

DEPARTMENT OF PUBLIC WORKS

Mayor:
CAROLYN G. GOODMAN

City Council:
STAVROS S. ANTHONY (Mayor Pro-Tem)
LOIS TARKANIAN
STEVEN D. ROSS
RICKI Y. BARLOW
BOB COFFIN
BOB BEERS

City Manager:
ELIZABETH N. FRETWELL

Director of Public Works:
JORGE CERVANTES, P.E., P.T.O.E.

City Engineer:
DAVID N. BOWERS, P.E., P.T.O.E.

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SUPPLEMENT 1

NVENERGY CLV COLLECTION SYSTEM CONTROL GATE

SUPPLEMENT 2

M1	PLC 03 CABINET LAYOUT
M2	BILL OF MATERIALS
E1	POWER LADDER
E2	DIGITAL DISPLAY, POWER SUPPLY AND PROCESSOR MODULE
E3	RACK 0, SLOTS 2-4
E4	RELAYS AND LIGHTS
L1	VAULT FLOODED
L2	FCV=NOINF031-FCV=1-1 GATE
L3	FLOW MONITOR AND INDICATION
L4	MONITORING ENCLOSURE TEMPERATURE

Funded By:
CITY OF LAS VEGAS SANITATION FUND



***COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH/OWENS AVE***

RECORD DRAWING

THIS RECORD DRAWING IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

Reviewed By:

CLV CITY ENGINEER _____ DATE _____

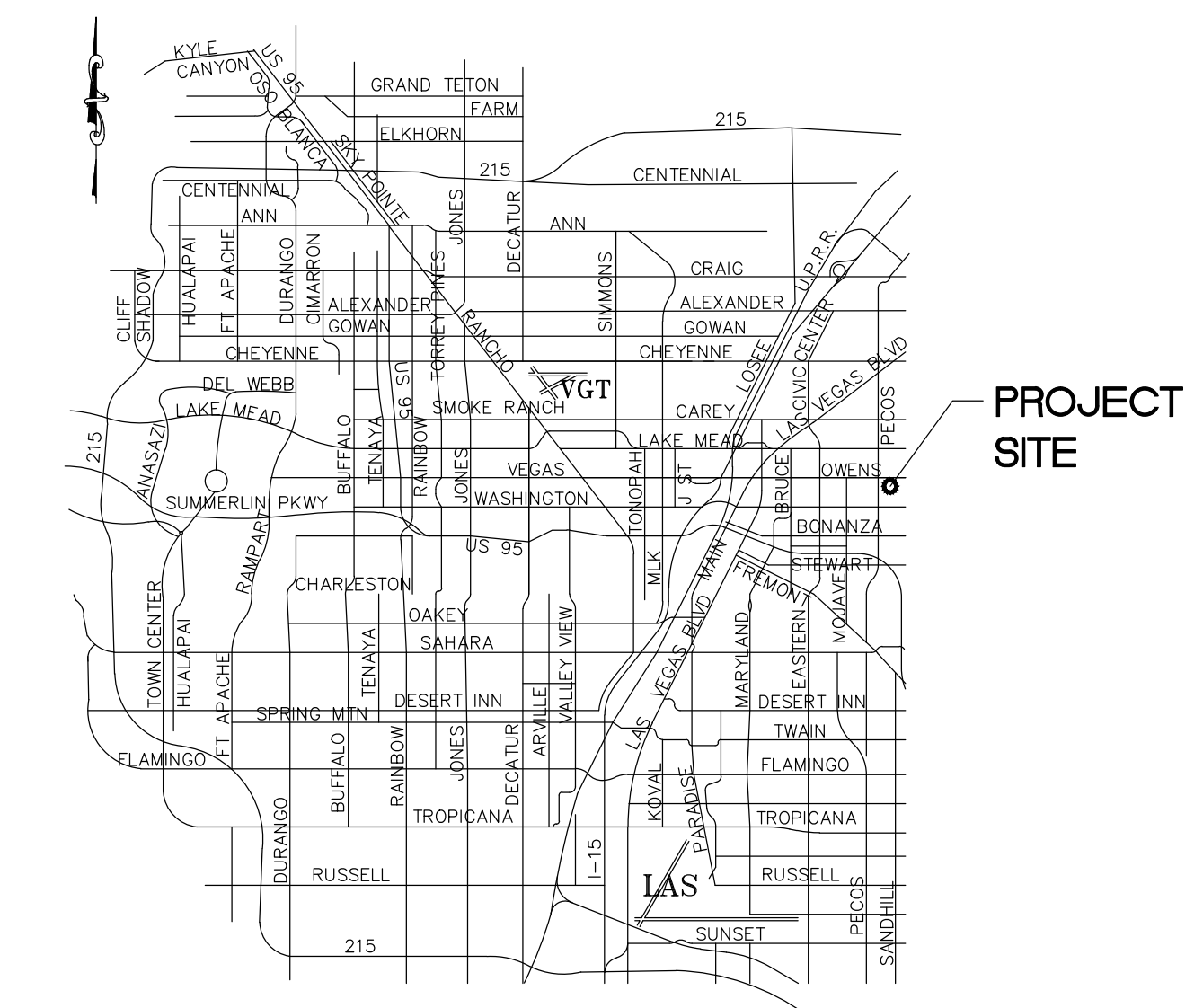
CLV CONSTRUCTION	MANAGEMENT	DATE
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CLV CITY TRAFFIC ENGINEER _____ DATE _____

CENTURY LINK	DATE
THE AFFIXED CENTURYLINK NEVADA APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION STANDARD REGULATIONS.	

CNLV UTILITIES DEPARTMENT— ENGINEERING SERVICES DIVISION (SEWER)	DATE
APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR CONSTRUCTION. A COMMITMENT TO SUPPLY WATER AND/OR SEWER SERVICE, OR AN APPROVAL OF ANY VIOLATION OF CNLV WATER AND/OR SEWER SERVICE RULES AND REGULATIONS OR DESIGN AND CONSTRUCTION STANDARDS.	

COX COMMUNICATIONS LAS VEGAS, INC. DATE _____



VICINITY MAP

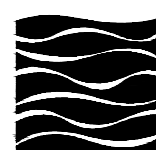
NOT TO SCALE

CLV BID NO. 13.53541.05

H# 49436

NOTE: A PRE-DEVELOPMENT MEETING WITH THE DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW DIVISION, OFF-SITE INSPECTOR IS REQUIRED. PLEASE CONTACT THE INSPECTOR AT 455-4610

HTE # 13-26839



GREELEY AND HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT MANAGEMENT

CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:

DESIGNED BY: JC/SC
DRAWN BY: RAM



FILE: **COLLECTION SYSTEM CONTROL GATE**
LAS VEGAS WASH / OWENS AVENUE

COVER SHEET, VICINITY MAP
AND SHEET INDEX

Sheet

CV

1 of 21
DRAWING NO.



Diagram 1: Storm Drain MH #1002-Detail
RIM ELEV.= 1806.77'
INV. CENTER= 1795.5'
NOTE: DEBRIS IN BOTTOM.

Diagram 2: Storm Drain MH #1003-Detail
RIM ELEV.= 1806.61'
INV. CENTER= 1795.5'
NOTE: DEBRIS IN BOTTOM.

Diagram 3: Sewer MH #1004-Detail
RIM ELEV.= 1806.55'
NOTE: INV. BLOCKED BY METAL LID.

Diagram 4: Storm Drain MH #1039-Detail
RIM ELEV.= 1805.43'
INV. CENTER= 1794.9'
NOTE: DEBRIS IN BOTTOM.

Diagram 5: Sewer MH #1192-Detail
RIM ELEV.= 1803.42'
TOP OF PIPE= 1789.3'
INV. CENTER= 1784.3'
NOTE: STILL WATER IN MANHOLE.

Diagram 6: Sewer MH #1212-Detail
RIM ELEV.= 1796.48'
INV. CENTER= 1783.7'
TOP OF PVC PIPE S.= 1795.1'
REVISED 04-26-2012

Diagram 7: Sewer MH #1213-Detail
RIM ELEV.= 1796.90'
INV. TO SECOND MH RIM: 1789.1'
NOTE: ACTUAL SEWER INV. OFFSET TOO FAR SOUTH TO OBTAIN INV MEASUREMENT.

Diagram 8: Sewer MH #1213-Detail
RIM ELEV.= 1796.90'
INV. TO SECOND MH RIM: 1789.1'
NOTE: ACTUAL SEWER INV. OFFSET TOO FAR SOUTH TO OBTAIN INV MEASUREMENT.

	CURB
	EDGE OF PAVEMENT
	BACK OF WALK
	FENCE
	SPOT ELEVATIONS
	CONTOURS
#1002	MANHOLE DETAIL NUMBER
CONC	CONCRETE
VLT	VAULT
HC	HANDICAP RAMP

THE BASIS OF BEARINGS FOR THIS MAP IS SOUTH 56°06'27"
EAST, BEING THE GRID BEARING BETWEEN NATIONAL GEODETIC
SURVEY (NGS) CONTINUOUSLY OPERATING REFERENCE STATIONS
(CORS) NVCA AND GIS 827 BASED UPON THE NORTH AMERICAN
DATUM 1983(CORS) EPOCH 2002 NEVADA STATE PLANE
COORDINATE SYSTEM, ZONE EAST.
THE PROJECT COMBINED FACTOR USED FOR THIS PROJECT IS
0.999842538.

CORS STATION NVCA - NAD83(CORS)
LATITUDE 36°13'11.19336" NORTH
LONGITUDE 115°10'19.35339" WEST
GRID NORTHING 26781878.91 US SURVEY FEET
GRID EASTING 777481.12 US SURVEY FEET

GIS 827 PER RECORD OF SURVEYS FILLE 88 PAGE 53 - NAD83
LATITUDE 36°09'33.49068" NORTH
LONGITUDE 115°03'43.69234" WEST
GRID NORTHING 26760021.57 US SURVEY FEET
GRID EASTING 810017.48 US SURVEY FEET

THE ELEVATION DATA SHOWN HEREON ARE U.S. SURVEY FEET REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988. CITY OF LAS VEGAS BENCHMARKS - 2008 ADJUSTMENT (UPDATED 05-24-2010), BASED UPON BENCHMARK STATION "2LV02 30W6" BEING A RIVET AND SQUARE ALUMINUM PLATE IN TOP OF CURB SOUTHWEST CORNER OF WASHINGTON AND PARKHURST.

ELEVATION 549.070 METERS – PUBLISHED

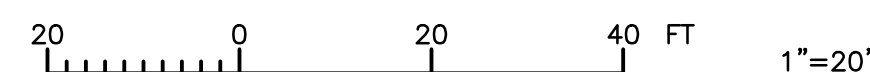
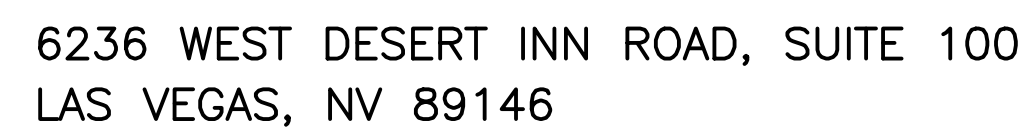
ELEVATION 1801.41 U.S. SURVEY FEET - COMPUTED

THE ELEVATION DATA SHOWN HEREON ARE U.S. SURVEY
FEET REFERENCED TO THE NORTH AMERICAN VERTICAL
DATUM OF 1988, CLARK COUNTY VERTICAL CONTROL
v.2003, BASED UPON BENCHMARK No. 18, STATION "0C02
1954" BEING A RIVET AND SQUARE ALUMINUM PLATE IN
TOP OF CURB NORTHEAST CORNER OF OWENS AVE. AND
WALNUT DR./SANDHILL RD. NEAR THE PC OF OWENS AVE.

ELEVATION 549.580 METERS – PUBLISHED

ELEVATION 1803.08 U.S. SURVEY FEET - COMPUTED

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HTE# 13-26839

[illegible]

 **DEPARTMENT OF PUBLIC WORKS**
CAPITAL PROJECT MANAGEMENT
CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.



INDICE: **COLLECTION SYSTEM CONTROL GATE**
LAS VEGAS WASH / OWENS AVENUE

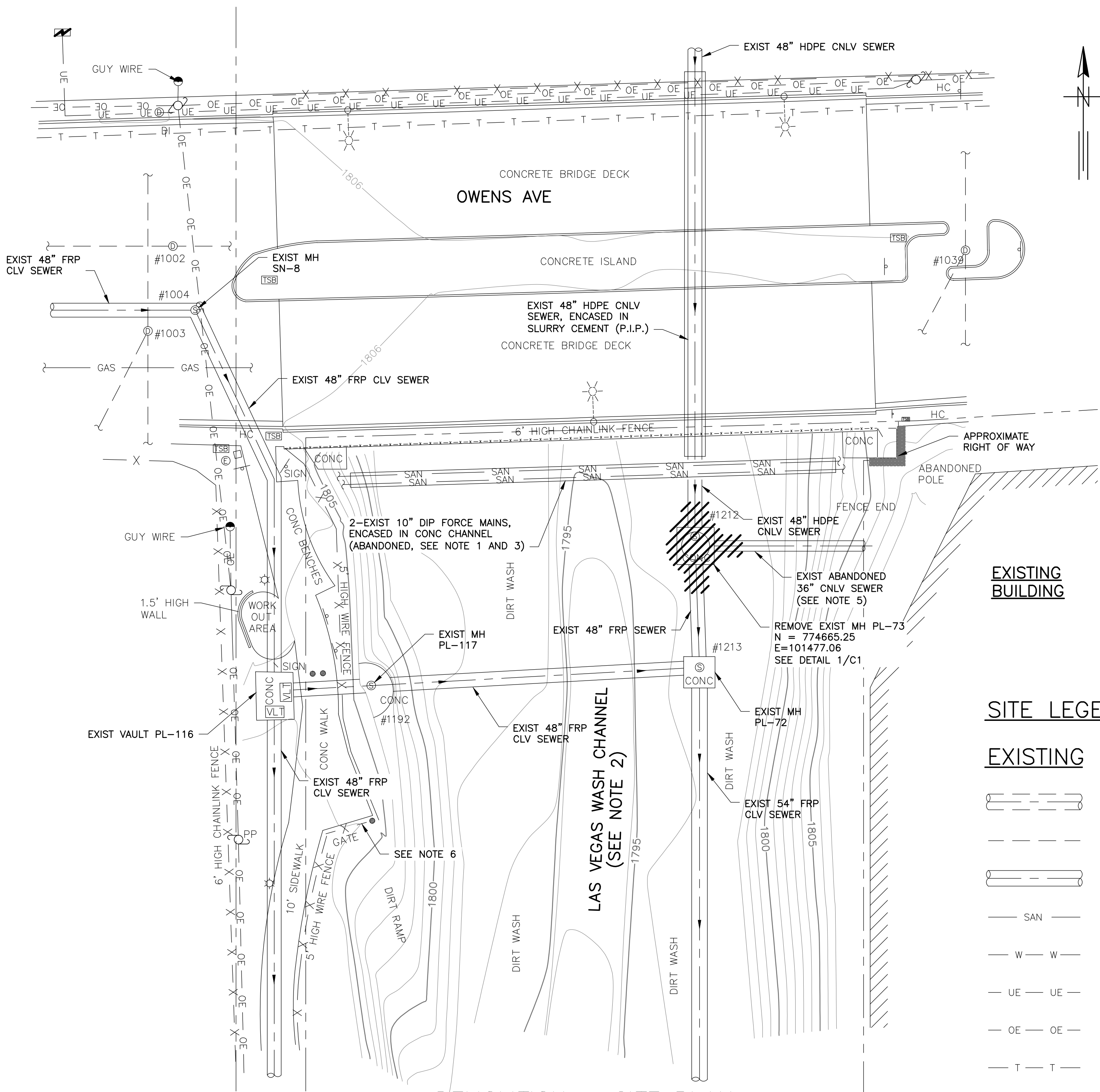
SURVEY SITE PLAN BASIS OF BEARINGS AND BENCHMARK

SHEET: 7
CO
FILE:

Sheet

G2

of **21**
DRAWING NO.



DEMOLITION — SITE PLAN
SCALE: 1" = 20'

- NOTES:**
1. PROTECT ALL EXISTING UTILITIES IN PLACE DURING CONSTRUCTION.
 2. PROTECT WASHFLOOR IN PLACE AND RETURN TO EXISTING CONDITION.
 3. APPROXIMATE LOCATION FOR EXISTING 10" DIP FORCE MAINS FROM CITY OF NORTH LAS VEGAS "A" CHANNEL SEWER PROJECT DESIGN DOCUMENTS AND SANDHILL RELIEF SEWER.
 4. VERIFY ALL EXISTING PIPE MATERIAL.
 5. FIELD VERIFY LOCATION AND LENGTH OF ABANDONED 36" SEWER TO BE REMOVED AND REMAINING SEWER TO BE FILLED.
 6. SITE ACCESS THRU EXISTING GATE CONTRACTOR TO COORDINATE WITH CITY OF LAS VEGAS PERSONNEL.
 7. REMOVE EXISTING MECHANICAL PLUG PRIOR TO COMPLETE DEMOLITION. MECHANICAL PLUG MANUFACTURED BY MECHANIC RESEARCH & DESIGN, INC. MECHANICAL PLUG TO BE PRESSURE WASHED AND CRATED IN ORIGINAL MANUFACTURER CRATE AND TURNED OVER TO THE CITY.

EXISTING BUILDING

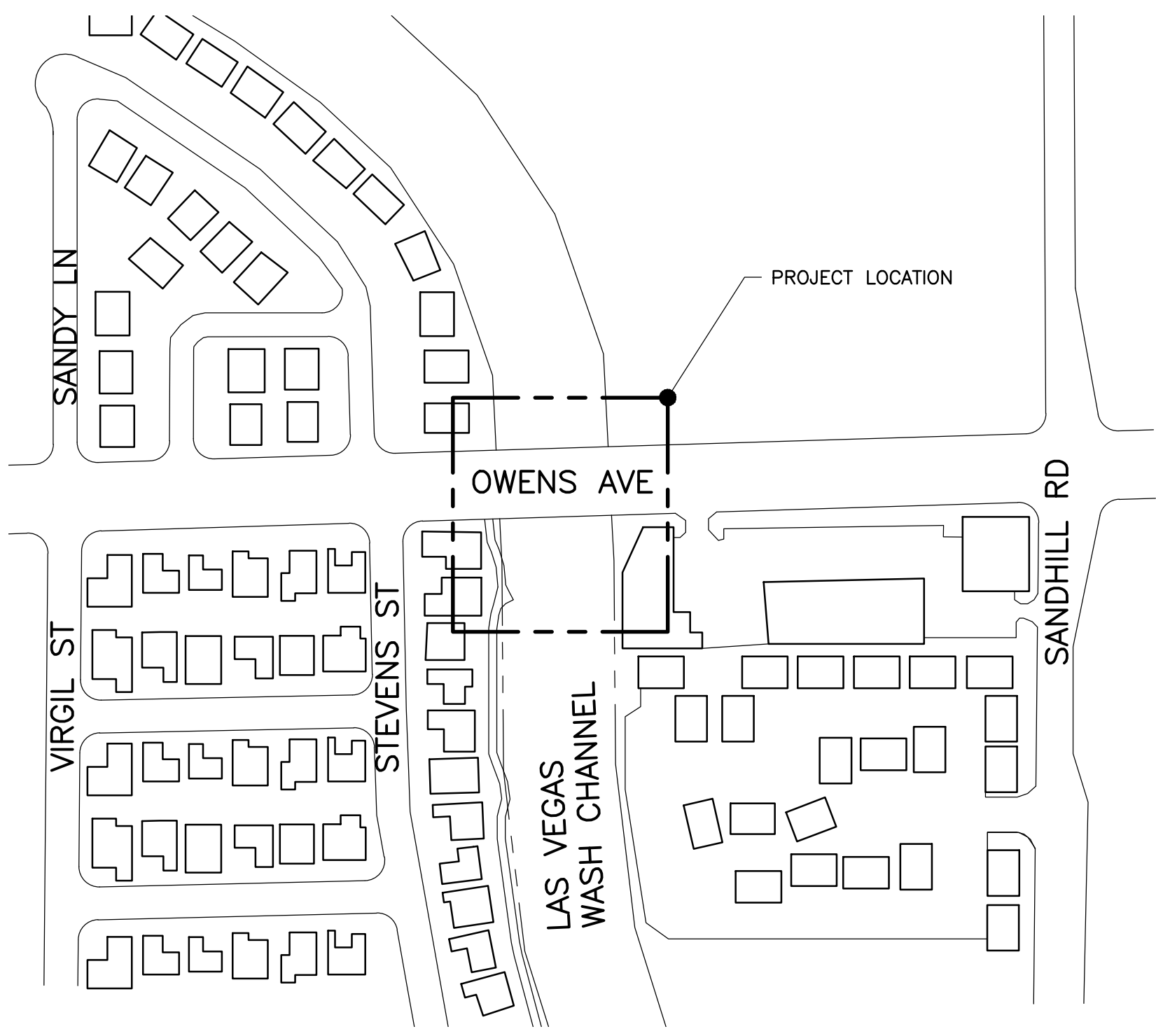
SITE LEGEND

EXISTING

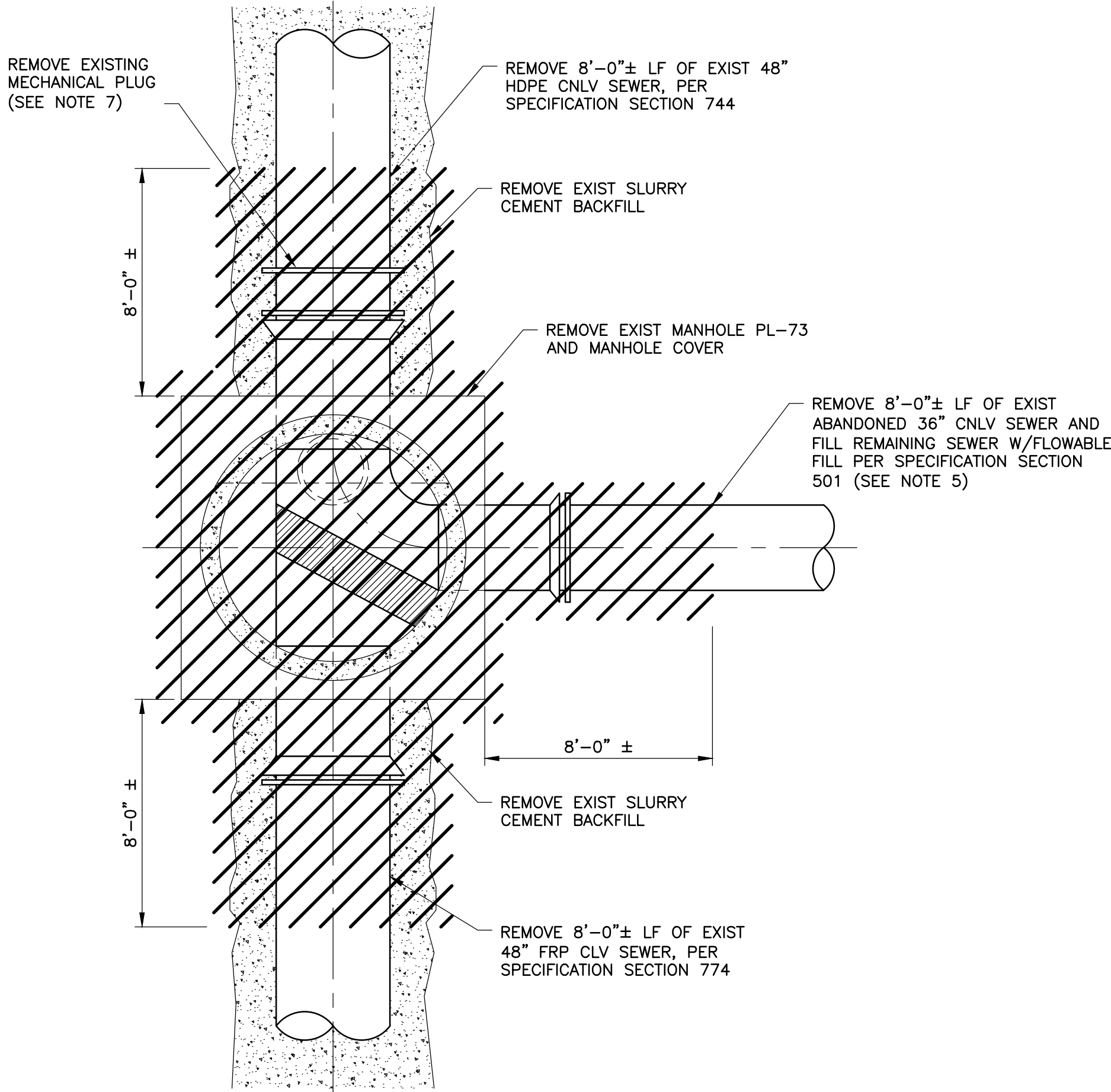
- | | |
|--|-------------------------------|
| | STORM PIPE ≥ 48" |
| | STORM PIPE < 48" |
| | SEWER PIPE ≥ 48" |
| | SEWER PIPE < 48" |
| | WATER PIPE |
| | UNDERGROUND ELECTRICAL |
| | OVERHEAD ELECTRICAL |
| | OVERHEAD TELEPHONE |
| | GAS LINE |
| | FENCE LINE |
| | CURB AND GUTTER |
| | CONTOUR LINE (1'-0" INTERVAL) |
| | DEMOLITION |

RECORD DRAWING

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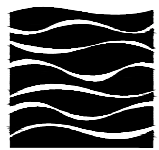
KEY MAP
SCALE: 1" = 200'



NOTE:
DETAIL FOR EXISTING MANHOLE PL-73 DEVELOPED FROM CITY OF NORTH LAS VEGAS "A" CHANNEL SEWER PROJECT DESIGN DOCUMENTS #102709.

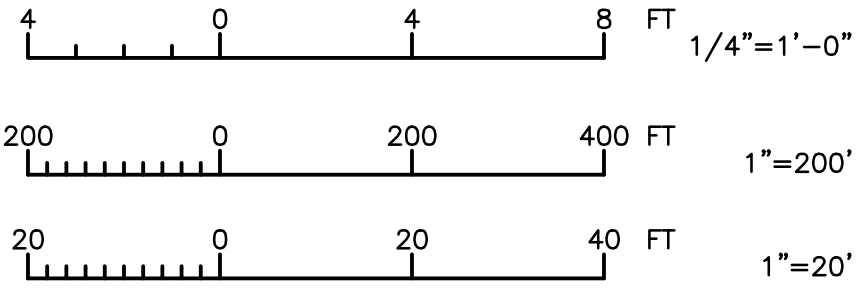
DETAIL 1/C1
MANHOLE DEMOLITION
SCALE: 1/4"=1'-0"

HTE# 13-26839



GREELEY and HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146



REVISIONS	NO.	DATE	DESCRIPTION	APP'D

DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT MANAGEMENT



TITLE: COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE

SHEET: DEMOLITION SITE PLAN
AND DETAILS

DESIGNED BY: JC/SC
DRAWN BY: RAM
CHECKED BY: KDC

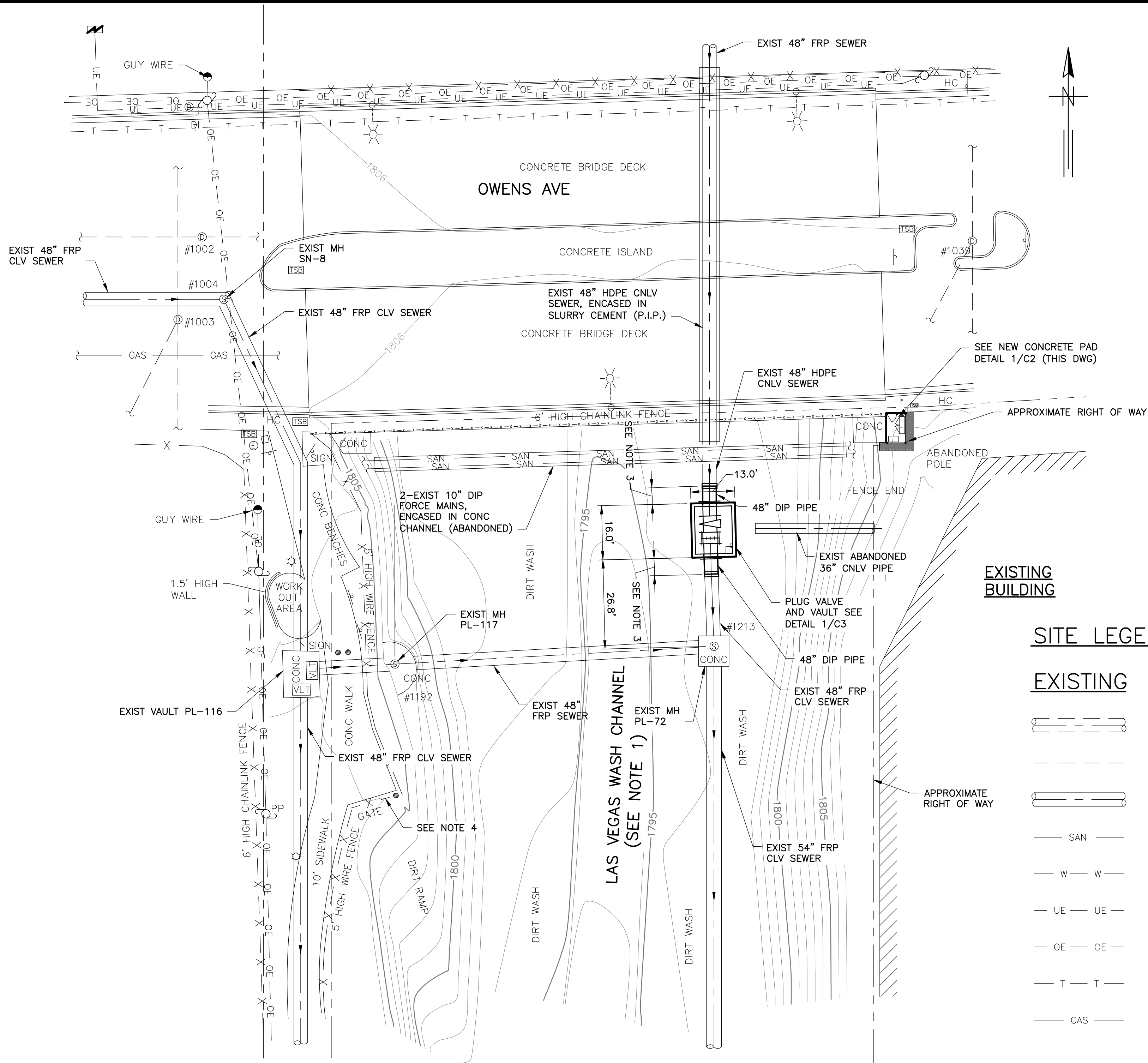
CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:

DATE: 02/13/2014

Sheet

Q1

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DRAWING NO.



