NOTICE OF AND AGENDA FOR
SPECIAL MEETING OF THE CITY COUNCIL
TOWN OF COLMA

Colma Community Center
1520 Hillside Boulevard
Colma, CA 94014

Wednesday, February 14, 2018
5:30 p.m.

NOTICE IS HEREBY GIVEN that the City Council of the Town of Colma will hold a Special Meeting at the above time and place for transacting the following business:

CONSENT CALENDAR

1. Motion to Accept the Minutes from the January 24, 2018 Regular Meeting.
2. Motion to Approve Report of Checks Paid for January 2018.
3. Motion to Reject All Bids for the Access Control System Project Bid Submitted on January 23, 2018 and Authorize Staff to Rebid the Project per Public Contract Code Sections 22037 and 22038.
4. Motion to Adopt a Resolution Waiving Any Irregularities in the Bid of and Awarding a Construction Contract to and Directing the City Manager to Execute the Construction Contract with RDI for the Town Hall Addition and Renovation Project, Phase V, Furniture, Fixtures & Equipment

NEW BUSINESS

5. **STATUS UPDATE TO 2017-19 STRATEGIC PLAN**

   Consider: Motion to Accept Update to 2017-19 Town of Colma Strategic Plan.

Caitlin Corley, City Clerk

Posted: February 14, 2018

TOWN OF COLMA
COLMA
AUGUST 5, 1924
CALIFORNIA

MINUTES
REGULAR MEETING
City Council of the Town of Colma
Colma Community Center, 1520 Hillside Boulevard
Colma, CA 94014
Wednesday, January 24, 2018
7:00 p.m.

CALL TO ORDER

Mayor Raquel Gonzalez called the Regular Meeting of the City Council to order at 7:06 p.m.

Council Present – Mayor Raquel "Rae" Gonzalez, Vice Mayor Joanne F. del Rosario, Council Members John Irish Goodwin, Diana Colvin and Helen Fisicaro were present.

Staff Present – City Manager Brian Dossey, City Attorney Christopher Diaz, Police Chief Kirk Stratton, Recreation Manager Cynthia Morquecho, Contract Director of Public Works Brad Donohue, Contract City Planner Michael Laughlin, Contract Assistant Planner Jonathan Kwan and Administrative Technician Darcy De Leon were in attendance.

REPORT FROM CLOSED SESSION

Mayor Gonzalez stated, "No action was taken at tonight's closed session meeting."

ADOPTION OF THE AGENDA

Mayor Gonzalez asked if there were any changes to the agenda. None were requested. The Mayor asked for a motion to adopt the agenda.

Action: Council Member Fisicaro moved to adopt the agenda; the motion was seconded by Vice Mayor del Rosario and carried by the following vote:

Name	Voting		Present, Not Voting		Absent
	Aye	No	Abstain	Not Participating	
Raquel Gonzalez, Mayor	✓				
Joanne F. del Rosario	✓				
John Irish Goodwin	✓				
Diana Colvin	✓				
Helen Fisicaro	✓				
	5	0			

PRESENTATION

Cory Wolbach, Outreach Manager for Get Us Moving San Mateo County.

Chief of Police Kirk Stratton presented the Police Department's End of Year Review.

PUBLIC COMMENTS

Mayor Gonzalez opened the public comment period at 7:52 p.m. and seeing no one come forward to speak, she closed the public comment period.

CONSENT CALENDAR

2. Motion to Adopt an Ordinance Reauthorizing Ordinance No. 669 (Codified as Sections 4.08.500 Through 4.08.570 of Subchapter 4.08 - Cable System, Open Video, Telecommunications and Franchises), Including the Fee Paid to the Town By State Video Franchise Holders for Public, Educational, and Government Access Purposes, and Amending Section 4.08.560 of the Colma Municipal Code (Second Reading).

3. Motion to Accept the Minutes from the January 10, 2018 Regular Meeting.

Action: Vice Mayor del Rosario moved to approve the Consent Calendar items #2 and 3; the motion was seconded by Council Member Colvin and carried by the following vote:

Name	Voting		Present, Not Voting		Absent
	Aye	No	Abstain	Not Participating	
Raquel Gonzalez, Mayor	✓				
Joanne F. del Rosario	✓				
John Irish Goodwin	✓				
Diana Colvin	✓				
Helen Fisicaro	✓				
	5	0			

STUDY SESSION

4. COLMA SYSTEMIC SAFETY ANALYSIS REPORT (SSAR) ROLLOUT

Contract Director of Public Works Brad Donohue presented the staff report and introduced Consultant Brian Ray from Kittelson & Associates to give the presentation. Mayor Gonzalez opened the public comment period at 8:19 p.m. Resident Juan Fuentes made a comment. The Mayor closed the public comment at 8:28 p.m. Council discussion followed.

This item was for discussion only; no action was taken at this meeting.

There was a short break from 8:44 p.m. to 8:49 p.m.

5. SERRAMONTE BOULEVARD AND COLLINS AVENUE MASTER PLAN STUDY SESSION

Contract City Planner Michael Laughlin presented staff report and introduced Consultant Rajeev Bhatia from Dyett and Bhatia to give the presentation. Mayor Gonzalez opened the public comment period at 9:09 p.m. and seeing no one come forward to speak, she closed the public comment period.

This item is for discussion only; no action will be taken at this meeting.

NEW BUSINESS

6. STERLING PARK RECREATION CENTER IMPROVEMENTS – CONCEPT DESIGN

Contract Assistant Planner Jonathan Kwan presented the staff report. Mayor Gonzalez opened the public comment period at 10:05 p.m. and seeing no one come forward to speak, she closed the public comment period. Council discussion followed.

Action: Council Member Goodwin moved to Approve a Concept Design to Expand the

Playground, Picnic Area and Create Exercise Stations at Sterling Park Recreation Center; the motion was seconded by Council Member Fisicaro and carried by the following vote:

Name	Voting		Present, Not Voting		Absent
	Aye	No	Abstain	Not Participating	
Raquel Gonzalez, Mayor	✓				
Joanne F. del Rosario	✓				
John Irish Goodwin	✓				
Diana Colvin	✓				
Helen Fisicaro	✓				
	5	0			

7. **2018 ADULT HOLIDAY EVENT**

Recreation Manager Cynthia Morquecho presented the staff report. Mayor Gonzalez opened the public comment period at 10:30 p.m. and seeing no one come forward to speak, she closed the public comment period.

Action: Council Member Fisicaro moved to Direct City Manager to Plan and Coordinate an Adult Holiday Event at the South San Francisco Conference Center on December 8, 2018; To Determine the Guest List for the Adult Holiday Event; To Set the Participation Fee for the Adult Holiday Event at $15 for Adults and $10 for Seniors and Disabled; and to Plan and Coordinate the Annual Town Picnic for September 8, 2018; the motion was seconded by Council Member Goodwin and carried by the following vote:

Name	Voting		Present, Not Voting		Absent
	Aye	No	Abstain	Not Participating	
Raquel Gonzalez, Mayor	✓				
Joanne F. del Rosario	✓				
John Irish Goodwin	✓				
Diana Colvin	✓				
Helen Fisicaro	✓				
	5	0			

COUNCIL CALENDARING

City Council tentatively scheduled a Special Meeting on February 14, 2018 at 5:30 p.m. The next Regular City Council Meeting will be on February 28, 2018 at 7:00 p.m.

REPORTS

No Council events to report.

City Manager Brian Dossey gave a report:

- State of Our Cities will be on January 26, 2018.
- Town received the GFOA Award for the sixth year in a row.
- There are several open recruitments for Administrative Services Director, Recreation Coordinator and part-time Community Service Officer. In February the Police Reserve recruitment will begin.
- City Attorney Christopher Diaz made partner with BBK & Associates, law firm the Town contracts for legal services.
- Administrative Technician Darcy De Leon was recently promoted.

- City Manager will be on vacation from January 26 to February 2.

ADJOURNMENT

Mayor Gonzalez adjourned the meeting at 10:45 p.m. in memory of Rattan K. Singh, dear friend of Subran "Charlie" Chahal, longtime security guard at Holy Cross Cemetery, and PFC James Leonard Jr.; he was killed in action in the Korean War in 1950, his remains were only recently recovered. He was born in San Francisco and was given full military honors and buried alongside his family at Holy Cross.

Respectfully submitted,

Darcy De Leon

Bank : first FIRST NATIONAL BANK OF DALY

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
12018	1/5/2018	00282	CALIFORNIA PUBLIC EMPLOY	1000000151477:	12/14/2017	MEDICAL INSURANCE	4,579.11	4,579.11
47122	1/3/2018	00004	AT&T	000010653441	12/13/2018	C3-A/B-12-10-TS-01 NOV 13-D	1,522.53	1,522.53
47123	1/3/2018	00005	ABAG PLAN CORPORATION	PLAN-2017-18-0	1/1/2018	2017/2018 PREMIUM 2 OF 2 IN	20,893.00	20,893.00
47124	1/3/2018	00020	ASSOCIATED SERVICES INC	117123408	12/15/2017	Spring Water 5 Gal	18.75	18.75
47125	1/3/2018	00028	ASCAP	2018 License Fe	12/20/2017	2018 LICENSE ACCT #500579(	348.00	348.00
47126	1/3/2018	00051	CALIFORNIA WATER SERVICE	6544607057	12/15/2017	6544607057 S.W. CORNER HI	188.71	188.71
47127	1/3/2018	00117	DELTA DENTAL OF CALIFORN	BE002560008	1/1/2018	DENTAL INSURANCE	12,233.00	12,233.00
47128	1/3/2018	00169	JENKINS, HEIDI	1449	12/15/2017	PLANT MAINTENANCE	780.00	780.00
47129	1/3/2018	00254	METRO MOBILE COMMUNICA	180116	1/1/2018	MAINTENANCE CONTRACT	602.00	602.00
47130	1/3/2018	00307	PACIFIC GAS & ELECTRIC	0678090639-9	12/19/2017	0678090639-9 S/E CORNER H	49.71	
				9593452526-2	12/19/2017	9593452526-2 1500 HILLSIDE	30.63	80.34
47131	1/3/2018	00357	SIERRA DISPLAY, INC.	22605	12/21/2017	2017 INSTALLATION MATERIA	426.43	426.43
47132	1/3/2018	00411	TURBO DATA SYSTEMS	27148	11/30/2017	CITATION PROCESSING	277.90	277.90
47133	1/3/2018	00432	VISION SERVICE PLAN	Jan 2018	12/18/2017	VISION SERVICE PLAN	1,029.20	1,029.20
47134	1/3/2018	00563	PETTY CASH	12/29/17 Petty C	12/29/2017	12/29/17 PETTY CASH REIMB	61.92	61.92
47135	1/3/2018	00631	P.E.R.S.	1000000151521!	12/20/2017	REPLACEMENT BENEFIT COI	356.40	356.40
47136	1/3/2018	00830	STAPLES ADVANTAGE	8047918887	12/16/2017	OFFICE SUPPLIES	416.68	416.68
47137	1/3/2018	00955	DIVISION OF THE STATE	Oct - Dec 2017	1/2/2018	DISABILITY ACCES & EDUCA	2.10	2.10
47138	1/3/2018	01001	SIGNET TESTING LABS, INC.	5900	10/20/2017	OCTOBER 2017 STAFF ENGIN	727.87	
				6004	11/17/2017	OCTOBER 2017 ANCHOR PUI	508.75	1,236.62
47139	1/3/2018	01030	STEPFORD, INC.	1702307	12/20/2017	MONTHLY SERVICE CONTRA	5,622.00	
				1702254	12/20/2017	NOV 2017 HOURS IN EXCESS	1,317.50	6,939.50
47140	1/3/2018	01031	A-1 RHINO LININGS, LLC	9056	12/28/2017	LINER HOOD	259.63	259.63
47141	1/3/2018	01037	COMCAST CABLE	12/27-01/26 XFII	12/17/2017	8155 20 022 0002770 1520 HIL	10.20	10.20
47142	1/3/2018	01340	NAVIA BENEFIT SOLUTIONS	10115636	12/31/2017	SECTION 125 PARTICIPANT &	75.00	75.00
47143	1/3/2018	01352	SESAC, INC.	10150964	12/14/2017	JAN - DEC 2018 CONTRACT #	417.00	417.00
47144	1/3/2018	01367	DUO DANCE ACADEMY	Dec 2017	12/19/2017	DANCE CLASSES	390.00	390.00
47145	1/3/2018	01480	LEXIPOL, LLC	22896	12/12/2017	JAN - DEC 2018 LAW ENFOR(	5,785.00	5,785.00
47146	1/3/2018	01625	ECOLAB EQUIPMENT CARE, (	95025083	12/16/2017	WOLF RANGE VALVE, PILOT	756.71	756.71
47147	1/3/2018	01745	WILLIAM D. WHITE CO., INC.	455277COLM	12/15/2017	12/06/17 FIXED CONTACTS A	414.00	414.00
47148	1/3/2018	01865	THYSSENKRUPP ELEVATOR	6000284021	12/20/2017	FIRE RETESTING ELEVATOR	1,042.00	1,042.00
47149	1/3/2018	02123	TYLER TECHNOLOGIES, INC.	045-206438	12/1/2017	JAN 1 - DEC 31, 2018 FINANC	20,591.22	20,591.22
47150	1/3/2018	02179	HUB INTERNATIONAL OF CA	Dec 2017	12/28/2017	INSURANCE EVENTS	128.04	128.04
47151	1/3/2018	02224	STANDARD INSURANCE COM	Jan 2018	12/15/2017	LIFE INSURANCE	214.50	214.50

Bank : first FIRST NATIONAL BANK OF DALY (Continued)

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47152	1/3/2018	02352	GUTIERREZ, IMELDA	2001029.003	12/27/2017	12.27.17 DEPOSIT REFUND	50.00	50.00
47153	1/3/2018	02409	BONDOC, MARYANNE	2001027.003	12/27/2017	12.27.17 DEPOSIT REFUND	300.00	300.00
47154	1/3/2018	02742	WOO, CASSANDRA	Dec 18, 2017 Mil	12/29/2017	DEC 18, 2017 MILEAGE & TOL	68.81	68.81
47155	1/3/2018	02793	DITO'S MOTORS	17276	12/27/2017	#4 REPLACE BRAKES & HEAI	769.00	
				17281	12/27/2017	#2 CHANGE ENGINE OIL AND	207.60	976.60
47156	1/3/2018	02799	WAVE	04179205	12/23/2017	RIMS INTERNET W/SSF	400.00	400.00
47157	1/3/2018	02849	U.S. BANK PARS ACCOUNT, 6	Jan 2018 OPEB	1/2/2018	OPEB CONTRIBUTION	100,798.00	100,798.00
47158	1/3/2018	02949	WELLS FARGO VENDOR FINA	99891343	12/21/2017	ADMIN COPY MACHINE	1,362.61	1,362.61
47159	1/3/2018	02993	MOSQUEDA, VANESSA	Oct 19-Dec 28, 2	12/28/2017	YOGA FOR SENIORS	710.00	710.00
47160	1/3/2018	03034	FLEX ADVANTAGE	Jan 2018	12/18/2017	HEALTH REIMBURSEMENT AI	36,309.49	36,309.49
47161	1/3/2018	03049	WAISLER, IAN	Oct 17-Dec 19, 2	12/20/2017	YOGA FOR STRESS RELIEF	1,170.00	1,170.00
47162	1/3/2018	03121	SAMANIEGO, DANIEL	2001026.003	12/27/2017	12.27.17 DEPOSIT REFUND	275.00	275.00
						b total for FIRST NATIONAL BANK OF DALY CITY:		224,496.00

42 checks in this report.

Grand Total All Checks: 224,496.00

Bank : first FIRST NATIONAL BANK OF DALY

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47163	1/5/2018	00068	COLMA PEACE OFFICER'S	01052018 B	1/5/2018	COLMA PEACE OFFICERS: P/	690.83	690.83
47164	1/5/2018	01340	NAVIA BENEFIT SOLUTIONS	01052018 B	1/5/2018	FLEX 125 PLAN: PAYMENT	310.00	310.00
47165	1/5/2018	01375	NATIONWIDE RETIREMENT S	01052018 B	1/5/2018	NATIONWIDE: PAYMENT	6,650.00	
				01052018 M	1/5/2018	NATIONWIDE: PAYMENT	1,200.00	7,850.00
47166	1/5/2018	02377	CALIFORNIA STATE DISBURSI	01052018 B	1/5/2018	WAGE GARNISHMENT: PAYM	917.53	917.53
93641	1/5/2018	00282	CALIFORNIA PUBLIC EMPLOY	01052018 B	1/5/2018	JANUARY 2018 ACTIVE PREM	52,363.49	52,363.49
93647	1/5/2018	00521	UNITED STATES TREASURY	01052018 M	1/5/2018	FEDERAL TAX: PAYMENT	940.97	940.97
93648	1/5/2018	01360	VANTAGE TRANSFER AGENT	01052018 M	1/5/2018	ICMA CONTRIBUTION: PAYME	463.86	463.86
93649	1/5/2018	00631	P.E.R.S.	01052018 M	1/5/2018	PERS MISC NON-TAX: PAYME	588.13	588.13
93651	1/5/2018	00130	EMPLOYMENT DEVELOPMEN	01052018 B	1/5/2018	CALIFORNIA STATE TAX: PAY	10,048.88	10,048.88
93652	1/5/2018	00521	UNITED STATES TREASURY	01052018 B	1/5/2018	FEDERAL TAX: PAYMENT	51,565.35	51,565.35
93653	1/5/2018	00631	P.E.R.S.	01052018 B	1/5/2018	PERS - BUYBACK: PAYMENT	37,294.61	37,294.61
93654	1/5/2018	01360	VANTAGE TRANSFER AGENT	01052018 B	1/5/2018	ICMA CONTRIBUTION: PAYME	3,179.70	3,179.70

b total for FIRST NATIONAL BANK OF DALY CITY: 166,213.35

12 checks in this report.

Grand Total All Checks: 166,213.35

Bank : first FIRST NATIONAL BANK OF DALY

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47167	1/8/2018	00051	CALIFORNIA WATER SERVICE	12/27/2017	1/5/2018	WATER BILL	4,331.97	4,331.97
47168	1/8/2018	00093	CITY OF SOUTH SAN FRANCI	517069	12/14/2017	TRAFFIC SIGNAL MAINTENAI	750.00	750.00
47169	1/8/2018	00307	PACIFIC GAS & ELECTRIC	12/22/2017	12/22/2017	PG&E	2,252.66	2,252.66
47170	1/8/2018	00334	S.B.R.P.S.T.C.	111318	1/3/2018	01/03/18 FTO UPDATE: MERC	85.00	85.00
47171	1/8/2018	00507	COLMA FIRE DISTRICT	Annual Inspectio	12/26/2017	ANNUAL INSPECTION FEE 11	125.00	125.00
47172	1/8/2018	00862	GOMEZ, LOURDES	2001031.003	1/4/2018	12.28.17 DEPOSIT REFUND	150.00	
				2001030.003	12/28/2017	12.28.17 DEPOSIT REFUND	50.00	200.00
47173	1/8/2018	01037	COMCAST CABLE	Jan 2018	12/26/2017	8155 20 022 0094769 TOWN C	13,510.48	
				12/25-01/24 427	12/20/2017	8155 20 022 0097028 427 F ST	286.16	
				12/25-01/24 Inte	12/20/2017	8155 20 022 0097051 Internet	286.16	14,082.80
47174	1/8/2018	01863	RODRIGUEZ, RYAN	01/02/18 Work B	1/5/2018	01/02/18 WORK BOOTS REIM	130.00	130.00
47175	1/8/2018	01888	CHIEF SUPPLY CORPORATIO	206131	8/14/2017	20 MINUTE FLARES (7)	1,071.08	1,071.08
47176	1/8/2018	02082	VINCE'S OFFICE SUPPLY, INC	Dec 2017	12/29/2017	OFFICE SUPPLIES	293.85	293.85
47177	1/8/2018	02623	BLOEBAUM, CYNTHIA	Dec 6, 2017 Chri	12/7/2017	COOKING CLASSES	465.00	
				Jan 3, 2017 Mole	1/4/2018	COOKING CLASSES	465.00	930.00
47178	1/8/2018	02637	Z.A.P. MANUFACTURING INC.	944	1/2/2018	6.5X6.5 DECALS H.I.P.	183.13	183.13
47179	1/8/2018	02730	THE RATCLIFF ARCHITECTS	Reimbursable E>	1/8/2018	REIMBURSABLE EXPENSES:	25,390.32	25,390.32
47180	1/8/2018	02876	TARONGOY, VIRGINIA	2001033.003	1/3/2018	01.03.18 DEPOSIT REFUND	275.00	275.00
47181	1/8/2018	02921	DELA CRUZ, SHANNON	2001035.003	1/3/2018	01.03.18 DEPOSIT REFUND	50.00	50.00
47182	1/8/2018	02935	EMCOR SERVICES-MESA ENE	001313370	12/22/2017	REPLACE MOTOR ON FC-1 A	2,528.00	2,528.00
47183	1/8/2018	03015	U.S. BANK CORPORATE PMT	12/22/17 Gogan	12/22/2017	CREDIT CARD PURCHASE	2,601.50	
				12/22/17 Morque	12/22/2017	CREDIT CARD PURCHASE	1,482.93	
				12/22/17 Dossey	12/22/2017	CREDIT CARD PURCHASE	1,101.48	
				12/22/17 Strattor	12/22/2017	CREDIT CARD PURCHASE	586.23	
				12/22/17 Burns	12/22/2017	CREDIT CARD PURCHASE	413.70	
				12/22/17 Fisicarc	12/22/2017	CREDIT CARD PURCHASE	322.42	
				12/22/17 Lum	12/22/2017	CREDIT CARD PURCHASE	41.76	6,550.02
47184	1/8/2018	03034	FLEX ADVANTAGE	101824	12/31/2017	FLEX PROCESSING FEES	160.00	160.00
47185	1/8/2018	03051	LOPEZ, CLAUDIA	2001034.003	1/3/2018	01.03.18 DEPOSIT REFUND	300.00	300.00
47186	1/8/2018	03061	NORTH BAY PETROLEUM	1897551	12/15/2017	May 1-15, 2017 PW Gas Purch	250.63	250.63

b total for FIRST NATIONAL BANK OF DALY CITY: 59,939.46

20 checks in this report.

Grand Total All Checks: 59,939.46

Bank : first FIRST NATIONAL BANK OF DALY

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47187	1/8/2018	00140	FIRST NAT BANK OF NO CA	12/21/17 Corley	12/21/2017	4IMPRINT PENS FOR COUNC	259.55	259.55
						b total for FIRST NATIONAL BANK OF DALY CITY:		259.55

1 checks in this report.

Grand Total All Checks: 259.55

Bank : first FIRST NATIONAL BANK OF DALY

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47188	1/16/2018	00013	ANDY'S WHEELS & TIRES	Dec 2017	12/31/2017	TIRE SERVICE	46.16	46.16
47189	1/16/2018	00020	ASSOCIATED SERVICES INC	118010049	1/1/2018	RENTAL	58.00	
				118010048	1/1/2018	Spring Water 5 Gal	9.00	67.00
47190	1/16/2018	00051	CALIFORNIA WATER SERVICE	0944444444	12/28/2017	0944444444 1180-1190 EL CAI	48.69	
				3422893362	12/28/2017	3422893362 1520 HILLSIDE BI	48.69	
				5793906861	12/28/2017	5793906861 1199 EL CAMINO	32.46	129.84
47191	1/16/2018	00057	CINTAS CORPORATION #2	Dec 2017	1/9/2017	CLEANING SERVICE	1,282.24	1,282.24
47192	1/16/2018	00082	CSMFO	179727	1/12/2018	02/06/18 PENINSULA/EAST B/	20.00	20.00
47193	1/16/2018	00112	DEPARTMENT OF JUSTICE	276760	1/1/2018	PD ACCOUNT #140503	162.00	162.00
47194	1/16/2018	00174	HOME DEPOT CREDIT SERVI	Nov 29-Dec 28, 2	12/29/2017	PW SUPPLY PURCHASES	1,217.24	1,217.24
47195	1/16/2018	00185	INTERNATIONAL ASSOCIATIO	1001295257	12/29/2017	2018 IACP MEMBERSHIP K. S	150.00	150.00
47196	1/16/2018	00307	PACIFIC GAS & ELECTRIC	0567147369-1	12/29/2017	0567147369-1 JSB S/O SERR/	177.27	177.27
47197	1/16/2018	00309	PAUL'S FLOWERS	12374	12/31/2017	25 CENTERPIECES ADULT HC	815.63	815.63
47198	1/16/2018	00345	SMC SHERIFF'S OFFICE	Jan 8-11, 2018 C	1/11/2018	C. GRANT JAN 8-11, 2018 CRI	275.00	275.00
47199	1/16/2018	00352	SERRAMONTE FORD, INC.	211489	12/31/2017	15 FORD EXPLORER REPLAC	468.55	468.55
47200	1/16/2018	00364	SMC SHERIFF'S OFFICE	CL05321	1/8/2018	LAB FEES	940.00	940.00
47201	1/16/2018	00388	SONITROL	1311994-IN	1/1/2018	427 F ST. MONTHLY MONITOI	113.00	113.00
47202	1/16/2018	00412	TELECOMMUNICATIONS ENG	45225	1/10/2018	Facilities Mgmt & Maintenance	1,328.00	1,328.00
47203	1/16/2018	00414	TERMINEX INTERNATIONAL L	371588303	1/11/2018	PEST CONTROL	450.00	
				371588304	1/11/2018	601 F St.	63.00	513.00
47204	1/16/2018	00500	SMC CONTROLLERS OFFICE	Dec 2017	1/5/2018	ALLOCATION OF PARKING PE	1,657.10	1,657.10
47205	1/16/2018	00623	ARAMARK	Dec 2017	12/31/2017	UNIFORM SERVICE	412.00	412.00
47206	1/16/2018	00830	STAPLES ADVANTAGE	8048095019	12/30/2017	8.5 X 11 COPY PAPER, KCUP	338.80	
				8048009686	12/23/2017	2" WHITE BINDERS, FLEX ELI	95.61	434.41
47207	1/16/2018	01037	COMCAST CABLE	01/02/18-02/01/1	12/27/2017	8155 20 022 0097069 INTERNI	291.16	291.16
47208	1/16/2018	01370	VERIZON WIRELESS SERVICE	9798116730	12/15/2017	CELL PHONE SERVICE	1,325.16	1,325.16
47209	1/16/2018	01399	WESTLAKE TOUCHLESS CAR	Dec 2017	1/1/2018	PD CAR WASH	13.95	13.95
47210	1/16/2018	01450	SAN MATEO LAWN MOWER	Dec 2017	12/30/2017	DEC 2017 PW PURCHASES	697.93	697.93
47211	1/16/2018	01565	BAY CONTRACT MAINTENAN	Jan 2018	1/10/2018	JANITORIAL SERVICES	8,312.18	
				20354	1/11/2018	PAPER SUPPLIES	1,213.91	9,526.09
47212	1/16/2018	01687	UNITED SITE SERVICES OF	114-6209706	12/31/2017	STANDARD AND REGULAR SI	136.73	136.73
47213	1/16/2018	01878	PRIORITY ARCHITECTURAL G	2018A7353	1/4/2018	CUSTOM NAMEPLATE 2"X10"	76.95	76.95
47214	1/16/2018	01995	CELESTE, MIKE L.	18-0101	1/8/2018	CARDROOM BACKGROUND	770.00	770.00
47215	1/16/2018	02011	FBI - LEEDA	2018 FBINAA Me	1/4/2018	#48572 K. STRATTON 2018 FE	125.00	125.00

Bank : first FIRST NATIONAL BANK OF DALY (Continued)

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47216	1/16/2018	02128	CALIFORNIA LAW ENFORCEM	2018 Active Men	1/10/2018	2018 ACTIVE MEMBERSHIP A	50.00	
				01/17/18 Training	1/10/2018	01/17/18 C.L.E.A.R.S. TRAININ	50.00	
				2018 Associate M	1/10/2018	2018 ASSOCIATE MEMBERSH	35.00	135.00
47217	1/16/2018	02132	WOLLMAN, JASON	Jan 3-6, 2018 SL	1/11/2018	JAN 1-6, 2018 SLI REIMBURSI	409.65	409.65
47218	1/16/2018	02144	DOMINIC A. DE LUCCA DBA DI	Nov & Dec 2017	1/9/2018	TAE KWON DO	900.00	900.00
47219	1/16/2018	02150	COLOMBO, EMIL L. AND DORI	370509	1/5/2018	01/05/18 LUNCH FOR 40: ROL	499.52	499.52
47220	1/16/2018	02190	GOGAN, REA	Jan 3-4, 2018 Re	1/8/2018	JAN 3-4, 2018 MILEAGE AND I	40.65	40.65
47221	1/16/2018	02274	FRANK AND GROSSMAN LAN	152146	1/1/2018	LANDSCAPE MAINTENANCE	10,608.00	
				40447497	12/31/2017	CUT AND REMOVE PALM ANE	1,590.72	
				40447498	12/31/2017	REMOVE DECLINING SHRUB	604.40	
				40447499	12/31/2017	REMOVE EXISTING JUNIPER	585.75	13,388.87
47222	1/16/2018	02499	GE CAPITAL INFORMATION	99977317	1/5/2018	PD COPY MACHINE RENTAL	808.92	
				99977313	1/5/2018	REC COPY MACHINE RENTAI	601.18	1,410.10
47223	1/16/2018	02510	REGIONAL GOVERNMENT SE	7837	12/31/2017	CONTRACT FINANCE SERVIC	5,338.25	5,338.25
47224	1/16/2018	02637	Z.A.P. MANUFACTURING INC.	973	1/10/2018	CUSTOM SIGN 12X18 S/F H.I.	1,614.69	
				974	1/10/2018	SIGN H.I.P: R3-1 24X24 (1), RE	400.18	2,014.87
47225	1/16/2018	02730	THE RATCLIFF ARCHITECTS	9162	1/9/2018	COLMA TOWN HALL RENOVA	29,092.60	
				9163	1/9/2018	DEC 3-30, 2017 5TH AMENDM	5,899.33	34,991.93
47226	1/16/2018	02743	UTILITY TELEPHONE, INC	Jan 2018	1/1/2018	INTERNET ACCESS 128070	717.99	717.99
47227	1/16/2018	02785	JONES, MARGARITA	2001036.003	1/5/2018	01.05.18 REFUND DEPOSIT	150.00	
				2001037.003	1/5/2018	01.05.18 REFUND DEPOSIT	50.00	200.00
47228	1/16/2018	02914	GARCIA, RAPHAEL	01/11/17 Reimbu	1/11/2018	01/11/18 REIMBUSRE MILLER	198.88	198.88
47229	1/16/2018	02926	PRECISION BODY SHOP & DE	154765	1/2/2018	WASH & WAX FORD FUSION	75.00	75.00
47230	1/16/2018	03015	U.S. BANK CORPORATE PMT	12/22/17 Tapia	12/22/2017	CREDIT CARD PURCHASE	1,474.80	
				12/22/17 Pfotenh	12/22/2017	CREDIT CARD PURCHASE	651.38	
				12/22/17 De Leo	12/22/2017	CREDIT CARD PURCHASE	295.95	
				12/22/17 Gotelli	12/22/2017	FEDEX, UPS STORE, OFFICE	233.20	
				12/22/17 Corley	12/22/2017	CREDIT CARD PURCHASE	150.66	
				12/22/17 Jordan	12/22/2017	KETCH ALL CO. 4-6 FT. EXTE	125.61	2,931.60
47231	1/16/2018	03061	NORTH BAY PETROLEUM	1900776	12/31/2017	PW GAS PURCHASES	74.69	74.69
47232	1/16/2018	03122	KIM TURNER, LLC	0180	12/13/2017	01/22/18 STRESS MANAGEME	143.00	143.00
47233	1/16/2018	03123	LATORRE, JOSEPH PAUL	CO043574 Refu	12/28/2017	CO043574 CITATION REFUNE	43.00	43.00

b total for FIRST NATIONAL BANK OF DALY CITY: 86,684.41

46 checks in this report.

Grand Total All Checks: 86,684.41

Bank : first FIRST NATIONAL BANK OF DALY

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47234	1/19/2018	00047	C.L.E.A.	01192018 B	1/19/2018	CLEA: PAYMENT	294.00	294.00
47235	1/19/2018	00068	COLMA PEACE OFFICER'S	01192018 B	1/19/2018	COLMA PEACE OFFICERS: PA	690.83	690.83
47236	1/19/2018	01340	NAVIA BENEFIT SOLUTIONS	01192018 B	1/19/2018	FLEX 125 PLAN: PAYMENT	310.00	310.00
47237	1/19/2018	01375	NATIONWIDE RETIREMENT S	01192018 B	1/19/2018	NATIONWIDE: PAYMENT	6,650.00	6,650.00
47238	1/19/2018	02224	STANDARD INSURANCE COM	01192018 B	1/19/2018	LIFE INSURANCE: PAYMENT	419.00	419.00
47239	1/19/2018	02377	CALIFORNIA STATE DISBURSI	01192018 B	1/19/2018	WAGE GARNISHMENT: PAYM	917.53	917.53
93656	1/19/2018	00130	EMPLOYMENT DEVELOPMEN	01192018 B	1/19/2018	CALIFORNIA STATE TAX: PAY	10,180.14	10,180.14
93657	1/19/2018	00521	UNITED STATES TREASURY	01192018 B	1/19/2018	FEDERAL TAX: PAYMENT	48,216.32	48,216.32
93658	1/19/2018	00631	P.E.R.S.	01192018 B	1/19/2018	PERS - BUYBACK: PAYMENT	39,562.95	39,562.95
93659	1/19/2018	01360	VANTAGE TRANSFER AGENT	01192018 B	1/19/2018	ICMA CONTRIBUTION: PAYME	3,202.05	3,202.05
						o total for FIRST NATIONAL BANK OF DALY CITY:		110,442.82

10 checks in this report.

Grand Total All Checks: 110,442.82

Bank : first FIRST NATIONAL BANK OF DALY

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47240	1/22/2018	00037	BROADCAST MUSIC INC	31034782	1/2/2018	JAN 1 - DEC 31, 2018 LICENSI	349.00	349.00
47241	1/22/2018	00071	CSG CONSULTANTS, INC.	10/28/17 - 11/24/	1/9/2018	CSG	98,291.61	98,291.61
47242	1/22/2018	00110	DEPARTMENT OF TRANSPOR	SL180447	1/9/2018	SIGNALS & LIGHTING	1,324.42	1,324.42
47243	1/22/2018	00112	DEPARTMENT OF JUSTICE	278400	1/1/2018	HR ACCOUNT #145931	98.00	98.00
47244	1/22/2018	00181	IEDA	21943	1/1/2018	LABOR RELATIONS CONSUL	1,371.00	1,371.00
47245	1/22/2018	00185	INTERNATIONAL ASSOCIATIO	1001300300	12/29/2017	JAN - DEC 2018 MEMBERSHII	150.00	150.00
47246	1/22/2018	00236	LAURETTA PRINTING COMPA	29976	1/15/2018	500 ENVELOPES CAP. BOND	217.00	217.00
47247	1/22/2018	00307	PACIFIC GAS & ELECTRIC	3007220528-6	1/8/2018	3007220528-6 1199 EL CAMIN	2,693.93	
				01/09/2018	1/9/2018	PG&E	2,166.72	
				6991706865-7	1/8/2018	6991706865-7 1190 EL CAMIN	955.79	5,816.44
47248	1/22/2018	00534	SMC INFORMATION SERVICE	1YCL11712	1/12/2018	MICRO CHANNEL & LINES	782.50	782.50
47249	1/22/2018	00619	LUM, SHERWIN	Jan 12, 2018 Re	1/18/2018	JAN 12, 2018 MAGNETIC SPE	33.00	33.00
47250	1/22/2018	00830	STAPLES ADVANTAGE	8048188636	1/6/2018	HP 80A BLACK TONER, 2018 I	240.49	240.49
47251	1/22/2018	01001	SIGNET TESTING LABS, INC.	6159	1/12/2018	Nov 28-Dec 9, 2017 Equipment	1,673.65	1,673.65
47252	1/22/2018	01037	COMCAST CABLE	01/11-02/10 601	1/7/2018	8155 20 022 0096715 601 F ST	106.16	106.16
47253	1/22/2018	01181	STONE, SHIRLEY	2001045.003	1/17/2018	01.17.18 COPPOLA WINERY T	24.00	24.00
47254	1/22/2018	01431	CSAC EXCESS INSURANCE A	18100370	1/8/2018	PREMIUM ADJUSTMENT BAS	5,820.00	5,820.00
47255	1/22/2018	01541	NORCAL HUMAN RESOURCES	Feb 8-9, 2018 N	1/17/2018	FEB 8-9, 2018 L. BURNS NOR	240.00	240.00
47256	1/22/2018	01601	DELA CRUZ, MARIA THERESA	2001041.003	1/16/2018	01.16.18 DEPOSIT REFUND	300.00	300.00
47257	1/22/2018	01653	KAISER FOUNDATION HEALTH	Dec 2017 Pre-er	1/9/2018	DEC 11, 2017 PRE-EMPLOYM	65.00	65.00
47258	1/22/2018	02172	RAMOS, EFREN	2001042.003	1/16/2018	01.16.18 DEPOSIT REFUND	275.00	275.00
47259	1/22/2018	02216	RAMOS OIL CO. INC.	954914	12/31/2017	PD GASOLINE PURCHASES 2	1,462.57	
				953397	12/20/2017	PD GASOLINE PURCHASES 1	1,453.81	
				951849	12/10/2017	PD GASOLINE PURCHASES 1	1,249.20	4,165.58
47260	1/22/2018	02317	CUS, ERIN	11/18/17-01/13/1	1/16/2018	BOOT CAMP FITNESS	800.00	800.00
47261	1/22/2018	02386	VIBO MUSIC SCHOOL	Sept 1-Dec 17, 2	1/17/2018	REPLACES CHECK #47078 D/	1,616.00	1,616.00
47262	1/22/2018	02676	DYETT & BHATIA, URBAN AN	17-552-03	1/10/2018	SERRAMONTE BLVD & COLLI	7,670.90	7,670.90
47263	1/22/2018	02769	COMCAST SPOTLIGHT, LP	WC657968	12/31/2017	HAVE A THRILL OF A TIME IN	4,075.50	
				WC655866	12/31/2017	HAVE A THRILL OF A TIME IN	1,000.00	5,075.50
47264	1/22/2018	02793	DITO'S MOTORS	17378	1/17/2018	2015 FUSION REPLACE PASS	662.50	
				17374	1/17/2018	#5 REPLACE ALL SPARK PLU	479.40	
				17375	1/17/2018	2012 EXPLORER CHANGE OI	41.00	1,182.90
47265	1/22/2018	02830	BAILEY FENCE COMPANY, IN	76563	1/4/2018	NEW WIRE MESH PARTITION	3,312.00	3,312.00
47266	1/22/2018	03034	FLEX ADVANTAGE	Feb 2018	1/19/2018	HEALTH REIMBURSEMENT AI	36,309.49	36,309.49

Bank : first FIRST NATIONAL BANK OF DALY (Continued)

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47267	1/22/2018	03060	PREFERRED ALLIANCE, INC.	0138530-IN	12/31/2017	DEC 11, 2017 PRE-EMPLOYM	42.00	42.00
47268	1/22/2018	03110	BHM CONSTRUCTION, INC.	3	12/31/2017	TOWN HALL BUILDING INFILL	565,649.02	
				2.1	11/30/2017	TOWN HALL BUILDING INFILL	15,774.33	581,423.35
47269	1/22/2018	03117	KITTELSON & ASSOCIATES, II	0092667R	1/3/2018	COLMA SYSTEMIC SAFETY A	22,171.25	22,171.25

b total for FIRST NATIONAL BANK OF DALY CITY: 780,946.24

30 checks in this report.

Grand Total All Checks: 780,946.24

Bank : first FIRST NATIONAL BANK OF DALY

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47270	1/29/2018	00004	AT&T	000010792082	1/13/2018	C3-A/B-12-10-TS-01 12.13.17-(	1,471.74	1,471.74
47271	1/29/2018	00051	CALIFORNIA WATER SERVICE	6544607057	1/17/2018	6544607057 S.W. CORNER HI	316.58	
				1727052702	1/21/2018	1727052702 JSB ACROSS FR(	168.26	484.84
47272	1/29/2018	00111	DEPARTMENT OF CONSERVA	Oct - Dec 2017	1/29/2018	SMIP	285.13	285.13
47273	1/29/2018	00117	DELTA DENTAL OF CALIFORN	BE002625160	2/1/2018	DENTAL INSURANCE	12,233.00	12,233.00
47274	1/29/2018	00215	FEDEX OFFICE AND PRINT	6-061-09515	1/19/2018	5 SHIPMENTS OF LIGHT FIXT	847.57	847.57
47275	1/29/2018	00221	LCC PENINSULA DIVISION	1388	1/16/2018	PENINSULA DIVISION 2018 M	100.00	100.00
47276	1/29/2018	00280	OFFICE DEPOT, INC.	995722630001	1/10/2018	SIGN HERE TAPE FLAG, 14"X	49.44	49.44
47277	1/29/2018	00282	CALIFORNIA PUBLIC EMPLOY	1000000151729	1/16/2018	MEDICAL INSURANCE	4,579.11	4,579.11
47278	1/29/2018	00307	PACIFIC GAS & ELECTRIC	01/18/2018	1/18/2018	PG&E	81.54	81.54
47279	1/29/2018	00365	SMCLETMA C/O BURLINGAME	2018 Membershi	1/19/2018	2018 MEMBERSHIP DUES : R.	100.00	100.00
47280	1/29/2018	00432	VISION SERVICE PLAN	Feb 2018	1/16/2018	VISION SERVICE PLAN	1,029.20	1,029.20
47281	1/29/2018	00460	SMC JOBS FOR YOUTH	FY 2017/2018 G	1/29/2018	FY 2017/2018 COUNCIL AWAF	1,500.00	1,500.00
47282	1/29/2018	00500	SMC CONTROLLERS OFFICE	Oct 2018	11/2/2017	ALLOCATION OF PARKING PE	1,207.60	1,207.60
47283	1/29/2018	00609	SMC DISTRICT ATTORNEY	RIMS Karpel Inte	1/17/2018	RIMS KARPEL INTERFACE: IN	925.00	925.00
47284	1/29/2018	01036	MANAGED HEALTH NETWORI	PRM-018771	1/17/2018	EMPLOYEE ASSISTANCE PR(	99.20	99.20
47285	1/29/2018	01037	COMCAST CABLE	01/27-02/26 XFI	1/17/2018	8155 20 022 0002770 1520 HIL	10.20	10.20
47286	1/29/2018	01076	API CONSULTING	18-01 Colma	1/17/2018	RECORDS MANAGEMENT	2,740.00	2,740.00
47287	1/29/2018	01183	BEST BEST & KRIEGER LLP	813069	1/16/2018	CITY ATTORNEY SERVICES	18,316.33	
				813071	1/16/2018	EMPLOYEE BENEFITS/TAX	892.80	
				813070	1/16/2018	CITY ATTORNEY SPECIAL SE	864.00	
				813072	1/16/2018	CITY ATTORNEY THIRD PART	801.00	20,874.13
47288	1/29/2018	01414	VERANO HOMEOWNERS ASS	2	2/1/2018	VERANO OWNERS ASSOCIA	320.00	320.00
47289	1/29/2018	01569	DARLING INTERNATIONAL IN(	600:3044027	1/16/2018	TRAP SERVICE CHARGE	102.71	102.71
47290	1/29/2018	02118	BAY AREA NEWS GROUP	0006078880	12/31/2017	ACCESS CONTROL ELECTRC	93.74	93.74
47291	1/29/2018	02119	GRANT, CHRISTOPHER	Mileage Reimbu	1/29/2018	JAN 8-11, 2018 MILEAGE REI	82.40	82.40
47292	1/29/2018	02224	STANDARD INSURANCE COM	Feb 2018	1/15/2018	LIFE INSURANCE	220.00	220.00
47293	1/29/2018	02244	CALIFORNIA BUILDING STAN	Oct - Dec 2017	1/29/2018	BSASRF	118.00	118.00
47294	1/29/2018	02274	FRANK AND GROSSMAN LAN	151968	11/1/2017	LANDSCAPE MAINTENANCE	10,608.00	10,608.00
47295	1/29/2018	02320	SANCHEZ, FATIMA	2001049.003	1/22/2018	01.22.18 DEPOSIT REFUND	350.00	
				2001048.003	1/22/2018	01.22.18 DEPOSIT REFUND	300.00	650.00
47296	1/29/2018	02342	FLORES, NELSY	2001051.003	1/22/2018	01.22.18 DEPOSIT REFUND	300.00	300.00
47297	1/29/2018	02352	GUTIERREZ, IMELDA	2001050.003	1/22/2018	01.22.18 DEPOSIT REFUND	300.00	300.00
47298	1/29/2018	02398	ADVANCED BUSINESS FORM	30401	1/24/2018	1,000 3-PT. MOVING CITATIOI	283.06	283.06

Bank : first FIRST NATIONAL BANK OF DALY (Continued)

Check #	Date	Vendor		Invoice	Inv Date	Description	Amount Paid	Check Total
47299	1/29/2018	02443	SUN RIDGE SYSTEMS, INC.	5069	1/25/2018	10.01.17-09.30.18 RIMS ANNU	16,801.00	16,801.00
47300	1/29/2018	02730	THE RATCLIFF ARCHITECTS	9034B	1/22/2018	COLMA TOWN HALL RENOVA	12,527.68	12,527.68
47301	1/29/2018	02816	SANCHEZ, TIFFANY SHARON	2001046.003	1/19/2018	01.19.18 DEPOSIT REFUND	150.00	
				2001047.003	1/19/2018	01.19.18 DEPOSIT REFUND	50.00	200.00
47302	1/29/2018	02864	MOBILE MODULAR MANAGEM	1533666	1/13/2018	24 X 60 HCD OFFICE RENTAL	790.28	
				1528567	1/7/2018	8 X 20 OFFICE HCD, RAMP RI	471.65	1,261.93
47303	1/29/2018	02909	TAPIA, ELIZABETH	Fall 2017 Tuition	1/23/2018	FALL 2017 TUITION REIMBUR	248.00	248.00
47304	1/29/2018	02935	EMCOR SERVICES-MESA ENE	001316189	1/19/2018	FC1-3 HEATING CONTROLS A	288.00	288.00
47305	1/29/2018	02938	TRASK, KIM	Survival Kits Reil	1/24/2018	01.24.18 REIMBURSE SURVIV	139.91	139.91
47306	1/29/2018	02946	VELASQUEZ, AMANDA	1/22/1 Mileage R	1/25/2018	01.22.18 STRESS MGMT FOR	19.40	19.40
47307	1/29/2018	02970	PRODUCTIVE PRINTING & GR	32454	1/19/2018	EVIDENCE & PROPERTY REF	734.06	734.06
47308	1/29/2018	03002	STELLA PAINTING INC.	17-265	1/19/2018	PAINT RED ZONE CURBS ON	9,050.00	9,050.00
47309	1/29/2018	03061	NORTH BAY PETROLEUM	1904214	1/15/2018	1-15, 2018 PW GAS PURCHAS	254.31	254.31
47310	1/29/2018	03114	LIGHTING SYSTEMS, LLC	0003529-IN	1/22/2018	SCOTT ARCHITECHTURAL FI	3,608.23	3,608.23
47311	1/29/2018	03115	COLE LIGHTING	26034-01B	11/21/2017	40% DUE ON REFURBISH OF	23,796.88	
				26034-01D	1/25/2018	SUPPLEMENTAL PRICE INCR	3,900.86	27,697.74
47312	1/29/2018	03117	KITTELSON & ASSOCIATES, II	0093177	1/26/2018	COLMA SYSTEMIC SAFETY A	16,557.34	16,557.34
47313	1/29/2018	03124	KAZ & ASSOCIATES ENVIRON	9972	1/9/2018	DEC 8 & 20, 2017 QSP SITE IN	550.00	550.00

b total for FIRST NATIONAL BANK OF DALY CITY: 151,633.21

44 checks in this report.

Grand Total All Checks: 151,633.21

STAFF REPORT

TO:	Mayor and Members of the City Council
FROM:	Brad Donohue, Director of Public Works-CSG Consultants, Inc.
VIA:	Brian Dossey, City Manager
MEETING DATE:	February 14, 2018
SUBJECT:	Reject All Bids and Reissue RFP for Access Control System Project

RECOMMENDATION

Staff recommends that the City Council pass:

> MOTION TO REJECT ALL BIDS FOR THE ACCESS CONTROL SYSTEM PROJECT BID SUBMITTED ON JANUARY 23, 2018 AND AUTHORIZE STAFF TO REBID THE PROJECT PER PUBLIC CONTRACT CODE SECTIONS 22037 AND 22038

EXECUTIVE SUMMARY

The proposed motion will reject all five (5) bids submitted for the Town's Access Control System Project ("Project"). The bids were submitted to the Town on or before 2:00 p.m. on Tuesday, January 23, 2018. After review of the bids submitted, it was determined that the low bid failed to include the required Addendum #1. The low bidder stated that Addendum #1 was never posted on the Town's website, thus he never received it. There were concerns and written protests from the bidders. As a result of the discrepancy in the bid process and material deviation in the low bidder's bid, Staff, in conformance with a legal opinion issued by the City Attorney, recommends that the City Council reject all bids and direct staff to rebid the project utilizing the existing bid documents and bid addenda with minor edits to address new dates and other logistical issues.

FISCAL IMPACT

There is no fiscal impact to Town's Access Control Budget (CIP # 983) to re-bid the Project.

BACKGROUND

At the Council Meeting held on December 13, 2018, the City Council directed Staff to proceed with bidding the Project. Project plans, specification and bid documents were posted on the Town Website, a local newspaper, and with multiple plan houses on December 15, 2017. A non-mandatory pre-bid conference was held on Thursday, January 4, 2018 at 10 a.m. A bid addendum

was posted to the required agencies (with the exception of the Town's Website) on Wednesday, January 17, 2018. Five (5) sealed bids were publicly opened on Tuesday, January 23, 2018 at 2:00 p.m.

ANALYSIS

The following bids were received for the Project:

1.	Johnson Controls	$264,353.24
2.	Cal Coast Telecom	$276,439.00
3.	Kratos Public Safety & Security Solutions	$333,472.25
4.	Vas Security Systems	$342,777.62
5.	Structure Works Inc.	$361,288.18

The lowest apparent bid cannot be considered responsive since the bidder did not acknowledge the Addendum #1 as part of their bid. Addendum #1 contained technical, procedural and product revisions which could have affected the cost of the Project. Because Addendum #1 is critical to the Project's scope of work, a bid that did not contain the acknowledged addendum cannot be considered responsive.

The Second low bidder also filed a protest, stating that the low bidder should be disqualified due to the low bidder's failure to include Addendum #1 as part of their bid.

The second apparent low bid was contested by the third low bid. It was the third low bid's opinion that the second bid, while having acknowledged Addendum #1, did not adequately cover the costs associated with the scope of work.

Given the foregoing and the discrepancy associated with the bid process, Staff along with the City Attorney's office believes that rejecting all bids and re-bidding the Project is in the best interest of the Town and the Town Hall Renovation Project meeting its completion deadlines. The Town has the authority to reject all bids and re-bid the Project for any reason as authorized by the law (Public Contract Code Section 22038) and the Bid Manual (Article 19).

COUNCIL ADOPTED VALUES

Approving the motion to rebid is the ***responsible*** action. Rebidding the project eliminates any potential claims and protests associated with discrepancies in the bids received and the bidding process and allows bidders to re-bid the Project.

ALTERNATIVES

The City Council could choose to not approve the motion; Staff would then review the submitted bids again and provide resolution for award to the lowest responsible bidder submitting a responsive bid. This action is not recommended because it will likely lead to additional protests and claims that could slow and potentially halt the Project until the disputes are resolved.

CONCLUSION

Staff recommends the City Council pass a motion rejecting all bids for the Project and direct Staff to rebid the project on a quick timeline per the minimum bid duration requirements stipulated in Public Contract Code 22037.

ATTACHMENTS

A. Notice of Inviting Bids – REBID
B. Bid Manual – REBID
C. Bid Plans – REBID
D. Bid Specifications – REBID
E. Addendum No. 1 – REBID

TOWN OF COLMA
COLMA
AUGUST 5, 1924
CALIFORNIA

TOWN OF COLMA

COLMA, CALIFORNIA

NOTICE OF INVITING BIDS

ACCESS CONTROL – CIP 983

REBID

PUBLISHED: THURSDAY, FEBRUARY 15, 2018

BID OPENING: THURSDAY, MARCH 1, 2018, 2 P.M.

NOTICE IS HEREBY GIVEN that the City Council of the Town of Colma ("Town") invites and will receive sealed Bids up to but not later than **2:00p.m., Thursday, March 1st, 2018** at the office of the Department of Public Works, located at 1190 El Camino Real, Colma, CA 94014, for the furnishing to Town of all labor, equipment, materials, tools, services, transportation, permits, utilities, and all other items necessary for Access Control (the "Project"). At said time, Bids will be publicly opened and read aloud at the Town Office. Bids received after said time shall be returned unopened. Bids shall be valid for a period of 90 calendar days after the Bid opening date.

The Project scope includes upgrades to existing and install of new electronic security systems, "Access Control".

Police Department: The Colma Police Department shall receive upgrades and additions to the existing electronic security system. Contractor shall be responsible for complete system upgrade, addition and/or tie-ins as described in the plans and specifications.

Town Hall: The new Colma Town Hall is currently being constructed and will continue to be under construction when the Access Control project begins. Town Hall shall receive new systems as described in the plans and specifications. Contractor is responsible for coordinating their work with the General Contractor constructing the building.

Bids must be submitted on the Town's Bid Forms. **Bidders may obtain a copy of the Contract Documents from** https://www.colma.ca.gov/rfp-and-bids. Hard copy plans and specs are available for viewing ONLY at the Colma Public Works Department at 1190 El Camino Real Colma, CA 94014. To the extent required by section 20103.7 of the Public Contract Code, upon request from a contractor plan room service, the Town shall provide an electronic copy of the Contract Documents at no charge to the contractor plan room.

It is the responsibility of each prospective bidder to download and print all Bid Documents for review and to verify the completeness of Bid Documents before submitting a bid. Any Addenda will be posted on https://www.colma.ca.gov/rfp-and-bids/. It is the responsibility of each prospective bidder to check https://www.colma.ca.gov/rfp-and-bids/ on a daily basis through the close of bids for any applicable addenda or updates. The Town does not assume any liability or responsibility based on any defective or incomplete copying, excerpting, scanning, faxing, downloading or printing of the Bid Documents. Information on https://www.colma.ca.gov/rfp-and-bids/ may change without notice to prospective bidders. The Contract Documents shall supersede any information posted or transmitted by https://www.colma.ca.gov/rfp-and-bids/.

Each Bid shall be accompanied by cash, a certified or cashier's check, or Bid Bond secured from a surety company satisfactory to the City Council, the amount of which shall not be less than ten percent (10%) of the submitted Total Bid Price, made payable to Town of Colma as bid security. The bid security shall be provided as a guarantee that within five (5) working days after the Town provides the successful bidder the Notice of Award, the successful Bidder will enter into a contract and provide the necessary bonds and certificates of insurance. The bid security will be declared forfeited if the successful Bidder fails to comply within said time. No interest will be paid on funds deposited with Town.

There will be no Pre-Bid Conference held, this is a Rebid and minutes from the initial bid's Pre Bid Conference may be obtained via addenda.

The successful Bidder will be required to furnish a Faithful Performance Bond and a Labor and Material Payment Bond each in an amount equal to one hundred percent (100%) of the Contract

Price. Each bond shall be in the forms set forth in the Bid Manual, shall be secured from a surety company that meets all State of California bonding requirements, as defined in California Code of Civil Procedure Section 995.120, and that is a California-admitted surety insurer.

Pursuant to Section 22300 of the Public Contract Code of the State of California, the successful Bidder may substitute certain securities for funds withheld by Town to ensure its performance under the contract.

Pursuant to Labor Code Section 1773, Town has obtained the prevailing rate of per diem wages and the prevailing wage rate for holiday and overtime work applicable in San Mateo County from the Director of the Department of Industrial Relations for each craft, classification, or type of worker needed to execute this contract. A copy of these prevailing wage rates may be obtained via the internet at: www.dir.ca.gov/dlsr/

In addition, a copy of the prevailing rate of per diem wages is available at the Town's Public Works Department and shall be made available to interested parties upon request. The successful bidder shall post a copy of the prevailing wage rates at each job site. It shall be mandatory upon the Bidder to whom the Contract is awarded, and upon any subcontractors, to comply with all Labor Code provisions, which include but are not limited to the payment of not less than the said specified prevailing wage rates to all workers employed by them in the execution of the Contract, employment of apprentices, hours of labor and debarment of contractors and subcontractors.

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. No Bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work. If awarded a contract, the Bidder and its subcontractors, of any tier, shall maintain active registration with the Department of Industrial Relations for the duration of the Project.

This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. In bidding on this Project, it shall be the Bidder's sole responsibility to evaluate and include the cost of complying with all labor compliance requirements under this contract and applicable law in its Bid.

Unless otherwise provided in the Instructions for Bidders, each Bidder shall be a licensed contractor pursuant to sections 7000 et seq. of the Business and Professions Code in the following classification(s) throughout the time it submits its Bid and for the duration of the contract: Class C License.

Substitution requests shall be made within 35 calendar days after the award of the contract. Pursuant to Public Contract Code Section 3400(b), the Town may make findings designating that certain additional materials, methods or services by specific brand or trade name other than those listed in the Standard Specifications be used for the Project. Such findings, if any, as well as the materials, methods or services and their specific brand or trade names that must be used for the Project may be found in the Special Conditions.

Pursuant to Public Contract Code section 7201, the Town has made a determination that the project described herein is substantially complex, and therefore a retention of _5__ % will be withheld from payment until after the work is complete.

Town shall award the contract for the Project to the lowest responsible Bidder submitting a responsive Bid as determined by the Town from the Total Bid. Town reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding process.

For further information, contact Dept. of Public Works at public.works@colma.ca.gov or at **650-757-8888.**

REBID TIMELINE SUMMARY:

- *Bid Published: Thursday, February 15th, 2018*
- *Addenda distribution: Friday, February 16th, 2018*
- *Bids Due: Thursday, March 1st, 2018 by 2 p.m.*

END OF NOTICE INVITING BID

TOWN OF COLMA

COLMA, CALIFORNIA

BID MANUAL

ACCESS CONTROL – CIP 983

REBID

PUBLISHED: THURSDAY, FEBRUARY 15, 2018

BID OPENING: THURSDAY, MARCH 1, 2018, 2 P.M.

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INSTRUCTIONS TO BIDDERS

ARTICLE 1. SECURING DOCUMENTS

Bids must be submitted to the Town on the Bid Forms which are a part of this Bid Manual for the Project. Bid and Contract Documents may be obtained from https://www.colma.ca.gov/rfp-and-bids. Prospective bidders are encouraged to telephone in advance to determine the availability of Contract Documents. Any charge for the Contract Documents is stated in the Notice Inviting Bids.

The Town may also make the Contract Documents available for review at one or more plan rooms, as indicated in the Notice Inviting Bids. Please Note: Prospective Bidders who choose to review the Contract Documents at a plan room must contact the Town to obtain the required Contract Documents if they decide to submit a bid for the Project.

Any Addenda will be posted on https://www.colma.ca.gov/rfp-and-bids. Failure to acknowledge addenda may make a bid nonresponsive and not eligible for award of the contract.

ARTICLE 2. EXAMINATION OF SITE AND CONTRACT DOCUMENTS

At its own expense and prior to submitting its Bid, each Bidder shall visit the site of the proposed work and fully acquaint itself with the conditions relating to the construction and labor required so that the Bidder may fully understand the work, including but not limited to difficulties and restrictions attending the execution of the work under the contract. Each Bidder shall carefully examine the Drawings, and shall read the Specifications, Contract, and all other documents referenced herein. Each Bidder shall also determine the local conditions which may in any way affect the performance of the work, including local tax structure, contractors' licensing requirements, availability of required insurance, the prevailing wages and other relevant cost factors, shall familiarize itself with all federal, state and local laws, ordinances, rules, regulations and codes affecting the performance of the work, including the cost of permits and licenses required for the work, and shall make such surveys and investigations, including investigations of subsurface or latent physical conditions at the site or where work is to be performed as may be required. Bidders are responsible for consulting the standards referenced in the Contract. The failure or omission of any Bidder to receive or examine any contract documents, forms, instruments, addenda, or other documents, or to visit the site and acquaint itself with conditions there existing shall in no way relieve any Bidder from any obligation with respect to its Bid or to the contract and no relief for error or omission will be given except as required under State law. The submission of a Bid shall be taken as conclusive evidence of compliance with this Article.

ARTICLE 3. INTERPRETATION OF DRAWINGS AND DOCUMENTS

Prospective Bidders unclear as to the true meaning of any part of the Drawings, Specifications or other proposed contract documents may submit to the Engineer of the Town a written request for interpretation. The prospective Bidder submitting the request is responsible for prompt delivery. Interpretation of the Drawings, Specifications or other proposed contract documents will be made only by a written addendum duly issued and a copy of such addenda will be mailed or delivered to each prospective Bidder who has purchased a set of Drawings and Specifications. The Town will not be responsible for any other explanation or interpretations of the proposed documents. If a Prospective Bidders becomes aware of any errors or omissions in any part of the Contract Documents, it is the obligation of the Prospective Bidder to promptly bring it to the attention of the Town.

ARTICLE 4. PRE-BID CONFERENCE

There will be no Pre-Bid Conference held, this is a Rebid and minutes from the initial bid's Pre-Bid Conference may be obtained via addenda.

ARTICLE 5. ADDENDA

The Town reserves the right to revise the Contract Documents prior to the Bid opening date. Revisions, if any, shall be made by written Addenda. All Addenda issued by the Town shall be included in the Bid and made part of the Contract Documents. Pursuant to Public Contract Code Section 4104.5, if the Town issues an Addendum which includes material changes to the Project less than 72 hours prior to the deadline for submission of Bids, the Town will extend the deadline for submission of Bids. The Town may determine, in its sole discretion, whether an Addendum warrants postponement of the Bid submission date. Each prospective Bidder shall provide Town a name, address, email address, and facsimile number to which Addenda may be sent, as well as a telephone number by which the Town can contact the Bidder. Copies of Addenda will be furnished by email, facsimile, first class mail, express mail or other proper means of delivery without charge to all parties who have obtained a copy of the Contract Documents and provided such current information. Please Note: Bidders are responsible for ensuring that they have received any and all Addenda. To this end, each Bidder should contact the Public Works Department to verify that it has received all Addenda issued, if any, prior to the Bid opening. The Bidder shall indicate the Addenda received prior to bidding in the space provided in the Bid Form. Failure to indicate all Addenda may be sufficient cause for rejecting the Bid.

ARTICLE 6. ALTERNATE BIDS

If alternate bid items are called for in the Contract Documents, the time required for completion of the alternate bid items has already been factored into the Contract duration and no additional Contract time will be awarded for any of the alternate bid items. The Town may elect to include one or more of the alternate bid items, or to otherwise remove certain work from the Project scope of work. Accordingly, each bidder must ensure that each bid item contains a proportionate share of profit, overhead, and other costs or expenses which will be incurred by the bidder.

ARTICLE 7. COMPLETION OF BID FORMS

Bids shall only be prepared using copies of the Bid Forms which are included in the Contract Documents. The use of substitute Bid Forms other than clear and correct photocopies of those provided by the Town will not be permitted. Bids shall be executed by an authorized signatory as described in these Instructions to Bidders. In addition, Bidders shall fill in all blank spaces (including inserting "N/A" where applicable), and initial all interlineations, alterations, or erasures to the Bid Forms. Bidders shall neither delete, modify, nor supplement the printed matter on the Bid Forms nor make substitutions thereon. USE OF BLACK OR BLUE INK, INDELIBLE PENCIL, OR A TYPEWRITER IS REQUIRED. Deviations in the Bid Forms may result in the Bid being deemed non-responsive.

ARTICLE 8. MODIFICATIONS OF BIDS

Each Bidder shall submit its Bid in strict conformity with the requirements of the Contract Documents. Unauthorized additions, modifications, revisions, conditions, limitations, exclusions or provisions attached to a Bid may render it non-responsive and may cause its rejection. Bidders shall not delete, modify, or supplement the printed matter on the Bid Forms, or make substitutions

thereon. Oral, telephonic and electronic modifications will not be considered.

ARTICLE 9. SUBCONTRACTORS

Bidder shall set forth the name, address of the place of business, and contractor license number of each subcontractor who will perform work, labor, furnish materials or render services to the bidder on said contract and each subcontractor licensed by the State of California who, under subcontract to bidder, specially fabricates and installs a portion of the Work described in the Drawings and Specifications in an amount in excess of one half of one percent (0.5%) of the total bid price, and shall indicate the portion of the work to be done by such subcontractor in accordance with Public Contract Code Section 4104.

ARTICLE 10. LICENSING REQUIREMENTS

Pursuant to Business and Professions Code Section 7028.15 and Public Contract Code Section 3300, all bidders must possess proper licenses for performance of this Contract. Subcontractors must possess the appropriate licenses for each specialty subcontracted. Pursuant to Business and Professions Code Section 7028.5, the Town shall consider any bid submitted by a contractor not currently licensed in accordance with state law and pursuant to the requirements found in the Contract Documents to be nonresponsive, and the Town shall reject the Bid. The Town shall have the right to request, and Bidders shall provide within ten (10) calendar days, evidence satisfactory to the Town of all valid license(s) currently held by that Bidder and each of the Bidder's subcontractors, before awarding the Contract.

Notwithstanding anything contained herein, if the Work involves federal funds, the Contractor shall be properly licensed by the time the Contract is awarded, pursuant to the provisions of Public Contract Code section 20103.5.

ARTICLE 11. BID GUARANTEE (BOND)

Each bid shall be accompanied by: (a) cash; (b) a certified or cashier's check made payable to Town of Colma; or (c) a Bid Bond secured from a surety company satisfactory to the City Council, the amount of which shall not be less than ten percent (10%) of the Total Bid Price, made payable to Town of Colma as bid security. Personal sureties and unregistered surety companies are unacceptable. The surety insurer shall be California admitted surety insurer, as defined in Code of Civil Procedure Section 995.120. The bid security shall be provided as a guarantee that within ten (10) working days after the Town provides the successful bidder the Notice of Award, the successful bidder will enter into a contract and provide the necessary bonds and certificates of insurance. The bid security will be declared forfeited if the successful bidder fails to comply within said time, and Town may enter into a contract with the next lowest responsive responsible bidder, or may call for new bids. No interest shall be paid on funds deposited with the Town. Town will return the security accompanying the bids of all unsuccessful bidders no later than 60 calendar days after award of the contract.

ARTICLE 12. IRAN CONTRACTING ACT OF 2010

In accordance with Public Contract Code Section 2200 *et seq*., the Town requires that any person that submits a bid or proposal or otherwise proposes to enter into or renew a contract with the Town with respect to goods or services of one million dollars ($1,000,000) or more, certify at the time the bid is submitted or the contract is renewed, that the person is not identified on a list created pursuant to subdivision (b) of Public Contract Code Section 2203 as a person engaging

in investment activities in Iran described in subdivision (a) of Public Contract Code Section 2202.5, or as a person described in subdivision (b) of Public Contract Code Section 2202.5, as applicable.

The form of such Iran Contracting Certificate is included with the bid package and must be signed and dated under penalty of perjury.

ARTICLE 13. NONCOLLUSION DECLARATION

Bidders on all public works contracts are required to submit a declaration of noncollusion with their bid. This form is included with the bid package and must be signed and dated under penalty of perjury.

ARTICLE 14. PUBLIC WORKS CONTRACTOR REGISTRATION CERTIFICATION

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work. If awarded a contract, the bidder and its subcontractors, of any tier, shall maintain active registration with the Department of Industrial Relations for the duration of the Project. To this end, Bidder shall sign and submit with its Bid the Public Works Contractor Registration Certification on the form provided, attesting to the facts contained therein. Failure to submit this form may render the bid non-responsive. In addition, each Bidder shall provide the registration number for each listed subcontractor in the space provided in the Designation of Subcontractors form.

ARTICLE 15. BIDDER INFORMATION AND EXPERIENCE FORM

Each Bidder shall complete the questionnaire provided herein and shall submit the questionnaire along with its Bid. Failure to provide all information requested within the questionnaire along with the Bid may cause the bid to be rejected as non-responsive. The Town reserves the right to reject any Bid if an investigation of the information submitted does not satisfy the Engineer that the Bidder is qualified to properly carry out the terms of the contract.

ARTICLE 16. WORKERS' COMPENSATION CERTIFICATION

In accordance with the provisions of Labor Code Section 3700, Contractor shall secure the payment of compensation to its employees. Contractor shall sign and file with the Town the following certificate prior to performing the work under this Contract:

> I am aware of the provisions of Section 3700 of the Labor Code, which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.

The form of such Workers' Compensation Certificate is included as part of this document.

ARTICLE 17. SIGNING OF BIDS

All Bids submitted shall be executed by the Bidder or its authorized representative. Bidders may

be asked to provide evidence in the form of an authenticated resolution of its Board of Directors or a Power of Attorney evidencing the capacity of the person signing the Bid to bind the Bidder to each Bid and to any Contract arising therefrom.

If a Bidder is a joint venture or partnership, it may be asked to submit an authenticated Power of Attorney executed by each joint venturer or partner appointing and designating one of the joint venturers or partners as a management sponsor to execute the Bid on behalf of Bidder. Only that joint venturer or partner shall execute the Bid. The Power of Attorney shall also: (1) authorize that particular joint venturer or partner to act for and bind Bidder in all matters relating to the Bid; and (2) provide that each venturer or partner shall be jointly and severally liable for any and all of the duties and obligations of Bidder assumed under the Bid and under any Contract arising therefrom. The Bid shall be executed by the designated joint venturer or partner on behalf of the joint venture or partnership in its legal name.

ARTICLE 18. SUBMISSION OF SEALED BIDS

Once the Bid and supporting documents have been completed and signed as set forth herein, they shall be placed, along with the Bid Guarantee and other required materials, in a sealed envelope, addressed and delivered or mailed, postage prepaid, to the Engineering Department of the Town before the time and day set for the receipt of bids. The envelope shall bear the title of the work and the name of the bidder. No oral or telephonic bids will be considered. No forms transmitted via the internet, e-mail, facsimile, or any other electronic means will be considered unless specifically authorized by the Town as provided herein. Bids received after the time and day set for the receipt of bids shall be returned to the bidder unopened. The envelope shall also contain the following in the lower left-hand corner thereof:

Bid of _____(Bidder's Name)_____
for the Access Control Project – CIP 983

Only where expressly permitted in the Notice Inviting Bids may bidders submit their bids via electronic transmission pursuant to Public Contract Code sections 1600 and 1601. Any acceptable method(s) of electronic transmission shall be stated in the Notice Inviting Bids. Town may reject any bid not strictly complying with Town's designated methods for delivery.

ARTICLE 19. OPENING OF BIDS

At the time and place set for the opening and reading of bids, or any time thereafter, each and every bid received prior to the time and day set for the receipt of bids will be publicly opened and read. The Town will leave unopened any Bid received after the specified date and time, and any such unopened Bid will be returned to the bidder. It is the bidder's sole responsibility to ensure that its Bid is received as specified. Bids may be submitted earlier than the date(s) and time(s) indicated.

The public reading of each bid will include the following information:

A. The name and business location of the bidder.

B. The nature and amount of the bid security furnished by bidder.

C. The bid amount.

Bidders or their representatives and other interested persons may be present at the opening of the bids. The Town may, in its sole discretion, elect to postpone the opening of the submitted Bids. The Town reserves the right to reject any or all Bids and to waive any informality or irregularity in any Bid.

ARTICLE 20. WITHDRAWAL OF BID

Any bid may be withdrawn either personally or by written request, incurring no penalty, at any time prior to the scheduled closing time for receipt of bids. Requests to withdraw bids shall be worded so as not to reveal the amount of the original bid. Withdrawn bids may be resubmitted until the time and day set for the receipt of bids, provided that resubmitted bids are in conformance with the instructions herein.

Bids may be withdrawn after bid opening only by providing written notice to Town within five (5) working days of the bid opening and in compliance with Public Contract Code Section 5100 *et seq*., or as otherwise may be allowed with the consent of the Town.

ARTICLE 21. BIDDERS INTERESTED IN MORE THAN ONE BID

No Bidder shall be allowed to make, file or be interested in more than one bid for the same work unless alternate bids are specifically called for. A person, firm or corporation that has submitted a sub-proposal to a Bidder, or that has quoted prices of materials to a Bidder, is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders. No person, firm, corporation, or other entity may submit a sub-proposal to a Bidder, or quote prices of materials to a Bidder, when also submitting a prime Bid on the same Project.

ARTICLE 22. SUBSTITUTION OF SECURITY

The Contract Documents call for monthly progress payments based upon the percentage of the Work completed. The Town will retain a percentage of each progress payment as provided by the Contract Documents. At the request and expense of the successful Bidder, the Town will substitute securities for the amount so retained in accordance with Public Contract Code Section 22300.

ARTICLE 23. PREVAILING WAGES

The Town has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute the Contract. These rates are available at the Public Works Department of the Town or may be obtained online at http://www.dir.ca.gov. Bidders are advised that a copy of these rates must be posted by the successful Bidder at the job site(s).

ARTICLE 24. DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS

In accordance with the provisions of the Labor Code, contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Labor Code Sections 1777.1 or 1777.7. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid to a debarred subcontractor by the Contractor for the Project shall be returned to the Town. The Contractor

shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Project.

ARTICLE 25. INSURANCE REQUIREMENTS

Prior to commencing work, the successful bidder shall purchase and maintain insurance as set forth in the General Conditions.

ARTICLE 26. PERFORMANCE BOND AND PAYMENT BOND REQUIREMENTS

The successful bidder will be required to furnish a Labor and Material Payment Bond and a Faithful Performance Bond each in an amount equal to one hundred percent (100%) of the contract price. Each bond shall be secured from a surety company that meets all State of California bonding requirements, as defined in California Code of Civil Procedure Section 995.120 and is admitted by the State of California. Each bond shall be accompanied, upon the request of Town, with all documents required by California Code of Civil Procedure Section 995.660 to the extent required by law. All bonding and insurance requirements shall be completed and submitted to Town within ten (10) working days from the date the Town provides the successful bidder with the Notice of Award.

ARTICLE 27. SALES AND OTHER APPLICABLE TAXES, PERMITS, LICENSES AND FEES

Contractor and its subcontractors performing work under this Contract will be required to pay California sales tax and other applicable taxes, and to pay for permits, licenses and fees required by the agencies with authority in the jurisdiction in which the Work will be located, unless otherwise expressly provided by the Contract Documents.

ARTICLE 28. PERMIT AND INSPECTION FEE ALLOWANCE

Notwithstanding anything contained herein, the Bid Form contains an allowance for the Contractor's cost of acquiring traffic control permits and for construction inspection fees that may be charged to the Contractor by the Agency of Jurisdiction. The allowance is included within the Bid Form to eliminate the need by bidders to research or estimate the costs of traffic control permits and construction inspection fees prior to submitting a bid. The allowance is specifically intended to account for the costs of traffic control permits and construction inspection fees charged by the local Agency of Jurisdiction only. No other costs payable by Contractor to the Agency of Jurisdiction are included within the allowance.

ARTICLE 29. FILING OF BID PROTESTS

Bidders may file a "protest" of a Bid with the Town's City Manager. In order for a Bidder's protest to be considered valid, the protest must:

A. Be filed in writing within five (5) calendar days after the bid opening date;

B. Clearly identify the specific irregularity or accusation;

C. Clearly identify the specific Town staff determination or recommendation being protested;

D. Specify in detail the grounds for protest and the facts supporting the protest; and

E. Include all relevant, supporting documentation with the protest at time of filing.

If the protest does not comply with each of these requirements, the Town may reject the protest without further review.

If the protest is timely and complies with the above requirements, the Town's City Manager, or other designated Town staff member, shall review the protest, any response from the challenged Bidder(s), and all other relevant information. The City Manager will provide a written decision to the protestor.

The procedure and time limits set forth in this Article are mandatory and are the sole and exclusive remedy in the event of a Bid protest. Failure to comply with these procedures shall constitute a failure to exhaust administrative remedies and a waiver of any right to further pursue the Bid protest, including filing a Government Code Claim or legal proceedings.

ARTICLE 30. BASIS OF AWARD; BALANCED BID

The Town shall award the Contract to the lowest responsible Bidder submitting a responsive Bid. The lowest Bid will be determined on the basis of the Total Bid.

The Town may reject any Bid which, in its opinion when compared to other Bids received or to the Town's internal estimates, does not accurately reflect the cost to perform the Work. The Town may reject as non-responsive any Bid which unevenly weights or allocates costs, including but not limited to overhead and profit to one or more particular bid items.

ARTICLE 31. AWARD PROCESS

Once all Bids are opened and reviewed to determine the lowest responsive and responsible Bidder, the City Council may award the contract. The apparent successful Bidder should begin to prepare the following documents: (1) the Performance Bond; (2) the Payment Bond; and (3) the required insurance certificates and endorsements. Once the Town notifies the Bidder of the award, the Bidder will have five (5) working days from the date of this notification to execute the Contract and supply the Town with all of the required documents and certifications. Regardless of whether the Bidder supplies the required documents and certifications in a timely manner, the Contract time will begin to run twenty (20) working days from the date of the notification. Once the Town receives all of the properly drafted and executed documents and certifications from the Bidder, the Town shall issue a Notice to Proceed to that Bidder.

ARTICLE 32. EXECUTION OF CONTRACT

As required herein the Bidder to whom an award is made shall execute the Contract in the amount determined by the Contract Documents. The Town may require appropriate evidence that the persons executing the Contract are duly empowered to do so. The Contract and bond forms to be executed by the successful Bidder are included within these Specifications and shall not be detached.

ARTICLE 33. QUESTIONS

Questions regarding this Bid Manual may be directed to the Dept. of Public Works AT (650) 757-8888 or email at public.works@colma.ca.gov. Any and all inquiries and comments regarding this Bid must be communicated in writing, unless otherwise instructed by the Town. The Town may,

in its sole discretion, disqualify any Bidder who engages in any prohibited communications.

BID FORMS

1.1 Bid.

Bids will be received at the Town of Colma Department of Public Works, 1190 El Camino Real, Colma, CA 94014, until **2:00pm, Thursday, March 1st, 2018.**

NAME OF BIDDER: _____

To the Honorable City Council
of the Town of Colma
1198 El Camino Real
Colma, California 94014

The undersigned hereby declare that we have carefully examined the location of the proposed Work, and have read and examined the Contract Documents, including all plans, specifications, and all addenda, if any for the following Project:

Access Control Project – CIP 983

We hereby propose to furnish all labor, materials, equipment, tools, transportation, and services, and to discharge all duties and obligations necessary and required to perform and complete the Project, as described and in strict conformity with the Drawings, and these Specifications for TOTAL BID PRICE indicated herein.

The undersigned acknowledges receipt, understanding, and full consideration of the following items to the Contract Documents:

Addenda No. _____

1. Attached is the required Bid Guarantee in the amount of not less than 10% of the Total Bid Price.
2. Attached is the completed Designation of Subcontractors form.
3. Attached is the fully executed Noncollusion Declaration form.
4. Attached is the completed Iran Contracting Act Certification form.
5. Attached is the completed Public Works Contractor Registration Certification form.
6. Attached is the completed Contractor's Certificate Regarding Workers' Compensation form.
7. Attached is the completed Bidder Information and Experience form.

A. BID SCHEDULE

NO.	ITEM DESCRIPTION	UNIT OF MEASURE	EST. QTY.	UNIT PRICE	ITEM COST
1.	**Electronic Security Systems – Furnish & Install Complete**	LS	1		
2.	**OH&P** – Contractor Overhead & Profit	Fee	-		
3.	**Bonding**	Fee	-		
4.	**Insurance**	Fee	-		
5.	**Total Bid**	Sub-Total (Items 1 – 4)			

The costs for any Work shown or required in the Contract Documents, but not specifically identified as a line item are to be included in the related line items and no additional compensation shall be due to Contractor for the performance of the Work.

In case of discrepancy between the Unit Price and the Item Cost set forth for a unit basis item, the unit price shall prevail and shall be utilized as the basis for determining the lowest responsive, responsible Bidder. However, if the amount set forth as a unit price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or is the same amount as the entry in the “Item Cost” column, then the amount set forth in the “Item Cost” column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the Unit Price.

For purposes of evaluating Bids, the Town will correct any apparent errors in the extension of unit prices and any apparent errors in the addition of lump sum and extended prices.

The estimated quantities for Unit Price items are for purposes of comparing Bids only and the Town makes no representation that the actual quantities of work performed will not vary from the estimates. Final payment shall be determined by the Engineer from measured quantities of work performed based upon the Unit Price.

B. TOTAL BID PRICE:

TOTAL BID PRICE BASED ON BID SCHEDULE TOTAL OF UNIT PRICES
FOR Access Control Project – CIP 983

$_____
Total Bid Price in Numbers

$_____
Total Bid Price in Written Form

In case of discrepancy between the written price and the numerical price, the written price shall prevail.

The undersigned agrees that this Bid Form constitutes a firm offer to the Town which cannot be withdrawn for the number of calendar days indicated in the Notice Inviting Bids from and after the Bid opening, or until a Contract for the Work is fully executed by the Town and a third party, whichever is earlier.

The successful bidder hereby agrees to sign the contract and furnish the necessary bonds and certificates of insurance within five (5) working days after the Town provides the successful bidder with the Notice of Award.

Upon receipt of the signed contract and other required documents, the contract will be executed by the Town, after which the Town will prepare a letter giving Contractor Notice to Proceed. The official starting date shall be the date of the Notice to Proceed, unless otherwise specified. The undersigned agrees to begin the Work within five (5) working days of the date of the Notice to Proceed, unless otherwise specified.

The undersigned has examined the location of the proposed work and is familiar with the Drawings and Specifications and the local conditions at the place where work is to be done.

If awarded the contract, the undersigned agrees that there shall be paid by the undersigned and by all subcontractors to all laborers, workers and mechanics employed in the execution of such contract no less than the prevailing wage rate within San Mateo County for each craft, classification, or type of worker needed to complete the Work contemplated by this contract as established by the Director of the Department of Industrial Relations. A copy of the prevailing rate of per diem wages are on file at the Town's Administration Office and shall be made available to interested parties upon request.

Enclosed find cash, bidder's bond, or cashier's or certified check No. _____ from the _____ Bank in the amount of _____, which is not less than ten percent (10%) of this bid, payable to Town of Colma as bid security and which is given as a guarantee that the undersigned will enter into a contract and provide the necessary bonds and certificates of insurance if awarded the Work.

The bidder furthermore agrees that in case of bidder's default in executing said contract and furnishing required bonds and certificates of insurance, the cash, bidder's bond, or cashier's or certified check accompanying this proposal and the money payable thereon shall become and shall remain the property of the Town of Colma.

Bidder is an individual _____, or corporation _____, or partnership _____, organized under the laws of the State of _____.

Bidder confirms license(s) required by California State Contractor's License Law for the performance of the subject project are in full effect and proper order. The following are the Bidder's applicable license number(s), with their expiration date(s) and class of license(s):

_____

_____

_____

If the Bidder is a joint venture, each member of the joint venture must include the required licensing information.

Sureties that will furnish the Faithful Performance Bond and the Labor and Material Payment Bond, in the form specified herein, in an amount equal to one hundred percent (100%) of the contract price within ten (10) working days from the date the Town provides the successful bidder the Notice of Award. Sureties must meet all of the State of California bonding requirements, as defined in California Code of Civil Procedure Section 995.120 and must be authorized by the State of California.

The insurance company or companies to provide the insurance required in the contract documents must have a Financial Strength Rating of not less than "A-" and a Financial Size Category of not less than "Class VII" according to the latest Best Key Rating Guide. At the sole discretion of the Town, the Town may waive the Financial Strength Rating and the Financial Size Category classifications for Workers' Compensation insurance.

(signatures continued on next page)

I hereby certify under penalty of perjury under the laws of the State of California that all of the information submitted in connection with this Bid and all of the representations made herein are true and correct.

Executed at _____, on this ____ day of _____, _____.

(Bidders Name – Print or Type)

_____
(Name and Title)

(Corporate Seal)

_____
(Signature)

Names of individual members of firm or names and titles of all officers of corporation and their addresses are listed below:

Name_____ Title_____

Complete Address_____

Phone_____ FAX_____

Name_____ Title_____

Complete Address_____

Phone_____ FAX_____

Name_____ Title_____

Complete Address_____

Phone_____ FAX_____

Name_____ Title_____

Complete Address_____

Phone_____ FAX_____

1.2 Bid Bond

[Note: Not required when other form of Bidder's Security, e.g. cash, certified check or cashier's check, accompanies bid.]

The makers of this bond are, _____, as Principal, and _____, as Surety and are held and firmly bound unto the Town of Colma, hereinafter called the Town, in the penal sum of TEN PERCENT (10%) OF THE TOTAL BID PRICE of the Principal submitted to TOWN for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated _____, 20 ____, for Access Control Project – CIP 983.

If the Principal does not withdraw its Bid within the time specified in the Contract Documents; and if the Principal is awarded the Contract and provides all documents to the Town as required by the Contract Documents; then this obligation shall be null and void. Otherwise, this bond will remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents shall in affect its obligation under this bond, and Surety does hereby waive notice of any such changes.

In the event a lawsuit is brought upon this bond by the Town and judgment is recovered, the Surety shall pay all litigation expenses incurred by the Town in such suit, including reasonable attorneys' fees, court costs, expert witness fees and expenses.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporation.

(Corporate Seal)

_____
Contractor/ Principal

By_____

Title_____

_____
Surety

(Corporate Seal)

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title_____

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF _____

On _____, 20___, before me, _____, Notary Public, personally
Date — Name And Title Of Officer (e.g. "Jane Doe, Notary Public")
appeared _____, who proved to me on the basis of satisfactory
Name(s) of Signer(s)
evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

_____
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for Contractor/Principal.

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF _____

On _____, 20___, before me, _____, Notary Public, personally
Date — Name And Title Of Officer (e.g. "Jane Doe, Notary Public")

appeared _____, who proved to me on the basis of satisfactory
Name(s) of Signer(s)

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

_____
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for the Attorney-in-Fact. The Power-of-Attorney to local representatives of the bonding company must also be attached.

END OF BID BOND

1.3 List of Subcontractors

In compliance with the Subletting and Subcontracting Fair Practices Act Chapter 4 (commencing at Section 4100), Part 1, Division 2 of the Public Contract Code of the State of California and any amendments thereof, Bidder shall set forth below: (a) the name and the location of the place of business, (b) the California contractor license number, (c) the DIR public works contractor registration number, and (d) the portion of the work which will be done by each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the work or improvement to be performed under this Contract in an amount in excess of one-half of one percent (0.5%) of the Bidder's Total Bid Price. Notwithstanding the foregoing, if the work involves the construction of streets and highways, then the Bidder shall list each subcontractor who will perform work or labor or render service to the Bidder in or about the work in an amount in excess of one-half of one percent (0.5%) of the Bidder's Total Bid Price or $10,000, whichever is greater. No additional time shall be granted to provide the below requested information.

If a Bidder fails to specify a subcontractor or if a contractor specifies more than one subcontractor for the same portion of work, then the Bidder shall be deemed to have agreed that it is fully qualified to perform that portion of work and that it shall perform that portion itself.

Work to be done by Subcontractor	Name of Subcontractor	Location of Business	CSLB Contractor License No.	DIR Registration Number	% of Work

Work to be done by Subcontractor	Name of Subcontractor	Location of Business	CSLB Contractor License No.	DIR Registration Number	% of Work

(Attach additional sheets if necessary)

Name of Bidder_____

Signature_____

Name and Title_____

Dated_____

1.4 Bidder Information and Experience Form

ARTICLE 1. INFORMATION ABOUT BIDDER

(Indicate not applicable ("N/A") where appropriate.)

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: _____

2.0 Type, if Entity: _____

3.0 Bidder Address: _____

_____

_____

Facsimile Number Telephone Number

_____

Email Address

4.0 How many years has Bidder's organization been in business as a Contractor? _____

5.0 How many years has Bidder's organization been in business under its present name? _____

5.1 Under what other or former names has Bidder's organization operated?_____

6.0 If Bidder's organization is a corporation, answer the following:

6.1 Date of Incorporation: _____

6.2 State of Incorporation: _____

6.3 President's Name: _____

6.4 Vice-President's Name(s): _____

_____

6.5 Secretary's Name: _____

6.6 Treasurer's Name: _____

7.0 If an individual or a partnership, answer the following:

7.1 Date of Organization: _____

7.2 Name and address of all partners (state whether general or limited partnership):

_____

_____

_____

8.0 If other than a corporation or partnership, describe organization and name principals:

_____

_____

9.0 List other states in which Bidder's organization is legally qualified to do business.

_____

_____

_____

10.0 What type of work does the Bidder normally perform with its own forces?

_____

_____

11.0 Has Bidder ever failed to complete any work awarded to it? If so, note when, where, and why:

_____

_____

12.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract? If so, attach a separate sheet of explanation:

_____

_____

13.0 List Trade References:

_____

_____

_____

_____

14.0 List Bank References (Bank and Branch Address):

_____

_____

_____

_____

15.0 Name of Bonding Company and Name and Address of Agent:

_____

_____

_____

[REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK]

ARTICLE 2. LIST OF CURRENT PROJECTS (BACKLOG)

[**Duplicate Page if needed for listing additional current projects.**]

Project	Description of Bidder's Work	Completion Date	Cost of Bidder's Work

ARTICLE 3. LIST OF COMPLETED PROJECTS – LAST THREE YEARS

[**Duplicate Page if needed for listing additional completed projects.**]

Please include only those projects which are similar enough to demonstrate Bidder's ability to perform the required Work.

Project	Description of Bidder's Work	Completion Date	Cost of Bidder's Work

ARTICLE 4. EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE

Personnel:

The Bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity.

1. List each person's job title, name and percent of time to be allocated to this project:

_____

_____

_____

2. Summarize each person's specialized education:

_____

_____

_____

3. List each person's years of construction experience relevant to the project:

_____

_____

_____

4. Summarize such experience:

_____

_____

_____

Bidder agrees that personnel named in this Bid will remain on this Project until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the Town.

Changes Occuring Since Prequalification

If any substantive changes have occurred since Bidder submitted its prequalification package for this Project, Bidder shall list them below. If none are listed, Bidder certifies that no substantive changes have occurred.

_____

_____

_____

_____

_____

_____

Additional Bidder's Statements:

If the Bidder feels that there is additional information which has not been included in the questionnaire above, and which would contribute to the qualification review, it may add that information in a statement here or on an attached sheet, appropriately marked:

_____
_____
_____
_____
_____
_____

ARTICLE 5. VERIFICATION AND EXECUTION

These Bid Forms shall be executed only by a duly authorized official of the Bidder:

I declare under penalty of perjury under the laws of the State of California that the foregoing information is true and correct:

Name of Bidder_____

Signature_____

Name_____

Title_____

Date_____

1.5 Non-Collusion Declaration

The undersigned declares:

I am the _____ of _____, the party making the foregoing Bid.

The Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The Bid is genuine and not collusive or sham. The Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid. The Bidder has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or to refrain from bidding. The Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the Bid Price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the Bid Price, or of that of any other Bidder. All statements contained in the Bid are true. The Bidder has not, directly or indirectly, submitted his or her Bid Price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a Bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the Bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [date], at _____ [city], _____ [state].

Name of Bidder_____

Signature_____

Name_____

Title_____

1.6 Iran Contracting Act Certification.
(Public Contract Code section 2200 et seq.)

As required by California Public Contract Code Section 2204, the Contractor certifies subject to penalty for perjury that the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 *et seq*.) is true and correct:

☐ The Contractor is not:

(1) identified on the current list of person and entities engaged in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or

(2) a financial instruction that extends, for 45 days or more, credit in the amount of $20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

☐ The Town has exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, the Town will be unable to obtain the goods and/or services to be provided pursuant to the Contract.

☐ The amount of the Contract payable to the Contractor for the Project does not exceed $1,000,000.

Signature:_____

Printed Name:_____

Title:_____

Firm Name:_____

Date:_____

Note: In accordance with Public Contract Code Section 2205, false certification of this form shall be reported to the California Attorney General and may result in civil penalties equal to the greater of $250,000 or twice the Contract amount, termination of the Contract and/or ineligibility to bid on contracts for three years.

1.7 Public Works Contractor Registration Certification

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. See http://www.dir.ca.gov/Public-Works/PublicWorks.html for additional information.

No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work.

Bidder hereby certifies that it is aware of the registration requirements set forth in Labor Code sections 1725.5 and 1771.1 and is currently registered as a contractor with the Department of Industrial Relations.

Name of Bidder:_____

DIR Registration Number:_____

DIR Registration Expiration:_____

Bidder further acknowledges:

1. Bidder shall maintain a current DIR registration for the duration of the project.
2. Bidder shall include the requirements of Labor Code sections 1725.5 and 1771.1 in its contract with subcontractors and ensure that all subcontractors are registered at the time of bid opening and maintain registration status for the duration of the project.
3. Failure to submit this form or comply with any of the above requirements may result in a finding that the bid is non-responsive.

Name of Bidder_____

Signature_____

Name and Title_____

Dated_____

1.8 Contractor's Certificate Regarding Workers' Compensation.

I am aware of the provisions of section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this Contract.

Name of Bidder _____

Signature _____

Name _____

Title _____

Dated _____

CONTRACT

This CONTRACT, No. _____ is made and entered into this ____ day of _____, _____, by and between Town of Colma, sometimes hereinafter called "Town," and _____, sometimes hereinafter called "Contractor."

WITNESSETH: That the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree with each other as follows:

a. **SCOPE OF WORK.** The Contractor shall perform all Work within the time stipulated in the Contract, and shall provide all labor, materials, equipment, tools, utility services, and transportation to complete all of the Work required in strict compliance with the Contract Documents as specified in Article 5, below, for the following Project:

Access Control Project – CIP 983

The Contractor and its surety shall be liable to the Town for any damages arising as a result of the Contractor's failure to comply with this obligation.

b. **TIME FOR COMPLETION.** Time is of the essence in the performance of the Work. The Work shall be commenced on the date stated in the Town's Notice to Proceed. The Contractor shall complete all Work required by the Contract Documents within 100 calendar days from the commencement date stated in the Notice to Proceed. By its signature hereunder, Contractor agrees the time for completion set forth above is adequate and reasonable to complete the Work.

c. **CONTRACT PRICE.** The Town shall pay to the Contractor as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of _____ Dollars ($_____). Payment shall be made as set forth in the General Conditions.

d. **LIQUIDATED DAMAGES.** In accordance with Government Code section 53069.85, it is agreed that the Contractor will pay the Town the sum set forth in Section 00 73 13, Article 1.11 for each and every calendar day of delay beyond the time prescribed in the Contract Documents for finishing the Work, as Liquidated Damages and not as a penalty or forfeiture. In the event this is not paid, the Contractor agrees the Town may deduct that amount from any money due or that may become due the Contractor under the Contract. This Article does not exclude recovery of other damages specified in the Contract Documents.

e. **COMPONENT PARTS OF THE CONTRACT.** The "Contract Documents" include the following:

Notice Inviting Bids
Instructions to Bidders
Bid Form
Bid Bond
Designation of Subcontractors
Information Required of Bidders
Non-Collusion Declaration Form

Iran Contracting Act Certification
Public Works Contractor Registration Certification
Performance Bond
Payment (Labor and Materials) Bond
Specifications Manual:
    General Conditions
    Special Conditions
    General Requirements
    Technical Specifications
Addenda
Plans and Drawings dated 11.30.2017
Standard Specifications for Public Works Construction “Greenbook”, latest edition, Except Sections 1-9
Applicable Local Agency Standards and Specifications, as last revised
Approved and fully executed change orders
Any other documents contained in or incorporated into the Contract

The Contractor shall complete the Work in strict accordance with all of the Contract Documents.

All of the Contract Documents are intended to be complementary. Work required by one of the Contract Documents and not by others shall be done as if required by all. This Contract shall supersede any prior agreement of the parties.

f. **PROVISIONS REQUIRED BY LAW AND CONTRACTOR COMPLIANCE.** Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of applicable federal, state and local laws, rules and regulations, including, but not limited to, the provisions of the California Labor Code and California Public Contract Code which are applicable to this Work.

g. **INDEMNIFICATION.** Contractor shall provide indemnification and defense as set forth in the General Conditions.

h. **PREVAILING WAGES.** Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at the Town’s Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, this Contract has been duly executed by the above-named parties, on the day and year above written.

TOWN OF COLMA

By: _____
Brian Dossey
City Manager

CONTRACTOR

By: _____

Its: _____

Printed Name: _____

ATTEST:

By: _____
City Clerk

APPROVED AS TO FORM:

By: _____
City Attorney

(CONTRACTOR'S SIGNATURE MUST BE NOTARIZED AND CORPORATE SEAL AFFIXED, IF APPLICABLE)

END OF CONTRACT

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF _____

On _____, 20___, before me, _____, Notary Public, personally
Date — Name And Title Of Officer (e.g. "Jane Doe, Notary Public")
appeared _____, who proved to me on the basis of satisfactory
Name(s) of Signer(s)
evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

_____
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

BOND FORMS

1.1 Performance Bond.

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, the Town of Colma, (hereinafter referred to as "Town") has awarded to _____, (hereinafter referred to as the "Contractor") an agreement for **Contract No.**_____, (hereinafter referred to as the "Project").

WHEREAS, the work to be performed by the Contractor is more particularly set forth in the Contract Documents for the Project dated _____, (hereinafter referred to as "Contract Documents"), the terms and conditions of which are expressly incorporated herein by reference; and

WHEREAS, the Contractor is required by said Contract Documents to perform the terms thereof and to furnish a bond for the faithful performance of said Contract Documents.

NOW, THEREFORE, we, _____, the undersigned Contractor and _____ as Surety, a corporation organized and duly authorized to transact business under the laws of the State of California, are held and firmly bound unto the Town in the sum of _____ DOLLARS, ($_____), said sum being not less than one hundred percent (100%) of the total amount of the Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if the Contractor, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the Contract Documents and any alteration thereof made as therein provided, on its part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill all obligations including the one (1) year guarantee of all materials and workmanship; and shall indemnify and save harmless the Town, its officials, officers, employees, and authorized volunteers, as stipulated in said Contract Documents, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees including reasonable attorney's fees, incurred by Town in enforcing such obligation.

As a condition precedent to the satisfactory completion of the Contract Documents, unless otherwise provided for in the Contract Documents, the above obligation shall hold good for a period of one (1) year after the acceptance of the work by Town, during which time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the Town from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the Town's rights or the Contractor or Surety's obligations

under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure Section 337.15.

Whenever Contractor shall be, and is declared by the Town to be, in default under the Contract Documents, the Surety shall remedy the default pursuant to the Contract Documents, or shall promptly, at the Town's option:

i. Take over and complete the Project in accordance with all terms and conditions in the Contract Documents; or

ii. Obtain a bid or bids for completing the Project in accordance with all terms and conditions in the Contract Documents and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a Contract between such bidder, the Surety and the Town, and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the Town under the Contract and any modification thereto, less any amount previously paid by the Town to the Contractor and any other set offs pursuant to the Contract Documents.

iii. Permit the Town to complete the Project in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the Town under the Contract and any modification thereto, less any amount previously paid by the Town to the Contractor and any other set offs pursuant to the Contract Documents.

Surety expressly agrees that the Town may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Project nor shall Surety accept a bid from Contractor for completion of the Project if the Town, when declaring the Contractor in default, notifies Surety of the Town's objection to Contractor's further participation in the completion of the Project.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project to be performed thereunder shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20___.

(Corporate Seal)

_____
Contractor/ Principal

By_____

Title_____

(Corporate Seal)

_____
Surety

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title_____

The rate of premium on this bond is _____ per thousand. The total amount of premium charges is $_____.
(The above must be filled in by corporate attorney.)

THIS IS A REQUIRED FORM

Any claims under this bond may be addressed to:

(Name and Address of Surety) _____
_____
_____

(Name and Address of Agent or Representative for service of process in California, if different from above) _____
_____
_____

(Telephone number of Surety and Agent or Representative for service of process in California) _____

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF _____

On _____, 20___, before me, _____, Notary Public, personally
Date — Name And Title Of Officer (e.g. "Jane Doe, Notary Public")
appeared _____, who proved to me on the basis of satisfactory
Name(s) of Signer(s)
evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

_____
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for Contractor/Principal.

Notary Acknowledgment

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STATE OF CALIFORNIA
COUNTY OF _____

On _____, 20___, before me, _____, Notary Public, personally
Date — Name And Title Of Officer (e.g. "Jane Doe, Notary Public")

appeared _____, who proved to me on the basis of satisfactory
Name(s) of Signer(s)

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

_____
Signature of Notary Public

OPTIONAL

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☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for the Attorney-in-Fact. The Power-of Attorney to local representatives of the bonding company must also be attached.

END OF PERFORMANCE BOND

1.2 Payment Bond (Labor and Materials).

KNOW ALL MEN BY THESE PRESENTS That

WHEREAS, the Town of Colma (hereinafter designated as the "Town"), by action taken or a resolution passed _____ , 20____, has awarded to _____ hereinafter designated as the "Principal," a contract for the work described as follows: **Contract No.**_____ (the "Project"); and

WHEREAS, said Principal is required to furnish a bond in connection with said contract; providing that if said Principal or any of its Subcontractors shall fail to pay for any materials, provisions, provender, equipment, or other supplies used in, upon, for or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, or for amounts due under the Unemployment Insurance Code or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of said Principal and its Subcontractors with respect to such work or labor the Surety on this bond will pay for the same to the extent hereinafter set forth.

NOW THEREFORE, we, the Principal and _____ as Surety, are held and firmly bound unto the Town in the penal sum of _____ Dollars ($_____) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, his or its subcontractors, heirs, executors, administrators, successors or assigns, shall fail to pay any of the persons named in Civil Code Section 9100, fail to pay for any materials, provisions or other supplies, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department or Franchise Tax Board from the wages of employees of the contractor and his subcontractors pursuant to Revenue and Taxation Code Section 18663, with respect to such work and labor the Surety or Sureties will pay for the same, in an amount not exceeding the sum herein above specified, and also, in case suit is brought upon this bond, all litigation expenses incurred by the Town in such suit, including reasonable attorneys' fees, court costs, expert witness fees and investigation expenses.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 9100 so as to give a right of action to such persons or their assigns in any suit brought upon this bond.

It is further stipulated and agreed that the Surety on this bond shall not be exonerated or released from the obligation of this bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described, or pertaining or relating to the furnishing of labor, materials, or equipment therefore, nor by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to any scheme or work of improvement herein above described, nor by any rescission or attempted rescission or attempted rescission of the contract, agreement or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond, nor by any fraud practiced by any person other than the claimant seeking to recover on the bond and that

this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the owner or Town and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in Civil Code Section 9100, and has not been paid the full amount of his claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned, including but not limited to the provisions of sections 2819 and 2845 of the California Civil Code.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20__.

(Corporate Seal)

_____
Contractor/ Principal

By_____

Title_____

(Corporate Seal)

_____
Surety

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title_____

Notary Acknowledgment

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STATE OF CALIFORNIA
COUNTY OF _____

On _____, 20___, before me, _____, Notary Public, personally
Date — Name And Title Of Officer (e.g. "Jane Doe, Notary Public")

appeared _____, who proved to me on the basis of satisfactory
Name(s) of Signer(s)

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

_____
Signature of Notary Public

OPTIONAL

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CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

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COUNTY OF _____

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Date — Name And Title Of Officer (e.g. "Jane Doe, Notary Public")
appeared _____, who proved to me on the basis of satisfactory
Name(s) of Signer(s)
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☐ Individual
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_____
Title(s)

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Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

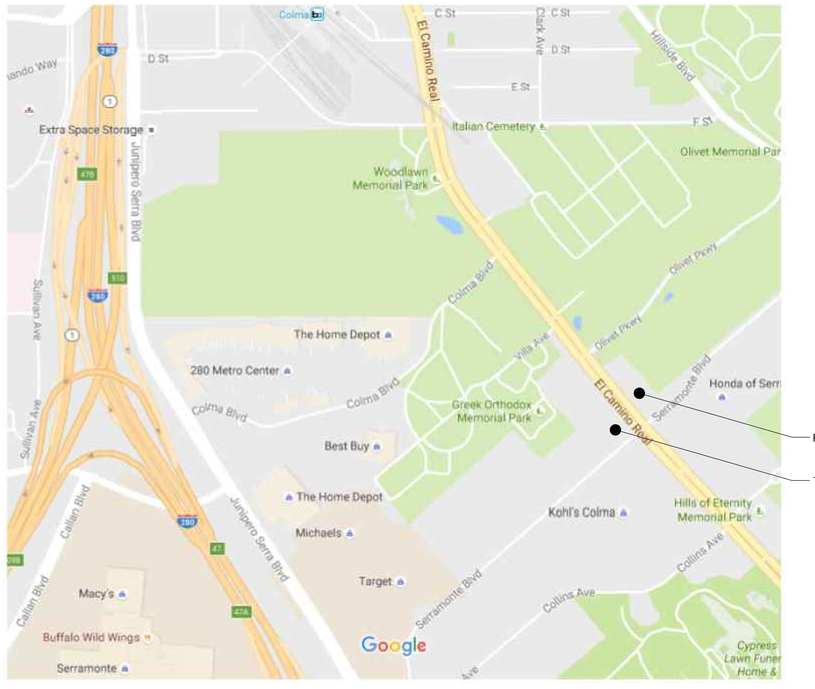
_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for the Attorney-in-Fact. The Power-of-Attorney to local representatives of the bonding company must also be attached.

END OF PAYMENT BOND

ELECTRONIC SECURITY SYSTEMS
TOWN OF COLMA
SAN MATEO COUNTY, CALIFORNIA



COLMA VICINITY MAP

DRAWING INDEX

Attachment C

Smith, Fause & McDonald Inc.
Communications Engineering Group
351 8th Street
San Francisco, Califorina 94103
(415) 255-9140 www.sfmi.com

KEY PLAN

NO	REVISION DESCRIPTION	DATE
	50% CD	10/19/16
	95% CD	04/18/17
	PRE-BID SET	11/22/17
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
COVER SHEET

SCALE NONE FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING G0.0
SHEET OF

ELECTRONIC SECURITY SYSTEMS GENERAL NOTES

1. REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. PROVIDE CONDUIT, BOXES AND FITTINGS SHOWN ON ELECTRONIC SECURITY SYSTEMS (TY) SYSTEM DRAWINGS UNDER THE WORK OF SECTION 28 05 28 PATHWAYS FOR ELECTRONIC SAFETY AND SECURITY. UNLESS OTHERWISE INDICATED, PROVIDE 1 INCH TRADE SIZE MINIMUM . PROVIDE RACEWAY SIZE AS REQUIRED FOR A MAXIMUM OF 30 PERCENT WIRE FILL.
3. PROVIDE FIRESTOPPING UNDER THE WORK OF SECTION 28 05 28 PATHWAYS FOR ELECTRONIC SAFETY AND SECURITY.
4. LOCATIONS SHOWN ON THE ARCHITECTURAL DRAWINGS TAKE PRECEDENCE OVER LOCATIONS SHOWN ON THE COMMUNICATIONS SYSTEMS DRAWINGS.
5. DEVICE QUANTITIES SHOWN ON FLOOR PLANS AND REFLECTED CEILING PLANS TAKE PRECEDENCE OVER DEVICE QUANTITIES SHOWN ON FUNCTIONAL DIAGRAMS.
6. QUANTITIES SHOWN ON FUNCTIONAL DIAGRAMS TAKE PRECEDENCE OVER QUANTITIES SHOWN ON RACK ELEVATIONS.
7. QUANTITIES SHOWN ON DEVICE SCHEDULES TAKE PRECEDENCE OVER QUANTITIES SHOWN ON FUNCTIONAL DIAGRAMS, FLOOR PLANS AND REFLECTED CEILING PLANS.
8. LOCATIONS SHOWN ON LARGE SCALE DRAWINGS TAKE PRECEDENCE OVER LOCATIONS SHOWN ON SMALL SCALE DRAWINGS.
9. NOT USED.
10. WIRING FOR THE WORK OF ELECTRONIC SECURITY SYSTEMS IS NOT PERMITTED TO SHARE CONDUIT, SLEEVES OR J-HOOKS WITH WIRING FOR WORK OF DIVISION 27. MAINTAIN AT LEAST 2 INCHES SEPARATION IF RUNNING PARALLEL. MAINTAIN AT LEAST 3 INCHES OF SEPARATION VERTICALLY IF CROSSING AT RIGHT ANGLES.

LEGEND

SURFACE RACEWAY.
FOR COMMUNICATIONS AND POWER SYSTEM PROVIDED UNDER DIV. 26.

MARK INDICATES RACEWAY DROP FROM CEILING.
COORDINATE EXACT LOCATION WITH DIV. 26 PLANS.

NEW WIRE AND/OR CABLE IN EXPOSED CONDUIT OR RACEWAY. FILL PER SCHEDULE, PLANS AND SPECIFICATION SECTION 28 05 13.

NEW WIRE AND/OR CABLE INSIDE NEW CONDUIT WALLS OR IN CEILING .

NEW WIRE AND/OR CABLE IN (N) UNDERGROUND CONDUIT. FILL PER SCHEDULE, PLANS AND SPECIFICATION SECTION 28 05 13.

CABLE/RACEWAY TURNS UP

CABLE/RACEWAY TURNS DOWN

HOME RUN

ACJ — CONDUIT TO CABLE TRANSITION POINT

TN — KEYNOTES

ABBREVIATIONS

1SR-1	SINGLE CHAMBER SURFACE RACEWAY
3SR-2.5	THREE CHAMBER SURFACE RACEWAY
A.D.A.	AMERICANS WITH DISABILITIES ACT
ADF	AREA DISTRIBUTION FACILITY
A.F.C.	ABOVE FINISHED CEILING
A.F.F.	ABOVE FINISHED FLOOR
ALT	ALTERNATE
A.M.F.F.	ABOVE MEZZANINE FINISHED FLOOR
BDF	BUILDING DISTRIBUTION FACILITY
B.F.C.	BELOW FINISHED CEILING
BLDG.	BUILDING
B.O.H.	BACK OF HOUSE
C.	CONDUIT
CAT.	CATEGORY
CBC	CALIFORNIA BUILDING CODE
CEC	CALIFORNIA ELECTRICAL CODE
COMM.	COMMUNICATIONS
C.L.	CENTERLINE
C.O.	CONDUIT ONLY
CONT.	CONTINUATION
CS	COMMUNICATIONS SYSTEM
(D)	DEMOLISH EXISTING
DED	DEDUCTIVE
⌀, DIA.	DIAMETER
DIV	DIVISION
(E)	EXISTING
EA.	EACH
EIA	ELECTRONIC INDUSTRIES ASSOCIATION
ELEV.	ELEVATION
E.O.L.	END OF LINE
EQPT.	EQUIPMENT
FIN	FINISHED
FUT	FUTURE
H.R.	HOME RUN
HT.	HEIGHT
J, JBOX	JUNCTION BOX
LAN	LOCAL AREA NETWORK
MATV	MASTER ANTENNA TELEVISION
MAX.	MAXIMUM
MIN.	MINIMUM
MOD.	MODULAR
MON.	MONUMENT
(N)	NEW
NEC	NATIONAL ELECTRICAL CODE
N.I.C.	NOT IN CONTRACT
NTS	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.F.E.	OWNER FURNISHED EQUIPMENT
OPP.	OPPOSITE
PNL.	PANEL
PROJ.	PROJECT
P.S.R.H	PROJECT STANDARD RECEPTACLE HEIGHT +18" AFF, U.O.N.
P.S.S.H.	PROJECT STANDARD SWITCH HEIGHT +48" AFF TO℄, U.O.N.
RE:	REFER TO
REF.	REFERENCE
SIM.	SIMILAR
SM	SINGLE MODE OPTICAL FIBER
SN	SHEET NOTE
SP	SHIELDED PAIR - SEE SPECIFICATIONS
SPEC	SPECIFICATION
S.R.	SURFACE RACEWAY
STD	STANDARD
STP	SHIELDED TWISTED PAIR
T.C.	TELECOMMUNICATIONS CLOSET
TEL	TELEPHONE
TELCOM	TELECOMMUNICATIONS
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TP	TWISTED PAIR
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
W/	WITH
WP	WEATHERPROOF

GENERAL SYMBOLS

ROOM KEY
XXXX
ROOM NAME
XXXX
ROOM NUMBER

1/1 DRAWING NUMBER
SHEET NUMBER

BLDG. SECTION KEY
1/1 DRAWING NUMBER
SHEET NUMBER

WALL SECTION KEY
1/1 DRAWING NUMBER
SHEET NUMBER

ELEVATION KEY
1/1 DRAWING NUMBER
SHEET NUMBER

DETAIL SYMBOL
1/1 DRAWING NUMBER
SHEET NUMBER

COLUMN GRID
1
A1
GRID LINES
BUILDING LABEL

DRAWING MATCH LINE

REVISION SYMBOL
1
REVISION NUMBER

JUNCTION BOX SCHEDULE

SYMBOL	H (INCHES)	W (INCHES)	(INCHES)
J1	6	6	4
J2	8	8	4
J3	12	12	4
J4	12	12	6
J5	12	12	8
J6	16	12	6
J7	18	18	8
J8	20	16	6
J9	20	16	8
J10	20	20	6
J11	20	20	8
J12	24	20	6
J13	24	20	8
J14	24	24	8
J15	30	24	8
J16	30	30	8
J17	36	30	8
J18	36	36	8

SUFFIX:

NONE - NEMA 1
A - NEMA 12
B - NEMA 3R
C - NEMA 4
D - NEMA 4X

EXAMPLE: J16C= 30"H X 30"W X 8"D HINGED NEMA 4 JBOX.

NOTE 1

ALL JUNCTION BOXES TO BE HINGED TYPE, PROVIDED WITHOUT PRE-PUNCHED KNOCKOUTS. PENETRATIONS IN JUNCTION BOXES SHALL BE CUT OR PUNCHED AS REQUIRED FOR INSTALLATION. PAINT ALL INTERIOR BOXES TO MATCH WALL FINISH. COORDINATE FINISH WITH ARCH. PLANS.

MATERIAL & EQUIPMENT LEGEND

1IDP	1" INNERDUCT, PLENUM RATED
2IDP	2" INNERDUCT, PLENUM RATED
C5ePP	CATEGORY 5e PATCH PANEL
C6PP	CATEGORY 6 PATCH PANEL.
FOH-P	FIBER OPTIC CABLE HYBRID, PLENUM RATED
FOH-OPR	FIBER OPTIC CABLE HYBRID, OUTSIDE PLANT RISER RATED
FOM-OPR	FIBER OPTIC CABLE, MULTI MODE OUTSIDE PLANT RISER RATED
FOS-OPR	FIBER OPTIC CABLE, SINGLE MODE OUTSIDE PLANT RISER RATED
FPP	FIBER PATCH PANEL
FSC	FIBER SPLICE CLOSURE
FSP	FIBER SPLICE PANEL
FTB	FIBER TERMINAL BOX
IDF	INTERMEDIATE DISTRIBUTION FACILITY
MDF	MAIN DISTRIBUTION FACILITY.
MM	MULTI MODE OPTICAL FIBER
MMP	MULTIMEDIA PLATE
OSP	OUTSIDE PLANT
SM	SINGLE MODE OPTICAL FIBER
UTP5e-4	UNSHIELDED TWISTED PAIR, CAT. 5e
UTP5e-4P	UNSHIELDED TWISTED PAIR, CAT. 5e PLENUM
UTP5e-4OP	UNSHIELDED TWISTED PAIR, CAT. 5e OUTSIDE PLANT
UTP6-4	UNSHIELDED TWISTED PAIR, CAT. 6
UTP6-4P	UNSHIELDED TWISTED PAIR, CAT. 6 PLENUM
UTP6-4OP	UNSHIELDED TWISTED PAIR, CAT. 6 OUTSIDE PLANT
110TBXX	110 TERMINAL BLOCK, CAT.5, XX-NO OF PAIRS
110PWTBXX	110 TERMINAL BLOCK, PRE-WIRED W/50 PIN CONNECTOR, XX- NO OF PAIRS
TB15	TERMINAL BLOCK WITH 15 AMP SWITCH BLADE.

