELECTOR SWITCH SST SOAP STONE ST STREET, SAINT, POINT OF CHANGE FROM SPIRAL TO TANGENT, STONE TILE STA ALIGNMENT STATION, STATION, STATIONING STBY STANDBY STC SOUND TRANSMISSION CLASS STD STANDARD STE SPECIAL TEST EQUIPMENT STIFF STIFFENER STL STEEL STOPR STOP SPEED COMMAND RELAY STOR STORAGE STR STRAIR, STRANDED STRUC STRUCTURAL, STRUCTURE STS SYNCHRONOUS TRANSPORT SIGNAL SUB SUBSTATION SUPP SUPPLY SUSP SUSPENDED SV TUNNEL VENTILATION FAN, SOLID VEE FROG, SHEET VINYL SVC SERVICE SVR SERVER SW SWITCHBOARD, SOUNDWALL, SOUTHWEST, SWITCH SWAC POR SWITCH MACHINE POWER OFF SWBD SWITCH BOARD SWGR SWITCH GEAR SWL SOUNDWALL SW'LY SOUTHWESTERLY SWR SYSTEMWIDE RACEWAY SWS SWITCHING STATION SWT PT SWITCH POINT</p>		<p>SY SQUARE YARD SYM SYMMETRICAL SYS SYSTEM(S)</p>	
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Santa Clara Valley Transportation Authority
 NO EXCEPTION TAKEN
 MAKE CORRECTIONS NOTED
 AMEND AND RESUBMIT
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: DB11002F
 By: *[Signature]* Date: 02/26/13

<p>DESIGNED BY J. STREEPER</p> <p>DRAWN BY K. MULLER</p> <p>CHECKED BY B. WAGNER</p> <p>IN CHARGE J. STREEPER</p> <p>DATE 20130117</p>			<p>Skanska Shimmick Herzog</p> <p>1435 California Circle Milpitas, California 95035 A Joint Venture</p>					<p>LINE, TRACK, STATIONS, AND SYSTEMS</p> <p>GENERAL ABBREVIATIONS SHEET 3 OF 4</p>	<p>CADD FILENAME C700-S-DL-X202.dwg</p> <p>SIZE SCALE D NONE</p> <p>CONTRACT NO. C700 REV. 1</p> <p>AREA CODE SHEET NO. DL X202 PAGE NO. 0005</p>
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 Jan 16, 2013

PURPOSE OF SURVEY:

THE PURPOSE OF THIS SURVEY IS TO PROVIDE HORIZONTAL AND VERTICAL CONTROL FOR RIGHT-OF-WAY ENGINEERING, DESIGN, AND CONSTRUCTION OF THE BAY AREA RAPID TRANSIT (BART) EXTENSION BY THE SANTA CLARA VALLEY TRANSPORTATION AUTHORITY (VTA), TO RUN SOUTHERLY FROM THE UNION TERMINUS OF BART'S WARM SPRINGS EXTENSION APPROXIMATELY ELEVEN MILES ALONG THE UNION PACIFIC RAILROAD RIGHT-OF-WAY, THEN SUBSURFACE WESTERLY THROUGH DOWNTOWN SAN JOSE UNDER SANTA CLARA STREET, THEN NORTHERLY TO AND ALONG THE CALTRAIN RIGHT-OF-WAY TO THE INTERSECTION OF LAFAYETTE STREET.

BASIS OF COORDINATES AND BEARINGS:

COORDINATES FOR CONTROL POINTS AND BEARINGS SHOWN ON THIS SURVEY ARE BASED HORIZONTALLY ON THE CCS83, ZONE 3, EPOCH 1998.5 (SEE NOTE #1 ON THIS SHEET), AND VERTICALLY ON NAVD88, DEVELOPED BY THE PERFORMANCE OF SURVEYS DESCRIBED AS FOLLOWS:

PRIMARY GPS SURVEY

THE PRIMARY GPS NETWORK CONSISTING OF 49 POINTS WAS OBSERVED TO FGCS ORDER B STANDARDS. THE GPS SURVEY WAS CONDUCTED USING FOUR TRIMBLE NAVIGATION 4700 AND ONE TRIMBLE NAVIGATION 4000SSI DUAL FREQUENCY GEODETIC RECEIVERS. STATIC SURVEYING TECHNIQUES WERE USED FOR MEASURING ALL BASELINE VECTORS. INSTRUMENT HEIGHTS WERE MEASURED IN METERS AND IN FEET. THESE VALUES WERE REDUCED AND COMPARED IN THE FIELD PRIOR TO LEAVING THE STATION. ALL STATIONS WERE OCCUPIED AT LEAST TWICE ON INDEPENDENT DAYS. IN GENERAL, GPS DATA WAS LOGGED FOR AT LEAST ONE HOUR; HOWEVER UP TO 4 HOURS OF DATA WAS COLLECTED FOR THE LONGER BASELINES.

ALL BASELINE VECTORS WERE PROCESSED USING THE TRIMBLE GEOMATICS OFFICE, (VERSION 1.50) SOFTWARE. FIXED BIAS SOLUTIONS WERE OBTAINED FOR ALL BASELINES USING INTERNATIONAL GPS SERVICE FOR GEODYNAMICS (IGS) PRECISE ORBITS FOR ALL BASELINE VECTOR COMPUTATIONS.

A MINIMALLY CONSTRAINED LEAST SQUARES ADJUSTMENT WAS PERFORMED ON THE PRIMARY GPS NETWORK TO ENSURE THAT FGCS ORDER-B STANDARDS WERE ACHIEVED. THE GPS BASELINES OF THE PRIMARY GPS NETWORK WERE ADJUSTED USING MICROSEARCH GEOLAB 2001 (VERSION 2001.9.20.0). THE GEODETIC COORDINATES (LATITUDE, LONGITUDE AND ELLIPSOIDAL HEIGHT) OF CORS STATION ZOAI PROVIDED THE MINIMAL CONSTRAINT. THE ADJUSTMENT COMPRISED OF 49 STATIONS AND 408 BASELINE VECTOR COMPONENTS (136 BASELINES) AND WAS BASED ON NAD83 (CORS) AT THE 2003.05 EPOCH.

CONVENTIONAL TRAVERSING

PRECISE CONVENTIONAL MEASUREMENTS WERE PERFORMED ON SECONDARY CONTROL INSTALLED TO DENSIFY THE PRIMARY GPS NETWORK, THEREBY ESTABLISHING A NETWORK OF CONTROL THROUGHOUT THE PROJECT AREA. FGCS FIRST ORDER CLASS I STANDARDS AND PROCEDURES WERE ADOPTED FOR THE SECONDARY CONTROL. A LEICA TC2002 WAS USED FOR ALL DIRECTION, ZENITH ANGLE AND SLOPE DISTANCE MEASUREMENTS. THIS INSTRUMENT WAS CALIBRATED LOCALLY FOR SCALE AND ZERO ERROR (PRISM CONSTANT) BY COMPARING GPS DERIVED DISTANCES WITH THE REDUCED HORIZONTAL DISTANCES. RELATIVE HUMIDITY AND TEMPERATURE OBSERVATIONS WERE OBSERVED DURING THE FIELD WORK. ATMOSPHERIC PRESSURE DATA WERE OBTAINED FROM SAN JOSE AIRPORT.

PRECISION LEVELING

FGCS STANDARDS, SPECIFICATIONS AND PROCEDURES FOR SECOND ORDER CLASS II WERE ADOPTED FOR VERTICAL CONTROL SURVEYS. EXISTING NGS VERTICAL CONTROL WAS DENSIFIED TO ESTABLISH NEW BENCHMARKS THROUGHOUT THE PROJECT AREA. THE SELECTED PROJECT VERTICAL DATUM IS NAVD88. A LEICA NA3003 DIGITAL LEVEL WAS USED FOR ALL PRECISION LEVELING. THE FGCS MODIFIED DOUBLE SIMULTANEOUS (MDS) PROCEDURE WAS USED, ALLOWING FOR TWO PARTIALLY INDEPENDENT HEIGHT DIFFERENCE MEASUREMENTS AT EACH SETUP.

NETWORK ADJUSTMENT AND POST ANALYSIS

THE LEAST SQUARES ADJUSTMENT WAS PERFORMED ON THE NAD83 (CORS) DATUM, EPOCH OF 2003.05. ALL GPS VECTORS, ELEVATION DIFFERENCES, AND CONVENTIONAL MEASUREMENTS WERE COMBINED IN A SINGLE UNIFIED ADJUSTMENT ALLOWING FOR THE MOST RIGOROUS AND RELIABLE RESULTS. THE GEOD99 GEODAL MODEL WAS USED TO FACILITATE THE GENERATION OF ORTHOMETRIC HEIGHTS (ELEVATIONS) FOR ALL CONTROL POINTS NOT OBSERVED THROUGH PRECISION LEVELING. THE COMBINED ADJUSTMENT WAS PERFORMED USING EVERY OBSERVATION TO ENSURE THE MOST RIGOROUS SOLUTION. CERTAIN OBSERVATIONS WERE DE-WEIGHTED IN THE LEAST SQUARES ADJUSTMENT.

THE VTA/BART PROJECT IS BASED ON NAD83 (CORS) EPOCH OF 1998.5. CONSEQUENTLY, THE RESULTS OF THIS ADJUSTMENT WERE TRANSFORMED FROM NAD83 (CORS), EPOCH OF 2003.05 BACK TO NAD83 (CORS), EPOCH 1998.5 USING THE NATIONAL GEODETIC SURVEY SOFTWARE HTDP (HORIZONTAL TIME-DEPENDENT POSITIONING SOFTWARE - VERSION 2.7).

NOTES:

- 1) ALL COORDINATES AND DISTANCES SHOWN ARE IN SURVEY FEET VALUES (GRID). FOR THE LENGTH OF THIS PROJECT, AN AVERAGED COMBINED SCALE FACTOR WAS USED FOR CONVERTING RECORDED MAPS AND DEEDS TO GRID. TO OBTAIN GROUND DISTANCES, MULTIPLY EXPRESSED DISTANCES BY 1.000053330.
- 2) STATIONS SJAA, WINT, MHCB, ZOAI, LUTZ, CHAB, M 874, BART 205R, & BART 206 WERE USED AS THE HORIZONTAL ADJUSTMENT CONSTRAINTS FOR THIS PROJECT (COORDINATES AND DESCRIPTIONS ON PG 2).
- 3) STATIONS QQ 453, M 874, N 1447, B 875, C 1121 RESET, Z 111 RESET, Q 591 RESET, N 874, K 179, VASONA, I 19-96 RESET, C 1371, L 1447, AND HPGN D CA SAN PEDRO WERE USED AS THE VERTICAL ADJUSTMENT CONSTRAINTS FOR THIS PROJECT (COORDINATES AND DESCRIPTIONS ON PAGE 2).
- 4) ALL BART MONUMENTS, BERY, FERN, AND VTA 171A ARE FND WITH VARYING DIAMETER (SEE PAGE 5).
- 5) A RECORD OF SURVEY IS BEING FILED PURSUANT TO PROVISION (d) OF SECTION 8762, OF THE PROFESSIONAL LAND SURVEYORS ACT.
- 6) THE HYPERLINK TO THE NGS WEBSITE: [HTTP://WWW.NGS.NOAA.GOV/CGI-BIN/DS_DESIG.PRL](http://www.ngs.noaa.gov/cgi-bin/ds_desig.prl)

BENCHMARKS:

THE ELEVATIONS SHOWN HEREON ARE COMPILED FROM DIFFERENTIAL LEVEL LOOPS BASED UPON THE FOLLOWING SOURCES:

NGS "QQ 453" BRASS DISK IN TOP OF CONC MON LOCATED IN CITY OF SAN JOSE NEAR THE JUNCTION OF US HIGHWAY 101 AND BLOSSOM HILL RD (STATE HWY 82) (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 190.83'
DATUM: NAVD88

NGS "N 1447" METAL ROD LOCATED IN CITY OF SAN JOSE AT THE INTERSECTION OF UNION PACIFIC RAILROAD AND OAKLAND ROAD, (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 52.37'
DATUM: NAVD88

CGS "B 875" BRASS DISK LOCATED IN CITY OF SAN JOSE AT THE INTERSECTION OF UNION PACIFIC RAILROAD AND WEST JULIAN STREET. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 90.67' (RECORD) 90.585 MEASURED
DATUM: NAVD88

CGS "C 1121 RESET" BRASS DISK LOCATED IN CITY OF SAN JOSE, APPROX 0.1 MILE NW OF THE JUNCTION OF HORNING STREET, AT THE CRISTINA WAREHOUSE COMPANY (1045 10TH STREET). (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 61.79'
DATUM: NAVD88

CGS "Z 111 RESET" BRASS DISK LOCATED IN CITY OF SAN JOSE, IN THE TOP OF THE NE END OF THE SE CONC ABUTMENT OF A CONC BRIDGE OVER W TAYLOR STREET (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 78.34' (RECORD) 78.261 MEASURED
DATUM: NAVD88

CGS "Q 591 RESET" BRASS DISK LOCATED IN WARM SPRINGS, APPROX 0.5 MILE SE'LY ALONG THE UNION PACIFIC RAILROAD FROM THE JUNCTION OF WARREN AVE, (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 45.84'
DATUM: NAVD88

CGS "N 874" BRASS DISK LOCATED IN WARM SPRINGS, IN TOP OF THE SW END OF THE NW ABUTMENT OF THE MISSION BOULEVARD UNDERPASS. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 48.33' (RECORD) 48.256 MEASURED
DATUM: NAVD88

CAGS "K 179 RESET" BRASS DISK LOCATED IN CITY OF MILPITAS, IN THE TOP OF THE SE CONC WALL OF AN 8 BY 9 FOOT CONC CATCH BASIN. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 51.91'
DATUM: NAVD88

CADH "VASONA" SURVEY DISK LOCATED IN TOP OF CONC MON, LOCATED IN LOS GATOS AT THE INTERSECTION OF STATE HWY 9 AND UNIVERSITY AVE, LOCATED AT VASONA DAM. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 307.67'
DATUM: NAVD88

NGS "I 19-96 RESET" DISK LOCATED IN CITY OF SAN JOSE, AT THE INTERSECTION OF 4TH STREET AND E SANTA CLARA STREET, IN A SQUARE CONC BASE. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 80.48'
DATUM: NAVD88

NGS "C 1371" DISK LOCATED IN CITY OF MILPITAS, IN TOP OF THE SE END OF THE NE HEADWALL FOR A 10 BY 15 FOOT CULVERT FOR FLOOD CONTROL. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 15.11'
DATUM: NAVD88

NGS "L 1447" DISK LOCATED IN CITY OF SAN JOSE, AT THE INTERSECTION OF COLEMAN AVE AND INTERSTATE HWY 880, IN A CONC WALKWAY OF THE NW ABUTMENT OF COLEMAN AVENUE OVERPASS OF THE INTERSECTION HWY 880. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 77.34' (RECORD) 77.232 MEASURED
DATUM: NAVD88

CA-085 "HPGN D CA SAN PEDRO" ALUM DISK LOCATED IN CITY OF SAN JOSE, NEAR THE COUNTY CIVIC CENTER, ABOUT 1 MILE SW OF THE JUNCTION OF US HWY 101 AND INTERSTATE HWY 880. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 60.6'
DATUM: NAVD88

CONTINUOUSLY OPERATING REFERENCE STATION (CORS):

SJAA = "SJAA STANFORD CORS ARP" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 1982253.27' E = 6075814.66'
DATUM: NAD83

WINT = "WINT WINTON CORS GRM" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 2064265.65' E = 6086755.33'
DATUM: NAD83

MHCB = "MT HAMILTON BARD CORS ARP" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 1948852.78' E = 6229522.73'
DATUM: NAD83

ZOAI = "OAKLAND 1 CORS ARP" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 2023759.45' E = 6122181.68'
DATUM: NAD83

LUTZ = "LUTZ L 1 PHASE CENTER" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 1929811.75' E = 6164513.21'
DATUM: NAD83

CHAB = "CHABOT BARD CORS ARP" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 2090178.88' E = 6093358.53'
DATUM: NAD83

HIGH PRECISION GEODETIC NETWORK (HPGN):

NGS "M 874" THE STATION IS LOCATED IN MILPITAS CALIFORNIA, ABOUT 0.2 MILES N OF STATE HWY 237, ALONG THE UNION PACIFIC RAILROAD. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 1984336.90' E = 6153198.63'
DATUM: NAD83
ELEVATION = 15.808 MEASURED

BAY AREA RAPID TRANSIT WSX CONTROL POINTS

"BART 205R"
N = 1993049.481 E = 6154314.945
ELEVATION = 90.075 (MEASURED)

"BART 206"
N = 1991626.622 E = 6150622.920
ELEVATION = 20.837 (MEASURED)

"BART 268"
N = 1993826.157 E = 6149797.161
ELEVATION = 22.630 (MEASURED)

"BART 48"
N = 1996507.182 E = 6148768.892
ELEVATION = 29.975 (MEASURED)

"BART 266"
N = 1997825.965 E = 6148258.986
ELEVATION = 40.344 (MEASURED)

"BART 264"
N = 2001811.723 E = 6146682.353
ELEVATION = 45.303 (MEASURED)

"BART 47"
N = 2002487.559 E = 6146417.936
ELEVATION = 47.810 (MEASURED)

PRESCRIPTIVE

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DESIGNED BY L BOROUMAND	
DRAWN BY L BOROUMAND	
CHECKED BY S HEFFNER	
IN CHARGE S HEFFNER	
DATE 20110311	

VTA. SANTA CLARA Valley Transportation Authority

SUBMITTED *[Signature]* APPROVED *[Signature]*

BART SILICON VALLEY

BART SILICON VALLEY BERRYESSA EXTENSION

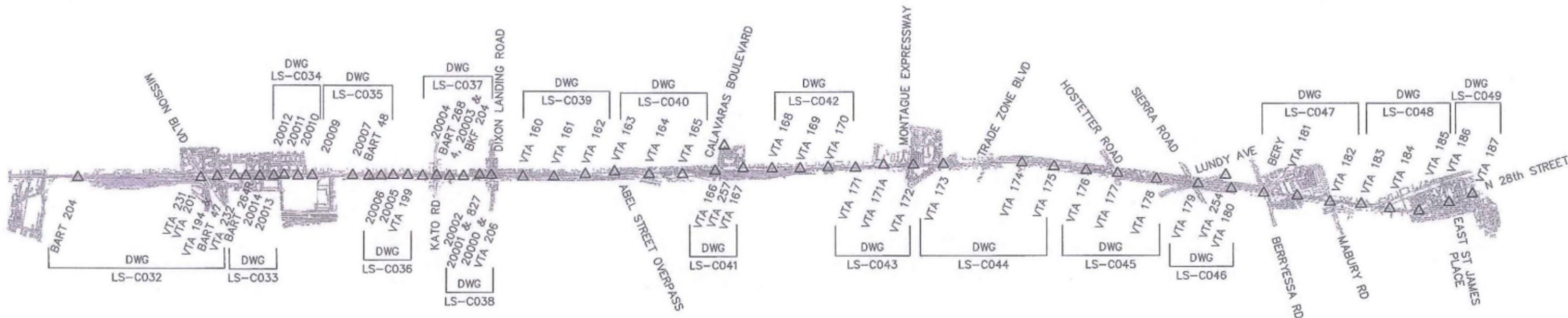
LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA NOTES

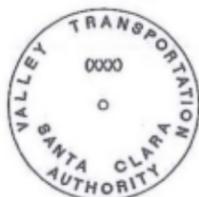
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SIZE SCALE D NOT TO SCALE
CONTRACT NO. C700
REV. P
AREA CODE SHEET NO. LS C030
PAGE NO. 0183



INDEX DWG



NOTE:
 ALL VTA MONUMENTS SET OR FOUND ARE 2" DIAMETER ALUMINUM DISK (EXCEPT AS NOTED) STAMPED "SANTA CLARA VALLEY TRANSPORTATION AUTHORITY" WITH MONUMENT NUMBER (XXX) AND 1/8" DIAMETER DRILLED HOLE.



COMBINED SCALE FACTOR (PROJECT AVERAGE)
 GROUND ----> GRID CONVERSIONS: MULTIPLY DISTANCES BY 0.999946673

VERTICAL CONTROL POINTS

VTA 363
 AT MISSION - SET VTA ALUMINUM CAP 363 FLAT IN EAST WALK OF KATO RD 1.0' WEST OF HANDRAIL OVER NORTH ABUTMENT FOR ROADWAY BRIDGE OVER MISSION BLVD ELEVATION = 51.088

VTA 364
 AT KATO RD - SET VTA ALUMINUM CAP 364 FLAT IN CONCRETE FOUNDATION FOR POWER LINE TOWER. SECOND TOWER SOUTH OF KATO RD 1.0' (FROM THE EAST) AT EAST SIDE OF 1-880 ELEVATION = 10.144

VTA 365
 AT ABEL - SET VTA ALUMINUM CAP 365 IN VERTICAL FACE OF COLUMN, IN WEST FACE OF NORTH COLUMN OF EAST BENT OF BRIDGE FOR ABEL CROSSING RR R/W 4' ABOVE EXISTING GRADE *** ELEVATION = 17.505

VTA 366
 AT CALAVERAS - SET VTA ALUMINUM CAP 366 IN VERTICAL FACE OF COLUMN, IN WEST FACE OF NORTH COLUMN OF EAST BENT OF BRIDGE FOR CALAVERAS CROSSING RR R/W 1.8' ABOVE EXISTING GRADE *** ELEVATION = 22.742

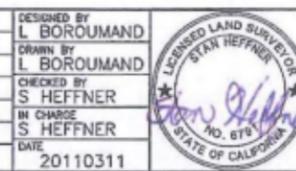
VTA 367
 AT CAPITOL - SET VTA ALUMINUM CAP 367 IN VERTICAL FACE OF COLUMN, IN EAST FACE OF SOUTH COLUMN OF THIRD BENT WEST OF RR R/W (BENT FOR LIGHT RAIL AERIAL STRUCTURE) 4' ABOVE EXISTING GRADE *** ELEVATION = 56.309

VTA 368
 AT CAPITOL - SET VTA ALUMINUM CAP 368 IN VERTICAL FACE OF COLUMN, IN WEST FACE SECOND BENT EAST OF RR R/W 4' ABOVE EXISTING GRADE *** ELEVATION = 57.969

*** CAP HAS 1/4" X 20" X 1" SET SCREW THAT CAN BE THREADED OUT TO SET THE ROD UPON (REQUIRED 1/8" ALLEN WRENCH). PLEASE THREAD BACK INTO CAP WHEN FINISHED. DO NOT OVER TIGHTEN! CAP HAS A SCRIBED LINE THAT CORRESPONDS TO THE ELEVATION OF THE TOP OF SET SCREW FOR USE IF YOU CAN'T LOOSEN THE SET SCREW.

PRESCRIPTIVE

DESIGNED BY	L. BOROUMAND
DRAWN BY	L. BOROUMAND
CHECKED BY	S. HEFFNER
IN CHARGE	S. HEFFNER
DATE	20110311



VTA. SANTA CLARA Valley Transportation Authority

SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

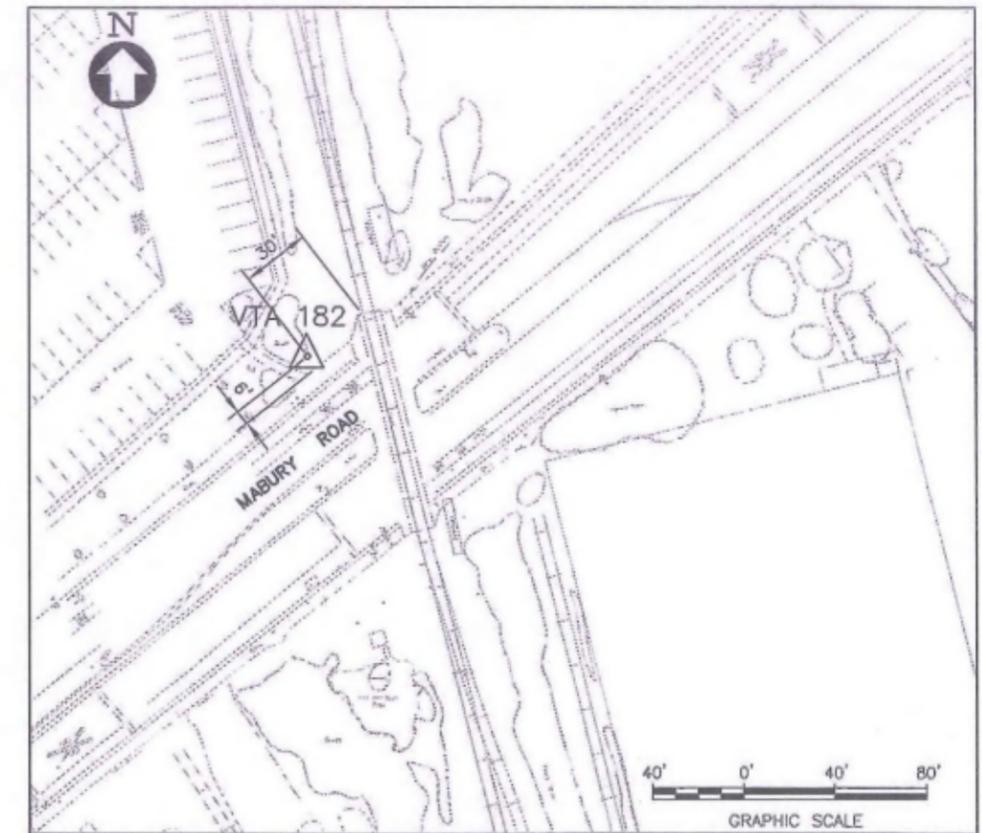
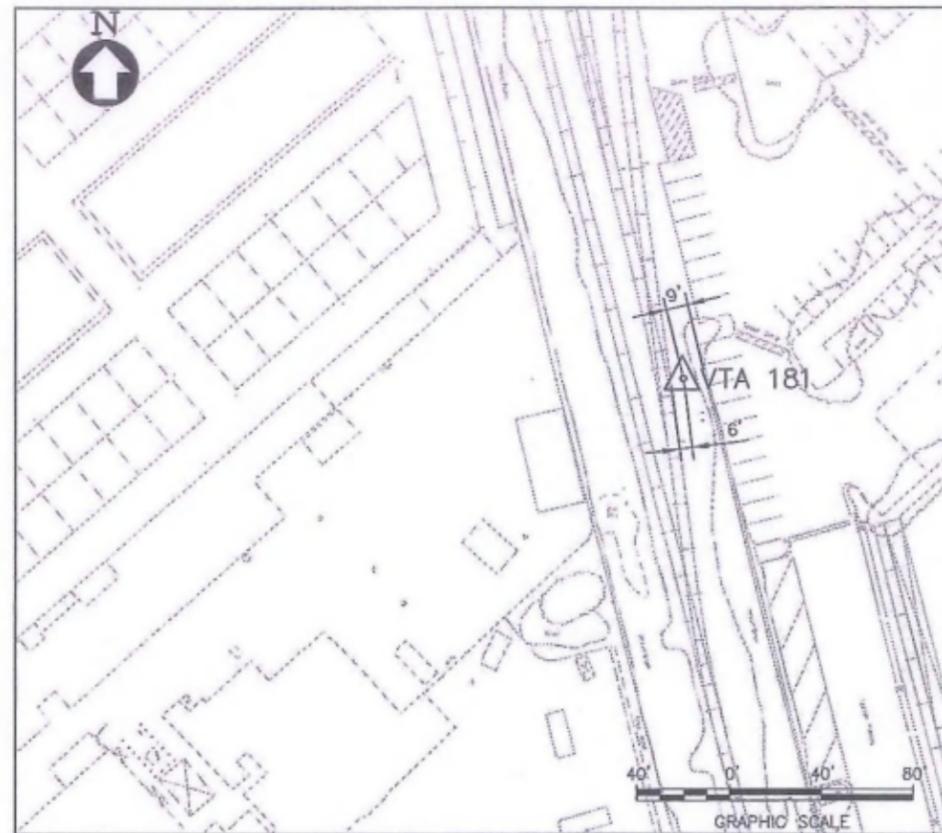
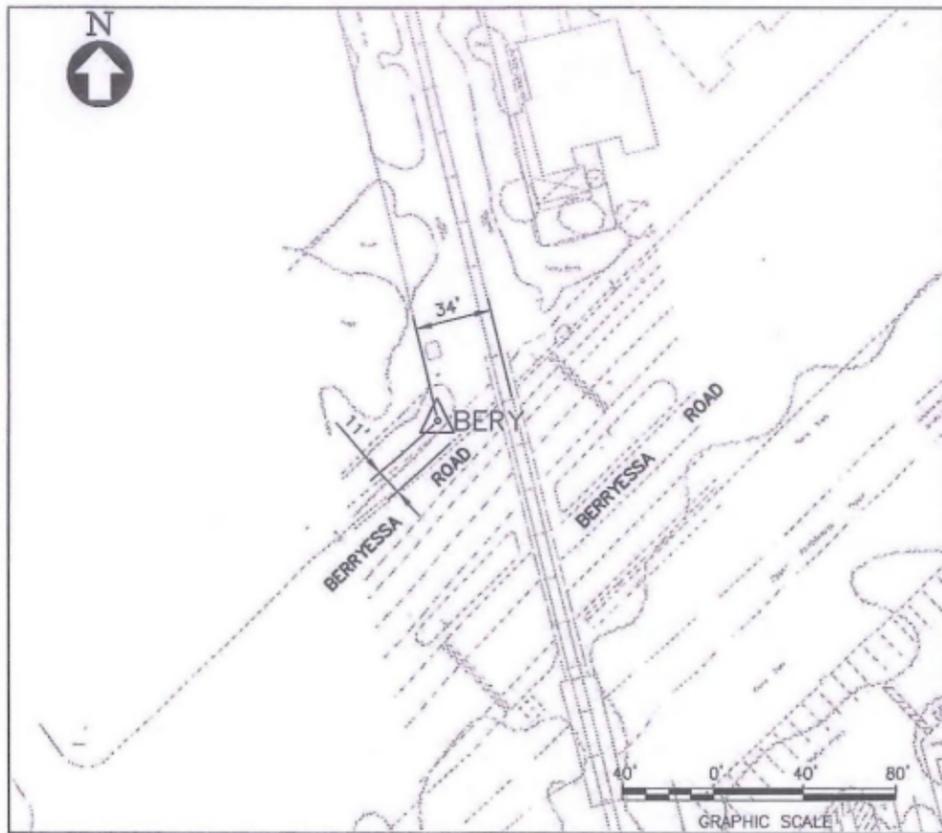


LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
 INDEX SHEET

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D	NOT TO SCALE		
CONTRACT NO.	C700	REV.	P
AREA CODE	LS	SHEET NO.	C031
		PAGE NO.	0184

BOROUMAND.L Mar 10, 2011 - 2:07pm C:\Users\boroumand\Documents\7393\03-08-11\7393-5-LS-C031.dwg



BERY (2000)
 FOUND 5/8" ALUM PIN 6" IN PVC MON WELL. LOCATED IN GRASS
 BEHIND BACK OF WALK ON NW SIDE OF BERRYESSA RD APPROX 35' WEST
 OF UPRR, AND APPROX 3000' SOUTH WESTERLY OF THE INTERSECTION OF
 BERRYESSA RD AND LUNDY AVE.

NORTHING 1960836.478
 EASTING 6161840.636
 ELEVATION 84.961
 DESCRIPTION BERY

VTA 181.
 FND ALUM DISK. LOCATED APPROX 1423' SOUTH OF BERRYESSA RD
 AND UPRR, APPROX 5' EAST OF RAIL.

NORTHING 1959418.448
 EASTING 6162251.359
 ELEVATION 84.793
 DESCRIPTION VTA 181

VTA 182
 FND ALUM DISK. LOCATED AT THE NW COR OF UPRR XING
 AND MABURY RD, APPROX 6' NORTH OF MABURY RD
 BACK WALK, AND APPROX 30' WEST OF WEST RAIL.

NORTHING 1958055.127
 EASTING 6162539.077
 ELEVATION 90.014
 DESCRIPTION VTA 182

PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
 SHEET 16 OF 18

CADD FILENAME C700-S-LS-C047.dwg	
SIZE D	SCALE 1" = 40'
CONTRACT NO.	REV. P
C700	
AREA CODE	SHEET NO.
LS	C047
PAGE NO.	0200

BOROUMAND.L Mar 10, 2011 - 3:52pm G:\Jaha\SPRINT\BART-COIN\C700-03-06-11\C700-8-LS-C047.dwg

DESIGNED BY L. BOROUMAND	
DRAWN BY L. BOROUMAND	
CHECKED BY S. HEFFNER	
IN CHARGE S. HEFFNER	
DATE 20110311	

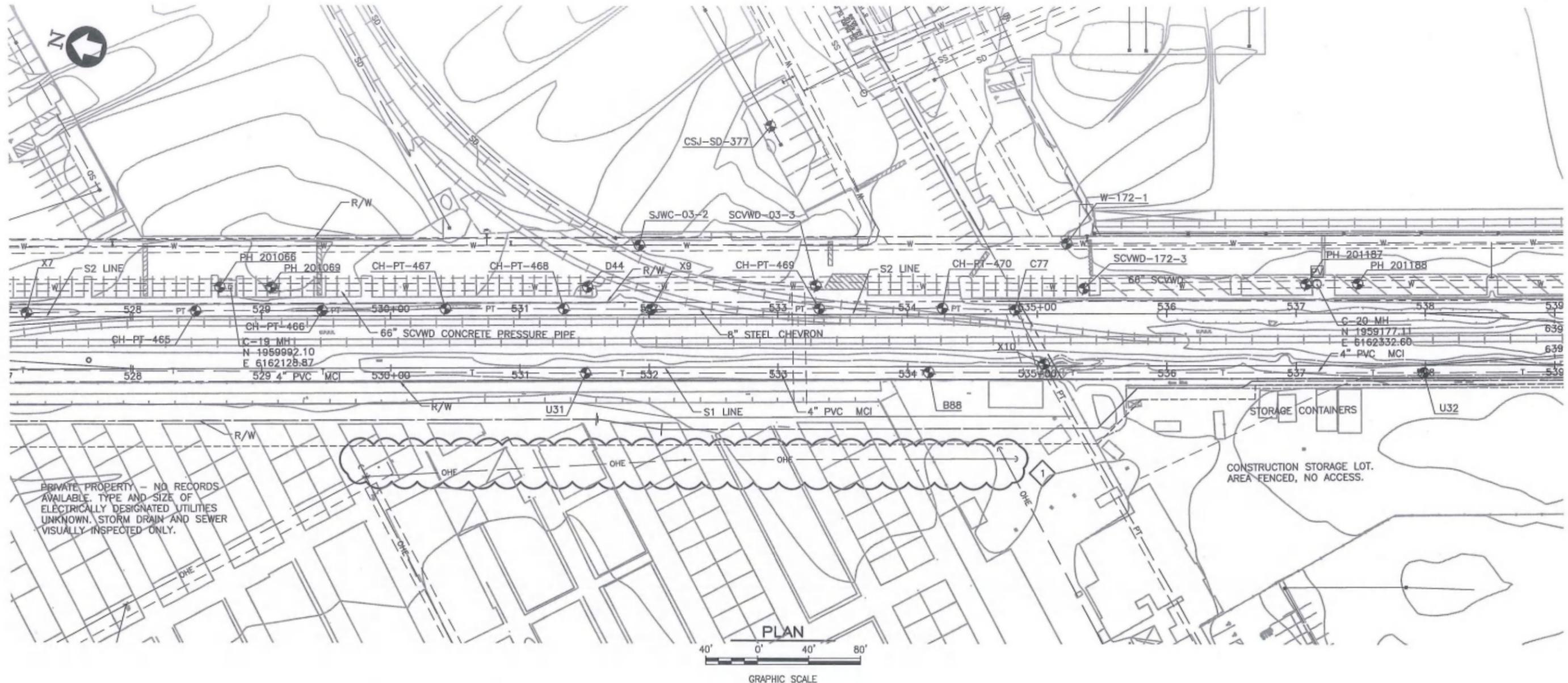
VTA. SANTA CLARA Valley Transportation Authority

SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*



BART SILICON VALLEY BERRYESSA EXTENSION

NOTE:
FOR NOTES AND LEGEND, SEE DRAWING DL-U001.



HOLE NO	UTILITY TYPE	NORTHING	EASTING	SURFACE ELEVATION	DEPTH OF COVER(FT)	ELEVATION AT TOP OF UTILITY	FLOW LINE ELEVATION
D44	W	1959723.36	6162195.21	86.33	7.09	79.24	-
SCVWD-03-3	W	1959552.01	6162238.70	85.71	6.42	79.29	-
SJWC-03-2	W	1959692.42	6162236.18	84.99	6.33	78.66	-
U31	T	1959709.13	6162130.26	82.78	3.44	79.34	-
X7	PT	1960140.67	6162071.89	84.03	4.53	79.50	-
X9	PT	1959671.99	6162190.21	84.54	5.23	79.31	-
X10	PT	1959367.00	6162222.28	83.15	4.12	79.03	-
CH-PT-470	PT	1959453.38	6162245.14	85.44	5.92	79.52	-
PH 201066	56" CPP W	1960000.17	6162126.90	-	-	78.54	-
PH 201069	56" CPP W	1959961.35	6162136.39	-	-	78.59	-
PH 201187	56" CPP W	1959185.25	6162330.46	-	-	80.45	-
PH 201188	56" CPP W	1959146.52	6162340.42	-	-	80.33	-

HOLE NO	UTILITY TYPE	NORTHING	EASTING	SURFACE ELEVATION	DEPTH OF COVER(FT)	ELEVATION AT TOP OF UTILITY	FLOW LINE ELEVATION
CH-PT-465	8" CHEVRON PT	1960013.80	6162104.57	84.19	3.83	80.36	79.69
CH-PT-466	8" CHEVRON PT	1959918.96	6162128.30	84.14	3.83	80.31	79.64
CH-PT-467	8" CHEVRON PT	1959826.11	6162152.60	84.21	4.83	79.38	78.71
CH-PT-468	8" CHEVRON PT	1959737.42	6162174.44	84.48	5.00	79.48	78.81
CH-PT-469	8" CHEVRON PT	1959545.22	6162222.06	85.48	6.17	79.31	78.65
CSJ-SD-377	10" STORM DRAIN	1959615.37	6162349.55	83.30	2.75	80.55	79.72
B88	FOC	1959451.84	6162194.52	82.33	4.39	77.94	-
C77	PT	1959398.58	6162257.239	85.71	7.64	78.07	-
SCVWD-172-3	W	1959351.01	6162286.09	85.31	12.67	72.64	-
U32	T	1959080.51	6162286.19	83.18	4.54	78.64	-
W-172-2	W	1958509.92	6162567.53	83.96	6.83	77.13	-

Santa Clara Valley Transportation Authority
X NO EXCEPTION TAKEN
MAKE CORRECTIONS NOTED
AMEND AND RESUBMIT
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: DB11002F
 By: *[Signature]* Date: 02/26/13

Jan 16, 2013 1:58am C:\projects\scvwd\du-013\du-013-rfc-r1-sc-vwd-66in-dwg.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
1	20130117				READY FOR CONSTRUCTION
0	20121019				READY FOR CONSTRUCTION

DESIGNED BY
J. CACCIOTTI
 DRAWN BY
J. CACCIOTTI
 CHECKED BY
B. WAGNER
 IN CHARGE
J. STREEPER
 DATE
20130117



Skanska
Shimmick
Herzog
1436 California Circle
Milpitas, California 95035
A Joint Venture

HMM
 Len
 T-Y-LIN INTERNATIONAL
 APPROVED *[Signature]*

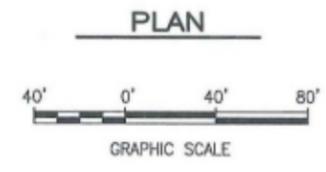
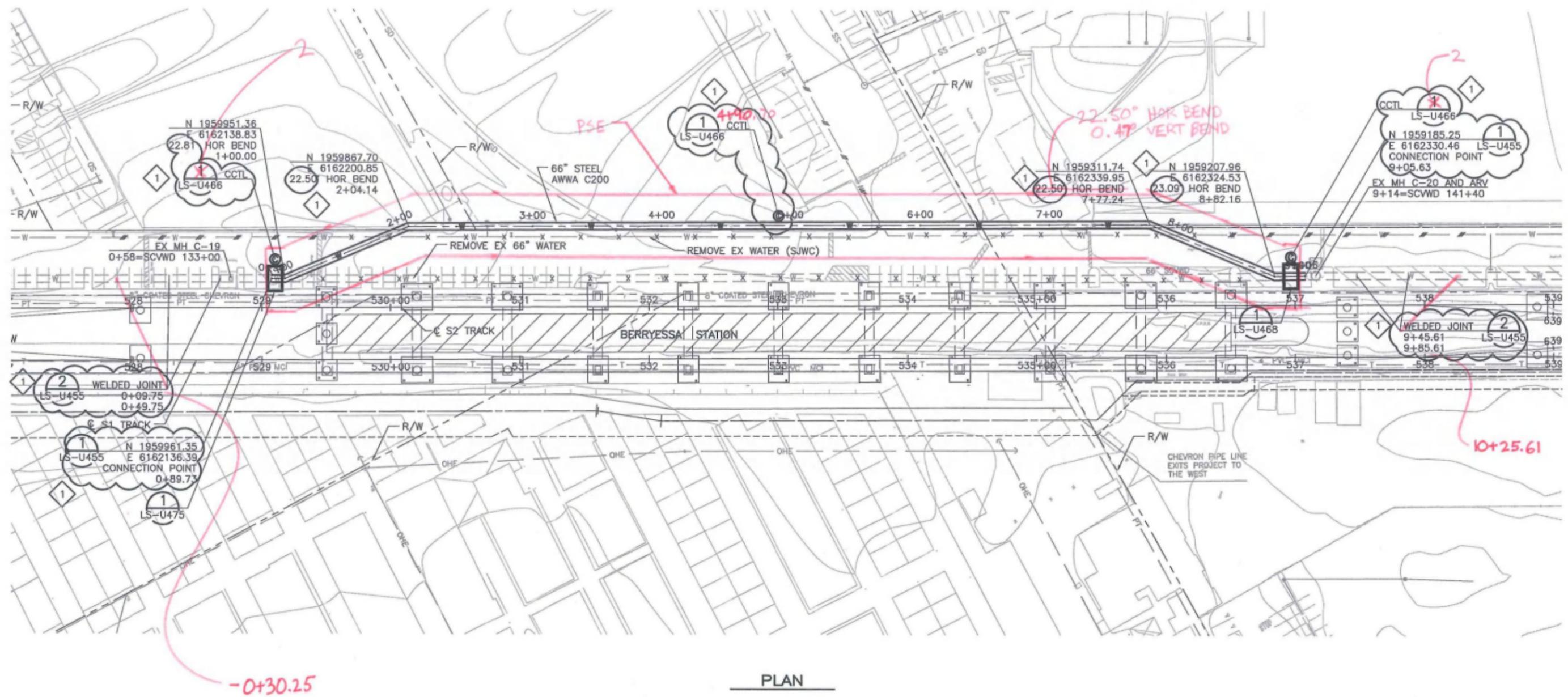


LINE, TRACK, STATIONS AND SYSTEMS
 EXISTING UTILITIES PLAN AND DATA
 S1 527+50 TO S1 539+00

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CONTRACT NO. C700	SHEET NO. LS	REV. 1
AREA CODE LS	PAGE NO. U171A	0008

Santa Clara Valley Transportation Authority
NO EXCEPTION TAKEN
MAKE CORRECTIONS NOTED
AMEND AND RESUBMIT
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: DB11002F
 By: *[Signature]* Date: 02/26/13

- NOTE**
- FOR NOTES AND LEGEND, SEE DRAWING DL-U001.
 - SCVWD STATIONING REFERS TO ORIGINAL PLANS, CENTRAL PIPELINE, ZONE W-1, JAN 1964.