- NOTES:**
1. RESTORE GRADING TO INITIAL EXISTING CONDITIONS.
 2. VERIFY ALL EXISTING PIPE MATERIAL.
 3. INSTALL COUPLING AT 3'-0" MIN 6'-0" MAX FROM OUTSIDE FACE OF VAULT WALL.
 4. SITE ACCESS THRU EXISTING GATE CONTRACTOR TO COORDINATE WITH CITY OF LAS VEGAS PERSONNEL.

NEW — SITE PLAN
SCALE: 1" = 20'

EXISTING BUILDING

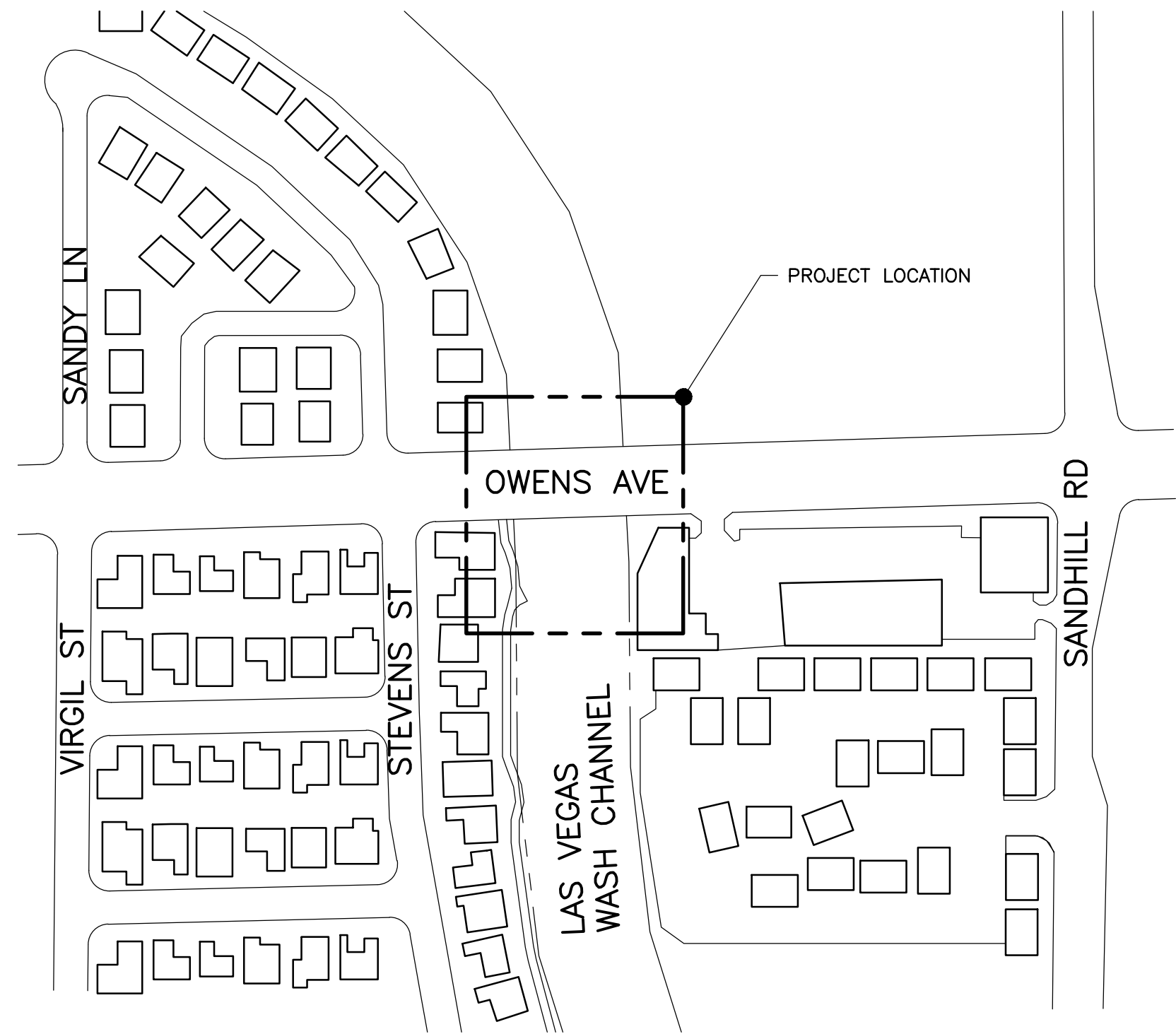
SITE LEGEND

EXISTING

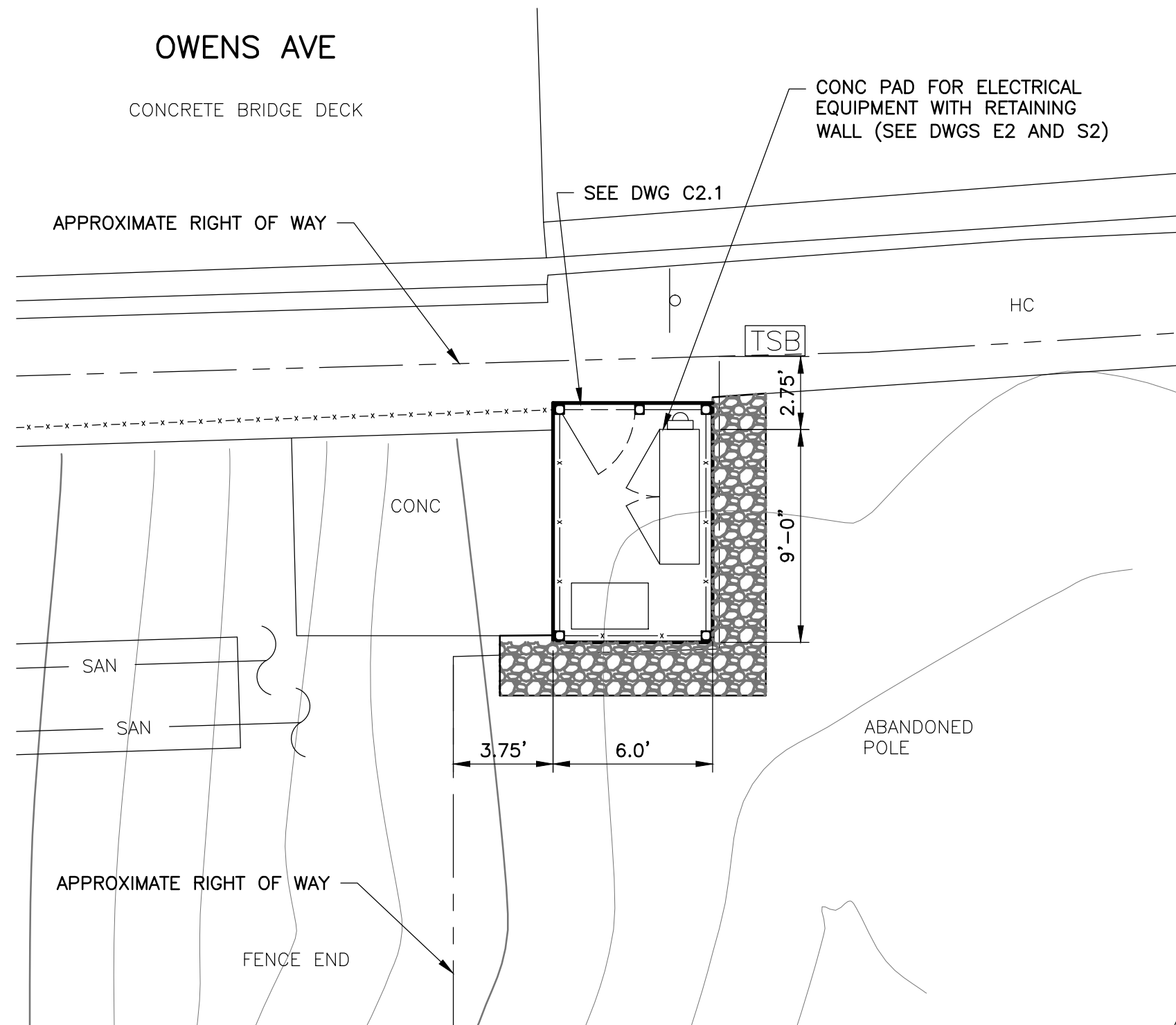
- | | |
|--|-------------------------------|
| | STORM PIPE ≥ 48" |
| | STORM PIPE < 48" |
| | SEWER PIPE ≥ 48" |
| | SEWER PIPE < 48" |
| | WATER PIPE |
| | UNDERGROUND ELECTRICAL |
| | OVERHEAD ELECTRICAL |
| | OVERHEAD TELEPHONE |
| | GAS LINE |
| | FENCE LINE |
| | CURB AND GUTTER |
| | CONTOUR LINE (1'-0" INTERVAL) |

NEW

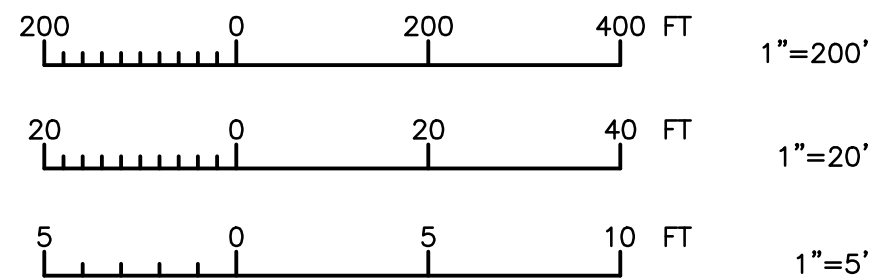
- | | |
|--|-------------------|
| | SEWER PIPE ≥ 48" |
| | SEWER PIPE < 48" |
| | PLUG VALVE |
| | DISMANTLING JOINT |
| | COUPLING |



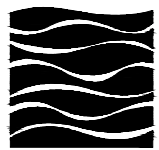
KEY MAP
SCALE: 1" = 200'



DETAIL 1/C2 — NEW CONCRETE PAD
SCALE: 1" = 5'



HTE# 13-26839



GREELEY AND HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146

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NO.	DATE	DESCRIPTION	APP'D
1	6/15	RECORD DRAWING	JC

DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT MANAGEMENT
CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:
DESIGNED BY: JC/SC
DRAWN BY: RAM
CHECKED BY: KDC
DATE: 02/13/2014

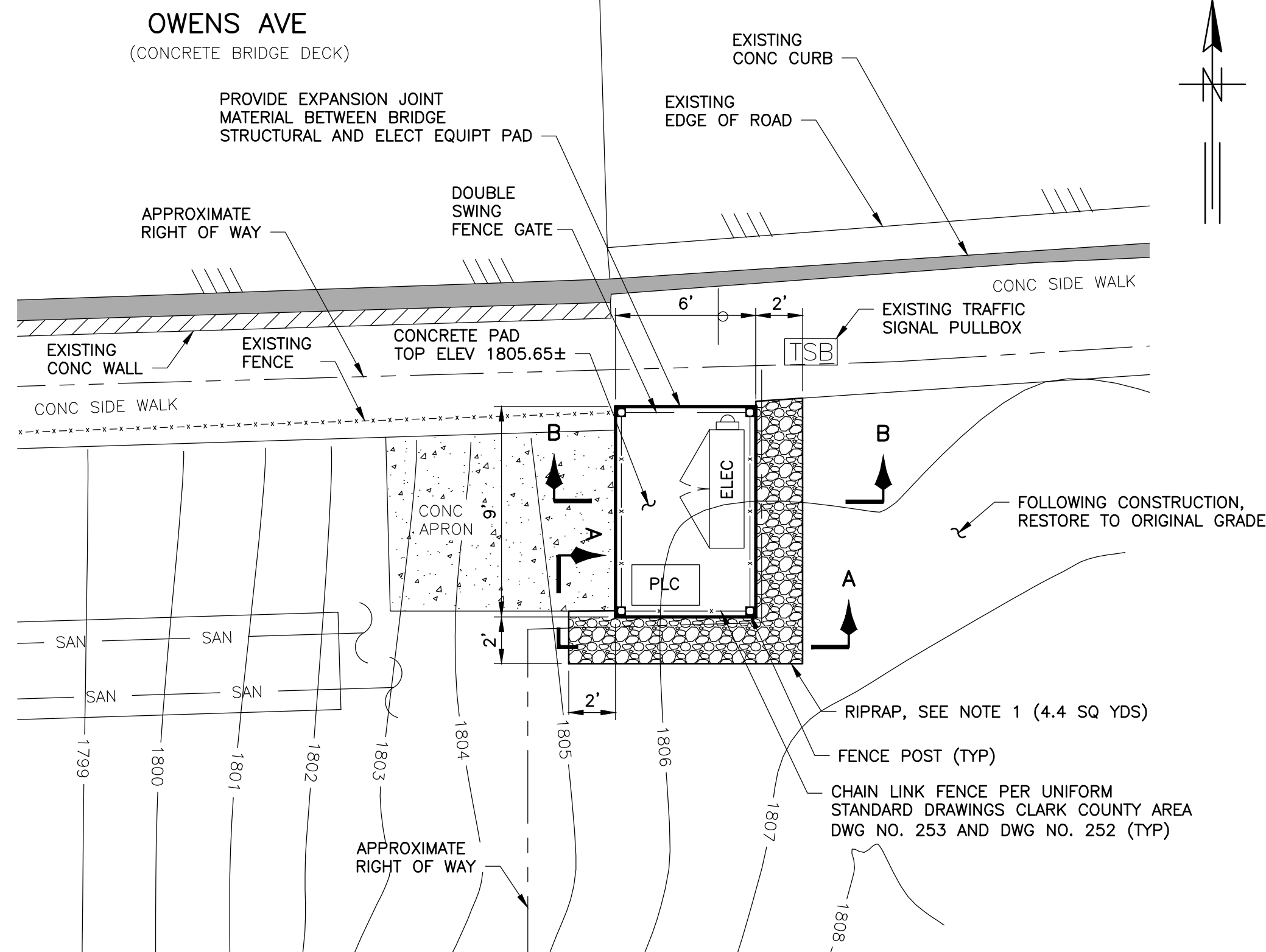


TITLE: COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE

NEW SITE PLAN
AND DETAILS

SHEET:

Sheet
C2
5 of 21
DRAWING NO.

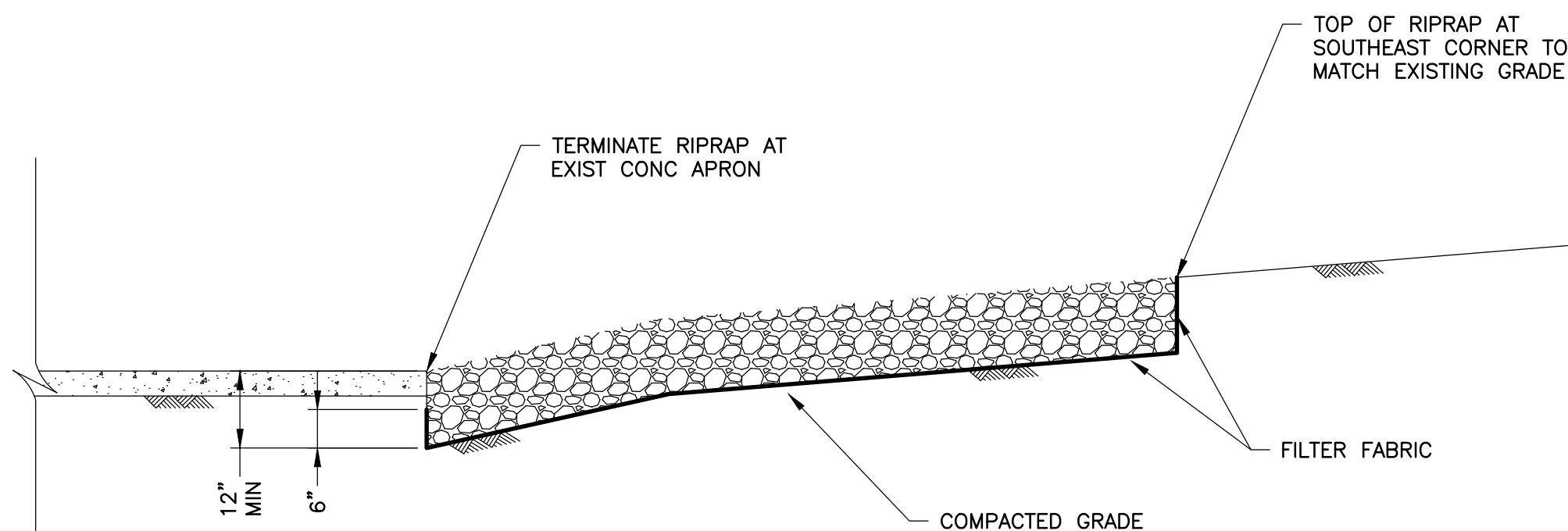


**DETAILED SITE PLAN
ELECTRICAL CONCRETE PAD**
SCALE: 1" = 5'

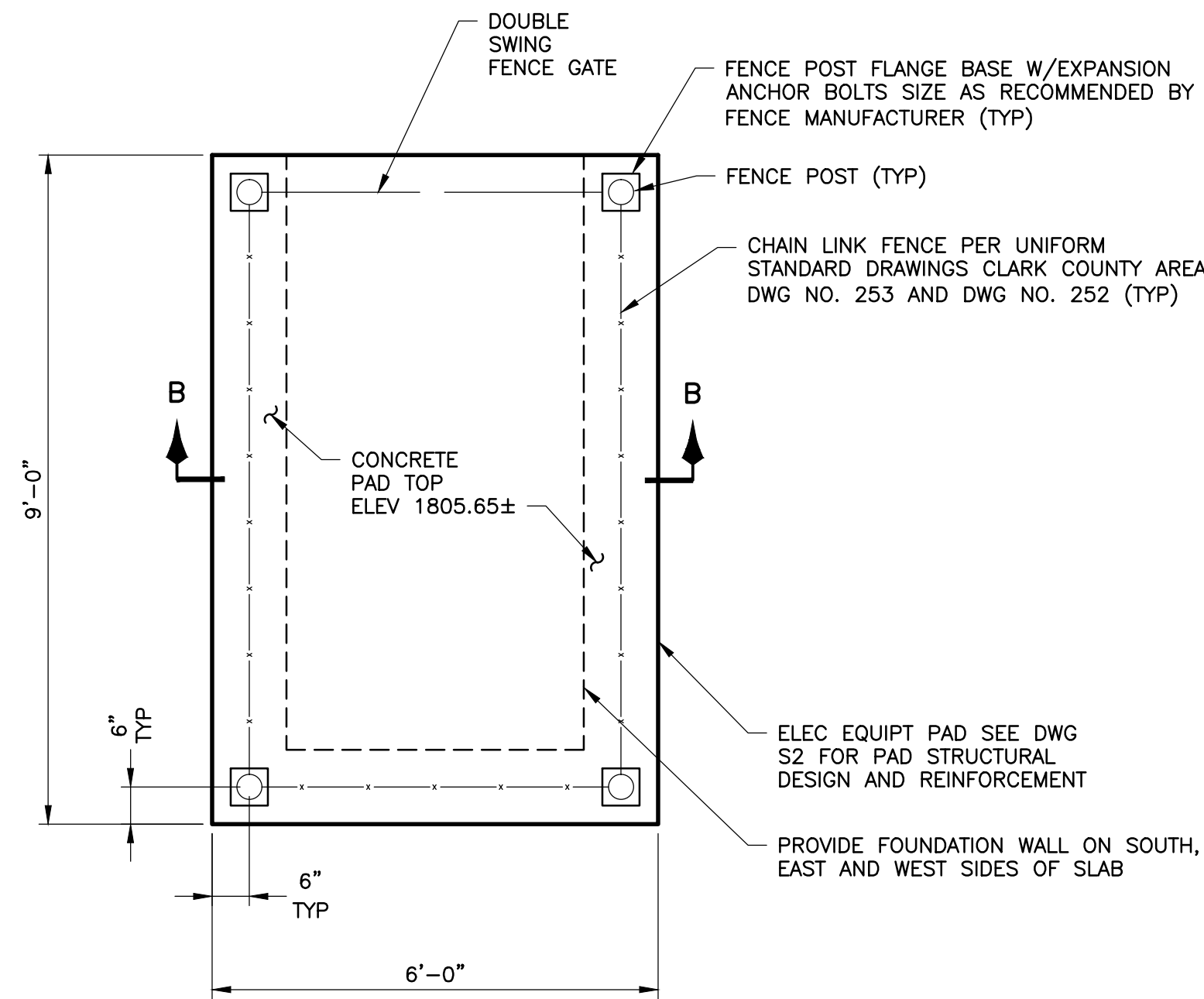
NOTE:

1. PLACE RIPRAP AS SHOWN IN ACCORDANCE WITH SECTION 610 OF THE STANDARD SPECIFICATIONS, MODIFIED AS FOLLOWS.
 - a. RIPRAP SHALL MEET THE FOLLOWING CRITERIA:

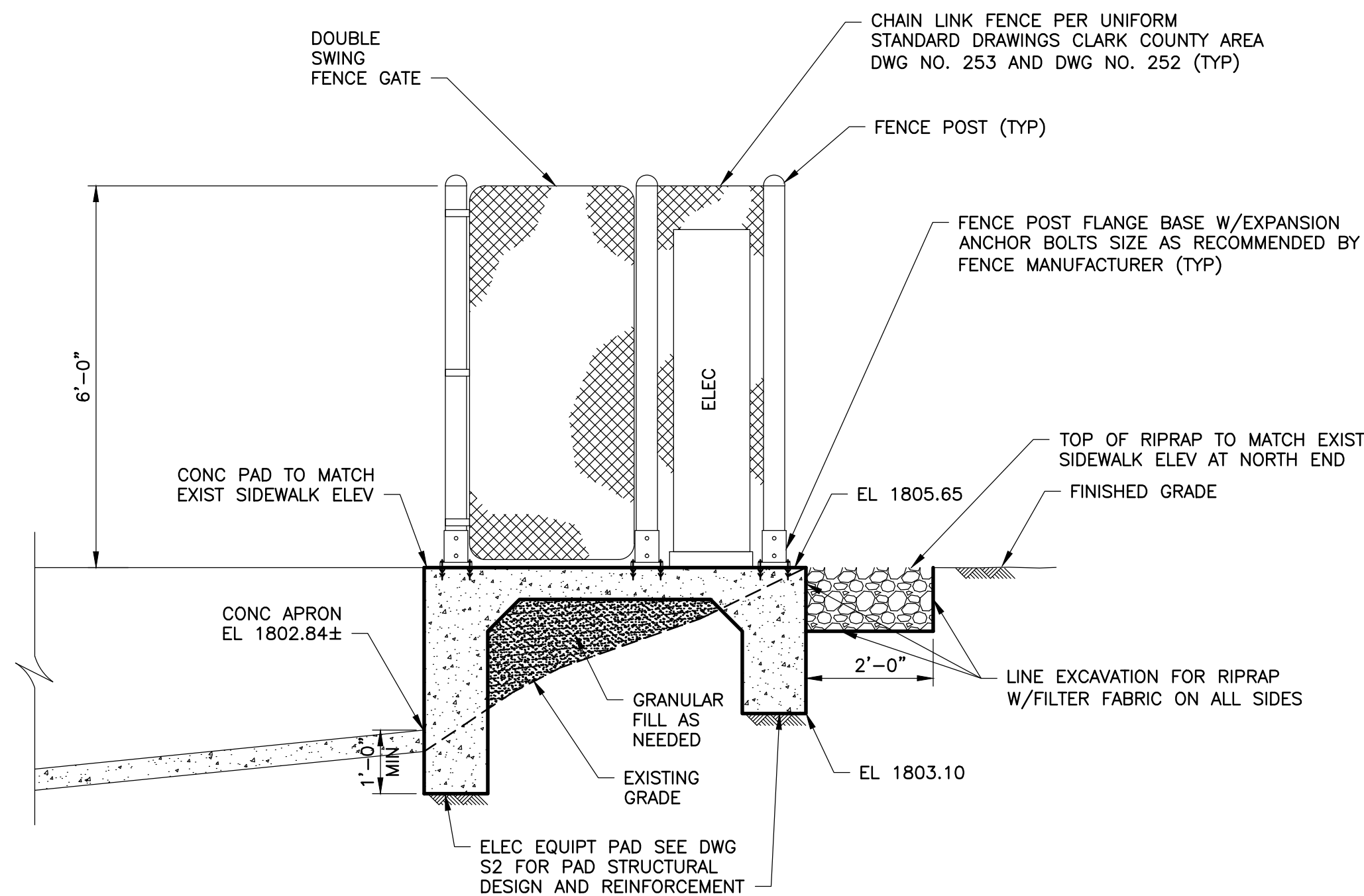
D₅₀ SHALL BE 8 INCHES WITH A MAXIMUM STONE SIZE OF 12 INCHES AND NO MORE THAN 15% BY WEIGHT SMALLER THAN 2 INCHES. SPECIFIC GRAVITY OF THE RIPRAP SHALL BE 2.6.



SECTION A-A
SCALE: 1/2" = 1'-0"



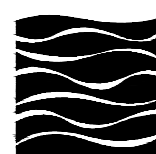
**ELECTRICAL EQUIPMENT PAD
PLAN VIEW**
SCALE: 1/2" = 1'-0"



SECTION B-B
SCALE: 1/2" = 1'-0"

RECORD DRAWING

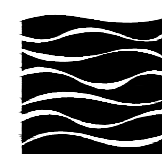
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GREELEY AND HANSEN

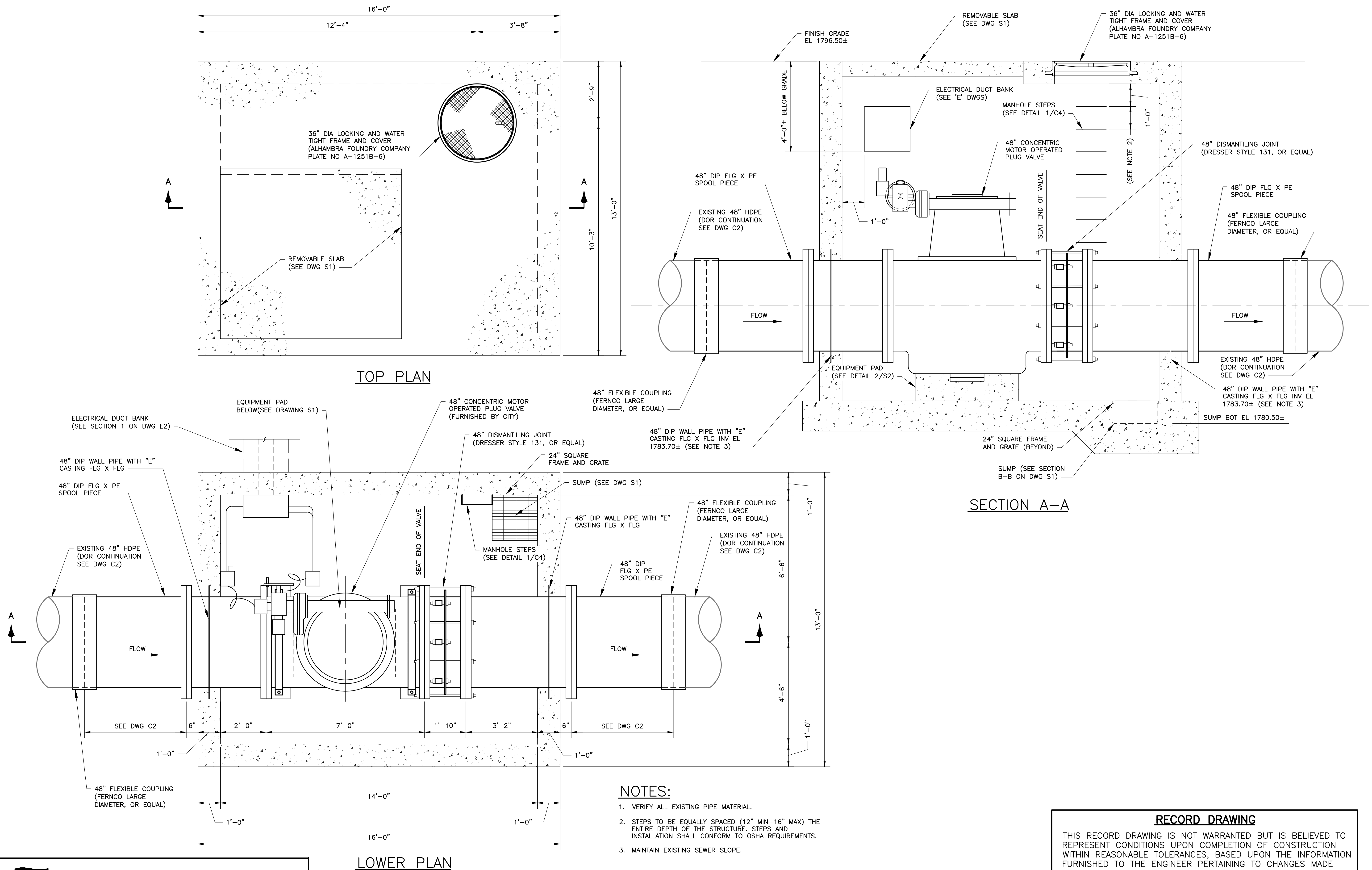
6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146

REVISIONS <table border="1"> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>																											DEPARTMENT OF PUBLIC WORKS CAPITAL PROJECT MANAGEMENT CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E. PROGRAM MANAGER: DESIGNED BY: JC/JC DRAWN BY: RAM CHECKED BY: KDC DATE: 02/13/2014 NO. DATE: 1 6/15 RECORD DRAWING REVISIONS JC APP'D
TITLE: COLLECTION SYSTEM CONTROL GATE LAS VEGAS WASH / OWENS AVENUE		SHEET: ELECTRICAL CONCRETE PAD																									
Sheet C2.1 51 of 21 DRAWING NO.		HTE# 13-26839																									



GREELEY and HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146



NOTES:

1. VERIFY ALL EXISTING PIPE MATERIAL.
2. STEPS TO BE EQUALLY SPACED (12" MIN-16" MAX) THE ENTIRE DEPTH OF THE STRUCTURE. STEPS AND INSTALLATION SHALL CONFORM TO OSHA REQUIREMENTS.
3. MAINTAIN EXISTING SEWER SLOPE.

DETAIL 1/C2,C3
PLUG VALVE VAULT

SCALE: 1/2"=1'-0"

1 0 1 2 3 4 5 FT 1/2"=1'-0"

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DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT MANAGEMENT



TITLE: COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE

NEW PLUG VALVE
PLAN AND SECTION

SHEET:

Sheet

C3

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DRAWING NO.