NOTE:
SEE SPECIFICATION SECTIONS FOR REFERENCE DESCRIPTIONS AND REQUIREMENTS. FOR OTHER MATERIAL AND EQUIPMENT TYPES REFER TO SPECIFICATIONS.

Smith, Fause & McDonald Inc.
Communications Engineering Group
351 8th Street
San Francisco, California 94103
(415) 255-9140 www.sfmi.com

KEY PLAN

NO	REVISION DESCRIPTION	DATE
	50% CD	10/19/16
	95% CD	04/18/17
	PRE-BID SET	11/22/17
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
ELECTRONIC SECURITY SYSTEMS GENERAL NOTES, LEGEND, ABBREVIATIONS AND JBOX SCHEDULE

SCALE NONE — FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING TY-0.1
SHEET OF

SYMBOL	DEVICE	FUNCTION OR SERVICE	LOCATION	WORK OF	ROUGH-IN	RACEWAY	ELEVATION	CABLE FILL & HOMERUN DESTINATION, U.O.N.	FINISH	WEIGHT, LB	DETAIL SHEET(S)
	WALL SLEEVE	PATHWAY	INDICATED	28 05 28	N/A	R11					
	CCTV CAMERA, FIXED FOCUS, TCP/IP	VISUAL SURVEILLANCE	INDICATED	28 23 00 WO4	(E) – LRI4.	R2 – LRI4	INDICATED & SCHEDULED	PER FUNCTIONAL	SUBMIT FOR SELECTION BY OWNER'S REP.		TY9.3
FE	CCTV CAMERA, FIXED FOCUS, TCP/IP, EXTERIOR	VISUAL SURVEILLANCE	INDICATED	28 23 00 WO4	(E) – LRI4.	R2 – LRI4	INDICATED & SCHEDULED	PER FUNCTIONAL	SUBMIT FOR SELECTION BY OWNER'S REP.		TY9.3
3	3-4 ADJUSTABLE CAMERA HEADS, 180 DEGREE CCTV IP CAMERA, INTERIOR, FIXED FOCUS	VISUAL SURVEILLANCE	WALL OR CLG AS INDICATED	28 23 00 WO4	FLUSH 5S BOX, 1 G. RING.	R6	INDICATED & SCHEDULED	PER FUNCTIONAL	SUBMIT FOR SELECTION BY OWNER'S REP.		TY9.3
3 E	3-4 ADJUSTABLE CAMERA HEADS, 180 DEGREE CCTV IP CAMERA, EXTERIOR, FIXED FOCUS	VISUAL SURVEILLANCE	WALL, CLG OR POLE AS INDICATED	28 23 00 WO4	FLUSH CAST 5S BOX. 1 G. RING	R6	INDICATED & SCHEDULED	PER FUNCTIONAL	SUBMIT FOR SELECTION BY OWNER'S REP.		TY9.3
4	FOUR ADJUSTABLE CAMERA HEADS, 360 DEGREE CCTV IP CAMERA, INTERIOR, FIXED FOCUS	VISUAL SURVEILLANCE	WALL OR CLG AS INDICATED	28 23 00 WO4	FLUSH 5S BOX, 1 G. RING.	R6	INDICATED & SCHEDULED	PER FUNCTIONAL	SUBMIT FOR SELECTION BY OWNER'S REP.		TY9.3
4 E	FOUR ADJUSTABLE CAMERA HEADS, 360 DEGREE CCTV IP CAMERA, EXTERIOR, FIXED FOCUS	VISUAL SURVEILLANCE	WALL, CLG OR POLE AS INDICATED	28 23 00 WO4	FLUSH CAST 5S BOX. 1 G. RING	R6	INDICATED & SCHEDULED	PER FUNCTIONAL	SUBMIT FOR SELECTION BY OWNER'S REP.		TY9.3
CKP	CARD READER, MULTI-PROTOCOL PROX/SMART WITH INTEGRAL KEYPAD.	ACCESS CONTROL/IDS	INDICATED	28 13 00	FLUSH 4-11/16" S BOX, 2-1/8" DEEP MIN., 1 G. RING. - LRI6	R4 - LRI6	C.L. AT +45" A.F.F		BLANK COVER PLATE MATCHES SURROUNDING ELECTRICAL		TY9.1, TY9.2
CN	CARD READER, MULTI-PROTOCOL PROX/SMART NARROW DOOR MULLION MOUNT TYPE	ACCESS CONTROL/IDS	INDICATED	28 13 00	MOUNTS TO DOOR MULLION CUTOUT.	R4	C.L. AT +45" A.F.F		BLANK COVER PLATE MATCHES SURROUNDING ELECTRICAL		TY9.1, TY9.2
CR	CARD READER, MULTI-PROTOCOL PROX/SMART	ACCESS CONTROL/IDS	INDICATED	28 13 00	FLUSH 5S BOX, 2-1/8" DEEP MIN., 1 G. RING – LRI6	R4 – LRI6	C.L. AT +45" A.F.F		BLANK COVER PLATE MATCHES SURROUNDING ELECTRICAL		TY9.1, TY9.2
DC	DURESS ALARM, CASEWORK OR WALL MTD.	ACCESS CONTROL/IDS	LRI16	28 13 00	LRI16		LRI16	N/A			TY9.1, TY9.2
DO	ACCESSIBILITY DOOR OPERATOR BUTTON/BAR	ACCESS CONTROL/IDS	WHERE INDICATED ON THE ARCH PLANS OR SCHEDULES	28 13 00 WO2	N/A - STUB TO BUTTON/BAR ROUGH-IN ENCLOSURE AT LV TERMINAL SIDE.	R2 – LRI6	WHERE INDICATED ON THE ELECTRICAL PLANS OR ARCH PLANS.	AS REQUIRED - COORDINATE INTERFACE TYPE WITH WORK OF DIV.S 8 AND 26.	N/A		TY9.1, TY9.2
DS	DOOR POSITION SWITCH	ACCESS CONTROL/IDS	LRI2	08 71 00 & 28 05 00, WO3	LRI2	R4 - LRI6	AS DETAILED				TY9.1, TY9.2
DT	DURESS ALARM TRANSITION PATHWAY	ACCESS CONTROL/IDS	INDICATED, COORD. WITH OWNER'S FURN. PLAN	28 05 28 WO3	(E) 4S BOX, 2-1/8" DEEP MIN., W 1 GANG RING. BLANK COVER PLATE WITH GROMMETED OPENING.	(E) R3	+18 INCHES AFF		BLANK COVER PLATE MATCHES SURROUNDING ELECTRICAL		
DW	DURESS ALARM, WALL MTD.	ACCESS CONTROL/IDS	INDICATED	28 13 00 WO3	4S BOX, 2-1/8" DEEP MIN., U.O.N.	R4 - LRI6	C.L. AT +45" A.F.F	N/A			
EL	ELECTRIC LOCK	ACCESS CONTROL/IDS	INDICATED	WO1	MUD BOX AT SOLID GROUTED DOOR FRAMES	R4 - LRI6	WIRE TO MIDDLE HINGE OF DOOR OPPOSITE LOCK				TY9.1, TY9.2
ER	ELECTRIC LOCK WITH INTEGRAL REX MICROSWITCH	ACCESS CONTROL/IDS	INDICATED	WO1	MUD BOX AT SOLID GROUTED DOOR FRAMES	R4 - LRI6	WIRE TO MIDDLE HINGE OF DOOR OPPOSITE LOCK				TY9.1, TY9.2
ES	ELECTRIC STRIKE	ACCESS CONTROL/IDS	INDICATED	WO1	MUD BOX AT SOLID GROUTED DOOR FRAMES	R4 - LRI6					TY9.1, TY9.2
GB	GLASS BREAK DETECTOR.	ACCESS CONTROL/IDS	INDICATED	28 05 00, 28 13 00	LRI3	R1	AT SUSPENDED CLG. CONDITIONS, 12" MIN. BELOW CLG. ELSEWHERE, +15' AFF ON WALLS, U.O.N.				
GB	GLASS BREAK DETECTOR, CEILING	ACCESS CONTROL/IDS	INDICATED	28 05 00, 28 13 00	LRI5	R1	AT UNDERSIDE OF CEILING				
HS	ROOF HATCH SWITCH	INTRUSION DETECTION	INDICATED, ON LATCH SIDE	28 05 00, 28 13 00	LRI13	R1 – LRI6	ON FRAMING ADJACENT TO HATCH				
J	J-BOX WITH BLANK FACE PLATE	ELECTRONIC SECURITY SYSTEMS PATHWAY	INDICATED	28 05 28	4S BOX, 2-1/8" DEEP MIN., U.O.N.	R4	INDICATED		BLANK COVER PLATE MATCHES SURROUNDING ELECTRICAL	2	
LA	LOCAL ALARM, WALL MOUNT WITH BUILDING STANDARD STANDARD KEY CYLINDER OVERRIDE	ACCESS CONTROL/IDS	INDICATED	28 13 00 WO3	FLUSH 4S BOX, 2-1/8" DEEP MIN., 1 G. RING	R4	C.L. AT +45" A.F.F		BLANK COVER PLATE MATCHES SURROUNDING ELECTRICAL		TY9.1, TY9.2
LR	LATCH RETRACTION HARDWARE	ACCESS CONTROL/IDS	INDICATED	WO1	N/A	R2	WIRE TO LOW VOLTAGE CONTACT OF LATCH RELEASE OR LINE VOLTAGE RELAY CONTROLLING LATCH RETRACTER.	PER FUNCTIONAL			
MD	MOTION DETECTOR	ACCESS CONTROL/IDS	INDICATED	28 05 00, 28 13 00	LRI3	R1	AT SUSPENDED CLG. CONDITIONS, 12" MIN. BELOW CLG. ELSEWHERE, +15' AFF ON WALLS, U.O.N.				
MD	MOTION DETECTOR, CEILING.	ACCESS CONTROL/IDS	INDICATED	28 05 00, 28 13 00	LRI5	R1	AT UNDERSIDE OF CEILING				
PHR	PANIC HARDWARE WITH INTEGRAL REX MICROSWITCH	ACCESS CONTROL/IDS	INDICATED	WO1	MUD BOX AT SOLID GROUTED DOOR FRAMES	R4 - LRI6	WIRE TO MIDDLE HINGE OF DOOR OPPOSITE LOCK				TY9.1, TY9.2
PO	POWERED OPERATOR, MOTOR ASSISTED DOOR	ACCESS CONTROL/IDS	WHERE INDICATED ON THE ELECTRICAL PLANS OR ARCH PLANS.	28 13 00 WO2	N/A - STUB TO MOTOR CONTROLLER AT LV TERMINAL SIDE.	R2 – LRI6	WHERE INDICATED ON THE ELECTRICAL PLANS OR ARCH PLANS.	AS REQUIRED - COORDINATE INTERFACE TYPE WITH WORK OF DIV.S 8 AND 26.	N/A		TY9.1, TY9.2
RB	RELEASE BUTTON	ACCESS CONTROL/IDS	INDICATED	28 05 00, 28 13 00	4S BOX, 2-1/8" DEEP MIN., W/ 1 GANG RING, U.O.N.	R4 - LRI6	+47" A.F.F TO TOP OF JBOX				
REX	REQUEST TO EXIT DETECTOR	ACCESS CONTROL/IDS	INDICATED	28 13 00	4S BOX, 2-1/8" DEEP MIN., W/ 1 GANG RING, U.O.N., OR ON FRAME	R4 – LRI6	DOOR HEAD FRAME				TY9.1, TY9.2
RTE	REQUEST TO ENTER INTERCOM, ROUGH-IN ONLY.	ACCESS CONTROL/IDS	INDICATED	28 05 00, 28 13 00	5S BOX W/ 2 G RING, U.O.N.	R5	+48" AFF		BLANK COVER PLATE MATCHES SURROUNDING ELECTRICAL		
R28	(E) FLOOR MOUNTED MEDIUM DEPTH SERVER CABINET, 44 RU, 30" WIDE MAX, 42" DEEP, 4 POST, SEISMIC RATED.	COMMUNICATIONS	FLOOR	BY TOWNHALL PROJECT			BOLT TO SLAB PER CONTRACTORS STRUCTURAL ENGINEERING DESIGN.		BLACK	1100	

Smith, Fause & McDonald Inc.
Communications Engineering Group
351 8th Street
San Francisco, California 94103
(415) 255-9140 www.sfmi.com

KEY PLAN

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	50% CD	10/19/16
	95% CD	04/18/17
	PRE-BID SET	11/22/17
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
ELECTRONIC SECUIRTY SYSTEMS SYMBOL SCHEDULE

SCALE NONE FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING TY-0.2
SHEET OF

NOTE NO.	DEVICE NOTES
DN1	NOT USED
	WORK OF NOTES
WO1	LOCK AND PANIC DOOR ALARM INTEGRATED IN PANIC HARDWARE ARE (E) AT PD, AND BY BASE BUILDING CONTRACTOR AT TOWN HALL. LV FIELD WIRING AND POWER SUPPLIES BY DIVISION 28.
WO2	MOTOR ASSISTED POWER DOOR OPERATOR AND DOOR OPERATOR BUTTON (DO) BY DIVISION 8 AND 26 AT TOWN HALL, (E) AT PD. DOOR ENTRY FROM UNSECURE SIDE UNDER CONTROL OF ACCESS CONTROL SYSTEM FURNISHED UNDER DIVISION 28.
WO3	AT TOWN HALL DS, WS AND HS ARE WORK OF THE BASE BUILDING CONTRACTOR'S PACKAGE; AT THE POLICE HQ THE DS, WS, HS, LA AND DW ARE (E) U.O.N.
WO4	AT TOWN HALL, THE BASE BUILDING DIVISION 27 PROVIDES STRUCTURED CABLING COMPLETE TO INDICATED CAMERA LOCATIONS. AT PD, ALL NEW CAMERAS ARE TO RECEIVE NEW CAMERAS CABLING INSTALLED UNDER THE WORK OF THIS PROJECT.
	LOCATION & ROUGH-IN NOTES
LRI1	FLUSH 4S BOX IN WALL ADJ. TO INDICATED LOCATION. FISH CABLE THROUGH FURNITURE TO OWNER SELECTED MOUNTING LOCATION.
LRI2	TOP OF DOOR AND IN DOOR FRAME, NOT MORE THAN 6" FROM JAMB SIDE. INSTALLATION SHALL NOT COMPROMISE FIRE RATING OF DOOR.
LRI3	4S BOX W/ 1 GANG RING BLANK COVER PLATE
LRI4	ROUGH-IN FOR CAMERAS AT PD IS (E). ROUGH-IN AT TOWN HALL FOR ESS IS BY THE BASE BUILDING CONTRACTOR.
LRI5	AT SUSPENDED CLG CONDITIONS, SM 4S BOX, BLANK COVER & FLEX C TO DEVICE. ELSEWHERE MOUNTED IN CEILING ADJ TO DEVICE OR MNT DEVICE TO COVER PLATE.
LRI6	ROUGH-IN FOR CARD READERS AT PD IS EXISTING EXCEPT FOR ONE (N) DOOR OPENING – EXERCISE ROOM 128 - AS SHOWN. FISH CABLING FOR REX AS REQUIRED. ROUGH-IN AT TOWN HALL FOR ESS IS BY THE BASE BUILDING CONTRACTOR.
LRI7	WORK OF DIVISION 28 WIRES TO GATE CONTROLLER INTERFACE ENCLOSURES AT PARKING ENTRY TO PLACE OPERATION OF GATE PORT UNDER THE CONTROL OF THE ACCESS CONTROL SYSTEMS. COORDINATE LOCATION IN FIELD WITH WORK OF OTHER DIVISIONS.
LRI8	4S BOX W/ BLANK COVER PLATE W/ GROMMET OPENING MTD WITHIN 6" OF LATCH AT UNDERSIDE OF ROOF. EXTEND HS TO HATCH FRAME AND INSTALL IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
LRI9	4S BOX, 2-1/8" DEEP MIN., W/ 1 GANG RING WITH LOCKING HINGED COVER PLATE (FSR WB-MR2G OR EQUAL).
LRI10	OUTLETS SHALL BE PLACED SO THEY WILL NOT BE COVERED BY AN UNDER-COUNTER CABINET.
LRI11	PROVIDE BACKING AND SUPPORT FOR 5 POUND DEVICE.
LRI12	TOP OF DOOR AND IN DOOR FRAME, NOT MORE THAN 6" FROM JAMB SIDE. INSTALLATION SHALL NOT COMPROMISE FIRE RATING OF DOOR.
LRI13	4S BOX W/ BLANK COVER PLATE W/ GROMMET OPENING MTD WITHIN 6" OF LATCH AT UNDERSIDE OF ROOF. EXTEND HS TO HATCH FRAME AND INSTALL IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
LRI14	NOT USED
LRI15	AS DETAILED AND/OR SCHEDULED ON THE ARCHITECTURAL DRAWINGS.
LRI16	LOCATE AS DIRECTED BY THE OWNER'S REPRESENTATIVE. FASTEN SECURELY TO THE CASEWORK OR WALL STRUCTURE WITH MECHANICAL FASTENERS.
	RACEWAY NOTES
R1	1/2" C. H.R. TO NEAREST IDS TERMINAL CABINET
R2	3/4" C. H.R. TO NEAREST IDS TERMINAL CABINET
R3	1" C. H.R. TO NEAREST IDS TERMINAL CABINET
R4	AS DETAILED AND/OR SCHEDULED
R5	3/4" C. H.R. TO ACCESSIBLE CEILING OR FLOOR, OR TO SERVING BDF, IDF OR EQUIPMENT ROOM, U.O.N.
R6	1" C. H.R. TO ACCESSIBLE CEILING OR FLOOR, OR TO SERVING BDF, IDF OR EQUIPMENT ROOM, U.O.N.
R7	1-1/4" C. H.R. TO ACCESSIBLE CEILING OR FLOOR, OR TO SERVING BDF, IDF OR EQUIPMENT ROOM, U.O.N.
R8	NOT USED
R9	NOT USED
R10	NOT USED
R11	UNLESS OTHERWISE SHOWN, PROVIDE 1.5" EMT SLEEVE, WITH INSULATED THROAT BUSHING AT EACH END, STUBBED OUT 4 INCHES FROM FACE OF WALL, AT ELEVATION APPROXIMATELY 6 INCHES ABOVE ACCESSIBLE CEILING. INSTALL SLEEVE IN AN ACCESSIBLE LOCATION AS DEFINED IN CALIFORNIA ELECTRICAL CODE, ARTICLE 100 DEFINITIONS. PROVIDE FIRESTOPPING UNDER WORK OF SECTION 28 05 28. BOND TO GROUND. COMPLY WITH DIVISION 26 AND SECTION 28 05 26.

ACCESSIBLE CEILING IS A T-BAR OR SIMILAR GRID BASED, PANELIZED REMOVEABLE CEILING MEETING THE DEFINITION FOR ACCESSIBLE WIRING METHODS IN ARTICLE 100 OF THE CALIFORNIA ELECTRICAL CODE.

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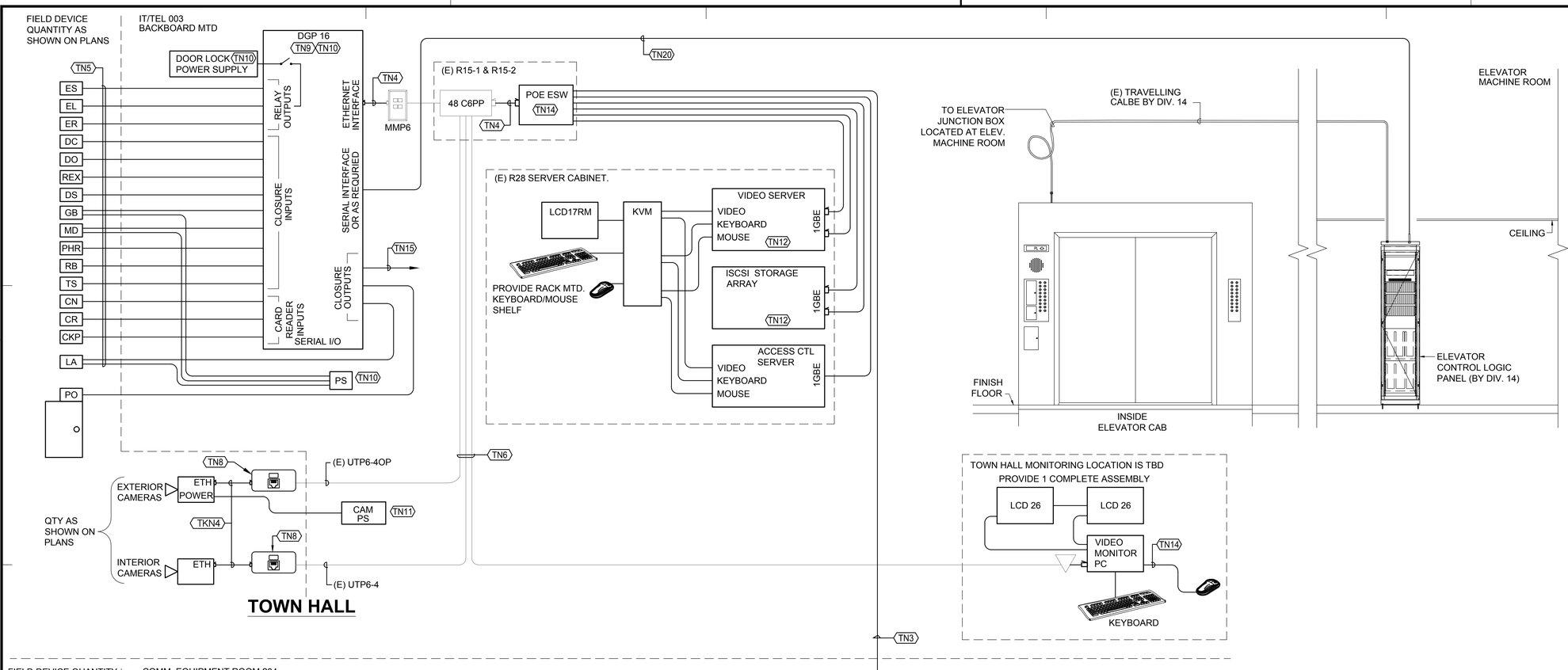
PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
ELECTRONIC SECUIRTY SYSTEMS SYMBOL SCHEDULE NOTES

SCALE NONE FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING TY-0.3
SHEET OF



SHEET NOTES

1. SINGLE DIAGRAM IS DIAGRAMMATIC. CONTRACTOR TO SUBMIT SHOP DRAWINGS INDICATING EXACT QTY AND LOCATION OF ACCESS CONTROL PANELS AND RELATED HARDWARE REQUIRED TO MEET THE FUNCTIONAL REQUIREMENTS OF THE PROJECT.
2. PROVIDE BATTERY BACKUP (UPS AND/OR PANEL MOUNTED BATTERY) TO SUPPORT OPERATIONS OF THE ELECTRONIC SECURITY SYSTEMS FOR AT LEAST 15 MIN. FOLLOWING LOSS OF POWER, INCLUDING CARD READERS ACCESS CONTROL AND IDS PANELS ELECTRIC LOCKS AND FIELD MONITORING DEVICES.
3. PROVIDE HIGH LEVEL COMMUNICATIONS INTERFACE USING TCP/IP COMMUNICATIONS AND NATIVE SDK/API INTERFACES TO INTERFACE ACCESS CONTROL AND INTRUSION DETECTION EVENTS WITH CAMERA CALL UP IN THE ASSOCIATED AREA, AND FOR RECEIPT OF MOTION DETECTION ALERTS FROM THE CCTV SYSTEM.

KEYNOTES

A	ARCHITECTURAL: COMPLY WITH DIVISIONS 3 THROUGH 14 - SEE ARCHITECTURAL DRAWINGS.
A1	DOOR POWER OPERATOR, WHERE OCCURS - REFER TO PLANS.
E	ELECTRICAL: COMPLY WITH DIVISION 26 - SEE ELECTRICAL DRAWINGS
E1	CONNECT ELECTRICAL SERVICE TO THIS AREA TO THE EMERGENCY POWER BACKUP SYSTEM.
E2	PROVIDE INTERFACE TO FIRE ALARM SYSTEM TO ENSURE THAT EXIT DOOR LOCKS IN THE PATH OF TRAVEL DEFINED FOR EMERGENCY EGRESS ARE RELEASED IN ACCORDANCE WITH THE CBC UPON OPERATION OF FIRE ALARM.
TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISIONS 28.
TN1	LOW VOLTAGE POWER REQUIRED VARIES WITH DEVICE MANUFACTURER.
TN2	DEVICE QUANTITY AS INDICATED ON THE PLANS.
TN3	(E) FIBER ETHERNET LINK BETWEEN TOWN HALL AND COLMA POLICE HEADQUARTERS.
TN4	CAT6 PATCH CORDS. PROVIDE QTY. AS REQUIRED.
TN5	PROVIDE CABLE GAUGE AS REQUIRED TO SUIT DEVICE, VOLTAGE OF POWER SUPPLY AND RUN LENGTH IN ACCORDANCE WITH THE MANUFACTURERS DIRECTIONS. AT UNDERGROUND CONDITIONS, PROVIDE CABLING SUITABLE TO EXPOSURE TO CONTINUOUS STANDING WATER.

KEYNOTES (CONT.)

TN6	STRUCTURED CABLING AT TOWN HALL IS (E)/WORK OF THE BASE BUILDING CONTRACTOR.
TN7	DUPLEX FIBER OPTIC PATCH CORDS. PROVIDE QTY. AS REQUIRED.
TN8	MMP6 MOUNTED TO SURFACE MTD BACKBOX OR EQUIVALENT USING SPECIFIED JACKS MTD IN 'BISCUIT BOX' MECHANICALLY FASTENED TO INTERIOR OF ENCLOSURE. WHERE CIRCUIT REQUIRES FIBER CONNECTIVITY, PROVIDE LC CONNECTOR, OTHERWISE PROVIDE CAT6 RJ45.
TN9	PROVIDE QTY AS REQUIRED.
TN10	PROVIDE UNINTERRUPTIBLE POWER BACKUP FOR ENTIRE SYSTEM FOR UP TO 4 HOURS OPERATION FOLLOWING LOSS OF POWER.
TN11	PROVIDE AUXILIARY CAMERA POWER AS REQUIRED WHERE CAMERA IS NOT DESIGNED TO OPERATE ON POE POWER ALONE INCLUDING ALL PTZ AND ALL EXTERIOR CAMERAS, WHICH SHALL BE PROVIDED WITH INTEGRAL HEATERS.
TN12	VIDEO MANAGEMENT SYSTEM TO PROVIDE NATIVE TCP/IP CAMERA CALL UP USING SDK/API INTERFACE TO ACCESS CONTROL SYSTEM AND INTRUSION DETECTION SYSTEM, INCLUDING ALARM ON MOTION. CONTRACTOR TO COORDINATE INTEGRATION AND TEST FUNCTIONALITY.
TN13	AT COLMA POLICE HEADQUARTERS, DOOR LOCK POWER SUPPLIES ARE (E) TO REMAIN.
TN14	OWNER FURNISHED
TN15	PROVIDE CLOSURE OUTPUT AS REQD TO MAINTAIN (E) FUNCTIONALITY THAT RELAYS USE OF DW'S AT SALLY PORT TO CAUSE (E) AUDIO AND VISUAL ALERTS AT DISPATCH.
TN16	UTP6-4OP.
TN17	THWN OR EQUIVALENT UNDERGROUND RATED CABLING AS SPECIFIED IN DIVISION 26 FOR SIM APPLICATIONS. SELECT GAUGE TO SUIT RUN LENGTHS.
TN18	WORKSTATION STRUCTURED CABLING AT COLMA POLICE HEADQUARTERS IS (E).
TN19	CAMERA IP STRUCTURED CABLING AT COLMA POLICE HEADQUARTERS IS WORK OF THIS PROJECT.
TN20	AT TOWN HALL, ACCESS CONTROL INTERFACES TO ELEVATOR MACHINE TO PREVENT CALLING THE ELEVATOR CAB UNLESS PRECEDED BY PRESENTATION OF VALID CARD OR EQUIVALENT AT READER EXTERNAL TO ELEVATOR CAB ON WALL IN LOBBY.

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PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
ACCESS AND INTRUSION DETECTION SYSTEM SINGLE LINE DIAGRAM

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A	DRAWING TY-7.1
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF

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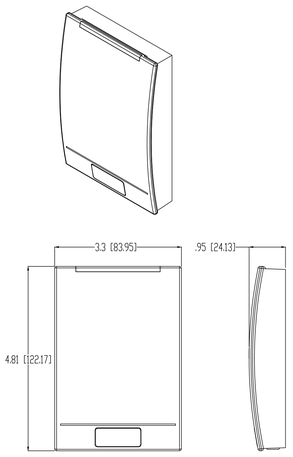
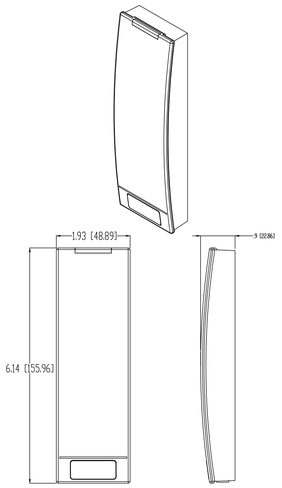


1 SMART CARD READER - TYPE CR
NTS



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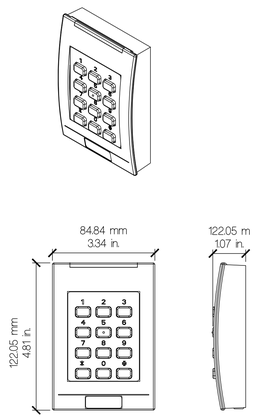
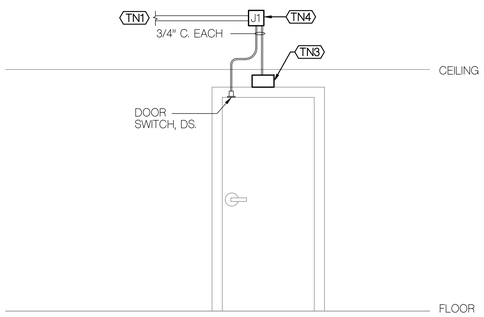
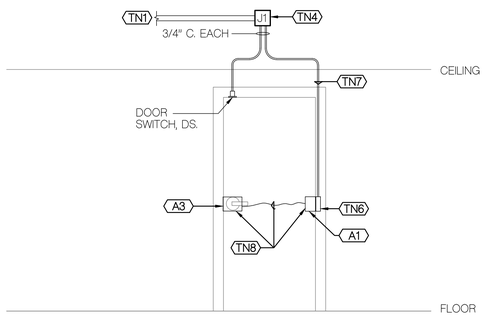


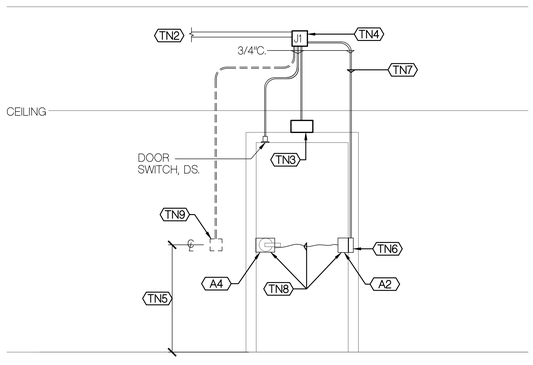
3 SMART CARD READER W/ INTEGRATED KEYPAD - TYPE CKP
NTS



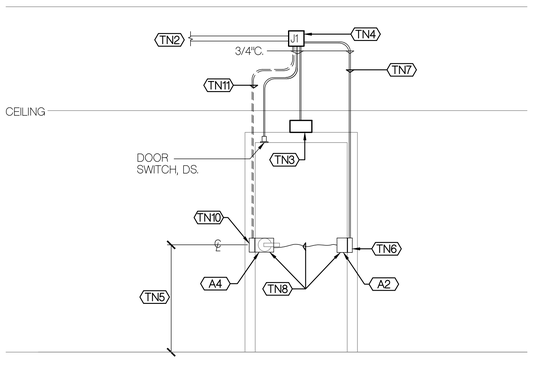
4 TYPICAL MONITORED SINGLE DOOR ELEVATION, IR REX EXIT ALARM SUPPRESSION
VIEW FROM SECURE SIDE, CEILING ACCESS NTS



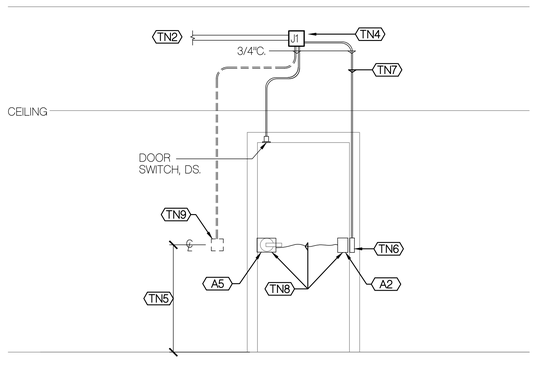
5 TYPICAL MONITORED SINGLE DOOR ELEVATION, DOOR HARDWARE EXIT ALARM SUPPRESSION
VIEW FROM SECURE SIDE, CEILING ACCESS NTS



6 TYPICAL ACCESS CONTROLLED SINGLE DOOR ELEVATION, IR REX EXIT ALARM SUPPRESSION
VIEW FROM SECURE SIDE, CEILING ACCESS NTS



7 TYPICAL ACCESS CONTROLLED SINGLE DOOR ELEVATION, IR REX EXIT ALARM SUPPRESSION, MULLION MOUNT CARD READER
VIEW FROM SECURE SIDE, CEILING ACCESS NTS



8 TYPICAL ACCESS CONTROLLED SINGLE DOOR ELEVATION, IDOOR HARDWARE EXIT ALARM SUPPRESSION
VIEW FROM SECURE SIDE, CEILING ACCESS NTS

SHEET NOTES

1. NOT EVERY DOOR CONDITION IS DEPICTED. REFER TO THE FLOOR PLANS FOR THE DEVICES REQUIRED AT EACH OPENING AND PROVIDE ROUGH-IN AS REQUIRED BASED ON SIMILAR ASSEMBLIES DETAILED ON THE TY SHEETS,
2. AT ACCESSIBLE CEILING CONDITIONS, SUPPORT ELECTRONIC SECURITY CABLING ON A SEPERATE SYSTEM OF CABLE HOOKS FROM CABLING HOOKS OR BASKET TRAY USED TO SUPPORT THE WORK OF AN OTHER LOW VOLTAGE SYSTEM, INCLUDING STRUCTURED CABLING, A/V AND/OR EMS AND HVAC CONTROL.
3. WHERE ESS SIGNAL CABLING IS CONSOLIDATED WITH A NETWORK OF CONDUITS AND PULL BOXES, MAINTAIN 40% MAXIMUM FILL.
4. HORIZONTAL ARRANGEMENT OF DEVICES MAY VARY - REFER TO THE FLOOR PLANS FOR THE REQUIRED ARRANGEMENTS. CARD READERS SHOULD GENERALLY BE PLACED ADJACENT TO THE DOOR HANDLE OF THE ACCESS CONTROLLED DOOR. REFER TO THE DIVISION 8 HW SCHEDULES AND THE APPROVED DIVISON 8 SUBMITTALS TO DETERMINE WHETHER EL OR ES ARE USED AT EACH OPENING.

KEYNOTES

A	ARCHITECTURAL. WORK OF DIVISIONS 3-14.
A1	TRANSFER HINGE WITH 1 PR CONDUCTORS MIN.
A2	TRANSFER HINGE WITH 2 PR CONDUCTORS MIN.
A3	HR - DOOR HANDLE OR PANIC HARDWARE WITH MECHANICAL LOCK AND INTEGRAL ALARM SUPPRESSION MICROSWITCH TO DETECT OPERATION OF DOOR FROM SECURE SIDE.
A4	EL - ELECTRIC DOOR LOCK OR ELECTRIC STRIKE.
A5	ER - DOOR HANDLE OR PANIC HARDWARE WITH ELECTRIC LOCK AND INTEGRAL ALARM SUPPRESSION MICROSWITCH TO DETECT OPERATION OF DOOR FROM SECURE SIDE.
TKN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
TKN1	EXTEND 1" MIN C. TO ACCESSIBLE CEILING AND/OR TELECOMMUNICATIONS ROOM SERVING THIS DOOR. REFER ADDITIONALLY TO THE REQUIREMENTS OF THE SHEET NOTES.
TKN2	EXTEND 1.25" MIN C. TO ACCESSIBLE CEILING AND/OR TELECOMMUNICATIONS ROOM SERVING THIS DOOR. REFER ADDITIONALLY TO THE REQUIREMENTS OF THE SHEET NOTES.
TKN3	REX - EXIT ALARM SUPPRESSION SENSOR, IR BASED, MOUNTED ABOVE DOOR.
TKN4	LOCATE ABOVE DOOR AT ACCESSIBLE CEILING CONDTIONS. AT GYP CEILING CONDITIONS, LOCATE REMOTELY AT NEAREST UTILITY SPACE.
TKN5	MATCH PROJECT SWITCH HEIGHT. CL OF +45" AFF TO CL.
TKN6	PROVIDE MUD BOX INSIDE DOOR FRAME AT GROUTED DOOR ASSEMBLIES.
TKN7	STUB CONDUIT INSIDE DOOR FRAME TO ABOVE THE MIDDLE HINGE OPPOSITE DOOR HANDLE/EL/ER/ES/PANIC HW. MEASURE DOOR ON SITE. COORDINATE SIDE OF DOOR SCHEDULED TO RECEIVE ACTIVE DOOR HARDWARE, INCLUDING EL OR ES WITH WORK OF DIVISION 8.
TKN8	DOOR HARDWARE (DOOR HANDLE, ES, EL, HR, AND/OR PHR AS APPLIES) AND TRANSFER HINGE FURNISHED AND INSTALLED UNDER THE WORK OF DIVISION 8. WORK OF DIVISION 28 WIRES LOCKING HARDWARE VIA TRANSFER HINGE AND PROVIDES WIRING AND PATHWAY BACK TO DGP.
TKN9	CR - WALL MOUNTED CARD READER WITH 4S BOX AND 1 GANG RING INSTALLED FACING UN-SECURE SIDE OF DOOR.
TKN10	CN - MULLION MOUNTED CARD READER MOUNTED TO FACE OF DOOR FRAME FACING UN-SECURE SIDE OF DOOR.
TKN11	STUB CONDUIT INSIDE DOOR FRAME TO ABOVE CUTOUT FOR MULLION MOUNT CARD READER.

Smith, Fause & McDonald Inc.
Communications Engineering Group
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KEY PLAN

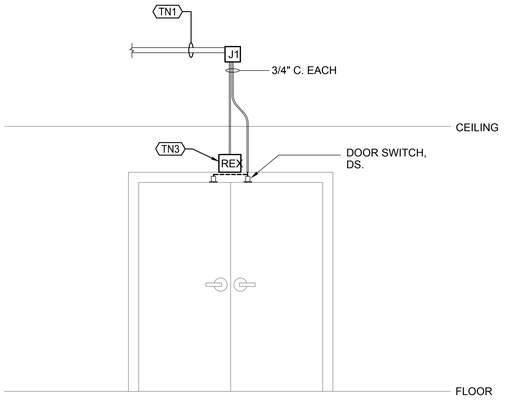
NO	REVISION DESCRIPTION	DATE
	50% CD	10/19/16
	95% CD	04/18/17
	PRE-BID SET	11/22/17
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
DETAILS
SINGLE DOOR ACCESS CONTROL

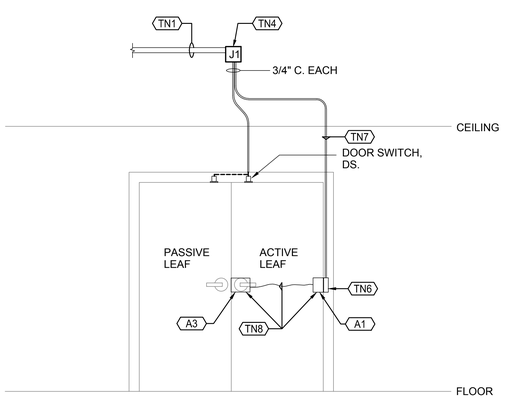
SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A	DRAWING TY-9.1
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF



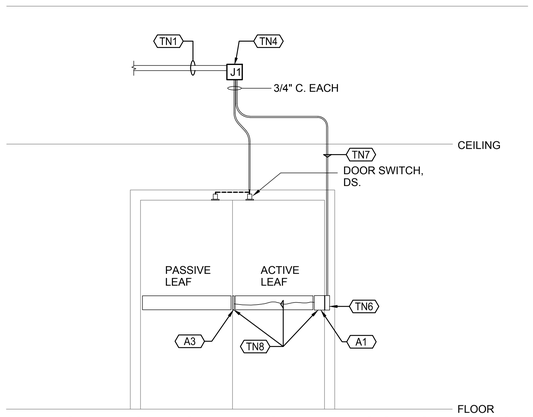
1 TYPICAL MONITORED DOUBLE DOOR OPENING, IR REX EXIT ALARM SUPPRESSION

VIEW FROM SECURE SIDE, CEILING ACCESS — NTS



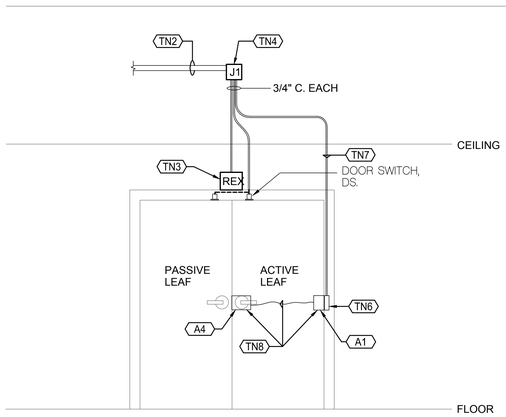
2 TYPICAL MONITORED DOUBLE DOOR OPENING, DOOR HARDWARE EXIT ALARM SUPPRESSION

VIEW FROM SECURE SIDE, CEILING ACCESS — NTS



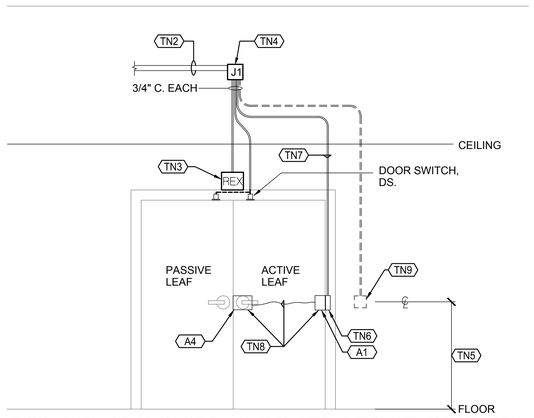
3 TYPICAL MONITORED DOUBLE DOOR OPENING, ACTIF LEAF PANIC HARDWARE EXIT ALARM SUPPRESSION

VIEW FROM SECURE SIDE, CEILING ACCESS — NTS



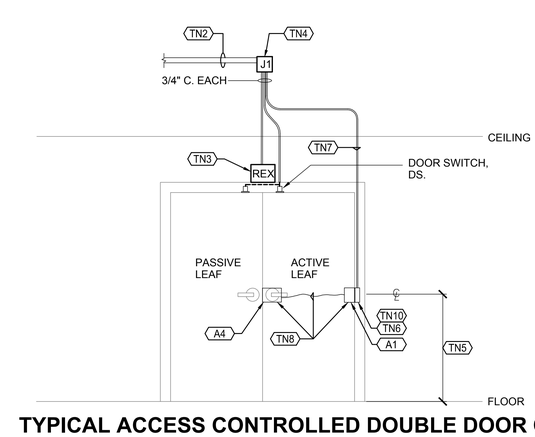
4 TYPICAL ACCESS CONTROLLED DOUBLE DOOR OPENING, AUTO LOCK/UNLOCK, IR REX EXIT ALARM SUPPRESSION

VIEW FROM SECURE SIDE, CEILING ACCESS — NTS



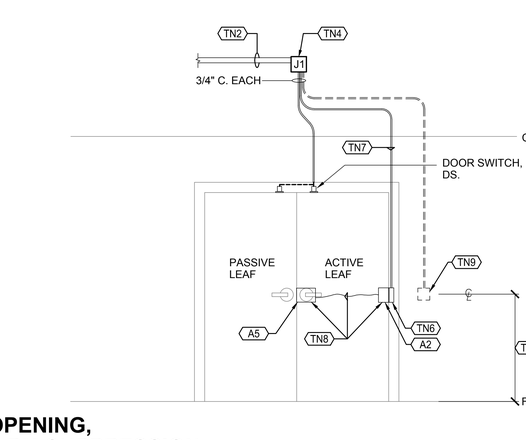
5 TYPICAL ACCESS CONTROLLED DOUBLE DOOR OPENING, WALL MOUNT CARD READER, IR REX EXIT ALARM SUPPRESSION

VIEW FROM SECURE SIDE, CEILING ACCESS — NTS



6 TYPICAL ACCESS CONTROLLED DOUBLE DOOR OPENING, MULLION MOUNT CARD READER, IR REX EXIT ALARM SUPPRESSION

VIEW FROM SECURE SIDE, CEILING ACCESS — NTS



7 TYPICAL ACCESS CONTROLLED DOUBLE DOOR OPENING, WALL MOUNT CARD READER, DOOR HARDWARE EXIT ALARM SUPPRESSION

VIEW FROM SECURE SIDE, CEILING ACCESS — NTS

SHEET NOTES

1. NOT EVERY DOOR CONDITION IS DEPICTED. REFER TO THE FLOOR PLANS FOR THE DEVICES REQUIRED AT EACH OPENING AND PROVIDE ROUGH-IN AS REQUIRED BASED ON SIMILAR ASSEMBLIES DETAILED ON THE TY SHEETS,
2. AT ACCESSIBLE CEILING CONDTIONS, SUPPORT ELECTRONIC SECURITY CABLING ON A SEPERATE SYSTEM OF CABLE HOOKS FROM CABLING HOOKS OR BASKET TRAY USED TO SUPPORT THE WORK OF AN OTHER LOW VOLTAGE SYSTEM, INCLUDING STRUCTURED CABLING, A/V AND/OR EMS AND HVAC CONTROL.
3. WHERE ESS SIGNAL CABLING IS CONSOLIDATED WITH A NETWORK OF CONDUITS AND PULL BOXES, MAINTAIN 40% MAXIMUM FILL.
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KEYNOTES

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A2	TRANSFER HINGE WITH 2 PR CONDUCTORS MIN.
A3	HR - DOOR HANDLE OR PANIC HARDWARE WITH MECHANICAL LOCK AND INTEGRAL ALARM SUPPRESSION MICROSWITCH TO DETECT OPERATION OF DOOR FROM SECURE SIDE.
A4	EL - ELECTRIC DOOR LOCK OR ELECTRIC STRIKE, REFER TO DIVISION 8.
A5	ER - DOOR HANDLE OR PANIC HARDWARE WITH ELECTRIC LOCK AND INTEGRAL ALARM SUPPRESSION MICROSWITCH TO DETECT OPERATION OF DOOR FROM SECURE SIDE.
A6	ES - ELECTRIC STRIKE.
A7	ARCHITECTURAL PEDESTAL - WHERE OCCURS, SEE PLANS
A8	DO - POWERED DOOR OPERATOR SWITCH MOUNTED TO PEDESTAL OR WALL ON BOTH SECURE AND UN-SECURE SIDES OF OPENING. WIRED TO DGP BY DIVISION 28.
A9	PO - POWERED DOOR OPERATOR
E	ELECTRICAL. COMPLY WITH DIVISION 26
E1	PROVIDES POWER TO POWERED DOOR OPERATOR.
TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
TN1	EXTEND 1" MIN C. TO ACCESSIBLE CEILING AND/OR TELECOMMUNICATIONS ROOM SERVING THIS DOOR. REFER ADDITIONALLY TO THE REQUIREMENTS OF THE SHEET NOTES.
TN2	EXTEND 1.25" MIN C. TO ACCESSIBLE CEILING AND/OR TELECOMMUNICATIONS ROOM SERVING THIS DOOR. REFER ADDITIONALLY TO THE REQUIREMENTS OF THE SHEET NOTES.
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TN4	LOCATE ABOVE DOOR AT ACCESSIBLE CEILING CONDTIONS. AT GYP CEILING CONDITIONS, LOCATE REMOTELY AT NEAREST UTILITY SPACE.
TN5	MATCH PROJECT SWITCH HEIGHT. CL OF +45" AFF TO CL.
TN6	PROVIDE MUD BOX INSIDE DOOR FRAME AT GROUTED DOOR ASSEMBLIES.
TN7	STUB CONDUIT INSIDE DOOR FRAME TO ABOVE THE MIDDLE HINGE OPPOSITE DOOR HANDLE/EL/ER/ES/PANIC HW. MEASURE DOOR ON SITE. COORDINATE SIDE OF DOOR SCHEDULED TO RECEIVE ACTIVE DOOR HARDWARE, INCLUDING EL OR ES WITH WORK OF DIVISION 8.
TN8	DOOR HARDWARE (DOOR HANDLE, ES, EL, HR, AND/OR PHR AS APPLIES) AND TRANSFER HINGE FURNISHED AND INSTALLED UNDER THE WORK OF DIVISION 8. WORK OF DIVISION 28 WIRES LOCKING HARDWARE VIA TRANSFER HINGE AND PROVIDES WIRING AND PATHWAY BACK TO DGP.
TN9	CR - WALL MOUNTED CARD READER WITH 4S BOX AND 1 GANG RING INSTALLED FACING UN-SECURE SIDE OF DOOR.
TN10	CN - MULLION MOUNTED CARD READER MOUNTED TO FACE OF DOOR FRAME FACING UN-SECURE SIDE OF DOOR.
TN11	STUB CONDUIT INSIDE DOOR FRAME TO ABOVE CUTOUT FOR MULLION MOUNT CARD READER.
TN12	CARD READER MOUNTED TO WALL OR PEDESTAL AT POWER DOOR OPERATOR ENABLED ENTRIES ON UN-SECURE SIDE.
TN13	1" C. FROM BASE OF PEDESTAL OR WALL MOUNT LOCATION OF DO AND RELATED CT, TO J2. OCCURS ON BOTH SECURE AND UN-SECURE SIDES OF OPENING.

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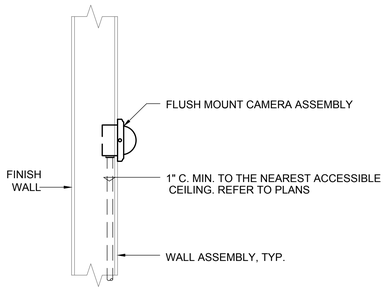
PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
DETAILS
DOUBLE DOOR ACCESS CONTROL

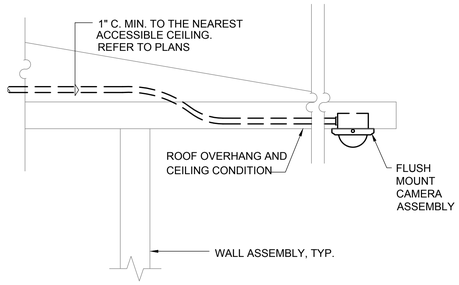
SCALE AS NOTED — FOR 30" x 42" SHEET

JOB NUMBER	2000967A
DRAWN BY	IK, AC, SC
DESIGNED BY	JUN
DATE	11/30/17
DRAWING	TY-9.2
SHEET	OF



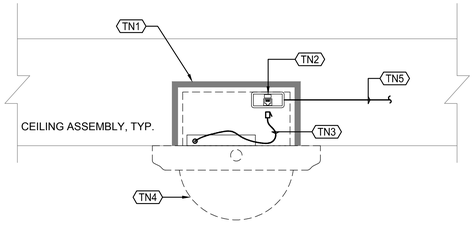
1 FMW-FLUSH MOUNT WALL

FUTURE CAMERA MOUNTING DETAIL NTS
PROVIDE INDICATED ROUGH-IN AND UNDER THE WORK OF DIVISION 27, STRUCTURED CABLING LOCATION. CAMERAS ARE FUTURE, N.I.C.



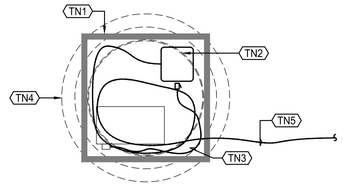
2 USC-UNDERSIDE OF CEILING

FUTURE CAMERA MOUNTING DETAIL. NTS
PROVIDE INDICATED ROUGH-IN AND UNDER THE WORK OF DIVISION 27, STRUCTURED CABLING LOCATION. CAMERAS ARE FUTURE, N.I.C.



3A SIDE VIEW

FUTURE CAMERA MOUNTING DETAIL NTS

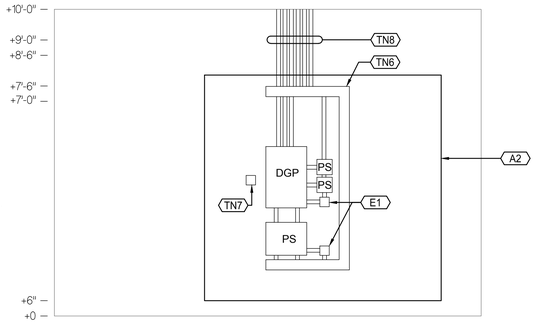


3B TOP VIEW

NTS

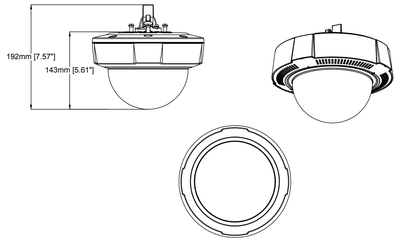
3 IP CAMERA WIRING DETAIL

NTS



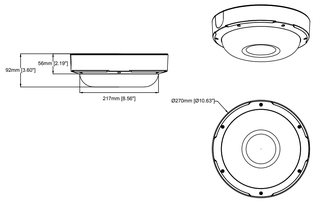
TYPICALL ESS PANEL ELEVATION AT TELECOMMUNICATIONS ROOMS

4 ELEVATION IS DIAGRAMMATIC - ARRANGE DEVICES FOR READY ACCESS AND SERVICE. PROVIDE CONDUITS AND CHASE NIPPLES AS REQUIRED TO FULLY ENCLOSE FUTURE ELECTRONIC SECURITY SYSTEM LV WIRING AND DEVICE CROSS-CONNECTS. NTS



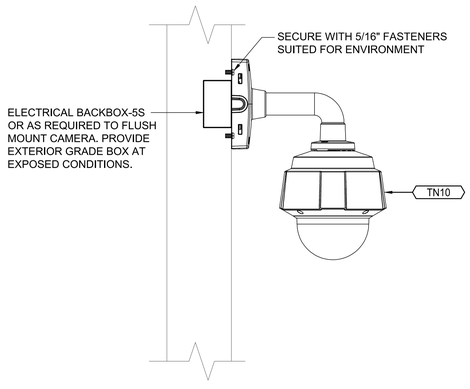
5 TYPICAL 180 DEGREE VIEW IP CAMERA ASSEMBLY

NTS



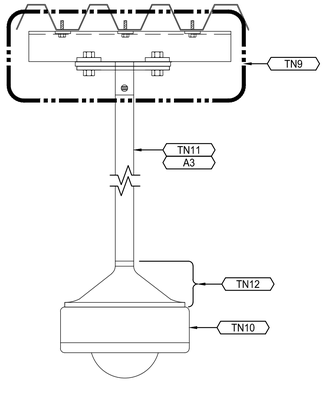
6 TYPICAL 360 DEGREE VIEW IP CAMERA ASSEMBLY

NTS



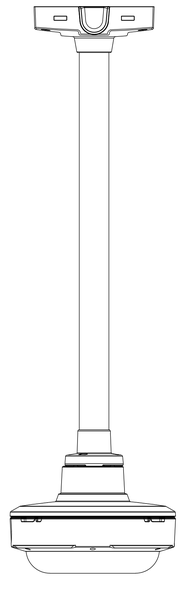
7 WALL-MOUNTED PENDANT CAMERA WITH EXTENSION

NTS



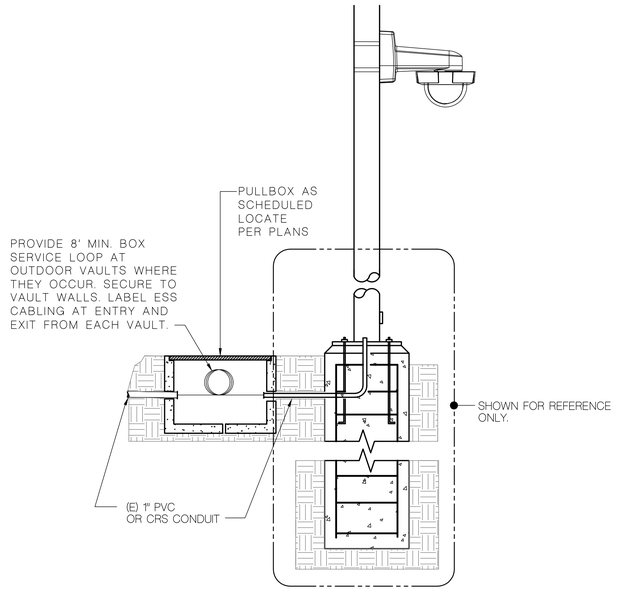
8 IP CAMERA PENDANT MOUNT

INTERIOR CEILING/STRUCTURE MOUNTED. NTS



9 TYPICAL 180 DEGREE VIEW IP CAMERA ASSEMBLY MTD TO MANUFACTURER'S PENDANT MOUNT

INTERIOR CEILING/STRUCTURE MOUNTED. NTS



10 CAMERA ON POLE

AT COLMA PD, POLES ARE (E). AT COLMA TOWN HALL, POLE IS WORK OF INFILL PROJECT (N.I.C.). BRR. NTS

KEYNOTES

A	ARCHITECTURAL: COMPLY WITH DIVISIONS 3 THROUGH 14 - SEE ARCHITECTURAL DRAWINGS.
A1	ELECTRIC LOCK TRANSFER HINGE AND WIRING WITHIN DOOR FURNISHED AND INSTALLED BY THE WORK OF DIVISION 8.
A2	3/4" C. FIRE TREATED PLY BACKBOARD FROM 18" AFF TO 7' AFF MIN. PAINT AS DESCRIBED/REQUIRED IN DIVISION 9.
E	ELECTRICAL SYSTEMS – COMPLY WITH DIVISION 26.
E1	2 - 20A 120/1P CKTS MOUNTED TO BACKBOARD FOR HW CONNECTION TO DGP AND POWER SUPPLIES THROUGH WIREWAY.
TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
TN1	ELECTRICAL BACKBOX-5S EQUAL TO RANDL INDUSTRIES 5 SQUARE #T-55019 TO FLUSH MOUNT CAMERA PROVIDE EXTERIOR GRADE BOX AT EXPOSED CONDITION.
TN2	MULTIMEDIA PLATE (BISCUIT BOX) FOR TERMINATION OF STATION CABLING. PLACE NEXT TO CAMERA ROUGH-IN LOCATION.
TN3	CAT6 PATCH CORD - PROVIDE LENGTH AS REQUIRED. ROUTE IN CONCEALED SPACE BETWEEN CAMERA AND BISCUIT BOX CCTV.
TN4	FLUSH MOUNT CAMERA.
TN5	CAT6 CABLING BY DIV. 28. SEE PLANS FOR CONTINUATION.
TN6	4"x4" MIN WIREWAY ON THREE SIDES OF ELECTRONIC SECURITY SYSTEM HEADEND. STUB CONDUITS FROM FIELD DEVICES DOWN TO WIREWAY. PROVIDE CHASE NIPPLES AND MAKEUP CONDUITS BETWEEN WIREWAY AND ESS PANELS AND POWER SUPPLIES.
TN7	WAO TO SERVE DGP.
TN8	ESS FIELD DEVICE CONDUITS
TN9	PROVIDE EQUAL TO CHIEF MANUFACTURING CMA110, 8" X 8" STEEL PLATE CEILING PLATE FITTING WITH 1" NPT PIPE THREAD ADAPTER.
TN10	IP SECURITY CAMERA.
TN11	1" NPT PIPE THREADED FOR PENDENT MOUNTING FROM STRUCTURE ABOVE.
TN12	CAMERA MANUFACTURE'S PENDANT MOUNT ADAPTER

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PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
DETAILS
CCTV AND BACKBOARDS

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A	DRAWING TY-9.3
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF

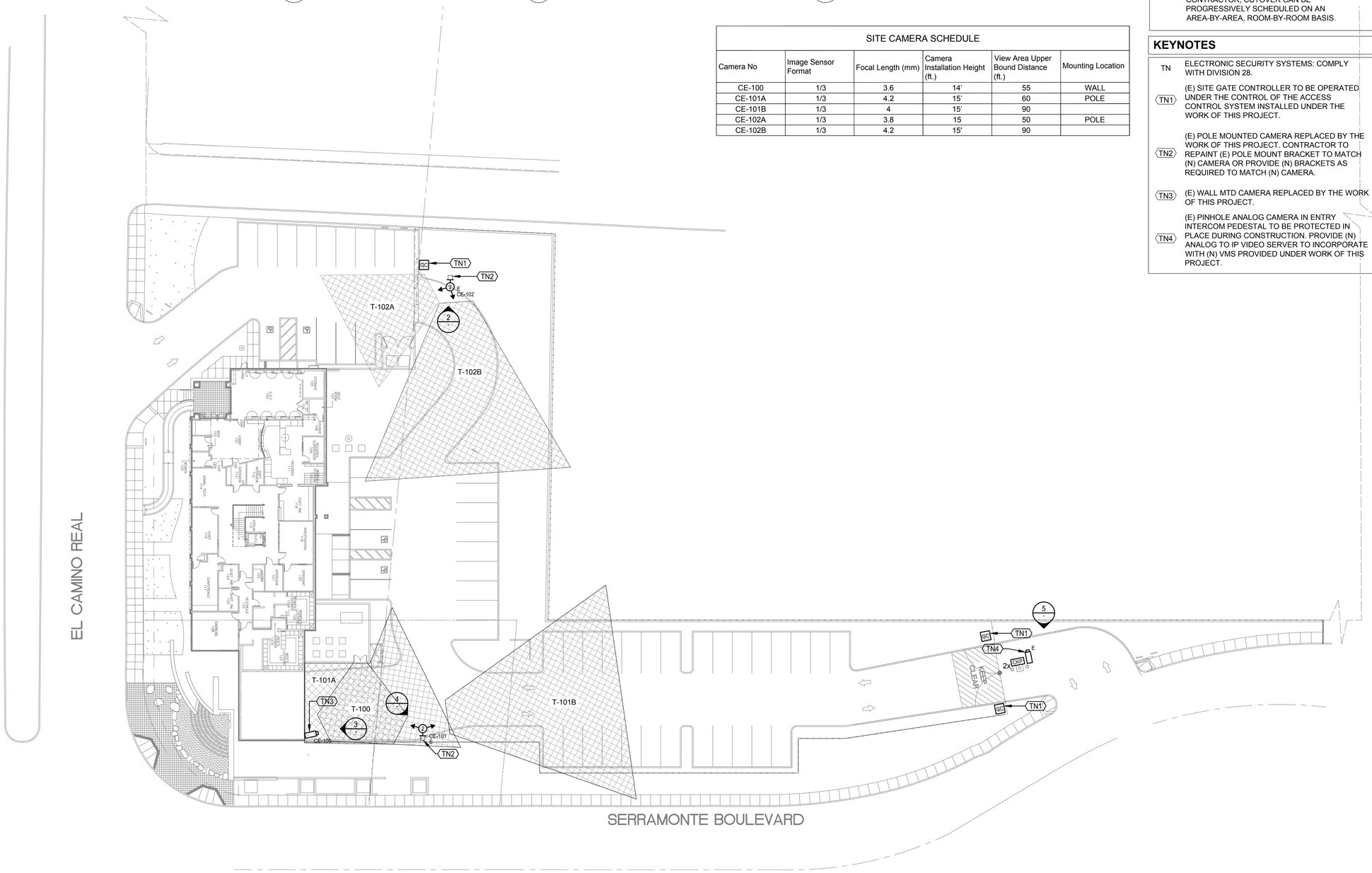
2 NORTH PARKING ENTRANCE

3 SOUTHWEST

4 SOUTHWEST PARKING

5 SOUTHEAST ENTRANCE

SITE CAMERA SCHEDULE					
Camera No	Image Sensor Format	Focal Length (mm)	Camera Installation Height (ft.)	View Area Upper Bound Distance (ft.)	Mounting Location
CE-100	1/3	3.6	14'	55	WALL
CE-101A	1/3	4.2	15'	60	POLE
CE-101B	1/3	4	15'	90	
CE-102A	1/3	3.8	15	50	POLE
CE-102B	1/3	4.2	15'	90	



1 POLICE DEPARTMENT ELECTRONIC SECURITY SYSTEMS SITE PLAN

1"=20'-0"

SHEET NOTES

1. AT POLICE HEADQUARTERS, ESS PATHWAY AND DOOR STRIKES AND DOOR POSITION SWITCHES ARE (E) U.O.N.
2. AT POLICE HEADQUARTERS, PROVIDE NEW REX WHERE REX ARE INDICATED.
3. (E) POLICE HEADQUARTERS CARD READERS TO BE REPLACED WITH NEW UNDER THE WORK OF THIS PROJECT. (E) CONTROL/MONITORING OF (E) DOOR OPENINGS, GATES, DURESS ALARMS AND SIMILAR TO BE TRANSFERRED TO THE NEW ACCESS/ALARM SYSTEM.
4. (E) POLICE HEADQUARTERS ANALOG VIDEO CAMERAS TO BE REPLACED WITH NEW IP BASED DIGITAL CAMERAS UNDER THE WORK OF THIS PROJECT, EXCEPT FOR FIVE COVERT INTERVIEW ROOM CAMERAS AND ONE GATE ENTRY INTERCOM CAMERA.
5. WORK TO BE SEQUENCED TO PROVIDE CONTINUOUS OPERATION OF (E) SYSTEM UNTIL PLANNED CUTOVER TO NEW SYSTEM. SUBJECT TO MUTUAL AGREEMENT OF THE CITY AND THE CONTRACTOR, CUTOVER CAN BE PROGRESSIVELY SCHEDULED ON AN AREA-BY-AREA, ROOM-BY-ROOM BASIS.

KEYNOTES

- TN — ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
- TN1 — (E) SITE GATE CONTROLLER TO BE OPERATED UNDER THE CONTROL OF THE ACCESS CONTROL SYSTEM INSTALLED UNDER THE WORK OF THIS PROJECT.
- TN2 — (E) POLE MOUNTED CAMERA REPLACED BY THE WORK OF THIS PROJECT. CONTRACTOR TO REPAINT (E) POLE MOUNT BRACKET TO MATCH (N) CAMERA OR PROVIDE (N) BRACKETS AS REQUIRED TO MATCH (N) CAMERA.
- TN3 — (E) WALL MTD CAMERA REPLACED BY THE WORK OF THIS PROJECT.
- TN4 — (E) PINHOLE ANALOG CAMERA IN ENTRY INTERCOM PEDESTAL TO BE PROTECTED IN PLACE DURING CONSTRUCTION. PROVIDE (N) ANALOG TO IP VIDEO SERVER TO INCORPORATE WITH (N) VMS PROVIDED UNDER WORK OF THIS PROJECT.

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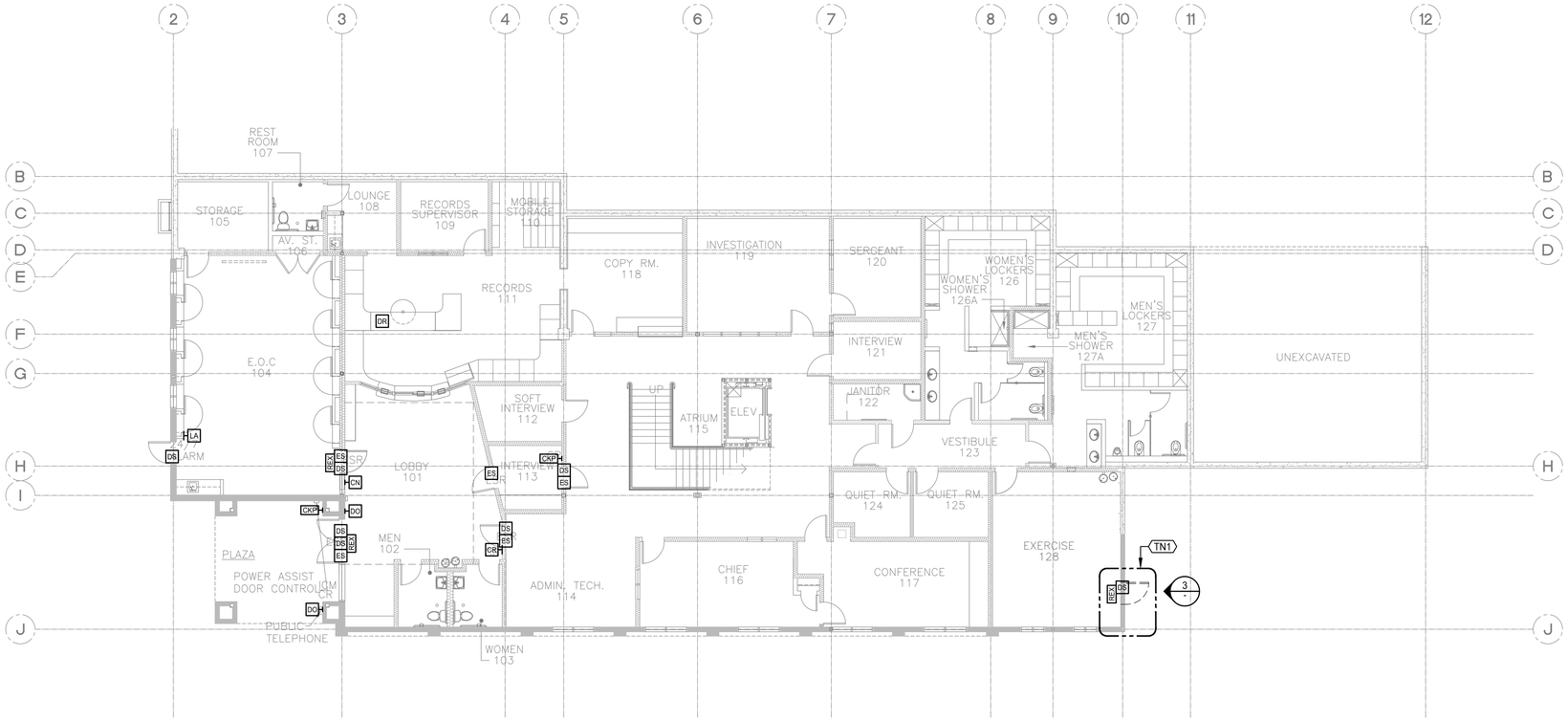
PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
POLICE DEPARTMENT ELECTRONIC SECURITY SYSTEMS SITE PLAN

SCALE AS NOTED — FOR 30" x 42" SHEET

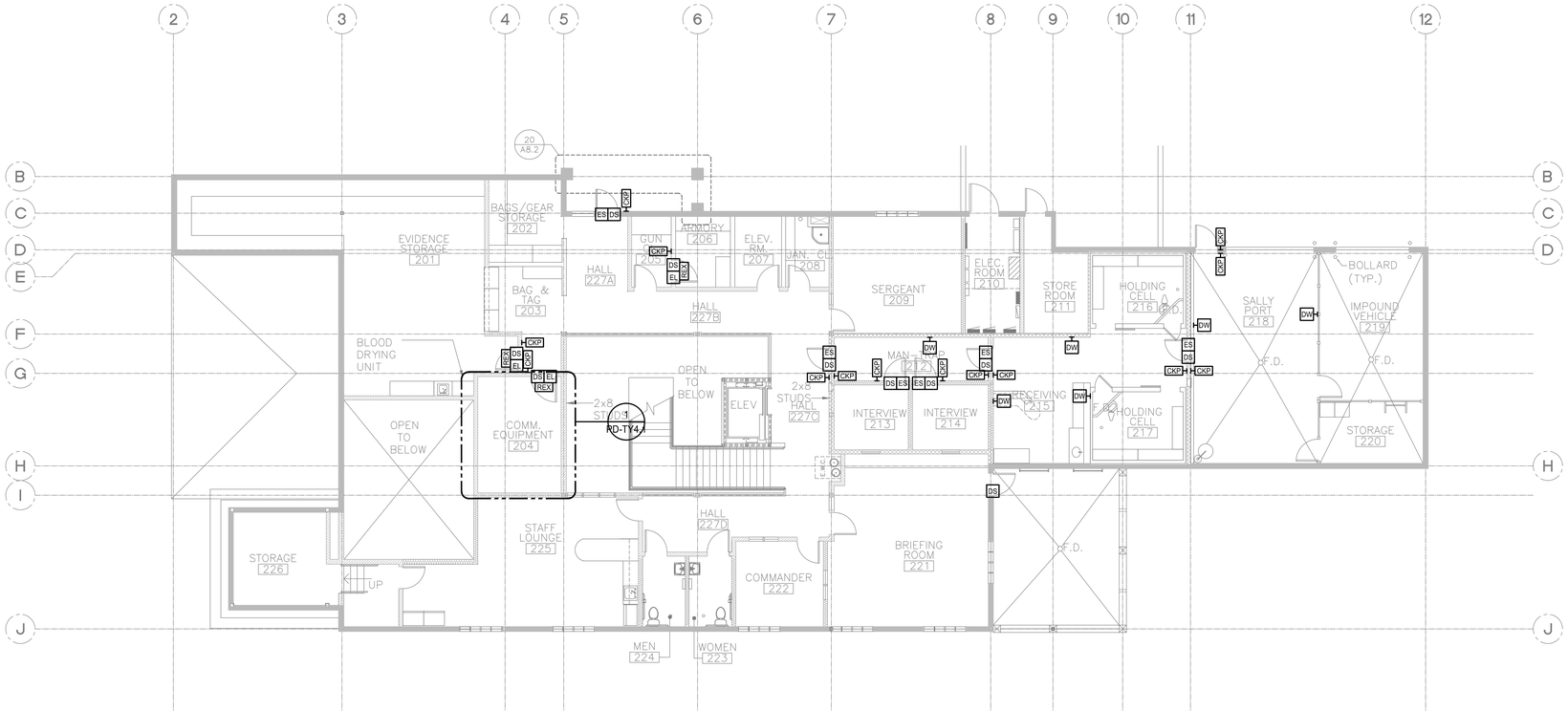
JOB NUMBER	DRAWING
2000967A	PD-TY1.0
DRAWN BY: IK, AC, SC	
DESIGNED BY: JUN	
DATE: 11/30/17	SHEET OF



POLICE DEPARTMENT - ELECTRONIC SECURITY SYSTEM
FIRST FLOOR DEVICE PLAN

1 — 1/8"=1'-0"

NORTH



POLICE DEPARTMENT - ELECTRONIC SECURITY SYSTEM
SECOND FLOOR DEVICE PLAN

2 — 1/8"=1'-0"

NORTH

EXISTING 1ST FLOOR REAR DOOR

3

SHEET NOTES

1. AT POLICE HEADQUARTERS, ESS PATHWAY, DOOR STRIKES, DOOR RELEASE BUTTONS, WALL MTD DURESS BUTTONS, LOCAL ALARMS AND DOOR POSITION SWITCHES ARE (E) U.O.N. WORK OF THIS PROJECT TRANSFERS THE FIELD DEVICES TO THE (N) ACCESS CONTROL/ALARM SYSTEM.
2. AT POLICE HEADQUARTERS, PROVIDE NEW REX WHERE REX ARE INDICATED.
3. (E) POLICE HEADQUARTERS CARD READERS TO BE REPLACED WITH NEW UNDER THE WORK OF THIS PROJECT. (E) CONTROL/MONITORING OF (E) DOOR OPENINGS, GATES, DURESS ALARMS AND SIMILAR TO BE TRANSFERRED TO THE NEW ACCESS/ALARM SYSTEM.
4. (E) POLICE HEADQUARTERS ANALOG VIDEO CAMERAS TO BE REPLACED WITH NEW IP BASED DIGITAL CAMERAS UNDER THE WORK OF THIS PROJECT, EXCEPT FOR FIVE COVERT INTERVIEW ROOM CAMERAS AND ONE GATE ENTRY INTERCOM CAMERA.
5. WORK TO BE SEQUENCED TO PROVIDE CONTINUOUS OPERATION OF (E) SYSTEM UNTIL PLANNED CUTOVER TO NEW SYSTEM. SUBJECT TO MUTUAL AGREEMENT OF THE CITY AND THE CONTRACTOR, CUTOVER CAN BE PROGRESSIVELY SCHEDULED ON AN AREA-BY-AREA, ROOM-BY-ROOM BASIS.

KEYNOTES

TN — ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.

TN1 — AT THIS DOOR, ESS PATHWAY AND ESS DEVICES ARE (N), WORK OF THIS PROJECT. PROVIDE (N) DOOR LOCK POWER SUPPLY IF NO CAPACITY REMAINS ON EXISTING SUPPLIES.

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KEY PLAN

NO	REVISION DESCRIPTION	DATE
	50% CD	10/19/16
	95% CD	04/18/17
	PRE-BID SET	11/22/17
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

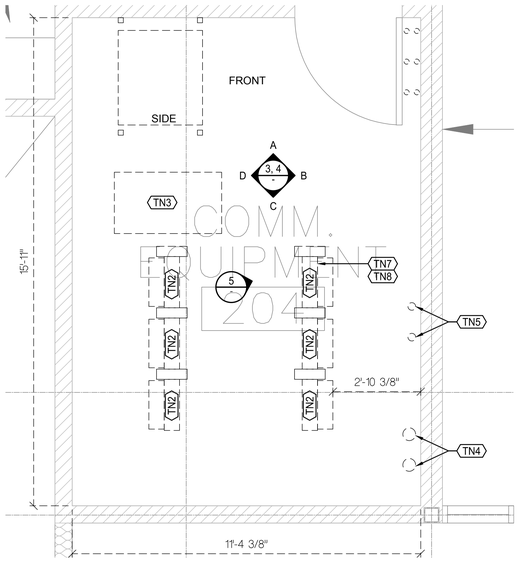
SHEET
POLICE DEPARTMENT ELECTRONIC SECURITY SYSTEM FIRST AND SECOND FLOOR DEVICE PLANS

SCALE AS NOTED — FOR 30" x 42" SHEET

JOB NUMBER 2000967A	DRAWING PD-TY2.1
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF

G:\2000967A\Drawings\PD-TY2.1.dwg 11-30-17 09:08:08 AM Alfred

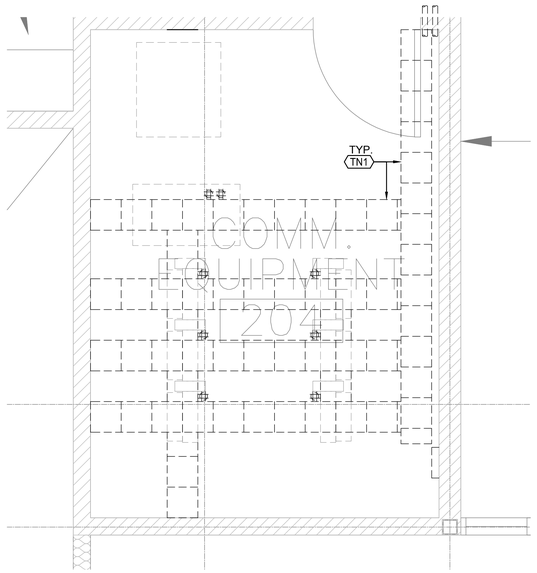
PLEASE RECYCLE



1 COMM. ROOM ENLARGED PLAN

1/2"=1'-0"

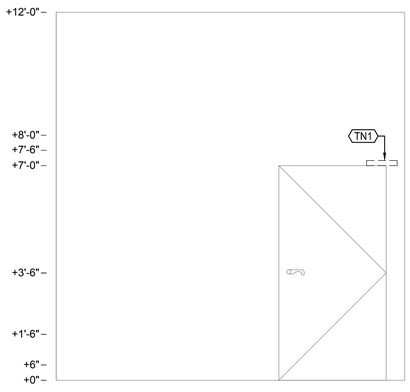
NORTH



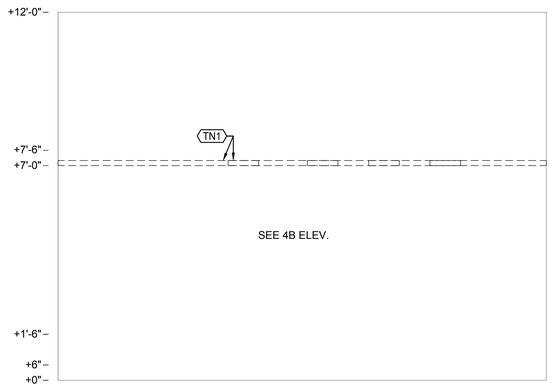
2 COMM. ROOM ENLARGED CEILING PLAN

1/2"=1'-0"

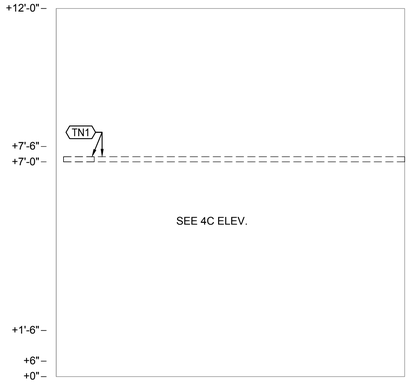
NORTH



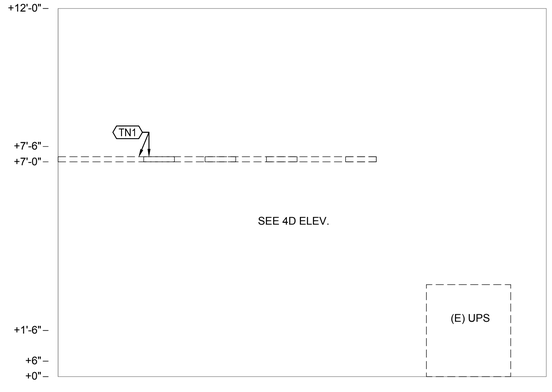
A NORTH



B EAST



C SOUTH



D WEST

3 ELEVATIONS

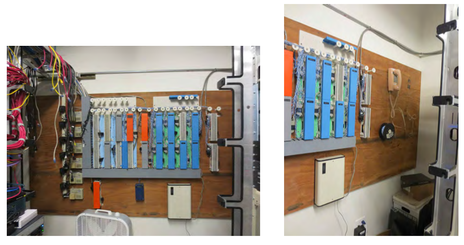
1/2"=1'-0"

4A NORTH WALL PHOTO ELEV.

NTS

4B EAST WALL PHOTO ELEV.

NTS



4C SOUTH WALL PHOTO ELEV.

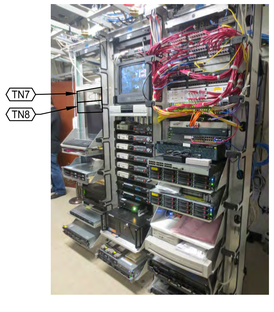
NTS

4D WEST WALL PHOTO ELEV.

NTS

4 PHOTO WALL ELEVATIONS

NTS



5 (E) 2 POST RACK

NTS

KEYNOTES

TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
TN1	(E) CTW-12 CABLE RUNWAY.
TN2	(E) 2 POST RACK.
TN3	(E) 4 POST RACK.
TN4	(E) 5" C. STUB-UP
TN5	(E) 4" C. STUB-UP
TN6	(E) UPS
TN7	(N) 48 C6PP.
TN8	POE ETHERNET SWITCH, OWNER FURNISHED.

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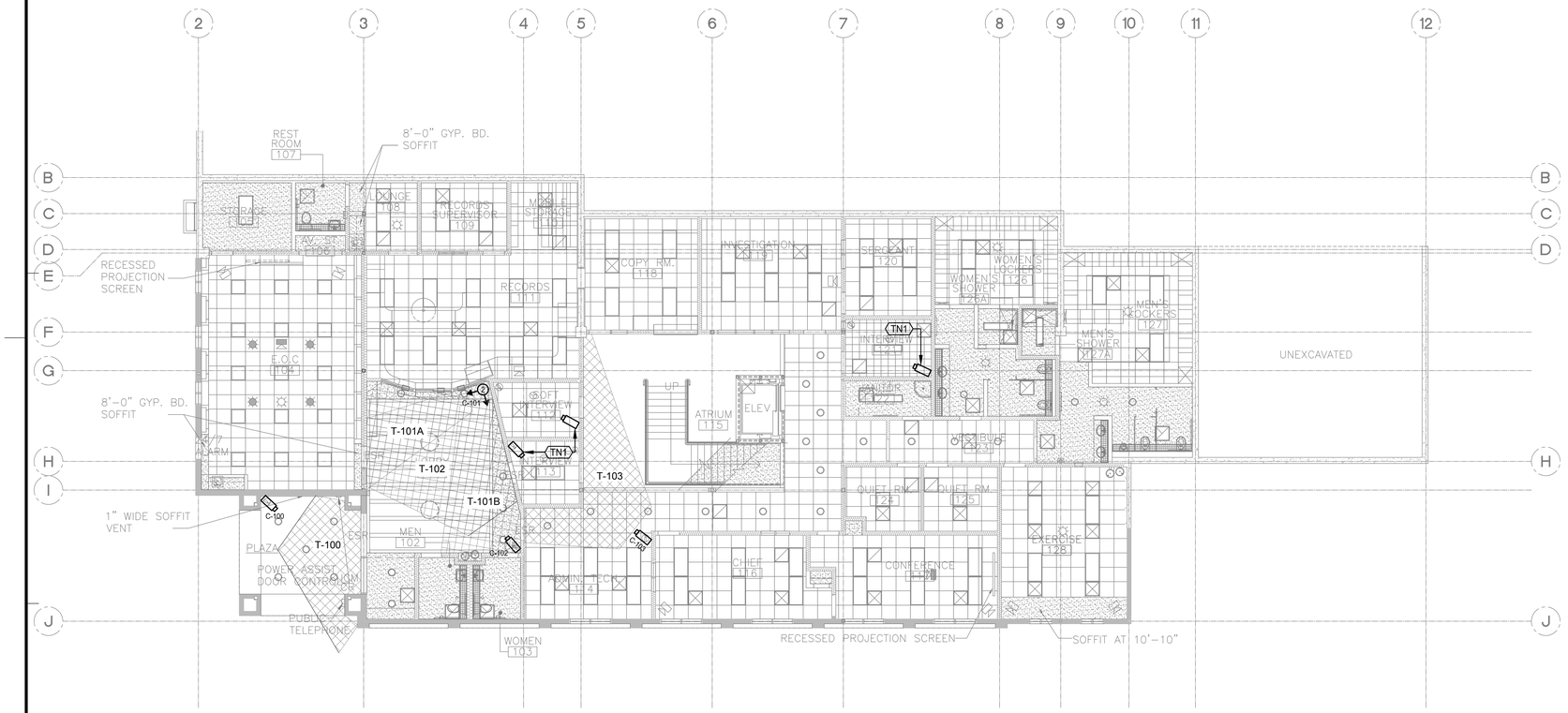
PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
POLICE DEPARTMENT ENLARGED COMM ROOM PLAN, RCP AND ELEVATIONS

SCALE AS NOTED FOR 30" x 42" SHEET

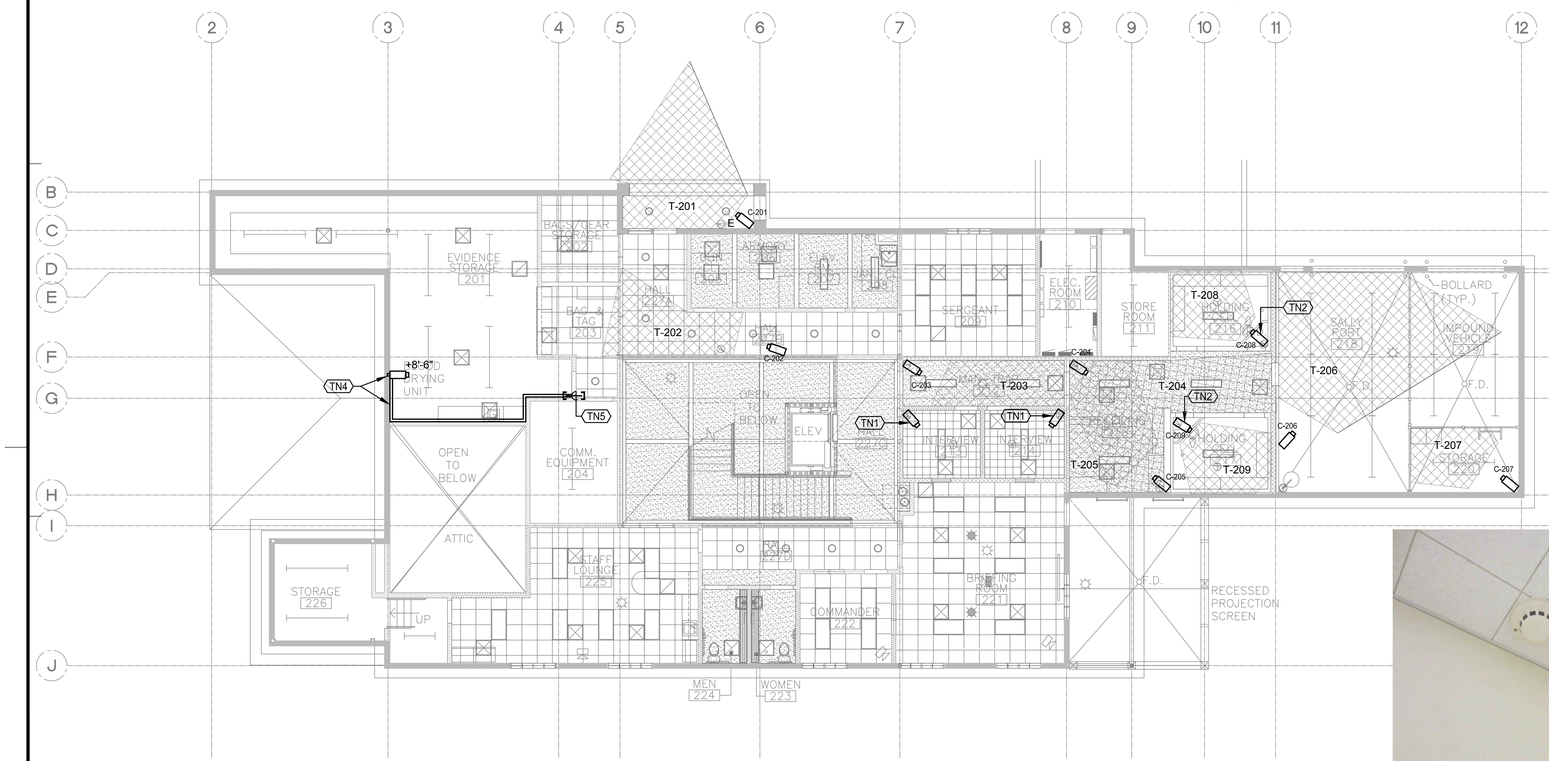
JOB NUMBER 2000967A	DRAWING PD-TY4.1
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF



1 POLICE DEPARTMENT - ELECTRONIC SECURITY SYSTEM FIRST FLOOR DEVICE R.C. PLAN

1/8"=1'-0"

NORTH



2 POLICE DEPARTMENT - ELECTRONIC SECURITY SYSTEM SECOND FLOOR DEVICE R.C. PLAN

1/8"=1'-0"

NORTH

3 (E) COVERT CAMERA (MOTION DETECTOR)

4 HOLDING CELL (E) CAMERA

SHEET NOTES

1. AT POLICE HEADQUARTERS, ESS CAMERA PATHWAY, UNLESS OTHERWISE NOTED, IS (E) U.O.N.
2. AT POLICE HEADQUARTERS, PROVIDE NEW REX WHERE REX ARE INDICATED.
3. (E) POLICE HEADQUARTERS CARD READERS TO BE REPLACED WITH NEW UNDER THE WORK OF THIS PROJECT. (E) CONTROL/MONITORING OF (E) DOOR OPENINGS, GATES, DURESS ALARMS AND SIMILAR TO BE TRANSFERRED TO THE NEW ACCESS/ALARM SYSTEM.
4. (E) POLICE HEADQUARTERS ANALOG VIDEO CAMERAS TO BE REPLACED WITH NEW IP BASED DIGITAL CAMERAS UNDER THE WORK OF THIS PROJECT, EXCEPT FOR FIVE COVERT INTERVIEW ROOM CAMERAS AND ONE GATE ENTRY INTERCOM CAMERA.
5. WORK TO BE SEQUENCED TO PROVIDE CONTINUOUS OPERATION OF (E) SYSTEM UNTIL PLANNED CUTOVER TO NEW SYSTEM. SUBJECT TO MUTUAL AGREEMENT OF THE CITY AND THE CONTRACTOR, CUTOVER CAN BE PROGRESSIVELY SCHEDULED ON AN AREA-BY-AREA, ROOM-BY-ROOM BASIS.
6. WHERE (E) THROUGH PENTRATION/FIRE STOP SYSTEMS ARE DISTURBED BY THE WORK OF THIS PROJECT, RESTORE TO MEET ORIGINAL FUNCTIONALITY.

KEYNOTES

TN ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.

TN1 (E) ANALOG VIDEO COVERT CAMERA (MOTION DETECTOR) TO BE PROTECTED IN PLACE DURING CONSTRUCTION. PROVIDE (N) ANALOG TO IP VIDEO SERVER TO INCORPORATE WITH (N) VMS PROVIDED UNDER WORK OF THIS PROJECT. ADJACENT COVERT MICROPHONE ASSEMBLY TO HAVE ITS INPUT ALSO ROUTED TO IP VIDEO SERVER FOR ENCODING AND RECORDING WITH ASSOCIATED IP VIDEO STREAM.

TN2 (E) ANALOG HOLDING CELL CAMERA TO BE REPLACED WITH (N) BOX IP CAMERA PLACED IN (E) VANDALPROOF HOUSING. COORDINATE NEW CAMERA WITH SIZE OF (E) ENCLOSURE.

TN3 PATHWAY AND ROUGH-IN TO THIS LOCATION DO NOT EXIST. CONTRACTOR TO CUT-IN OLD WORK BOX FLUSH IN WALL TO MOUNT CAMERA.

TN4 AT CONTRACTOR'S OPTION, NEW CABLING TO PULL IN CEILING VOID OF LOWER FLOOR THEN FISH UP EXTERIOR WALL TO (N) LOCATION, OR ALTERNATIVELY PLACE NEW 1SR1 SURFACE RACEWAY TO CREATE PATHWAY FROM ACCESSIBLE SECOND FLOOR CEILING TO WALL ADJACENT TO (N) CAMERA, FOLLOWING (E) WALL/CLG JUNCTION TO CONCEAL SURFACE RACEWAY.

TN5 (N) 1" C. EQUIVALENT THROUGH PENETRATION SEALANT.

BUILDING CAMERA SCHEDULE

Camera No	Image Sensor Format	Focal Length (mm)	Camera Installation Height (ft.)	View Area Upper Bound Distance (ft.)	Mounting Location
C-100	1/3	3.6	12'	20	CEILING
C-101A	1/3	3.6	10'	27	CEILING
C-101B	1/3	3.6	10'	30	
C-103	1/3	2.6	10'	24	CEILING
C-201	1/3	2.8	10'	18	CEILING
C-202	1/3	4.4	10'	23	CEILING
C-203	1/3	3.6	10'	20	CEILING
C-204	1/3	2.6	10'	24	CEILING
C-205	1/3	3.6	10'	20	CEILING
C-206	1/3	3.6	12'	27	WALL
C-207	1/3	2.8	10'	16	WALL
C-208	1/3	2.6	7.5'	13	WALL
C-209	1/3	2.6	7.5'	13	WALL

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	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
POLICE DEPARTMENT ELECTRONIC SECURITY SYSTEM FIRST AND SECOND FLOOR DEVICE R.C. PLANS

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING PD-TY6.1
SHEET OF

KEYNOTES

TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
TN1	(E) 1" C.
TN2	(E) UNDERGROUND VAULT
TN3	(E) LIGHTING POLE AT EDGE OF PARKING LOT.

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IT/TEL 003 ROOM AT LEVEL 0

TN3

+14' E

TN1

PB1P

TN2

TN1

DN

DN

2 E

NORTH

1 SITE PLAN - ELEC. SECURITY DEVICE PLAN
1"=10'-0"

KEY PLAN

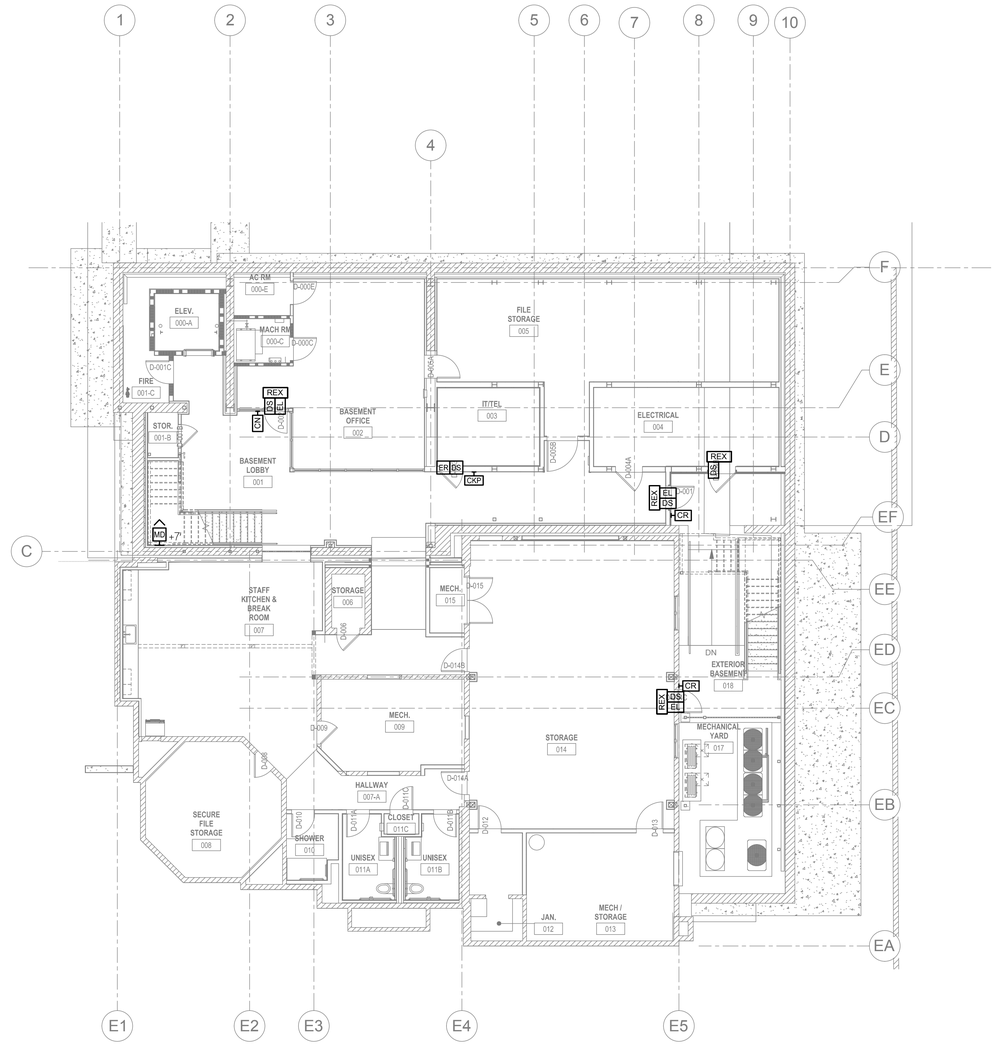
NO	REVISION DESCRIPTION	DATE
	50% CD	10/19/16
	95% CD	04/18/17
	PRE-BID SET	11/22/17
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
TOWN HALL ELECTRONIC SECURITY DEVICE SITE PLAN

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A	DRAWING TH-TY1.0
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF



TOWN HALL LEVEL 0
ELECTRONIC SECURITY DEVICE PLAN

1

1/8"=1'-0"

NORTH

SHEET NOTE

1 AT TOWN HALL, ESS PATHWAY AND ELECTRONIC DOOR HARDWARE (INCLUDING DOOR POSITION SWITCHES) ARE WORK OF A SEPARATE PROJECT (TOWNHALL INFILL) U.O.N. WORK OF THIS PROJECT PROVIDES (N) ELECTRONIC SECURITY SYSTEMS USING PATHWAYS AND DOOR HARDWARE PROVIDED BY OTHERS.

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KEY PLAN

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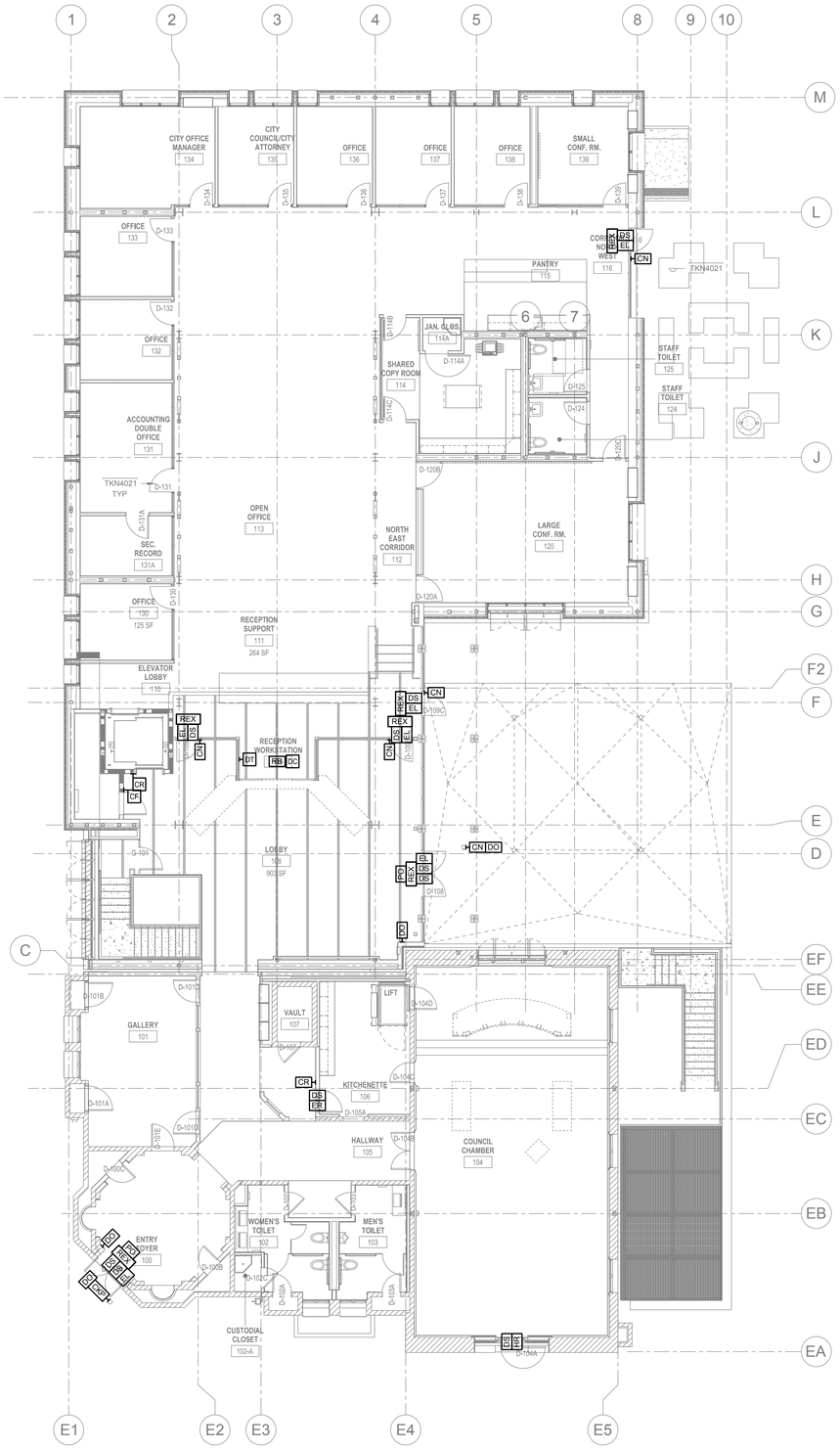
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
TOWN HALL LEVEL 0
ELECTRONIC SECURITY
DEVICE PLAN

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING TH-TY2.1
SHEET OF



TOWN HALL LEVEL 1
ELECTRONIC SECURITY DEVICE PLAN

1 1/8"=1'-0"

NORTH

SHEET NOTE

1 AT TOWN HALL, ESS PATHWAY AND ELECTRONIC DOOR HARDWARE (INCLUDING DOOR POSITION SWITCHES) ARE WORK OF A SEPARATE PROJECT (TOWNHALL INFILL) U.O.N. WORK OF THIS PROJECT PROVIDES (N) ELECTRONIC SECURITY SYSTEMS USING PATHWAYS AND DOOR HARDWARE PROVIDED BY OTHERS.

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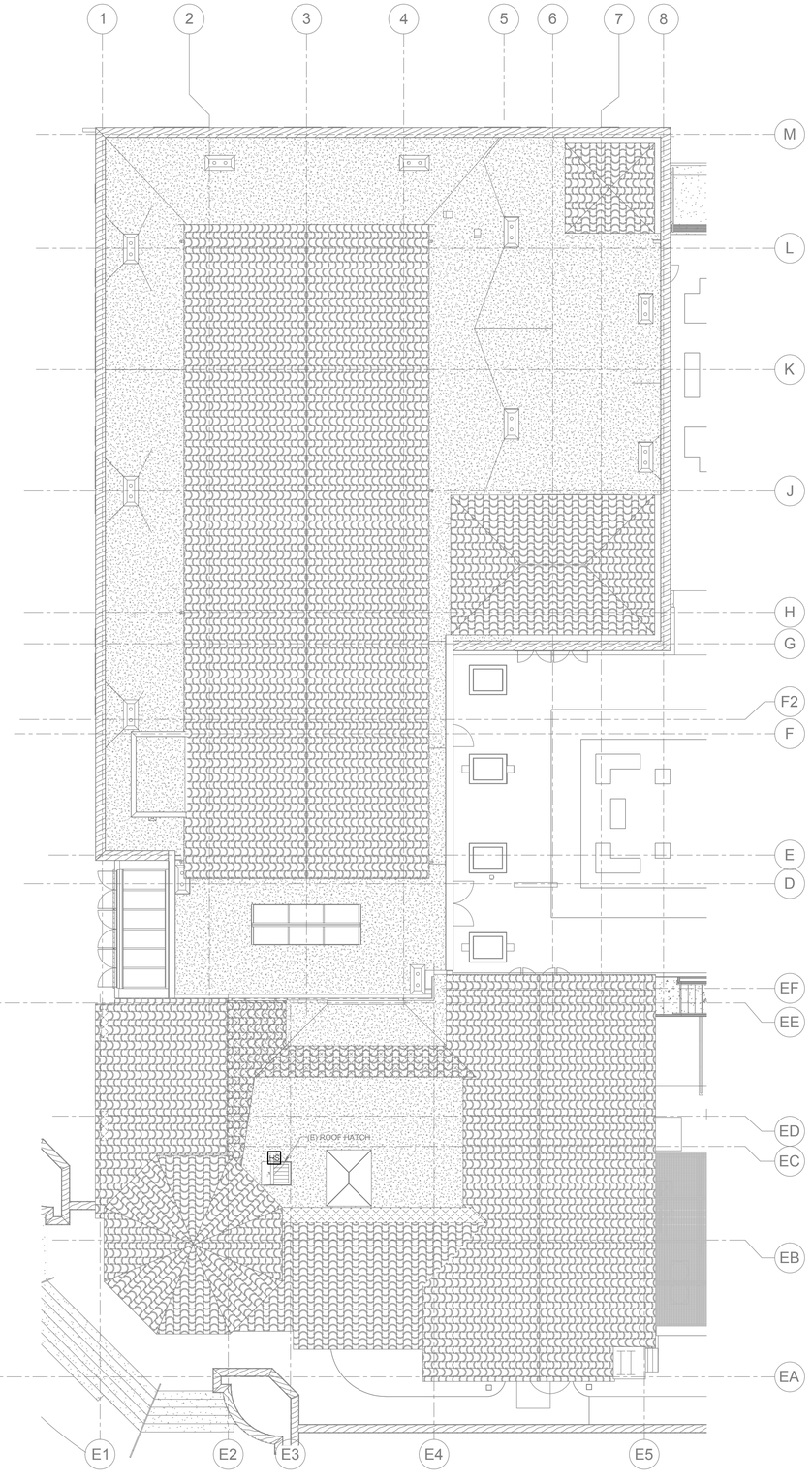
	PRE-BID SET	11/22/17
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
TOWN HALL LEVEL 1 ELECTRONIC SECURITY DEVICE PLAN

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING TH-TY2.2
SHEET OF



1 TOWN HALL ROOF ELECTRONIC SECURITY DEVICE PLAN
1/8"=1'-0"

NORTH

SHEET NOTE

1 AT TOWN HALL, ESS PATHWAY AND ELECTRONIC DOOR HARDWARE (INCLUDING DOOR POSITION SWITCHES) ARE WORK OF A SEPARATE PROJECT (TOWNHALL INFILL) U.O.N. WORK OF THIS PROJECT PROVIDES (N) ELECTRONIC SECURITY SYSTEMS USING PATHWAYS AND DOOR HARDWARE PROVIDED BY OTHERS.

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KEY PLAN

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	50% CD	10/19/16
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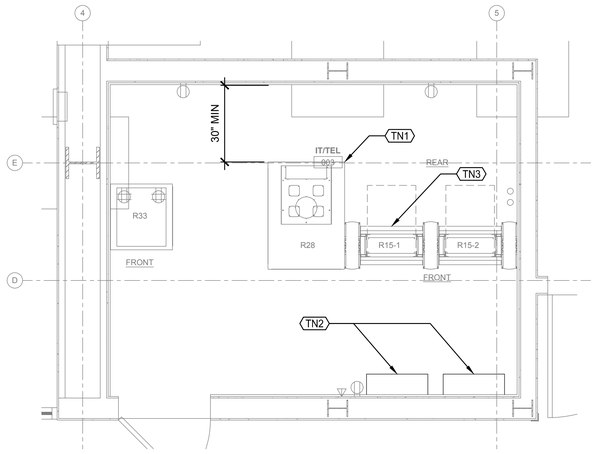
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
TOWN HALL ROOF ELECTRONIC SECURITY DEVICE PLAN

SCALE AS NOTED FOR 30" x 42" SHEET

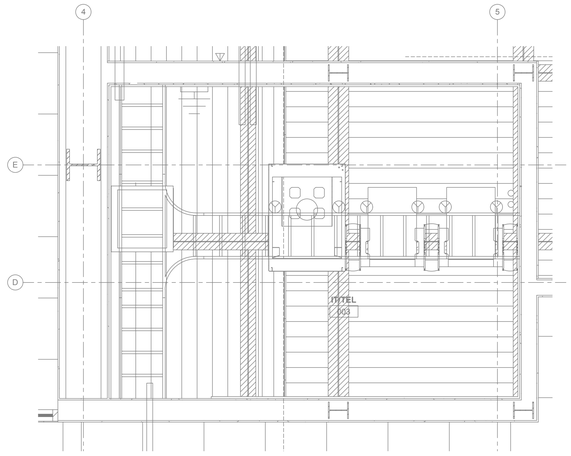
JOB NUMBER	DRAWING
2000967A	TH-TY2.3
DRAWN BY: IK, AC, SC	
DESIGNED BY: JUN	
DATE: 11/30/17	SHEET OF



1 IT/TEL 003 COMMUNICATIONS DEVICE ENLARGED PLAN

1/2"=1'-0"

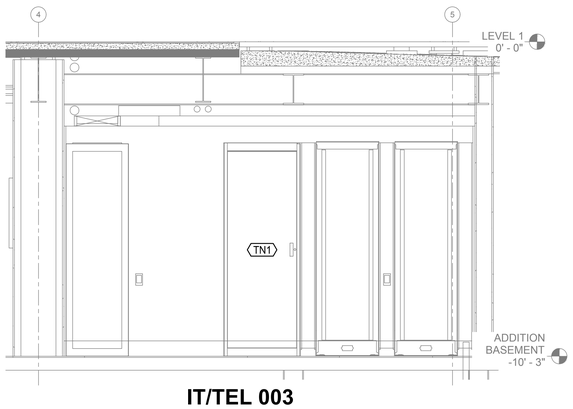
NORTH



2 IT/TEL 003 COMMUNICATIONS DEVICE ENLARGED RCP

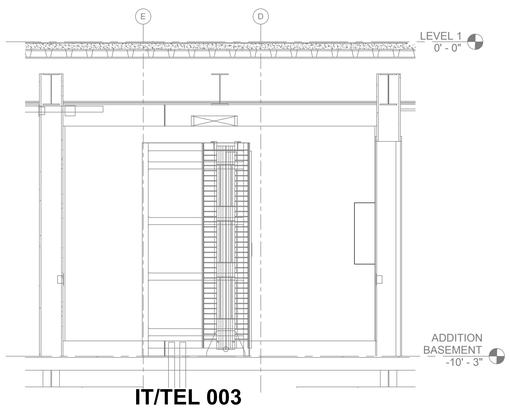
1/2"=1'-0"

NORTH



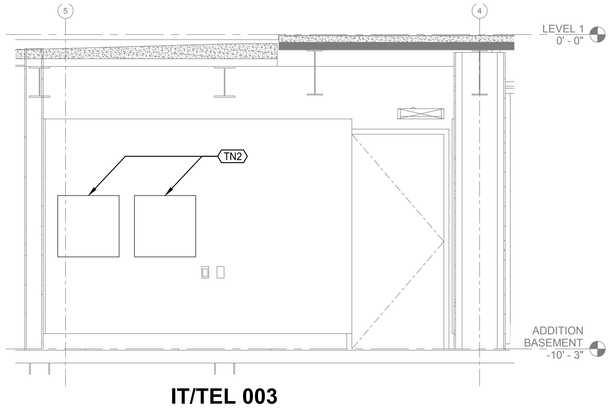
3 IT/TEL 003 ELEVATION NORTH

1/2"=1'-0"



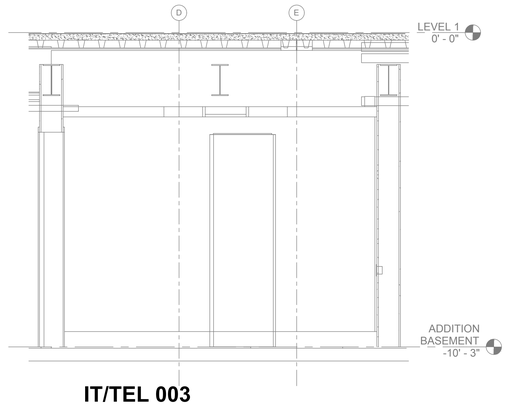
4 IT/TEL 003 ELEVATION EAST

1/2"=1'-0"



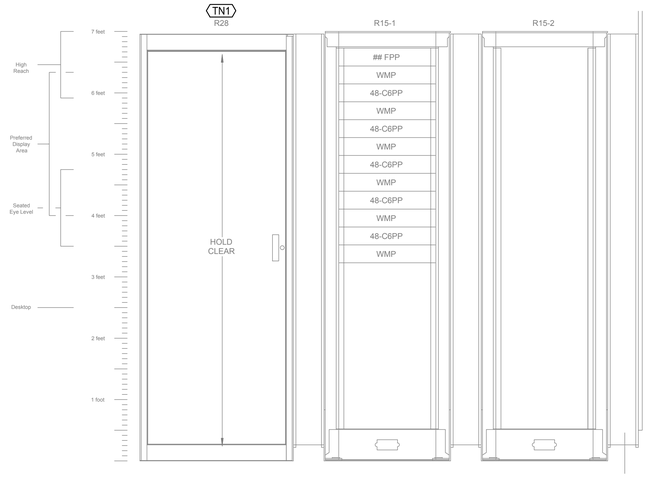
5 IT/TEL 003 ELEVATION SOUTH

1/2"=1'-0"



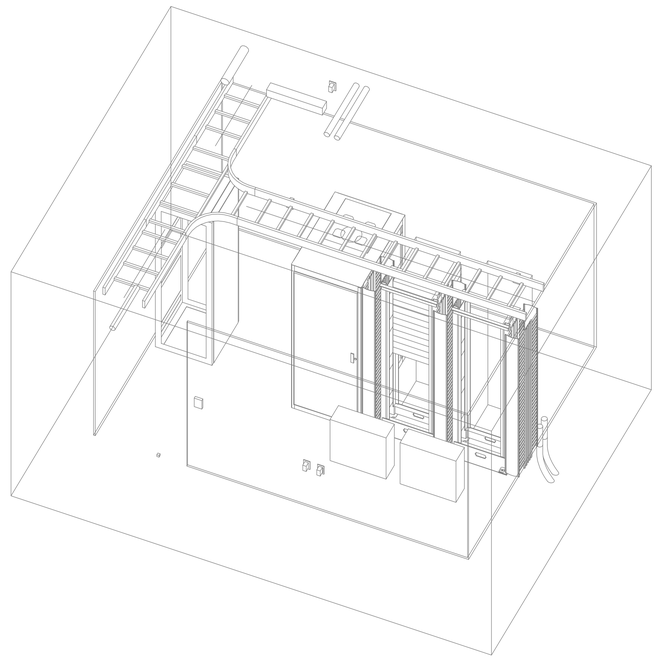
6 IT/TEL 003 ELEVATION WEST

1/2"=1'-0"



7 RACK ELEVATION

1"=1'-0"



8 IT/TEL 003 3D VIEW

NTS

KEYNOTES

E	ELECTRICAL: COMPLY WITH DIVISION 26.
TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
TN1	(E) 42" DEEP SERVER CABINET INSTALLED BY TOWN HALL PROJECT FOR USE OF THIS PROJECT IN INSTALLING HEADEND SERVERS.
TN2	ACCESS CONTROL PANELS (DGP) INSTALLED UNDER THE WORK OF THIS PROJECT,
TN3	STRUCTURED CABLING TO (E) CAMERA ROUGH-IN LOCATIONS TERMINATED AT R15 INSTALLED UNDER THE WORK OF THE TOWNHALL PROJECT.