Jan 16, 2013 - 2:13pm C:\proj\scvwd\copy of mtr-temp\scvwd\020-5-CL-U785.dwg

DESIGNED BY	J. STREEPER
DRAWN BY	K. MULLER
CHECKED BY	B. WAGNER
IN CHARGE	J. STREEPER
DATE	20130117



Skanska
 Spinnick
 Herzog

1436 California Circle
 Milpitas, California 95035
 A Joint Venture

HMM

SUBMITTED *[Signature]*

LDN Lockwood, Andrew & Newnam, Inc.
 A Joint Venture

T-Y-LIN INTERNATIONAL

APPROVED *[Signature]*

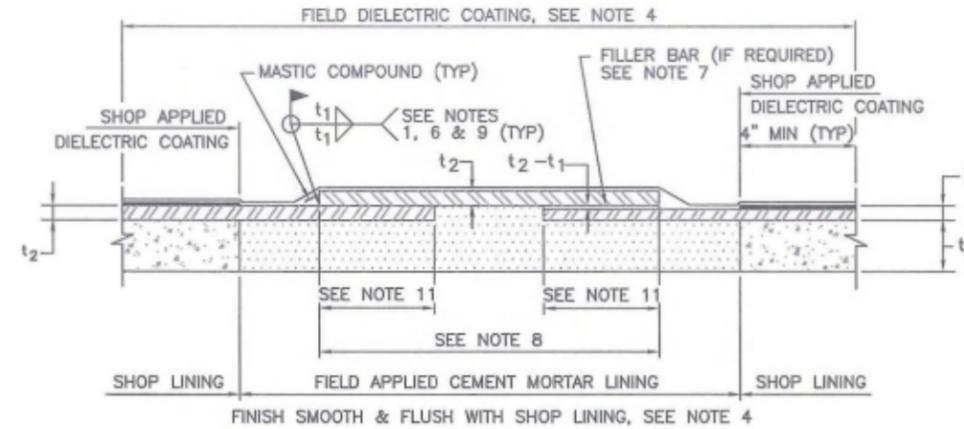
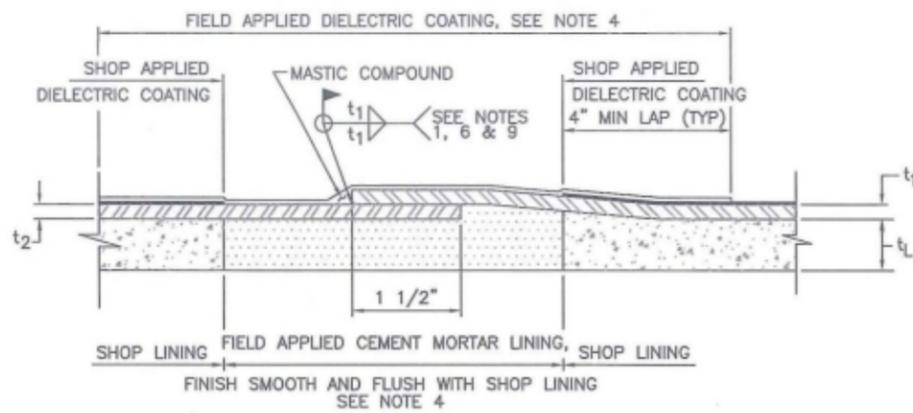
BART SILICON VALLEY

BART SILICON VALLEY BERRYESSA EXTENSION

LINE, TRACK, STATIONS AND SYSTEMS

UTILITY RELOCATION - SCVWD WATER
 66" STEEL PIPE
 BERRYESSA STATION

CADD FILENAME	C700-S-DL-U785.dwg
SIZE	D
SCALE	1"=40'
CONTRACT NO.	C700
REV.	1
AREA CODE	DL
SHEET NO.	U785
PAGE NO.	0010



LAP WELD FIELD JOINT

NTS **LS-U450**

LINING: CEMENT MORTAR
COATING: DIELECTRIC (COAL-TAR ENAMEL,
LIQUID EPOXY OR POLYETHYLENE)

Santa Clara Valley Transportation Authority
NO EXCEPTION TAKEN
~~X~~ MAKE CORRECTIONS NOTED
 AMEND AND RESUBMIT
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: DB11002F
 By: *[Signature]* Date: 02/26/13

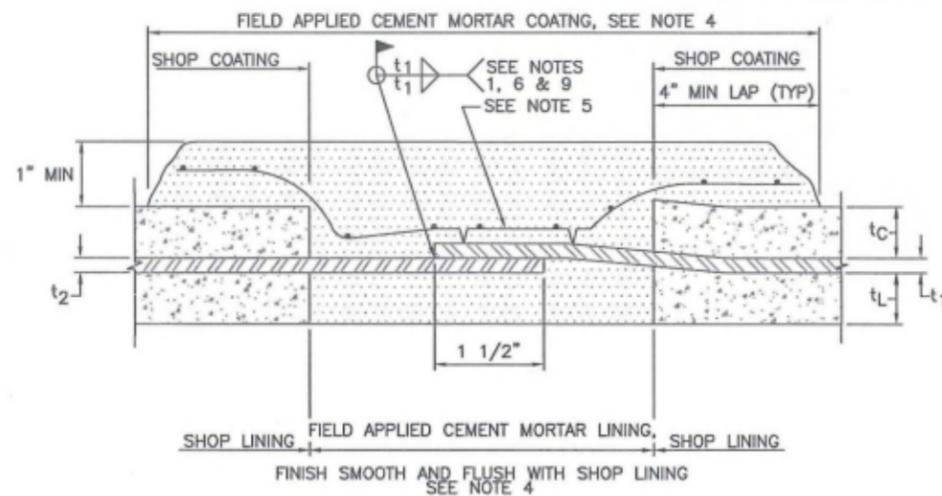
BUTT STRAP FIELD JOINT

NTS **LS-U450**

LINING: CEMENT MORTAR
COATING: DIELECTRIC (COAL-TAR ENAMEL,
LIQUID EPOXY OR POLYETHYLENE)

NOTES:

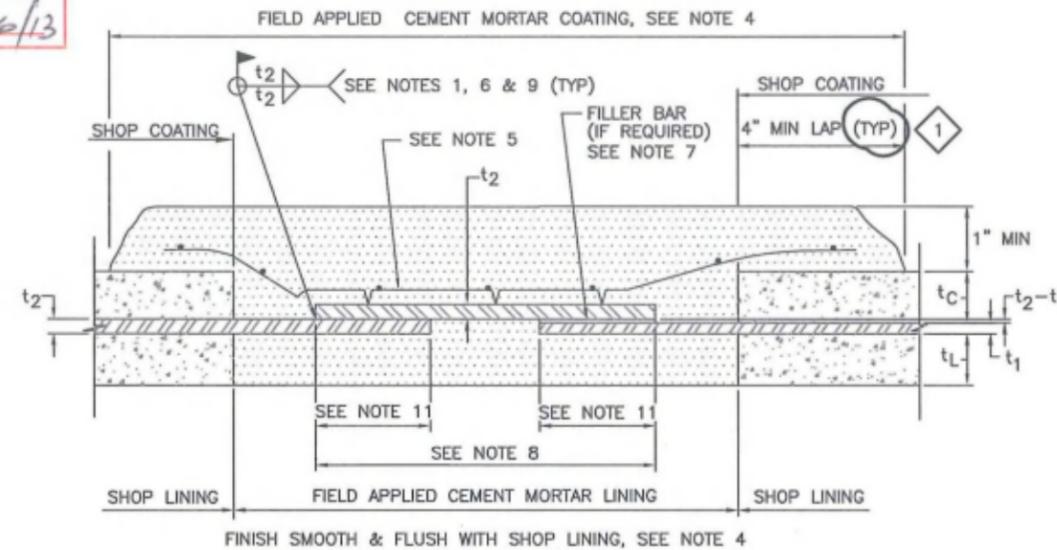
1. ALTHOUGH A DOUBLE WELD IS SHOWN, ONLY A SINGLE WELD IS REQUIRED EXCEPT WHERE NOTED OTHERWISE. THE SINGLE WELD MAY BE PLACED INSIDE OR OUTSIDE THE PIPE AT THE OPTION OF THE CONTRACTOR FOR PIPE SIZES GREATER THAN OR EQUAL TO 36". FOR PIPE SIZES LESS THAN 36", SINGLE WELDS SHALL BE PLACED OUTSIDE OF THE PIPE.
2. FOR PIPE SIZES GREATER THAN OR EQUAL TO 36", DOUBLE WELD JOINTS SHALL BE USED FOR:
 - A) PIPE JOINTS WITHIN CONCRETE ENCASEMENTS AND TUNNELS; AND
 - B) THE FIRST PIPE JOINTS OUTSIDE OF THE CONCRETE ENCASEMENT OR TUNNEL.
 DOUBLE WELD JOINTS MAY BE REQUIRED IN TENSION ANCHORAGE AREAS.
3. BEFORE WELDING, DRILL AND TAP 1/4" IPS HOLES (2 EQUALLY SPACED) FOR ALL DOUBLE WELDED JOINTS. PLUG WELD AFTER COMPLETION OF AIR TESTING. **AIR TEST PRESSURE SHALL BE 40 PSI.**
4. FIELD APPLIED COATING AND LINING SHALL BE APPLIED ONLY AFTER EACH JOINT IS ASSEMBLED, WELDED, CLEANED, INSPECTED AND TESTED.
5. FIELD COATING SHALL BE REINFORCED WITH 2" x 4" x 13 GAUGE SELF-FURRING WELDED WIRE FABRIC. LAP END 3" MINIMUM AND TACK WELD TO STEEL CYLINDER.
6. t₁ AND t₂ ARE THICKNESSES OF STEEL CYLINDER. (t₂ ≥ t₁)
7. WHERE FILLER BAR IS REQUIRED, DOUBLE WELD AND PROVIDE AIR TEST HOLES FOR PIPE SIZES GREATER THAN OR EQUAL TO 36".
8. MINIMUM BUTT STRAP WIDTH IS:
 - A) 4" FOR PIPE SIZES LESS THAN 36"; AND
 - B) 6" FOR PIPE SIZES 36" OR GREATER. MAXIMUM BUTT STRAP WIDTH IS 21".
9. WELD SIZE SHOWN BY LETTER DESIGNATION IS FOR REFERENCE ONLY. THE ACTUAL WELD SIZE SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
10. UNLESS OTHERWISE INDICATED, CEMENT MORTAR LINING THICKNESS, t_L AND CEMENT MORTAR COATING THICKNESS, t_C, SHALL CONFORM TO AWWA C205.
11. FOR PIPE SIZES LESS THAN 36", MINIMUM LAP IS 1". FOR PIPE SIZES 36" OR GREATER, MINIMUM LAP IS 2".



LAP WELD FIELD JOINT

NTS **LS-U450**

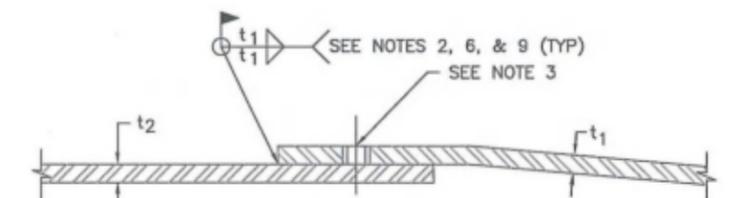
CEMENT MORTAR LINED AND COATED STEEL PIPE



BUTT STRAP FIELD JOINT

NTS **LS-U450**

CEMENT MORTAR LINED AND COATED STEEL PIPE



AIR TEST HOLE FOR DOUBLE WELD JOINT

NTS **LS-U450**

LAP JOINT SHOWN, AIR TEST HOLE SHALL ALSO BE PROVIDED AT ALL DOUBLE WELD BUTT STRAP JOINTS. LINING AND COATING NOT SHOWN, SEE NOTE 4.

Jan 16, 2013 3:11pm C:\projects\ls\mbr-002\mbr-002\mbr-002\LS-U450.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
1	20130117				READY FOR CONSTRUCTION
0	20121019				READY FOR CONSTRUCTION

DESIGNED BY
J. STREEPER
DRAWN BY
A. CANIVEL
CHECKED BY
B. WAGNER
IN CHARGE
J. STREEPER
DATE
20130117

Skanska
Shimmick
Herzog

1436 California Circle
Milpitas, California 95035
A Joint Venture

Submitted *[Signature]*

L&N
Lachner, Anderson
& Newman, Inc.
T-Y-LIN INTERNATIONAL

Approved *[Signature]*

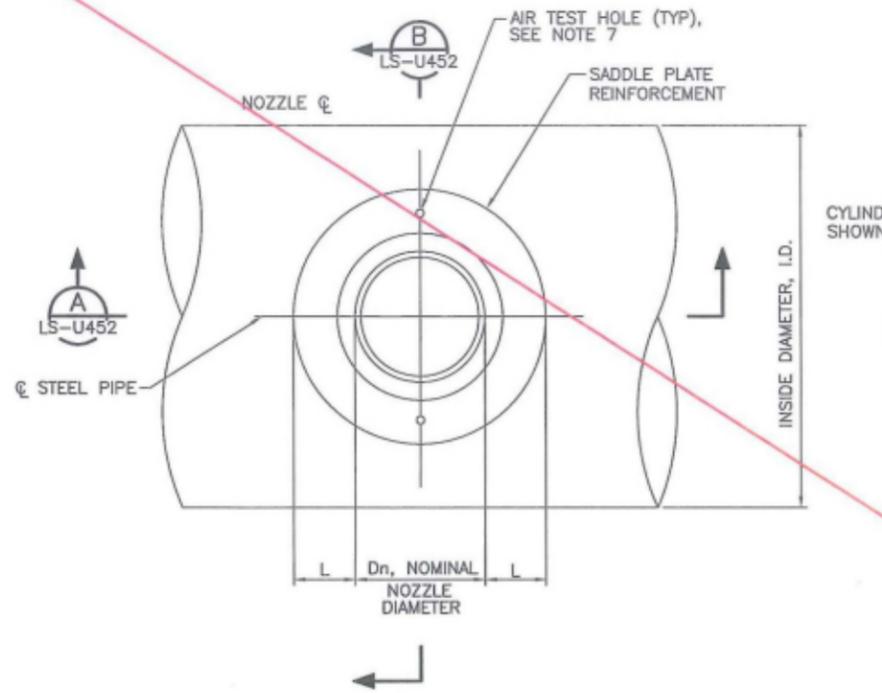
BART
VTA SILICON VALLEY

BART SILICON VALLEY BERRYESSA EXTENSION

LINE, TRACK, STATIONS AND SYSTEMS

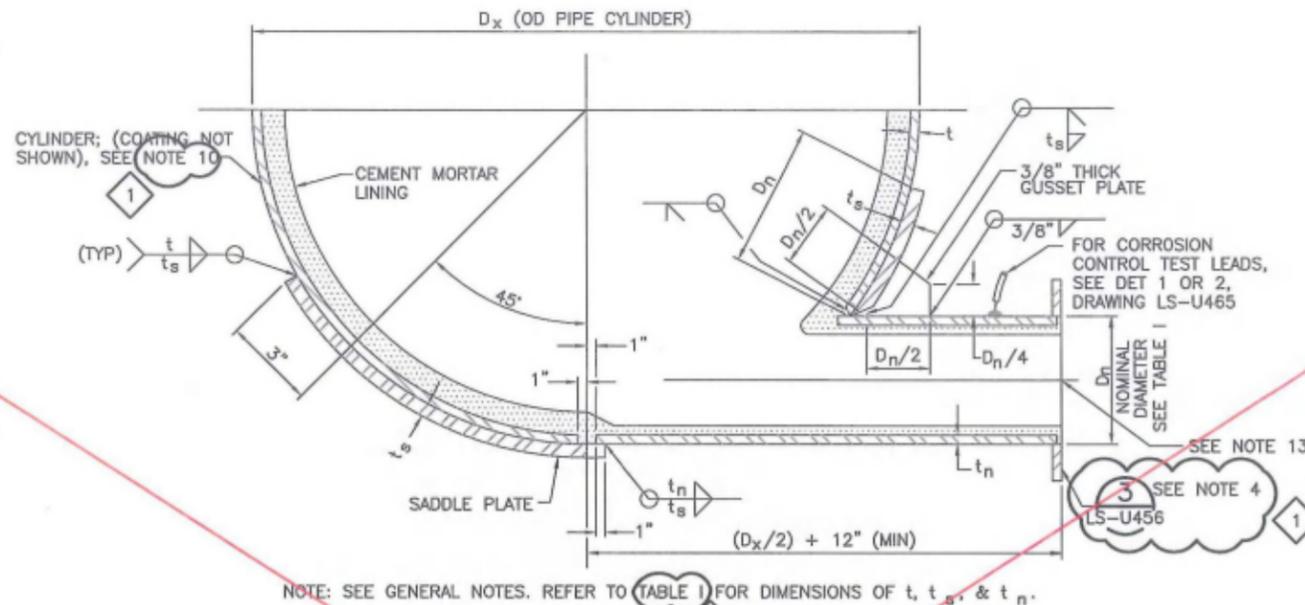
SCVWD WATER PIPELINE
DETAILS
FIELD JOINTS

CADD FILENAME C700-S-LS-U450.dwg	SCALE AS NOTED
CONTRACT NO. C700	REV. 1
AREA CODE LS	SHEET NO. U450
	PAGE NO. 0012



TYPICAL NOZZLE OUTLET

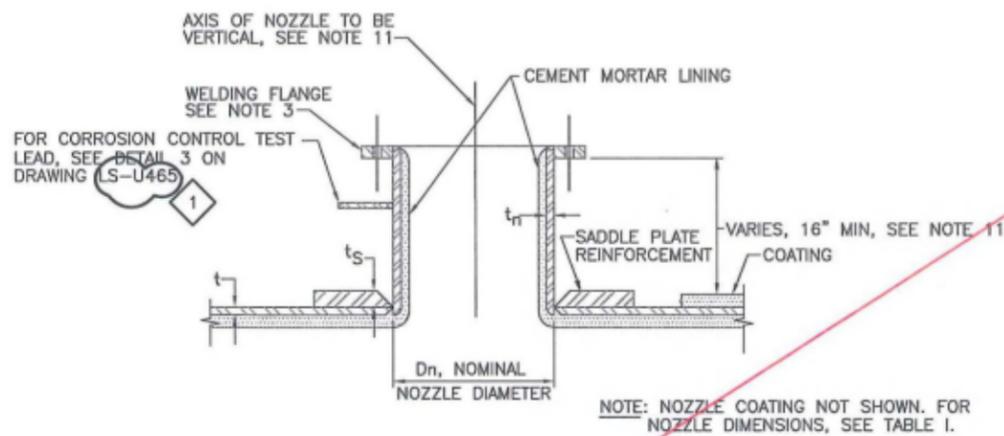
NTS **1**
LS-U452



TANGENT NOZZLE STEEL PIPE

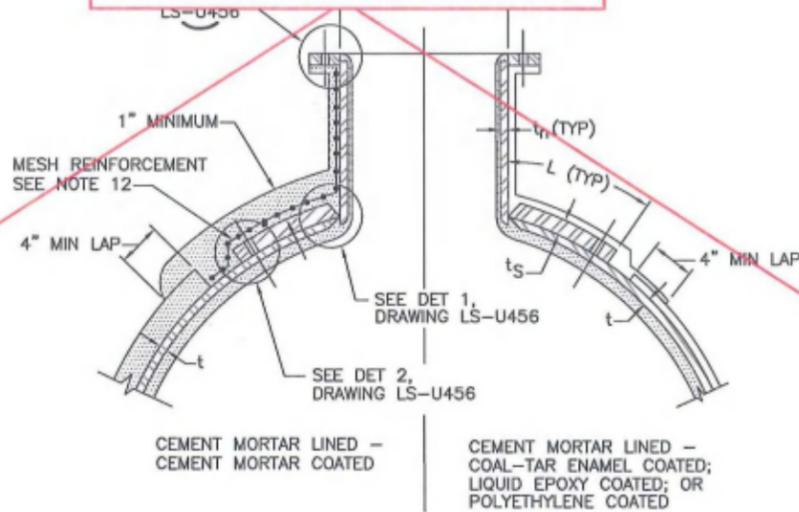
NTS **2**
LS-U452

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SECTION

NTS **A**
LS-U452



SECTION

NTS **B**
LS-U452

NOTES:

1. SEE SPECIFICATIONS FOR MATERIAL, INSTALLATION, COATING, AND LINING REQUIREMENTS.
2. ALL NOZZLES AND PLATES ARE TO BE MANUFACTURED FROM STEEL, CONFORMING TO THE REQUIREMENTS OF STEEL PIPE (ASTM 570 GRADE 36, ASTM A36 OR EQUAL). FOR NOZZLE 24" OR LESS NOMINAL DIAMETER, ASTM A53 GRADE B STANDARD SCHEDULE STEEL PIPE MAY BE USED.
3. WELDING FLANGES SHALL BE SLIP-ON WELDING FLANGES, RING TYPE, FLAT-FACE, SEE SPECIFICATIONS. BLIND FLANGES SHALL BE STEEL, SEE SPECIFICATIONS.
4. FLANGE FACES SHALL BE SHOP COATED WITH A REMOVABLE RUST-PREVENTING COMPOUND TO PROVIDE PROTECTION DURING TRANSPORT AND PRIOR TO INSTALLATION.
5. FLANGE GASKETS SHALL BE 1/8" THICK, FULL-FACE CLOTH INSERTED RUBBER GASKETS.
6. FLANGE BOLTS SHALL STRADDLE CENTERLINE OF PIPE OR CENTERLINE OF FLANGE UNLESS REQUIRED OTHERWISE ON DRAWINGS.
7. DRILL AND TAP TEST HOLES FOR AIR TEST BEFORE WELDING MEMBERS AS SHOWN ON DETS. PLUG WELD AFTER AIR TEST IS COMPLETED. SEE DRAWING LS-U450.
8. SHOP COAT ALL METAL SURFACES EXCEPT FLANGE FACES AND SURFACES RECEIVING FIELD APPLIED COATINGS.
9. COAT ALL EXPOSED METAL SURFACES WITH THE SAME COATING AS WAS USED ON THE MAIN PIPE, EXCEPT AS NOTED OTHERWISE.
10. FOR SLOPING PIPE - INSTALL NOZZLE VERTICALLY. MAINTAIN A MINIMUM CLEARANCE TO THE NOZZLE FLANGE AS SHOWN. SEE DRAWINGS LS-U459 & LS-U476 FOR REQUIRED CLEARANCE IN PRECAST VAULTS.
11. MESH REINFORCING SHALL BE SELF-FURRING WIRE MESH 2" x 4" x 13 GAUGE. SECURE WITH CLIPS AT 24" CENTERS AND WELD TO SADDLE, PIPE CYLINDER, OR NOZZLE.
12. FOR THE CITY OF MILPITAS TURN OUT, INSTALL 20" BUTTERFLY VALVE AND BLIND FLANGE. PROTECT AS SHOWN ON DRAWING LS-U467, DETAIL 2.

Santa Clara Valley Transportation Authority
 NO EXCEPTION TAKEN
 MAKE CORRECTIONS NOTED
 AMEND AND RESUBMIT
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: DB11002F
 By: *[Signature]* Date: 02/26/13

PIPE DIAMETER I.D. (IN)	PIPE CYLINDER* t (IN)	NOZZLE THICKNESS		INTERNAL DESIGN PRESSURE, FEET	L (IN)
		D _n	t _n (IN)		
SADDLE PLATE THICKNESS (t _s)					
42"	0.500	24"	0.250	0.625	9.875
SADDLE PLATE THICKNESS (t _s)					
42"	0.500	26"	0.250	0.625	8.125

Jan 16, 2013 - 3:20pm C:\projects\scvwd\mils-scvwd\mils-030109\030109-5-LS-U452.dwg

DESIGNED BY J. STREEPER	
DRAWN BY A. CANIVEL	
CHECKED BY B. WAGNER	
IN CHARGE J. STREEPER	
DATE 20130117	

Skanska Shimmick Herzog
 1436 California Circle
 Milpitas, California 95035
 A Joint Venture

Lockwood, Andrews & Newnam, Inc.
 T-Y-LIN INTERNATIONAL

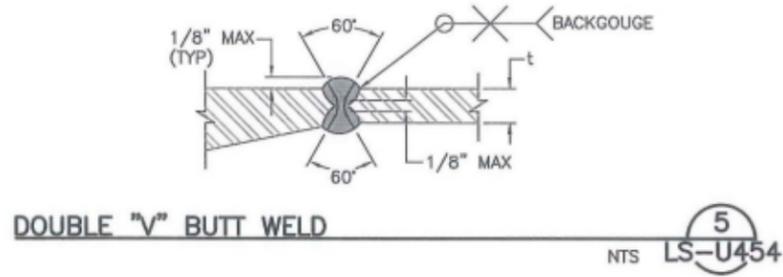
SUBMITTED *[Signature]* APPROVED *[Signature]*


 BART SILICON VALLEY BERRYESSA EXTENSION

LINE, TRACK, STATIONS AND SYSTEMS		CADD FILENAME C700-S-LS-U452.dwg
SCVWD WATER PIPELINE DETAILS NOZZLE		CONTRACT NO. C700 REV. 1
AREA CODE LS	SHEET NO. U452	PAGE NO. 0014

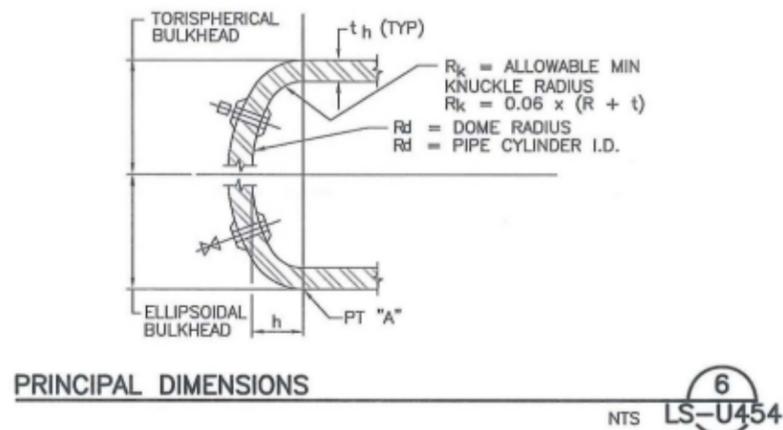
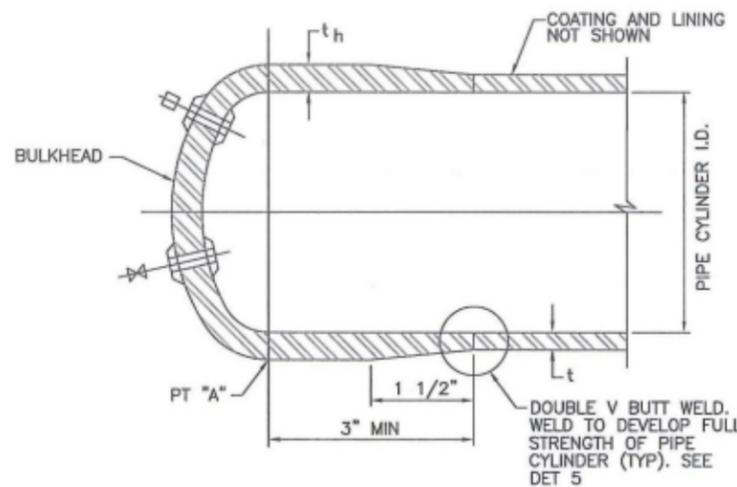
NOTES:

1. LINING AND COATING OF BULKHEAD SHALL MATCH THE ADJACENT PIPE, EXCEPT THAT COAL TAR COATING SHALL NOT BE ALLOWED ON TEMPORARY BULKHEADS. HOLD BACK LINING AND COATING 4" MINIMUM FROM JOINT TO BE WELDED. COAT AND LINE EXPOSED SURFACES AFTER WELDING.
2. THE INDICATED BULKHEAD THICKNESS SHALL BE THE THICKNESS AT THE THINNEST POINT AFTER FORMING.
3. "t" = THICKNESS OF PIPE CYLINDER
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE ANCHORAGE FOR PIPE SECTIONS UNDER TEST.
5. AFTER TEMPORARY BULKHEAD REMOVAL, PIPE JOINT TO ADJACENT PIPE SHALL BE IN ACCORDANCE WITH THE DETAILS ON THESE DRAWINGS, AND REPAIR OF LINING AND COATING SHALL BE AS SHOWN ON THE DRAWINGS AS SPECIFIED IN THE SPECIFICATIONS.



	PIPE DIA	PRESSURE CLASS (FT)	TORISPHERICAL		ELLIPSOIDAL	
			DOME RADIUS	BULKHEAD THICKNESS th (IN)	h (IN)	BULKHEAD THICKNESS th (IN)
TEMP. CONCAVE EXTERNAL BULKHEAD	42"	615	TBD	NOT USED	10.5	0.336

	PIPE DIA	PRESSURE CLASS (FT)	TORISPHERICAL		ELLIPSOIDAL	
			DOME RADIUS	BULKHEAD THICKNESS th (IN)	h (IN)	BULKHEAD THICKNESS th (IN)
TEMP. CONCAVE EXTERNAL BULKHEAD	66"	475	TBD	NOT USED	16.5	0.400



Santa Clara Valley Transportation Authority
NO EXCEPTION TAKEN
 MAKE CORRECTIONS NOTED
 AMEND AND RESUBMIT
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 Contract No.: DB11002F
 By: *[Signature]* Date: 02/26/13

Jan 16, 2013 10:52:59am C:\projects\scvwd\scvwd-ocw\scvwd\jms\44986\C700-S-LS-U454.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
1	20130117				READY FOR CONSTRUCTION
0	20121019				READY FOR CONSTRUCTION

DESIGNED BY
J. STREEPER
 DRAWN BY
A. CANIVEL
 CHECKED BY
B. WAGNER
 IN CHARGE
J. STREEPER
 DATE
20130117

Skanska
Shimmick
Herzog

1436 California Circle
Menlo Park, California 94025
A Joint Venture

LOCKWOOD, ANDREWS & NEWNAM, INC.
A Joint Venture

T-Y-LIN INTERNATIONAL

APPROVED *[Signature]*

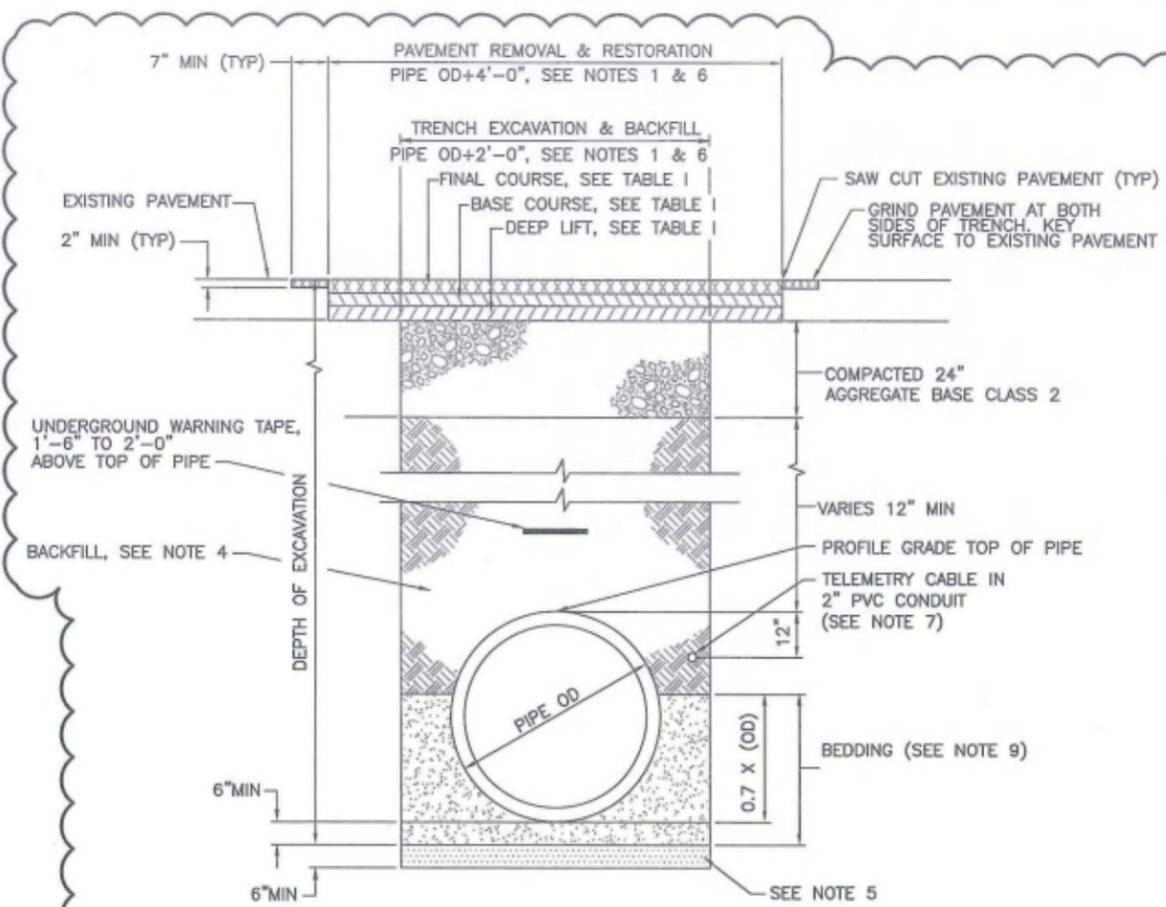
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 SILICON VALLEY

BART SILICON VALLEY BERRYESSA EXTENSION

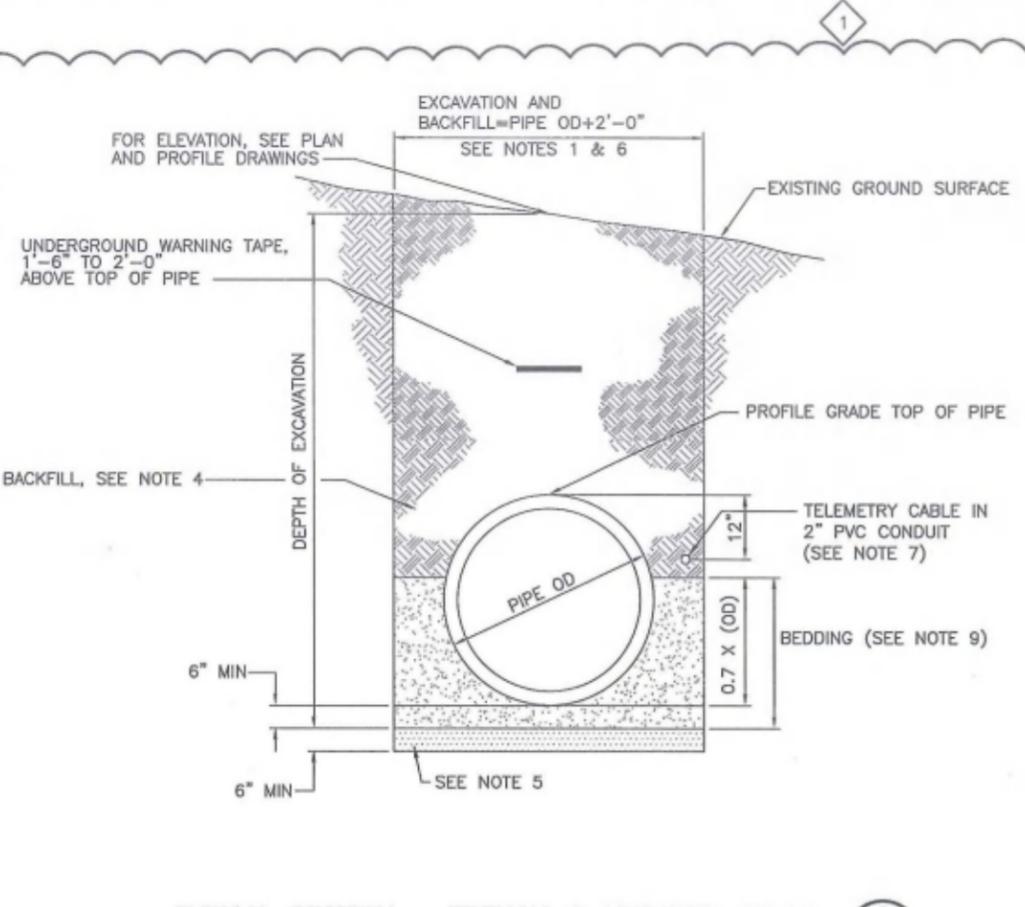
LINE, TRACK, STATIONS AND SYSTEMS

SCVWD WATER PIPELINE
 DETAILS
 BULKHEADS

CADD FILENAME C700-S-LS-U454.dwg	SIZE D	SCALE AS NOTED
CONTRACT NO. C700	SHEET NO. LS U454	REV. 1
AREA CODE	PAGE NO. 0016	



TYPICAL SECTION - TRENCH @ PAVED AREAS 1
NTS LS-U460



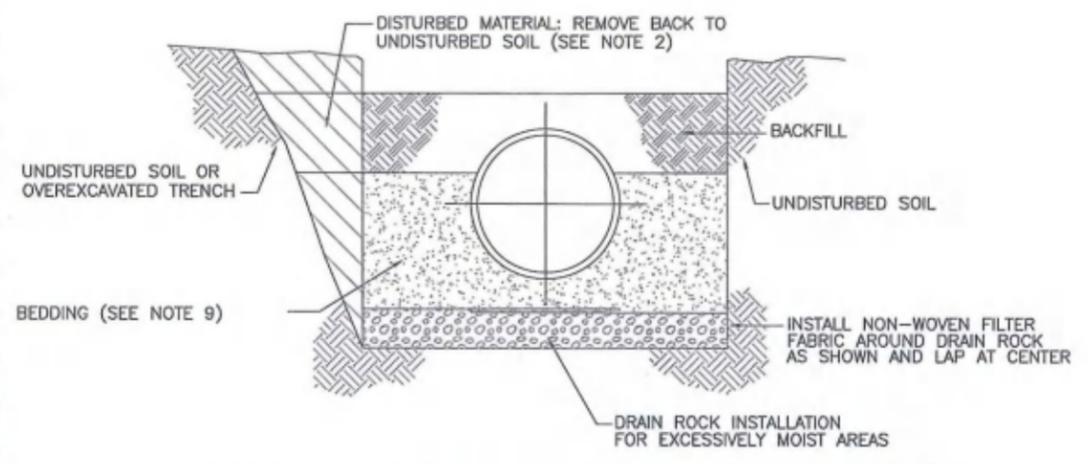
TYPICAL SECTION - TRENCH @ UNPAVED AREAS 2
NTS LS-U460

- NOTES:**
- TRENCHING SHALL CONFORM TO SAFETY REQUIREMENTS REGARDLESS OF TRENCH WIDTH.
 - ALL OVEREXCAVATION OR DISTURBED NATIVE MATERIAL SHALL BE REMOVED FROM THE TRENCH AND BACKFILLED WITH THE SAME MATERIAL AS REQUIRED FOR TRENCH BACKFILL FOR THE DESIGNATED DEPTHS.
 - ALL EXISTING FACILITIES DAMAGED BY THE CONTRACTOR SHALL BE RESTORED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY WITH JURISDICTION.
 - BEDDING MATERIAL MAY BE USED AS AN ALTERNATIVE TO TYPE "A" AND TYPE "B" BACKFILL. IN CITY OF MILPITAS R/W, USE AGGREGATE BASE CLASS 2.
 - IF UNSUITABLE MATERIAL IS ENCOUNTERED, AS DEFINED IN THE SPECIFICATIONS, OVEREXCAVATE AND REPLACE WITH SUITABLE MATERIAL OR DRAIN ROCK PER DETAIL 4.
 - MINIMUM TRENCH WIDTH SHALL BE AS SHOWN. VARIATION OF THE TRENCH DIMENSIONS OR CONFIGURATION FROM THOSE SHOWN ON THE DRAWINGS MAY RESULT IN A CHANGE IN THE PIPE DESIGN. SEE SPECIFICATIONS.
 - 2" PVC CONDUIT WITH TELEMETRY CABLE IS NOT INCLUDED ON THE 66" CENTRAL PIPELINE.
 - REMOVAL OF SHORING SHALL BE COORDINATED WITH PLACEMENT OF SOIL-CEMENT.
 - BEDDING SHALL BE ANY OF:
A) COMPACTED SELECT BACKFILL MATERIAL
B) SOIL CEMENT
C) CONTROLLED LOW STRENGTH MATERIAL (CLSM)
D) CONTROLLED DENSITY FILL (CDF)
 - WHEN BEDDING USED IS SOIL CEMENT, CLSM, OR CDF, SEE DRAWING LS-U461 FOR SAND PADS.