REVISIONS	NO.	DATE	DESCRIPTION	APP'D

CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:
DESIGNED BY: JC/SC
DRAWN BY: RAM
CHECKED BY: KDC
DATE: 02/13/2014

HTE# 13-26839



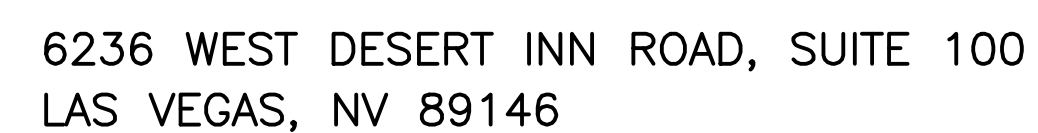
1. MANHOLE STEP SHALL CONFORM TO ASTM C-478, ASTM C-497 AND SECTION 4.9.3.
2. REINFORCED PLASTIC STEPS SHALL BE POLYPROPYLENE PLASTIC COATED, WITH AN INNER DEFORMED STEEL REINFORCING ROD (GRADE 60/ASTM A-615).
3. STEPS AND INSTALLATION SHALL CONFORM TO OSHA REQUIREMENTS.



ALL STEPS SHALL BE EPOXIED IN PLACE DURING THE VAULT FABRICATION PROCESS USING EPOXY AS RECOMMENDED BY STEP MANUFACTURER. EPOXY SHALL BE RESISTANT TO DEGRADATION BY SANITARY WASTEWATER AND HYDROGEN SULFIDE.

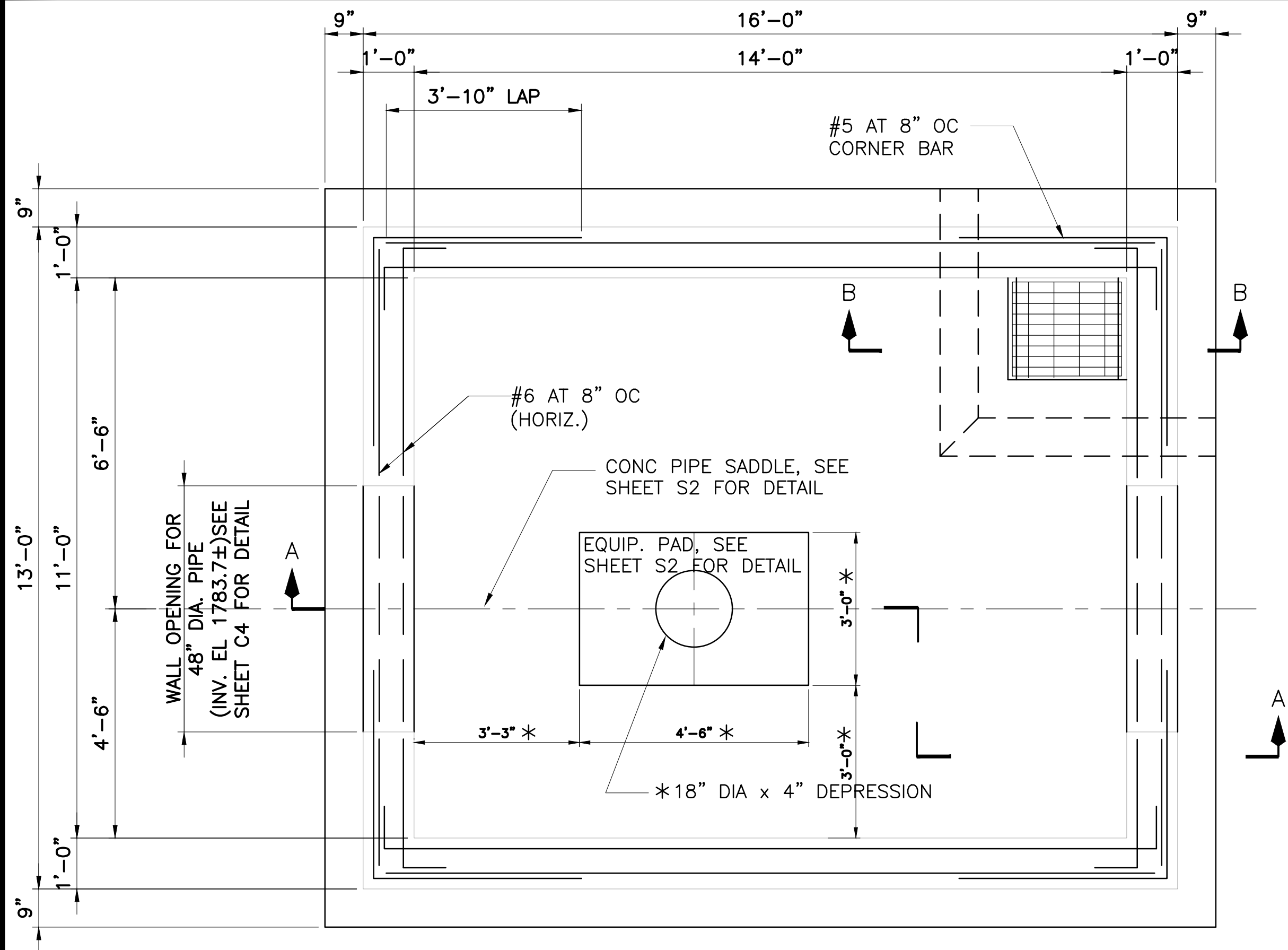
DETAIL 1/C3, C4
MANHOLE STEPS
SCALE: NOT TO SCALE

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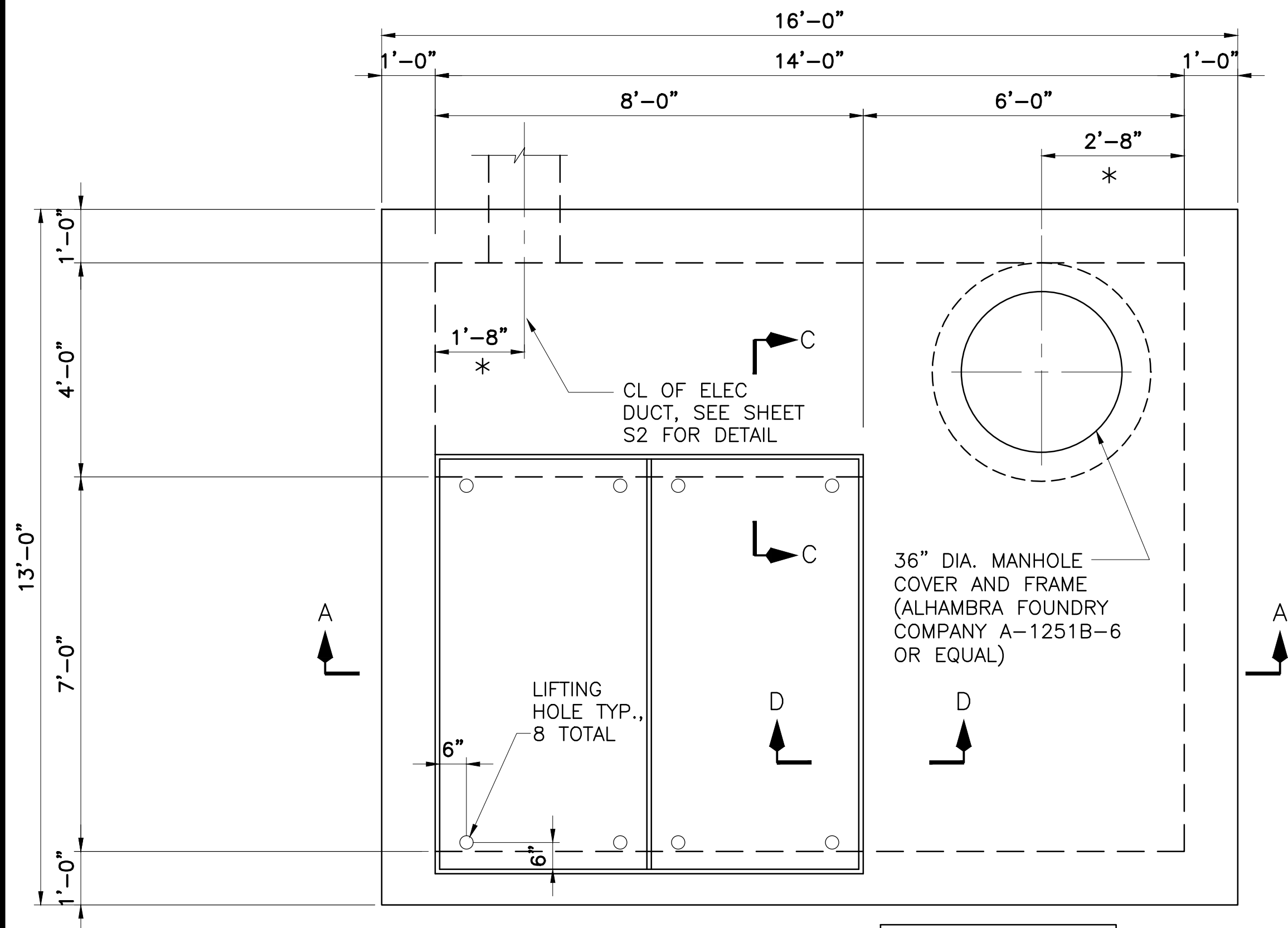
TITLE: COLLECTION SYSTEM CONTROL GATE LAS VEGAS WASH / OWENS AVENUE	SHEET: 		DEPARTMENT OF PUBLIC WORKS		REVISIONS
			CAPITAL PROJECT MANAGEMENT		
		CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E. PROGRAM MANAGER:			
		DESIGNED BY: JC/SC DRAWN BY: RAM CHECKED BY: KOC			
		DATE: 02/13/2014			
					NO. DATE: DESCRIPTION APP'D



SECTIONAL PLAN

SCALE: 1/2"=1'-0"

VERTICAL BARS NOT SHOWN FOR CLARITY



TOP PLAN

SCALE: 1/2"=1'-0"

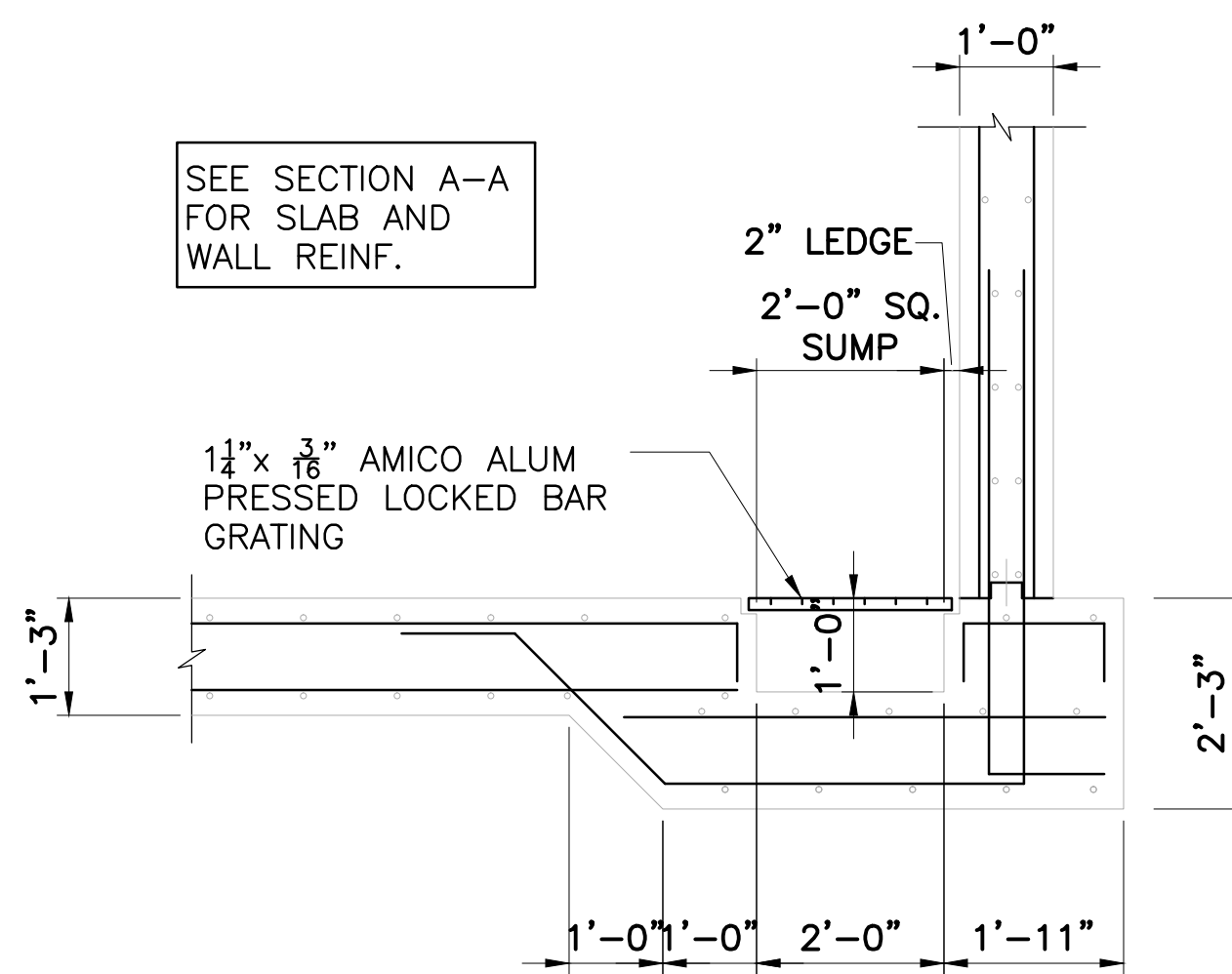
DESIGNED LIVE LOAD = 150 PSF

RECORD DRAWING

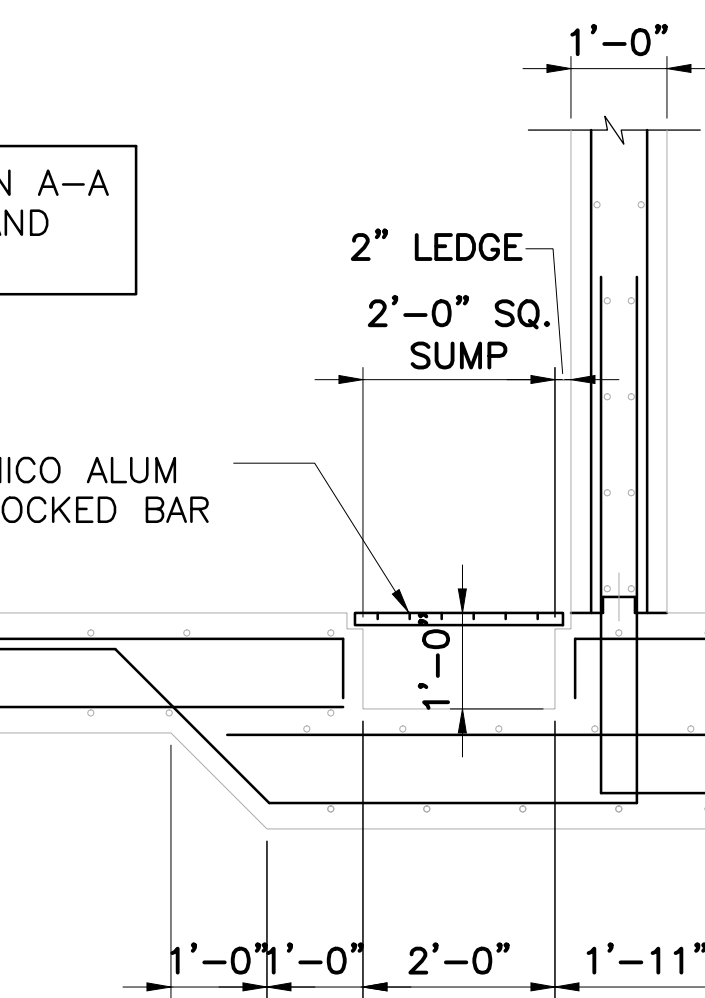
THIS RECORD DRAWING IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

SECTION B-B

SCALE: 1/2"=1'-0"



SEE SECTION A-A FOR SLAB AND WALL REINF.



SECTION A-A

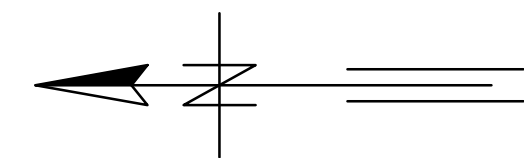
SCALE: 1/2"=1'-0"

NOTES:

- BACKFILL OVEREXCAVATED AREA UNDER VAULT BOTTOM WITH TYPE II AGGREGATE BASE COMPACTED TO 90 PERCENT RELATIVE COMPACTION.
- PROVIDE WATERPROOFING MEMBRANE TO EXTERIOR OF WALLS AND TO TOP OF TOP SLAB PER USS 646
- DO NOT PLACE FOUNDATION PRIOR TO APPROVAL BY GEOTECHNICAL ENGINEER.
- DO NOT PLACE BACK FILL AGAINST SUBSTRUCTURE WALLS UNTIL FLOOR SLABS SUPPORTING TOP AND BOTTOM OF THE WALLS HAVE ATTAINED A COMPRESSIVE STRENGTH OF 3,000 PSI. PLACE BACK FILL EVENLY AGAINST EACH SIDE OF EQUAL AND OPPOSITE LATERAL PRESSURES.
- THE FOLLOWING PARAMETERS WERE USED IN THE DESIGN CONTRACTOR TO VERIFY VALUES WITH GEOTECHNICAL ENGINEER:

SOIL BEARING PRESSURE = 2000 PSF
ACTIVE PRESSURE (DRY) = 43 PSF/FT
ACTIVE PRESSURE (MOIST) = 93.4 PSF/FT
COEFFICIENT OF FRICTION = 0.53
TEMPORARY SURCHARGE = 200 PSF
- DESIGNED 28 DAYS CONCRETE STRENGTH f'_c =4,500 PSI.
- DESIGNED REINFORCING STEEL YIELD STRENGTH f_y =60 ksi.
- CLEAR COVER TO REINFORCING = 2" UNO.
- * DIMENSION OR ELEVATION TO BE DETERMINED OR VERIFIED AFTER FINAL SELECTION OF EQUIPMENT.

1 0 1 2 3 4 5 FT 1/2"=1'-0"



REVISIONS		NO.	DATE	DESCRIPTION	APP'D

DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT MANAGEMENT

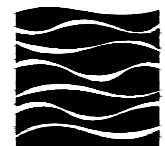
CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:
DESIGNED BY: MJP
DRAWN BY: REF
CHECKED BY: JRJ

DATE: 02/12/14

CITY OF LAS VEGAS

TITLE: COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE

SHEET: PLANS AND SECTIONS WITH NOTES



GREELEY and HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146

ONE LINE AND SCHEMATIC DIAGRAM SYMBOLS	
SYMBOL	DESCRIPTION
	INCOMING FEEDER
	OUTGOING FEEDER
	CONDUCTORS CONNECTED
	GROUNDING CONNECTION
	LIGHTNING OR SURGE ARRESTOR
	RECTIFIER OR DIODE
	SURGE CAPACITOR
	POWER TRANSFORMER
	CONTROL POWER TRANSFORMER
	CURRENT TRANSFORMER (NUMBER DENOTES QUANTITY REQUIRED)
	CURRENT TRANSFORMER 3 PHASE WINDOW TYPE
	POTENTIAL TRANSFORMER (NUMBER DENOTES QUANTITY REQUIRED)
	DISCONNECTING OR DRAWOUT DEVICE
	LOW VOLTAGE AIR CIRCUIT BREAKER WITH 100A TRIP
	LOW VOLTAGE AIR CIRCUIT BREAKER 225A FRAME AND 125A TRIP
	LOW VOLTAGE AIR CIRCUIT BREAKER WITH COORDINATED CURRENT LIMITING FUSES - 225A FRAME AND 150A TRIP
	KEY INTERLOCK - DASHED LINE WITH ARROWS INDICATES MOVEMENT OF KEY DURING INTERLOCK PROCEDURE
	FULL VOLTAGE MAGNETIC COMBINATION STARTER WITH MOTOR CIRCUIT PROTECTOR, CONTROL TRANSFORMER AND OVERLOAD RELAYS (M - OPERATING COIL)
	FULL VOLTAGE MAGNETIC COMBINATION REVERSING STARTER WITH MOTOR CIRCUIT PROTECTOR, CONTROL TRANSFORMER AND OVERLOAD RELAYS (F - FORWARD, R - REVERSE)
	FULL VOLTAGE MAGNETIC COMBINATION TWO SPEED STARTER WITH MOTOR CIRCUIT PROTECTOR, CONTROL TRANSFORMER AND OVERLOAD RELAYS (H - HIGH, L - LOW, F - FAST, S - SLOW)
	REDUCED VOLTAGE MAGNETIC COMBINATION AUTOTransformer STARTER WITH MOTOR CIRCUIT PROTECTOR, CONTROL TRANSFORMER AND OVERLOAD RELAYS (R - RUN, TR - TIMER, 1S & 2S - TRANSITION)
	SOLID STATE REDUCED VOLTAGE COMBINATION STARTER WITH MOTOR CIRCUIT PROTECTOR AND CONTROL TRANSFORMER
	MOTOR - THREE PHASE (NUMBER DENOTES HORSEPOWER)
	AUTOMATIC TRANSFER SYSTEM

ONE LINE AND SCHEMATIC DIAGRAM SYMBOLS	
SYMBOL	DESCRIPTION
	OPERATING COIL (C-CONTACTOR, F-FAST, F-FORWARD, H-HIGH, L-LOW, M-MOTOR STARTER, R-REVERSE, S-SLOW)
	RELAY COIL (AR-AUXILIARY RELAY, CR-CONTROL RELAY, LOR-LOCKOUT RELAY, TR-TIME DELAY RELAY WHERE 'XX' DENOTES RELAY FUNCTION OR NUMBER)
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	OVERLOAD RELAY CONTACT
	NORMALLY OPEN (SHOWN) OR NORMALLY CLOSED RESET TIMER CONTACT (X-X-O - DENOTES TIMER SEQUENCE FOR RESET-TIMING-TIMED OUT PERIODS. X INDICATES CONTACT CLOSED)
	NORMALLY OPEN CONTACT WITH TIME DELAY CLOSING (ON DELAY)
	NORMALLY CLOSED CONTACT WITH TIME DELAY CLOSING (OFF DELAY)
	NORMALLY CLOSED CONTACT WITH TIME DELAY OPENING (ON DELAY)
	NORMALLY OPEN CONTACT WITH TIME DELAY OPENING (OFF DELAY)
	LS - LIMIT SWITCH
	FS - FLOAT SWITCH
	PS OR VS - PRESSURE OR VACUUM SWITCH
	FLS - FLOW SWITCH
	TS - TEMPERATURE SWITCH
	TQ - TORQUE SWITCH
	LATCHING RELAY WITH CLEARING CONTACTS
	SELECTOR SWITCH
	NORMALLY OPEN PUSHBUTTON
	NORMALLY CLOSED PUSHBUTTON
	PUSHBUTTON STATION (ONE, TWO OR THREE UNIT)
	INDICATING LIGHT (A-AMBER, B-BLUE, G-GREEN, R-RED, W-WHITE)
	THERMAL OVERLOAD ELEMENT (OL)
	ON-OFF SWITCH
	RESISTOR
	FUSE
	BATTERY
	HEATING ELEMENT
	MAINTAINED CONTACT PUSHBUTTON WITH MUSHROOM HEAD OPERATOR
	SELECTOR SWITCH X INDICATES CONTACT CLOSED IN CORRESPONDING SWITCH POSITION
	CURRENT SENSOR TRIP SWITCH

ABBREVIATIONS	
AFD - ADJUSTABLE FREQUENCY DRIVE	
AFF - ABOVE FINISHED FLOOR	
ATS - AUTOMATIC TRANSFER SWITCH	
BKR - BREAKER	
BOD - BOTTOM OF DUCT	
CKT - CIRCUIT	
CP - CONTROL PANEL	
CPT - CONTROL POWER TRANSFORMER	
DP - DISTRIBUTION PANELBOARD	
DTC - DATA TERMINAL CABINET	
EO - ELECTRICALLY OPERATED	
FO - FIBER OPTIC	
GFI - GROUND FAULT INTERRUPTER	
GND - GROUND	
GRS - GALVANIZED RIGID STEEL	
JB - JUNCTION BOX	
LCP - LIGHTING CONTROL PANEL	
LP - LIGHTING PANELBOARD	
LT - LIGHTING TRANSFORMER	
MCC - MOTOR CONTROL CENTER	
MH - MOUNTING HEIGHT	
PB - PULL BOX	
PLC - PROGRAMMABLE LOGIC CONTROLLER	
PVC - POLYVINYL CHLORIDE	
RTU - REMOTE TERMINAL UNIT	
SP - SPACE	
TB - TERMINAL BOX	
TCP - TEMPERATURE CONTROL PANEL	
TTC - TELEPHONE TERMINAL CABINET	
WP - WEATHERPROOF	
XP - EXPLOSION-PROOF	

POWER, LIGHTING AND MISCELLANEOUS PLAN SYMBOLS	
SYMBOL	DESCRIPTION
	EXPOSED CONDUIT RUN
	CONCEALED CONDUIT RUN ABOVE CEILING OR IN WALLS
	CONCEALED CONDUIT RUN IN OR BELOW FLOOR SLAB
	UNDERGROUND CONDUIT (CONCRETE ENCASED)
	UNDERGROUND CONDUIT (DIRECT BURIED)
	UNDERGROUND CABLE (DIRECT BURIED)
	CONDUIT CAPPED
	CONDUIT UP
	CONDUIT DOWN
	CONDUIT WITH HOT, NEUTRAL AND GROUND WIRES (LONG LINE DENOTES NEUTRAL; LONG LINE WITH DOT DENOTES GROUND)
	HOME RUN TO LIGHTING PANELBOARD (LP6 INDICATES PANELBOARD AND 1,3,5 INDICATES CIRCUITS 1, 3 AND 5)
	FLEXIBLE CONDUIT OR CABLE
	GROUNDING CONDUCTOR
	NEUTRAL CONDUCTOR
	EQUIPMENT ENCLOSURE AS INDICATED ON PLAN
	LIGHTING PANELBOARD 208Y/120V OR 120/240V
	LIGHTING PANELBOARD 480Y/277V
	DRY TYPE TRANSFORMER
	JUNCTION BOX, PULL BOX OR TERMINAL BOX
	MANUALLY OPERATED DISCONNECTING CIRCUIT BREAKER OR SWITCH (SEE SPECIFICATIONS)
	FULL VOLTAGE MAGNETIC STARTER OR CONTACTOR
	COMBINATION CIRCUIT BREAKER STARTER
	MOTOR - THREE PHASE
	MOTOR - SINGLE PHASE
	MOTOR OPERATED VALVE OR SLUICE GATE WITH INTEGRAL CONTROLLER AND CONTROL STATION
	CONTROL STATION (SEE SCHEMATIC DIAGRAMS FOR ASSOCIATED DEVICES)
	CONTROL STATION AND FIELD CONTROL DEVICES (SEE ONE LINE DIAGRAMS AND SCHEMATICS FOR DETAILS)
	GROUND ROD
	GROUND ROD WITH ACCESS BOX
	LIGHTNING ROD
	METER SOCKET
	WATER HEATER
	UNIT HEATER
	LIGHT LINE DENOTES EXISTING WORK
	HEAVY LINE DENOTES NEW WORK

SYMBOL	DESCRIPTION
	WALL OR CEILING MOUNTED INCANDESCENT OR HID LIGHTING FIXTURE UPPER LETTER DENOTES FIXTURE TYPE NUMBER DENOTES CIRCUIT NUMBER AND LETTER DENOTES SWITCH CONTROLLING FIXTURE
	EMERGENCY LIGHTING FIXTURE
	WALL OR CEILING MOUNTED EXIT OR DIRECTIONAL SIGN (SHADED SIDE DENOTES ILLUMINATED FACE ARROW INDICATES DIRECTION)
	POLE MOUNTED LIGHTING FIXTURE
	FLOODLIGHT
	FLUORESCENT STRIP LIGHTING FIXTURE
	FLUORESCENT LIGHTING FIXTURE
	EMERGENCY FLUORESCENT LIGHTING FIXTURE
	REMOTE TEST PUSHBUTTON AND "ON" INDICATING LIGHT FOR BATTERY EQUIPPED LIGHTING FIXTURES
	EMERGENCY BATTERY PACK WITH TWO LIGHTING HEADS
	EMERGENCY BATTERY PACK - REMOTE HEAD
	PHOTOELECTRIC CELL
	DUPLEX RECEPTACLE 2 POLE, 3 WIRE, 120 VOLT, 20A, OR AS NOTED
	CLOCK WITH RECEPTACLE
	SINGLE POLE SWITCH UNLESS NOTED OTHERWISE 2P - TWO POLE 3 - THREE WAY 4 - FOUR WAY D - DOOR SWITCH M - MOMENTARY CONTACT
	GAS SENSOR - ASTERISK REPRESENTS GAS
	COMBUSTIBLE GAS DETECTOR

NOTE:

THIS IS A GENERAL LEGEND PROVIDED TO FACILITATE USE OF THE ELECTRICAL DRAWINGS.
ALL SYMBOLS MAY NOT BE USED IN THIS SET OF ELECTRICAL DRAWINGS.
REFER TO THE DRAWINGS AND SPECIFICATIONS FOR ITEMS REQUIRED.

RECORD DRAWING

THIS RECORD DRAWING IS NOT WARRANTED BUT IS BELIEVED TO
REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION
WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION
FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE
DURING CONSTRUCTION.

TITLE: **COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE**

**ELECTRICAL
SYMBOLS AND LEGENDS**

SHEET:

Sheet

E1
10 of 21
DRAWING NO.