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PROJECT

TOWN OF COLMA

ELECTRONIC SECURITY SYSTEMS

SHEET

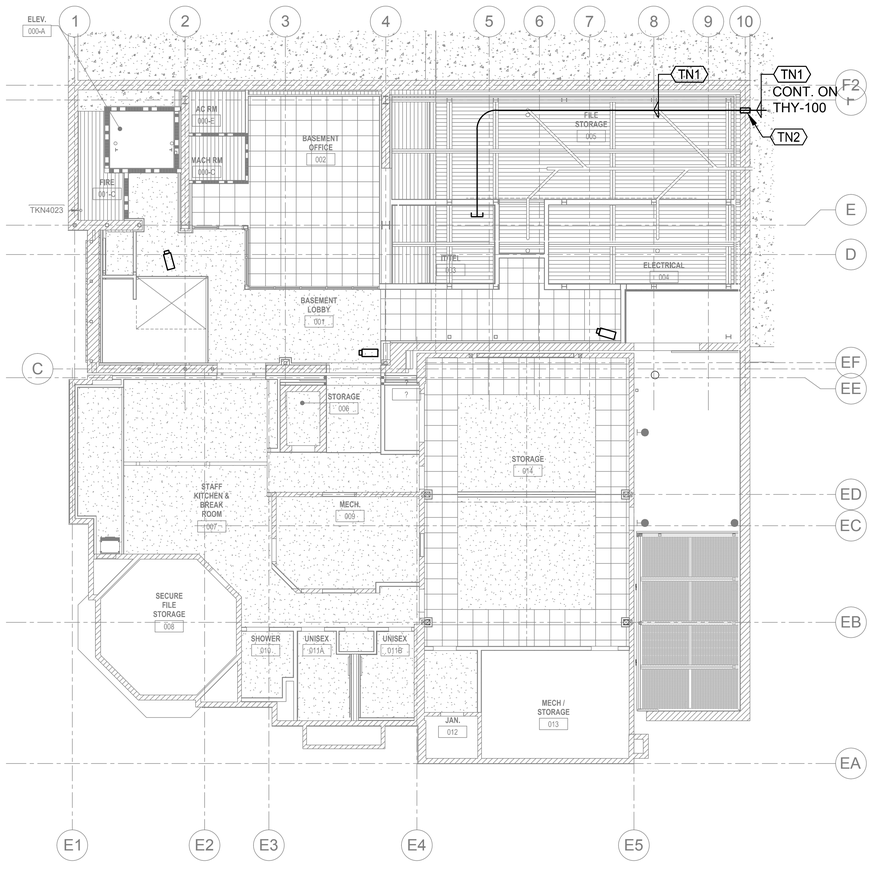
TOWN HALL IT/TEL ROOM 003 ENLARGED PLAN, RCP AND ELEVATIONS

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A	DRAWING TH-TY4.1
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF

KEYNOTES

TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
TN1	1" C.
TN2	PROVIDE WATERTIGHT PENETRATION SEAL AT PENETRATION OF (E) WALL.



1 TOWN HALL LEVEL 0 ELECTRONIC SECURITY DEVICE PLAN

1/8"=1'-0"

NORTH

Smith, Fause & McDonald Inc.
Communications Engineering Group
351 8th Street
San Francisco, Califorina 94103
(415) 255-9140 www.sfmi.com

KEY PLAN

NO	REVISION DESCRIPTION	DATE
	50% CD	10/19/16
	95% CD	04/18/17
	PRE-BID SET	11/22/17
	BID SET	11/27/17

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

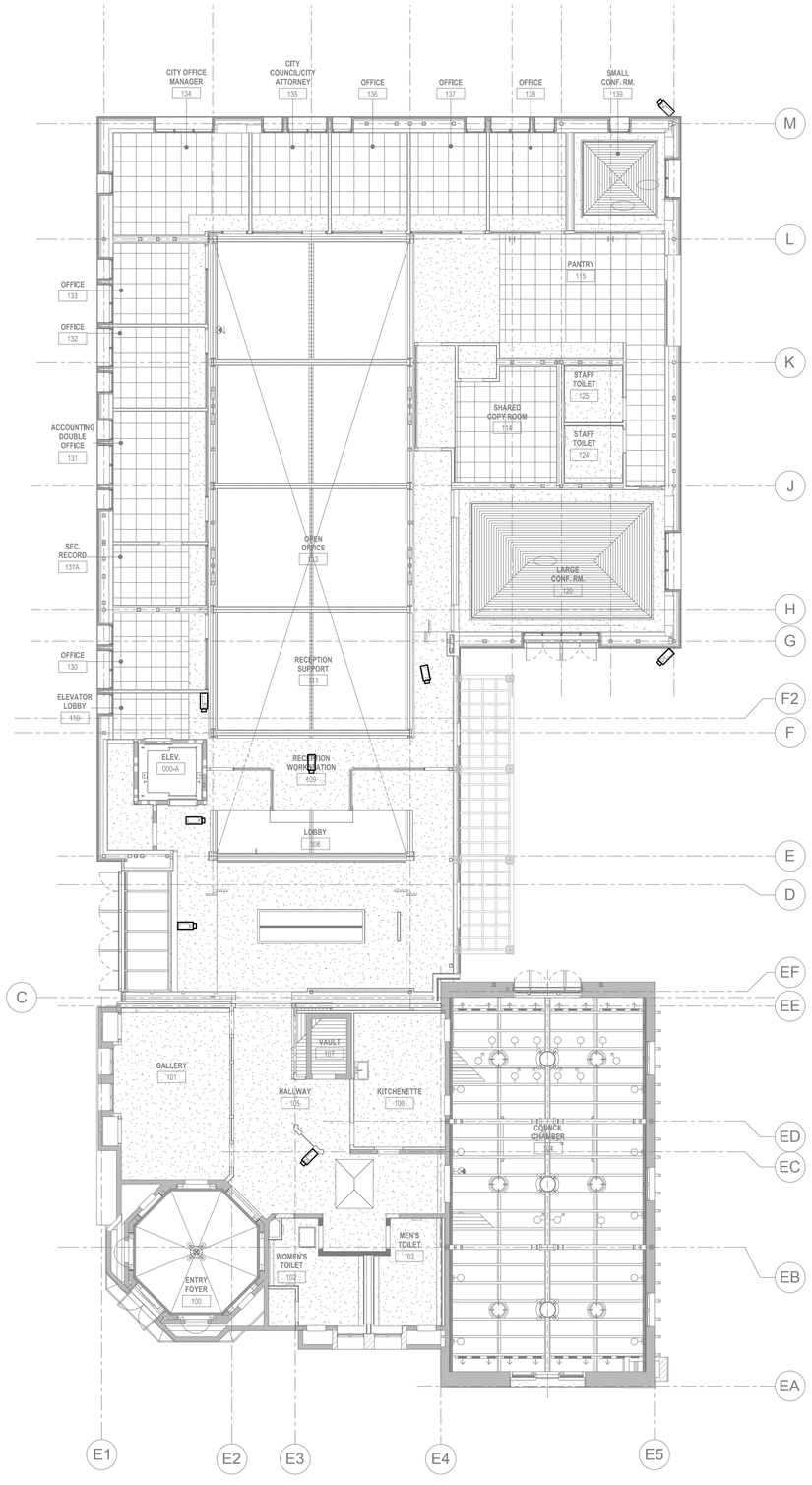
SHEET
TOWN HALL LEVEL 0 ELECTRONIC SECURITY DEVICE PLAN

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING TH-TY6.1
SHEET OF

G:\2000967A\Drawings\TH-TY6.1.dwg 11-30-17 09:08:37 AM Alfred

PLEASE RECYCLE



1 TOWN HALL LEVEL 1 ELECTRONIC SECURITY DEVICE RCP

1/8"=1'-0"

NORTH

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KEY PLAN

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PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
TOWN HALL LEVEL 1 ELECTRONIC SECURITY DEVICE RCP

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING TH-TY6.2
SHEET OF

TOWN OF COLMA

COLMA, CALIFORNIA

SPECIFICATION MANUAL

ACCESS CONTROL – CIP 983

REBID

PUBLISHED: FEBRUARY 15, 2018

BID OPENING: THURSDAY, MARCH 1, 2018, 2 P.M.

TABLE OF CONTENTS

00 72 13 – GENERAL CONDITIONS

ARTICLE 1. DEFINED TERMS

Whenever used in the Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined below, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

A. Act of God – An earthquake of magnitude of 3.5 or higher on the Richter scale or a tidal wave.

B. Addenda -- Written or graphic instruments issued prior to the submission of Bids which clarify, correct, or change the Contract Documents.

C. Additional Work -- New or unforeseen work will be classified as "Additional Work" when the Town's Representative determines that it is not covered by the Contract.

D. Applicable Laws -- The laws, statutes, ordinances, rules, codes, regulations, permits, and licenses of any kind, issued by local, state or federal governmental authorities or private authorities with jurisdiction (including utilities), to the extent they apply to the Work.

E. Bid -- The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices and other terms for the Work to be performed.

F. Bidder -- The individual or entity who submits a Bid directly to the Town.

G. Change Order ("CO") -- A document that authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Contract, in accordance with the Contract Documents and in the form contained in the Contract Documents.

H. Change Order Request ("COR") -- A request made by the Contractor for an adjustment in the Contract Price and/or Contract Times as the result of a Contractor-claimed change to the Work. This term may also be referred to as a Change Order Proposal ("COP"), or Request for Change ("RFC").

I. Town -- The Town of Colma.

J. City Council, Council -- The City Council of the Town.

K. Town's Representative -- The individual or entity as identified in the Special Conditions to act as the Town's Representative.

L. Claim -- A demand or assertion by the Town or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

M. Contract -- The entire integrated written agreement between the Town and Contractor concerning the Work. “Contract” may be used interchangeably with “Agreement” in the Contract Documents. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral, and includes all Contract Documents.

N. Contract Documents -- The documents listed in Section 00 52 13, Article 5. Some documents provided by the Town to the Bidders and Contractor, including but not limited to reports and drawings of subsurface and physical conditions are not Contract Documents.

O. Contract Price -- Amount to be paid by the Town to the Contractor as full compensation for the performance of the Contract and completion of the Work, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs.

P. Contract Times -- The number of days or the dates stated in the Contract Documents to: achieve defined Milestones, if any; and to complete the Work so that it is ready for final payment.

Q. Contractor -- The individual or entity with which the Town has contracted for performance of the Work.

R. Contractor’s Designated On-Site Representative -- The Contractor’s Designated On-Site Representative will be as identified in Section 00 72 13, Article 3 and shall not be changed without prior written consent of the Town.

S. Daily Rate -- The Daily Rate stipulated in the Contract Documents as full compensation to the Contractor due to the Town’s unreasonable delay to the Project that was not contemplated by the parties.

T. Day -- A calendar day of 24 hours measured from midnight to the next midnight.

U. Defective Work -- Work that is unsatisfactory, faulty, or deficient; or that does not conform to the Contract Documents; or that does not meet the requirements of any inspection, reference standard, test, or approval referenced in the Contract Documents.

V. Demobilization -- The complete dismantling and removal by the Contractor of all of the Contractor’s temporary facilities, equipment, and personnel at the Site.

W. Drawings -- That part of the Contract Documents prepared by of the Engineer of Record which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

X. Effective Date of the Contract -- The date indicated in the Contract on which it becomes effective, but if no such date is indicated, it means the date on which the Contract is signed and delivered by the last of the two parties to sign and deliver.

Y. Engineer, whenever not qualified, shall mean the Representative of the Town, acting either directly or through properly authorized agents, such agents acting severally

within the scope of the particular duties entrusted to them. On all questions concerning the acceptance of materials, machinery, the classifications of material, the execution of work, conflicting interest of the contractors performing related work and the determination of costs, the decision of the Engineer, duly authorized by the City Council, shall be binding and final upon both parties.

Z. Engineer of Record -- The individual, partnership, corporation, joint venture, or other legal entity named as such in Section 00 73 13, Article 1.1. or any succeeding entity designated by the Town.

AA. Green Book -- The current edition of the Standard Specifications for Public Works Construction.

BB. Hazardous Waste -- The term "Hazardous Waste" shall have the meaning provided in Section 104 of the Solid Waste Disposal Act (42 U.S.C. § 6903) as amended from time to time or, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a class I, class II, or class III disposal site in accordance with provisions of existing law, whichever is more restrictive.

CC. Holiday – The Holidays occur on:

New Year's Day - January 1
President's Day – Third Monday in February
Memorial Day - Last Monday in May
Independence Day - July 4
Labor Day - First Monday in September
Veteran's Day - November 11
Thanksgiving Day - Fourth Thursday in November
Friday after Thanksgiving
Christmas Eve – December 24
Christmas Day - December 25
Day After Christmas – December 26
New Year's Eve – December 31

If any Holiday listed above falls on a Saturday, Saturday and the preceding Friday are both Holidays. If the Holiday should fall on a Sunday, Sunday and the following Monday are both Holidays.

DD. Notice of Award -- The written notice by the Town to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, the Town will sign and deliver the Contract.

EE. Notice of Completion -- The form which may be executed by the Town and recorded by the county where the Project is located constituting final acceptance of the Project.

FF. Notice to Proceed -- A written notice given by the Town to Contractor fixing the date on which the Contractor may proceed with the Work and when Contract Times will commence to run.

GG. Project -- The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

HH. Recyclable Waste Materials -- Materials removed from the Site which are required to be diverted to a recycling center rather than an area landfill. Recyclable Waste Materials include asphalt, concrete, brick, concrete block, and rock.

II. Schedule of Submittals -- A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to facilitate scheduled performance of related construction activities.

JJ. Shop Drawings -- All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

KK. Specifications -- That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

LL. Stop Payment Notice -- A written notice as defined in Civil Code section 8044.

MM. Subcontractor -- An individual or entity other than a Contractor having a contract with any other entity than the Town for performance of any portion of the Work at the Site.

NN. Submittal -- Written and graphic information and physical samples prepared and supplied by the Contractor demonstrating various portions of the Work.

OO. Successful Bidder -- The Bidder submitting a responsive Bid to whom the Town makes an award.

PP. Supplier -- A manufacturer, fabricator, supplier, distributor, material man, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment used in the performance of the Work or to be incorporated in the Work.

QQ. Underground Facilities -- All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

RR. Unit Price Work -- Work to be paid for on the basis of unit prices as provided by the Contractor in its bid or as adjusted in accordance with the Contract Documents.

SS. Warranty -- A written guarantee provided to the Town by the Contractor that the Work will remain free of defects and suitable for its intended use for the period required by the Contract Documents or the longest period permitted by the law of this State, whichever is longer.

TT. Work -- The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce

such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

ARTICLE 2. CONTRACT DOCUMENTS

A. **Contract Documents.** The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all.

B. **Interpretations.** The Contract Documents are intended to be fully cooperative and complementary. If the Contractor observes that any documents are in conflict, the Contractor shall promptly notify the Engineer in writing. In case of conflicts between the Contract Documents, the order of precedence shall be as follows:

1. Change Orders
2. Addenda
3. Special Conditions
4. Technical Specifications
5. General Requirements
6. Plans (Contract Drawings)
7. Contract
8. General Conditions
9. Instructions to Bidders
10. Notice Inviting Bids
11. Contractor's Bid Forms
12. Standard Specifications for Public Works Construction (Sections 1-9 Excluded)
13. Applicable Local Agency Standards and Specifications
14. Standard Drawings
15. Reference Documents

With reference to the Drawings, the order of precedence shall be as follows:

1. Figures govern over scaled dimensions
2. Detail drawings govern over general drawings
3. Addenda or Change Order drawings govern over Contract Drawings
4. Contract Drawings govern over Standard Drawings
5. Contract Drawings govern over Shop Drawings

C. **Conflicts in Contract Documents.** Notwithstanding the orders of precedence established above, in the event of conflicts, the higher standard, higher quality, and most expensive shall always apply.

D. **Organization of Contract Documents.** Organization of the Contract Documents into divisions, sections, and articles, and arrangement of drawings shall not control the Contractor in dividing Project Work among subcontractors or in establishing the extent of Work to be performed by any trade.

ARTICLE 3. PRECONSTRUCTION AND CONSTRUCTION COMMUNICATION

Before any Work at the site is started, a conference attended by the Town, Contractor, Town's Representative, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to herein, procedures for

handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

At this conference the Town and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

ARTICLE 4. CONTRACT DOCUMENTS: COPIES & MAINTENANCE

Contractor will be furnished, free of charge, **five (5)** copies of the Contract Documents. Additional copies may be obtained at cost of reproduction.

Contractor shall maintain a clean, undamaged set of Contract Documents, including submittals, at the Project site.

ARTICLE 5. EXAMINATION OF DRAWINGS, SPECIFICATIONS AND SITE OF WORK

A. **Examination of Contract Documents.** Before commencing any portion of the Work, Contractor shall again carefully examine all applicable Contract Documents, the Project site, and other information given to Contractor as to materials and methods of construction and other Project requirements. Contractor shall immediately notify the Engineer of any potential error, inconsistency, ambiguity, conflict, or lack of detail or explanation. If Contractor performs, permits, or causes the performance of any Work which is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all resulting costs, including, without limitation, the cost of correction. In no case shall the Contractor or any subcontractor proceed with Work if uncertain as to the applicable requirements.

B. **Additional Instructions.** After notification of any error, inconsistency, ambiguity, conflict, or lack of detail or explanation, the Engineer will provide any required additional instructions, by means of drawings or other written direction, necessary for proper execution of Work.

C. **Quality of Parts, Construction and Finish.** All parts of the Work shall be of the best quality of their respective kinds and the Contractor must use all diligence to inform itself fully as to the required construction and finish.

D. **Contractor's Variation from Contract Document Requirements.** If it is found that the Contractor has varied from the requirements of the Contract Documents including the requirement to comply with all applicable laws, ordinances, rules and regulations, the Engineer may at any time, before or after completion of the Work, order the improper Work removed, remade or replaced by the Contractor at the Contractor's expense.

ARTICLE 6. MOBILIZATION

A. When a bid item is included in the Bid Form for mobilization, the costs of Work in advance of construction operations and not directly attributable to any specific bid item will be included in the progress estimate ("Initial Mobilization"). When no bid item is

provided for “Initial Mobilization,” payment for such costs will be deemed to be included in the other items of the Work.

B. Payment for Initial Mobilization based on the lump sum provided in the Bid Form, which shall constitute full compensation for all such Work. No payment for Initial Mobilization will be made until all of the listed items have been completed to the satisfaction of the Engineer. The scope of the Work included under Initial Mobilization shall include, but shall not be limited to, the following principal items:

1. Obtaining and paying for all bonds, insurance, and permits.

2. Moving on to the Project site of all Contractor’s plant and equipment required for the first month’s operations.

3. Installing temporary construction power, wiring, and lighting facilities, as applicable.

4. Establishing fire protection system, as applicable.

5. Developing and installing a construction water supply, if applicable.

6. Providing and maintaining the field office trailers for the Contractor, if necessary, and the Engineer (if specified), complete, with all specified furnishings and utility services.

7. Providing on-site sanitary facilities and potable water facilities as specified per Cal-OSHA and these Contract Documents.

8. Furnishing, installing, and maintaining all storage buildings or sheds required for temporary storage of products, equipment, or materials that have not yet been installed in the Work. All such storage shall meet manufacturer’s specified storage requirements, and the specific provisions of the specifications, including temperature and humidity control, if recommended by the manufacturer, and for all security.

9. Arranging for and erection of Contractor’s work and storage yard.

10. Posting all OSHA required notices and establishment of safety programs per Cal-OSHA.

11. Full-time presence of Contractor’s superintendent at the job site as required herein.

12. Submittal of Construction Schedule as required by the Contract Documents.

ARTICLE 7. EXISTENCE OF UTILITIES AT THE WORK SITE

A. The Town has endeavored to determine the existence of utilities at the Project site from the records of the owners of known utilities in the vicinity of the Project. The positions of these utilities as derived from such records are shown on the Plans.

B. Unless indicated otherwise on the Plans and Specifications, no excavations were made to verify the locations shown for underground utilities. The service connections

to these utilities are not shown on the Plans. Water service connections may be shown on the Plans showing general locations of such connections. It shall be the responsibility of the Contractor to determine the exact location of all service connections. The Contractor shall make its own investigations, including exploratory excavations, to determine the locations and type of service connections, prior to commencing Work which could result in damage to such utilities. The Contractor shall immediately notify the Town in writing of any utility discovered in a different position than shown on the Plans or which is not shown on the Plans.

C. If applicable, all water meters, water valves, fire hydrants, electrical utility vaults, telephone vaults, gas utility valves, and other subsurface structures shall be relocated or adjusted to final grade by the Contractor. Locations of existing utilities shown on the Plans are approximate and may not be complete. The Contractor shall be responsible for coordinating its Work with all utility companies during the construction of the Work.

D. Notwithstanding the above, pursuant to section 4215 of the Government Code, the Town has the responsibility to identify, with reasonable accuracy, main or trunkline facilities on the plans and specifications. In the event that main or trunkline utility facilities are not identified with reasonable accuracy in the plans and specifications made a part of the invitation for Bids, the Town shall assume the responsibility for their timely removal, relocation, or protection.

E. Contractor, except in an emergency, shall contact the appropriate regional notification center, **Northern California Underground Service Alert** at 811 or 1-800-227-2600 or on-line at www.digalert.org at least two working days prior to commencing any excavation if the excavation will be performed in an area which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the Town, and obtain an inquiry identification number from that notification center. No excavation shall be commenced or carried out by the Contractor unless such an inquiry identification number has been assigned to the Contractor or any subcontractor of the Contractor and the Town has been given the identification number by the Contractor.

ARTICLE 8. SOILS INVESTIGATIONS

NOT USED

ARTICLE 9. CONTRACTOR'S SUPERVISION

Contractor shall continuously keep at the Project site, a competent and experienced full-time Project superintendent acceptable to the Town. Superintendent must be able to proficiently speak, read and write in English and shall have the authority to make decisions on behalf of the Contractor. Contractor shall continuously provide efficient supervision of the Project.

ARTICLE 10. WORKERS

A. Contractor shall at all times enforce strict discipline and good order among its employees. Contractor shall not employ on the Project any unfit person or any one not skilled in the Work assigned to him or her.

B. Any person in the employ of the Contractor whom the Town may deem incompetent or unfit shall be dismissed from the Work and shall not be employed on this Project.

ARTICLE 11. INDEPENDENT CONTRACTORS

Contractor shall be an independent contractor for the Town and not an employee. Contractor understands and agrees that it and all of its employees shall not be considered officers, employees, or agents of Town and are not entitled to benefits of any kind normally provided employees of Town, including but not limited to, state unemployment compensation or workers' compensation. Contractor assumes full responsibility for the acts and omissions of its employees or agents related to the Work.

ARTICLE 12. SUBCONTRACTS

A. Contractor agrees to bind every subcontractor to the terms of the Contract Documents as far as such terms are applicable to subcontractor's portion of the Work. Contractor shall be as fully responsible to the Town for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by its subcontractors, as Contractor is for acts and omissions of persons directly employed by Contractor. Nothing contained in these Contract Documents shall create any contractual relationship between any subcontractor and the Town.

B. The Town reserves the right to accept all subcontractors. The Town's acceptance of any subcontractor under this Contract shall not in any way relieve Contractor of its obligations in the Contract Documents.

C. Prior to substituting any subcontractor listed in the Bid Forms, Contractor must comply with the requirements of the Subletting and Subcontracting Fair Practices Act pursuant to California Public Contract Code section 4100 et seq.

ARTICLE 13. VERIFICATION OF EMPLOYMENT ELIGIBILITY

By executing this Contract, Contractor verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time, and shall require all subcontractors, sub-subcontractors and consultants to comply with the same. Each person executing this Contract on behalf of Contractor verifies that he or she is a duly authorized officer of Contractor and that any of the following shall be grounds for the Town to terminate the Contract for cause: (1) failure of the Contractor or its subcontractors, sub-subcontractors or consultants to meet any of the requirements provided for in this Article; (2) any misrepresentation or material omission concerning compliance with such requirements; or (3) failure to immediately remove from the Work any person found not to be in compliance with such requirements.

ARTICLE 14. REQUESTS FOR SUBSTITUTION

A. For the purposes of this provision, the term "substitution" shall mean the substitution of any material, method or service substantially equal to or better in every respect to that indicated in the Standard Specifications or otherwise referenced herein.

B. Pursuant to Public Contract Code section 3400(b), the Town may make a finding that is described in the Notice Inviting Bids that designates certain products, things, or services by specific brand or trade name.

C. Unless specifically designated in the Special Conditions, whenever any material, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating the description of the material, process, or article desired and shall be deemed to be followed by the words "or equal." Contractor may, unless otherwise stated, offer for substitution any material, process, or article which may be substantially equal to or better in every respect to that so indicated or specified in the Contract Documents. However, the Town has adopted uniform standards for certain materials, processes, and articles.

D. The Contractor shall submit substitution requests, together with substantiating data, for substitution of any "or equal" material, process, or article no later than thirty-five (35) calendar days after award of Contract. Provisions regarding submission of substitution requests shall not in any way authorize an extension of time for the performance of this Contract. If a substitution request is rejected by the Town, the Contractor shall provide the material, method or service specified herein. The Town shall not be responsible for any costs incurred by the Contractor associated with substitution requests. The burden of proof as to the equality of any material, process, or article shall rest with the Contractor. The Engineer has the complete and sole discretion to determine if a material, process, or article is substantially equal to or better than that specified and to approve or reject all substitution requests.

E. Substantiating data as described above shall include, at a minimum, the following information:

    1. A signed affidavit from the Contractor stating that the material, process, or article proposed as a substitution is substantially equal to or better than that specified in every way except as may be listed on the affidavit.

    2. Illustrations, specifications, catalog cut sheets, and any other relevant data required to prove that the material, process, or article is substantially equal to or better than that specified.

    3. A statement of the cost implications of the substitution being requested, indicating whether and why the proposed substitution will reduce or increase the amount of the contract.

    4. Information detailing the durability and lifecycle costs of the proposed substitution.

F. Failure to submit all the required substantiating data detailed above in a timely manner so that the substitution request can be adequately reviewed may result in rejection of the substitution request. The Engineer is not obligated to review multiple submittals related the same substitution request resulting from the Contractor's failure to initially submit a complete package.

G. Time limitations within this Article shall be strictly complied with and in no case will an extension of time for completion of the contract be granted because of Contractor's failure to provide substitution requests at the time and in the manner described herein.

H. The Contractor shall bear the costs of all Town work associated with the review of substitution requests.

I. If substitution requests approved by the Engineer require that Contractor furnish materials, methods or services more expensive than that specified, the increased costs shall be borne by Contractor.

ARTICLE 15. SHOP DRAWINGS

A. Contractor shall check and verify all field measurements and shall submit with such promptness as to provide adequate time for review and cause no delay in its own Work or in that of any other contractor, subcontractor, or worker on the Project, six (6) copies of all shop drawings, calculations, schedules, and materials list, and all other provisions required by the Contract Documents. Contractor shall sign all submittals affirming that submittals have been reviewed and approved by Contractor prior to submission to Engineer. Each signed submittal shall affirm that the submittal meets all the requirements of the Contract Documents except as specifically and clearly noted and listed on the transmittal letter of the submittal.

B. Contractor shall make any corrections required by the Engineer, and file with the Engineer six (6) corrected copies each, and furnish such other copies as may be needed for completion of the Work. Engineer's acceptance of shop drawings shall not relieve Contractor from responsibility for deviations from the Contract Documents unless Contractor has, in writing, called Engineer's attention to such deviations at time of submission and has secured the Engineer's written acceptance. Engineer's acceptance of shop drawings shall not relieve Contractor from responsibility for errors in shop drawings.

ARTICLE 16. SUBMITTALS

A. Contractor shall furnish to the Engineer for approval, prior to purchasing or commencing any Work, a log of all samples, material lists and certifications, mix designs, schedules, and other submittals, as required in the Contract Documents. The log shall indicate whether samples will be provided in accordance with other provisions of this Contract.

B. Contractor will provide samples and submittals, together with catalogs and supporting data required by the Engineer, to the Engineer within a reasonable time period to provide for adequate review and avoid delays in the Work.

C. These requirements shall not authorize any extension of time for performance of this Contract. Engineer will check and approve such samples, but only for conformance with design concept of work and for compliance with information given in the Contract Documents. Work shall be in accordance with approved samples and submittals.

ARTICLE 17. MATERIALS

A. Except as otherwise specifically stated in the Contract Documents, Contractor shall provide and pay for all materials, labor, tools, equipment, lights, power, transportation, superintendence, temporary constructions of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete this Contract within specified time.

B. Unless otherwise specified, all materials shall be new and the best of their respective kinds and grades as noted and/or specified, and workmanship shall be of good quality.

C. Materials shall be furnished in ample quantities and at such times as to ensure uninterrupted progress of the Work and shall be stored properly and protected as required by the Contract Documents. Contractor shall be entirely responsible for damage or loss by weather or other causes to materials or Work.

D. No materials, supplies, or equipment for Work under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in the Work and agrees upon completion of all work to deliver the Project, to the Town free from any claims, liens, or charges.

E. Materials shall be stored on the Project site in such manner so as not to interfere with any operations of the Town or any independent contractor.

F. Contractor shall verify all measurements, dimensions, elevations, and quantities before ordering any materials or performing any Work, and the Town shall not be liable for Contractor's failure to so. No additional compensation, over and above payment for the actual quantities at the prices set out in the Bid Form, will be allowed because of differences between actual measurements, dimension, elevations and quantities and those indicated on the Plans and in the Specifications. Any difference therein shall be submitted to the Engineer for consideration before proceeding with the Work.

ARTICLE 18. PERMITS AND LICENSES

A. Town will apply and pay for the review of necessary encroachment permits for Work within the public rights-of-way. Contractor shall obtain all other necessary permits and licenses for the construction of the Project, including encroachment permits, and shall pay all fees required by law and shall comply with all laws, ordinances, rules and regulations relating to the Work and to the preservation of public health and safety. Before acceptance of the Project, the Contractor shall submit all licenses, permits, certificates of inspection and required approvals to the Town.

B. The Bid Form contains an allowance for the Contractor's cost of acquiring traffic control permits and for construction inspection fees that may be charged to the Contractor by the Agency of Jurisdiction. The allowance is included within the Bid Form to eliminate the need by bidders to research or estimate the costs of traffic control permits and construction inspection fees prior to submitting a bid. The allowance is specifically intended to account for the costs of traffic control permits and construction inspection fees charged by the local Agency of Jurisdiction only. No other costs payable by

Contractor to the Agency of Jurisdiction are included within the allowance. Payment by Town to Contractor under the Permit and Inspection Allowance Bid Item shall be made based on actual cost receipts only and in accordance with the provisions of these specifications.

ARTICLE 19. TRENCHES

NOT USED

ARTICLE 20. TRAFFIC CONTROL

NOT USED

ARTICLE 21. DIVERSION OF RECYCLABLE WASTE MATERIALS

In compliance with the applicable Town's waste reduction and recycling efforts, Contractor shall divert all Recyclable Waste Materials to appropriate recycling centers as required for compliance with the local jurisdiction's waste diversion ordinances. Contractor will be required to submit weight tickets and written proof of diversion with its monthly progress payment requests. Contractor shall complete and execute any certification forms required by Town or other applicable agencies to document Contractor's compliance with these diversion requirements. All costs incurred for these waste diversion efforts shall be the responsibility of the Contractor.

ARTICLE 22. REMOVAL OF HAZARDOUS MATERIALS

Should Contractor encounter material reasonably believed to be polychlorinated biphenyl (PCB) or other toxic wastes and hazardous materials which have not been rendered harmless at the Project site, the Contractor shall immediately stop work at the affected Project site and shall report the condition to the Town in writing. The Town shall contract for any services required to directly remove and/or abate PCBs and other toxic wastes and hazardous materials, if required by the Project site(s), and shall not require the Contractor to subcontract for such services. The Work in the affected area shall not thereafter be resumed except by written agreement of the Town and Contractor.

ARTICLE 23. SANITARY FACILITIES

NOT USED

ARTICLE 24. AIR POLLUTION CONTROL

Contractor shall comply with all air pollution control rules, regulations, ordinances and statutes, including, but not limited to, those required by the South Coast Air Quality Management District. All containers of paint, thinner, curing compound, solvent or liquid asphalt shall be labeled to indicate that the contents fully comply with the applicable material requirements.

ARTICLE 25. LAYOUT AND FIELD ENGINEERING

NOT USED

ARTICLE 26. TESTS AND INSPECTIONS

A. If the Contract Documents, the Engineer, or any instructions, laws, ordinances, or public authority requires any part of the Work to be tested or Approved, Contractor shall provide the Engineer at least two (2) working days' notice of its readiness for observation or inspection. If inspection is by a public authority other than the Town, Contractor shall promptly inform the Town of the date fixed for such inspection. Required certificates of inspection (or similar) shall be secured by Contractor. Costs for Town testing and Town inspection shall be paid by the Town. Costs of tests for Work found not to be in compliance shall be paid by the Contractor.

B. If any Work is done or covered up without the required testing or approval, the Contractor shall uncover or deconstruct the Work, and the Work shall be redone after completion of the testing at the Contractor's cost in compliance with the Contract Documents.

C. Where inspection and testing are to be conducted by an independent laboratory or agency, materials or samples of materials to be inspected or tested shall be selected by such laboratory or agency, or by the Town, and not by Contractor. All tests or inspections of materials shall be made in accordance with the commonly recognized standards of national organizations.

D. In advance of manufacture of materials to be supplied by Contractor which must be tested or inspected, Contractor shall notify the Town so that the Town may arrange for testing at the source of supply. Any materials which have not satisfactorily passed such testing and inspection shall not be incorporated into the Work.

E. If the manufacture of materials to be inspected or tested will occur in a plant or location greater than sixty (60) miles from the Town, the Contractor shall pay for any excessive or unusual costs associated with such testing or inspection, including but not limited to excessive travel time, standby time and required lodging.

F. Reexamination of Work may be ordered by the Town. If so ordered, Work must be uncovered or deconstructed by Contractor. If Work is found to be in accordance with the Contract Documents, the Town shall pay the costs of reexamination and reconstruction. If such work is found not to be in accordance with the Contract Documents, Contractor shall pay all costs.

ARTICLE 27. PROTECTION OF WORK AND PROPERTY

A. The Contractor shall be responsible for all damages to persons or property that occurs as a result of the Work. Contractor shall be responsible for the proper care and protection of all materials delivered and Work performed until completion and final Acceptance by the Town. All Work shall be solely at the Contractor's risk. Contractor shall adequately protect adjacent property from settlement or loss of lateral support as necessary. Contractor shall comply with all applicable safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the Project site where Work is being performed. Contractor shall erect and properly maintain at all times, as required by field conditions and progress of work, all necessary safeguards, signs, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created in the course of construction.

B. In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization from the Engineer, is hereby permitted to act to prevent such threatened loss or injury; and Contractor shall so act, without appeal, if so authorized or instructed by the Engineer or the Town. Any compensation claimed by Contractor on account of emergency work shall be determined by and agreed upon by the Town and the Contractor.

ARTICLE 28. CONTRACTOR'S MEANS AND METHODS

Contractor is solely responsible for the means and methods utilized to perform the Work. In no case shall the Contractor's means and methods deviate from commonly used industry standards.

ARTICLE 29. AUTHORIZED REPRESENTATIVES

The Town shall designate representatives, who shall have the right to be present at the Project site at all times. The Town may designate an inspector who shall have the right to observe all of the Contractor's Work. The inspector shall not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. Contractor shall provide safe and proper facilities for such access.

ARTICLE 30. HOURS OF WORK

A. As provided in Article 3 (commencing at section 1810), Chapter 1, Part 7, Division 2 of the Labor Code, Contractor stipulates that eight (8) hours of labor shall constitute a legal day's work. The time of service of any worker employed at any time by the Contractor or by any subcontractor on any subcontract under this Contract upon the Work or upon any part of the Work contemplated by this Contract is limited and restricted to eight (8) hours during any one calendar day and 40 hours during any one calendar week, except as hereinafter provided. Notwithstanding the provisions herein above set forth, work performed by employees of Contractor in excess of eight (8) hours per day, and 40 hours during any one week, shall be permitted upon this public work upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.

B. The Contractor and every subcontractor shall keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed in connection with the Work or any part of the Work contemplated by this Contract. The record shall be kept open at all reasonable hours to the inspection of the Town and to the Division of Labor Law Enforcement, Department of Industrial Relations of the State of California.

C. The Contractor shall pay to the Town a penalty of twenty-five dollars ($25.00) for each worker employed in the execution of this Contract by the Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any calendar day and 40 hours in any one calendar week in violation of the provisions of Article 3 (commencing at section 1810), Chapter 1, Part 7, Division 2 of the Labor Code.

D. Any work necessary to be performed after regular working hours, or on Saturdays and Sundays or other holidays, shall be performed without additional expense to the Town.

E. Town will provide inspection during normal working hours from 7:00 a.m. to 3:30 p.m. Monday through Friday. Inspection before or after this time will be charged to the Contractor as reimbursable inspection time. Inspections on weekends requires two days' notice for review and approval. Upon written request and approval the 8.5 hour working day may be changed to other limits subject to city/county ordinance.

F. It shall be unlawful for any person to operate, permit, use, or cause to operate any of the following at the Project site, other than between the hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, with no Work allowed on the Town-observed holidays, unless otherwise approved by the Town:

1. Powered Vehicles

2. Construction Equipment

3. Loading and Unloading Vehicles

4. Domestic Power Tools

ARTICLE 31. PAYROLL RECORDS

A. Pursuant to Labor Code section 1776, Contractor and all subcontractors shall maintain weekly certified payroll records, showing the names, addresses, Social Security numbers, work classifications, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by them in connection with the Work under this Contract. Contractor shall certify under penalty of perjury that records maintained and submitted by Contractor are true and accurate. Contractor shall also require subcontractor(s) to certify weekly payroll records under penalty of perjury.

B. In accordance with Labor Code section 1771.4, the Contractor and each subcontractor shall furnish the certified payroll records directly to the Department of Industrial Relations ("DIR") on the specified interval and format prescribed by the DIR, which may include electronic submission. Contractor shall comply with all requirements and regulations from the DIR relating to labor compliance monitoring and enforcement.

C. The payroll records described herein shall be certified and submitted by the Contractor at a time designated by the Town. The Contractor shall also provide the following:

1. A certified copy of the employee's payroll records shall be made available for inspection or furnished to such employee or his or her authorized representative on request.

2. A certified copy of all payroll records described herein shall be made available for inspection or furnished upon request of the DIR.

D. Unless submitted electronically, the certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement ("DLSE") of the DIR or shall contain the same information as the forms provided by the DLSE.

E. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency, the Town, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or performing the contract shall not be marked or obliterated.

F. In the event of noncompliance with the requirements of this Article, the Contractor shall have ten (10) calendar days in which to comply subsequent to receipt of written notice specifying in what respects the Contractor must comply with this Article. Should noncompliance still be evident after such 10-day period, the Contractor shall pay a penalty of one hundred dollars ($100.00) to the Town for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payment then due.

G. The responsibility for compliance with this Article shall rest upon the Contractor.

ARTICLE 32. PREVAILING RATES OF WAGES

A. The Contractor is aware of the requirements of Labor Code sections 1720 *et seq.* and 1770 *et seq.*, as well as California Code of Regulations, Title 8, Section 16000 *et seq.* ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" and "maintenance" projects. Since this Project involves an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and since the total compensation is $1,000 or more, Contractor agrees to fully comply with such Prevailing Wage Laws. The Contractor shall obtain a copy of the prevailing rates of per diem wages at the commencement of this Contract from the website of the Division of Labor Statistics and Research of the Department of Industrial Relations located at www.dir.ca.gov. In the alternative, the Contractor may view a copy of the prevailing rate of per diem wages which are on file at the Town's Administration Office and shall be made available to interested parties upon request. Contractor shall make copies of the prevailing rates of per diem wages for each craft, classification, or type of worker needed to perform work on the Project available to interested parties upon request, and shall post copies at the Contractor's principal place of business and at the Project site. Contractor shall defend, indemnify and hold the Town, its officials, officers, employees and authorized volunteers free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or allege failure to comply with the Prevailing Wage Laws.

B. The Contractor shall forfeit as a penalty to the Town not more than Two Hundred Dollars ($200.00), pursuant to Labor Code section 1775, for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate as determined by the Director of the Department of Industrial Relations for such work or craft in which such worker is employed for any public work done under the Contract by it or by any subcontractor under it. The difference between such prevailing wage rate and the amount paid to each worker for each calendar day or portion thereof, for which each worker was paid less than the prevailing wage rate, shall be paid to each worker by the Contractor.

C. Contractor shall post, at appropriate conspicuous points on the Project site, a schedule showing all determined general prevailing wage rates and all authorized deductions, if any, from unpaid wages actually earned.

ARTICLE 33. PUBLIC WORKS CONTRACTOR REGISTRATION

Pursuant to Labor Code sections 1725.5 and 1771.1, the Contractor and its subcontractors must be registered with the Department of Industrial Relations prior to the execution of a contract to perform public works. By entering into this Contract, Contractor represents that it is aware of the registration requirement and is currently registered with the DIR. Contractor shall maintain a current registration for the duration of the Project. Contractor shall further include the requirements of Labor Code sections 1725.5 and 1771.1 in any subcontract and ensure that all subcontractors are registered at the time this Contract is entered into and maintain registration for the duration of the Project.

ARTICLE 34. EMPLOYMENT OF APPRENTICES

A. Contractor and all subcontractors shall comply with the requirements of Labor Code sections 1777.5 and 1777.6 in the employment of apprentices.

B. Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

C. Knowing violations of Labor Code section 1777.5 will result in forfeiture not to exceed one hundred dollars ($100.00) for each calendar day of non-compliance pursuant to Labor Code section 1777.7.

D. The responsibility for compliance with this Article shall rest upon the Contractor.

ARTICLE 35. NONDISCRIMINATION/EQUAL EMPLOYMENT OPPORTUNITY

Pursuant to Labor Code section 1735 and other applicable provisions of law, the Contractor and its subcontractors shall not discriminate against any employee or applicant for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, sexual orientation, or any other classifications protected by law on this Project. The Contractor will take affirmative action to insure that employees are treated during employment or training without regard to their race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, sexual orientation, or any other classifications protected by law.

Employment Eligibility; Contractor. By executing this Contract, Contractor verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time. Such requirements and restrictions include, but are not limited to, examination and retention of documentation confirming the identity and immigration status of each employee of the Contractor. Contractor also verifies that it has not committed a violation of any such law within the five (5) years immediately preceding the date of execution of this Contract, and shall not violate any such law at any time during the term of the Contract.

Contractor shall avoid any violation of any such law during the term of this Contract by participating in an electronic verification of work authorization program operated by the United States Department of Homeland Security, by participating in an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, or by some other legally acceptable method. Contractor shall maintain records of each such verification, and shall make them available to the Town or its representatives for inspection and copy at any time during normal business hours. The Town shall not be responsible for any costs or expenses related to Contractor's compliance with the requirements provided for or referred to herein.

Employment Eligibility; Subcontractors, Sub-subcontractors and Consultants. To the same extent and under the same conditions as Contractor, Contractor shall require all of its subcontractors, sub-subcontractors and consultants performing any part of the Work or of this Contract to make the same verifications and comply with all requirements and restrictions provided for herein.

Employment Eligibility; Failure to Comply. Each person executing this Contract on behalf of Contractor verifies that he or she is a duly authorized officer of Contractor, and understands that any of the following shall be grounds for the Town to terminate the Contract for cause: (1) failure of Contractor or its subcontractors, sub-subcontractors or consultants to meet any of the requirements provided for herein; (2) any misrepresentation or material omission concerning compliance with such requirements; or (3) failure to immediately remove from the Work any person found not to be in compliance with such requirements.

ARTICLE 36. DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS

Contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Labor Code section 1777.1 or 1777.7. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid, or may have been paid to a debarred subcontractor by a contractor on the project shall be returned to the Town. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the project.

ARTICLE 37. LABOR/EMPLOYMENT SAFETY

The Contractor shall comply with all applicable laws and regulations of the federal, state, and local government, including Cal/OSHA requirements and requirements for verification of employees' legal right to work in the United States.

The Contractor shall maintain emergency first aid treatment for his employees which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C. § 651 *et seq*.), and California Code of Regulations, Title 8, Industrial Relations Division 1, Department of Industrial Relations, Chapter 4. The Contractor shall ensure the availability of emergency medical services for its employees in accordance with California Code of Regulations, Title 8, Section 1512.

The Contractor shall submit the Illness and Injury Prevention Program and a Project site specific safety program to the Town prior to beginning Work at the Project site. Contractor shall maintain a confined space program that meets or exceeds the Town Standards. Contractor shall adhere to the Town's lock out tag out program.

ARTICLE 38. INSURANCE

The Contractor shall obtain, and at all times during performance of the Work of Contract, maintain all of the insurance described in this Article. Contractor shall not commence Work under this Contract until it has provided evidence satisfactory to the Town that it has secured all insurance required hereunder. Contractor shall not allow any subcontractor to commence work on any subcontract until it has provided evidence satisfactory to the Town that the subcontractor has secured all insurance required under this Article. Failure to provide and maintain all required insurance shall be grounds for the Town to terminate this Contract for cause. Contractor shall furnish Town with original certificates of insurance and endorsements effective coverage required by this Contract on forms satisfactory to the Town. The certificates and endorsements for each insurance policy shall be signed by a person authorized by that insurer to bind coverage on its behalf, and shall be on forms acceptable to the Town. All certificates and endorsements must be received and approved by the Town before Work commences.

A. **Additional Insureds; Waiver of Subrogation**. The Town, its officials, officers, employees, agents and authorized volunteers shall be named as Additional Insureds on Contractor's All Risk policy and on Contractor's and its subcontractors' policies of Commercial General Liability and Automobile Liability insurance using, for Contractor's policy/ies of Commercial General Liability insurance, ISO CG forms 20 10 and 20 37 (or endorsements providing the exact same coverage, including completed operations), and, for subcontractors' policies of Commercial General Liability insurance, ISO CG form 20 38 (or endorsements providing the exact same coverage). Notwithstanding the minimum limits set forth in this Contract for any type of insurance coverage, all available insurance proceeds in excess of the specified minimum limits of coverage shall be available to the parties required to be named as Additional Insureds hereunder. Contractor and its insurance carriers shall provide a Waiver of Subrogation in favor of those parties.

B. **Workers' Compensation Insurance**. The Contractor shall provide workers' compensation insurance for all of the employees engaged in Work under this Contract, on or at the Site, and, in case of any sublet Work, the Contractor shall require the subcontractor similarly to provide workers' compensation insurance for all the latter's employees as prescribed by State law. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in work under this Contract, on or at the Site, is not protected under the Workers' Compensation Statutes, the Contractor shall provide or shall cause a subcontractor to provide, adequate insurance coverage for the protection of such employees not otherwise protected. The Contractor is required to secure payment of compensation to his employees in accordance with the provisions of section 3700 of the Labor Code. The Contractor shall file with the Town certificates of his insurance protecting workers. Company or companies providing insurance coverage shall be acceptable to the Town, if in the form and coverage as set forth in the Contract Documents.

C. **Employer's Liability Insurance**. Contractor shall provide Employer's Liability Insurance, including Occupational Disease, in the amount of at least one million dollars ($1,000,000.00) per person per accident. Contractor shall provide Town with a certificate of Employer's Liability Insurance. Such insurance shall comply with the provisions of the Contract Documents. The policy shall be endorsed, if applicable, to

provide a Borrowed Servant/Alternate Employer Endorsement and contain a Waiver of Subrogation in favor of the Town.

D. **Commercial General Liability Insurance**. Contractor shall provide "occurrence" form Commercial General Liability insurance coverage at least as broad as the most current ISO CGL Form 00 01, including but not limited to, premises liability, contractual liability, products/completed operations, personal and advertising injury which may arise from or out of Contractor's operations, use, and management of the Site, or the performance of its obligations hereunder. The policy shall not contain any exclusion contrary to this Contract including but not limited to endorsements or provisions limiting coverage for (1) contractual liability (including but not limited to ISO CG 24 26 or 21 39); or (2) cross-liability for claims or suits against one insured against another. Policy limits shall not be less than $2,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. Defense costs shall be paid in addition to the limits.

1. Such policy shall comply with all the requirements of this Article. The limits set forth herein shall apply separately to each insured against whom claims are made or suits are brought, except with respect to the limits of liability. Further the limits set forth herein shall not be construed to relieve the Contractor from liability in excess of such coverage, nor shall it limit Contractor's indemnification obligations to the Town, and shall not preclude the Town from taking such other actions available to the Town under other provisions of the Contract Documents or law.

2. All general liability policies provided pursuant to the provisions of this Article shall comply with the provisions of the Contract Documents.

3. All general liability policies shall be written to apply to all bodily injury, including death, property damage, personal injury, owned and non-owned equipment, blanket contractual liability, completed operations liability, explosion, collapse, under-ground excavation, removal of lateral support, and other covered loss, however occasioned, occurring during the policy term, and shall specifically insure the performance by Contractor of that part of the indemnification contained in these General Conditions relating to liability for injury to or death of persons and damage to property.

4. If the coverage contains one or more aggregate limits, a minimum of 50% of any such aggregate limit must remain available at all times; if over 50% of any aggregate limit has been paid or reserved, the Town may require additional coverage to be purchased by Contractor to restore the required limits. Contractor may combine primary, umbrella, and as broad as possible excess liability coverage to achieve the total limits indicated above. Any umbrella or excess liability policy shall include the additional insured endorsement described in the Contract Documents.

5. All policies of general liability insurance shall permit and Contractor does hereby waive any right of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss.

E. **Automobile Liability Insurance**. Contractor shall provide "occurrence" form Automobile Liability Insurance at least as broad as ISO CA 00 01 (Any Auto) in the amount of, at least, one million dollars ($1,000,000) per accident for bodily injury and property damage. Such insurance shall provide coverage with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by Contractor or for which Contractor is responsible, in a form and with insurance companies acceptable to the Town. All policies of automobile insurance shall permit and Contractor does hereby waive any right of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss.

F. Contractor shall require all tiers of sub-contractors working under this Contract to provide the insurance required under this Article unless otherwise agreed to in writing by Town. Contractor shall make certain that any and all subcontractors hired by Contractor are insured in accordance with this Contract. If any subcontractor's coverage does not comply with the foregoing provisions, Contractor shall indemnify and hold the Town harmless from any damage, loss, cost, or expense, including attorneys' fees, incurred by the Town as a result thereof.

ARTICLE 39. FORM AND PROOF OF CARRIAGE OF INSURANCE

A. Any insurance carrier providing insurance coverage required by the Contract Documents shall be admitted to and authorized to do business in the State of California unless waived, in writing, by the Town's Risk Manager. Carrier(s) shall have an A.M. Best rating of not less than an A:VII. Insurance deductibles or self-insured retentions must be declared by the Contractor. At the election of the Town the Contractor shall either 1) reduce or eliminate such deductibles or self-insured retentions, or 2) procure a bond which guarantees payment of losses and related investigations, claims administration, and defense costs and expenses. If umbrella or excess liability coverage is used to meet any required limit(s) specified herein, the Contractor shall provide a "follow form" endorsement satisfactory to the Town indicating that such coverage is subject to the same terms and conditions as the underlying liability policy.

B. Each insurance policy required by this Contract shall be endorsed to state that: (1) coverage shall not be suspended, voided, reduced or cancelled except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the Town; and (2) any failure to comply with reporting or other provisions of the policies, including breaches of warranties, shall not affect coverage provided to the Town, its officials, officers, agents, employees, and volunteers.

C. The Certificates(s) and policies of insurance shall contain or shall be endorsed to contain the covenant of the insurance carrier(s) that it shall provide no less than thirty (30) days written notice be given to the Town prior to any material modification or cancellation of such insurance. In the event of a material modification or cancellation of coverage, the Town may terminate the Contract or stop the Work in accordance with the Contract Documents, unless the Town receives, prior to such effective date, another properly executed original Certificate of Insurance and original copies of endorsements or certified original policies, including all endorsements and attachments thereto evidencing coverage's set forth herein and the insurance required herein is in full force and effect. Contractor shall not take possession, or use the Site, or commence operations under this Contract until the Town has been furnished

original Certificate(s) of Insurance and certified original copies of endorsements or policies of insurance including all endorsements and any and all other attachments as required in this Article. The original endorsements for each policy and the Certificate of Insurance shall be signed by an individual authorized by the insurance carrier to do so on its behalf.

D. The Certificate(s) of Insurance, policies and endorsements shall so covenant and shall be construed as primary, and the Town's insurance and/or deductibles and/or self-insured retentions or self-insured programs shall not be construed as contributory.

E. Town reserves the right to adjust the monetary limits of insurance coverages during the term of this Contract including any extension thereof if, in the Town's reasonable judgment, the amount or type of insurance carried by the Contractor becomes inadequate.

F. Contractor shall report to the Town, in addition to the Contractor's insurer, any and all insurance claims submitted by the Contractor in connection with the Work under this Contract.

ARTICLE 40. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

A. **Time for Completion/Liquidated Damages.** Time is of the essence in the completion of the Work. Work shall be commenced within ten (10) Days of the date stated in the Town's Notice to Proceed and shall be completed by Contractor in the time specified in the Contract Documents. The Town is under no obligation to consider early completion of the Project; and the Contract completion date shall not be amended by the Town's receipt or acceptance of the Contractor's proposed earlier completion date. Furthermore, Contractor shall not, under any circumstances, receive additional compensation from the Town (including but not limited to indirect, general, administrative or other forms of overhead costs) for the period between the time of earlier completion proposed by the Contractor and the Contract completion date. If the Work is not completed as stated in the Contract Documents, it is understood that the Town will suffer damage. In accordance with Government Code section 53069.85, being impractical and infeasible to determine the amount of actual damage, it is agreed that Contractor shall pay to the Town as fixed and liquidated damages, and not as a penalty, the sum stipulated in the Contract for each calendar day of delay until the Work is fully completed. Contractor and its surety shall be liable for any liquidated damages. Any money due or to become due the Contractor may be retained to cover liquidated damages.

B. **Inclement Weather.** Contractor shall abide by the Engineer's determination of what constitutes inclement weather. Time extensions for inclement weather shall only be granted when the Work stopped during inclement weather is on the critical path of the Project schedule.

C. **Extension of Time.** Contractor shall not be charged liquidated damages because of any delays in completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of Contractor (or its subcontractors or suppliers). Contractor shall within five (5) Days of identifying any such delay notify the Town in writing of causes of delay. The Town shall ascertain the facts and extent of delay and grant extension of time for completing the Work when, in its judgment, the facts justify

such an extension. Time extensions to the Project shall be requested by the Contractor as they occur and without delay. No delay claims shall be permitted unless the event or occurrence delays the completion of the Project beyond the Contract completion date.

D. **No Damages for Reasonable Delay.** The Town's liability to Contractor for delays for which the Town is responsible shall be limited to only an extension of time unless such delays were unreasonable under the circumstances. In no case shall the Town be liable for any costs which are borne by the Contractor in the regular course of business, including, but not limited to, home office overhead and other ongoing costs. Damages caused by unreasonable Town delay, including delays caused by items that are the responsibility of the Town pursuant to Government Code section 4215, shall be based on actual costs only, no proportions or formulas shall be used to calculate any delay damages.

ARTICLE 41. COST BREAKDOWN AND PERIODIC ESTIMATES

Contractor shall furnish on forms Approved by the Town:

A. Within ten (10) Days of Notice to Proceed with the Contract, a detailed estimate giving a complete breakdown of the Contract price, if the Contract amount is a lump sum.

B. A monthly itemized estimate of Work done for the purpose of making progress payments. In order for the Town to consider and evaluate each progress payment application, the Contractor shall submit a detailed measurement of Work performed and a progress estimate of the value thereof before the tenth (10th) Day of the following month.

C. Contractor shall submit, with each of its payment requests, an adjusted list of actual quantities, verified by the Engineer, for unit price items listed, if any, in the Bid Form.

D. Following the Town's Acceptance of the Work, the Contractor shall submit to the Town a written statement of the final quantities of unit price items for inclusion in the final payment request.

E. The Town shall have the right to adjust any estimate of quantity and to subsequently correct any error made in any estimate for payment.

Contractor shall certify under penalty of perjury, that all cost breakdowns and periodic estimates accurately reflect the Work on the Project.

ARTICLE 42. PROGRESS ESTIMATES AND PAYMENT

A. By the tenth (10th) Day of the following calendar month, Contractor shall submit to Engineer a payment request which shall set forth in detail the value of the Work done for the period beginning with the date work was first commenced and ending on the end of the calendar month for which the payment request is prepared. Contractor shall include any amount earned for authorized extra work. From the total thus computed, a deduction shall be made in the amount of five percent (5%) for retention, except where the Town has adopted a finding that the Work done under the Contract is substantially complex, and then the amount withheld as retention shall be the

percentage specified in the Notice Inviting Bids. From the remainder a further deduction may be made in accordance with Section B below. The amount computed, less the amount withheld for retention and any amounts withheld as set forth below, shall be the amount of the Contractor's payment request.

B. The Town may withhold a sufficient amount or amounts of any payment or payments otherwise due to Contractor, as in his judgment may be necessary to cover:

1. Payments which may be past due and payable for just claims against Contractor or any subcontractors for labor or materials furnished in and about the performance of work on the Project under this Contract.

2. Defective work not remedied.

3. Failure of Contractor to make proper payments to his subcontractor or for material or labor.

4. Completion of the Contract if there is a reasonable doubt that the Work can be completed for balance then unpaid.

5. Damage to another contractor or a third party.

6. Amounts which may be due the Town for claims against Contractor.

7. Failure of Contractor to keep the record ("as-built") drawings up to date.

8. Failure to provide update on construction schedule as required herein.

9. Site cleanup.

10. Failure to comply with Contract Documents.

11. Liquidated damages.

12. Legally permitted penalties.

C. The Town may apply such withheld amount or amounts to payment of such claims or obligations at its discretion with the exception of subsections (B)(1), (3), and (5) of this Article, which must be retained or applied in accordance with applicable law. In so doing, the Town shall be deemed the agent of Contractor and any payment so made by the Town shall be considered as a payment made under contract by the Town to Contractor and the Town shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligations. The Town will render Contractor a proper accounting of such funds disbursed on behalf of Contractor.

D. Upon receipt, the Engineer shall review the payment request to determine whether it is undisputed and suitable for payment. If the payment request is determined to be unsuitable for payment, it shall be returned to Contractor as soon as practicable but not later than seven (7) Days after receipt, accompanied by a document setting forth in writing the reasons why the payment request is not proper. The Town shall make

the progress payment within 30 calendar days after the receipt of an undisputed and properly submitted payment request from Contractor, provided that a release of liens and claims has been received from the Contractor pursuant to Civil Code section 8132. The number of days available to the Town to make a payment without incurring interest pursuant to this paragraph shall be reduced by the number of days by which the Engineer exceeds the seven (7) Day requirement.

E. A payment request shall be considered properly executed if funds are available for payment of the payment request and payment is not delayed due to an audit inquiry by the financial officer of the Town.

ARTICLE 43. SECURITIES FOR MONEY WITHHELD

Pursuant to section 22300 of the Public Contract Code of the State of California, Contractor may request the Town to make retention payments directly to an escrow agent or may substitute securities for any money withheld by the Town to ensure performance under the contract. At the request and expense of Contractor, securities equivalent to the amount withheld shall be deposited with the Town or with a state or federally chartered bank as the escrow agent who shall return such securities to Contractor upon satisfactory completion of the contract. Deposit of securities with an escrow agent shall be subject to a written agreement substantially in the form provided in section 22300 of the Public Contract Code.

ARTICLE 44. CHANGES AND EXTRA WORK.

A. **Contract Change Orders**.

1. The Town, without invalidating the Contract, may order changes in the Work consisting of additions, deletions or other revisions, and the Contract Price and Contract Time shall be adjusted accordingly. Except as otherwise provided herein, all such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents. A Change Order signed by the Contractor indicates the Contractor's agreement therewith, including any adjustment in the Contract Price or the Contract Time, and the full and final settlement of all costs (direct, indirect and overhead) related to the Work authorized by the Change Order.

2. Contractor shall promptly execute changes in the Work as directed in writing by the Town even when the parties have not reached agreement on whether the change increases the scope of Work or affects the Contract Price or Contract Time. All claims for additional compensation to the Contractor shall be presented in writing. No claim will be considered after the Work in question has been done unless a written Change Order has been issued or a timely written notice of claim has been made by Contractor.

3. Whenever any change is made as provided for herein, such change shall be considered and treated as though originally included in the Contract, and shall be subject to all terms, conditions, and provisions of the original Contract.

4. Contractor shall not be entitled to claim or bring suit for damages, whether for loss of profits or otherwise, on account of any decrease or omission of any item or portion of Work to be done.

5. No dispute, disagreement, or failure of the parties to reach agreement on the terms of the Change Order shall relieve the Contractor from the obligation to proceed with performance of the work, including Additional Work, promptly and expeditiously.

6. Contractor shall make available to the Town any of the Contractor's documents related to the Project immediately upon request of the Town, as set forth in Article 52.

7. Any alterations, extensions of time, Additional Work, or any other changes may be made without securing consent of the Contractor's surety or sureties.

B. **Contract Price Change**.

1. Process for Determining Adjustments in Contract Price.

   a. Owner Initiated Change. The Contractor must submit a complete cost proposal, including any change in the Contract Price or Contract Time, within seven (7) Days after receipt of a scope of a proposed change order initiated by the Town, unless the Town requests that proposals be submitted in less than seven (7) Days.

   b. Contractor Initiated Change. The Contractor must give written notice of a proposed change order required for compliance with the Contract Documents within seven (7) Days of discovery of the facts giving rise to the proposed change order.

   c. Whenever possible, any changes to the Contract amount shall be in a lump sum mutually agreed to by the Contractor and the Town.

   d. Price quotations from the Contractor shall be accompanied by sufficiently detailed supporting documentation to permit verification by the Town, including but not limited to estimates and quotations from subcontractors or material suppliers, as the Town may reasonably request. Contractor shall certify the accuracy of all Change Order Requests under penalty of perjury.

   e. If the Contractor fails to submit a complete cost proposal within the seven (7) Day period (or as requested), the Town has the right to order the Contractor in writing to commence the Work immediately on a time and materials basis and/or issue a lump sum change to the Contract Price and/or Contract Time in accordance with the Town's estimate. If the change is issued based on the Town's estimate, the Contractor will waive its right to dispute the action unless within fifteen (15) Days following completion of the added/deleted work, the Contractor presents written proof that the Town's estimate was in error.

2. Unit Price Change Orders.

   a. When the actual quantity of a Unit Price item varies from the Bid Form, compensation for the change in quantity will be calculated by multiplying the actual quantity by the Unit Price. This calculation may result in either an additive or deductive Final Change Order pursuant to the Contract Documents.

b. No Mark up for Overhead and Profit. Because the Contract Unit Prices provided in the Bid Form include Overhead and Profit as determined by Contractor at the time of Bid submission, no mark up or deduction for Overhead and Profit will be included in Unit Price Change Orders.

c. Bid items included on the Bid Form may be deducted from the Work in their entirety without any negotiated extra costs.

d. Contractor acknowledges that unit quantities are estimates and agrees that the estimated unit quantities listed on the Bid Form will be adjusted to reflect the actual unit quantities which may result in an adjustment to the Contract Unit Prices. Such an adjustment will be made by execution of a final additive or deductive Change Order following Contractor's completion of the Work. Upon notification, Contractor's failure to respond within seven (7) Days will result in Town's issuance of a unit quantity adjustment to the Contract Unit Prices and/or Contract Time in accordance with the Contract Documents.

e. The Town or Contractor may make a Claim for an adjustment in the Unit Price in accordance with the Contract Documents if:

i. the quantity of any item of Unit Price Work performed by Contractor differs by twenty-five percent (25%) or more from the estimated quantity of such item indicated in the Contract; and

ii. there is no corresponding adjustment with respect to any other item of Work; and

iii. Contractor believes that Contractor is entitled to an increase in Unit Price as a result of having incurred additional expense or the Town believes that the Town is entitled to a decrease in Unit Price and the parties are unable to agree as to the amount of any such increase or decrease..

3. Lump Sum Change Orders. Compensation for Lump Sum Change Orders shall be limited to expenditures necessitated specifically by the Additional Work, and shall be segregated as follows:

a. Labor. The costs of labor will be the actual cost for wages prevailing locally for each craft or type of worker at the time the Additional Work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State or local laws, as well as assessment or benefits required by lawful collective bargaining agreements. The use of a labor classification which would increase the Additional Work cost will not be permitted unless the Contractor establishes the necessity for such new classifications. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.

b. Materials. The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available in the quantities involved, plus sales tax, freight, and delivery. Materials costs shall be based upon supplier or manufacturer's invoice. If invoices or other satisfactory evidence of

cost are not furnished within fifteen (15) Days of delivery, then the Town shall determine the materials cost, at its sole discretion.

c. Tool and Equipment Use. Costs for the use of small tools, which are tools that have a replacement value of $1,000 or less, shall be considered included in the Overhead and Profit mark-ups established below. Regardless of ownership, the rates to be used in determining equipment use costs shall not exceed listed rates prevailing locally at equipment rental agencies, or distributors, at the time the Work is performed.

4. Time and Materials Change Orders.

a. General. The term Time and Materials means the sum of all costs reasonably and necessarily incurred and paid by Contractor for labor, materials, and equipment in the proper performance of Additional Work. Except as otherwise may be agreed to in writing by the Town, such costs shall be in amounts no higher than those prevailing in the locality of the Project, and shall include only the following items.

b. Timely and Final Documentation.

i. T&M Daily Sheets. Contractor must submit timesheets, materials invoices, records of equipment hours, and records of rental equipment hours to the Town's Representative for an approval signature **each day** Additional Work is performed. Failure to get the Town's Representative's approval signature each Day shall result in a waiver of Contractor's right to claim these costs. The Town's Representative's signature on time sheets only serves as verification that the Work was performed and is not indicative of Town's agreement to Contractor's entitlement to the cost.

ii. T&M Daily Summary Sheets. All documentation of incurred costs ("T&M Daily Summary Sheets") shall be submitted by Contractor within **three (3) Days** of incurring the cost for labor, material, equipment, and special services as Additional Work is performed. Contractor's actual costs shall be presented in a summary table in an electronic spreadsheet file by labor, material, equipment, and special services. Each T&M Daily Summary Sheet shall include Contractor's actual costs incurred for the Additional Work performed that day and a cumulative total of Contractor's actual costs incurred for the Additional Work. Contractor's failure to provide a T&M Daily Summary Sheet showing a total cost summary within three (3) Days but within five (5) Days of performance of the Work will result in the Contractor's otherwise allowable overhead and profit being reduced by 50% for that portion of Additional Work which was not documented in a timely manner. Contractor's failure to submit the T&M Daily Summary Sheet within five (5) Days of performance of the Work will result in a total waiver of Contractor's right to claim these costs.

iii. T&M Total Cost Summary Sheet. Contractor shall submit a T&M Total Cost Summary Sheet, which shall include total actual costs, within **seven (7) Days** following completion of Town approved Additional Work. Contractor's total actual cost shall be presented in a summary table in an

electronic spreadsheet file by labor, material, equipment, and special services. Contractor's failure to submit the T&M Total Cost Summary Sheet within seven (7) Days of completion of the Additional Work will result in Contractor's waiver for any reimbursement of any costs associated with the T&M Summary Sheets or the performance of the Additional Work.

c. Labor. The Contractor will be paid the cost of labor for the workers used in the actual and direct performance of the Work. The cost of labor will be the sum of the actual wages paid (which shall include any employer payments to or on behalf of the workers for health and welfare, pension, vacation, and similar purposes) substantiated by timesheets and certified payroll for wages prevailing for each craft or type of workers performing the Additional Work at the time the Additional Work is done, and the labor surcharge set forth in the Department of Transportation publication entitled *Labor Surcharge and Equipment Rental Rates*, which is in effect on the date upon which the Work is accomplished and which is a part of the Contract. The labor surcharge shall constitute full compensation for all payments imposed by Federal, State, or local laws and for all other payments made to, or on behalf of, the workers, other than actual wages.

   i. Equipment Operator Exception. Labor costs for equipment operators and helpers shall be paid only when such costs are not included in the invoice for equipment rental.

   ii. Foreman Exception. The labor costs for foremen shall be proportioned to all of their assigned work and only that applicable to the Additional Work shall be paid. Indirect labor costs, including, without limitation, the superintendent, project manager, and other labor identified in the Contract Documents will be considered Overhead.

d. Materials. The cost of materials reported shall be itemized at invoice or lowest current price at which materials are locally available and delivered to the Project site in the quantities involved, plus the cost of sales tax, freight, delivery, and storage.

   i. Trade discounts available to the purchaser shall be credited to the Town notwithstanding the fact that such discounts may not have been taken by Contractor.

   ii. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual supplier as determined by the Town's Representative.

   iii. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from said sources on Additional Work items or the current wholesale price for such materials delivered to the Project site, whichever price is lower.

   iv. If, in the opinion of the Town's Representative, the cost of materials is excessive, or Contractor does not furnish satisfactory evidence of the cost

of such materials, then the cost shall be deemed to be the lowest current wholesale price for the total quantity concerned delivered to the Project site less trade discounts.

v. The Town reserves the right to furnish materials for the Additional Work and no Claim shall be allowed by Contractor for costs of such materials or Indirect Costs or profit on Town furnished materials.

e. Equipment.

i. Rental Time. The rental time to be paid for equipment on the Project site shall be the time the equipment is in productive operation on the Additional Work being performed and, in addition, shall include the time required to move the equipment to the location of the Additional Work and return it to the original location or to another location requiring no more time than that required to return it to its original location; except that moving time will not be paid if the equipment is used on other than the Additional Work, even though located at the site of the Additional Work.

(a) Rental Time Not Allowed. Rental time will not be allowed while equipment is inoperative due to breakdowns.

(b) Computation Method. The following shall be used in computing the rental time of equipment on the Project site.

(i) When hourly rates are paid, any part of an hour less than 30 minutes of operation shall be considered to be 1/2-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation.

(ii) When daily rates are paid, any part of a day less than 4 hours operation shall be considered to be 1/2-day of operation, and any part of an hour in excess of 4 hours will be considered one day of operation.

ii. Rental Rates. Contractor will be paid for the use of equipment at the lesser of (i) the actual rental rate, or (ii) the rental rate listed for that equipment in the California Department of Transportation publication entitled *Labor Surcharge and Equipment Rental Rates*, which is in effect on the date upon which the Contract was executed. Such rental rates will be used to compute payments for equipment whether the equipment is under Contractor's control through direct ownership, leasing, renting, or another method of acquisition. The rental rate to be applied for use of each item of equipment shall be the rate (i.e., daily, monthly) resulting in the least total cost to the Town for the total period of use. If it is deemed necessary by Contractor to use equipment not listed in the publication, an equitable rental rate for the equipment will be established by the Town's Representative. Contractor may furnish cost data which might assist the Town's Representative in the establishment of the rental rate.

iii. Contractor-Owned Equipment.

(a) For Contractor-owned equipment, the allowed equipment rental rate will be limited to the monthly equipment rental rate using a utilization rate of 173 hours per month.

(b) For Contractor-owned equipment, the rental time to be paid for equipment on the Site shall be the time the equipment is in productive operation, unless, in the instance of standby time, the equipment could be actively used by Contractor on another project, then Town shall pay for the entirety of the time the equipment is on Site. It shall be Contractor's burden to demonstrate to the Town that the equipment could be actively used on another project.

iv. All equipment shall, in the opinion of the Town's Representative, be in good working condition and suitable for the purpose for which the equipment is to be used.

v. Before construction equipment is used on the Additional Work, Contractor shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the Town's Representative, in duplicate, a description of the equipment and its identifying number and the scheduled Additional Work activities planned.

vi. Unless otherwise specified, manufacturer's rating and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

f. Special Services. Special work or services are defined as that Additional Work characterized by extraordinary complexity, sophistication, or innovation or a combination of the foregoing attributes which are unique to the construction industry.

i. Invoices for Special Services. When the Town's Representative and Contractor determine that a special service is required which cannot be performed by the forces of Contractor or those of any of its Subcontractors, the special service may be performed by an entity especially skilled in the Additional Work. Invoices for special services based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental costs, after validation of market values by the Town's Representative.

ii. Discount and Allowance. All invoices for special services will be adjusted by deducting all trade discounts offered or available, whether the discounts were taken or not. In lieu of Overhead and Profit specified herein, a total allowance not to exceed fifteen percent (15%) for Overhead and Profit will be added to invoices for Special Services.

iii. When the Town determines, in its sole discretion, that competitive bidding is necessary for certain special services, Contractor shall solicit competitive bids for those special services.

g. Excluded Costs. The term Time and Material shall not include any of the following costs or any other home or field office overhead costs, all of which are to be considered administrative costs covered by Contractor's allowance for Overhead and Profit.

i. Overhead Cost. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, timekeepers, clerks, and other personnel employed by Contractor whether at the Site or in Contractor's principal office or any branch office, material yard, or shop for general administration of the Additional Work;

ii. Office Expenses. Expenses of Contractor's principal and branch offices;

iii. Capital Expenses. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Additional Work and charges against Contractor for delinquent payments;

iv. Negligence. Costs due to the negligence of Contractor or any Subcontractor or Supplier, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including without limitation the correction of Defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property;

v. Other. Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in the Contract Documents;

vi. Small Tools. Cost of small tools valued at less than $1,000 and that remain the property of Contractor;

vii. Administrative Costs. Costs associated with the preparation of Change Orders (whether or not ultimately authorized), cost estimates, or the preparation or filing of Claims;

viii. Anticipated Lost Profits. Expenses of Contractor associated with anticipated lost profits or lost revenues, lost income or earnings, lost interest on earnings, or unpaid retention;

ix. Home Office Overhead. Costs derived from the computation of a "home office overhead" rate by application of the *Eichleay, Allegheny*, burden fluctuation, or other similar methods;

x. Special Consultants and Attorneys. Costs of special consultants or attorneys, whether or not in the direct employ of Contractor, employed for services specifically related to the resolution of a Claim, dispute, or other matter arising out of or relating to the performance of the Additional Work.

h. Overhead, Profit and Other Charges. The mark-up for overhead (including supervision) and profit on work added to the Contract shall be according to the following:

i. "Net Cost" is defined as consisting of costs of labor, materials, and tools and equipment only excluding overhead and profit. The costs of applicable insurance and bond premium will be reimbursed to the Contractor and subcontractors at cost only, without mark-up. Contractor shall provide Town with documentation of the costs, including, but not limited to, payroll records, invoices, and such other information as Town may reasonably request.

ii. For Work performed by the Contractor's forces, the added cost for overhead and profit shall not exceed fifteen percent (15%) of the Net Cost of the Work.

iii. For Work performed by a subcontractor, the added cost for overhead and profit shall not exceed fifteen percent (15%) of the subcontractor's Net Cost of the Work to which the Contractor may add five percent (5%) of the subcontractor's Net Cost.

iv. For Work performed by a sub-subcontractor, the added cost for overhead and profit shall not exceed fifteen percent (15%) of the sub-subcontractor's Net Cost for Work to which the subcontractor and general contractor may each add an additional five percent (5%) of the Net Cost of the lower tier subcontractor.

v. No additional mark-up will be allowed for lower tier subcontractors, and in no case shall the added cost for overhead and profit payable by Town exceed twenty-five percent (25%) of the Net Cost as defined herein, of the party that performs the Work.

5. All of the following costs are included in the markups for overhead and profit described above, and Contractor shall not receive any additional compensation for: Submittals, drawings, field drawings, Shop Drawings, including submissions of drawings; field inspection; General Superintendence; General administration and preparation of cost proposals, schedule analysis, Change Orders, and other supporting documentation; computer services; reproduction services; Salaries of project engineer, superintendent, timekeeper, storekeeper, and secretaries; Janitorial services; Small tools, incidentals and consumables; Temporary On-Site facilities (Offices, Telephones, High Speed Internet Access, Plumbing, Electrical Power, Lighting; Platforms, Fencing, Water), Jobsite and Home office overhead or other expenses; vehicles and fuel used for work otherwise included in the Contract Documents; Surveying; Estimating; Protection of Work; Handling and disposal fees; Final Cleanup; Other Incidental Work; Related Warranties; insurance and bond premiums.

6. For added or deducted Work by subcontractors, the Contractor shall furnish to the Town the subcontractor's signed detailed record of the cost of labor, material and equipment, including the subcontractor markup for overhead and profit. The same requirement shall apply to sub-subcontractors

7. For added or deducted work furnished by a vendor or supplier, the Contractor shall furnish to the Town a detailed record of the cost to the Contractor, signed by such vendor or supplier.

8. Any change in the Work involving both additions and deletions shall indicate a net total cost, including subcontracts and materials. Allowance for overhead and profit, as specified herein, shall be applied if the net total cost is an increase in the Contract Price; overhead and profit allowances shall not be applied if the net total cost is a deduction to the Contract Price. The estimated cost of deductions shall be based on labor and material prices on the date the Contract was executed.

9. Contractor shall not reserve a right to assert impact costs, extended job site costs, extended overhead, constructive acceleration and/or actual acceleration beyond what is stated in the Change Order for Work. No claims shall be allowed for impact, extended overhead costs, constructive acceleration and/or actual acceleration due to a multiplicity of changes and/or clarifications. The Contractor may not change or modify the Town's change order form in an attempt to reserve additional rights.

10. If the Town disagrees with the proposal submitted by Contractor, it will notify the Contractor and the Town will provide its opinion of the appropriate price and/or time extension. If the Contractor agrees with the Town, a Change Order will be issued by the Town. If no agreement can be reached, the Town shall have the right to issue a unilateral Change Order setting forth its determination of the reasonable additions or savings in costs and time attributable to the extra or deleted work. Such determination shall become final and binding if the Contractor fails to submit a claim in writing to the Town within fifteen (15) Days of the issuance of the unilateral Change Order, disputing the terms of the unilateral Change Order, and providing such supporting documentation for its position as the Town may require.

C. **Change of Contract Times**.

1. The Contract Times may only be changed by a Change Order.

2. All changes in the Contract Price and/or adjustments to the Contract Times related to each change shall be included in Contractor's COR pursuant to this Article. No cost or time will be allowed for cumulative effects of multiple changes. All Change Orders must state that the Contract Time is not changed or is either increased or decreased by a specific number of days. Failure to include a change to time shall waive any change to the time unless the parties mutually agree in writing to postpone a determination of the change to time resulting from the Change Order.

3. Notice of the amount of the request for adjustment in the Contract Times with supporting data shall be delivered within seven (7) Days after such start of occurrence, unless Town's Representative allows an additional period of time to ascertain more accurate data in support of the request. No extension of time or additional compensation shall be given for a delay if the Contractor failed to give notice in the manner and within the time prescribed.

4. Town may elect, at Town's sole discretion, to grant an extension in Contract Times, without Contractor's request, because of delays or other factors.

5. <u>Use of Float and Critical Path.</u>

a. Float is for the benefit of the Project. Float shall not be considered for the exclusive use or benefit of either the Town or the Contractor.

b. Contractor shall not be entitled to compensation, and Town will not compensate Contractor, for delays which impact early completion. Any difference in time between the Contractor's early completion and the Contract Time shall be considered a part of the Project float.

6. Contractor's entitlement to an extension of the Contract Times is limited to a Town-caused extension of the critical path, reduced by the Contractor's concurrent delays, and established by a proper time impact analysis. No time extension shall be allowed unless, and then only to the extent that, the Town-caused delay extends the critical path beyond the previously approved Contract Time. If approved, the increase in time required to complete the Work shall be added to the Contract Time.

   a. Contractor shall not be entitled to an adjustment in the Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

   b. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions (as determined by the Town), Acts of God, acts or failures to act of utility owners not under the control of Town, or other causes not the fault of and beyond control of Town and Contractor, then Contractor shall be entitled to an time extension when the Work stopped is on the critical path. Such a non-compensable adjustment shall be Contractor's sole and exclusive remedy for such delays. Contractor must submit a timely request in accordance with the requirements of this Article.

   c. <u>Utility-Related Delays.</u>

      i. Contractor shall immediately notify in writing the utility owner and Town's Representative of its construction schedule and any subsequent changes in the construction schedule which will affect the time available for protection, removal, or relocation of utilities. Requests for extensions of time arising out of utility relocation or repair delays shall be filed in accordance with this Article.

      ii. Contractor shall not be entitled to damages or additional payment for delays attributable to utility relocations or alterations if correctly located, as noted in the Contract Documents or by the Underground Service Alert survey.

7. <u>Content for Requests for Contract Extension.</u> Contractor's justification for entitlement shall be clear and complete citing specific Contract Document references and reasons on which Contractor's entitlement is based. At a minimum, each request for a time extension must include:

a. Each request for an extension of Contract Time must identify the impacting event, in narrative form, providing a description of the delay event and sufficient justification as to why the Contractor is entitled to a time extension. Contractor must demonstrate that the delay arises from unforeseeable causes beyond the control and without the fault or negligence of both Contractor and any Subcontractors or Suppliers, or any other persons or organizations employed by any of them or for whose acts any of them may be liable, and that such causes in fact lead to performance or completion of the Work, or specified part in question, beyond the corresponding Contract Times, despite Contractor's reasonable and diligent actions to guard against those effects.

b. Each request for an extension of Contract Time must include a time impact analysis in CPM format, using the Contemporaneous Impacted As-Planned Schedule Analysis to calculate the impact of the delay event.

8. No Damages for Reasonable Delay.

a. Town's liability to Contractor for delays for which Town is responsible shall be limited to only an extension of time unless such delays were unreasonable under the circumstances. In no case shall Town be liable for any costs which are borne by the Contractor in the regular course of business, including, but not limited to, home office overhead and other ongoing costs.

b. Damages caused by unreasonable Town delay that impact the critical path, including delays caused by items that are the responsibility of the Town pursuant to Government Code section 4215, shall be compensated at the Daily Rate established in the Special Conditions. No other calculations, proportions or formulas shall be used to calculate any delay damages.

c. Town and Town's Representative, and the officers, members, partners, employees, agents, consultants, or subcontractors of each of them, shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

9. Contractor's failure, neglect, or refusal to comply with the requirements of the Contract Documents, or any portion thereof, shall bar Contractor's request for extensions of the Contract Times. Such failure, neglect, or refusal prejudices Town's and Town's Representative's ability to recognize and mitigate delay, and such failure, neglect, or refusal prevent the timely analysis of requests for extensions of Contract Times, and whether such extensions may be warranted. Contractor hereby waives all rights to extensions of Contract Times due to delays or accelerations that result from or occur during periods of time for which Contractor fails, neglects, or refuses to fully comply with the requirements of this Article.

ARTICLE 45. FINAL ACCEPTANCE AND PAYMENT

A. The acceptance of the Work on behalf of the Town will be made by the Engineer. Such acceptance by the Town shall not constitute a waiver of defects. When the Work has been accepted there shall be paid to Contractor a sum equal to the contract price less any amounts previously paid Contractor and less any amounts withheld by the Town from Contractor under the terms of the contract. The final five percent (5%), or the percentage specified in the notice inviting bids where the Town has adopted a finding of substantially complete, shall not become due and payable until five (5) calendar days shall have elapsed after the expiration of the period within which all claims may be filed under the provisions of Civil Code section 9356. If the Contractor has placed securities with the Town as described herein, the Contractor shall be paid a sum equal to one hundred percent (100%) of the contract price less any amounts due the Town under the terms of the Contract.

B. Unless Contractor advises the Town in writing prior to acceptance of the final five percent (5%) or the percentage specified in the notice inviting bids where the Town has adopted a finding of substantially complete, or the return of securities held as described herein, said acceptance shall operate as a release to the Town of all claims and all liability to Contractor for all things done or furnished in connection with this work and for every act of negligence of the Town and for all other claims relating to or arising out of this work. If Contractor advises the Town in writing prior to acceptance of final payment or return of the securities that there is a dispute regarding the amount due the Contractor, the Town may pay the undisputed amount contingent upon the Contractor furnishing a release of all undisputed claims against the Town with the disputed claims in stated amounts being specifically excluded by Contractor from the operation of the release. No payments, however, final or otherwise, shall operate to release Contractor or its sureties from the Faithful Performance Bond, Labor and Material Payment Bond, or from any other obligation under this contract.

C. In case of suspension of the contract any unpaid balance shall be and become the sole and absolute property of the Town to the extent necessary to repay the Town any excess in the cost of the Work above the contract price.

D. Final payment shall be made no later than 60 days after the date of acceptance of the Work by the Town or the date of occupation, beneficial use and enjoyment of the Work by the Town including any operation only for testing, start-up or commissioning accompanied by cessation of labor on the Work, provided that a release of liens and claims has been received from the Contractor pursuant to Civil Code section 8136. In the event of a dispute between the Town and the Contractor, the Town may withhold from the final payment an amount not to exceed 150% of the disputed amount.

E. Within ten (10) calendar days from the time that all or any portion of the retention proceeds are received by Contractor, Contractor shall pay each of its subcontractors from whom retention has been withheld each subcontractor's share of the retention received. However, if a retention payment received by Contractor is specifically designated for a particular subcontractor, payment of the retention shall be made to the designated subcontractor if the payment is consistent with the terms of the subcontract.

ARTICLE 46. OCCUPANCY

The Town reserves the right to occupy or utilize any portion of the Work at any time before completion, and such occupancy or use shall not constitute acceptance of any part of Work covered by this Contract. This use shall not relieve the Contractor of its responsibilities under the Contract.

ARTICLE 47. INDEMNIFICATION

To the fullest extent permitted by law, Contractor shall immediately defend (with counsel of the Town's choosing), indemnify and hold harmless the Town, officials, officers, agents, employees, and representatives, and each of them from and against:

A. Any and all claims, demands, causes of action, costs, expenses, injuries, losses or liabilities, in law or in equity, of every kind or nature whatsoever, but not limited to, injury to or death, including wrongful death, of any person, and damages to or destruction of property of any person, arising out of, related to, or in any manner directly or indirectly connected with the Work or this Contract, including claims made by subcontractors for nonpayment, including without limitation the payment of all consequential damages and attorney's fees and other related costs and expenses, however caused, regardless of whether the allegations are false, fraudulent, or groundless, and regardless of any negligence of the Town or its officers, employees, or authorized volunteers (including passive negligence), except the sole negligence or willful misconduct or active negligence of the Town or its officials, officers, employees, or authorized volunteers.

B. Contractor's defense and indemnity obligation herein includes, but is not limited to damages, fines, penalties, attorney's fees and costs arising from claims under the Americans with Disabilities Act (ADA) or other federal or state disability access or discrimination laws arising from Contractor's Work during the course of construction of the improvements or after the Work is complete, as the result of defects or negligence in Contractor's construction of the improvements.

C. Any and all actions, proceedings, damages, costs, expenses, fines, penalties or liabilities, in law or equity, of every kind or nature whatsoever, arising out of, resulting from, or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of Contractor;

D. Any and all losses, expenses, damages (including damages to the Work itself), attorney's fees, and other costs, including all costs of defense which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the Work and all of Contractor's obligations under the agreement. Such costs, expenses, and damages shall include all costs, including attorney's fees, incurred by the indemnified parties in any lawsuit to which they are a party.

Contractor shall immediately defend, at Contractor's own cost, expense and risk, with the City Council's choosing, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against the Town, its officials, officers, agents, employees and representatives. Contractor shall pay and satisfy any judgment, award or decree that may be rendered against the Town, its officials, officers, employees, agents, employees and representatives, in any such suit, action or other legal proceeding. Contractor shall reimburse the

Town, its officials, officers, agents, employees and representatives for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. The only limitations on this provision shall be those imposed by Civil Code section 2782.

ARTICLE 48. PROCEDURE FOR RESOLVING DISPUTES

In accordance with Public Contract Code sections 20104 *et seq.* and other applicable law, public works claims of $375,000 or less which arise between the Contractor and the Town shall be resolved under the following statutory procedure unless the Town has elected to resolve the dispute pursuant to Public Contract Code section 10240 *et seq.*

A. **All Claims.** All claims shall be submitted in writing and accompanied by substantiating documentation. Claims must be filed on or before the date of final payment unless other notice requirements are provided in the contract. "Claim" means a separate demand by the Contractor for (1) a time extension, (2) payment of money or damages arising from work done by or on behalf of the Contractor and payment of which is not otherwise expressly provided for or the Contractor is not otherwise entitled, or (3) an amount the payment of which is disputed by the Town.

B. **Claims Under $50,000.** The Town shall respond in writing to the claim within 45 calendar days of receipt of the claim, or, the Town may request, in writing, within 30 calendar days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the Town may have. If additional information is needed thereafter, it shall be provided upon mutual agreement of the Town and the Contractor. The Town's written response shall be submitted 15 calendar days after receiving the additional documentation, or within the same period of time taken by the Contractor to produce the additional information, whichever is greater.

C. **Claims over $50,000 but less than or equal to $375,000.** The Town shall respond in writing within 60 calendar days of receipt, or, may request in writing within 30 calendar days of receipt of the claim, any additional documents supporting the claim or relating to defenses or claims the Town may have against the Town. If additional information is needed thereafter, it shall be provided pursuant to mutual agreement between the Town and the Contractor. The Town response shall be submitted within 30 calendar days after receipt of the further documents, or within the same period of time taken by the Contractor to produce the additional information or documents, whichever is greater. The Contractor shall make these records and documents available at all reasonable times, without any direct charge.

D. **All Claims.** The Contractor will submit the claim justification in the following format:

    1. Summary of claim merit and price, and Contract clause pursuant to which the claim is made.

    2. List of documents relating to claim:

        a. Specifications
        b. Drawings
        c. Clarifications (Requests for Information)
        d. Schedules
        e. Other (All Related Documents)

3. Chronology of events and correspondence.

4. Analysis of claim merit.

5. Analysis of claim cost.

6. Analysis of time impact analysis in CPM format.

7. Cover letter and certification of validity of the claim.

E. **All Claims.** Notwithstanding the foregoing, all public works claims between the Contractor and the Town shall be resolved pursuant to the procedures set forth in Public Contract Code section 9204. The Town will provide a written response to the Contractor identifying what portion of the claim is disputed and what portion is undisputed within 45 days of receipt of the claim, unless the parties mutually agree to extend the time for response. If the Town does not respond within the 45-day time period, or as extended by mutual agreement, the claim shall be deemed rejected in its entirety.

F. **All Claims.** If the Contractor disputes the Town's response, or if the Town fails to respond within the statutory time period(s), the Contractor may so notify the Town within 15 calendar days of the receipt of the response or the failure to respond, and demand an informal conference to meet and confer for settlement. Upon such demand, the Town shall schedule a meet and confer conference within 30 calendar days.

G. **All Claims.** Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion thereof remains in dispute, the Town shall provide the Contractor with a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any portion of the claim that remains in dispute shall be submitted to nonbinding mediation. The selection of the mediator shall be in accordance with Public Contract Code section 9204, and the Town and the Contractor shall equally share the associated mediator fees. Each party will be responsible for its own attorneys' fees and other costs.

H. The Contractor must comply with the claims filing procedures set forth in Government Code sections 900 *et seq.* for any claim or any portion thereof that remains in dispute, after the meet and confer conference. For purposes of those provisions, the time within which a claim must be filed shall be tolled from the time the Contractor submits the written claim until the time the claim is denied, including any time utilized for the meet and confer conference. Submission of a claim, properly certified, with all required supporting documentation, and written rejection or denial of all or part of the claim by the Town, is a condition precedent to any action, proceeding, litigation, suit, general conditions claim, or demand for arbitration by Contractor.

I. **Government Code Claim.** In addition to any and all contract requirements pertaining to notices of and requests for compensation or payment for extra work, disputed work, construction claims and/or changed conditions, the Contractor must comply with the claim procedures set forth in Government Code sections 900 *et seq.* prior to filing any lawsuit against the Town. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain

unresolved after all procedures pertaining to extra work, disputed work, construction claims, and/or changed conditions have been followed by Contractor. If no such Government Code claim is submitted, or if the prerequisite contractual requirements are not otherwise satisfied as specified herein, Contractor shall be barred from bringing and maintaining a valid lawsuit against the Town.

ARTICLE 49. TOWN'S RIGHT TO TERMINATE CONTRACT

A. **Termination for Cause by the Town:**

1. In the sole estimation of the Town, if the Contractor refuses or fails to prosecute the Work or any separable part thereof with such diligence as will insure its completion within the time specified by the Contract Documents, or any extension thereof, or fails to complete such Work within such time, or if the Contractor should be adjudged a bankrupt, or if it should make a general assignment for the benefit of its creditors, or if a receiver should be appointed on account of its insolvency, or the Contractor or any of its subcontractors should violate any of the provisions of this Contract, the Town may serve written notice upon the Contractor and its Surety of the Town's intention to terminate this Contract. This notice of intent to terminate shall contain the reasons for such intention to terminate this Contract, and a statement to the effect that the Contractor's right to perform this Contract shall cease and terminate upon the expiration of ten (10) calendar days unless such violations have ceased and arrangements satisfactory to the Town have been made for correction of said violations.

2. In the event that the Town serves such written notice of termination upon the Contractor and the Surety, the Surety shall have the right to take over and perform the Contract. If the Surety does not: (1) give the Town written notice of Surety's intention to take over and commence performance of the Contract within 15 calendar days of the Town's service of said notice of intent to terminate upon Surety; and (2) actually commence performance of the Contract within 30 calendar days of the Town's service of said notice upon Surety; then the Town may take over the Work and prosecute the same to completion by separate contract or by any other method it may deem advisable for the account and at the expense of the Contractor.

3. In the event that the Town elects to obtain an alternative performance of the Contract as specified above: (1) the Town may, without liability for so doing, take possession of and utilize in completion of the Work such materials, appliances, plants and other property belonging to the Contractor that are on the site and reasonably necessary for such completion (A special lien to secure the claims of the Town in the event of such suspension is hereby created against any property of Contractor taken into the possession of the Town under the terms hereof and such lien may be enforced by sale of such property under the direction of the City Council without notice to Contractor. The proceeds of the sale after deducting all expenses thereof and connected therewith shall be credited to Contractor. If the net credits shall be in excess of the claims of the Town against Contractor, the balance will be paid to Contractor or Contractor's legal representatives.); and (2) Surety shall be liable to the Town for any cost or other damage to the Town necessitated by the Town securing an alternate performance pursuant to this Article.

B. **Termination for Convenience by the Town:**

1. The Town may terminate performance of the Work called for by the Contract Documents in whole or, from time to time, in part, if the Town determines that a termination is in the Town's interest.

2. The Contractor shall terminate all or any part of the Work upon delivery to the Contractor of a Notice of Termination specifying that the termination is for the convenience of the Town, the extent of termination, and the Effective Date of such termination.

3. After receipt of Notice of Termination, and except as directed by the Town's Representative, the Contractor shall, regardless of any delay in determining or adjusting any amounts due under this Termination for Convenience clause, immediately proceed with the following obligations:

    a. Stop Work as specified in the Notice.

    b. Complete any Work specified in the Notice of Termination in a least cost/shortest time manner while still maintaining the quality called for under the Contract Documents.

    c. Leave the property upon which the Contractor was working and upon which the facility (or facilities) forming the basis of the Contract Document is situated in a safe and sanitary manner such that it does not pose any threat to the public health or safety.

    d. Terminate all subcontracts to the extent that they relate to the portions of the Work terminated.

    e. Place no further subcontracts or orders, except as necessary to complete the continued portion of the Contract.

    f. Submit to the Town's Representative, within ten (10) calendar days from the Effective Date of the Notice of Termination, all of the usual documentation called for by the Contract Documents to substantiate all costs incurred by the Contractor for labor, materials and equipment through the Effective Date of the Notice of Termination. Any documentation substantiating costs incurred by the Contractor solely as a result of the Town's exercise of its right to terminate this Contract pursuant to this clause, which costs the contractor is authorized under the Contract documents to incur, shall: (1) be submitted to and received by the Engineer no later than 30 calendar days after the Effective Date of the Notice of Termination; (2) describe the costs incurred with particularity; and (3) be conspicuously identified as “Termination Costs occasioned by the Town's Termination for Convenience.”

4. Termination of the Contract shall not relieve Surety of its obligation for any just claims arising out of or relating to the Work performed.

5. In the event that the Town exercises its right to terminate this Contract pursuant to this clause, the Town shall pay the Contractor, upon the Contractor's submission of the

documentation required by this clause and other applicable provisions of the Contract Documents, the following amounts:

a. All actual reimbursable costs incurred according to the provisions of this Contract.

b. A reasonable allowance for profit on the cost of the Work performed, provided Contractor establishes to the satisfaction of the Town's Representative that it is reasonably probable that Contractor would have made a profit had the Contract been completed and provided further, that the profit allowed shall in no event exceed fifteen (15%) percent of the costs.

c. A reasonable allowance for Contractor's administrative costs in determining the amount payable due to termination of the Contract under this Article.

C. Notwithstanding any other provision of this Article, when immediate action is necessary to protect life and safety or to reduce significant exposure or liability, the Town may immediately order Contractor to cease Work on the Project until such safety or liability issues are addressed to the satisfaction of the Town or the Contract is terminated.

ARTICLE 50. WARRANTY AND GUARANTEE OF WORK

A. Contractor hereby warrants that materials and Work shall be completed in conformance with the Contract Documents and that the materials and Work provided will fulfill the requirements of this Warranty. Contractor hereby agrees to repair or replace, at the discretion of the Town, any or all Work that may prove to be defective in its workmanship, materials furnished, methods of installation or fail to conform to the Contract Document requirements together with any other Work which may be damaged or displaced by such defect(s) within a period of one (1) year from the date of the Notice of Completion of the Project without any expense whatever to the Town, ordinary wear and tear and unusual abuse and neglect excepted. Contractor shall be required to promptly repair or replace defective equipment or materials, at Contractor’s option. All costs associated with such corrective actions and testing, including the removal, replacement, and reinstitution of equipment and materials necessary to gain access, shall be the sole responsibility of the Contractor.

B. For any Work so corrected, Contractor’s obligation hereunder to correct defective Work shall be reinstated for an additional one (1) year period, commencing with the date of acceptance of such corrected Work. The reinstatement of the one (1) year warranty shall apply only to that portion of work that was corrected. Contractor shall perform such tests as Town may require to verify that any corrective actions, including, without limitation, redesign, repairs, and replacements comply with the requirements of the Contract. In the event of Contractor’s failure to comply with the above-mentioned conditions within ten (10) calendar days after being notified in writing of required repairs, to the reasonable satisfaction of the Town, the Town shall have the right to correct and replace any defective or non-conforming Work and any work damaged by such work or the replacement or correction thereof at Contractor’s sole expense. Contractor shall be obligated to fully reimburse the Town for any expenses incurred hereunder immediately upon demand.

C. In addition to the warranty set forth in this Article, Contractor shall obtain for Town all warranties that would be given in normal commercial practice and assign to Town any and all manufacturer's or installer's warranties for equipment or materials not manufactured by Contractor and provided as part of the Work, to the extent that such third-party warranties are assignable and extend beyond the warranty period set forth in this Article. Contractor shall furnish the Town with all warranty and guarantee documents prior to final Acceptance of the Project by the Town as required.

D. When specifically indicated in the Contract Documents or when directed by the Engineer, the Town may furnish materials or products to the Contractor for installation. In the event any act or failure to act by Contractor shall cause a warranty applicable to any materials or products purchased by the Town for installation by the Contractor to be voided or reduced, Contractor shall indemnify Town from and against any cost, expense, or other liability arising therefrom, and shall be responsible to the Town for the cost of any repairs, replacement or other costs that would have been covered by the warranty but for such act or failure to act by Contractor.

E. The Contractor shall remedy at its expense any damage to Town-owned or controlled real or personal property.

F. The Town shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage. The Contractor shall within ten (10) calendar days after being notified commence and perform with due diligence all necessary Work. If the Contractor fails to promptly remedy any defect, or damage; the Town shall have the right to replace, repair or otherwise remedy the defect, or damage at the Contractor's expense.

G. In the event of any emergency constituting an immediate hazard to health, safety, property, or licensees, when caused by Work of the Contractor not in accordance with the Contract requirements, the Town may undertake at Contractor's expense, and without prior notice, all Work necessary to correct such condition.

H. Acceptance of Defective Work.

1. If, instead of requiring correction or removal and replacement of Defective Work, the Town prefers to accept it, Town may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Town's evaluation of and determination to accept such Defective Work and for the diminished value of the Work.

2. If any acceptance of defective work occurs prior to release of the Project Retention, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Town shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work and all costs incurred by Town.

3. If the Project Retention is held in an escrow account as permitted by the Contract Documents, Contractor will promptly alert the escrow holder, in writing, of the amount of Retention to be paid to Town.

4. If the acceptance of Defective Work occurs after release of the Project Retention, an appropriate amount will be paid by Contractor to Town.

I. Town May Correct Defective Work.

1. If Contractor fails within a reasonable time after written notice from Town's Representative to correct Defective Work, or to remove and replace rejected Work as required by Town, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Town may, after seven (7) Days' written notice to Contractor, correct, or remedy any such deficiency.

2. In connection with such corrective or remedial action, Town may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Town has paid Contractor but which are stored elsewhere. Contractor shall allow Town and Town's Representative, and the agents, employees, other contractors, and consultants of each of them, access to the Site to enable Town to exercise the rights and remedies to correct the Defective Work.

3. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Town correcting the Defective Work will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions into the Contract Documents with respect to the Work; and Town shall be entitled to an appropriate decrease in the Contract Price.

4. Such claims, costs, losses and damages will include, but not be limited to, all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Defective Work.

5. If the Change Order is executed after all payments under the Contract have been paid by Town and the Project Retention is held in an escrow account as permitted by the Contract Documents, Contractor will promptly alert the escrow holder, in writing, of the amount of Retention to be paid to Town.

6. If the Change Order is executed after release of the Project Retention, an appropriate amount will be paid by Contractor to Town.

7. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to Town correcting Defective work.

J. Nothing in the Warranty or in the Contract Documents shall be construed to limit the rights and remedies available to Town at law or in equity, including, but not limited to, Code of Civil Procedure section 337.15.

ARTICLE 51. DOCUMENT RETENTION & EXAMINATION

A. In accordance with Government Code section 8546.7, records of both the Town and the Contractor shall be subject to examination and audit by the State Auditor General for a period of three (3) years after final payment.

B. Contractor shall make available to the Town any of the Contractor's other documents related to the Project immediately upon request of the Town.

C. In addition to the State Auditor rights above, the Town shall have the right to examine and audit all books, estimates, records, contracts, documents, bid documents, subcontracts, and other data of the Contractor (including computations and projections) related to negotiating, pricing, or performing the modification in order to evaluate the accuracy and completeness of the cost or pricing data at no additional cost to the Town, for a period of four (4) years after final payment.

ARTICLE 52. SEPARATE CONTRACTS

A. The Town reserves the right to let other contracts in connection with this Work or on the Project site. Contractor shall permit other contractors reasonable access and storage of their materials and execution of their work and shall properly connect and coordinate its Work with theirs.

B. To ensure proper execution of its subsequent Work, Contractor shall immediately inspect work already in place and shall at once report to the Engineer any problems with the Work in place or discrepancies with the Contract Documents.

C. Contractor shall ascertain to its own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by the Town in prosecution of the Project to the end that Contractor may perform this Contract in the light of such other contracts, if any. Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy at site of the Project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project. If simultaneous execution of any contract for the Project is likely to cause interference with performance of some other contract or contracts, the Engineer shall decide which Contractor shall cease Work temporarily and which contractor shall continue or whether work can be coordinated so that contractors may proceed simultaneously. The Town shall not be responsible for any damages suffered or for extra costs incurred by Contractor resulting directly or indirectly from award, performance, or attempted performance of any other contract or contracts on the Project site.

ARTICLE 53. NOTICE AND SERVICE THEREOF

All notices shall be in writing and either served by personal delivery or mailed to the other party as designated in the Bid Forms. Written notice to the Contractor shall be addressed to Contractor's principal place of business unless Contractor designates another address in writing for service of notice. Notice to Town shall be addressed to the Town as designated in the Notice Inviting Bids unless Town designates another address in writing for service of notice. Notice shall be effective upon receipt or five (5) calendar days after being sent by first class mail, whichever is earlier. Notice given by facsimile shall not be effective unless acknowledged in writing by the receiving party.

ARTICLE 54. NOTICE OF THIRD PARTY CLAIMS

Pursuant to Public Contract Code section 9201, the Town shall provide the Contractor with timely notification of the receipt of any third-party claims relating to the Contract. The Town is entitled to recover reasonable costs incurred in providing such notification.

ARTICLE 55. STATE LICENSE BOARD NOTICE

Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint regarding a patent act or omission is filed within four (4) years of the date of the alleged violation. A complaint regarding a latent act or omission pertaining to structural defects must be filed within ten (10) years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, California 95826.

ARTICLE 56. INTEGRATION

A. **Oral Modifications Ineffective.** No oral order, objection, direction, claim or notice by any party or person shall affect or modify any of the terms or obligations contained in the Contract Documents.

B. **Contract Documents Represent Entire Contract.** The Contract Documents represent the entire agreement of the Town and Contractor.

ARTICLE 57. ASSIGNMENT OF CONTRACT

Contractor shall not assign, transfer, convey, sublet or otherwise dispose of the rights or title of interest of any or all of this contract without the prior written consent of the Town. Any assignment or change of Contractor's name of legal entity without the written consent of the Town shall be void. Any assignment of money due or to become due under this Contract shall be subject to a prior lien for services rendered or Material supplied for performance of Work called for under the Contract Documents in favor of all persons, firms, or corporations rendering such services or supplying such Materials to the extent that claims are filed pursuant to the Civil Code, the Code of Civil Procedure or the Government Code.

ARTICLE 58. CHANGE IN NAME AND NATURE OF CONTRACTOR'S LEGAL ENTITY

Should a change be contemplated in the name or nature of the Contractor's legal entity, the Contractor shall first notify the Town in order that proper steps may be taken to have the change reflected on the Contract and all related documents. No change of Contractor's name or nature will affect Town's rights under the Contract, including but not limited to the bonds.

ARTICLE 59. ASSIGNMENT OF ANTITRUST ACTIONS

Pursuant to Public Contract Code section 7103.5, in entering into a public works contract or subcontract to supply goods, services, or materials pursuant to a public works contract, Contractor or subcontractor offers and agrees to assign to the Town all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 USC, Section 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials

pursuant to this contract or any subcontract. This assignment shall be made and become effective at the time the Town tenders final payment to the Contractor, without further acknowledgment by the parties.

ARTICLE 60. PROHIBITED INTERESTS

No Town official or representative who is authorized in such capacity and on behalf of the Town to negotiate, supervise, make, accept, or approve, or to take part in negotiating, supervising, making, accepting or approving any engineering, inspection, construction or material supply contract or any subcontract in connection with construction of the project, shall be or become directly or indirectly interested financially in the Contract.

ARTICLE 61. CONTROLLING LAW

Notwithstanding any subcontract or other contract with any subcontractor, supplier, or other person or organization performing any part of the Work, this Contract shall be governed by the law of the State of California excluding any choice of law provisions.

ARTICLE 62. JURISDICTION; VENUE

Contractor and any subcontractor, supplier, or other person or organization performing any part of the Work agrees that any action or suits at law or in equity arising out of or related to the bidding, award, or performance of the Work shall be maintained in the Superior Court of San Mateo County, California, and expressly consent to the jurisdiction of said court, regardless of residence or domicile, and agree that said court shall be a proper venue for any such action.

ARTICLE 63. LAWS AND REGULATIONS

A. Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on conduct of work as indicated and specified. If Contractor observes that drawings and specifications are at variance therewith, it shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided for in this Contract for changes in work. If Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Engineer, it shall bear all costs arising therefrom.

B. Contractor shall be responsible for familiarity with the Americans with Disabilities Act ("ADA") (42 U.S.C. § 12101 et seq.). The Work will be performed in compliance with ADA regulations.

ARTICLE 64. PATENTS

Contractor shall hold and save the Town, officials, officers, employees, and authorized volunteers harmless from liability of any nature or kind of claim therefrom including costs and expenses for or on account of any patented or unpatented invention, article or appliance manufactured, furnished or used by Contractor in the performance of this contract.

ARTICLE 65. OWNERSHIP OF CONTRACT DOCUMENTS

All Contract Documents furnished by the Town are Town property. They are not to be used by Contractor or any subcontractor on other work nor shall Contractor claim any right to such

documents. With exception of one complete set of Contract Documents, all documents shall be returned to the Town on request at completion of the Work.

ARTICLE 66. NOTICE OF TAXABLE POSSESSORY INTEREST

In accordance with Revenue and Taxation Code section 107.6, the Contract Documents may create a possessory interest subject to personal property taxation for which Contractor will be responsible.

ARTICLE 67. SURVIVAL OF OBLIGATIONS

All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

00 73 13 – SPECIAL CONDITIONS

1.1 Engineer of Record.

A. For purposes of this Project, the Engineer of Record or Engineer shall be: Smith, Fause & MacDonald, Inc.

1.2 Location of the Project.

A. The Project is located in Colma, Ca.

B. The general location of the Project is shown on Plan Sheet G0.0

1.3 Status of the Project Area and Rights-of-Way.

[NOT USED]

1.4 Site Data.

A. The data provided herein is for the information of Contractor and is subject to all limitations and conditions set forth in the Contract Documents.

B. Subsurface Exploration Data.

[NOT USED.]

C. Other Site Data. The following data are available for inspection at Town's office:

1. Town Hall Project – Infill & Sitework Drawings

Copies of these reports, drawings and other materials may be examined at Town's office during regular business hours.

1.5 Pre-Purchased or Pre-Negotiated Material.

[NOT USED.]

1.6 Designation of Town's Representative.

A. Unless otherwise modified by Town, Town's Representative shall be The Director of Public Works and his/her Designee.

1.7 Modification of Hours of Work.

M – F: 8AM – 7PM

Sat/Sun: 9AM – 5PM

1.8 Project Retention

In accordance with Public Contract Code § 7201, Town will withhold 5% of each progress payment as retention on the Project.

1.9 Reverse Liquidated Damages Due to Unreasonable Town Delay.

A. In compliance with the provisions of California Public Contract Code § 7102, the Contractor will be compensated for damages incurred due to delays in completing the Work due solely to the fault of the Town, where such delay is unreasonable under the circumstances and not contemplated by the parties and such delay is not the result of Additional Work. The Contractor and Town agree that determining actual damages is impracticable and extremely difficult. As such, the Contractor shall be entitled to the appropriate time extension and to payment of liquidated damages in the sum of **$150.00** per Day of delay in excess of the time specified for the Completion of the Work. Such amount shall constitute the only payment allowed and shall necessarily include all overhead (direct or indirect), all profit, all administrative costs, all bond costs, all labor, materials, equipment and rental costs, and any other costs, expenses and fees incurred or sustained as a result of such delay. The Contractor expressly agrees to be limited solely to the liquidated damages for all such delays as defined in this subsection.

1.10 Liquidated Damages Due to Contractor Delay.

A. Time is of the essence. Should Contractor fail to complete all or any part of the Work within the time specified in the Contract Documents, Town will suffer damage, the amount of which is difficult, if not impossible, to ascertain and, pursuant to the authority of Government Code section 53069.85, Town shall therefore be entitled to **$250.00** per Day as liquidated damages for each Day or part thereof that actual completion extends beyond the time specified.

B. Liquidated damages may be deducted from progress payments due Contractor, Project retention or may be collected directly from Contractor, or from Contractor's surety. These provisions for liquidated damages shall not prevent Town, in case of Contractor's default, from terminating the Contractor.

1.11 Utility Outages – Notices to Residents.

A. Should Contractor's operations require interruption of any utility service, Contractor shall notify Town at least ten (10) Days prior to the scheduled outage. Contractor will notify all impacted residents on a form provided by Town at least seven (7) Days prior to the scheduled outage.

B. Contractor shall be responsible for providing, at its cost, any temporary utility or facilities necessitated by the utility outage.

1.12 Schedule Constraints.

Contractor must perform work in such manner whereas the Town Hall Project Construction Schedule is not impacted by work being performed by the Access Control Contractor. Access Control Equipment, Materials and Set Up for Colma Town Hall shall take

precedence to that of the Colma Police Department when necessary. The Town Representative shall determine when the time is necessary for this precedence to occur.

1.13 Noise Restrictions

A. Contractor shall use only such equipment on the Work and in such state of repair so that the emission of sound therefrom is within the noise tolerance level of that equipment as established by Cal/OSHA.

B. Contractor shall comply with the most restrictive of the following: (1) local sound control and noise level rules, regulations and ordinances and (2) the requirements contained in these Contract Documents, including hours of operation requirements.

C. No internal combustion engine shall be operated on the Project without a muffler of the type recommended by the manufacturer. Should any muffler or other control device sustain damage or be determined to be ineffective or defective, the Contractor shall promptly remove the equipment and shall not return said equipment to the job until the device is repaired or replaced. Said noise and vibration level requirements shall apply to all equipment on the job or related to the job, including but not limited to, trucks, transit mixers or transit equipment that may or may not be owned by the Contractor.

1.14 Safety Programs.

A. In addition to all other safety requirements of the Contract Documents, Contractor must comply with Cal/OSHA at all times during the completion of the Work.

B. Town has considered these Safety Programs when determining the Contract Times and no additional time or compensation will be added to the Contract due to these Programs.]

1.15 Coordination with Other Contractors.

A. In addition to the Contract requirements relating to other work at the Site, Town anticipates that other contractors will be performing work within the Site. Specifically:

- BHM Construction Inc. and their Subcontractors

B. Town has considered these other contractors when determining the Contract Times and no additional time or compensation will be added to the Contract due to these other contractors.

END OF SPECIAL CONDITIONS

01 00 00 – GENERAL REQUIREMENTS

PART 1 -- GENERAL

1.1 DESCRIPTION

A. ESS System Upgrades to existing conditions

B. ESS System Additions to existing and new conditions

C. ESS System Tie-in to existing and new conditions

D. ESS Equipment Install and Programming

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION

3.1 LAYOUT OF WORK AND QUANTITY SURVEYS

NOT USED

3.2 SCHEDULE

A. Estimated Schedule. Within 10 Working Days after the issuance of the Notice of Award, Contractor shall prepare a Project schedule and shall submit this to the Engineer for Approval. The receipt or Approval of any schedules by the Engineer or the Town shall not in any way relieve the Contractor of its obligations under the Contract Documents. The Contractor is fully responsible to determine and provide for any and all staffing and resources at levels which allow for good quality and timely completion of the Project. Contractor's failure to incorporate all elements of Work required for the performance of the Contract or any inaccuracy in the schedule shall not excuse the Contractor from performing all Work required for a completed Project within the specified Contract time period. If the required schedule is not received by the time the first payment under the Contract is due, Contractor shall not be paid until the schedule is received, reviewed and accepted by the Engineer.