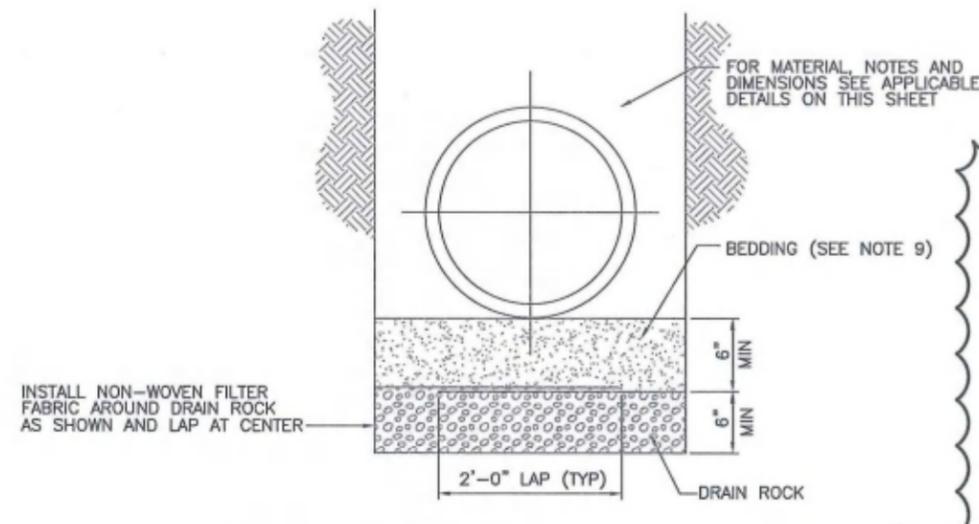
TABLE I
MINIMUM REQUIREMENTS FOR STRUCTURAL SECTION REPLACEMENT

JURISDICTION	ASPHALT CONCRETE PAVEMENT		
	DEEP LIFT (INCHES)	BASE COURSE (INCHES)	FINAL COURSE (INCHES)
COUNTY OF SANTA CLARA	*	*	*
CITY OF MILPITAS	6	4	1

* MATCH EXIST



OVEREXCAVATION OR CAVE-IN CORRECTIVE PROCEDURE 3
NTS LS-U460



DRAIN ROCK INSTALLATION 4
NTS LS-U460

Santa Clara Valley Transportation Authority
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 By: *[Signature]* Date: 02/26/13

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 1
 0
 REV DATE BY SUB APP DESCRIPTION DATE
 20130117
 20121019
 20130117

DESIGNED BY J. STREEPER
 DRAWN BY A. CANIVEL
 CHECKED BY B. WAGNER
 IN CHARGE J. STREEPER
 DATE 20130117

REGISTERED PROFESSIONAL ENGINEER
 J. STREEPER
 No. 67445
 STATE OF CALIFORNIA

Skanska Shimmick Herzog
 1438 California Circle
 Milpitas, California 95035
 A Joint Venture

HMM
 LOCKWOOD, ANDREWS & NEWMAN, INC.
 T-Y-LIN INTERNATIONAL

APPROVED *[Signature]*

BART
 SILICON VALLEY
 BART SILICON VALLEY BERRYESSA EXTENSION

LINE, TRACK, STATIONS AND SYSTEMS
 SCVWD WATER PIPELINE
 DETAILS
 TRENCH SECTIONS

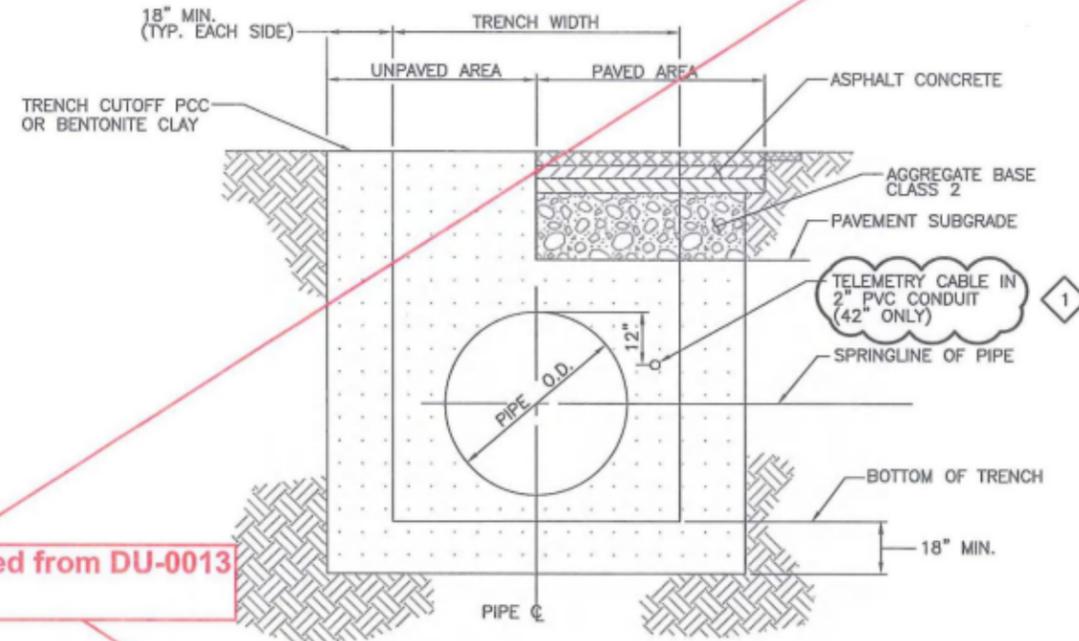
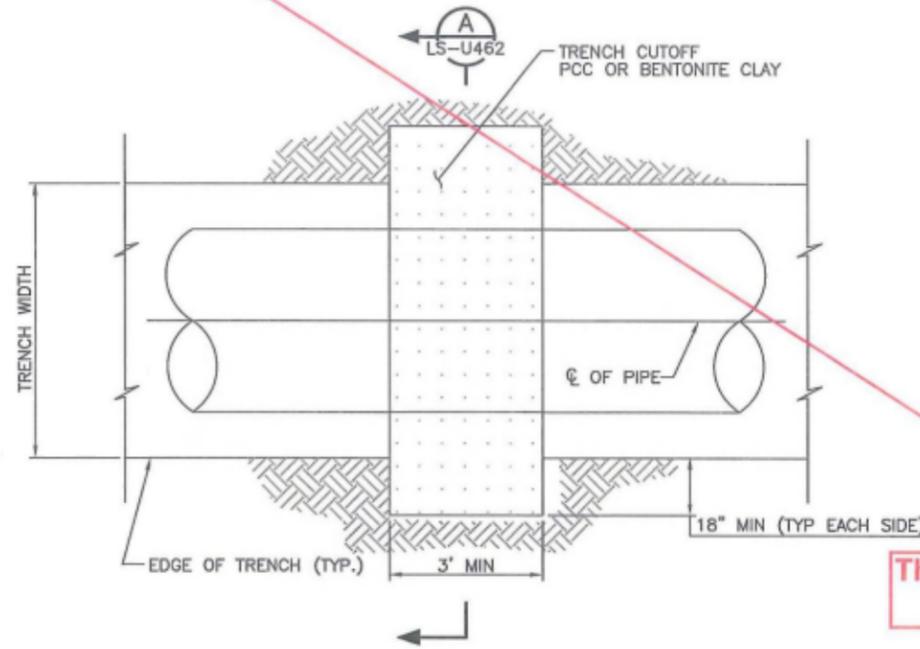
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SIZE SCALE AS NOTED

CONTRACT NO. C700 REV. 1

AREA CODE SHEET NO. LS U460 PAGE NO. 0019

NOTE:
INSTALL TRENCH CUTOFFS AT 300FT INTERVALS



This sheet is deleted from DU-0013

TRENCH CUTOFF NTS 1 LS-U462

TRENCH CUTOFF NTS A LS-U462

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B. WAGNER
IN CHARGE
J. STREEPER
DATE
20130117



Skanska
Shimmick
Herzog
1436 California Circle
Milpitas, California 95035
A Juhl Venture

HMH
SUBMITTED *[Signature]*

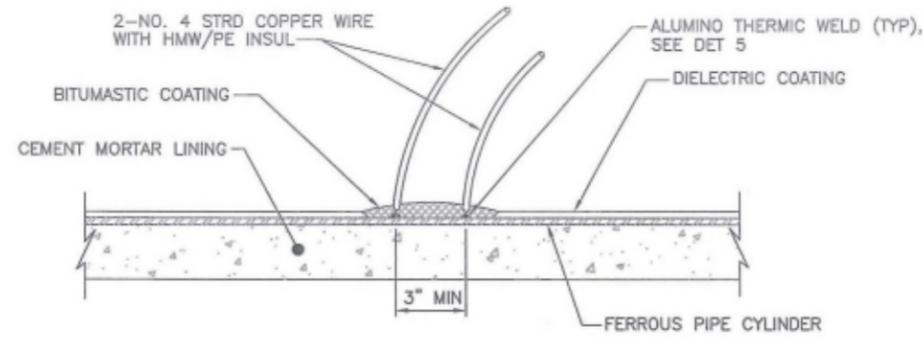
LEN Lockwood, Andrews & Newnam, Inc.
APPROVED *[Signature]*

T-Y-LIN INTERNATIONAL

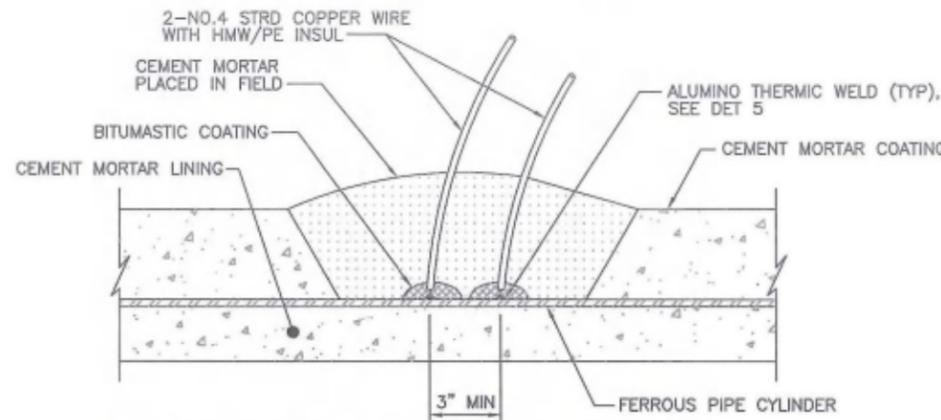


LINE, TRACK, STATIONS AND SYSTEMS
SCVWD WATER PIPELINE
DETAILS
TRENCH CUTOFF

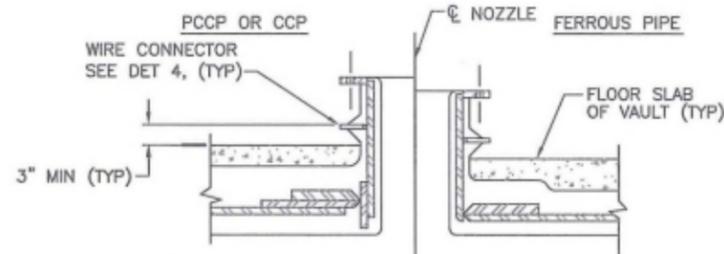
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SCALE	AS NOTED
CONTRACT NO.	C700
AREA CODE	LS
SHEET NO.	U462
REV.	1
PAGE NO.	0021



WIRE CONNECTION TO DIELECTRIC COATED FERROUS PIPE (1) NTS LS-U465

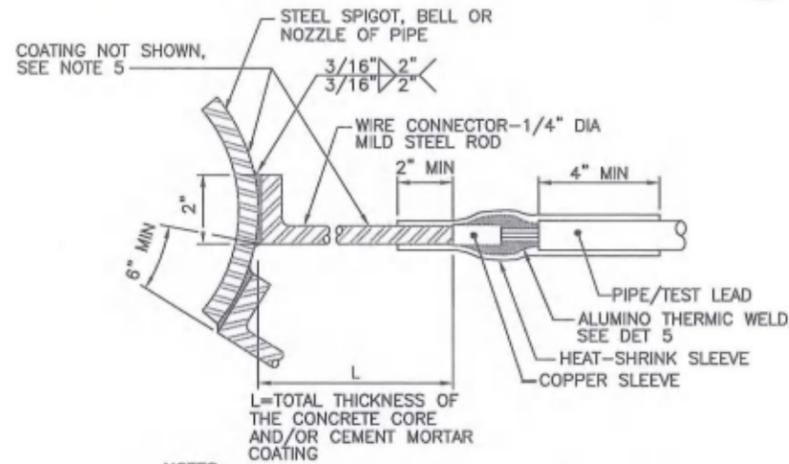


WIRE CONNECTION TO CEMENT MORTAR COATED FERROUS PIPE (2) NTS LS-U465



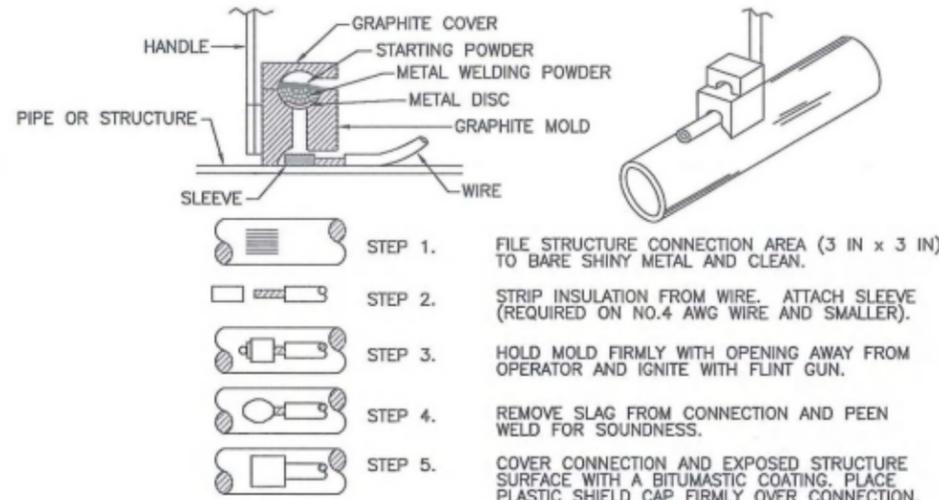
NOTES:
1. COATING NOT SHOWN.

TEST LEAD CONNECTION ON VERTICAL NOZZLE (3) NTS LS-U465



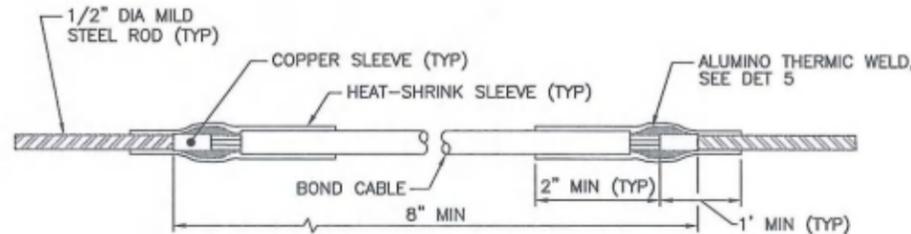
NOTES:
1. WIRE CONNECTORS SHALL BE LOCATED ON CYLINDER 6" APART.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF RUBBER PIPE GASKET FROM DAMAGE DURING WELDING.
3. WIRE CONNECTORS MAY BE FIELD OR SHOP ASSEMBLED. TEST LEADS AND PIPE LEADS SHALL HAVE SUFFICIENT LEAD LENGTH TO RUN TO THE TEST BOX WITHOUT ANY SPLICES. NO WIRE SPLICES ARE PERMITTED IN TEST LEADS OR PIPE LEADS.
4. ALL HEAT-SHRINK SLEEVES DAMAGED DURING WELDING SHALL BE WRAPPED HALF-LAPPED FOR LENGTH OF SLEEVE WITH 90 MIL, 4" WIDE VINYL MASTIC TAPE.
5. REPAIR DAMAGED PIPE COATING AND COVER WIRE CONNECTOR, INCLUDING 4" MIN OF THE HEAT-SHRINK SLEEVE, WITH CEMENT MORTAR GROUT OR BITUMASTIC COATING.

WIRE CONNECTOR VERTICAL WELDS AND PCCP/CCP CONNECTION ONLY (4) NTS LS-U465



NOTES:
1. ALL WIRE WELDS SHALL BE MINIMUM 3 INCHES APART.
2. STANDARD WELD CARTRIDGES SHALL BE USED FOR STEEL SURFACES. FOR DUCTILE IRON AND CAST IRON, USE XF-19 ALLOY OR EQUIVALENT.
3. WELD SHOWN IS FOR HORIZONTAL SURFACES. FOR VERTICAL SURFACES SEE DET 4. SPECIAL WELDS (NOT SHOWN) ARE REQUIRED FOR WIRE CONNECTIONS TO STEEL ROD.

ALUMINO THERMIC WELD (5) NTS LS-U465



NOTES:
1. BOND CABLES SHALL BE NO. 4 AWG STRD COPPER CABLE WITH HMW/PE INSUL.

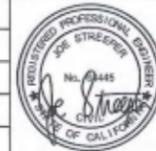
BOND CABLE ASSEMBLY (6) NTS LS-U465

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1	20130117				READY FOR CONSTRUCTION
0	20121019				READY FOR CONSTRUCTION

DESIGNED BY
J. STREEPER
 DRAWN BY
A. CANIVEL
 CHECKED BY
B. WAGNER
 IN CHARGE
J. STREEPER
 DATE
20130117



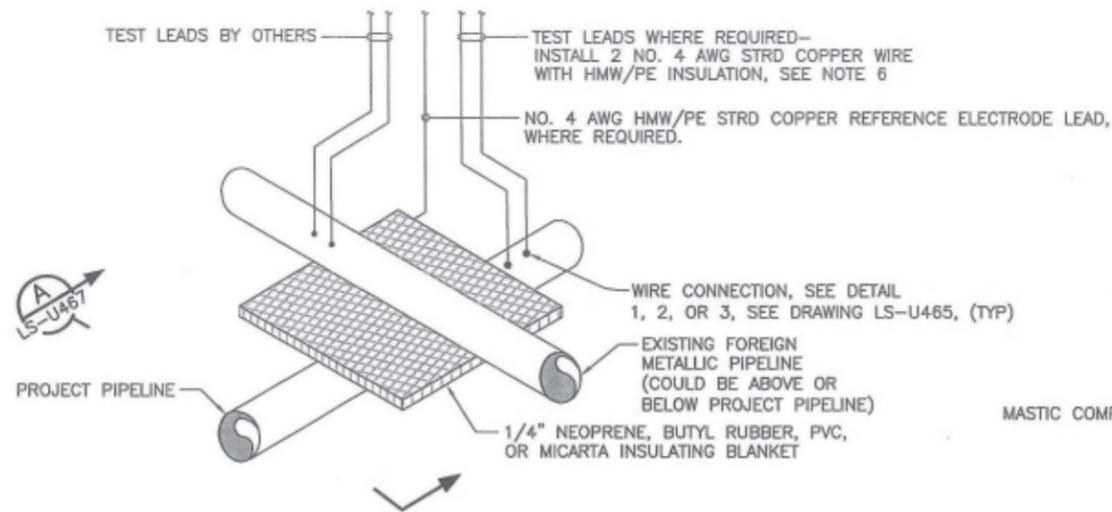
Skanska
Shimmick
Herzog
 1436 California Circle
Milpitas, California 95035
A Joint Venture

LMN Loderwood, Andrews & Neumann, Inc.
 T-Y-LIN INTERNATIONAL
 APPROVED *[Signature]*



LINE, TRACK, STATIONS AND SYSTEMS
 SCVWD WATER PIPELINE
 DETAILS
 TEST LEAD AND BOND CABLE DETAILS

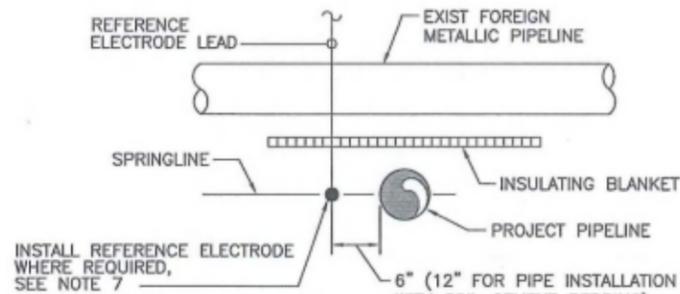
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SIZE	SCALE AS NOTED
CONTRACT NO.	C700
AREA CODE	LS
SHEET NO.	U465
PAGE NO.	0022



NOTES:

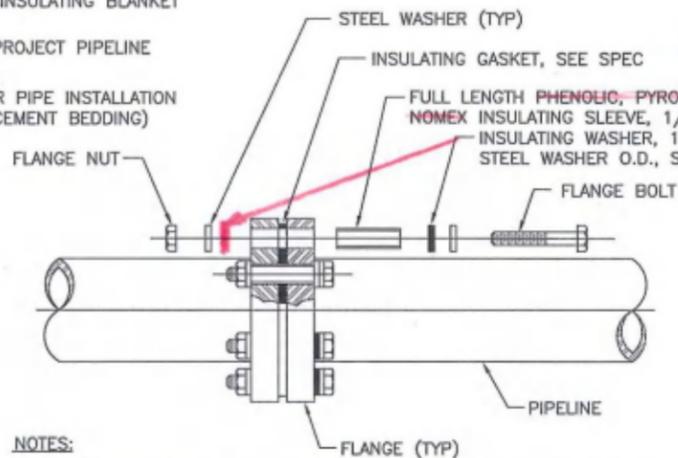
1. INSTALL INSULATING BLANKET BETWEEN METALLIC PIPELINES WHEN THE DISTANCE SEPARATING THE PIPELINES IS 24" OR LESS.
2. BLANKET SHALL BE SQUARE AND 2 FEET LARGER THAN THE LARGEST PIPELINE DIAMETER (e.g. 24" PIPE SIZE = 48" SQUARE BLANKET).
3. BLANKET SHALL BE INSTALLED ON SOIL BACKFILL AND CENTERED BETWEEN THE PIPES.

INSULATING BLANKET
NTS LS-U467 1



INSTALL REFERENCE ELECTRODE WHERE REQUIRED, SEE NOTE 7

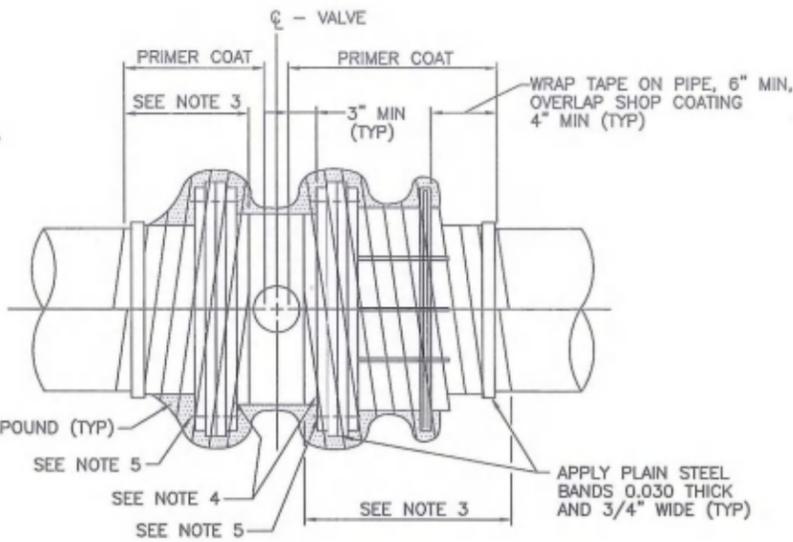
SECTION A
NTS LS-U467



NOTES:

1. FOR BURIED INSTALLATIONS, INSTALL WAX TAPE COATING, SEE DETAIL 3.
2. DO NOT COAT OR SPRAY INSULATING COMPONENTS WITH GREASE.
3. POLYETHYLENE AND MYLAR INSULATING SLEEVES ARE NOT ACCEPTABLE AND WILL BE REJECTED.
4. SEE DETAIL 6, FOR FIELD LINING AT FLANGED INSULATING JOINT.

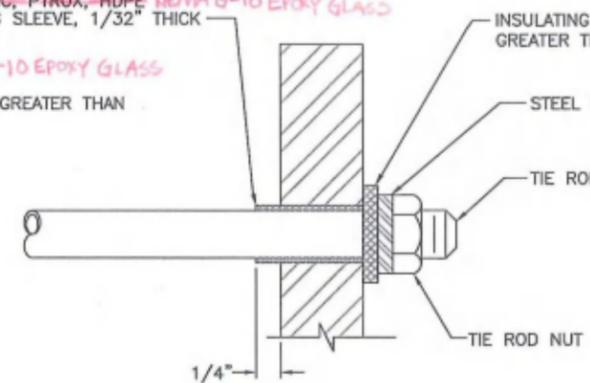
FLANGED INSULATING JOINT
NTS LS-U467 4



PROTECTION FOR BURIED VALVE AND COUPLING WITH FLANGED INSULATING JOINT
NTS LS-U467 2

Santa Clara Valley Transportation Authority
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By: [Signature] Date: 02/26/13

FULL LENGTH PHENOLIC, PYROX, HDPE, OR NEMA 6-10 EPOXY GLASS OR NOMEX INSULATING SLEEVE, 1/32" THICK



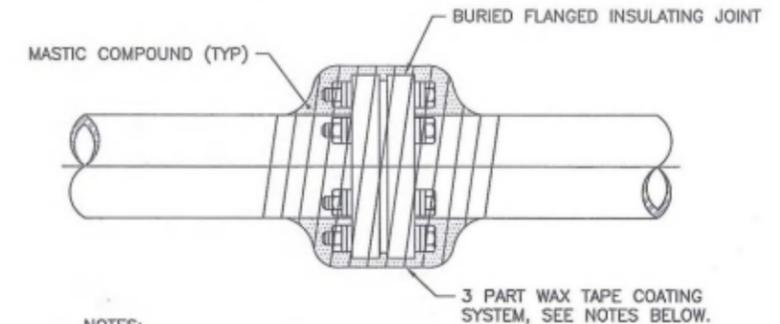
NOTES:

1. FOR BURIED INSTALLATIONS, INSTALL WAX TAPE COATING, SEE DETAIL 3.
2. DO NOT COAT OR SPRAY INSULATING COMPONENTS WITH GREASE.
3. POLYETHYLENE AND MYLAR INSULATING SLEEVES ARE NOT ACCEPTABLE AND WILL BE REJECTED.
4. SEE DETAIL 6, FOR FIELD LINING AT FLANGED INSULATING JOINT.

TIE ROD INSULATING JOINT
NTS LS-U467 5

NOTES:

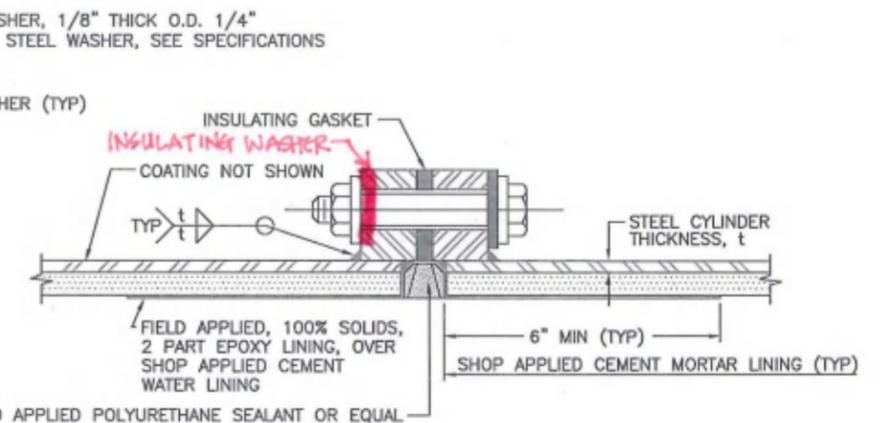
1. INSTALL INSULATING JOINTS AT THE LOCATIONS SHOWN ON THE DRAWINGS AND AS REQUIRED BY THE SPECIFICATIONS.
2. ALL BOLT HOLES SHALL BE REAMED AFTER FITTING FLANGES TOGETHER BUT BEFORE INSERTING INSULATING SLEEVES.
3. APPLY 3 PART WAX TAPE COATING SYSTEM. SEE NOTE 1, DETAIL 3.
4. TAPES TO LAP OVER ON VALVE BODY OR FITTING A MINIMUM OF 4".
5. INSULATING WASHERS ARE REQUIRED ON ~~ONLY ONE SIDE~~ ^{BOTH SIDES} OF ALL BURIED FLANGED INSULATING JOINTS, AND MAY BE PLACED ON A SIDE SELECTED BY THE CONTRACTOR, EXCEPT THAT INSULATING WASHERS SHALL BE ON SIDE OF JOINT OPPOSITE BURIED VALVE.
6. INSTALL TEST LEADS AS REQUIRED AND BRING LEADS TO TEST STATION AS SHOWN ON DRAWING LS-U471.
7. FOR PIPE INSTALLATION WITH SOIL-CEMENT BEDDING, INSTALL REFERENCE ELECTRODE IN NATIVE MATERIAL.



NOTES:

1. BURIED FLANGED INSULATING JOINTS SHALL BE COATED WITH A WAX TAPE COATING SYSTEM CONSISTING OF THE FOLLOWING:
 - A. WAX TAPE PRIMER APPLIED ON ALL EXPOSED SURFACES OF FLANGE, BOLTS AND NUTS.
 - B. WAX TAPE WRAPPED WITH ONE (1") INCH OVERLAP ON PREVIOUSLY PRIMED SURFACES.
 - C. PLASTIC WRAPPER APPLIED OVER WAX TAPE.
2. WAX TAPE COATING SHALL OVERLAP PIPE COATING A MINIMUM OF FOUR (4") INCHES.

PROTECTION FOR BURIED FLANGED INSULATING JOINT
NTS LS-U467 3

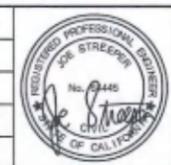


FIELD LINING AT FLANGED INSULATING JOINT
NTS LS-U467 6

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0	20121019				READY FOR CONSTRUCTION

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J. STREEPER
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A. CANIVEL
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B. WAGNER
IN CHARGE
J. STREEPER
DATE
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Skanska
Shimmick
Herzog
1436 California Circle
Milpitas, California 95035
A Joint Venture
HMM
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& NEWMAN, INC.
T-Y-LIN INTERNATIONAL

APPROVED
[Signature]



LINE, TRACK, STATIONS AND SYSTEMS
SCVWD WATER PIPELINE
DETAILS
INSULATING JOINTS

CADD FILENAME C700-S-LS-U467.dwg	SCALE AS NOTED
CONTRACT NO. C700	REV. 1
AREA CODE SHEET NO. LS U467	PAGE NO. 0024

TABLE 1
TENSION ANCHORAGE WELDED STEEL PIPE (AWWA C200)

STATION LIMITS (SEE NOTE 3)	MINIMUM CYLINDER REQUIRED (IN)	WELD THROAT DIMENSION REQUIRED (IN)	DESCRIPTION OF BEND OR FITTING
0+30	EXISTING	t	BEGIN TENSION ZONE
0+90	0.424	t	BEGIN PROPOSED PIPE
1+00.00	0.424	t	22.81' HOR BEND
1+20	0.424	t	TEMP BULK HEAD
2+04.14	0.424	t	22.50' HOR BEND
7+77.24	0.424	t	22.50' HOR BEND/ 0.46' VERT BEND
8+74	0.424	t	TEMP BULK HEAD
8+82.16	0.424	t	23.09' HOR BEND
9+06	0.424	t	END PROPOSED PIPE
10+22	EXISTING	t	END TENSION ZONE

t = FULL THICKNESS OF CYLINDER

TABLE 2
PIPE DESIGN

WELDED STEEL PIPE NON-CEMENT MORTAR COATED (AWWA C200)		
CLASS DESIGNATION (SEE NOTE 1)	MINIMUM CYLINDER THICKNESS (IN) (SEE NOTE 2)	STATION
	UNLIMITED/EMBANKMENT TRENCH CONDITION	
66-475-10	0.424	0+90.00 TO 9+06.00

NOTES:

- CLASS DESIGNATION (66-615-10)
66 = PIPE I.D. IN INCHES (NET INTERNAL)
475 = INTERNAL DESIGN PRESSURE, FEET OF HEAD
10 = EXTERNAL DESIGN, FEET OF COVER
- STEEL FOR PIPE CYLINDER IS MINIMUM ALLOWED BASED ON USE OF A1018 GRADE 36 STEEL SHEET OR ASTM 572 GRADE 36 STEEL PLATE OR EQUAL.
- INCREMENTAL THICKNESS CHANGES SHALL NOT EXCEED 1/8 INCH IN A MINIMUM DISTANCE OF 2 FEET FOR WELDED STEEL PIPE.
- WITHIN EACH REACH OF PIPE IDENTIFIED WITH TENSION ANCHORAGE REQUIREMENTS, TOTAL STEEL CYLINDER THICKNESS AND/OR WELD THROAT DIMENSION REQUIRED VARY LINEARLY RELATIVE TO STATIONING.
- A DOUBLE WELD IS REQUIRED WHEN THE TABULATED WELD THROAT DIMENSION IS GREATER THAN 0.707 TIMES THE TOTAL CYLINDER THICKNESS AT THE STATIONING OF THE WELD.
- THE BELL/SPIGOT CONFIGURATION AND THE BELL TO SPIGOT WELD DIMENSION FOR STEEL PIPE SHALL CONFORM TO THE REQUIREMENT SHOWN ON DRAWING LS-U450.
- WHERE TENSION ZONE EXTENDS INTO EXISTING PIPE, WELD JOINTS OF EXISTING PIPE AS REQUIRED TO ACHIEVE LIMITS OF TENSION ZONE.

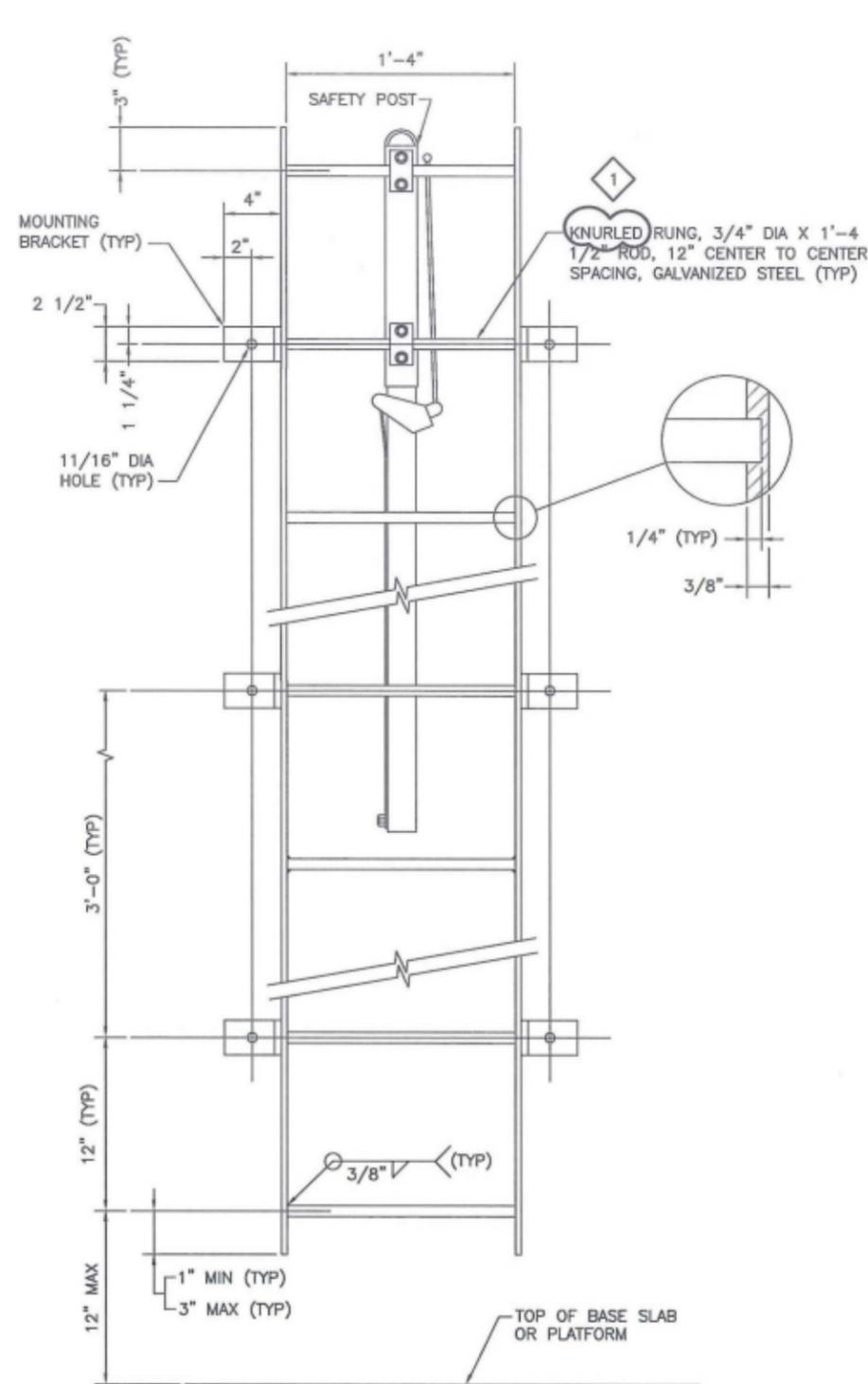
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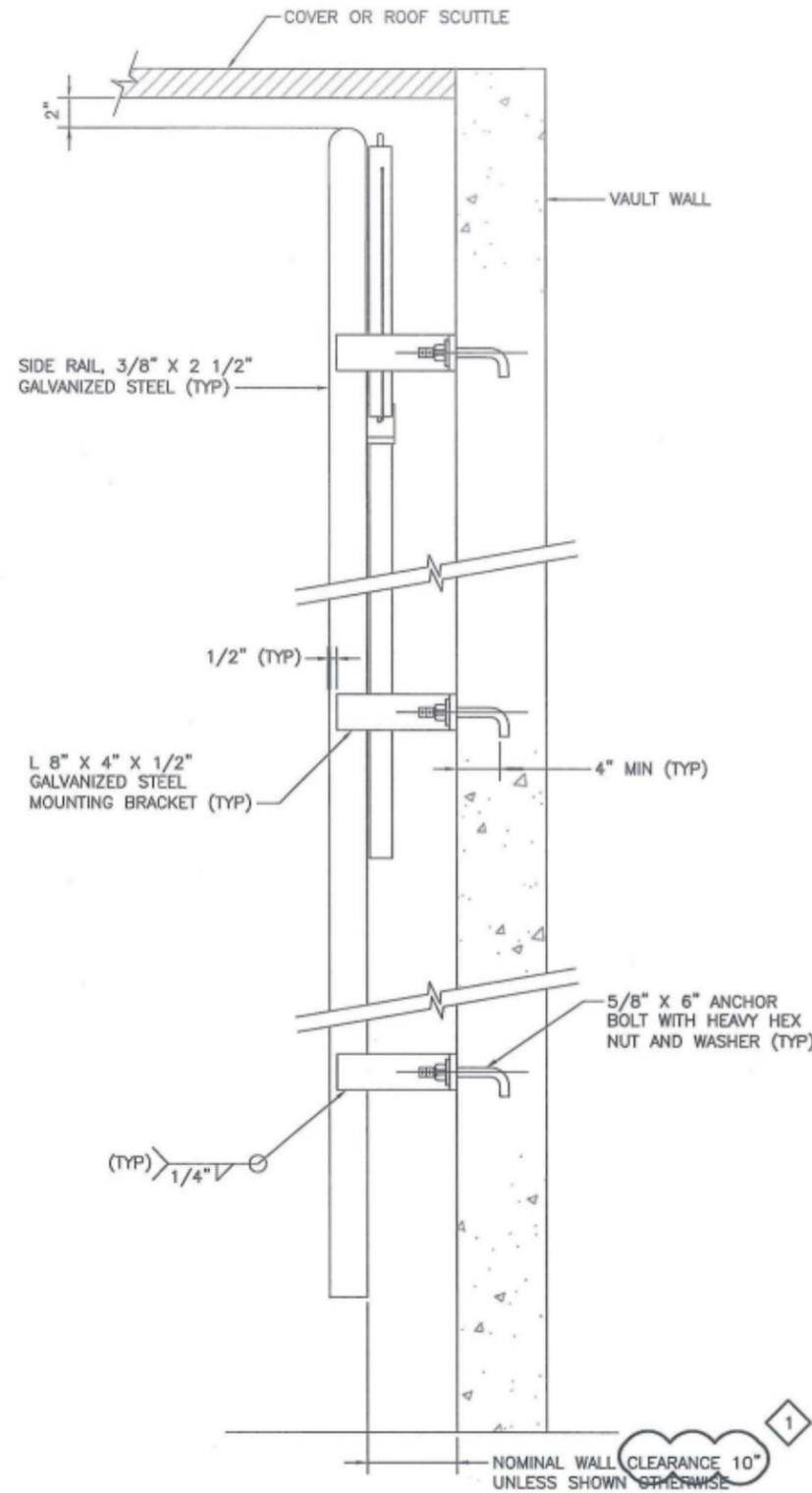
Contract No.: DB11002F
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REV	DATE	BY	SUB	APP	DESCRIPTION																					
1	20130117				READY FOR CONSTRUCTION																					
0	20121019				READY FOR CONSTRUCTION																					



VAULT LADDER - **1**
FRONT VIEW NTS LS-U472



VAULT LADDER - **2**
SIDE VIEW NTS LS-U472

NOTE:
IN LIEU OF CAST IN PLACE ANCHORS, THE CONTRACTOR MAY SUBMIT AN ALTERNATE ANCHORAGE DETAIL TO THE ENGINEER FOR APPROVAL.