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT MANAGEMENT

CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:

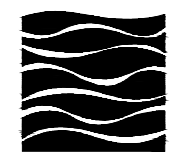
DESIGNED BY: RZ
DRAWN BY: TT

CHECKED BY: NV

DATE: 02/28/2014

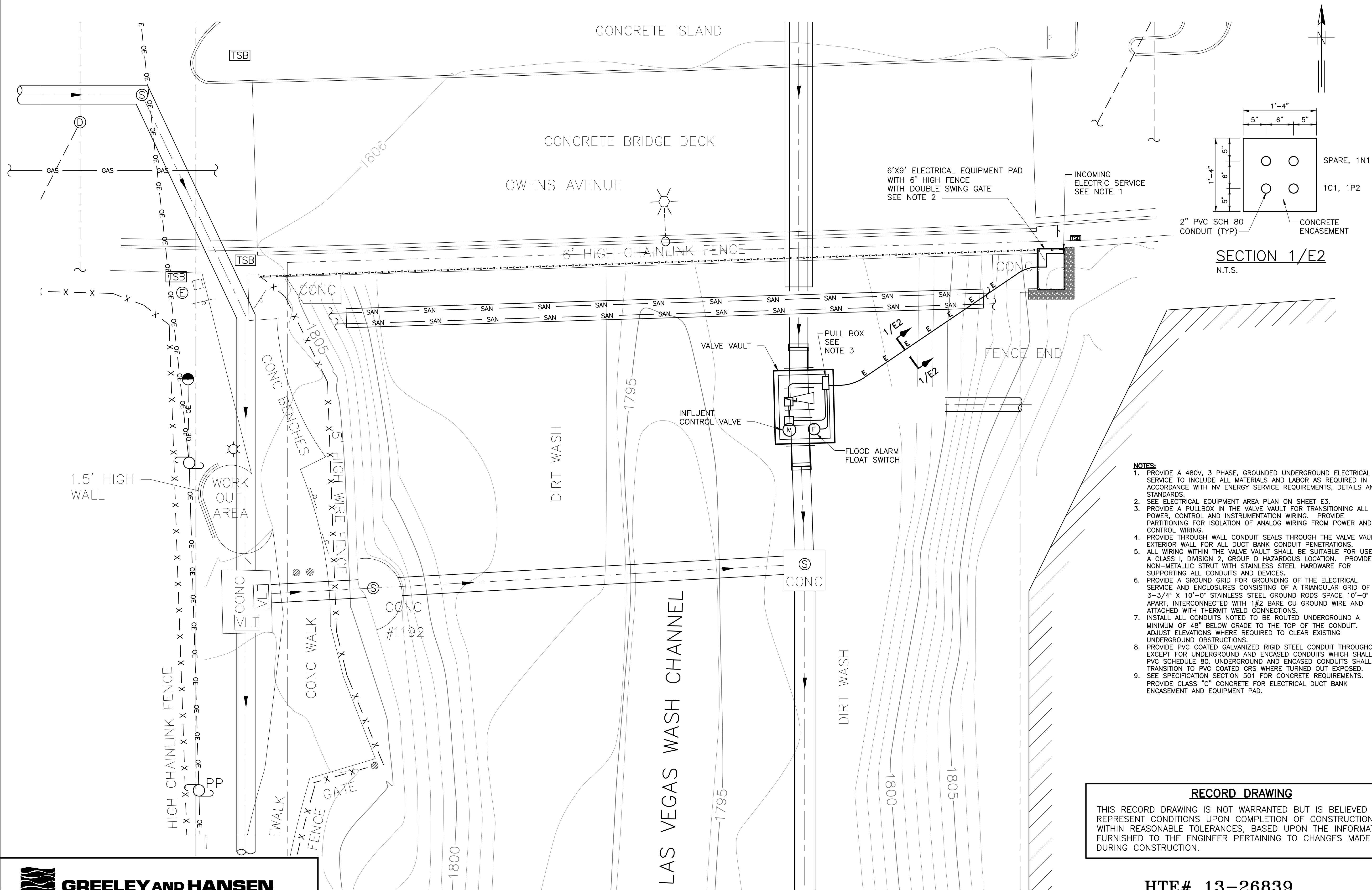
REVISIONS

NO.	DATE:	DESCRIPTION	APP'D



GREELEY and HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146

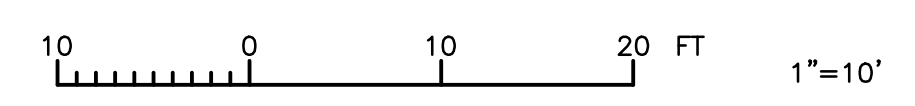


- NOTES:**
1. PROVIDE A 480V, 3 PHASE, GROUNDED UNDERGROUND ELECTRICAL SERVICE TO INCLUDE ALL MATERIALS AND LABOR AS REQUIRED IN ACCORDANCE WITH NV ENERGY SERVICE REQUIREMENTS, DETAILS AND STANDARDS.
 2. SEE ELECTRICAL EQUIPMENT AREA PLAN ON SHEET E3.
 3. PROVIDE A PULLBOX IN THE VALVE VAULT FOR TRANSITIONING ALL POWER, CONTROL AND INSTRUMENTATION WIRING. PROVIDE PARTITIONING FOR ISOLATION OF ANALOG WIRING FROM POWER AND CONTROL WIRING.
 4. PROVIDE THROUGH WALL CONDUIT SEALS THROUGH THE VALVE VAULT EXTERIOR WALL FOR ALL DUCT BANK CONDUIT PENETRATIONS.
 5. ALL WIRING WITHIN THE VALVE VAULT SHALL BE SUITABLE FOR USE IN A CLASS I, DIVISION 2, GROUP D HAZARDOUS LOCATION. PROVIDE NON-METALLIC STRUT WITH STAINLESS STEEL HARDWARE FOR SUPPORTING ALL CONDUITS AND DEVICES.
 6. PROVIDE A GROUND GRID FOR GROUNDING OF THE ELECTRICAL SERVICE AND ENCLOSURES CONSISTING OF A TRIANGULAR GRID OF 3-3/4" X 10'-0" STAINLESS STEEL GROUND RODS SPACE 10'-0" APART, INTERCONNECTED WITH 1#2 BARE CU GROUND WIRE AND ATTACHED WITH THERMIT WELD CONNECTIONS.
 7. INSTALL ALL CONDUITS NOTED TO BE ROUTED UNDERGROUND A MINIMUM OF 48" BELOW GRADE TO THE TOP OF THE CONDUIT. ADJUST ELEVATIONS WHERE REQUIRED TO CLEAR EXISTING UNDERGROUND OBSTRUCTIONS.
 8. PROVIDE PVC COATED GALVANIZED RIGID STEEL CONDUIT THROUGHOUT EXCEPT FOR UNDERGROUND AND ENCASED CONDUITS WHICH SHALL BE PVC SCHEDULE 80. UNDERGROUND AND ENCASED CONDUITS SHALL TRANSITION TO PVC COATED GRS WHERE TURNED OUT EXPOSED.
 9. SEE SPECIFICATION SECTION 501 FOR CONCRETE REQUIREMENTS. PROVIDE CLASS "C" CONCRETE FOR ELECTRICAL DUCT BANK ENCASEMENT AND EQUIPMENT PAD.

RECORD DRAWING

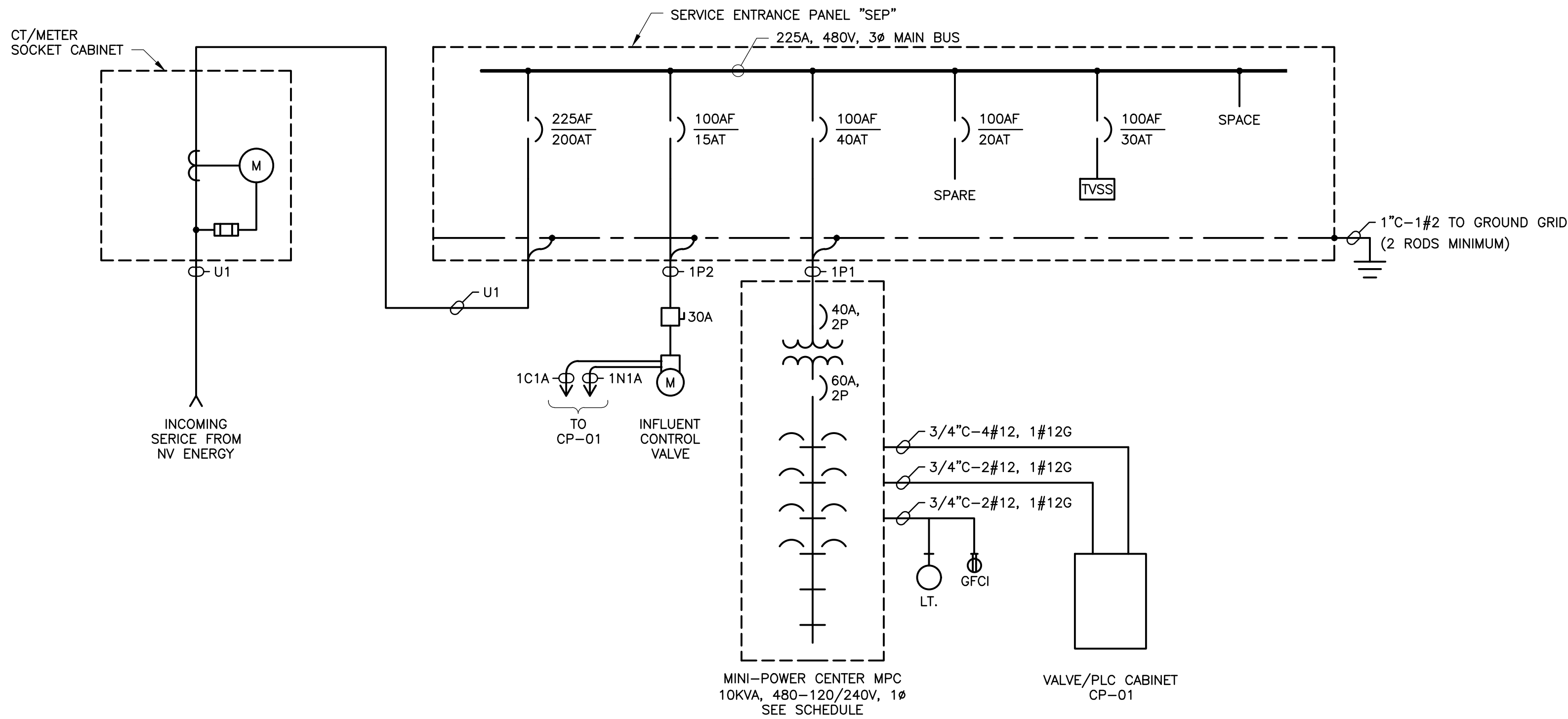
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HTE# 13-26839



SITE PLAN
SCALE: 1" = 10'-0"

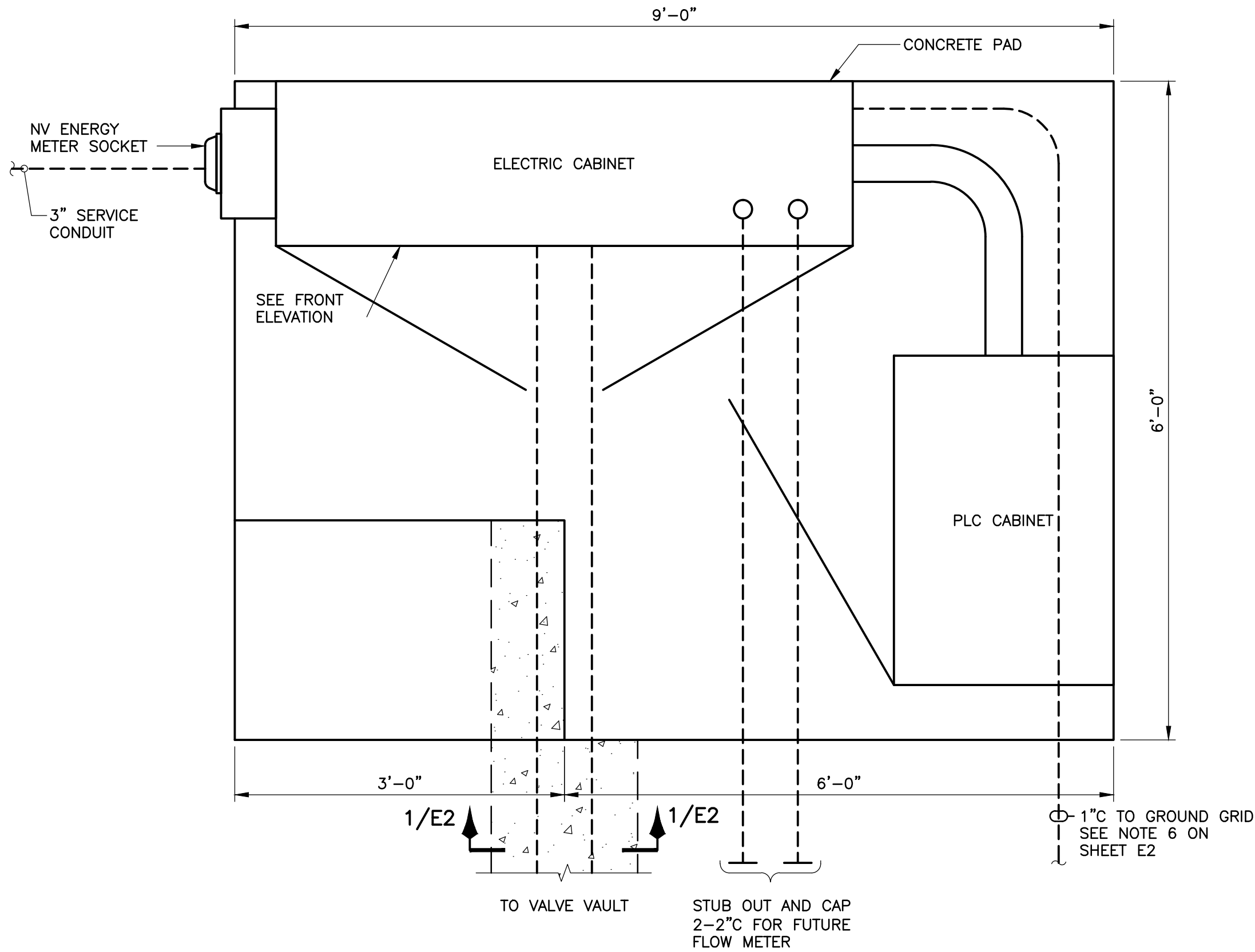
REVISIONS		NO. DATE		DESCRIPTION		JC APP'D	
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DEPARTMENT OF PUBLIC WORKS							
CAPITAL PROJECT MANAGEMENT							
CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.							
PROGRAM MANAGER:							
DESIGNED BY: RZ							
DRAWN BY: TT							
CHECKED BY: NV							
DATE: 02/28/2014							
TITLE: COLLECTION SYSTEM CONTROL GATE				ELECTRICAL SITE PLAN			
SHEET: LAS VEGAS WASH / OWENS AVENUE							
Sheet E2				11 of 21			
DRAWING NO.							



ONE LINE DIAGRAM

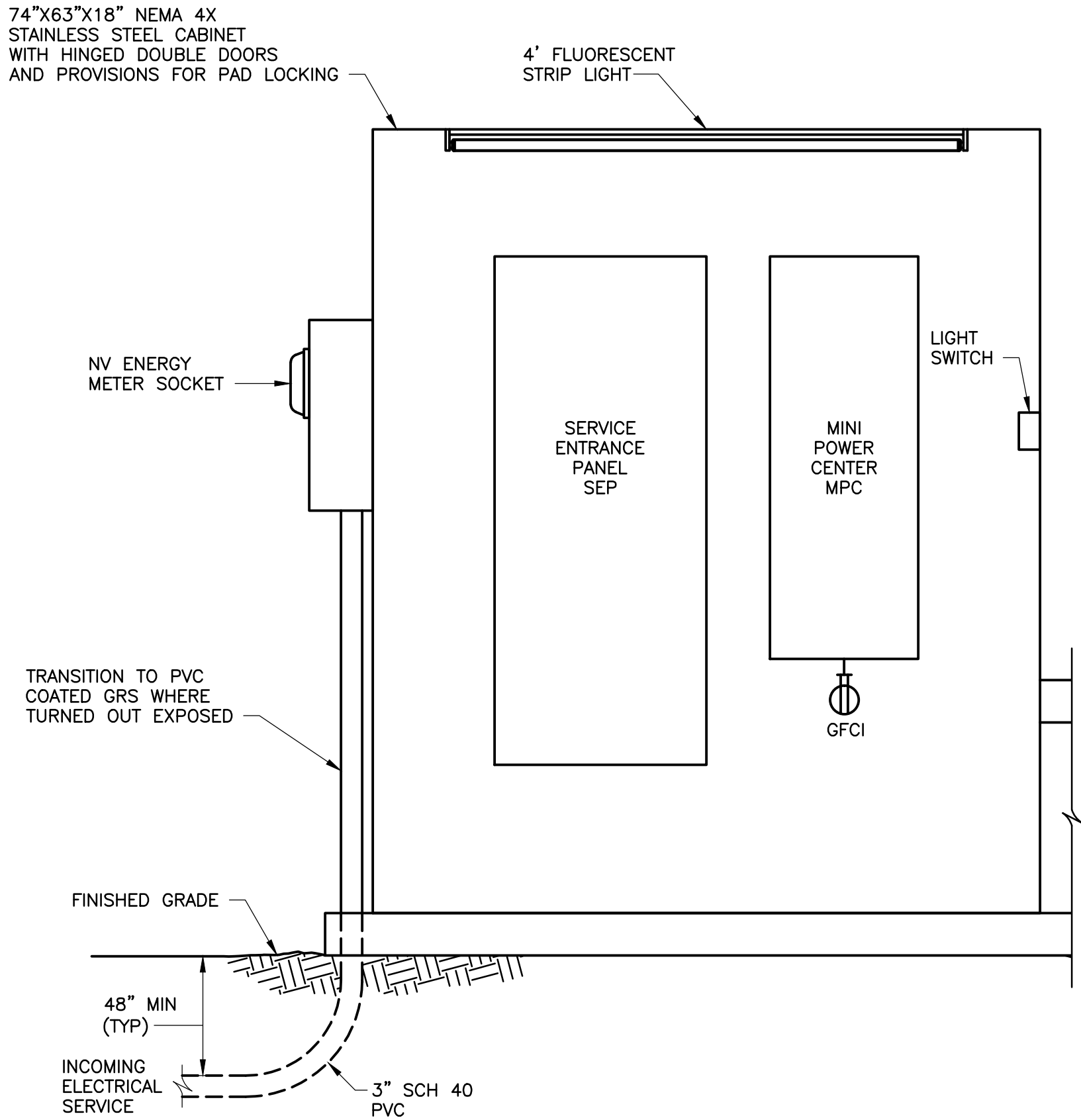
CIRCUIT SCHEDULE – MINI POWER CENTER							
60A MAIN BREAKER, 120/240V, 1 PHASE, 3 WIRE W/GROUND BUS							
PHASE A				PHASE B			
CKT	WATTS	BKR	SERVES	CKT	WATTS	BKR	SERVES
1	1200	20A	LIGHT RECEPT	3	1200	20A	CP-01-UPS
2	1200	20A	AIR COND	4	1200	20A	CP-01-CONTROL
5	0	20A	SPARE	7	0	20A	SPARE
6	0	20A	SPARE	8	0	20A	SPARE
9	0	20A	SPACE	11	0	20A	SPACE
10	0	20A	SPACE	12	0	20A	SPACE
TOTAL A:	2400			TOTAL B:	2400		
			TOTAL WATTS:	4800			

CABLE AND CONDUIT SCHEDULE				
CONDUIT NUMBER	CONDUIT SIZE	CONDUCTOR QUANTITY AND SIZE	FROM	TO
U1	3"	3-250KCMIL, 1#2G	NV ENERGY	SERVICE ENTRANCE PANEL (SEP)
1P1	1"	2#6, 1#8G	SEP	MINI-POWER CENTER (MPC)
1P2	2"	3#10, 1#10G	SEP	INFLUENT CONTROL VALVE
1C1	2"	20#14, 1#14G (6 SPARES)	VALVE PLC CABINET	INFLUENT CONTROL VALVE
1C1A	1"	18#14, 1#14G	PB IN VAULT	INFLUENT CONTROL VALVE
1C1B	3/4"	2#14, 1#14G	PB IN VAULT	FLOAT SWITCH
1N1	2"	1-2/C#16TWSH	WAVLE PLC CABINET	PB IN VAULT
1N1A	3/4"	1-2/C#16TWSH	PB IN VAULT	INFLUENT CONTROL VALVE
				POSITION INDICATION



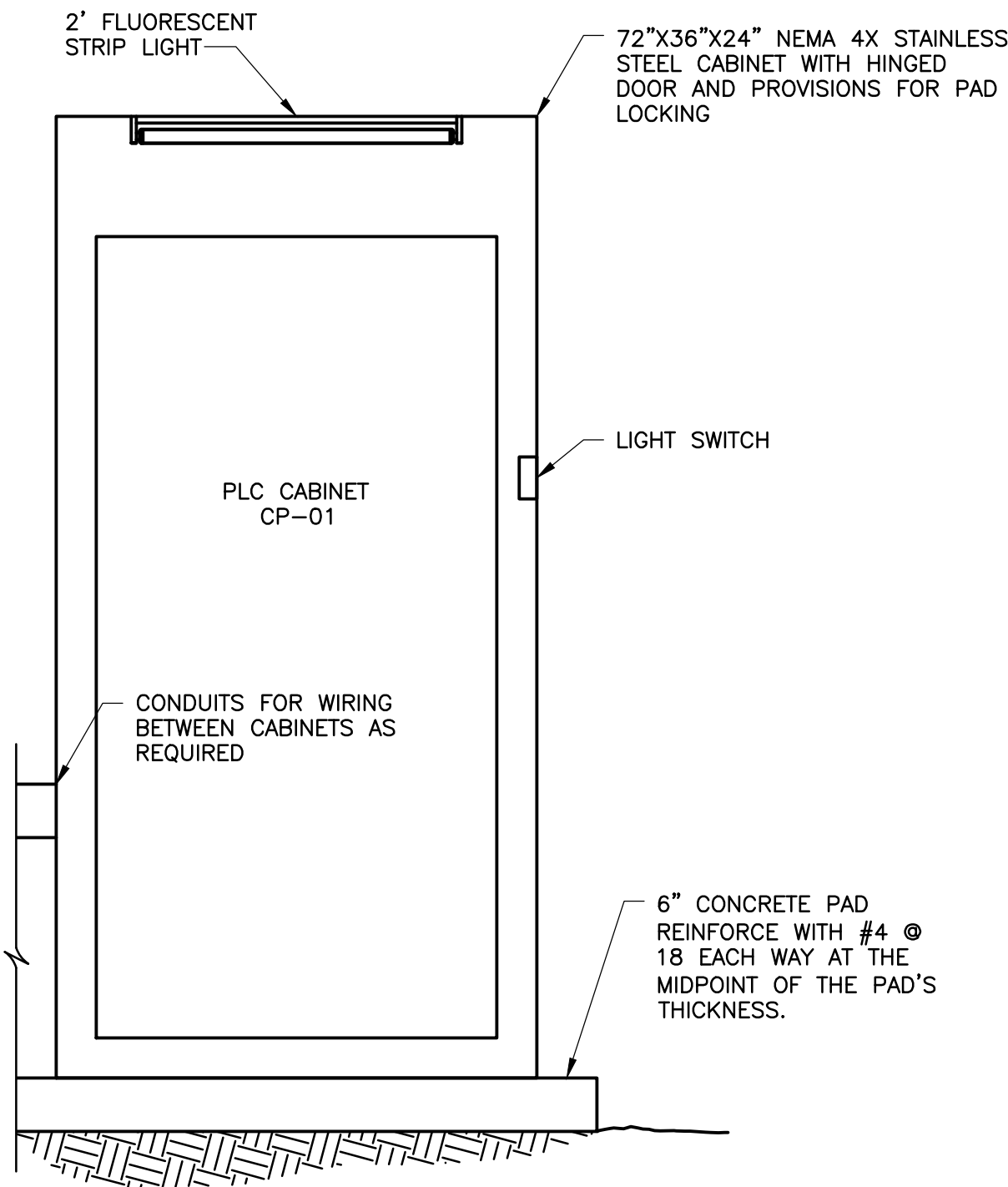
ELECTRICAL EQUIPMENT AREA PLAN

SCALE: 1" = 1'-0"
NOTE: ANCHOR AND SUPPORT CABINETS AS REQUIRED. WITH STAINLESS STEEL CHANNEL AND HARDWARE.



FRONT ELEVATION ELECTRICAL CABINET

SCALE: 1" = 1'-0"
NOTE: INSTALL ALL INTERCONNECTING WIRING WITHIN AND BETWEEN CABINETS IN GRS CONDUIT. UTILIZING WIREWAYS AS REQUIRED. MAINTAIN SEPARATION OF ANALOG AND DIGITAL WIRING. PROVIDE MARINE GRADE STAINLESS STEEL HARDWARE AND FASTENERS PER THE MANUFACTURER'S RECOMMENDATIONS FOR ANCHORING THE ENCLOSURE TO THE CONCRETE PAD.

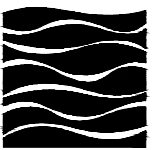


FRONT ELEVATION PLC CABINET

SCALE: 1" = 1'-0"
SEE ELECTRICAL CABINET NOTES FOR APPLICABLE CABLE ROUTING, ANCHORING INSTRUCTIONS, AND ACCEPTABLE CONSTRUCTION MATERIALS.

1 0 1 2 FT 1"=1'-0"

HTE# 13-26839



GREELEY and HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146

RECORD DRAWING

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DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT MANAGEMENT

CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:

DESIGNED BY: RZ

DRAWN BY: TT

CHECKED BY: NV

DATE: 02/28/2014

TITLE: COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE

SHEET:
**ONE LINE AND
BLOCK WIRING DIAGRAMS**

Sheet

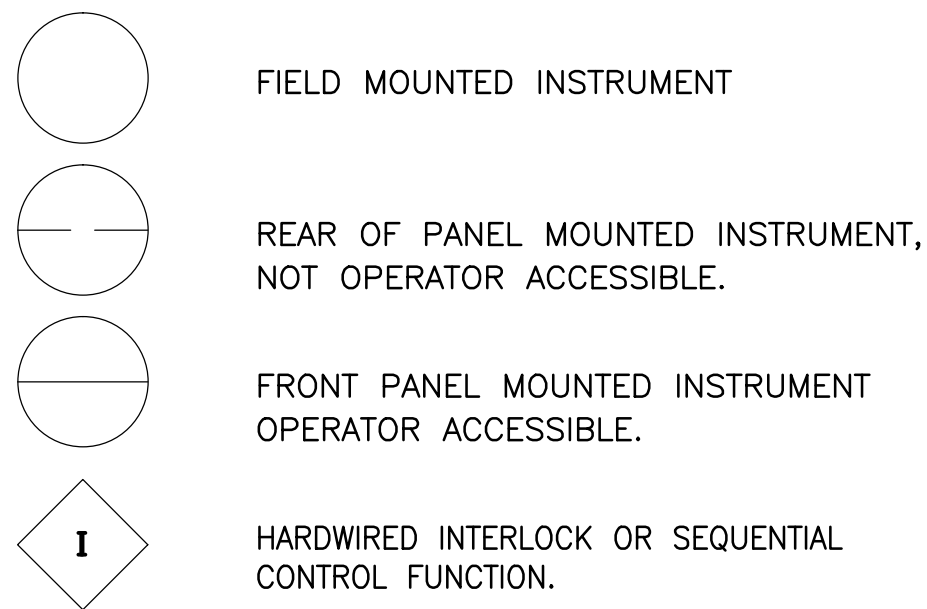
E3

12 of 21

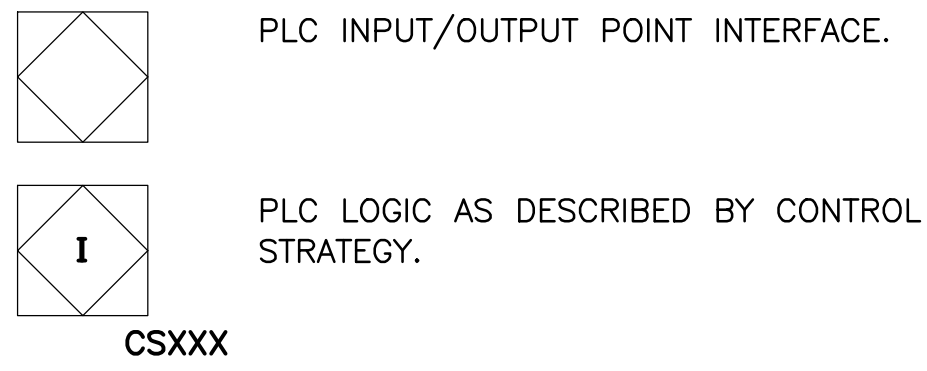
DRAWING NO.

INSTRUMENT AND FUNCTION SYMBOLS

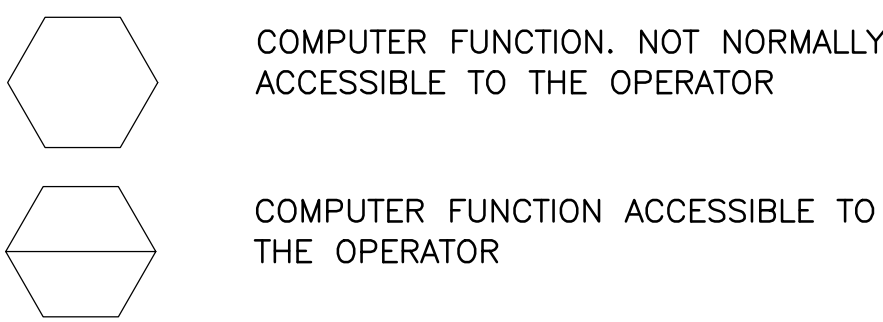
INSTRUMENTS AND INTERLOCKS



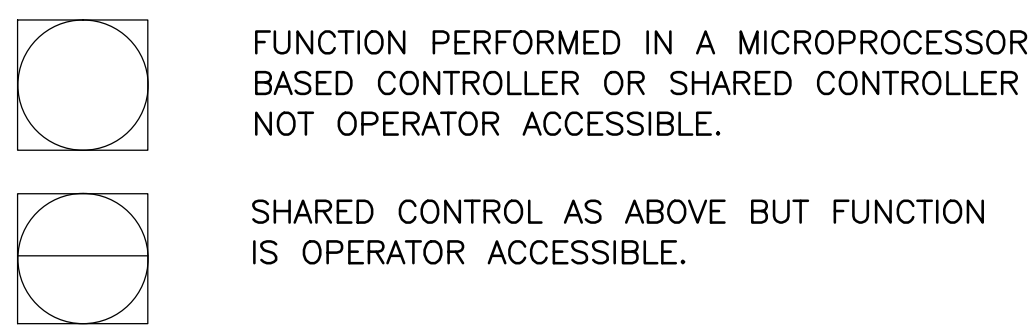
FUNCTION/INTERFACE LOGIC INTEGRAL TO THE PLC.