B. Schedule Contents. The schedule shall indicate the beginning and completion dates of all phases of construction; critical path for all critical, sequential time related activities; and "float time" for all "slack" or "gaps" in the non-critical activities. The schedule shall clearly identify all staffing and other resources which in the Contractor's judgment are needed to complete the Project within the time specified for completion. The overall Project Schedule duration shall be within the Contract time.

C. Schedule Updates. Contractor shall continuously update its construction schedule. Contractor shall submit an updated and accurate construction schedule to the Engineer monthly when requested to do so by Engineer. Contractor shall also submit

schedules showing a three week detailed look-ahead at bi-weekly meetings conducted with the Town. The Engineer may withhold progress payments or other amounts due under the Contract Documents if Contractor fails to submit an updated and accurate construction schedule.

3.3 TEMPORARY FIELD OFFICE

[NOT USED]

3.4 PROTECTION OF WORK AND PROPERTY

A. All existing infrastructure, systems and finishes which are removed, damaged, or destroyed in the course of the Work, shall be replaced or repaired to the original condition. If Contractor provides the Town with reasonable notice of the need for such repair or replacement, it shall be performed by the Town. If the Contractor fails to provide the Town with reasonable notice, the repair or replacement shall be performed by and at the expense of the Contractor to the satisfaction of the Town, whether or not those obstructions have been shown on the Plans, unless otherwise stated herein.

B. Contractor shall provide such heat, covering, and enclosures as are necessary to protect all Work, materials, equipment, appliances, and tools against damage by weather conditions.

C. Contractor shall take adequate precautions to protect existing infrastructure, systems, finishes, and other adjoining property and structures, and to avoid damage thereto, and Contractor shall repair any damage thereto caused by the Work operations. Contractor shall:

1. Enclose the working area with a substantial barricade, and arrange work to cause minimum amount of inconvenience and danger to the Town Staff or public.

2. Deliver materials to the Project site over a route designated by the Engineer.

3. Confine Contractor's apparatus, the storage of materials, and the operations of its workers to limits required by law, ordinances, permits, or directions of the Engineer. Contractor shall not unreasonably encumber the Project site with its materials.

4. Ensure that existing facilities, and structures are all adequately protected and that, upon completion of all Work, all facilities that may have been damaged are restored to a condition acceptable to the Town.

5. At the completion of work each day, leave the Project site in a clean, safe condition.

D. These precautionary measures will apply continuously and not be limited to normal working hours. Full compensation for the Work involved in the preservation of life, safety and property as above specified shall be considered as included in the prices paid for the various contract items of Work, and no additional allowance will be made therefore.

E. Should damage to persons or property occur as a result of the Work, Contractor shall be responsible for proper investigation, documentation, including video or photography, to adequately memorialize and make a record of what transpired. The Town shall be entitled to inspect and copy any such documentation, video, or photographs.

3.5 SITE CONDITIONS SURVEYS

A. Work Included.

Contractor shall conduct thorough pre-construction and post-construction site condition surveys of the entire project area. Site Conditions surveys shall include written documentation of the conditions found, as well as photographs and video recordings of the area within at least 80 feet of any construction area and staging area. The written notes, photographs, and video shall be suitable for forensic purposes to resolve any damage claims that may arise as a result of construction.

B. Submittals.

1. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 – Common Work Results for Electronic Safety and Security.

C. Site Condition Written Documentation.

Written documentation shall include the time, date, and conditions under which the site survey was made. The documentation shall note the condition of structures, pavement, sidewalks, utilities, fences, and etc. within the work areas.

D. Photographs.

1. General – Contractor shall take enough photographs during each site survey to provide a record of conditions existing prior to construction and conditions after construction. Pre-construction photographs shall be taken prior to any construction or mobilization of equipment, but not more that one week prior to actual start of work. The pre-construction photographs may be staged at different times to match the progression of the Work.

2. The photographs shall document existing damage to facilities, both prior to and after construction.

3. Photographs shall include items to indicate scale, as needed. Scaling shall also be used to document elevation differences, as needed.

4. One set of color prints shall be submitted. Additional sets shall be available for reviewing in settling any construction disputes. A set of photos shall also be furnished in electronic format. The resolution shall be at least equal to 7 mega-pixels. All photos shall be documented as to time and date taken, photographer, project number, location, and orientation. Documentation shall include a brief description of objects photographed.

E. Video Recording.

1. Video recordings shall document the conditions of the entire area affected by construction, as well as nearby facilities. The general documentation requirements for videos are the same as for photographs. Video recorders shall accurately and continuously record the time and date.

2. Video recordings shall include an audio portion made simultaneously during the videoing. The audio recording shall describe the location, time, orientation, and objects being recorded. Special commentary shall be provided for unusual conditions or damage noted.

3. Video equipment shall be capable of producing high resolution images and shall have zoom capabilities.

4. Video recordings shall provide an overall picture of the sites and shall provide detailed images of damaged areas. Video shall extend to the maximum height of structures.

5. The Engineer shall have the right to reject any audio video recordings submitted with unintelligible audio, uncontrolled pan or zoom, or of poor quality. Video recordings shall be repeated when rejected.

6. Video recordings shall be submitted with labels indicating the project, date, recorder, and other pertinent information. Recordings shall be submitted on standard DVDs in a standard format.

F. Timing.

Contractor shall provide written notice of the time scheduled for the site conditions survey and the place it is to begin. Contractor shall obtain the Engineer's concurrence prior to beginning the condition survey. The Engineer reserves the right to cancel the survey due to weather conditions or other problems. Videoing shall be done during times of good visibility and no videoing or photography shall be done during periods of visible precipitation or when standing water obscures pavement. Contractor shall provide the Engineer with an opportunity to have a representative present when taking the photos and provide guidance during photographing.

G. Site Surveyor.

The site condition surveyor(s) shall be experienced in construction and potential damage concerns. The site condition surveyor(s) shall be familiar with the photography and video equipment being used.

H. Field Quality Control.

Prior to submitting videos and photographs, the Contractor shall spot check the photos and videos in the field to insure they accurately reflect the actual conditions and to insure they are correctly labeled.

I. Soils Compaction Testing.

NOT USED

3.6 SUBMITTAL REQUIREMENTS FOR MANUALS AND RECORD DRAWINGS

A. General. The Contractor shall furnish all materials and perform all Work required for furnishing submittals to Town in accordance with Contract Documents.

B. Technical Manuals.

NOT USED

C. Record Drawings

1. The Contractor shall maintain one record set of Drawings at the Site. On these, it shall mark all Project conditions, locations, configurations, and any other changes or deviations which may vary from the information represented in the original Contract Documents, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or directed to fully indicate the Work as actually constructed. These master record drawings of the as-built conditions, including all revisions made necessary by Addenda and Change Orders shall be maintained up-to-date during the progress of the Project. Red ink shall be used for alterations and notes. Notes shall identify relevant Change Orders by number and date.

2. Record drawings shall be accessible to Town's Representative at all times during the construction period. Failure on the Contractor's part to keep record drawings current could result in withholding partial payment.

3. Upon Completion of the Project and as a condition of final acceptance, the Contractor shall finalize and deliver a complete set of Record Drawings to Town's Representative. The information submitted by the Contractor will be assumed to be correct, and the Contractor shall be responsible for, and liable to Town, for the accuracy of such information, and for any errors or omissions which may or may not appear on the Record Drawings.

D. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete the Manuals and Record Drawings shall be included in Contractor's bid and distributed in the Schedule of Pay. No additional compensation shall be made to the Contractor for this Work.

3.7 MATERIALS

A. Materials to be Furnished by the Contractor

1. Inspection of Materials. Materials furnished by the Contractor which will become a part of the Project shall be subject to inspection at any one or more of the following locations, as determined by Town's Representative: at the place of production or manufacture, at the shipping point, or at the site of the Work. To allow sufficient

time to provide for inspection, the Contractor shall submit to Town's Representative, at the time of issuance, copies of purchase orders or other written instrument confirming procurement of the materials, including drawings and other pertinent information, covering materials on which inspection will be made.

2. No later than fourteen (14) Days prior to manufacture of material, Contractor shall inform Town's Representative, in writing, the date the material is to be manufactured.

3. Contractors Obligations. The inspection of materials at any of the locations specified above or the waiving of the inspection thereof shall not impact whether the materials and equipment conform to the Contract Documents. Contractor will not be relieved from furnishing materials meeting the requirements of the Contract Documents due to Town's inspection or lack of inspection of the equipment or materials. Acceptance of any materials will be made only after materials are installed in the Project.

4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to accommodate Town's testing efforts, including any travel required by Contractor's forces, shall be included in Contractor's bid and distributed in the Schedule of Pay Items related to the materials requiring testing. No additional compensation shall be made to the Contractor for this Work.

3.8 LOCAL CONDITIONS AND REQUIREMENTS

A. Access to Work and Haul Routes

1. Access, Damage, Restoration. The Contractor shall make his own investigation of the condition of available public or private roads and of clearances, restrictions, bridge-load limits, permit or bond requirements, and other limitations that affect or may affect transportation and ingress or egress at the Site. Claims for changes in Contract Price or Contract Times arising out of the unavailability of transportation facilities or limitations thereon shall not be considered by Town.

2. The Contractor shall maintain and repair any damage arising out of Contractor's operations to all roads used during construction of the Project, and upon completion of all Work, but prior to final acceptance, the roads shall be restored to their original condition. Prior to using any road for access to the Site, the Contractor shall conduct a photograph and/or video survey of the roadway with a copy submitted to Town's Representative.

3. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

B. Power. Contractor shall provide at its own expense all necessary power required for operations under the contract. The Contractor shall provide and maintain in good order such modern equipment and installations as shall be adequate in the opinion of

the Engineer to perform in a safe and satisfactory manner the Work required by the contract.

C. Construction Water.

NOT USED

D. Operation of Existing Water Facilities

NOT USED

E. Construction at Existing Utilities

1. General. Where the Work to be performed crosses or otherwise interferes with water, sewer, gas, or oil pipelines; buried cable; or other public or private utilities, the Contractor shall perform construction in such a manner so that no damage will result to either public or private utilities. It shall be the responsibility of the Contractor to determine the actual locations of, and make accommodates to maintain, all utilities.

2. Permission, Notice and Liability. Before any utility is taken out of service, permission shall be obtained by the Contractor from the owner. The owner, any impacted resident or business owner and the Town Representative will be advised of the nature and duration of the utility outage as well as the Contractor's plan for providing temporary utilities if required by the owner. The Contractor shall be liable for all damage which may result from its failure to maintain utilities during the progress of the Work, and the Contractor shall indemnify Town as required by the Contract Documents from all claims arising out of or connected with damage to utilities encountered during construction; damages resulting from disruption of service; and injury to persons or damage to property resulting from the negligent, accidental, or intentional breaching of utilities.

3. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

F. Traffic Control

1. General. Contractor shall abide by traffic control plans approved by the appropriate jurisdiction.

G. Cleaning Up

1. Contractor at all times shall keep premises free from debris such as waste, rubbish, and excess materials and equipment. Contractor shall not store debris under, in, or about the premises.

2. Contractor shall fully clean up the site at the completion of the Work. If the Contractor fails to immediately clean up at the completion of the Work, the Town may do so and the cost of such clean up shall be charged back to the Contractor.

3.9 ENVIRONMENTAL QUALITY PROTECTION

A. Environmental Conditions

NOT USED.

B. Landscape and Vegetation Preservation

NOT USED

C. Protected Species

NOT USED

D. Preservation of Historical and Archeological Resources

NOT USED

E. Dust and Pollution Control

1. Contractor shall provide all necessary material, equipment and labor to prevent and control the emission of dust and any other potential pollutant on site.

2. Contractor shall not discharge into the atmosphere from any source smoke, dust or other air contaminants in violation of the law, rules, and regulations of the governing agency.

3. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to comply with this paragraph, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

F. Fugitive Dust

NOT USED.

G. Management of Storm, Surface and Other Waters

NOT USED

END OF GENERAL REQUIREMENTS

SECTION 28 05 00

COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Section includes, but is not necessarily limited to:
   1. Common standards and procedures for the Electronic Safety and Security Work.
   2. Design, engineer and provide complete, all means of support, suspension, attachment, fastening, bracing, and restraint (hereinafter "support") of the Work of this Division. Provide engineering of such support by parties licensed to perform work of this type in the Project jurisdiction.

1.2 RELATED DOCUMENTS

A. General provisions of the Contract, including Conditions and Division 1 Specification Sections, apply to this Section.
B. Provisions of this Section apply to Electronic Safety and Security Work, including the following Sections:
   1. Section 28 05 13 – Conductors and Cables for Electronic Safety and Security
   2. Section 28 05 26 – Grounding and Bonding For Electronic Safety And Security
   3. Section 28 05 28 – Pathways for Electronic Safety and Security
   4. Section 28 13 00 – Access Control and Alarm Systems
   5. Section 28 23 00 – Visual Surveillance

1.3 REFERENCES

A. Usage in accordance with Section 01 42 19 - Reference Standards.
B. Conform to the applicable portions of the following standards agencies:
   1. American National Standards Institute (ANSI)
      a. ANSI C39.1 (1981; R 1992) Requirements for Electrical Analog Indicating Instruments
   2. ASTM International (ASTM)
      a. ASTM A 123/A 123M (2002) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
      b. ASTM B 32 (2004) Solder Metal
   3. Electronic Industries Alliance (EIA)
      a. EIA ANSI/EIA/TIA-232-F (2002) Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange
   4. National Electrical Manufacturers Association (NEMA)
      a. NEMA ICS 2 (2000) Industrial Controls and Systems: Controllers, Contactors, and Overload Relays Rated Not More than 2000 Volts AC or 750 Volts DC
      b. NEMA ICS 6 (1993; R 2001) Industrial Control and Systems: Enclosures
   5. U.S. National Archives and Records Administration (NARA)
      a. 47 CFR 15 Radio Frequency Devices

6. Underwriters Laboratories (UL)
    a. UL 1037 (1999; Rev thru Sep 1999) Antitheft Alarms and Devices
    b. UL 1076 (1995; Rev thru Feb 1999) Proprietary Burglar Alarm Units and Systems
    c. UL 1610 (1998; Rev Aug 2001) Central-Station Burglar-Alarm Units
    d. UL 294 (1999; Rev thru Oct 2001) Access Control System Units
    e. UL 636 (1996; Rev thru Mar 2001) Holdup Alarm Units and Systems
    f. UL 639 (1997; Rev thru Sep 2002) Intrusion Detection Units
    g. UL 681 (1999; Rev thru Jan 2001) Installation and Classification of Burglar and Holdup Alarm Systems
    h. UL 796 (1999; Rev thru Dec 2003) Printed-Wiring Boards (1982 issue or latest revision).

1.4 DEFINITIONS

A. See also Section 01 42 10 - Abbreviations, Symbols, and Definitions and Section 28 1300 – Access Control and Alarm Systems.
B. General Abbreviations used in these specifications. Refer additionally to the abbreviations list appearing on the Drawings.
    1. ADA Americans With Disabilities Act.
    2. AFC Above Finished Ceiling.
    3. AFF Above the Finished Floor.
    4. BLDG Building
    5. CAT Category
    6. CL Centerline
    7. DIV Division
    8. (E) Existing
    9. FBO Furnished By Owner
    10. HR Home Run
    11. ID Inside Diameter
    12. LAN Local Area Network
    13. MAX Maximum
    14. NIC Not In Contract.
    15. OD Outside Diameter
    16. OFE Owner Furnished Equipment.
    17. PSRH Project Standard Receptacle Height.
    18. PSSH Project Standard Switch Height.
    19. TYP Typical
    20. UON Unless Otherwise Noted.
C. Definitions of Terms:
    1. As defined in Section 28 13 00 – Access Control and Alarm Systems.

1.5 SYSTEM PERFORMANCE REQUIREMENTS

A. The fully configured access control panels provided under the work of this project in conjunction with devices installed under the work of this project, shall enable the access control and intrusion detection functions as defined in Section 28 13 00 – Access Control and Alarm Systems.
B. The video surveillance system installed under the work of this Project shall enable viewing and recording images on a VMS/NVR system as defined in Section 28 23 00 – Visual Surveillance.

1.6 SUBMITTALS

A. Submit the following according to Conditions of the Construction Contract and Division 1 Specification Sections.
B. General Requirements
    1. Submit all materials for review arranged in same order as Specifications, individually referenced to Specification Section, Paragraph number and Contract Drawing. Conform in every detail as applies to each referencing Section.
    2. Submit 8 ½"x 11" items bound in volumes and drawings in edge bound sets. Submit all drawings on sheets of the same size.
    3. Make each specified submittal as a coordinated package complete with all information specified herein. Incomplete or uncoordinated submittals will be returned with no review action.
C. Contractor and Key Personnel Experience.
    1. A minimum of 30 days prior to installation, submit documentation of the experience of the Electronic Safety and Security contractor(s) and of their key personnel.
    2. Qualifications shall be provided for:
        a. the Electronic Safety and Security contractor(s),
        b. the Electronic Safety and Security installers,
        c. and the supervisor(s) (if different from the installers).
    3. Refer to Quality Assurance paragraph in this section for complete requirements.
D. Progress Schedule: Comply with Section 01 32 13 - Project Coordination.
E. Manufacturer's Product Data:
    1. Manufacturer's Product Data Sheets. Collate in sequence of List of Materials:
    2. Data sheet for each item in each Electronic Security Section, including all accessories, clearly marked for proposed product required for the Project, to including but not limited to the following where required by the Project scope:
        a. Common Work
            1) Power Supplies
            2) UPS’s
            3) Switches
            4) Relays
            5) Batteries
            6) Tamper resistant security fasteners

7) Terminal blocks
8) End-of-Line Resistors.

b. Wiring
1) Cabling of each type used on the project.

c. Racks and Cabinets (where provided under the work of Division 28).

d. Electronic Security Systems Pathway
1) Raceway
2) Raceway connectors
3) Gutter
4) Terminal Cans, Pull Boxes, Device Boxes
5) Enclosures
6) Means of support

e. Access Control and Intrusion Device Field Devices
1) Door position sensors
2) Request to exit devices

3. Material Safety Data Sheet, where applies.
4. List of Materials Schedule. For each item, include:
a. Referencing Specification Section
b. Referencing Paragraph
c. Manufacturer.
d. Model number.
e. Listing, including name of Nationally Recognized Testing Laboratory.
f. Precede each submittal book with a summary schedule, with columns for each item above and rows for each item submitted.
1) Example:

Specification Section	Paragraph	Contract Drawing Reference	Manufacturer	Model No.	UL/CLA Listed
28 05 00	2.03C		XYZ	123	Y
28 13 00	2.07A1		AAA	34-56	Y
		TY2.1	ZZY	456	Y

F. Functional description, provide
1. A system description, including analysis and calculations used in sizing equipment required.
2. Description to show how the equipment shall operate as a system to meet the performance requirements. The following information shall be supplied as a minimum:
a. Description of site equipment and its configuration
b. Protocol description
3. Startup operations
4. System expansion capability and method of implementation
5. System power requirements and UPS sizing

G. Field (Installation) and Shop Drawings: Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. Collate in sequence at least the following plans:
   1. Drawing index/symbol sheet.
   2. Floor plans. At scale of Contract Documents. Show:
      a. Device locations, type and circuit number(s).
      b. Mounting height.
      c. Conduit size.
      d. Rough-in.
      e. Wire type.
      f. Wire fill.
      g. Termination rooms, including Telecommunications Room
   3. Sections/Elevations: At scale of Contract Documents:
      a. Mounting location reference.
      b. Terminal cabinets.
      c. Electrical power receptacles required for the work of this Section.
      d. Block wiring terminations
      e. Clearances
      f. Backboard Wire and Cable Management
   4. Enlarged plans. At scale of Contract Documents or larger as required for trade coordination. Show:
      a. Refer to "floor plans" above.
      b. Architectural features.
      c. Rack cabinets.
      d. Clearances required by the CEC.
      e. Terminal panels and backboard mounted power supplies
      f. Terminal blocks
      g. Electrical and Mechanical panels, including panel boards, EMS and fire alarm, and mechanical systems in vicinity of the work of these Sections.
   5. System Conduit Riser Drawing. Submit drawings that clearly and completely indicate the function of each Electronic Safety and Security component. Indicate termination points of devices, and interconnections required for system operation. Indicate interconnection between modules and devices. Show:
      a. Terminal cabinets.
      b. Coordination with floor plans.
      c. Wire runs not shown on floor plans.
      d. Wire type.
      e. Wire number

f. Wire fill.

6. Single line diagram of Electronic Security and Safety Systems. Indicate the relationship of integrated components on one diagram and show power source, system controls, impedance matches; plus number, size, identification, and maximum lengths of interconnecting wires.
   a. Show at least:
      1) Equipment: Function, make, model.
      2) Rack number.
   b. Grounding and bonding scheme
   c. Terminal cabinets.
   d. Coordination with floor plans.
   e. Wire runs not shown on floor plans.
   f. Wire fill.
   g. Wire numbers assigned uniquely to each wire/cable.
   h. Wire type.
   i. Signal Type
   j. Signal operating level or voltage (for non-optical communications).
   k. Shield condition at both ends (float, ground, location of ground) for non-optical communications.
7. Equipment rack elevations: All racks scaled at 1-1/2" equals 1 foot, or larger.
   a. Show Equipment:
      1) Function.
      2) Make.
      3) Model.
8. Rack wiring drawings: For each rack, show:
   a. Power strip: Receptacles, circuiting.
   b. Equipment.
   c. Grounding.
   d. Wiring, all systems.
   e. Wiring harness scheme.
9. Mounting details:
   a. Specific details of restraints including anchor bolts submitted under the Section 28 05 28 – Pathways for Electronic Safety and Security for mounting and maximum loading at each location, showing compliance and coordination with the CBC and the project Architectural, Structural and Mechanical Documents.
   b. Stamped and signed by an Engineer licensed in the Project jurisdiction for work of this type.
      1) Submit an accompanying Engineering analysis stamped and signed by an Engineer licensed in California for work of this type, indicating that the Equipment Enclosure System will comply with California Building Code for the Project Seismic Zone when loaded with the weight of the equipment submitted.

2) Show calculations on drawings or in bound volume for review.

c. Show loads, type and strength of connections, sizes, dimensions, materials, etc.

d. Provide details for:

1) Equipment Rack anchorage and supporting frame.

2) Wall Mounted Racks and Enclosures.

3) Cable Runway and Cable Tray

4) Monitors, cameras or other Electronic Safety and Security Equipment with total weight, including housing and support brackets weighing 20 pounds or more.

10. Installation details

a. Terminal cabinets: Draw elevations of terminal blocks corresponding to the Single Line Diagram.

b. Firestopping,

c. Details of flexible raceway connections to be made to vibrating equipment

d. California Access Compliance Manual and Americans with Disabilities Act (ADA) compliance.

11. Fabrication details

a. Receptacles.

b. Panels.

c. Special mounting provisions

d. Legends/engraving details. Half or full size:

12. Schedules of Application

a. An itemized list of all items of equipment to be fitted with flexible electrical connections.

b. Catalog cuts of the products to be applied as J-Box mastic and Acoustical Sealant, and a schedule of rooms to receive application of mastic and sealant at J-Boxes.

H. Test plan

1. Project Site Test Reports:

a. Schedule: Submit test reports in timely manner relative to Project schedule such that the Owner's Representative may conduct verification of submitted test data without delay of scheduled progress.

b. Project Site test report: Submit following system completion and prior to and as condition precedent to Acceptance Review and Testing of the Work of this Section.

c. Content: Include at least:

1) Time and date of test.

2) Personnel conducting test.

3) Test equipment, including serial and date of calibration.

4) Test object.

5) Procedure used.

6) Results of test

7) Numerical or graphical presentation.
8) Electronic file in format and media directed by the Owner's Representative.

d. Refer additionally to the requirements of Part 3 of this Section and of the individual Electronic Safety and Security Sections.

I. Hazardous Materials Notification: In the event no product or material is available that does not contain asbestos, PCB or other hazardous materials as determined by the Owner, a "Material Safety Data Sheet" (MSDS) equivalent to OSHA Form 20 shall be submitted for that proposed product or material prior to installation.

J. Asbestos and PCB Certification: After completion of installation, but prior to Substantial Completion, Contractor shall certify in writing that products and materials installed, and processes used, do not contain asbestos or polychlorinated biphenyls (PCB), using format in Article 3 of General Conditions using format in Division 1 Section "Closeout Procedures".

1.7 QUALITY ASSURANCE

A. Procedures: In accordance with Section 01 45 00 - Quality Control.

B. Qualifications

1. Installer's Qualifications
   a. Prior to installation, submit data of the installer's experience and qualifications. Show that the installer who will perform the work has a minimum of 2 years experience successfully installing Electronic Safety and Security Systems of the same type and design as specified herein. Include the names, locations, and points of contact of at least two installations of the same type and design as specified herein where the installer has installed such systems.
   b. Indicate the type of each system and certify that each system has performed satisfactorily in the manner intended for a period of not less than 12 months.
2. Instructor's Qualifications
   a. Prior to installation, submit data of the instructor's experience and qualifications. Show that the instructor, who will train operating and maintenance personnel, has received a minimum of 24 hours of IDS training from a technical organization such as the National Burglar and Fire Alarm Association, and 2 years experience in the installation of IDS of the type specified.
3. Access Control Systems Contractor and Installation Personnel
   a. Contracting firm(s) and installation personnel installing the access control systems specified under the work of Division 28 shall be authorized dealers in the specified products.
   b. Contractor personnel terminating, testing and programming the access control systems specified under the work of Division 28 shall have received factory training to install and program the specified hardware
4. Video Surveillance System Contractor and Installation Personnel

a. Contracting firm(s) and installation personnel installing the video management systems and cameras specified under the work of Division 28 shall be authorized dealers in the specified products.
b. Contractor personnel programming and/or configuring the video management systems and cameras specified under the work of Division 28 shall have received factory training to install and program the specified hardware

5. Installer's Qualifications
   a. Prior to installation, submit data of the installer's experience and qualifications. Show that the installer who will perform the work has a minimum of 2 years experience successfully installing Electronic Safety and Security Systems of the same type and design as specified herein. Include the names, locations, and points of contact of at least two installations of the same type and design as specified herein where the installer has installed such systems.
   b. Indicate the type of each system and certify that each system has performed satisfactorily in the manner intended for a period of not less than 12 months.

C. Designated Supervisor: Furnish a designated supervisor present and in responsible charge in the fabrication shop and on the Project Site during all phases of installation and testing of the Work of this Section. This supervisor shall be the same individual through the execution of the Work unless illness, loss of personnel, or other circumstances reasonably beyond the control of the Contractor intervene.

D. Reference Documents: At all times when the work is in progress, maintain at the workplace, fabrication shop or Project Site as applies.
   1. A complete set of the latest stamped, actioned submittals of record.
   2. A complete set of manufacturer's original operation, instruction and service manuals for each equipment item.

E. Test Equipment
   1. Requirements:
      a. Maintain and operate test equipment at the fabrication shop and the job site for both routine and Acceptance Testing of the Work of this Section.
      b. Maintain test equipment at the job site while work is in progress from installation of equipment racks until Owner Acceptance of this Work; thereafter remove all of this test equipment from the job site.
      c. Unless otherwise indicated, test equipment shall remain property of the Contractor.
      d. Provide all required test cables, jigs and adapters.
      e. Provide equipment with traceable calibration, with calibration date not greater than one year prior to the date of the use of the equipment to perform the specified testing.
   2. Equipment: Specified in individual Sections.

F. Standard Products
   1. Provide materials and equipment that are products of manufacturers regularly

engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section. All components must be of new condition, used or reconditioned products will not be accepted.

a. Alternative Qualifications. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

2. Material and Equipment Manufacturing Date
   a. Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

G. Manufacturer’s identification tags or marks are not acceptable on surfaces which will remain exposed to view after installation.

H. Evidence of “patching” after removal of tags or marks is not acceptable.

1.8 REGULATORY REQUIREMENTS

A. Regulations Applicable: Including but not limited to those defined in Section 01 41 00 - Regulatory Requirements.
   1. Nothing in the Contract Documents shall be construed to permit Work not conforming to applicable laws, ordinances, rules, or regulations.
   2. Safety Agency Listing: All devices provided under the Work of this Section which are connected to the Project electrical system shall be listed by a Nationally Recognized Testing Laboratory, and shall be so labeled.
   3. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Owner’s Representative. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

1.9 DELIVERY, STORAGE AND HANDLING

A. Procedures:
   1. In accordance with General Conditions and Division 1 Section “Product Requirements”, as specified in the individual sections of Division 28 and the following.

B. General

1. Provide protection from weather, moisture, extreme heat and cold, dirt, dust, and other contaminants for cabling and equipment placed in storage.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Connecting hardware shall be rated for operation under ambient conditions of 32 to 140 degrees F and in the range of 0 to 95 percent relative humidity, non-condensing.

1.11 SEQUENCING

A. Comply with Section 01 10 00 - Summary and Section 01 32 16 – Project Schedules.

1.12 OPERATING AND MAINTENANCE DATA

A. Commercial off the shelf manuals shall be furnished for operation, installation, configuration, and maintenance of products provided as a part of the Electronic Safety and Security cabling and pathway system. Precede the manuals with a systems narrative specific to this Project, outlining the major systems functionality, the major systems components, and identifying which manuals document the performance of which subsystems.
   1. Submit operations and maintenance data in accordance with Section 01 78 30 - Guarantees Bonds Service and Maintenance Contracts and as specified herein not later than 2 months prior to the date of beneficial occupancy.

B. Spare Parts
   1. In addition to the requirements of Section 01 78 30 - Guarantees Bonds Service and Maintenance Contracts, provide a complete list of parts and supplies, with current unit prices and source of supply, and a list of spare parts recommended for stocking.

1.13 PROJECT RECORD DOCUMENTS

A. Comply with 01 78 00 - Closeout Submittals, and the following.
   1. Record Drawings
      a. Content
         1) Furnish at least as required for the Shop and Installation Drawings defined elsewhere in this Section.
         2) Contractor shall be responsible for updating building and Electronic Safety and Security plans to reflect as-built conditions.
         3) Indicate actual work on Drawings; indicate actual products used, replace vendor neutral nomenclature used in bid set with makes and models of actual installed devices.
      b. CAD.
         1) Use a computer aided drafting (CAD) system in the preparation of record drawings for this Project. CAD system shall produce files in AutoCAD® .DWG format, latest release at time of Project bid closure. Owner Standard, no substitution permitted.

2) Disk copy of Record Drawings: Provide 2 separate disc copies of each drawing file in the format noted above. Submit on Owner directed media format.

c. Reproduceables: As specified in Division 1.

1.14 WARRANTY SERVICE

A. In addition to provisions of General Conditions and Division 1 Section “Product Requirements”, provide the following.

1. Response Time:
   a. Provide an access control and/or video management system/camera manufacturer qualified technician, as applies to the nature of the warranty item, familiar with the work at the Project Site within 24 hours after receipt of a notice of non-emergency malfunction.
   b. Provide an access control manufacturer qualified technician familiar with the work at the Project Site within 4 hours after receipt of a notice of an emergency malfunction. An emergency malfunction is defined as one causing gate or door openings to be either inaccessible or unsecured, or loss of video from more than one camera.
   c. Provide the Owner’s Representative with telephone number attended 8 hours a day, 7 days a week, to be called in the event of a malfunction.

B. Provide all additional Warranties as defined in each Electronic Safety and Security Systems Section.

1.15 CLOSEOUT

A. Punch List: Perform any and all remedial work, at no claim for additional cost or time. Where required, retest and submit Test Report. Notify the Owner’s Representative of completion of Punch List.
B. Portable Equipment: Furnish all portable equipment and spares to the Owner’s Representative, along with complete documentation of the materials presented. Where applicable, furnish portable equipment in the original manufacturer's packing.
C. Operating and Maintenance Data: Install framed operating and maintenance instructions. Submit Manuals.
D. Project Record Documents: Submit print and digital copies. Digital files shall be in AutoCAD .dwg format, latest release at time of Project bidding..
E. Keys: If applicable, replace construction locks with permanent locks. Provide 5 sets of keys to the Owner’s Representative.
F. Instruction: Conduct specified instruction.
G. Warranty: Submit Warranty dated to run from date of Substantial Completion of the Project.

PART 2 - PRODUCTS

2.1 GENERAL

A. Where a particular material, device, piece of equipment or system is specified directly, the current manufacturer's specification for the same shall be considered to be a part of these specifications, as if completely contained herein in every detail.
B. Each material, device or piece of equipment shall comply with all of the manufacturer's current published specifications for that item.
C. Products shall be made by manufacturers regularly engaged in the production of such products.
D. Provide quantity as shown on Contract Drawings, or as otherwise indicated.
E. Provide all auxiliary and incidental materials and equipment necessary for the operation and protection of the Work of this Section as if specified in full herein.
F. Unless recycled content is specified, provide new materials.
G. Provide the manufacturer's latest design/model, permanently labeled with the manufacturer's name, model number and serial number.
H. Where products are of similar type or use, provide products of the same manufacturer, unless otherwise indicated.
I. Components
    1. UL or third party certified. Cabling and interconnecting hardware and components for Electronic Safety and Security systems shall be UL listed or third party independent testing laboratory certified, and shall comply with NFPA 70 and conform to the requirements specified herein.
    2. Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations, submit proof of such compliance.
        a. The label or listing by the specified organization will be acceptable evidence of compliance.
        b. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Owner’s Representative.
        c. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.
J. Enclosures:
    1. Provide steel frames and enclosures designed and wired to eliminate all induced currents.
    2. Make bolted connections with self-locking devices.
    3. All enclosures should be appropriate to environment of installation – refer to the requirements of Section 28 05 28 – Pathways for Electronic Safety and Security.
K. Finishes: Any item or component of the Work of this Section which is visible shall comply with the following.
    1. Finishes noted or scheduled on the Contract Drawings take precedence.

2. Where design location requires that products, materials or equipment are visible to the public, no manufacturer's logos larger than 1/2 inch shall be visible. Unless otherwise noted or directed, neatly remove or permanently paint out such logos.
3. Where finishes are not noted or otherwise defined in the Contract Documents, submit manufacturer's standard finish samples for selection by the Owner's Representative.

2.2 POWER PROTECTION

A. Power Supply, Backboard Mounted
   1. Drawing Reference(s): PS, Door Lock Power Supply
   2. Backboard mounted equipment
   3. Function:
      a. Power supply with integral backup battery
      b. Class 1 (115VAC Input)
      c. Individually fused, Power Limited, Class 2 outputs - sized to meet worst case load and runtime while maintaining system operations.
      d. Unless otherwise indicated support operations of field devices and doors for at least 2 hours following loss of power.
      e. Provide timer modules as required to supplement ACAS operations.
      f. Power supply shall accept dry contact interface from fire alarm system to initiate power shutdown to fail-safe electric lock hardware
      g. Battery is lead acid type of common commercial manufacture.
      h. UL Listings: UL 294, UL603, UL 1069, UL1481 for application
      i. Power supply and battery fully enclosed in steel NEMA enclosure with cam lock cover and conduit knockouts.
      j. Thermal and short circuit protection with auto reset.
   4. Manufacturers:
      a. Altronix AL600ULM.
      b. Or equal.

2.3 LABELING

A. Shall meet the legibility, defacement, exposure and adhesion requirements of UL 969.
B. Unless otherwise indicated, provide black text on a white background.
C. Shall be preprinted, field printer or computer printed type. Hand written labels are not acceptable.
D. Manufacturers
   1. Brother P-Touch
   2. Brady
   3. Or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine existing conditions before starting work. Submit conflicts in a timely manner for resolution

3.2 GENERAL

A. Conform to UL 681, UL 1037, and UL 1076, the appropriate installation manual and the requirements of each specification section for each equipment type, whichever is most restrictive . Components within the system shall be configured with appropriate "service points" to pinpoint system trouble in less than 20 minutes.

3.3 PREPARATION

A. Prepare and sequence the work to minimize disruption to each room environment and any existing Electronic Safety and Security systems.
B. Protection: Cover all computers, electronic equipment, desks, chairs, furniture and other articles when working at ceiling level and/or performing dust producing tasks.

3.4 LABELING

A. Field devices: Each Electronic Security System initiating device and each annunciating device shall be labeled with the assigned ID matching the device ID used in the Access Control programming and set-up screens.
    1. The ID shall incorporate the device abbreviation, the architectural door number and a sequential number assigned to each device of the same type occurring at the door opening in the form Door Number - Device Abbreviation – Sequential Number - .
        a. Example: One LA at door number 101A: 101A-LA-1.
        b. Example: Two DO's at door 121: 121-DO-1, 121-DO-2.
    2. Apply label to an unobtrusive spot on the device, cut to minimum practical size before applying.
B. Panels. Attach to the interior of each control a panel clear plastic holder in this holder place a laser printed list of the door and card reader relay points zone numbers and other signals that may be transmitted to the central station, the type of device, exactly what the alarm and restoral signals indicate. This list shall be typed on 8-½" x 11" paper provide a copy of these list(s) in Microsoft Word on electronic media format delivered to the Owner's Representative.
C. Refer to Section 28 05 13 – Conductors and Cables for Electronic Safety and Security for the requirements regarding cable labeling.

3.5 REPAIR AND RESTORATION

A. Where working in spaces occupied by the Owner, return to their original positions any furniture or articles relocated to perform the work.

3.6 CLEANING

A. Where working in spaces occupied by the Owner:
   1. Immediately after completing work within each space, clean up and remove all materials, scrap and dust.
   2. All scrap material in work area shall be picked up and removed from the building at the end of each day. See also Division 1 for additional requirements.
   3. All dust resulting from work performed shall be vacuumed up daily.
   4. All scrap material shall be removed from Campus and disposed of in an authorized disposal site. Refer to Section 01 74 19 - Construction Waste Management and Disposal.

3.7 SYSTEMS PERFORMANCE TESTING AND ADJUSTING PROCEDURES

A. General Procedures
   1. It shall be the responsibility of the Security Contractor to demonstrate to the Owner's Representative that the security system is complete and functional as per these specifications. For intrusion detection field devices test shall ensure that the requisite degree of intrusion detection is provided.
   2. Acceptance testing shall be scheduled by the Security Contractor thorough established project channels
   3. Furnish all necessary instruments and equipment required for conducting tests.
B. Device Level Tests
   1. Initially, test each sensor and subsystem component individually.
   2. Test all wire for shorts, open circuits, or grounding.
   3. Immediately correct any defective work
C. Systems Tests.
   1. When the function of each component within a particular subsystem such as each sensor within a particular zone is verified, certify that subsystem of the entire Electronic Safety and Security System is satisfactorily meeting required specifications. Test each subsystem similarly until each detection zone has been certified.
   2. When subsystem certification is complete, test entire integrated system to ensure that subsystem elements are compatible and function as a complete system. Integrated system test shall be accomplished in linear fashion, end-to-end, and shall verify that each simulated intrusion performed within each detection zone produces an appropriate alarm or signal.
   3. Integrated system test shall also verify that alarm is correctly annunciated at the terminal block associated with the field devices,
D. Contractor Testing
   1. Provide for approval, not later than 30 days prior to formal inspection and test, a detailed operational test plan of how each component, subsystem, and entire Electronic Safety and Security System will be tested.
   2. Submit a written test report from an authorized representative of the equipment

manufacturer that the system has been 100% tested and approved. Submit prior to request for final payment.

3. Test each individual circuit and device for proper operation in the presence of telecommunications personnel. Correct all failures and retest at contractors expense to verify corrections. Correct as built drawings, O & M manuals, programming sheets and system programming to reflect the Owner's final occupancy room numbers.
4. Provide Owner's Acceptance Form with a check box associated with each card reader and input point. A check mark in the box will indicate that each point has been correctly installed and that communication between the controller and the server has been established. This form shall be completed prior to Owner acceptance of the system.

3.8 COMMISSIONING AND ACCEPTANCE

A. General:
   1. Upon completion of the work, remove excess debris, materials, equipment, apparatus, tools and similar items. Leave the premises clean, neat and orderly.
B. Results Expected:
   1. Electronic Security Systems shall be complete and ready for use.
   2. Testing, start-up and cleaning work shall be complete.
   3. Maintenance Materials: Special tools for proper operation and maintenance of the equipment provided under this Specification shall be delivered to the Owner.
C. Inspections
   1. There shall be three phases of commissioning inspections:
      a. Rough-in inspection
      b. Above-ceiling inspection (after cables are placed)
      c. Final inspection and testing
   2. The Contractor shall verify that the installation and materials used have been inspected before they are enclosed within building features, or otherwise hidden from view. The Contractor shall bear costs associated with uncovering or exposing installations or features that have not been inspected and approved.
D. Rough-in inspection. Once electrical rough-in and pathways have been installed, but prior to walls and ceilings being installed, the Contractor shall request of the Owner's Representative, in writing, for the official rough-in inspection to take place. The Owner's Representative will then schedule a time to be on-site to conduct this inspection.
   1. At a minimum, the Owner's Representative will evaluate the following items:
      a. Accurate location and height above finished floor for all outlet boxes.
      b. Accurate dimensions (particularly depth) of all outlet boxes and diameter of in-wall conduit serving outlet boxes.
      c. Gutter size, location and clearance.
      d. Location and size of all other electronic security systems conduits or pathways.

e. Location, spacing and clearance of and around electronic security systems racks and wall-mounted equipment.
f. That electronic security systems hard wired power and power receptacles, where installed under the work of this project, meet the design requirements.

2. The Owner's Representative is then to issue a written report to the Contractor identifying all items which currently do not meet the construction document requirements. All items are to be resolved prior to walls and ceilings being closed up. This report is not necessarily all-inclusive; should issues be discovered later in the project, the Contractor is still responsible for corrections/repairs.

E. Above-ceiling inspection

1. Once all electronic security systems cabling has been installed and properly supported and walls have been painted, but prior to the installation of ceiling tiles/material, contractor shall request of the design team, in writing, for the official above-ceiling inspection. The Owner's Representative will then schedule a time to be on-site to conduct this inspection

2. At a minimum, the Owner's Representative will evaluate the following items:
   a. That all items from the previous inspection have been corrected.
   b. That electronic security systems cabling is routed correctly and adequately supported.
   c. That electronic security systems cabling is not painted or over-sprayed.
   d. That the installed electronic security systems cabling matches what was specified/submitted.
   e. That there are no kinks, splices, or other damage to the installed electronic security systems cabling.
   f. That all field devices are properly supported, oriented and labeled.
   g. That all penetrations through fire-rated walls are properly firestopped, including fire blocking materials installed in the annular spaces; and that the firestops are properly labeled.

3. The Owner's Representative is then to issue a written report to the Contractor identifying all items which currently do not meet the construction document requirements. This report is not necessarily all- inclusive; should issues be discovered later in the project, the appropriate communications subcontractor is still responsible for corrections/repairs.

F. Acceptance Review and Testing Procedures

1. The Owner's Representative will witness formal Acceptance Tests after receipt of written certification that all prior Punch List work is complete and that Contractor's functionality tests have been completed and that system is ready for final inspection. This request shall be made 3 weeks before substantial completion. The Owner's Representative will then schedule a time to be on-site to conduct this inspection.

2. The Contractor shall provide the following for the acceptance testing.
    a. Personnel: Provide services of the designated supervisor, ACAS manufacturer representative and additional manufacturer qualified technicians familiar with work of this Project. Provide quantity of technicians as required to comply with Project Schedule.
    b. All tools appropriate for performance of adjustment of and corrections to this Work. Include spare wire and connectors and specified tooling for application.
    c. Ladders, scaffolding and/or lifts as required to access high devices.
    d. All test equipment.
    e. Complete set of latest stamped, actioned submittals of record for reference.
    f. Complete set of Test Reports.
    g. Complete set of manufacturer's original operation, instruction and service manuals for each equipment item for reference.
3. The Contractor shall execute the test plan required in Submittals section and as approved and/or modified by the Owner's Representative. The testing must demonstrate complete operation of all systems and equipment, including any portable equipment.
4. These procedures may be performed at any hour of the day or night as required by the Owner's Representative to comply with the Project Schedule and avoid conflict with Owner staff or student activities. Provide all specified personnel and equipment at any time without claim for additional cost or time.
5. At a minimum, the Owner's Representative will check the following items:
    a. Mechanical/Physical Installation.
        1) That all items from the previous inspections have been corrected.
        2) That all electronic security systems equipment and cabling terminal rooms is installed per the contract documents, including all required terminal blocks, pull boxes, termination resistors and electronic security systems grounding.
        3) All other items necessary to guarantee contract documents are met and complete and functioning communications systems are installed.
        4) All cables and electronic security systems field devices and pathway are properly labeled.
        5) All penetrations through fire-rated walls are properly fire-stopped, including fire blocking materials installed in the annular spaces; and that the firestops are properly labeled.
    b. Functionality Demonstration
        1) Demonstrate functionality of each installed device is consistent with the read range, sensitivity and immunity to false alarms as specified by the device manufacturer.
        2) Functional demonstration to also include, but not limited to the following active components and all related items installed under the work of the project:

a) Batteries
b) Cameras
c) Card readers
d) Door position sensors
e) Duress alarm components
f) Electrified hinges
g) Electrified latches
h) Electrified strikes
i) Glass break sensors
j) Key pad controllers
k) Local alarm devices
l) Motion detectors
m) Power supplies
n) Relays
o) Request to exit devices
p) Servers
q) Switches
r) UPS devices

6. Access Control Infrastructure:
   a. Demonstrate that operation of each opening, including access controlled doors and gates. Refer to the System Performance Requirements and Schedule of Programmatic Outcomes by Door Opening in Section 28 13 00 – Access Control and Alarm Systems is in full conformance with the specified functionality, including each C-Cure status item associated with the scheduled Door Class.
7. Door Position, Window and Hatch Switches
   a. Demonstrate functionality of each device. Demonstrate that operation of each monitored door by 1/2" or less from the fully closed position causes the position switch to change state.
8. Uninterrupted Power Systems:
   a. Disconnect normal power service. Demonstrate that the system remains in full operation for the specified time.

G. Adjust: As directed by the Owner's Representative.

3.9 POST ACCEPTANCE TEST REMEDIATION

A. Temporary Equipment: Provide and operate, without claim for additional cost or time, temporary equipment and/or systems to provide reasonably equivalent function, as determined by the Owner's Representative, in place of the Work of this Section which is incomplete or found not in conformance with the Contract Documents as of seven (7) days prior to the scheduled completion date. Provide such temporary equipment until Acceptance of the Work of this Section. Thereafter, remove such temporary equipment.

B. Correct:

1. In timely manner, correct identified Work of this Section which is incomplete or found not in conformance with the Contract Documents to comply with the Contract Documents, as reasonably determined by the Owner's Representative.
2. Conduct additional tests to in the presence of the Owner's representative to demonstrate that system conforms to the Contract Documents.

END OF SECTION

SECTION 28 05 13

CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes wiring standards for work of Electronic Safety and Security Systems

B. Related Work Under Other Sections

1. Section 28 05 00 – Common Work Results for Electronic Safety and Security.
2. Section 28 05 26 – Grounding and Bonding For Electronic Safety And Security
3. Section 28 05 28 – Pathways for Electronic Safety And Security
4. Section 28 13 00 – Access Control and Alarm Systems
5. Section 28 23 00 – Visual Surveillance

1.2 SUBMITTALS

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

1.3 REFERENCES

A. Usage: In accordance with Division 1.

B. Comply with the portions of the following standards applicable to the scope of this Project:

C. American Society For Testing and Materials (ASTM)

a. ASTM A228/A228M-02 Steel Wire, Music Spring Quality.
b. ASTM D 709(2001) Laminated Thermosetting Materials

D. Federal Communications Commission (FCC)

a. The Code of Federal Regulations, Title 47, Telecommunications, Chapter 1 - FCC Part 68 (1982 issue or latest revision) (47 CFR 68) .

E. Institute of Electrical and Electronic Engineers

a. IEEE 383-2003 Standard for Qualifying Class 1E Electric Cables and Field Splices for Nuclear Power Generating Stations
b. IEEE 100-00 The Authoritative Dictionary of IEEE Standards Terms

F. Insulated Cable Engineers Association (ICEA)

a. ICEA S-56-434 (1983, 5th Ed.) Reaffirmed October 18, 1991 Polyolefin Insulated Communication Cables for Outdoor Use.

b. ANSI/ICEA S-83-596-2011 Indoor Optical Fiber Cables
c. ANSI/ICEA S-84-608-2010 Telecommunications Cable, Filled Polyolefin Insulated Copper Conductor
d. ANSI/ICEA S-86-634-2011 Buried Distribution & Service Wire, Filled Polyolefin Insulated, Copper Conductor.
e. ANSI/ICEA S-87-640-2011 Fiber Optic Outside Plant Communications Cable
f. ICEA S-102-700-2004 – ICEA Standard For Category 6 Individually Unshielded Twisted Pair Indoor Cables (With Or Without An Overall Shield) For Use In Communications Wiring Systems Technical Requirements
g. ICEA S-103-701-2011 Riser Cables Technical Requirements

G. National Electrical Manufacturers Association (NEMA)

a. NEMA WC 63.1(2000) Twisted Pair Premise Voice and Data Communications Cables

H. National Fire Protection Association (NFPA)

a. NFPA 70 National Electrical Code

I. Telecommunications Industry Association (ANSI/TIA)

a. ANSI/TIA-568-C.0, Generic Telecommunications Cabling for Customer Premises
b. ANSI/TIA-568-C.1, Commercial Building Telecommunications Cabling Standard, 2009
c. ANSI/TIA-568-C.2, Balanced Twisted-Pair Telecommunication Cabling and Components Standard, published 2009
d. ANSI/TIA-568-C.3, Optical Fiber Cabling Components Standard, published 2008, including errata issued in October, 2008.
e. ANSI/TIA 569-C (2012) Telecommunications Pathways and Spaces
f. ANSI/TIA-606-B (2012) Administration Standard Telecommunications Infrastructure
g. ANSI- J-STD-607-B (2011) Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises

J. Underwriters Laboratories, Inc. (UL)

a. UL 444(2002; Bul. 2002, 2003) Communications Cables
b. UL 910(1998) Flame-Propagation and Smoke-Density Values for Electrical and Optical-Fiber Cables Used in Spaces Transporting Environmental Air
c. UL 1286(1999; R 2004) Office Furnishings
d. UL 1581 Reference Standard for Electrical Wires, Cables, and Flexible Cords. Oct. 2001
e. UL 1666(2000; R 2002) Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts
f. UL 1863(2000; R 2004) Communications Circuit Accessories

g. UL 969 (1995; R 2001) Marking and Labeling Systems

1.4 QUALITY ASSURANCE

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

1.5 DELIVERY, STORAGE AND HANDLING

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

B. Shipping Conditions:

1. All cable shall be shipped on reels or manufacturer supplied “handy boxes”.
2. The diameter of the drum shall be at least 13 times the diameter of the cable.
3. The reels shall be substantial and so constructed as to prevent damage during shipment and handling.
4. Secure the outer end of the cable to the reel head so as to prevent the cable from becoming loose in transit.
5. Project the inner end of the cable into a slot in the side of the reel, or into a housing on the inner slot of the drum, in such a manner and with sufficient length to make it available for testing.
6. The inner end shall be fastened so as to prevent the cable from becoming loose during installation. End seals shall be applied to each of the cables to prevent moisture from entering the cable.

C. Storage:

1. Do not roll or store cable reels without an appropriate underlay.
2. Retain factory cable protection until installation. Supplement with heavy gauge plastic sheeting if factory protective membrane is pierced prior to installation. Tape ends and seams water and dust tight.
3. The reels with cable shall be suitable for outside storage conditions when the temperature ranges from minus 40 degrees C to plus 65 degrees C, with relative humidity from 0 to 100 percent.
4. Protect cable reels from physical damage from site construction vehicles or from settling into the soil.
5. Equipment, other than outside plant rated cable protected with fully watertight cable caps, to be delivered and placed in storage, suitably protected from the weather, humidity and temperature variation, dirt and dust, or other contaminants.

D. Handling

1. Cabling other than outside plant cabling exposed to standing water or other liquids at any time during storage, delivery or placement shall be replaced at no expense to the University.

2. Cut ends of outside plant rated cabling or portions of outside plant rated cable with a damaged jacket shall not be exposed to standing water or other liquids at any time during storage, delivery or placement. Where such conditions occur, the University's representative may require that the cable be replaced at no cost to the University.

1.1 SEQUENCING

E. Coordinate the installation of the horizontal cabling with the other work of this Project, or Projects simultaneously in progress in each building of the project. The Contractor shall ensure that construction and preparation of the rooms and spaces in which the work of this Section are to be installed are sufficiently complete before beginning work.

F. Removal, replacement and re-installation of materials and equipment required to permit the completion or correction of other building trade work that is the work of this Project shall be done at no cost to the University or impact to the project schedule.

1.6 CATEGORY RATED CABLE PERFORMANCE STANDARDS

A. Horizontal (Station) Category 6 Copper Cabling – Permanent Link

B. Testing shall commence while the University's equipment in the area of service is operational and creating worst case emissions associated with its operation while in good working order. Every effort shall be made to include worst case influence on the materials install shall be taken.

C. In accordance with the field test specifications defined in ANSI/TIA-568-C.2 “Commercial Balanced Twisted-Pair Telecommunications Cabling and Components Standard”, every horizontal station cabling link in the project shall be tested for:

1. Wire Map
2. Length
3. Insertion Loss
4. NEXT Loss
5. PS NEXT Loss
6. ACR-F Loss
7. PS ACR-F Loss
8. Return Loss
9. Propagation Delay
10. Delay Skew

D. Using the listed Category 6 cable test set, test installed cabling using Permanent Link procedure and submit report demonstrating that the link meets the following parameters:

Frequency (MHz)	Insertion Loss	NEXT (Worst pair to pair)	Power Sum NEXT	ELFEXT (Worst pair to pair)	Power Sum ELFEXT	Return Loss
1.0	2.0	79.3	77.3	72.8	69.8	20.0
4.0	3.8	70.3	68.3	60.7	57.7	23.6
10.0	5.9	64.3	62.3	52.8	49.8	26.0
16.0	7.5	61.3	59.3	48.7	45.7	26.0

Frequency (MHz)	Insertion Loss	NEXT (Worst pair to pair)	Power Sum NEXT	ELFEXT (Worst pair to pair)	Power Sum ELFEXT	Return Loss
20.0	8.4	59.8	57.8	46.7	43.7	26.0
31.3	10.6	56.9	54.9	42.9	39.9	25.0
62.5	15.3	52.4	50.4	36.8	33.8	23.5
100.0	19.7	49.3	47.3	32.8	29.8	22.5
150.0	24.7	48.7	44.7	29.3	26.3	21.6
200.0	29	44.8	42.8	26.8	23.8	21.0
250.0	32.6	43.3	41.3	24.8	21.8	20.5

E. Each permanent link shall demonstrate a positive PSACR beyond 350 MHz to meet and exceed the bandwidth requirements of TIA-568-C.2 Category 6 standards. Each permanent link shall demonstrate 2 dB of cross talk headroom over TIA-568-C.2 Category 6 standard for NEXT, PSNEXT, ELFEXT and PSELFEXT bit error rate.

F. Report whether tested link passes or fails

G. Note exceptions to required Category standards. Remedy and retest

1.7 CATEGORY RATED CABLE TESTING

1. General
2. In addition to the tests detailed in this specification section, the contractor shall notify the University's Representative of any additional tests that are deemed necessary to guarantee a fully functional system. The contractor shall carry out and record any additional measurement results at no additional charge
3. Test and report on each intermediate cabling segment separately, including station cabling, horizontal distribution (each segment, if multiple) and telecommunications room wiring.
4. Test each end to end cable link.
5. Submit machine-generated documentation and raw data of all test results on Contractor-provided, and University's Representative approved, forms; and in electronic format approved by the University's Representative.
6. Provide machine-generated data on an appropriate disk media (CD-ROM CD-R format) to be transferred to the University's computers.
7. Where the machine-generated documentation requires use of a proprietary computer program to view the data, provide the University with 1 licensed copy of the software.
8. Provide registered testing software used for the actual tests to the University for review of test data.
9. Test Equipment:
10. Test systems using at least one (1) each of the following test measurement devices or their functional equivalents:
11. Level IIIe field testers as defined in ANSI/TIA-1152 - Fluke DX-1800, Agilent or equal.

12. The tester including the appropriate interface adapter must meet the specified accuracy requirements. The accuracy requirements for the permanent link test configuration (baseline accuracy plus adapter contribution) are specified in Table 4 of ANSI/TIA-1152 (Table 4 in this TIA document also specifies the accuracy requirements for the Channel configuration).
13. The RJ45 test plug shall fall within the values specified in ANSI/TIA-568-C Annex C for NEXT, FEXT and Return Loss.
14. The tester interface adapters must be of high quality and the cable shall not show any twisting or kinking resulting from coiling and storing of the tester interface adapters. In order to deliver optimum accuracy, preference is given to a permanent link interface adapter for the tester that can be calibrated to extend the reference plane of the Return Loss measurement to the permanent link interface. The contractor shall provide proof that the interface has been calibrated within the period recommended by the vendor. To ensure that normal handling on the job does not cause measurable Return Loss change, the adapter cord cable shall not be of twisted-pair construction..
15. Site portable communications systems (walkie-talkie, cell phone or similar).
16. Any other items of equipment or materials required to demonstrate conformance with the Contract Documents.
17. Station Wiring, General
18. Test station wire only after all pairs of station wire in a work area have been terminated at both ends, and no work of this Section or other Sections may cause physical disturbance to the wiring.
19. Correct any and all transpositions found. Retest.
20. If any conductor in a station wire tests either open or short, then the entire station wire is to be removed, replaced, and re-tested.
21. Inside Category 6 Cabling.
22. Using the listed Category 6 cable test set, test and submit report on the parameters specified for Category 6 cabling in this Section. Report whether tested link passes or fails the Category 6 standards. Cables must pass TIA Permanent Link Certification for the cable type being installed. A "Marginal" test result will not be accepted.
23. Note exceptions to required Category standards. Remedy and retest.

1.8 WARRANTY

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

PART 2 - PRODUCTS

2.1 CABLING

A. General

1. Where not otherwise specified or indicated, conform to manufacturers most stringent recommendations with respect to pair count, gage, conductor construction and shielding for indicated run length.

2. Conform to Code requirements with respect to acceptable jacket construction for each application and condition. Provide NEC/CEC CMP listed cable construction at plenum at environmental air and underfloor applications.
3. Analog Video Cabling, Copper Coax and Related. Provide cable with electrical conductors of soft drawn annealed copper, bare or tinned, solid or concentric stranded as applies, conductivity not less than 98% of pure copper. Comply with applicable Code for insulation, jacket, marking and listing for applicable use.
4. Manufacturers:
   a. Alpha
   b. Belden
   c. Commscope/Isotec
   d. West Penn
   e. or equal.

B. Card Reader Cabling

1. Construction:
   a. Conform to Code requirements with respect to acceptable jacket construction for each application and condition
   b. 4 pair
   c. 22 ga. minimum
   d. Overall foil shield with drain wire.
   e. Manufacturers:
      1) Belden
      2) Alpha
      3) Commscope/Isotec
      4) West Penn
      5) or equal.
   f. Manufacturers, Alternate Construction:
      1) Provide Category 6 cabling as specified elsewhere in this Section.

C. Release Button, Door Switch

1. 2 stranded conductors, 22-18 gauge minimum
2. Manufacturers:
   a. Belden 8442, 8461, 5300UE, 5500UE, 6300UE, 6500UE
   b. Alpha
   c. Commscope/Isotec
   d. West Penn
   e. or equal.

D. Request to Exit, Motion Detector, Glass Break

1. 4 stranded conductors, 22-18 gauge minimum
2. Manufacturers:
   a. Belden 5302UE, 5502UE, 6302UE, 6502UE
   b. Alpha

c. Commscope/Isotec
d. West Penn
e. or equal.

E. Combination dual detector

1. 6 stranded conductors, 22-18 gauge minimum
2. Manufacturers:
   a. Belden 5304UE, 5504UE, 6304UE, 6504UE
   b. Alpha
   c. Commscope/Isotec
   d. West Penn
   e. or equal.

F. Lock Power and General Low Voltage Power, Indoor Applications

1. 2 stranded conductors, 16-18 gauge minimum. Size to exceed manufacturers minimum recommendations for voltage drop for required run lengths.
2. Manufacturers:
   a. Belden 5300UE, 5200UE, 6300UE, 6200UE
   b. Alpha
   c. Commscope/Isotec
   d. West Penn
   e. or equal.

G. RS-232 Cabling

1. At least 2-3 pairs, actual pair count as required by interface.
2. 22 gauge minimum, paired construction.
3. Overall foil shield with drain wire
4. Manufacturers:
   a. Belden 9855, 89855
   b. Alpha
   c. Commscope/Isotec
   d. West Penn
   e. or equal.

H. RS-485 Cabling

1. At least 2 pairs, or as required by interface.
2. 18 gauge minimum, paired construction.
3. Overall foil and braid shield with drain wire
4. Manufacturers:
   a. Belden 9842, 82842
   b. Alpha
   c. Commscope/Isotec
   d. West Penn
   e. or equal.

I. Control Cabling, Underground, in ducts

1. As specified for the applications above with waterblocking construction consisting of two ply tape designed to swell on exposure to water.
2. Jacket is sunlight and moisture resistant
3. NEC CM or CL3 listed or better. Transition to listed cabling type within 50 feet of entering building.
4. Manufacturer listed for underground application subject to extended exposure to standing water.
5. Manufacturer:
   a. West Penn Aquaseal
   b. Alpha
   c. Belden
   d. Commscope/Isotec
   e. or equal.

J. Cable, Precision Video:

1. Spec Reference: PVideo.
2. Description: 100% sweep tested (0.01 to 100 MHz) double braided shield solid center conductor 75 ohms coaxial precision video cable.
3. Performance:
   a. Cable Type: Coaxial precision video.
   b. Center Conductor AWG: At least twenty (20) bare copper. Copper clad steel center conductors not acceptable. Increase gauge for longer runs as recommended by camera manufacturer.
   c. Jacket
      1) Underground: Flooded, waterblocked. Suitable for continuous immersion in water.
      2) Riser and General Applications:
      3) Underfloor and in environmental airspace: Plenum
   d. Insulation: Polyethylene.
   e. Shield: Tinned copper double braid, 95% coverage.
   f. Nominal Impedance: 75 ohms.
   g. Velocity of Propagation: at least 66%.
   h. Maximum Attenuation Per 100':
      1) 1 MHz: 0.25 dB
      2) 4.5 MHz: 0.45 dB.
      3) 10 MHz: 0.78 dB.
4. Jacket: Polyethylene.
5. Diameter: 0.305" maximum.
6. Manufacturers
   a. Interior Application
      1) Belden 8281A, 8281B, 543945, 643948
      2) Commscope/Isotek IR201V59

3) West Penn
4) or equal

b. Underground Outside Plant, as for above with flooded jacket, at least NEC CM rating.
   1) Belden 5339W5
   2) Commscope/Isotek
   3) West Penn
   4) or equal

c. Siamese cabling with specified coaxial cable and integral camera control cabling:
   1) Belden
   2) Commscope/Isotek
   3) West Penn
   4) or equal

2.2 CABLE TERMINATION DEVICES AND RELATED, NON-CATEGORY RATED

A. Screw type or Tubular Clamp Barrier Blocks:

1. Buchanan 125, 0625 Series.
2. Electrovert equivalent.
3. TRW Cinch 140, 141, 142 Series.
4. Weidmuller
5. Pass & Seymour/Legrand equivalent.
6. Phoenix
7. or equal.

B. Tubular Clamp Barrier Blocks, High Density, Switch Block Section

1. Spec Reference: TB15.
2. Features/Functions
   a. Paired screw terminals on opposite sides of insulating base.
   b. TB15 Base mounts to DIN rail, providing space beneath TB15 to dress field and source cabling.
   c. Terminates range of wire gages used by project – at least 30 gage to 10 gage.
   d. High density:
      1) At least 33 pairs of connections per foot for 12 and smaller gage terminations,
      2) At least 16 pairs of connections per foot for 10 gage terminations.
   e. Switch Block Section permits load, such as field devices, to be separated from monitoring panel for testing independent of source then restored without disturbing field wiring terminations.
   f. Rated at least fifteen (15) amperes at 300V AC/DC
3. Approvals
   a. UL
4. Manufacturers:
   a. Allen Bradley Isolation Switch Blocks,

1) 1492-H7 for 30 to 12 gage
2) 1492-CE9 for 10 gage.

b. Tyco Buchanan 0135 Series.
c. WECO Electrical Connectors
d. Altech
e. Curtis Industries
f. Electrovert
g. Weidmuller
h. Pass & Seymour/Legrand
i. Phoenix
j. or equal.

C. Video connector, BNC type, 75 ohms, cord, crimp applied. Coordinate with cable.

1. Amp.
2. Amphenol.
3. Augat/LRC Products
4. Canare.
5. Kings.
6. RFI/Celltronics.
7. Trompeter.
8. or equal.

2.3 STRUCTURED CABLING

A. General

1. Provide horizontal cable in compliance with NFPA 70 and performance characteristics in accordance with TIA/EIA-568-C

B. Definitions

1. Keystone Opening: A communications industry standard rectangular opening in a wall plate or patch panel having nominal dimensions of 0.58" wide and .76" high and designed to securely mount industry standard keystone jacks.

C. Intervendor compatibility

1. Keystone Jack Compatibility test.
   a. Any jack or panel system proposed as meeting the keystone compatibility requirements of this specification shall be able to interchangeably mount or mount in (as applies) Leviton Quickport series components.
   b. Systems exhibiting excess play, inability to insert, inability to remove, damage to the plate or jack or occupying excessive area behind the plate opening will not be accepted.

D. Copper Cabling, Category Rated Data/Voice

1. General

2. Provide horizontal cable in compliance with NFPA 70 and performance characteristics in accordance with ANSI/TIA-568-C
3. High Speed, EIA/TIA Category Cabling
   a. Drawing Reference: ** UTP6-4, where ** denotes cable count
   b. Construction:
      1) Provide horizontal copper cable in accordance with:
         a) ANSI/TIA-568-B.2
         b) UL 444
         c) NEMA WC 66 (Performance Standard for Category 6 and Category 7 100 Ohm Shielded and Unshielded Twisted Pair)
         d) ICEA S-90-661
      2) UTP (unshielded twisted pair),
      3) 100 ohm impedance
      4) No shield in the sheath.
      5) Jacket
         a) Color: Blue unless otherwise indicated.
         b) Provide communications general purpose (CM or CMG), communications plenum (CMP) or communications riser (CMR) rated cabling in accordance with NFPA 70.
         c) Type CMP and CMR may be substituted for type CM or CMG and type CMP may be substituted for type CMR in accordance with NFPA 70.
   c. Certification
      1) Warrantied by the manufacturer to provide Category 6 performance when installed in accordance with applicable ANSI/TIA standards and when terminated with the jacks supplied by the Contractor for this Project.
   d. Minimum Performance
      1) Assembly electrically meets or exceeds ANSI/TIA 568-C.2 Category 6 performance standards and the following:

FQ = Frequency (MHz) / TIA = TIA Spec / PG = Product Guarantee					
	RL (dB)	NEXT (dB)	PSNEXT (dB)	ACRF (dB)	LCL/TCL
FQ	TIA / PG	TIA / PG	TIA / PG	TIA / PG	PG
1	20.00 / 20.00	74.30 / 76.30	72.30 / 74.30	67.80 / 67.80	40.00
4	23.00 / 23.00	65.30 / 67.30	63.30 / 65.30	55.80 / 55.80	40.00
10	25.00 / 25.00	59.30 / 61.30	57.30 / 59.30	47.80 / 47.80	40.00
16	25.00 / 25.00	56.20 / 58.30	54.20 / 56.30	43.70 / 43.70	38.00
20	25.00 / 25.00	54.80 / 56.80	41.80 / 54.80	41.80 / 41.80	37.00
31.25	23.60 / 23.60	51.90 / 53.90	49.90 / 51.90	37.90 / 37.90	35.10
62.5	21.50 / 21.50	47.40 / 49.40	45.40 / 47.40	31.90 / 31.90	32.00
100	20.10 / 20.10	44.30 / 46.30	42.30 / 44.30	27.80 / 27.80	30.00
150	18.90 / 18.90	41.70 / 43.70	39.70 / 41.70	24.30 / 24.30	28.20
200	18.00 / 18.00	39.80 / 41.80	37.80 / 39.80	21.80 / 21.70	27.00
250	17.30 / 17.30	38.30 / 40.30	36.30 / 38.30	19.80 / 19.80	26.00

300	— / 16.80*	— / 39.10*	— / 37.10*	— / 18.30*	25.20
350	— / 16.30*	— / 38.20*	— / 36.20*	— / 16.90*	24.60*
400	— / 15.90*	— / 37.30*	— / 35.30*	— / 15.80*	24.00*
450	— / 15.50*	— / 36.50*	— / 34.50*	— / 14.70*	23.50*
500	— / 15.20*	— / 35.80*	— / 33.80*	— / 13.80*	23.00*
	IL (dB/100 m)	ACR (dB/100 m)	PSACR (dB/100 m)	PSACRF (dB/100 m)	EL TCTL
FQ	TIA / PG	TIA / PG	TIA / PG	TIA / PG	PG
1	2.00 / 2.00	72.20 / 74.30	70.30 / 72.30	64.80 / 64.80	35.00
4	3.80 / 3.80	61.50 / 63.50	59.50 / 61.50	52.80 / 52.80	23.00
10	6.00 / 6.00	53.40 / 55.40	51.30 / 53.40	44.80 / 44.80	15.00
16	7.60 / 7.60	48.80 / 50.70	46.70 / 48.70	40.70 / 40.70	10.90
20	8.50 / 8.50	46.40 / 48.40	44.30 / 46.40	38.80 / 38.80	9.00
31.25	10.70 / 10.70	41.40 / 43.30	39.20 / 41.30	37.90 / 34.90	—
62.50	15.40 / 15.40	32.40 / 34.00	30.00 / 32.00	28.90 / 28.90	—
100	19.80 / 19.80	25.20 / 26.60	22.50 / 24.60	24.80 / 24.80	—
150	24.70 / 24.60	16.90 / 19.10	14.90 / 17.10	21.30 / 21.30	—
200	29.00 / 29.00	10.80 / 12.90	8.80 / 10.90	18.80 / 18.70	—
250	32.80 / 32.80	7.30 / 7.50	3.50 / 5.50	16.80 / 16.80	—
300	— / 36.40*	— / 2.70*	— / —	— / 15.30*	—
350	— / 39.80*	— / -1.60*	— / —	13.90 / 13.90*	—
400	— / 43.00*	— / -5.70*	— / —	12.80 / 12.80*	—
450	— / 46.00*	— / -9.50*	— / —	— / 11.70*	—
500	— / 48.90*	— / -13.10*	— / —	10.80 / 10.80*	—

e. Technical Data - Physical
   1) Conductor: 23 AWG Bare Copper
   2) Conductor diameter - in.: 0.022”
   3) Insulated conductor dia.-in.: 0.039”
   4) Cable diameter - in.: 0.21”
   5) Nom. cable wt.-lb./kft.: 22
   6) Max. installation tension - lb.: 25
   7) Min. bend radius - in.: 1.00
   8) Color Code:
      a) Pair-1: White/Blue Blue
      b) Pair-2: White/Orange Orange
      c) Pair-3: White/Green Green
      d) Pair-4: White/Brown Brown
   9) Temperature Rating (degrees C)
      a) Installation: 0 to +50
      b) Operation: -20 to +75
   10) Mutual Capacitance: 5.1 nF/100 m max.
   11) DC Resistance: 9.38 Ohms/100 m max.
   12) Skew: 45 ns/100 m max.

13) Pair to Ground Unbalance: 330 pF/100 m max.
14) Velocity of Propagation: 69% nom.
15) DC Resistance unbalance: 5% max.

4. Manufacturers:
   a. Berk-Tek LANmark-6
   b. General Cable
   c. or equal

E. High Speed, Category 6 Cabling, Plenum Rated

1. Drawing Reference:** UTP6-4P, where ** denotes cable count
2. Construction:
   a. As for non-plenum, with fire retardant overall jacket construction.
   b. National Safety Agency – UL or ETL listed, NEC compliant for plenum installation - CMP.
3. Manufacturers
   a. As for non-plenum Cat. 6, plenum construction.
4. Minimum Performance
   a. Category 6 CMP, where FQ = Frequency (MHz), TIA = TIA Spec, PG = Manufacturer's Product Guarantee

	RL (dB)	NEXT (dB)	PSNEXT (dB)	ACRF (dB)	LCL/TCL
FQ	TIA / PG	TIA / PG	TIA / PG	TIA / PG	PG
1	20.00 / 20.00	74.30 / 76.30	72.30 / 74.30	67.80 / 67.80	40.00
4	23.00 / 23.00	65.30 / 67.30	63.30 / 65.30	55.80 / 55.80	40.00
10	25.00 / 25.00	59.30 / 61.30	57.30 / 59.30	47.80 / 47.80	40.00
16	25.00 / 25.00	56.20 / 58.30	54.20 / 56.30	43.70 / 43.70	38.00
20	25.00 / 25.00	54.80 / 56.80	41.80 / 54.80	41.80 / 41.80	37.00
31.25	23.60 / 23.60	51.90 / 53.90	49.90 / 51.90	37.90 / 37.90	35.10
62.5	21.50 / 21.50	47.40 / 49.40	45.40 / 47.40	31.90 / 31.90	32.00
100	20.10 / 20.10	44.30 / 46.30	42.30 / 44.30	27.80 / 27.80	30.00
150	18.90 / 18.90	41.70 / 43.70	39.70 / 41.70	24.30 / 24.30	28.20
200	18.00 / 18.00	39.80 / 41.80	37.80 / 39.80	21.80 / 21.70	27.00
250	17.30 / 17.30	38.30 / 40.30	36.30 / 38.30	19.80 / 19.80	26.00
300	— / 16.80*	— / 39.10*	— / 37.10*	— / 18.30*	25.20
350	— / 16.30*	— / 38.20*	— / 36.20*	— / 16.90*	24.60*
400	— / 15.90*	— / 37.30*	— / 35.30*	— / 15.80*	24.00*
450	— / 15.50*	— / 36.50*	— / 34.50*	— / 14.70*	23.50*
500	— / 15.20*	— / 35.80*	— / 33.80*	— / 13.80*	23.00*
	IL (dB/100 m)	ACR (dB/100 m)	PSACR (dB/100 m)	PSACRF (dB/100 m)	EL TCTL
FQ	TIA / PG	TIA / PG	TIA / PG	TIA / PG	PG
1	2.00 / 2.00	72.20 / 74.30	70.30 / 72.30	64.80 / 64.80	35.00
4	3.80 / 3.80	61.50 / 63.50	59.50 / 61.50	52.80 / 52.80	23.00
10	6.00 / 6.00	53.40 / 55.40	51.30 / 53.40	44.80 / 44.80	15.00

16	7.60 / 7.60	48.80 / 50.70	46.70 / 48.70	40.70 / 40.70	10.90
20	8.50 / 8.50	46.40 / 48.40	44.30 / 46.40	38.80 / 38.80	9.00
31.25	10.70 / 10.70	41.40 / 43.30	39.20 / 41.30	37.90 / 34.90	—
62.50	15.40 / 15.40	32.40 / 34.00	30.00 / 32.00	28.90 / 28.90	—
100	19.80 / 19.80	25.20 / 26.60	22.50 / 24.60	24.80 / 24.80	—
150	24.70 / 24.60	16.90 / 19.10	14.90 / 17.10	21.30 / 21.30	—
200	29.00 / 29.00	10.80 / 12.90	8.80 / 10.90	18.80 / 18.70	—
250	32.80 / 32.80	7.30 / 7.50	3.50 / 5.50	16.80 / 16.80	—
300	— / 36.40*	— / 2.70*	— / —	— / 15.30*	—
350	— / 39.80*	— / -1.60*	— / —	13.90 / 13.90*	—
400	— / 43.00*	— / -5.70*	— / —	12.80 / 12.80*	—
450	— / 46.00*	— / -9.50*	— / —	— / 11.70*	—
500	— / 48.90*	— / -13.10*	— / —	10.80 / 10.80*	—

5. Technical Data - Physical
   a. Conductor: 23 AWG Bare Copper
   b. Conductor diameter - in.: 0.023”
   c. Insulated conductor dia.-in.: 0.041”
   d. Cable diameter - in. 0.22”
   e. Nom. cable wt.-lb./kft. 29
   f. Max. installation tension - lb.: 25
   g. Min. bend radius - in. 1.00
   h. Color Code
      1) Pair-1 White/Blue Blue
      2) Pair-2 White/Orange Orange
      3) Pair-3 White/Green Green
      4) Pair-4 White/Brown Brown
   i. Temperature Rating (degrees C)
      1) Installation 0 to +50
      2) Operation -20 to +75
6. Electrical
   a. Mutual Capacitance 5.2 nF/100 m max.
      1) DC Resistance: 9.38 Ohms/100 m max.
      2) Skew: 45 ns/100 m max.
   b. Pair to Ground Unbalance: 330 pF/100 m max.
   c. Velocity of Propagation: 67% nom.
   d. DC Resistance unbalance: 5% max.
7. Manufacturers:
   a. Berk-Tek LANmark-6
   b. General Cable
   c. or equal

F. High Speed, Category 6 Cabling, Outside Plant
   1. Drawing Reference: ** UTP6-4OP or UTP6-OSP, where ** denotes cable count.

2. Construction:
    a. Exceeds TIA/EIA 568-C.2 CAT 6, ISO/IEC 11801:2002 CAT 6, & IEC 61156-5 CAT 6 Horizontal Cable
    b. Suitable for placement in duct below grade subject to extended exposure to standing water. Cable includes flooded construction for moisture protection.
    c. Jacket: Water resistant linear low density polyethylene or equivalent construction.
    d. Inner jacket: Water resistant linear low density polyethylene or equivalent construction.
    e. Insulation: Solid polyolefin or equivalent construction.
    f. Filling Compound: 80 degree centigrade extended thermoplastic rubber or equivalent construction.
3. Manufacturer
    a. Mohawk VersaLAN OSP Category 6
    b. BerkTek
    c. CommScope
    d. General/Essex.
    e. Belden.
    f. or equal.

G. Work Area Outlets

1. Data Jacks Performance Requirements, General
    a. Jack
        1) Construction:
            a) Industry standard keystone construction.
            b) Performance - The jack shall meet or exceed the following standards.
            c) TIA/EIA 568C.1
        2) UL listed
        3) Physical - The modular jacks shall meet the following physical requirements.
        4) Connector-insulation displacement connectors accepting 22 and 24 gauge AWG solid conductor wire.
        5) Wired to meet EIA 568C.1 and T568B Color Code
        6) Color:
            a) Jacks: Blue.
            b) Blank jack cover: To match plate.
        7) “C6” or equivalent molded on face of jack.
        8) Mechanical - The modular jacks shall meet the following mechanical requirements
        9) Plug insertion - minimum 750 plug insertions
    b. Blank connector modules.
        1) Features.
            a) Snaps into faceplate, fills blank openings.
    c. Manufacturers – Jacks, subject to keystone interchangeability requirement:

1) Leviton eXtreme 6+ Connector
2) Panduit Mini-com TX6
3) or equal.

d. Manufacturers - Blank Module.
1) Leviton SnapIn Blank Module
2) Panduit Mini-com Blank Module
3) or equal.

2. Telecommunications Outlets, Copper Jacks, Wall Mount, Flush
a. Drawing Reference(s):
1) MMP4
2) MMP6

b. Assembly. Provide complete telecommunications outlet assembly, including but not limited to:
1) Faceplate with industry standard keystone openings
2) Blank connector modules at faceplate openings not filled with connector modules.
3) Labels and label holders.
4) Faceplate Features:
a) Single gang.
b) Front Loading
c) Openings for up to 4 keystone jack connector modules – MMP4, up to 6 openings – MMP6.
d) At wall mount locations calling for 4 jacks or fewer, provide with flat faced openings for jacks relative to the place of the faceplate, oriented along the long edge of the place.
e) At other jack locations, including wall mount locations with more than 4 jacks, inside floor boxes or above ceiling, provide with flat face faceplates.
5) Label holders with space to label the plate number and the number of each jack.
6) Color: To match electrical receptacles and switch plates mounted on same wall,

c. Manufacturers - flat plates, subject to keystone interchangeability requirement:.
1) Leviton Quickport Multimedia MOS Single Gang Wall Plates and Adapters.
2) Panduit Mini-com Classic Series
3) or equal

3. MultiMedia Surface Mount Box
a. Drawing Reference (s):
1) * MMSB, where * represents the number of Category connectors of the type specified elsewhere herein.

b. Biscuit Box
c. Features Functions

1) Surface mount enclosure holds terminated station cabling with Category connectors parallel to face of mounting surface.
2) Mechanically fastened to enclosure surface.
3) 2 part assembly includes fixed mounting base plate and removable cover over terminations

d. Manufacturers:
1) Leviton Quickport Surface Mount Boxes
2) Panduit
3) Or equal.

H. Data Patch Panels, Keystone, Rack Mounted

1. Drawing Reference:***CXPPK, or CXPP, where *** refers to port count and X to Category rating of ports.
2. Functions/Features:
a. 19" EIA rack mountable.
b. At least 24 ports per EIA rack unit (1.75").
c. Industry standard keystone openings in steel plate
d. arranged in rows on steel panel,
e. jacks on front,
f. terminations on rear.
g. Port identifier label space on front.
h. Fill each opening with Category 6 keystone jacks as specified herein above. Coordinate jack selection with patch panel construction to ensure that jack width behind the panel does not prevent fully loading panel.
i. Integral cable management bar at rear.
3. Manufacturer
a. Leviton QuickPort High Density Multimedia Patch Panels with Management Bar
b. Panduit Netkey
c. Hubbell Xcelerator Series Panels
d. Molex EZ Patch
e. Suttle SE-2504 and SE-2504-48 Patch Panels
f. AMP
g. ADC/Krone
h. Ortronics
i. or equal.

2.4 PATCH CORDS

A. Category 6 Patch Cords

1. Reference: Cat 6 Patch Cords
2. Features/Function/Construction:
a. Manufactured product – field/contractor assembled patch cords not acceptable.

b. Manufacturer certified to exceed EIA/TIA 568 C.1 Category 6 performance and construction standards.
c. Snagless Boot Covers
d. Color: Green, Aqua or Turquoise, unless directed otherwise by the Owner's Representative. In no event the color of the supplied voice patch cabling match that used by the Owner furnished data systems patch cords

3. Length: As required to meet function
4. Quantity: As required to meet function
5. Manufacturers:
   a. Belden
   b. Belkin
   c. Leviton
   d. Systimax/Commscope
   e. AMP
   f. Hubbell
   g. Siemon
   h. Or equal.

2.5 ELECTRONIC SECURITY SYSTEMS CABLING LABELS, INTERIOR

A. Shall meet the legibility, defacement, exposure and adhesion requirements of UL 969.

B. Shall be preprinted or computer printed type. Hand written labels are not acceptable.

C. Provide vinyl substrate with a white printing area and black print. If cable jacket is white, provide cable label with printing area that is any other color than white, preferably orange or yellow – so that the labels are easily distinguishable.

D. Shall be flexible vinyl or other substrates to apply easy and flex as cables are bent.

E. Shall use aggressive adhesives that stay attached even to the most difficult to adhere to jacketing.

F. Manufacturers:

1. Brady
2. Brother
3. Panduit
4. Or equal.

2.6 ELECTRONIC SECURITY SYSTEMS CABLE LABELS, OUTSIDE PLANT

A. Cable Tags in Manholes, Handholes, and Vaults

1. Provide tags for communications cable or wire located in manholes, handholes, and vaults.
   a. The tags shall be polyethylene.
   b. Machine printed - Do not provide handwritten letters.
2. Polyethylene Cable Tags

a. Provide tags of polyethylene that have an average tensile strength of 22.4 MPa (3250 pounds per square inch) 3250 pounds per square inch; and that are two millimeter (0.08 inch) 0.08 inch thick (minimum), non-corrosive non-conductive; resistive to acids, alkalis, organic solvents, and salt water; and distortion resistant to 77 degrees C 170 degrees F.
b. Provide 1.3 mm (0.05 inch) 0.05 inch (minimum) thick black polyethylene tag holder.
c. Provide a one-piece nylon, self-locking tie at each end of the cable tag.
d. Ties shall have a minimum loop tensile strength of 778.75 N (175 pounds) 175 pounds. The cable tags shall have black block letters, numbers, and symbols 25 mm (one inch) one inch high on a yellow background.
e. Letters, numbers, and symbols shall not fall off or change positions regardless of the cable tags' orientation.

3. Manufacturers:
   a. Panduit
   b. Brady
   c. or equal.

PART 3 - EXECUTION

3.1 WIRING CLASSIFICATION AND RELATED

A. Audio Signal Wiring Classification:

1. Type A-l: Microphone level wiring less than -30 dBu, 20 Hz to 20 kHz.
2. Type A-2: Line level wiring -30 dBu to +24 dBu, 20 Hz to 20 kHz.
3. Type A-3: Loudspeaker level or circuit wiring greater than +24 dBu, from 20 Hz to 20 kHz.

B. Video and Related Signal Wiring Classification:

1. Type V-1: Baseband and composite video wiring 1 volt peak-to-peak into 75 ohms, 0 to 10.0 MHz.
2. Type V-2: Synchronization and switching pulse wiring 4 volts peak-to-peak into 75 ohms, 15.62 to 15.75 kHz.
3. Type V-3: Color subcarrier wiring 0 to 4 volts peak-to-peak into 75 ohms, 3.57 to 4.43 MHz.
4. Type V-4: MATV system wiring 0.1 to 1000 microVolts peak-to-peak into 50 or 75 ohms, 47 to 890 MHz.

C. Control Signal Wiring Classifications:

1. Type C-1: DC control wiring 0 to 50 volts.
2. Type C-2: Synchronous control or data wiring 0 to 40 volts, peak-to-peak.
3. Type C-3: AC control wiring 0 to 48 volts, 60 Hz.

D. Additional Wiring Classifications:

1. Type M-1: DC power wiring 0 to 48 volts.

2. Type M-2: AC power wiring greater than 50 volts, 60 Hz.
3. Wiring Combinations:

E. Except as indicated herein, conduit, wireways and cable bundles shall contain only wiring of a single classification. The following combinations are acceptable in conduit, or cable harnesses. Additional acceptable combinations may be indicated on the Drawings.

1. Types A-1, C-1, and M-1.
2. Types A-2, C-l, C-2, and M-l, runs less than 20 feet.
3. Types A-2, C-1, and M-1.
4. Types A-3, C-1, C-2, and M-1.
5. Types A-2, V-1, and V-3.
6. Types V-1, V-2, V-3, and C-1.
7. Types M-2 and C-3.

3.2 WIRING PRACTICE

A. All wiring of Division 28 to be installed in raceway except above accessible ceilings.

1. Separate raceway systems, including backboxes and conduit, shall be provided for to electromagnetically isolate electric lock and door motor operators, local door alarms and other similarly powered sources of electro-magnetic noise from door position switches, card reader, door release buttons, duress alarms and similar low power, electromagnetic noise sensitive applications. Refer to Wiring Classification and Related above and comply.
2. Minimum conduit size for multiple conductor runs shall be ¾". In each control panel 2 empty ¾ conduits shall be installed for future use. These conduits shall be routed to an accessible area above the ceiling or to a location approved by Owner. Run circuits for AC separate from circuits using DC. Each supervisory/data loop shall be run separately from any other supervisory/data loops they shall not be permitted to share the same conduit. From security alarm control panel provide one ¾" conduit to nearest telephone backboard or panel location for tie-in to Owner furnished central station. Provide min 1" conduit to each card access or exterior door, unless otherwise shown or scheduled on the plans
3. Conduits including flexible metal and armored cable shall terminate in the sensor or device enclosure.
4. Ends of conduit shall be fitted with insulated bushings. Exposed conductors at ends of conduits external to sensors and devices are not acceptable.
5. Refer to additional requirements in Section 28 05 28 - Pathways For Electronic Safety And Security.

B. All field wiring shall run continuous from device to device no splices shall be permitted except at specified terminal blocks installed in lockable termination cabinets.

1. The use of wire nuts and crimp type connectors shall not be permitted.
2. Where shielded wire is used it shall be connected to an earth ground at the panel. Tin terminated shield drain wires and insulate with heat shrinkable tubing.
3. Dress, lace or harness all wire and cable to prevent mechanical stress on electrical connections. No wire or cable shall be supported by a connection point.

4. Provide service loops where harnesses of different classes cross, or where hinged panels are to be interconnected.
5. Security alarm conductor terminations in control panels, termination cabinets, junction boxes and annunciator panels to be made on specified terminal strips with a separate point for each conductor.
    a. All such strips to be number identified as shown in wiring diagram attached to inside of door of control panel.
    b. Connect wiring neatly to terminals strips.
    c. Set up termination of cabling so that section of the system may be isolated or shorted out for servicing.

C. No control panel shall be mounted where is not readily accessible the highest connection point shall not be above 6’6”' nor shall the bottom of the panel be below 30".

D. All necessary interconnections, services, and adjustments required for a complete and operable system shall be provided. All installation work must be done in accordance with the safety requirements set forth in the general requirements of ANSI C2 and NFPA 70.

E. Coordinate insulation displacement (quick connect) terminal devices with wire size and type. Comply with manufacturer's recommendations. Make connections with automatic impact type tooling set to recommended force.

F. Security alarm conductor terminations in control panels and termination panels to be made on terminal strips with a separate point for each conductor. All such strips to be number or labeled identified as shown in wiring diagram attached to inside of door of control panel. Connect wiring neatly to terminals strips. Bundle with nylon cable straps. Set up termination of cabling so that sections of the system may be isolated or shorted out for servicing.

G. Mount end-of-line resistor for each circuit at the device. Glass break devices may be grouped orderly to a zone. Do not allow glassbreak zones to cover more than one side of the building without approval from Owner. Connect glass break detectors to C-Cure DGP panel and provide programming of campus C-Cure database to enable remote reset.

H. Correct unacceptable wiring conditions including but not limited to:

1. Deformed, brittle or cracked insulation.
2. Torn or worn cable jacket.
3. Excessively scored cable jackets.
4. Insulation shrunken or stripped further than 1/8" away from the actual point of connection within a connector, or on a punch block.
5. Ungrommeted, unbushed, or uninsulated wire or cable entries.
6. Deformation or improper radius of wire or cable.

3.3 TERMINATION CABINETS

A. Where termination cabinets are used they shall be installed in or on walls. Each termination cabinet shall have a hinged cover with a lock installed flush with the cover. These locks shall be keyed alike. Each termination cabinet shall be marked with a sign with the words "Sec. Termination Cabinet" attached to the front cover. This sign shall be constructed from red laminated plastic with 1/4" white engraved letters.

3.4 UNDERGROUND WIRING PRACTICE

A. General

1. Provide safety barriers and flag persons for all open manholes and pullboxes that are located in areas accessible to the public.
2. Provide traffic control in accordance with the requirements of Division 1.
3. Conform to OSHA guidelines when accessing manholes and handholes, inclusive of the requirement for air sampling. Provide continuous measurements. Provide the Owner's Representative with contractor maintained logs of air samples taken at most two hours apart.
4. Provide sufficient personnel to permit one individual to remain above the surface at all times, in visual contact with persons in manholes and similar. Provide the observer with a appropriate means of obtaining assistance.
5. Provide ladders for access to manholes. Do not permit workers to use cables or splice cases as ladders.
6. Install a 3/8" nylon pullrope with all underground cables placed by this project.

B. Cable Pulling

1. Test existing duct lines with a mandrel and thoroughly swab out to remove foreign material before pulling cables.
2. Pull cables down grade with the feed-in point at the manhole or buildings of the highest elevation.
3. Use flexible cable feeds to convey cables through manhole opening and into duct runs.
4. Accumulate cable slack at each manhole or junction box where space permits by training cable around the interior to form one complete loop.
5. Maintain minimum allowable bending radii in forming such loops.
6. Do not exceed the specified cable bending radii when installing cable under any conditions, including turnups into outdoor pedestals or other enclosures.
7. Cable with tape shield shall have a bending radius not less than 12 times the overall diameter of the completed cable.
8. If basket-grip type cable-pulling devices are used to pull cable in place, cut off the section of cable under the grip before splicing and terminating.

C. Cables in Manholes, Pull boxes and Handholes.

1. Do not install cables utilizing the shortest route, but route along those walls providing the longest route and the maximum spare cable lengths.
2. Form cables to closely parallel walls, not to interfere with duct entrances, and support on brackets and cable insulators.

3. In existing manholes and handholes where new ducts are to be terminated or where new cables are to be installed, locate the existing installation of cables, cable supports and grounding as required for a uniform installation with cables carefully arranged and supported.
4. Where underground cable splices are called for on the plans, support cable splices in underground structures by racks on each side of the splice.
5. Located splices to prevent cyclic bending in the spliced sheath.
6. Install cables at middle and bottom of cable racks, leaving top space opening or future cables, except as otherwise indicated for existing installations.

D. Service Loop at Building Entry

1. For outside plant entering a communications room, provide at least 20 feet of cable in excess of the minimum required to reach terminal device by a dressed route. Form into a storage loop, typically around the perimeter of the backboard and fix in place as directed by the Owner's Representative.

3.5 SPLICING

A. All wire and cable shall be continuous and splice-free for the entire length of run between designated connections or terminations.

1. At designated splices, maintain conductor color code across all splices.
   a. All shielded cables shall be insulated. Do not permit shields to contact conduit, raceway, boxes, panels or equipment enclosures.
   b. Within buildings, make splices only in designated terminal cabinets and/or on designated equipment backboards.

3.6 PULLING IN

A. Verify that all raceway has been de-burred and properly joined, coupled, and terminated prior to installation of cables. Verify that all raceway is clear of foreign matter and substances prior to installation of wire or cable.

B. Inspect all conduit bends to verify proper radius. Comply with Code for minimum permissible radius and maximum permissible deformation.

C. Apply a chemically inert lubricant to all wire and cable prior to pulling in conduit. Do not subject wire and cable to tension greater than that recommended by the manufacturer. Use multi-spool rollers where cable is pulled in place around bends. Do not pull reverse bends.

D. Provide a box loop for all wire and cable routed through junction boxes or distribution panels. Cable loops and bends shall not be bent at a radius greater than that recommended by the manufacturer.

3.7 SUPPORT

A. Support: Provide support for all cabling. Conform to the most restrictive of the California Electric Code and Section 28 05 28 Pathways for Electronic Safety and Security. Provide support for all cabling. Conform to the restrictions of the California Electric Code and Section 27 05 29. Secure all wire and cable run vertically for continuous distances greater than thirty (30) feet. Secure robust non-coaxial cables with screw-flange nylon cable ties or similar devices appropriate to weight of cable. For all other cables, provide symmetrical conforming nonmetallic bushings or woven cable grips appropriate to weight of cable.

B. Separation from sources of Electromagnetic Interference: Conform with the requirements of ANSI/TIA-569-C, 9.3 Pathway Separation from EMI sources. Secure all wire and cable run vertically for continuous distances greater than thirty (30) feet. Secure robust non-coaxial cables with screw-flange nylon cable ties or similar devices appropriate to weight of cable. For all other cables, provide symmetrical conforming nonmetallic bushings or woven cable grips appropriate to weight of cable.

C. Field Device Wiring

1. Wire each device as a home run from the device the terminal block
2. Loop or Zone wiring not acceptable unless addressable devices are specified and provided. Wire all potential monitoring and signaling points (each pin) of each field device and alarm sensor, including internal tamper sensors.
3. At electric strikes and electric locks, provide end-of-line resistors, diodes or MOV's where device does not already include such components. Document where such devices have been added on As-Built drawings.

D. Card Reader Wiring

1. Verify that the slack loops called for on the plans are provided.

3.8 STRUCTURED CABLING

A. Signal Polarity and Color Code Convention

1. Category 6 Station Wire, RJ45 - Per ANSI/TIA-568C, designation T568B

B. Station Cable Installation and Termination Procedures

1. General:
   a. All station cable, between the station outlets and the IDF terminal blocks, shall be continuous unspliced runs.
   b. Station cable shall run loose throughout all pathways. At no time shall any station cable be secured by a tywrap, electrical tape or similar bindings.
   c. At Cable Trays in Telecommunications Rooms, bundle station cable loosely into a bundle using velcro wraps applied at 3'-0" o.c. typically. At no time permit the cables to be deformed by such cable bundling.
   d. All exposed wiring shall be installed in surface raceway.
   e. All wiring above ceilings shall be installed in cable tray or open top cable hangers.

f. Cable above accessible ceilings shall be supported 4' on center (min) from cable support attached to building structure.
g. Cable shall have no physical defects such as cuts, tears or bulges in the outer jacket. Cables with defects shall be replaced.
h. Install cable in neat and workmanlike manner. Neatly bundle and tie all cable in closets. Leave sufficient cable for 90 degree sweeps at all vertical drops.
i. Maintain the following clearances from EMI sources.
    1) Power cable - 6 in.
    2) Fluorescent Lights - 12 in.
    3) Transformers - 48 in.
j. Cables jackets that are chaffed or burned exposing internal conductor insulation or have any bare copper ("shiners") shall be replaced.
k. Firestop all openings where cable is installed through a fire barrier.

2. Run Lengths:
    a. Mockup prior to proceeding
        1) Contractor to field verify the performance of the proposed installation in a mockup using the proposed cabling, jacks, raceway and listed test equipment prior to proceeding.
            a) Contractor to install (1) One typical copper work area outlet complete with jacks at both ends, utilizing the proposed pathway and cabling.
            b) Contractor to install all labeling for this mockup
            c) Contractor to perform testing of this mockup using the specified test equipment and procedures.
            d) Results are to be inspected and reviewed by the Owner’s Representative prior to proceeding with the rest of the installation.
            e) Any deficiencies in the installation of the mockup are to be corrected by the Contractor and re-inspected by the Owner’s Representative prior to proceeding with the rest of the installation.
    b. Station, Horizontal and IDF/HC Links:
        1) Horizontal Distribution runs (including vertical portions) shall not exceed 295 feet from station outlet to the associated Telecommunications closet.
        2) Station cabling runs to be 10 feet) or less.
        3) IDF/HC room distribution wiring not to exceed 19.5 feet
        4) Alternately, total length not to exceed 328 feet.
        5) Report to the Owner's Representative conditions exceeding these requirements.
    c. Limit cable bends to a minimum radius of 8 times cable diameter except where otherwise noted herein.
    d. Termination shall not untwist more than 1/2 inch of cable maximum from the manufactured condition.
    e. Service loop at Station

1) Copper. Provide slack, which is to be no less than 2.5" and no greater than 5.0", in the station cable at the station outlet end. This is to allow the Work Area Outlet to be removed from the outlet box and visually inspected without leaving so much wire in the box that it might become accidentally damaged during installation.

f. Termination of wiring at the station outlet:
   1) All data and voice station cable shall be terminated at the individual receptacle modules in accordance with ANSI/TIA-568-C, assignment T568B. Unless otherwise indicated, load jacks in faceplates in the manner detailed in the drawings.
   2) Termination of wiring at existing station outlets:
      a) Install in data and voice inserts in place of existing blank insert in existing faceplate.
      b) Install new labels and label holders.

g. Termination of station wiring at the IDF/HC
   1) For the installation/layout of station cable within the IDF/HC rooms, see detail on drawings.
   2) Data cabling is to be installed in the center of the rear rack rails (or trough) within the rack, not the wire manager.
   3) All Category 6 station cables entering the IDF/HC room will be terminated on a Category 6 RJ45 jack mounted in a Patch Panel as specified in this Section Horizontal cabling in the closet shall be installed equally between the first and third racks, in a three rack installation, separated by one empty between cable racks in each TR. Cabling shall be split as 1-48 in the first rack, 49 thru 96 in the third and back to the first for additional cabling. Single rack TR's are exempt from this alternating method.
   4) Fiber station cabling will similarly be terminated on rack mounted patch panels.
   5) Termination shall begin at the upper left corner of the path panel and proceed to the right continuing down, left to right until all cables are terminated.

h. Security Camera Locations:
   1) At accessible ceiling locations, provide a (10') Ten Foot Slack Loop for the Data Cables at each Camera Location to allow for minor repositioning.

3.9 LABELING

A. Label each end of each cable to indicate its terminal point. Apply labeling within 1" of end of cable jacket.

   1. For field devices, use the device label assigned per the requirements of Section 28 05 00 - Common Work Results for Electronic Safety and Security.

END OF SECTION

SECTION 28 05 26

GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General provisions of the Contract, including Conditions and Division 1 Specification Sections, apply to this Section.

B. Related Work Under Other Sections

1. Section 28 05 00 – Common Work Results for Electronic Safety and Security

2. Section 28 05 13 – Conductors and Cables for Electronic Safety and Security

3. Section 28 05 28 – Pathway for Electronic Safety and Security

1.2 SUMMARY

A. This section includes grounding and bonding of Electronic Safety and Security Work, including but not limited to:

1. Electronic Safety and Security Raceways

2. Cable Shields

3. Electronic Safety and Security Cabinets and Enclosures.

1.3 SYSTEM DESCRIPTION

A. Provide Electronic Safety and Security Grounding System as described herein..

B. Except as otherwise indicated, the complete Electronic Safety and Security installation including the racks, cabinets, panels, cable tray, runway, lightning protectors cable shields and splice cases provided under the work of this project shall be completely and effectively grounded in accordance with all Code and Standards requirements, whether or not such connections are specifically shown or specified.

C. Resistance:

1. Resistance from the farthest ground bus through the ground electrode to earth shall not exceed 5 Ohms or the requirements of ANSI/TIA/-606-B-2012, whichever is more restrictive.

2. Resistance from Electronic Safety and Security Rack Buss ground to Ufer ground must remain less than or equal to the electrical ground presented at A/C outlet for electronic equipment in the communications rack.

1.4 REFERENCES

A. American National Standards Institute (ANSI)

1. ANSI/TIA/-606-B-2012, Administration Standard Telecommunications Infrastructure.

2. ANSI-J-STD-607-B, Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises.

B. ASTM INTERNATIONAL (ASTM)

1. ASTM B3 (2013) Standard Specification for Soft or Annealed Copper Wire

C. IEEE

1. IEEE C135.30 (1988) Standard for Zinc-Coated Ferrous Ground Rods for Overhead or Underground Line Construction

2. IEEE 81 (2012) Guide for Measuring Earth

D. Underwriters Laboratories (UL)

1. UL 467 (1993); R 2004 Grounding and Bonding Equipment

1.5 SUBMITTALS

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

1.6 QUALITY ASSURANCE

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

1.7 DELIVERY, STORAGE AND HANDLING

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

1.8 WARRANTY

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MATERIALS

A. Products of the manufacturers specified in this section establish the minimum functional, aesthetic and quality standards required for work of this section.

2.2 MANUFACTURERS

A. Equal products by the following manufacturers will be considered providing that all features of the specified product are provided:

1. Ground Bushings, Connectors, Jumpers and Bus:
    a. O-Z/Gedney.
    b. Thomas & Betts Corp.
    c. Or equal.
2. Compression Connector Lug
    a. Panduit
    b. Harger Lightning & Grounding
    c. Or equal.
3. Telecommunications Ground Bus Bar
    a. Panduit
    b. Harger Lightning & Grounding
    c. or equal.
4. Rack and Cabinet Grounding
    a. Panduit Structured Ground Kit
    b. Harger Lightning & Grounding

c. or equal.

2.3 GROUND CONDUCTORS

A. General purpose insulated: UL listed and code sized copper conductor, with dual rated THHN/THWN insulation, color identified green.

B. Cable jacket marking:

C. Must be legible and shall contain the following information:

a. Manufacturer's name

b. Copper conductor gauge

c. UL listing

d. Cable jacket shall be green with black lettering

D. Bonding Backbone Cable: 3/0 AWG THHN/THWN CU - Must be UL listed.

1. Manufacturer:

a. General Cable

b. Harger Lightning & Grounding

c. Or equal.

E. Bonding pigtails: Insulated copper conductor, identified green, sized per code, and provided with termination screw or lug. Provide solid conductors for #10 AWG or smaller and stranded conductors for #8 AWG or larger.

F. Bonding Conductors sized at 2 kcmil per linear foot of conductor length up to a size of 3/0 AWG ground wire.

2.4 COMPRESSION CONNECTOR LUG

A. Description

1. Long-barrel compression lugs shall be used on all ground wire.

2. Copper alloy body.

3. Provide lug size to match conductor being terminated.

4. Provide 2 hole pattern lugs.

5. Provide each lug with silicon bronze hardware, including 2 bolts, 2 split lock washers and 2 nuts.

    a. Manufacturer:

    b. Panduit

    c. Harger Lightning & Grounding GECLBxxx (xxx depending on cable size)

    d. or equal.

2.5 INSULATED GROUNDING BUSHINGS

A. Plated malleable iron or steel body with 150 degree Centigrade molded plastic insulating throat and lay-in grounding lug.

2.6 CONNECTIONS TO STRUCTURAL STEEL, GROUND RODS, OR SPLICES

A. Where required by the Specifications, grounding conductors shall be spliced together, connected to ground rods or connected to structural steel using exothermic welds or high pressure compression type connectors.

1. Exothermic welds shall be used for cable-to-cable and cable-to-ground rod and for cable to structural steel surfaces. Exothermic weld kits shall be as manufactured by Harger Lightning & Grounding, Cadweld, Thermoweld or equal. Each particular type of weld shall use a kit unique to that type of weld.

2. High-pressure compression type connectors shall be used for cable-to-cable and cable-to-ground rod connections. Connections shall be as manufactured by Thomas & Betts #53000 series, Burndy “Hy-Ground” or equal.

2.7 EXTRA FLEXIBLE, FLAT BONDING JUMPERS

A. Two Hole Tinned Flat Braided Copper Ground Straps, 6 Gauge equivalent, 12” long with crimped lugs on each end and ¼”-20 mounting hardware.

1. Manufacturer:

    a. Harger GS12094122C3/8

    b. or equal.

PART 3 - EXECUTION

3.1 GENERAL

A. Provide Grounding and Bonding according to the most restrictive requirements of:

1. ANSI-J-STD-607-B.

2. California Electrical Code Article 250 and references therein.

3. California Electrical Code Article 800.

B. In the event of conflicting requirements, National Electrical Code requirements shall prevail.

C. Point of Connection

1. Under Work of this Section, ground to the building Telecommunications Grounding System as installed under the work of Division 27 at the TMGB

D. Ground And Bonding Conductor Installation

1. All lug connections to the ground bars and opposite end shall use Antioxidant Joint Compound.

2. Unless otherwise noted, all bonding and ground wires on telecom cable trays and runways shall be routed on the outer edge of the cable trays and runways.

E. Mechanical Connections

1. Make connections bare metal to bare metal.

2. Where required, remove paint to bare metal, make grounding or bonding connection, and touch up paint.

3. Torque threaded fasteners to manufacturer’s recommended values.

F. Compression Connections

1. Make compression connections with the lug or fitting manufacturer’s recommended tooling, with the tooling set to the recommended force and stroke.

G. Electronic Safety and Security Raceways and Sleeves

1. Bond metallic raceway and sleeves to the Telecommunications Ground Busbar at the Telecommunications Room that serves the related Electronic Safety and Security systems.

2. Where a metallic raceway connects 2 or more Telecommunications Rooms, bond to the Telecommunications Ground Busbar at each.

H. Cable Shields

1. Comply with California Electrical Code Article 800.

I. Protector Fields

1. Comply with California Electrical Code Article 800.

J. Electronic Safety and Security cabinets and enclosures

1. Bond to the Communications Ground Busbar at the Communications Room.

3.2 LABELING

A. Provide labeling according to the requirements of:

1. ANSI/TIA-606-B.

2. Section 28 05 00 - Common Work Results for Electronic Safety and Security

END OF SECTION

SECTION 28 05 28

PATHWAYS FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes provision of electronic security systems pathways as specified in this Section and as shown diagrammatically on the plans. Provide electronic security systems pathways in accordance with the CEC, ANSI/TIA-569-C (2012) Telecommunications Pathways and Spaces, as specified in this Section and as shown on the plans, whichever is most restrictive. Provide system furniture pathways in accordance with UL 1286.

B. Contractor to design complete Electronic Safety and Security pathway system including provision of:

1. Rigid steel conduit and fittings.
2. Intermediate metal conduit and fittings.
3. Electrical metallic tubing and fittings.
4. Non-metallic raceway and fittings.
5. Flexible metallic conduit and fittings.
6. Liquidtight flexible metallic conduit and fittings.
7. Miscellaneous conduit fittings and products.
8. Junction Boxes
9. Hinged cover enclosures.
10. Pullboxes and Terminal Cabinets.
11. Wireway
12. Surface Raceway
13. Strut supports
14. Beam clamps
15. Concrete Fasteners

16. Touch-Up Materials

17. Conduit supports.

18. Equipment supports.

19. Fastening hardware

20. Equipment Cabinet and Rack Accessories

C. Provide fire penetration sealant systems at all rated wall and floor/ceiling penetrations as required.

D. At Hazardous Occupancies, installation conforms to the requirements of California Electric Code for Class and Division rating of spaces.

E. Fastening System Description

1. Provide devices specified in this Section and related Sections for support of electronic safety equipment specified for this Project.

2. Provide support systems that are adequate for the weight of equipment, conduit and wiring to be supported.

3. Seismic Design Requirements

a. Identify each item requiring seismic restraint installation in accordance with CBC Chapter 16. Include floor mounted items weighing more than 400 pounds and wall mounted or suspended items weighing more than 20 pounds.

b. Supports for such items, including racks, conduit, cable trays and similar shall be provided support, bracing, and anchorage, designed by the Contractor in accordance with the following criteria:

1) Design to resist seismic forces in accordance with CBC Chapter 16.

2) Minimum Design Parameters - As defined for the Project, with respect to Occupancy Category, Site Classification, Seismic Design Category, Importance Factor, Spectral Acceleration and SDI.

1.2 RELATED DOCUMENTS

A. General provisions of the Contract, including Conditions and Division 1 Specification Sections, apply to this Section.

B. Related Work In Other Sections. Related work: Consult all other Sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.

1. Section 01 71 23 – Field Engineering.
2. Section 28 05 00 – Common Work Results for Electronic Safety and Security
3. Section 28 05 13 – Conductors and Cables for Electronic Safety and Security
4. Section 28 05 26 – Grounding and Bonding for Electronic Safety and Security
5. Section 28 13 00 – Access Control and Alarm Systems
6. Section 28 23 00 – Visual Surveillance

1.3 REFERENCES

A. Usage: In accordance with Section 01 41 00 – Regulatory Requirements.

1. American Institute of Steel Construction (AISC)
    a. AISC 325 (2005) Steel Construction Manual
2. American National Standards Institute (ANSI)
    a. ANSI C80.1 1994 Rigid Steel Conduit - Zinc Coated
    b. ANSI C80.3 1991 Electrical Metallic Tubing - Zinc Coated
    c. EIA-310-D (1992) Cabinets, Racks, Panels, and Associated Equipment (ANSI/EIA/310-D)
    d. ANSI/TIA-607-B (2011), Generic Telecommunications Bonding and Grounding (Earthing) and Bonding Requirements for Customer Premises
3. American Society For Testing and Materials (ASTM)
    a. ASTM A123/A123M-02 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
    b. ASTM A153/A153M-04 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
    c. ASTM B633-98e1 Specification for Electro-deposited Coatings of Zinc on Iron and Steel.

d. ASTM A653/A653M-04a Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

4. National Electrical Manufacturers Association (NEMA)

   a. NEMA 250-2003 Enclosures for Electrical Equipment (1000 Volts Maximum)

   b. NEMA FB 1 (ANSI/NEMA FB 1-2003) Fittings, Cast Metal Boxes and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable

   c. FB 2.10 2000 Selection and Installation Guidelines For Fittings For Use With Non-Flexible Metallic Conduit Or Tubing (Rigid Metal Conduit, Intermediate Metal Conduit, And Electrical Metallic Tubing).

   d. FB 2.20 2000 Selection and Installation Guidelines for Fittings for use with Flexible Electrical Conduit and Cable

   e. NEMA ICS 6 1988 (Rev. 1) Enclosures for Industrial Control and Systems

   f. NEMA OS 3-2002 Selection and Installation Guidelines for Electrical Outlet Boxes.

   g. NEMA RN 1-1998 Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.

   h. NEMA TC 7 2000 Smooth Wall Coilable Polyethylene Electrical Plastic Duct

   i. NEMA TC 13 2000 Electrical Nonmetallic Tubing (ENT).

   j. NEMA TC 14 1984(R 1986) Filament-Wound Reinforced Thermosetting Resin Conduit and Fittings

5. Underwriters Laboratories, Inc. (UL)

   a. UL 1 2000 Flexible Metal Conduit

   b. UL 6 2004 Electrical Rigid Metal Conduit - Steel

   c. UL 50 (1995; R 1999, Bul. 2001) Enclosures for Electrical Equipment

   d. UL 360 1986 (Bul. 1991) (R 1993) Liquid-Tight Flexible Steel Conduit

   e. UL 514A 1991 (R 2004) Metallic Outlet Boxes

   f. UL 514B 1989 (R 2004) Conduit, Tubing and Cable Fittings

g. UL 514C 1996 (R 2000) Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers.

h. UL 651 1989 (R 1989) (Bul. 1993) Schedule 40 and 80 Rigid PVC Conduit.

i. UL 797 1993 (R 2004) Electrical Metallic Tubing - Steel

j. UL 1242 1983 (R1993) (Bul. 1993) Intermediate Metal Conduit.

k. UL 1286(1999; R 2001, Bul. 2002) Office Furnishings

l. UL 1479 Fire Tests of Through Penetration Firestops

m. UL Fire Resistance Directories

6. Telecordia Technologies

a. Network Equipment Building System (NEBS) GR-63-CORE.

1.4 SUBMITTALS

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification, Section 28 05 00 - Common Work Results for Electronic Safety and Security and the following:

1. As part of the project submittals, the contractor to provide engineered shop drawings indicating the proposed design for mounting all work of this Division as defined under the Seismic Design Requirements and defined elsewhere in this Section, inclusive of mounting systems, equipment mounted at the exterior, inclusive of its effective wind load under the range of conditions expected.

a. Shop drawings to be accompanied by anchorage calculations indicating that it shall remain attached to the mounting surface after experiencing forces in conformance with California Code of Regulations, Title 24, 2007 California Building Code.

b. Structural Calculations shall be prepared and signed by a California Registered Structural Engineer. Specify proof loads for drilled-in anchors, if used.

1.5 QUALITY ASSURANCE

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

B. All materials, equipment and parts comprising the units specified herein shall be new and unused, and of current manufacturer.

C. Only products and applications listed in this Section may be used on the project unless otherwise submitted and approved by the Owner's Representative.

1.6 DELIVERY, STORAGE AND HANDLING

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

1.7 WARRANTY

A. Conform with the requirements of Conditions of Construction Contract, Division 1 Specification and Section 28 05 00 - Common Work Results for Electronic Safety and Security.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide the following types of conduit systems listed by their commonly used generic name.

2.2 RACEWAY

A. Manufacturers:

1. Raceway:

a. Allied Tube and Conduit Co.

b. Triangle PWC, Inc.

c. Western Tube and Conduit Corp.

d. Spring City Electrical Manufacturing Co.

e. Occidental Coating Co. (OCAL).

f. Alflex Corp.

g. American Flexible Metal Conduit Co.

h. Anaconda.

i. Or equal.

2. Stainless Steel Raceway and Fittings

a. Calbrite

b. Allied Tube and Conduit

c. Or equal.

3. Fittings:

a. Appleton Electric Co.

b. OZ/Gedney.

c. Thomas & Betts Corp.

d. Spring City Electrical Manufacturing Co.

e. Occidental Coating Co. (OCAL).

f. Carlon.

g. or equal.