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Jun 16, 2013 3:55pm C:\proj\scvwd\work\scvwd\1\ms\4472\1\700-5-13-U472.dwg

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Skanska
Shimmick
Herzog

1435 California Circle
Menlo Park, California 94035
A Joint Venture

HMM

Submitted: *[Signature]*

Approved: *[Signature]*

Landwood, Andrews & Newman, Inc.
A Joint Venture

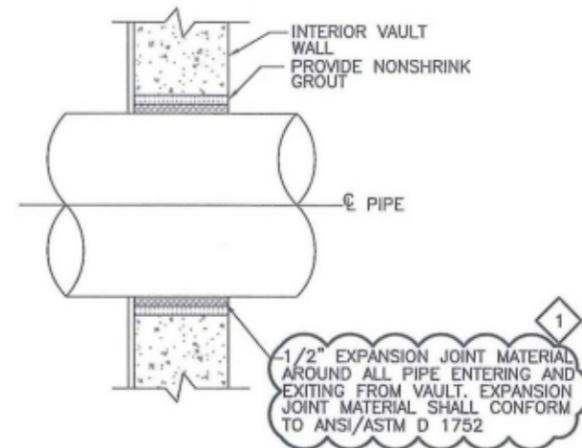
T-Y-LIN INTERNATIONAL

BART SILICON VALLEY BERRYESSA EXTENSION

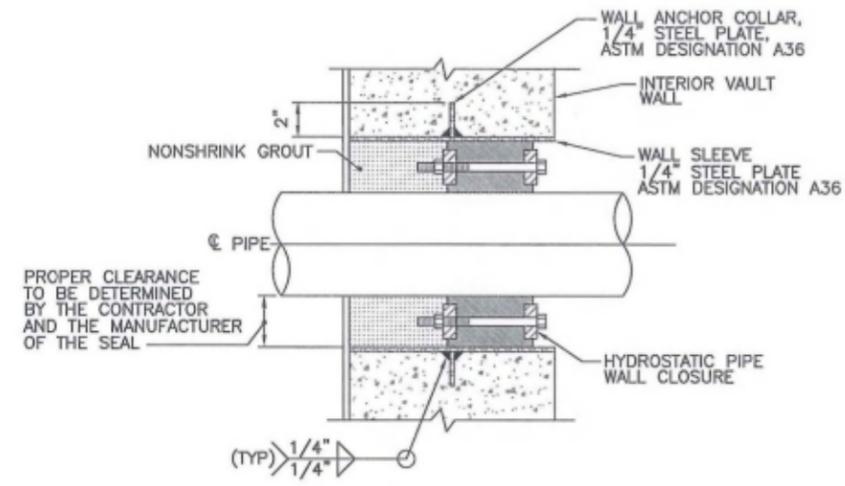
LINE, TRACK, STATIONS AND SYSTEMS

SCVWD WATER PIPELINE
DETAILS
VAULT LADDER

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SIZE	D
SCALE	AS NOTED
CONTRACT NO.	C700
AREA CODE	LS
SHEET NO.	U472
REV.	1
PAGE NO.	0027



METHOD 1 SEALANT
NTS **1**
LS-U474



METHOD 2 SEALANT
NTS **2**
LS-U474

Santa Clara Valley Transportation Authority

NO EXCEPTION TAKEN

MAKE CORRECTIONS NOTED

AMEND AND RESUBMIT

Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.

Contract No.: DB11002F

By: *[Signature]* Date: 02/26/13

Jan 16, 2013 3:45pm C:\projects\ls\scvwd\scvwd\ls-u474.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
1	20130117				READY FOR CONSTRUCTION
0	20121019				READY FOR CONSTRUCTION

DESIGNED BY
J. STREEPER

DRAWN BY
A. CANIVEL

CHECKED BY
B. WAGNER

IN CHARGE
J. STREEPER

DATE
20130117



Skanska
Spinnick
Herzog

1436 California Circle
Milpitas, California 95035
A Joint Venture

HMM

SUBMITTED *[Signature]*

LON Lockwood, Andrews & Bonnen, Inc.
A Joint Venture

T-Y-LIN INTERNATIONAL

APPROVED *[Signature]*

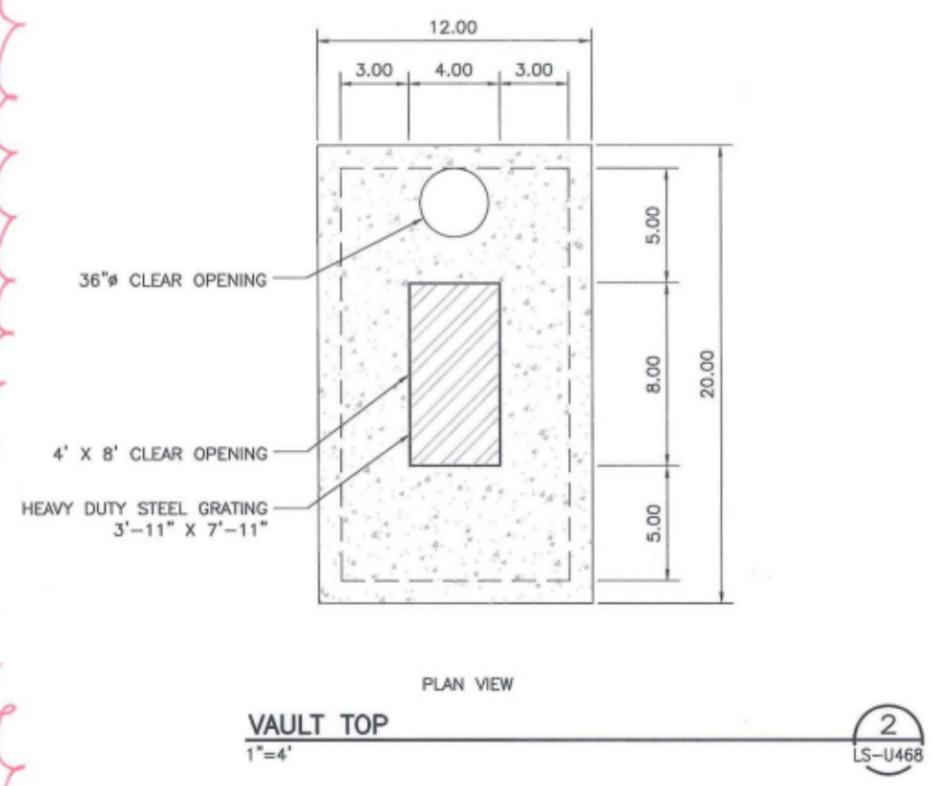
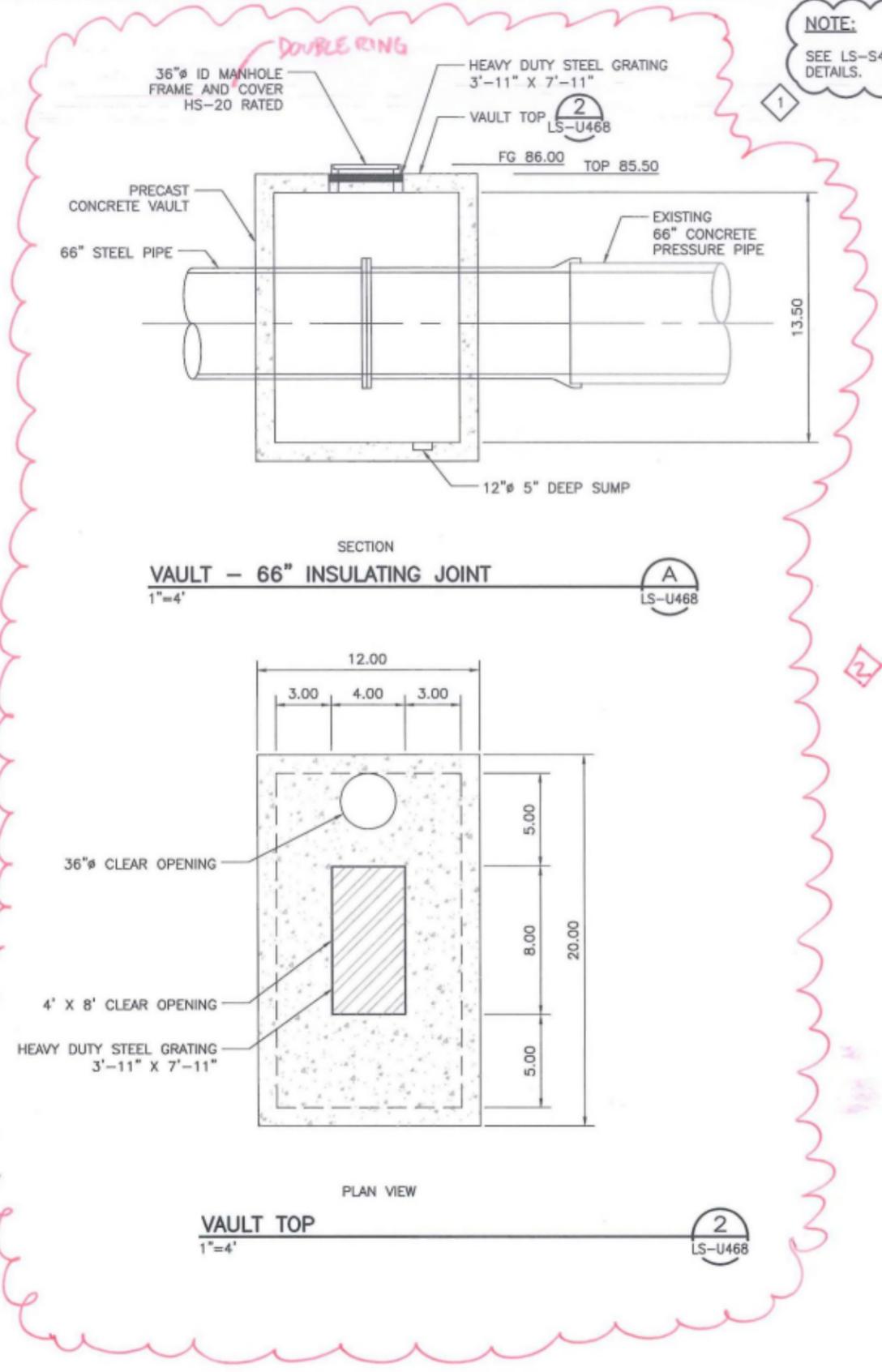
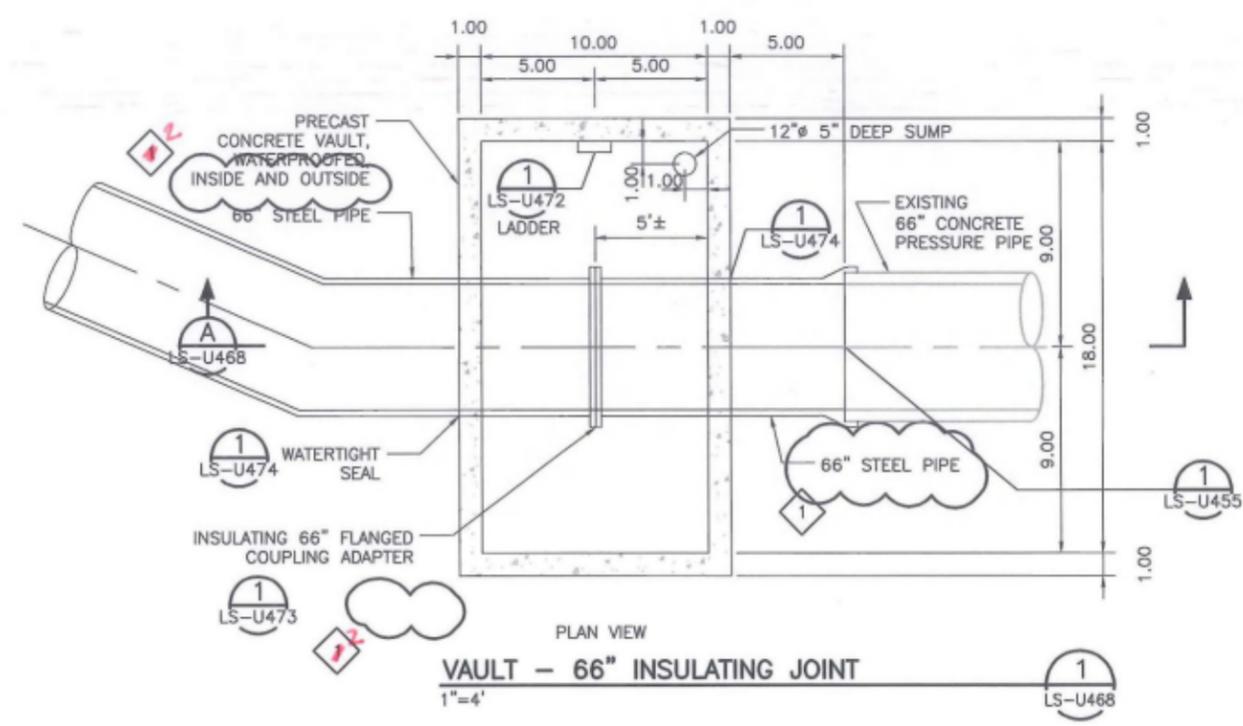


LINE, TRACK, STATIONS AND SYSTEMS

SCVWD WATER PIPELINE
DETAILS
SEALANT

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CONTRACT NO. C700	REV. 1
AREA CODE LS	SHEET NO. U474
PAGE NO. 0029	

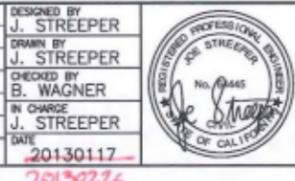
NOTE:
SEE LS-S400, LS-S401 AND LS-S402 FOR STRUCTURE DETAILS.



Santa Clara Valley Transportation Authority
 NO EXCEPTION TAKEN
 MAKE CORRECTIONS NOTED
 AMEND AND RESUBMIT
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: DB11002F
 By: *[Signature]* Date: *2/26/13*

Feb 26, 2013 - B:\Herr C:\projects\scvwd\copy of sub-template [20]_vms4496\C700-S-LS-U468.dwg

DESIGNED BY	J. STREEPER
DRAWN BY	J. STREEPER
CHECKED BY	B. WAGNER
IN CHARGE	J. STREEPER
DATE	20130117
DATE	20130226



Skanska Shimmick Herzog
 1436 California Circle
 Milpitas, California 95035
 A Jdkt Venture

Submitted: *[Signature]*
 Approved: *[Signature]*

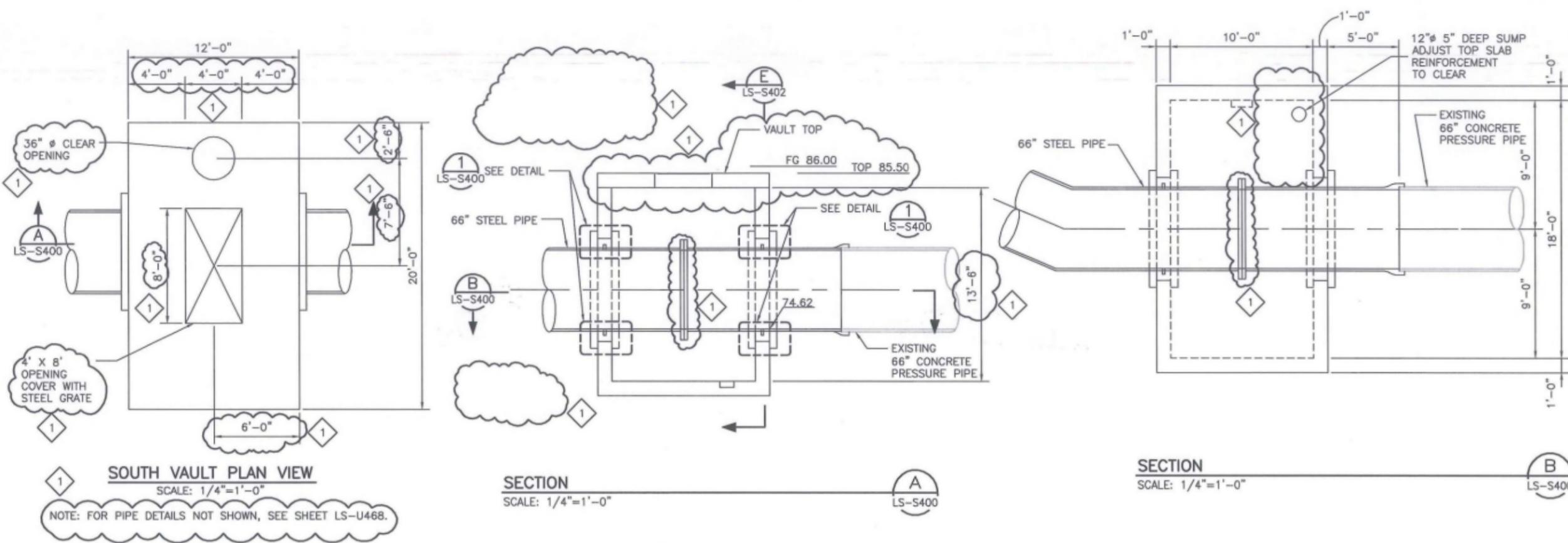
Leckrone, Andrew & Newman, Inc.
 T-Y-LIN INTERNATIONAL

BART
 SILICON VALLEY

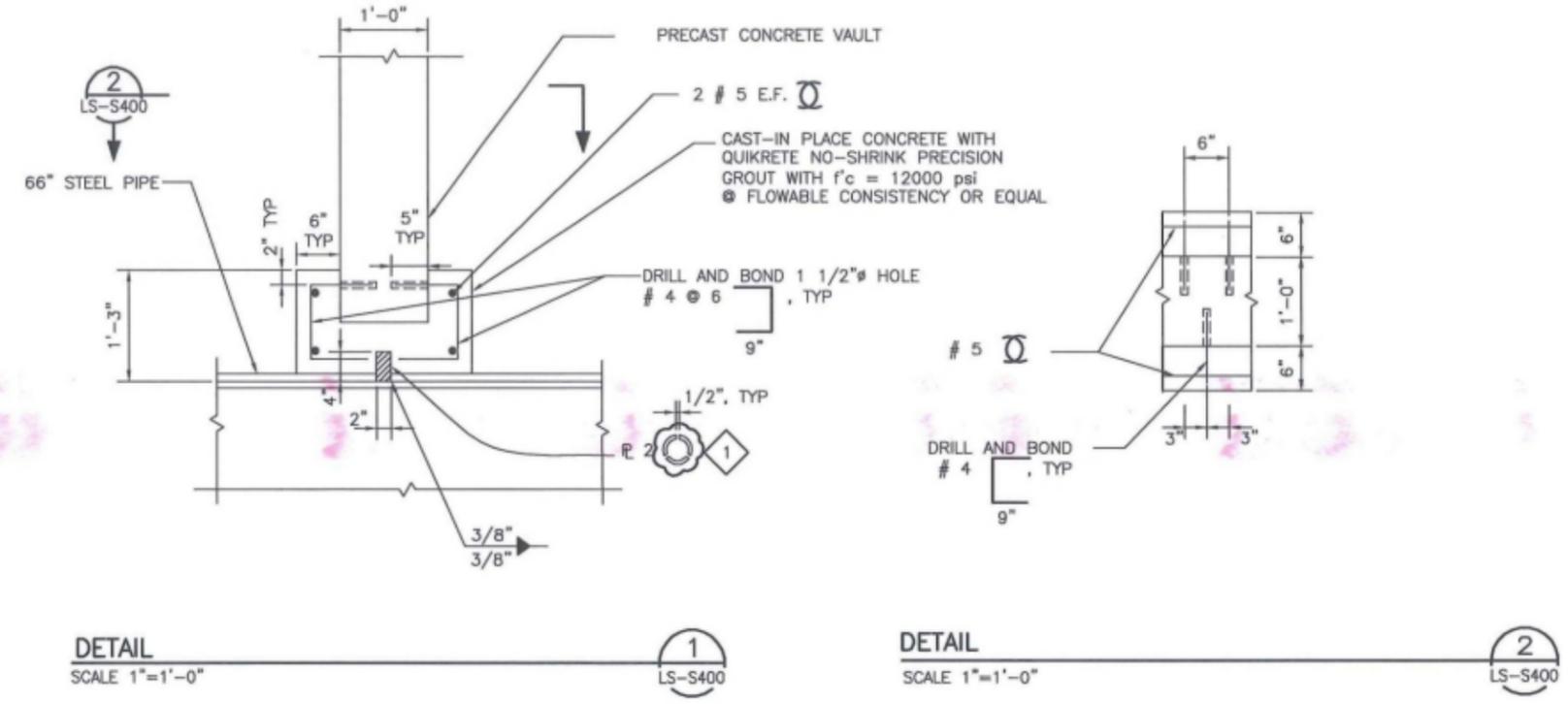
BART SILICON VALLEY BERRYESSA EXTENSION

LINE, TRACK, STATIONS AND SYSTEMS
 SCVWD WATER PIPELINE
 DETAILS
 VAULT DETAILS

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CONTRACT NO.	C700
AREA CODE	LS
SHEET NO.	U468
PAGE NO.	0031
REV.	1



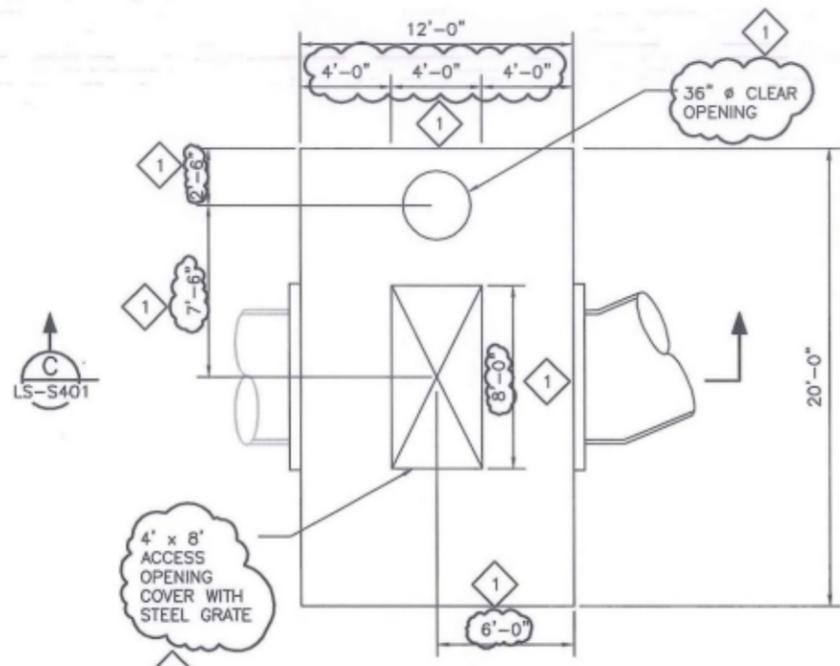
- DESIGN NOTES:**
1. PRECAST CONCRETE UNIT STRESSES:
 $f'_c = 6.0$ ksi.
 2. BAR REINFORCING STEEL $f_y = 60$ ksi.
 3. THREADED BARS = ASTM 722 TYPE II.
 4. DESIGN ASSUMED MAXIMUM 6" OF FUTURE CONCRETE ON TOP OF THE LID.



Santa Clara Valley Transportation Authority
~~X~~ NO EXCEPTION TAKEN
 MAKE CORRECTIONS NOTED
 AMEND AND RESUBMIT
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: DB11002F
 By: *[Signature]* Date: 2/26/13

DESIGNED BY C. SONG DRAWN BY S. PAVULURI CHECKED BY O. LI IN CHARGE O. LI DATE 20130117						Skanska Shimmick Herzog 1436 California Circle Milpitas, California 95035 A Joint Venture T-Y-LIN INTERNATIONAL Lockwood, Andrews & Newnam, Inc. A Joint Venture SUBMITTED <i>[Signature]</i> APPROVED <i>[Signature]</i>				LINE, TRACK, STATIONS AND SYSTEMS SCVWD WATER PIPE LINE DETAILS VAULT DETAILS SHEET 1 OF 4		CADD FILENAME C700-S-LS-S400.dwg SIZE SCALE D AS NOTED CONTRACT NO. C700 AREA CODE SHEET NO. PAGE NO. LS S400 0032	
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0	20130117			READY FOR CONSTRUCTION									

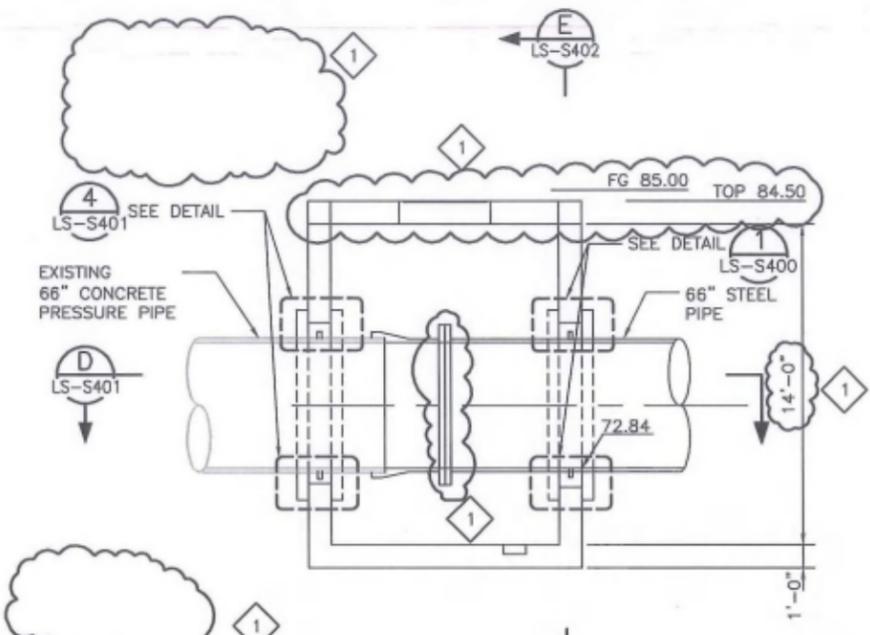
File Path: C:\Users\jshim\Documents\20130117\LS-S400.dwg
 Date: 2/26/13



NORTH VAULT PLAN VIEW

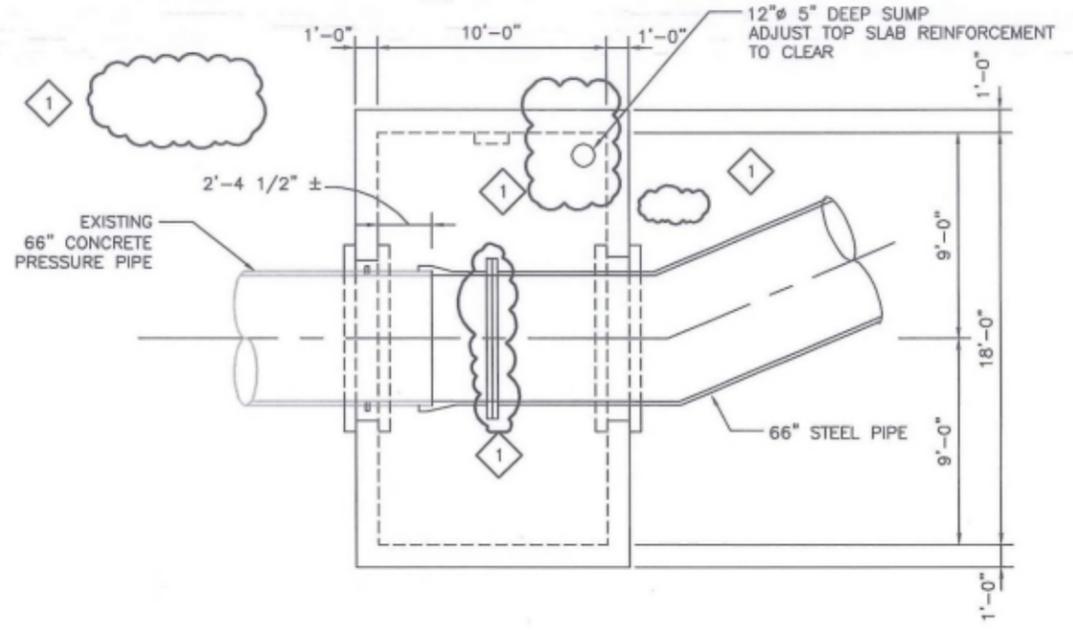
SCALE: 1/4" = 1'

NOTE: FOR PIPE DETAILS NOT SHOWN, SEE SHEET LS-U475.



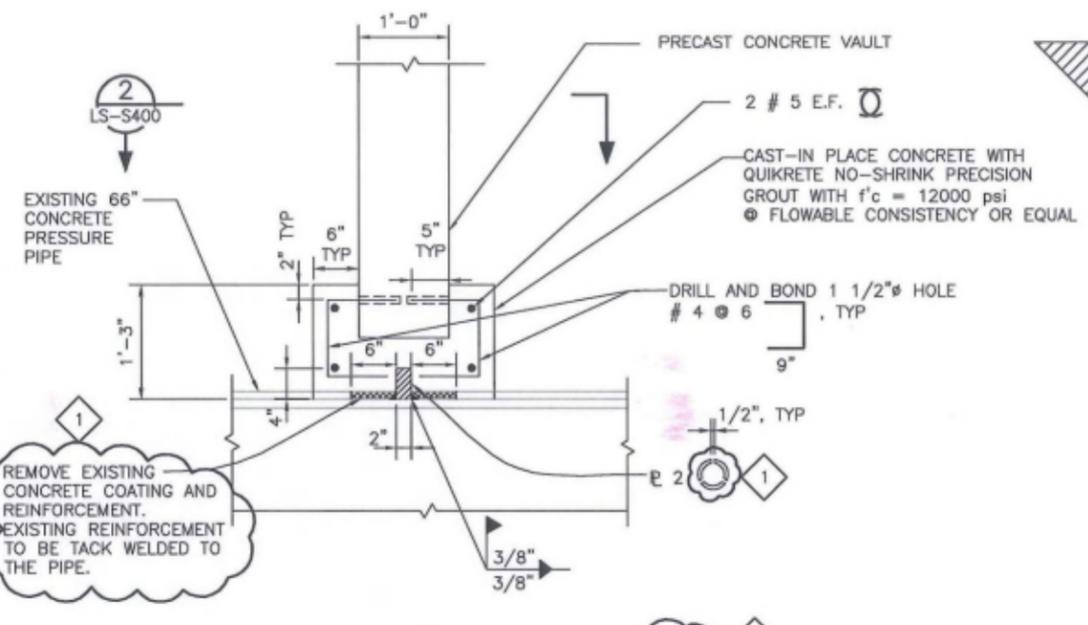
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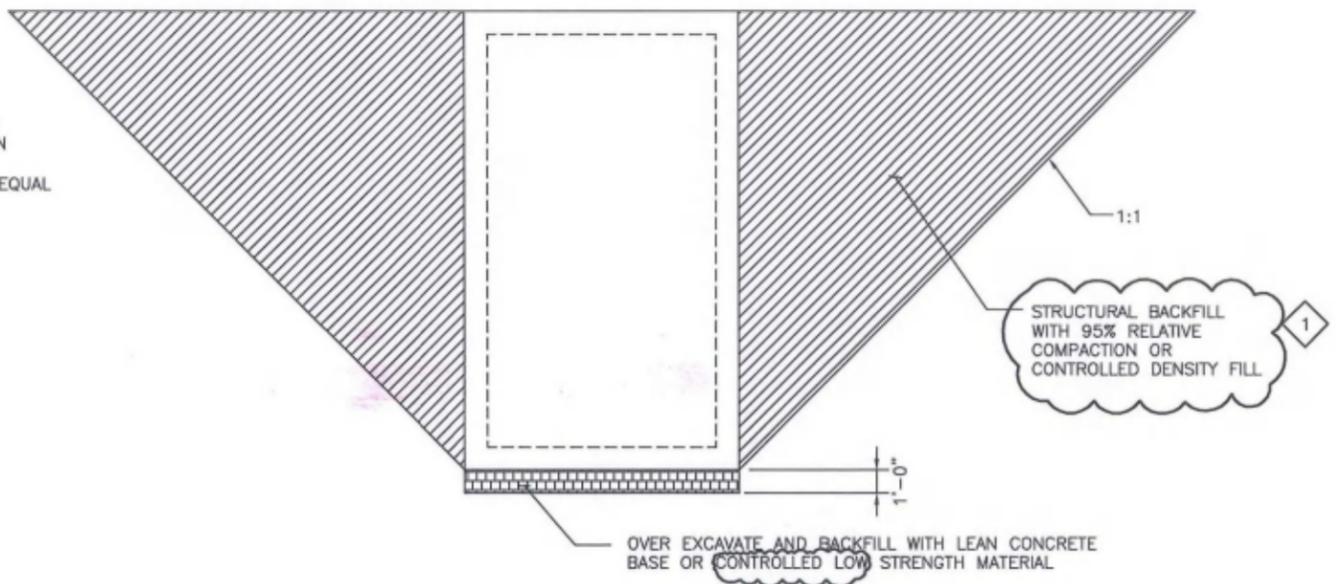
SECTION

SCALE: 1/4" = 1'



DETAIL

SCALE: 1" = 1'



EXCAVATION AND BACKFILL DETAILS

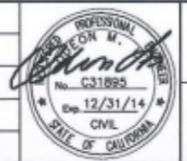
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Santa Clara Valley Transportation Authority
 NO EXCEPTION TAKEN
 MAKE CORRECTIONS NOTED
 AMEND AND RESUBMIT
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No. DP1702F
 Date: 02/11/13

Feb 20, 2013 9:40am C:\projects\scvwd\scvwd-ctb\mtd\17A\0700-5-LS-S401.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
1	20130211				READY FOR CONSTRUCTION
0	20130117				READY FOR CONSTRUCTION

DESIGNED BY
C. SONG
 DRAWN BY
S. PAVULURI
 CHECKED BY
O. LI
 IN CHARGE
O. LI
 DATE
20130117

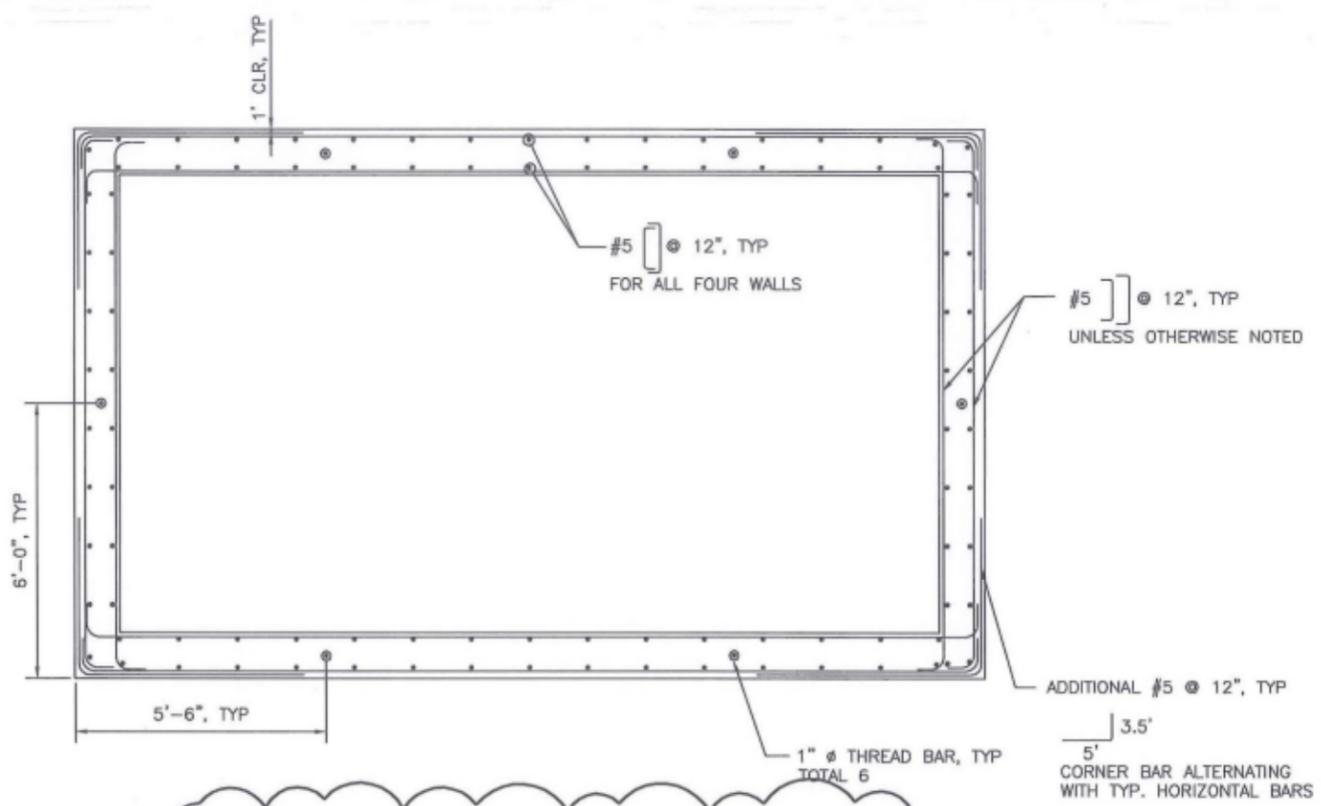


Skanska Shimmick Herzog
 1436 California Circle
 Milpitas, California 95035
 A Joint Venture
T-Y-LIN INTERNATIONAL
 Submitted: [Signature]
 Approved: [Signature]