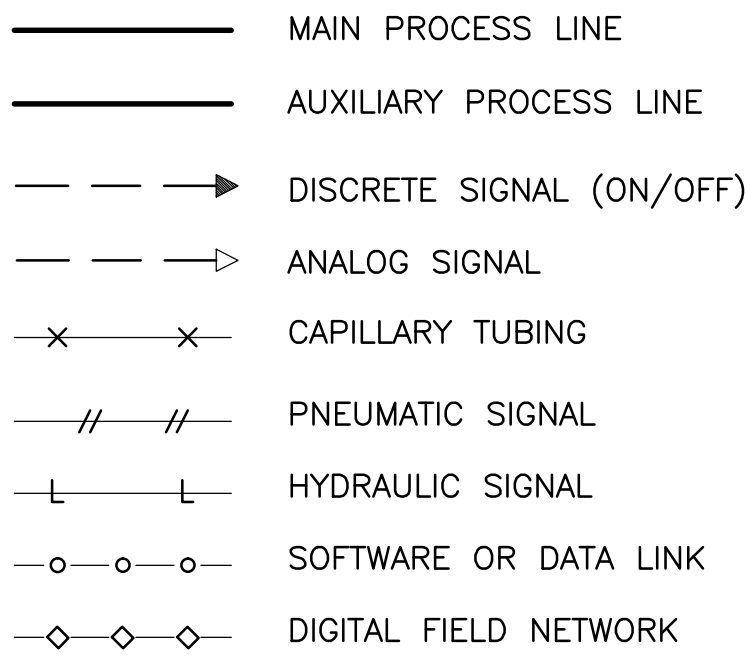
HMI COMPUTER FUNCTION



SHARED CONTROL OR DISPLAY FUNCTIONS



INSTRUMENT SIGNAL LINES

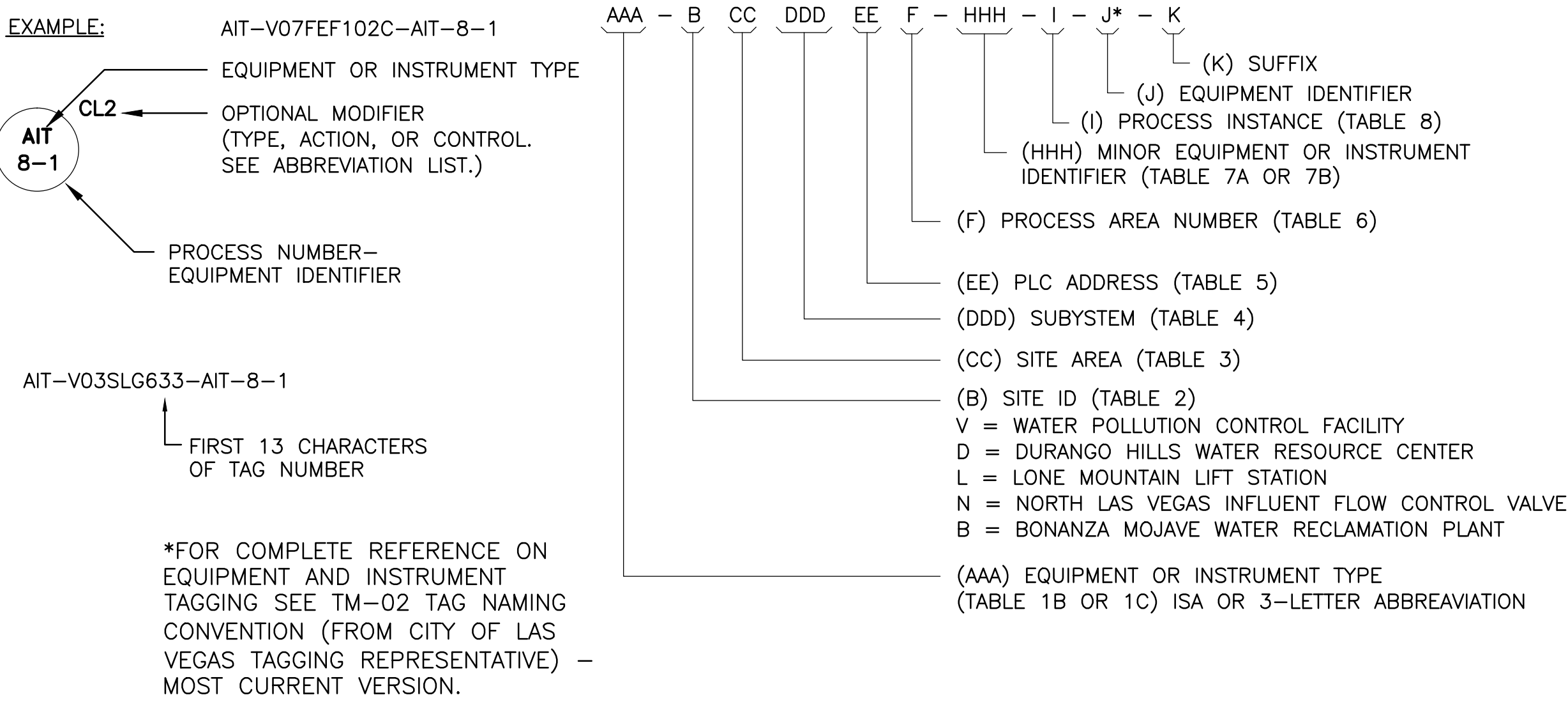


NOTE: SOLID LINES INDICATE WORK UNDER THIS CONTRACT.
SHADED LINES INDICATE EXISTING ITEMS OR WORK BY OTHERS.

INSTRUMENT IDENTIFICATION LEGEND

FIRST-LETTER		SUCCEEDING-LETTERS			
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS	-	ALARM	-	-
B	BURNER	-	-	-	-
C	CONDUCTIVITY	-	-	CONTROL	CLOSED
D	DENSITY, SPECIFIC GRAVITY	DIFFERENTIAL	-	-	-
E	VOLTAGE	-	SENSOR (PRIMARY ELEMENT)	-	-
F	FLOW RATE	RATIO	-	-	FAIL
G	FIRE, SMOKE	-	GLASS	-	-
H	HAND (MANUAL)	-	-	-	HIGH
I	CURRENT (ELECTRICAL)	-	INDICATE	-	-
J	POWER	SCAN	-	-	-
K	TIME, TIME SCHEDULE	TIME, RATE OF CHANGE	-	CONTROL STATION	-
L	LEVEL	-	PILOT LIGHT	-	LOW
M	MOTOR, MOISTURE, HUMIDITY	MOMENTARY	-	-	MIDDLE, INTERMEDIATE
N	TORQUE	-	-	-	-
O	USER'S CHOICE	-	ORIFICE, RESTRICTION	-	OPENED
P	PRESSURE	-	TEST CONNECTION	-	-
Q	QUANTITY	INTEGRATE, TOTALIZE	-	-	-
R	RADIATION	-	RECORD	-	-
S	SPEED, FREQUENCY	SAFETY	-	SWITCH	-
T	TEMPERATURE	-	-	TRANSMIT	-
U	MULTIVARIABLE	-	MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION	-	-	VALVE, DAMPER	-
W	WEIGHT, FORCE	-	WELL	-	-
X	-	-	-	-	-
Y	EVENT, STATE OR PRESENCE	-	-	RELAY, COMPUTE, CONVERT	-
Z	POSITION	-	-	ACTUATOR, FINAL CONTROL ELEMENT	-

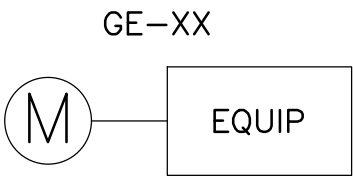
MAJOR EQUIPMENT / INSTRUMENT TAG NUMBERS



ANALYTICAL INSTRUMENTATION

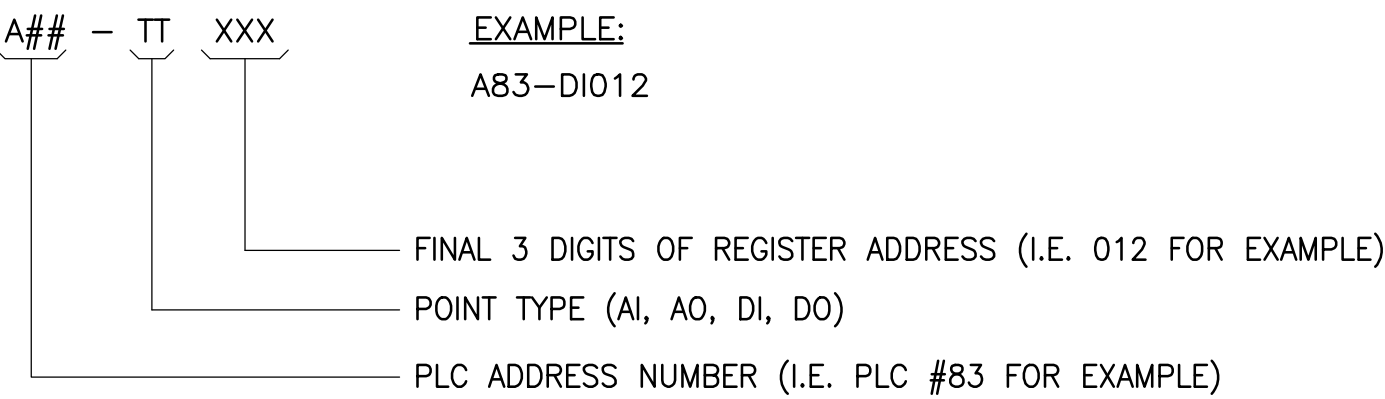
AIT, RESIDUAL CHLORINE ANALYZER	CL2
AIT, DECHLORINATION SULFITE/RESIDUAL (SO2/CL2) MEASUREMENT	SO2/CL2
AIT, pH ANALYZER	pH
AIT, TURBIDITY	TURB
AIT, DISSOLVED OXYGEN	DO
AIT, ORP ANALYZER	ORP
AIT, MIXED LIQUOR SUSPENDED SOLIDS METER	MLSS
AIT, TOTAL SUSPENDED SOLID METER	TSS
AIT, AMMONIUM	NH4
AIT, NITRATE	NO3

CONTROL DIAGRAM CROSS REFERENCE



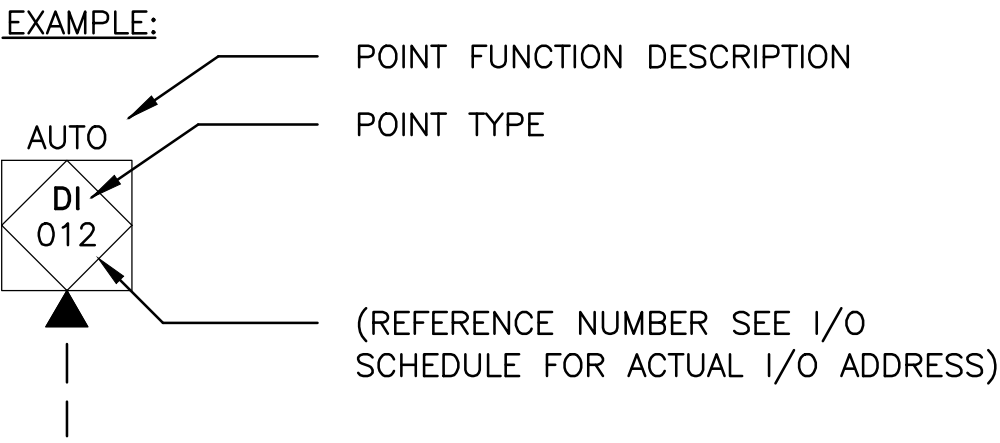
XX IS A REFERENCE TO THE ELECTRICAL CONTROL DIAGRAMS LOCATED IN THE ELECTRICAL PORTIONS OF THE SPECIFICATIONS.

INPUT/OUTPUT POINT TAG NUMBERS



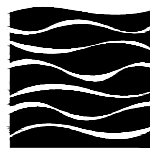
DESCRIPTIONS
AI = ANALOG INPUT
AO = ANALOG OUTPUT
DI = DISCRETE INPUT
DO = DISCRETE OUTPUT

NOTE:
PLC ADDRESS IS NOTED ON EACH P&ID DRAWING (I.E. PLC #83 FOR EXAMPLE)



RECORD DRAWING

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GREELEY AND HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146



Wunderlich-Malec

980B MARY CREST RD.
HENDERSON, NV. 89014

HTE# 13-26839

Sheet



13 of 21
DRAWING NO.

TITLE: COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE

INSTRUMENTATION AND
CONTROL DIAGRAM

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT MANAGEMENT

CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:

DESIGNED BY: RON NALDOZA

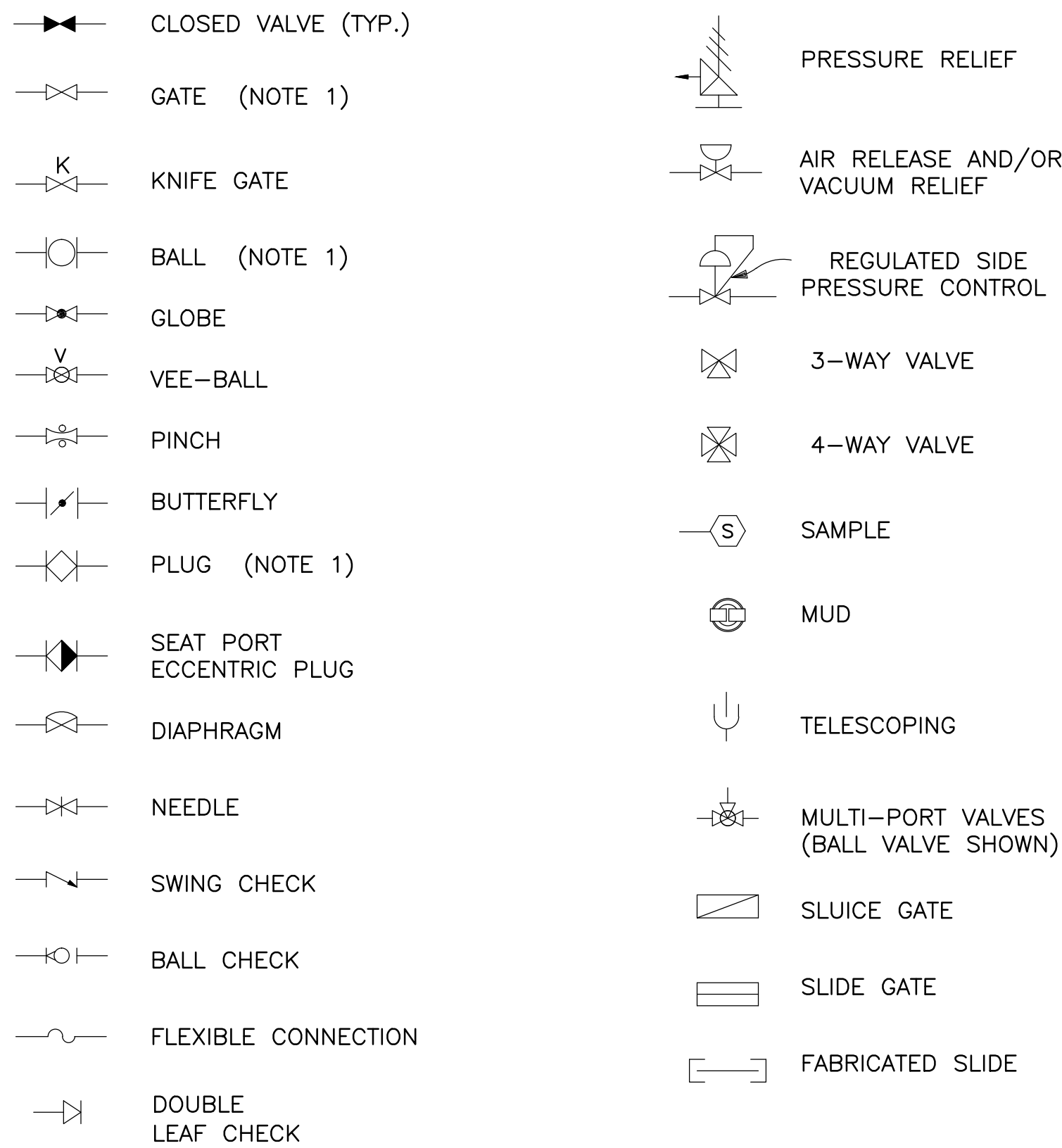
DRAWN BY: JESUS SIMIANO

CHECKED BY: REGGIE GEORGE DATE: 6/5/2015

REVISIONS

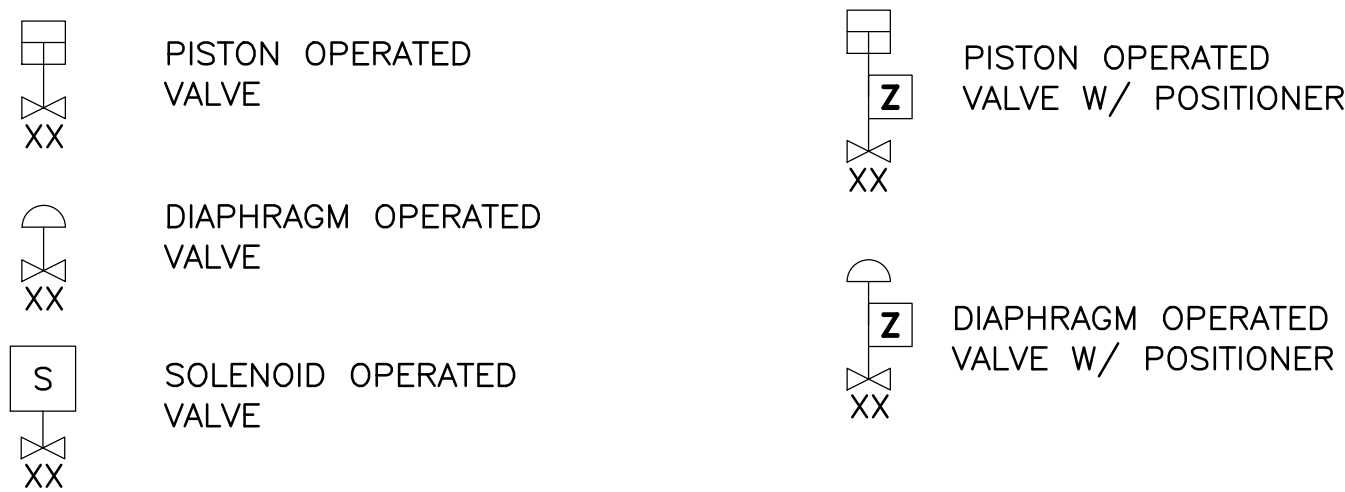
NO. DATE: DESCRIPTION APP'D

VALVE AND GATE SYMBOLS



NOTES:
1. SYMBOLS SHOWN INDICATE VALVE IN NORMALLY OPEN POSITION. FOR NORMALLY CLOSED VALVES, SYMBOLS HAVE A SOLID FILL.

VALVE ACTUATOR SYMBOLS

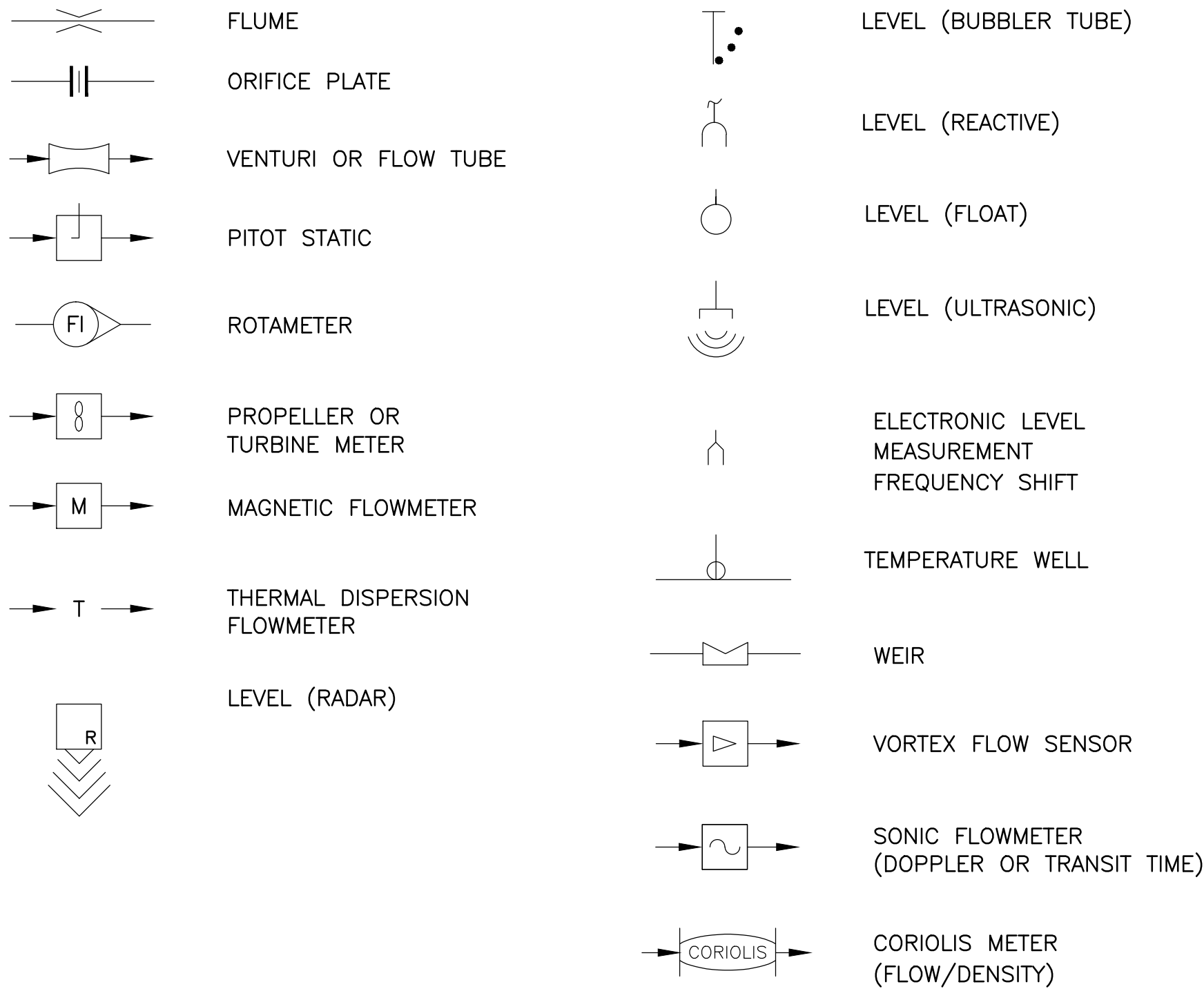


NOTE: FAIL REFERS TO LOSS OF SIGNAL OR PRIMARY POWER (PNEUMATIC OR ELECTRICAL)

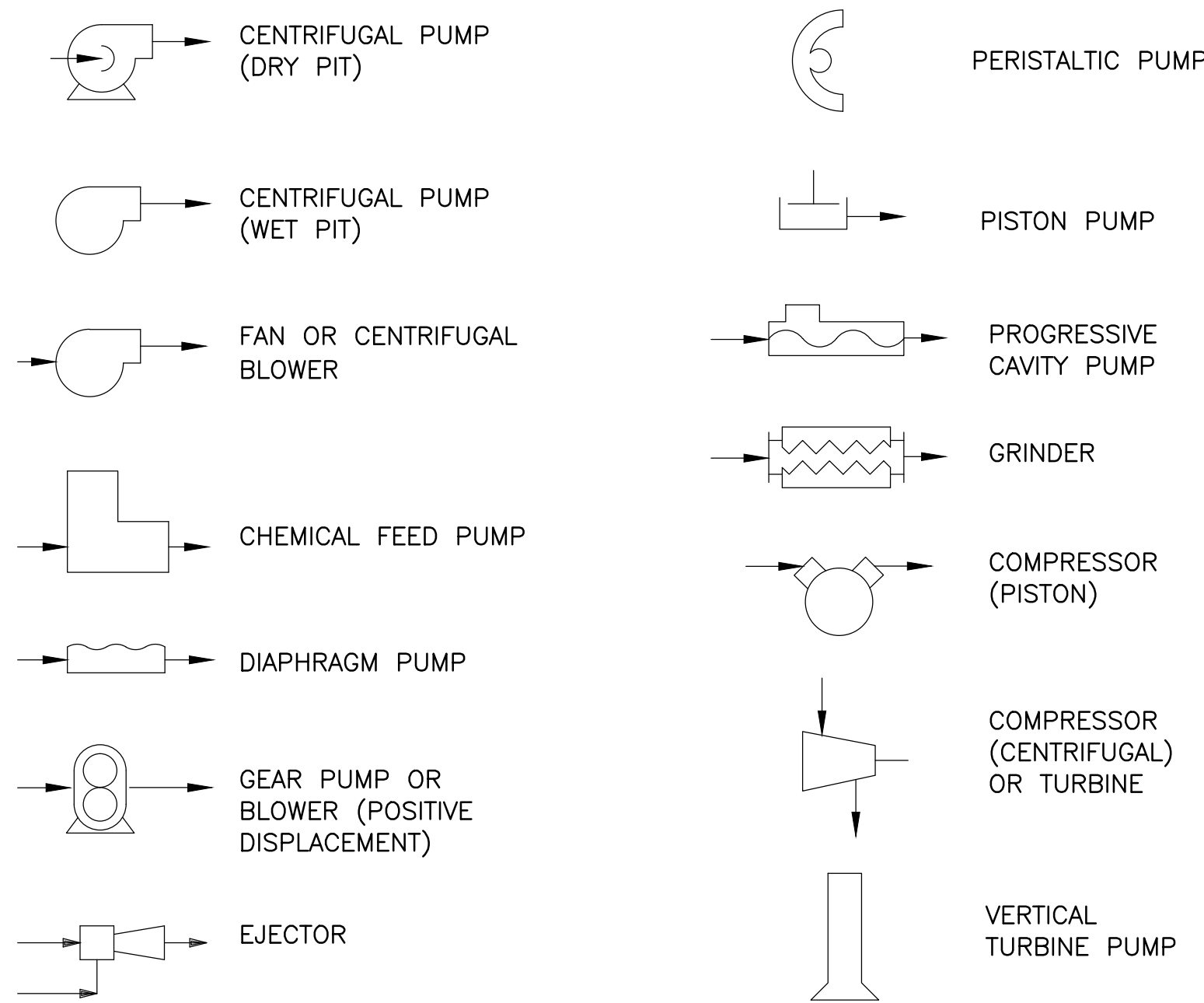
XX= FO: FAIL OPEN
FC: FAIL CLOSED
FLP: FAIL LAST POSITION

Z= P: PNEUMATIC
H: HYDRAULIC

INSTRUMENT PRIMARY ELEMENTS



PUMPS AND COMPRESSOR SYMBOLS

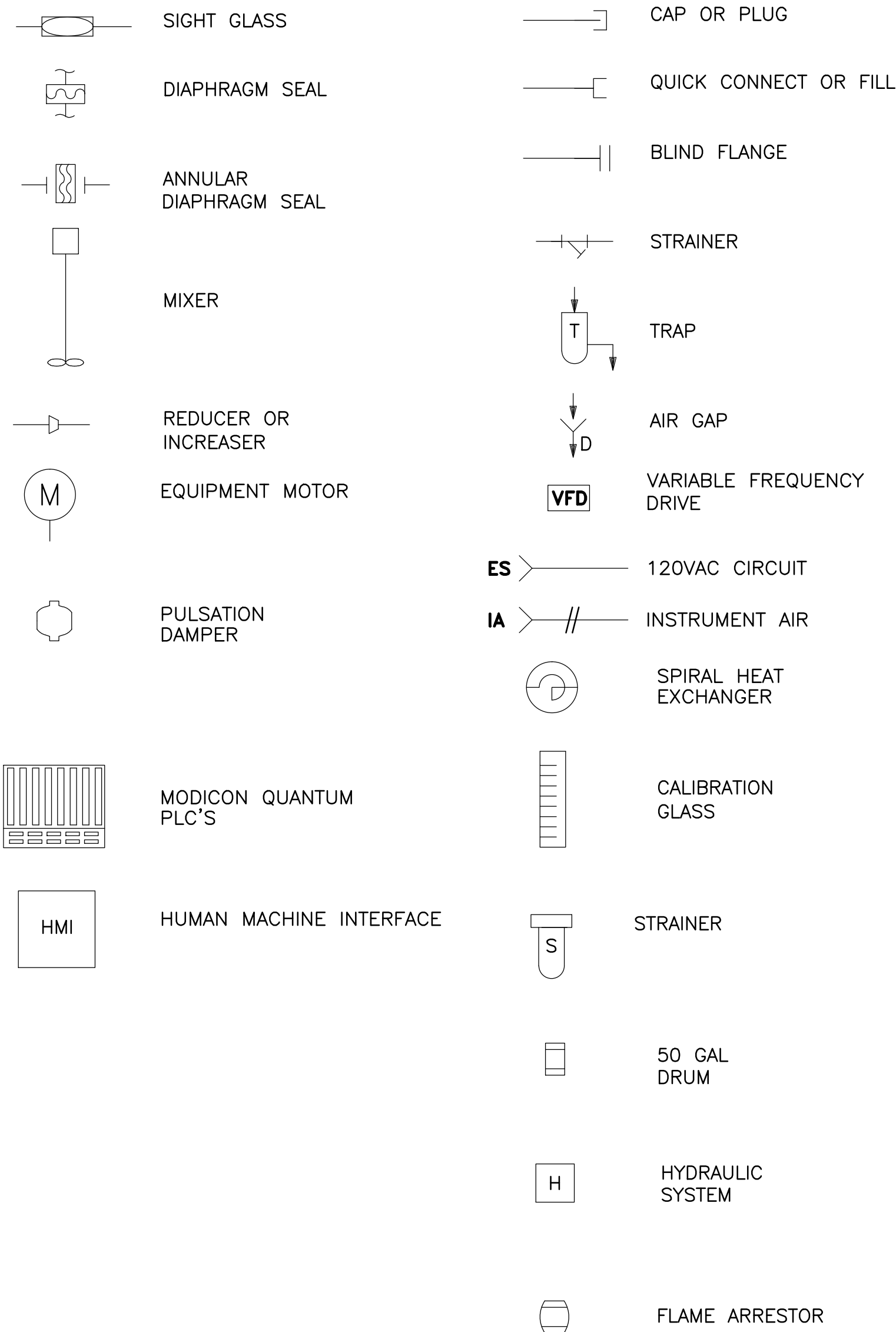


SHEET INTERFACE SYMBOLS

1. ON DWG. I456 CONTINUATION IS SHOWN AS:

2. ON DWG. I123 CONTINUATION IS SHOWN AS:

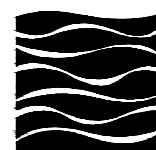
MISCELLANEOUS SYMBOLS



RECORD DRAWING

THIS RECORD DRAWING IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

HTE# 13-26839



GREELEY AND HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146



Wunderlich-Malec

980B MARY CREST RD.
HENDERSON, NV. 89014

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT MANAGEMENT

CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.