B. Rigid Steel Conduit.

1. Drawing and Spec Reference: RSC.

2. Construction:

a. Conduit: Full weight, threaded, hot-dip galvanized steel, conforming to ANSI C80.1 and UL 6.

b. Compression type couplings, locknuts, bushings, and elbows: Only materials of steel or malleable iron are acceptable. Locknuts shall be bonding type with sharp edges for digging into the metal wall of an enclosure.

c. Three piece couplings: Electroplated, cast malleable iron.

d. Insulating bushings: Threaded polypropylene or thermosetting phenolic rated 150 degree C minimum.

e. Insulated grounding bushings: Threaded cast malleable iron body with insulated throat and steel "lay-in" ground lug with compression screw.

f. Insulated metallic bushings: Threaded cast malleable iron body with plastic insulated throat rated 150 degrees C.

g. All fittings and connectors shall be threaded.

C. Coated Rigid Steel Conduit:

1. Drawing and Spec Reference: CRSC.

2. Conduit: Full weight, threaded, hot-dip galvanized steel, conforming to ANSI C80.1 and NEMA RN-1 with nominal 40 mil thermoplastic vinyl coating, heat fused and bonded to the exterior of the conduit.

3. Fittings:

a. Conduit couplings and connectors shall be as specified for galvanized rigid steel conduit and shall be factory PVC coated with an insulating jacket equivalent to that of the coated material.

b. Fittings over-sleeve to extend 1 conduit diameter or 1-1/2" beyond fitting, whichever is less.

4. Performance:

a. Tensile Strength: 3500 psi.

5. Approvals:

a. NEMA RN1 (Type 40 - 40 mils thick)

b. CalTrans Type 2

6. Manufacturers:

a. Plastibond by RobRoy Industries.

b. Occal-40 by Occidental Coating Company.

c. KorKap by Plastic Applicators.

d. Ocal-Blue

e. or equal.

D. Intermediate Metal Conduit

1. Spec Reference: IMC

2. Conduit: Hot dip galvanized steel meeting the requirements of CEC Article 345 and conforming to ANSI C80.6 and UL 1242.

3. Fittings: Compression type couplings, connector and bushing shall be as specified for galvanized rigid steel conduit. Integral retractable type IMC couplings are also acceptable.

E. Electrical Metallic Tubing.

1. Drawing and Spec Reference: EMT.

2. Conduit: Shall be formed of cold rolled strip steel, electrical resistance welded continuously along the longitudinal seam and hot dip galvanized after fabrication. Conduit shall conform to ANSI C80.3 specifications and shall meet UL classifications.

3. Raintight compression couplings: Electroplate steel or cast malleable iron; UL listed raintight and concrete tight, using gland and ring compression type construction.

4. Raintight compression connectors: Electroplated steel or cast malleable iron, UL listed raintight and concrete tight, with insulated throat, using gland and ring compression type construction.

5. Use of set-screw couplings and connectors is not permitted.

F. Flexible Conduit:

1. Spec Reference: FLEX

2. Construction:

a. Flexible steel, zinc coated on both inside and outside by hot-dipping process.

b. Interlocking spirally wound continuous steel strip.

c. 3/4" minimum size.

3. Fittings: Compression type connectors shall be of the single screw clamp variety with steel or cast malleable iron bodies and threaded male hubs with insulated throats. Exception: Pressure cast screw-in connectors shall be acceptable for fixture connection in suspended ceilings and cut-in outlet boxes within existing furred walls.

4. Approvals:

a. UL 1

G. Liquidtight Flexible Metallic Conduit

1. Spec Reference: Liquidtight

2. Conduit: Shall be fabricated in continuous lengths from galvanized steel strips, interlocking spirally wound, covered with extruded liquidtight jacket of polyvinyl chloride (PVC) and conforming to UL 360. Provide conduit with a continuous copper-bonding conductor wound spirally between the convolutions.

3. Fittings: Compression type connector body and gland nut shall be of cadmium plated steel or cast malleable iron, with tapered, male, threaded hub; insulated throat and neoprene "O" ring gasket recessed into the face of the stop nut. The clamping gland shall be of molded nylon with an integral brass push-in ferrule.

H. Conduit, Stainless Steel

1. Constructed of Type 316 Stainless Steel with either EMT, IMC type stainless steel fittings.

2. Approvals

a. UL6A

I. PVC Conduit

1. Drawing and Spec Reference: PVC.

2. Construction:

a. 4" trade diameter, unless otherwise noted.

b. Poly-vinyl chloride.

c. Schedule by Application

1) Straight segments, Schedule 40.

2) Flat elbows, Schedule 40.

3) Vertical elbows sweep up to grade, Schedule 80.

4) Above grade, Schedule 80.

d. Elbows.

1) Where innerduct liner is scheduled – CRSC.

2) Elsewhere, Schedule 80.

3) 90° C rated.

4) Solvent welded joints, joints by pipe manufacturer.

e. Application.

1) Soil Backfill/Direct Burial

a) RUS Type II, Type C or Type DB

b) Schedule 40.

2) Concrete Encasement:

c) PVC Type DB-120,

d) RUS Type I, Type B or Type EB

e) Any meeting Soil Backfill/Direct Burial.

3) Boring

f) HDPE.

g) RUS Type Flexible Plastic.

f. Performance:

1) Tensile Strength: 7,000 psi at 73.4° F.

2) Flexural Strength: 11,000 psi.

3) Compressive Strength: 8,600 psi.

g. Approvals:

1) RUS Listed for Telephone Cable Installation 5-99 Edition, or latest release thereof.

2) NEMA TC-2, PVC Type EPC-40 and EPC-80.

3) NEMA TC-3.

4) NEMA TC14 Fiberglass Conduit.

5) UL 514 fittings.

6) UL 651.

7) ANSI C33.91.

h. Manufacturers:

1) RUS Listed:

Manufacturer	RUS Listed for	Manufacturer Part Number
Allwire, Inc.	Flexible plastic	ALLDUCT
American Pipe & Plastics		
	Plastic	PVC Multi-Duct (2,3,4 and 6-way)
Americon International	Flexible plastic	HDPE Duct
	Plastic	PVC Type C
Apache Plastics, Inc.	Plastic	Type EB and Type DB
ARMCO	Plastic	Smooth-Cor Type B and Type C
Arnco	Flexible plastic	HDPE Conduit
Bay Plastics, Inc.	Plastic	Type B and Type C
Bristolpipe		
	Plastic	Type EB and Type DB
Can-Tex		
	Plastic	Type B, C, and D
Carlon		
	Plastic	Multi-Gard
Certain-Teed Products Corp.	Plastic	Type EB and Type DB
CIBA-GEIGY	Fiberglass	T & D Conduit
Condux International, Inc.		
	Plastic	Type EB and Type DB
CSR Polypipe	Flexible plastic	HDPE Duct
Dura-line	Flexible plastic	HDPE Duct
Eagle Pacific Industries, Inc.		
	Flexible plastic	HDPE Coiled Duct
Endot Industries	Flexible plastic	HDPE Duct
Freedom Plastics, Inc.	Plastic	Type C
Hercules, Inc.	Flexible plastic	Corflo plastic conduit

Hurlbut Plastic Pipe	Plastic	Type C
Ingomar Plastic Pipe	Plastic	Type B and Type C
J-M Manufacturing Company	Plastic	Types C, EB, and DB
Kyova	Plastic	Type EB and Type DB
LCP National Plastics, Inc.		
	Plastic	Type B and Type C
Northern Pipe Products	Plastic	Type B, C, and D
OMNI	Flexible plastic	HDPE Duct
Petroflex		
	Flexible plastic	Corrugated HDPE Duct
Phillips Products Co., Inc.	Flexible plastic	Driscon 3200
Phone Ducs	Plastic	Multiple plastic conduit (4, 6, & 9 Way)
PLEXCO	Flexible plastic	PLEXCO Duct
PWPipe	Plastic	Type EB and Type DB
Pyramid Industries, Inc.		
	Flexible plastic	HDPE Conduit
Quail Plastics	Plastic	Type EB and Type DB
Queen City Plastics	Plastic	Type EB and Type DB
River City Plastics	Plastic	Type EB and Type DB
Sedco	Plastic	Type EB and Type DB
Southern Pipe, Inc.	Plastic	PVC Types EB, DB, and Sch. 40
Tamaqua Cable Products	Flexible plastic	HDPE Duct
Tridyn Industries	Plastic	Type EB and Type DB
Vassallo Industries	Plastic	Type B and Type C
Wesflex	Flexible plastic	Flex-Con

2) or equal

J. Fiberglass Conduit

1. Spec Reference: Fiberglass
2. Construction:
    a. Trade Standard Sizes
    b. Meets NEMA TC 14
    c. Complete system of joints and threaded steel conduit couplers
3. Manufacturers:
    a. TVC Communication/Vikimatic Fiberglass Conduit
    b. Champion Fiberglass
    c. FRE Composite
    d. or equal.

2.3 MISCELLANEOUS CONDUIT FITTINGS AND PRODUCTS

A. General
    1. UL 514B.
    2. Listed in UL Electrical Construction Materials List.

B. Conduit Fittings, Insulated Throat Grounding Bushings
    1. Description
        a. Threaded for Rigid Steel Conduit and Intermediate Metal Conduit.
        b. UL Listed for use with copper conductors.
        c. Thermoplastic insulated liner for 105 degrees Celsius.
        d. Body of malleable iron, zinc plated; or die cast zinc.
    2. Manufacturer
        a. Thomas & Betts (Steel City) BG-801 Series
        b. O-Z/Gedney
        c. or equal.

C. Watertight conduit entrance seals: Steel or cast malleable iron bodies and pressure clamps with PVC sleeve, neoprene sealing grommets and PVC coated steel pressure rings. Fittings shall be supplied with neoprene sealing rings between the body and PVC sleeve.

D. Watertight cable sealing bushings: One piece, compression molded sealing ring with PVC coated steel pressure disks, stainless steel sealing screws and zinc plated cast malleable iron locking collar.

E. Expansion fittings: Multi-piece unit comprised of a hot dip galvanized malleable iron or steel body and outside pressure bussing designed to allow a maximum of 4" conduit movement (2" in either direction). Furnish with external braid tinned copper bonding jumper. Unit shall be UL listed for wet or dry locations.

F. Expansion/deflection couplings: Multi-piece unit comprised of a neoprene sleeve with internal flexible tinned copper braid attached to bronze end couplings with stainless steel bands. Coupling shall accommodate .75-inch deflection, expansion, or contraction in any direction, and allow 30-degree angular deflections. Flexible, corrosion-resistant, watertight, moisture and heat resistant molded rubber jacket and stainless steel jacket clamps. Unit shall comply with UL467 and UL514.

   1. Manufacturer:

      a. OZ/Gedney Type DX

      b. Steel City Type EDF

      c. or equal.

G. Fire rated penetration seals:

   1. UL classified.

   2. Conduit penetrations in fire rated separation shall be sealed with a UL classified assembly consisting of fill, void or cavity materials.

   3. The fire rated sealant material shall be the product best suited for each type of penetration, and may be a caulk, putty, composite sheet or wrap/strip.

   4. Penetrations of rated floors shall be sealed with an assembly having both F and T ratings at least equal to rating of the floor.

   5. Penetrations of rated walls shall be sealed with an assembly having an F rating at least equal to the rating of the wall.

H. Standard products not herein specified:

1. Submit for review a listing of standard electrical conduit hardware and fittings not herein specified prior to use or installation, i.e. locknuts, bushings, etc.

2. Listing shall include manufacturers name, part numbers, and a written description of the item indicating type of material and construction.

3. Miscellaneous components shall be equal in quality, material, and construction to similar items herein specified.

I. Hazardous area fittings: UL listed for the application.

2.4 JUNCTION AND DEVICE BOXES

A. Junction and Device Boxes

1. Spec References: As shown on Symbol Schedule

2. Construction:

a. Concealed/Flush Mounted:

b. One or two piece welded knockout boxes. Junction boxes with knockouts are not to be used for surface mounted locations or exposed locations.

c. UL 514A, cadmium or zinc-coated 1.25 oz/sq. ft., if ferrous metal.

d. Pressed sheet steel, for flush indoor locations.

e. UL 514C approved if non-metallic.

f. At hollow masonry, tile walls and plaster walls, provide with device rings as required.

g. Surface mounted:

1) Conform to the following.:

a) Cast iron with threaded hubs and mounting lugs.

b) Gasketed cover with spring lid.

2) Concrete floor embedded:

a) Cast iron concrete pour boxes with screwed brass cover, unless otherwise noted.

b) Cadmium plated screw cover attachment at least 6" on center.

h. If size not otherwise noted, at least 4S (4" square) by 2-1/8" deep, or Code minimum size, whichever is larger.

1) Wherever 4S is indicated, contractor may at their option substitute 4-11/16" or 5” (5S) square boxes while maintaining the minimum depth required by these specifications.

2) At recessed masonry wall installations, provide gangable masonry boxes.

i. Provide complete with approved type of connectors and required accessories, including attachment lugs or hangers. Provide raised device covers as required to accept scheduled device.

3. Approvals.

a. UL 514A

4. Manufacturers:

a. Interior, flush:

1) Steel City.

2) Bowers

3) Randl Industries, Inc. (5S Boxes).

4) or equal.

b. Interior, flush 5S Boxes

1) Randl, Inc. 5 Square Telecommunications Boxes

2) or equal.

c. Surface mount or exterior, exposed with cover of same construction.

1) Appleton

2) Pyle-National

3) or equal.

d. Other conditions:

1) Any meeting approvals and requirements.

2.5 CABINETS AND ENCLOSURES

A. Terminal Cabinets:

1. Spec Reference: As Scheduled.

2. All security system enclosures to be equipped with tamper detection. All enclosures should be appropriate to the environment. External enclosures must meet standard to withstand high moisture sea air.

3. Construction:

   a. Interior Applications:

      1) Zinc Coated Sheet Steel, code gauge with standard concentric knockouts for conduit terminations.

      2) Finish: Manufacturer's standard gray baked enamel finish.

      3) Covers: Trim fitted, continuous hinged steel door, flush catch – lockable and keyed to match. Screw fastened doors not acceptable.

         a) Door face to be not less than 95% of panel interior dimensions.

   b. Exterior Applications

      1) Enclosures to be NEMA 4X Type 316 Stainless Steel or non-metallic

   c. Interior dimensions not less than those scheduled.

   d. Provide with 3/4" fire retardant treated ply backboard.

4. Mounting:

   a. Flush cabinets shall be furnished with concealed trim clamps and shall be not less than 4 inches deep.

   b. Surface cabinets shall be furnished with screw cover trim, flush hinged door and shall not be less than 6 inches deep.

   c. Interior Applications:

      1) NEMA 250 Type 1, unless otherwise noted. Refer to plans and schedules.

   d. Exterior Applications:

      1) NEMA 250 Type - NEMA 4X.

5. Manufacturers:

a. B-Line Electrical Enclosures

b. Circle AW Products.

c. Hammond

d. Henessey.

e. Hoffman.

f. Myers Electric Products

g. Rittal.

h. or equal.

2.6 WIREWAY

A. Lay-In Wireway

1. Spec Reference: Gutter

2. Features/Functions/Construction

a. NEMA Type 1, unless otherwise noted.

b. ANSI 61 Gray polyester powder finish inside and outside.

c. Screw fastened cover completely removable to provide complete access to interior.

d. 6"x6" cross-section minimum, size for 30% fill maximum

3. Approvals

a. UL 870

b. NEMA Type 1

4. Manufacturers

a. Hoffman Lay-In Type 1 Wireway

b. Square D

c. Circle AW

d. or equal

2.7 SURFACE RACEWAY

A. General

1. Products provided under the work of this Section shall provide the following minimum characteristics:

2. Approvals

    a. U.L Listed

    b. Multi-chamber surface raceway shall conform to NEC 352B for simultaneous power and telecommunications use.

3. Meet or exceed the requirements of ANSI/TIA-569-C for a surface raceway system

4. Fittings shall incorporate radiussed corners such that wiring cannot be placed therein with bend radius less than the minimum bend radius specified in ANSI/TIA-568C.1.

5. Raceway base shall be designed to be securely fastened to mounting surface per manufacturer's recommendations using mechanical fasteners. Systems requiring use of adhesive fasteners will not be accepted.

6. Raceway system shall include fittings for connection and change of raceway direction and/or plane of installation.

7. Available in-line raceway connector fittings shall include at least:

    a. External Elbow

    b. Flat Elbow

    c. Internal Elbow

    d. End Cap

    e. Splice Cover

    f. Tee

    g. Cable clips to retain contents in overhead installation. Alternatively, provide separate cable ties and independent restraint for same.

8. System shall accommodate connection to trade standard boxes and fittings through accessory boxes and transition pieces

9. Trade connections, device boxes and mounting systems shall not reduce fill capacity, except where specifically scheduled.

10. System shall include device plates of types to meet requirements shown on Communication Systems drawings.

11. Available device mounting boxes shall include at least:

    a. Raised Device Box

    b. 2-gang Raised Device Box

    c. In-Line Device Box

12. System shall include device plates of types to meet requirements shown on Communication Systems drawings.

13. Available device plates shall include at least:

    a. Single Receptacle Plate

    b. Duplex Receptacle Plate (NEMA 106)

    c. Duplex - Duplex (Quadplex) Plate

B. Surface Raceway, Non-metallic:

1. Drawing & Spec Reference: #SR*, where "#" denotes number of chambers, "*" denotes cross sectional area of each chamber in square inches.

2. Construction

    a. Single chamber, 1 square inch:

        1) Drawing and reference designation: 1SR-1

        2) Two piece construction or hinged single piece.

        3) System components to provide at least a one (1) inch bend radius at corners.

    b. Dual chamber, 2 square inches:

        1) Drawing and reference designation: 2SR-2

        2) Two piece construction.

        3) At least 3.7 square inches of fill areas in each of two chambers.

        4) System components to provide at least a one (1) inch bend radius at corners.

    c. Three chamber, 3/4 inch:

1) Drawing and reference designation: 3SR-.75

2) Two piece construction.

3) Three chamber, 2.5 inch:

4) Drawing and reference designation: 3SR-2.5

5) System components to provide at least a one (1) inch bend radius at corners.

d. Color: White or Ivory, to best match surrounding surfaces. Submit color options to Owner's Representative for selection.

e. Three chamber surface raceway shall have three adjacent chambers separated by removable horizontal dividers. System and installation shall not compromise separation of services.

f. Keyed cover plate shall require tool for removal.

3. Approvals:

a. Plastic meeting UL 94 V-0 flammability rating.

4. Manufacturers, subject to the above:

a. One chamber, 1 inch (1SR-1)

1) Wiremold.PN10.

2) Panduit LDP-10.

3) Hubbell.

4) or equal.

b. Two chamber, 2 inch (2SR-2)

1) Wiremold 5400B Series (Design Basis).

2) Hubbell.

3) or equal.

c. Three chamber, 3/4 inch (3SR-.75)

1) Wiremold 5400 Series with 5400 BD Base (Design Basis).

2) Hubbell Mediatrak System.

3) or equal.

d. Three chamber, 2.5 inch (3SR2.5)

1) Wiremold 5500 Series with 5500BD Base (Design Basis).

2) Hubbell Mediatrak 10.

3) or equal.

2.8 EQUIPMENT ENCLOSURE SYSTEMS

A. Rack Mounting Screws:

1. Screws 10-32; length as required for at least 1/4" excess when fully seated; oval head with black plastic non marring cup washer or equivalent ornamental head; nickel, cadmium or black plated; Phillips, Allen Hex, Square-Tip or Torx drive. Slotted screws are not acceptable.

B. Sliding Shelf:

1. Plan Reference: SLIDING SHELF

2. Construction/Features:

a. 16 gauge minimum cold rolled steel

b. Powder coat finish to match rack color, unless otherwise noted

c. 19" Wide Pull out with handhole or knob.

d. Solid or perforated surface

e. Depth: At least 20", u.o.n.

f. 50 pound minimum load capacity

3. Manufacturers:

a. Atlas Sound

b. BGW Systems, Inc. Sliding Shelves

c. Chatsworth Products 32" Deep Megaframe Sliding Shelf.

d. Elkay SLSH series

e. Homaco Adjustable Pull-Out Equipment Shelves

f. Hubbell MCCTELSHLF

g. Middle Atlantic Heavy-Duty Sliding Shelf

h. APW SSDC30.

i. AFCO AS-SO-19-24.

j. Or equal.

C. Fixed Shelf - 4 post rack applications

1. Plan Reference(s):

a. FIXED SHELF

b. SHELF

2. Construction:

a. 16 gauge minimum cold rolled steel

b. Powder coat finish to match rack color, unless otherwise noted

c. Holds 100 lbs load

d. Mounts to front and rear rails, U.O.N.

e. Solid or Perforated bottom panel to suit equipment being mounted.

f. Depth to equal not less than 75% of depth of equipment rack.

g. Not more than 1 RU in height.

3. Manufacturers:

a. Atlas Sound Heavy Duty Shelves, SH series.

b. BGW Systems, Inc. Rack Mount Trays

c. Elkay SSH Series

d. Homaco Adjustable Equipment Shelves and Fixed Dual Shelves

e. Lowell Rack Mounted Utility Shelves

f. Middle Atlantic Universal Rackshelves

g. Rack Innovations, Inc.

h. ZERO/Stantron Stationary Shelves

i. AFCO AS-SF-19-24

j. APW ESDC30.

k. Hubbell MCCPSHLF

l. Chatsworth Products 29" Deep Megaframe Fixed Shelves.

m. or equal

D. Fixed Shelf - 2 post rack applications

1. Plan Reference(s):

a. FIXED SHELF

b. SHELF

2. Construction:

a. 18 gauge minimum cold rolled steel

b. Powder coat finish to match rack color, unless otherwise noted

c. Holds 25 lbs load

d. Mounts to front rails, supports load to rear of frame. U.O.N., center support shelves not acceptable.

e. Solid or Perforated bottom panel to suit equipment being mounted.

f. Not more than 1 RU in height.

3. Manufacturers:

a. Chatsworth Products, Inc.

b. or equal

E. Keyboard/Mouse Shelf

1. Drawing Reference: Keyboard/Mouse Shelf

2. Stores fullsize keyboard and mouse inside rack.

3. Upon retraction to rack front, pivots 90 degrees for operator access.

4. Manufacturers
    a. APC 19" Rotating Keyboard Drawer.
    b. Middle Atlantic
    c. or equal.

F. Grommet Panel
1. Features/Functions/Construction
    a. 1 RU steel or aluminum panel with 18" wide x 1" tall smooth edged
    b. opening in face
    c. Cable management panel protrudes below opening perpendicular to rear face.
2. Manufacturers:
    a. Middle Atlantic BR1
    b. Custom by Contractor using Blank Panel
    c. or equal.

G. Blank Panels:
1. Construction
    a. 16 gauge minimum cold rolled steel
    b. Powder coat finish to match rack color, unless otherwise noted
2. Manufacturers
    a. Middle Atlantic Products SB Series.
    b. Atlas Sound S19 Series.
    c. BGW Systems Inc. Flanged Steel Blank Panels
    d. Dukane
    e. Elkay
    f. Lowell Series L3
    g. Zero ZP112000 Series.

h. Hubbell

i. or equal.

H. Vent Panels:

1. Construction

a. 20 gauge minimum cold rolled steel

b. 1/8" minimum holes, at least 70% open total panel cross-section.

c. Powder coat finish to match rack color, unless otherwise noted

2. Manufacturers

a. Atlas Sound SVP Series.

b. BGW Systems Inc. Perforated Vent Panels

c. House of Metal Enclosures (HOME) Series PRP.

d. Lowell Series L5

e. Middle Atlantic Products VT Series.

f. Zero.

g. or equal.

I. Drawers

1. Construction

a. 16 gauge minimum cold rolled steel

b. Powder coat finish to match rack color, unless otherwise noted

c. Suitable for mounting from face of 4 post rack

d. At least 14-1/2" deep.

e. Full extension ball bearing slides with trigger release disconnect.

f. Rated for at least 100 pound load.

g. Flush handle does not protrude from drawer face.

h. Provide key lock where indicated.

2. Manufacturers

    a. BGW Systems Inc. Rack Mount Drawer Systems.

    b. Middle Atlantic Heavy Duty D or TD series.

    c. Atlas Sound SD*-165FP Series.

    d. Elkay SSD Series.

    e. or equal.

J. Vertical Lacer Strips

1. 44RU high vertical steel strips with points for attachment of velco cable ties at at least 6” o.c.

2. Manufacturers:

    a. Middle Atlantic LACE-44LP

    b. APW

    c. or equal.

K. Horizontal Lacer Bars

1. EIA 19” Width steel strips or bars suitable to provide support to large cable dressed horizontally through racks

2. Size to suit load and mounting width.

3. Manufacturers:

    a. Middle Atlantic LBP-1R4, LBP-1.5 and LBP-1S.

    b. APW

    c. or equal.

L. Seismic Hold-down Equipment Straps

1. Drawing Reference: None - Provide as required to secure equipment that can not be screw fastened to mounting shelves.

2. Manufacturers:

    a. BGW Systems

b. Everest Electronic Equipment Lock Down Kit

c. Ergotron

d. Chatsworth Products

e. Middle Atlantic Products

f. Q-Safety, Inc.

g. or equal.

2.9 THROUGH PENETRATIONS SEALANT SYSTEMS

A. At a minimum, follow all manufacturer instructions. In case of discrepancy between manufacturer and contractor requirements, the more stringent shall apply. In the case of conflicting instructions, report any discrepancy to the Owner's Representative in a timely fashion so as not to impact the construction timeline.

B. Application: Through Penetration Sealant Assemblies, Renenterable

1. Zero-maintenance firestop assemblies shall be used at all penetrations of rated partitions when the pathway on one or both sides of the wall, ceiling or floor is open, such as J-hooks or cable tray.

2. Communications cable tray or ladder rack shall not be continued through a fire-rated wall. Stop the tray or ladder rack, install multiple zero- maintenance firestop assemblies as needed, and continue the tray or ladder rack on the other side. Ensure grounding of the cable tray is continuous through the wall.

3. Electronic security system conduit sleeves through a single fire-rated wall shall not be used. For these applications, a zero-maintenance firestop assembly is required.

C. Application: Firestopping for Conduits and Other Closed Pathways

1. Firestopping is required for all fire-rated penetrations where a electronic security system conduit or other closed pathway penetrates one or more membranes of a fire-rated wall floor or ceiling

2. Required for all electronic security system outlets located on fire-rated walls. Systems shall be UL CLIV tested

D. For all penetrations for electronic security system openings through fire-rated walls, floors and ceilings, install the same manufacturer's product for that type of penetration throughout the project.

E. Coordinate with all other trades prior to installation:

   1. To ensure that through penetration firestop systems are installed according to specified requirements.

   2. To ensure that sizing of openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems is appropriate.

F. All penetrations through fire-rated building structures (walls, ceilings and floors) shall be sealed with an appropriate firestop system that at least matches the fire rating of the structure. This requirement applies to through penetrations (complete penetration) and membrane penetrations (through one side of a hollow fire-rated structure).

   1. Any penetrating item i.e., riser slots, cables, conduit, cable tray, and raceways, etc. shall be properly firestopped.

   2. Through penetrations shall be sealed on both sides of the structure.

   3. Electronic security system outlet back-boxes installed in fire-rated walls shall be completely enclosed in an appropriate firestopping assembly within the wall.

   4. Conduit sleeves shall not be used for penetrating fire-rated floors, ceilings and walls. A zero-maintenance firestop assembly shall be used instead.

G. Verify the locations of all fire-rated walls prior to installation.

H. Firestopping assemblies must make a gas, smoke and water tight seal when activated in a fire.

I. Multiple cable bundles planned to penetrate a fire-rated wall and entering the same space within 10 feet of each other shall be consolidated in to a single penetration, unless one or both penetrations are membrane penetrations.

J. Ambient Conditions:

   1. Do not install firestopping products when ambient or substrate temperatures are outside the limitations recommended by the manufacturer.

   2. Do not install firestopping products when substrates are wet due to rain, frost, condensation, or other causes.

   3. Maintain the minimum temperature before, during, and for a minimum 3 days after installation of materials.

K. Schedule installation of firestopping after completion of the penetrating item (e.g., conduit) installation but prior to the covering or concealing of openings.

L. Before beginning installation:

1. Examine and clean the affected surfaces, as they shall be free of dirt, grease, oil, scale, laitance, rust, release agents, water repellants, and any other substances that may inhibit optimum adhesion.

2. Provide masking and temporary covering to protect adjacent surfaces.

3. Do not proceed until unsatisfactory conditions have been corrected.

M. After installation:

1. Remove equipment, materials, and debris, leaving area in undamaged, clean condition.

2. Clean all surfaces adjacent to sealed openings to be free of excess firestopping materials and soiling as work progresses.

3. Do not cover installed firestopping assemblies until inspected by the Owner's Representative.

N. All firestop systems (including the cabling through them) and identification labels shall be installed prior to the Owner Representative's above-ceiling inspection.

O. Labeling

1. At all firestop locations, install a permanent label near the firestop on each side of the wall, ceiling or floor. Labels shall be pre-printed and include:

a. Manufacturer of the firestop.

b. Name of product and UL System Number.

c. Name of installer and company name

d. Date of installation.

e. Rating of the wall/system (F and T ratings).

2. One location may have multiple labels (e.g. for a firestop in the annular space around a conduit penetration and a firestop within the conduit around the cables).

3. Labels shall not be painted over or otherwise obscured or defaced.

2.10 SUPPORTING DEVICES

A. General

1. Supports to be sized to suit load and selected to match mounting conditions

B. Manufacturers

1. Equal products by the following manufacturers will be considered providing that all features of the specified product are provided:

a. Concrete fasteners:

1) Phillips "Red-Head".

2) Remington.

3) Ramset.

4) Hilti

5) Simpson Strong-Tie

6) or equal.

b. Concrete inserts and construction channel:

1) Unistrut Corp.

2) GS Metals "Globe Strut."

3) Thomas & Betts "Kindorf" Corp.

4) Or equal.

c. Conduit straps:

1) O-Z/Gedney.

2) Erico "Caddy" Fastening Products.

3) Thomas & Betts "Kindorf" Corp.

4) Or equal.

d. Beam Clamps

1) Cooper B-Line

2) SuperStrut

3) Unistrut

4) or equal

e. Aircraft Cable Sway Braces

1) Mason Industries

2) M.W. Sausse/Vibrex

3) Loos & Company, Inc.

4) or equal.

f. Construction Channel

1) B-Line

2) Unistrut

3) Globe Strut

4) or equal.

C. Concrete Fasteners

1. Provide expansion-shield type concrete anchors.

2. Provide powder driven concrete fasteners with washers. Obtain approval by Owner's Representative prior to use.

D. Concrete Inserts

1. Provide pressed galvanized steel, concrete spot insert, with oval slot capable of accepting square or rectangular support nuts of ¼ inch to ½ inch diameter thread for rod support.

E. Aircraft cable sway braces

1. Steel rope sized to meet load.

F. Construction Channel:

1. Construction:

a. 1-5/8" square galvanized channel formed from U.S.S.G No. 12 or 0.109 inch cold formed steel with 17/32-inch diameter bolt holes, and 1-1/2 inch on center in the base of the channel.

b. 10 foot sections.

2. All supporting materials by same manufacturer.

G. Beam Clamps

1. Malleable iron electro-galvanized steel beam clamps selected to match building structural steel members.

H. Conduit Straps

1. One hole strap, steel or malleable iron, with malleable iron clamp-back spacer for surface mounted wall and ceiling applications.

    a. Use malleable strap with spacers for exterior and wet locations.

    b. Use steel strap without spacers for interior locations.

2. Steel channel conduit strap for support from construction channel.

3. Steel conduit hanger for pendant support with threaded rod

4. Steel wire conduit support strap for support from independent #12 gauge hanger wires.

I. Threaded rods, couplings, screws and nuts:

1. Electrolytically coated with zinc, 2 oz. zinc per square foot of surface, ASTM A123 or A153.

J. Miscellaneous Parts

1. Hot dipped galvanized after fabrication; after cutting, de-burring and hole drilling. Coated with zinc, 2 oz. zinc per square foot of surface, ASTM A123 or A153.

K. Exterior/Wet Service Application

1. Electronic security systems hangers or supports in wet areas or areas exposed to outside air including but not limited to building exterior, Tank Farm, AH-1 Mechanical Room, Greenhouse Interior or similar, shall be need to be suitably corrosion resistant, constructed of either 316 stainless steel or non-metallic

2. Manufacturers:

    a. Cooper Industries

    b. Champion Fiberglass

    c. Enduro Composites

    d. Seasafe

e. Or equal.

L. Paint/Tape for Touch-up:

1. Zinc: CRC "Zinc-It", Glyptal, Enterprise Galvanizing “Galambra”, or equal.

PART 3 - EXECUTION

3.1 GENERAL

A. The Owner's Representative reserves the right to request additional supports where in their sole opinion said supports are required. Any additional supports shall be installed at no additional cost to the Owner.

3.2 EXAMINATION

A. Thoroughly examine site conditions for acceptance of supporting device installation to verify conformance with manufacturer and specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.3 PREPARATION

A. Coordinate size, shape and location of concrete pads required for equipment installation with the work specified in other sections.

B. Lay out support devices to maintain headroom, neat mechanical appearance and to support the equipment loads.

C. Where shown on the Drawings or Specifications, install freestanding Electronic Safety and Security equipment on concrete pads.

3.4 CONDUIT APPLICATION

A. General: Install the following types of conduits and fittings in the locations listed, unless otherwise noted in the drawings:

1. Exterior, Exposed:

a. Type RSC in conformance with SFIA TIG Sec. 508.7.D(1).

2. Interior, Exposed, Wet and Damp Locations:

a. Type RSC.

b. At interior locations over 8 feet above finished floor, EMT acceptable.

3. Interior, Hazardous Locations
    a. Type RSC
    b. Type IMC, where permitted by the CEC.
4. Interior, exposed or concealed, dry locations:
    a. RSC, if subject to physical abuse.
    b. EMT, if not subject to physical abuse.
5. Interior, concealed, damp locations, including in masonry walls.
    a. RSC
6. Embedded in Concrete
    a. RSC or rigid non-metallic conduit.
    b. PVC Type Schedule 40.
7. Transition from walls, floor boxes and monuments to open plan furniture systems:
    a. Liquidtight

3.5 GENERAL REQUIREMENTS

A. Refer to the manufacturer's instructions and conform thereto.

B. Distribution Pathway via EMT Raceway:

1. EMT conduit is to be installed meeting the NEC handbook Article 348 Installation Specifications.
2. Provide escutcheon plates for all through wall conduit stubs.
3. All ends of conduits shall be cut square, reamed and fitted with insulated bushing.
4. All conduit which passes through fire walls shall be sealed with fire stop putty after all station wire has been installed.

3.6 MOUNTING AND INSTALLATION – DEVICE BOXES

A. Conform to the more restrictive of NEMA OS 3-2002 and the following.

B. Provide backboxes at all Electronic Safety and Security systems devices. Installation of device plates directly to wall surface without use of a backbox, unless specifically directed on plans, is unacceptable.

C. The distance between pull boxes shall not exceed 150 feet or more than two 90 degree bends.

D. Align boxes plumb with floor and surrounding construction. At door frames, locate 4" from frame. Verify placement with Owner's Representative details to ensure that box clears all trim, etc.

E. Support and fasten boxes securely. At stud walls use rigid bar hangers, attached to hanger with stud and nut.

F. At existing locations, provide cutting, patching and finishing as required to maintain or restore finishes so that resulting installation is integrated into the Architectural decor of the particular location.

G. Mounting Height: the mounting height of a wall-mounted outlet box is defined as the height from the finished floor to the horizontal center line of the cover plate.

H. Mount outlet boxes with the long axis vertical. Three or more gang boxes shall be mounted with the long axis horizontal.

I. Install wiring jacks and outlet devices only in boxes which are clean; free from excess building materials, dirt, and debris.

J. Install wiring jacks and outlet devices after wiring work is complete.

3.7 TERMINAL CABINETS, JUNCTION BOXES AND PULL BOXES

A. General

1. Thoroughly examine site conditions for acceptance of cabinets and enclosures installation to verify conformance with manufacturer and specification tolerances. Do not commence with installation until all conditions are made satisfactory.

B. Set cabinets and enclosures plumb and symmetrical with building lines. Furnish and install all construction channel bolts, angles, etc. required to mount all equipment furnished under this Section of the Specifications.

C. Cabinets and enclosures shall be anchored and braced to withstand seismic forces calculated in accordance with standards referenced in Section 27 05 29 – Hangers and Supports for Electronic Safety and Security Systems.

D. "Train" interior wiring, bundle and clamp using specified plastic wire wraps. Separate power and signal wiring.

E. Replace doors or trim exhibiting dents, bends, warps or poor fit that may impede ready access, security or integrity.

F. Terminate conduit in cabinet with lock nut and grounding bushing.

G. Cleaning

1. Touch-up paint any marks, blemishes or other finish damage suffered during installation.

2. Vacuum clean cabinet on completion of installation.

3.8 SUPPORT

A. Provide supports for raceways as specified in this Section.

B. All raceways installed in exposed dry locations shall be grouped in a like arrangement and supported by means of conduit straps, wall brackets or trapeze hangers in accordance with Code and the requirements of this Section. Fasten all hangers from the building structural system.

C. Provide supports and mounting attachments per the most restrictive of Code and the following.

D.

Raceway Size (inches)	No of cables in run	Location	Support Spacing (feet)	
			RSC	EMT
Horizontal Runs				
½, 3/4	1-2	Flat Ceiling Wall Runs	5	5
½, 3/4	1-2	Where Access Limited To Building Structure	7	7
½, 3/4	3≥	Any Location	7	7
1≥	1-2	Flat Ceiling Or Wall	6	6
1≥	1-2	Where Access Limited To Building Structure	10	10
1≥	3≥	Any Locations	10	10
Any	Any	Concealed	10	10
Vertical Runs				
½, 3/4	Any	Exposed	7	7
1, 1-1/4	Any	Exposed	8	8
1-1/2≥	Any	Exposed	10	10

E. Install no more than one coupling or device between supports.

F. The Owner's Representative reserves the right to request additional supports where in their sole opinion said supports are required. Any additional supports shall be installed at no additional cost to the Owner.

3.9 PENETRATIONS

A. Gypsum Wall Board Penetrations: Provide circular penetrations maximum 1/8" inch larger than outer diameter of conduit being used. On both sides of the wall fill space between conduit and wall with joint compound, depth to match gypsum board thickness.

B. Install UL listed fire-stop system whenever a raceway penetrates a firewall in conformance with the manufacturer's directions, the published systems assembly requirements, CBC Section 709 and 710 and CEC 300-21, whichever is the most restrictive. At cable tray penetrations, provide pillow type removable fire stop per CBC Section 709 and 710, the published systems assembly requirements and the manufacturer's directions, whichever is the most restrictive.

C. All Electronic Safety and Security systems conduit openings in walls and floors are the responsibility of the Contractor. Install sleeves shown on the drawings when the concrete is poured. Any openings required after the concrete has set maybe core drilled.

3.10 RACEWAY INSTALLATION

A. Access control and intrusion detection systems shall be installed in entirely in raceway sized for 30% cable fill maximum, including:

1. Rough-in for the field devices as detailed and scheduled on the plans.

2. Pull cabinets located at regular intervals in the building, sized to accommodate the access control and intrusion detection cabling.

    a. Size raceway between pull cabinets to accommodate fill of field devices.

    b. Provide two separate raceway systems

        1) one for power cabling, including power for door locks and field devices.

        2) one for Access Control and Intrusion Detection System field devices, including card readers, motion detectors, glass break sensors, request-to-exit sensors and similar.

3. Wireway at backboard of BDF and IDF to terminate the raceway arriving from the pull cabinets and directly from the field devices.

4. Terminal cabinets at backboard of BD and IDF to enclose the TB15's used to terminate the field wiring installed under the work of this contract.

B. General

1. Raceway runs are shown schematically – Contractor to provide design and implementation of complete pathway system. Install concealed unless specifically shown otherwise. Supports, pull boxes, junction boxes and similar generally not indicated. Provide where designated in addition to those required by the Contractor's design.

   a. Install exposed conduit and raceway parallel and perpendicular to nearby surfaces or exposed structural members, and follow the surface contours. Level and square conduit and raceway runs.

   b. Raceway runs shall be mechanically and electrically continuous between all each equipment rack and utility demarcation point, receptacle and/or surface raceway strip, as applies.

   c. Each conduit shall enter and be securely connected to a cabinet, junction box, pull box, or outlet by means of a locknut on the outside and a bushing on the inside or by means of a liquid-tight, threaded, self-locking, cold-weld type wedge adapter.

   d. Bends

      1) All bends or elbows shall have a minimum radius as follows:

Conduit Size	Min. Radius (Inches)
3/4"	8
1"	12
1-1/4"	18
2"	24
2-1/2"	24
3"	30
3-1/2"	30
4"	30
5"	36

6"	42

2) Use factory elbows or machine bends for conduit bends 1-1/4" and larger.

e. Make bends and offsets so the inside diameter is not effectively reduced. Make bends in parallel or banked runs from the same center line so that the bends are parallel.

f. Install at least one (1) 3/8", 200 pound strength nylon pull cord in all empty raceways.

g. Raceways crossing building expansion joints or in straight runs exceeding 100 feet shall be provided with UL listed expansion fittings.

h. Install conduit seals and drains to prevent accumulated moisture in conduits from entering Electronic Safety and Security Systems enclosures.

2. Do not install conduit in concrete slabs unless specifically directed by Owner's Representative. Embedded conduits in concrete slab walls, and columns shall be installed in center third between upper and lower layers of reinforcing steel as directed by the Owner's Representative. Space conduits 8" on center except at cabinet locations where slab thickness shall be increased as directed by the Owner's Representative.

3. All conduits to be kept 12" away from steam or hot water lines. Install horizontal conduit and raceway runs below water and steam piping.

4. Conduit dropping down to equipment shall be as straight as possible without any offsets, parallel or perpendicular to walls, ceilings and other building features.

5. Conduit installed on any equipment shall be run symmetrical with the equipment and in such a manner as to:

   a. not to be exposed to damage;

   b. not interfere with access to components of the equipment that will interfere with maintenance operation or;

   c. not to be in a manner that the Owner deems detrimental to its operation.

6. Whenever an installation such as that listed occurs, the Contractor shall make all necessary changes at no additional cost to the Owner.

7. All cut ends of conduit, scratches, tool marks, etc. on any metallic raceway installed in the ground or on the exterior of the building shall be treated with two coats of specified Touch Up Paint/Tape.

8. Exposed conduit and metallic surface raceway installed in finished spaces shall be painted to match surrounding surfaces using paint and methods directed by the Owner's Representative.

9. All raceways stubbing up into equipment or racks shall be sealed. Raceways with conductors shall be plugged with duct-seal. Spare raceways shall be capped. Prevent foreign matter from entering conduit and raceway; use temporary closure protection. Replace conduits containing concrete, varnish or other foreign material.

10. Complete installation of conduit and raceway runs before starting installation of cables/wires within conduit and raceway.

11. Use specified conduit and raceway fittings that are of types compatible with the associated conduit and raceway and suitable for the use and location. Join and terminate conduit and raceway with fittings designed and approved for the purpose of the conduit and raceway system and make up tight.

12. Where chase nipples are used, align the raceway and coupling square to the box and tighten the chase nipple so no threads are exposed.

13. Horizontal conduit or EMT runs, where required and permitted, shall be installed as close to ceiling or ceiling beams as practical.

14. Conduit and EMT connected to wall outlets shall be run in such a manner that they will not cross water, steam or waste pipes or radiator branches.

15. Conduit and EMT shall not be run through beams, purlins or columns except where permission is granted by Owner's Representative in writing.

16. Bond installed metallic raceway in accordance with the requirements of the CEC.

3.11 RACEWAY FOR ACCESS CONTROL AND INTRUSION DETECTION SYSTEMS

A. Refer to general requirements herein above.

B. Access control and intrusion detection systems shall be installed in entirely in raceway below ceiling line in pathway size for 40% fill maximum, including:

1. Rough-in for the field devices as detailed and scheduled on the plans. Extend rough in raceway to the nearest basket tray as shown on the TN plans.

2. Pull cabinets located at regular intervals in the building, sized to accommodate the access control and intrusion detection cabling.

    a. Size raceway between pull cabinets to accommodate fill of field devices.

    b. Pathway including flexible metal and armored cable shall terminate in the sensor or device enclosure.

    c. Ends of conduit shall be fitted with insulated bushings. Provide continuous complete non-flexible pathways, from device, including pull boxes for all field devices. Leaving exposed conductors at ends of conduits external to sensors and devices not acceptable except above accessible ceiling line.

3. Gutter at backboard indicated security electronics termination points sized for 30% fill maximum, to terminate the raceway arriving from the pull cabinets and directly from the field devices pathway systems.

4. Terminal cabinets at backboard of indicated termination rooms for security electronics to enclose the TB15's and terminal blocks used to terminate the field wiring installed under the work of this contract.

3.12 HAZARDOUS LOCATIONS

A. Use rigid steel conduit only.

B. Install UL listed sealing fittings that prevent passage of explosive vapors in accordance with the manufacturers written instructions. Locate fittings at suitable, accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank coverplate having a finish similar to that of adjacent plates or surfaces.

C. Install raceway sealing fittings at the following points and elsewhere as indicated:

    1. Where conduits enter or leave hazardous locations.

    2.

3.13 REUSE OF EXISTING CONDUIT

A. General

    1. Existing conduit is to be used as a pathway only where so shown on the drawings.

    2. Prior to beginning work involving the use of an existing conduit, the Contractor shall consult with the Owner’s Representative in order to establish whether or not the conduit contains active service.

3. If no active service exists within the conduit, all cable is to be removed, and work is to proceed.

4. If active service does exist within the conduit and it has been determined that service needs to be disrupted, then work on that conduit shall not proceed until a schedule of service outage has been established by Owner's Representative. Once given direction to proceed, the Contractor shall within the time period of one (1) working day; remove the old cable, install, terminate and test the new cables, and notify the Owner's Representative the work using the specific conduit has been completed. The Owner's Representative shall be responsible for the disconnection and reconnecting of the active service cross-connects within the terminal closet(s).

B. Conduit preparation procedure:

1. Remove existing wires and cables (if any).

2. Run a mandrel ½" smaller than the inside diameter of the conduit through the conduit receiving new wires and cables.

3. If the specified size mandrel will not pass through the existing conduit, start with a smaller size mandrel and increase mandrel size until the specified sized mandrel will pass.

4. Run a wire brush and clean rag with an outside diameter 1/8" larger than the inside of the conduit through the conduit receiving new wires and cables.

5. Repeat above until conduit is clean and materials detrimental to the wire and cables to be installed no longer exit conduit with the clean rag.

3.14 WIREWAY INSTALLATION

A. Install complete wireway system at electronic security systems backboards, including track, cover plate, device boxes, inside and outside elbows, splice plates, T's, transitions and extension rings and end caps as required.

B. Any existing surface raceway and/or exposed cabling along the indicated pathway of the raceway to be installed shall be removed prior to the installation of the new raceway. If the existing cabling contains active service, then Contractor shall consult with the Owner's Representative as to how best maintain the existing service before proceeding with the work.

C. Provide and install the proper factory fabricated corners, support clips, end connectors, etc. as required.

D. Corners and joints are to be cut neatly and finished using connector components of specified system. Where components are not available using specified system, to meet requirements of drawings, provide cleanly mitered joints, EMT and/or surface backboxes specified elsewhere herein.

E. All installed surface raceway shall be inspected for marks, scratches, gaps between sections or improper fitting of connector parts. All such damage shall be repaired to the Owner's Representatives satisfaction, or the raceway shall be removed and replaced.

F. Remove sharp corners and edges prior to installation of cable.

G. Attachment of raceway to walls, floors, and partitions:

1. Attach raceway to the supporting surface with mechanical fasteners applied to building structure per the most restrictive of manufacturer's directions, Code, or these provisions.

2. All surface raceway shall be installed so that its edges are parallel to the vertical or horizontal edge of the surface on which they are mounted. All surface raceway, found not to be installed in this manner, shall be removed and re-installed correctly.

3. Surface raceway shall be secured at 2'-0" intervals (2 spaced screws for 2" and wider raceways) with wood screws into wooden framing or self drilling wall anchors (ITWBildex "Heavy Duty E-Z Toggle" or equal) into sheetrock or plastic inserts with pre-assembled drive screw for concrete (Redhead nail anchors or equal) Powder (explosive charge) driven anchors are not acceptable. The use of adhesives as the sole means for fastening to any surface is not allowed.

4. Screws used in fastening surface raceway shall be no less than 3/4" in length.

5. The proper support clips, as called for by the manufacturer, for securing surface raceway to walls or floors are to be used per the manufacturer's instructions.

3.15 SURFACE RACEWAY INSTALLATION:

A. Install complete raceway system as shown on drawings, including track, cover plate, device boxes, radiused inside and outside elbows and manufacturer's category and fiber cabling guideway fittings, splice plates, T's, transitions and extension rings and end caps as required.

B. Any existing surface raceway and/or exposed cabling along the indicated pathway of the raceway to be installed shall be removed prior to the installation of the new raceway. If the existing cabling contains active service, then Contractor shall consult with the Owner's Representative as to how best maintain the existing service before proceeding with the work.

C. Provide and install the proper factory fabricated corners, support clips, end connectors, etc. as required. Support and restrain cabling as required to suit installation conditions. Removal of the raceway cover shall not result in cabling dropping out of the raceway.

D. Corners and joints are to be cut neatly and finished using connector components of specified system. Where components are not available using specified system, to meet requirements of drawings, provide cleanly mitered joints, EMT and/or surface backboxes specified elsewhere herein.

E. All installed surface raceway shall be inspected for marks, scratches, gaps between sections or improper fitting of connector parts. All such damage shall be repaired to the Owner's Representatives satisfaction, or the raceway shall be removed and replaced.

F. Remove sharp corners and edges prior to installation of cable.

G. Attachment of raceway to walls, floors, and partitions:

1. Attach raceway to the supporting surface with mechanical fasteners applied to building structure per the most restrictive of manufacturer's directions, Code, or these provisions.

2. All surface raceway shall be installed so that its edges are parallel to the vertical or horizontal edge of the surface on which they are mounted. All surface raceway, found not to be installed in this manner, shall be removed and re-installed correctly.

3. Surface raceway shall be secured at 2'-0" intervals (2 spaced screws for 2" and wider raceways) with wood screws into wooden framing or self drilling wall anchors (ITWBildex "Heavy Duty E-Z Toggle", no known equal) into sheetrock or plastic inserts with pre-assembled drive screw for concrete (ITT-HOLUB "HI-DRIVE" nail anchors, no known equal) Powder (explosive charge) driven anchors are not acceptable. The use of adhesives as the sole means for fastening to any surface is not allowed.

4. Screws used in fastening surface raceway shall be no less than 3/4" in length.

5. The proper support clips, as called for by the manufacturer, for securing surface raceway to walls or floors are to be used per the manufacturer's instructions.

H. Placement of surface raceway:

1. As indicated on the plans, all vertical runs from surface station outlets shall drop directly from a horizontal run to the station outlet unless noted otherwise.

   a. Raceway base and cover sections shall be minimum 24" long unless the run is shorter.

b. Off-set cover joints from base joints by at least 12".

2. Miter joints shall have gaps of less than 1/16". Caulk gaps after completion of wiring installation.

3.16 SUPPORT INSTALLATION

A. Furnish and install supporting devices as noted throughout the Electronic Safety and Security Systems work.

B. Electronic Safety and Security device and conduit supports shall be independent of all other system supports that are not structural elements of the building, unless otherwise noted.

C. Fasten hanger rods, conduit clamps, outlet and junction boxes to building structure using powder actuated tools, precast inserts, expansion anchors, preset inserts or beam clamps.

D. Use powder actuated tools, self-drilling anchors, expansion anchor, or preset inserts on concrete surfaces.

E. Use sheet metal screws in sheet metal studs and wood screws in wood construction.

F. Do not fasten supports to piping, ductwork, mechanical equipment, conduit, or acoustical ceiling suspension wires.

G. Do not drill structural steel members unless first approved in writing by the Owner's Representative.

H. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

I. Install surface-mounted cabinets with minimum of four anchors. Provide additional support backing in stud walls prior to sheet rocking as required to adequately support cabinets and panels.

J. Bridge studs top and bottom with channels to support flush mounted cabinets and panelboards in stud walls.

3.17 ERECTION OF METAL SUPPORTS

A. Cut, fit, and place miscellaneous metal fabrications accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

B. Field Welding: Comply with AWS "Structural Welding Code."

3.18 WOOD SUPPORTS

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorage accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

3.19 EQUIPMENT ENCLOSURES, RACKS AND CABINETS

A. Mounting

1. Unless otherwise noted, all floor supported equipment racks shall be bolted to the structure in accordance with the requirements of the CBC and the contractor's approved structural engineering submittal demonstrating the method to be used to conform to these requirements.

2. Rows of identical racks shall be bolted together with rack managers between, in addition to being bolted to the floor, and individual bond cables to form a single electrical ground plane

3. Wall mounted equipment racks and cabinets shall similarly be bolted to structural members in accordance with the requirements of the CBC and the contractor's approved structural engineering submittal demonstrating the method to be used to conform to these requirements.

B. Equipment Enclosure (Rack) and Equipment Backboard Fabrication

1. Combustible material, other than incidental trim of indicated equipment, is prohibited within equipment racks.

2. Provide permanent labels for all equipment and devices.

3. Floor racks to be bolted floor unless otherwise indicated.

4. Access shall not require demounting or de-energizing of equipment. Install access covers, hinged panels, or pull-out drawers to insure complete access to terminals and interior components.

5. Provide a permanent label on the front of each equipment rack including the rack designation, and the circuit breaker number and associated electrical distribution panel designation servicing same.

6. Where wiring of mixed types are called for on the plans, maintain separation of wiring classifications as specified in the individual sections of the Communications Work. Separately dress, route and land microphone, audio line level and data cables and related on the right side of the equipment enclosure, as viewed from the rear; dress, route, and land loudspeaker level, data and control cables on the left side of the equipment enclosure, as viewed from the rear.

7. Provide vertical wire management of cabling within the rack independent of the adjustable EIA mounting rails. Vertical wiring management provided by the contractor within the rack shall not prevent such rails from being moved as required by the Owner.

8. Dress and support cabling at a minimum of 24 inch on center.

9. Access shall not require demounting or de-energizing of equipment or cabling. Install access covers, hinged panels, or pull-out drawers to insure complete access to terminals and interior components.

10. Fasten removable covers containing any wired component with a continuous hinge along one side, with associated wiring secured and dressed to provide an adequate service loop. Provide an appropriate stop locks to hold all hinged panels and drawers in a serviceable position.

11. Provide permanent labels for all equipment and devices. Where possible, fasten such labels to the rack frame or to blank or vent panels which will remain in place when active equipment is removed for possible service.

12. At audio and video jackfields, provide service loop to permit removal of jackfields from rack sufficient to conveniently access all jack contacts for routine cleaning and maintenance. Organize the service loop and harness such that reasonable reconnection of jacks and jack normals is possible without cutting apart the harness.

13. Coordinate the design and execution of wire harnessing of multi-bay audio and video rack ensembles with conditions of delivery to installation locations at Project Site, and with the requirement herein for test of the completely wired system in the shop prior to delivery to the Project Site. Organize the wiring harnesses such that they will fold within one shippable unit without risk of damage, or provide polarized multipin connectors and related interconnect systems as specified elsewhere herein.

C. Signal Grounding & Bonding Procedures

1. Comply with National Electrical Code and the California Electric Code. Bond equipment racks to ground in accordance with the California Electric Code and ANSI/ EIA/ TIA 607 and Section 28 05 26 – Grounding and Bonding for Electronic Safety and Security.

2. Maintain a unipoint ground scheme – bond each rack individually to the TMGB, do not bus grounds.

3. Equipment enclosures shall not be permitted to touch each other unless bolted together and electrically bonded.

END OF SECTION

SECTION 28 13 00

ACCESS CONTROL AND ALARM SYSTEMS

PART 1 - GENERAL

1.1 SCOPE

A. Section includes (but is not necessarily limited to) provision of a complete access control system, including but not limited to:

1. Access Control and Alarm System.

a. Work of this Project provides a new enterprise grade access control system for the Colma Town Hall and Police Headquarters buildings. The Access Control and Alarm System (ACAS) shall include all intelligent field advanced processing controller, communication devices, card readers, combination card readers/keypads, access cards, I/O boards, power supplies, conduit, raceways, enclosures, mounting hardware, and all other equipment as specified herein. All material shall be the manufacturer's standard catalog products.

b. Scope of work includes provision of ACAS panels, readers and field devices at the following facilities:

1) Town of Colma Town Hall

2) Town of Colma Police Headquarters building

c. Input and output points.

1) As described in the narrative, work of this project installs new Card Readers at selected locations.

2) Work of this project interfaces the ACAS to field devices installed under the work of this Section:

a) Door position switches.

b) Local door alarms

c) Electric locks and electric strikes

d) Request to exit devices, including:

i) PIR based REX devices

ii) Door hardware with integral REX button functionality.

e) Gate position switches

3) Work of this project interfaces to devices installed under the work of other Sections:

a) Power Door Operators and their controls

b) Intelligent gate controllers

c) Elevator controls

2. Intrusion Detection System

a. If the provided ACAS system is not listed as a UL Listed 1076 Proprietary Burglar Alarm Unit, provide a separate commercial burglar alarm system consisting of intrusion detection panel and field devices, connected to the Owner selected Central Station Alarm panel using IP or dialup as selected by the Owner for escalation if required.

B. Related Work in Other Sections:

1. Section 08 11 13 – Hollow Metal Doors and Frames

2. Section 08 71 00 – Door Hardware

3. Section 28 05 00 – Common Work Results for Electronic Safety and Security

4. Section 28 05 13 – Conductors and Cables for Electronic Safety and Security

5. Section 28 05 26 – Grounding and Bonding For Electronic Safety And Security

6. Section 28 05 28 – Pathways for Electronic Safety and Security

7. Section 32 31 00 – Fences and Gates

C. Related Work by Others

1. By Town of Colma

a. Ethernet Network switches connected to structured cabling installed at the Telecommunications Rooms.

b. Existing Microsoft Windows ActiveDirectory directory services for use in assign access groups and users by the Contractor. Refer to the minimum functional directory services capabilities provided by the access control system provided under the work of this Section.

c. IBM PC type workstations running Windows 7 or later to be used in monitoring and configuring the system installed by the work of this Section.

1.2 SUBMITTALS

A. Refer to the requirements of Section 01 33 23 – Shop Drawings, Product Data and Samples and Section 28 05 00 – Common Work Results for Electronic Safety and Security.

1.3 QUALITY ASSURANCE

A. General:

1. Conform to Section 28 05 00 - Common Work Results For Electronic Safety and Security.

2. The manufacturers of all hardware and software components employed in the system shall be established vendors to the access control/security monitoring industry for no less than five (5) years.

3. The security system integrator shall have been regularly engaged in the installation and maintenance of integrated access control systems similar in size and scope to that outlined herein for a period of no less than five (5) years.

4. The security system integrator shall supply information attesting to the fact that their firm is an authorized product dealer for the system proposed.

5. The security system integrator shall supply information attesting to the fact that their installation and service technicians are competent factory trained personnel capable of maintaining the system and providing reasonable service time.

6. The security system integrator shall provide a minimum of three (3) references whose systems are of similar complexity and have been installed and maintained by the security system integrator in the last five (5) years.

7. There shall be a local representative and factory authorized local service organization that shall carry a complete stock of parts and provide maintenance for these systems. Local shall be defined as an area in a 50 mile radius of installed location

B. Standards Agencies. Additionally, conform to the applicable portions of the following standards defined in 28 05 00 – Common Work Results for Electronic Safety and Security.

1.4 DEFINITIONS

A. Definitions of Terms: The following definitions and conditions apply to each of the respective parameters and the measurements of those parameters, unless specifically stated otherwise:

1. ACAS. Access Control and Alarm Systems. The integrated system installed by the work of this Contract comprising the access control system, intrusion detection system and panic/duress alarms, including both central processing hardware and the remote field devices.

2. Access Group: A logical group of card readers (terminals) which may be connected to one or more controllers and that represent a collection of readers for which a particular cardholder may have access privileges.

3. Access Mode: The mode of operation in which the ACAS shall only annunciate tamper and trouble conditions at a monitored point. Alarm conditions shall not be annunciated in this mode. This is referred to as “alarm shunting.”

4. Acknowledge: The action taken by an ACAS operator to indicate that he/she is aware of a specific alarm or tamper state.

5. Advisory: A message provided by the ACAS to the operator to inform him/her of a condition as reported by the ACAS.

6. Active mode: That in which some type of signal is continuously sent across the link, resulting in simple link breaks being readily detected.

7. Alarm: A change of state as detected by the ACAS indicating that it has detected a condition that its sensors were designed to identify.

8. Armed. State of operating in a secure mode. For a given device, when in armed condition the failure of the device to operate in a prescribed manner associated with secure state operations causes an alarm state to be generated at the central alarm monitoring panel or screen, and if a local sounder/door alarm is shown, causes sounder to activate.

9. Audit Trail: A sequential record of system activity used to reconstruct and review a series of system events.

10. Badge: The physical card, carried by the cardholder used to gain access through a portal by presentation to a card reader.

11. Boolean: An expression that results in a value of either TRUE or FALSE.

12. Cardholder: A person who is a member of the cardholder database who may have been issued a valid badge.

13. Card Reader: A device usually located at access points, designed to decode the information contained on or within a badge for the purposes of making an access decision or for identity verification.

14. Clear: The action taken by an ACAS operator to remove an alarm from the alarms queue after it has been acknowledged and, if required, responded to.

15. Disable: A system command that intentionally places a device or system out of service, typically for maintenance.

16. Download: Refers to the transfer of system configuration information from the server to the memory of the controllers. This includes information such as badge records and access rights.

17. Dry Contact: A voltage free electrical contact.

18. DGP. Data Gathering Panel. Intelligent access control and alarm systems panel connected to the ACAS network and to card readers, access control and intrusion detection field devices as specified elsewhere in this Section.

19. Element: As used in this section means a constituent part of a complex signal such as an AC or DC voltage or current, AC phase, or frequency duration.

20. Elevator/Cabinet Control: Elevators and cabinets are readers associated with a set of output points and an optional set of input points. The field controller interfaces with elevators and cabinets using output points to enable car-call buttons or unlock cabinet doors and input points to monitor their status. The controller may grant access to a floor or cabinet door when a badge is presented at a reader installed in the elevator cab. The elevator/cabinet access control allows the operator to assign cardholder access to various elevators, floors, cabinets, and doors in a facility using access group definition.

21. Events: Events are sequences of system commands or actions that may be activated at a pre-defined time or on an as-needed basis. Events can be activated and deactivated either manually or automatically.

22. Facility Code: A coded number, in addition to the individual card number stored within each card key, which uniquely identifies the facility at which the card is valid. This feature prevents cards from one facility being used at another facility with a similar access control system.

23. Fail-safe: For system electronics, the capability to monitor system functions and report an alarm when a failure is detected in a critical system function. For door hardware, hardware which on loss of electrical power ceases to restrict movement through the affected door opening. Contrast with fail-secure.

24. Fail-secure: For door hardware, hardware which on loss of electrical power continues to restrict movement through the affected door opening from the unsecure side to the secure side. Contrast with fail-safe.

25. Guard Tour: A sequence of transactions that, when performed within a specified time frame, ensures that your facility is being properly monitored by security personnel. The main purpose of a tour is to confirm and record that an area has been physically visited. It provides real time monitoring of guard activities - reporting if a guard arrives early or late to designated tour stations. Guard Tour stations can either be readers or input points. Tours can be selected randomly or may be specified at regular time intervals.

26. Input Point: Electrical contacts that open or close to inform the system of a change of state.

27. Intruder: An animate object at least 1220 mm 48 inches in height, 34 kg 75 pounds in weight and 4 cubic feet in volume, moving through the protected zones or portals at a velocity of 30 to 3000 mm 0.1 to 10 feet per second.

28. Line Supervision: The process of monitoring an electrical circuit via electrical and software systems to verify the electrical integrity of the supervised circuit.

29. Loop: A number of terminals connected in series in a continuous circuit that starts and ends at the controller.

30. Monitoring: The process of maintaining a vigilant watch over a system element or point and taking appropriate action in response to system activity.

31. Offline: A condition in which a controller is not in communication with the server. In the offline mode, the controller continues to make access decisions and process alarms according to the information stored at its local database.

32. Output Point: Control external devices such as signals, relays, LEDs, control modules, etc.

33. Panel: See Controller.

34. Password: A combination of numbers and/or letters unique to each ACAS operator.

35. Polling: Terminals are interrogated at regular intervals by the controller to establish and verify communications with other equipment and exchange data if necessary.

36. Port: A connection that provides a means of communication between devices.

37. Priority: The relative importance of system events.

38. Reset: A command or feedback signal that indicates that a monitored point has returned to its normal state having previously been at the alarm or trouble state.

39. REX. Request to Exit. With a magnetic lock, a photo-optical device that breaks the current to the lock on detecting a person approaching from the secure side as required by Code and NFPA 101 while signaling the ACAS panel that the exit detected by the door switch was preceded by an approach to the door from the secure side. With non-magnetic locks, a REX performs the same signaling function for the ACAS panel, but no alteration of the lock power is required as the electric lock is intrinsically safe. This functionality is provided by either a infrared photo-optical REX devices or, for small spaces, door hardware with integral micro-switches triggered by mechanical motion to provide equivalent notification to the ACAS panel that the door position switch signal was preceded by an action by a person operating the door hardware located on the secure side of the opening.

40. Secure Mode: The normal state of an alarm input point. A change of state in this mode shall indicate an alarm, or that it has transferred to the trouble or tamper state.

41. Secured Area: A physical location within the facility to which one or more card readers control access.

42. Secure Side. With respect to a door, the side on which the assets to be protected lie. At exterior doors, this is generally the interior face. Provide to match Contractor's architectural plans, including the exiting plan, the door hardware schedules and specifications to confirm which face is the Secure Side.

43. Sensor zone: A geographic position for which an intrusion must be identified and displayed and may be the combination of multiple detection devices.

44. Server: The main computer in the system. The server runs the ACAS software, stores database information, and communicates with the field controllers and operator workstation terminals.

45. Service: The process that performs specific system functions and operates in the background without user intervention.

46. Soft Alarm: Soft alarms and their addresses are created by the system during installation rather than hardwired to an actual input point.

47. Tamper: A condition within the circuitry of a monitored point, which indicates that the electrical integrity of that sensing circuit has been compromised.

48. Terminal: Terminals provide additional reader interfaces, input points or output points to the ACAS.

49. Time Zone: A user-defined period made up of days of the week and hours of the day during which events such as Valid Card Grants and Input/Output linking events may occur.

50. Transaction: Indicate some form of system activity. It may include items such as access requests and general system messages.

51. Trouble: A condition within the circuitry of a monitored point, which indicates that an equipment malfunction, single break, single fault and/or a wire-to-wire short exists.

52. Unsecure Side. With respect to a door, the exposed side opposite the side on which the assets to be protected lie. At exterior doors, this is generally the exterior face.

53. User-Definable: An attribute of an ACAS function, which may be easily tailored by an operator without extensive computer programming knowledge or experience.

54. Workstation: A personal computer connected to the main Access Control and Alarm System (ACAS) server computer via local area network connections for the purpose of operating the system and responding to alarms.

1.5 QUALITY ASSURANCE

A. ACAS Quality Assurance

1. The ACAS shall be tested and listed by Underwriters Laboratories (UL) for UL 294 for Access Control System Units.

B. Intrusion Detection Quality Assurance

1. The ACAS shall be tested and listed by Underwriters Laboratories (UL) for UL 1076 for Proprietary Alarm Units

C. Installing Contractor Qualifications

1. Conform with the requirements of Section 28 05 00 – Common Work Results for Electronic Safety and Security and Part 1 of this Section.

1.6 UNINTERRUPTIBLE POWER

A. System Power and Functionality during Loss of Power

1. Power supply for door locks shall be provided by the work of this Section.

2. Power supply shall be 120-volts, 60 Hz supplied from the building's emergency power system. DC power for all system supervisory and control functions shall be provided by the control panel's power supply.

3. The system shall be electrically supervised against power loss, short and open wiring faults in the detection and alarm circuits. A malfunction shall cause the system to function as follows:

   a. Common trouble will be annunciated at the local panel as well as the alarm receiver the Owner's designated central station receiver

4. Provide UPS and supplemental battery subsystems sufficient to sustain system operations of the components indicated:

   a. 4 hours for DGP.

   b. 4 hours for field devices, including operation of electric door hardware and monitoring functions.

1.7 SYSTEM PERFORMANCE REQUIREMENTS:

A. General Description - Access Control and Alarms Processing System

1. The ACAS shall be a powerful, flexible, multi-function and object-oriented security and event management system that features a variety of customizable interfaces for maintaining the system and for monitoring the desired secure sites. The ACAS shall provide an option to display these management and monitoring interfaces in the native languages of the people using the system. The security and event management system shall be flexible in order to meet specific requirements and quickly respond to evolving security challenges. The ACAS shall be a scalable platform, simple and economical enough to support a single site, yet upgradeable enough to manage a multi-site network. The ACAS shall use an open, distributed architecture, where database servers could reside in geographically separate locations.

2. The ACAS shall provide extensive information management capability using Microsoft .NET Framework V4.5. It shall operate in a Client / Server configuration on personal computers with a Windows-based platform. Its distributed client-server architecture shall be capable of supporting up to 100 simultaneous clients, multiple types of controllers, and over 10,000 input devices, including cameras and multiple types of card readers. The ACAS shall be constructed to be database independent and shall support at a minimum Microsoft SQL Server 2008 (Express, Standard, or Enterprise), for data protection, redundancy and manageability.

3. The ACAS shall have true multi-tasking, multiprocessor and remote client support; allowing independent activities and monitoring to occur simultaneously at different locations. The operator workstation (Client) shall be user friendly, employing icon-based menus and providing a mouse-driven interface for system operation and the creation of color graphic maps. The user interface shall be customizable, capable of delivering a unique look and feel without a unique version release. It shall be an intuitive user interface that is similar to Microsoft's Outlook and Explorer with its easy navigation and tree structures. A practical application layout editor shall let users drag and drop any application onto one screen and create a customized hub for all activities via a single "command and control" center.

4. Field devices such as card readers, alarm inputs, control points, etc. shall be connected to fully distributed intelligent field controllers or directly through a Software Development Kit or Web Services, and be capable of operating without host computer intervention. All objects within the ACAS, i.e. doors, readers, time intervals, etc. shall be addressed by a unique name as opposed to point numbering or mnemonics. The ACAS shall have badge generation tools to create and manage badges using a graphical interface and convenient query features to manage large numbers of badges.

B. Licensing

1. Licensing shall be required for the ACAS software. The licensing shall include the following:

   a. Series (Model). System to be include valid license for the access control software provided.

   b. Number of online readers. System to be licensed for least double the reader count required for the Project.

   c. Number of online inputs. System to be licensed for least double the online input count required for the Project.

   d. Number of online outputs. System to be licensed for least double the online ouput count required for the Project.

   e. Number of card holders. System to the licensed for at least 3,000 card holders

   f. Number of simultaneous clients. System to be licensed for at least 5 monitoring clients

   g. Number of simultaneous badging stations. System to be licensed for at least 1 badging station.

   h. Optional Features. As required to meet the specified functions.

C. Access Control and Alarm System - General Requirements:

1. UL Listed 1076 Proprietary Burglar Alarm Unit.

a. Designed by manufacturer to function as an Intrusion Detection System in addition to as an Access Control System.

b. Where ACAS system is not listed per UL 1076, and intrusion detection functionality is required by the program, Contractor to provide an independent listed 1076 alarm panel configured to report tampers, motion, glassbreaks, faults and similar events to the existing campus intrusion detection headend.

2. Provide for a separate supervised circuit to each monitored device.

3. Monitor circuits at local ACAS Data Gathering Panels. Indicate at least:

a. Alarm on contact state change.

b. Trouble on short or open.

D. Door Opening Operations. Assumes doors are in armed condition.

1. Doors with Card Reader on One Side

a. Presentation of valid card at unsecure side:

1) Performs real-time lookup of card against current database to validate card status relative to door opening, day of week and time of day.

2) Provides positive success visual feedback - green light or similar - to card holder

3) Permits cardholder to operate door.

4) Logs entry in access database, including at minimum card number, door number and timestamp

5) Shunts alarm generation for door open status for Owner selected variable period (adjustable over a range of at least 10 seconds to 1 minute adjustable through ACAS software).

6) If double door opening, permits operation of second leaf during the Owner selected variable period without generating alarm.

b. Presentation of invalid or unreadable card at unsecure side of door:

1) performs real-time lookup of card against current database to validate card status relative to door opening, day of week and time of day.

2) provides positive failed visual feedback - red light or similar - to card holder and denies operation of door.

3) logs entry in access database, including at minimum card number (if readable), door number and timestamp

c. Approach to door opening from secure side

1) Doors equipped with Request to Exit: If occupant breaks approach beam from side farthest from door first, followed by beams closer to door, shunts generation of alarm on door operation for Construction Administrator selected variable period as for Card Readers above.

2) Doors equipped with Request to Exit equivalent in handle/crash bar: If occupant signals intent to exit from secure side by mechanically operating door hardware, shunts generation of alarm on door operation for Owner selected variable period as for Card Readers above.

3) Doors equipped with Release Button: On operating Release Button, shunts generation of alarm on door operation for Owner selected variable period as for Card Readers above.

4) If double door opening, permits operation of second leaf during the Owner selected variable period without generating alarm.

2. Doors with Card Readers on both sides, one side is secure, one side is unsecure.

a. Operation, General

1) Unless otherwise indicated, doors with dual card readers have an unsecure and secure side. A CR symbol appears on the unsecure side; a CRS symbol appears on the secure side. Neither magnetic locks nor delayed egress systems are to be installed. A valid card is necessary to operate the door from the unsecure side as for doors with single card readers

2) A valid card is necessary to shunt the door alarm when operating the door from the secure side. Failure to present a valid card does not prevent door from operating.

b. Presentation of valid card at unsecure side:

1) performs realtime lookup of card against current database to validate card status relative to door opening, day of week and time of day.

2) provides positive success visual feedback - green light or similar - to card holder

3) permits cardholder to operate door.

4) logs entry in access database, including at minimum card number, door number and timestamp

5) shunts alarm generation for door open status for Owner selected variable period (adjustable over a range of at least 10 seconds to 1 minute).

6) If double door opening, permits operation of second leaf during the Owner selected variable period without generating alarm.

c. Presentation of invalid or unreadable card at either side of door:

1) performs real-time lookup of card against current database to validate card status relative to door opening, day of week and time of day.

2) provides positive failed visual feedback - red light or similar - to card holder and, at unsecure side, denies operation of door

3) logs entry in access database, including at minimum card number (if readable), door number and timestamp

d. Presentation of valid card at secure side.

1) performs realtime lookup of card against current database to validate card status relative to door opening, day of week and time of day.

2) provides positive success visual feedback - green light or similar - to card holder

3) logs entry in access database, including at minimum card number, door number and timestamp

4) shunts alarm generation for door open status for Owner selected variable period (adjustable over a range of at least 10 seconds to 1 minute).

5) If double door opening, permits operation of second leaf during the Owner selected variable period without generating alarm.

3. Doors with Card Readers on both sides, both sides unsecure.

a. Operation, General

1) Where indicated by CR symbols on both sides of the door, the door opening to require a valid card to operate the door from either side.

2) Such door configurations shall not be installed where the door is part of an emergency egress path of travel.

b. Presentation of a valid card at either side:

1) performs realtime lookup of card against current database to validate card status relative to door opening, day of week and time of day.

2) provides positive success visual feedback - green light or similar - to card holder

3) permits cardholder to operate door.

4) logs entry in access database, including at minimum card number, door number and timestamp

5) shunts alarm generation for door open status for Owner selected variable period (adjustable over a range of at least 10 seconds to 1 minute).

6) If double door opening, permits operation of second leaf during the Owner selected variable period without generating alarm.

c. Presentation of invalid or unreadable card at either side of door:

1) performs real-time lookup of card against current database to validate card status relative to door opening, day of week and time of day.

2) provides positive failed visual feedback - red light or similar - to card holder and denies operation of door

3) logs entry in access database, including at minimum card number (if readable), door number and timestamp

4. Doors left open ("propped open") beyond the designated period generate an alarm at the central control panel indicating door and condition. If a local door alarm is shown in the vicinity of the door, causes the local door alarm to sound. Local alarms for door prop should provide an intermittent tone 30 seconds before going into alarm and triggering a solid tone upon alarm. Local door alarm can be cleared either from the access control system control screen or locally using designated key. Use of a key to silence the LA sounding, but shall not interrupt processing of other ACAS events associated with event.

5. Doors operated while armed without presentation of a valid card, valid operation of a Request to Exit Device, operation of a release button or release by central control panel to generate an alarm at the central control panel indicating door and condition. If a local door alarm is shown in the vicinity of the door, causes the local door alarm to sound, Local door alarm can be cleared either from the access control system control screen or locally using designated key.

6. Doors provided with powered door operators to be configured to operate as follows:

a. Unsecure side

1) Depressing the door operator button without first presenting a valid card results and no action.

2) Depressing door operator button after presenting a valid card causes the DGP to signal the door operator to initiate door opening after the associated electric lock mechanism has been released.

a) In a double door, where the handle in an electric latch cannot be retracted remotely, this may include releasing an electric strike in the normally passive leaf of the opening.

b) Owner's Representative to provide direction as to the length of time for which the door operator button to remain operational following receipt of a valid card.

b. Secure side

1) Depressing door operator button causes the DGP to signal the door operator to initiate door opening after the associated electric lock mechanism has been released.

a) In a double door, where the handle in an electric latch cannot be retracted remotely, this may include releasing an electric strike in the normally passive leaf of the opening.

E. Gate Operation

1. Presentation of valid card or vehicle emitter at unsecure side:

a. performs real-time lookup of card against current database to validate card status relative to gate, day of week and time of day.

b. provides positive success visual feedback - green light or similar - to card holder.

c. signals gate controller to operate gate.

d. logs entry in access database, including at minimum card number, door number and timestamp

e. shunts alarm generation for gate open status for Owner's Representative selected variable period (adjustable over a range of at least 30 seconds to 2 minutes).

2. Presentation of invalid or unreadable card at unsecure side of gate:

a. performs real-time lookup of card against current database to validate card status relative to gate, day of week and time of day.

b. provides positive failed visual feedback - red light or similar - to card holder and denies operation of gate logs entry in access database, including at minimum card number (if readable), door number and timestamp

3. Approach to gate from secure side

a. detector loop or similar device detects presence of vehicle at exit point.

b. receives signal from gate operator on action to operate Gate.

c. shunts alarm generation for gate open status for Owner's Representative selected variable period (adjustable over a range of at least 30 seconds to 2 minutes).

4. Detects forced operation of gate/operation of gate without use of valid card, remote release by Controller or in response to inductive loop detector or its functional equivalent.

a. generates an alarm at the central control panel indicating gate location and condition

F. Tamper Monitoring

1. Tampering with the DGP (removing its cover panel) or of other monitored electronic security system pullbox covers to be reported to the central ACAS monitoring station. Restoral events (replacement of cover) to similarly be reported to the central ACAS monitoring station.

1.8 COORDINATION

A. Coordinate the work of this contract with the related work of at least the following parties:

1. Colma Police Department

2. Colma IT staff

PART 2 - PRODUCTS

2.1 ACCESS CONTROL ALARM PROCESSING:

A. ACAS Software

1. General

a. The ACAS shall be an integrated system that utilizes a single, industry-standard relational database management system for the storage and manipulation of related data. The ACAS shall include a server with operating system and applications software, operator and administrator terminals with appropriate software, hard copy printers and fixed magnetic storage media. The security devices shall communicate with the field panels via a dedicated cable network. The field panels shall communicate to the server via a Fast Ethernet 10/100, TCP/IP network or a serial (RS-232, RS-485) connection.

b. The ACAS shall allow for growth and scalability from a low-end or entry level system to a high end or enterprise system by increasing CPU power, memory and database. The ACAS shall be modular in nature, allowing system capacities to be easily expanded without requiring major changes to system operation. All defined system data as well as historical information shall be maintained. Customizable user interfaces shall allow management of system information and activity for administrators and operators. The ACAS shall include an intuitive .NET based badging solution with a WYSIWYG badge layout editor and GUI for badge design.

2. ACAS Minimum Features and Functionality

a. Partitioning

1) The ACAS shall allow system administrators to separate the creation and viewing of objects into partitions. ACAS operators shall be associated with partitions and this shall determine which objects operators have the ability to create and or view. The ACAS shall support an unlimited number of partitions.

a) The ACAS partitions shall include but not be limited to the following objects:

i) Personnel

ii) Clearances

iii) Doors

iv) Controllers with all associated hardware (readers, inputs, outputs, etc).

v) Video servers with all associated objects (cameras, tours, views, etc). Integration of the video server of Section 28 23 00 with the management functions of the ACAS server is a future functionality that is N.I.C. for the work of this Project.

vi) Application layouts

vii) Events

viii) Dynamic views

ix) Maps

x) Reports, forms, results

xi) Holidays

xii) Badge layouts

xiii) Queries

xiv) Images

2) Through the use of privileges, the ACAS System Administrator shall be able to determine which objects are associated with a particular partition. These objects shall then be assigned to System Operators with the appropriate privilege.

3) The ACAS shall support a super-user assigned the 'System All' privilege who shall have full access to all objects in all partitions.

4) Any operator shall have the ability to be assigned access rights to any partition. Individual Access rights shall be created and have the ability to be assigned to any users of the ACAS.

5) The ACAS shall allow objects to be created in any partition. The ACAS shall have the ability to grant or remove permission from any object in any partition.

6) The ACAS shall provide the ability to move objects from one partition to another partition without the requirement of deleting and recreating.

7) The ACAS shall provide the ability to import/export any configured object.

8) The ACAS shall support the display of all associated objects contained within a partition.

b. Enterprise Architecture

1) The ACAS shall provide an Enterprise Architecture, licensable option that shall allow the Owner to expand the system in the future to configure multiple Satellite Application Servers (SAS) to communicate with a Master Application Server (MAS). The Master Application Server shall provide a platform for global management of the personnel, video, and access control security objects on two or more Satellite Application Servers (SAS) in an enterprise.

2) The Enterprise Architecture shall work by synchronizing each SAS system's database with the MAS database. The MAS shall contain the global data that is used across every server, such as global personnel records, global clearances, and global schedules. The global data shall be synchronized to each SAS to provide enterprise-wide security. The MAS shall be used to remotely monitor and manage controllers and future ACAS managed video servers attached to SAS's in the enterprise, however it shall not support any directly connected controllers or video servers.

3) The MAS shall provide the capability for Central Monitoring of the entire enterprise, using the Monitoring Station application. From a Central Monitoring Station connected to the MAS, the system shall be capable of viewing events, activities, and status of every SAS in the enterprise. Alternatively, you can connect to an individual SAS to monitor that system and its connected hardware. In addition, the MAS shall provide the ability to integrate with external sources via LDAP, XML, CSV or ODBC imports both manually or automatically through scheduled processes.

4) Each SAS shall contain database records for all future connected video and access control devices, as well as local personnel, clearances, privileges, and other related data. Each SAS shall synchronize with the MAS so that SAS local data is replicated to the MAS for central management and monitoring. In addition, the MAS shall provide central reporting capability for replicated SAS objects including journal and audit transactional data. [Note, for Connected Program integrations, SAS local data is not replicated to the MAS and central reporting is limited.]

5) All local data shall be synchronized immediately to the MAS or queued if a server is offline. All queued data shall be replicated automatically upon restoral of communication. Global data that is created or changed at the SAS/MAS shall be replicated to all locations. Journal and Audit data shall be synchronized either manually or on a configurable schedule, providing the ability to manage bandwidth usage and load balancing.

6) Operators in the enterprise architecture shall be configured as local or global. Global operators shall be subject to the user privileges as defined on each SAS.

7) The Enterprise Architecture shall support a Standalone to SAS Migration Utility that shall be used to merge a standalone ACAS server into an existing ACAS Enterprise site.

8) The future Enterprise Architecture option shall include:

a) Support for up to forty (40) SAS Systems

b) Global Administration of Personnel and Clearances, Images, Card formats, CHUID Formats, Holidays, Personnel groups, and Operators and Privileges

c) Centralized Reporting

d) Central Monitoring of Events and Activities across the Enterprise

e) Central Management of Access Card Enrollment

f) Central Badging and Image processing

g) Global Management of Badge Layouts

h) Single Card Access across the Entire Enterprise

i) Increased Scalability of Security Hardware and Video

j) End-to-End Encryption

k) Automated Synchronization of Enterprise Security Databases

l) Central Management of Video and Hardware Resources

m) Remote Editing of Global and Local Data

9) The Enterprise Architecture option shall provide Multi-Version support. Multi-Version support shall allow SASs running a prior version of the ACAS software to continue to synchronize with the MAS allowing for a phased deployment during an Enterprise-wide upgrade. Client connectivity between MAS and Multi-version SASs for monitoring and administration is supported

c. Graphical User Interface (GUI)

1) The ACAS shall employ a standard Windows graphical user interface (GUI). A mouse and keyboard shall be the primary operator interface with the system. Operator screens shall utilize all standard Windows-style functions such as drop-down menus, context menus, radio buttons, and lists, as appropriate. The interface shall utilize a 'tree structure' similar to Windows Explorer.

d. Administration Operator Interface

1) The ACAS shall employ an Administration Operator Interface to control the following:

a) Hardware (readers, inputs, outputs, door controls, other systems, future fully integrated video surveillance systems,).

b) Configuration of personnel records, operators and operator privileges.

c) Graphical Maps.

d) Application Layouts.

e) Dynamic Views.

f) Queries.

g) Import/Export of objects, including images.

h) System Variables.

i) Reports (either periodic or one-time).

j) System functions (event command and control, actions, schedules).

k) Display of a list of objects in a grid that can have their values modified and respond to real-time status changes.

l) Scheduling of backups.

m) Monitoring of system settings and performance.

n) Designing of and printing of badges.

2) The GUI shall be configurable by the system administrator to control the views and access of each Monitoring Station operator.

e. Monitoring Operator Interface / Activity Monitoring

1) The ACAS shall contain a monitoring component that is capable of, among other things, displaying the current state of any object in the system. Additionally the monitoring station shall be capable of displaying a log of all activity that occurs in the system, from object state changes, to access control information. All text for events (alarms) in the system shall be configurable to be displayed in color based on the user-specified priority of the event.

2) The Monitoring Station shall be capable of showing all changes occurring to an object without requiring the associated activity messages for that object to be routed to that monitoring station. The ACAS shall require the operator to have appropriate permissions to view and/or control any object.

3) The monitoring station interface shall be user-customizable. The ACAS shall support the ability of the end user to create a customized application layout for the monitoring station. The monitoring station shall support multiple application layouts that can be assigned to the operators. Each application layout can have multiple panes in the same window. The panes can have multiple tabs so that different objects such as cameras and tours can be displayed in the same pane. The panes shall have the ability to include: General activity; Event (Alarm) activity; Dynamic card swipe information; Video cameras and tours; Maps; Dynamic Views; Reports; and links to external applications. Each pane shall have the ability to be moved to a specific screen.

4) The ACAS monitoring station shall support a Swipe and Show Viewer. The Swipe and Show Viewer shall monitor a configurable list of Doors, and shall display a portrait or multiple portraits of personnel who present an access credential at a Reader on an included Door or Elevator. The ACAS shall allow multiple Swipe and Show Viewers to be added to an Application Layout. The Swipe and Show Viewer shall provide configurable image border colors that shall correspond to access transaction states (Admit, Reject etc.,). The Swipe and Show Viewer shall display the date and time of the transaction, the location, area, Cardholders name and the status of the transaction. The Swipe and Show Viewer shall allow an Operator with the appropriate Privileges to perform the following functions from the Viewer:

a) View/Edit the Cardholder record

b) Perform a momentary unlock of the associated door

c) Grace the Cardholder (allow the cardholder into an APB area)

d) Perform an Area Lockout Grace of the cardholder

e) Perform an APB reset on the cardholder

5) The ACAS shall support the ability to configure an Operator's Application Layouts to open in separate instances of the Monitoring Station to enhance the performance of multiple displays. Each Application Layout shall support the assignment of a monitor number. The Operator opening the Monitoring Application shall automatically open a separate instance of the Monitoring Application on each assigned Monitor. The ACAS shall support up to Ten (10) assigned monitors for Application Layouts.

6) The ACAS shall provide the Monitoring Operator with following functional capabilities:

a) Shall provide a scrolling list of lines or tiles showing current activity on the system.

b) Shall display activity in real-time as data is being transmitted by field hardware.

c) Shall include icons that indicate the type of activity and textual description of the activity.

d) The color of the frames of the tiles, icons, and/or text shall indicate the type or importance of the information contained therein.

e) A series of menus, driven by drop-down or trees, shall allow the Monitoring Station operator to perform manual actions, such as "momentary door unlock" for a given door.

f) As part of the manual action capability, the system shall provide screens or boxes that query the operator on specifics, such as start and end time, and offer guidance on performing the manual actions.

g) Ability to view a sortable list of active alarms or events and recently active alarms or activity.

h) Ability to view video from DVMS systems within the same GUI. The video screen GUI shall be able to display multiple panes of live or recorded video and have on-screen camera controls for each live window, providing PTZ control of individual cameras.

i) A GUI that minimizes the number of operator mouse clicks or keyboard strokes.

j) Mouse controls include "right-click" pop-ups and highlighted default selections.

k) Objects shall be displayed to the operator based on his/her assigned operator privilege. The operator shall only be able to monitor/command those objects for which he or she has been assigned privilege.

l) When an operator logs out of a workstation and a new operator logs on, the objects displayed on the workstation screen shall by dynamically updated to display only those objects for which the new operator has privilege.

m) Allow the customization of columns as defined by the operator privilege, including:

i) Adjusting width (on the fly or pre-programmed).

ii) Not displaying Columns (on the fly or pre-programmed).

iii) Sorting on selected columns (to follow standard Windows conventions).

n) Allow for a “freeze” function. This includes a configurable “freeze time-out” that permits an activity to be selected and temporarily prevents the display of subsequent activities which push the selected activity off the screen. A break-through event disables the freeze function. The freeze function shall provide a graphic bar where the remaining time available in the freeze timeout shall be displayed. Selecting the freeze timeout icon before the time elapses shall extend the freeze timeout to the maximum.

o) Provide Acknowledge All, Acknowledge and Clear All and Silence All buttons for events.

p) Support multiple panes for the display of events, activities, video, personnel images, and maps.

q) Display the number of active causes of an event.

r) Support the ability to attach a log message to an event, even after the event has been acknowledged.

s) Provide the ability to attach Predefined Log Messages to an event upon acknowledgement.

t) Shall allow a Monitoring Operator to select on-screen transactions (both events and system activity) and Email the transactions with a single mouse click.

7) Pre-defined Alarm Acknowledgement Messages

a) The ACAS shall provide the ability to create Predefined Log Messages. Each log message shall have a Name, Description, Label and Message Text. These messages shall be assigned to any event providing the ability to select the appropriate response that resolved the event. The ACAS shall provide the ability to group multiple log messages and then assign the group to an event. Each group shall contain up to one hundred messages and each event shall support up to one hundred messages. The ACAS shall allow only users with specified operator privileges to add, modify, or delete messages or message groups. Predefined messages shall be editable by an operator with the proper privilege and may be appended as required by the operator.

b) Messages shall have the following characteristics:

i) Message Name shall be configured with up to 500 characters

ii) Message Description shall configured with up to 500 characters

iii) Message Label shall be configured with up to 100 characters

iv) Message Text shall be configured with up to 3000 characters

8) The ACAS shall support audible alarm annunciation at operator workstations (operator configurable audio [WAV] files associated with alarms).

9) The activity monitoring screen shall be capable of displaying the following features:

a) System clock.

b) Date/time when the activity actually occurred and the date/time when the activity was received by the server shall be displayed (when they are different).

c) Real time event counters.

d) Count of the active events.

e) Count of the events requiring operator acknowledgment.

f) Name of operator logged on at the workstation.

g) Real-time display of the current activity on the system in chronological order.

h) Acknowledge All and Silence All buttons for events.

i) Manual Action command buttons.

j) Pre-defined and configurable acknowledgement messages.

k) Log message.

l) Clear event.

m) Clear group of events.

n) Event action message (automatically display selected message for event).

o) Dynamic views.

f. Web Client

1) The ACAS shall support a Thin Client to provide remote access to the ACAS Server via a web browser. The Thin Client shall support Microsoft® Internet Explorer 7.0 and Mozilla Firefox® 3.0 or greater. The Thin Client shall support 128-bit AES encryption to the ACAS Server.

2) The Thin Client shall support Single Sign-on utilizing Windows Authentication. The privileges of the ACAS operator shall be propagated to the Thin Client User allowing only access to Security Objects for which the ACAS Operator is authorized. The Thin Client shall provide support for Partitioning of the system and utilize the Partitions assigned to the Operator.

3) All changes made to the ACAS database via the Thin Client shall be recorded in the Audit Trail Database.

4) The Thin Client shall provide Personnel Management including:

a) Shall allow the operator to create and modify personnel data (includes adding/removing clearances, schedules, and expiration dates).

b) Operator shall have the ability to enable and disable cards.

c) Operator shall have the ability to search for, edit, add, and delete Personnel records from the ACAS database.

d) Search function shall allow wildcards and shall include First name, Last name, card number, and user defined text.

e) Shall support the Auto-increment Card Number feature for Credentials created using the Web Client.

f) Shall support a *Change CHUID Format* button on the Credentials tab that allows you to change the CHUID format of a Credential.

g) Shall support an *Auto Generate* button that allows you to randomly generate a PIN for PIN-only Credentials.

h) The ACAS thin client shall provide a personnel image tab that includes image display, Image capture from a file or a local USB camera, and the capability to crop the Image and save it to the ACAS personnel record.

i) The ACAS thin client shall support the previewing/printing of badges.

5) The Thin Client shall support an Activity Monitor to provide a scrolling display of system activity. Activity shall be restricted based upon the Operator's Privilege and Partition assignments. Display controls shall include page up, page down, and a freeze function.

6) The Thin Client shall support acknowledgement of an Event from the Event Dynamic View.

7) The Thin Client shall support for logging an Event Message from the Event Dynamic View

8) The Thin Client shall support Manual Actions to include the Locking/unlocking of doors, and the Activation/deactivation of events.

9) The Thin Client shall support the display of Dynamic Views as defined by the ACAS. Dynamic Views shall provide a real time view of ACAS data including Journal and Audit Trail history. Viewing of Multiple Dynamic Views shall be supported.

10) The Thin Client shall support creating, configuring, loading and saving of reports. Reports shall consist of personnel history activity or audit data. The report data shall allow sorting within the thin Client view page by any displayed field in ascending or descending order. The Thin Client shall allow reports to be saved in the following formats: XLS, CSV, XML, TXT or PDF. The operator shall have the option to save the report to a file or send it via email.

11) The Thin Client shall support Manual Action Challenges. The Manual Action Challenge shall require an operator to enter their login credentials (User name and password) when executing a manual action, such as a door unlock, from within the Thin client.

12) The Thin Client shall support the ability to query on a specific cardholder or a group of cardholders for the purpose of assigning clearances to multiple cardholders at once. Once the query is complete, the operator shall have the ability to assign a single access clearance or a group of clearances to all cardholders.

13) The Thin Client shall support the ability to display a door activity report from the web client cardholder record configuration view. In addition, it shall provide the ability to display the Activation / Expiration Date and Time for each credential assigned to a cardholder. The thin client shall display all user-defined personnel fields and the details of each assigned access clearance in a separate window.

14) The Thin Client shall support Auto-Logoff based upon inactivity. The Thin Client shall monitor user activity and shall automatically log a user out of the workstation after a user defined timeout period.

15) The Thin Client shall support the ability to assign or remove clearances to multiple cardholders simultaneously.

g. ACAS Mobile Application

1) The ACAS shall support a Mobile Application allowing operators to monitor or administer the ACAS system by way of mobile device. The device shall be connected via the phone network and a VPN or via Wi-Fi to the ACAS server utilizing Web Service (IIS - Web Service).

2) The ACAS Mobile software shall be available for download from the following locations:

a) Apple App Store

b) Google Play

3) The Mobile Application shall support mobile phones and tablets running the following operating systems.

a) Apple iOS 7.1 and higher (iPhone, iPad, iPod Touch)

b) Android OS 4.0 and higher

4) The Mobile Application shall connect to a standalone ACAS server, including an Enterprise Satellite Application Server (SAS) and Site Server (Appliance).

5) The ACAS Mobile Application shall support connection to the ACAS system through a 3G (minimum), 4G, or Wi-Fi connection.

6) The number of mobile connections allowed by the ACAS server shall be based on the ACAS licensing model. Each connection made through the ACAS Web service shall be considered a simultaneous client connection.

7) Operator login to the ACAS Mobile Application shall be consistent with the ACAS thick client application, authenticating login credentials via Windows Single Sign-On (SSO).

8) The ACAS Web Service shall require Internet Information Services (IIS) be installed on the target system. The ACAS Web Service shall be installed on the IIS server during installation.

9) The ACAS Mobile Application user interface shall be localized with supported ACAS languages: Arabic, Czech, Danish, Dutch, English, French, German, Hungarian, Italian, Japanese, Korean, Polish, Portuguese (Brazilian), Russian, Simplified Chinese, Spanish, Swedish, Traditional Chinese, and Turkish.

10) The ACAS Mobile Application shall support SSL-encrypted communications with the remote Mobile Web Service.

11) The ACAS Mobile Application shall provide a search and filter option to refine query results.

12) The ACAS Mobile Application shall provide a link to a context menu while viewing objects, providing the operator the ability to perform ACAS operations consistent with the ACAS administration and monitoring applications.

13) The ACAS Mobile Application shall provide the following core features:

a) The ACAS Mobile Application shall provide operators with the appropriate privilege, access to tools used for inspecting the ACAS Journal and Audit Logs.

b) The ACAS Mobile Application shall provide a collection of tools to monitor ACAS events and other objects. Monitoring shall show active ACAS events in real time.

c) The ACAS Mobile Application shall provide a collection of tools to manage personnel and shall allow for the following:

i) Create/Update Personnel Records

ii) Assign/Remove a card/credential to personnel.

iii) Capture an image and associate that image with personnel.

iv) Grace personnel, Antipassback Card Reset, Area Lockout Grace, and remove personnel from an Area

14) The ACAS Mobile Application shall provide tools used to explore, edit and control the following objects:

a) Favorite Filters

b) Favorite Monitors

c) Query

d) Events

e) Manual Actions

f) Operators

g) Controllers

h) Doors

i) Elevators

j) Inputs

k) DGP Clusters

l) Outputs

m) Readers

15) The ACAS Mobile Application shall provide an editor for local application preferences such as:

a) Login Parameters – Encryption, Inactivity Timer, etc.

b) Data Collection – Page Size

c) Monitoring – Polling Intervals, etc.

h. Graphic Maps

1) The ACAS shall support unlimited graphic maps and icons to be displayed on the operator workstation monitor.

2) The system shall support an operator-programmable, color graphic map display that:

a) Shall be capable of showing the floor plan, the location of alarm devices, and alarm instructions for a facility.

b) Shall be centralized in the system configuration and displayed on the operators' workstations.

c) Shall allow various maps to be associated with different areas to create a hierarchy of maps.

d) Shall support graphic maps having a resolution of 1024x768 Pixels or greater.

3) Operators shall be able to use drag-and-drop mouse technique to place dynamic system level object icons of all objects such as: cameras, video servers, inputs/outputs, events, maps, reports, dynamic views, and door/elevator icons. These dynamic object icons shall allow a system operator to perform tasks and issue commands related to the object by double-clicking on the icon.

4) The ACAS shall allow the addition of new layers to the drawing (such that if the drawing must ever be reloaded due to an update of the drawing, the layer(s) created within the ACAS will be added back automatically without additional reconfiguration).

5) The ACAS shall be able to directly import the following file formats for the map:

a) AutoCAD (.DWG)

b) DXF

c) JPEG (.JPG)

d) PNG

6) The Maps feature shall include two operational modes: an administrative mode to allow configuring of the facility floor plans or site plans that show exterior features and a runtime mode to allow monitoring and interacting with the configured facility layouts or site plans.

i. Information Storage, Backup and Transfer

1) All programmed information, as well as transactional history, shall be automatically stored in the database for later retrieval and backup. The ACAS shall support configurations where the ACAS database(s) may be installed on a hard drive on the ACAS server, on an independent database server, or in an existing corporate database server.

2) The ACAS shall be capable of backing up and restoring all system data and transactional history. The server shall be capable of transferring all programmed data and transactional history to CD-ROM, DVD, or Hard Drive (including networked drives).

3) The ACAS shall allow activity history to be written to a database. The system shall have the capacity to store a minimum of 50 million transactions. There shall be a method of backing up the activity history on external media and then restoring and replaying it.

4) The ACAS shall support AES 256-bit encrypted communications between server and user client.

5) The ACAS shall support AES 256-bit encrypted communications between server and controller. The encryption shall support both local and third-party digital certificates.

j. Communication Ports

1) The ACAS shall be able to support multiple serial devices. In addition to COM1 and COM2, up to 8 additional ports may be configured through the use of a port expander or its equivalent.

2) The ACAS shall support the use of Ethernet networks as the communications path between the host computer and field devices such as DGP's and CCTV matrix switchers. This communications path shall be the same network used for communications between the host server and the operator workstations. The communications between the host computer and the field devices shall be encapsulated in a TCP/IP network/transport layer.

k. Printers

1) The ACAS shall support report printing. The report printer(s) may be connected directly to the client PC, or shared over a network. The ACAS shall support as report printer(s) any printer for which a printer driver exists within the Windows 7, Windows 8.1 and Windows Server 2008 operating systems.

l. Software Configuration

1) The ACAS configuration tools shall utilize intelligent configuration controls. The system shall be structured so an operator is unable to perform configuration functions that are invalid based on the configuration used. The system shall support the ability to search within browser lists using filtering operators such as "begins with", "ends with", "contains", etc. The system shall also allow an operator to do searches using filtering operators on any class of object in the system, both in the Administration application and the Monitoring Station application.

2) The ACAS shall allow text description of all configured objects. The ACAS shall allow the renaming of an existing title description without removing the sub-components of that configuration object. The ACAS shall automatically remove from the system all configuration references to an object being deleted. The ACAS shall automatically provide default names for all inputs, outputs, readers, and extension boards. The ACAS shall clearly display which hardware objects (inputs, outputs, readers) on a controller are configured, and which are not.

3) The ACAS shall provide for the configuration of templates. Templates of supported objects shall be operator-configurable to provide default values for data fields within an object class's configuration.

4) The ACAS shall support an unlimited number of groups for any object type. The ACAS shall support unlimited object group definitions. In general, a group shall be usable wherever an individual object is referenced in the ACAS. For example, a group may be used instead of an object when configuring a schedule/object pair in a clearance, and a group may be used instead of an object when performing a manual action to unlock a door.

5) The ACAS shall generally allow any object in the system to be grouped including personnel, doors, inputs, outputs and clearances.

6) The ACAS shall restrict the viewing and controlling of objects in the administration and monitoring stations via operator privileges. The ACAS shall support the configuration of operator restrictions on an object class basis, and on an object-by-object basis. The ACAS shall maintain a distinction between objects that are being monitored and objects that are being controlled, preventing operators from issuing object manual actions to objects for which the operator does not have manual action privileges. There shall be different levels of controls within the system for administration privileges versus monitoring privileges.

7) The ACAS shall support unlimited operator accounts with unlimited definable privilege levels.

8) The ACAS shall allow configuration of controllers using hierarchical tree-based navigation and context menus.

9) The ACAS shall support the ability to download firmware updates to the controllers.

10) The ACAS shall support the following methods for Operator authentication and authorization:

a) Windows Single Sign-On (SSO).

b) Basic User Authentication with locally defined user names and passwords with strong password rule enforcement.

11) The ACAS shall provide an automatic client update process for quick distribution of application updates.

12) The ACAS shall have context sensitive online help (at the screen level) available at any point requiring operator input.

m. Personnel Records

1) The ACAS shall provide Personnel Templates that shall eliminate repetitive data entry by pre-configuring Personnel Records with data common to all Personnel.

2) The ACAS Personnel records shall provide multiple tabbed pages of personnel data containing default system and user-defined fields. The ACAS shall support an unlimited number of tabs allowing an unlimited number of user-defined fields. Labels for user-defined field tabs shall be customizable by the System Administrator with the appropriate privileges. Each user-defined field shall allow a name, description and label. A default language shall be selectable by the System Administrator for the user-defined field labels.

3) User-defined fields shall be definable as Mandatory or Unique and shall support the following field types:

a) Character

b) Integer

c) Logical

d) Date/Time

e) Date

f) Time

g) Enumerated List

h) Multi Line

i) Decimal

j) Identity

4) User-defined fields shall support masking to provide consistency of data entry across all system operators. Custom masks, as well as the following predefined masks, shall be available:

a) Alphabetic

b) Alphanumeric

c) Numeric

d) Phone Number – USA

e) Zip Code

f) Zip Code +4

g) Alpha – All Caps

h) Alpha – All Lower case

5) The ACAS shall provide a “Personnel Record Document Object” option which allows the operator to assign / attach up to two (2) documents (such as URL, PDF, or TXT files) to the personnel record. The document may be applied to the record as a:

a) 'Shared' Document - added to the ACAS via the Documents Editor.

b) 'Private' Document - imported from outside the system, such as a birth certificate or a diploma.

6) The ACAS shall include a "Documents" tab to user-defined personnel views as well as the default view "*Personnel View with Portrait in Header*" to support the association of documents. The documents are available for viewing by operators with appropriate privilege.

7) The ACAS shall support the generation of a unique random card number for an access credential for all Personnel records. The unique card number shall contain up to the maximum number of digits for the CHUID format chosen for the credential.

8) The ACAS shall support the configuration of a trigger for a Personnel record that pulses an Event whenever a 'Card Admitted'/'Card Rejected' message is logged to the Journal for that person at a defined Door/Elevator.

9) The ACAS shall support an email address field for each Personnel Record and shall support the sending of emails to Personnel Groups.

n. Credentials

1) The ACAS shall support a minimum of five (5) credentials (cards) per Personnel record and shall only count Active and/or Expired Cards towards the maximum assignable Cards per Person. Cards designated as Lost, Stolen and Disabled shall not count towards the maximum assignable Cards per Person.

2) The ACAS shall support the ability to define the default period of time (in Days, Hours or Years) from a Credential’s Activation Date until its Expiration. The ACAS shall support an override of the default Expiration time period for individual Personnel Types.

3) The ACAS shall support Temporary Credentials. Temporary Credentials shall be available for general re-use without being associated to specific Personnel records. Temporary Credentials shall be assignable to visitors and can also serve as temporary replacement cards for Personnel who misplaced or forgot their regular Credentials. The ACAS shall support the configuration of a default number of days for Temporary Credentials to remain active after they are created.

4) The ACAS shall provide the ability to define background colors for the Active/Expired Credential Status fields in the Personnel Record.

5) The ACAS shall support a system-wide setting to automatically disable Personnel Credentials that have not been used for a specified period of time. The Disable by Inactivity process shall support a user configurable daily scan time.

o. Personnel Views

1) The ACAS shall support user-defined Personnel Views. Personnel Views shall provide the ability to customize the Personnel record by adding and/or removing certain objects from the operator's view. Personnel Views shall be assignable to ACAS operators via the operator's assigned privilege and shall be definable for use in the creation and/or editing of the Personnel record. All Personnel Views enabled for an operator shall be selectable from the current view to allow an operator to switch views in real time. Personnel Views shall support the following:

a) Adding/Removing Fields (including all user-defined fields)

b) Custom Field Labels

c) Adding Boxes to group together common fields

d) Adding/Removing tabs to organize fields

e) Custom Tab Labels

f) Customization of Tab display order

g) Background/Foreground color control of fields and labels

h) Personnel Record Document Object – to associate up to two (2) documents to the record

p. Language Localization

1) The ACAS shall be configured so the information presented to system operators is displayed in a language native to the system operator provided that the proper translation files exist.

2) It shall be possible to translate the ACAS into any left-to-right or right-to-left language supported by Unicode and by the Microsoft Windows operating system.

3) Languages shall include English, Arabic, Brazilian Portuguese, Dutch, French, German, Italian, Polish, Simplified Chinese, Spanish and Japanese.

q. Inputs

1) The ACAS shall monitor both supervised and unsupervised hardware inputs as well as virtual inputs such as predefined system messages. These inputs include door / elevator inputs and monitor points. The ACAS shall also monitor controller inputs such as tamper, AC fail, and low battery.

2) The ACAS shall have the ability to name and allow for user-defined descriptions for individual inputs, outputs, and readers as well as input and output modules.

3) There shall be three separate and distinct states for inputs, which can be defined on the input configuration screen: Disabled, Enabled / Disarmed and Enabled / Armed.

4) The ACAS shall allow configuration to link the state of an input to an output. The system shall allow multiple inputs to activate a single output or group of outputs.

r. Outputs

1) The ACAS shall have outputs, also known as Control points, which associate an input or event action with a relay output. These output uses include doors / elevators, alarms and industrial control.

2) There shall be three types of outputs available: dry contact / Form C relays, wet or voltage sourced relays and Open Collectors. Outputs shall be configured such that they can be activated, deactivated or pulsed by system actions.

s. Card and Reader Support

1) The ACAS shall be designed to support multiple card formats and card reader types.

2) The ACAS shall support the following features for directly connected readers:

a) OSDP. (Open Supervised Device Protocol), v2.1.6 or higher. OSDP shall be supported with qualified OSDP capable readers, using OSDP Secure Channel AES128 encryption.

b) User defined card formats up to 256 bits.

c) Unlimited number of ACAS card formats.

d) The ability to assign up to 10 card formats per reader.

e) The ability to show reader status on a reader LCD.

f) Support Wiegand and 3x4 matrix keypads.

g) The enrollment of biometric templates to smartcards.

h) Custom CHUID FIPS201-compliant supporting full 256-bit data.

i) The ACAS shall support readers that provide Wiegand signaling and magnetic signaling to include:

i) Multi-technology readers.

ii) Wiegand swipe/insert readers.

iii) Proximity readers.

iv) Biometric readers.

v) Smart card readers.

vi) Wireless readers.

vii) Magnetic readers.

t. Advanced Door Monitoring

1) The ACAS shall support Advanced Door Monitoring allowing additional monitoring inputs and lock sensing equipment at all doors. Advanced Door Monitoring shall allow integration with third-party lock release inputs, such as fire and crash bar devices, that control emergency egress.

2) Advanced Door Monitoring shall include:

a) Multiple inputs – Advanced Doors shall support up to 16 inputs.

b) Single and double-leaf doors with multiple DSM or Request To Exit (RTE) inputs.

c) Shall support Lock sensing devices – to monitor locking on magnetic bonds, bolts, and cams.

d) Integrated lock releases – to integrate door unlocking with fire, crash bar, power fail, and key switch inputs.

e) Special events and actions – to create keypad commands that lock, unlock, and secure doors for a specific time period.

f) Alarm Suppression and RTE control on a per door basis.

g) Enhanced Shunt control.

h) Grace and change timing options – to fine tune the ACAS timing to avoid the effects of 'door bounce'.

i) Journal reports and Monitor Station activities – to manage the system and monitor door activity.

j) Additional Event Actions related to Advanced Doors

u. Keypad Commands

1) The ACAS shall support keypad commands. Keypad commands shall be up to Nine digits in length. Keypad commands shall be entered at a keypad connected to a DGP controller and shall be used to activate system events. The event shall be configurable to activate any allowable event action.

2) Keypad Commands shall support Personnel Permission options to accompany the command and validate the issuer's identity. Keypad Commands shall be configurable to require a valid credential or a valid credential plus a PIN. Keypad Commands shall also be available to all Personnel or only selected Personnel as part of a Personnel Group.

3) The ACAS shall support the assignment of certain users as Keypad Command Administrators. These users shall be able to issue all Keypad Commands and shall not be required to be part of a Personnel Group assigned to a Keypad Command.

4) Keypad commands shall have the ability to be limited to specific doors as part of a Door Group within an iSTAR Cluster. In addition, specific readers shall be configured to allow or disallow keypad commands.

5) Keypad Commands shall support segmentation of the nine-digit code in the form of Prompt Codes. Prompt Codes shall allow the user to utilize some digits of the Keypad Command to correspond to a command such as a door unlock, and the remaining digits to correspond to an object such as a door. When using Prompt Codes, the first segment shall be entered and the ACAS shall prompt the user on the reader LCD module to enter the remaining digits. The ACAS shall support two Prompt Codes per keypad command.

v. Reader LCD Messages

1) The ACAS shall provide custom LCD messages to be displayed on the LCD screen of LCD enabled readers. All messages, as well as date and time formats, shall be downloaded to the controller and will be used on all supported readers configured on that panel. The ability for the System Administrator to change the Language for LCD messages shall be provided.

w. Wired or Wireless Handheld IP Device Support

1) The ACAS system will be installed as a wired system.

2) The ACAS shall support wired or wireless handheld IP devices.

3) The ACAS shall support the following features for a ruggedized handheld / portable reader:

a) The reader shall store a user-defined list of cardholders locally in its memory for visual validation of personnel.

b) The reader shall support a GUI, touch screen, and personnel verification application.

c) Support for smartcard contactless (MIFARE, iCLASS, DESFire), barcode and HID proximity cards.

d) Wired or wireless communication to the ACAS server.

e) Communicate to the ACAS Server via a SSL connection.

f) User-defined personnel query to define records stored at reader.

g) Live-to-server or standalone operation mode.

h) Ability to manually accept or reject cardholder at reader.

i) Ability to show the expiration date of a cardholder.

j) A report of personnel who have not presented their card to the reader.

k) Upload of transactions to the ACAS server for reporting purposes.

l) Scheduled database refresh by Time Specification.

m) Encrypted database on reader.

n) Application security mode based on personnel credential.

o) Pre-defined personnel fields to download to reader.

p) Unit shall be ruggedized.

q) Unit shall support a full duty cycle on a single battery charge.

r) Unit shall Support up to 16 GB RAM.

x. Wireless Reader Devices

1) The ACAS shall provide for a Wireless Lock solution. The ACAS shall interface to the wireless lock via panel interface modules.

2) The ACAS shall support up to 16 wireless readers per controller. The readers shall support communicating to a single panel interface module (PIMs) or up to 16 PIMs depending on reader type and physical location of reader.

3) The ACAS shall provide a Wireless Reader configuration tab within the Intelligent Controller UI for the setup of the RS-485 version of panel interface modules.

4) The wireless reader editor shall support the following input configuration:

a) Wireless DSM

b) Wireless RTE

c) Wireless Reader Tamper

d) Wireless Reader Communication Fail

e) Low Battery

5) The wireless reader editor shall support the following output configuration:

a) Door Latch Relay

6) The ACAS shall also support a Wiegand interface module to communicate to the DGP controllers as a standard Wiegand reader signal.

y. Door Configurations / Elevator Control

1) The ACAS shall allow doors to be configured to operate in any of the following access control modes:

a) Unlocked

b) No Access (Secure mode)

c) Any combination of the following, as defined by schedule, event: card only, PIN only, Card + PIN, Card entry through keypad.

2) The ACAS shall allow a door to be configured to operate using the following functions:

a) Readers shall read cards while the door is in the open position.

b) Door lock relay shall automatically lock upon the door being opened.

c) Allow for a user-defined delay relock time period.

d) Allow for a user-defined door unlock time and door held open time.

e) A separate (alternate) shunt timer for ADA flagged cardholders

f) The operator shall be able to specify a shunt expiration output to be triggered for a configurable time (in hh:mm:ss) before the expiration of the door open or alternate shunt. Can be enabled for ADA only, or all the time.

g) Allow for a user-defined door unlock and door held time, in seconds.

h) PIN-only access (keypad).

i) PIN-entry on the reader keypad shall be required during a specified schedule after a card access (unless a manual action or event has disabled PIN).

j) Card entry through keypad.

3) The ACAS shall allow each door to be configured to cause a variety of events such as alarms to occur based on activity at that door.

4) The ACAS shall support configuration of unlimited elevators.