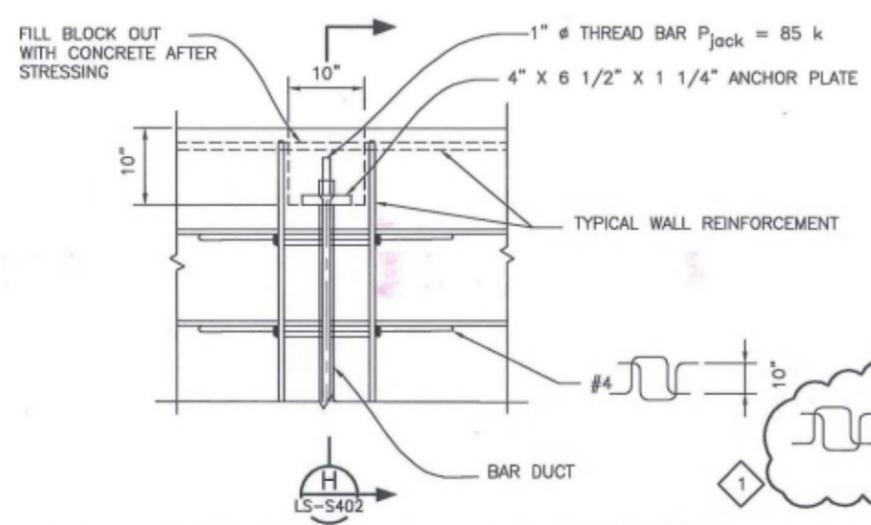


LINE, TRACK, STATIONS AND SYSTEMS
 SCVWD WATER PIPE LINE DETAILS
 VAULT DETAILS
 SHEET 2 OF 4

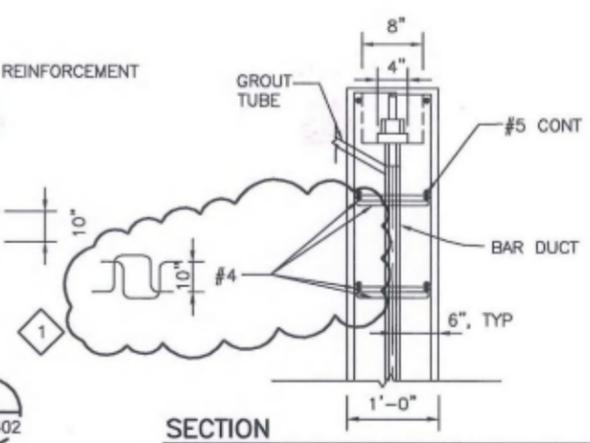
CADD FILENAME	C700-S-LS-S401.dwg
SIZE	D
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CONTRACT NO.	C700
REV.	0
AREA CODE	LS
SHEET NO.	S401
PAGE NO.	0033



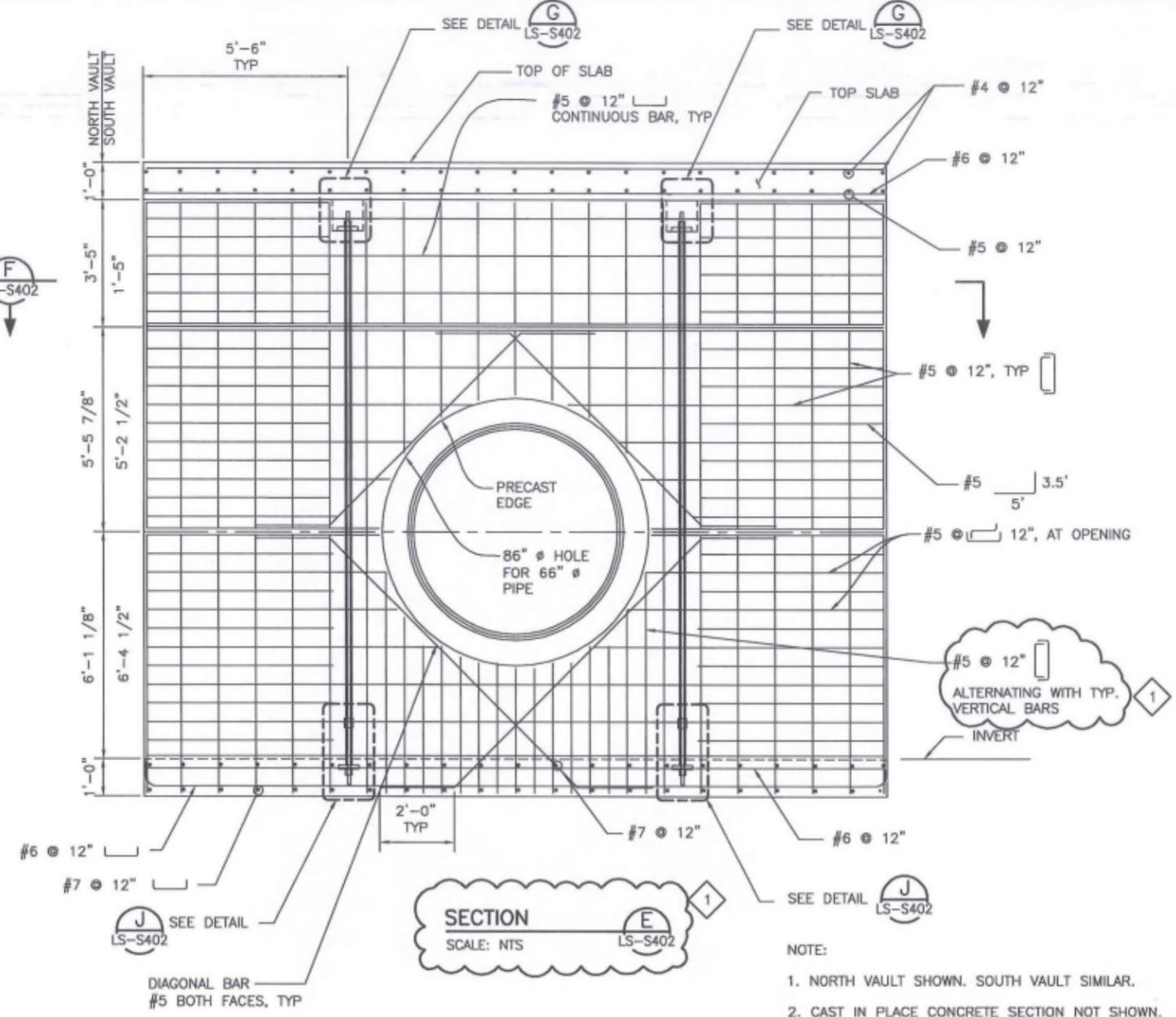
SECTION F
SCALE: 1/2"=1'
LS-S402



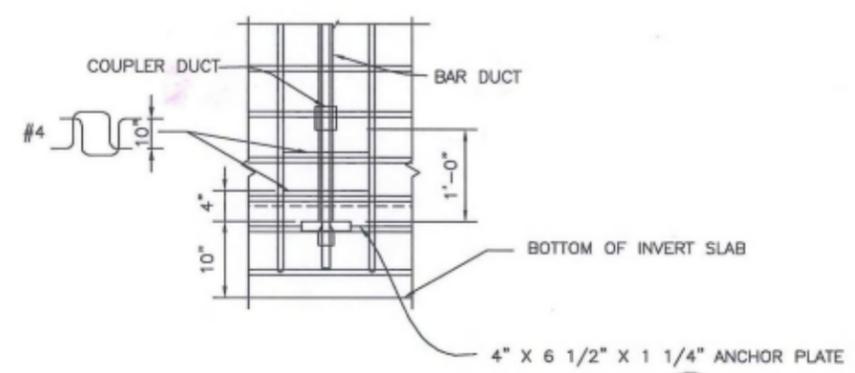
POST-TENSION ANCHORAGE BLOCKOUT DETAIL G
SCALE: 1"=1'
LS-S402



SECTION H
SCALE: 1"=1'
LS-S402



SECTION E
SCALE: NTS
LS-S402



SECTION J
SCALE: 1"=1'
LS-S402

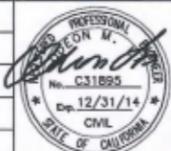
- NOTE:
1. NORTH VAULT SHOWN. SOUTH VAULT SIMILAR.
 2. CAST IN PLACE CONCRETE SECTION NOT SHOWN.

Santa Clara Valley Transportation Authority
~~NO EXCEPTION TAKEN~~
~~MAKE CORRECTIONS NOTED~~
~~AMEND AND RESUBMIT~~
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: DD1002F
 By: *[Signature]* Date: *[Signature]*

Feb 12, 2013 - 9:28am C:\projects\hwy-68\csh\du-013\du-013-rfc-r2-sound-66in-drawings\du-013-rfc-r2-sound-66in-drawings.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
1	20130211				READY FOR CONSTRUCTION
0	20130117				READY FOR CONSTRUCTION

DESIGNED BY
C. SONG
 DRAWN BY
S. PAVULURI
 CHECKED BY
O. LI
 IN CHARGE
O. LI
 DATE
20130117

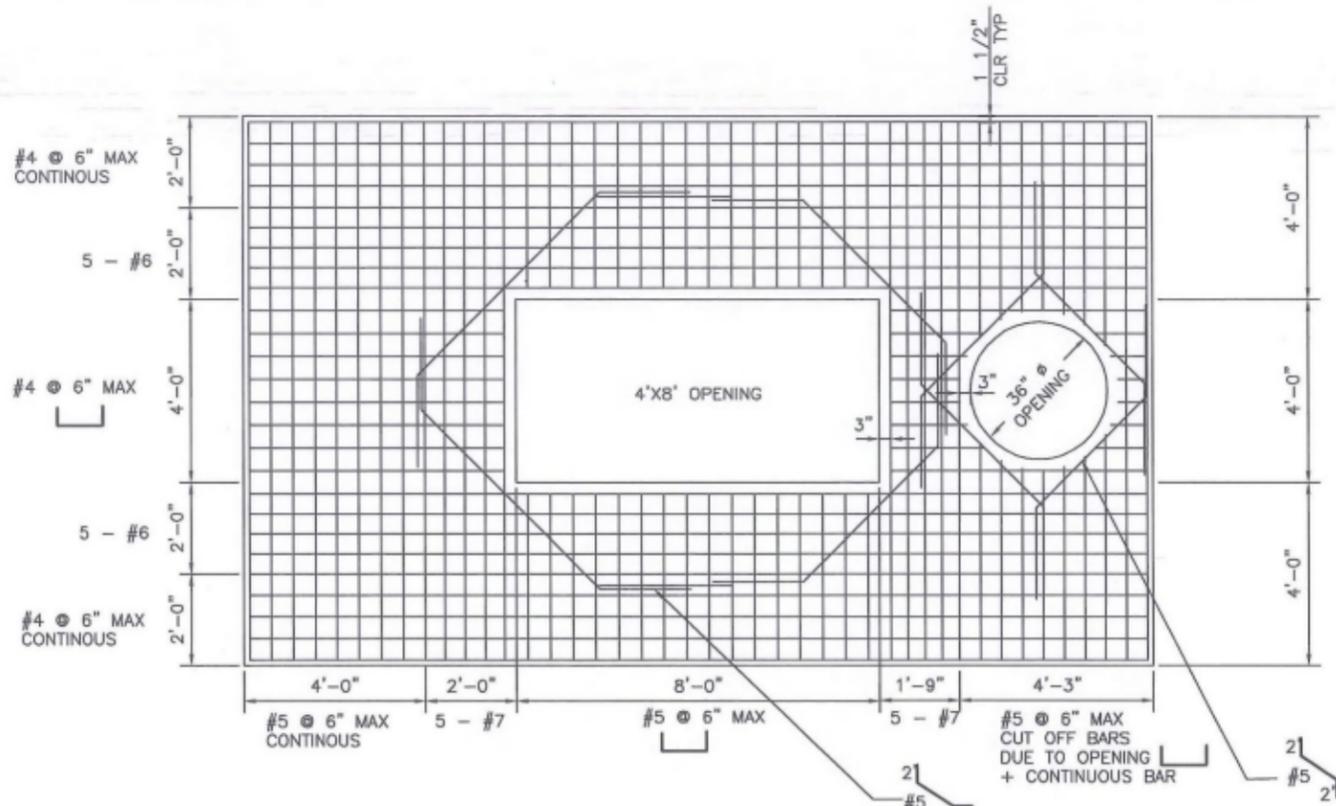


Skanska Shimmick Herzog
 1436 California Circle
 Milpitas, California 95035
 A Joint Venture
T-Y-LIN INTERNATIONAL
 Submitted: *[Signature]*
 Approved: *[Signature]*

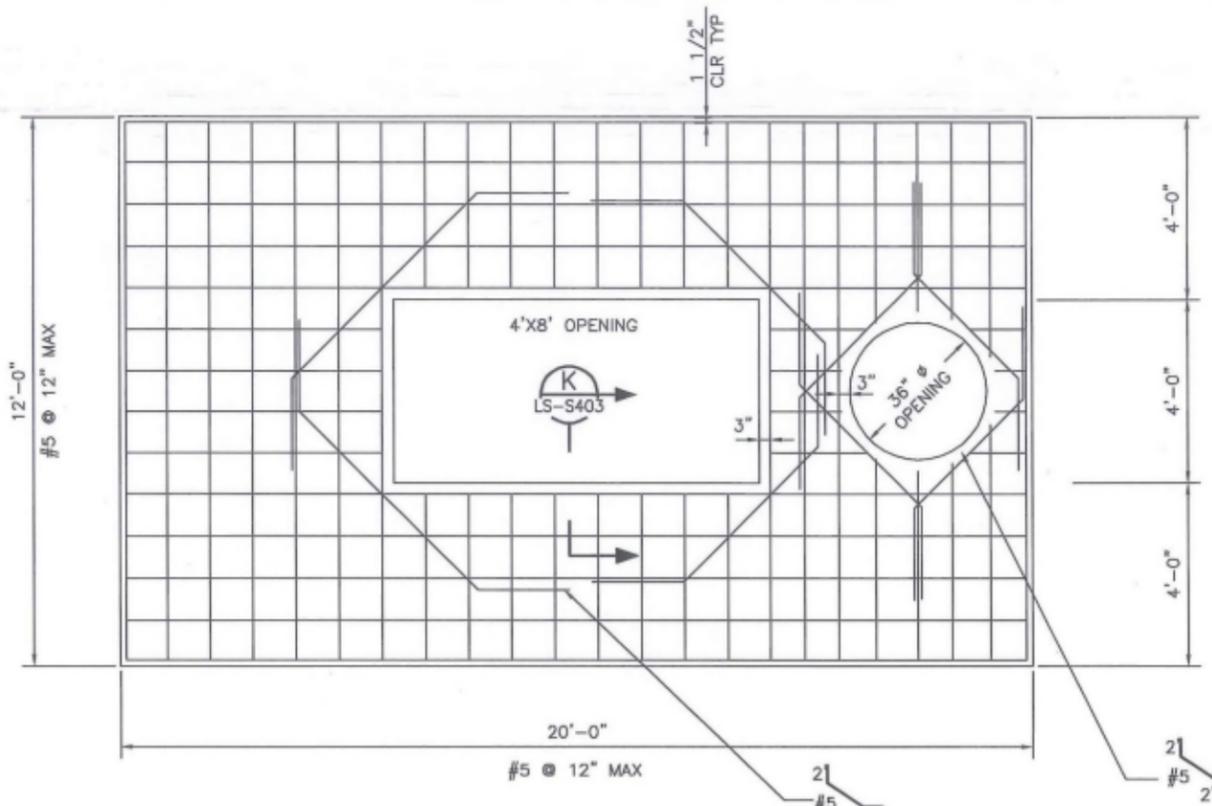
BART
SILICON VALLEY
 BART SILICON VALLEY BERRYESSA EXTENSION

LINE, TRACK, STATIONS AND SYSTEMS
 SCVWD WATER PIPE LINE DETAILS
 VAULT DETAILS
 SHEET 3 OF 4

CADD FILENAME C700-S-LS-S402.dwg	SCALE AS NOTED
CONTRACT NO. C700	REV. 0
AREA CODE SHEET NO. LS S402	PAGE NO. 0034

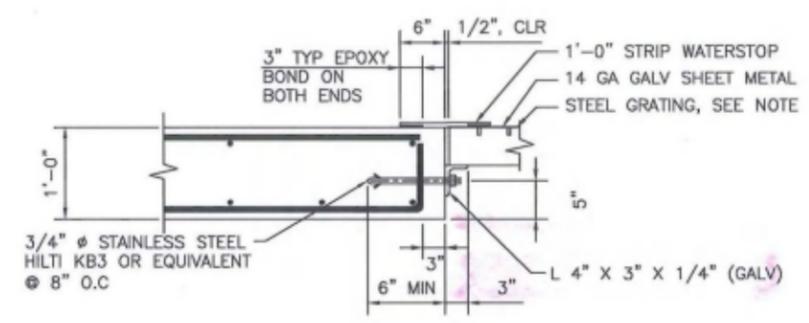


LID BOTTOM REINFORCEMENT
SCALE 1/2"=1'-0"
1
LS-S403



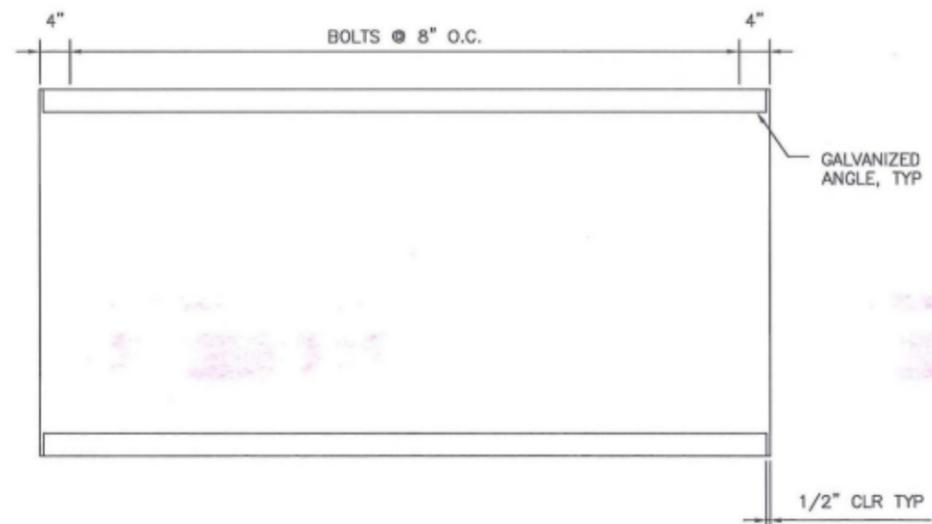
LID TOP REINFORCEMENT
SCALE 1/2"=1'-0"
2
LS-S403

NOTE: GALVANIZED SHEET METAL, STEEL GRATING, ANGLE, AND BOLTS NOT SHOWN FOR CLARITY.



SECTION
SCALE 1"=1'-0"
K
LS-S403

NOTE: HEAVY DUTY WELDED STEEL GRATING MANUFACTURED BY GRATING PACIFIC OR EQUIVALENT. GRATING SHALL BE TYPE W30-4 WITH 5"x3/8" BEARING BARS SPACED AT 1 7/8" O.C. AND 1"x3/8" CROSS BARS SPACED 4" O.C. WEIGHT PER SQUARE FT IS 45.3 LBS. HEAVY DUTY GRATING SHALL BE CAPABLE OF CARRYING A H-20 LOAD ON A 6'-3" CLEAR SPAN. OPEN ENDS OF GRATING SHALL BE BANDED. HEAVY DUTY GRATING SHALL BE GALVANIZED AFTER FABRICATION.



ANGLE AND BOLT LAYOUT
SCALE 1"=1'-0"
3
LS-S403

Santa Clara Valley Transportation Authority
~~NO EXCEPTION TAKEN~~
MAKE CORRECTIONS NOTED
~~AMEND AND RESUBMIT~~
 Any action shown above is subject to the terms of the contract and does not relieve the contractor of any of its obligations under the contract including design and detailing.
 Contract No.: D1110021
 By: *[Signature]* Date: 2/26/13

Feb 12, 2013 - 9:54am C:\p\projects\year-cad\scvwd\17A\0700-S-LS-S403.dwg

DESIGNED BY C. SONG DRAWN BY S. PAVULURI CHECKED BY O. LI IN CHARGE O. LI DATE 20130211				PROFESSIONAL SEAL ON M. No. C31895 Exp. 12/31/14 CIVIL STATE OF CALIFORNIA		Skanska Shimmick Herzog 1436 California Circle Milpitas, California 95035 A Joint Venture T-Y-LIN INTERNATIONAL Lockwood, Andrews & Newnam, Inc. A LEO A. HEALY COMPANY T-Y-LIN INTERNATIONAL APPROVED <i>[Signature]</i>		BART SILICON VALLEY BART SILICON VALLEY BERRYESSA EXTENSION		LINE, TRACK, STATIONS AND SYSTEMS SCVWD WATER PIPE LINE DETAILS VAULT DETAILS SHEET 4 OF 4		CADD FILENAME C700-S-LS-S403.dwg SIZE SCALE D AS NOTED CONTRACT NO. C700 REV. 0 AREA CODE SHEET NO. LS S403 PAGE NO. 0035	
0	20130211			READY FOR CONSTRUCTION									
REV	DATE	BY	SUB	APP	DESCRIPTION								

PURPOSE OF SURVEY:

THE PURPOSE OF THIS SURVEY IS TO PROVIDE HORIZONTAL AND VERTICAL CONTROL FOR RIGHT-OF-WAY ENGINEERING, DESIGN, AND CONSTRUCTION OF THE BAY AREA RAPID TRANSIT (BART) EXTENSION BY THE SANTA CLARA VALLEY TRANSPORTATION AUTHORITY (VTA), TO RUN SOUTHERLY FROM THE UNION TERMINUS OF BART'S WARM SPRINGS EXTENSION APPROXIMATELY ELEVEN MILES ALONG THE UNION PACIFIC RAILROAD RIGHT-OF-WAY, THEN SUBSURFACE WESTERLY THROUGH DOWNTOWN SAN JOSE UNDER SANTA CLARA STREET, THEN NORTHERLY TO AND ALONG THE CALTRAIN RIGHT-OF-WAY TO THE INTERSECTION OF LAFAYETTE STREET.

BASIS OF COORDINATES AND BEARINGS:

COORDINATES FOR CONTROL POINTS AND BEARINGS SHOWN ON THIS SURVEY ARE BASED HORIZONTALLY ON THE CCS83, ZONE 3, EPOCH 1998.5 (SEE NOTE #1 ON THIS SHEET), AND VERTICALLY ON NAVD88, DEVELOPED BY THE PERFORMANCE OF SURVEYS DESCRIBED AS FOLLOWS:

PRIMARY GPS SURVEY

THE PRIMARY GPS NETWORK CONSISTING OF 49 POINTS WAS OBSERVED TO FGCS ORDER B STANDARDS. THE GPS SURVEY WAS CONDUCTED USING FOUR TRIMBLE NAVIGATION 4700 AND ONE TRIMBLE NAVIGATION 4000SSI DUAL FREQUENCY GEODETIC RECEIVERS. STATIC SURVEYING TECHNIQUES WERE USED FOR MEASURING ALL BASELINE VECTORS. INSTRUMENT HEIGHTS WERE MEASURED IN METERS AND IN FEET. THESE VALUES WERE REDUCED AND COMPARED IN THE FIELD PRIOR TO LEAVING THE STATION. ALL STATIONS WERE OCCUPIED AT LEAST TWICE ON INDEPENDENT DAYS. IN GENERAL, GPS DATA WAS LOGGED FOR AT LEAST ONE HOUR; HOWEVER UP TO 4 HOURS OF DATA WAS COLLECTED FOR THE LONGER BASELINES.

ALL BASELINE VECTORS WERE PROCESSED USING THE TRIMBLE GEOMATICS OFFICE, (VERSION 1.50) SOFTWARE. FIXED BIAS SOLUTIONS WERE OBTAINED FOR ALL BASELINES USING INTERNATIONAL GPS SERVICE FOR GEODYNAMICS (IGS) PRECISE ORBITS FOR ALL BASELINE VECTOR COMPUTATIONS.

A MINIMALLY CONSTRAINED LEAST SQUARES ADJUSTMENT WAS PERFORMED ON THE PRIMARY GPS NETWORK TO ENSURE THAT FGCS ORDER-B STANDARDS WERE ACHIEVED. THE GPS BASELINES OF THE PRIMARY GPS NETWORK WERE ADJUSTED USING MICROSEARCH GEOLAB 2001 (VERSION 2001.9.20.0). THE GEODETIC COORDINATES (LATITUDE, LONGITUDE AND ELLIPSOIDAL HEIGHT) OF CORS STATION ZOA1 PROVIDED THE MINIMAL CONSTRAINT. THE ADJUSTMENT COMPRISED OF 49 STATIONS AND 408 BASELINE VECTOR COMPONENTS (136 BASELINES) AND WAS BASED ON NAD83 (CORS) AT THE 2003.05 EPOCH.

CONVENTIONAL TRAVERSING

PRECISE CONVENTIONAL MEASUREMENTS WERE PERFORMED ON SECONDARY CONTROL INSTALLED TO DENSIFY THE PRIMARY GPS NETWORK, THEREBY ESTABLISHING A NETWORK OF CONTROL THROUGHOUT THE PROJECT AREA. FGCS FIRST ORDER CLASS I STANDARDS AND PROCEDURES WERE ADOPTED FOR THE SECONDARY CONTROL. A LEICA TC2002 WAS USED FOR ALL DIRECTION, ZENITH ANGLE AND SLOPE DISTANCE MEASUREMENTS. THIS INSTRUMENT WAS CALIBRATED LOCALLY FOR SCALE AND ZERO ERROR (PRISM CONSTANT) BY COMPARING GPS DERIVED DISTANCES WITH THE REDUCED HORIZONTAL DISTANCES. RELATIVE HUMIDITY AND TEMPERATURE OBSERVATIONS WERE OBSERVED DURING THE FIELD WORK. ATMOSPHERIC PRESSURE DATA WERE OBTAINED FROM SAN JOSE AIRPORT.

PRECISION LEVELING

FGCS STANDARDS, SPECIFICATIONS AND PROCEDURES FOR SECOND ORDER CLASS II WERE ADOPTED FOR VERTICAL CONTROL SURVEYS. EXISTING NGS VERTICAL CONTROL WAS DENSIFIED TO ESTABLISH NEW BENCHMARKS THROUGHOUT THE PROJECT AREA. THE SELECTED PROJECT VERTICAL DATUM IS NAVD88. A LEICA NA3003 DIGITAL LEVEL WAS USED FOR ALL PRECISION LEVELING. THE FGCS MODIFIED DOUBLE SIMULTANEOUS (MDS) PROCEDURE WAS USED, ALLOWING FOR TWO PARTIALLY INDEPENDENT HEIGHT DIFFERENCE MEASUREMENTS AT EACH SETUP.

NETWORK ADJUSTMENT AND POST ANALYSIS

THE LEAST SQUARES ADJUSTMENT WAS PERFORMED ON THE NAD83 (CORS) DATUM, EPOCH OF 2003.05. ALL GPS VECTORS, ELEVATION DIFFERENCES, AND CONVENTIONAL MEASUREMENTS WERE COMBINED IN A SINGLE UNIFIED ADJUSTMENT ALLOWING FOR THE MOST RIGOROUS AND RELIABLE RESULTS. THE GEOID99 GEODAL MODEL WAS USED TO FACILITATE THE GENERATION OF ORTHOMETRIC HEIGHTS (ELEVATIONS) FOR ALL CONTROL POINTS NOT OBSERVED THROUGH PRECISION LEVELING. THE COMBINED ADJUSTMENT WAS PERFORMED USING EVERY OBSERVATION TO ENSURE THE MOST RIGOROUS SOLUTION. CERTAIN OBSERVATIONS WERE DE-WEIGHTED IN THE LEAST SQUARES ADJUSTMENT.

THE VTA/BART PROJECT IS BASED ON NAD83 (CORS) EPOCH OF 1998.5. CONSEQUENTLY, THE RESULTS OF THIS ADJUSTMENT WERE TRANSFORMED FROM NAD83 (CORS), EPOCH OF 2003.05 BACK TO NAD83 (CORS), EPOCH 1998.5 USING THE NATIONAL GEODETIC SURVEY SOFTWARE HTDP (HORIZONTAL TIME-DEPENDENT POSITIONING SOFTWARE - VERSION 2.7).

NOTES:

- 1) ALL COORDINATES AND DISTANCES SHOWN ARE IN SURVEY FEET VALUES (GRID). FOR THE LENGTH OF THIS PROJECT, AN AVERAGED COMBINED SCALE FACTOR WAS USED FOR CONVERTING RECORDED MAPS AND DEEDS TO GRID. TO OBTAIN GROUND DISTANCES, MULTIPLY EXPRESSED DISTANCES BY 1.000053330.
2) STATIONS SJAA, WINT, MHCB, ZOA1, LUTZ, CHAB, M 874, BART 205R, & BART 206 WERE USED AS THE HORIZONTAL ADJUSTMENT CONSTRAINTS FOR THIS PROJECT (COORDINATES AND DESCRIPTIONS ON PG 2).
3) STATIONS QQ 453, M 874, N 1447, B 875, C 1121 RESET, Z 111 RESET, Q 591 RESET, N 874, K 179, VASONA, I 19-96 RESET, C 1371, L 1447, AND HPGN D CA SAN PEDRO WERE USED AS THE VERTICAL ADJUSTMENT CONSTRAINTS FOR THIS PROJECT (COORDINATES AND DESCRIPTIONS ON PAGE 2).
4) ALL BART MONUMENTS, BERY, FERN, AND VTA 171A ARE FND WITH VARYING DIAMETER (SEE PAGE 5).
5) A RECORD OF SURVEY IS BEING FILED PURSUANT TO PROVISION (d) OF SECTION 8762, OF THE PROFESSIONAL LAND SURVEYORS ACT.
6) THE HYPERLINK TO THE NGS WEBSITE: HTTP://WWW.NGS.NOAA.GOV/CGI-BIN/DS_DESIG.PRL

BENCHMARKS:

THE ELEVATIONS SHOWN HEREON ARE COMPILED FROM DIFFERENTIAL LEVEL LOOPS BASED UPON THE FOLLOWING SOURCES:

NGS "QQ 453" BRASS DISK IN TOP OF CONC MON LOCATED IN CITY OF SAN JOSE NEAR THE JUNCTION OF US HIGHWAY 101 AND BLOSSOM HILL RD (STATE HWY 82) (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 190.83'
DATUM: NAVD88

NGS "N 1447" METAL ROD LOCATED IN CITY OF SAN JOSE AT THE INTERSECTION OF UNION PACIFIC RAILROAD AND OAKLAND ROAD, (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 52.37'
DATUM: NAVD88

CGS "B 875" BRASS DISK LOCATED IN CITY OF SAN JOSE AT THE INTERSECTION OF UNION PACIFIC RAILROAD AND WEST JULIAN STREET. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 90.67' (RECORD) 90.585 MEASURED
DATUM: NAVD88

CGS "C 1121 RESET" BRASS DISK LOCATED IN CITY OF SAN JOSE, APPROX 0.1 MILE NW OF THE JUNCTION OF HORNING STREET, AT THE CRISTINA WAREHOUSE COMPANY (1045 10TH STREET). (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 61.79'
DATUM: NAVD88

CGS "Z 111 RESET" BRASS DISK LOCATED IN CITY OF SAN JOSE, IN THE TOP OF THE NE END OF THE SE CONC ABUTMENT OF A CONC BRIDGE OVER W TAYLOR STREET (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 78.34' (RECORD) 78.261 MEASURED
DATUM: NAVD88

CGS "Q 591 RESET" BRASS DISK LOCATED IN WARM SPRINGS, APPROX 0.5 MILE SE'LY ALONG THE UNION PACIFIC RAILROAD FROM THE JUNCTION OF WARREN AVE, (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 45.84'
DATUM: NAVD88

CGS "N 874" BRASS DISK LOCATED IN WARM SPRINGS, IN TOP OF THE SW END OF THE NW ABUTMENT OF THE MISSION BOULEVARD UNDERPASS. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 48.33' (RECORD) 48.256 MEASURED
DATUM: NAVD88

CACS "K 179 RESET" BRASS DISK LOCATED IN CITY OF MILPITAS, IN THE TOP OF THE SE CONC WALL OF AN 8 BY 9 FOOT CONC CATCH BASIN. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 51.91'
DATUM: NAVD88

CADH "VASONA" SURVEY DISK LOCATED IN TOP OF CONC MON, LOCATED IN LOS GATOS AT THE INTERSECTION OF STATE HWY 9 AND UNIVERSITY AVE, LOCATED AT VASONA DAM. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 307.67'
DATUM: NAVD88

NGS "I 19-96 RESET" DISK LOCATED IN CITY OF SAN JOSE, AT THE INTERSECTION OF 4TH STREET AND E SANTA CLARA STREET, IN A SQUARE CONC BASE. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 80.48'
DATUM: NAVD88

NGS "C 1371" DISK LOCATED IN CITY OF MILPITAS, IN TOP OF THE SE END OF THE NE HEADWALL FOR A 10 BY 15 FOOT CULVERT FOR FLOOD CONTROL. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 16.11'
DATUM: NAVD88

NGS "L 1447" DISK LOCATED IN CITY OF SAN JOSE, AT THE INTERSECTION OF COLEMAN AVE AND INTERSTATE HWY 880, IN A CONC WALKWAY OF THE NW ABUTMENT OF COLEMAN AVENUE OVERPASS OF THE INTERSECTION HWY 880. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 77.34' (RECORD) 77.232 MEASURED
DATUM: NAVD88

CA-085 "HPGN D CA SAN PEDRO" ALUM DISK LOCATED IN CITY OF SAN JOSE, NEAR THE COUNTY CIVIC CENTER, ABOUT 1 MILE SW OF THE JUNCTION OF US HWY 101 AND INTERSTATE HWY 880. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
ELEVATION= 60.6'
DATUM: NAVD88

CONTINUOUSLY OPERATING REFERENCE STATION (CORS):

SJAA = "SJAA STANFORD CORS ARP" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 1982253.27' E = 6075814.66'
DATUM: NAD83

WINT = "WINT WINTON CORS GRM" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 2064265.65' E = 6086755.33'
DATUM: NAD83

MHCB = "MT HAMILTON BARD CORS ARP" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 1948852.78' E = 6229522.73'
DATUM: NAD83

ZOA1 = "OAKLAND 1 CORS ARP" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 2023759.45' E = 6122181.68'
DATUM: NAD83

LUTZ = "LUTZ L 1 PHASE CENTER" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 1929811.75' E = 6164513.21'
DATUM: NAD83

CHAB = "CHABOT BARD CORS ARP" LOCATED IN CALIFORNIA, THIS STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. (FOR MORE DETAIL OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 2090178.88' E = 6093358.53'
DATUM: NAD83

HIGH PRECISION GEODETIC NETWORK (HPGN):

NGS "M 874" THE STATION IS LOCATED IN MILPITAS CALIFORNIA, ABOUT 0.2 MILES N OF STATE HWY 237, ALONG THE UNION PACIFIC RAILROAD. (FOR MORE INFORMATION OF DESCRIPTION, GO TO NGS WEBSITE, DATA SHEET)
N = 1984336.90' E = 6153198.63'
DATUM: NAD83
ELEVATION = 15.808 MEASURED

BAY AREA RAPID TRANSIT WSX CONTROL POINTS

"BART 205R"
N = 1993049.481 E = 6154314.945
ELEVATION = 90.075 (MEASURED)

"BART 206"
N = 1991626.622 E = 6150622.920
ELEVATION = 20.837 (MEASURED)

"BART 268"
N = 1993826.157 E = 6149797.161
ELEVATION = 22.630 (MEASURED)

"BART 48"
N = 1996507.182 E = 6148768.892
ELEVATION = 29.975 (MEASURED)

"BART 266"
N = 1997825.965 E = 6148258.986
ELEVATION = 40.344 (MEASURED)

"BART 264"
N = 2001811.723 E = 6146682.353
ELEVATION = 45.303 (MEASURED)

"BART 47"
N = 2002487.559 E = 6146417.936
ELEVATION = 47.810 (MEASURED)

PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA NOTES

Table with columns: CADD FILENAME (C700-S-LS-C030.dwg), SIZE D, SCALE, NOT TO SCALE, CONTRACT NO., REV. (C700), AREA CODE (LS), SHEET NO. (C030), PAGE NO. (0183)

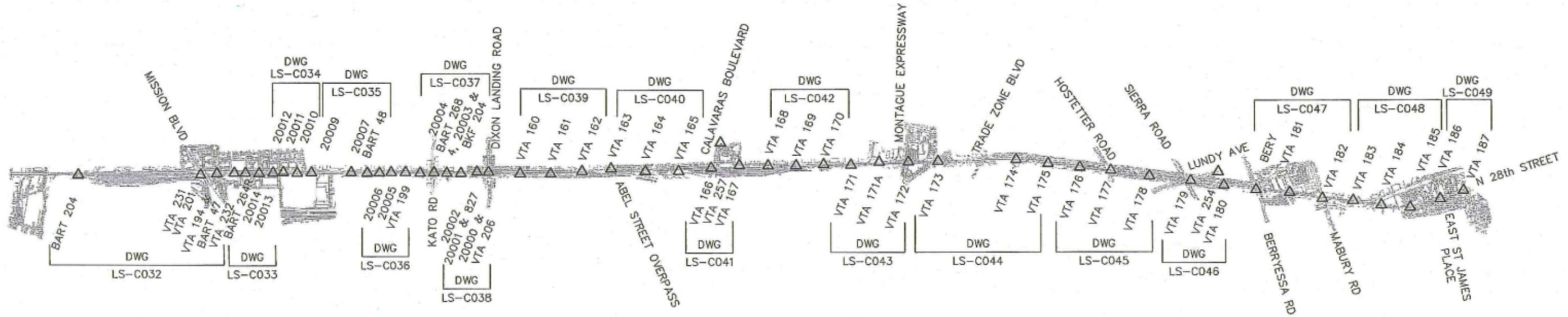
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Professional stamps and signatures: DESIGNED BY L BOROU-MAND, DRAWN BY L BOROU-MAND, CHECKED BY S HEFFNER, IN CHARGE S HEFFNER, DATE 20110311, VTA logo, and signatures of L Borou-mand and S Heffner.





INDEX DWG



NOTE:
 ALL VTA MONUMENTS SET OR FOUND ARE 2" DIAMETER ALUMINUM DISK (EXCEPT AS NOTED) STAMPED "SANTA CLARA VALLEY TRANSPORTATION AUTHORITY" WITH MONUMENT NUMBER (XXX) AND 1/8" DIAMETER DRILLED HOLE.



COMBINED SCALE FACTOR (PROJECT AVERAGE)
 GROUND ----> GRID CONVERSIONS: MULTIPLY DISTANCES BY 0.999946673

VERTICAL CONTROL POINTS

- VTA 363**
 AT MISSION - SET VTA ALUMINUM CAP 363 FLAT IN EAST WALK OF KATO RD 1.0' WEST OF HANDRAIL OVER NORTH ABUTMENT FOR ROADWAY BRIDGE OVER MISSION BLVD ELEVATION = 51.088
- VTA 364**
 AT KATO RD - SET VTA ALUMINUM CAP 364 FLAT IN CONCRETE FOUNDATION FOR POWER LINE TOWER. SECOND TOWER SOUTH OF KATO RD 1.0' (FROM THE EAST) AT EAST SIDE OF 1-880 ELEVATION = 10.144
- VTA 365**
 AT ABEL - SET VTA ALUMINUM CAP 365 IN VERTICAL FACE OF COLUMN, IN WEST FACE OF NORTH COLUMN OF EAST BENT OF BRIDGE FOR ABEL CROSSING RR R/W 4' ABOVE EXISTING GRADE *** ELEVATION = 17.505
- VTA 366**
 AT CALAVERAS - SET VTA ALUMINUM CAP 366 IN VERTICAL FACE OF COLUMN, IN WEST FACE OF NORTH COLUMN OF EAST BENT OF BRIDGE FOR CALAVERAS CROSSING RR R/W 1.8' ABOVE EXISTING GRADE *** ELEVATION = 22.742

- VTA 367**
 AT CAPITOL - SET VTA ALUMINUM CAP 367 IN VERTICAL FACE OF COLUMN, IN EAST FACE OF SOUTH COLUMN OF THIRD BENT WEST OF RR R/W (BENT FOR LIGHT RAIL AERIAL STRUCTURE) 4' ABOVE EXISTING GRADE *** ELEVATION = 56.309

- VTA 368**
 AT CAPITOL - SET VTA ALUMINUM CAP 368 IN VERTICAL FACE OF COLUMN, IN WEST FACE SECOND BENT EAST OF RR R/W 4' ABOVE EXISTING GRADE *** ELEVATION = 57.969

*** CAP HAS 1/4" X 20" X 1" SET SCREW THAT CAN BE THREADED OUT TO SET THE ROD UPON (REQUIRED 1/8" ALLEN WRENCH). PLEASE THREAD BACK INTO CAP WHEN FINISHED. DO NOT OVER TIGHTEN! CAP HAS A SCRIBED LINE THAT CORRESPONDS TO THE ELEVATION OF THE TOP OF SET SCREW FOR USE IF YOU CAN'T LOOSEN THE SET SCREW.