PROGRAM MANAGER:

DESIGNED BY: RON NALDOZA

DRAWN BY: JESUS SIMIANO

CHECKED BY: REGGIE GEORGE DATE: 6/5/2015

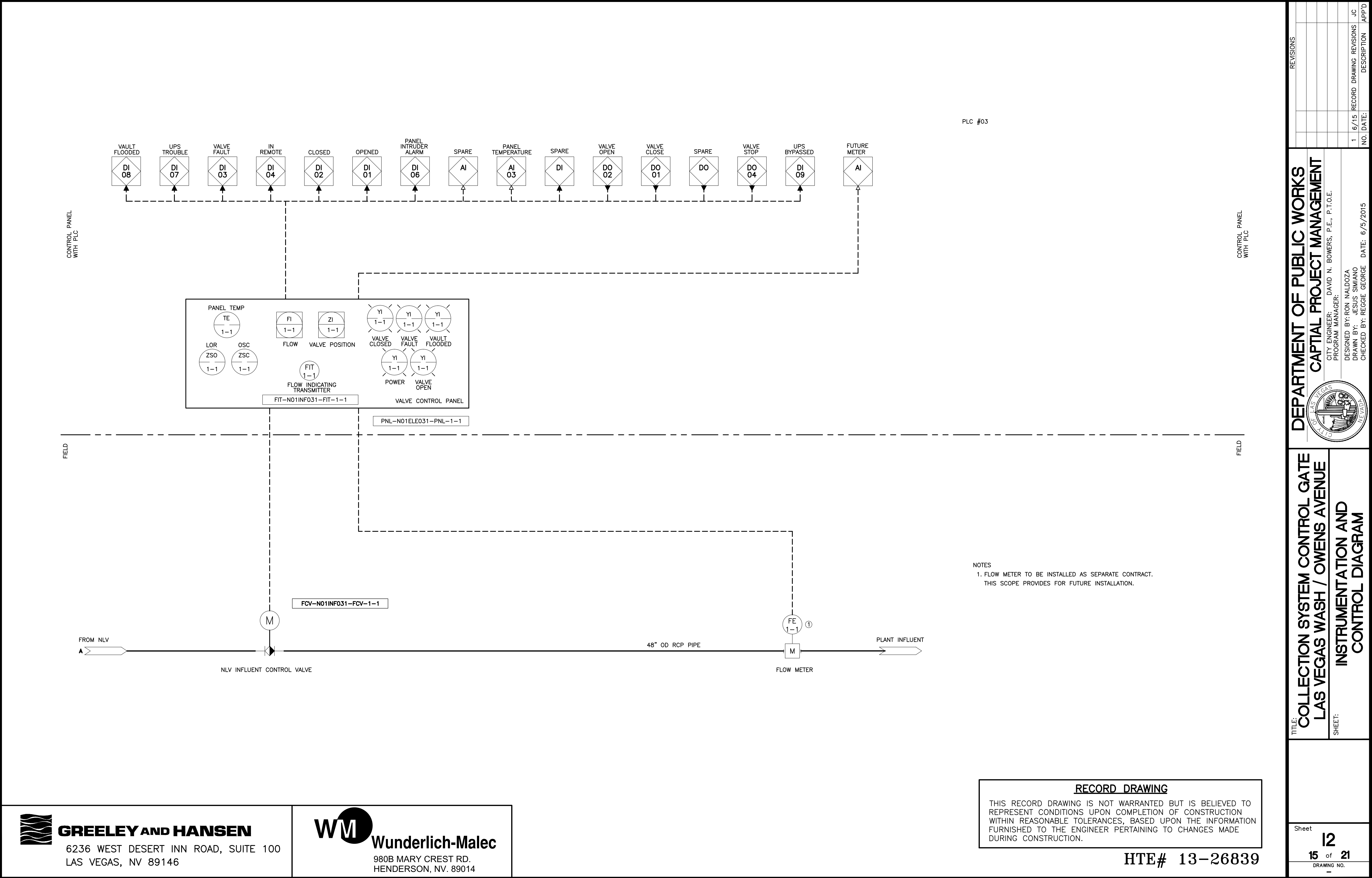
TITLE: COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE

INSTRUMENTATION AND
CONTROL LEGEND

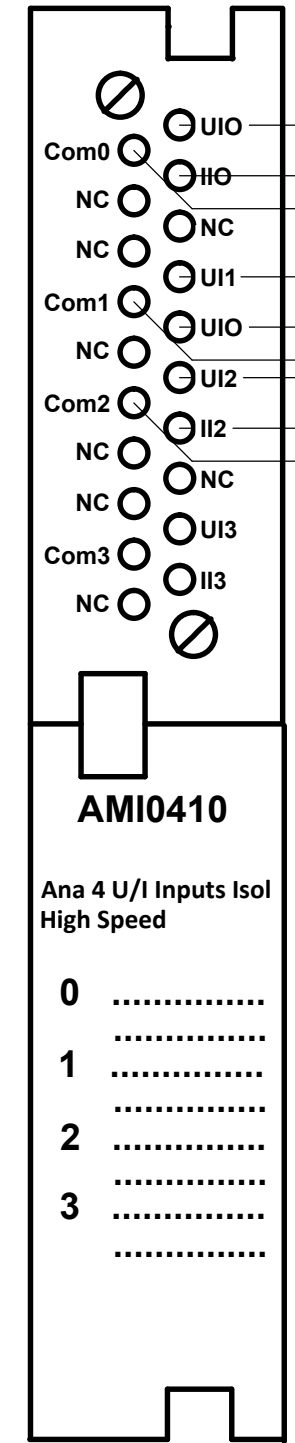
Sheet

11

14 of 21
DRAWING NO.



BMX AMI0410
4 CHANNEL
ANALOG INPUT



24VDC
COMMON

DIGITAL
DISPLAY

120VAC FROM UPS }

(4-20 MA)
INPUT

(4-20 MA)
OUTPUT

120VAC FROM UPS }

DIGITAL
DISPLAY

(4-20 MA)
OUTPUT

(4-20 MA)
INPUT

24VDC POWER SURGE
FROM PLC POWER
SUPPLY MODULE

PANEL

FIELD

4-20 MA

+
-
ZIT
1-1

CURRENT SOURCED
4-WIRE ANALOG INPUT

CONTROL VALVE
POSITION

110 VAC

110 NEUTRAL

GROUND

N L G

CURRENT SOURCED
4-WIRE ANALOG INPUT

CONTROL VALVE
FLOW METER

4-20 MA

+
-
TIT
1-1

CURRENT SOURCED
2-WIRE ANALOG INPUT

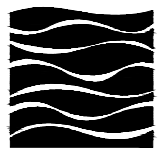
PANEL
TEMPERATURE

NOTES:

1. CABLE SHIELD GROUNDED ONLY AT TERMINAL BLOCK

RECORD DRAWING

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HTE# 13-26839

REVISIONS		NO.	DATE	DESCRIPTION	APP'D

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT MANAGEMENT

CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:
DESIGNED BY: RON NALDOZA
DRAWN BY: JESUS SIMIANO
CHECKED BY: REGGIE GEORGE DATE: 6/5/2015

TITLE: COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE

SHEET: BMX AMI 0410 - 4 CHANNEL
ANALOG INPUT MODULE

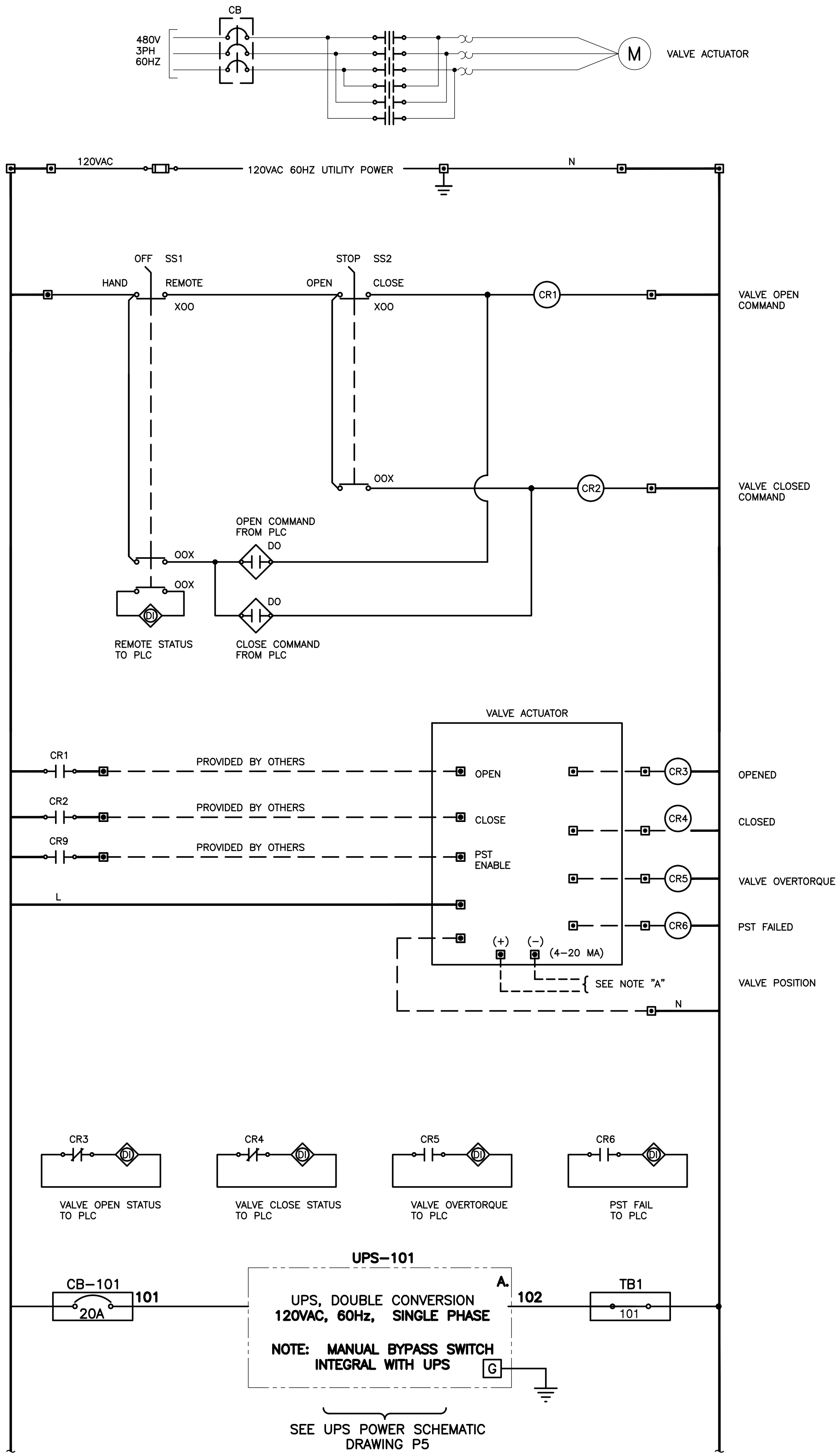
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P1

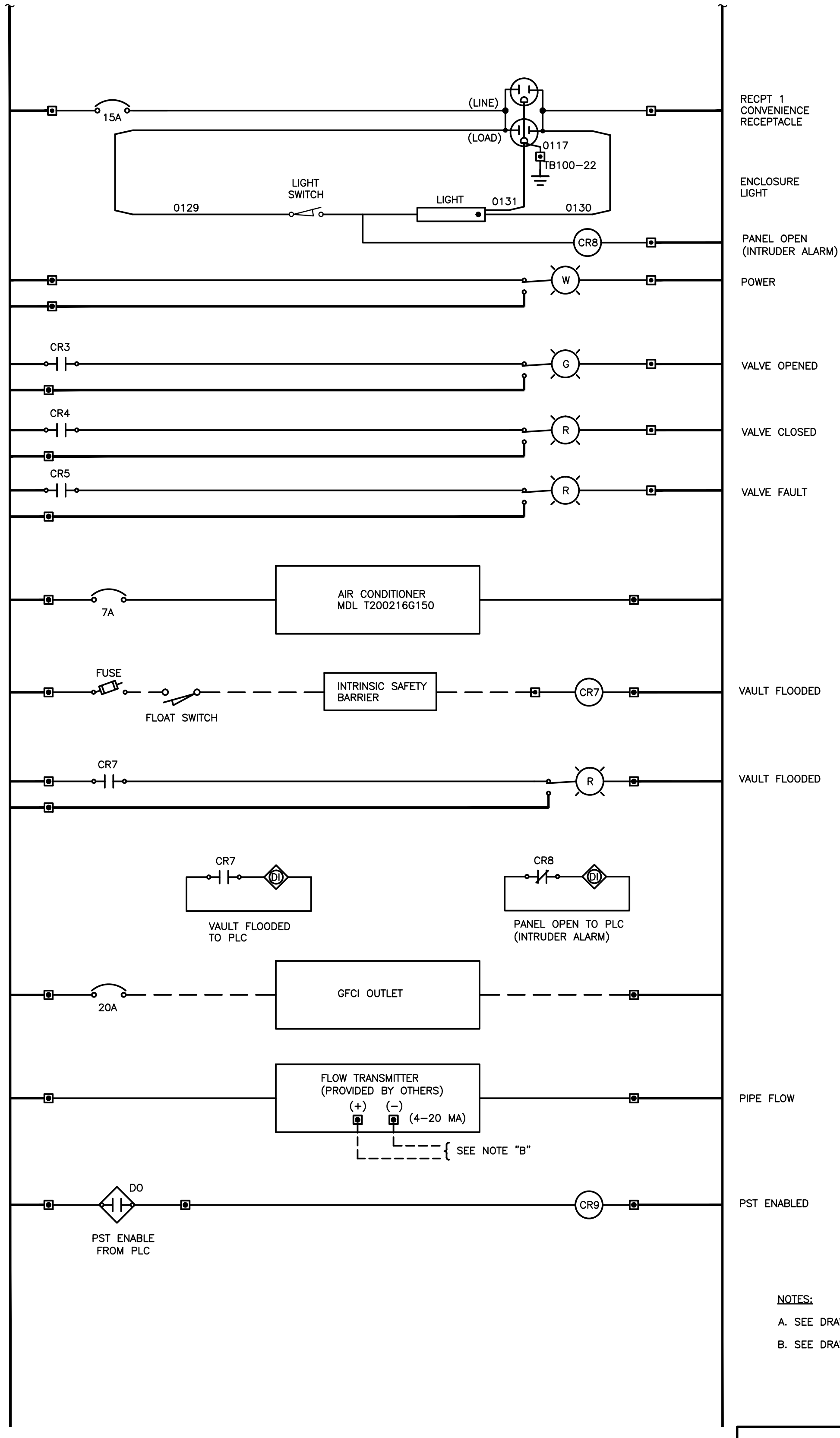
16 of 21

DRAWING NO.

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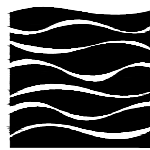


*PST - PARTIAL STROKE TESTING

NOTES:
A. SEE DRAWING P1
B. SEE DRAWING P1

RECORD DRAWING

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GREELEY and HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
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CAPITAL PROJECT MANAGEMENT

CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.

PROGRAM MANAGER:

DESIGNED BY: RON NALZODA

DRAWN BY: JESUS SIMIANO

CHECKED BY: REGGIE GEORGE DATE: 6/5/2015



TITLE: COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE

PLC SCHEMATIC AND
WIRING DIAGRAM

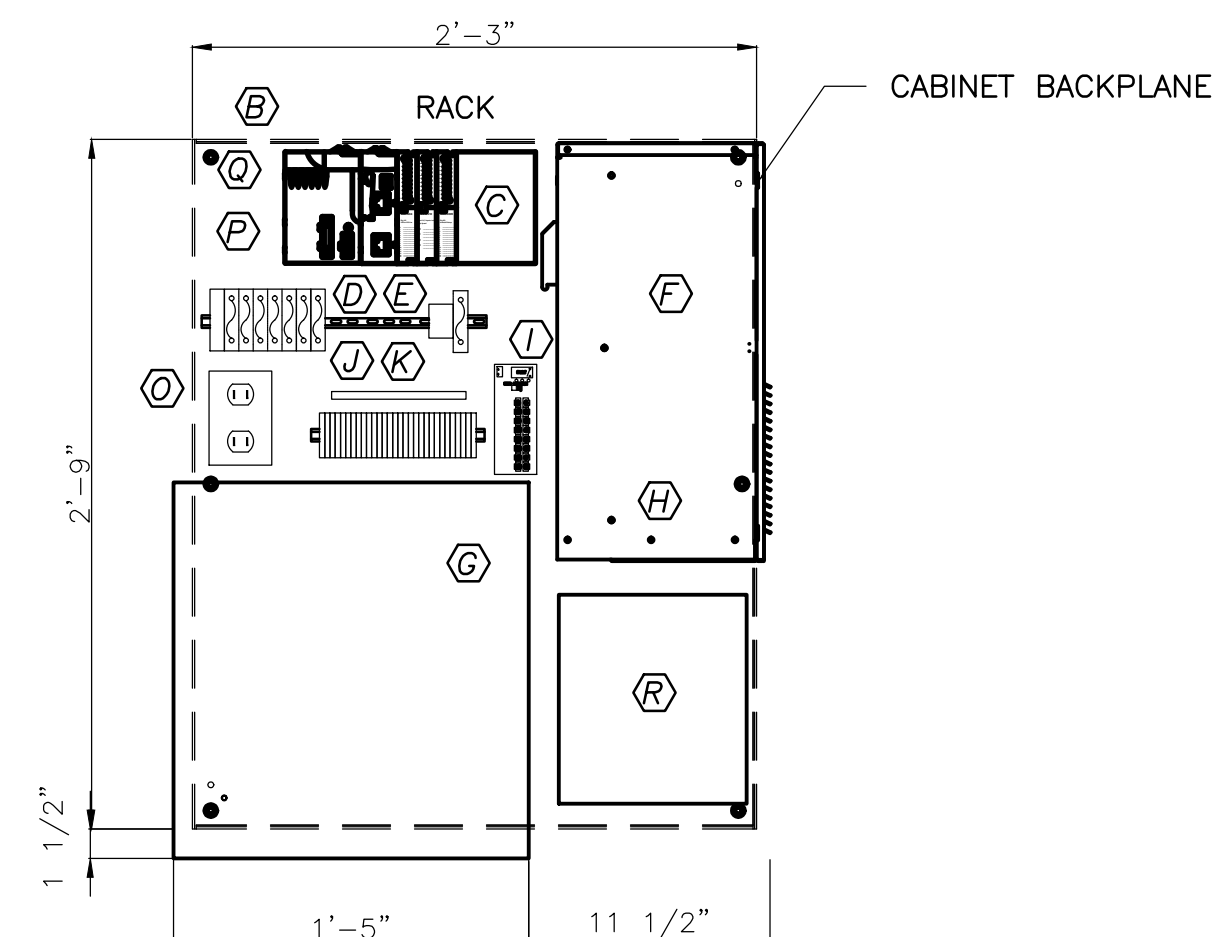
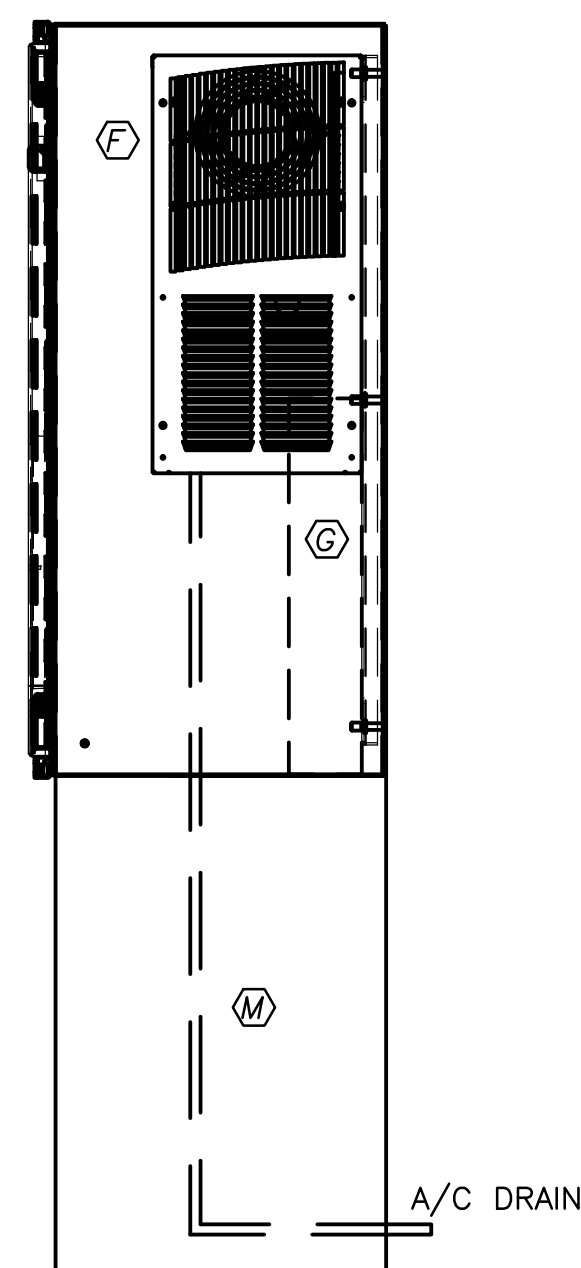
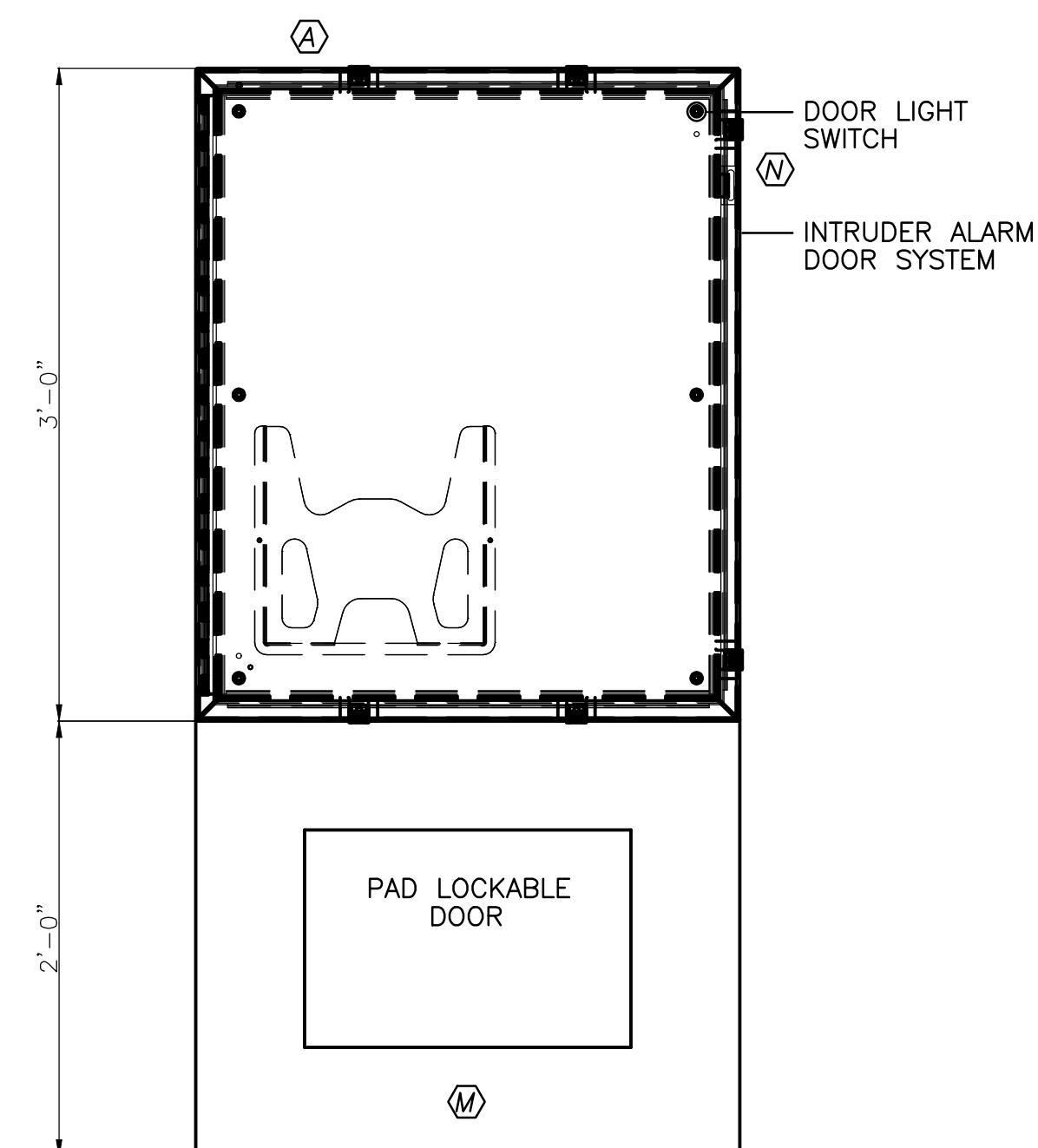
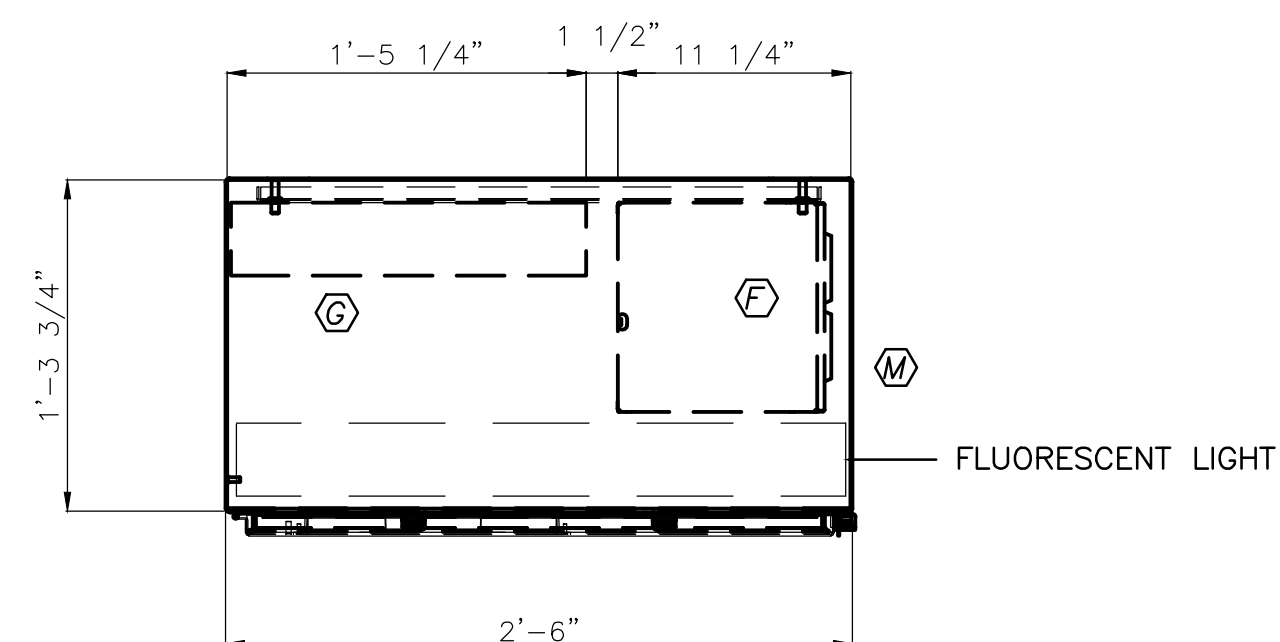
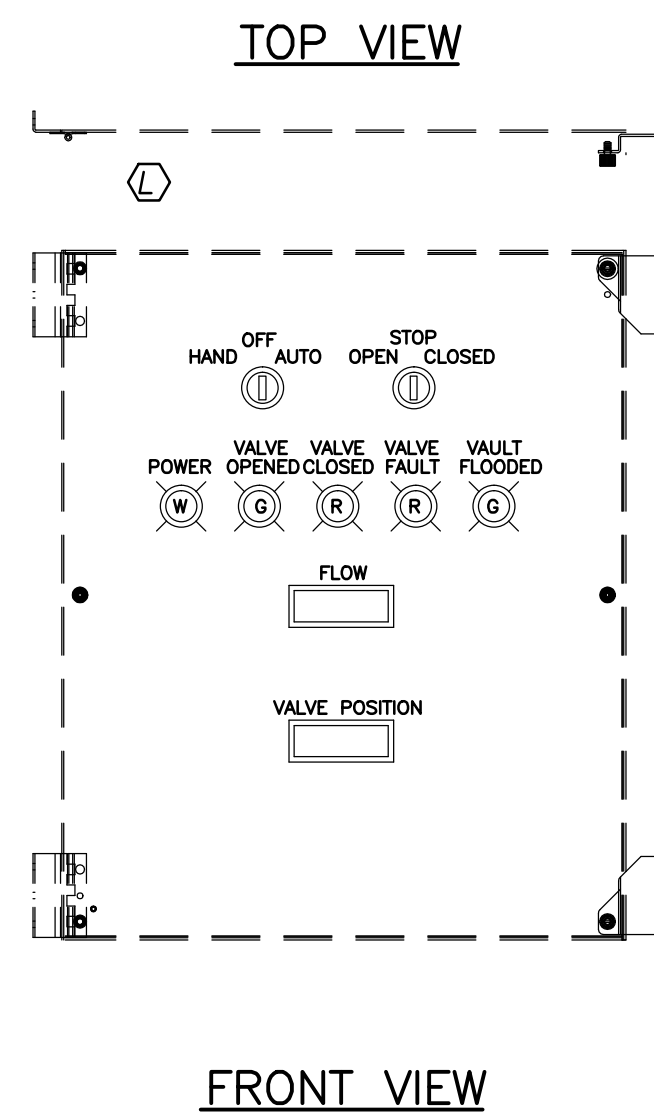
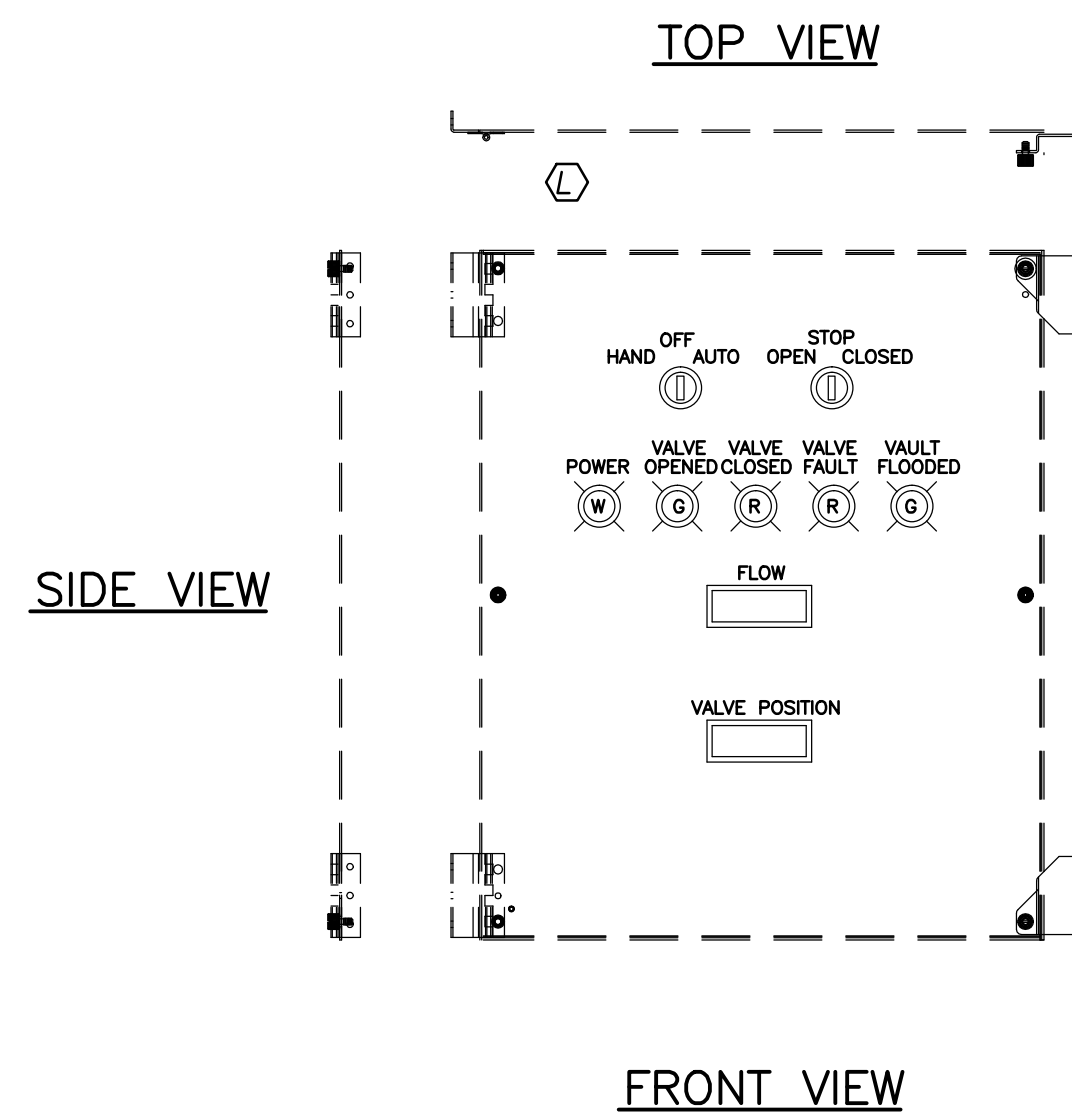
SHEET:

Sheet

P4

19 of 21
DRAWING NO.