5) The ACAS shall support an extended unlock function initiated via two valid card presentations to a single reader or a ‘double swipe’. The double swipe feature provides the ability to designate doors at which cardholders with double swipe privileges may perform an extended lock or unlock of the door. The double swipe feature shall support the following:

a) Modified reader beeper pattern to reflect the extended unlock mode.

b) Individual card access privileges to perform double swipe action.

c) Unique parameters assignable to any door.

d) Reset of a double swipe unlock (relock) via scheduled event.

e) Event activation to reflect double swipe state (Lock, Unlock).

z. Maintenance Mode

1) The ACAS shall support a Maintenance Mode to facilitate the installation, testing and maintenance of selected ACAS objects. Maintenance Mode shall be used to limit information about an object displayed on the ACAS Monitoring Station. An ACAS System Operator, with the appropriate Privileges, shall be able to place ACAS objects into Maintenance Mode. Placing an object into Maintenance Mode shall not prevent ACAS actions associated with that object from occurring. Maintenance Mode shall only affect the Monitoring Application and shall allow the System Operator to:

a) Only view those objects in Maintenance Mode

b) Exclude those objects in Maintenance Mode from an Operator's view

c) View information about all System objects, including those in Maintenance Mode

2) Operator Privilege and Application Layout Filtering assignments shall determine whether or not an object in Maintenance Mode is viewable as being in Maintenance Mode on the Monitoring Station. Only Monitoring Station operators with the correct privilege and Application Layout Filtering shall be able to view objects in Maintenance Mode. Maintenance Mode shall only be reported in Journal messages when an object is placed in Maintenance Mode.

3) The following objects shall be supported in Maintenance Mode (at a minimum):

a) DGP Clusters

b) Controllers

c) Doors

d) Readers

e) Input/Output Modules

f) Inputs

g) Outputs

h) Elevators

i) Events

j) Areas

k) Intrusion Zones

l) Keypad Commands

aa. Area Control and Antipassback

1) The ACAS shall support the ability to define Area configurations. Areas are defined as physical regions bounded by doors. An area shall consist of a room, a specific location(s) within a building, or an entire building

2) All configured areas shall have in/out access doors providing the ability to run reports showing all present cardholders in each area. There shall be no way to leave an area without presenting a credential to a reader/door.

3) The ACAS shall support Global Antipassback and shall allow an area to be configured to cross multiple clusters (groups of controllers) to enforce Global Antipassback decisions.

4) The ACAS shall provide the ability to run a Roll Call report. The host shall maintain a current area for each personnel record, and the time at which the area was entered (AreaAccessTime).The current area shall represent the last area entered by the cardholder based on a valid admit.

5) The ACAS shall support Area control to provide the ability for tracking personnel. With this function, an operator shall obtain the current location of cardholders. Dynamic views and or reports can be generated to show specific cardholders who are present in each defined area.

6) Each cardholder's record shall provide easy access to view and maintain their current area location. This card record property will be updated as a person moves from one area to another using a valid credential.

7) The ACAS shall support the configuration of an area as a Mustering area. A Mustering area is an area where Personnel gather in an emergency. A Roll Call report shall be supported for the tracking of Personnel present during an emergency. The ACAS shall also support the definition of a De-Mustering area. The De-Mustering area shall be used to place all Personnel in a neutral area to accurately track Personnel as they re-enter a facility.

8) The local controller shall provide the ability to manage and control the Area configuration in the event that it loses communication with the ACAS system server.

9) The ACAS Area configuration shall have three modes of operations: None, Antipassback, and Timed Antipassback.

10) Antipassback shall control access based on the cardholder's location. The ACAS shall deny access to cardholders who are in violation of antipassback rules. In the event that a cardholder leaves an area without presenting their credential to the out access reader/door and then tries to enter back into the area by swiping the In access reader/door, a denial of access will occur. The ACAS shall provide the ability to grace individual cardholders who have violated antipassback rules. The Grace option shall also provide the ability to grace all cardholders.

11) Antipassback shall continue to be enforced during communications failure. ACAS controllers shall have the ability to be clustered in a group. The master controller in the group and all other controllers within that group shall have full access to the existing antipassback information. The cluster can be configured for 'No Access' Communications Failure mode or for 'Local' Communications Failure mode.

12) Clustered controllers configured in 'Local' mode that are disconnected from the master controller shall grace all cardholders from antipassback violations. The disconnected controller shall then follow antipassback rules specific to the areas defined on that controller. If the controller does not know if a cardholder is in antipassback violation based on areas that are configured between controllers, access will be granted.

13) Clustered controllers configured in 'No Access' mode that are disconnected from the master controller mode shall not grace all cardholders from antipassback violations. All cardholders will receive a denial of access until communications is restored.

14) The ACAS shall support Timed Antipassback. Areas configured for Timed Antipassback shall require a cardholder use an exit reader to exit an area. Cardholders who do not exit properly shall be required to wait for a predetermined period of time before re-entering the area.

15) The ACAS shall support Pass-through Areas. Area Pass-through shall serve to restrict the length of time that Personnel can remain in an Area before being required to exit or pass through to another area. The ACAS shall support a user-defined time period for the Pass-through area. Personnel Groups shall be configurable with Pass-through Restrictions and each Personnel Group shall support a separate, user-defined time period that may be different than the Area-wide time interval. Personnel Groups shall be configurable to be exempt from Pass-through Restrictions.

16) The ACAS shall provide occupancy restrictions for areas. Restrictions shall be applied to individual cardholders (personnel) or user defined groups of cardholders. Areas shall be configurable to provide limits for the maximum and minimum number of personnel who can access an area at one time. It shall be possible to trigger an event based upon a violation of either of these rules. Events shall be configurable based upon the following criteria:

a) Maximum occupancy status

b) Minimum occupancy status

c) Group Maximum occupancy status

d) Group Minimum occupancy status

e) Personnel Count (user-defined)

f) Violation status (Antipassback entry/exit violation etc.)

17) The ACAS shall support Soft occupancy restrictions for both maximum and minimum occupancy to allow reporting of violations while still allowing access to the area.

18) The ACAS shall support Area Lockout. Area Lockout shall restrict or lockout certain cardholders from an area once they have accessed another area. The cardholder shall be locked out of the designated target Area or Group of Areas for a specified period of time. The maximum time period for lockout shall be five (5) days. The target locked-out Area shall be any of the following:

a) Same Area

b) Another Area

c) Area group

19) The ACAS shall allow a System Operator with the appropriate privileges to cancel the lockout time (lockout grace) for all or individual cardholders, thereby canceling the area lockout.

bb. Dynamic Area Manager

1) The ACAS shall support the Dynamic Area Manager feature. The Dynamic Area Manager feature shall allow the first qualified person admitted to the Area to act as the Area Manager. This person shall be the first to enter the area and shall be required to be the last to leave the area.

2) An area designated for the Dynamic Area Manager feature shall have an entry reader and an exit reader.

3) The ACAS shall deny any exit request from the area manager until all other occupants have left the area.

4) The Dynamic Area Manager feature shall support the use of the Conditional Access feature for the designated area.

5) The Area status display shall show the following Personnel counts:

a) Area Manager count

b) Managed Personnel Count (All Personnel admitted after the Dynamic Area Manager)

c) Conditionally Admitted Personnel Count

cc. Carpool Antipassback

1) The ACAS shall provide Carpool Antipassback to facilitate parking lot area controls. Carpool Antipassback shall support the organization of Personnel into Carpool Groups which shall be permitted to park in designated Carpool Areas. The ACAS shall move Carpool Groups in and out of Carpool areas based upon the driver's credential. The Carpool Antipassback feature shall allow the monitoring of vehicle counts in the Carpool Area to facilitate parking lot area Occupancy Restrictions. The ACAS shall support Timed Antipassback for Carpool Antipassback areas.

dd. Escorted Access

1) The ACAS shall provide an Escorted Access feature that gives the ability to control, track, and report on the movements of Personnel designated as Escorted Visitors. An *Escorted Visitor* shall be a visitor who can only move around a facility in tandem with an employee designated as an *Escort*.

2) There shall be two Escort Visitor modes: Companion mode and Remote Escort Mode. In Companion mode the system shall allow multiple Escorted Visitors to be accompanied by one escort. In Remote Escort mode the system shall allow Escorted Visitors and the Escort to present their credentials on opposite sides of a door to gain access.

3) The ACAS shall have the ability to configure a designated Area to allow an Escorted Visitor to enter/exit the area without an Escort.

ee. Conditional Access

1) The ACAS shall support Conditional Access that shall allow an occupant on one side of a door to grant temporary access to a cardholder who does not have clearance and was denied access to that door.

2) The ACAS shall support the configuration of an event to be used to notify the occupant that a cardholder is attempting to gain access through the door.

3) The ACAS shall support the configuration of a second event to be used to unlock/grant access to the door based upon a response from the occupant or a privileged ACAS Operator.

4) The Conditional Access function shall support an Operator configurable timer that shall be used to cancel the Conditional Access request if the occupant is unavailable or chooses to deny access

5) The ACAS shall support the use of Conditional Access in conjunction with the Dynamic Area Manager feature.

ff. Intrusion Zones

1) The ACAS shall support the configuration of Intrusion Zones. An Intrusion Zone is a user-defined group of Doors and Inputs on the same local Controller that delineates a physical area. This area shall be monitored and produce an alarm during any violation of the objects associated with the Zone.

2) The local controller shall provide the ability to manage and control the Intrusion Zone in the event that it loses communication with the ACAS system server.

3) The Intrusion Zone shall have 2 modes of operations: Armed or Disarmed. When an Intrusion Zone is in an armed mode, the state of the Intrusion Zone shall either be Violated or Not Violated based on the state of the inputs and doors associated with the Zone. If the Zone is violated the ACAS shall provide the ability to execute any defined event(s) within the ACAS.

4) The ACAS shall provide the ability to display the “Ready to Arm State” of any configured Zone. The “Ready to Arm State” shall be able to be displayed from any ACAS monitoring application or from a local reader with an LCD display. All off-normal points/doors shall be able to be displayed from both locations. If any point or door associated with a Zone is not in a normal state, the Zone shall show a “Not Ready to Arm State”.

5) When a door is placed in a Zone, the operation of the door shall be configured based on the state of the Zone (unlocked, locked, secure). Specific doors assigned to the Intrusion Zone shall be configured as entrance or exit points for the Zone. When the Zone is being armed or disarmed, a user-definable time shall be set for exit or disarm operations. Specific readers/doors shall have the ability to be defined as arm/disarming stations.

6) The Intrusion Zone shall be configured such that when an input configured in a Zone is active, the Zone cannot be armed without executing a force arm. When a Zone is force armed, the input(s) that were in an active state shall not function as part of the Zone until they are placed back in a normal state and the Zone is disarmed and rearmed.

7) Inputs configured in a Zone shall have the ability to be configured as Controlled Inputs or Monitored Inputs. A Controlled Input shall follow the state of the Zone. If the Zone is disarmed, the Controlled Input shall be disarmed as well. A Monitored Input shall have the ability to cause a Zone violation even if the Zone is in a disarmed state.

gg. Schedules

1) The ACAS shall support unlimited operator configurable schedules. Each schedule shall allow unlimited individual time intervals.

2) Each system controller shall support a minimum of 128 schedules and a minimum of 18 time intervals per schedule.

3) Each schedule shall consist of operator-defined time segments. Each time segment shall be day(s) of the week and include holidays and starting and ending times. The system shall provide grouping of days.

4) Recurring schedules shall be supported and provide hourly, daily, weekly, bi-weekly, monthly, quarterly, annual and semi-annual intervals. Recurring schedules shall support a start date and shall be configurable to end by a certain date or after a pre-defined number of occurrences.

5) Recurrence patterns shall be supported to allow:

a) Schedule recurs every X year(s)

b) Schedule activates on the last day of each month

c) Schedule activates on the specified day of each month

d) Schedule activates on the first, second, third etc. weekday of each month

hh. Holidays

1) The ACAS shall support unlimited holidays.

2) The ACAS shall support holiday type designations as Recurring Day of Month, Recurring Relative Monthly, Non-Recurring or Day of Week. The ACAS shall allow assignment of duration to each holiday.

3) Holiday groups can be assigned to a Schedule.

ii. Time Zones

1) The ACAS shall maintain time zones to be used when configuring certain system objects. A time zone shall adhere to standard international Time Zone behavior, and the system shall support all time zones supported by the Windows OS.

2) The ACAS shall allow time zones to be assigned to IP devices, controllers, CCTV matrix switchers, DVRs, and scheduled Manual Actions.

jj. Clearances

1) The ACAS shall support configuration of unlimited Clearances.

2) The DGP controllers shall support up to 150 clearances per person.

3) The ACAS shall support clearance activation and expiration date and time.

4) The ACAS shall support the ability to select multiple personnel from a Dynamic View and assign clearance(s) to the selected personnel.

5) The ACAS shall support the ability to select multiple personnel from a Dynamic View and remove clearance(s) from the selected personnel.

kk. Custom Clearances

1) The ACAS shall support the configuration of up to 20 Custom Clearances per Personnel record and up to 100,000 system-wide. Custom clearance shall give unique individualized access to Doors/Door Groups and Elevators/Elevator Groups during an assigned schedule. The ACAS Custom Clearances shall also support the assignment of activation and expiration dates.

2) The ACAS shall support a process to remove expired custom clearances from personnel records. The process shall be configured as a system-wide event action with the option to activate by schedule.

ll. Clearance Filters

1) The ACAS shall support Clearance Filters. Clearance Filters shall provide the ability to dynamically change the access rights of personnel (cardholders) or groups of personnel. Personnel with a lower Clearance Filter level than that assigned to a card reader shall be denied access to that card reader (door). Clearance Filter levels shall be assignable to card readers either manually or automatically via event logic or a time schedule.

mm. Events

1) The ACAS shall support unlimited operator configurable events, including the scheduling of events, and action-based trigger of events.

2) The system shall provide 8 configurable event priority levels with a total of 200 numbered event priorities. The system shall allow the operator to define custom colors and labels per individual priority level.

3) The system shall allow an event to be configured to:

a) Be sortable by event name, date/time, priority, state, and any other displayable information.

b) Be routed to operators by operator privileges, including support for the routing by time of day feature.

c) Require or not require operator acknowledgment.

d) Require or not require operator clearing.

e) Require or not require a log message to be entered by the system operator acknowledging the event.

f) Require or not require a log message to be entered by the system operator clearing the event.

g) Display or not display the event activation.

h) Require the object(s) causing the event activation to reset before the operator may acknowledge the event.

i) Display an operator-defined text message upon event activation.

j) Display an operator-defined text message when the event is deactivated.

k) Be associated with a map so the map opens automatically on the monitoring station when the event activates.

l) Activate a second event when the first event activates and is unacknowledged for a specified period of time.

m) Activate a second event when the first event activates, is acknowledged and is not cleared for a specified period of time.

n) Allow the operator to associate an audio wave file with the event.

o) Allow for minimum activation time and delayed activation time for events.

p) Download events to the iSTAR controllers.

q) Run imports and exports.

r) Run reports and remove report results.

4) Event Instructions

a) Each event shall support event instructions to be displayed in the Event Details Screen. Event instructions shall support a maximum of five hundred characters and shall support website addresses, UNC addresses and local file paths.

5) Latch, Unlatch, Toggle, and Pulse for Event

a) The ACAS shall support Event Actions and Manual Action buttons that can be used to Latch, Unlatch, Toggle, and Pulse other Events.

b) The ACAS shall support a “Latch” Event Action which shall cause it to activate and remain activated.

c) The ACAS shall support an “Unlatch” Event Action which shall cause it to deactivate and remain inactive.

d) The ACAS shall support a “Toggle” Event Action which shall reverse an Event’s Latch-Unlatch state: switching a Latched Event to an Unlatched Event and vice versa.

e) The ACAS shall support a “Pulse” Event Action which shall cause an event to activate momentarily.

6) The ACAS shall allow an operator to create a copy of an existing event from within the event editor.

7) Event Assessment:

a) The ACAS shall provide an Event Assessment Feature which allows an operator to quickly view all objects associated with an event in a user defined Event Assess Application Layout.

b) The ACAS shall not require the operator to navigate away from the event assessment window to review objects associated with the event.

c) The ACAS shall provide an Event Editor “Assess Configuration” to allow an operator to configure the objects available during the assessment of an event in the Monitoring Station.

d) The Assess Event Application Layout shall have the following capabilities:

i) View any documents associated with the Event.

ii) View live video associated with the Event.

iii) View recorded video associated with the Event.

iv) View Event details.

v) View a Map associated with the Event.

vi) View a Journal Replay of the event, based on a query associated with the Event.

vii) Use an Event Details Viewer with additional quick action buttons to process the Event.

e) Each event shall provide the ability to show the entire Event Assessment with a single mouse click via an icon.

f) The event assessment layout shall only be available for viewing by operators with appropriate privilege.

nn. Dual Phase Event Acknowledgement

1) The ACAS shall have the capability of configuring user defined events (alarms) to require Dual Phase Acknowledgement. Dual Phase Acknowledgement shall provide a Pending Acknowledgment window and a Pending Clear event monitoring window in addition to the System Activity window. Each event in the ACAS shall be configurable individually to use Dual Phase Acknowledgement. Once the event is acknowledged, it shall be removed from the Pending Acknowledgment window and shall appear in the Pending Clear event monitoring window. A monitoring station operator with the appropriate privilege to clear events can select the event from the pending clear event monitor window and click the clear event button to clear the event. Events that require clearing and are waiting to be cleared shall be configurable to require acknowledgement upon re-activation of the event.

2) Events configured for Dual Phase Acknowledgement shall have the following features:

a) The event shall be configurable to require a log message for alarm acknowledgement and or alarm clearing.

b) Predefined log messages shall be assignable to alarm acknowledgement and or alarm clearing.

c) The ACAS shall support the configuration of an Operator's monitoring station permissions to determine if the operator can only acknowledge events, only clear events, or can acknowledge and clear events.

d) Operators with acknowledge and clear privileges shall be able to acknowledge and clear events in a single action.

e) A Dual Phase Acknowledgement event shall be configurable so the acknowledging operator can't clear the event. (In this configuration, clearing the event shall be required by a different operator.)

f) Events that are acknowledged or silenced shall be configurable to remain silent until cleared.

g) A user-defined timer can be configured to activate a second event if acknowledgement of an event, or clearing of an event, does not take place within the specified time frame. The timer shall start when the event is activated.

oo. Sounds

1) The ACAS shall include a Sound editor that allows an operator to create Sound objects to associate with 'Play Sound' Actions for Events. A single Sound object may be associated with multiple Events, rather than having to save an individual sound file multiple times—each associated with a single Event.

2) Sounds shall be saved in a Sound table in the ACAS database.

3) Sounds shall replicate, on an enterprise system, but they will be Local Only.

4) The ACAS shall support the ability to import and export Sounds in .WAV file format. The size of the .WAV files that are imported shall be enforced to be less than 1460000 bytes (1.39 MB).

5) Sounds shall be Privilege based.

pp. Journal Triggers

1) The ACAS shall support a Journal Triggers editor that allows an operator to define Triggers to activate an Event when a specified Journal Message occurs. The Journal Trigger shall be a Query-like object that evaluates Journal Messages and pulses an Event when the criteria specified in the configured trigger is logged in the Journal.

2) The ACAS shall support an Event Action that sends email notification with a description of the activation cause each time a Journal trigger is activated.

3) The ACAS Monitoring Event Status screen shall display the reason a particular Event was pulsed by a Journal trigger.

4) The ACAS shall support up to a maximum of 500 Journal Triggers.

qq. Audit Triggers

1) The ACAS shall support an Audit Triggers editor that allows an operator to define Triggers to activate an Event when a specified Audit Log Entry occurs. The Audit Trigger shall be a Query-like object that evaluates Audit Log Entries and pulses an Event when the criteria specified in the configured trigger is logged in the Audit Log.

2) The ACAS shall support up to a maximum of 500 Audit Triggers.

rr. Manual Action Challenge

1) The ACAS shall support Manual Action Challenges. The Manual Action Challenge shall require a ACAS operator to enter their login credentials (User name and password) when executing a manual action from within the ACAS.

2) The Manual Action Challenge shall be available from both the Administration and Monitoring Applications.

3) The Manual Action Challenge shall be assigned to a Privilege and the Privilege shall be assigned to the ACAS operator.

ss. Document Editor

1) The ACAS shall support the ability to import multiple types of document objects to include PDF, TXT, XML, DOC, XLS, JPG, GIF, PNG, TIF

2) The ACAS shall have the ability to attach these object types to the following areas:

a) Personnel records to provide additional information.

b) Events as part of the Events Assessment Feature.

c) A Guard Tour

tt. Integrated Email

1) The ACAS email system shall have the ability to interface directly to an SMTP-compliant email system supplied and configured by the user.

2) The email configuration shall support user authentication via a password and SSL encrypted communication to the email server.

3) The email system shall support the ability to send emails to Personnel Groups.

uu. Import / Export

1) The ACAS shall provide a means for manually importing and exporting selected data in XML format. This mechanism shall support the import and export of any and all classes or types of data in the system. Specific data validation and logging requirements shall be met.

2) The system shall also support importing from CSV files.

3) The ACAS shall provide an automated import mechanism (preferably XML-based). This mechanism shall support the import of most classes or types of data into the system. Specific data validation and logging requirements shall be met.

4) The ACAS shall have the capability to perform automated imports from an Open Database Connectivity (ODBC) data source allowing the import of personnel data directly into the system database.

vv. Directory Services Interface

1) The system shall have the ability to connect to a directory service source via the Lightweight Directory Application Protocol (LDAP). The connection to the LDAP source shall be user-configurable directly from the ACAS and shall not require custom code. The LDAP interface shall also support the automatic assignment of ACAS clearances based on data contained in the LDAP record. The LDAP feature shall support the following features:

a) LDAP server name and user-defined port number.

b) A base distinguished name for the root of searches.

c) A user-definable LDAP search filter to refine object search.

d) User-defined mapping of attributes to ACAS personnel fields.

e) The use of a Distinguished Name (DN) entry for the ACAS to authenticate to LDAP.

f) Option to search all sub-levels of the directory from the base DN.

g) Preview sample-data based on ACAS LDAP import settings.

h) Automatic roles-based ACAS clearance(s) based on two fields of source data.

i) Automatic import of directory entries from the LDAP source.

j) Authentication via a user-definable LDAP user account and SSL.

k) Automatic ACAS clearance assignment.

2) The ACAS shall provide a Data Mapping feature that provides field mapping information using the XSLT file based on the input data or an external XSLT file.

3) The ACAS shall support Import and management of Operators with their respective Privilege Groups using XML and LDAP role-based templates.

ww. Objects

1) Each object within the ACAS shall be addressed by a unique operator-defined name. Object names shall be unique within object types.

2) The ACAS shall provide the ability to add description text to each object definition.

xx. Reports

1) The ACAS shall support a Report Service that runs as a Windows Service. The Report Service shall operate in either 64 or 32 bit mode. The Report Service shall execute Reports that are either run on the Server by an Operator or configured to run automatically as an Event Action.

2) The ACAS shall provide configurable data reports for database configuration, historical activity (Journal) and audit tracking. Pre-defined reports shall be available for download and import into the system.

3) The ACAS report function shall perform the following:

a) Create reports about any object.

b) Create report templates to simplify report design.

c) Run reports on demand.

d) Save report results for sharing between different users of the application.

e) Export reports into formats such as PDF, RTF, TXT, TIFF, Excel (XLS), and MHTML.

f) Specify a query to select and filter the records on which to report.

g) Specify the data fields to be included in a report.

h) Specify a design for the report layout.

i) Design a report form to be used as a layout for headers / footers for multiple reports.

j) Access and use system pre-defined report forms.

k) Select tabular, multi-line, or free form report layouts.

l) Report on objects linked together with parent / child relations.

m) Schedule reports to run automatically on a customized schedule.

n) Send exported report files to the printer or to external recipients via e-mail.

4) The ACAS shall support integration to The Business Intelligence Reporting Suite (BIRS). The suite shall offer web-based reporting as well as data warehousing of ACAS historical and system data. The suite shall include multiple pre-written reports such as 24 Hour Journal Messages, 24 Hour Trouble Messages, Graphical Usage and Count of Door Group. The open system procedures shall allow the reports to be written and saved for repeat use.

5) The reporting suite shall provide an interactive user experience via any standard web browser, allowing the user to scrutinize the information without needing to print or review hard copies.

6) The reporting suite shall support connecting to one or more ACAS systems. This shall provide data and reports across an enterprise solution to allow segregated reports that reflect both satellite application server data as well as master application server data.

7) The reporting suite shall allow an enterprise to share and blend data from other sources such as ERP and Time and Attendance systems to yield critical business information and reporting.

8) The reporting suite shall provide information delivery options such as email, CSV export, PDF export, XML data transfer, or database pool offerings. The suite shall also be a critical resource in system review and audit procedures such as system maintenance and performance.

9) The Reporting Suite shall:

a) Provide Intuitive user interface and web-based reporting for ACAS customers

b) Share and blend data from other sources to yield critical business information

c) Leverage Microsoft® Business Intelligence (BI) tools

d) Include Reporting Service for report delivery and presentation

e) Perform Reporting and processing from the ACAS host

f) Include Subscription options for automated delivery of reports

g) Include Dashboard, graphical, and statistical reports, and reports customized by user

h) Generate Reports on any PC with compatible Web browser without ACAS Client software

i) Offer and secure Data via Active Directory and SQL permissions

j) Include Optional front end or other application integration including SharePoint

yy. Dynamic Views

1) The system shall support a grid format displayable report that will be usable to display homogeneous lists of objects within the system. This display shall be configurable both at configuration time and also at run time.

2) The Dynamic views shall have the following features:

a) Real-time updating and display of property values.

b) The display shall be sortable.

c) Groupable by any number of columns.

d) Filterable based on user selectable criteria.

e) Printable.

f) Can be saved as a MS Excel file from the current view.

g) Exportable in either XML or CSV file formats.

h) The export file shall be viewable in Excel (Excel must be installed separately).

i) The export file shall be able to be emailed.

j) The user shall be able to add and remove columns from the grid at runtime to enhance the user experience even if displaying a preconfigured view.

k) The view shall be capable of pre-configuration so that repeatable displays of objects are possible.

l) The view shall support in-place editing of properties of the object.

m) Bulk operations shall be performed via multi-selection. The operations shall consist of (but are not limited to) setting a property to a value and deletion.

zz. Query

1) The ACAS shall provide a Query engine to be useful for users without any knowledge of SQL or any other specific query language. It shall allow users to make requests against data sets with preconfigured relations between tables. The relations shall reflect the actual relations between database objects and the user shall be able to put conditions on any available field in the selected object type and its subordinate objects.

2) The users shall be able to construct a proper query expression selecting all available operations, column names, and table names from prompted lists. It shall eliminate the necessity to memorize any particular expression syntax. References to existing configuration objects shall also be prompted through a list of existing objects where applicable, eliminating the necessity of memorizing names. The Query feature also shall support complex logic, such as AND/OR.

3) Negative logic Queries using the new NOT IN operators. The ACAS shall support Query filters that perform AND/OR operations to narrow Query results. The ACAS shall also support building complex query operations by use of block filters that perform AND/OR/AND NOT IN/OR NOT IN operations to further narrow Query results.

4) The ACAS shall provide a Journal Query Assistant as a special method of the Query engine to query on XML fields within Journal Messages. This method shall allow the user to build queries on Journal messages. The Journal Query Assistant shall support Card Admitted, Card Rejected, Operator Login and Operator Activity message types, Area Activity, Object Changed State and Manual Action message types.

aaa. Guard Tour

1) The ACAS shall support Guard Tours.

2) A Guard Tour shall consist of a series of predetermined Stops requiring a Guard to check-in at each Stop to complete the Tour within the specified time. The Guard Tour shall consist of any combination of Doors, Elevators, and Inputs.

3) The ACAS shall support a maximum of two hundred Guard Tours.

4) The maximum number of Stops per Guard Tour shall be one hundred.

5) The ACAS shall support up to a maximum of fifty simultaneous running Guard Tours.

6) The ACAS shall support two types of Guard Tours: Sequential and Random requiring the Guard to check all Stops in sequence or in a random order.

7) A sequential tour shall be configured with a minimum and maximum time that a guard shall have between stops.

8) Each Tour shall be configured with a specific group of guards that shall be allowed to execute the Tour.

9) The following Tour states shall be available to activate preconfigured events in the ACAS:

- **a)** Activated
- **b)** Started On Time
- **c)** Started Early
- **d)** Started Late
- **e)** Suspended
- **f)** Suspended too Long
- **g)** Resumed
- **h)** Cancelled
- **i)** Completed
- **j)** Completed Early
- **k)** Completed Late
- **l)** Inactive
- **m)** Not completed On Time
- **n)** Failed To Start
- **o)** Error Occurred

10) A guard Tour shall have the ability to be initiated from:

- **a)** The reader configured as the first Stop of the Tour
- **b)** An Event (Manually activated or on a Schedule)
- **c)** A manual Action from an Operator at the ACAS Monitoring Workstation

11) The ACAS shall support sending an email notification to a Guard of the impending start of the scheduled Tour.

12) A Guard shall be required to complete check-ins at all Guard Tour Stops before the maximum completion time expires and shall be required to spend at least the minimum amount of time on the Tour.

13) A Tour shall be canceled by either an error, event action or a manual action from an Operator at the ACAS Monitoring Application.

14) Each Tour shall be able to be configured with a minimum and maximum time of completion.

15) The system shall indicate that a Tour Stop was reached early and started early if a guard checks in at the first stop before the minimum stop time expires.

16) The system shall indicate that a Tour Stop was reached late when a guard checks in at the first Stop after the maximum time expires.

17) The System shall indicate that a Tour Stop was not reached on time when a guard has not checked in after the maximum Stop time expires.

18) In the ACAS Monitoring Station Application, it shall be possible to display the details of all the Guard Tour Stops and the current status of the Tour.

19) Each Guard Tour shall have the ability to attach up to a maximum of ten documents explaining the details of the configured Guard Tour.

20) Each Guard Tour shall support Predefined Log Messages or Message Groups.

21) Tour status shall be available from the ACAS Monitoring Station Application and shall provide the following information:

a) Tour Type

b) Last Tour Status

c) Current Tour Status (Running/Not Running)

d) Guard Name (if active)

e) Last Completed Stop

f) Percentage Completed.

22) The ACAS shall provide the ability to configure an icon on an ACAS MAP representing a Guard Tour. An Operator shall have the ability to start the Tour and manually assign a specific Guard responsible for completing the Tour from the MAP.

23) The icon representing the Tour shall change appearance based upon the current state of the tour.

24) The ACAS shall provide the ability to run a Journal Report providing the details of any completed or active Tour including;

a) Time scheduled

b) Guard assigned

c) Activation time

d) Stop status

e) State complete

bbb. CCTV Integration / Digital Video

1) The ACAS shall provide integration with the Video Management System (VMS) installed under the work of Section 28 23 00 to provide at least:

a) Camera callup of view at the guard station of the closest camera on receipt of alarm condition by the ACAS.

b) Increased recorded (frame) rate and resolution for the called up camera,

c) Synchronization of event markers between the systems

d) Video motion detection of protected area triggers alarm marker on ACAS for that areas.

2) The ACAS server shall be connected to the VMS during the configuration process enabling the ACAS to query the VMS for setup information.

ccc. General Purpose Interface

1) The ACAS shall support a licensable General Purpose Bi-directional Serial Interface.

2) The General Purpose Interface shall be a programmable bi-directional communication protocol that shall provide a general mode of communication between the ACAS General Purpose Interface driver and a third-party device.

3) The third-party device shall send pure ASCII messages via a serial port (RS-232) or remotely via a TCP/IP port (via a Terminal Server) into the General Purpose Interface driver.

4) The ACAS shall interpret messages in two ways:

a) As journal messages recorded into the ACAS historical journal.

b) As any of five Monitoring Point status changes configured to trigger an ACAS event.

5) The General Purpose Interface supports the following functionality:

a) Input: where the input strings are sent from the device through the Serial/Network port to the ACAS Server. The General Purpose Message Protocol object is used to define and parse the information.

b) Output: where the output is an Action and requests a response from the device.

c) Poll: where the poll is an action that requires a response from the device.

ddd. ID Badging Subsystem

1) The ACAS shall include an embedded ID Badging Subsystem. The ID Badging subsystem shall utilize a common database with and be an integral part of the ACAS. The ID Badging Subsystem shall provide the ability to capture cardholder images and design and print user-defined badge layouts. The Badging Subsystem shall support the following capabilities:

a) Unlimited number of badge design layouts.

b) WYSIWYG badge designer.

c) Background color detection in the portrait image.

d) Threshold level selection to apply to background detection.

e) User-defined selection of background color.

f) User-defined selection of replacement color or transparency setting.

g) Edge-detection setting, to aid in replacing only the selected background and not any matching color within the portrait image.

h) Capture, import, and display portraits.

i) Capture, import, and display signatures.

j) Capture and display fingerprints.

k) Insert, import, and display foreground and background images.

l) Print two-sided badges.

m) Encode magnetic data onto personnel badges.

n) Insert 1D or 2D bar codes.

o) Insert or replace color and transparent effects for image and background display.

p) Support a variety of image formats including .bmp, .jpg, .tif, and .wmf.

q) Custom functions using the Expression builder.

r) Multiple images per cardholder.

s) Diagonal and Square borders. Each type of border shall support a user-defined width and height setting, and individual color settings for each border side.

t) Proper Case (first letter in string is set to uppercase, all other characters set to lowercase).

u) Year display (four- or two-digit).

v) Month display (full or abbreviated name, or numeric).

w) Day display (full or abbreviated name, or week/month numeric).

x) Hour display (12 or 24 hour format).

y) Minute display.

z) Second display.

eee. Visitor Management

1) The ACAS shall support an embedded Visitor Management feature. The ACAS shall support the creation and management of visitor appointments. The Visitor Management feature shall serve as a replacement for paper-based visitor log books and shall support the organization and tracking of visitors. The Visitor Management feature shall support the following features:

a) Keep track of visits (and Visitors) in progress

b) single-/multi-visitor group appointment scheduling

c) temporary credential issuance

d) Visitor check-in/check-out

e) Visit Templates

f) Visit Sites

g) e-mail notification of visitor arrivals

h) Manage unplanned visits and anonymous visitors

i) Manage the return of credentials and the end of a visit

j) Configure Instructions for the visit

k) Configure personnel as visit hosts

l) The capability to check-in and check-out Visitors via valid card swipes at a Reader.

2) The ACAS shall support an optional Visitor Management Web portal that shall allow a host to create and manage visits and visitors via a standard web browser.

3) The ACAS Visitor Management Web portal shall support the following Web Browsers:

a) Internet Explorer

b) Chrome

c) FireFox

d) Safari on IOS

4) An ACAS Operator can:

a) Customize the Portal for each visit site

b) Create and Configure Visit sites

c) Create and configure Visit Templates (which include Clearances for the Visit)

d) Designate personnel as Hosts (Can Host Visits)

e) Configure the details for welcome Email to hosts

f) Configure a Visitor Management Door Action for card swipe check-in and checkout

5) A Host using the Visitor Management Web portal shall be able to do the following:

a) Create, edit and delete Visits

b) Utilize Visit Templates to create Visits

c) Search for existing Visits

d) Add instructions for the visit and attach pertinent documents to the visit

e) Add additional Hosts to a Visit

f) Create New Visitor records and add Visitors to Visits

g) Email visitors the details about the visit

fff. Smart Card / Proximity Card Enrollment

1) The ACAS shall provide a smart card enrollment feature as part of the ID Badging Subsystem. The smart card enrollment feature shall allow a user to enroll MIFARE, iCLASS or DESFire cards utilizing a USB wedge reader or a Manufacturer-approved badge printer.

2) The ACAS shall provide a proximity card enrollment feature as part of the ID Badging Subsystem. The proximity enrollment feature shall allow a user to enroll the card number of proximity cards on a Fargo HDP 5000 printer that is equipped with an OMINKEY CardMan 5x25 encoder.

3) The ID Badging Subsystem shall support the creation of Smart Card Templates to define the smart card configuration. Templates shall be used to define the data transfer between the physical card and the Personnel Record. Templates shall define the card type as MIFARE, iCLASS or DESFire. When programming a card, the system shall be able to read and write to all relevant data such as personnel fields, card fields or card formats. The Badging Subsystem shall provide the ability to Enroll MIFARE, iCLASS or DESFire. The Badging Subsystem shall provide the ability to Program and Enroll MIFARE.

4) Templates shall also be utilized to define the Security Keys needed to access the data on the smart card. Templates shall be assignable to the enrollment device (wedge reader or printer).

5) The ID Badging Subsystem shall support both the enrollment (reading of data from the card) and programming (writing of data to the card) for MIFARE cards. The ID Badging Subsystem shall support the enrollment of DESFire cards and shall support Card Serial Number data only. The ID Badging Subsystem shall support the enrollment of iCLASS cards and shall support Card Serial Number data only.

6) The ID Badging Subsystem shall support the creation of Custom read/write Keys. Custom Keys are private keys supplied by a third party. Custom Keys shall be assigned to Software House Readers via Program Cards supplied by the Manufacturer.

ggg. System Parameters

1) The Security Management System (ACAS) shall have a minimum capacity of:

a) 250,000 Global Personnel Records

b) 16 online readers

c) 64 online inputs

d) 64 online outputs

e) 7,000 credentials

f) 6 simultaneous Clients

g) 1 Badging Client

2) The ACAS shall have a maximum capacity of:

a) 2,500+ online readers

b) 10,000+ online inputs

c) 10,000+ online outputs

d) 500,000 credentials

e) 10 Simultaneous Clients

f) 2 Badging Clients

3) Refer to the requirements of Part 1 and the narrative for the minimum functionality required by this Project.

a) ACAS software provided under the work of this project to have the required capacity in terms of doors, readers, and field devices requirements with the reserve capacity in each category of at least 100%. ACAS software capacity for the above listed hardware and card holder count shall furthermore be expandable in standard commercial increments to permit the Owner to procure additional capacity as required in the future up to and including at least four times the capacity of the ACAS required to run the 333 Building.

4) The ACAS shall support both application and web client connections. The system shall allow the user to define the number of administration/monitoring client connections. This prevents web clients from using these reserved connections.

3. Operational Modes Supported

a. The ACAS shall provide the following operational functionality:

1) The system shall control access to a designated area.

2) The system shall validate cardholder credentials by use of downloaded personnel records, card formats, PINs, biometric enrollment and multiple active cards. The system shall compare the time, location, and unique credential number of an attempted entry with information stored in memory.

3) Access to a designated area will be validated only when a user's credential has a valid number for its facility and the number is valid for the current time and for the reader where it is used.

4) The system shall access the hardware that validates the person and monitor the security of a building by use of controllers, doors, readers, elevators, inputs and outputs. When access has been validated, a signal to the door locking device shall be activated to enable alarm-free access at that location.

5) The system shall configure itself as required by use of an Administrative application, and shall provide Configuration templates.

6) The system shall monitor access control activities by use of Monitor Station, Alarm configuration, NetVue, CCTV, and dynamic Graphical Maps display of alarm, door, and event activity (Maps based on CAD data).

7) The system shall restrict administrative and Monitoring Station activity by use of Privileges and Authentication (User Password) using Microsoft Windows OS Password Function.

8) The system shall report on various aspects of the system by use of Reports (canned and configurable). Reports shall be able to export to a printer.

9) The system shall have the capability to report off-normal security device conditions both audibly and visually.

10) The system shall control hardware from the monitoring station by use of Manual actions, Events, and cause lists.

11) The system shall provide Record and Data Management by use of Historical Journal (archive and replay), Full Audit Trail and automated and manual import and export (data and images).

12) The system shall allow for data to be imported from other products by use of database Migration tools.

4. Controllers

a. Clustering

b. The ACAS shall support a user-defined grouping of DGP controllers defined as a cluster. DGP controllers within a cluster shall be able to communicate in a peer-to-peer scheme should the ACAS server lose communication with the cluster.

c. Clustering shall support the following features:

1) Assignment of Master controllers for cluster communication to the ACAS server

2) Primary and backup communication paths to the ACAS server

3) Up to 16 controllers per cluster

4) Logical event linking between controllers in a cluster independent of ACAS server communication

5) Antipassback control within a cluster shall be independent of ACAS server communication

6) Asynchronous communication via TCP/IP (Polled devices shall not be acceptable)

7) Encrypted communications

d. Network communications between a cluster master and the host, and between a cluster master and cluster members, shall be done using AES 256 bit symmetric encryption, tested and verified by an independent lab and listed for FIPS 197.

e. Encrypted DGP controllers shall be listed for FIPS 140-2, which meets the necessary physical, operational, and cryptographic requirements for a cryptographic module for the National Institute of Standards (NIST).

5. Manufacturers:

a. Tyco Software House C-Cure 9000

b. Lenel OnGuard

c. Genetech Synergis Enterprise

d. Or equal

B. Server Hardware

1. Spec References:

a. Access Control Server, LCD17RM

b. Access Control Monitoring PC, LCD 17

2. ACAS Server Hardware

a. Minimum Features/Functions/Performance

1) The ACAS Server to be compatible and approved for use with and supplied with one of the ACAS Manufacturers' Operating Systems supported by the ACAS Manufacturer when used as a server device, and with memory, processor and disk space scaled according to the system application requirements of this Project

2) The server shall be a rack mount standard manufactured product of a computer manufacturer regularly engaged in the production of business class servers and shall carry the manufacturer's standard product warranty, assigned to the Owner.

3) Server shall meet or exceed the ACAS manufacturer's minimum performance and functional requirements for a ACAS server at the time of beneficial occupancy.

4) Provide complete system including server, rack monitor, rack mount keyboard and mouse, or provide KVM and share peripherals with other similar rack mount devices installed under the work this Project.

b. Manufacturers:

1) Server

a) Dell

b) HP

c) Intel

d) or equal.

2) Manufacturer, Monitor:

a) Samsung series

b) Sharp

c) or equal.

3) Rack Mount Monitor Enclosure

a) Middle Atlantic RSH4A with backclamp.

b) Raxxess.

c) Custom by Contractor.

d) or equal.

4) Combination Monitor with Integral Rackmount, subject to the video response rate requirements defined above.

a) Marshall Electronics

b) Pelco

c) ToteVision

d) or equal.

C. Server Hardware

1. Spec References:

a. DGP (Data Gathering Panel)

2. Field Panels (DGP), with enclosures, daughter cards and accessories as required to provide the functionality described in these specifications, with at least 100% expansion capacity (based on greater of door or reader count) at the time of building opening

3. Minimum Network Door Controller Hardware Features, Functions and Construction

a. Processor and Memory

1) The Network Door Controller's microprocessor shall be of sufficient speed and power to provide on-board AES 256-bit encryption without use of an external encryption device, while providing access decisions within 500 ms on a fully loaded system. The controller shall have at least 2GB of on-board memory for cardholder and event storage. There shall be at least 16GB of on-board FLASH memory that shall be used for boot code and operating system code, and for memory backup.

2) The controller shall be able to locally store at least 500,000 card holders, using five cards/person and with 10 clearances/person, while also providing room for a transaction buffer of 10,000 alarms and events (minimum) in case communications to the host is lost.

b. Memory Retention and Real Time Clock Backup

1) The Network Door Controller must include automatic means to back up the system memory, including card holder records, configuration information, and alarm/event information, to onboard non-volatile flash memory in the event of AC power loss or Battery Low alarm. During the power interruption, the system's real time clock shall be backed up using a lithium coin cell battery such that the time is current when power is restored.

c. Dual Ethernet Network Ports

1) The Network Door Controller shall have two on-board 10/100/1Gb Ethernet ports, using standard RJ-45 connectors. The network ports must support full duplex communications. The controller must provide visual LED indication of transmit and receive activity for the Ethernet communications port. Controllers that do not offer full duplex 1Gb connectivity will not be accepted.

d. Secondary Communications

1) Using the dual network ports, the controller must support a primary network communications path and secondary communications path to the system server. Failover operation is described later in this document.

e. Field I/O Wiring Modules (ACMs)

1) The Network Door Controller shall provide terminations for field wiring through the use of modular ACM boards (Access Control Modules). Each module shall support up to 8 readers and 8 doors, and a Network Door Controller may utilize either one or two ACMs, for a total of 16 readers.

2) Upgrades. An eight-reader Network Door Controller shall be able to easily upgraded in the field to a 16-reader controller, through the addition of a second ACM board.

3) USB Communications. Communications from each ACM to the Network Door Controller's GCM (General Control Module) shall be made using a standard USB connection.

f. Wireless Locksets

1) The Network Door Controller shall provide monitoring and control of up to 32 wireless locksets, using a local RS485 bus to interface to the wireless lockset hub network. The Network Door Controller shall support either the Schlage AD300 and AD400 series of locksets, or the ASSA ABLOY Aperio series of locksets.

2) Wireless locks are a future option for the Owner to implement after the project opens; provide wired locks for the work of this Project

g. Power Requirements

1) The Network Door Controller shall be powered from a low voltage 12VDC power source, within a range of +/- 15%. 12VDC power is used to power the controller electronics, plus, reader power and RS485 bus power.

2) Power Requirements Design. The system designer shall be responsible for calculating the overall power requirements for the Network Door Controller, including locking devices, readers, annunciators, and PIR exit devices. A power calculation spreadsheet shall be used to verify system power requirements, and a safety factor of 50% shall be used when sizing power supplies.

h. Wall Mount System Enclosure

1) The Network Door Controller shall be housed in a locking 18 gauge steel enclosure, suitable for wall mounting in accordance with UL 294. All cabinet locks shall be keyed alike. The cabinet shall be suitably sized to allow installation of the controller and associated field wiring. The cabinet shall measure 25" in height by 22" in width and 5" in depth. There shall be a power indicator on the door which shall be visible when power is applied to the controller. A single, Normally Closed (NC) tamper switch shall be incorporated into the door. There shall be at least 12 knockouts on the enclosure of various sizes to facilitate conduit and wire routing.

i. Environmental Requirements

1) The Network Door Controller shall be capable of operation in temperatures between 0º and 50º C (32º - 122º F), and within humidity levels between 5% and 95%, non-condensing.

j. Reader Inputs

1) The controller shall provide for direct connection of up to 16 Wiegand read heads. The read heads connected to these ports shall conform to the industry standard Wiegand Output format and shall support multiple card technologies including contactless smart card, Wiegand, proximity, barium ferrite, bar code and biometrics. Wiegand readers directly connected to the controller may reside up to 500 ft. from the controller with the proper 18 AWG wiring. Wiegand reader inputs must be capable of receiving and decoding a bit stream of at least 256 bits.

k. LED Control

1) In addition to accepting card data from the read heads, the controller shall control the LEDs at the reader, supporting industry standard 2-wire or 1-wire control. The controller shall also provide a signal line to control an external beeper at the reader with an active low going signal. The LED control shall support three LEDs - red, amber and green. The ACAS shall support the configuration of these LEDs such that certain LEDs shall illuminate or not illuminate or pulse to indicate various System status conditions. These LEDs shall indicate the following status conditions as a default:

a) On-line Indication Amber LED on steady

b) Off-line Indication Red LED on steady

c) Card Accepted Green LED pulses for door open time

d) Card/PIN

i) Amber LED pulses to enter PIN.

ii) Subsequent red/green LEDs mimic card input

e) Alarm Condition All LEDs pulse in alternating pattern

l. Wiegand Keypad Support

1) The direct Wiegand reader ports shall support Wiegand readers with integrated Wiegand output keypads. The supported data format shall conform to industry standard 4 bit or 8 bit (4 bits plus 4 bits complemented) Wiegand keypad data.

m. Power for Readers

1) The controller shall provide +12VDC power for each reader, up to 1.5A each, on separate wiring terminals.

n. Support for RS485 Readers, with Display/Keypad

1) The controller shall support RS485 readers, to accommodate door control at distances greater than the 500 foot Wiegand distance limit.

o. Supervised Inputs

1) Twenty four (24) Class A Supervised inputs shall be provided on each ACM module, providing three inputs per reader. All supervised inputs in the system shall be field-configurable to accept either 1K, 5K or 10K ohm terminating resistor networks which may be configured to accept Normally Open (NO) or Normally Closed (NC) switches or contacts. Each EOL resistor network shall be configured such that the circuit reports unique messages for a secure circuit, alarm condition, and an open or shorted input (supervision alarm). Each input must also be capable of reading a non-supervised circuit.

2) Each two-wire input must be able to be configured individually for its supervisory circuit type.

3) Each two-wire input must be terminated on its own connector, and must not share a connector with another input.

4) The Monitoring Application Interface shall provide the current status of the inputs and shall log changes in input status. Supervised inputs shall be able to be taken offline for diagnostic purposes and each input shall support being linked directly to an output or to a system event. All input activations shall be reported to the Monitoring Application and stored in the Historical Journal on the System Server.

p. General Inputs

1) The Network Door Controller shall provide dedicated, normally-closed inputs for:

2) Enclosure Tamper. In a wall-mount cabinet, the tamper input shall be pre-wired to the enclosure door to report opening of the door as a tamper event. In a rack-mount enclosure system, each enclosure's tamper switch shall be pre-wired to either the GCM or ACM tamper input.

a) Power Fail. A dedicated input shall be provided for a power failure alarm. When using an external DC power supply to power the unit, this input shall be wired to the power supply's alarm output

b) Low Battery. A dedicated input shall be provided for a low battery alarm. When using external DC power supply to power the unit, this input shall be wired power supply's low battery alarm output

3) Outputs. The Network Door Controller shall provide 16 separate outputs on each ACM module, configurable through on-board jumpers as either "wet-lock1" (power sourcing), "wet-lock2" (power sourcing) or as dry contact form C relays. The outputs shall be used to control door locks, local annunciators, and other output devices as required.

4) Output Protection and Power Ratings.

a) Each output shall be individually protected with a PTC resettable fuse, transzorbs and snubbers so that power can be directly provided to locking devices without damage to the controller.

b) When sourcing power to the outputs, one or both lock power inputs may be used. Outputs shall be able to provide at least 0.75A at 12VDC or 24VDC.

c) Eight of the output relays shall be socketed, designed to control lock circuits, and shall be rated for 5.0A, 30VAC/DC when used as a dry contact control relay.

d) The other eight relays shall be non-socketed, designed to control local door annunciator devices, and shall be rated for at least 1.0A at 30 VAC/30 VDC when used as a dry contact control relay.

e) The controller shall provide a LED for visual indication of each output's status.

f) Each output must be terminated on its own connector, and must not share a connector with another output.

g) The Monitoring Application Interface shall provide the current status of each output and shall allow the manual activation of each output individually or in user-defined groups for diagnostic purposes. All output activations shall be reported to the Monitoring Application and stored in the Historical Journal on the System Server.

q. Fire Alarm Interlock

1) Each lock output shall be capable of being controlled directly from a fire alarm input on the ACM board, based on a local dip switch setting for each output. When the fire alarm input is activated, the lock output shall be controlled to the door open state, if its fire alarm dip switch was enabled for that lock. Fire alarm control shall be hard-wired and not dependent on any software or firmware function to operate. Fire alarm functionality shall be tested and listed per UL.

2) A separate fire alarm key switch latch input shall be provided. This input shall be used if manual intervention is required after a fire alarm before the locks are able to return to their normal (locked) condition. The ACM module shall have a key switch enable switch to enable this feature.

r. Local Display

1) The controller shall include a local, on-board two line LCD for status and field diagnostic messages. Provide local switches on the controller to set the LCD messaging and diagnostic modes.

2) For normal operations, the LCD shall be configured to display status messages. For troubleshooting operations, the LCD shall be configured to display diagnostic messages for readers and card data, inputs, outputs, network ports and other connected devices.

3) As a minimum, status messages shall include:

a) DGP boot information

b) Date and time

c) Firmware version

d) Controller status information.

e) Configured power and measured power

f) IP address and MAC address of controller

g) Host connectivity status

4) The LCD shall also provide diagnostic information for:

a) Cards/Readers – display raw card data, number of bits, reader number

b) Inputs – display changes in input state

c) Outputs – test each output in sequence

d) Ethernet ports – test operation of the port

s. I/O Expansion

1) The Network Door Controller shall support input and output expansion, through the use of RS485-based input/output modules. Each ACM module shall support up to 16 I8 modules, each providing eight supervised inputs, and up to 16 R8 eight-output form C relay modules. Form C relays shall be rated at 2A resistive and 1A inductive at 30VAC/DC.

2) The controller's wall mount enclosure shall be able to accommodate up to four modules mounted internally, without need for an external enclosure of any kind.

3) The controller must provide, at least, eight RS-485 expansion ports. Each port must have LED indication of transmit and receive communications activity. End-of-line (EOL) termination resistors shall be provided for each port to satisfy RS-485 multi-drop requirements. The termination resistors must be selectable, by switch, to provide the possibility of a "Y" wiring arrangement.

4) Each RM reader expansion bus must provide +12VDC power to its associated devices, through on-board power terminals. Each RM device may be powered from the controller, or through a local +12VDC source.

t. Wiring Connectors

1) All connectors shall be screw down type and pluggable, to facilitate field replacements and simplify testing. Connector spacing shall be such that connectors cannot be placed on the wrong wiring terminals.

4. Minimum Network Door Controller Software Functionality

a. Firmware and OS

1) The Network Door Controller shall utilize a standard off the shelf Linux operating system, including kernel and base OS image. Firmware updates to the controller shall include updates to the OS if applicable, including security patches. It shall not be necessary to independently manage updates to the OS outside of the access control application.

b. Communications

1) The Network Door Controller shall utilize standard Ethernet network connectivity for communications, to the host server or to other network controllers. Controllers shall be wired at any point on a Local Area Network (LAN)/Wide Area Network (WAN) via industry standard Ethernet utilizing the TCP/IP protocol. The Network Door Controllers shall be able to communicate back to the System database server through industry standard network switches and routers and shall not be required to reside on the same subnet as the System Server. Any activity or event within the controller network shall be routed to any client workstation(s) on the network, regardless of the controller that handles the activity. The System Server shall manage any message routing issues, thus isolating the subsystem applications from network-specific communication details.

2) The controller to System Server communication, and controller to controller communication within the same cluster, shall include authentication and a minimum of 256 bit AES encryption.

3) Upon losing and then restoring communications between the controller and the System Server, database synchronization between the System Server database and the local database in each controller shall be fast and efficient. When communications are restored, database synchronization shall occur immediately and without System Operator intervention. Any changes made to the System Server database while the controller was off-line shall also be simultaneously downloaded to all required controller databases.

c. Protocols

1) Communication between the System Server and the controller, and from controller to controller, is via TCP/IP only.

2) The controller shall support DHCP. Each controller may be configured to accept an IP address and device name from local DHCP (Dynamic Host Configuration Protocol), WINS (Windows Internet Naming Service) or DNS (Domain Name System) servers.

3) The controller shall have two 10/100/1000bT Ethernet (RJ-45) ports on-board and shall not require external devices to connect to the network.

d. Clustering

1) The Network Door Controllers shall support peer-to-peer communications, without the need for host intervention. A cluster is a user-defined grouping of Network Door Controllers used to define peer-to-peer communications.

2) Peer-to-peer communications within a cluster shall be used for input/output linking between controllers, and for anti-passback control within a cluster.

3) Each cluster has a master controller. The master is the primary connection between the cluster and the System Server. Communication from the System Server to the master shall be through a TCP/IP supported physical medium.

4) The other cluster controllers are referred to as members. Member controllers do not communicate directly to the System Server or to each other; rather their communication path to the System Server and to each other shall be through the master. Communication within a cluster is always through a TCP/IP supported physical medium.

5) Each master controller shall support an alternate Ethernet communications path to the System Server. In the event of a primary communications path failure, the master shall immediately attempt to utilize the secondary or alternate communications path. The alternate Ethernet path can be configured to use a different host IP address and subnet.

e. Polling

1) The Network Door Controllers shall support peer-to-peer communications, without the need for host intervention. Communication between the System Server and the controller shall be asynchronous. The Network Door Controller shall not require any poll messages between the System Server and the controller. Messages shall only be transmitted when required and messages can be initiated by any controller or by the System Server. The controller shall transmit a network heartbeat to the System Server to satisfy UL requirements.

f. AES Encryption and Key Management

1) The controller to System Server communication, and controller to controller communication within the same cluster, shall include authentication and a minimum of 256-bit AES encryption. The controller shall offer both default key management and custom key management.

2) For a secure environment, the controller must be able to accept and use a customer-supplied custom encryption key, supplied either from the host or from the controller. The controller must use a public key infrastructure (PKI) arrangement and certificates to authenticate keys between the host and the controller. The controller shall provide an on-board USB port to load a local encryption key.

g. Common System Services

1) System Watchdog

a) The System Watchdog shall constantly monitor all internal processes and if it detects a problem, it shall reboot the controller. A hardware watchdog shall also run and reboot the controller if the system software fails to strobe it. The controller's internal clock shall be updated by the controller's real-time clock upon restart.

2) Software Update Service

a) The system shall provide the ability to update the controller firmware stored in FLASH remotely from the host, directly within the C•CURE 9000 user interface. If the update image becomes corrupted, the controller can fall back to an original boot image. The boot image shall restart the controller and inform the host to re-send the update image. This feature allows the controller firmware to be easily upgraded to add new features.

3) Event Handling Services

a) The controller system firmware shall provide a service that will serve as a clearinghouse for all activities generated on a Network Door Controller. The System Server shall download a list of action definitions and a list of events to each controller. The system software shall provide an interface for reporting activities or events in real time as they occur.

b) Event Linking

i) Event linking shall tie an activity on one controller to the triggering of an action on the same or different controller. The Server Controller shall support three types of event linking:

c) Local Event Linking

i) When the source device and the target device are linked through an activity on the same controller, local event linking shall occur.

d) Cluster Event Linking

i) When the source device and the target device being linked are on different controllers in the same cluster, cluster event linking shall occur. The transmission of the action request from one controller to another shall occur (routed through the master controller) with no System Server intervention.

e) Global Event Linking

i) When the source device and the target device being linked are on different clusters, global event linking shall occur. This cross-cluster linking will require that the action request be routed through the System Server. The event link definitions shall be created on the System Server and shall be downloaded to the appropriate controllers. The System Server shall also insure that the event link definitions are valid and that there are no recursive links.

4) Action Scheduling

a) The system software shall provide an action scheduling service that will execute actions on devices residing on the same or other controllers at a predefined time, frequency and time interval. The action definitions shall be the same System Server-defined actions utilized by event linking. The actions and the action schedule shall be defined by the System Server software and shall be downloaded to the appropriate controllers.

5) Offline / Online Reporting

a) The system shall provide a mechanism to report activities to the System Server for display, reporting and archiving. If a System Server is not currently connected to the cluster of controllers, the activity reports will be buffered until the System Server reconnects to the cluster. Should the user-configured, activity buffer limit be exceeded before the System Server reconnects, the first in first out rule shall apply. Provide a minimum of 10,000 events in the offline buffer.

6) Time Management Services

a) The system shall provide a service to manage user-defined time periods. These time periods shall be defined on the System Server and downloaded to all controllers. The time management services shall also ensure that all controllers have a synchronized time clock.

7) Access Control Functionality

a) The controller shall perform basic access control operations with or without communications to a host server, including unlocking a door based on a valid credential, unlock based on a valid PIN, unlock based on card plus PIN, unlock based on schedule, unlock based on a pre-defined sequence or event, and unlock based on a manual action initiated by a system operator. In addition, the Network Door Controller shall be capable of the following:

8) Custom Defined Card Formats

a) The user shall be able to define custom card formats, up to 10 per controller, and each format shall be able to be at least 256 bits in length. The user shall be able to define and use government card formats such as the 200-bit GSA format with HMAC.

9) Elevator Control

a) The controller shall be able to perform elevator control, using either inputs and outputs hard-wired to the elevator control system, or, using a network interface through the host server. Card readers may be located in the elevator lobbies or elevator cabs. Upon a valid card read, the controller shall decide which floors the person is authorized for.

10) Intrusion Zones

a) Doors on the controller shall be able to be defined as intrusion zones that are armed and disarmed by various methods through a RM keypad/display reader.

b) Inputs on the controller shall be able to be defined as included in intrusion zones, and may be defined as 24-hour inputs, such as glass-break sensors, or as inputs that may be shunted during a time period, such as motion sensors.

11) Double Swipe Custom Event

a) The controller shall be capable of performing a pre-defined sequence of events if two duplicate card reads are seen within a certain period of time. It must be possible to select which personnel will activate the double swipe feature on each door.

12) Diagnostic Web Server

a) The Diagnostic Web Server shall generate real-time operational and diagnostic information on a Network Door Controller to be viewed by system installers, troubleshooters and tech support personnel from a standard web browser, such as Internet Explorer. This web server, residing on each controller, shall answer requests from a standard web browser and shall generate and serve up HTML pages that indicate controller status and diagnostic information.

b) Compatibility

i) The Diagnostic Server shall be compatible with standard browsers, such as Internet Explorer, Google Chrome and Mozilla Firefox.

c) Functional Requirements

i) The Diagnostic Web Server shall query the appropriate controllers to determine the following information and shall display it in an organized fashion to the user via a web browser.

d) Total and Available Memory (RAM)

i) The Diagnostic Web Server shall display the total amount of memory (in bytes) on the controller and the amount of memory (in bytes) that is currently free.

e) Current Time Information

i) The Diagnostic Web Server shall display the controller's current time and time zone.

f) Boot Time

i) The Diagnostic Web Server shall display the time at which the controller was last rebooted.

g) Firmware and Operating System Versions

i) The Diagnostic Web Server shall display the Firmware Version and build number and the operating system Version Number.

h) MAC and IP Address Information

i) The Diagnostic Web Server shall display the controller's unique MAC Address as well as its IP Address.

i) Controller Type (Cluster)

i) The Diagnostic Web Server shall display the controller type within the cluster – Master or Member.

j) Connection Status

i) The Diagnostic Web Server shall display the controller's current connection status with its parent (System Server or Master Controller).

k) Parent Information

i) The Diagnostic Web Server shall display the hardware MAC and IP Addresses of its parent (System Server or Master Controller).

l) Security

i) The Diagnostic Web Server shall support multiple simultaneous users and should have minimal impact on the normal operation of the controller. The Diagnostic Web Server shall utilize a standard security scheme that requires a user to log in using a password that shall be set via the System Server or the DGP Configuration Utility (ICU).

ii) It shall be possible to disable the diagnostic web server if desired.

m) Database Information

i) The Diagnostic Web Server shall display all controller database information, along with the number of records contained, the amount of memory (in bytes) utilized and the percentage of memory that each one consumes.

n) Run-Time Diagnostics/Debug Information

i) The user shall have the ability, via the web browser, to enable the output of real-time debugging information. This information shall be displayed on the browser. The information may also be output via the serial Debug Port of the controller and can be viewed (and captured) by standard tools such as HyperTerminal.

h. Manufacturers

1) Tyco Software House C-Cure iStar Ultra

2) Lenel onGuard

3) Mercury Security

4) Or equal.

5. External Power Supply Manufacturer:

a. Altronix

b. By door lock manufacturer as specified in Division 8.

c. Or equal

2.2 CARD READERS

A. Card Readers

1. Spec References:

a. CR: Card Reader, Wall Mount

b. CN: Card Reader, Mullion Mount

c. CKP: Card Reader, Wall Mount with Integral Keypad

2. Triple Technology Card Readers:

a. Simultaneously support of BLE Mobile Devices, NFC Mobile Devices, 13.56MHz and 125Khz contactless credentials. The contactless smart card reader shall read Mobile IDs powered by the Seos standard based software application or applet technology.

b. The Contractor should anticipate that the Owner will register with the card reader manufacturer such that the readers shall be shipped factory “mobile enabled” with the Owner’s assigned key.

3. The contactless smart card reader must support the following 2 modes of interaction with BLE credentials:

a. Tap Mode: The mobile device must be brought very close to or touching the reader (a similar user experience to that observed using Prox cards)

b. Twist and Go: The mobile device holder must initiate the read by twisting the mobile device in using a sharp 90° rotation in either direction.

4. Provide range of color options for selection by the Owner’s Representative.

5. Minimum Features/Functions:

a. Typical Maximum Read Range

1) HID Prox ISO Card: 2.5 – 3.5” (6.5 - 9.0 cm)

2) HID Prox Keyfob/Tag: 1.0 – 2.25” (2.5 - 5.5 cm)

3) Microprox® Tag: 1.0 – 1.25" (2.5-3.2 cm)

4) iCLASS SE Card: 4.0 - 4.5” (10.2 - 11.4 cm)

5) iCLASS SE Key/Tag: 1.0 - 2.0” (2.5 - 5.0 cm)

6) Mobile IDs using Bluetooth & Seos:

a) Twist and Go: 6.6 ft.

b) Tap: 5.9”

b. Dimensions

1) CN: 1.9" x 6.0" x 0.9"

2) CR: 3.3” x 4.8” x 0.95”

3) CKP: 3.3” x 4.8” x 1.1”

c. Operating Temperature

1) -40º to 150º F

d. Operating Humidity

1) 5% to 95% relative humidity non-condensing

e. Transmit Frequencies

1) 125 kHz and 13.56 MHz

f. Cable Distance

1) Wiegand Interface 500ft (150 m) 22 AWg

g. Card Compatibility

1) 125 kHz Proximity

a) HID proximity cards, key fobs, and tags

b) AWID Credentials

c) EM4102 Credentials

2) 13.56 MHz contactless smart cards

a) Secure Identity Object™ (SIO®) on iCLASS Seos, iCLASS SE/SR, MIFARE DESFire EV1 and MIFARE Classic (On by Default)

b) standard iCLASS Access Control Application (order with Standard interpreter)

c) ISO14443A (MIFARE) CSN, ISO14443B CSN, ISO15693 CSN

d) Mifare and Mifare DESFire EV1 custom data models

e) FeliCa CSN, CEPAS4 CSN or CAN Manufacturer:

h. CKP: Integral keypad permits transmission of supplemental instructions to ACS DGP in combination with use of an authenticated access control card.

6. Manufacturers:

a. HID. All readers to be supplied HID Mobile Enabled with the Owner's key factory programmed.

1) CKP: HID RPK40 multiCLASS SE Reader with Keypad and BLE for Mobile Access.

2) CR: HID RP40 multiCLASS SE Reader with BLE for Mobile Access.

3) CN: HID RP15 multiCLASS SE Reader with BLE with BLE for Mobile Access.

b. Or equal.

B. Vehicle Reader

1. Drawing Reference: VR

2. Minimum Features/Functions/Performance/Construction:

a. Electronic:

1) Transmit Frequency: 865 - 868 MHz / 902 - 928 MHz dependent on regional regulations

2) Typical Read Range: 3 to 5 meters

3) Input Voltage (VDC) 12VDC or 24VDC

4) Cable Length

a) Wiegand

i) 500 ft (152 m) – 22 AWG

ii) 300 ft (91 m) – 24 AWG

b) RS-485

i) 4000 ft (1,219 m) – 24 AWG

b. Physical

1) Nominal Dimensions: 10" x 9.10" x 2.75"

2) Color : Black

3) Housing Material UL94 Polycarbonate

c. Thermal

1) Storage Temperature -67° to 185° F

2) Operating Temperature -30° to 150° F

d. Operating Humidity 5% to 95% relative humidity non-condensing

e. Environmental Rating IP65

f. Standards: UL294/cUL (US & Canada),

3. Manufacturers:

a. HID iCLASS SE U90 Long Range Reader

b. Tyco Software House

c. Assa Abloy

d. AMAG

e. Or equal

C. Cards and Fobs

1. Type: HID 500x iCLASS® Seos

2. Quantity: 50.

D. Badging Stations

1. Provide accessories suitable for use with Owner furnished computer to function as a badging station including a card printer, and enrollment card reader and a USB camera:

a. Dual sided card reader printer:

1) Minimum Features, Functions and Performance:

a) Printer provides either dual or single-sided printing

b) Print Method: Dye-sublimation / resin thermal transfer

c) Resolution: 300 dpi

d) Print Speed: 16 seconds per card / 225 cards per hour (YMCKO)

e) Included Software: Embedded badging layout application Data protection: AES-256 encryption on the printer over a secure network

f) Card capacity: 100 card input, 100 card output, 100 card reject with same-side input/output hopper.

b. USB based enrollment card reader

1) Minimum Features, Functions and Performance:

a) Operating Frequency: Dual 125 kHz and 13.56 MHz

b) Typical Maximum Read Range: 1.0” – 3.0” (2.5 – 7.6cm)

c) Current Consumption: USB units: Typical 70 mA, maximum 100 mA; Serial units: Typical 75 mA, maximum 110 mA

d) Physical Characteristics

i) Dimensions (Desktop): 3.55 in x 2.05 in x 0.65 in (90.2mm x 52.1mm x 16.5mm)

ii) Weight (Desktop): 2.1 oz (desktop box only), 3.8 oz (with 6ft cable)

iii) Housing Color: Desktop -- Black, Pearl; Surface Mount -- Black, White; Hardware Integration Pocket -- Jack Black

iv) Mounting Options: Surface mount housing can be easily mounted on panels, kiosks, and other indoor applications. It is designed for mounting with 1” #8 screws only (not included), at a maximum force of 6.25 in/lbs. Desktop reader has an articulated cable for easy placement on desktops, counters, and more. The IP67 compliant readers must be installed according to the installation guide (enclosed with all units).

v) Cable Length: Desktop -- 6 in, 16 in & 6 ft; Surface Mount -- 13 in; Hardware Integration Pocket -- Internal Mount is 2 ¾”, External Mount is 6’. (Custom Lengths Available. Call our Sales department at (866) 439-4884)

vi) Indicators: Tri-state LED, dual tone beeper

vii) Power Supply: USB Self-powered; PoE; Serial RS-232: several power options exist

viii) Interface: USB, Serial RS-232, Ethernet

e) Minimum Range of Environmental Usage

i) Operating Temperature Range: -22° to 150°F (-30° to 65°C)

ii) Operating Humidity Range: 5% to 95% relative humidity, non-condensing

iii) Storage Temperature Range: -40° to 185°F (-40° to 85°C).

c. USB camera

1) Minimum Features, Functions and Performance:

a) USB Signal Output and powered

b) Video capture: Up to 640 x 480 pixels (VGA CCD)

c) Still image capture: Up to 1280 x 960 pixels, 1.3 megapixels

d) Frame rate: Up to 30 frames per second

2. Manufacturers:

a. Badge Printer:

1) HID Fargo DTC4250e ID Card Printer & Encoder

2) or equal

b. USB based enrollment card reader.

1) RF IDeas Keystroke USB Reader with SIM Card for iCLASS SE and iCLASS Seos

2) Or equal

c. USB Camera

1) Logitech QuickCam Pro 4000 or as supported by the Access Control manufacturer.

2) Or equal.

2.3 INTRUSION DETECTION SYSTEM

A. Intrusion Detection Panel and Keypad

1. General:

a. The IDS shall include a Control Panel with built-in, supervised telephone line interface and/or IP interface as required.

b. The IDS shall include recording and retention of event information in a dedicated event log.

c. The IDS shall incorporate an integral real-time clock, calendar, and a test timer.

d. The IDS shall incorporate battery charging capabilities with supervision of battery voltage and battery leads.

e. The IDS shall accommodate a time / event-based scheduling system.

f. The IDS shall be capable of supervision of peripheral devices and communications interfaces.

g. The IDS shall support the connection and reporting of intrusion, devices to a remote Digital Alarm Communicator Receiver (DACR).

h. The IDS shall accommodate configuration and operation of separate, independent areas.

i. The IDS shall accommodate hard-wired via expansion point interface modules.

j. The DACS shall have electrically supervised detection loops and power supplies with battery(s) maintenance. This supervision shall be programmable for the purposes of reporting this information to the DACR.

k. The DACS shall be capable of monitoring and switching to active telephone/IP lines when trying to establish communications with the DACR and transmitting a report.

l. The DACS shall be capable of sending (manually or automatically) test and status reports to remote DACRs.

m. The DACS shall be able to accommodate test, diagnostics, and configuration programming functions locally or remotely via a portable programmer or a computer running the Remote Programming Software (RPS).

n. The DACS shall annunciate alarm, trouble, service reminders, and other relevant system status messages in custom English text at the ACC.

2. Minimum Features/Functions/Performance:

a. IP−based communication options provide high−speed, secure alarm transport and control through connection of wired and/or wireless cellular network interfaces. Provide IP and/or dial interface as required to match Owner's selected Central Alarm monitoring company requirement.

b. Up to 32 programmable areas each supporting both with perimeter and interior points with choice of touch screen, ATM style, or LED keypads. Homerun wire each point to IDS and create areas in software – bussed wiring not permitted.

c. 75 points with flexible configuration options to meet multiple installation requirements.

d. Credentials (Tokens): At least 399

e. Custom Functions: At least 4

f. Events: Up to 1000

g. Passcode Users: At least 399, plus 1 service passcode

h. Points: At least 75

i. Programmable Relay Outputs: At least 67.

3. Keypad

a. Numeric keypad

b. 3 Function keys

c. LED Alphanumeric Display

d. Status Indicators

e. Group LED Indicators

f. Armed Status Perimeter, Interior, and Instant

g. Point Status Point Fault, Point Alarm Memory, and

h. Bypassed Point

i. Color as selected by Owner's Representative from manufacturer's standard options.

4. Manufacturers:

a. Intrusion Detection Panel & Keypad

1) Bosch D7000 series control panel and LCD keypad..

2) Or equal – No known equal.

5. External Power Supply Manufacturer:

a. Altronix with battery extenders as required to provide 2 hour Power Loss functionality.

b. Equal by IDS panel manufacturer

c. Or equal.

2.4 POWER PROTECTION

A. Backboard mounted equipment

1. Function:

a. Power supply with backup battery

b. Class 1 (115VAC Input)

c. Individually fused, Power Limited, Class 2 outputs - sized to meet worst case load and runtime while maintaining system operations.

d. Unless otherwise indicated support operation of ACAS system for specified operational period following loss of power.

e. Battery is lead acid type of common commercial manufacture.

f. UL Listings: UL 294, UL603, UL 1069, UL1481 for application

g. Provide timer modules as required to supplement DGP control

h. Supervised fire alarm disconnect

i. Power supply and battery fully enclosed in steel NEMA enclosure with cam lock cover and conduit knockouts.

j. Thermal and short circuit protection with auto reset.

2. Manufacturers:

a. Altronix AL Series (Design Basis)

b. Security Door Controls

c. Or equal.

2.5 ACCESS CONTROL AND ALARM SENSORS & FIELD DEVICES

A. General

1. Field devices to be selected to match condition of opening and/or space to be protected. The following specifications are minimum standards; Contractor to consult with listed manufacturers and select appropriate device and mounting means for unusual construction conditions.

B. Door Tamper Alarm Switch

1. Spec Reference: DS

2. Construction and Features

a. UL Listed

b. Hermetically sealed magnetic reed switch. Dual biased high security switch assembly deters tampering. Reed shall be potted in the contact housing with a polyurethane based compound.

c. Magnet shall be made of Alnico V.

d. Steel Door Switches

1) Contact and magnet housing shall snap-lock into a 1" dia. hole. Snap-lock insulation bushing for tight fit and maximum gap in steel.

2) Housings shall be molded of flame retardant ABS plastic. Both contact and magnet plastic housings are constructed of one piece of thick-walled ABS plastic for maximum strength.

3) Color of housings shall be off-white, grey or mahogany brown. Color to be selected by Owner's Representative.

4) Designed for Use in Steel Doors

5) Operates in steel door and frame at gap up to:

a) 1" min., Steel Doors

b) 2" Min, Wood Doors

6) Under Door Threshold switches. At all glass door assemblies with base lock plate, mount DS under door threshold. Provide necessary blocking and shimming and/or secondary magnets at recessed doors to bring magnet within specified gap.

3. Manufacturer:

a. Steel Doors, 1"

1) Sentrol 1076W.

2) Or equal

b. Under threshold:

1) Sentrol 1921 magnet and 1055 or 1075W Switch

2) Ademco.

3) Or equal

C. Door Switch, RollUp Doors and Coiling Grills

1. Spec Reference: DU

2. Function/Features:

a. Protects openings where door or gate travels in vertical plane.

b. Place door switches on slab at side of track or at top of frame at each end of rollup door or grill.

c. Fasten magnet to traveling door.

d. Switch connects to structure with armored cable connection.

3. Manufacturer:

a. Sentrol 1982 Magnet and 2202A or 2205 switch with Manufacturer's Supplemental Mounting Brackets and Spacers as required. At panel/sectional doors Sentrol 2300 series.

b. Ademco

c. or equal.

D. Gate Switch

1. Spec Reference: GS

2. Function/Features:

a. Monitors status of gate protected openings.

b. Fasten magnet to traveling/moving gate with tamperproof fasteners.

c. Switch connects to conduit and backbox infrastructure with armored cable connection.

3. Manufacturer:

a. Sentrol 1982 Magnet and 2202A or 2205 switch with Manufacturer's Supplemental Mounting Brackets and Spacers as required. At panel/sectional gates, provide Sentrol 2300 series.

b. Ademco

c. or equal.

E. Hatch Switch

1. Spec Reference: HS

2. Monitors state of roof hatches

3. Fasten magnet to hatch door.

4. Switch connects to structure at hatch opening with armored cable connection to serving junction box

5. Manufacturer:

a. Sentrol 2500 series

b. Ademco.

c. or equal.

F. Local Door Alarm, Interior

1. Spec Reference: LA

2. Functions/Features:

a. Provide door management alarms for local and remote monitoring and annunciation of the status of the doors (door prop/door held, door intrusion/door forced or secure)

b. The LA shall be capable of operating in a stand-alone configuration or with access control systems.

c. Local sounder (field selectable 96 or 103 dBA @ 3 feet) shall be used to indicate both door prop/door held and intrusion/door forced conditions after a user selectable quiet, or access, time (0 seconds - 90 minutes) has expired. Sounder shall be incorporated into the faceplate of the LA.

d. Form C (N/O or N/C) contacts shall be available for the following outputs:

1) Door Contact Status.

2) Door Prop Alarm.

3) Intrusion & Tamper Alarm.

4) Bypass/ Key Switch Status.

5) Dry Contact Remote Alarm Reset.

e. The alarm (intrusion) contact shall change state upon the recognition of an alarm or tamper condition to alert remote monitoring equipment.

f. The unit shall remain in alarm until reset by integral key switch, remotely through a dry contact or automatically through an onboard timer (settable from 0 seconds to 5 minutes or manual).

g. An integral key switch shall be available for alarm shunt or alarm reset and be incorporated into the faceplate of the LA.

h. A Bi-Color status L.E.D. shall be incorporated into the faceplate of the LA. A remote L.E.D. output shall be provided to control a Bi-Color L.E.D. that follows the actions of the faceplate mounted L.E.D.

i. Inputs shall include a N/C Dry Contact for the door, Voltage Sense (12-24 VAC/DC) to monitor electric lock voltages and a N/O or N/C passive Shunt Input.

j. The following timers shall be user settable:

1) Auto-reset,

2) Alarm delay

3) Silent time

4) Shunt Delay.

k. The LA shall be mounted in the wall adjacent to the monitored door at PSSH.

3. Manufacturers:

a. Designed Security, Inc. Model ES4200-K4-T1 w/ Rim Cylinder Keylock K option and a tamper circuit, keyed as directed by the Owner.

1) As exterior locations, provide with manufacturer's -007 component weatherization option.

b. Or equal.

G. Door Release Button, Door Operator button, Non-Hazardous Opening, General Purpose Dry Contact Signaling

1. Spec Reference(s): RB, DO

a. Stainless Steel Panel – fits one gang opening.

b. Button or plate engraved with iconic and text labeling in contrasting color – text and color as directed by Owner's Representative.

c. 1.5” minimum button diameter.

d. Color coded plastic button cap – color as selected by the Owner’s Representative

e. Suitable for continuous exposure to outdoor environment under conditions typical of Project site.

2. Manufacturer:

a. Schlage 620/631 Series.

b. Designed Security, Inc. ES440.

c. Or equal.

H. Door Release Button, Hazardous Area

1. Spec Reference: RBE

2. UL Classified Class 1, Division 1

3. Manufacturers:

a. Alarm Controls Corporation EXP-1.

b. or equal (no known equal).

2.6 INTRUSION DETECTION FIELD DEVICES

A. Duress Alarm

1. Manufacturer:

a. Potter (Amseco) HUSK-10.

b. GE Sentrol

c. Or equal

B. Glassbreak Detectors, Recessed

1. Manufacturer: Rokonet Vitron Plus.

2. GE Sentrol

3. Bosch

4. Ademco

5. Or equal

C. Glassbreak Detectors, Surface

1. Manufacturer:

a. Rokonet Vitron Plus.

b. GE Sentrol

c. Bosch

d. Ademco

e. Or equal

D. Motion Detector

1. Manufacturer:

a. Aleph SP-360D.

b. Rokonet Vitron Plus.

c. GE Sentrol

d. Bosch

e. Ademco

f. Or equal

E. Duress Alarm, Wall Mount

1. Function/Construction:

a. As for RB as specified in Section 17900 – Common Work Results for Electronic Safety and Security, button labeled “Push for Help” in red letters.

b. Manufacturer:

c. As for RB specified elsewhere in this Section

F. Tamper Alarm Switch

1. Select to suit application.

2. Manufacturer:

a. Sentrol.

b. Ademco.

c. Or equal.

2.7 ACCESS CONTROL WIRING

A. As specified in Section 28 05 13 – Conductors and Cables for Electronic Safety and Security.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall install all system components, including City furnished equipment, and appurtenances in accordance with the manufacturer's instructions, IEEE C2 and as shown and necessary to provide a fully functional system. The contractor shall furnish necessary interconnections, services, and adjustments required for a complete and operable system as specified and shown. Control signal, communications, and data transmission line grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.

B. Provide mounting hardware as necessary to securely fasten ACAS hardware to the supporting structure or racks.

C. Device Wiring and Communication Circuit Surge Protection

1. All inputs shall be protected against surges induced on device wiring. Outputs shall be protected against surges induced on control and device wiring installed outdoors and as shown. All communications equipment shall be protected against surges induced on any communications circuit. All cables and conductors, except fiber optics, which serve as communications circuits from security console to field equipment, and between field equipment, shall have surge protection circuits installed at each end.

D. Installation

1. The contractor shall install the system in accordance with the standards for safety, NFPA 70, UL 681, UL 1037 and UL 1076, and the appropriate installation manual for each equipment type. Components within the system shall be configured with appropriate service points to pinpoint system trouble in less than 20 minutes.

2. Flexible cords or cord connections shall not be used to supply power to any components of the system, except where specifically noted. All other electrical work shall be as specified in Division 26 and as shown.

3. All circuit boards are to be mounted on "Stand-Offs". Circuit boards may not be

affixed with double sided tape.

4. No components of the security system are to be mounted on the interior door of the DGP enclosure. Where additional space is required, Contractor to place a supplemental NEMA enclosure adjacent to the DGP sized as required to accommodate the additional components.

5. Perimeter Wireway: Refer to the requirements of Section 28 05 28 - Pathway for Electronic safety and Security regarding the requirement to wrap the backboard at electronic security system installation locations with steel wireway/gutter and terminal cabinets as necessary to fully enclose wiring and components associated with electronic security systems installation.

6. Enclosure Penetrations

7. Enclosure penetrations shall be from the bottom unless the system design requires penetrations from other directions. Penetrations of interior enclosures involving transitions of conduit from interior to exterior, and penetrations on exterior enclosures shall be sealed with rubber silicone sealant to preclude the entry of water. The conduit riser shall terminate in a hot-dipped galvanized metal cable terminator. The terminator shall be filled with an approved sealant as recommended by the cable manufacturer, and in a manner that does not damage the cable. Locate penetrations to enclosures to ensure they will not interfere with components inside enclosure such as batteries, circuit boards, locking mechanisms etc.

8. Cold Galvanizing

9. Field welds and/or brazing on factory galvanized boxes, enclosures, conduits, etc., shall be coated with a cold galvanized paint containing at least 95 percent zinc by weight.

E. Card Readers

1. Contractor to coordinate detail construction work in vicinity of card readers with work of other trades to ensure that specified read range of card readers is not compromised by the presence of large metal objects in the immediate vicinity of reader

2. Securely fasten card reader to structure to prevent its movement during repeated usage.

3. Unless otherwise indicated, card readers to be mounted to the nearest side of the door housing the door handle.

4. Unless otherwise indicated, card readers should be mounted to flush mount

backboxes. Mounting card readers on surface mounted boxes is unacceptable except where such installations are specifically called for in the plans.

5. Contractor to further ensure that power supplies used with the readers meet or exceed card reader manufacturer minimum requirements for current and voltage stability.

6. Exterior card reader installations must be equipped with the appropriate weather protection.

3.2 PROGRAMMING

A. Initial Systems Programming

1. Contractor to meet with City's Representative to confirm functional requirements for surveillance systems defined in Part 1 of this Section, including but not limited to the following:

a. Access Classification Tiers

1) In accordance with the Schedule of Programmatic Outcomes by Door Opening Schedule elsewhere in this Section below identify users and user groups having access to selected:

a) Door(s).

2) Monitoring to be provided at each Alarm point.

3) Always on (24 hour response).

4) On when the system is Master Armed.

5) Only on when the system is Perimeter Armed.

6) Displays / Does Not Display at the Access Control Panel when the point is activated.

7) Provides / Does Not Provide entry warning tone.

8) Sounds / Does Not Sound audible alarm indication.

9) Point is bypassable / not bypassable.

10) Alarm Verification with programmable verification time.

11) Summary Relay activation by Point.

12) Provides / Does Not Provide "watch point" capability.

b. Calendar. System Operations as a function of day-of-the-week and hour-of-the-day and differential access permitted based on these changes.

1) Access limitations and device functions that are dependent on the time or access or the event.

c. Alarm System response to events

1) Normal access (validated).

2) System fault

3) Unauthorized access

4) Unauthorized access detected by multiple monitoring points.

d. Pass codes according to the authorities and functions defined by the City's Representative.

e. In addition to standard door operation arming and alarming as described in Part 1 of this Specification Section, initial system programming to include the following features and functions:

1) Arming Zones – at least the following:

a) Office Perimeter

b) Mayor's Office

c) Private Offices

d) Secure Storage Rooms

e) Council Chambers

f) Maintenance Openings and Hatches

f. Document the Initial Programming Requirements and Submit in accordance with Section 28 05 00 - Common Work Results For Electronic Safety and Security.

2. At minimum, include allowance of post-opening programming time in the following quantities.

a. In addition to providing the programming necessary to meet the functional requirements defined in Part 1 of this Section, Contractor to provide systems customization programming time as defined below in the following quantities:

b. 10 hours.

c. Programming time is time spent by a trained systems programming developing the specific sequence of alarm events and response for this Project.

d. Programming time does not include installation of or correcting deficient installation of system components, coordination with the contractors, training the programmer in the programming of the system software or meeting with the City's Representative(s) to establish the functional requirements of the security system.

e. Programming time not used in initial systems configuration shall be available to the City for supplemental post-opening programming. Contractor to provide such post opening programming in a minimum of 4 hour blocks.

f. Contractor to provide City's Representative with daily timesheets of programming time spent in support of this Project on request"

g. Implement System Programming as defined above.

3. Schedule of Programmatic Outcomes by Door Opening. For the indicated door openings, the Contractor should anticipate programming at least the minimum number of features associated with the Town of Colma Standard Door Class as scheduled below.

Town of Colma Standard Door Class	Class 2	Class 3	Class 4	Class 5
Doors Opening Class Assignment	Police Perimeter & Interior Doors; Secure Storage Room Office Perimeter	Town Hall Private Offices Council Chamber	Emergency Exit Only Doors	Exit Only Doors
Card and PIN Reader	Secure Storage Rooms		No	No

Town of Colma Standard Door Class	Class 2	Class 3	Class 4	Class 5
Card Reader	Office Perimeter	Yes	No	No
Latch Bolt Monitoring				
Strike Position Monitoring				
Door Position Monitoring	Yes	Yes	Yes	Yes
Local Sounder	Yes	Yes	Yes	Yes
Always Locked	Yes		Yes	Yes
Locked/Unlocked on Schedule/Action		Yes		
Min. [TBD] Programming to be performed by Contractor	Door Forced Open	Door Forced Open	Emergency Exit Open	Door Forced Open
	Door Forced Open Audio	Door Forced Open Audio	Emergency Exit Open Audio	Door Forced Open Audio
	Door Forced Display Map	Door Forced Display Map	Emergency Exit Open Display Map	Door Forced Display Map
	Door Held Open	Door Held Open	Emergency Exit Secured Audio	Door Held Open
	Door Held Audio	Door Held Audio	DCP Key Disarmed	Door Held Audio
	Door Held Display Map	Door Held Display Map	DCP Key Disarmed Audio	Door Held Display Map
	Door Secured Audio	Door Secured Audio	DCP Key Disarmed Display Map	Door Secured Audio
	DJP Tamper	DJP Tamper	DCP Key Armed	DCP Key Dis-

Town of Colma Standard Door Class	Class 2	Class 3	Class 4	Class 5
			Audio	armed
	DJP Tamper Audio	DJP Tamper Audio	DCP Tamper	DCP Key Dis-armed Audio
	DJP Tamper Display Map	DJP Tamper Display Map	DCP Tamper Audio	DCP Key Dis-armed Display Map
	DJP Tamper Secure Audio	DJP Tamper Secure Audio	DCP Tamper Display Map	DCP Key Armed Audio
	DCP Key Dis-armed	DCP Key Dis-armed	DCP Tamper Secure Audio	DCP Tamper
	DCP Key Dis-armed Audio	DCP Key Dis-armed Audio		DCP Tamper Audio
	DCP Key Dis-armed Display Map	DCP Key Dis-armed Display Map		DCP Tamper Display Map
	DCP Key Armed Audio	DCP Key Armed Audio		DCP Tamper Secure Audio
	DCP Tamper	DCP Tamper		
	DCP Tamper Audio	DCP Tamper Audio		
	DCP Tamper Display Map	DCP Tamper Display Map		
	DCP Tamper Secure Audio	DCP Tamper Secure Audio		

a. For doors indicated to receive access control/IDS hardware, Contractor to request present written request of City's Representative for assignment to the appropriate Access Class.

3.3 WIRING PRACTICE

A. Comply with requirements of Sections 27 11 16 - Communications Cabinets, Racks, Frames and Enclosures and Section 28 05 13 – Conductors and Cables for Electronic Safety and Security

B. At electric strikes and electric locks and all other monitored lines requiring same, provide end-of-line resistors, diodes or MOV's where device does not already include such components. Document where such devices have been added.

3.4 SYSTEM STARTUP

A. Satisfaction of the requirements below does not relieve the Contractor of responsibility for incorrect installations, defective equipment items, or collateral damage as a result of Contractor work/equipment. The Contractor shall not apply power to the system until after:

1. System equipment items have been set up in accordance with manufacturer's instructions.

2. A visual inspection of the system has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.

3. System wiring has been tested and verified as correctly connected.

4. System grounding and transient protection systems have been verified as properly installed.

5. Power supplies to be connected to the system have been verified as the correct voltage, phasing, and frequency.

3.5 IDS TESTING AND ADJUSTMENT

A. Test shall ensure that the requisite degree of intrusion detection is provided. Initially, test each sensor and subsystem component individually. When the function of each component within a particular subsystem such as each sensor within a particular zone is verified, certify that subsystem of the entire IDS as satisfactorily meeting required specifications. Test each subsystem similarly until each detection zone has been certified. When subsystem certification is complete, test entire integrated system to ensure that subsystem elements are compatible and function as a complete system. Integrated system test shall be accomplished in linear fashion, end-to-end, and shall verify that each simulated intrusion performed within each detection zone produces an appropriate alarm or signal. Integrated system test shall also verify that alarm is correctly annunciated at the local annunciator unit (where a local annunciator is shown on the plans) and the central alarm reporting and display unit. Provide for approval, not later than 30 days prior to formal inspection and test, a detailed operational test plan of how each component, subsystem, and entire ACAS will be tested. When tests are complete and corrections made, submit a signed and dated certificate with a request for formal inspection and tests

3.6 SYSTEMS PERFORMANCE DEMONSTRATION AND ADJUSTING PROCEDURES

A. Demonstrate functionality of each installed device. Refer to the requirements of Section 28 05 00 - Common Work Results for Electronic Safety and Security.

3.7 LABELING

1. Conform with the requirements of Section 27 05 53 – Identification for Communications Systems.

3.8 WARRANTY PERIOD SERVICE & ADJUSTMENT

A. Warranty

1. The ACAS shall be warranted by the contractor for one (1) year from the date of Substantial Completion.

2. Maintenance and Service

a. The contractor shall provide all services required and equipment necessary to maintain the entire ACAS in an operational state as specified for a period of one (1) year after formal written acceptance of the system, and shall provide all necessary material required for performing scheduled adjustments or other nonscheduled work.

3. Description of Work

a. The adjustment and repair of ACAS includes computer equipment, contractor provided programming, software updates, signal transmission equipment, access control equipment, facility interfaces, and support equipment. Responsibility shall be limited to contractor installed equipment and programming. Provide the manufacturers required adjustments, re-programming of deficient contractor programmed functions and other work as necessary.

4. Personnel

a. Service personnel shall be qualified to accomplish all work promptly and satisfactorily. Provide proof that Service personnel have successfully completed the appropriate level of both hardware and software training offered by the system manufacturer. The City's Representative shall be advised in writing of the name of the designated service representative and of any change in personnel.

5. Inspections

a. The contractor shall perform two inspections at six (6) month intervals or more often if required by the manufacturers. This work shall be performed during regular working hours, Monday through Friday, excluding Federal holidays. These inspections shall include:

b. Visual checks and operational tests of the central processor, local processors, monitors, keyboards, system printers, peripheral equipment, ACAS equipment, power supplies, and electrical and mechanical controls.

c. Clean system equipment, including interior and exterior surfaces.

d. Perform diagnostics on all equipment.

e. Check and calibrate each ACAS device.

f. Run system software and correct diagnosed problems.

g. Resolve previous outstanding problems.

B. Warranty Service

1. The City's Representative shall initiate service calls when the ACAS is not functioning properly. Qualified personnel shall be available to provide service to the complete ACAS.

2. The City's Representative shall be furnished with the telephone number where the

contractor's service supervisor can be reached at all times.

3. Service personnel shall be at the site within four (4) hours after receiving a request for service.

4. The ACAS shall be restored to proper operating condition after one (1) calendar day.

5. Materials installed during warranty service to match or exceed specification of products originally installed for the specified function.

END OF SECTION

SECTION 28 23 00

VISUAL SURVEILLANCE

PART 1 - GENERAL

1.1 SCOPE

A. For the Town of Colma Town Hall and Police Department Buildings, section Includes (but is not necessarily limited to):

1. Video Surveillance System.

a. Miniature fixed view indoor and self-illuminated TCP/IP outdoor dome cameras, including 180 and 360 degree view Multiview indoor and outdoor cameras.

b. Box format IP camera for use at existing detention camera enclosure.

c. Video capture server (A to D converter) for use with Owner's existing convert interview cameras and microphones.

d. POE and Class 2 Powering of Cameras.

2. Network Video Recorder (NVR) based Video Management System (VMS).

a. Network video recording system mounted in cabinet installed under work of separate project in Comm Room of Town Hall building of project.

b. NVR licensing to enable recording of cameras installed under the work of this Project on the NVR provided under the work of this Project plus 20%.

c. General purpose video analytics (abandoned object, motion in the wrong direction) detection integration with the on-board analytics provided by the specified cameras. Provide for integrated analytics programming integration for at least 25% of the cameras installed under the work of this Project.

B. Related Work in Other Sections:

1. Section 28 05 00 - Common Work Results for Electronic Safety and Security

a. Submittals required of the work of this section.

b. Miscellaneous parts and execution standards for the work of this Section.

2. Section 28 05 13 - Conductors and Cables for Electronic Safety and Security

a. Cabling products and execution standards for the work of this Section.

3. Section 28 05 28

    a. Provides raceway and backboxes for the work of this Section.

4. Section 28 13 00 – Access Control and Alarm

    a. Provides access control and alarm system that work of this Section integrates with.

1.2 RELATED WORK BY OTHERS

A. The Owner supplies the POE enabled Ethernet Switches and related building Ethernet networking hardware used to transmit the packets generated by the cameras installed under the work of this Project.

B. Backboxes at interior and exterior surfaces (excluding at site poles) are existing except where noted.

C. Structured cabling for Cameras at Town Hall is work of base building project (N.I.C).

1.3 SUBMITTALS

A. Refer to the requirements of Section 01 33 23 – Shop Drawings, Product Data and Samples and Section 28 05 00 – Common Work Results for Electronic Safety and Security.

1.4 SYSTEM PERFORMANCE REQUIREMENTS

A. Video Surveillance Systems:

1. Technical Performance:

    a. TCP/IP: System demonstrates full conformance with 3rd party alarming and motion detection at remote monitoring headend using ONVIF Software (Open Network Video Interface Forum) Protocol.

    b. IP Cameras: Meet Manufacturers performance specification.

2. Functional Performance:

    a. Monitor and Display

        1) Remote monitoring and reviewing of recorded images by persons using:

            a) Owner's Local and Wide Area Network.

b) Local Area Network using Owner furnished network switching, and cabling provided by the work of this Project at the Police HQ and of other Contractors at Town Hall.

2) Provide images suitable for making identification of persons and license plate capture under lighting conditions resulting from the work of this Project.

b. Record

1) Record video streams using network video recorder provided under the work of this Project

c. Monitoring points

1) PD Dispatch/Access Control Station

a) Provide not less than two viewing stations with two video monitors at each - including one providing a matrix output overview of all the cameras in the system and the second providing a tactical view of key cameras and any camera currently in alarm. Configure the arrangement of cameras in the matrix and on the tactical monitor as directed by the Owner.

2) Town Hall. Provide not less than one viewing station, configured as per PD above.

3. Uninterrupted Power System: For systems deriving camera power from power supplies installed under the work of this Project, sustain system operation for 2 hours following loss of power.

1.5 COORDINATE

1. Coordinate intended camera locations with the work of the Other Trades and the work of Section 28 05 28 – Pathways for Electronic Safety and Security to ensure field conditions do not result in obscuring the intended camera view(s).

2. At Town Hall, coordinate with the work of Division 27 to ensure that station cabling required for the work of this section has been installed and that the installation has been observed by the Owner's Representative as being in substantial conformance with the requirements of the Project before work of this section patches into it.

1.6 DEFINITIONS

A. Refer additionally to Section 28 05 00 - Common Work Results for Electronic Safety and Security.

B. Abbreviations used in this Section

1. ACS – Access Control System
2. AES: Advanced Encryption Standard
3. AGC: Automatic gain control
4. ALPR – License Plate Recognition
5. API: Application Programming Interface
6. Aspect ratio: A ratio of width to height in images
7. Bit Rate: The number of bits/time unit sent over a network
8. Bonjour: Enables automatic discovery of computers, devices, and services on IP networks.
9. CSA – Client Software Application
10. DGM – Dynamic Graphical Maps
11. DHCP: Dynamic Host Configuration Protocol
12. DNS: Domain Name System
13. DVS – Digital Video Server
14. EIS: Electronic Image Stabilization
15. FPS: Frames per Second
16. FTP: File Transfer Protocol
17. H.264 (Video Compression Format)
18. IEEE 802.1x: Authentication framework for network devices
19. IP: Internet Protocol
20. IR light: Infrared light
21. ISO: International Standards Organization
22. JPEG: Joint Photographic Experts Group (image format)
23. LAN: Local Area Network

24. LED: Light Emitting Diode
25. LPR: License Plate Recognition
26. Lux: A standard unit of illumination measurement
27. MBR: Maximum Bit Rate
28. MPEG: Moving Picture Experts Group
29. Multicast: Communication between a single sender and multiple receivers on a network
30. NTP: Network Time Protocol
31. NTSC: National Television System Committee – a color encoding system based on 60Hz
32. ONVIF: Global standard for the interface of IP-based physical security products
33. PACS: Physical Access Control System
34. PAL: Phase Alternating Line – a color encoding system based on 50Hz
35. PTZ: Pan/Tilt/Zoom
36. PoE: Power over Ethernet (IEEE 802.3af/at) standard for providing power over network cable
37. Progressive scan: An image scanning technology which scans the entire picture
38. QoS: Quality of Service
39. RAID: Redundant Array of Independent Disks
40. SDK – Software Development Kit
41. SIP: Session Initiation Protocol
42. SMA – Software Maintenance Agreement
43. SMPTE: Society of Motion Picture and Television Engineers
44. SMTP: Simple Mail Transfer Protocol
45. SNMP: Simple Network Management Protocol
46. SSL: Secure Sockets Layer

47. SSM – Server Software Module

48. SaaS: Software as a Service

49. TCP: Transmission Control Protocol

50. TLS: Transport Layer Security

51. UI – User Interface

52. UPS: Uninterruptible Power Supply

53. UPnP: Universal Plug and Play

54. USP – Unified Security Platform

55. USW – Unified Web Client

56. Unicast: Communication between a single sender and single receiver on a network

57. VBR: Variable Bit Rate

58. VMS – Video Management System

59. VMS: Video Management System

60. WDR: Wide dynamic range

1.7 LABELING AND DOCUMENTATION

A. Label the finished installation. Label each cable at each end uniquely using a Brady or similar cable labeling system.

B. Document the camera locations on a floor plan using CAD. Assign each camera a unique ID identical with those applied at the NVR and use this identification on the floor plans. Indicate the head end rack location and the major wiring runs. Provide a single-line diagram of the installed system. Submit PDF copies of the as built drawing documentation. In addition submit electronic copies of the CAD files for the Owner's use. Submit electronic files on a media type determined by the Owner.

C. Prepare and provide a hard copy and an electronic copy of an O&M manual for for the completed installation. Hard copy to be provided in a three ring binder. The electronic copy to be submitted on a PDF on a media determined by the Owner's Representative.

1.8 TRAINING

A. Train the Owner's Representatives in operation of the installed video management system provide at least two hours classroom type training in the theory and operation of the VMS system and provide up to eight hours support for the initial systems operator during first use. Document the training using a camera and video recorder and provide a copy of the recorded training to the Owner for future reference and use in training new staff.

1.9 QUALITY ASSURANCE

A. Test Equipment - provide for the purposes of quality assurance as described in Section 28 05 00 - Common Work Results for Electronic Safety and Security.

1. Network Packet Analyzer: (Fluke, Wireshark)

2. Waveform/Vector Monitor.

3. Portable High Resolution Color Picture Monitor (Marshall Electronics, ToteVision or equal).

PART 2 - PRODUCTS

2.1 VIDEO SURVEILLANCE EQUIPMENT

A. General:

1. All equipment and materials used shall be standard components that are regularly manufactured and used in the manufacturer’s CCTV system.

2. All systems and components shall have been thoroughly tested and proven in production use for at least 60 days prior to the installation of this system.

3. All CCTV active systems components shall be provided with the availability of a toll free, 24-hour technical assistance program from the manufacturer, which provides immediate technical assistance to the end user at no charge. Where supplied systems are only supported through dealer liaison with manufacturer, and the Owner’s Representative needs to speak with the VMS manufacturer during Contractor troubleshooting of integration, Contractor to initiate call under VMS SMA expanded through work of Project on Owner's behalf.

2.2 VIDEO MANAGEMENT SYSTEM

A. Video Management System

1. Spec Reference(s): VMS, Storage Server, TBackup

2. Minimum Features/Function/Construction:

    a. VMS General Requirements

        1) The VMS shall be based on a true open architecture that shall allow the use of non-proprietary workstation and server hardware, non-proprietary network infrastructure and non-proprietary storage.

        2) The VMS shall offer a complete and scalable video surveillance solution that shall allow cameras to be added on a unit-by-unit basis.

        3) The VMS shall interface with analog-to-digital video encoders and IP cameras and with digital-to-analog video decoders, hereafter referred to as digital video servers (DVS). The VMS shall support DVS from various manufacturers.

        4) The VMS shall integrate DVS using the DVS native SDK or using the following industry standards to interface to the DVS:

            a) ONVIF

        5) All video streams supplied from analog cameras or IP cameras shall be digitally encoded in MPEG-4, MPEG-2, MJPEG, H.264, Wavelet, or JPEG2000 compression formats and recorded simultaneously in real time.

        6) All audio streams supplied from IP video servers shall be digitally encoded in g711 (u-law), g721, g723, or AAC compression formats and recorded simultaneously in real time.

        7) Each camera's bit rate, frame rate, and resolution shall be set independently from other cameras in the system, and altering these settings shall not affect the recording and display settings of other cameras.

        8) The VMS shall be able to use multiple CCTV keyboards to operate the entire set of cameras throughout the system, including brands of cameras from various manufacturers and including their PTZ functionalities (i.e.: Pelco keyboard controls Panasonic dome or vice-versa).

        9) The VMS shall be able to retrieve and set the current position of PTZ cameras using XYZ coordinates.

        10) The VMS shall support PTZ camera protocols from multiple manufacturers, including analog and IP protocols.

11) The VMS shall arbitrate the user conflict on PTZ usage based on user levels per camera.

12) The VMS shall support the following list of CCTV keyboard protocols:

    a) American Dynamics 2078 ASCII, and American Dynamics 2088 ASCII

    b) Bosch Autodome, Bosch Intuikey.

    c) DVTel.

    d) GE ImpactNet.

    e) Panasonic, Pelco ASCII, Pelco KBD-300, and Pelco P.

    f) Radionics.

    g) Samsung SSC-1000.

    h) Video alarm.

13) The VMS shall support the following list of joysticks and control keyboards:

    a) Axis 295.

    b) Axis T8310 Video Surveillance Control Board.

    c) Panasonic WV-CU950 Ethernet keyboard.

    d) Any USB joystick detected as a Windows Game Controller.

14) The VMS shall allow for the configuration of a time zone for each camera connected to a DVS. For playback review, users shall have the ability to search for video based on the following options:

    a) Local time of the camera.

    b) Local time of the SSM.

    c) Local time of user's workstation.

    d) GMT Time.

    e) Other time zone.

15) Audio and Video storage configuration for the SSM shall either be:

    a) Internal or external IDE/SATA/SAS organized or not in a RAID configuration.

b) Internal or external SCSI/iSCSI/Fiber Channel organized or not in a RAID configuration.

c) Within the overall storage system, it shall be possible to include disks located on:

i) External PCs on a LAN or WAN.

ii) Network Attached Servers (NAS) on a LAN or WAN.

iii) Storage Area Networks (SAN).

16) The SSM shall not limit the actual storage capacity configured per server.

b. Cyber Security Requirements

1) The USP shall be an IP enabled solution. All communication between the SSM and CSA shall be based on standard TCP/IP protocol and shall use TLS encryption with digital certificates to secure the communication channel.

2) The USP shall support user authentication with claims-based authentication using external providers. External providers shall include:

a) ADFS (Active Directory Federation Services)

3) The USP shall limit the IP ports in use and shall provide the Administrator with the ability to configure these ports.

4) The VMS shall support only secured media stream requests, unless explicitly configured otherwise. Secured media stream requests shall be secured with strong certificate based authentication leveraging RTSPS (aka RTSP over TLS). Client authentication for media stream requests is claims-based and may use a limited lifetime security token.

5) The VMS shall offer the ability to encrypt the media stream, including video, audio, and metadata with authenticated encryption. Media stream encryption shall be done at rest and in transit and be a certificate based AES 128b bits encryption. The VMS shall:

a) Allow encryption to be set on a per camera basis for all or some of the cameras.

b) Provide up to 20 different certificates for different groups of CSA or users who have been granted access to decrypted streams.

c) Not decrease the recording performance by more than 50% when encryption is enabled.

d) Use Secure RTP (SRTP) to encrypt the payload of a media stream in transit and allow multicast and unicast of the encrypted stream.

e) Use a random encryption key and change periodically.

f) Allow encrypted streams to be exported.

6) The VMS shall support end to end encrypted streams with cameras supporting Secure RTP (SRTP) both in unicast and multicast from the camera.

c. Failover and Standby Requirements

1) The USP shall support native and off-the-shelf failover options.

2) Failover Directory

a) The Standby Directory shall act as a replacement SSM on hot standby, ready to take over as the acting Directory in case the primary Directory fails. The failover shall occur in less than 1 minute. No action from the user shall be required.

b) The USP shall support up to five (5) Directories on standby, lined up to take over as the acting Directory in a cascading fashion.

c) The Standby Directory shall keep its configuration database synchronized with the primary Directory.

d) The Standby Directory shall support disaster recovery scenarios where a server can be located in another geographic area (or building) and only take over if all other Directories become offline.

e) The Standby Directory shall support synchronization of the configuration databases using a backup and restore mechanism. The synchronization period shall be configurable from 15 minutes to 1 week.

f) The Standby Directory shall support real-time synchronization of the configuration databases using SQL Mirroring or SQL Always On.

3) Standby Archiver. As specified elsewhere in this Section.

d. Archiving

1) The Archiver (role) shall use an event and timestamp database for the advanced search of audio/video archives. This database shall use Microsoft SQL.

2) The Archiver shall protect archived audio/video files and the system database against network access and non-administrative user access.

3) The Archiver shall digitally sign recorded video using 248-bit RSA public/private key cryptography.

4) The Archiver shall offer a plug and play type hardware discovery service with the following functionalities:

   a) Automatically discover DVS units as they are attached to the network.

   b) Discover DVS units on different network segments, including the Internet, and across routers with or without network address translation (NAT) capabilities.

5) The Archiver shall have the capacity to configure the key frame interval (I-frame) in seconds or number of frames.

6) The Archiver shall provide a pre-alarm and post-alarm recording option that can be set between one second and 5 minutes on a per camera basis.

7) The Archiver shall provide the functionality of storing of video and audio streams based on triggering events, such as:

   a) Digital motion detection.

   b) Digital input activation.

   c) Macros.

   d) Through SDK application recording.

8) The Archiver shall perform video motion detection on each individual camera based on a grid of 1320 motion detection blocks. All of the video motion detection settings are configurable on schedule. A global sensitivity threshold is available to reduce motion detection sensitivity when the video signal is noisy or when a lot of false hits are incurred. Video motion detection itself can be set into four different modes:

   a) Full Screen: All 1320 blocks on screen are activated, and a general threshold for the overall motion in the entire image can be set, and when it is reached, it can trigger recording and a motion event or a custom event.

   b) Full Screen Unit: This is the same as the Full Screen but the motion detection takes place in the DVS.

c) Detection Zone: Six overlapping zones can be defined in the 1320 blocks on screen with each of these zones having its own threshold, and, when that threshold is reached, each one of them can trigger recording and a motion event or a custom event. Each zone triggering its own event allows for the configuration of directional motion detection events and other complex motion detection logic.

d) Detection Zone Unit: This is the same as the Detection Zone, but the motion detection takes place in the DVS and only one zone is supported.

e) Disabled: No motion detection is performed on this camera.

9) The Archiver shall be able to detect motion in video within 200 milliseconds and not only on key frames.

10) The Archiver shall allow for multiple recording schedules to be assigned to a single camera. Each schedule shall be created with the following parameters:

a) Recording mode:

i) Continuous.

ii) On Motion/Manual.

iii) Manual.

iv) Disabled.

b) Recurrence pattern:

i) Once on specific days.

ii) Specific days on a yearly basis.

iii) Specific days on a monthly basis.

iv) Specific days on a weekly basis.

v) Daily.

11) Time coverage:

i) All day.

ii) Specific time range(s).

iii) Daytime or nighttime based on the times of sunrise and sunset that are automatically calculated from the time of year and a geographical location. Provision shall be given to offset the calculated sunrise or sunset time by plus or minus 3 hours.

12) The Archiver shall allow each camera (video source) to be encoded multiple times in the same or different video formats (MPEG-4, MPEG-2, MJPEG, H.264, H.265, Wavelet or JPEG2000), limited only by the capabilities of each DVS.

13) Whenever multiple video streams are available from the same camera, users shall be free to use any one of them based on their assigned usage. The standard video stream usages are:

    a) Live.

    b) Recording.

    c) Remote.

    d) Low resolution.

    e) High resolution.

14) The Archiver shall allow the video quality to vary according to predefined schedules. Such schedules shall have the same configuration flexibility as the recording schedules mentioned earlier. The video quality shall be based on, but not limited to, the following parameters:

    a) Maximum bit rate.

    b) Maximum frame rate.

    c) Image quality.

    d) Key frame interval.

15) The Archiver shall have the ability to dynamically boost the quality of the "recording stream" (see previous bullet) based on specific events:

    a) When recording is started manually by a user.

    b) When recording is triggered by a macro, an alarm or detected motion.

16) The Archiver shall have the capacity to communicate with the DVS using 128 bits SSL encryption.

17) The Archiver shall have the capacity to communicate with the DVS using HTTPS secure protocol.

18) The Archiver shall have the capacity to receive multicast UDP streams directly from the DVS.

19) For network topologies that restrict the DVS from sending multicast UDP streams, the Archiver shall redirect audio/video streams to active viewing clients on the network using multicast UDP.

20) The Archiver shall have the capacity to redirect audio/video streams to active viewing clients on the network using unicast UDP or TCP.

21) The Archiver shall empower the administrator with a full range of disk management options:

    a) The Archiver shall allow the administrator to choose which disks to use for archiving and to set a maximum quota for each.

    b) The Archiver shall allow the administrator to spread the archiving of different cameras on different disk groups (groups of disks controlled by the same controller) so that archiving could be carried out in parallel on multiple disks.

    c) The Archiver shall have the capacity to move video archives to the Azure Cloud. The archives will be moved after a preset number of days.

22) The Archiver shall offer the following options to clean up old archives, on a camera by camera basis:

    a) After a preset number of days.

    b) Deleting oldest archives first when disks run out of space.

    c) Stop archiving when disks are full.

23) The Archiver shall allow important video sequences to be protected against normal disk cleanup routines.

24) Users shall have the following options when protecting a video sequence:

    a) Until a specified date.

    b) For a specified number of days.

    c) Indefinitely (until the protection is explicitly removed).

25) The Archiver shall allow the administrator to put a cap on the percentage of storage space occupied by protected video.

26) The Archiver shall keep a log and compile statistics on disk space usage.

    a) The statistics shall be available by disk group or for the whole Archiver.

    b) The statistics shall show the percentage of protected video over the total used disk space.

27) The Archiver shall have the capacity to down-sample video streams for storage saving purposes. The down-sampling options available are the following:

    a) For H.264, MPEG-4, and H.265, streams the down-sampling options are: all key frames, 1 fps, 2 sec./frame, 5 sec./frame, 10 sec./frame, 15 sec./frame, 30 sec./frame, 60 sec./frame, 120 sec./frame.

    b) For MJPEG streams the down-sampling options are: 15 fps, 10 fps, 5 fps, 2 fps, 1 fps, 2 sec./frame, 5 sec./frame, 10 sec./frame, 15 sec./frame, 30 sec./frame, 60 sec./frame, 120 sec./frame.

28) The Archiver shall support DVS with edge recording capabilities and offer the following capacity:

    a) The ability to playback the video recorded on the DVS at different speeds.

    b) The ability to offload (video trickling) the video recorded on the DVS on schedule, on event, or manually to store it on the Archiver.

    c) It shall be possible to filter the video that is being offloaded using one or multiple of the following filters:

        i) Time interval.

        ii) Playback request.

        iii) Video analytic events.

        iv) Motion events.

        v) Bookmarks.

        vi) Alarms.

        vii) Input pin events.

29) Unit offline events. The Archiver shall be provided with proven performance and scalability figures:

a) The Archiver's performance shall be guaranteed during the rebuild of a disk from a raid 5 disk group. The rebuild process shall not affect the recording and playback capabilities.

b) The recommended server specification from the VMS manufacturer's Hardware Requirement shall allow Archiver to perform up to 300 cameras or 300Mbs throughput first limit reached.

c) The high-performance archiver specification from the VMS manufacturer's Hardware Requirement shall allow Archiver to perform:

i) Up to 500 cameras or 500Mbs throughput first limit reached with a 1Gbs NIC.

ii) Up to 700 cameras or 1300Mbs throughput first limit reached with a 10Gbs NIC.

30) The Archiver shall provide the ability to encrypt the media stream coming from the DVS including the video, audio and metadata

a) Media encryption shall be optional and can be activated on a per DVS basis.

b) Media encryption shall be performed with AES-128.

c) Media encryption shall encrypt all video, audio and metadata at rest and in transit. Once media encryption is turned on for a DVS all media stored or redirected by the Archiver shall be encrypted and shall require the private key to be decoded.

d) It shall be possible to export the encrypted media into a non-encrypted ASF file.

e. Auxiliary Archiver

1) The Auxiliary Archiver shall be used to produce redundant archives (video, events, or bookmarks) for any camera in the system, on a case by case basis.

2) The Auxiliary Archiver shall have the ability to record a camera on a different schedule than the Archiver.