PRESCRIPTIVE

DESIGNED BY L. BOROUMAND					
DRAWN BY L. BOROUMAND					
CHECKED BY S. HEFFNER					
IN CHARGE S. HEFFNER					
DATE 20110311					
REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

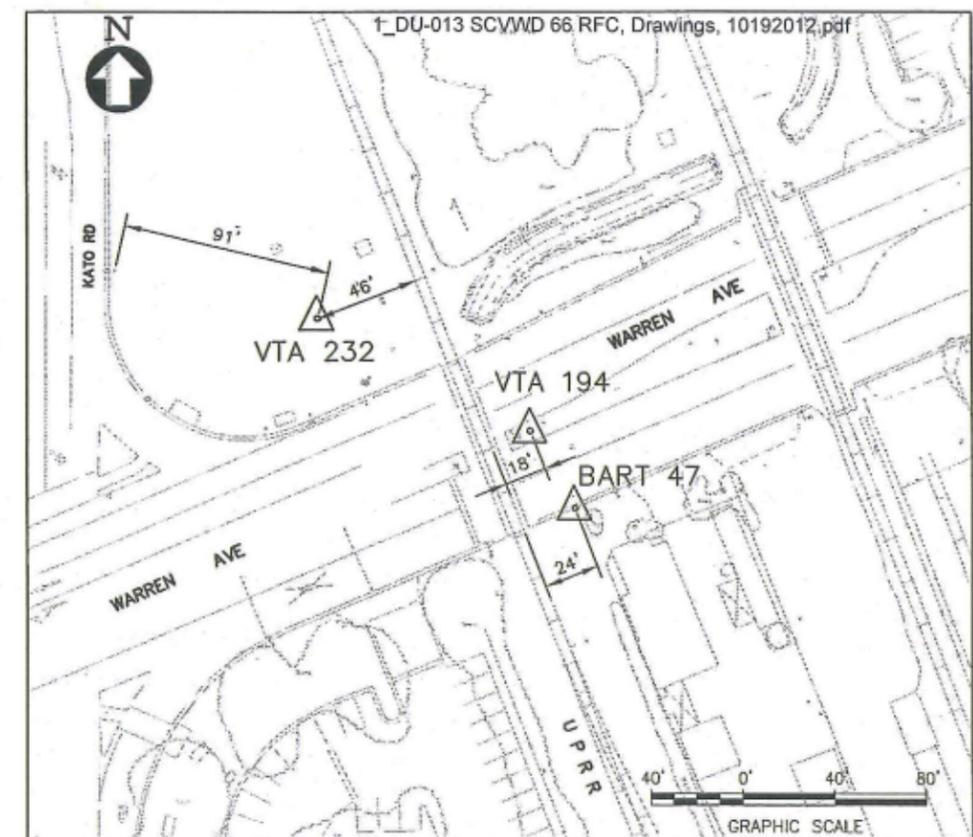
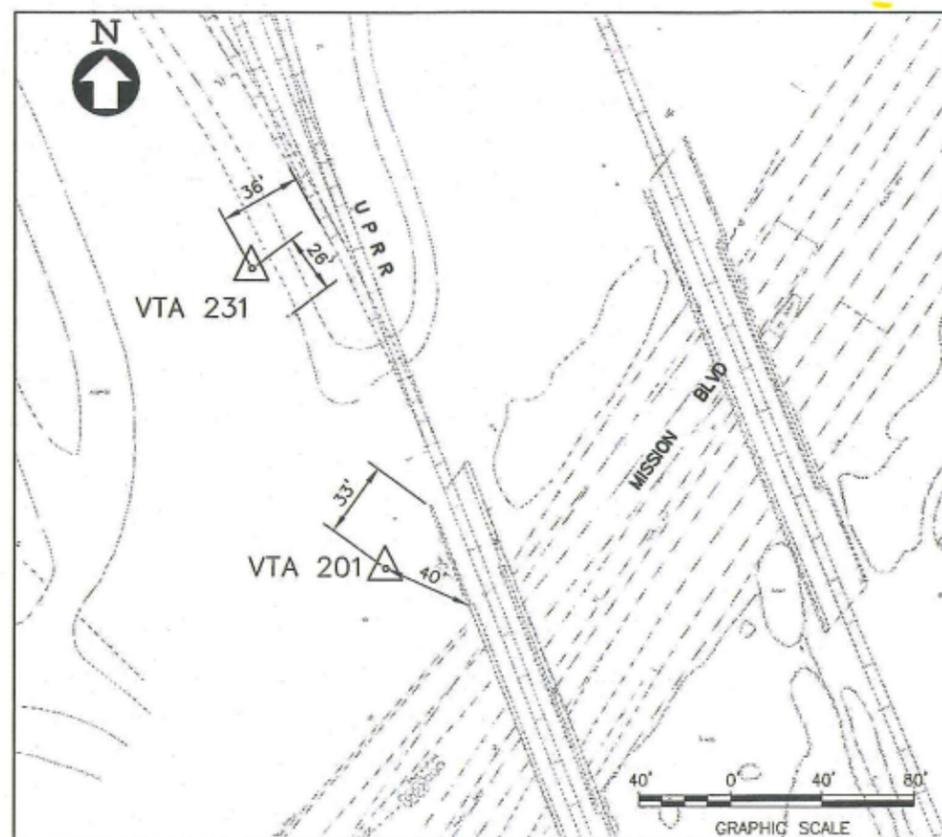
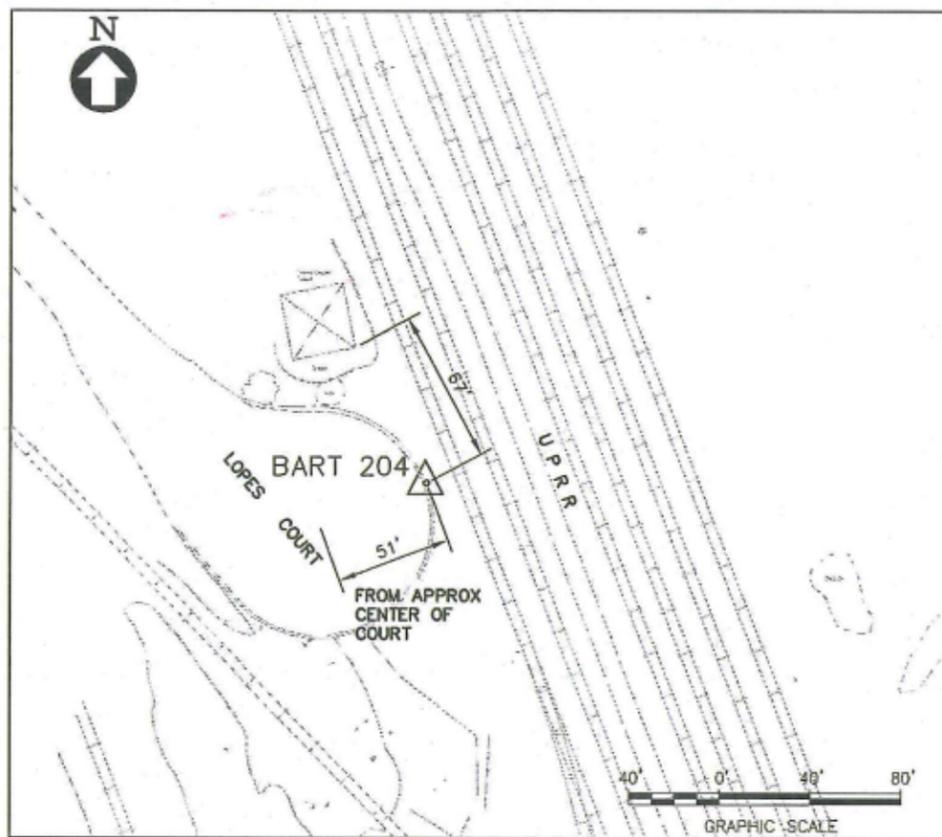
SANTA CLARA Valley Transportation Authority
 SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

BART SILICON VALLEY BERRYESSA EXTENSION

LINE, TRACK, STATIONS AND SYSTEMS
 SURVEY CONTROL DATA
 INDEX SHEET

CADD FILENAME C700-S-LS-C031.dwg
SIZE SCALE D NOT TO SCALE
CONTRACT NO. REV. C700 P
AREA CODE SHEET NO. PAGE NO. LS C031 0184

BOROUMAND, L. Mar 10, 2011 - 2:07pm C:\data\SWT\BART-CO\11\CP00-5-LS-C031.dwg



BART 204
 FND 3 1/2" ALUM DISK. LOCATED AT NE'LY SIDE BULB ON LOPES CT,
 SW'LY OF UPRR, N'LY OF FREMONT RAIL YARD,
 AND POINT FND IN TOP OF CURB (TC).

NORTHING 2008049.557
 EASTING 6144168.363
 ELEVATION 45.845
 DESCRIPTION BART 204

VTA 231
 2" ALUMINUM DISK LOCATED AT THE SOUTHERLY END
 OF THE UPRR WARM SPRINGS RAIL YARD. THE POINT IS
 LOCATED AT +/- 150 FEET NORTHERLY OF THE NORTHERLY
 END OF THE CUT MADE FOR MISSION BLVD BELOW THE
 TRACKS AND 36 FEET WESTERLY OF THE WEST UPRR RAIL.

NORTHING 2003278.131
 EASTING 6146029.637
 ELEVATION 44.844
 DESCRIPTION VTA 231

VTA 201.
 FND ALUM DISK. LOCATED ON THE EAST OF UPRR XING
 AND MISSION BLVD APPROX 40' SW'LY OF END WING WALL
 AND APPROX 41.3' W'LY OF USC&GS 874.

NORTHING 2003147.748
 EASTING 6146088.235
 ELEVATION 45.464
 DESCRIPTION VTA 201

VTA 232
 2" ALUMINUM DISK ATTACHED TO A 1/2" IRON PIPE
 DRIVEN 0.3' BELOW GRADE. DISK IS LOCATED ON THE
 NORTHERLY SIDE OF WARREN AVE EASTERLY OF KATO RD
 AND WESTERLY OF THE UPRR TRACKS.

NORTHING 2002570.022
 EASTING 6146305.289
 ELEVATION 44.427
 DESCRIPTION VTA 232

VTA 194
 ALUMINUM DISK LOCATED ON THE CENTER ISLAND OF WARREN AVENUE,
 18' EAST OF THE EAST RAIL.

NORTHING 2002521.166
 EASTING 6146398.280
 ELEVATION 47.626
 DESCRIPTION VTA 194

BART 47
 FOUND 3 1/2" ALUMINUM DISK ON THE SOUTHEASTERLY ROW
 OF WARREN AVENUE, APPROX 24' EAST OF THE EAST RAIL

NORTHING 2002487.559
 EASTING 6146417.938
 ELEVATION 47.810
 DESCRIPTION BART 47

PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
 SHEET 1 OF 18

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REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

DESIGNED BY
L. BOROUMAND

DRAWN BY
L. BOROUMAND

CHECKED BY
S. HEFFNER

IN CHARGE
S. HEFFNER

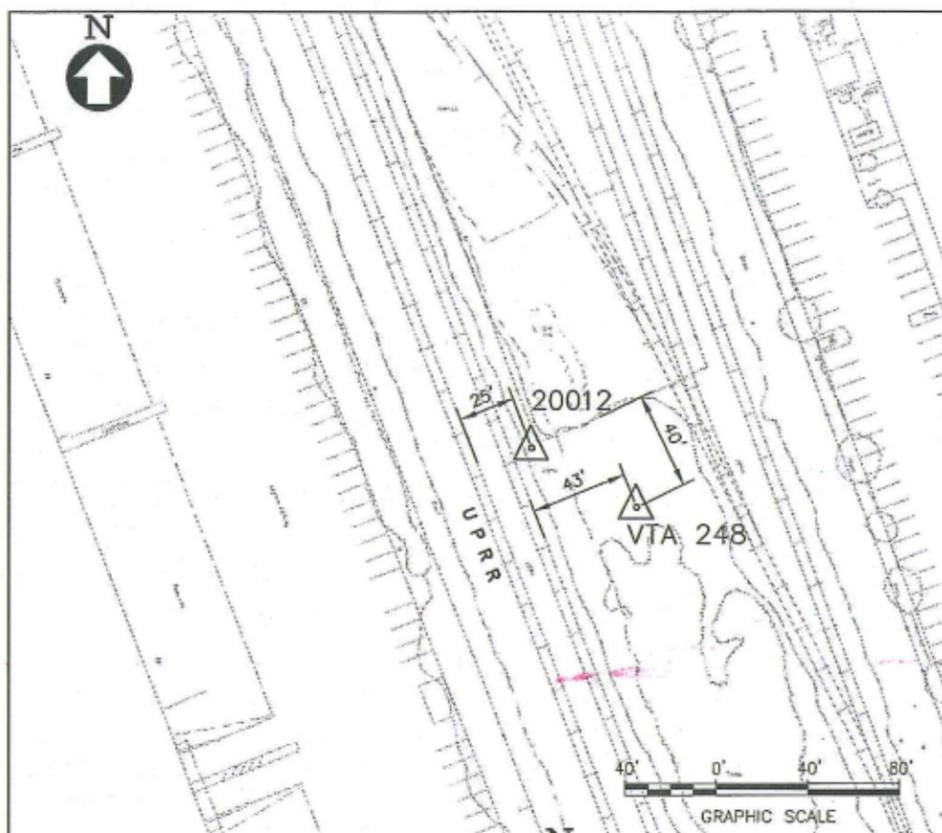
DATE
20110311

VTA. SANTA CLARA
Valley Transportation Authority

SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

BART SILICON VALLEY BERRYESSA EXTENSION

CADD FILENAME C700-S-LS-C032.dwg		
SIZE	SCALE	
D	1" = 40'	
CONTRACT NO.	C700	REV. P
AREA CODE	SHEET NO. LS	PAGE NO. 0185



20012
REBAR WITH DRILL HOLE LOCATED APPROX 288' NORTH OF THE ALAMEDA COUNTY FLOOD CONTROL CANAL AND APPROX 25' EAST OF THE EAST RAIL.

NORTHING 2000274.260
EASTING 6147288.346
ELEVATION 46.417
DESCRIPTION 20012

VTA 248
2" ALUMINUM DISK ATTACHED TO A 1/2" IRON PIPE IN THE BRUSHY AREA BETWEEN THE EASTERLY AND WESTERLY SETS OF UPRR TRACKS +/- 40 FEET SOUTHERLY OF TANK YARD FENCE.

NORTHING 2000248.390
EASTING 6147335.119
ELEVATION 48.478
DESCRIPTION VTA 248

20011
REBAR WITH DRILL HOLE LOCATED APPROX 150' SOUTH OF THE ALAMEDA COUNTY FLOOD CONTROL CANAL AND APPROX 33' EAST OF THE EAST RAIL.

NORTHING 1999860.737
EASTING 6147459.900
ELEVATION 46.705
DESCRIPTION 20011

20010
REBAR WITH DRILL HOLE LOCATED APPROX 744' SOUTH OF THE ALAMEDA COUNTY FLOOD CONTROL CANAL AND APPROX 33' EAST OF THE EAST RAIL.

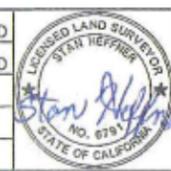
NORTHING 1999310.278
EASTING 6147675.727
ELEVATION 45.738
DESCRIPTION 20010

PRESCRIPTIVE

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REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

DESIGNED BY
L. BOROUMAND
DRAWN BY
L. BOROUMAND
CHECKED BY
S. HEFFNER
IN CHARGE
S. HEFFNER
DATE
20110311

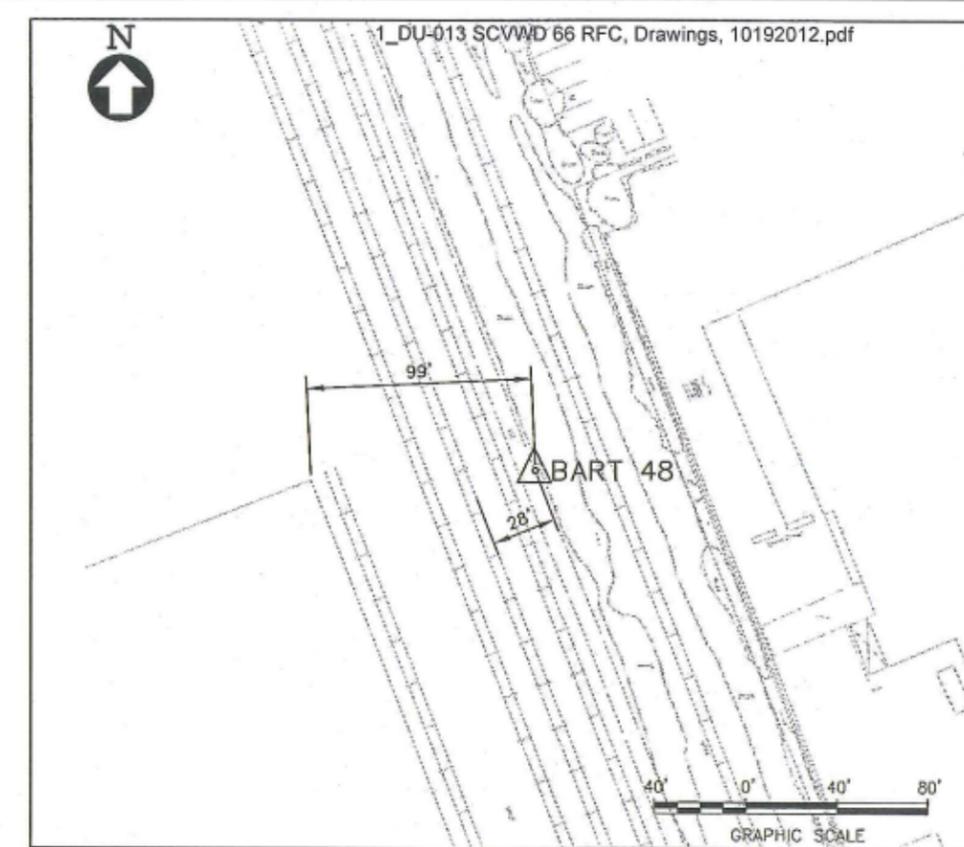
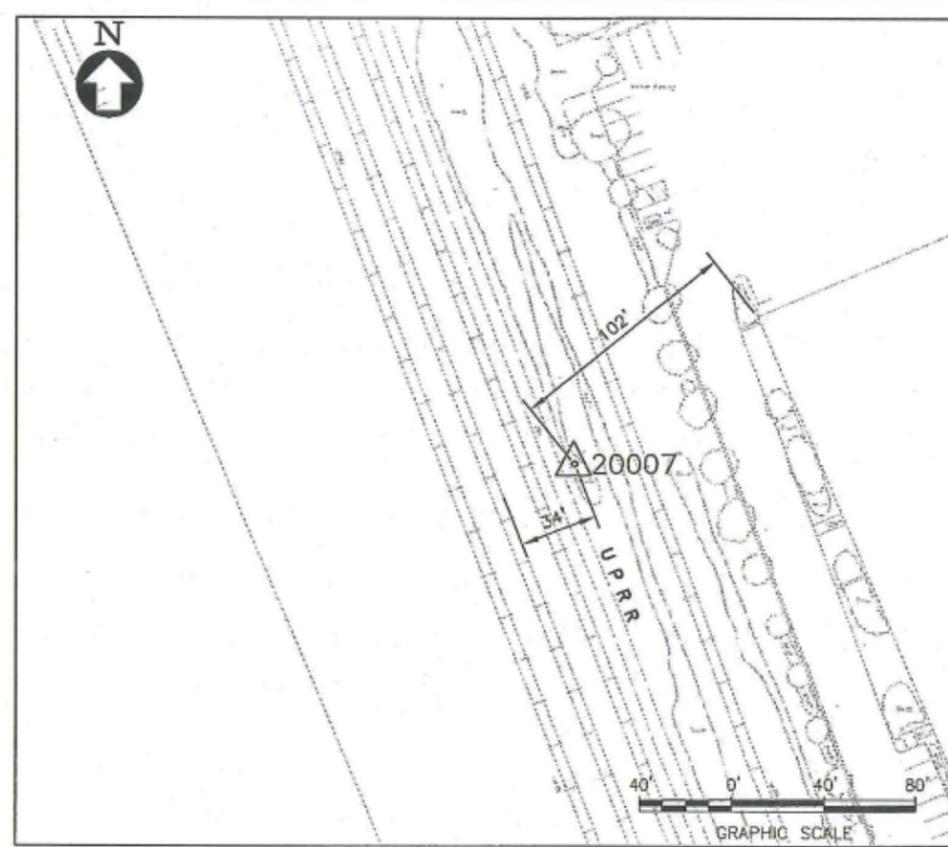
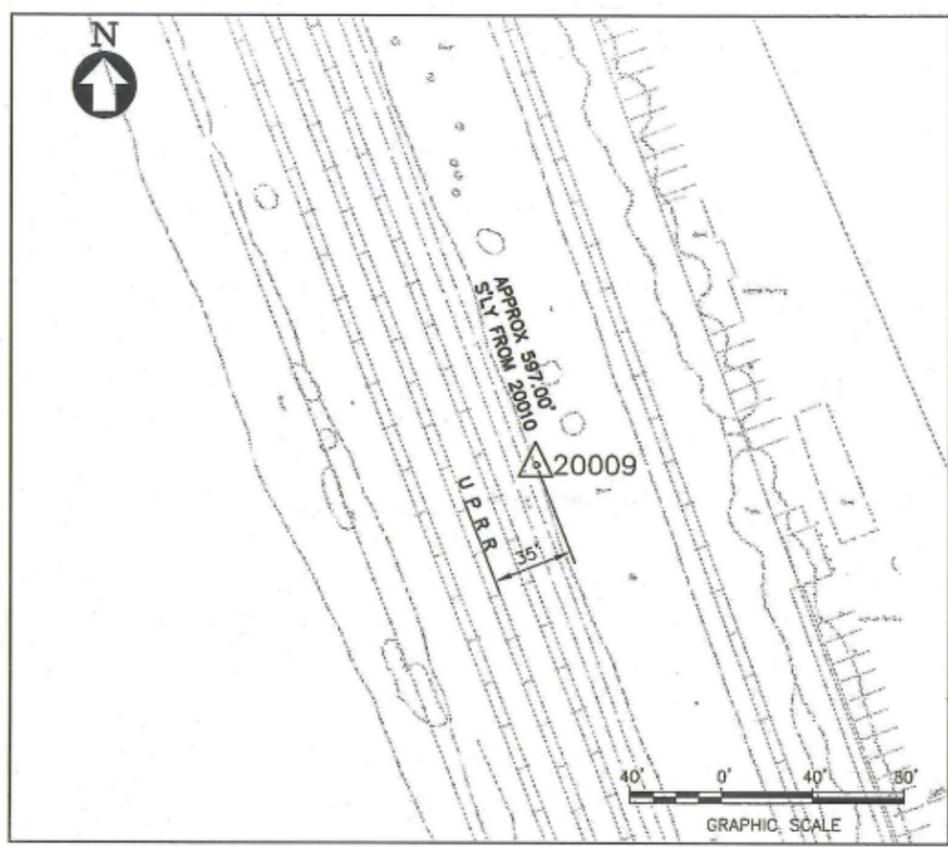


VTA SANTA CLARA Valley Transportation Authority
SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*



LINE, TRACK, STATIONS AND SYSTEMS
SURVEY CONTROL DATA
SHEET 3 OF 18

CADD FILENAME C700-S-LS-C034.dwg	
SIZE	SCALE
D	1" = 40'
CONTRACT NO.	REV.
C700	P
AREA CODE	SHEET NO.
LS	C034
PAGE NO.	
0187	



20009
 REBAR WITH DRILL HOLE LOCATED APPROX 1350' SOUTH OF THE ALAMEDA COUNTY FLOOD CONTROL CANAL AND APPROX 35' EAST OF THE EAST RAIL

NORTHING	1998755.236
EASTING	6147895.788
ELEVATION	43.689
DESCRIPTION	20009

20007
 REBAR WITH DRILL HOLE LOCATED APPROX 3055' SOUTH OF THE ALAMEDA COUNTY FLOOD CONTROL CANAL AND APPROX 34' EAST OF THE EAST RAIL.

NORTHING	1997164.732
EASTING	6148517.268
ELEVATION	35.336
DESCRIPTION	20007

BART 48
 5/8" REBAR AND 3 1/2" ALUMINUM CAP LOCATED APPROX 2800' NORTH OF THE NORTHERLY RIGHT OF WAY OF KATO ROAD AND APPROX 28' EAST OF THE EAST RAIL.

NORTHING	1998507.182
EASTING	6148768.892
ELEVATION	29.975
DESCRIPTION	BART 48

BOROUMAND.L Mar 10, 2011 - 2:21pm 8:\users\BOROUMAND.L\BART-C035.dwg-11\UT00-9-LS-C035.dwg

PRESCRIPTIVE

DESIGNED BY	L. BOROUMAND
DRAWN BY	L. BOROUMAND
CHECKED BY	S. HEFFNER
IN CHARGE	S. HEFFNER
DATE	20110311



VTA SANTA CLARA Valley Transportation Authority

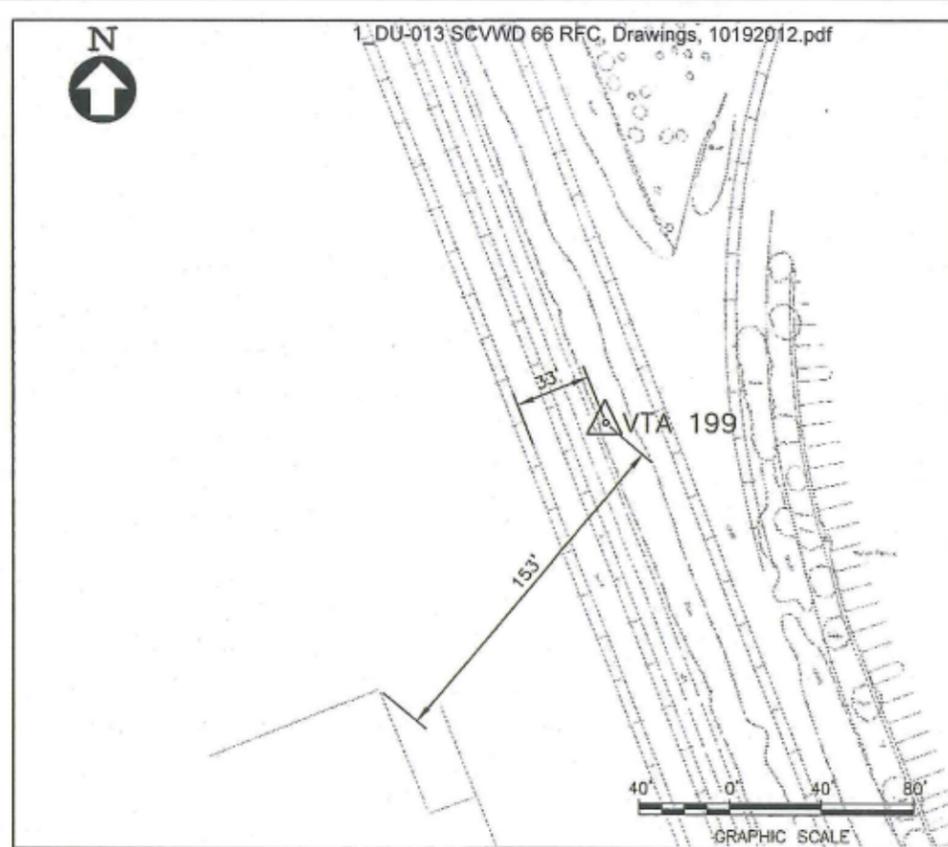
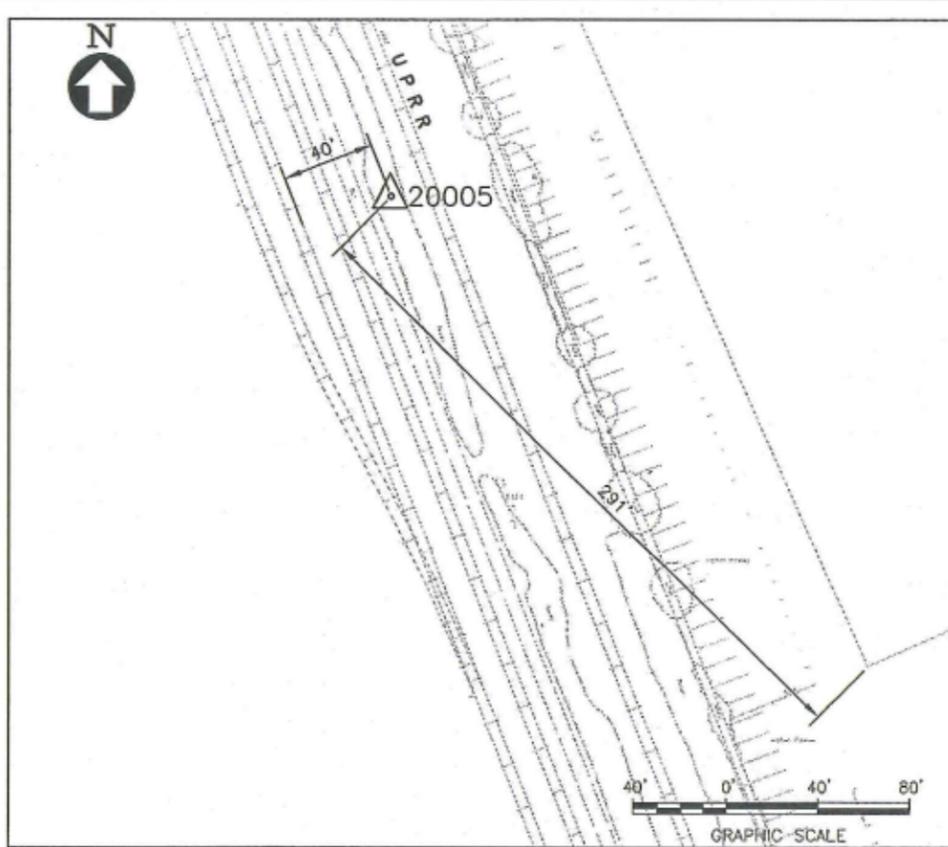
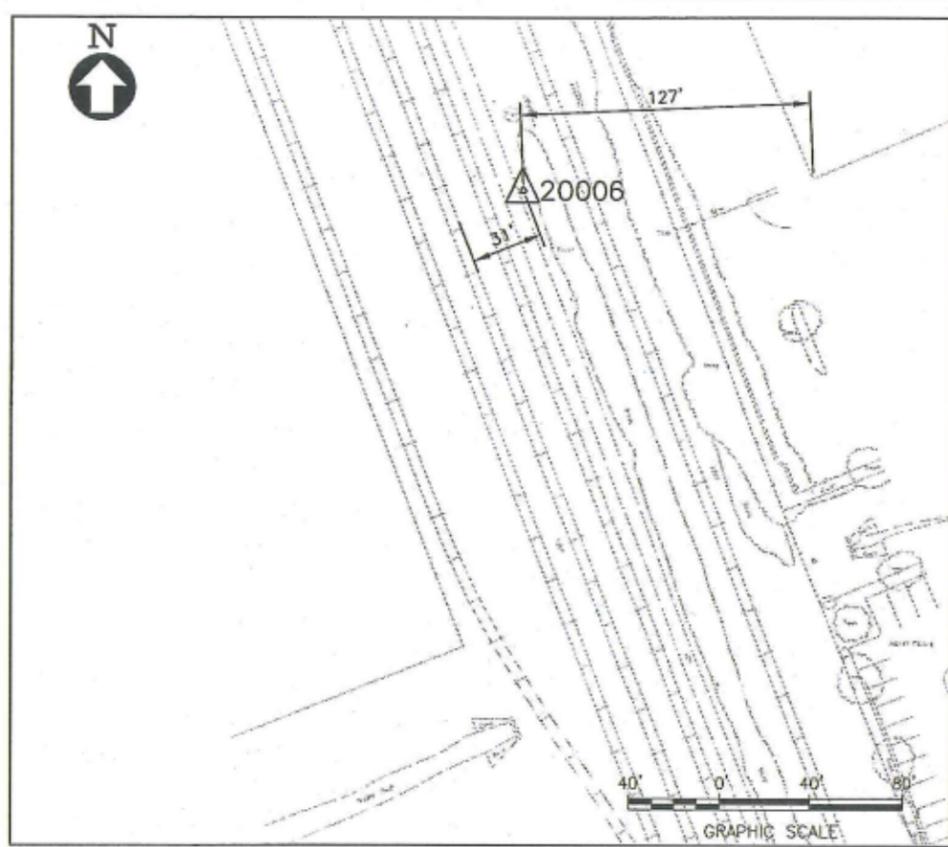
SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*



LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
 SHEET 4 OF 18

CADD FILENAME	C700-S-LS-C035.dwg		
SIZE	SCALE	1" = 40'	
CONTRACT NO.	C700	REV.	P
AREA CODE	LS	SHEET NO.	C035
		PAGE NO.	0188



20006
REBAR WITH DRILL HOLE LOCATED APPROX 2311' NORTH OF THE NORTHWESTERLY RIGHT OF WAY OF KATO ROAD AND APPROX 31' EAST OF THE EAST RAIL.

NORTHING 1996058.721
EASTING 6148947.835
ELEVATION 27.026
DESCRIPTION 20006

20005
REBAR WITH DRILL HOLE LOCATED APPROX 1750' NORTH OF THE NORTHWESTERLY RIGHT OF WAY OF KATO ROAD AND APPROX 40' EAST OF THE EAST RAIL.

NORTHING 1995540.485
EASTING 6149160.119
ELEVATION 24.929
DESCRIPTION 20005

VTA 199
ALUMINUM DISK LOCATED APPROX 1150' NORTH OF THE NORTHWESTERLY RIGHT OF WAY OF KATO ROAD AND APPROX 33' EAST OF THE EAST RAIL.

NORTHING 1994976.804
EASTING 6149373.631
ELEVATION 22.258
DESCRIPTION VTA 199

PRESCRIPTIVE

C:\Users\lboroumand\Documents\20110311\20110311.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

DESIGNED BY
L. BOROUMAND

DRAWN BY
L. BOROUMAND

CHECKED BY
S. HEFFNER

IN CHARGE
S. HEFFNER

DATE
20110311

VTA SANTA CLARA Valley Transportation Authority

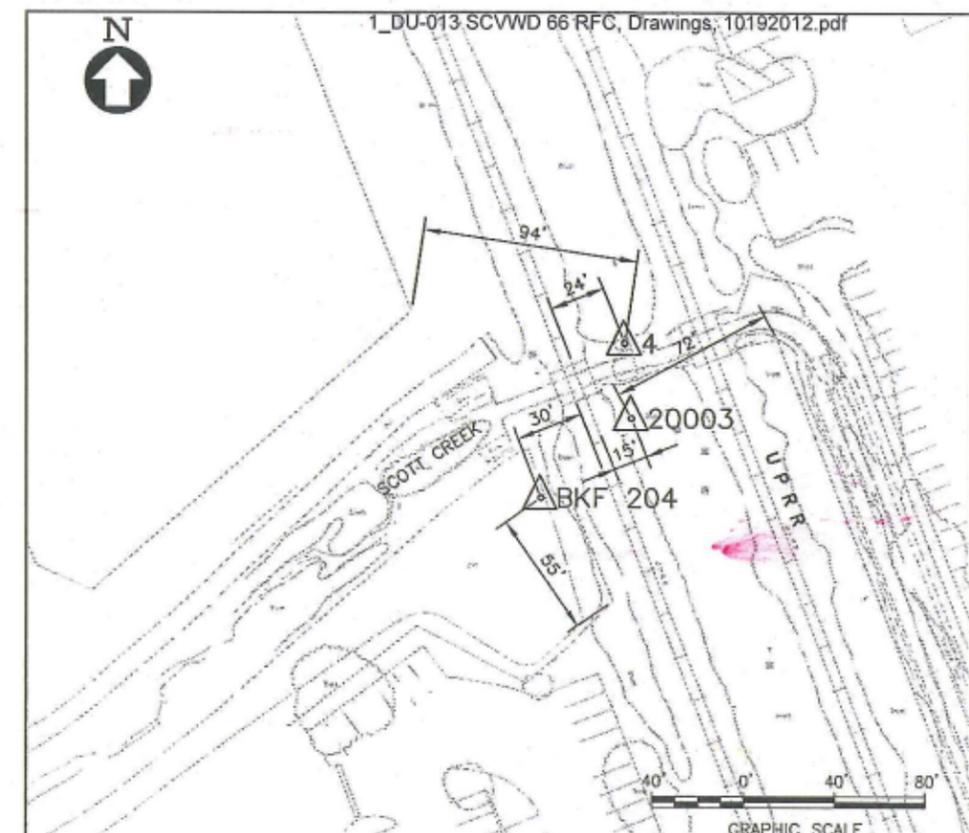
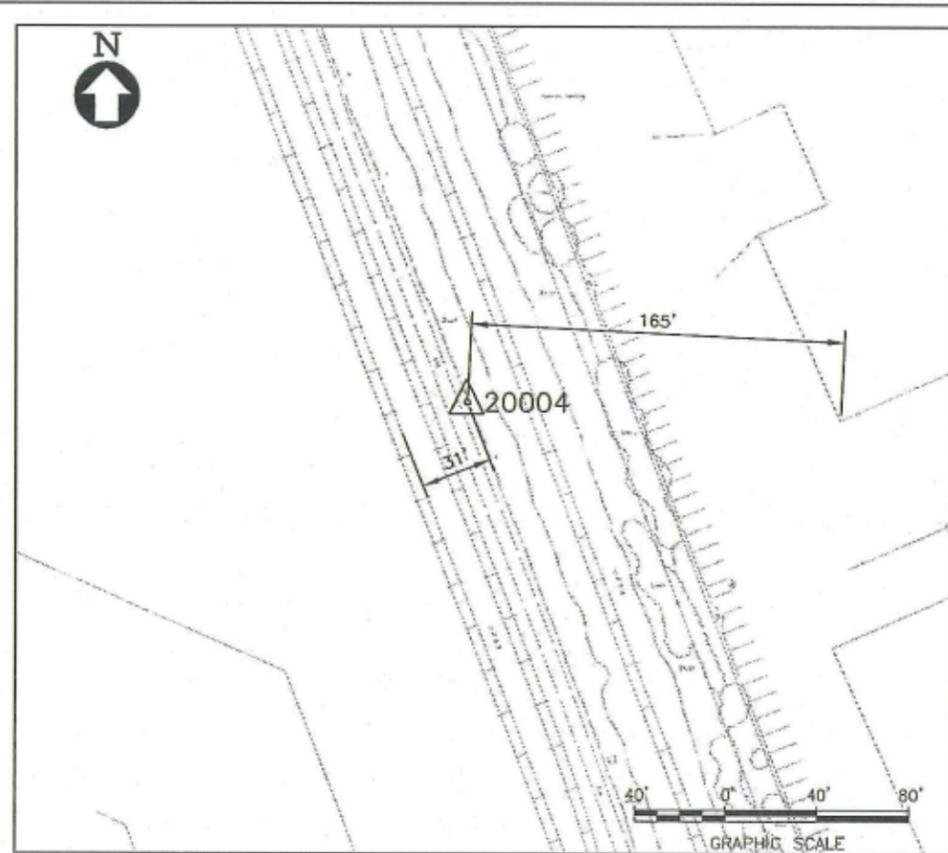
SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

BART SILICON VALLEY BERRYESSA EXTENSION

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
SHEET 5 OF 18

CADD FILENAME C700-S-LS-C036.dwg		
SIZE D	SCALE 1" = 40'	
CONTRACT NO. C700	REV. P	
AREA CODE LS	SHEET NO. C036	PAGE NO. 0189



20004
REBAR WITH DRILL HOLE LOCATED APPROX 520' NORTH OF THE NORTHWESTERLY RIGHT OF WAY OF KATO ROAD AND APPROX 31' FEET EAST OF THE EAST RAIL.

NORTHING 1994389.535
EASTING 6149601.742
ELEVATION 20.205
DESCRIPTION 20004

BART 268
2 1/2" BRASS DISK LOCATED ON THE SOUTHEASTERLY RIGHT OF WAY OF KATO ROAD AND APPROX 8' EAST FROM THE EAST RAIL.

NORTHING 1993826.157
EASTING 6149797.161
ELEVATION 22.630
DESCRIPTION BART 268

4
FOUND REBAR WITH PLASTIC CAP LOACED APPROX 10' NORTH OF SCOTT CREEK AND APPROX 24' EAST OF THE EAST RAIL.

NORTHING 1993342.844
EASTING 6150003.805
ELEVATION 15.321
DESCRIPTION 4

20003
REBAR WITH DRILL HOLE LOCATED APPROX 22' SOUTH OF SCOTT CREEK AND APPROX 15' EAST OF THE EAST RAIL.

NORTHING 1993310.261
EASTING 6150006.720
ELEVATION 17.143
DESCRIPTION 20003

BKF 204
FOUND REBAR WITH PLASTIC CAP LOACED APPROX 42' SOUTH OF SCOTT CREEK AND APPROX 30' WEST OF WEST RAIL.