HTE# 13-26839



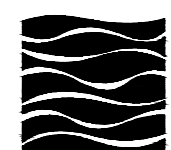
- NOTES:

1. SUN SHIELDS TO BE INSTALLED ON ALL SIDES OF PLC CABINET PER MFR
2. CABINET FOUNDATION PLAN BY OTHERS
3. PLC CABINET REQUIRES MODIFICATION TO VENT AC UNIT TO OUTSIDE AIR
4. SWING OUT PANEL IN PLC CABINET COMPOSED OF TWO HOFFMAN PART NOS. -
PANEL PART NO. A36P30SS6
AND HARDWARE PART NO. ANADFK
5. PROVIDE FLOW AND VALVE MONITORING ON SWING OUT PANEL
6. PLC CABINET BASE TO BE CONSTRUCTED WITH SIX SIDES.

RACK (BMX XBP 0400)		
Module	Model #	Description
1	BMX-CPS-2000	120VAC POWER SUPPLY
2	BMX-P34-2020	M340 PROCESSOR WITH ETHERNET PORT
3	BMX-DAI-1604	16 CHANNEL DIGITAL INPUT CARD
4	BMX-DAO-0805	8 CHANNEL DIGITAL OUTPUT CARD
5	BMX-AMI-0410	4 CHANNEL ANALOG I/O CARD – ISOLATED ANALOG INPUTS (4)
6	SPARE	SPARE

KEY NOTES	
ITEM NO. & DESCRIPTION	
A	PLC CONTROL CABINET, HOFFMAN MDL A36H3016SS6LP
B	PLC CONTROL CABINET BACKPLANE
C	MODICON M340 4 SLOT BACKPLANE
D	110 VAC BREAKERS
E	110VAC POWER SUPPLY
F	MCLEAN T200216G150 AC UNIT
G	TRIPP LITE SU1500RTX 1500 kVA/1200 WATT 2U
H	PROVIDE DRAIN FOR AC UNIT TO EXTERIOR
I	SCADA CONTROL NETWORK SWITCH
J	TERMINAL BLOCK
K	GROUND BUSS
L	SWING OUT PANEL MOUNTED IN PLC CABINET
M	CUSTOM HOFFMAN BASE PER MFR
N	PLC CABINET PADLOCK
O	120 VAC RECEPTACLE
P	TVSS
Q	TEMPERATURE SENSOR PROSENSE TTD25N-0300F-H
R	FLOW INDICATING TRANSMITTER INSTALLED BY OTHERS, ONLY SHOWN IN BACKPLANE VIEW FOR CLARITY (9"x10"x13" AVAILABLE)

NO SCALE



GREELEY AND HANSEN

6236 WEST DESERT INN ROAD, SUITE 100
LAS VEGAS, NV 89146



Wunderlich-Malec

980B MARY CREST RD.
HENDERSON, NV. 89014

RECORD DRAWING

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HTE# 13-26839

[illegible]

 **DEPARTMENT OF PUBLIC WORKS**
CAPITAL PROJECT MANAGEMENT
CITY ENGINEER: DAVID N. BOWERS, P.E., P.T.O.E.
PROGRAM MANAGER:



PROJECT: **COLLECTION SYSTEM CONTROL GATE
LAS VEGAS WASH / OWENS AVENUE**

PLC 03 CABINET INSTALLATION DIAGRAM

DATE: _____
SHEET: _____

Sheet

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of **21**

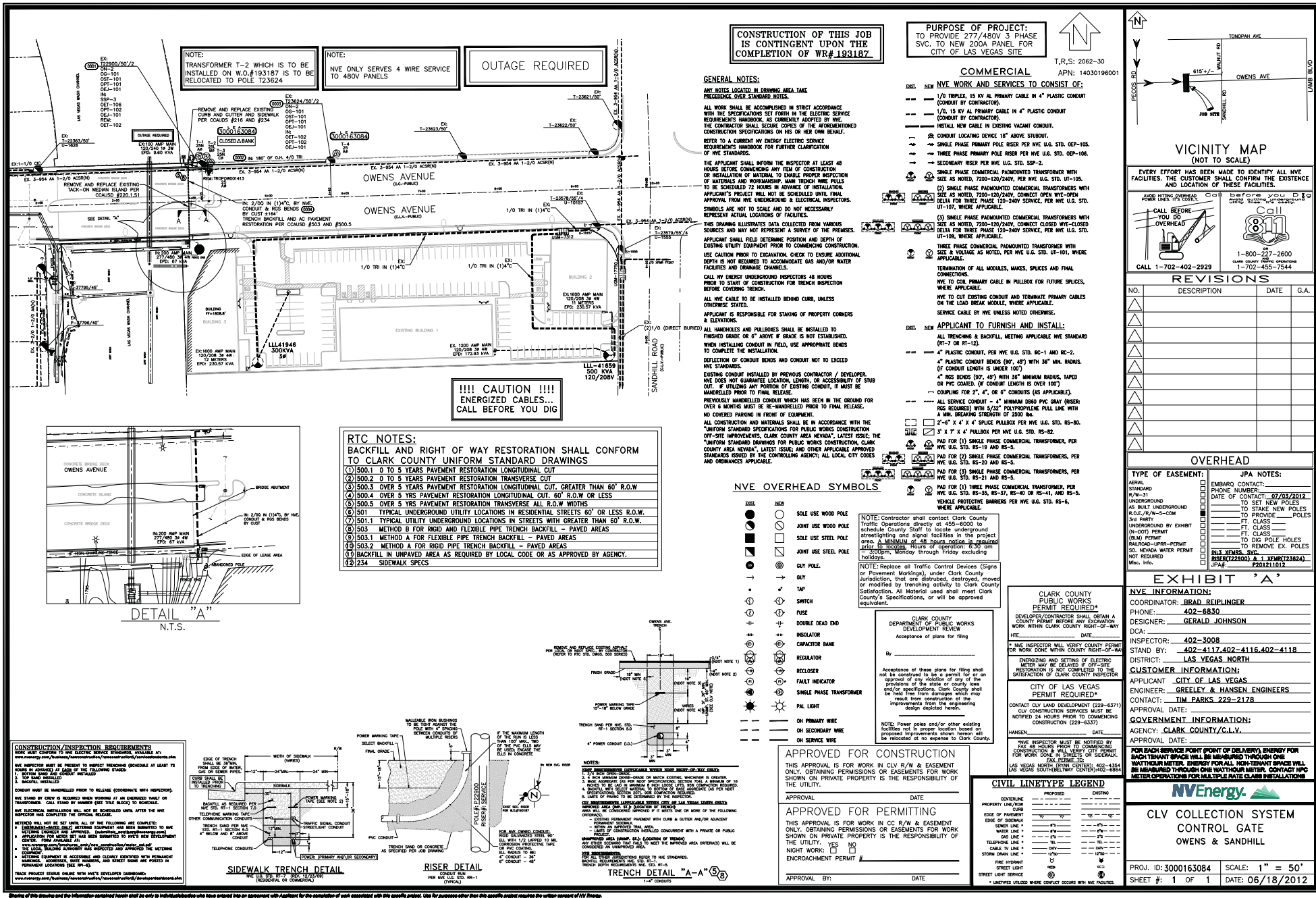
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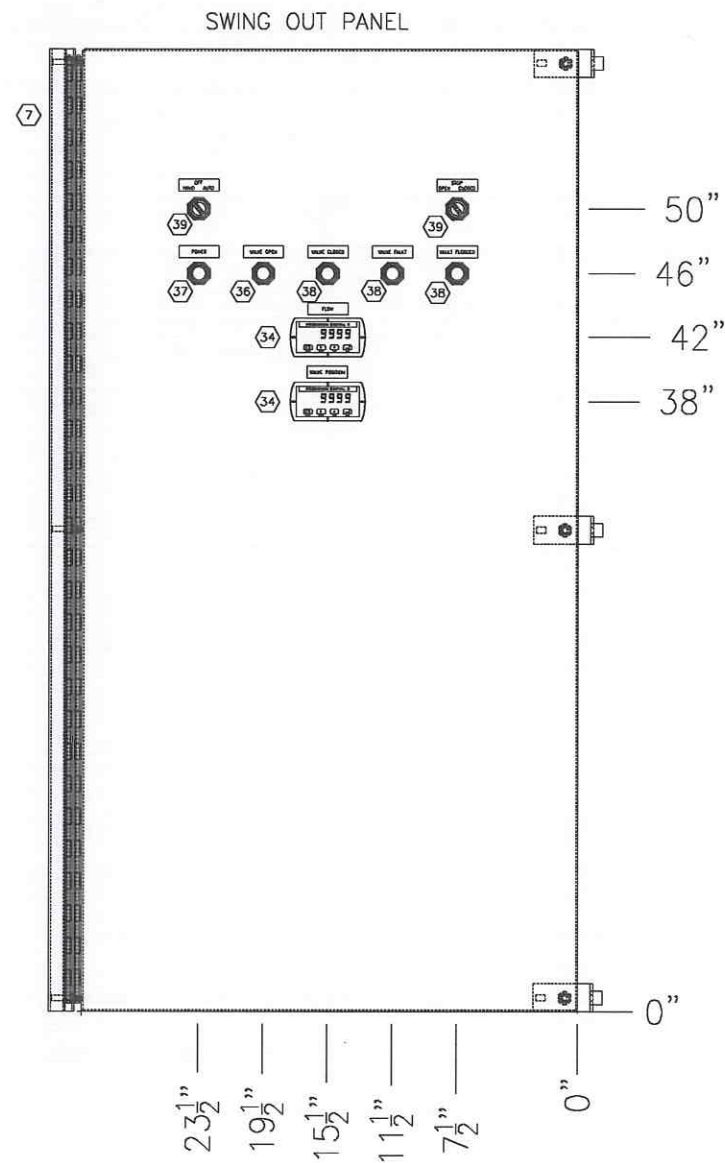
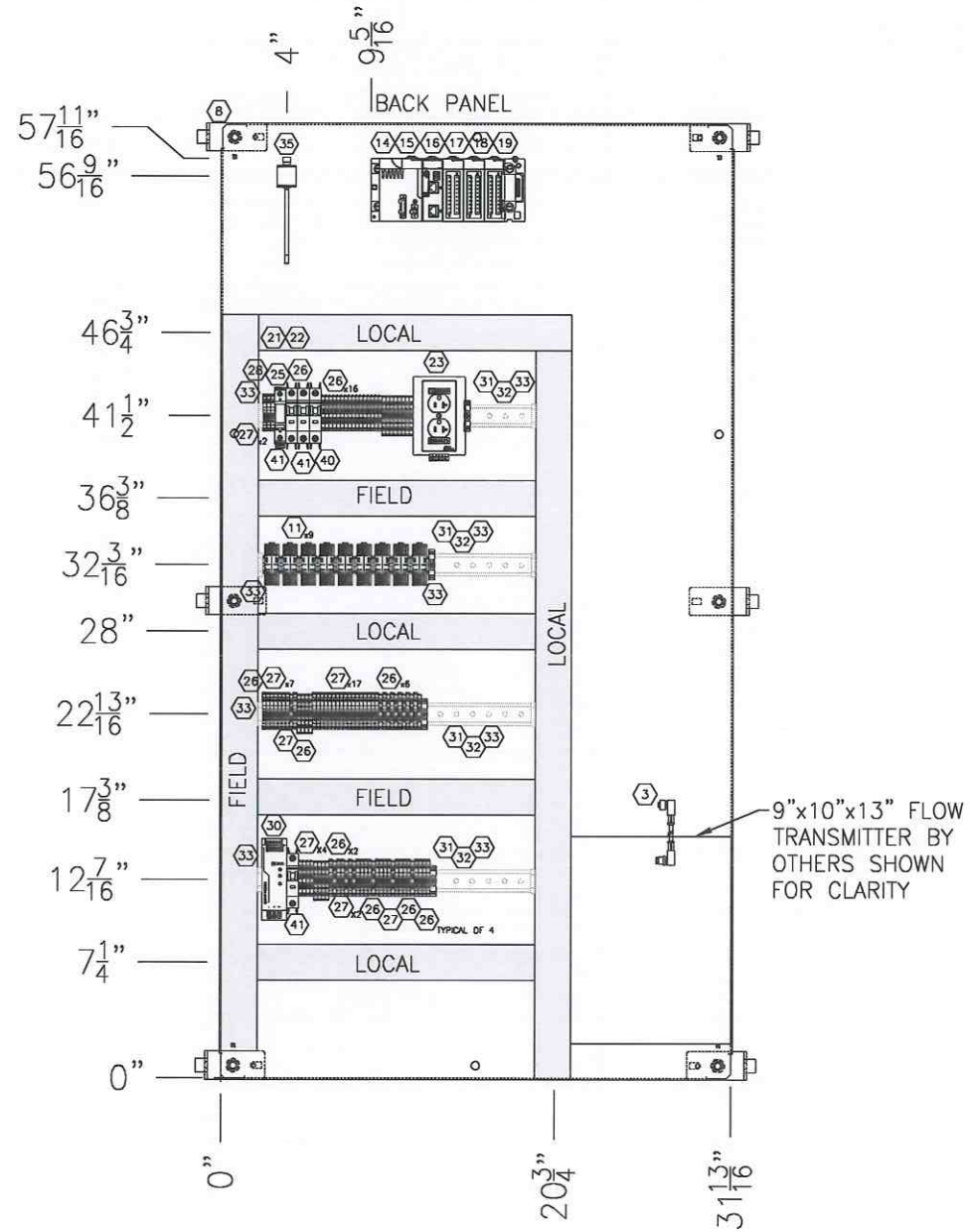
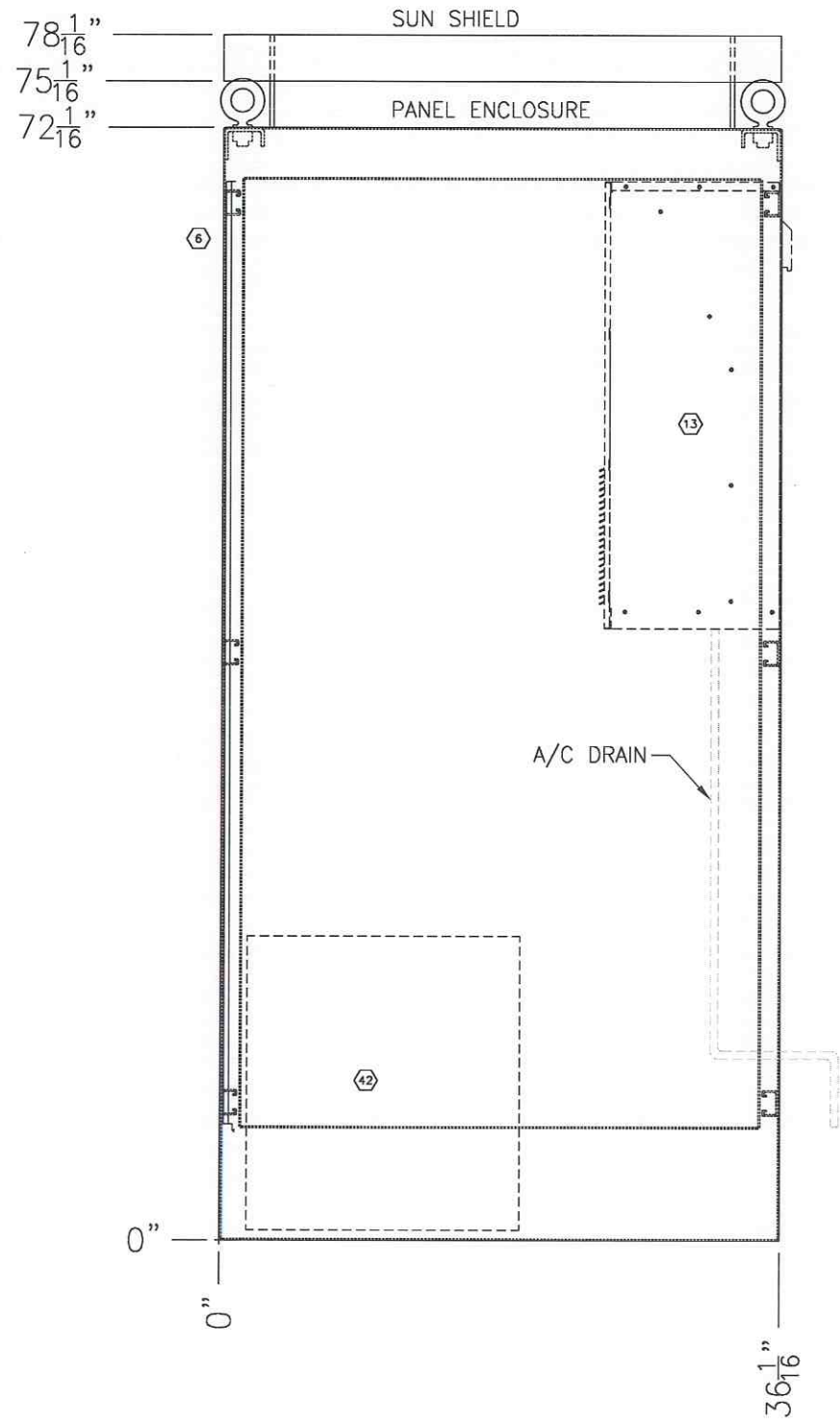
CHECKED BY: REGGIE GEORGE DATE: 6/5/2015

NO.	DATE:
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DESCRIPTION

pp'D





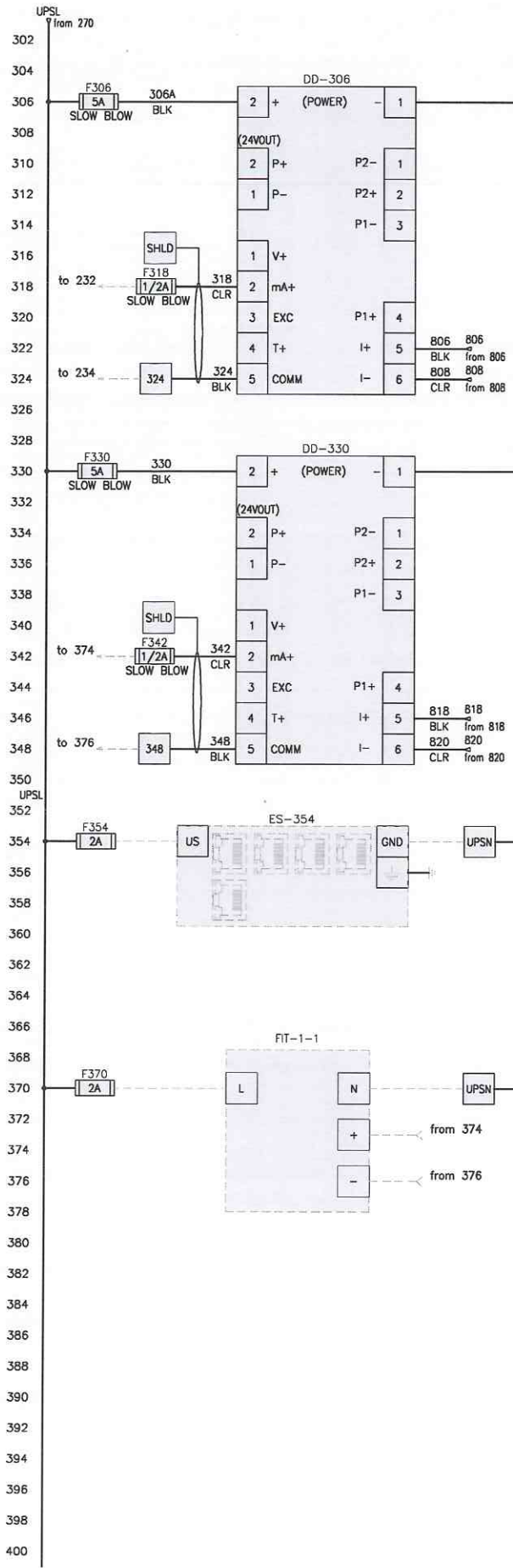
AS-BUILT

DESIGNED BY: CL	DATE: 10/06/14	DRAWING TITLE / DESCRIPTION: PLC 03 CABINET LAYOUT	REV.	DATE
DRAWN BY: TLL3	JOB NUMBER: 5348	PANEL NAME	DESCRIPTION	DRAWN BY
APPROVED BY:	DRAWING NUMBER: M-1	SHEET OF		
Control Automation Solutions George T. Hall Co. 1315 Greg St. Sparks, NV 89431 775-356-7401 INDUSTRIAL POWER CLWPCF COLLECTION SYSTEM CONTROL GAS				
IF THERE IS NO LINE OR IF THIS LINE IS NOT 1" HIGH THIS DRAWING IS NOT TO SCALE				

AS-BUILT

PLC PANEL BILL OF MATERIALS				
Item	Qty/Ft	Part Number	Manufacturer	Description
1	1	SBP2200RM	APC	UPS Bypass Switch
2	1	ST12C	Automation Direct	Panel Bracket
3	1	CDP12-OB-030-BB	Automation Direct	Patch Panel for Prosense Temperature Transmitter
4	12	GMA2	Bussman	2A Fast Acting Fuse
5	1	CCH-WALLMNT-KIT	Corning Cable System	6U, 19" rack for UPS system
6	1	A723624SSFSN4	Hoffman	72x36x24 Nema 4X, 304SS enclosure
7	1	A72SP36F3	Hoffman	Swingout Panel w/ Hardware
8	1	A72P36F1	Hoffman	Back Panel
9				Item Deleted
10				Item Deleted
11	9	RH2B-ULAC120V	IDEC	2 Pole 10A, 120 VAC Relay W / Indicator
12	9	SH2B-05C	IDEC	Finger Safe Relay Base, 2 Pole
13	1	T290416G150	Hoffman	AC Unit
14	1	BMX XBP 0400	Modicon	M340 Backplane
15	1	BMX CPS 2000	Modicon	PLC Power Supply 120VAC
16	1	BMX P34 2020	Modicon	M340 Processor with Ethernet Port
17	1	BMX DAI 1604	Modicon	16 Channel Digital Input Card
18	1	BMX DRA 0805	Modicon	8 Channel Digital Output Card
19	1	BMX AMI 0410	Modicon	4 Channel Analog I/O Card- Isolated Analog Inputs
20	3	BMXFTB2010	Modicon	Removable Terminal Strips for PLC Modules
21	lot	F2X3LG6	Panduit	Wire Duct, 2" w x 3" h (size may vary)
22	lot	C2LG6	Panduit	Wire Duct Cover, 2" wide
23	2	5600525	Phoenix Contact	120VAC Duplex Receptacle
24	1	2817738	Phoenix Contact	TVSS Base
25	1	2807586	Phoenix Contact	TVSS Plug in Module 120VAC
26	12	30 46 10 0	Phoenix Contact	Fuse Terminal Block, UT-4 HESILA 120 VAC
27	100	30 44 10 2	Phoenix Contact	Terminal Block, UT- 4
28	20	30 44 12 8	Phoenix Contact	Terminal Block, UT- 4-PE Ground
29	5	3032224	Phoenix Contact	50 Position Bridge Jumper
30	1	2866750	Phoenix contact	24VDC Power Supply 5A
31	lot	0801733	Phoenix Contact	Mounting Rail, stick (6 Foot section)
32	AR	1206560	Phoenix Contact	Din Rail End Cap
33	AR	0800886	Phoenix Contact	Din Rail Anchor
34	2	PD765-6R3-00	Precision Digital	Flow Digital Display & Valve Display
35	1	TTD25N-20-0300F-H	Prosense	Temperature Sensor/Transmitter 4-20 mA output.
36	1	9001KP1G9	Square D	Green Light Incandescent BA 120VAC/DC
37	1	9001KP1A9	Square D	White Light Incandescent BA 120VAC/DC
38	3	9001KP1R9	Square D	Red Light Incandescent BA 120VAC/DC
39	2	9001KS43BH13	Square D	30mm 3 Position Switch, NEMA 4X
40	2	60112	Square D	Miniature Circuit Breaker, 15A
41	2	60113	Square D	20A, 120VAC Circuit Breakers
42	1	SU1500RTLXL2UA	Tripp Lite	1500kVA/1200 Watt 2U
43	1	Custom	industrial service metal	sunshield for top of cabinet
44	1	Custom	Custom	cover to protect AC unit entry to enclosure
45	1	9968112	Rittal	lighting kit
46	1	4127010	Rittal	switch for door

DESIGNED BY: CL	DATE: 10/06/14	DRAWING TITLE / DESCRIPTION: BILL OF MATERIALS	REV: 1	DATE: 10/06/14
DRAWN BY: TLL3	JOB NUMBER: 5348	PANEL NAME: M-2	REV: 1	DATE: 10/06/14
APPROVED BY:	DRAWING NUMBER: M-2	SHEET: 01	REV: 1	DATE: 10/06/14
CUSTOMER: Controls, Automation, Solutions George T. Hall Co. 1315 Greg St. Sparks, NV 89431 775-356-7401		PROJECT: INDUSTRIAL POWER CLWPCF COLLECTION SYSTEM CONTROL GAS		

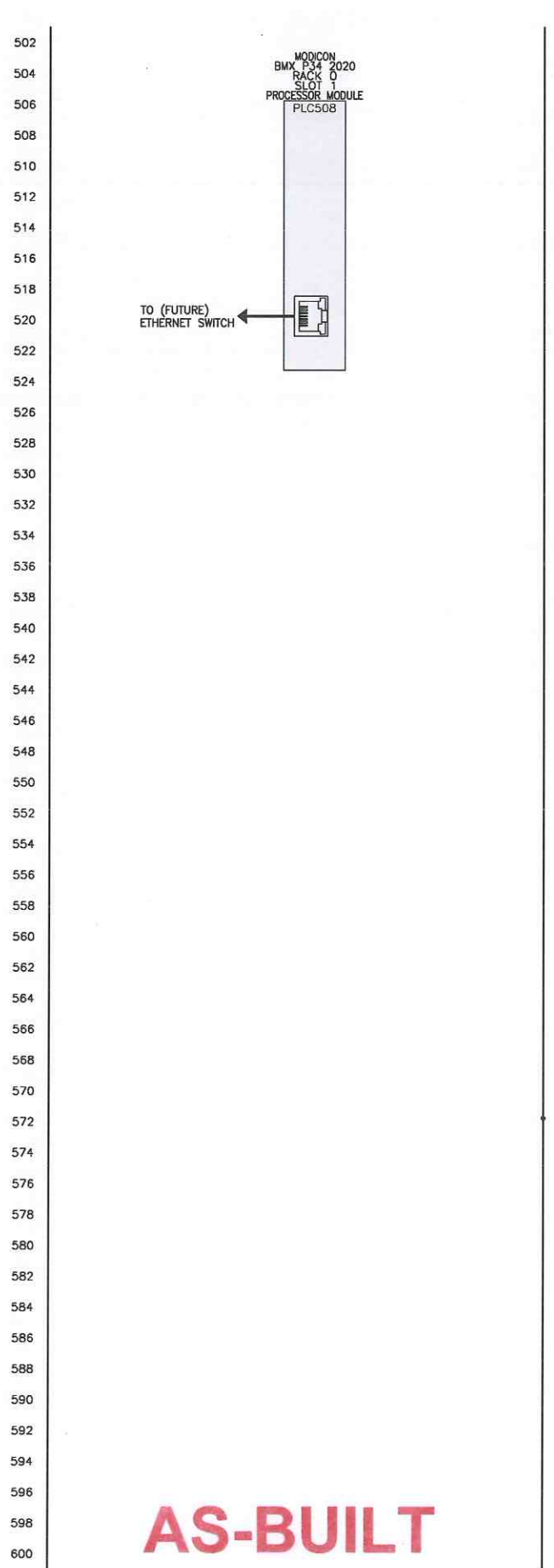
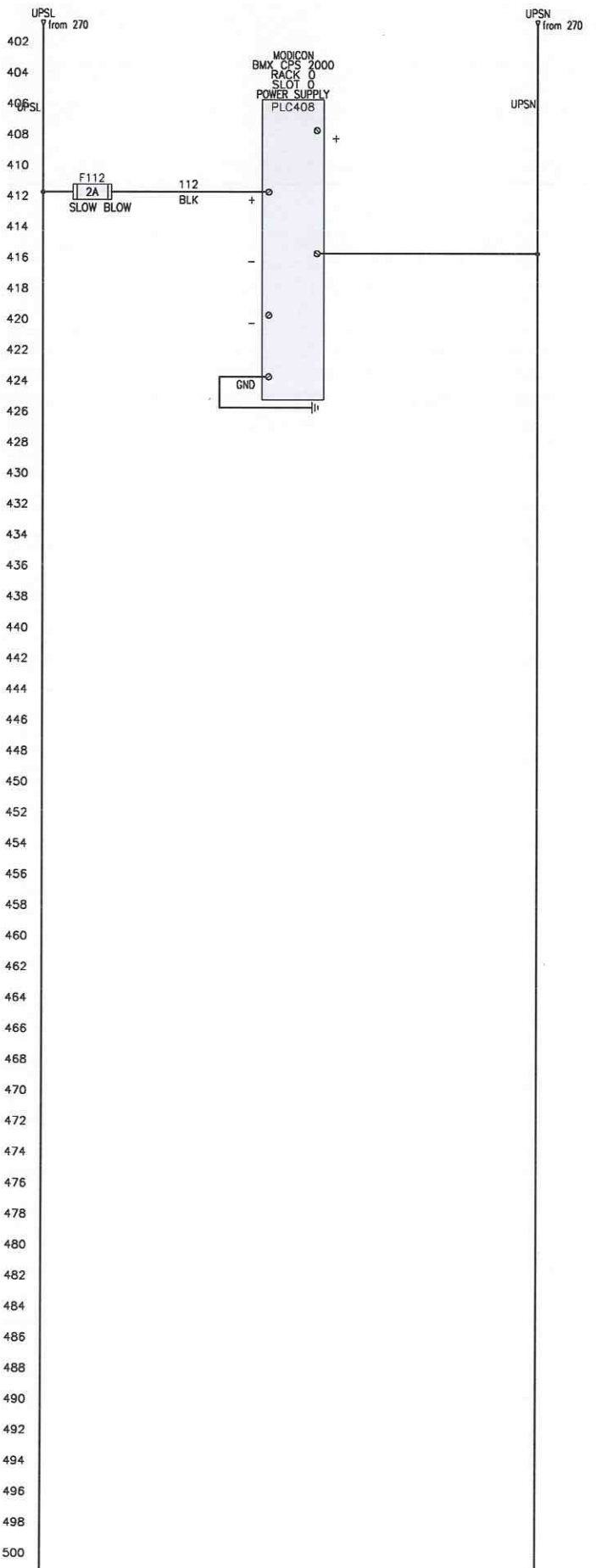