3) The Auxiliary Archiver shall have the ability to archive any of the standard video streams for archiving. The standard video stream usages are: Live, Recording, Remote, Low Resolution, and High Resolution.

4) The Auxiliary archiver shall have the capacity to move video archives to the Azure Cloud.

f. Standby Archiver

1) The Standby Archiver shall act as a replacement Archiver role on hot standby, ready to take over the functions of the primary Archiver role. The failover will occur in less than 1 minute. No action from the user will be required.

2) The Standby Archiver assigned to an Archiver role entity shall automatically provide protection for all DVS connected to that Archiver role.

3) The Standby Archiver shall protect the primary Archiver role against the following failures:

a) Server failure (hardware or software).

b) Storage failure, such as Archiver Role detects that it cannot read or write to any of its allocated disks.

4) It shall be possible for a single USP server to act as the standby server of multiple Archiver roles.

a) Each Archiver role shall have priority value if multiple Archiver Roles fail at the same time on the same standby server.

5) It shall be possible for any Archiver role in the system to be designated as another's standby and vice-versa.

6) For each Archiver role it shall be possible to set up to 2 standby archiver so that if the first failover Archiver fails the failover will automatically occur to a third server.

7) The Standby Archiver shall have the ability to act as a Redundant Archiver.

8) It shall be possible to set a different retention period for the Archiver and the Redundant Archiver.

9) The Redundant Archiver shall maintain an exact copy of everything recorded by the default Archiver, i.e. audio/video archives, events, and bookmarks.

10) Redundancy shall be configured on a camera by camera basis.

11) The Redundant Archiver shall have to ability to use a multicast video stream from the DVS and shall not require an additional connection to any DVS.

g. Cloud Archiving

1) The VMS shall support the automatic transfer of video recorded on the Archiver to the cloud, based on the age of the video.

2) The Archiver shall encrypt recordings using AES-256 prior to transferring video to the cloud and maintain encryption keys local to the user's system.

3) The VMS shall support TLS encryption between the on-premises Archiver and the cloud.

4) The VMS shall allow users to search video stored in the cloud through the same functionality used when querying video that is stored locally.

5) The VMS will maintain a local cache of video downloaded from the cloud, in order to playback recordings without requiring an additional transfer.

h. VMS Media Streaming

1) The Media Router Role shall be responsible for routing video and audio streams across local and wide area networks from the source (e.g. DVS) to the destination (e.g. CSA).

2) The Media Router Role shall support multiple transport protocols, such as unicast TCP, unicast UDP, and multicast UDP.

3) The Media Router shall support IGMP (Internet Group Management Protocol) to establish multicast group memberships:

a) IGMP v3, including SSM (Source-Specific Multicast) shall be supported.

4) The Media Router Role using Redirector Agents shall be responsible for redirecting a stream from a source IP endpoint to a destination IP endpoint.

5) The Redirector Agents shall be capable of converting a stream from and to any supported transport protocols:

a) Multicast UDP to Unicast TCP.

b) Multicast UDP to Unicast UDP.

c) Unicast TCP to Multicast UDP.

d) Unicast UDP to Multicast UDP.

6) It shall be possible to limit the number of concurrent live and playback video redirections for each Redirector Agent in order to better control the bandwidth across multiple sites.

7) It shall be possible to protect the Media Router Role against hardware or software unavailability by configuring another Media Router Role to act as a hot standby server.

8) Multiple Redirector Agents shall be used on a large VMS installation to increase the service availability and to provide automatic load balancing.

i. VMS Video Archives Transfer capabilities

1) Archive transfer shall provide the ability to:

a) Transfer video from a server to another server in the same system.

b) Transfer video from a federated server to another server.

c) Transfer video from camera storage to a server.

2) It shall be possible to program video transfers either on a recurrent schedule, or to trigger them manually or upon connection.

3) It shall be possible to filter the video of interest for a transfer. The video of interest shall be defined with the following filters:

a) All archives when the camera was offline.

b) Alarms.

c) Playback request from the edge.

d) Video analytics events.

e) Motion events.

f) Bookmarks.

g) Input triggers.

h) Time range.

4) It shall be possible to define the length of video before and after the event used as a filter to determine the video of interest.

5) The USP shall offer an interface for displaying all video archive transfer requests. This interface shall display all the current, requested and scheduled video transfer requests. It shall be possible to edit, trigger, and cancel video archive transfers from this interface.

j. General Client Software Requirements

1) The Client Software Applications (CSA) shall provide the user interface for USP configuration and monitoring over any network and be accessible locally or from a remote connection.

2) The CSA shall consist of the Configuration UI for system configuration and the Monitoring UI for monitoring. The CSA shall be Windows-based and provide an easy-to-use graphical user interface (UI).

3) The CSA for monitoring shall support running in 64-bit mode.

4) The Server Administrator shall be used to configure the server database(s). It shall be web-based and accessible locally on the SSM or across the network.

5) The CSA shall seamlessly merge access control, license plate recognition (ALPR), and video functionalities within the same user application.

6) The USP shall use the latest user interface (UI) development and programming technologies such as Microsoft WPF (Windows Presentation Foundation), the XAML markup language, and the .NET software framework.

7) All applications shall provide an authentication mechanism, which verifies the validity of the user. As such, the administrator (who has all rights and privileges) can define specific access rights and privileges for each user in the system.

8) Logging on to a CSA shall be done either through locally stored USP user accounts and passwords or using the operators Windows credentials when Active Directory integration is enabled.

9) When integrated with Microsoft's Active Directory, the CSA and USP shall authenticate users using their Windows credentials. As a result, the USP will benefit from Active Directory password authentication and strong security features.

10) The CSA shall support multiple languages, including but not limited to the following: English, French, Arabic, Czech, Dutch, German, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Persian (Farsi), Polish, Portuguese (Brazilian), Simplified and Traditional Chinese, Russian, Spanish, Swedish, Thai, Turkish and Vietnamese.

11) To enhance usability and operator efficiency, the Configuration UI and Monitoring UI shall support many of the latest UI such as:

    a) A customizable Home Page that includes favorite and recently used tasks.

    b) Task-oriented approach for administrator/operator activities where each type of activity (surveillance, visitor management, individual reports, and more) is an operator task.

    c) Consolidated and consistent workflows for video, ALPR, and access control.

    d) Single click functionality for reporting and tracking. The Monitoring UI shall support both single-click reporting for access control, ALPR, and video, as well as single-click tracking of areas, cameras, doors, zones, cardholders, elevators, ALPR entities, and more. Single-click reporting or tracking shall create a new task with the selected entities to report on or track.

12) Configuration UI and Monitoring UI Home Page and Tasks

    a) The Configuration UI and Monitoring UI shall be task-oriented.

    b) A task shall be user interface design patterns whose goal is to simplify the user interface by grouping related features from different systems such as video and access, in the same display window. Features shall be grouped together in a task based on their shared ability to help the user perform a specific task.

    c) Tasks shall be accessible via the Home Page of either the Configuration or the Surveillance CSA.

    d) Newly created tasks shall be accessible via the Configuration UI or the Monitoring UI taskbar.

    e) Similar tasks shall be grouped into the following categories:

        i) Operation: Access control management, LRP management, and more.

ii) Investigation: Video bookmark/motion/archive reports, access control activity reports, visitor activity reports, alarm reports, ALPR activity reports, and more.

iii) Maintenance: Access control and video configuration reports, troubleshooters, audit trails, health-related reports, and more.

f) An operator shall be able to launch a specific task only if he or she has the appropriate privileges.

g) The Home Page content shall be customizable through the use of privileges to hide tasks that an operator should not have access to and through a list of favorite and recently used tasks. In addition, editing a USP XML file to add new tasks on the fly shall also be possible.

13) The Contractor shall provide licensing to support up to 15 simultaneous Clients.

k. Configuration User Interface (UI)

1) General

a) The Configuration UI application shall allow the administrator or users with appropriate privileges to change the system configuration. The Configuration UI shall provide decentralized configuration and administration of the USP system from anywhere on the IP network.

b) The configuration of all embedded ACS, VMS, and ALPR systems shall be accessible via the Configuration UI.

c) The Configuration UI shall have a home page with single-click access to various tasks.

d) The Configuration UI shall include a variety of tools such as troubleshooting utilities, import tools, and a unit discover tool, amongst many more.

e) The Configuration UI shall include a static reporting interface to:

i) View historical events based on entity activity. The user shall be able to perform such actions as printing a report and troubleshooting a specific access event from the reporting view.

ii) View audit trails that show a history of user/administrator changes to an entity.

f) Common entities such as users, schedules, alarms and many more, can be reused by all embedded systems (ACS, VMS, and ALPR).

2) Video management system

a) The Configuration UI shall allow the administrator or users with appropriate privileges to change video configuration.

b) The Configuration UI shall provide the ability to change video quality, bandwidth, and frame rate parameters on a per camera (stream) basis for both live and recorded video.

c) The Configuration UI shall provide the ability to change video quality by a selection of predefined video quality template.

d) The Configuration UI shall provide the ability to configure brightness, contrast, and hue settings for each camera on the same DVS.

e) The Configuration UI shall provide the capability to enable audio recording on DVS units that support audio.

f) The Configuration UI shall provide the ability to change the audio parameters, serial port and I/O configuration of individual DVS units.

g) The Configuration UI shall provide the capability to rename all DVS units based on system topology and to add descriptive information to each DVS.

h) The Configuration UI shall provide the ability to set recording schedules and modes for each individual camera. The recording mode can be:

i) Continuous.

ii) On motion and Manual.

iii) Manual only.

iv) Disabled.

i) The Configuration UI shall support the creation of schedules to which any of the following functional aspects can be attached:

i) Video quality (for each video stream per camera).

ii) Recording (for each camera).

iii) Motion detection (for each detection zone per camera).

iv) Brightness, Contrast, and Hue (for each camera)

v) Camera sequence execution

j) The Configuration UI shall support the creation of unlimited recording schedules and the assigning of any camera to any schedule.

k) The Configuration UI shall detect and warn user of any conflict within assigned schedules.

l) The Configuration UI shall provide the capability to set a PTZ protocol to a specific DVS serial port and shall allow mixing domes of various manufacturers within a system.

m) User shall have the ability to configure a return to home function after a predefined time of inactivity for PTZ cameras. This period of inactivity time shall be configurable from 1 to 7200 seconds.

l. VMS Client User Interface (UI)

1) The Monitoring UI shall fulfill the role of a Unified Security Interface that is able to monitor video, ALPR, and access control events and alarms, as well as view live and recorded video.

2) The Monitoring UI shall provide a graphical user interface to control and monitor the USP over any IP network. It shall allow administrators and operators with appropriate privileges to monitor their unified security platform, run reports, and manage alarms.

3) To enhance usability and operator efficiency, the Monitoring UI shall support the following UI concepts:

a) Dynamically adaptive interface that adjusts in real-time to what the operator is doing.

b) A dynamic dashboard loaded with entity-specific widgets (e.g. door and camera widgets).

c) Use of transparent overlays that can display multiple types of data in a seamless fashion.

d) Display tile menus and quick commands.

e) Consolidated and consistent workflows.

f) Tile menus and quick commands easily accessible within every display tile of the user workspace.

g) Single click functionality for reporting and tracking. The Monitoring UI shall support both single-click reporting for access control, ALPR, and video, as well as single-click tracking of areas, cameras, doors, zones, cardholders, elevators, ALPR entities, and more. Single-click reporting or tracking shall create a new task with the selected entities to report on or to track.

4) Monitoring UI Home Page and Tasks

a) Similar tasks shall be grouped into the following categories:

i) Operation: Access control/LRP/video surveillance, visitor management, mustering, access control and video alarm monitoring, and more.

ii) Investigation: Video bookmark/motion/archive reports, access control activity reports, visitor activity reports, alarm reports, ALPR activity reports, and more.

iii) Maintenance: Access control and video configuration reports, troubleshooters, audit trails, and more.

5) Dynamically Adaptive UI, Dashboard, and Widgets

a) The Monitoring UI shall dynamically adapt to what the operator is doing. This shall be accomplished through the concept of widgets that are grouped in the Monitoring UI dashboard.

b) Widgets shall be mini-applications or mini-groupings in the Monitoring UI dashboard that let the operator perform common tasks and provide them with fast access to information and actions.

c) With a single click on an entity (e.g. door or camera) the specific widgets associated to that entity appear and other non-relevant widgets disappear dynamically (instantly). Widgets shall bring the operator information such as door status and camera stream information, as well as user actions, such as door unlock, PTZ controls, and more.

d) Specific widgets include those for a door, camera, alarm, zone, display tile, video stream (statistics), PTZ camera, and more.

6) Operator Workflows

a) A workflow shall be a sequence of operations an operator or administrator shall execute to complete an activity. The “flow” relates to a clearly defined timeline or sequence for executing the activity.

b) The Monitoring UI shall be equipped with consistent workflows for the ALPR, video, and access control systems that it unifies.

c) Generating or printing a report, setting up or acknowledging an alarm, or creating an incident report shall follow the same process (workflow) whether the operator is working with video, ALPR, or access control, or with both video and access control.

7) Each task within the Monitoring UI shall consist of one or more of the following items:

a) Event list.

b) Logical tree. Doors, cameras, zones, ALPR units, and elevators shall be grouped under Areas in a hierarchical fashion.

c) Entities list of all entities being tracked.

d) Display tiles with various patterns (1 x 1, 2 x 2, and more).

e) Display tile menu with various commands related to cameras, doors, PTZ, and tile controls.

f) Dashboard with widgets.

8) The Monitoring UI shall support multiple event lists and display tile patterns, including:

a) Event/alarm list layout only

b) Display tile layout only

c) Display tile and alarm/event list combination

d) ALPR map and alarm/event list combination

9) User workspace customization

a) The user shall have full control over the user workspace through a variety of user-selectable customization options. Administrators shall also be able to limit what users and operators can modify in their workspace through privileges.

b) Once customized, the user shall be able to save his or her workspace.

c) The user workspace shall be accessible by a specific user from any client application on the network.

d) Display tile patterns shall be customizable.

e) Event or alarm lists shall span anywhere from a portion of the screen up to the entire screen and shall be resizable by the user. The length of event or alarm lists shall be user-defined. Scroll bars shall enable the user to navigate through lengthy lists of events and alarms.

f) The Monitoring UI shall support multiple display tile patterns (e.g. 1 display tile (1x1 matrix), 16 tiles (8x8 matrix), and multiple additional variations).

g) The Monitoring UI shall support as many monitors as the PC video adapters and Windows Operating System are capable of accepting.

h) Additional customization options include: show/hide window panes, show/hide menus/toolbars, show/hide overlaid information on video, resize different window panes, and choice of tile display pattern on a per task basis.

10) The Monitoring UI shall provide an interface to support the following tasks and activities common to access control, ALPR, and video:

a) Monitoring the events from a live security system (ACS and/or VMS and/or ALPR).

b) Generating reports, including custom reports.

c) Monitoring and acknowledging alarms.

d) Creating and editing incidents and generating incident reports.

e) Displaying dynamic graphical maps and floor plans as well as executing actions from dynamic graphical maps and floor plans.

f) Management and execution of hot actions and macros.

11) The Monitoring UI shall be able to monitor the activity of the following entities in real-time: areas, ALPR entities, doors, elevators, cameras, cardholders, cardholder groups, zones (input points), and more.

12) The Monitoring UI shall include advanced video capabilities, including:

a) Advanced live video viewing functionality.

b) Advanced archive playing and video playback functionality.

c) Monitoring and management of video system events and alarms.

d) Intercom or duplex audio.

e) Generation of video reports.

f) Control of PTZ cameras.

g) Creating and monitoring archive transfer requests.

h) Display metadata overlaid on live or playback video.

13) The Monitoring UI shall leverage the Graphical Processing Unit (GPU) for video decoding.

a) The following GPU technologies shall be supported:

i) NVidia CUDA

ii) Intel Quick Sync

b) The Monitoring UI shall have the ability to decode video through the optimal simultaneous use of the GPU and Computer Processing Units (CPU).

14) The live video viewing capabilities of the Monitoring UI shall include:

a) The ability to display all cameras attached to the USP and all cameras attached to federated systems.

b) Support for live video monitoring on each and every display tile within a task in the user's workspace.

c) The USP shall support uninterrupted video streaming. The CSA shall keep existing video connections active in the event that an SSM (except Archiver) becomes unavailable.

d) The ability to drag and drop a camera into a display tile for live viewing.

e) The ability to drag and drop a camera into a display tile for live viewing on an analog monitor connected to an IP hardware decoder (converting an IP encoded stream into an analog video signal).

f) The ability to drag and drop a camera from a map into a display tile for live viewing.

g) Support for digital zoom on live camera video streams.

h) The ability for audio communication with video units with audio input and output.

i) The ability to control pan-tilt-zoom, iris, focus, and presets.

j) The ability to bookmark important events for later retrieval on any archiving camera and to uniquely name each bookmark in order to facilitate future searches.

k) The ability to start/stop recording on any camera in the system that is configured to allow manual recording by clicking on a single button.

l) The ability to activate or de-activate viewing of all system events as they occur.

m) The ability to switch to instant replay of the video for any archiving camera with the simple click of button.

n) The ability to take snapshots of live video and be able to save or print the snapshots.

o) The ability to view the same camera multiple times in different tiles.

15) The video playback (archive playing) capabilities of the Monitoring UI shall include:

a) Support for audio and video playback for any time span.

b) Support for video playback on each and every display tile.

c) The ability to instantly replay the video for any archiving camera with the simple click of a button.

d) The ability to select between instant synch of all video streams in playback mode, allowing operators to view events from multiple angles or across several camera fields, or non-synchronous playback.

e) The ability to simultaneously view the same camera in multiple tiles at different time intervals.

f) The ability to control playback with:

i) Pause.

ii) Lock Speed.

iii) Forward and Reverse Playback at: 1x, 2x, 4x, 6x, 8x, 10x, 20x, 40x, 100x.

iv) Forward and Reverse Playback frame by frame.

v) Slow Forward and Reverse Playback at: 1/8x, 1/4x, 1/3x, 1/2x.

vi) Loop playback between two time markers.

g) The ability to display a single timeline or one timeline for each selected video stream, which would allow the operator to navigate through the video sequence by simply clicking on any point in the timeline.

h) The ability to display the level of motion at any point on a timeline.

i) The ability to clearly display bookmarked events on the timeline(s).

j) The ability to query archived video using various search criteria, including, but not limited to, time, date, camera, and area.

k) The tool necessary for searching video and associated audio based on user-defined events or motion parameters.

l) The ability to define an area of the video field in which to search for motion as well as define the amount of motion that will trigger search results. The Monitoring UI shall then retrieve all archived video streams that contain motion that meets the search parameters. There shall be a graphical timeline on which the time of each search hit shall be indicated.

m) The ability to browse through a list of all bookmarks created on the system and select any bookmarked event for viewing.

n) The ability to add bookmarks to previously archived video for easier searching and retrieval.

o) Support for digital zoom on playback video streams.

p) Still image export to PNG, JPEG, GIF, and BMP format with Date and Time stamp, and Camera Name on the image (snapshot).

q) Tools for exporting video and a self-contained video player on various media such as USB keys or CD/DVD-ROM. This video player shall be easy to use without training and shall still support reviewing video metadata, such as bookmark, or navigating the video with functions like panoramic camera view dewarping.

r) Tools for exporting video sequences in standard video formats, such as ASF.

s) The ability to encrypt exported video files.

t) The ability for an operator to load previously exported video files from their computer or network.

u) The ability for queries to be saved upon closing the CSA and reappear when the application is reopened.

v) The ability to dynamically block, on demand, video stream dynamically to lower level users to prevent access, for a specific time, to live and recorded video.

w) A tool building and exporting a set of videos into a single container. This tool shall allow the operator to build sequences of video to create a storyboard and allow the export of synchronous cameras.

x) The ability to store the video export and still image export at a pre-defined storage location.

y) An interface with the ability to list, search, and manipulate previously generated video exports.

z) The ability to export sequences of video in open standards including ASF and MP4

16) The Monitoring UI shall provide an interface to support the following ALPR tasks and capabilities:

a) Monitoring and management of ALPR events and alarms.

b) Viewing of license plate picture(s) and context images.

c) Viewing of license plate data (e.g. license plate reads)

d) Verification of ALPR data against live and recorded video.

17) Entity Monitoring

a) The USP shall permit the user to select multiple entities to monitor from the Monitoring UI by adding the entities one by one to the tracking list.

b) The Monitoring UI shall provide the option to filter which events shall be displayed in the display tile layout and/or event list layout.

c) It shall be possible to lock a Monitoring UI display tile so that it only tracks the activity of a specific entity (e.g. specific door or camera).

d) The user shall be able to drag and drop an event from an event list (or an alarm from an alarm list) onto a display tile to view a license plate read, cardholder picture ID, badge ID, or live/archived video, among other options.

e) Event, alarm, monitoring/tracking, and report lists shall contain cardholder pictures where applicable.

f) The user shall be permitted to start or pause the viewing of events within each display tile.

18) Display Tile Packing and Unpacking

a) The Monitoring UI shall support single-click unpacking and packing for ALPR hits, ALPR reads, areas, doors, zones, camera sequences, and alarms.

b) The packing and unpacking of entities shall allow operators to quickly obtain additional information and camera views of a specific entity.

c) The unpacking of an entity shall display associated entities. For example, unpacking a door with multiple associated cameras shall display all cameras associated with that door. Unpacking shall reconfigure the display tiles to be able to display all associated entities. For example, unpacking a door (or a zone or alarm) that is currently in a 1 x 1 tile configuration and that has 3 cameras tied to it will create a 1 x 3 display tile arrangement for viewing all associated entities.

d) Packing will return the display to the original tile pattern.

19) Visual Tracking

a) The Monitoring UI shall support the ability to manually track a moving target with the single click of a button.

b) The ability to switch from one camera view to an adjacent camera shall be done within a single display tile.

c) Switching between camera streams shall be accomplished by simply clicking on a semi-transparent shape or overlay.

d) Visual tracking shall be available with both live and recorded video.

m. Server Administrator User Interface Requirements

1) The Server Administrator shall be used to configure the SSM and the Directory Role (main configuration) and its database(s), to apply the license, and more.

2) The Server Administrator shall be a web-based application. Through the Server Administrator, it shall be possible to access the SSM across the network or locally on the server.

3) Access to the Server Administrator shall be protected via login name, password, and encrypted communications.

4) The Server Administrator shall allow the administrator (user) to perform the following functions:

   a) Manage the system license.

   b) Configure the database(s) and database server for the Directory Role,

   c) Activate/Deactivate the Directory Role.

   d) Manually back up the Directory Role database(s) and/or restore the server database(s), as well as configure scheduled backups of the databases.

   e) Define the client-to-server communications security settings.

   f) Configure the network communications hardware, including connection addresses and ports.

   g) Configure system SMTP settings (mail server and port).

   h) Configure event and alarm history storage options.

n. Unified Web Client (UWC) General Requirements

   1) The UPS shall support a unified web client (UWC) for access control and video.

   2) The UWC shall be a truly thin client with no download required other than an internet web browser or standard web browser plugins.

   3) The UWC shall be platform independent and run within Microsoft Internet Explorer, Firefox, Safari, and Google Chrome.

   4) Web pages for the web client shall be managed and pushed by the Mobile Server. Microsoft IIS or any other web hosting service shall not be required given that all the web pages shall be hosted by the Mobile Server.

5) Video Stream shall be redirected to the Web Client with no stream transformation or re-encoding for all streams in H264, H265, and Mpeg4 ISO.

6) The Contractor shall provide up to 20 of simultaneous Web Clients.

7) Functionalities:

a) Login using name and password or Active Directory support shall be available.

b) Encrypted communications for all transactions.

c) Print reports and export to CSV file.

d) Customer logo customization shall be available for multi-tenant and hosted services applications.

e) Video

i) Live and playback video at 320 x 240, 640 x 480 or 1280 x 1024 @ 15 fps.

ii) Video export.

iii) 1, 4, 6 or 9 tiles.

iv) Basic PTZ Controls (Pan/Tilt, Zoom, go to presets, start pattern).

v) Start / Stop recording.

vi) Sample web page for customers to see how to view video for their own development.

vii) Add bookmarks.

f) Alarms

i) Alarm report.

o. Smartphone and Tablet App General Requirements

1) The USP shall support mobile apps for various off-the-shelf smartphones and tablets. The mobile apps shall communicate with the Mobile Server of the USP over any WiFi or mobile network connection.

2) Mobile apps shall communicate with the UPS via a Mobile Server (same as the Unified Web Client or UWC). Communication between the mobile device and the Mobile Server shall support optional encryption.

3) Supported device manufacturers shall include (refer to Mobile App specifications for latest compatibility list):

   a) Apple iPod Touch, iPhone, and iPad.

   b) Android-compatible smartphones and tablets.

   c) Windows and Windows Phone 8.1.

4) It shall be possible to download the mobile apps from the Central application store (Apple iTunes App Store, Google Play, Windows Store).

5) Functionalities

   a) Live monitoring and command and control of the USP.

   b) Receive alarm push notifications from the Apple Push Notification Server or from the Google Android push server.

   c) Alarm management (view and acknowledge alarms, video tied to alarms).

   d) View USP hierarchy and search for entities.

   e) Stream video from the mobile device using the built-in camera.

      i) Video streams from mobile devices shall be available in the USP to be viewed in live and recorded on the Archiver.

   f) Video

      i) View live and playback video at 320 x 240, 640 x 480 or 1280 x 1024 @ 15 fps.

      ii) Monitor camera status.

      iii) View up to 6 video feeds.

      iv) Control PTZ functionality of a camera, including access to PTZ presets.

      v) Save snapshots locally on the device.

      vi) View video tied to access control events, and alarms.

p. Health Monitor

   1) The USP shall monitor the health of the system, log health-related events, and calculate statistics.

2) USP services, roles, agents, units, and client apps will trigger health events.

3) The USP shall populate the Windows Event Log with health events related to USP roles, services, and client apps.

4) A dedicated role, the Health Monitoring Role, shall perform the following actions:

   a) Monitor the health of the entire system and log events.

   b) Calculate statistics within a specified time frame (hours, days, months).

   c) Calculates availability for clients, servers and video/access/ALPR units.

5) A Health Monitoring task and Health History reporting task shall be available for live and historical reporting.

6) A web-based, centralized health dashboard shall be available to remotely view unit and role health events of the USP.

7) Detailed system care statistics will be available through a web-based dashboard providing health metrics of USP entities and roles, including Uptime and mean-time-between-failures.

8) Health events shall be accessible via the SDK (can be used to create SNMP traps).

q. Session Initiation Protocol (SIP) Communication Management (CM)

1) An operator of the USP shall be able to, within the USP Monitoring UI, initiate calls to and answer calls from other operator and edge voice devices such as intercoms, emergency call stations, information desks, softphones, or phone devices.

2) The USP shall support CM between the USP client User Interface and SIP endpoint devices.

3) SIP endpoints shall be able to register to the UPS using a standard SIP protocol.

4) The USP shall support CM between two SIP endpoint devices.

5) The USP shall allow the configuration of SIP trunk connections to multiple SIP Servers supporting SIP Trunks. The CM shall support the management of calls to and from other SIP Servers connected though SIP Trunks. The CM is a service of the USP and shall not require the addition of any third party software.

6) The CM shall support the following audio compression formats:

   a) PCMA (G.711 aLaw).

   b) PCMU (G.711 uLaw).

   c) G.722.

   d) G.729.

7) The CM shall certify SIP devices from the following manufacturers:

   a) Axis.

   b) Castel.

   c) Cisco.

   d) Code Blue.

   e) Commend.

   f) Jacques.

   g) Vingtor- Stentofon.

   h) Zenitel.

8) The CM shall allow bidirectional audio and video recording of call sessions. The USP shall offer the following recording capabilities:

   a) Automatic cleanup of call session files after a programmable number of days.

   b) Deactivation of call recording between operators.

   c) Deactivation of call recording with specific operators.

   d) Deactivation of call recording with specific voice devices.

   e) Selection of the storage path for call session recordings.

9) The CM shall provide the flexibility for the administrator to define the network ports used to communicate between the USP servers and :

   a) USP Operator Client User Interfaces.

   b) SIP devices.

c) SIP servers.

10) The CM shall provide the capability to create Ring Groups. A Ring Group is a group of call numbers grouped under a single call number. It shall be possible to set a Ring Group to simultaneously or sequentially call the members of the group. Dwell time for sequence mode shall be configurable.

11) The CM shall allow the automatic routing of calls through the configuration of a collection of rules (Dial Plan). Dial Plans shall support the following capabilities:

    a) Match a phone number with regular expression.

    b) Route calls based on matching the phone numbers from which calls are made.

    c) Route calls based on matching the destination phone numbers to which calls are made.

    d) Change the phone extension from which calls are received.

    e) Change the phone extensions to which calls are sent.

    f) A combination of any of the above capabilities in a configured priority and based on a schedule.

12) Dial Plans shall be applicable to calls between SIP entities registered to the USP as well as to and from external SIP servers.

13) The USP shall unify, within a simple user interface, the workflow between the associated security entities of a call session, including the call box, cameras, doors, intrusion zones and outputs.

14) The USP shall support video and audio calls :

    a) Between USP Client User Interfaces.

    b) To and from USP Client User Interfaces and SIP devices.

    c) Between SIP devices.

15) The USP shall provide an advanced and friendly call management user interface that allows operators to:

    a) Connect standard USB headsets and webcams to USP Client User Interface workstations so that USP users can make voice and video calls through the USP Client User Interface.

b) Display the video associated with the call and switch between multiple video sources.

c) Receive incoming call notifications directly through a notification tray.

d) Initiate, answer, forward, place on hold, or cancel calls from a dedicated call dialog box.

e) Control cameras, doors, zones, and device outputs during a call.

f) Create a customizable list of contacts, so that users can quickly call their contacts. Contact lists shall include other USP users, as well as SIP devices.

g) Dial a phone number to make a call.

h) Dial a DTMF sequence during a call.

i) Monitor the availability status of a user and set its own availability status.

j) Access a history log of calls that the operator both initiated and received. This log shall show the time of the call, duration, direction and the reason for its ending. It shall be possible to redial one of the entries in the log.

16) The USP shall allow an operator to manage up to 10 calls simultaneously. The call queue shall show the status of each call: incoming, in call, or on hold. It shall be possible to hold and resume a call directly from the call queue.

17) The USP shall offer a call window. It shall be possible within the call windows to:

a) Switch between cameras associated with the call participant.

b) Open and lock doors associated with the call participant.

c) Arm and Disarm zones associated with the call participant.

d) Trigger outputs associated with the call participant.

e) Put on hold, resume, forward, and end a call.

f) Mute the microphone.

g) Hide the webcam video feed.

18) The USP shall have a built-in address book. The address book shall be available in the call dialog box, in which users can view and manage their list of contacts. From the address book, users shall be able to do the following:

    a) Call a contact by simply double-clicking the contact name.

    b) See the availability status of their contacts (users and SIP Devices).

    c) Quickly display a contact's information, such as photo, name, and number.

    d) Filter their contacts by type (SIP Device or User).

    e) Create a list of favorites by adding and removing contacts.

    f) Search for and call numbers that appear in the contact list.

19) The USP shall provide a graphical dial pad to allow the operator to make calls and dial DTMF tones during a call.

20) The USP shall provide call reporting capabilities to allow for the investigation of the activities during specific call sessions. The report shall provide the capability to replay audio recordings and watch call sessions that have associated video. The Call report shall provide filters to query the call records by:

    a) Date and time.

    b) Call session duration.

    c) Involved users and call stations.

    d) Call events and actions.

    e) Actions taken by a user on doors, intrusion zones and outputs during the call session.

21) The USP shall give the capability to export a call session, including bidirectional audio, associated video, and log journal of the call session.

22) It shall be possible to place the voice devices as icons on a map that shall display the call status of the voice device with a color code. A right-click on the voice device map icon shall allow the user to:

    a) Answer or reject an incoming call.

    b) Initiate a call to the device.

c) Put on hold and resume a call with the device.

23) It shall be possible for an operator to select and broadcast his or her availability status, with the possible statuses being Available, Away and Busy. This status will appear with a color code in the call dialog box of other operators.

24) The Contractor shall provide up to 5 SIP connections. The Contractor shall provide up to 1 number of SIP trunks.

25) The Contractor shall provide a failover and bidirectional audio and video recording license for each SIP device.

r. USP General Requirements

1) The Unified Security Platform (USP) shall be an enterprise class IP-enabled security and safety software solution.

2) The USP shall support the seamless unification of IP access control system (ACS), IP video management system (VMS), and IP automatic license plate recognition system (ALPR) under a single platform. The USP user interface (UI) applications shall present a unified security interface for the management, configuration, monitoring, and reporting of embedded ACS, VMS, and ALPR systems and associated edge devices.

3) Functionalities available with the USP shall include:

a) Configuration of embedded systems, such as ACS, ALPR, and VMS systems.

b) Live event monitoring.

c) Live video monitoring and playback of archived video.

d) Alarm management.

e) Reporting, including creating custom report templates and incident reports.

f) The Federation feature for global monitoring, reporting, and alarm management of multiple remote and independent ACS and/or VMS systems spread across multiple facilities and geographic areas.

g) Global cardholder management across multiple facilities and geographic areas each with their own independent ACS system.

h) Microsoft Active Directory integration for synchronizing USP user accounts and ACS cardholder accounts.

i) Intrusion device and panel integration (live monitoring, reporting, and arming/disarming).

j) SIP Intercom device integration for bi-directional communication.

k) Integration with third party systems and databases via plug-ins (access control, video analytics, point of sale, and more).

l) Dynamic graphical map viewing.

m) Asset management system integration.

4) The USP shall be deployed in one or more of the following types of installations:

a) Unified access, ALPR, video platform, and any combination thereof.

b) Standalone access control, ALPR, or video platform.

c) Unified access and video platform that federates multiple remote ACS and VMS.

d) Standalone video platform that federates multiple independent remote VMS.

e) Standalone access control that federates multiple independent remote ACS.

5) Licensing

a) A single central license shall be applied centrally on the configuration server.

b) There shall be no requirement to apply a license at every server computer or client workstation.

c) Based on selected options, one or more embedded systems shall be enabled or disabled.

6) Hardware and Software Requirements

a) The USP and embedded systems (video, license plate recognition, and access control) shall be designed to run on a standard PC-based platform loaded with a Windows operating system. The preferred operating system shall be coordinated with the Owner following the manufacturer supported operating systems.

b) The core client/server software shall be built in its entirety using the Microsoft .NET software framework and the C# (C-Sharp) programming language.

c) The USP database server(s) shall be built on Microsoft's SQL Server. The preferred SQL version shall be coordinated with the Owner and compatible with the USP.

d) The USP shall be compatible with virtual environments, including VMware and Microsoft Hyper-V.

e) The USP shall use the latest user interface (UI) development and programming technologies such as Microsoft WPF (Windows Presentation Foundation), the XAML markup language, and .NET software framework.

s. USP Architecture

1) The USP shall be based on a client/server model. The USP shall consist of a standard Server Software Module (SSM) and Client Software Applications (CSA).

2) The USP shall be an IP enabled solution. All communication between the SSM and CSA shall be based on standard TCP/IP protocol and shall use TLS encryption with digital certificates to secure the communication channel.

3) The SSM shall be a Windows service that can be configured to start when the operating system is booted and run in the background. The SSM shall automatically launch at computer startup, regardless of whether or not a user is logged on the machine.

4) Users shall be able to deploy the SSM on a single server or across several servers for a distributed architecture. The USP shall not be restricted in the number of SSM deployed.

5) The USP shall support the concept of The Federation feature whereby multiple independent ACS and VMS installations can be merged into a single large virtual system for centralized monitoring, reporting, and alarm management.

6) The USP shall protect against potential database server failure and continue to run through standard off-the-shelf solutions.

7) The USP shall support up to one thousand instances of CSA connected at the same time. However, an unrestricted number of CSA can be installed at any time.

8) The USP shall support an unrestricted number of logs and historical transactions (events and alarms) with the maximum allowed being limited by the amount of hard disk space available.

9) The USP shall support uninterrupted video streaming. The CSA shall keep existing video connections active in the event that an SSM (except Archiver) becomes unavailable.

10) Roles-Based Architecture

    a) The USP shall consist of a role-based architecture, with each SSM hosting one or more roles.

    b) Each role shall execute a specific set of tasks related to either core system, automatic license plate recognition (ALPR), video (VMS), or access control (ACS) functionalities, among many others. Installation shall be streamlined through the ability of the USP to allow administrators to:

        i) Deploy one or several SSM across the network prior to activating roles.

        ii) Activate and deactivate roles as needed on each and every SSM.

        iii) Centralize role configuration and management.

        iv) Support remote configuration.

        v) Move roles over from one SSM to another.

    c) Each role, where needed, shall have its own database to store events and role-specific configuration information.

    d) Roles without databases, such as The Federation feature, Active Directory, and Global Cardholder Management, shall support near real-time standby without any third party failover software being required.

    e) Directory Role

i) The Directory Role shall manage the central database that contains all the system information and component configuration of the USP.

ii) The Directory Role shall authenticate users and give access to the USP based on predefined user access rights or privileges, and security partition settings.

iii) The Directory Role shall support the configuration/management of the following components common to the ACS, ALPR, and VMS sub-systems:

iv) Security Partitions, users and user groups.

v) Areas.

vi) Zones, input/output (IO) linking rules, and custom output behavior.

vii) Alarms. Schedules, and scheduled tasks.

viii) Custom events.

ix) Macros or custom scripts.

x) The Directory Role shall support the configuration/management of the following components specific to VMS:

xi) Video servers and their peripherals (e.g. audio, IOs, and serial ports).

xii) PTZ.

xiii) Camera sequences.

xiv) Recording and archiving schedules.

xv) The Directory Role shall support the configuration/management of the following components specific to ACS:

xvi) Door controllers, and input and output (IO) modules.

xvii) Doors, Elevators, and Access rules.

xviii) Cardholders and cardholder groups, credentials, and badge templates.

xix) The Directory Role shall support the configuration/management of the following components specific to ALPR:

xx) ALPR units and cameras.

xxi) Hotlists, permit lists, and overtime rules.

f) The Video Archiver Role shall be responsible for managing cameras and encoders under its control and archiving

g) The Media Router Role shall be responsible for routing video and audio streams across local and wide area networks from the source (e.g. DVS) to the destination (e.g. CSA).

h) The Access Manager Role shall be responsible for synchronizing access control hardware units under its control, such as door controllers and IO modules. This role shall also be responsible for validating and logging all access activities and events when the door controllers and IO modules are online.

i) The Automatic License Plate Recognition (ALPR) Role shall be responsible for synchronizing fixed ALPR units (cameras) and mobile ALPR applications under its control. The ALPR Role shall also be responsible for logging all ALPR activities and events.

j) The Zone Manager Role shall be responsible for managing all software zones (collection of inputs) and logging associated zone events. Zones shall consist of inputs from both access control and video devices.

k) The Health Monitoring Role shall be responsible for monitoring and logging health events and warnings from the various client applications, roles, and services that are part of the USP. This role shall also be responsible for logging events within the Windows Event Log and for generating reports on health statistics and health history.

l) Optional Roles

    i) The Federation Role shall be responsible for creating a large virtual system consisting of hundreds or thousands of independent and remote ACS and/or VMS systems.

    ii) The Global Cardholder Synchronizer Role shall be responsible for synchronizing cardholder and credential data between the local site and a central site. Synchronization between remote sites shall also be supported.

    iii) The Active Directory Role shall be responsible for synchronizing user accounts and cardholder accounts with a Microsoft Active Directory server.

iv) The Intrusion Manager Role shall be responsible for managing third party intrusion devices such as alarm panels and perimeter detection devices. This role shall also be responsible for logging all intrusion events in a database.

v) The Asset Manager Role shall be responsible for integrating and synchronizing with third party asset management systems and logging asset related events. This role shall also be responsible for supporting the execution of asset-related reports such as inventory reports and asset activity reports.

vi) The Plug-in Manager Role shall be responsible for the communication between the USP and third party systems such as video analytics, access control and video systems, and building management systems.

vii) The Point of Sale (POS) Manager Role shall be responsible for integrating the USP with third party POS systems and for logging transactions.

viii) The Web SDK Role shall be responsible for connecting the USP to any application or interface developed with the Web Service SDK. Applications developed with the Web Service SDK shall be platform independent and rely on the REST protocol for communications.

ix) The Communication Management Role shall be responsible for registering the SIP communication endpoints and for managing the call routing.

x) The Video Redirector Role shall be responsible for connecting any video stream to a third party system using standard RTSP protocol. This role shall provide access to live video.

11) Server Monitoring Service (Watchdog)

a) The USP shall include a Server Monitoring Service that continuously monitors the state of the Server Software Module (SSM) service.

b) The Server Monitoring Service shall be a Windows service that automatically launches at system startup, regardless of whether or not a user is logged into his account.

c) The Server Monitoring Service shall be installed on all PCs/servers running an SSM. In the event of a malfunction or failure, the Server Monitoring Service shall restart the failed service. As a last resort, the Server Monitoring Service shall reboot the PC/server should it be unable to restart the service.

t. USP Video and Access Control Unification

1) The Monitoring UI shall present a true Unified Security Interface for live monitoring and reporting of the ACS and VMS. Advanced live video viewing and playback of archived video shall be available through the Monitoring UI.

2) The Configuration UI shall present a true Unified Security Interface for the configuration and management of the ACS and VMS.

3) The user shall be able to associate one or more video cameras to the following entity types: areas, doors, elevators, zones, alarms, intrusion panels, and more.

4) It shall be possible to view video associated to access control events when viewing a report.

5) It shall be possible to view video associated to intrusion panel events when viewing a report.

6) The USP shall support the following Alarm Management functionality:

a) Create and modify user-defined alarms. An unrestricted number of user-defined alarms shall be supported.

b) Assign a time schedule or a coverage period to an alarm. An alarm shall be triggered only if it is a valid alarm for the current time period.

c) Set the priority level of an alarm and its reactivation threshold.

d) Define whether to display live or recorded video, still frames or a mix once the alarm is triggered.

e) Provide the ability to display live and recorded video within the same video tile using picture-in-picture (PiP) mode.

f) Provide the ability to group alarms by source and by type.

g) Define the time period after which the alarm is automatically acknowledged.

h) Define the recipients of an alarm. Alarm notifications shall be routed to one or more recipients. Recipients shall be assigned a priority level that prioritizes the order of reception of an alarm.

i) Define the alarm broadcast mode. Alarm notifications shall be sent using either a sequential or an all-at-once broadcast mode.

j) Define whether to display the source of the alarm, one or more entities, or an HTML page.

k) Specify whether an incident report is mandatory during acknowledgment.

7) The workflows to create, modify, add instructions and procedures, and acknowledge an alarm shall be consistent for access control, ALPR, and video alarms.

8) Alarms shall be federated, allowing global alarm management across multiple independent USP, ACS, and VMS systems.

9) The USP shall also support alarm notification to an email address or any device using the SMTP protocol.

10) The ability to create alarm-related instructions shall be supported through the display of one or more HTML pages following an alarm event. The HTML pages shall be user-defined and can be interlinked.

11) Alarm unpacking and packing shall be supported where all the entities associated to an alarm can be display in the Monitoring UI with the single click of a button.

12) The user shall have the ability to acknowledge alarms, create an incident upon alarm acknowledgement, and put an alarm to snooze.

13) The user shall be able to spontaneously trigger alarms based on something he or she sees in the system.

14) An alarm shall be configured in such a way that it remains visible until the source condition has been acknowledged.

15) The user shall be able to investigate an alarm without acknowledging it.

u. USP Threat Levels

1) The USP shall support Threat Levels to dynamically change the system behavior to respond to critical events.

2) Threat Levels shall be activated and deactivated by the CSA operator with the right privilege.

3) Threat Levels shall be set on an area or on the entire system.

4) Threat Levels shall affect the system behavior by executing any action available in the USP such as: trigger output, start recording, block camera, override recording quality, arm zone, set a door in maintenance mode, and more.

5) The following specific actions shall be available with Threat Level:

   a) Set minimum security clearance to restrict or permit access to cardholders on specific areas on top of the restrictions imposed by the access rules.

   b) Set minimum user level to automatically log out user from the USP.

   c) Set reader mode to change how the doors are accessed (e.g. card and PIN, or card or PIN).

6) A visible notification shall be displayed in all operator CSA when a Threat Level is activated.

v. USP Remote Task

1) The USP shall provide, through a Remote Task, capabilities to remotely monitor and control the content of other workstations running the CSA (Monitoring UI) that are part of the same system.

2) The USP shall support video wall applications by connecting and controlling multiple workstations and monitors simultaneously.

3) The Remote Task shall be a graphical interface showing a replication of the remote workstation running the CSA (Monitoring UI).

4) The Remote Task shall allow the connection to other workstations using a low bandwidth mode to receive only snapshots of video viewed remotely.

5) The Remote Task shall allow the connection to other workstations using a spy mode to remain invisible to the remotely connected workstation.

6) The functionality provided by the remote monitoring and control capability shall include:

   a) Remote monitoring and control of the monitoring and alarm monitoring tasks.

b) Ability to remotely switch cameras, doors and zones into display tiles.

c) Ability to remotely control live and playback video.

d) Ability to remotely change the tile pattern.

e) Ability to remotely create and delete tasks.

f) Ability to remotely start/stop task cycling.

g) Ability to remotely go into full screen mode.

h) Ability to remotely save and reload the workspace.

w. USP Advanced Task Management

1) USP shall support an infrastructure for managing Monitoring UI tasks used for live monitoring, day to day activities, and reporting.

2) Administrators shall be able to assign tasks and lock the operator`s workspace. The user management of their workspace shall be limited by their assigned privileges.

3) Operators shall be able save their tasks as either Public Tasks or Private Tasks and in a specific partition. Public tasks shall be available to all users. Private tasks shall only be available to the owner of the task.

4) Operators shall be able to share their tasks by sending them to one or more online users. Recipients shall have the option to accept the sent task.

x. USP Reporting

1) The USP shall support report generation (database reporting) for access control, ALPR, video, and intrusion.

2) Each and every report in the system shall be a USP task, each associated with its own privilege. A user shall have access to a specific report task if he or she has the appropriate privilege.

3) The workflows to create, modify, and run a report shall be consistent for access control, ALPR, and video reports.

4) Reports shall be federated, allowing global consolidated reporting across multiple independent USP, ACS, and VMS systems.

5) Access control and ALPR reports shall support cardholder pictures and license plate pictures, respectively.

6) The USP shall support the following types of reports:

   a) Alarm reports.

   b) Video-specific reports (archive, bookmark, motion, and more).

   c) Configuration reports (cardholders, credentials, units, access rules, readers/inputs/outputs, and more).

   d) Activity reports (cardholder, cardholder group, visitor, credential, door, unit, area, zone, elevator, and more).

   e) ALPR-specific reports (mobile ALPR playback, hits, plate reads, reads/hits per day, reads/hits per ALPR zone, and more).

   f) Health activity and health statistics reports.

   g) Other types of reports, including visitor reports, audit trail reports, incident reports, and time and attendance reports.

7) Generic Reports, Custom Reports and Report Templates

   a) The user shall the option of generating generic reports from an existing list, generating reports from a list of user-defined templates, or creating a new report or report template.

   b) The user shall be able to customize the predefined reports and save them as new report templates. There shall be no need for an external reporting tool to create custom reports and report templates. Customization options shall include setting filters, report lengths, and timeout period. The user shall also be able to set which columns shall be visible in a report. The sorting of reported data shall be available by clicking on the appropriate column and selecting a sort order (ascending or descending).

   c) All report templates shall be created within the Monitoring UI.

   d) These templates can be used to generate reports on a schedule in PDF or Excel formats.

   e) An unrestricted number of custom reports and templates shall be supported.

8) A reporting task layout shall consist of panes with settings (report length, filters, go and reset commands, etc.), the actual report data in column format, and a pane with display tiles. The user shall be able to drag and drop individual records in a report onto one or more display tiles to view a cardholder's picture ID, playback a video sequence, or both.

9) The USP shall support comprehensive data filtering for most reports based on entity type, event type, event timestamp, custom fields, and more.

10) The user shall be able to click on an entity within an existing report to generate additional reports from the Monitoring UI.

11) The USP shall support the following actions on a report: print report, export report to a PDF/Microsoft Excel/CSV file, and automatically email a report based on a schedule and a list of one or more recipients.

y. USP Federation feature: Monitoring of Remote Systems

1) The USP shall support the concept of a Federation feature for access control, video, and license plate recognition.

2) The Federation feature shall allow multiple independent USP systems (Federated systems) to be unified into a larger virtual system (the Federation feature). This shall facilitate the global monitoring of multiple independent USP systems.

3) The Federation feature shall support the unification of multiple independent video surveillance systems or VMS.

4) Entities that shall be federated and monitored centrally from the Federation feature shall include: alarms, areas, cameras, cardholders and cardholder groups, credentials, doors, elevators, and zones (monitored inputs).

5) The Federation feature shall support a cloud-based deployment, whereby the service and infrastructure will be updated automatically and provisioned by the service provider, without need for on-site hardware.

6) The Federation feature shall support Global Alarm Management from the Monitoring UI for both access control and video.

7) The Federation feature shall support Global Report Generation from the Monitoring UI for both access control and video.

8) The Federation feature shall support dozens of operator actions on remote (federated) entities from the Monitoring UI (e.g. generating a global report taking into account events from multiple independent sites or acknowledging remote alarms).

z. USP Zone Management

1) The USP shall support the configuration and management of zones for input point monitoring via the Zone Manager Role. A user shall be able to add, delete, or modify a zone if he or she has the appropriate privileges.

2) A zone shall monitor the status of one or more inputs points. Zone monitoring or input point monitoring shall be possible through the use of a controller and one or more input modules. Inputs from video cameras or video encoders shall also be accessible via a zone.

3) Depending on the hardware installed, supervised inputs shall be supported. Depending on the input module used, both 3-state and 4-state supervision shall be available.

4) A schedule shall be defined for a zone, indicating when the zone will be monitored.

5) Custom Events shall provide full flexibility in creating custom events tailored to a zone. Users shall be able to associate custom events to state changes in monitored inputs.

6) The ACS shall support one or more cameras per zone. Video shall then be associated to zone state changes.

7) Input/Output (IO) Linking

a) Zone management shall support Input/Output (IO) Linking. IO Linking shall allow one or more inputs to trigger one or more outputs.

b) IO Linking shall be available in offline mode when communication between the server and hardware is not available.

c) Custom Output Behaviors shall provide full flexibility in creating a variety of complex output signal patterns: simple pulses, periodic pulses, variable duty-cycle pulses, and state changes.

d) Through the “trigger an output” action, the ACS shall support the triggering of outputs with custom output behaviors.

aa. USP User And User Group Security, Partitions, and Privileges Management

1) The USP shall support the configuration and management of users and user groups. A user shall be able to add, delete, or modify a user or user group if he or she has the appropriate privileges.

2) The USP shall support user authentication with claims-based authentication using external providers. External providers shall include:

    a) ADFS (Active Directory Federation Services)

3) Common access rights and privileges shared by multiple users shall be defined as User Groups. Individual group members shall inherit the rights and privileges from their parent user groups. User group nesting shall be allowed.

4) User privileges shall be extensive in the USP. All configurable entities for the USP, including access control/video/ALPR, shall have associated privileges.

5) Specific entities, such as cardholders, cardholder groups, and credentials shall include a more granular set of privileges, such as the right to access custom fields and change the activation or profile status of an entity.

6) Partitions

    a) The USP shall limit what users can view in the configuration database via security partitions (database segments). The administrator, who has all rights and privileges, shall be allowed to segment a system into multiple security partitions.

    b) All entities that are part of the USP can be assigned to one or more partitions.

    c) A user who is given access to a specific partition shall only be able to view entities (components) within the partition to which he or she has been assigned. Access is given by assigning the user as an accepted user to view the entities that are members of a particular partition.

    d) A user or user group can be assigned administrator rights over the partition.

7) It shall be possible to specify user and user group privileges on a per partition basis.

8) Advanced logon options shall be available such as dual logon and more.

9) It shall be possible to specify an inactive period for the Monitoring UI after which time the application shall automatically lock, while still preserving access to currently displayed camera feeds.

bb. USP Event/Action Management

1) The USP shall support the configuration and management of events for video and ALPR. A user shall be able to add, delete, or modify an action tied to an event if he has the appropriate privileges.

2) The USP shall receive all incoming events from one or more ACS and/or VMS. The USP shall take the appropriate actions based on user-define event/action relationships.

3) The USP shall receive and log the following events:

   a) System-wide events.

   b) Application events (clients and servers).

   c) Area, camera, door, elevator, and ALPR events (reads and hits).

   d) Unit events.

   e) Zone events.

   f) Alarm events.

4) The USP shall allow the creation of custom events.

5) The USP shall have the capability to execute an action in response to an access control, video, and ALPR event. The USP shall support the following list of actions, without being limited to:

   a) Add bookmark

   b) Block and unblock video

   c) Display a camera on an analog monitor

   d) Display an entity in the CSA

   e) Email a report

   f) Email a snapshot

   g) Export report

   h) Go home

   i) Go to preset

j) Override recording quality

k) Play a sound

l) Reboot unit

m) Run a macro

n) Run a pattern

o) Send a message

p) Send an email

q) Set threat level

r) Start/Stop applying video protection

s) Start/Stop recording

t) Start/Stop transfer

u) Trigger alarm

cc. Trigger output

1) The USP shall allow a schedule to be associated with an action. The action shall be executed only if it is an appropriate action for the current time period.

dd. USP Schedules and Scheduled Tasks

1) Schedules

a) The USP shall support the configuration and management of complex schedules. A user shall be able to add, delete, or modify a schedule if he or she has the appropriate privileges.

b) The USP shall provide full flexibility and granularity in creating a schedule. The user shall be able to define a schedule in 1-minute or 15-minute increments.

c) Daily, weekly, ordinal, and specific schedules shall be supported.

2) Scheduled Tasks

a) The USP shall support scheduled tasks for video, and ALPR.

b) Scheduled tasks shall be executed on a user-defined schedule at a specific day and time. Recurring or periodic scheduled tasks shall also be supported.

c) Scheduled tasks shall support all standard actions available within the USP, such as sending an email or emailing a report.

ee. USP Macros and Custom Scripts

1) The USP shall enable users to automate and extend the functionalities of the system through the use of macros or custom scripts for access control, video, and ALPR.

2) Custom macros shall be created with the USP Software Development Kit (SDK).

3) A macro shall be executed either automatically or manually.

4) In the Monitoring UI, a macro shall be launched through hot actions.

ff. USP Dynamic Graphical Maps (DGM)

1) The USP shall support mapping functionality for access control, video surveillance, intrusion detection, ALPR, and external applications.

2) The USP shall provide a map centric interface with the ability to command and control all the UPS capabilities from a full screen map interface.

3) It shall be possible to span the map over all screens of the USP client station. In the scenario where the map is spanned over all the screens of the USP client station it shall be possible to navigate the map including pan and zoom, and the map's moves shall be synchronized between all screens. Spanning the map over multiple screen must provide the same command and control capabilities than in a single screen display,

4) The DGM shall support the following file format and protocol for importing map background:

a) PDF

b) JPG

c) PNG

d) Web Map Service (WMS) defined by the Open Geospatial Consortium (OGC)

e) BeNomad

5) The DGM shall provide the following online map providers for use as map background and provide the ability to manage their service license if they require one

   a) Google Map, aerial, terrain (Licensed)

   b) Bing Map, aerial, satellite, hybrid (Licensed)

6) It shall be possible to configure a mixed set of maps made of GIS, online providers and private imported files and link them together.

7) The DGM shall provide the ability to display all native entities of the UPS including:

   a) Cameras, fix, and PTZ

   b) Doors

   c) Camera sequences

   d) Areas

   e) Intrusion areas

   f) Intrusion zones

   g) License Plate Recognition cameras

   h) Digital inputs

   i) Digital outputs

   j) Intercoms

   k) Alarms

   l) Macros

   m) Police Car Patrollers

8) The DGM shall provide the ability to draw and display information over the map in the form of:

   a) Vectoriel shapes: line, rectangles, polygones, ellipse

   b) Pictures

c) Text

9) The DGM shall provide the ability to display any type of third party entities integrated through an SDK.

10) The DGM shall provide the ability to display layer of information in Keyhole Markup Language (KML) format.

11) The DGM shall provide the ability to the operator to manage layers of entities display over the map, being able to turn them on and off and changing the superposition order.

12) The DGM shall offer built-in map data backup and restore for both map background and layers of entities.

13) The DGM shall offer failover capabilities.

14) The DGM shall scale up to several thousands of entities on a single map and hundreds of maps.

15) The DGM shall provide a means to update a map background without affecting the map object configuration.

16) The DGM shall offer a user friendly graphical map designer to configure the maps.

17) The DGM shall provide a user friendly and intuitive navigation that includes:

a) The ability to create hierarchies of maps to facilitate navigation within and between various sites and buildings.

b) The ability to define favorites for recurrent position recall.

c) The possibility to create links between maps. The map links shall allow the link from one map to multiple maps representing the floors of a building.

d) A common user experience regarding navigation into the map for both GIS and private maps.

e) A history log of positions.

18) It shall be possible to monitor the state of entities on the map. It shall be possible to customize the icons of any entities represented on the map.

19) The DGM shall display the actual video Field of View of camera. It shall be possible to configure the FOV of a camera by entering the specification of the camera installation or graphically by moving the boundaries of the Field of View.

20) For PTZ cameras offering position feedback capability, the DGM shall:

    a) Dynamically represent the accurate Field of View of the camera.

    b) Allow the user to act on the PTZ by moving its field of view.

21) The DGM shall offer the ability to optionally set a graphical display notification of the motion detection.

22) The DGM shall offer a smart selection tool to access the video simply by clicking the location the user wants to see, the DGM will automatically select the cameras that can see this location and move the PTZ towards that location. This smart selection tool shall take into consideration the obstacle and not display cameras that cannot see the location because of a wall.

23) It shall be possible to select a location by drawing a zone of interest on the DGM and display all the entities that are part of that zone of interest at once.

24) The user shall be able to select and display the content of multiple USP entities on the map in popup windows.

25) It shall be possible to access live and playback video from the map.

26) It shall be possible to monitor from the DGM all entities event notification. User shall be able to turn on and off the notification per entity.

27) The DGM shall offer the ability to fully operate alarm monitoring. It shall be possible to:

    a) Center the map on entities related to the alarm.

    b) Visualize the Alarms notification on the map access the related video from the map.

    c) Trigger and receive alarms.

    d) Act on the alarm from the DGM, including acknowledgements, forwarding, and investigation.

    e) Visualize that an alarm occurred in an underlying linked map.

28) The DGM shall provide the following search capabilities:

a) Search and center by entity name.

b) From the Display of an entity in the USP locate the entity on the map and offer the ability to select another one close-by.

29) Any update of map content by an administrator shall be immediately and dynamically pushed to all DGM users.

gg. USP Audit and User Activity Trails (Logs)

1) The USP shall support the generation of audit trails. Audit trails shall consist of logs of operator/administrator additions, deletions, and modifications.

2) Audit trails shall be generated as reports. They shall be able to track changes made within specific time periods. Querying on specific users, changes, affected entities, and time periods shall also be possible.

3) For entity configuration changes, the audit trail report shall include detailed information of the value before and after the changes.

4) The USP shall support the generation of user activity trails. User activity trails shall consist of logs of operator activity on the USP such as login, camera viewed, badge printing, video export, and more.

5) The ACS shall support the following actions on an audit and activity trail report: print report and export report to a PDF/ Microsoft Excel/CSV file.

hh. USP Incident Reports

1) Incident reports shall allow the security operator to create reports on incidents that occurred during a shift. Both video-related and access control-related incident reports shall be supported.

2) The operator shall be able to create standalone incident reports or incident reports tied to alarms.

3) The operator shall be able to link multiple video sequences to an incident, access them in an incident report, and change the date or time of the sequences later on.

4) It shall be possible to create a list of Incident categories, tag a category to an incident, and filter the search with the category as a parameter.

5) Incident reports shall allow the creation of a custom form on which to input information on an incident.

6) Incident reports shall allow entities, events, and alarms to be added to support at the report's conclusions.

ii. USP Third Party Integration

1) Microsoft Active Directory Integration

a) The USP shall support a direct connection to one or multiple Microsoft Active Directory server via the Active Directory Role(s). Active Directory integration shall enable the synchronization of information from the Active Directory server to the USP.

b) Active Directory integration shall permit the central management of the USP users, user groups, cardholders, and cardholder groups.

c) The USP shall be able to connect to and synchronize data from multiple Active Directory servers (up to 10).

d) The USP shall support synchronizing Active Directory Universal Groups as well as security groups belonging to other domains within the same forest.

e) The USP shall support Microsoft Active Directory encryption using LDAP SSL.

f) When enabled, Active Directory shall manage user logon to the USP client applications through the user's Windows credentials. Logging to the USP shall utilize native Active Directory password management and authentication features.

g) It shall be possible to synchronize the following USP entities and their information from Active Directory with the USP:

i) Users (username, first and last names, email address, and more).

ii) User groups (user group name, description, and group email address).

iii) Active Directory attributes to USP custom fields.

h) When enabled, the addition, removal, or suspension of a user's Windows account in Active Directory shall result in the creation, deletion, or disabling of the equivalent user account in the USP.

i) Supported synchronization methods for additions, modification, and deletions of synchronized entities shall include: on first logon (users only), manual synchronization, and scheduled synchronization.

j) The USP shall support user connections across independent organizations by connecting to an external ADFS (Active Directory Federation Services) service using claims-based authentication.

2) Intrusion Detection Integration

a) The USP shall integrate with third party intrusion panels and devices via an Intrusion DDK. The Intrusion Manager Role shall manage communications with the intrusion panels. Communications with intrusion devices shall be over serial communications and/or an IP network.

b) Integration with intrusion panels shall be possible outside the release cycle of the USP. It shall be possible to add new integrations at any point in time.

c) Functionality available via the integration of intrusion devices with the USP shall include the following (where supported by the intrusion panel):

i) Arm and disarm intrusion devices (manually, on schedule, or following a USP event).

ii) Activate or trigger intrusion device outputs.

iii) View intrusion events and alarms.

iv) Monitor the status, including arming status, of the intrusion devices.

v) Video verification of intrusion events and alarms with video panels.

vi) Create USP zones using intrusion device inputs.

d) Currently supported intrusion panels include:

i) Bosch G Series panels.

ii) DSC Power Series panels.

iii) DMP XR Series panels.

iv) Honeywell Galaxy Dimension panels.

3) Asset Management Integration

a) The USP shall integrate with third party asset management systems via the Asset Management Role.

b) Communications with asset management solutions shall be over an IP network (via software communications).

c) Functionality available via the integration of asset management systems with the USP shall include the following (where supported by the asset management systems):

i) Synchronize asset management system assets with USP asset entities.

ii) Live monitoring of asset-related activity events, health events, and activity (asset online, asset offline, asset moves, or low battery).

iii) Synchronization of asset management alarms with Security Center alarms.

iv) Viewing video tied to asset-related activity and alerts within monitoring and reporting tasks.

v) Acknowledging alarms in Security Center which acknowledges alerts in the asset management system and vice versa.

vi) Real-time tracking of asset locations on a per area basis.

vii) Asset Management Inventory reporting task that details the current location (area) of an asset.

viii) Asset Activity reporting task that provides a historical review of asset-related events and activity.

d) Currently supported asset management systems include:

i) RF Code Asset Manager.

4) Additional Third Party Integrations

a) The USP shall support multiple approaches to integrating third party systems. These shall include: Software Development Kits (SDKs), Driver Development Kits (DDKs), REST-based Web Service SDKs, RTSP Service SDKs, and more.

b) The USP architecture shall support the addition of new connectors to integrate to third party system integration, such as:

i) Video analytics.

ii) Third party video systems.

iii) Third party access control systems.

iv) Point-of-sale (POS) systems.

v) Building management systems.

vi) Human resource management systems (HRMS).

jj. USP Software Development Kit (SDK)

1) A USP SDK shall be available to support custom development for the platform.

2) The SDK shall include functionalities specific to the embedded automatic license plate recognition (ALPR), access control (ACS), and video (VMS) systems.

3) Integration with external applications and databases shall be possible with the SDK.

4) The SDK shall enable end-users to develop new functionality (user interface, standalone applications or services) to link the USP to third party business systems and applications, such as Badging Systems, Human Resources Management Systems (HRMS), and Enterprise Resource Planning (ERP) systems.

5) The SDK shall be based on the .NET framework.

6) The SDK shall support dynamic or transactional updates to the USP configuration. It shall also support change notification of USP entity configuration.

7) The SDK shall provide an extensive list of programming functions to view and/or configure core entities such as: users and user groups, alarms, custom events, and schedules, and more.

8) The SDK shall provide an extensive list of programming functions to view and configure ACS and VMS.

9) The SDK shall provide an extensive list of programming functions to view and configure most ACS entities such as: cardholders, cardholder groups, visitors, credentials, access rules (modify only), and custom fields.

10) The SDK shall be able to receive real time events from the following USP entities: users and user groups, areas, zones, cameras, video units, doors, door controllers (units), elevators, cardholders, cardholder groups, and credentials.

11) The SDK shall be able to query the history of events for areas, cameras, zones, alarms, cardholders, credentials, visitors, doors, query license plate read events, license plate hit events, generate a license plate hits report, generate a license plate reads report.

12) The SDK shall support the following alarm functions: view alarms in real time, acknowledge alarms, change priority, and change recipient.

3. Video Management Data Storage Server

   a. EIA 19" Rack Mount chassis, including all necessary mounting rails and hardware to mount in DIN (square hole) 4 post racks as provided under the work of Section 27 11 16 – Communications Cabinets, Racks, Frames and Enclosures.

   b. Not more than 2RU high.

   c. The server shall have the minimum capacities as required by the VMS manufacturer including:

      1) CPU's: As required by the VMS Manufacturer.

      2) RAM: As required by the VMS Manufacturer.

      3) Operating System: As required by the VMS Manufacturer.

      4) USB or PS/2 style mouse

      5) USB or PS/2 style keyboard

      6) Dual 10/100/Gigabit/10Gigabit Ethernet Adapters

      7) Display Adapter (at least 1024 x 768 resolution @ 65,536 colors)

      8) If server cannot boot from iSCSI Raid Array, provide a boot disk hard drive, at least 1T SATA or SAS.

   d. Quantity of servers: As required and recommended by the VMS manufacturer for the quantity equal to 1.3 times the number of cameras provided under the work of this Project.

   e. Features/Functions/Performance - iSCSI Raid Arrays

1) Total Capacity: As required to capture full-motion video at highest resolution of specified cameras stored without overwriting for at least 75 days continuous operation, assuming:

   a) 1.3 times the camera count initially provided with the Project.

   b) 3.5 megapixel recording resolution per camera or greater as required to match supplied cameras.

   c) H.264 compression

   d) 40% activity (motion present 40% of period)

   e) 15 frame per second motion recording

2) Minimum RAID Architecture:

   a) As required by the VMS Manufacturer.

3) Minimum Construction and Performance

   a) As required by the VMS Manufacturer.

4) Rack mountable, EIA 19", including all necessary mounting rails and hardware to mount in square hole) 4 post racks with DIN (square) openings

5) Not larger than 6 RU.

f. Tape backup. Provide tape loader subsystem consisting of software and LTO – 7 format loader with drive and loader capacity to backup an entire month's video real-time storage in one session not to exceed four hours with no operator intervention. Provide a supply of tapes as required to support this monthly backup operation for at least twelve months.

4. Manufacturers, VMS System:

   a. Genetec Security Center Omnicast Enterprise with Video Storage SubSystem meeting Genetec Hardware Prequalification. Provide with Microsoft Active Directory integration and configured for failover clustering and Session Initiation Protocol (SIP) Communication Management (CM) functions through Sipelia Advanced license. Provide configured with options for Owner to implement Failover Directory, Auxiliary Archiver, Standby Archiver, in the future – these functions not required at time of building opening. Provide Unified Security Platform functions if Genetec Unified Security Platform provided as access control system under the work of Section 28 13 00.

b. Avigilon Control Center NVMS, latest general release with Video Storage Sub-System meeting Avigilon Hardware Specifications for this scale of installation. Provide auxiliary software modules as necessary to provide the full functionality required in this specification.

c. Milestone System XProtect Enterprise

d. OnSSI

e. Or equal.

5. Manufacturers, Servers

   a. As pre-qualified by the VMS Manufacturer.

   b. HP

   c. Intel

   d. Dell

   e. Or equal.

6. Manufacturers, iSCSI Array: Quantity - As required to meet storage requirement.

   a. As pre-qualified by the VMS Manufacturer.

   b. NetApp Inc.

   c. Isilon Systems

   d. Dell

   e. HP

   f. pivot

   g. Or equal.

7. Manufacturers, Hard Drives for iSCSI Array

   a. Seagate

   b. Western Digital

   c. Or equal.

8. Manufacturers, Tape Backup Subsystem

a. Overland Storage Series

b. HP

c. StorageTek

d. Or equal.

B. Video Encoding Appliances

1. Drawing Reference: Video Server

2. Minimum Features, Functions, Construction

a. Video

1) Video compression: H.264 Baseline and Main Profiles (MPEG-4 Part 10/AVC) Motion JPEG

2) Resolutions: 720x576 to 176x120, 1536x1152 to 176x120 for quad view

3) Frame rate:

a) H.264: 25/30 fps (50/60 Hz)

b) 15 fps in quad view in full resolution

c) Motion JPEG: 25/30 fps (50/60 Hz)

d) 15 fps in quad view in full resolution

4) Video streaming

a) One individually configured H.264 and one Motion JPEG stream per channel at full frame rate

b) More streams if identical or limited in frame rate/resolution

c) Controllable frame rate and bandwidth

d) VBR/CBR H.264

5) Image settings:

a) Compression, Color, Brightness, Contrast, Text and image overlay,

b) Mirroring of images, Privacy mask, Aspect ratio correction,

c) Enhanced deinterlace filter, Video termination, Antialiasing,

d) Temporal noise filtering

e) Rotation: 90°, 180°, 270°

6) Pan/Tilt/Zoom

a) Wide range of analog PTZ cameras supported

b) 100 presets/camera, Guard tour, PTZ control queue

c) Supports Windows compatible joysticks

b. Audio

1) Audio streaming Two-way, full duplex and half duplex (2 mic/line inputs, 1 line output)

2) Audio compression:

a) In:

i) AAC-LC 8 or 16 kHz 8–64 kbit/s

ii) G.711 μ-law PCM 8 kHz 64 kbit/s

iii) G.726 ADPCM 8 kHz 32 kbit/s or 24 kbit/s

b) Out:

i) G.711 μ-law PCM 8 kHz 64 kbit/s, μ-law PCM 16 kHz 128 kbit/s

ii) G.726 ADPCM 8 kHz 32 kbit/s or 24 kbit/s

3) Audio input/output:

a) External microphone input or line input

b) Line level output

c) Audio streaming, record (AU) and play uploaded (WAV, AU) clips AU (G.711 μ-law 8-bit 8/16 kHz mono), WAV (PCM 16-bit 8/16 kHz mono)

c. Network

1) IP address: One IP address for four channels

2) Security: Password protection, IP address filtering, HTTPSb encryption,IEEE 802.1Xb network access control, Digest authentication, User access log

3) Supported protocols

a) IPv4/v6, HTTP, HTTPSb, SSL/TLSb, QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, UPnP™, SNMPv1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS.

d. System integration

1) Application Programming Interface:

a) Open API for software integration

b) ONVIF Profile S, specifications at www.onvif.org

2) Intelligent video: Video motion detection, Active tampering alarm, Audio detection

3) Event triggers: Intelligent video, External inputs, Video loss, Edge storage events,

4) Event actions

a) File upload: FTP, HTTP, network share and email,

b) Notification: email, HTTP and TCP,

c) Video and audio recording to edge storage

d) Pre- and post-alarm video buffering

e) PTZ preset, Play audio clip, External output activation

5) Data streaming: Event data

e. General

1) Casing: Standalone, metal casing, wall mount

2) Memory: 512 MB RAM, 128 MB Flash

3) Power: 8–20 V DC, max. 8 W; Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3

4) Connectors:

a) DC input terminal block

b) 4x analog composite video BNC inputs

c) RJ45 10BASE-T/100BASE-TX PoE

d) Terminal block for four configurable external inputs/outputs

e) Terminal block for RS-485/RS-422 (full duplex)

f) 2x 3.5 mm jacks for microphone or line input (mono)

g) 3.5 mm jack for audio output (mono)

5) Edge storage:

a) MicroSD/microSDHC/microSDXC slot supporting memory card up to 64 GB

b) Support for recording to dedicated network-attached storage (NAS)

6) Operating conditions

a) 0 °C to 50 °C (32 °F to 122 °F)

b) Humidity 20–80% RH (non-condensing)

7) Approvals

a) EN 55022 Class B, EN 55024, IEC/EN/UL 60950-1, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR 22 Class B, KCC KN22 Class B, KN24

3. Manufacturers:

a. Axis P72 Video Encoder Series. Provide quantity as required by number of existing analog cameras and microphones indicated for re-use.

b. Or equal (no known equal).

2.3 CAMERAS AND RELATED

A. Cameras, General

1. Form Factor: Unless otherwise noted, provide mini dome cameras which fit tight to trade standard backboxes, and provides no protrusion to grasp or hang from.

a. Exceptions:

1) Box cameras where specified.

2) Sunshades at exterior wall mount cameras.

3) Pendant and pole mount cameras.

2. Minimum resolution: Not less than 2.3 Megapixels.

3. Minimum frames per second: Not less than 15 frames per second (fps) on motion detection.

4. Minimum illumination to produce a usable produce a useable picture through the VMS system.

   a. Not more than 0.09 lux at 1/30s shutter, no sens up allowed.

   b. Camera to provide mechanical cut filter.

   c. At cameras facing glass doors to the exterior, with a view to exterior windows or other sources of varying light, provide with Wide Dynamic Range (WDR) compensation, 100 dB min.

5. Video Codec: H.264.

6. Lensing. Provide with varifocal lens or field selectable lensing to suit proposed field of view.

7. Focus. Provide and implement manual focus at time of installation. Camera to support remote autofocus or auto backfocus to permit accommodation of changes over time.

8. Vandal resistant construction:

   a. IK10 minimum.

   b. Integral Tamper alarm.

9. Streaming. Camera to support at least two simultaneous streams at different resolutions for use in monitoring and recording.

10. Motion processing: Provides internal means to trigger motion detection and alarm based on change in field of view defined by software of a minimum number of pixels associated with the arrival or departure of a person in the field being monitored. On detection of motion, relays alarm to VMS and responds to request for high frame output, as specified herein above.

11. Recording Control:

a. Cameras to support continuous and motion detection based recording.

12. Standards Conformance.

    a. ONVIF

        1) The camera shall be compliant with the Open Network Video Interface Forum Profile S (ONVIF Profile S) conformance.

        2) The camera shall also support ONVIF event commands such as Tampering alarm, Motion alarm and Fan error.

    b. Cameras to meet the applicable portions of the following standards:

        1) FCC Part 15 - Subpart B Class A

        2) UL 60950-1

        3) UL 60950-22

        4) SMPTE 296M (HDTV 720p)

        5) SMPTE 274M (HDTV 1080p)

        6) MPEG-4:

            a) ISO/IEC 14496-10 Advanced Video Coding (H.264)

        7) Networking:

            a) IEEE 802.3af/802.3at (Power over Ethernet)

            b) IEEE 802.1X (Authentication)

            c) IPv4 (RFC 791)

            d) IPv6 (RFC 2460)

            e) QoS – DiffServ (RFC 2475)

        8) Mechanical Environment:

            a) NEMA 250 Type 4X

                i) Exterior cameras to be IP66 or NEMA 4X

            b) IEC/EN 62262 IK10+ (50J)

            c) IEC 60068-2-1

d) IEC 60068-2-2

e) IEC 60068-2-6

f) IEC 60068-2-14

g) IEC 60068-2-27

h) IEC 60068-2-52

i) IEC 60068-2-60

j) IEC 60068-2-78

9) Power Source:

a) POE from Owner supplied network switch ports at TR's. Use of midspan extenders not permitted.

13. Housing:

a. To be paintable and painted to match interior as selected by the Owner's Representative without voiding the manufacturer's warranty.

b. Mounting Hardware: Provide manufacturers mounting hardware as required. to suit application, with manufacturer accessory mounting plates, pendant adapters and backboxes as necessary to mount to rough-in conditions without creating installed conditions permitting public to grasp or hang from support of any camera installed within 10 feet of floor.

14. Station cabling to support TCP/IP cameras to be ANSI/TIA Cat 6 category cabling installed using means and methods as outlined under the Structured Cabling section. To ensure long-term maintainability of the system each cable used for TCP/IP cameras shall be terminated at a surface mounted biscuit box placed internal to the rough-in for the camera and a patch cord shall be extended from the permanently installed surface mount box to the camera network port. It shall not be permitted to terminate RJ45's directly on the ends of the installed permanent link station cabling.

B. TCP/IP Surveillance Indoor and Outdoor Dome Camera, Fixed, Miniature, General Purpose:

1. Drawing References:

a. CCTV Camera

2. Minimum Features, Functions, Performance, Construction

a. Camera - Fixed dome 1080p network camera

1) The fixed dome network camera shall meet or exceed the following design specifications:

2) The camera shall operate on an open source; Linux-based platform, and including a built-in web server.

3) The camera shall be equipped with an IR-sensitive progressive scan megapixel sensor.

4) The camera shall provide a removable IR-cut filter, providing day/night functionality.

5) The camera shall be equipped with a varifocal lens with P-iris.

6) The camera shall be equipped with a motorized 30x optical zoom lens lens with P-iris, providing a horizontal field of view between 36° and 105° (9 mm).

7) The camera shall be equipped with a motorized 30x optical zoom lens lens with P-iris, providing a horizontal field of view between 15° and 36° (22 mm).

8) The camera shall provide local video storage utilizing a microSD/microSDHC/microSDXC memory card expansion.

9) The camera shall be manufactured with an IP66-, IP67-, IP6K9K- and NEMA 4X-rated, IK10+ (50 joules) impact-resistant casing.

10) The camera shall provide a manual 3-axis (pan/tilt/rotation) positioning to allow adjustment for optimum camera rotation and placement.

11) The camera shall provide a clear lower dome.

b. The fixed dome network camera shall meet or exceed the following performance specifications:

1) Illumination

a) The camera shall meet or exceed the following illumination specifications:

i) Color: 0.11 lux at 50 IRE, F1.3; B/W: 0.02 lux at 50 IRE, F1.3 (9 mm: HDTV 1080p 25/30 fps with WDR - forensic capture)

ii) Color: 0.22 lux at 50 IRE, F1.3; B/W: 0.04 lux at 50 IRE, F1.3 (9 mm HDTV 1080p 50/60 fps)

iii) Color: 0.17 lux at 50 IRE, F1.6; B/W: 0.03 lux at 50 IRE, F1.6 (22 mm HDTV 1080p 25/30 fps with WDR - forensic capture)

iv) Color: 0.34 lux at 50 IRE, F1.6; B/W: 0.06 lux at 50 IRE, F1.6 (22 mm HDTV 1080p 50/60 fps)

2) Resolution

a) The camera shall be designed to provide at least two video streams in HDTV 1080p (1920x1080) at up to 30 frames per second (60Hz mode) or 25 frames per second (50Hz mode) using H.264 or Motion JPEG (WDR active).

b) The camera shall be designed to provide at least two video streams in HDTV 1080p (1920x1080) at up to 60 frames per second (60Hz mode) or 50 frames per second (50Hz mode) using H.264 or Motion JPEG (WDR in-active).

c) The camera shall be designed to provide at least two video streams in HDTV 720p (1280x720) at up to 120 frames per second (60Hz mode) or 100 frames per second (50Hz mode) using H.264 or Motion JPEG (WDR in-active).

d) The camera shall provide both landscape format (4:3 and 16:9 aspect ratio) as well as corridor format (3:4 and 9:16 aspect ratio).

e) The camera shall support video resolutions including:

i) 1920x1080 (HDTV 1080p)

ii) 1280x720 (HDTV 720p)

3) Encoding

a) The camera shall support the following video encoding algorithms:

i) Motion JPEG encoding in a selectable range from 1 up to 25/30 frames per second in all resolutions.

ii) Motion JPEG encoding in a selectable range from 1 up to 50/60 frames per second in all resolutions.

iii) Motion JPEG encoding in a selectable range from 1 up to 100/120 frames per second in all resolutions.

iv) Baseline Profile H.264 encoding with motion estimation in up to 25/30 frames per second.

v) Baseline Profile H.264 encoding with motion estimation in up to 50/60 frames per second.

vi) Baseline Profile H.264 encoding with motion estimation in up to 100/120 frames per second.

vii) Main Profile H.264 encoding with motion estimation and context-adaptive binary arithmetic coding (CABAC) in up to 25/30 frames per second.

viii) Main Profile H.264 encoding with motion estimation and context-adaptive binary arithmetic coding (CABAC) in up to 50/60 frames per second.

ix) Main Profile H.264 encoding with motion estimation and context-adaptive binary arithmetic coding (CABAC) in up to 100/120 frames per second.

x) Support High Profile H.264 encoding with motion estimation up to 25/30 frames per second.

xi) Support High Profile H.264 encoding with motion estimation up to 50/60 frames per second.

xii) Support High Profile H.264 encoding with motion estimation up to 100/120 frames per second.

xiii) Support High Profile H.264 encoding with motion estimation up to 25/30 frames per second.

xiv) Support High Profile H.264 encoding with motion estimation up to 50/60 frames per second.

xv) Support High Profile H.264 encoding with motion estimation up to 100/120 frames per second.

b) The camera shall provide independently configured simultaneous H.264 and Motion JPEG streams.

c) The camera shall in H.264 support Variable Bit Rate (VBR) for video quality adapted to scene content. To protect the network from unexpected bit rate speaks the camera shall support Constant Bit Rate (CBR) or Maximum Bit Rate (MBR).

d) The camera shall provide configurable compression levels.

e) Support standard baseline profile H.264 with motion estimation.

f) Support motion estimation in H.264/MPEG-4 Part 10/AVC.

g) The camera shall for its H.264 implementation support scene adaptive bitrate control with automatic dynamic ROI to reduce bitrate in unprioritized regions in order to lowering bandwidth and storage requirements.

4) Transmission

a) The camera shall allow for video to be transported over:

i) HTTP (Unicast)

ii) HTTPS (Unicast)

iii) RTP (Unicast & Multicast)

iv) RTP over RTSP (Unicast)

v) RTP over RTSP over HTTP (Unicast)

vi) The camera shall support Quality of Service (QoS) to be able to prioritize traffic.

5) Image

a) The camera shall incorporate Automatic and Manual White Balance.

b) The camera shall incorporate an electronic shutter operating in the range of 1/143000s to 2s.

c) The camera shall incorporate capture mode with the following settings:

i) HDTV 1080p (1920x1080) with WDR: 25/30 fps (50/60 Hz)

ii) HDTV 1080p (1920x1080) without WDR: Up to 50/60 fps (50/60 Hz)

iii) HDTV 720p (1280x720) without WDR: Up to 100/120 fps (50/60 Hz)

d) The camera shall incorporate Wide Dynamic Range - Forensic Capture functionality providing up to120dB dynamic range.

e) The camera shall support manually defined values for:

i) Color level

ii) Brightness

iii) Sharpness

iv) Contrast

f) The camera shall incorporate a function for optimization of low light behavior at different light levels.

g) The camera shall allow for rotation of the image in steps of 90º.

h) The camera shall incorporate a function for Electronic Image Stabilization (EIS) for real-time image stabilization.

i) The camera shall incorporate a function to manually correct barrel distortion, by using a slider to correct distortion in the image.

6) Audio

a) The camera shall support two-way full duplex audio:

b) Input sources

i) External microphone

ii) External line device

c) Output sources

i) External line device

d) Encoding

i) The camera shall support:

ii) AAC LC 8/16/32/48 kHz

iii) G.711 PCM 8 kHz

iv) G.726 ADPCM 8kHz

v) Opus 8/16/48 kHz

c. User Interface

1) Web server

a) The camera shall contain a built-in web server making video and configuration available to multiple clients in a standard operating system and browser environment using HTTP, without the need for additional software.

b) Optional components downloaded from the camera for specific tasks, e.g. Active X, shall be signed by an organization providing digital trust services, such as Verisign, Inc.

2) Language Specification

a) The camera shall provide a function for altering the language of the user interface, and shall include support for at least 10 different languages.

3) IP addresses

a) The camera shall support both fixed IP addresses and dynamically assigned IP addresses provided by a Dynamic Host Control Protocol (DHCP) server.

4) The camera shall allow for automatic detection of the camera based on UPnP and Bonjour when using a PC with an operating system supporting this feature.

5) The camera shall provide support for both IPv4 and IPv6.

6) PTZ functionality

a) The camera shall:

i) Provide Digital PTZ functionality.

ii) Provide preset positions functionality.

iii) Provide 3x optical zoom (9 mm).

iv) Provide 2x digital zoom (9 mm).

v) Provide 2.4x optical zoom (22 mm)

vi) Provide 2x digital zoom (22 mm)

7) Event functionality

a) The camera shall be equipped with an integrated event functionality, which can be trigged by:

i) Video Motion Detection

ii) Audio Detection

iii) Live Stream Accessed

iv) Day/Night Mode

v) Camera tampering

vi) Manual Trigger/Virtual Inputs

vii) PTZ functionality

viii) External input

ix) Embedded third party applications

x) Edge storage disruption detection

xi) Shock Detected

b) Response to triggers shall include:

i) Send notification, using HTTP, HTTPS, TCP, SNMP trap or email

ii) Send images, using FTP, HTTP, HTTPS, network share or email

iii) Send video clip, using FTP, HTTP, HTTPS, network share or email

iv) Send SNMP trap message

v) Day/Night Vision Mode

vi) Defog Mode

vii) Activating external output

viii) Play audio clip

ix) PTZ control functionality

x) WDR mode

c) The camera shall provide memory for pre & post alarm recordings.

8) Edge storage

a) The camera shall support continuous and event controlled recording to:

i) Local memory added to the cameras microSD-card slot

ii) Network attached storage, located on the local network

b) The camera shall be able to detect and notify Edge storage disruptions.

9) Protocol

a) The camera shall incorporate support for at least IPv4/v6, HTTP, HTTPS, SSL/TLS, QoS Layer 3 DiffServ, TCP, ICMP, SNMPv1/v2c/v3 (MIB-II), RTSP, RTP, UDP, IGMP, RTCP, SMTP, FTP, DHCP, UPnP, ARP, DNS, DynDNS, SOCKS, SSH, NTP, CIFS/SMB, Bonjour.

b) The SMTP implementation shall include support for SMTP authentication.

10) Text overlay

a) The camera shall:

i) Provide embedded on-screen text with support for date & time, and a customer-specific text, camera name, of at least 45 ASCII characters.

ii) Provide the ability to apply privacy masks to the image.

iii) Allow for the overlay of a graphical image, such as a logotype, into the image.

11) Security

a) The camera shall support the use of HTTPS and SSL/TLS, providing the ability to upload signed certificates to encrypt and secure authentication and communication of both administration data and video streams.

b) The camera shall provide centralized certificate management, with both pre-installed CA certificates and the ability to upload additional CA certificates. The certificates shall be signed by an organization providing digital trust services.

c) The camera shall support IEEE 802.1X authentication.

d) The camera shall provide support for restricting access to pre-defined IP addresses only, so-called IP address filtering.

e) The camera shall restrict access to the built-in web server by usernames and passwords at three different levels.

12) API support

a) The camera shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third party applications.

b) The camera shall support relevant ONVIF profiles as defined by the ONVIF Organization.

13) Embedded applications

a) The camera shall provide a platform allowing the upload of third party applications into the camera.

14) Installation and maintenance

a) The camera shall be supplied with Windows-based management software which allows the assignment of IP addresses, upgrade of firmware and backup of the cameras' configuration.

b) The camera shall support the use of SNMP-based management tools according to SNMP v1, 2c & 3 / MIB-II.

c) The camera shall allow updates of the software (firmware) over the network, using FTP or HTTP.

d) The camera shall provide the ability to apply a rectangle of customer-defined number of pixels to the image, which can be used as a pixel counter identifying the size of objects in number of pixels.

e) The camera shall accept external time synchronization from an NTP (Network Time Protocol) server.

f) The camera shall store all customer-specific settings in a non-volatile memory that shall not be lost during power cuts or soft reset.

g) The camera shall provide Remote zoom and Remote focus functionality.

h) The camera shall provide Autorotation functionality.

i) The camera shall provide Leveling assistant functionality.

15) Access log

a) The camera shall provide a log file, containing information about the 250 latest connections and access attempts since the unit's latest restart. The file shall include information about the connecting IP addresses and the time of connecting.

b) Provide a connection list of all currently connected viewers. The file shall include information about connecting IP address, time of connecting and the type of stream accessed.

16) Camera diagnostics

a) The camera shall be equipped with LEDs, capable of providing visible status information. LEDs shall indicate the camera's operational status and provide information about power, communication with receiver, the network status and the camera status.

b) The camera shall be monitored by a Watchdog functionality, which shall automatically re-initiate processes or restart the unit if a malfunction is detected.

c) The camera shall send a notification when the unit has re-booted and all services are initialized.

17) Hardware interfaces

a) Network interface

i) The camera shall be equipped with one 10BASE-T/100BASE-TX PoE Fast Ethernet-port, RJ45 connector and shall support auto negotiation of network speed (100 MBit/s and 10 MBit/s) and transfer mode (full and half duplex).

b) Inputs/Outputs

i) The camera shall be equipped with two configurable I/O ports, accessible via a removable terminal block. These inputs/outputs shall be configurable to respond to normally open (NO) or normally closed (NC) dry contacts. The output shall be able to provide 12 V DC, 50 mA.

c) Audio

i) The camera shall be equipped with one 3.5 mm jack for line/mic input and one 3.5 mm jack for line output.

18) Enclosure

a) At exterior locations, the camera shall:

i) Be manufactured with an IP66-, IP67-, IP6K9K- and NEMA 4X-rated, IK10+ (50 joules) impact-resistant casing.

ii) Be fitted with a dehumidifying membrane.

b) Provide encapsulated electronics

d. Power

a) Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3

i) Max: 11.7 W

ii) Typical: 4.8 W

b) 8–28 V DC

i) Max: 16.5 W

ii) Typical: 7.0 W

c) 20–24 V AC

i) Max: 24.5 VA

ii) Typical: 15.8 VA

e. Environmental

a) Operate in a temperature range of -50 °C to +60 °C (-58 °F to 140 °F).

b) Operate in a humidity range of 10–100% RH (condensing).

f. Mounting hardware: Contractor to select to suit application, with manufacturer accessory mounting plates, ceiling mounting, exterior sunshades, pipe mounts, pendant adapters, parapet mounts, corner mounts and backboxes as necessary to mount to rough-in conditions.

3. Manufacturers:

a. Axis

1) Indoors: Q3505-V Mk II

2) Exterior: Q3505-VE Mk II

b. Avigilon

c. Sony

d. or equal.

C. TCP/IP Box Indoor Surveillance Camera, Fixed, General Purpose:

1. Drawing References:

   a. CCTV Camera where box camera required to fit in existing enclosure.

2. Minimum Features, Functions, Performance, Construction. The fixed network camera shall meet or exceed the following design specifications:

   a. General

      1) The camera shall operate on an open source; Linux-based platform, and including a built-in web server.

      2) The camera shall be equipped with an IR-sensitive progressive scan megapixel sensor.

      3) The camera shall provide a removable IR-cut filter, providing day/night functionality.

      4) The camera shall be equipped with remote back focus functionality.

      5) The camera shall be equipped with a varifocal lens with P-iris.

      6) The camera shall provide local video storage utilizing a microSD/microSDHC/microSDXC UHS-I memory card expansion.

      7) The camera shall be manufactured with a metal (zinc) casing.

   b. Illumination

      1) The camera shall meet or exceed the following illumination specifications:

         a) 0.11 lux in color and 0.01 lux in B/W

         b) 0.22 lux in color and 0.02 lux in B/W, in HDTV 1080p 50/60 fps.

   c. Resolution

      1) The camera shall be designed to provide at least two video streams in HDTV 1080p (1920x1080) at up to 60 frames per second (60Hz mode) or 50 frames per second (50Hz mode) using H.264 or Motion JPEG.

      2) The camera shall provide up to 8 individually cropped out view areas.

      3) The camera shall support video resolutions including:

         a) 1920x1080 (HDTV 1080p)

b) 1280x720 (HDTV 720p)

4) The camera shall provide both landscape format (4:3 and 16:9 aspect ratio) as well as corridor format (3:4 and 9:16 aspect ratio).

d. Encoding

1) The camera shall support the following video encoding algorithms:

a) Motion JPEG encoding in a selectable range from 1 up to 50/60 frames per second in all resolutions.

b) Baseline Profile H.264 encoding with motion estimation in up to 50/60 frames per second.

c) Main Profile H.264 encoding with motion estimation and context-adaptive binary arithmetic coding (CABAC) in up to 50/60 frames per second.

d) Support High Profile H.264 encoding with motion estimation up to 50/60 frames per second.

e) Support H.264 with automatic scene adaptive bitrate control in up to 50/60 frames per second.

2) The camera shall provide independently configured simultaneous H.264 and Motion JPEG streams.

3) The camera shall in H.264 support Variable Bit Rate (VBR) for video quality adapted to scene content. To protect the network from unexpected bit rate speaks the camera shall support Constant Bit Rate (CBR) or Maximum Bit Rate (MBR).

4) The camera shall provide configurable compression levels.

5) Support standard baseline profile H.264 with motion estimation.

6) Support motion estimation in H.264/MPEG-4 Part 10/AVC.

7) The camera shall for its H.264 implementation support scene adaptive bitrate control with automatic dynamic ROI to reduce bitrate in unprioritized regions in order to lowering bandwidth and storage requirements.

e. Transmission

1) The camera shall allow for video to be transported over:

a) HTTP (Unicast)

b) HTTPS (Unicast)

c) RTP (Unicast & Multicast)

d) RTP over RTSP (Unicast)

e) RTP over RTSP over HTTP (Unicast)

2) The camera shall support Quality of Service (QoS) to be able to prioritize traffic.

a. Image

1. The camera shall incorporate Automatic and Manual White Balance.
2. The camera shall incorporate an electronic shutter operating in the range of 1/66500 s to 2 s.
3. The camera shall incorporate Wide Dynamic Range - Forensic Capture functionality providing up to 120dB dynamic range.
4. The camera shall support manually defined values for:
   a. Color level
   b. Brightness
   c. Sharpness
   d. Contrast
5. The camera shall incorporate a function for optimization of low light behavior.
6. The camera shall allow for rotation of the image in steps of 90º.

b. Audio

1. The camera shall support two-way full duplex audio:
2. Input sources
   a. Internal microphone
   b. External microphone
   c. External line device
3. Output sources
   a. External line device
4. Encoding
   a. The camera shall support:
      1. AAC 8/16/32/48 kHz
      2. G.711 PCM 48 kHz
      3. G.726 ADPCM 48 kHz

c. User Interface

1. Web server
    a. The camera shall contain a built-in web server making video and configuration available to multiple clients in a standard operating system and browser environment using HTTP, without the need for additional software.
    b. Optional components downloaded from the camera for specific tasks, e.g. Active X, shall be signed by an organization providing digital trust services, such as Verisign, Inc.
2. Language Specification
    a. The camera shall provide a function for altering the language of the user interface, and shall include support for at least 10 different languages.
3. IP addresses
    a. The camera shall support both fixed IP addresses and dynamically assigned IP addresses provided by a Dynamic Host Control Protocol (DHCP) server.
    b. The camera shall allow for automatic detection of the camera based on UPnP and Bonjour when using a PC with an operating system supporting this feature.
    c. The camera shall provide support for both IPv4 and IPv6.

d. PTZ functionality
1. The camera shall:
    a. Provide Digital PTZ functionality.
    b. Provide support for up-loadable PTZ drivers.

e. Event functionality
1. The camera shall be equipped with an integrated event functionality, which can be trigged by:
    a. Video Motion Detection
    b. Audio Detection
    c. Live Stream Accessed
    d. Camera tampering
    e. Manual Trigger/Virtual Inputs
    f. PTZ functionality
    g. External input
    h. Embedded third party applications
    i. Edge storage disruption detection
2. Response to triggers shall include:
    a. Send notification, using HTTP, HTTPS, TCP, SNMP trap or email
    b. Send images, using FTP, HTTP, HTTPS, network share or email

c. Send video clip, using FTP, HTTP, HTTPS, network share or email

d. Send SNMP trap message

e. Recording to local storage and/or network attached storage

f. Activating external output

g. Play audio clip

h. PTZ control functionality

i. WDR mode

3. The camera shall provide memory for pre & post alarm recordings.

f. Edge storage

1) The camera shall support continuous and event controlled recording to:

a) Local memory added to the cameras SD-card slot

b) Network attached storage, located on the local network

2) The camera shall be able to detect and notify Edge storage disruptions.

g. Protocol

1) The camera shall incorporate support for at least IPv4/v6, HTTP, HTTPS, SSL/TLS, QoS Layer 3 DiffServ, TCP, ICMP, SNMPv1/v2c/v3 (MIB-II), RTSP, RTP, UDP, IGMP, RTCP, SMTP, FTP, DHCP, UPnP, ARP, DNS, DynDNS, SOCKS, SSH, NTP, CIFS/SMB, Bonjour.

2) The SMTP implementation shall include support for SMTP authentication.

h. Text overlay

1) The camera shall:

a) Provide embedded on-screen text with support for date & time, and a customer-specific text, camera name, of at least 45 ASCII characters.

b) Provide the ability to apply privacy masks to the image.

c) Allow for the overlay of a graphical image, such as a logotype, into the image.

i. Security

1) The camera shall support the use of HTTPS and SSL/TLS, providing the ability to upload signed certificates to encrypt and secure authentication and communication of both administration data and video streams.

2) The camera shall provide centralized certificate management, with both pre-installed CA certificates and the ability to upload additional CA certificates. The certificates shall be signed by an organization providing digital trust services.

3) The camera shall support IEEE 802.1X authentication.

4) The camera shall provide support for restricting access to pre-defined IP addresses only, so-called IP address filtering.

5) The camera shall restrict access to the built-in web server by usernames and passwords at three different levels.

j. API support

1) The camera shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third party applications.

2) The camera shall support relevant ONVIF profiles as defined by the ONVIF Organization.

k. Embedded applications

1) The camera shall provide a platform allowing the upload of third party applications into the camera.

l. Installation and maintenance

1) The camera shall be supplied with Windows-based management software which allows the assignment of IP addresses, upgrade of firmware and backup of the cameras' configuration.

2) The camera shall support the use of SNMP-based management tools according to SNMP v1, 2c & 3 / MIB-II.

3) The camera shall allow updates of the software (firmware) over the network, using FTP or HTTP.

4) The camera shall provide the ability to perform back focus adjustment remotely from the products web interface.

5) The camera shall provide the ability to apply a rectangle of customer-defined number of pixels to the image, which can be used as a pixel counter identifying the size of objects in number of pixels.

6) The camera shall accept external time synchronization from an NTP (Network Time Protocol) server.

7) The camera shall store all customer-specific settings in a non-volatile memory that shall not be lost during power cuts or soft reset.

m. Access log

1) The camera shall provide a log file, containing information about the 250 latest connections and access attempts since the unit's latest restart. The file shall include information about the connecting IP addresses and the time of connecting.

2) Provide a connection list of all currently connected viewers. The file shall include information about connecting IP address, time of connecting and the type of stream accessed.

n. Camera diagnostics

1) The camera shall be equipped with LEDs, capable of providing visible status information. LEDs shall indicate the camera's operational status and provide information about power, communication with receiver, the network status and the camera status.

2) The camera shall be monitored by a Watchdog functionality, which shall automatically re-initiate processes or restart the unit if a malfunction is detected.

3) The camera shall send a notification when the unit has re-booted and all services are initialized.

o. Hardware interfaces

1) Network interface

a) The camera shall be equipped with one 10BASE-T/100BASE-TX PoE Fast Ethernet-port, using a standard male RJ45 connector and shall support auto negotiation of network speed (100 MBit/s and 10 MBit/s) and transfer mode (full and half duplex).

2) Serial interface

a) The camera shall be equipped with one RS-485/422 serial port.

3) Inputs/Outputs

a) The camera shall be equipped with two configurable I/O ports, accessible via a removable terminal block. These inputs/outputs shall be configurable to respond to normally open (NO) or normally closed (NC) dry contacts. The output shall be able to provide 12 V DC, 50 mA.

4) Audio

a) The camera shall be equipped with one 3.5 mm jack for line/mic input and one 3.5 mm jack for line output.

5) Power

a) The camera shall be equipped with a removable terminal block providing connectivity for external power.

p. Enclosure

a. The camera shall:

a) Be manufactured with a metal (zinc) casing.

q. Power

1) Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3

2) PoE max 6.8 W, typical 3.6 W

3) 8 - 28 V DC, max 7.3 W typical 4.2 W

r. Environmental

1) Operate in a temperature range of 0 °C to +55 °C (+32 °F to 131 °F).

2) Operate in a humidity range of 10–85% RH (non-condensing).

s. Mounting hardware: Contractor to select to suit application, with manufacturer accessory mounting plates, ceiling mounting, exterior sunshades, pipe mounts, pendant adapters, parapet mounts, corner mounts and backboxes as necessary to mount to rough-in conditions.

3. Manufacturers:

a. Axis P1365 Mk II

b. Avigilon

c. Sony

d. or equal.

D. IP Surveillance Interior/Exterior Dome Camera, Three to Four Camera Sensors minimum, Fixed, 180° Combined Horizontal Angle:

1. Drawing References:

    a. Interior Cameras, Circle with 2 in center and two arrowheads

    b. Exterior Cameras, Circle with 2 in center and two arrowheads, subscript E

2. The fixed dome multi-sensor network camera shall meet or exceed the following design specifications:

    a. The camera shall operate on an open source; Linux-based platform, and including a built-in web server.

    b. The camera shall be equipped with an IR-sensitive progressive scan megapixel sensor.

    c. The camera shall provide a removable IR-cut filter, providing day/night functionality.

    d. The camera shall be manufactured with an IP66- and NEMA 4X-rated, IK10 impact-resistant aluminum casing fitted with an repaintable weather shield.

    e. The camera shall be equipped with factory-focused lenses in order to eliminate the need for manual focusing.

    f. The camera shall provide a manual 3-axis (pan/tilt/rotation) positioning to allow adjustment for optimum camera rotation and placement.

    g. The camera shall provide a 180° panoramic overview provided by three sensors.

3. The fixed dome multi-sensor network camera shall meet or exceed the following performance specifications:

    a. Illumination

        1) The camera shall meet or exceed the following illumination specifications:

            a) 2 lux in color

            b) 0.4 lux B/W

    b. Resolution

        1) Be designed to provide video streams in:

            a) 3 x 4K Ultra HD: Up to 25/30 fps with power line frequency 50/60 Hz

b) 3 x 11 MP: Up to 16/20 fps with power line frequency 50/60 Hz

2) The camera shall support video resolutions including:

a) 3840x2880

b) 3840x2160

c) 1920x1080 (HDTV 1080p)

d) 1280x720 (HDTV 720p)

e) 800x600

c. Encoding

1) The camera shall support the following video encoding algorithms:

a) Motion JPEG encoding in a selectable range from 1 up to 25/30 frames per second in all resolutions.

b) Baseline Profile H.264 encoding with motion estimation in up to 25/30 frames per second.

c) Main Profile H.264 encoding with motion estimation and context-adaptive binary arithmetic coding (CABAC) in up to 25/30 frames per second.

d) Support High Profile H.264 encoding with motion estimation up to 50/60 frames per second.

2) The camera shall provide independently configured simultaneous H.264 and Motion JPEG streams.

3) The camera shall in H.264 support Variable Bit Rate (VBR) for video quality adapted to scene content. To protect the network from unexpected bit rate speaks the camera shall support Constant Bit Rate (CBR) or Maximum Bit Rate (MBR).

4) The camera shall provide configurable compression levels.

5) Support motion estimation in H.264/MPEG-4 Part 10/AVC.

d. Transmission

1) The camera shall allow for video to be transported over:

a) HTTP (Unicast)

b) HTTPS (Unicast)

c) RTP (Unicast & Multicast)

d) RTP over RTSP (Unicast)

e) RTP over RTSP over HTTP (Unicast)

2) The camera shall support Quality of Service (QoS) to be able to prioritize traffic.

e. Image

1) The camera shall incorporate Automatic and Manual White Balance.

2) The camera shall incorporate an electronic shutter operating in the range of 1/23250 s to 2/5 s.

3) The camera shall incorporate Wide Dynamic Range – Dynamic contrast.

4) The camera shall provide backlight compensation functionality.

5) The camera shall support manually defined values for:

a) Color level

b) Brightness

c) Sharpness

d) Contrast

6) The camera shall incorporate a function for optimization of low light behavior.

f. User Interface

1) Web server

a) The camera shall contain a built-in web server making video and configuration available to multiple clients in a standard operating system and browser environment using HTTP, without the need for additional software.

b) Optional components downloaded from the camera for specific tasks, e.g. Active X, shall be signed by an organization providing digital trust services, such as Verisign, Inc.

2) Language Specification

a) The camera shall provide a function for altering the language of the user interface, and shall include support for at least 10 different languages.

3) IP addresses

a) The camera shall support both fixed IP addresses and dynamically assigned IP addresses provided by a Dynamic Host Control Protocol (DHCP) server.

b) The camera shall allow for automatic detection of the camera based on UPnP and Bonjour when using a PC with an operating system supporting this feature.

c) The camera shall provide support for both IPv4 and IPv6.

g. Event functionality

1) The camera shall be equipped with an integrated event functionality, which can be trigged by:

a) Video Motion Detection

b) Live Stream Accessed

c) Camera tampering

d) Fan malfunctioning

e) Temperature

f) Manual Trigger/Virtual Inputs

g) Embedded third party applications

h) Edge storage disruption detection

2) Response to triggers shall include:

a) Send notification, using HTTP, HTTPS, TCP or email

b) Send images, using FTP, HTTP, HTTPS, network share or email

c) Send video clip, using FTP, HTTP, HTTPS, network share or email

d) Send SNMP trap message

e) Recording to local storage and/or network attached storage

f) Day/Night Vision Mode

g) Overlay Text

3) The camera shall provide memory for pre & post alarm recordings.

h. Edge storage

1) The camera shall support continuous and event controlled recording to:

a) Local memory added to the cameras SD-card slot

b) Network attached storage, located on the local network

2) The camera shall be able to detect and notify Edge storage disruptions.

i. Protocol

1) The camera shall incorporate support for at least IPv4/v6, HTTP, HTTPS, SSL/TLS, QoS Layer 3 DiffServ, TCP, ICMP, SNMPv1/v2c/v3 (MIB-II), RTSP, RTP, UDP, IGMP, RTCP, SMTP, FTP, DHCP, UPnP, ARP, DNS, DynDNS, SOCKS, SSH, NTP, CIFS/SMB, Bonjour.

2) The SMTP implementation shall include support for SMTP authentication.

j. Text overlay

1) The camera shall:

a) Provide embedded on-screen text with support for date & time, and a customer-specific text, camera name, of at least 45 ASCII characters.

b) Provide the ability to apply privacy masks to the image.

c) Allow for the overlay of a graphical image, such as a logotype, into the image.

k. Security

1) The camera shall support the use of HTTPS and SSL/TLS, providing the ability to upload signed certificates to encrypt and secure authentication and communication of both administration data and video streams.

2) The camera shall provide centralized certificate management, with both pre-installed CA certificates and the ability to upload additional CA certificates. The certificates shall be signed by an organization providing digital trust services.

3) The camera shall support IEEE 802.1X authentication.

4) The camera shall provide support for restricting access to pre-defined IP addresses only, so-called IP address filtering.

5) The camera shall restrict access to the built-in web server by usernames and passwords at three different levels.

l. API support

1) The camera shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third party applications.

2) The camera shall support relevant ONVIF profiles as defined by the ONVIF Organization.

m. Embedded applications

1) The camera shall provide a platform allowing the upload of third party applications into the camera.

n. Installation and maintenance

1) The camera shall be supplied with Windows-based management software which allows the assignment of IP addresses, upgrade of firmware and backup of the cameras' configuration.

2) The camera shall support the use of SNMP-based management tools according to SNMP v1, 2c & 3 / MIB-II.

3) The camera shall allow updates of the software (firmware) over the network, using FTP or HTTP.

4) The camera shall provide the ability to apply a rectangle of customer-defined number of pixels to the image, which can be used as a pixel counter identifying the size of objects in number of pixels.

5) The camera shall accept external time synchronization from an NTP (Network Time Protocol) server.

6) The camera shall store all customer-specific settings in a non-volatile memory that shall not be lost during power cuts or soft reset.

o. Access log

1) The camera shall provide a log file, containing information about the 250 latest connections and access attempts since the unit's latest restart. The file shall include information about the connecting IP addresses and the time of connecting.

2) Provide a connection list of all currently connected viewers. The file shall include information about connecting IP address, time of connecting and the type of stream accessed.

p. Camera diagnostics

1) The camera shall be equipped with LEDs, capable of providing visible status information. LEDs shall indicate the camera's operational status and provide information about power, communication with receiver, the network status and the camera status.

2) The camera shall be monitored by a Watchdog functionality, which shall automatically re-initiate processes or restart the unit if a malfunction is detected.

3) The camera shall send a notification when the unit has re-booted and all services are initialized.

q. Hardware interfaces

1) Network interface

a) The camera shall be equipped with one 100BASE-TX Fast Ethernet-port, using a standard male RJ45 connector and shall support auto negotiation of network speed (100 MBit/s and 10 MBit/s) and transfer mode (full and half duplex).

r. Enclosure

1) The camera shall:

a) Be manufactured with an IP66- and NEMA 4X-rated, IK10 impact-resistant aluminum casing.

b) Be fitted with a dehumidifying membrane.

c) Be fitted with an repaintable weather shield.

s. Power

1) Power over Ethernet Plus (PoE+) IEEE 802.3at Type 2 Class 4

t. Environmental

1) Operate in a temperature range of -40 °C to +55 °C (-40 °F to 131 °F).

2) Operate in a humidity range of 10–100% RH (condensing).

4. Manufacturer:

a. Interior and Exterior Camera, Fixed

1) Axis Communications Q3709-PVE (Design Basis)

a) Provide the following mounts, as required:

i) Axis T94A01D Pendant Kit

ii) Axis T91B61 Wall Mount

iii) Axis T91B51 Ceiling Mount

iv) Axis T94A02F Ceiling Bracket

v) Axis T91A64 Corner Bracket

vi) Axis T91B50 Telescopic Ceiling Mount

2) Equal by Avigilon, with matching mounting hardware accessories as required.

3) Or equal.

E. IP Surveillance Interior/Exterior Dome Camera, Four Camera Sensors, Fixed, 360° Combined Horizontal Angle:

1. Drawing References:

a. Interior Cameras, Circle with 4 in center and four arrowheads

b. Exterior Cameras, Circle with 4 in center and four arrowheads, subscript E

2. The panoramic network camera shall meet or exceed the following design specifications:

a. The camera shall operate on an open source; Linux-based platform, and including a built-in web server.

b. The camera shall be equipped with four progressive scan megapixel sensors.

c. The camera shall provide flexible positioning of four varifocal camera heads.

d. The camera shall provide the following field of view:

1) 4x 1080p

a) Horizontal: 108° - 54°

b) Vertical: 57° - 30°

2) 4x 720p

a) Horizontal: 67° - 36°

b) Vertical: 37° - 20°

e. The camera shall provide adjustable focus and zoom functionality.

f. The camera shall provide local video storage utilizing a microSD/microSDHC/microSDXC memory card expansion.

g. The camera shall be manufactured with an IP66-, NEMA 4X- and IK09-rated Die-casted aluminum casing.

h. The camera shall provide:

1) Pan ± 90°

2) Tilt 28° - 92°

3) Rotate ± 90°

3. The panoramic network camera shall meet or exceed the following performance specifications:

a. Illumination

1) The camera shall meet or exceed the following illumination specifications:

a) 0.3 lux in color

b. Resolution

1) The camera shall be designed to provide 4x video streams in HDTV 1080p (1920x1080) at up to 15 frames per second (60Hz mode) or 12.5 frames per second (50Hz mode) using H.264 or Motion JPEG.

2) The camera shall be designed to provide 4x video streams in HDTV 720p (1280x720) at up to 30 frames per second (60Hz mode) or 25 frames per second (50Hz mode) using H.264 or Motion JPEG.

3) The camera shall be designed to provide quad view in resolution up to 1920x1440

4) The camera shall support video resolutions including:

   a) 1920x1440 (Quad view)

   b) 1920x1080 (HDTV 1080p)

   c) 1280x720 (HDTV 720p)

5) The camera shall provide both landscape format (4:3 and 16:9 aspect ratio) as well as corridor format (3:4 and 9:16 aspect ratio).

c. Encoding

1) The camera shall support the following video encoding algorithms:

   a) Motion JPEG encoding in a selectable range from 1 up to 25/30 frames per second in all resolutions.

   b) Baseline Profile H.264 encoding with motion estimation in up to 25/30 frames per second.

   c) Main Profile H.264 encoding with motion estimation and context-adaptive binary arithmetic coding (CABAC) in up to 25/30 frames per second.

   d) Support High Profile H.264 encoding with motion estimation up to 25/30 frames per second.

   e) Support H.264 with automatic scene adaptive bitrate control in up to 25/30 frames per second.

2) The camera shall provide independently configured simultaneous H.264 and Motion JPEG streams.

3) The camera shall in H.264 support Variable Bit Rate (VBR) for video quality adapted to scene content. To protect the network from unexpected bit rate speaks the camera shall support Constant Bit Rate (CBR) or Maximum Bit Rate (MBR).

4) The camera shall provide configurable compression levels.

5) Support standard baseline profile H.264 with motion estimation.

6) Support motion estimation in H.264/MPEG-4 Part 10/AVC.

7) The camera shall for its H.264 implementation support scene adaptive bitrate control with automatic dynamic ROI to reduce bitrate in unprioritized regions in order to lowering bandwidth and storage requirements.

d. Transmission

1) The camera shall allow for video to be transported over:

a) HTTP (Unicast)

b) HTTPS (Unicast)

c) RTP (Unicast & Multicast)

d) RTP over RTSP (Unicast)

e) RTP over RTSP over HTTP (Unicast)

2) The camera shall support Quality of Service (QoS) to be able to prioritize traffic.

e. Image

1) The camera shall incorporate Automatic and Manual White Balance.

a) The camera shall incorporate an electronic shutter operating in the range of:

b) 720p: 1/28000 s to 2 s

c) 1080p: 1/22500 s to 2 s

2) The camera shall incorporate capture mode with the following settings:

a) HDTV 1080p 12.5/15 fps

b) HDTV 720p 25/30 fps

3) The camera shall support manually defined values for:

a) Color level

b) Brightness

c) Sharpness

d) Contrast

4) The camera shall incorporate a function for optimization of low light behavior.

5) The camera shall allow for rotation of the image in steps of 90°.

6) The camera shall incorporate local contrast functionality.

f. User Interface

1) Web server

a) The camera shall contain a built-in web server making video and configuration available to multiple clients in a standard operating system and browser environment using HTTP, without the need for additional software.

b) Optional components downloaded from the camera for specific tasks, e.g. Active X, shall be signed by an organization providing digital trust services, such as Verisign, Inc.

2) Language Specification

a) The camera shall provide a function for altering the language of the user interface, and shall include support for at least 10 different languages.

3) IP addresses

a) The camera shall support both fixed IP addresses and dynamically assigned IP addresses provided by a Dynamic Host Control Protocol (DHCP) server.

b) The camera shall allow for automatic detection of the camera based on UPnP and Bonjour when using a PC with an operating system supporting this feature.

c) The camera shall provide support for both IPv4 and IPv6.

g. Event functionality

1) The camera shall be equipped with an integrated event functionality, which can be trigged by:

a) Video Motion Detection

b) Live Stream Accessed

c) Camera tampering

d) Manual Trigger/Virtual Inputs

e) Embedded third party applications

f) Edge storage disruption detection

2) Response to triggers shall include:

a) Send notification, using HTTP, HTTPS, TCP, SNMP trap or email

b) Send images, using FTP, HTTP, HTTPS, network share or email

c) Send video clip, using FTP, HTTP, HTTPS, network share or email

d) Recording to local storage and/or network attached storage

h. Overlay Text

1) The camera shall provide memory for pre & post alarm recordings.

i. Edge storage

1) The camera shall support continuous and event controlled recording to:

a) Local memory added to the cameras SD-card slot

b) Network attached storage, located on the local network

2) The camera shall be able to detect and notify Edge storage disruptions.

j. Protocol

1) The camera shall incorporate support for at least IPv4/v6, HTTP, HTTPS, SSL/TLS, QoS Layer 3 DiffServ, TCP, ICMP, SNMPv1/v2c/v3 (MIB-II), RTSP, RTP, UDP, IGMP, RTCP, SMTP, FTP, DHCP, UPnP, ARP, DNS, DynDNS, SOCKS, SSH, NTP, CIFS/SMB, Bonjour.