NORTHING 1993275.702
EASTING 6149967.094
ELEVATION 0.000
DESCRIPTION BKF 204

PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
SHEET 6 OF 18

CADD FILENAME C700-S-LS-C037.dwg	
SIZE D	SCALE 1" = 40'
CONTRACT NO. C700	REV. P
AREA CODE LS	SHEET NO. C037
PAGE NO. 0190	

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DESIGNED BY L. BOROUMAND					
DRAWN BY L. BOROUMAND					
CHECKED BY S. HEFFNER					
IN CHARGE S. HEFFNER					
DATE 20110311					
P 20110311	REQUEST FOR PROPOSAL				
REV	DATE	BY	SUB	APP	DESCRIPTION

VTA SANTA CLARA Valley Transportation Authority

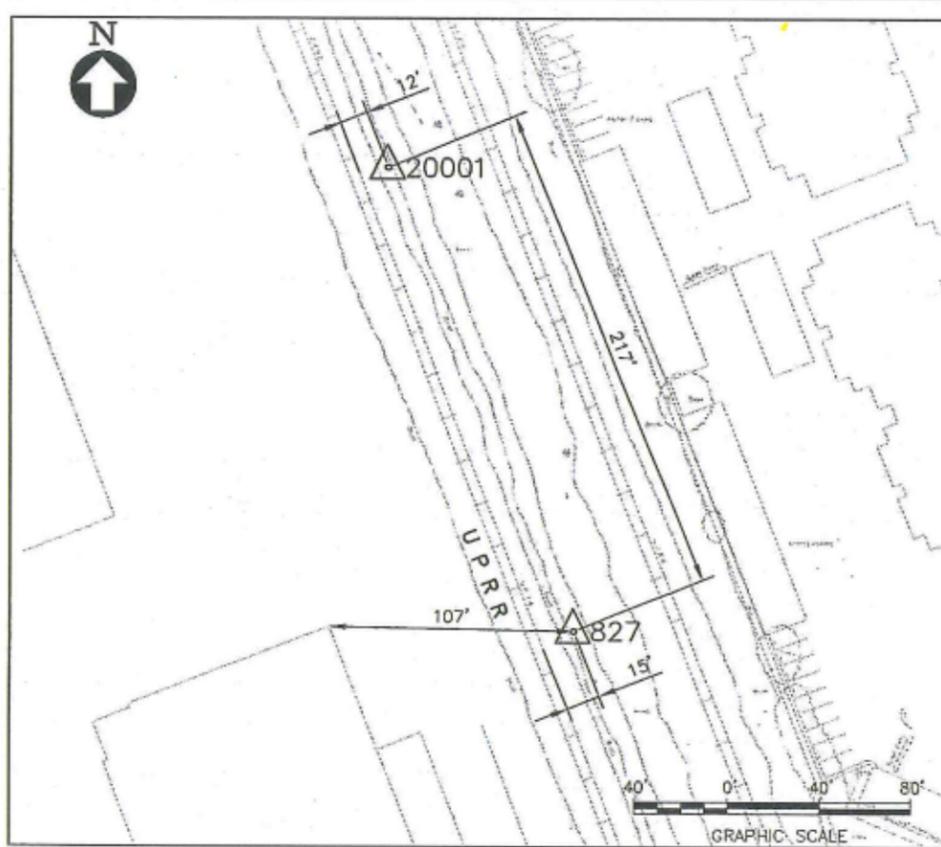
SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

BART
VTA SILICON VALLEY
BART SILICON VALLEY BERRYESSA EXTENSION



20002
REBAR WITH DRILL HOLE LOCATED APPROX 1160' SOUTH OF THE SOUTHEASTERLY RIGHT OF WAY OF KATO ROAD AND APPROX 11' EAST OF THE EAST RAIL.

NORTHING	1992750.731
EASTING	6150221.614
ELEVATION	17.122
DESCRIPTION	20002

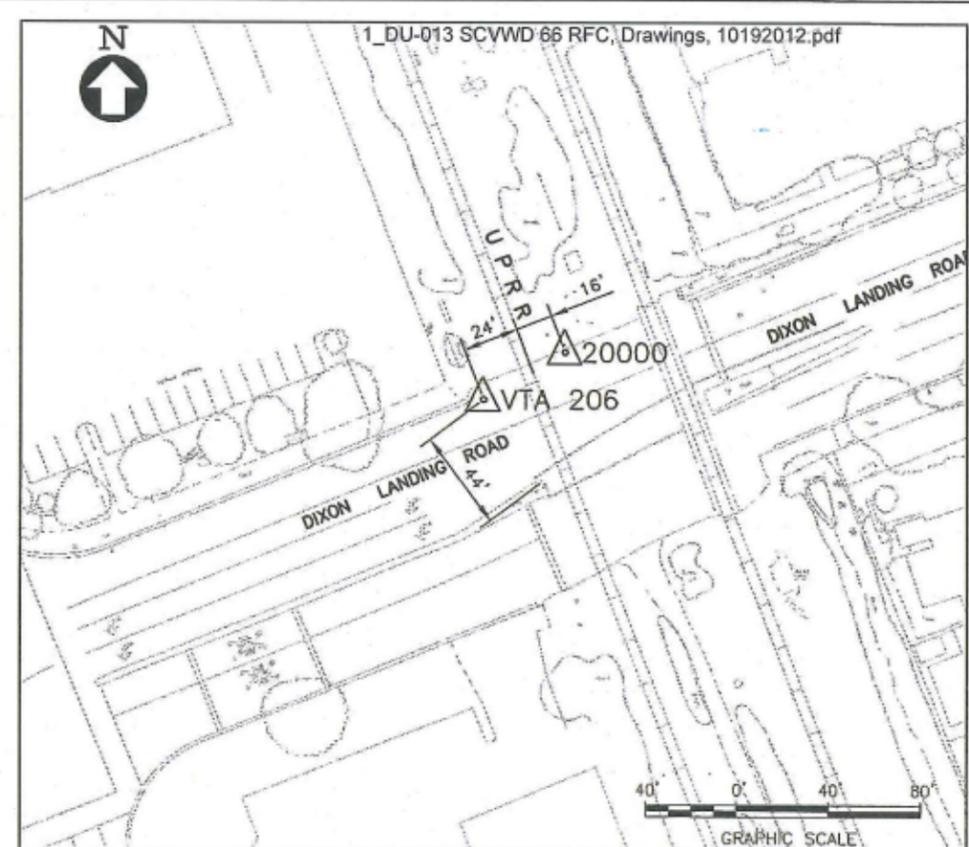


20001
REBAR WITH DRILL HOLE LOCATED APPROX 590' NORTH OF THE NORTHWESTERLY RIGHT OF WAY OF DIXON LANDING ROAD AND APPROX 12' EAST OF THE EAST RAIL.

NORTHING	1992197.325
EASTING	6150439.108
ELEVATION	16.429
DESCRIPTION	20001

827
FOUND REBAR WITH PLASTIC CAP LOCATED APPROX 375' NORTH OF THE NORTHWESTERLY RIGHT OF WAY OF DIXON LANDING ROAD AND APPROX 15' EAST OF THE EAST RAIL.

NORTHING	1991995.757
EASTING	6150520.623
ELEVATION	16.141
DESCRIPTION	827



20000
PK NAIL AND WASHER STAMPED "20000", LOCATED ON THE NORTHWESTLY RIGHT OF WAY OF DIXON LANDING ROAD AND APPROX 16' EAST OF THE EAST RAIL.

NORTHING	1991647.050
EASTING	6150658.739
ELEVATION	21.180
DESCRIPTION	20000

VTA 206 = BART 206
2 1/2" BRASS DISK LOCATED ON THE NORTHWESTLY RIGHT OFF WAY OF DIXON LANDING ROAD AND APPROX 24' WEST OF THE EAST RAIL.

NORTHING	1991626.622
EASTING	6150622.920
ELEVATION	20.837
DESCRIPTION	VTA 206 BART 206

BORUMAND.L Mar 10, 2011 - 2:45pm C:\Users\BORUMAND\OneDrive\Documents\11\CT00-5-LS-C038.dwg

DESIGNED BY	L. BORUMAND
DRAWN BY	L. BORUMAND
CHECKED BY	S. HEFFNER
IN CHARGE	S. HEFFNER
DATE	20110311

REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL



VTA Valley Transportation Authority

SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

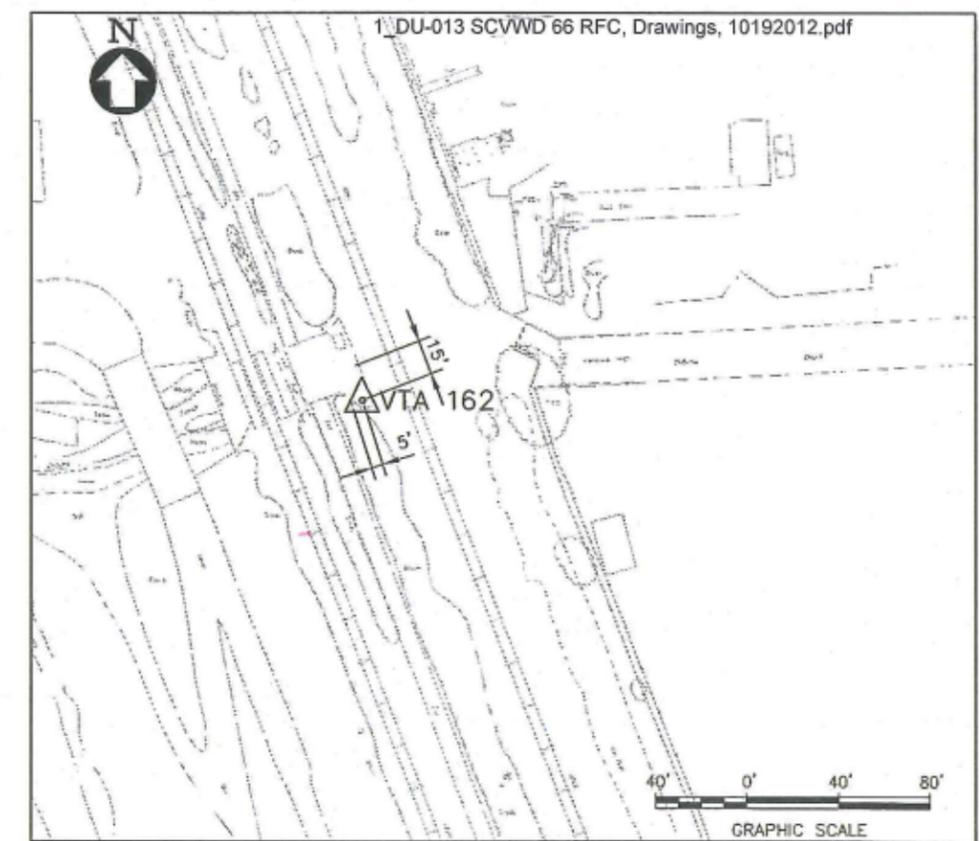
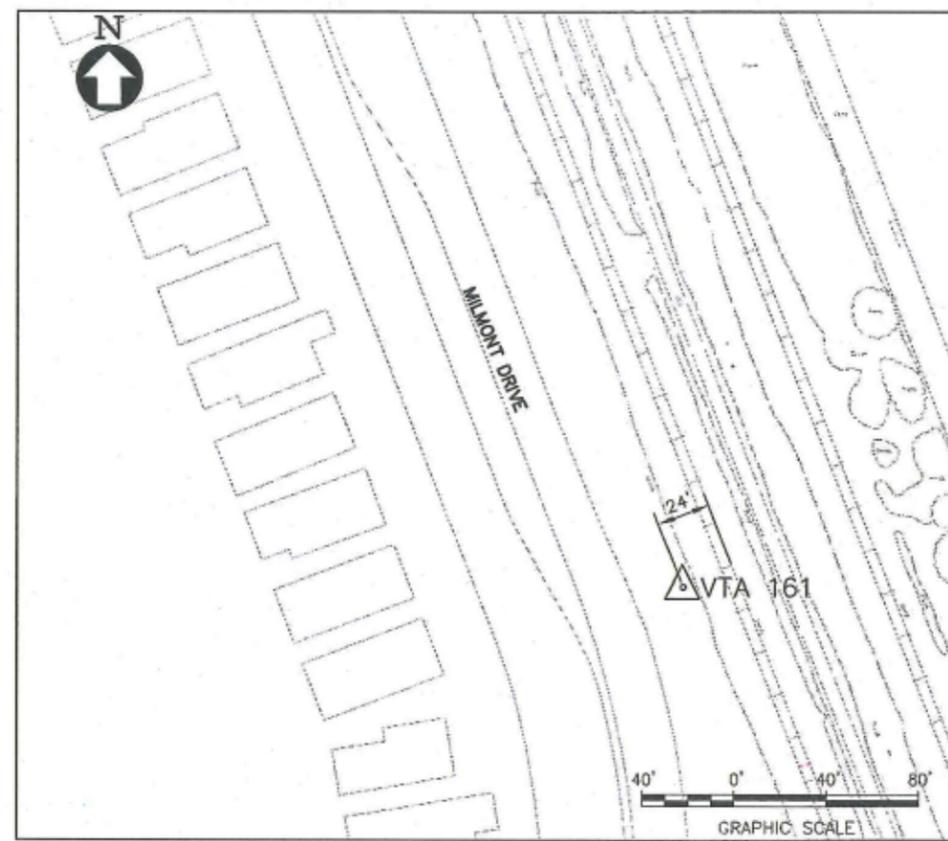
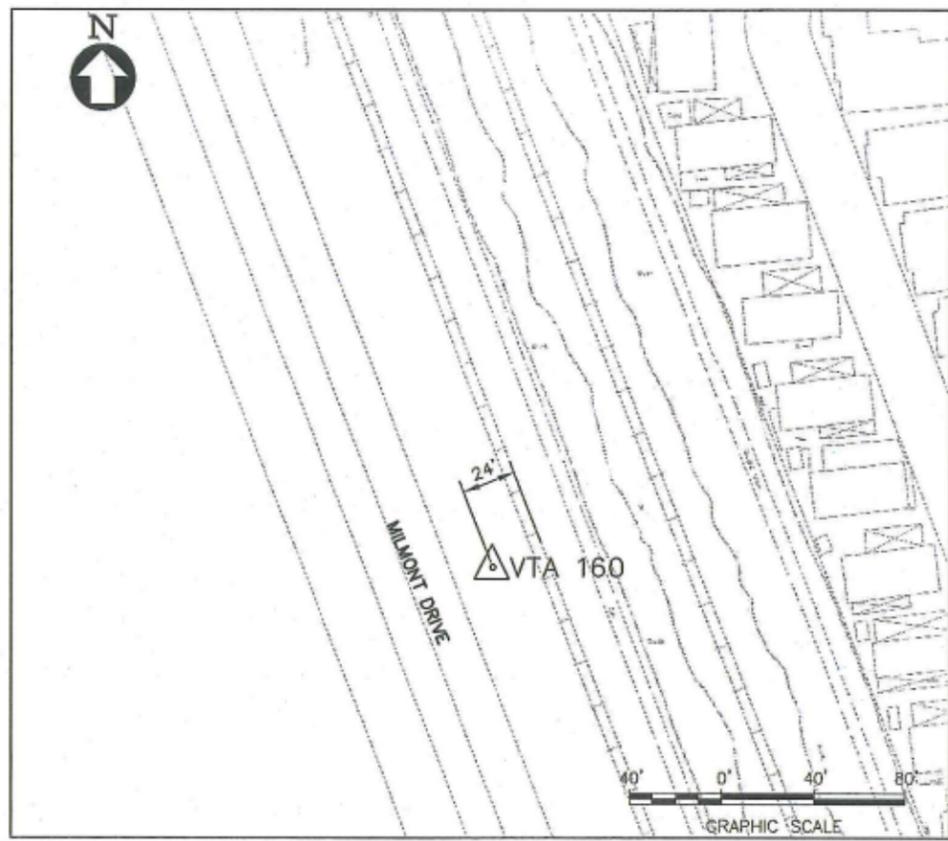


PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
SHEET 7 OF 18

CADD FILENAME	C700-S-LS-C038.dwg
SIZE	D
SCALE	1" = 40'
CONTRACT NO.	C700
REV.	P
AREA CODE	LS
SHEET NO.	C038
PAGE NO.	0191



VTA 160
 FND ALUM DISK. LOCATED IN THE CITY OF MILPITAS. LOCATED APPROX 1289'
 S OF DIXON LANDING RD AND UPRR, OPPOSITE SIDE OF SOFTBALL FIELDS
 ON MILMONT DR, APPROX 20' OF SOUND WALL, AND APPROX 25' WEST OF WEST RAIL.

NORTHING 1990390.811
 EASTING 6151107.471
 ELEVATION 14.237
 DESCRIPTION VTA 160

VTA 161
 FND ALUM DISK. LOCATED APPROX 2640' SOUTH OF THE INTERSECTION OF
 UPRR AND DIXON LANDING RD AND APPROX 25' WEST OF WEST RAIL.

NORTHING 1989167.225
 EASTING 6151587.519
 ELEVATION 12.055
 DESCRIPTION VTA 161

VTA 162
 FND ALUM DISK. LOCATED AT THE SE COR OF THE INTERSECTION OF
 CALERA CREEK AND UPRR, APPROX 5' E'LY OF A TELEGRAPH POLE
 AND APPROX 15' SOUTH OF THE CL OF CALERA CREEK.

NORTHING 1987955.521
 EASTING 6152127.752
 ELEVATION 15.153
 DESCRIPTION VTA 162

PRESCRIPTIVE

Mar 10, 2011 - 2:46pm C:\Users\boroumand\Documents\2011\DU-013 SCVWD 66 RFC - C039.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

DESIGNED BY
L. BOROUMAND
 DRAWN BY
L. BOROUMAND
 CHECKED BY
S. HEFFNER
 IN CHARGE
S. HEFFNER
 DATE
20110311



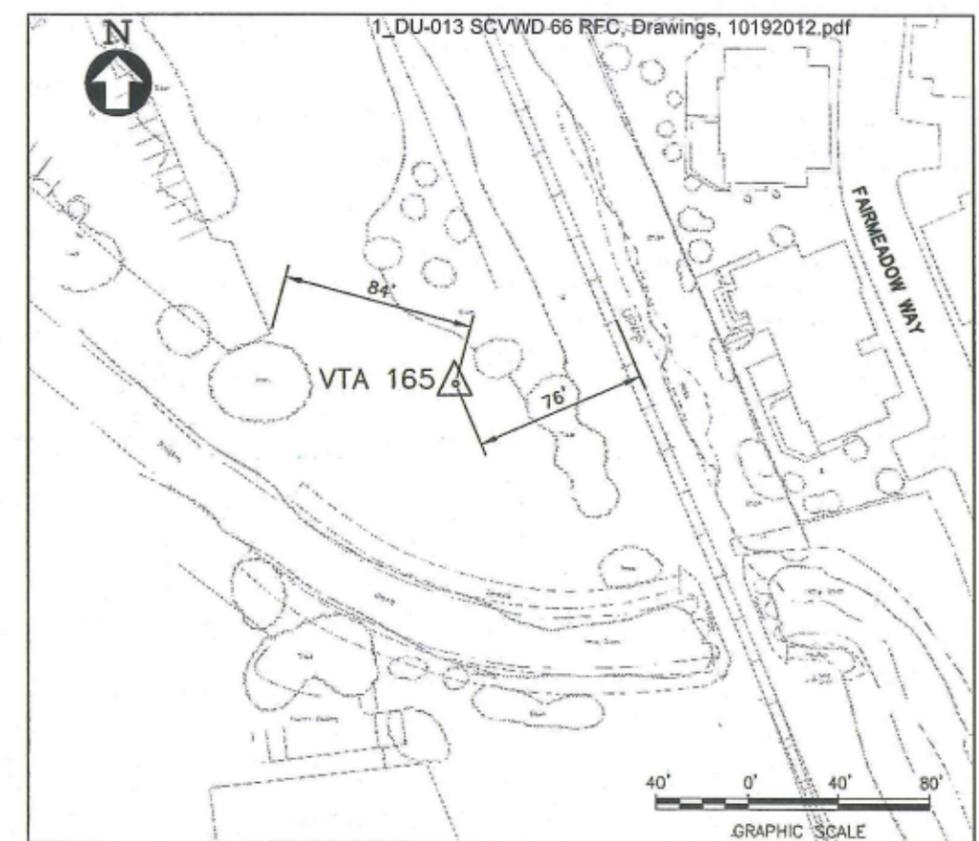
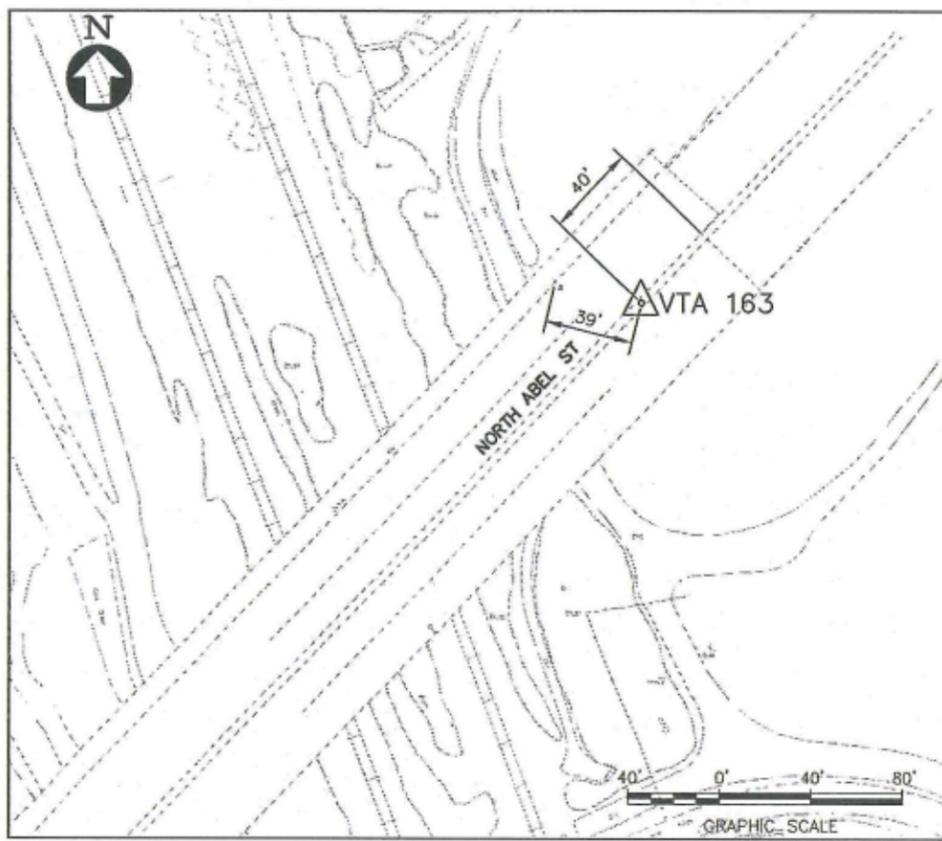
SANTA CLARA
VTA Valley Transportation Authority

SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*



LINE, TRACK, STATIONS AND SYSTEMS			CADD FILENAME C700-S-LS-C039.dwg
SIZE D	SCALE 1" = 40'		
CONTRACT NO. C700	REV. P		
AREA CODE LS	SHEET NO. C039	PAGE NO. 0192	

SURVEY CONTROL DATA
 SHEET 8 OF 18



VTA 163.
 FND ALUM DISK. LOCATED APPROX 170' EAST OF THE INTERSECTION
 OF N ABEL RD OVER CROSSING AND UPRR,
 FROM BEG. BRIDGE DECK APPROX 12' EAST IN ISLAND.

NORTHING 1986829.887
 EASTING 6152725.320
 ELEVATION 49.074
 DESCRIPTION VTA 163

VTA 164.
 FND ALUM DISK. LOCATED APPROX 50' WEST OF WEST RAIL,
 APPROX 1450' S OF N ABEL ST OVERPASS.

NORTHING 1985399.626
 EASTING 6153133.830
 ELEVATION 14.198
 DESCRIPTION VTA 164

VTA 165.
 FND ALUM DISK. LOCATED APPROX 75' WEST OF WEST RAIL
 AND APPROX 1400' N OF HWY 237 AND UPRR.

NORTHING 1984084.645
 EASTING 6153655.644
 ELEVATION 16.999
 DESCRIPTION VTA 165

BOROUMAND.L Mar 10, 2011 - 2:51pm C:\Users\BOROUMAND\Documents\CAD\C700-5-LS-C040.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

DESIGNED BY
L. BOROUMAND

DRAWN BY
L. BOROUMAND

CHECKED BY
S. HEFFNER

IN CHARGE
S. HEFFNER

DATE
20110311

SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

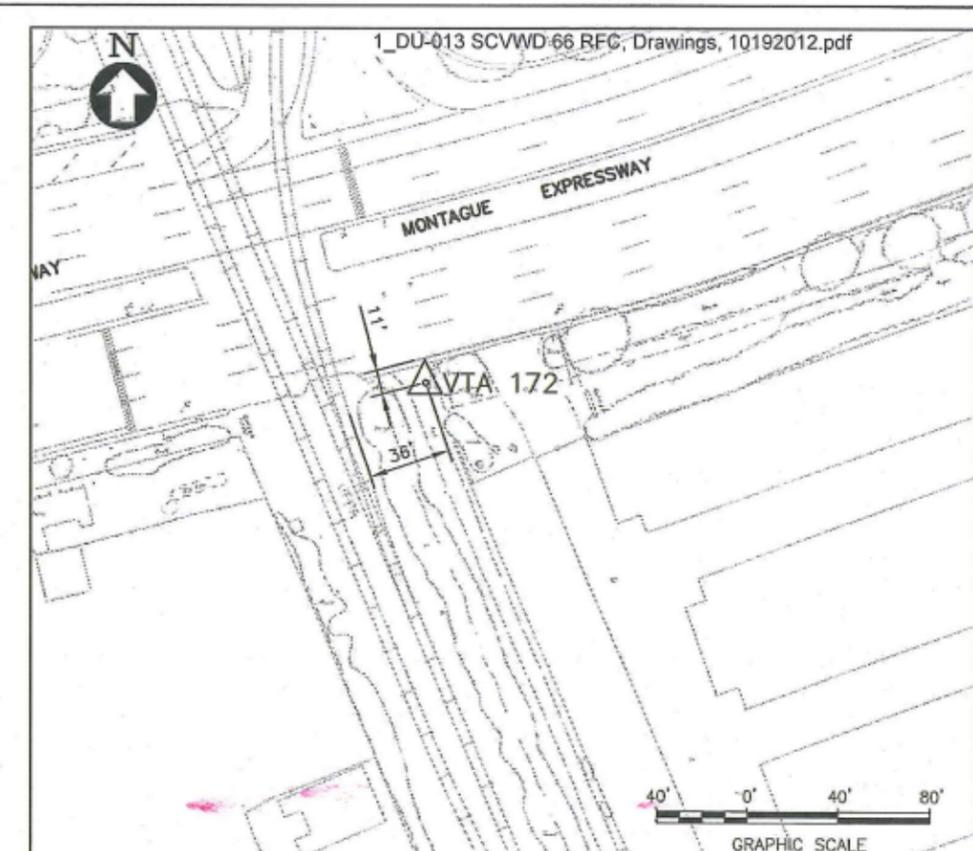
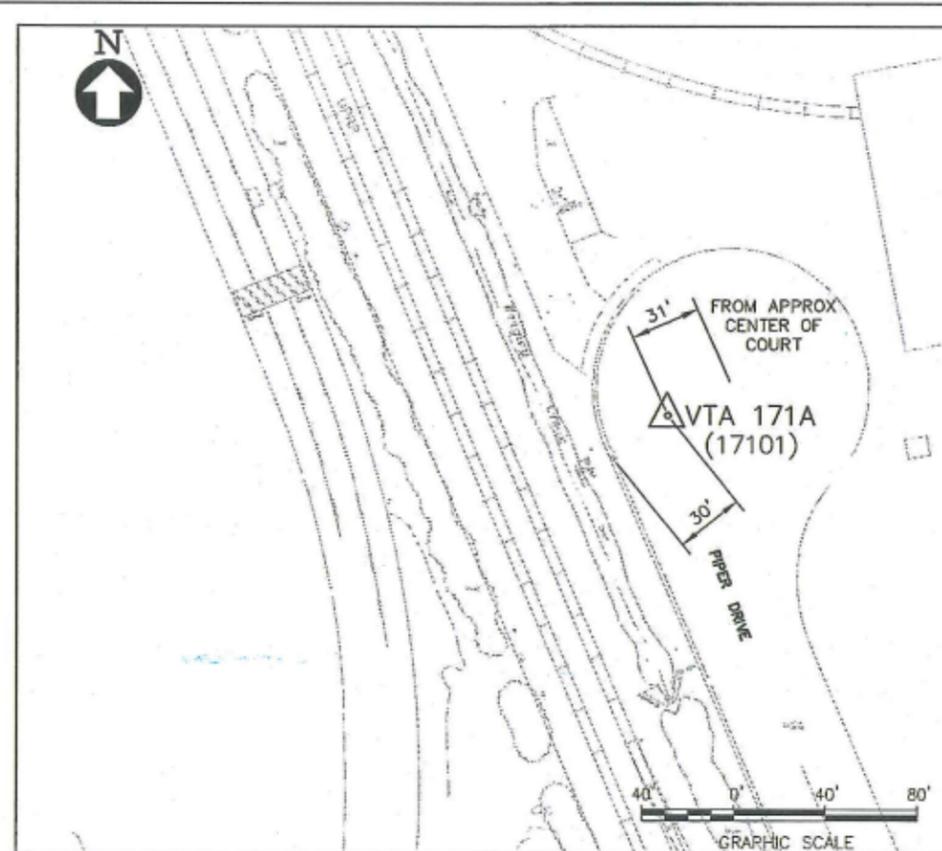
BART SILICON VALLEY BERRYESSA EXTENSION

PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
SHEET 9 OF 18

CADD FILENAME C700-5-LS-C040.dwg	CONTRACT NO. C700	REV. P
SIZE SCALE D 1" = 40'	AREA CODE LS	SHEET NO. C040
		PAGE NO. 0193



VTA 171.
FND ALUM DISK. LOCATED APPROX 2532' NORTH OF UPRR XING
AT MONTAGUE EXWY AND APPROX 10.5' EAST OF EAST RAIL.

NORTHING 1977316.880
EASTING 6156626.052
ELEVATION 36.703
DESCRIPTION VTA 171

VTA 171A (17101)
FND 2" BRASS DISK IN MON WELL "VTA SANTA CLARA 171A" STAMPING.
LOCATED AT DEAD END OF PIPER DR.

NORTHING 1976250.923
EASTING 6157139.167
ELEVATION 43.832
DESCRIPTION VTA 171A

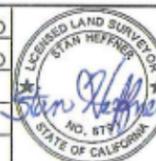
VTA 172.
FND ALUM DISK. LOCATED AT THE SE COR OF UPRR XING AND
MONTAGUE EXWY APPROX 12' SOUTH OF CURB, AND APPROX 30' EAST OF R/R.

NORTHING 1975086.174
EASTING 6157606.096
ELEVATION 50.432
DESCRIPTION VTA 172

BOROUMAND.L Mar 10, 2011 5:05pm C:\Users\boroum\OneDrive\Documents\700-C043-LS-C043.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

DESIGNED BY
L. BOROUMAND
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L. BOROUMAND
CHECKED BY
S. HEFFNER
IN CHARGE
S. HEFFNER
DATE
20110311



VTA. SANTA CLARA Valley Transportation Authority
SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

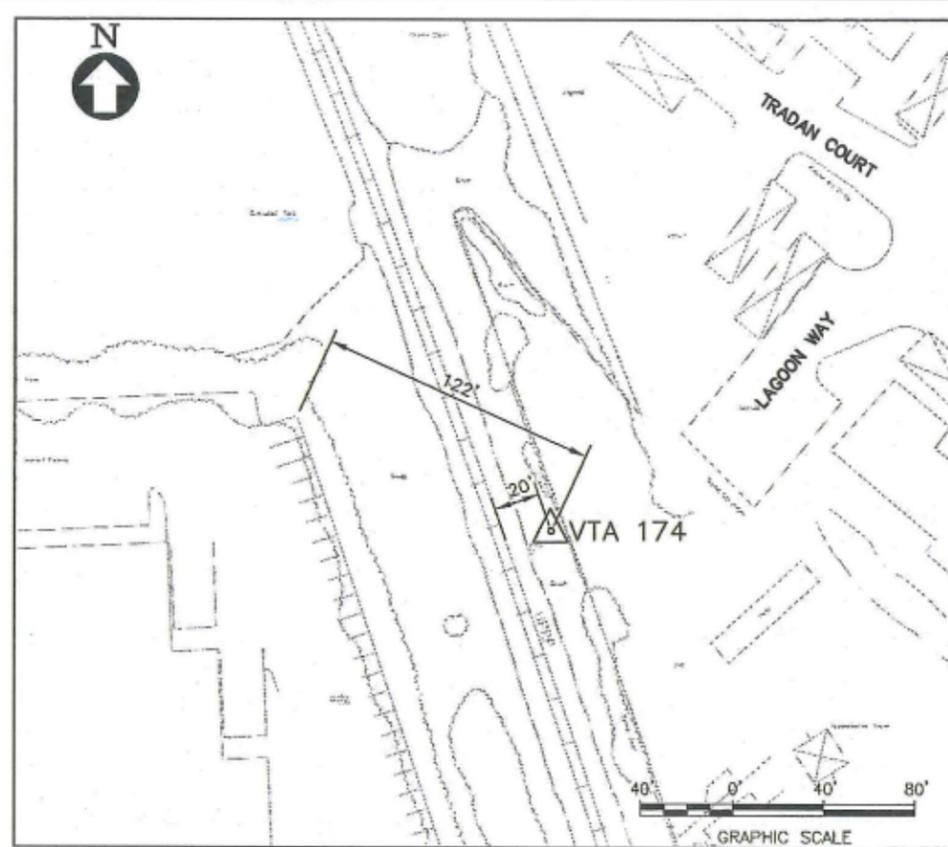
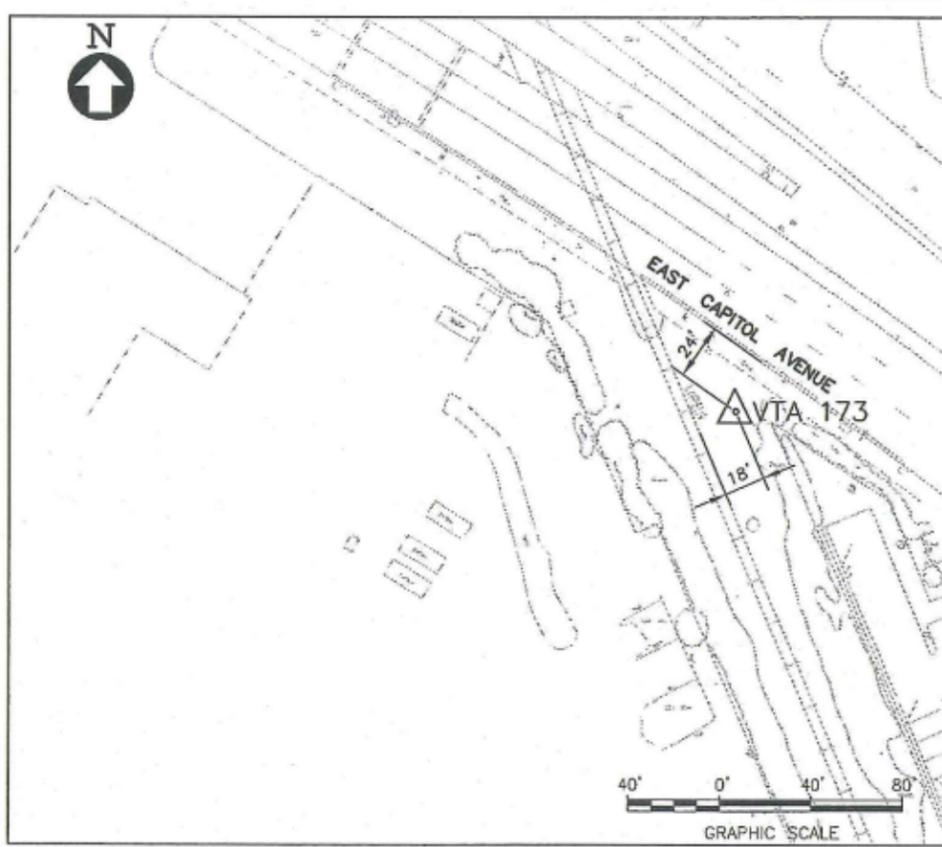


PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
SHEET 12 OF 18

CADD FILENAME C700-S-LS-C043.dwg		
SIZE	SCALE	
D	1" = 40'	
CONTRACT NO.	C700	REV. P
AREA CODE	SHEET NO. LS	PAGE NO. C043 0196



VTA 173.
FND ALUM DISK. LOCATED AT THE SE COR OF UPRR XING AND CAPITOL AVE
AND APPROX 18' EAST OF EAST RAIL.

NORTHING 1973934.220
EASTING 6158069.421
ELEVATION 52.295
DESCRIPTION VTA 173

VTA 174.
FND ALUM DISK. LOCATED IN THE CITY OF SAN JOSE.
LOCATED APPROX 1470' SOUTH FROM THE INTERSECTION
OF UPRR AND TRADE ZONE BLVD, AND APPROX 20' EAST OF EAST RAIL.

NORTHING 1970854.066
EASTING 6159367.670
ELEVATION 68.458
DESCRIPTION VTA 174

VTA 175.
FND ALUM DISK. LOCATED APPROX 2650' NORTH OF HOSTETTER RD
AND UPRR AND APPROX 8' EAST OF FENCE LINE.