VALVE POSITION
MFG: PRECISION DIGITAL
PN: PD765-6R3-00
24V/200mA
12-22 AWG/4-5inLBS

VALVE POSITION
MFG: PRECISION DIGITAL
PN: PD765-6R3-00
24V/200mA
12-22 AWG/4-5inLBS

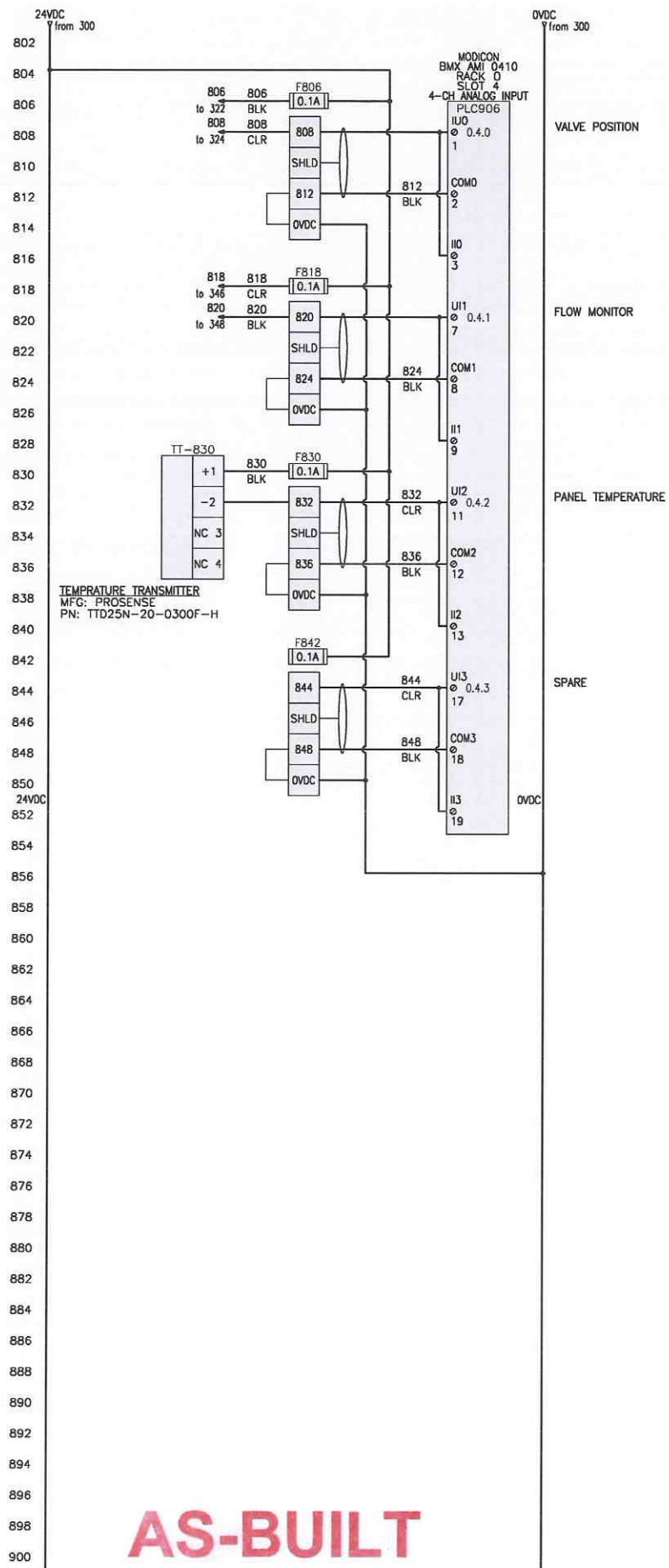
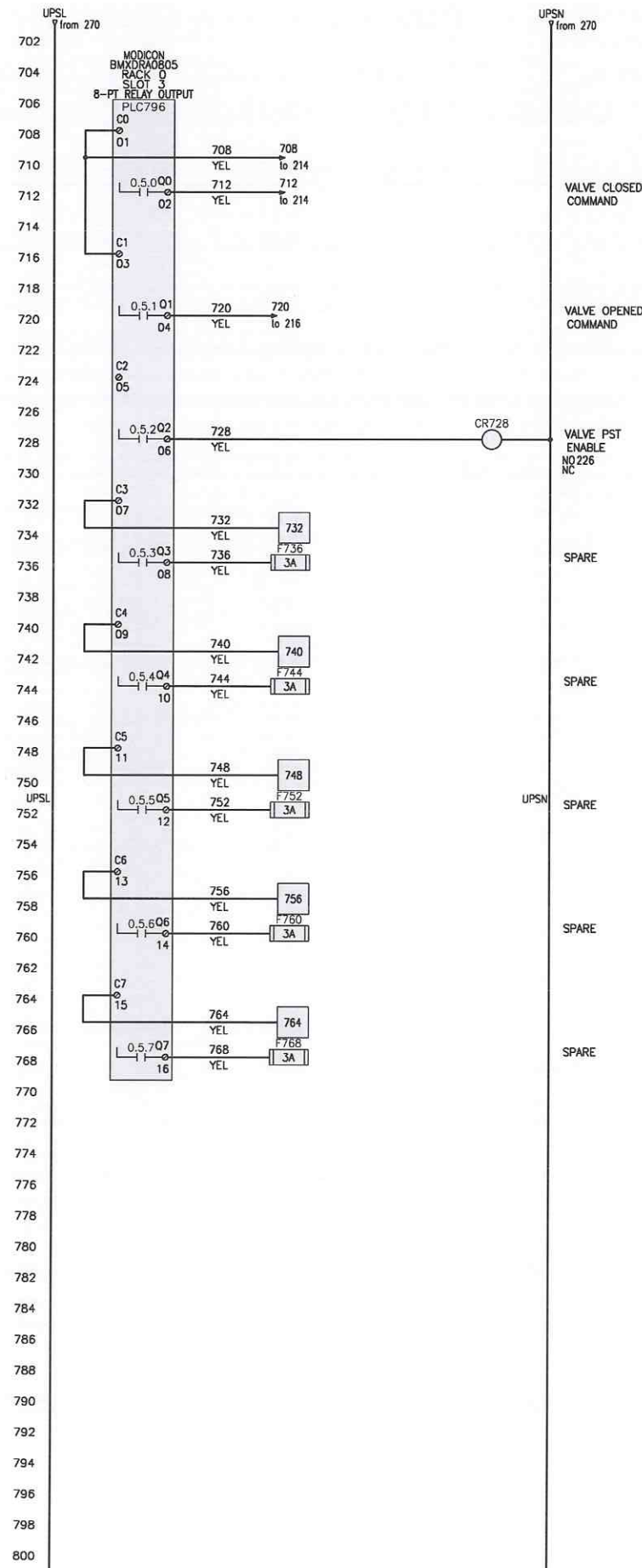
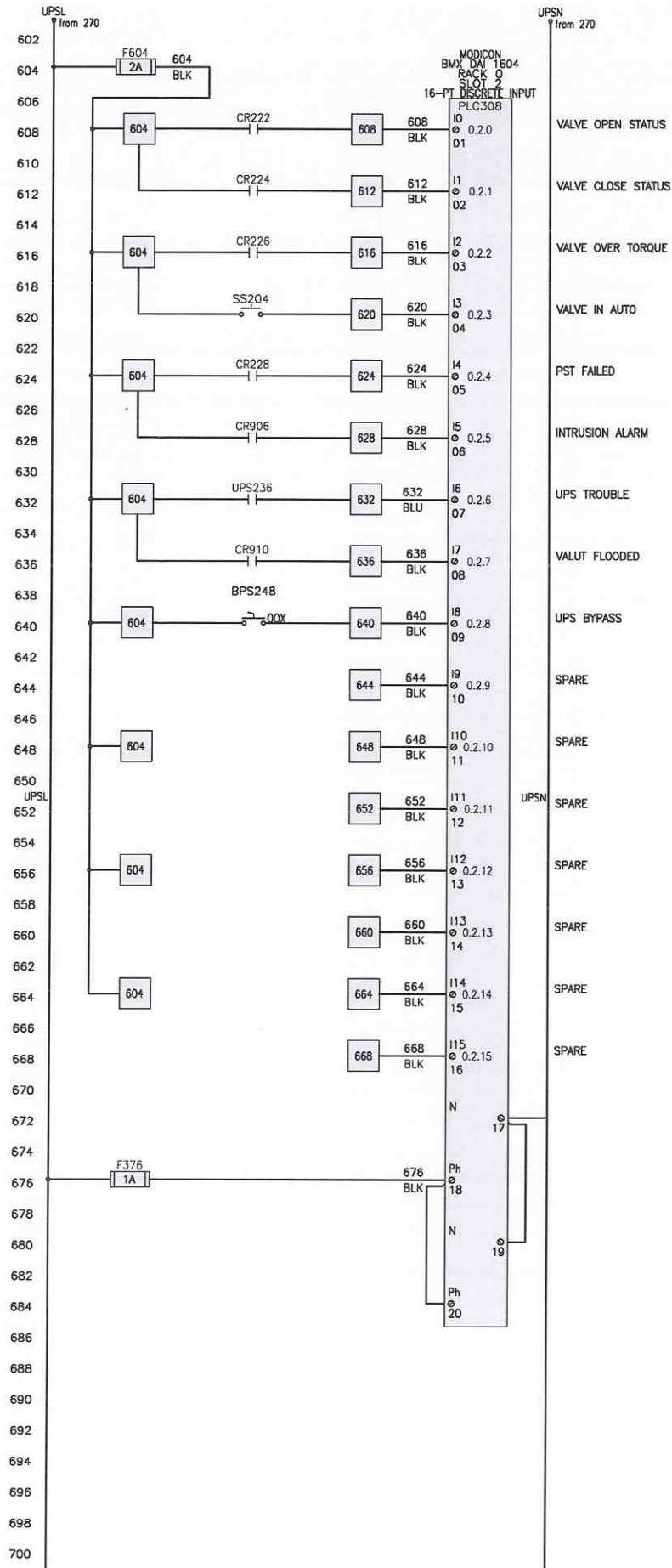
PLC TO SCADA
ETHERNET SWITCH
(FUTURE)

FLOW METER
(FIELD INSTALLATION
IN THIS CABINET)



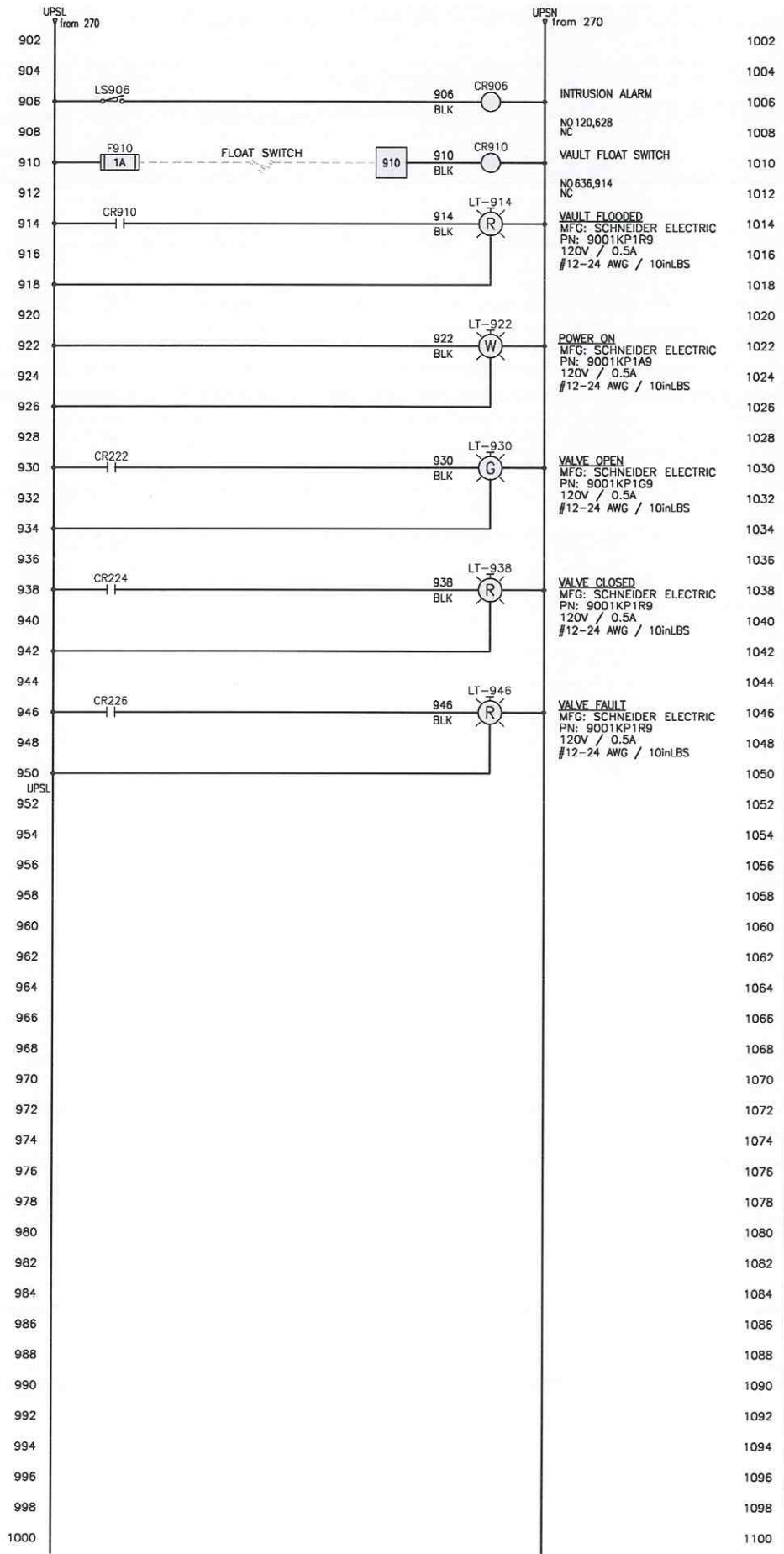
AS-BUILT

DESIGNED BY: CL	DATE: 10/06/14	DRAWING TITLE / DESCRIPTION: DIGITAL DISPLAY, POWER SUPPLY AND PROCESSOR MODULE	REV.	DATE
DRAWN BY: TLL3	JOB NUMBER: 5348	PANEL NAME	DESCRIPTION	BRN BY
APPROVED BY:	DRAWING NUMBER: E-2			
IF THERE IS NO LINE OR IF THIS LINE IS NOT IN BLUE, THIS DRAWING IS NOT TO SCALE.				
Controls Automation Solutions George T. Hall Co. 1315 Greg St. Sparks, NV 89431 775-356-7401				
CUSTOMER: CLWPCF				
PROJECT: INDUSTRIAL POWER CLWPCF COLLECTION SYSTEM CONTROL GAS				



AS-BUILT

DESIGNED BY: CL		Controls, Automation, Solutions		DATE: 10/06/14		DRAWING TITLE / DESCRIPTION									
DRAWN BY: TLL3		George T. Hall Co. 1315 Greg St. Sparks, NV 89431 775-356-7401		CLWPCF		JOB NUMBER: 5348		RACK 0, SLOTS 2-4							
APPROVED BY:						DRAWING NUMBER		PANEL NAME							
IF THERE IS NO LINE OR IF THIS LINE IS NOT IN BLUE, THIS DRAWING IS NOT TO BE USED.		PROJECT:		INDUSTRIAL POWER CLWPCF		E-3									
				COLLECTION SYSTEM CONTROL GAS		SHEET OF						REV.		DESCRIPTION	
														DATE	



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1106

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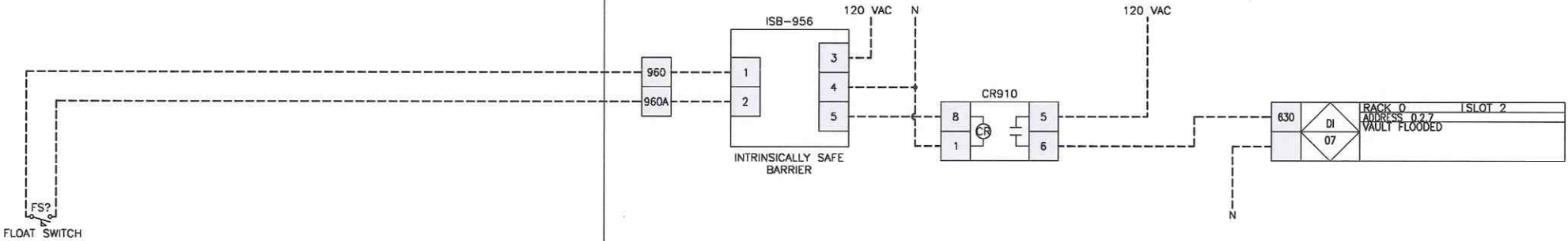
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AS-BUILT

DESIGNED BY:	CL		Control Automation Solutions George T. Hall Co. 1315 Greg St. Sparks, NV 89431 775-356-7401	CUSTOMER:	CLWPCF	DATE:	10/06/14	DRAWING TITLE / DESCRIPTION	RELAYS AND LIGHTS	REV.	DESCRIPTION	DRAWN BY:	DATE	
DRAWN BY:	TLL3					JOB NUMBER:	5348							PANEL NAME
APPROVED BY:						DRAWING NUMBER	E-4							SHEET
PROJECT:										INDUSTRIAL POWER CLWPCF COLLECTION SYSTEM CONTROL GAS				

FIELD

PLC 03



AS-BUILT

DESIGNED BY: CL	Control, Automation, Solutions	DATE: 08/12/11	DRAWING TITLE / DESCRIPTION		VAULT FLOODED	REV.	DESCRIPTION	DATE
DRAWN BY: TLL3	George T. Hall Co. 1315 Greg St. Sparks, NV 89431 775-356-7401	JOB NUMBER: 5348	PANEL NAME			A	IS BARRIER, FUSES, AND GROUNDING ADDED TO LOOP	12/12/14
APPROVED BY:	INDUSTRIAL POWER CLWPCF COLLECTION SYSTEM CONTROL GAS	DRAWING NUMBER: L-1	SHEET		OF			

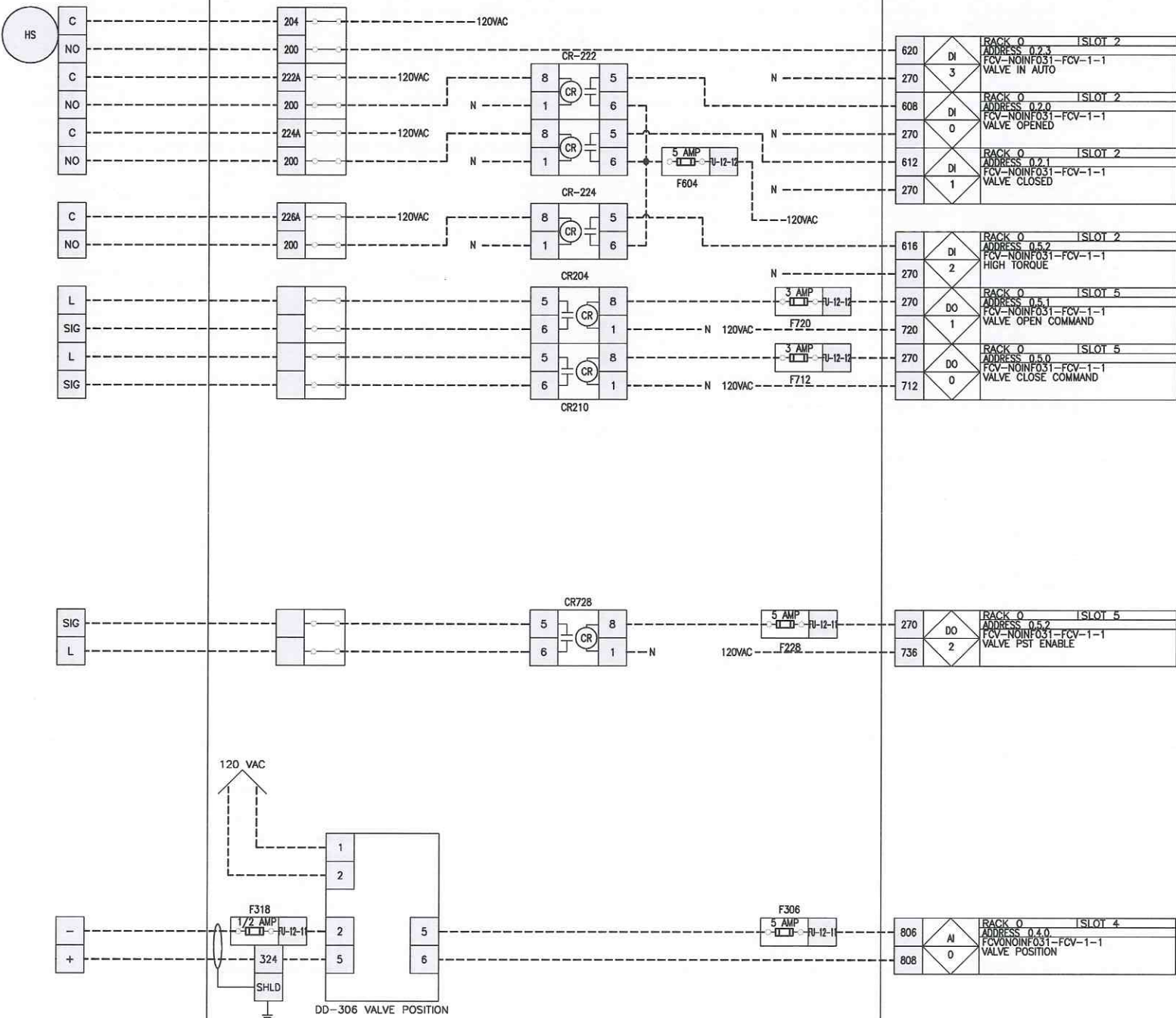
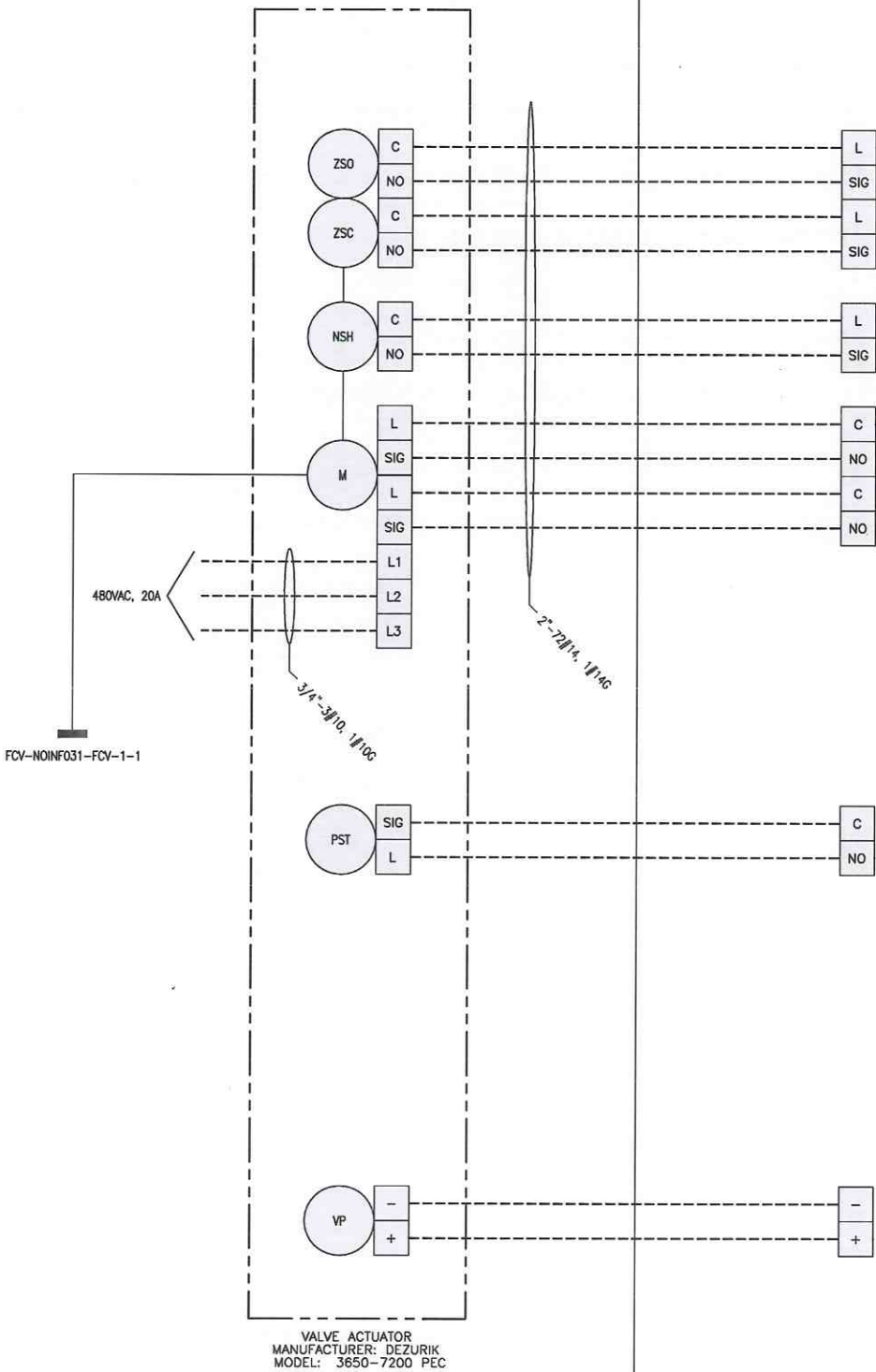
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RIO

BACK PANEL

PLC 03

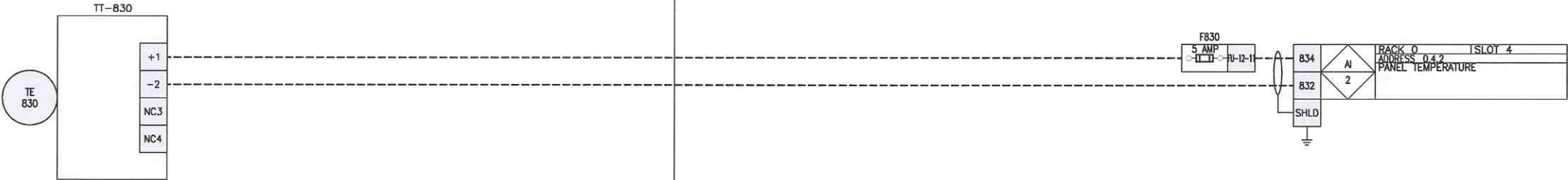


AS-BUILT

DESIGNED BY: CL	DATE: 08/12/11	DRAWING TITLE / DESCRIPTION: FCV-NOINF031-FCV-1-1 GATE	12/12/14
DRAWN BY: TLL3	JOB NUMBER: 5348	PANEL NAME: L-2	TLL3
APPROVED BY:	DRAWING NUMBER: L-2	SHEET OF: 1	12/12/14
CUSTOMER: CLWPCF		PROJECT: INDUSTRIAL POWER CLWPCF COLLECTION SYSTEM CONTROL GAS	
George T. Hall Co. 1315 Greg St. Sparks, NV 89431 775-356-7401		13 BARRIER, FUSES, AND CIRCUITS ADDED TO LDDP	
Controls Automation Solutions		REVISIONS	
George T. Hall Co. 1315 Greg St. Sparks, NV 89431 775-356-7401		DESCRIPTION	
INDUSTRIAL POWER CLWPCF COLLECTION SYSTEM CONTROL GAS		DRAWN BY	
INDUSTRIAL POWER CLWPCF COLLECTION SYSTEM CONTROL GAS		DATE	

BACK PANEL

PLC 03



AS-BUILT

DESIGNED BY: CL	 Controls, Automation, Solutions George T. Hall Co. 1315 Greg St. Sparks, NV 89431 775-356-7401	CUSTOMER: CLVWP/CF	DATE: 08/12/11	DRAWING TITLE / DESCRIPTION MONITORING ENCLOSURE TEMPERATURE					
DRAWN BY: TLL3		JOB NUMBER: 5348							
APPROVED BY:		DRAWING NUMBER: L-4			PANEL NAME				
PROJECT: INDUSTRIAL POWER CLVWP/CF COLLECTION SYSTEM CONTROL GAS			SHEET OF						
IF THERE IS NO NAME OR NUMBER FOR THE PROJECT, THE DRAWING IS NOT TO SCALE.									