NORTHING 1969510.650
EASTING 6159682.814
ELEVATION 74.033
DESCRIPTION VTA 175

PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
SHEET 13 OF 18

CADD FILENAME C700-S-LS-C044.dwg		
SIZE	SCALE	
D	1" = 40'	
CONTRACT NO.	C700	REV. P
AREA CODE	SHEET NO.	PAGE NO.
LS	C044	0197

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P	20110311				REQUEST FOR PROPOSAL

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L. BOROUMAND

CHECKED BY
S. HEFFNER

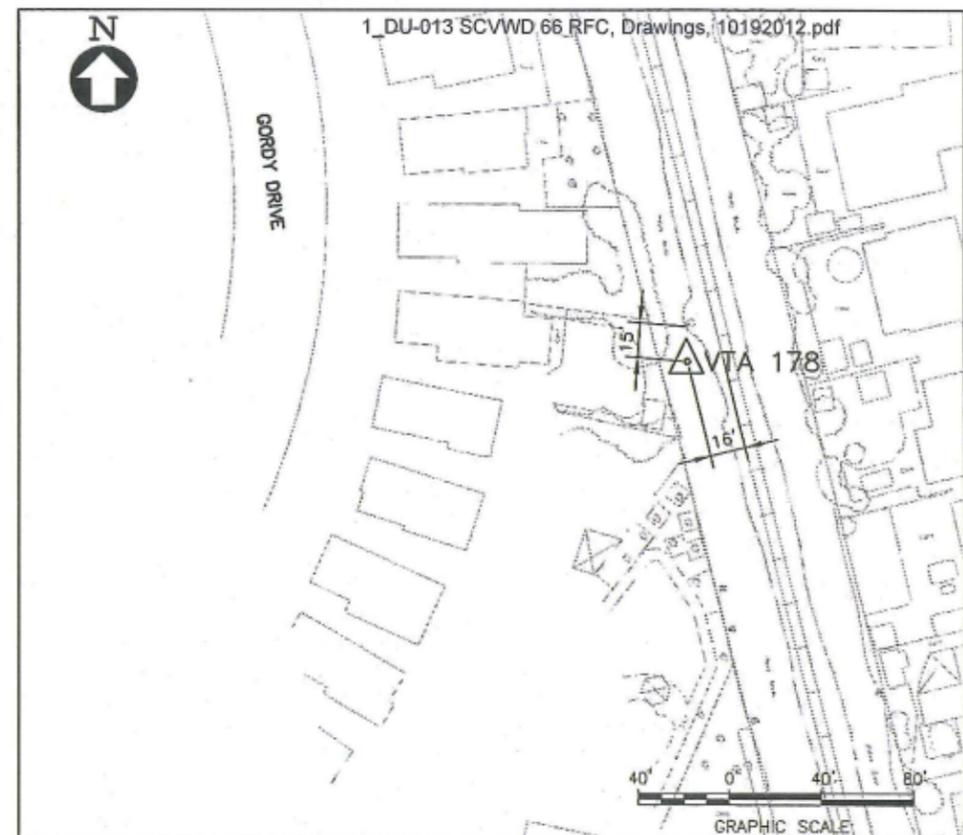
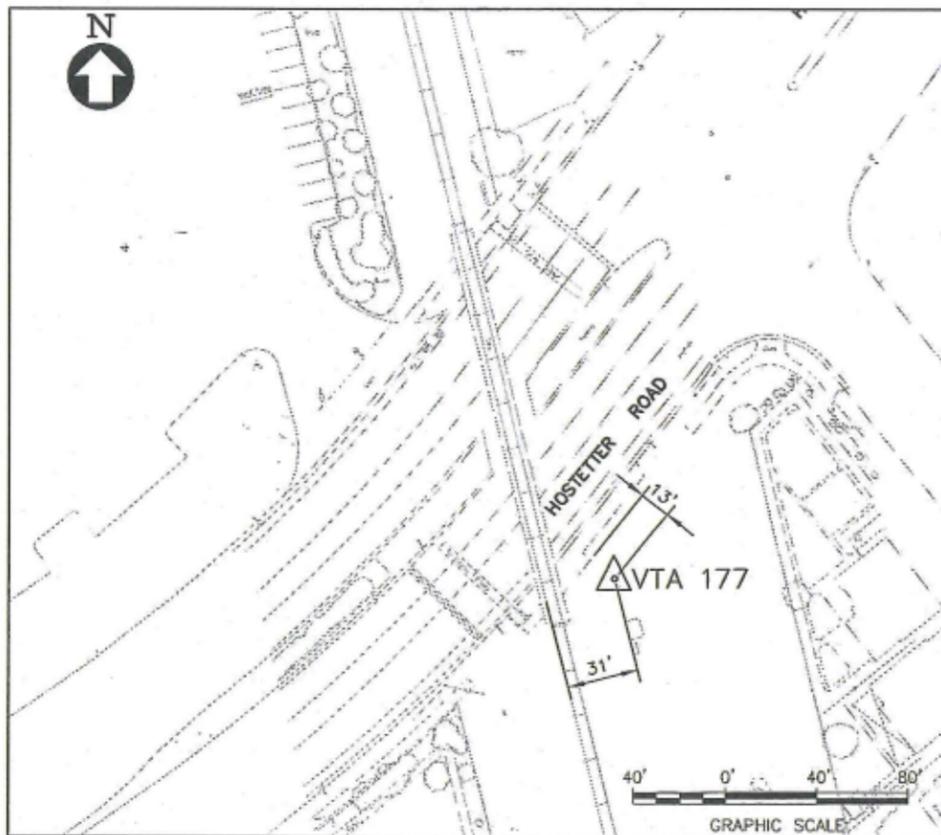
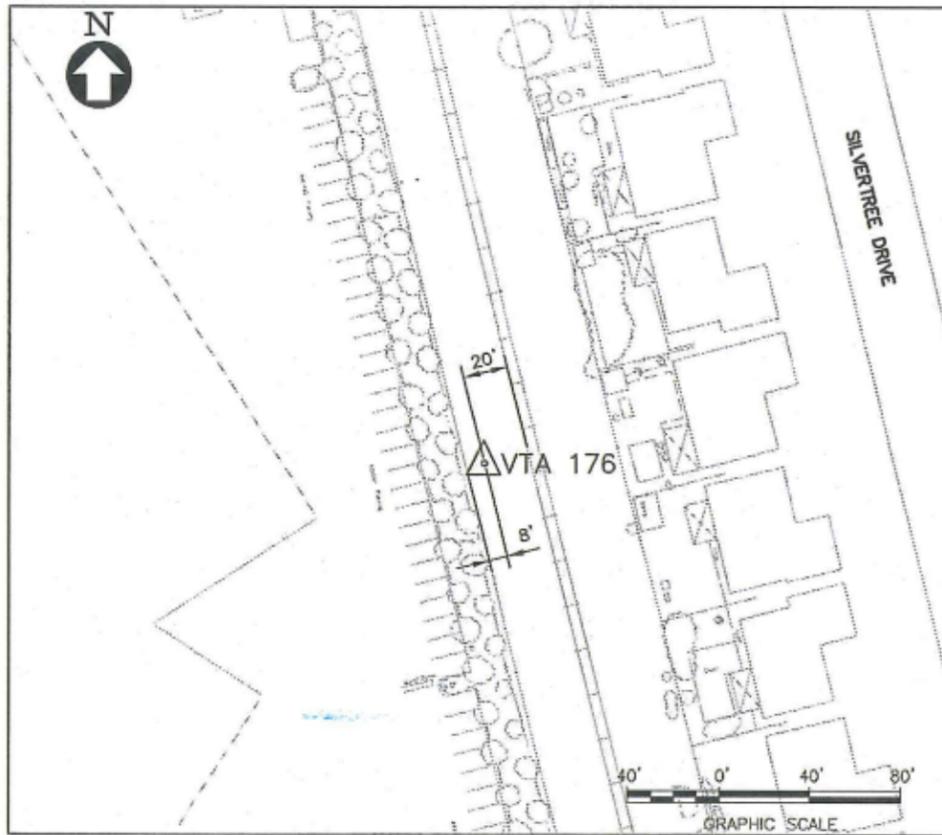
IN CHARGE
S. HEFFNER

DATE
20110311

VTA. VALLEY TRANSPORTATION AUTHORITY

SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

BART SILICON VALLEY BERRYESSA EXTENSION



VTA 176.
FND ALUM DISK. LOCATED APPROX 1270' NORTH OF HOSTETTER RD
ON WEST SIDE OF UPRR AND APPROX 8' EAST OF FENCE.

NORTHING 1968183.251
EASTING 6160013.511
ELEVATION 80.689
DESCRIPTION VTA 176

VTA 177.
FND ALUM DISK. LOCATED AT THE SE COR OF THE INTERSECTION
OF UPRR XING AND HOSTETTER RD, APPROX 13' SOUTH OF
BACK OF WALK, AND APPROX 30' EAST OF EAST RAIL.

NORTHING 1966880.737
EASTING 6160391.056
ELEVATION 84.675
DESCRIPTION VTA 177

VTA 178.
FND ALUM DISK. LOCATED APPROX 1573' IN R/W NORTH OF THE INTERSECTION
LUNDY AVE AND SIERRA RD, APPROX 1720' SOUTH OF HOSTETTER RD AND UPRR,
APPROX 16.5' WEST OF WEST RAIL, AND APPROX 15.5' SE OF SIGNAL BOX.

NORTHING 1965276.996
EASTING 6160743.331
ELEVATION 86.118
DESCRIPTION VTA 178

BOROUMAND.L Mar 10, 2011 - 3:15pm C:\Users\BOROUMAND\Documents\11\CT00-5-LS-C045.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

DESIGNED BY
L. BOROUMAND
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L. BOROUMAND
CHECKED BY
S. HEFFNER
IN CHARGE
S. HEFFNER
DATE
20110311



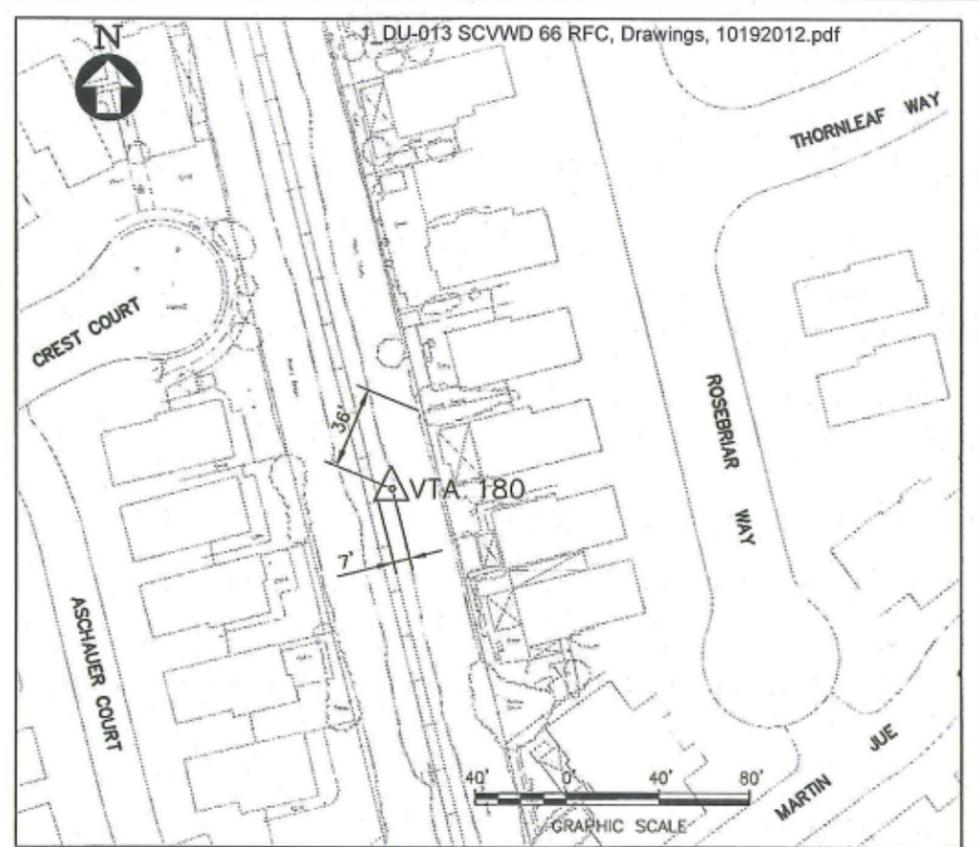
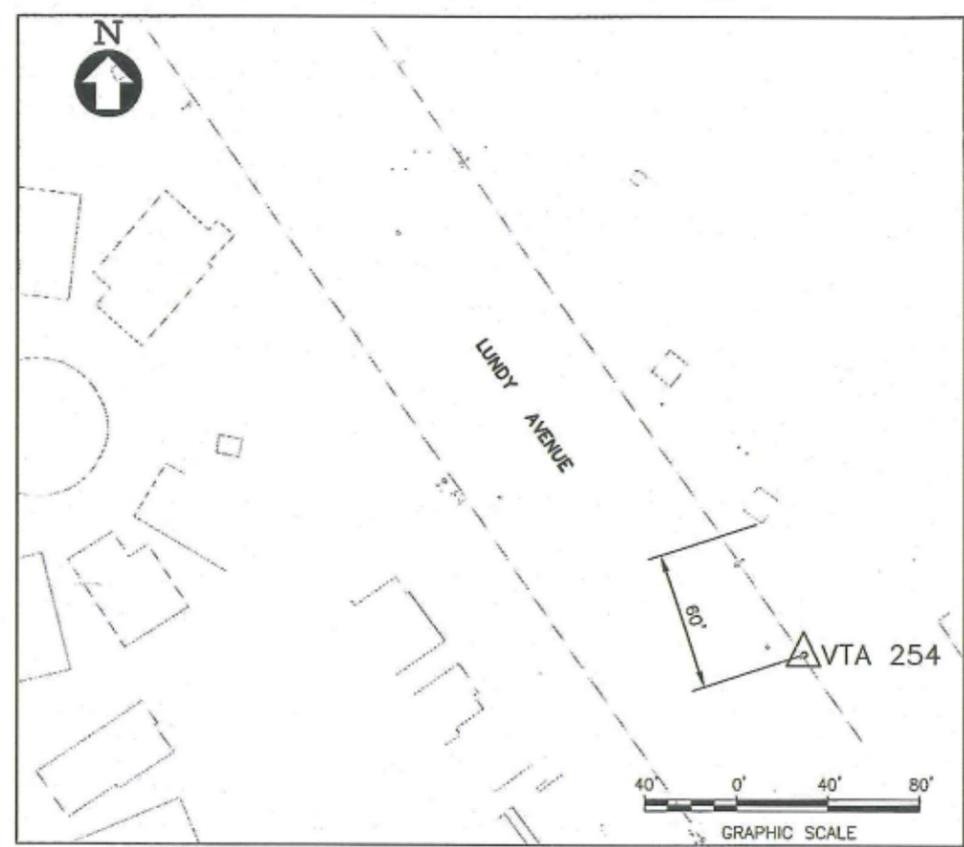
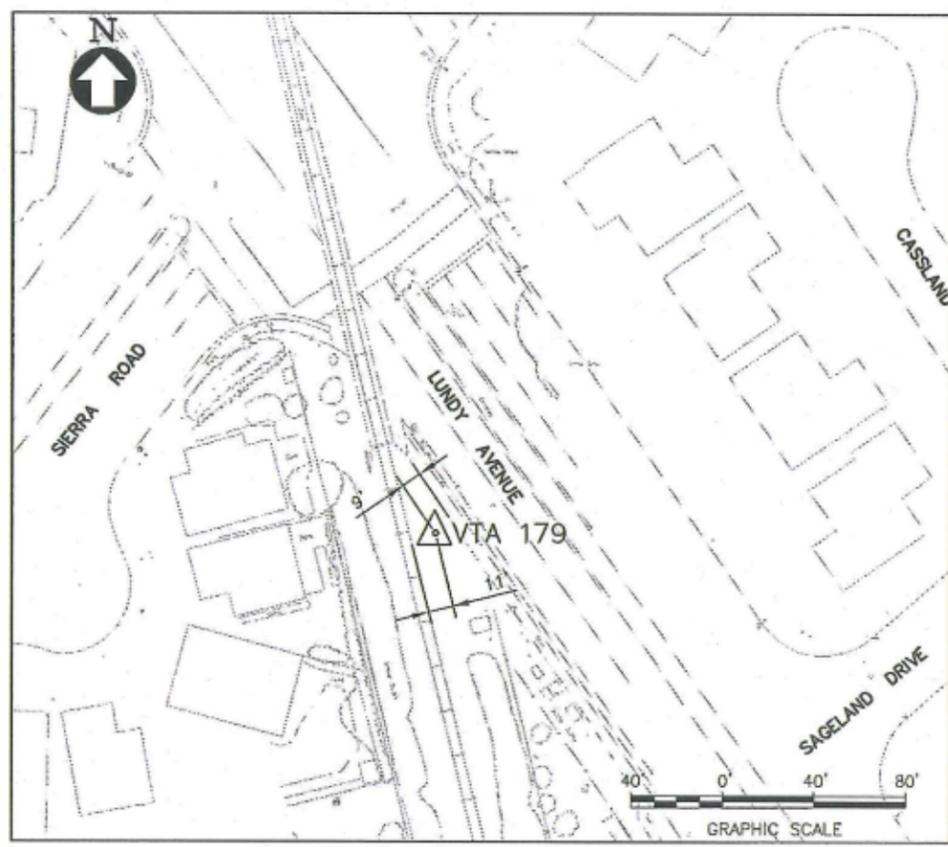
SANTA CLARA
VTA. Valley Transportation Authority
SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*



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LINE, TRACK, STATIONS AND SYSTEMS
SURVEY CONTROL DATA
SHEET 14 OF 18

CADD FILENAME C700-S-LS-C045.dwg	REV. P
SIZE D	SCALE 1" = 40'
CONTRACT NO. C700	SHEET NO. C045
AREA CODE LS	PAGE NO. 0198



VTA 179.
FND ALUM DISK. LOCATED AT THE SE COR OF UPRR AND LUNDY AVE
AND APPROX 9' WEST OF BW.

NORTHING 1963561.514
EASTING 6161205.023
ELEVATION 83.758
DESCRIPTION VTA 179

VTA 254.
SET ALUM DISK. LOCATED APPROX 1320' NORTH OF LUNDY AVE
FROM THE INTERSECTION OF BERRYESSA RD AND LUNDY AVE,
AVE, APPROX 82' NORTH OF THE CL OF INTERSECTION OF LUNDY AVE
AND HILTBRAND DR ON THE EAST SIDE OF LUNDY
AVE, LOCATED BEHIND A CATCH BASIN ON THE EAST SIDE OF LUNDY AVE.

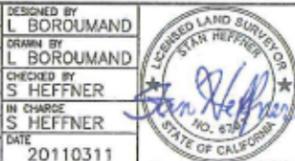
NORTHING 1962615.647
EASTING 6161973.433
ELEVATION 90.055
DESCRIPTION VTA 254

VTA 180.
FND ALUM DISK. LOCATED APPROX 1440' N OF BERRYESSA RD
AND UPRR AND APPROX 7.2' EAST OF EAST RAIL.

NORTHING 1962190.010
EASTING 6161544.308
ELEVATION 83.773
DESCRIPTION VTA 180

BOROUMAND.L Mar 10, 2011 11:32am C:\Users\boroumand\Documents\0011\0700-LS-C046.dwg

DESIGNED BY	L. BOROUMAND				
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CHECKED BY	S. HEFFNER				
IN CHARGE	S. HEFFNER				
DATE	20110311				
REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL



SANTA CLARA
VTA. Valley Transportation Authority

SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

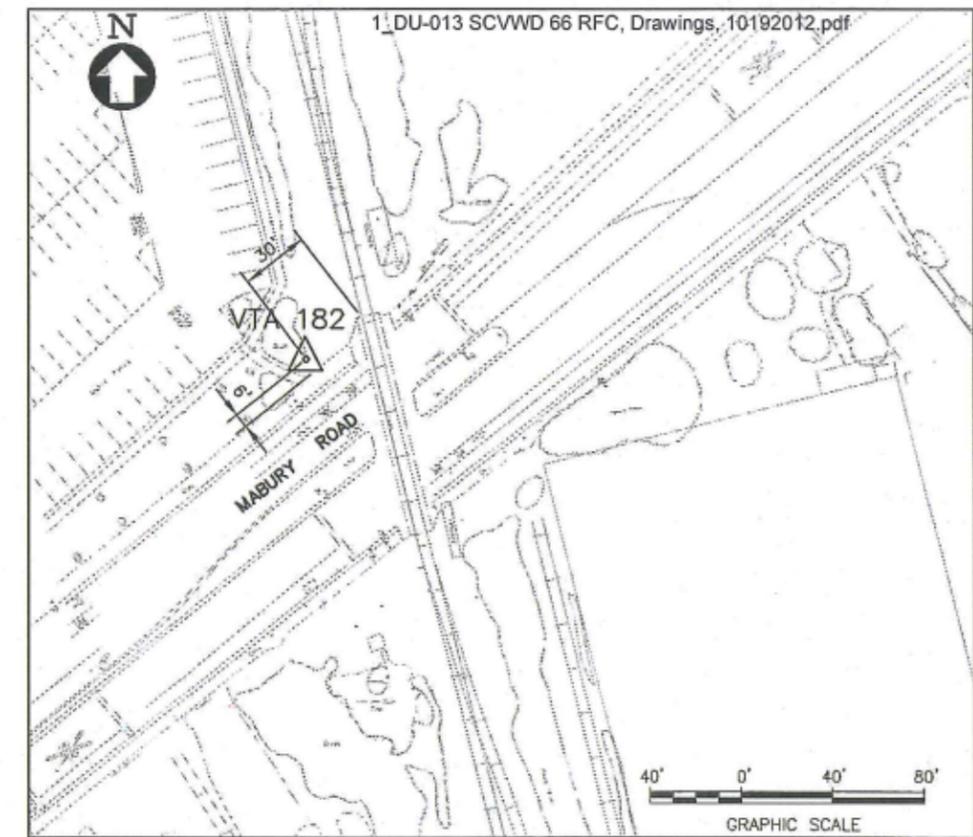
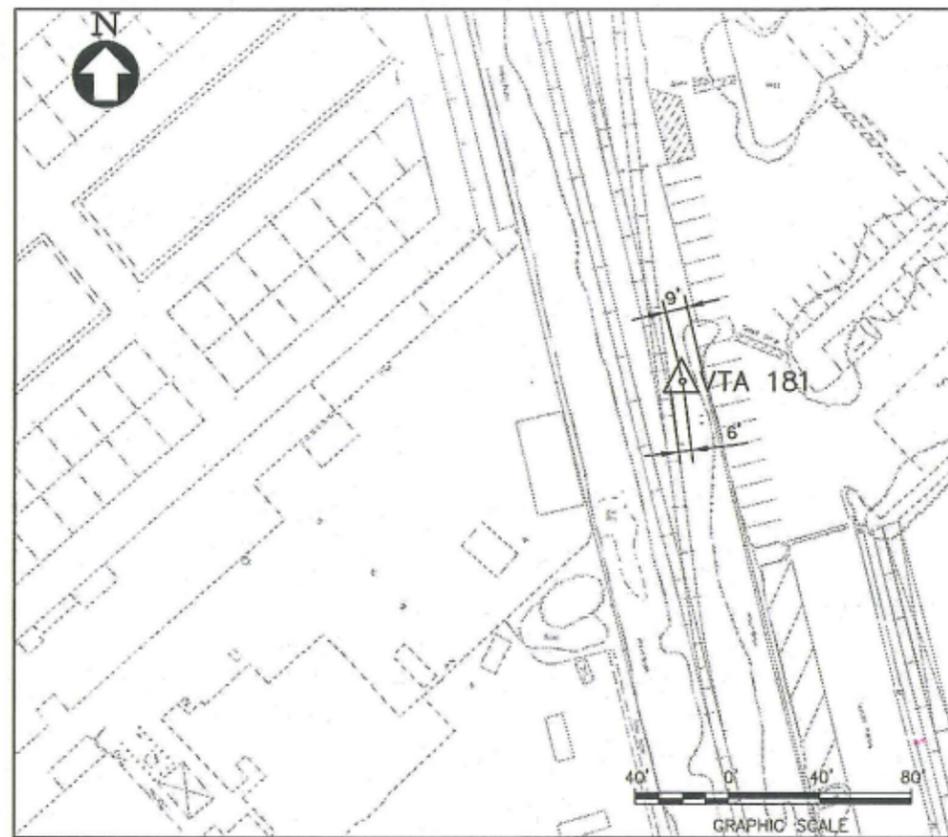
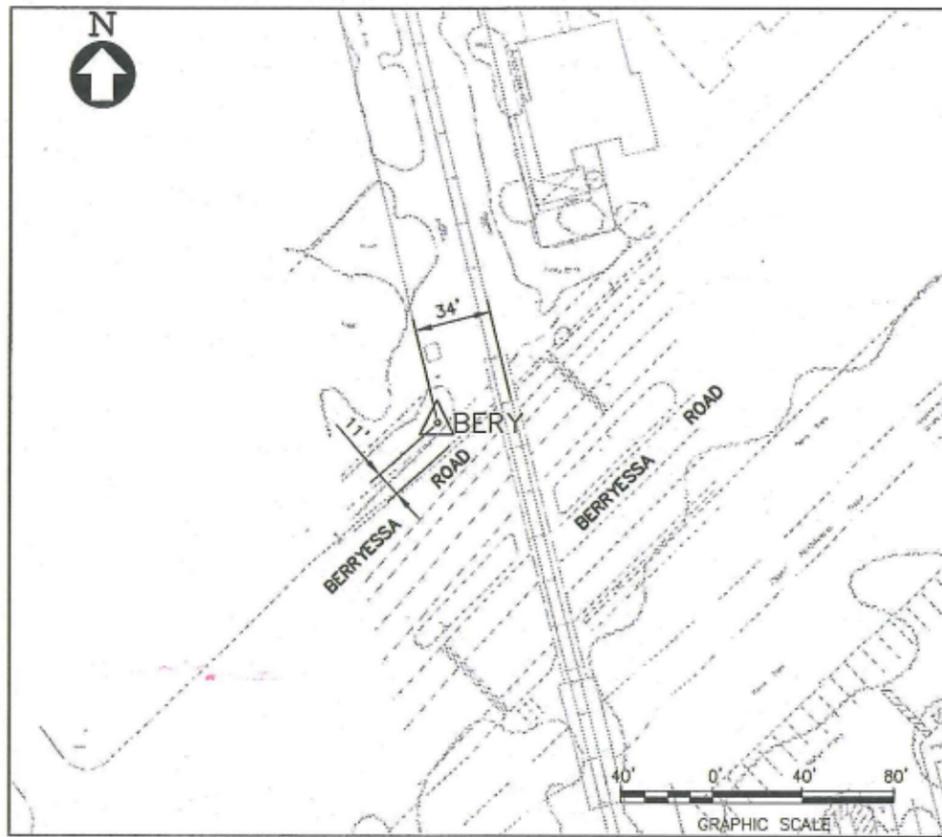


PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
SHEET 15 OF 18

CADD FILENAME	C700-S-LS-C046.dwg		
SIZE	SCALE	1" = 40'	
CONTRACT NO.	C700	REV.	P
AREA CODE	LS	SHEET NO.	C046
		PAGE NO.	0199



BERY (2000)
 FOUND 5/8" ALUM PIN 6" IN PVC MON WELL. LOCATED IN GRASS
 BEHIND BACK OF WALK ON NW SIDE OF BERRYESSA RD APPROX 35' WEST
 OF UPRR, AND APPROX 3000' SOUTH WESTERLY OF THE INTERSECTION OF
 BERRYESSA RD AND LUNDY AVE.

NORTHING 1960836.478
 EASTING 6161840.636
 ELEVATION 84.961
 DESCRIPTION BERY

VTA 181.
 FND ALUM DISK. LOCATED APPROX 1423' SOUTH OF BERRYESSA RD
 AND UPRR, APPROX 5' EAST OF RAIL.

NORTHING 1959418.448
 EASTING 6162251.359
 ELEVATION 84.793
 DESCRIPTION VTA 181

VTA 182
 FND ALUM DISK. LOCATED AT THE NW COR OF UPRR XING
 AND MABURY RD, APPROX 6' NORTH OF MABURY RD
 BACK WALK, AND APPROX 30' WEST OF WEST RAIL.

NORTHING 1958055.127
 EASTING 6162539.077
 ELEVATION 90.014
 DESCRIPTION VTA 182

PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
 SHEET 16 OF 18

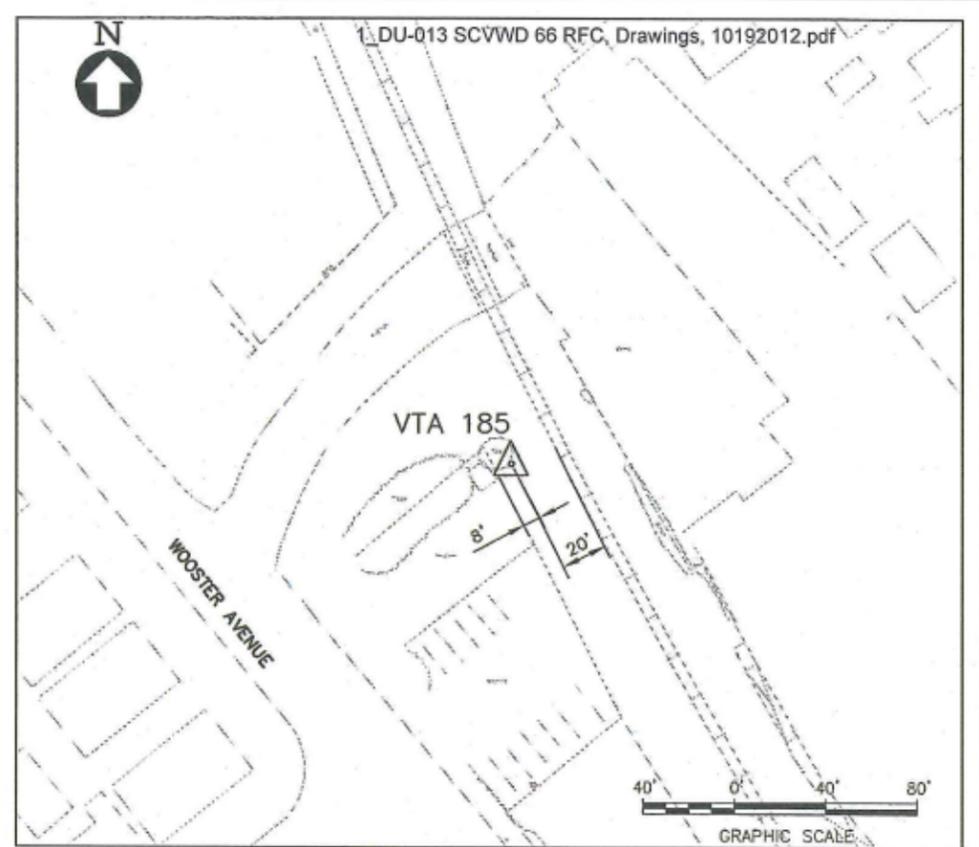
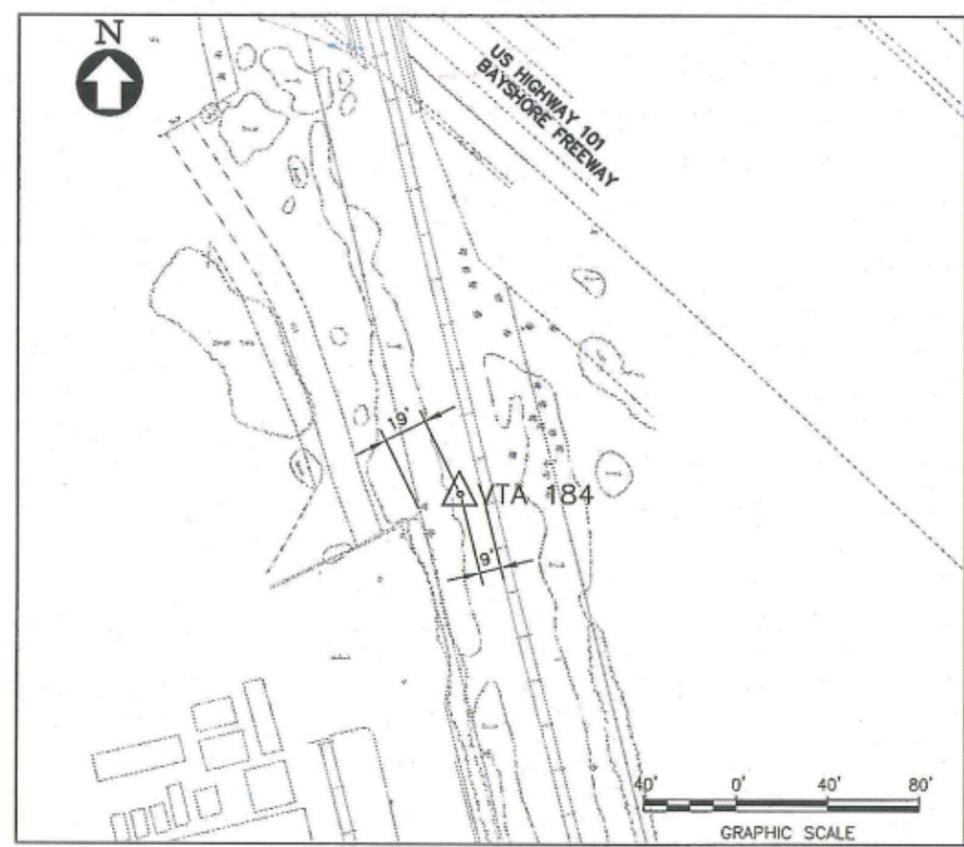
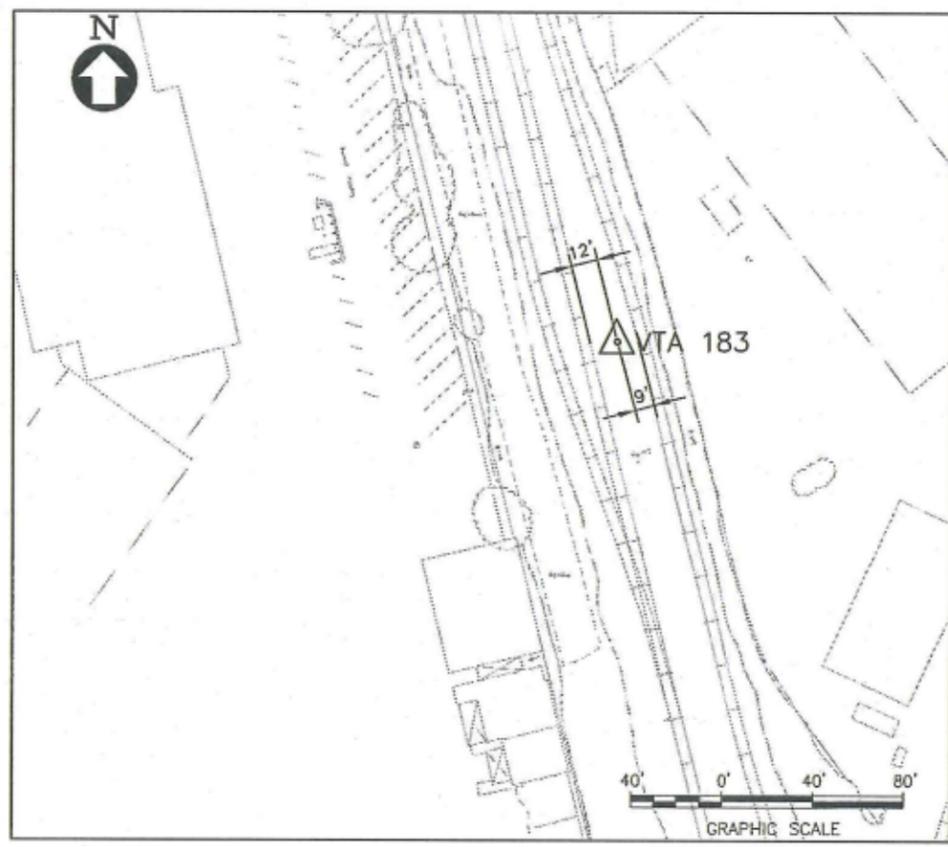
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SIZE D	SCALE 1" = 40'
CONTRACT NO. C700	REV. P
AREA CODE LS	SHEET NO. C047
PAGE NO. 0200	

Mar 10, 2011 - 3:32pm C:\Users\lboroumand\swr\swr-cad\1\2700-6-LS-C047.dwg

DESIGNED BY L BOROUMAND	
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CHECKED BY S HEFFNER	
IN CHARGE S HEFFNER	
DATE 20110311	

SANTA CLARA Valley Transportation Authority
 SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

BART
 SILICON VALLEY
 BART SILICON VALLEY BERRYESSA EXTENSION



VTA 183.
 FND ALUM DISK. LOCATED APPROX 1285' IN R/W
 SOUTH OF MABURY RD AND UPRR XING, APPROX 890'
 NORTH OF HWY 101 AND UPRR, APPROX 11.5' EAST OF
 EAST RAIL, AND APPROX 8.3' WEST OF WEST RAIL.

NORTHING 1956781.947
 EASTING 6162903.994
 ELEVATION 90.427
 DESCRIPTION VTA 183

VTA 184.
 FND ALUM DISK. LOCATED AT THE INTERSECTION OF HWY 101
 AND OVERPASS OF R/R STEEL BRIDGE. FROM END OF STEEL BRIDGE
 OF R/R SOUTH APPROX 187' IN R/W, AND APPROX 9' WEST OF RAIL.

NORTHING 1955593.212
 EASTING 6163174.705
 ELEVATION 94.883
 DESCRIPTION VTA 184

VTA 185.
 FND ALUM DISK. LOCATED APPROX 760' NORTH OF E JULIAN ST
 AND UPRR, APPROX 8' NE OF FENCE.

NORTHING 1954408.164
 EASTING 6163540.186
 ELEVATION 88.056
 DESCRIPTION VTA 185

BOROUMAND.L 10/10/2011 3:25pm C:\Users\boroumand\Documents\2011\CT010\03-08-11\CT010-5-LS-0048.dwg

REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

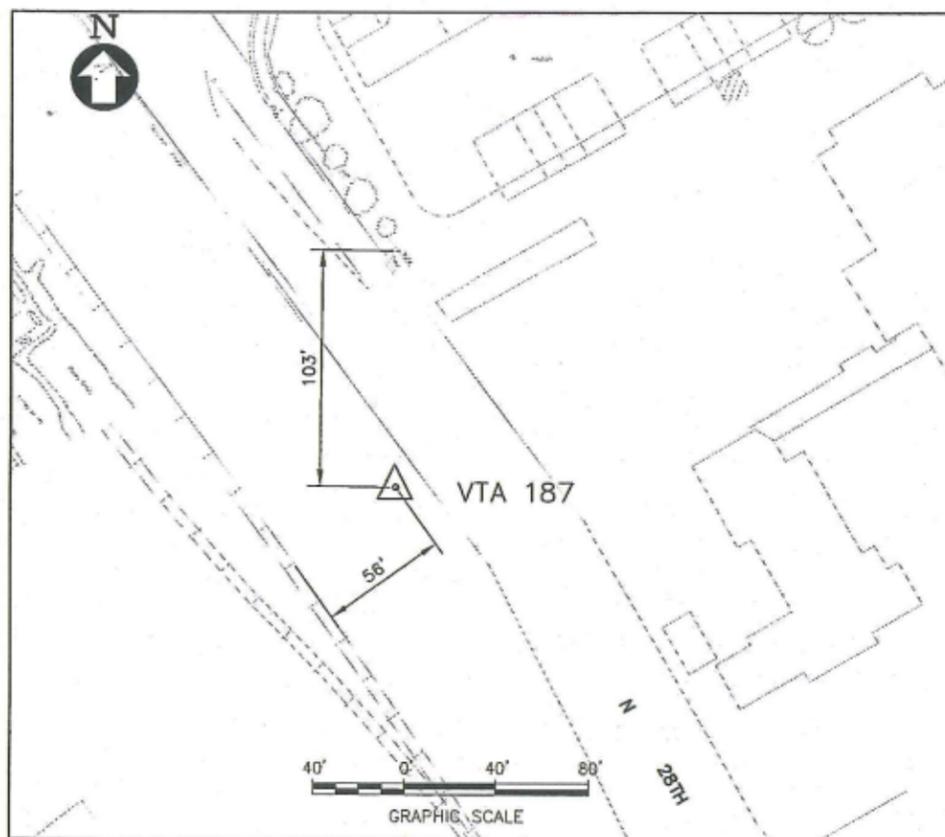
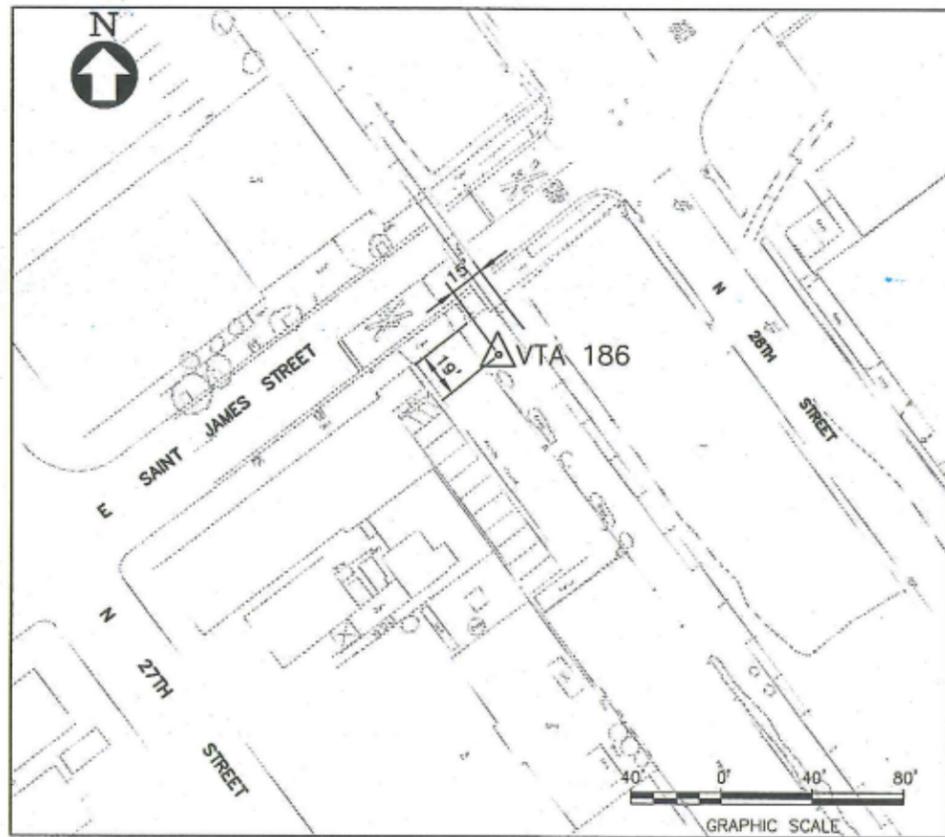
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L. BOROUMAND
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L. BOROUMAND
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S. HEFFNER
 IN CHARGE
S. HEFFNER
 DATE
20110311



SANTA CLARA
VTA. Valley Transportation Authority
 SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*



PRESCRIPTIVE			
LINE, TRACK, STATIONS AND SYSTEMS			
SURVEY CONTROL DATA SHEET 17 OF 18			
CADD FILENAME C700-S-LS-C048.dwg	SIZE D	SCALE 1" = 40'	REV. P
CONTRACT NO. C700	AREA CODE LS	SHEET NO. C048	PAGE NO. 0201



VTA 186.
FND ALUM DISK. LOCATED AT THE SW COR OF THE
INTERSECTION OF E ST JAMES ST AND UPRR AND
APPROX 14' WEST OF RAIL.

NORTHING	1953317.829
EASTING	6164323.892
ELEVATION	87.155
DESCRIPTION	VTA 186

VTA 187.
FND ALUM DISK. LOCATED APPROX 261' NORTH OF THE
INTERSECTION OF 28TH ST AND ALUM ROCK AVE
AND APPROX 57' EAST OF EAST RAIL.

NORTHING	1952541.255
EASTING	6164999.058
ELEVATION	88.628
DESCRIPTION	VTA 187

PRESCRIPTIVE

LINE, TRACK, STATIONS AND SYSTEMS

SURVEY CONTROL DATA
SHEET 18 OF 18

CADD FILENAME C700-S-LS-C049.dwg	
SIZE D	SCALE 1" = 40'
CONTRACT NO. C700	REV. P
AREA CODE LS	SHEET NO. C049
	PAGE NO. 0202

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REV	DATE	BY	SUB	APP	DESCRIPTION
P	20110311				REQUEST FOR PROPOSAL

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L. BOROUMAND
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L. BOROUMAND
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S. HEFFNER
IN CHARGE
S. HEFFNER
DATE
20110311



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VTA. Valley Transportation Authority

SUBMITTED *Stan Heffner* APPROVED *Stan Heffner*