2) The SMTP implementation shall include support for SMTP authentication.

k. Text overlay

1) The camera shall:

a) Provide embedded on-screen text with support for date & time, and a customer-specific text, camera name, of at least 45 ASCII characters.

b) Provide the ability to apply privacy masks to the image.

c) Allow for the overlay of a graphical image, such as a logotype, into the image.

l. Security

1) The camera shall support the use of HTTPS and SSL/TLS, providing the ability to upload signed certificates to encrypt and secure authentication and communication of both administration data and video streams.

2) The camera shall provide centralized certificate management, with both pre-installed CA certificates and the ability to upload additional CA certificates. The certificates shall be signed by an organization providing digital trust services.

3) The camera shall support IEEE 802.1X authentication.

4) The camera shall provide support for restricting access to pre-defined IP addresses only, so-called IP address filtering.

5) The camera shall restrict access to the built-in web server by usernames and passwords at three different levels.

m. API support

1) The camera shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third party applications.

2) The camera shall support relevant ONVIF profiles as defined by the ONVIF Organization.

n. Embedded applications

1) The camera shall provide a platform allowing the upload of third party applications into the camera.

o. Installation and maintenance

1) The camera shall be supplied with Windows-based management software which allows the assignment of IP addresses, upgrade of firmware and backup of the cameras' configuration.

2) The camera shall support the use of SNMP-based management tools according to SNMP v1, 2c & 3 / MIB-II.

3) The camera shall allow updates of the software (firmware) over the network, using FTP or HTTP.

4) The camera shall provide the ability to apply a rectangle of customer-defined number of pixels to the image, which can be used as a pixel counter identifying the size of objects in number of pixels.

5) The camera shall accept external time synchronization from an NTP (Network Time Protocol) server.

6) The camera shall store all customer-specific settings in a non-volatile memory that shall not be lost during power cuts or soft reset.

p. Access log

1) The camera shall provide a log file, containing information about the 250 latest connections and access attempts since the unit's latest restart. The file shall include information about the connecting IP addresses and the time of connecting.

2) Provide a connection list of all currently connected viewers. The file shall include information about connecting IP address, time of connecting and the type of stream accessed.

q. Camera diagnostics

1) The camera shall be equipped with LEDs, capable of providing visible status information. LEDs shall indicate the camera's operational status and provide information about power, communication with receiver, the network status and the camera status.

2) The camera shall be monitored by a Watchdog functionality, which shall automatically re-initiate processes or restart the unit if a malfunction is detected.

3) The camera shall send a notification when the unit has re-booted and all services are initialized.

r. Hardware interfaces

1) Network interface

a) The camera shall be equipped with one 10BASE-T/100BASE-TX PoE Fast Ethernet-port, using a standard male RJ45 connector and shall support auto negotiation of network speed (100 MBit/s and 10 MBit/s) and transfer mode (full and half duplex).

s. Enclosure

1) The camera shall:

a) Be manufactured with an IP66-, NEMA 4X- and IK09-rated Die-casted aluminum casing.

b) Be fitted with a polycarbonate dome.

t. Power

1) Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 2

2) Typical 4.8 W

3) Max 5.5 W

u. Environmental

1) Operate in a temperature range of -30 °C to +60 °C (-22 °F to 140 °F).

2) Operate in a humidity range of 10–100% RH (condensing).

4. Manufacturer:

a. Interior and Exterior Camera, Fixed

1) Axis Communications P3707-PE (Design Basis)

a) Provide the following mounts, as required:

i) Axis T94M02D Pendant Kit

ii) Axis T91D61 Wall Mount

iii) Axis T91B51, T91B63 Ceiling Mount

iv) Axis T91B50 Telescopic Ceiling Mount

2) Equal by Avigilon with matching mounting hardware.

3) Or equal.

2.4 MEDIA CONVERTERS

A. 100base FX Fiberoptic Media Converter with POE, POE+

1. Drawing Reference: 100 FXMC.

2. Minimum Features/Functions/Construction:

a. Media converter provides conversion from 100 base T to 100 base FX using IEEE standard protocols.

b. Where installed outdoors, industrial construction of assembly is suitable for continuous installation outdoors subject to a wide range of temperature and humidity.

c. Power source: 24VAC or 48-57 VDC.

d. Standards:

   1) IEEE 802.3

   2) IEEE 802.3x

   3) IEEE 802.3u

   4) IEEE 802.3ab

   5) IEEE 802.3at

   6) IEEE 802.3z

   7) IEEE 802.3af

e. Status LEDs:

   1) PWR (Power): (below RJ-45)

   2) FX-Link/Act (Fiber Link/Activity): (Upper Left on RJ-45) ON = Link; Flashing = Activity

   3) TX-Link/Act (Copper Link/Activity): (Upper Right on RJ-45) ON = Link; Flashing = Activity

f. Nominal maximum dimensions:

   1) Width: 1.8"

   2) Depth: 3.3"

   3) Height: 0.85"

g. Power Consumption

   1) 3.53 Watts (No PoE)

   2) 32.725 Watts (1 port PoE+)

h. Power Sources: AC version also supports 22-36 VAC ± 10%

i. Overload Current Protection

j. Reverse Polarity Protection

k. Where installed outdoors, provided finished appearance enclosure meeting NEMA 4X and finished as required by the Owner's Representative to house media converter, patch cords and supporting infrastructure. Where mounted on pole, provide pole mounting hardware.

l. Where installed outdoors, assembly shall be suitable and intended by its manufacturer for installation outdoors. Minimum environmental operating range:

1) Operating Temp: -40°C to 75°C

2) Storage Temp: -40°C to 85°C

3) Humidity: 5% – 95% humidity non-condensing

4) Altitude : 0 – 10,000 ft. altitude

m. Ingress Protection: IP31

n. Regulatory Compliance: FCC Class A, CISPR22/EN55022 Class A, EN55024, CE Mark

o. Supports data rates of 10/100/1000 Mbps

p. Connectors:

1) One or two RJ-45 - 100BaseTX with POE or POE+ providing up to 30 watts to load. Provide port count as required

2) LC - 100baseFX

q. Optical interface: Provision for SingleMode fiber. Provide with SFP optics suitable for transmission at up to at least 3 times the distance of the installed link.

3. Manufacturers, Media Converter:

a. Transition Networks SI-IES-111-LRT or SI-IES-121D-LRT. Provide with power supply and SFP port optics as required.

b. Altronix

c. Axis

d. Avigilon

e. or equal.

4. Manufacturer, Outdoor Enclosure

a. Axis T98A series

b. Avigilon

c. Custom by Contractor

d. Or equal.

2.5 POWER SUPPLIES

A. Camera Power Supplies

1. Spec Reference: CAM PS

2. Backboard mounted equipment

3. Function:

a. Power supply.

b. Class 1 (115VAC Input)

c. Individually fused, Power Limited, Class 2 outputs - sized to meet worst case load while maintaining system operations.

d. UL Listings: UL 294, UL603, UL 1069, UL1481 for application

e. Power supply and battery fully enclosed in steel NEMA enclosure with cam lock cover and conduit knockouts.

f. Thermal and short circuit protection with auto reset.

4. Manufacturers:

a. Altronix ALTV Series (Design Basis)

b. by camera manufacturer

c. or equal.

B. POE Power Supplies

1. Spec Reference: POE PS

2. Backboard mounted equipment installs on DIN rails.

3. Class 2 Voltage to suit POE device(s). Select for at least 50% safe headroom relative to attached load, cable gauge and run length/IR drop.

4. Approvals:

    a. UL 60950-1

    b. UL 508

    c. Over current protected outputs.

5. Manufacturers

    a. Lamda Electronics DPP Series with Altronix DP4 Power Distribution Modules.

    b. Altronix

    c. By POE Transceiver or Switch Manufacturer

    d. or equal.

PART 3 - EXECUTION

3.1 PROGRAMMING AND INSTALLATION

A. Initial Systems Programming

1. Meet with Owner's Representative to establish functional requirements for surveillance systems, including but not limited to the following:

    a. Camera Views

        1) Fixed views

            a) The target areas of useable coverage required for each camera are documented on the plans. The scheduled "View area upper bound distance" defines the minimum distance for which usable pictures will be provided. The scheduled lensing shown is calculated based on the mounting height, view area upper bound distance and the scheduled assumed CCD size. Contractor bears the responsibility to review the target image requirements relative to the system the Contractor proposes to provide and to adjust the lensing as necessary.

            b) Contractor to review the target for each camera at the Initial Systems Programming Meeting with the Owner's Representative and adjust the target view areas, and where required, the mounting location to provide the view currently required by the Owner's Representative.

c) For each camera view, Contractor to review with Owner's Representative the requirement for electronic masking of images gathered to prevent the system from recording undesired material.

2) Pan-Tilt-Zoom Views

a) As for Fixed Views above.

b) In addition, review Owner's requirement for patrol views (continuous sweeping patterns followed by the cameras when not under operator control) and preset shots (pre-programmed views that the camera can rapidly switch between under program and manual control.

2. Document and submit in accordance with the requirements of Section 28 05 00.

3. Provide initial systems programming in accordance with the preceding.

B. Installation

1. General

a. Conform to the manufacturers recommendations and instructions regarding:

1) camera mounting and adjustment.

2) power and video cable sizing for length of indicated run.

b. Wiring Practice - Comply with requirements of Section 28 05 13 – Conductors and Cables for Electronic Safety and Security.

2. Camera Installation

a. Locate the cameras in accordance with the plans and as required to provide the target images noted on the plans, except where modified through the pre-construction meeting described above.

b. Do not place cameras where they will be subject to ready access or tampering from persons in public access areas of the sites.

1) Bring to the Owner's Representative attention through an RFI any proposed location that does not require a ladder or similar means of access from the public space.

2) Obtain Owner's Representative's resolution of the RFI prior to proceeding with the installation.

c. Secure cameras to structure so that they can not be readily removed, including with use tools or by force.

   1) Cameras are to be mounted to flush mounted backboxes at fed through rear of camera body, except where surface mounting is explicitly called for.

   2) Where surface mounting is indicated, use knock-outs on side of camera housing to connect to conduit. Install backbox containing required structured cabling biscuit box at remote location hidden from view and secure cover with tamperproof fasteners.

   3) Select fastening means appropriate to the mounting surface and its underlying framing system and fasten securely to the structure and not to lightweight surface materials. Removal of cameras following successful fastening shall require use of tamper fastener tooling or application of destructive force. Owner's Representative reserves the right to request remounting of any camera not found to meet this standard at no additional cost.

d. Where mounting to pipe mount indicated/or required by field conditions, select materials to maintain stability of camera image under environmental conditions associated with installation location, including wind load and potential for impact.

e. At exterior cameras, seal openings as directed by the manufacturer's instructions.

f. Apply manufacturer's recommended anti-graffiti coating to camera housings and domes.

g. Provide cameras with lensing as required to cover area of coverage indicated on the plans.

h. Adjust auto-iris systems at night to gain maximum depth of field under low light conditions.

i. Using a precision display portable video monitor and/or laptop, adjust each camera's angle and field of view as directed by the Owner's Representative.

3. Power Supplies.

   a. Unless otherwise directed, place camera supplies in the communications room closet to the camera(s) served by the equipment.

   b. Submit proposed locations on communications room backboards for review by the Owner's Representative prior to installation.

c. Correct installation conditions found to block access work of other Sections.

3.2 SYSTEM STARTUP

A. The Contractor shall not apply power to the CCTV system until the following items have been completed:

1. CCTV system equipment items and NVR interface have been set up in accordance with manufacturer's instructions.

2. A visual inspection of the CCTV system has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.

3. System wiring has been tested and verified as correctly connected as indicated.

4. All system grounding and transient protection systems have been verified as properly installed and connected as indicated.

5. Power supplies to be connected to the CCTV system have been verified as the correct voltage, phasing, and frequency as indicated.

B. Satisfaction of the above requirements shall not relieve the Contractor of responsibility for incorrect installation, defective equipment items, or collateral damage as a result of Contractor work/equipment.

3.3 SYSTEMS PERFORMANCE TESTING AND ADJUSTING PROCEDURES

A. The Contractor shall provide all personnel, equipment, instrumentation, and supplies necessary to perform all site testing. The Owner’s Representative will witness all performance verification and endurance testing. Written permission shall be obtained from the Owner’s Representative before proceeding with the next phase of testing. Original copies of all data produced during performance verification and endurance testing shall be turned over to the Owner’s Representative at the conclusion of each phase of testing prior to Owner’s Representative approval of the test.

B. Contractor's Field Testing.

1. The Contractor shall calibrate and test all equipment, verify system operation, place the integrated system in service, and test the integrated system. Ground rods installed by the Contractor shall be tested as specified in IEEE Std 142. The Contractor shall deliver a report describing results of functional tests, diagnostics, and calibrations including written certification to the Owner's Representative that the installed complete system has been calibrated, tested, and is ready to begin performance verification testing. The report shall also include a copy of the approved performance verification test procedure. In addition, the Contractor shall make a master video tape recording to DVD showing typical day and night views of each camera in the system and shall deliver the DVD with the report. Note any objects in the field of view that might produce highlights that could cause camera blinding. Note any objects in the field of view or anomalies in the terrain which may cause blind spots. Note if a camera cannot be aimed to cover the zone and exclude the rising or setting sun from the picture. Note night assessment capabilities and whether lights or vehicle headlights cause blooming or picture degradation. If any of the above conditions or other conditions exist that cause picture degradation or interfere with the camera field of view, the Contractor shall inform the Owner's Representative. The DVD shall be recorded using the video recorder installed as part of the CCTV system. If a recorder is not part of the CCTV system, the DVD prepared using the Video Management System installed under the work of this Section. The Contractor shall provide the Owner's Representative with the original tape as part of the documentation of the system and shall submit a letter certifying that the CCTV system is ready for performance verification testing. The field testing shall as a minimum include:

    a. Verification that the video transmission system and any signal or control cabling have been installed, tested, and approved as specified.

    b. When the system includes remote control/monitoring stations or remote switch panels, verification that the remote devices are functional, communicate with the security center, and perform all functions as specified.

    c. Verification that the switcher is fully functional and that the switcher software has been programmed as needed for the site configuration.

    d. Verification that switcher software is functioning correctly. All software functions shall be exercised.

    e. Verification that software video multiplexers are functioning correctly.

    f. Operation of all software, electrical and mechanical switcher controls and verification that the control performs the designed function.

g. Verification that all analog video sources and video outputs provide a full bandwidth signal at all video inputs.

h. Verification that all video signals are terminated properly.

i. Verification that all cameras are aimed and focused properly. The Contractor shall conduct a walk test of the area covered by each camera to verify the field of view.

j. Verification that cameras facing the direction of rising or setting sun are aimed sufficiently below the horizon so that the camera does not view the sun directly.

k. If vehicles are used in proximity of the assessment areas, verification of night assessment capabilities and determination if headlights cause blooming or picture degradation.

l. Verification that all cameras are synchronized and that the picture does not roll when cameras are switched.

m. Verification that the alarm interface to the IDS is functional and that automatic camera call-up is functional with appropriate video annotation for all designated ESS alarm points and cameras.

n. When pan/tilt mounts are used in the system, verification that the limit stops have been set correctly. Verification of all controls for pan/tilt or zoom mechanisms are operative and that the controls perform the desired function. If preposition controls are used, verification that all home positions have been set correctly, and have been tested for auto home function and correct home position.

o. When dome camera mounts are used in the system, verify that all preset positions are correct and that the dome also operates correctly in a manual control mode.

2. The Contractor shall deliver a report describing results of functional tests, diagnostics, and calibrations including written certification to the Owner's Representative that the installed complete system has been calibrated, tested, and is ready to begin performance verification testing. The report shall also include a copy of the approved performance verification test procedure.

C. Performance Verification Test

1. The Contractor shall demonstrate that the completed CCTV system complies with the contract requirements. Using approved test procedures, all physical and functional requirements of the project shall be demonstrated and shown. The performance verification test, as specified, shall not be started until receipt by the Contractor of written permission from the Owner's Representative, based on the Contractor's written report. This shall include certification of successful completion of Contractor Field Testing as specified in paragraph "Contractor's Field Testing," and upon successful completion of training as specified. If the CCTV system is being installed in conjunction with an ESS, the CCTV performance verification test shall be run simultaneously with the ESS performance verification test. The Owner's Representative may terminate testing at any time when the system fails to perform as specified. Upon successful completion of the performance verification test, the Contractor shall deliver test reports and other documentation as specified to the Owner's Representative prior to commencing the endurance test.

2. Testing

    a. Video Systems:

        1) Picture Monitors:

            a) Apply crosshatch. Verify linearity.

            b) Apply red field. Adjust purity.

        2) Camera Operation: Demonstrate that each camera:

            a) Responds appropriately to PTZ controls from the DVR and from software installed on the Owner's PC's, where camera is PTZ equipped.

            b) Produces images in conformance with specifications and as defined in the initial systems programming requirements.

            c) At PTZ enabled cameras, provides "patrol" and pre-set shots in conformance with specifications and as defined in the initial systems programming requirements.

            d) Includes date/time/camera number identification.

    b. Uninterrupted Power Systems: Disconnect normal power service. Demonstrate that the system remains in full operation for the specified time.

3.4 LABELING

A. Conform with the requirements of Section 27 05 53 – Identification for Communications Systems.

END OF SECTION

TOWN OF COLMA
COLMA
AUGUST 5, 1924
CALIFORNIA

TOWN OF COLMA

Town Hall, 1198 El Camino Real
Colma, California 94014

ADDENDUM NO. 1

Friday, February 16th, 2018

Project: **Colma Town Hall – Access Control REBID**

From: **Brad Donohue, Director of Public Works**

TO: ALL HOLDERS OF Contract Documents and Specifications for the Project of **"Colma Town Hall – Campus Renovation and Additions – Access Control**

Addendum Acknowledgement Receipt
Shall Become a Part of the Project Specifications

This Addendum is hereby made a part of the Contract Documents for the construction of the above referenced project and its provisions supplement and/or supersede those of previously issued Drawings and Specifications. The unaltered portions of the CONTRACT DOCUMENTS shall remain in effect. Please acknowledge receipt of this Addendum on your Bid Form and return a signed copy with your Bid Form. The updates and changes are as follows:

A. SPECIFICATION REVISIONS/ADDITONS: Summary changes as noted below. Insertions/additions to re-issued spec sections noted by **bold green text**; deletions by ~~green strikeout text~~; items are clouded as well.

1. Section 28 05 00 - Common Work Results For Electronic Safety and Security
   i. 2.2.B. Add specification for rack mounted UPS.
   ii. 3.8.F.6.a. Revise language of Access Control commissioning.
2. Section 28 13 00 – Access Control and Alarm Systems
   i. 1.1.B. Revise language of related work sections.
   ii. 1.6.A.4 Revise language related to power protection to match plans.
   iii. 2.1.A.5.d Revise listed manufacturers.
   iv. 2.1.C Revise title of subsection
   v. 2.1.C.5.b Delete reference to Section in in work of Project.
   vi. 2.3.A.4 a. Revise manufacturer model
3. Section 28 23 00 – Visual Surveillance
   i. 1.1.A.1.c. Revise narrative description.
   ii. 2.2.B.3. - Revise listed manufacturers.

B. PLAN SHEET REVISIONS/ADDITIONS (Clouded):

1. TY-0.3

i. Revise Symbol Schedule Notes.

2. TY-7.1
    i. Revise Sheet Notes and Keynotes regarding back up power.
    ii. Revise sheet reference on VMS
    iii. Add Tape Backup to single line.
    iv. Add Contractor Option to reuse existing access control enclosures at PD.
    v. Correct typo.
3. PD-TY2.1
    i. Revise Sheet Notes 1 and 2 and Keynote 1 to identify all REX and DS shown this sheet (other than devices at exterior door to room 103) Future (N.I.C.).
4. TH-TY1.0.
    i. Added camera target views
5. TH-TY6.1
    i. Added camera target views
    ii. Added Sheet Note
6. TH-TY6.2
    i. Added camera target views
    ii. Added Sheet Note

ATTACHMENTS (ENCLOSED HEREWITHIN):

1. Specification Section 28 05 00 - Common Work Results For Electronic Safety and Security – Affected Sheets Only
2. Specification Section 28 13 00 - Access Control and Alarm Systems – Affected Sheets Only
3. Specification Section 28 23 00 - Visual Surveillance – Affected Sheets Only
4. Drawings
    a. TY-0.3
    b. TY-7.1
    c. PD-TY2.1
    d. TH-TY1.0
    e. TH-TY6.1
    f. TH-TY6.2
5. Meeting Minutes from Pre-Bid Conference held for initial bid; Tuesday, January 4th, 2018 @ 10 a.m.
6. Photos of existing IT Room in Colma Police Dept.

ADDENDUM ACKNOWLEDGEMENT

Bidder acknowledges receipt of this addendum, which shall be attached to the bid proposal.

CONTRACTOR'S REPRESENTATIVE	DATE

THIS DOCUMENT SHALL BECOME A PART OF THE BIDDING AND

CONTRACT DOCUMENTS.

END OF ADDENDUM NO. 1

2. Where design location requires that products, materials or equipment are visible to the public, no manufacturer's logos larger than 1/2 inch shall be visible. Unless otherwise noted or directed, neatly remove or permanently paint out such logos.
3. Where finishes are not noted or otherwise defined in the Contract Documents, submit manufacturer's standard finish samples for selection by the Owner's Representative.

2.2 POWER PROTECTION

A. Power Supply, Backboard Mounted
   1. Drawing Reference(s): PS, Door Lock Power Supply
   2. Backboard mounted equipment
   3. Function:
      a. Power supply with integral backup battery
      b. Class 1 (115VAC Input)
      c. Individually fused, Power Limited, Class 2 outputs - sized to meet worst case load and runtime while maintaining system operations.
      d. Unless otherwise indicated support operations of field devices and doors for at least 2 hours following loss of power.
      e. Provide timer modules as required to supplement ACAS operations.
      f. Power supply shall accept dry contact interface from fire alarm system to initiate power shutdown to fail-safe electric lock hardware
      g. Battery is lead acid type of common commercial manufacture.
      h. UL Listings: UL 294, UL603, UL 1069, UL1481 for application
      i. Power supply and battery fully enclosed in steel NEMA enclosure with cam lock cover and conduit knockouts.
      j. Thermal and short circuit protection with auto reset.
   4. Manufacturers:
      a. Altronix AL600ULM.
      b. Or equal.

B. UPS, Rack Mounted
   1. Drawing Reference: None – refer to requirements of Sheet Notes and Key Notes
   2. Features/Functions/Performance:
      a. Provide continuous, no-break power with sine wave output.
      b. Size to carry connected load for length of time described on the sheet and keynotes following loss of power, after at least eight hours of charge time.
      c. Design supports use of manufacturer's line of external battery pack enclosures capable of extending run-time in parallel with internal batteries.
      d. Design permits change-out of batteries without removal of UPS or connected equipment from service.
      e. Provide Transient Over-Voltage (TOV) Surge Suppression; comply with ANSI/IEEE C62.41-1980, Category A and Category B.
      f. Provide complete isolation from Line.

g. Provide output voltage regulation to ANSI C84.1 for computing equipment.
h. SNMP manageable and status reporting to Owner's Management console. Provide output KVA, switch-mode power supply rated, not less than 150% of connected load indicated.
i. Rack Mounted

3. Manufacturer:
a. SmartUPS XL RM series by American Power Conversion (APC)
b. Tripp Lite
c. Cyber Power
d. Or equal.

2.3 LABELING

A. Shall meet the legibility, defacement, exposure and adhesion requirements of UL 969.
B. Unless otherwise indicated, provide black text on a white background.
C. Shall be preprinted, field printer or computer printed type. Hand written labels are not acceptable.
D. Manufacturers
1. Brother P-Touch
2. Brady
3. Or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine existing conditions before starting work. Submit conflicts in a timely manner for resolution

3.2 GENERAL

A. Conform to UL 681, UL 1037, and UL 1076, the appropriate installation manual and the requirements of each specification section for each equipment type, whichever is most restrictive . Components within the system shall be configured with appropriate "service points" to pinpoint system trouble in less than 20 minutes.

3.3 PREPARATION

A. Prepare and sequence the work to minimize disruption to each room environment and any existing Electronic Safety and Security systems.
B. Protection: Cover all computers, electronic equipment, desks, chairs, furniture and other articles when working at ceiling level and/or performing dust producing tasks.

3.4 LABELING

A. Field devices: Each Electronic Security System initiating device and each annunciating device shall be labeled with the assigned ID matching the device ID used in the Access Control programming and set-up screens.

a. Demonstrate that operation of each opening, including access controlled doors and gates. Refer to the System Performance Requirements and Schedule of Programmatic Outcomes by Door Opening in Section 28 13 00 – Access Control and Alarm Systems is in full conformance with the specified functionality, including each Access Control system ~~C-Cure~~ status item associated with the scheduled Door Class.

7. Door Position, Window and Hatch Switches
   a. Demonstrate functionality of each device. Demonstrate that operation of each monitored door by 1/2" or less from the fully closed position causes the position switch to change state.
8. Uninterrupted Power Systems:
   a. Disconnect normal power service. Demonstrate that the system remains in full operation for the specified time.

G. Adjust: As directed by the Owner's Representative.

3.9 POST ACCEPTANCE TEST REMEDIATION

A. Temporary Equipment: Provide and operate, without claim for additional cost or time, temporary equipment and/or systems to provide reasonably equivalent function, as determined by the Owner's Representative, in place of the Work of this Section which is incomplete or found not in conformance with the Contract Documents as of seven (7) days prior to the scheduled completion date. Provide such temporary equipment until Acceptance of the Work of this Section. Thereafter, remove such temporary equipment.

B. Correct:
   1. In timely manner, correct identified Work of this Section which is incomplete or found not in conformance with the Contract Documents to comply with the Contract Documents, as reasonably determined by the Owner's Representative.
   2. Conduct additional tests to in the presence of the Owner's representative to demonstrate that system conforms to the Contract Documents.

END OF SECTION

e) Gate position switches

3) Work of this project interfaces to devices installed under the work of other Sections:

a) Power Door Operators and their controls

b) Intelligent gate controllers

c) Elevator controls

2. Intrusion Detection System

a. If the provided ACAS system is not listed as a UL Listed 1076 Proprietary Burglar Alarm Unit, provide a separate commercial burglar alarm system consisting of intrusion detection panel and field devices, connected to the Owner selected Central Station Alarm panel using IP or dialup as selected by the Owner for escalation if required.

B. Related Work in Other Sections:

1. ~~Section 08 11 13 – Hollow Metal Doors and Frames~~

2. ~~Section 08 71 00 – Door Hardware~~

3. Section 28 05 00 – Common Work Results for Electronic Safety and Security

4. Section 28 05 13 – Conductors and Cables for Electronic Safety and Security

5. Section 28 05 26 – Grounding and Bonding For Electronic Safety And Security

6. Section 28 05 28 – Pathways for Electronic Safety and Security

7. Section 28 23 00 – Visual Surveillance

8. ~~Section 32 31 00 – Fences and Gates~~

C. Related Work by Others

1. By Town of Colma

a. Ethernet Network switches connected to structured cabling installed at the Telecommunications Rooms.

1.6 UNINTERRUPTIBLE POWER

A. System Power and Functionality during Loss of Power

1. Power supply for door locks shall be provided by the work of this Section.

2. Power supply shall be 120-volts, 60 Hz supplied from the building's emergency power system. DC power for all system supervisory and control functions shall be provided by the control panel's power supply.

3. The system shall be electrically supervised against power loss, short and open wiring faults in the detection and alarm circuits. A malfunction shall cause the system to function as follows:

   a. Common trouble will be annunciated at the local panel as well as the alarm receiver the Owner's designated central station receiver

4. Provide UPS and supplemental battery subsystems sufficient to sustain system operations of the components indicated:

   a. ~~4 hours for~~ DGP – provide as indicated on Drawing TY-7.1~~.~~

   b. ~~4 hours for~~ F~~f~~ield devices, including operation of electric door hardware and monitoring functions – provide as indicated on Drawing TY-7.1~~.~~

1.7 SYSTEM PERFORMANCE REQUIREMENTS:

A. General Description - Access Control and Alarms Processing System

1. The ACAS shall be a powerful, flexible, multi-function and object-oriented security and event management system that features a variety of customizable interfaces for maintaining the system and for monitoring the desired secure sites. The ACAS shall provide an option to display these management and monitoring interfaces in the native languages of the people using the system. The security and event management system shall be flexible in order to meet specific requirements and quickly respond to evolving security challenges. The ACAS shall be a scalable platform, simple and economical enough to support a single site, yet upgradeable enough to manage a multi-site network. The ACAS shall use an open, distributed architecture, where database servers could reside in geographically separate locations.

a. Clustering

b. The ACAS shall support a user-defined grouping of DGP controllers defined as a cluster. DGP controllers within a cluster shall be able to communicate in a peer-to-peer scheme should the ACAS server lose communication with the cluster.

c. Clustering shall support the following features:

1) Assignment of Master controllers for cluster communication to the ACAS server

2) Primary and backup communication paths to the ACAS server

3) Up to 16 controllers per cluster

4) Logical event linking between controllers in a cluster independent of ACAS server communication

5) Antipassback control within a cluster shall be independent of ACAS server communication

6) Asynchronous communication via TCP/IP (Polled devices shall not be acceptable)

7) Encrypted communications

d. Network communications between a cluster master and the host, and between a cluster master and cluster members, shall be done using AES 256 bit symmetric encryption, tested and verified by an independent lab and listed for FIPS 197.

e. Encrypted DGP controllers shall be listed for FIPS 140-2, which meets the necessary physical, operational, and cryptographic requirements for a cryptographic module for the National Institute of Standards (NIST).

5. Manufacturers:

a. Tyco Software House C-Cure 9000

b. Lenel OnGuard

c. Genetech Synergis Enterprise

d. Avigilon Access Control Manager integrated in Avigilon Control Center

e. Or equal

B. Server Hardware

c) or equal.

3) Rack Mount Monitor Enclosure

a) Middle Atlantic RSH4A with backclamp.

b) Raxxess.

c) Custom by Contractor.

d) or equal.

4) Combination Monitor with Integral Rackmount, subject to the video response rate requirements defined above.

a) Marshall Electronics

b) Pelco

c) ToteVision

d) or equal.

C. ~~Server~~ Integrated Access Control and Intrusion Detection Hardware

1. Spec References:

a. DGP (Data Gathering Panel)

2. Field Panels (DGP), with enclosures, daughter cards and accessories as required to provide the functionality described in these specifications, with at least 100% expansion capacity (based on greater of door or reader count) at the time of building opening

3. Minimum Network Door Controller Hardware Features, Functions and Construction

a. Processor and Memory

1) The Network Door Controller's microprocessor shall be of sufficient speed and power to provide on-board AES 256-bit encryption without use of an external encryption device, while providing access decisions within 500 ms on a fully loaded system. The controller shall have at least 2GB of on-board memory for cardholder and event storage. There shall be at least 16GB of on-board FLASH memory that shall be used for boot code and operating system code, and for memory backup.

1) Bosch ~~D7000~~ G series control panel and LCD keypad..

2) Or equal – No known equal.

5. External Power Supply Manufacturer:

   a. Altronix with battery extenders as required to provide 2 hour Power Loss functionality.

   b. Equal by IDS panel manufacturer

   c. Or equal.

2.4 POWER PROTECTION

A. Backboard mounted equipment

1. Function:

   a. Power supply with backup battery

   b. Class 1 (115VAC Input)

   c. Individually fused, Power Limited, Class 2 outputs - sized to meet worst case load and runtime while maintaining system operations.

   d. Unless otherwise indicated support operation of ACAS system for specified operational period following loss of power.

   e. Battery is lead acid type of common commercial manufacture.

   f. UL Listings: UL 294, UL603, UL 1069, UL1481 for application

   g. Provide timer modules as required to supplement DGP control

   h. Supervised fire alarm disconnect

   i. Power supply and battery fully enclosed in steel NEMA enclosure with cam lock cover and conduit knockouts.

   j. Thermal and short circuit protection with auto reset.

2. Manufacturers:

   a. Altronix AL Series (Design Basis)

   b. Security Door Controls

SECTION 28 23 00

VISUAL SURVEILLANCE

PART 1 - GENERAL

1.1 SCOPE

A. For the Town of Colma Town Hall and Police Department Buildings, section Includes (but is not necessarily limited to):

1. Video Surveillance System.

a. Miniature fixed view indoor and self-illuminated TCP/IP outdoor dome cameras, including 180 and 360 degree view Multiview indoor and outdoor cameras.

b. Box format IP camera for use at existing detention camera enclosure.

c. Video capture server (A to D converter) for use with Owner's existing convert interview cameras and microphones, and with entry station pinhole camera.

d. POE and Class 2 Powering of Cameras.

2. Network Video Recorder (NVR) based Video Management System (VMS).

a. Network video recording system mounted in cabinet installed under work of separate project in Comm Room of Town Hall building of project.

b. NVR licensing to enable recording of cameras installed under the work of this Project on the NVR provided under the work of this Project plus 20%.

c. General purpose video analytics (abandoned object, motion in the wrong direction) detection integration with the on-board analytics provided by the specified cameras. Provide for integrated analytics programming integration for at least 25% of the cameras installed under the work of this Project.

B. Related Work in Other Sections:

1. Section 28 05 00 - Common Work Results for Electronic Safety and Security

a. Submittals required of the work of this section.

b. Miscellaneous parts and execution standards for the work of this Section.

2. Section 28 05 13 - Conductors and Cables for Electronic Safety and Security

a. Cabling products and execution standards for the work of this Section.

b) 4x analog composite video BNC inputs

c) RJ45 10BASE-T/100BASE-TX PoE

d) Terminal block for four configurable external inputs/outputs

e) Terminal block for RS-485/RS-422 (full duplex)

f) 2x 3.5 mm jacks for microphone or line input (mono)

g) 3.5 mm jack for audio output (mono)

5) Edge storage:

a) MicroSD/microSDHC/microSDXC slot supporting memory card up to 64 GB

b) Support for recording to dedicated network-attached storage (NAS)

6) Operating conditions

a) 0 °C to 50 °C (32 °F to 122 °F)

b) Humidity 20–80% RH (non-condensing)

7) Approvals

a) EN 55022 Class B, EN 55024, IEC/EN/UL 60950-1, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR 22 Class B, KCC KN22 Class B, KN24

3. Manufacturers:

a. Axis P72 Video Encoder Series. Provide quantity as required by number of existing analog cameras and microphones indicated for re-use.

b. Avigilon

c. Or equal ~~(no known equal)~~.

2.3 CAMERAS AND RELATED

A. Cameras, General

1. Form Factor: Unless otherwise noted, provide mini dome cameras which fit tight to trade standard backboxes, and provides no protrusion to grasp or hang from.

NOTE NO.	DEVICE NOTES
DN1	NOT USED
	WORK OF NOTES
WO1	LOCK AND PANIC DOOR ALARM INTEGRATED IN PANIC HARDWARE ARE (E) AT PD, AND BY BASE BUILDING CONTRACTOR AT TOWN HALL. LV FIELD WIRING AND POWER SUPPLIES BY DIVISION 28.
WO2	MOTOR ASSISTED POWER DOOR OPERATOR AND DOOR OPERATOR BUTTON (DO) BY DIVISION 8 AND 26 AT TOWN HALL, (E) AT PD. DOOR ENTRY FROM UNSECURE SIDE UNDER CONTROL OF ACCESS CONTROL SYSTEM FURNISHED UNDER DIVISION 28.
WO3	AT TOWN HALL DS, WS AND HS ARE WORK OF THE BASE BUILDING CONTRACTOR'S PACKAGE; AT THE POLICE HQ THE DS, WS, HS, LA AND DW ARE (E) U.O.N.
WO4	AT TOWN HALL, THE BASE BUILDING DIVISION 27 PROVIDES STRUCTURED CABLING COMPLETE TO INDICATED CAMERA LOCATIONS. AT PD, ALL NEW CAMERAS ARE TO RECEIVE NEW CAMERAS CABLING INSTALLED UNDER THE WORK OF THIS PROJECT.
	LOCATION & ROUGH-IN NOTES
LRI1	FLUSH 4S BOX IN WALL ADJ. TO INDICATED LOCATION. FISH CABLE THROUGH FURNITURE TO OWNER SELECTED MOUNTING LOCATION.
LRI2	TOP OF DOOR AND IN DOOR FRAME, NOT MORE THAN 6" FROM JAMB SIDE. INSTALLATION SHALL NOT COMPROMISE FIRE RATING OF DOOR.
LRI3	4S BOX W/ 1 GANG RING BLANK COVER PLATE
LRI4	ROUGH-IN FOR CAMERAS AT PD IS (E). ROUGH-IN AT TOWN HALL FOR ESS IS BY THE BASE BUILDING CONTRACTOR.
LRI5	AT SUSPENDED CLG CONDITIONS, SM 4S BOX, BLANK COVER & FLEX C TO DEVICE. ELSEWHERE MOUNTED IN CEILING ADJ TO DEVICE OR MNT DEVICE TO COVER PLATE.
LRI6	ROUGH-IN FOR CARD READERS AT PD IS EXISTING. FISH CABLING FOR REX AS REQUIRED. ROUGH-IN AT TOWN HALL FOR ESS IS BY THE BASE BUILDING CONTRACTOR.
LRI7	WORK OF DIVISION 28 WIRES TO GATE CONTROLLER INTERFACE ENCLOSURES AT PARKING ENTRY TO PLACE OPERATION OF GATE PORT UNDER THE CONTROL OF THE ACCESS CONTROL SYSTEMS. COORDINATE LOCATION IN FIELD WITH WORK OF OTHER DIVISIONS.
LRI8	4S BOX W/ BLANK COVER PLATE W/ GROMMET OPENING MTD WITHIN 6" OF LATCH AT UNDERSIDE OF ROOF. EXTEND HS TO HATCH FRAME AND INSTALL IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
LRI9	4S BOX, 2-1/8" DEEP MIN., W/ 1 GANG RING WITH LOCKING HINGED COVER PLATE (FSR WB-MR2G OR EQUAL).
LRI10	OUTLETS SHALL BE PLACED SO THEY WILL NOT BE COVERED BY AN UNDER-COUNTER CABINET.
LRI11	PROVIDE BACKING AND SUPPORT FOR 5 POUND DEVICE.
LRI12	TOP OF DOOR AND IN DOOR FRAME, NOT MORE THAN 6" FROM JAMB SIDE. INSTALLATION SHALL NOT COMPROMISE FIRE RATING OF DOOR.
LRI13	4S BOX W/ BLANK COVER PLATE W/ GROMMET OPENING MTD WITHIN 6" OF LATCH AT UNDERSIDE OF ROOF. EXTEND HS TO HATCH FRAME AND INSTALL IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
LRI14	NOT USED
LRI15	AS DETAILED AND/OR SCHEDULED ON THE ARCHITECTURAL DRAWINGS.
LRI16	LOCATE AS DIRECTED BY THE OWNER'S REPRESENTATIVE. FASTEN SECURELY TO THE CASEWORK OR WALL STRUCTURE WITH MECHANICAL FASTENERS.
	RACEWAY NOTES
R1	1/2" C. H.R. TO NEAREST IDS TERMINAL CABINET
R2	3/4" C. H.R. TO NEAREST IDS TERMINAL CABINET
R3	1" C. H.R. TO NEAREST IDS TERMINAL CABINET
R4	AS DETAILED AND/OR SCHEDULED
R5	3/4" C. H.R. TO ACCESSIBLE CEILING OR FLOOR, OR TO SERVING BDF, IDF OR EQUIPMENT ROOM, U.O.N.
R6	1" C. H.R. TO ACCESSIBLE CEILING OR FLOOR, OR TO SERVING BDF, IDF OR EQUIPMENT ROOM, U.O.N.
R7	1-1/4" C. H.R. TO ACCESSIBLE CEILING OR FLOOR, OR TO SERVING BDF, IDF OR EQUIPMENT ROOM, U.O.N.
R8	NOT USED
R9	NOT USED
R10	NOT USED
R11	UNLESS OTHERWISE SHOWN, PROVIDE 1.5" EMT SLEEVE, WITH INSULATED THROAT BUSHING AT EACH END, STUBBED OUT 4 INCHES FROM FACE OF WALL, AT ELEVATION APPROXIMATELY 6 INCHES ABOVE ACCESSIBLE CEILING. INSTALL SLEEVE IN AN ACCESSIBLE LOCATION AS DEFINED IN CALIFORNIA ELECTRICAL CODE, ARTICLE 100 DEFINITIONS. PROVIDE FIRESTOPPING UNDER WORK OF SECTION 28 05 28. BOND TO GROUND. COMPLY WITH DIVISION 26 AND SECTION 28 05 26.

ACCESSIBLE CEILING IS A T-BAR OR SIMILAR GRID BASED, PANELIZED REMOVEABLE CEILING MEETING THE DEFINITION FOR ACCESSIBLE WIRING METHODS IN ARTICLE 100 OF THE CALIFORNIA ELECTRICAL CODE.

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KEY PLAN

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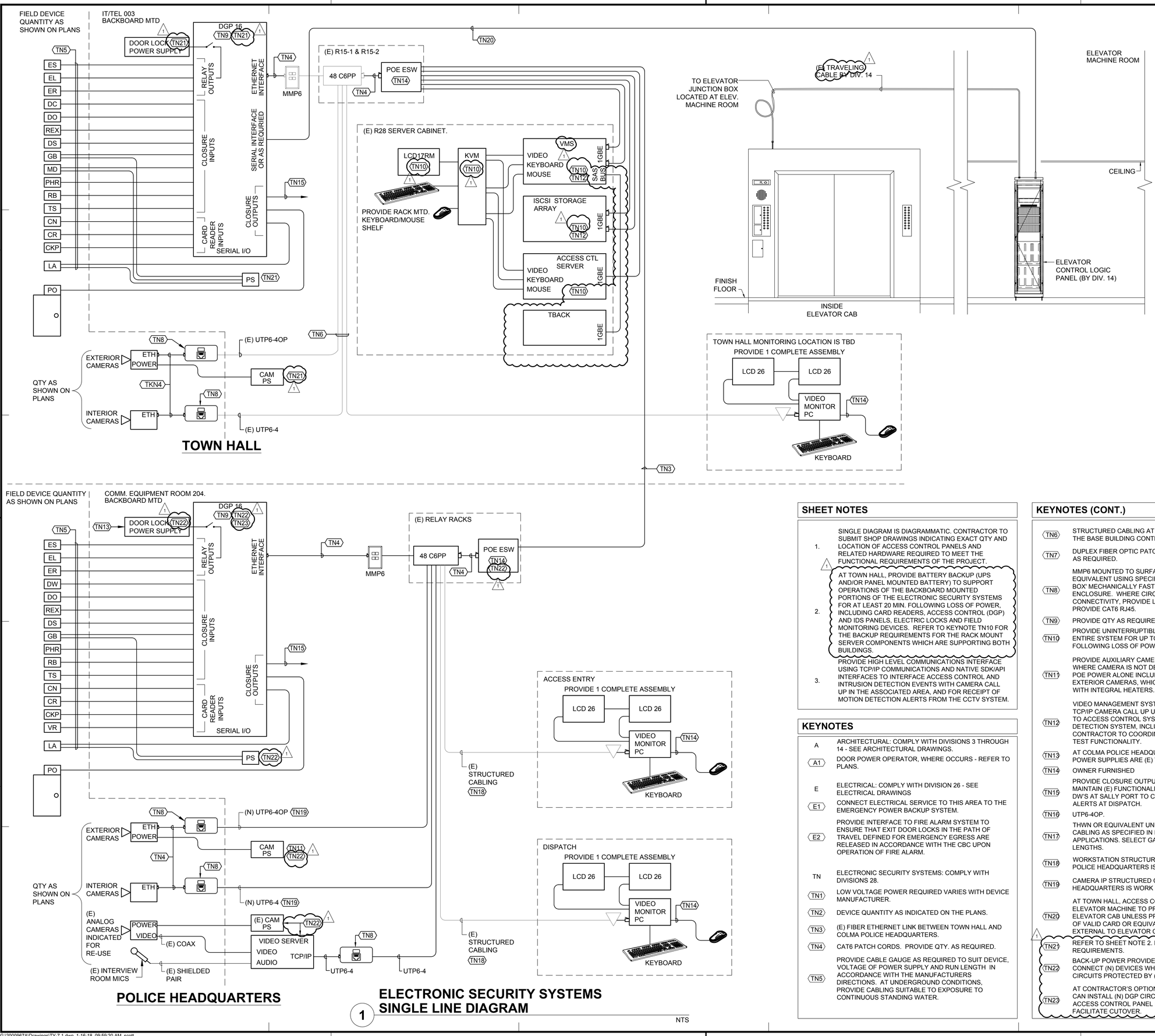
PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
ELECTRONIC SECUIRTY SYSTEMS SYMBOL SCHEDULE NOTES

SCALE NONE FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING TY-0.3
SHEET OF



SHEET NOTES

1. SINGLE DIAGRAM IS DIAGRAMMATIC. CONTRACTOR TO SUBMIT SHOP DRAWINGS INDICATING EXACT QTY AND LOCATION OF ACCESS CONTROL PANELS AND RELATED HARDWARE REQUIRED TO MEET THE FUNCTIONAL REQUIREMENTS OF THE PROJECT.
2. (1) AT TOWN HALL, PROVIDE BATTERY BACKUP (UPS AND/OR PANEL MOUNTED BATTERY) TO SUPPORT OPERATIONS OF THE BACKBOARD MOUNTED PORTIONS OF THE ELECTRONIC SECURITY SYSTEMS FOR AT LEAST 20 MIN. FOLLOWING LOSS OF POWER, INCLUDING CARD READERS, ACCESS CONTROL (DGP) AND IDS PANELS, ELECTRIC LOCKS AND FIELD MONITORING DEVICES. REFER TO KEYNOTE TN10 FOR THE BACKUP REQUIREMENTS FOR THE RACK MOUNT SERVER COMPONENTS WHICH ARE SUPPORTING BOTH BUILDINGS.
3. PROVIDE HIGH LEVEL COMMUNICATIONS INTERFACE USING TCP/IP COMMUNICATIONS AND NATIVE SDK/API INTERFACES TO INTERFACE ACCESS CONTROL AND INTRUSION DETECTION EVENTS WITH CAMERA CALL UP IN THE ASSOCIATED AREA, AND FOR RECEIPT OF MOTION DETECTION ALERTS FROM THE CCTV SYSTEM.

KEYNOTES

A	ARCHITECTURAL: COMPLY WITH DIVISIONS 3 THROUGH 14 - SEE ARCHITECTURAL DRAWINGS.
A1	DOOR POWER OPERATOR, WHERE OCCURS - REFER TO PLANS.
E	ELECTRICAL: COMPLY WITH DIVISION 26 - SEE ELECTRICAL DRAWINGS
E1	CONNECT ELECTRICAL SERVICE TO THIS AREA TO THE EMERGENCY POWER BACKUP SYSTEM.
E2	PROVIDE INTERFACE TO FIRE ALARM SYSTEM TO ENSURE THAT EXIT DOOR LOCKS IN THE PATH OF TRAVEL DEFINED FOR EMERGENCY EGRESS ARE RELEASED IN ACCORDANCE WITH THE CBC UPON OPERATION OF FIRE ALARM.
TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISIONS 28.
TN1	LOW VOLTAGE POWER REQUIRED VARIES WITH DEVICE MANUFACTURER.
TN2	DEVICE QUANTITY AS INDICATED ON THE PLANS.
TN3	(E) FIBER ETHERNET LINK BETWEEN TOWN HALL AND COLMA POLICE HEADQUARTERS.
TN4	CAT6 PATCH CORDS. PROVIDE QTY. AS REQUIRED.
TN5	PROVIDE CABLE GAUGE AS REQUIRED TO SUIT DEVICE, VOLTAGE OF POWER SUPPLY AND RUN LENGTH IN ACCORDANCE WITH THE MANUFACTURERS DIRECTIONS. AT UNDERGROUND CONDITIONS, PROVIDE CABLING SUITABLE TO EXPOSURE TO CONTINUOUS STANDING WATER.

KEYNOTES (CONT.)

TN6	STRUCTURED CABLING AT TOWN HALL IS (E)/WORK OF THE BASE BUILDING CONTRACTOR.
TN7	DUPLEX FIBER OPTIC PATCH CORDS. PROVIDE QTY. AS REQUIRED.
TN8	MMP6 MOUNTED TO SURFACE MTD BACKBOX OR EQUIVALENT USING SPECIFIED JACKS MTD IN 'BISCUIT BOX' MECHANICALLY FASTENED TO INTERIOR OF ENCLOSURE. WHERE CIRCUIT REQUIRES FIBER CONNECTIVITY, PROVIDE LC CONNECTOR, OTHERWISE PROVIDE CAT6 RJ45.
TN9	PROVIDE QTY AS REQUIRED.
TN10	PROVIDE UNINTERRUPTIBLE POWER BACKUP FOR ENTIRE SYSTEM FOR UP TO 4 HOURS OPERATION FOLLOWING LOSS OF POWER.
TN11	PROVIDE AUXILIARY CAMERA POWER AS REQUIRED WHERE CAMERA IS NOT DESIGNED TO OPERATE ON POE POWER ALONE INCLUDING ALL PTZ AND ALL EXTERIOR CAMERAS, WHICH SHALL BE PROVIDED WITH INTEGRAL HEATERS.
TN12	VIDEO MANAGEMENT SYSTEM TO PROVIDE NATIVE TCP/IP CAMERA CALL UP USING SDK/API INTERFACE TO ACCESS CONTROL SYSTEM AND INTRUSION DETECTION SYSTEM, INCLUDING ALARM ON MOTION. CONTRACTOR TO COORDINATE INTEGRATION AND TEST FUNCTIONALITY.
TN13	AT COLMA POLICE HEADQUARTERS, DOOR LOCK POWER SUPPLIES ARE (E) TO REMAIN.
TN14	OWNER FURNISHED
TN15	PROVIDE CLOSURE OUTPUT AS REQD TO MAINTAIN (E) FUNCTIONALITY THAT RELAYS USE OF DW'S AT SALLY PORT TO CAUSE (E) AUDIO AND VISUAL ALERTS AT DISPATCH.
TN16	UTP6-4OP.
TN17	THWN OR EQUIVALENT UNDERGROUND RATED CABLING AS SPECIFIED IN DIVISION 26 FOR SIM APPLICATIONS. SELECT GAUGE TO SUIT RUN LENGTHS.
TN18	WORKSTATION STRUCTURED CABLING AT COLMA POLICE HEADQUARTERS IS (E).
TN19	CAMERA IP STRUCTURED CABLING AT COLMA POLICE HEADQUARTERS IS WORK OF THIS PROJECT.
TN20	AT TOWN HALL, ACCESS CONTROL INTERFACES TO ELEVATOR MACHINE TO PREVENT CALLING THE ELEVATOR CAB UNLESS PRECEDED BY PRESENTATION OF VALID CARD OR EQUIVALENT AT READER EXTERNAL TO ELEVATOR CAB ON WALL IN LOBBY.
(1) TN21	REFER TO SHEET NOTE 2. FOR POWER BACK-UP REQUIREMENTS.
TN22	BACK-UP POWER PROVIDED BY (E) FLOOR MOUNT UPS. CONNECT (N) DEVICES WHERE THEY OCCUR TO (E) CIRCUITS PROTECTED BY (E) UPS.
TN23	AT CONTRACTOR'S OPTION, WORK OF THE PROJECT CAN INSTALL (N) DGP CIRCUIT BOARDS IN (E) BOSCH ACCESS CONTROL PANEL ENCLOSURES TO FACILITATE CUTOVER.

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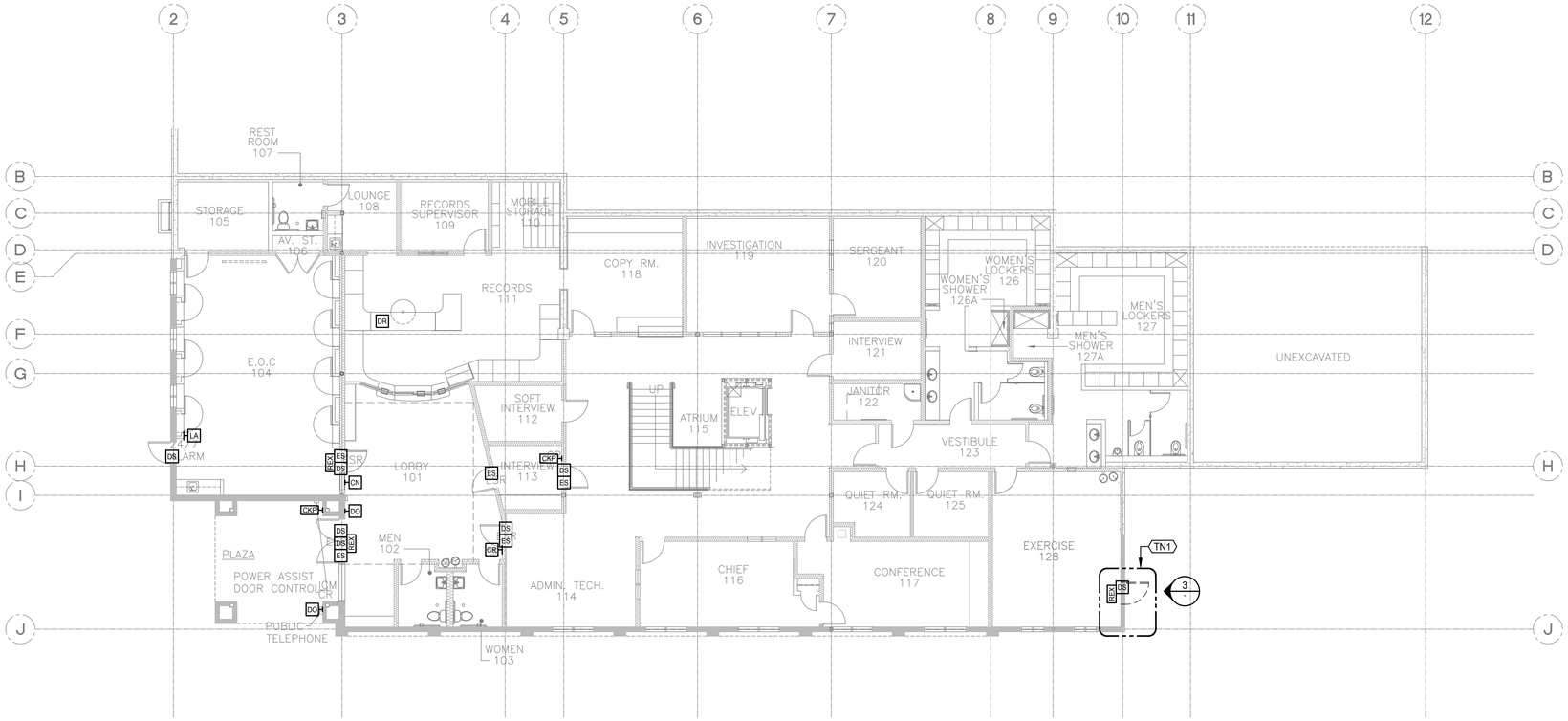
1	ADDENDUM 1	01/16/18

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
ACCESS AND INTRUSION DETECTION SYSTEM SINGLE LINE DIAGRAM

SCALE AS NOTED FOR 30" x 42" SHEET

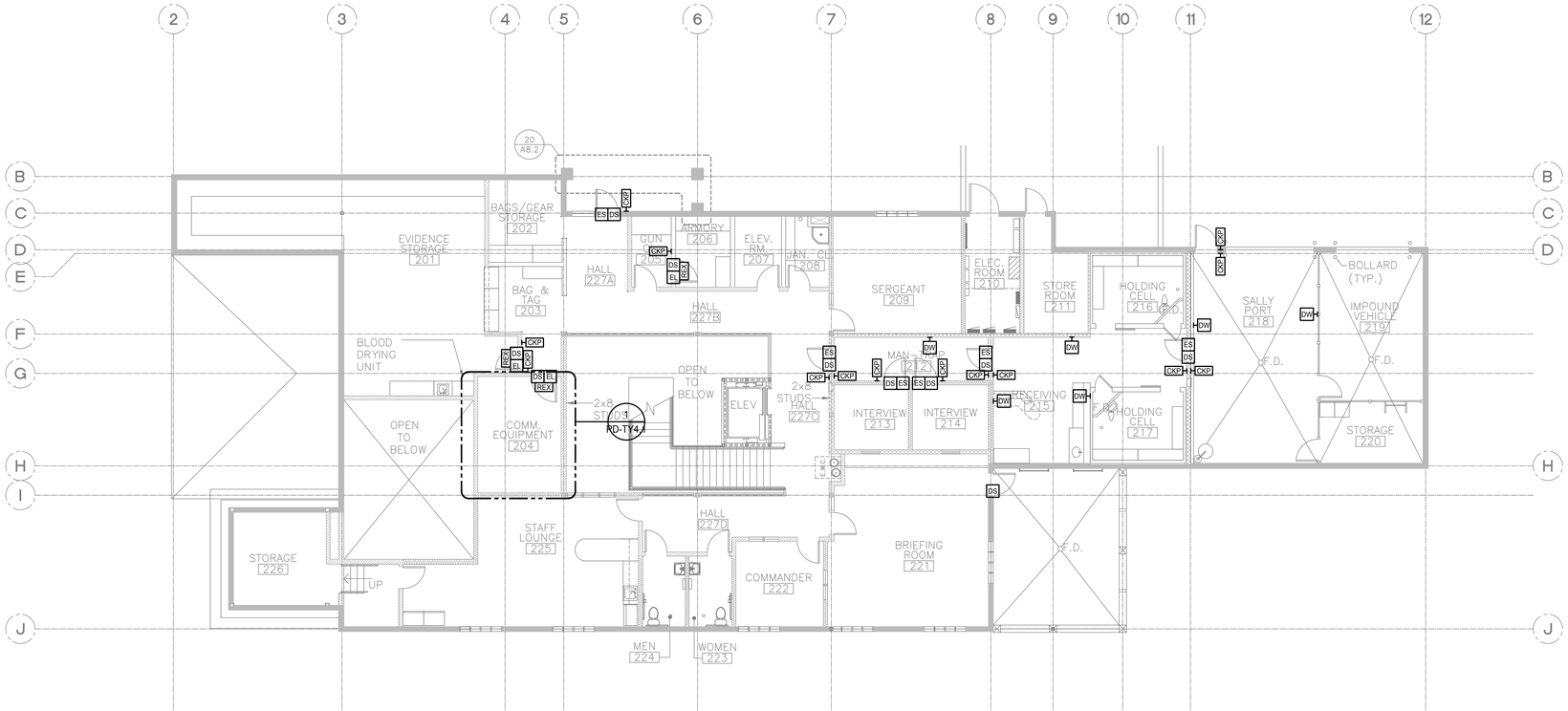
JOB NUMBER 2000967A	DRAWING TY-7.1
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF



POLICE DEPARTMENT - ELECTRONIC SECURITY SYSTEM
FIRST FLOOR DEVICE PLAN

1 — 1/8"=1'-0"

NORTH



POLICE DEPARTMENT - ELECTRONIC SECURITY SYSTEM
SECOND FLOOR DEVICE PLAN

2 — 1/8"=1'-0"

NORTH

EXISTING 1ST FLOOR REAR DOOR

3

SHEET NOTES

1. AT POLICE HEADQUARTERS, ESS PATHWAY, DOOR STRIKES, DOOR RELEASE BUTTONS, WALL MTD DURESS BUTTONS, LOCAL ALARMS AND DOOR POSITION SWITCHES ARE (E) U.O.N. WORK OF THIS PROJECT TRANSFERS THE FIELD DEVICES TO THE (N) ACCESS CONTROL/ALARM SYSTEM.
2. AT POLICE HEADQUARTERS, PROVIDE NEW REX WHERE REX ARE INDICATED.

1

3. (E) POLICE HEADQUARTERS CARD READERS TO BE REPLACED WITH NEW UNDER THE WORK OF THIS PROJECT. (E) CONTROL/MONITORING OF (E) DOOR OPENINGS, GATES, DURESS ALARMS AND SIMILAR TO BE TRANSFERRED TO THE NEW ACCESS/ALARM SYSTEM.
4. (E) POLICE HEADQUARTERS ANALOG VIDEO CAMERAS TO BE REPLACED WITH NEW IP BASED DIGITAL CAMERAS UNDER THE WORK OF THIS PROJECT, EXCEPT FOR FIVE COVERT INTERVIEW ROOM CAMERAS AND ONE GATE ENTRY INTERCOM CAMERA.

   WORK TO BE SEQUENCED TO PROVIDE CONTINUOUS OPERATION OF (E) SYSTEM UNTIL PLANNED CUTOVER TO NEW SYSTEM. SUBJECT TO MUTUAL AGREEMENT OF THE CITY AND THE CONTRACTOR, CUTOVER CAN BE PROGRESSIVELY SCHEDULED ON AN AREA-BY-AREA, ROOM-BY-ROOM BASIS.
5.

KEYNOTES

TN — ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.

TN1 — AT THIS DOOR, ESS PATHWAY AND ESS DEVICES ARE (N), WORK OF THIS PROJECT. PROVIDE (N) DOOR LOCK POWER SUPPLY IF NO CAPACITY REMAINS ON EXISTING SUPPLIES.

1

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	BID SET	11/27/17
1	ADDENDUM 1	01/16/18

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
POLICE DEPARTMENT ELECTRONIC SECURITY SYSTEM FIRST AND SECOND FLOOR DEVICE PLANS

SCALE AS NOTED — FOR 30" x 42" SHEET

JOB NUMBER 2000967A	DRAWING PD-TY2.1
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF

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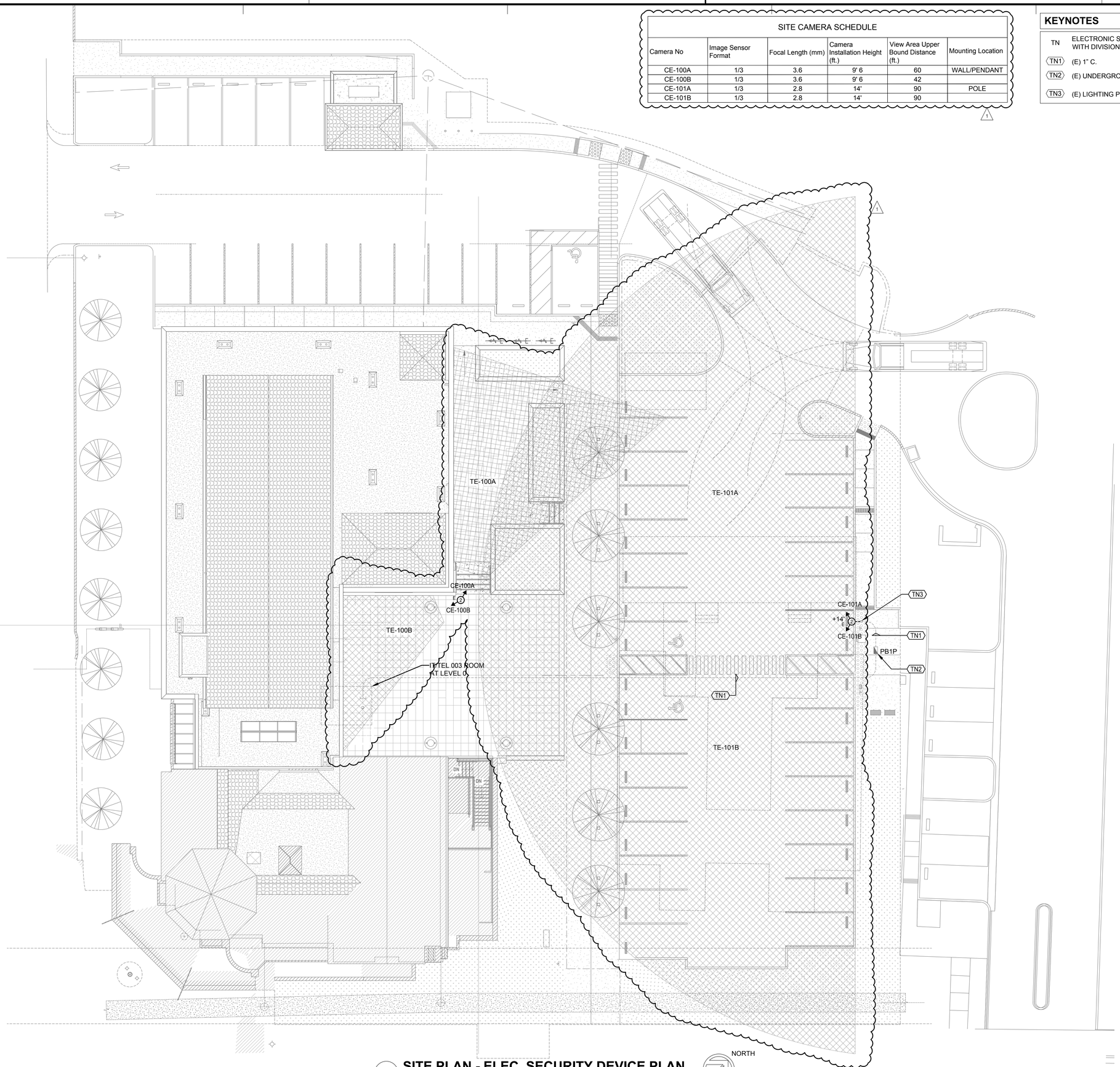
PLEASE RECYCLE

SITE CAMERA SCHEDULE

Camera No	Image Sensor Format	Focal Length (mm)	Camera Installation Height (ft.)	View Area Upper Bound Distance (ft.)	Mounting Location
CE-100A	1/3	3.6	9' 6	60	WALL/PENDANT
CE-100B	1/3	3.6	9' 6	42	
CE-101A	1/3	2.8	14'	90	POLE
CE-101B	1/3	2.8	14'	90	

KEYNOTES

TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
TN1	(E) 1" C.
TN2	(E) UNDERGROUND VAULT
TN3	(E) LIGHTING POLE AT EDGE OF PARKING LOT.



1 **SITE PLAN - ELEC. SECURITY DEVICE PLAN**
1"=10'-0"

NORTH

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	BID SET	11/27/17
1	ADDENDUM 1	01/16/18

PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
TOWN HALL ELECTRONIC SECURITY DEVICE SITE PLAN

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17
DRAWING TH-TY1.0
SHEET OF

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PLEASE RECYCLE

BUILDING CAMERA SCHEDULE

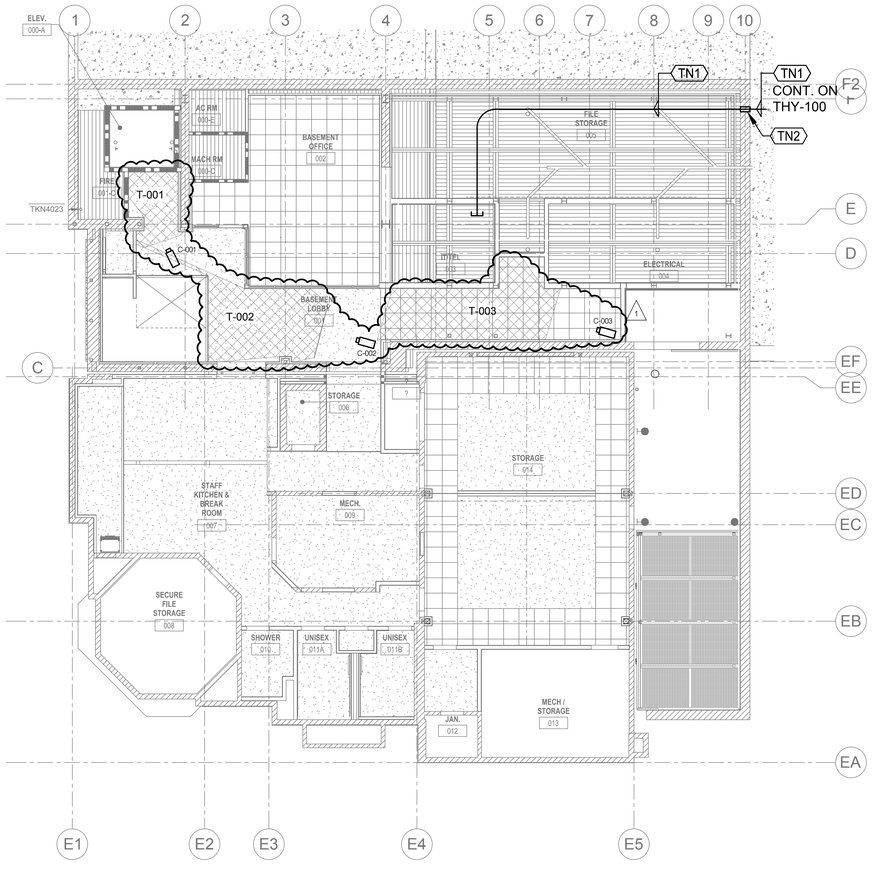
Camera No	Image Sensor Format	Focal Length (mm)	Camera Installation Height (ft.)	View Area Upper Bound Distance (ft.)	Mounting Location
Basement Floor					
C-001	1/3	2.8	8.5'	15	CEILING
C-002	1/3	4.2	8.5'	35	CEILING
C-003	1/3	4.5	8.5'	27	CEILING
First Floor					
CE-102	1/3	4	9'	70	WALL
CE-103	1/3	2.8	9'	50	WALL
C-100	1/3	2.6	8.5'	13	WALL/CEILING
C-101	1/3	2.8	8.5'	35	WALL/CEILING
C-102	1/3	2.6	8.5'	29	CEILING
C-103	1/3	2.6	8.5'	30	CEILING
C-104	1/3	2.8	9.5'	13	WALL/CEILING
C-105	1/3	3.6	9.5'	40	CEILING

SHEET NOTE

1. AT TOWN HALL, ESS PATHWAY AND ELECTRONIC DOOR HARDWARE (INCLUDING DOOR POSITION SWITCHES) ARE WORK OF A SEPARATE PROJECT (TOWNHALL INFILL) U.O.N. WORK OF THIS PROJECT PROVIDES (N) ELECTRONIC SECURITY SYSTEMS USING PATHWAYS AND DOOR HARDWARE PROVIDED BY OTHERS.

KEYNOTES

TN	ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISION 28.
TN1	1" C.
TN2	PROVIDE WATERTIGHT PENETRATION SEAL AT PENETRATION OF (E) WALL.



1 TOWN HALL LEVEL 0 ELECTRONIC SECURITY DEVICE PLAN
1/8"=1'-0"

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PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

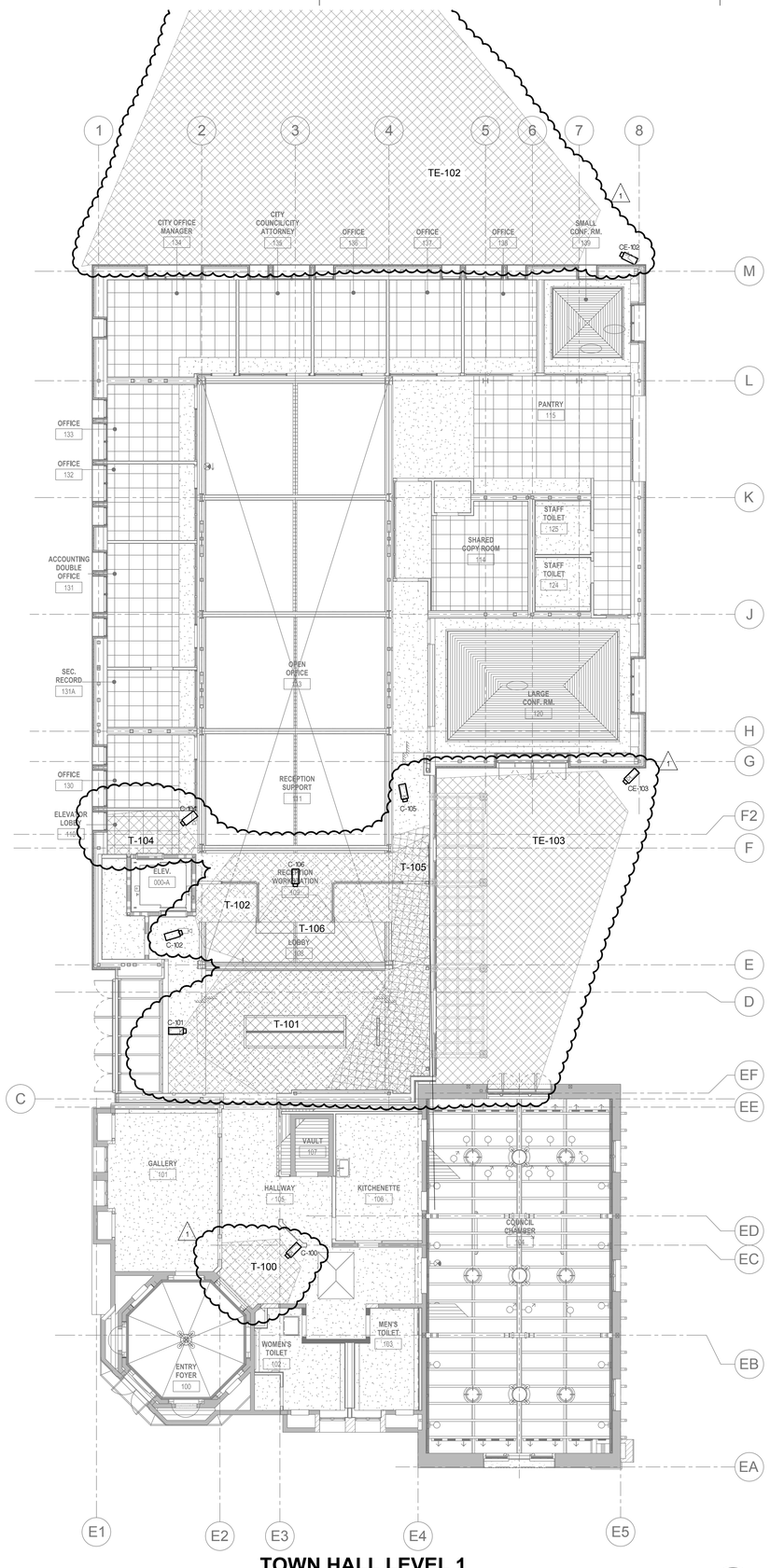
SHEET
TOWN HALL LEVEL 0 ELECTRONIC SECURITY DEVICE PLAN

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A
DRAWN BY IK, AC, SC
DESIGNED BY JUN
DATE 11/30/17

DRAWING TH-TY6.1

SHEET OF



TOWN HALL LEVEL 1
1 ELECTRONIC SECURITY DEVICE RCP
1/8"=1'-0"

NORTH

SHEET NOTE

1. AT TOWN HALL, ESS PATHWAY AND ELECTRONIC DOOR HARDWARE (INCLUDING DOOR POSITION SWITCHES) ARE WORK OF A SEPARATE PROJECT (TOWNHALL INFILL) U.O.N. WORK OF THIS PROJECT PROVIDES (N) ELECTRONIC SECURITY SYSTEMS USING PATHWAYS AND DOOR HARDWARE PROVIDED BY OTHERS.

BUILDING CAMERA SCHEDULE

Camera No	Image Sensor Format	Focal Length (mm)	Camera Installation Height (ft.)	View Area Upper Bound Distance (ft.)	Mounting Location
Basement Floor					
C-001	1/3	2.8	8.5'	15	CEILING
C-002	1/3	4.2	8.5'	35	CEILING
C-003	1/3	4.5	8.5'	27	CEILING
First Floor					
CE-102	1/3	4	9'	70	WALL
CE-103	1/3	2.8	9'	50	WALL
C-100	1/3	2.6	8.5'	13	WALL/CEILING
C-101	1/3	2.8	8.5'	35	WALL/CEILING
C-102	1/3	2.6	8.5'	29	CEILING
C-103	1/3	2.6	8.5'	30	CEILING
C-104	1/3	2.8	9.5'	13	WALL/CEILING
C-105	1/3	3.6	9.5'	40	CEILING

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PROJECT
TOWN OF COLMA
ELECTRONIC SECURITY SYSTEMS

SHEET
TOWN HALL LEVEL 1
ELECTRONIC SECURITY
DEVICE RCP

SCALE AS NOTED FOR 30" x 42" SHEET

JOB NUMBER 2000967A	DRAWING TH-TY6.2
DRAWN BY IK, AC, SC	
DESIGNED BY JUN	
DATE 11/30/17	SHEET OF

Meeting Minutes Information for Reference by Bidders during Rebid

Town of Colma Public Works Department

Town of Colma – Access Control Project
Pre-Bid Conference
Thursday 1/4/17 @ 10am
Colma PD 1199 El Camino Real

Bid Logistics

1. Bid Schedule/Timeline
    - Pre-bid RFIs due: Thursday, January 11th by 5pm
    - Addenda Distribution (If Necessary): Thursday January 18th
    - **Sealed Bids Due: Tuesday, January 23rd, 2018 by 2p.m. (Firm)**
2. Obtaining Bid Documents
    - Docs are available via PDF for download at https://www.colma.ca.gov/rfp-and-bids/
3. Labor Requirements
    - Project is Prevailing Wage, Contractor responsible for direct payroll submission to State DIR
    - Payroll submissions to Town Staff upon request is required
4. Appropriate Class C License is required
5. Bid Bond, Cash or Cashier's Check required at time of bid submission
6. Bid Manual
    - Instructions to Bidders
    - Bid Forms begin on Page 12
        i. Bid Schedule is on Page 13
            1. Basis of Bid: Total Bid Price, Line 5 in the Bid Schedule
    - Contract Agreement is available for reference on Page 33
        i. Specific terms and agreements can be found in the General Conditions, Special Conditions and General Requirements
    - Performance and Payment Bonds required with bid submission

Technical Discussion

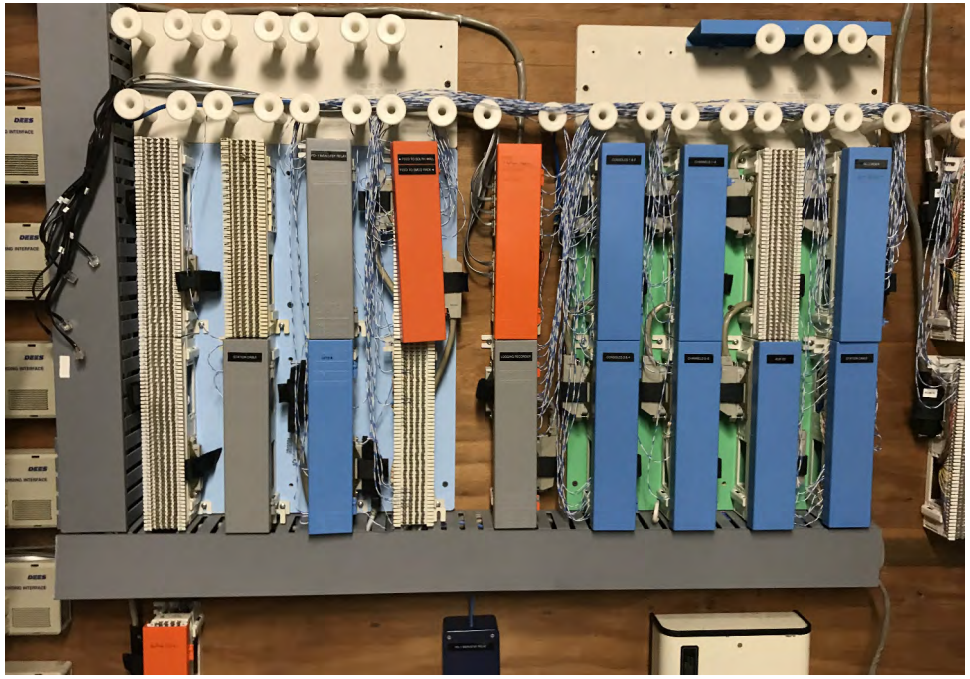
1. Engineer recommends product data be submitted prior to shop drawings once submittal process is under way
2. Existing Conditions at Police Department
3. Town Hall is under construction, significant coordination efforts required with General Contractor
    - Bidders may request copies of plans and specs for Town Hall project by emailing public.works@colma.ca.gov.
4. Network Switches provided by the City
5. Programming Meetings with Staff and Designer are necessary
6. Presentation of VMS and Access Control systems to Staff is necessary
7. Monitoring Facilities are in bid scope

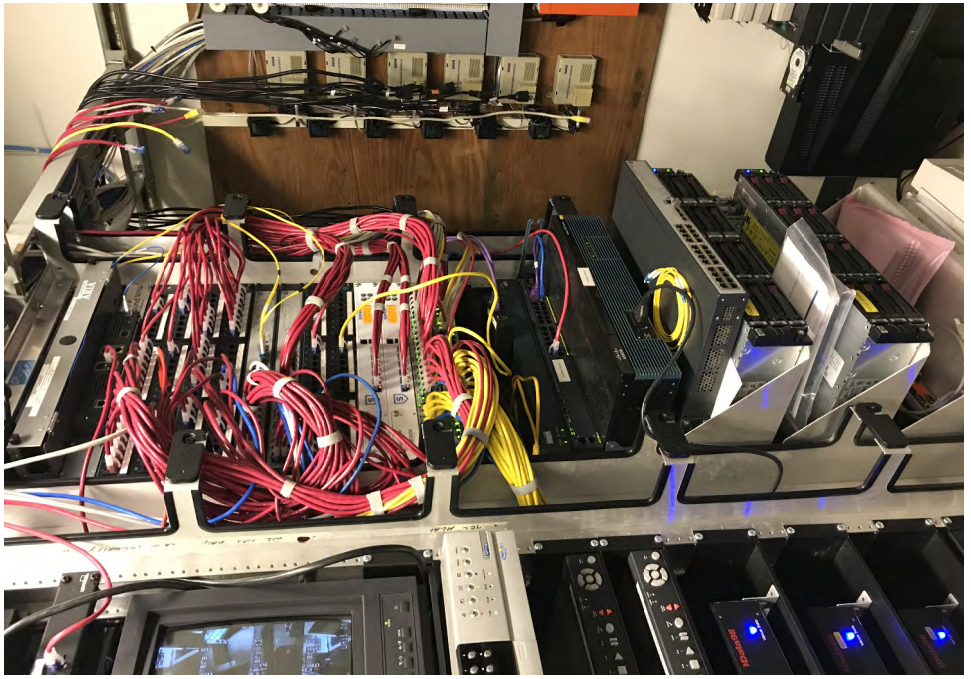
8. Door Hardware at Police Department is existing, Contractor responsible for new operations utilizing existing Division 8 hardware
9. Door Hardware and systems at Town Hall by others, Contractor responsible for card readers and terminations
10. Expect to coordinate with Police Department for down time hours when shutting down or switching at existing systems
11. Training for users is indicated in Division 28 specs
    - Expect to provide multiple trainings to end users, IT Staff and Administrative personnel, it is specified that the Contractor record the training sessions and provide copies to Staff
12. Scope is for mobile ready readers (BluTooth enabled), mobile access to video – refer to specs.
13. Contractor's responsibility to properly size servers and software per specification requirements and Town needs
14. Employee Data "build out" by Contractor
15. Specifications include 50 reader cards
16. Software House C-Cure 9000 or equal is listed as basis of design in specification 28 13 00.

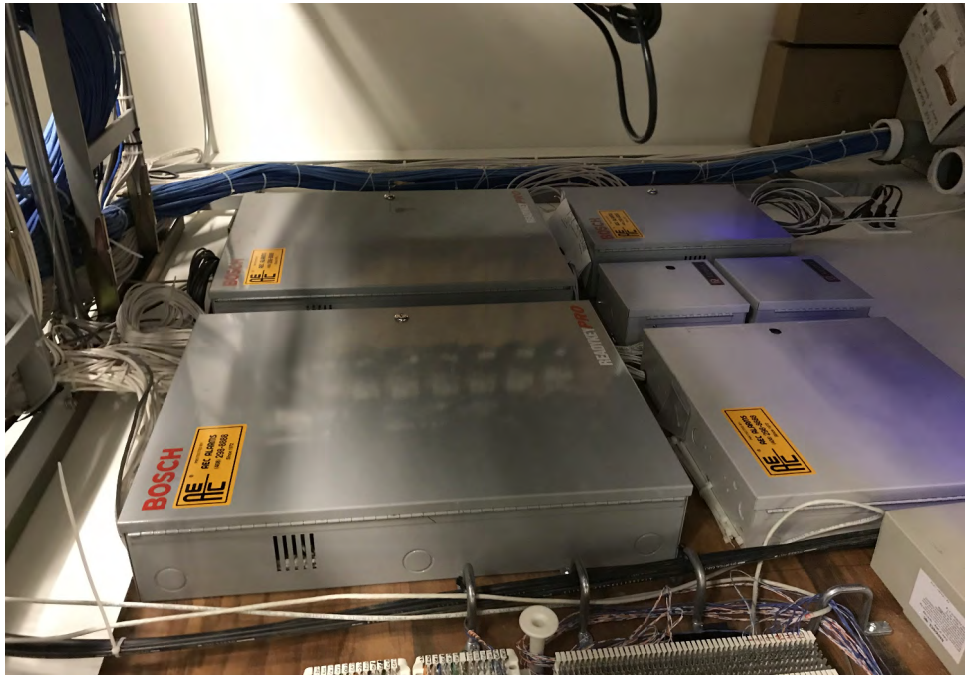
Pre-bid Conference

1. Tri-Security Inc.
2. Integrated Security Controls
3. Kratos Public Safety & Security Solutions, Inc.
4. Decker Electric
5. Structure Works
6. Vas Security Systems, Inc.
7. Microbiz Security Company

Meeting Minutes Information for Reference by Bidders during Rebid






BOSCH


MOTOROLA


BOSCH

STAFF REPORT

TO: Mayor and Members of the City Council

FROM: Brad Donohue, Public Works Director/CSG Consultants

VIA: Brian Dossey, City Manager

MEETING DATE: February 14, 2018

SUBJECT: Notice of Award – Town Hall Project – Phase V, FF&E

RECOMMENDATION

Staff recommends that the City Council adopt

> RESOLUTION WAIVING ANY IRREGULARITIES IN THE BID OF AND AWARDING A CONSTRUCTION CONTRACT TO AND DIRECTING THE CITY MANAGER TO EXECUTE THE CONSTRUCTION CONTRACT WITH RDI FOR THE TOWN HALL ADDITION AND RENOVATION PROJECT, PHASE V, FURNITURE, FIXTURES & EQUIPMENT

EXECUTIVE SUMMARY

The Town Hall Addition and Renovation Project, Phase V, Furniture, Fixtures & Equipment ("Project") was published for bid on Friday, January 12, 2018; bid opening occurred on Tuesday, February 6, 2018 at 2:00 p.m. In reviewing the bids received (bid schedules, bid forms, contractor references, etc.), Town Staff has determined that RDI with a bid amount of $235,722.36 is the lowest responsible bidder submitting a responsive bid.

Staff recommends that the Council approve award of the construction contract to and direct the City Manager to execute the construction contract with RDI.

FISCAL IMPACT

The Council approved budget for the Project is $325,000.00; The lowest responsible bidder's bid amount of $235,722.36 is within the appropriated budget amount stated above. Staff recommends that a 15% Construction Contingency ($35,358) be held by the Town to be used in the event of unforeseen condition and/or Town directed changes after contract award.

BACKGROUND

At the City Council Meeting on January 10, 2018, the furniture schematic and proposed furniture inventory was introduced to City Council. Enlarged floor plans were provided for typical staff offices, the City Manager's office, Council offices, conference rooms, staff workstations, reception desk, Council Chambers, gallery, staff kitchen, staff pantry, etc. The City Council reviewed and provided the necessary feed back to the design team.

Council directed Staff to proceed with a call for bids on the Project inclusive of the City Councils recommendations.

ANALYSIS

A total of three were received on Tuesday, February 6, 2018.

1. Pivot Interiors - $234,403.98

2. RDI - $235,722.36

3. One Work Place - $258,393.00

Staff reviewed all three bids received and determined that RDI is the lowest responsible bidder submitting a responsive bid in the amount of $235,722.36.

The bid submitted by Pivot Interiors was determined non-responsive. Pivot's bid has a material deviation in the bid schedule that affects the amount of the bid rendering the bid non-responsive. Material bid errors that affect the amount of the bid are not waivable.

RDI's bid had an immaterial error related to inserting a number and corresponding note for the mobilization line item in the bid schedule. Because the note clarifies the intent of the mobilization line item, Staff is able to resolve the error without further clarification from RDI. Thus, the error is immaterial and waivable. If the Council chooses to waive the error, RDI's would be the lowest responsible bidder submitting a responsive bid.

The bid submitted by One Work Place also includes material bid deviations that affect the amount of the bid thus rendering it non-responsive.

Staff reviewed and analyzed each bid package thoroughly, reviewing bid items and unit costs to ensure completeness, accuracy and responsiveness to the bid documents. Staff also contacted references provided by bidders in effort to ensure that the bidders were responsible.

The Engineer's Estimate for the Project is $250,000.00 and the lowest responsive bid is less than the estimate.

COUNCIL ADOPTED VALUES

Approval of the proposed resolution is consistent with the City Council's value of **FAIRNESS**, treating all submitted bids in a fair and equitable manner.

ALTERNATIVE

City Council could reject the recommended bid and direct staff to re-bid the project. This is not recommended because rebidding the project could delay the opening of the new Town Hall facility.

CONCLUSION

Staff recommends that City Council adopt a Resolution (1) rejecting the bid submitted by Pivot Interiors as nonresponsive, (2) waiving immaterial errors contained in RDI's bid and (3) awarding the Project construction contract to and directing the City Manager to execute a construction contract with RDI as the lowest responsible bidder submitting a responsive bid.

ATTACHMENTS

A. Resolution
B. Contract
C. Bid Package (Lowest Apparent Bid)

TOWN OF COLMA
COLMA
AUGUST 5, 1924
CALIFORNIA

RESOLUTION NO. 2018-__
OF THE CITY COUNCIL OF THE TOWN OF COLMA

RESOLUTION WAIVING ANY IRREGULARITIES IN THE BID OF AND AWARDING A CONSTRUCTION CONTRACT TO AND DIRECTING THE CITY MANAGER TO EXECUTE THE CONSTRUCTION CONTRACT WITH RDI FOR THE TOWN HALL ADDITION AND RENOVATION PROJECT, PHASE V, FURNITURE, FIXTURES & EQUIPMENT

The City Council of the Town of Colma does hereby resolve:

1. Background.

(a) The Town of Colma opened bids for the Town Hall Addition and Renovation Project, Phase V, Furniture, Fixtures & Equipment ("Phase V") on February 6, 2018.

(b) Town Staff determined that RDI, is the lowest responsible bidder submitting a responsive bid in the amount of $235,722.36.

(c) The bid from the low bidder (Pivot Interiors) includes several material bid errors in the bid schedule that affect the amount of the bid thus rendering the bid non-responsive.

(d) The bid from RDI contained a minor irregularity arising from inserting a number and corresponding note for the mobilization line item in the bid schedule.

(e) The Town has broad discretion to determine responsiveness and accept a responsive bid even if there are minor irregularities or mistakes, as long as such mistakes are immaterial. (See *Menefee v. County of Fresno* (1985) 163 Cal.App.3d 1175; *Ghilloti Construction Co. v. City of Richmond* (1996) 45 Cal.App.4th 897.)

(f) The Town was able to clarify the intent of the mobilization line item in RDI's bid based on the note included with the bid schedule; therefore, the error was resolved without the need to obtain further clarification from RDI.

2. Finding.

(a) The City Council finds that the error in Pivot Interiors bid is a material error that is not waivable and renders the bid nonresponsive.

(b) The City Council finds that the minor bid irregularity in RDI's bid is immaterial and waivable.

(c) The City Council finds that RDI is the lowest responsible bidder submitting a responsive bid.

3. Order

(a) The bid submitted by Pivot Interiors is hereby rejected as nonresponsive due to material bid errors in the bid.

(b) The minor bid irregularity in RDI's bid is hereby waived as immaterial.

(c) Award of the construction contract for Phase V in the amount of $235,722.36 is hereby made to RDI.

(d) The construction contract for Phase V between the Town of Colma and RDI, a copy of which is on file with the City Clerk, is approved by the City Council of the Town of Colma.

(e) The City Manager is authorized to execute said contract on behalf of the Town of Colma, with such minor technical amendments as may be deemed appropriate by the City Manager and the City Attorney.

(f) A Town controlled fifteen percent (15%) construction contingency in the amount of $35,358 to be used in the event of unforeseen conditions and certain allowance items is established for Phase V.

Certification of Adoption

I certify that the foregoing Resolution No. 2018-__ was duly adopted at a regular meeting of said City Council held on February 14, 2018 by the following vote:

Name	Counted toward Quorum			Not Counted toward Quorum	
	Aye	No	Abstain	Present, Recused	Absent
Raquel Gonzalez, Mayor					
Joanne del Rosario					
John Irish Goodwin					
Diana Colvin					
Helen Fisicaro					
Voting Tally	0	0			

Dated _____

_____
Raquel Gonzalez, Mayor

Attest: _____
Caitlin Corley, City Clerk

CONTRACT

This CONTRACT, No. _____ is made and entered into this ____ day of _____, _____, by and between Town of Colma, sometimes hereinafter called "Town," and RDI, sometimes hereinafter called "Contractor."

WITNESSETH: That the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree with each other as follows:

a. **SCOPE OF WORK.** The Contractor shall perform all Work within the time stipulated in the Contract, and shall provide all labor, materials, equipment, tools, utility services, and transportation to complete all of the Work required in strict compliance with the Contract Documents as specified in Article 5, below, for the following Project:

TOWN HALL – FF&E

The Contractor and its surety shall be liable to the Town for any damages arising as a result of the Contractor's failure to comply with this obligation.

b. **TIME FOR COMPLETION.** Time is of the essence in the performance of the Work. The Work shall be commenced on the date stated in the Distric's Notice to Proceed. The Contractor shall complete all Work required by the Contract Documents within 105 calendar days from the commencement date stated in the Notice to Proceed. By its signature hereunder, Contractor agrees the time for completion set forth above is adequate and reasonable to complete the Work.

c. **CONTRACT PRICE.** The Town shall pay to the Contractor as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of _____ Dollars ($_____). Payment shall be made as set forth in the General Conditions.

d. **LIQUIDATED DAMAGES.** In accordance with Government Code section 53069.85, it is agreed that the Contractor will pay the Town the sum set forth in Section 00 73 13, Article 1.11 for each and every calendar day of delay beyond the time prescribed in the Contract Documents for finishing the Work, as Liquidated Damages and not as a penalty or forfeiture. In the event this is not paid, the Contractor agrees the Town may deduct that amount from any money due or that may become due the Contractor under the Contract. This Article does not exclude recovery of other damages specified in the Contract Documents.

e. **COMPONENT PARTS OF THE CONTRACT.** The "Contract Documents" include the following:

Bid Manaul
- Notice Inviting Bids
- Instructions to Bidders
- Bid Form
- Bid Bond
- Designation of Subcontractors
- Information Required of Bidders
- Non-Collusion Declaration Form

Iran Contracting Act Certification
Public Works Contractor Registration Certification
Performance Bond
Payment (Labor and Materials) Bond
Bid Specifications
General Conditions
Special Conditions
Technical Specifications
Install Instructions
Addenda
Plans and Drawings
Standard Specifications for Public Works Construction “Greenbook”, latest edition, Except Sections 1-9
Applicable Local Agency Standards and Specifications, as last revised
Approved and fully executed change orders
Any other documents contained in or incorporated into the Contract

The Contractor shall complete the Work in strict accordance with all of the Contract Documents.

All of the Contract Documents are intended to be complementary. Work required by one of the Contract Documents and not by others shall be done as if required by all. This Contract shall supersede any prior agreement of the parties.

f. **PROVISIONS REQUIRED BY LAW AND CONTRACTOR COMPLIANCE.** Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of applicable federal, state and local laws, rules and regulations, including, but not limited to, the provisions of the California Labor Code and California Public Contract Code which are applicable to this Work.

g. **INDEMNIFICATION.** Contractor shall provide indemnification and defense as set forth in the General Conditions.

h. **PREVAILING WAGES.** Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at the Town’s Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, this Contract has been duly executed by the above-named parties, on the day and year above written.

TOWN OF COLMA

By: _____
Brian Dossey
City Manager

RDI

By: _____

Its: _____

Printed Name: _____

ATTEST:

By: _____
City Clerk

APPROVED AS TO FORM:

By: _____
City Attorney

(CONTRACTOR'S SIGNATURE MUST BE NOTARIZED AND CORPORATE SEAL AFFIXED, IF APPLICABLE)

END OF CONTRACT

TOWN OF COLMA
COLMA
AUGUST 5, 1924
CALIFORNIA

A. BID SCHEDULE

NO.	ITEM DESCRIPTION	UNIT OF MEASURE	UNIT PRICE	ITEM COST
1.	Project Managerment – Coordination with Staff, Correspondence, Submittals, RFIs, etc.	LS	1	$6,450.00
2.	Protection – At existing finishes	LS	1	Included
3.	FF&E Materials – Sub-total from Exhibit A*	LS	1	$180,292.83 Tax 15,775.62
4.	FF&E Labor for Install (Prevailing Wage)	LS	1	$24,187.50 Tax $2,116.41
5.	Insurance & Bonding	LS	1	$6,900
6.	OH&P – Overhead & Profit Note: profit included in lines 3 &4	LS/Fee	1	-$35,650.05
7.	**Total Bid Price (tax included)**	**Total**	-	$235,722.36

*Exhibit A is provided at the end of the Bid Manual and must be filled out complete for the bid to be accepted.

The Town will register with bidder's stated/selected procurement agency if necessary.

The costs for any Work shown or required in the Contract Documents, but not specifically identified as a line item are to be included in the related line items and no additional compensation shall be due to Contractor for the performance of the Work.

In case of discrepancy between the Unit Price and the Item Cost set forth for a unit basis item, the unit price shall prevail and shall be utilized as the basis for determining the lowest responsive, responsible Bidder. However, if the amount set forth as a unit price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or is the same amount as the entry in the "Item Cost" column, then the amount set forth in the "Item Cost" column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the Unit Price.

For purposes of evaluating Bids, the Town will correct any apparent errors in the extension of unit prices and any apparent errors in the addition of lump sum and extended prices.

The estimated quantities for Unit Price items are for purposes of comparing Bids only and the Town makes no representation that the actual quantities of work performed will not vary from the estimates. Final payment shall be determined by the Engineer from measured quantities of work performed based upon the Unit Price.

B. TOTAL BID PRICE:

TOTAL BID PRICE BASED ON BID SCHEDULE TOTAL OF UNIT PRICES
FOR Town Hall – FF&E

$ $235,722.36
Total Bid Price in Numbers

$ Two hundred thirty five thousand, seven hundred twenty two dollars and thirty six cents
Total Bid Price in Written Form

In case of discrepancy between the written price and the numerical price, the written price shall prevail.

The undersigned agrees that this Bid Form constitutes a firm offer to the Town which cannot be withdrawn for the number of calendar days indicated in the Notice Inviting Bids from and after the Bid opening, or until a Contract for the Work is fully executed by the Town and a third party, whichever is earlier.

The successful bidder hereby agrees to sign the contract and furnish the necessary bonds and certificates of insurance within ten (10) working days after the Town provides the successful bidder with the Notice of Award.

Upon receipt of the signed contract and other required documents, the contract will be executed by the Town, after which the Town will prepare a letter giving Contractor Notice to Proceed. The official starting date shall be the date of the Notice to Proceed, unless otherwise specified. The undersigned agrees to begin the Work within ten (10) working days of the date of the Notice to Proceed, unless otherwise specified.

The undersigned has examined the location of the proposed work and is familiar with the Drawings and Specifications and the local conditions at the place where work is to be done.

If awarded the contract, the undersigned agrees that there shall be paid by the undersigned and by all subcontractors to all laborers, workers and mechanics employed in the execution of such contract no less than the prevailing wage rate within San Mateo County for each craft, classification, or type of worker needed to complete the Work contemplated by this contract as established by the Director of the Department of Industrial Relations. A copy of the prevailing rate of per diem wages are on file at the Town's Administration Office and shall be made available to interested parties upon request.

Enclosed find cash, bidder's bond, or cashier's or certified check No. 0921507944 from the Bank of America Bank in the amount of 23,400.00, which is not less than ten percent (10%) of this bid, payable to Town of Colma as bid security and which is

given as a guarantee that the undersigned will enter into a contract and provide the necessary bonds and certificates of insurance if awarded the Work.

The bidder furthermore agrees that in case of bidder's default in executing said contract and furnishing required bonds and certificates of insurance, the cash, bidder's bond, or cashier's or certified check accompanying this proposal and the money payable thereon shall become and shall remain the property of the Town of Colma.

Bidder is an individual _____, or corporation X , or partnership _____, organized under the laws of the State of California.

Bidder confirms license(s) required by California State Contractor's License Law for the performance of the subject project are in full effect and proper order. The following are the Bidder's applicable license number(s), with their expiration date(s) and class of license(s):

License # 715770 Expires 11/30/2018 - License Classes B, C15, C61/D34

If the Bidder is a joint venture, each member of the joint venture must include the required licensing information.

Sureties that will furnish the Faithful Performance Bond and the Labor and Material Payment Bond, in the form specified herein, in an amount equal to one hundred percent (100%) of the contract price within ten (10) working days from the date the Town provides the successful bidder the Notice of Award. Sureties must meet all of the State of California bonding requirements, as defined in California Code of Civil Procedure Section 995.120 and must be authorized by the State of California.

The insurance company or companies to provide the insurance required in the contract documents must have a Financial Strength Rating of not less than "A-" and a Financial Size Category of not less than "Class VII" according to the latest Best Key Rating Guide. At the sole discretion of the Town, the Town may waive the Financial Strength Rating and the Financial Size Category classifications for Workers' Compensation insurance.

(signatures continued on next page)

I hereby certify under penalty of perjury under the laws of the State of California that all of the information submitted in connection with this Bid and all of the representations made herein are true and correct.

Executed at San Francisco, CA, on this 5 day of February, 2018.

(Bidders Name – Print or Type)

Maryann McCarthy, Principal

(Name and Title)

(Corporate Seal)

(Signature)

Names of individual members of firm or names and titles of all officers of corporation and their addresses are listed below:

Name Ann Pantera Title President

Complete Address 747 Front Street, Suite 100 San Francisco, CA 94111

Phone 415-777-0202 FAX 415-777-0941

Name Fay Abbassi Title Vice President

Complete Address 747 Front Street, Suite 100 San Francisco, CA 94111

Phone 415-777-0202 FAX 415-777-0941

Name Maryann McCarthy Title Secretary

Complete Address 747 Front Street, Suite 100 San Francisco, CA 94111

Phone 415-777-0202 FAX 415-777-0941

Name Kalee Woo Title Treasurer

Complete Address 747 Front Street, Suite 100 San Francisco, CA 94111

Phone 415-777-0202 FAX 415-777-0941

n/a Cashier's check included

1.2 Bid Bond

[Note: Not required when other form of Bidder's Security, e.g. cash, certified check or cashier's check, accompanies bid.]

The makers of this bond are, _____, as Principal, and _____, as Surety and are held and firmly bound unto the Town of Colma, hereinafter called the Town, in the penal sum of TEN PERCENT (10%) OF THE TOTAL BID PRICE of the Principal submitted to TOWN for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated _____, 20 ____, for Town Hall - FF&E.

If the Principal does not withdraw its Bid within the time specified in the Contract Documents; and if the Principal is awarded the Contract and provides all documents to the Town as required by the Contract Documents; then this obligation shall be null and void. Otherwise, this bond will remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents shall in affect its obligation under this bond, and Surety does hereby waive notice of any such changes.

In the event a lawsuit is brought upon this bond by the Town and judgment is recovered, the Surety shall pay all litigation expenses incurred by the Town in such suit, including reasonable attorneys' fees, court costs, expert witness fees and expenses.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporation.

(Corporate Seal)

_____
Contractor/ Principal

By_____

Title_____

_____
Surety

(Corporate Seal)

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title_____

n/a Cashier's check included

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF San Francisco

On February 5 (Date), 2018, before me, _____ (Name And Title Of Officer (e.g. "Jane Doe, Notary Public")), Notary Public, personally appeared Maryann McCarthy (Name(s) of Signer(s)), who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

_____
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for Contractor/Principal.

n/a Cashier's check included

Notary Acknowledgment

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF San Francisco

On February 5 (Date), 20 18, before me, _____ (Name And Title Of Officer (e.g. "Jane Doe, Notary Public")), Notary Public, personally appeared Maryann McCarthy (Name(s) of Signer(s)), who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

_____
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for the Attorney-in-Fact. The Power-of-Attorney to local representatives of the bonding company must also be attached.

END OF BID BOND

1.3 List of Subcontractors

In compliance with the Subletting and Subcontracting Fair Practices Act Chapter 4 (commencing at Section 4100), Part 1, Division 2 of the Public Contract Code of the State of California and any amendments thereof, Bidder shall set forth below: (a) the name and the location of the place of business, (b) the California contractor license number, (c) the DIR public works contractor registration number, and (d) the portion of the work which will be done by each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the work or improvement to be performed under this Contract in an amount in excess of one-half of one percent (0.5%) of the Bidder's Total Bid Price. Notwithstanding the foregoing, if the work involves the construction of streets and highways, then the Bidder shall list each subcontractor who will perform work or labor or render service to the Bidder in or about the work in an amount in excess of one-half of one percent (0.5%) of the Bidder's Total Bid Price or $10,000, whichever is greater. No additional time shall be granted to provide the below requested information.

If a Bidder fails to specify a subcontractor or if a contractor specifies more than one subcontractor for the same portion of work, then the Bidder shall be deemed to have agreed that it is fully qualified to perform that portion of work and that it shall perform that portion itself.

Work to be done by Subcontractor	**Name of Subcontractor**	**Location of Business**	**CSLB Contractor License No.**	**DIR Registration Number**	**% of Work**
Receiving, Delivery and installation of furniture	All Modular	Hayward , CA	918072	1000023880	13.41%

Name of Bidder RDI / Resource Design Interiors

Signature [signature]

Name and Title Maryann McCarthy, Principal

Dated February 5, 2018

1.4 Bidder Information and Experience Form

ARTICLE 1. INFORMATION ABOUT BIDDER

(Indicate not applicable ("N/A") where appropriate.)

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: RDI / Resource Design Interiors

2.0 Type, if Entity: Corporation

3.0 Bidder Address: Front Street, Suite 100
San Francisco CA 94111

415-777-0941 415-777-0202
Facsimile Number Telephone Number

maryann.mccarthy@rdi-sf.com
Email Address

4.0 How many years has Bidder's organization been in business as a Contractor? 42 years

5.0 How many years has Bidder's organization been in business under its present name? 42 years

5.1 Under what other or former names has Bidder's organization operated? dba Resource and Design, Inc.

6.0 If Bidder's organization is a corporation, answer the following:

6.1 Date of Incorporation: August 9, 1989

6.2 State of Incorporation: California

6.3 President's Name: Ann Pantera

6.4 Vice-President's Name(s): Fay Abbassi

6.5 Secretary's Name: Maryann McCarthy

6.6 Treasurer's Name: Kalee Woo

7.0 If an individual or a partnership, answer the following:

7.1 Date of Organization: n/a

7.2 Name and address of all partners (state whether general or limited partnership):

n/a

8.0 If other than a corporation or partnership, describe organization and name principals:

n/a

9.0 List other states in which Bidder's organization is legally qualified to do business.

Arizona, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Maryland, Massachusetts Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, North Dakota, Pennsylvania, Oregon, Texas, Virginia, Washington, Washington D.C., Wisconsin

10.0 What type of work does the Bidder normally perform with its own forces?

Contract furniture related services that include consulting, procuring, space planning, technical design specification and project management.

11.0 Has Bidder ever failed to complete any work awarded to it? If so, note when, where, and why:

No

12.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract? If so, attach a separate sheet of explanation:

No

13.0 List Trade References:

Kimball Office

Knoll, Inc.

All Modular

National Office Furniture

14.0 List Bank References (Bank and Branch Address):

Bank of America 500 Battery St, San Francisco, CA 94111

First Republic 101 Pine Street , San Francisco, CA 94111

Union Bank 350 California Street, San Francisco, CA 94104

15.0 Name of Bonding Company and Name and Address of Agent:

Western Surety Co.

Pam Nader, CAL Insurance & Associates. Inc.

2311 Taraval Street, San Francisco, CA 94116

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ARTICLE 2. LIST OF CURRENT PROJECTS (BACKLOG)

[**Duplicate Page if needed for listing additional current projects.**]

Project	Description of Bidder's Work	Completion Date	Cost of Bidder's Work
City & County SF SFO CAC Project	450 workstations & ancillary furnishings	March 2018	$2.9Mil
WestED - Alameda	51 Private offices, 19 workstations & ancillary furnishings	May 2018	$409K
Union Bank /Phoenix	600 workstations & ancillary furnishings	August 2018	$700K
Union Bank Purepoint	Update 50 Branches	December 2018	$500K
Onlok Admin	100 workstations & ancillary furnishings	April 2018	$335K
Union Bank - Millwork	Update 20 branches	December 2018	$500K
John Muir	Various active projects	June 2018	$600K
AAC - Wichita	15 workstations & ancillary furnishings	April 2018	$140K
Delta Delta SF / Oak	500+ workstations & ancillary furnishings	May 2018	$4.6Mil
FRB	Various active projects	April 2018	$165K
EPA	Design and Project management Relocation project	February 2018	$165K
Wells Fargo	Various active projects	March 2018	$280K
Please note our current backlog is $12M - the above projects represent projects /accounts with open orders over $150K			

ARTICLE 3. LIST OF COMPLETED PROJECTS – LAST THREE YEARS

[**Duplicate Page if needed for listing additional completed projects.**]

Please include only those projects which are similar enough to demonstrate Bidder's ability to perform the required Work.

Project	Description of Bidder's Work	Completion Date	Cost of Bidder's Work
AAC - Headquarters	Furnished 120K sq foot HQ location in Santa Rosa CA	May 2016	$2.6Mil
FitBit - Fremont Street	Multiphase 9 floor project	January 2016 - March 2017	$7Mil
SHC - Emeryville Clinic	4 floor Outpatient Clinic	December 2016	$3Mil
SHC - Southbay Cancer Center	4 floor Outpatient Clinic	May 2015	$3.5Mil
SHC - Redwood City Clinic	3 floor Outpatient Clinic	November 2017	$1.9 Mil
Sony - Cafe	Large Cafe / Hospitality Project	June 2017	$600K
Sony 645 Harrison	180 workstations & ancillary furnishings	September 2017	$1Mil
Union Bank	Various Locations/project	2017	$1.6M
Lending Home SF	400 Workstations & ancillary furnishing	November 2017	1.5M
FRB	Various Locations/project	2017	$4.5M
Wells Fargo	Various Locations/project	2017	$1.2M
EPA	Multiphase 15 floor project	2014-2016	$11Mil
Imperva	250 workstations & ancillary furnishing	2016	$1.7Mil
Please note that RDI have reported revenues on average over $30 million annually for the last 3 years - the above represents some larger projects/account activity			

This a partial list of completed projects -

ARTICLE 4. EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE

Personnel:

The Bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity.

1. List each person's job title, name and percent of time to be allocated to this project:

Melissa Albritton, Account Executive, 30-80% depending on stage of project

Elaine Ivins, Project Manager, 30-80% depending on stage of project

Catrina Lee, Project Coordinator, 30-50% depending on stage of project

Yasmeen Lam, Designer, 20-70% depending on stage of project

2. Summarize each person's specialized education:

Melissa Albritton has a Interior Design Degree and 13+ years of client sales consulting experience

Elaine Ivins has completed Solomon Coyle Project Management Training and has 4 years of practical field project management experience

Catrina Lee has a business degree and has supported Melissa and team for over 5 years
Yasmeen Lam has an Interior Design Degree and 12 years of technical design experience.

3. List each person's years of construction experience relevant to the project:

See above

4. Summarize such experience:

See above

Bidder agrees that personnel named in this Bid will remain on this Project until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the Town.

Changes Occuring Since Prequalification

If any substantive changes have occurred since Bidder submitted its prequalification package for this Project, Bidder shall list them below. If none are listed, Bidder certifies that no substantive changes have occurred.

no changes

Additional Bidder's Statements:

If the Bidder feels that there is additional information which has not been included in the questionnaire above, and which would contribute to the qualification review, it may add that information in a statement here or on an attached sheet, appropriately marked:

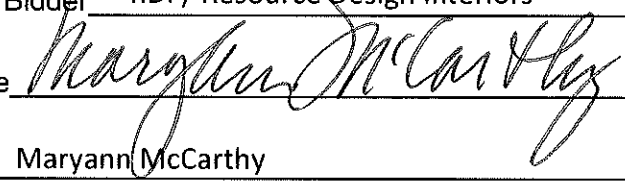
RDI is a certified WBE (Women Owned Enterprise). In addition, we invest in the continual education/certification of our staff resulting in an trained and experienced staff. We proud of the longevity and tenure of our staff and know that this delivers long term value to our customers. Many our our clients have worked with RDI for decades including City and County of SF, Delta Dental, Stanford Healthcare, Union Bank, and FRB. These entities all have active projects with RDI and ongoing business.

ARTICLE 5. VERIFICATION AND EXECUTION

These Bid Forms shall be executed only by a duly authorized official of the Bidder:

I declare under penalty of perjury under the laws of the State of California that the foregoing information is true and correct:

Name of Bidder RDI / Resource Design Interiors

Signature 

Name Maryann McCarthy

Title Principal

Date February 5, 2018

1.5 Non-Collusion Declaration

The undersigned declares:

I am a Principal of RDI / Resource Design Interiors, the party making the foregoing Bid.

The Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The Bid is genuine and not collusive or sham. The Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid. The Bidder has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or to refrain from bidding. The Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the Bid Price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the Bid Price, or of that of any other Bidder. All statements contained in the Bid are true. The Bidder has not, directly or indirectly, submitted his or her Bid Price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a Bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the Bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on February 5, 2018 [date], at San Francisco [city], California [state].

Name of Bidder RDI / Resource Design Interiors

Signature 

Name Maryann McCarthy

Title Principal

1.6 Iran Contracting Act Certification.
(Public Contract Code section 2200 et seq.)

As required by California Public Contract Code Section 2204, the Contractor certifies subject to penalty for perjury that the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 *et seq.*) is true and correct:

☒ The Contractor is not:

(1) identified on the current list of person and entities engaged in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or

(2) a financial instruction that extends, for 45 days or more, credit in the amount of $20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

☐ The Town has exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, the Town will be unable to obtain the goods and/or services to be provided pursuant to the Contract.

☒ The amount of the Contract payable to the Contractor for the Project does not exceed $1,000,000.

Signature: Maryann McCarthy

Printed Name: Maryann McCarthy

Title: Principal

Firm Name: RDI / Resource Design Interiors

Date: February 5, 2018

Note: In accordance with Public Contract Code Section 2205, false certification of this form shall be reported to the California Attorney General and may result in civil penalties equal to the greater of $250,000 or twice the Contract amount, termination of the Contract and/or ineligibility to bid on contracts for three years.

1.7 Public Works Contractor Registration Certification

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. See http://www.dir.ca.gov/Public-Works/PublicWorks.html for additional information.

No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work.

Bidder hereby certifies that it is aware of the registration requirements set forth in Labor Code sections 1725.5 and 1771.1 and is currently registered as a contractor with the Department of Industrial Relations.

Name of Bidder: RDI / Resource Design Interiors

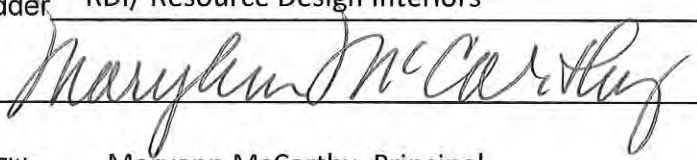
DIR Registration Number: 1000052710

DIR Registration Expiration: 6/18/18

Bidder further acknowledges:

1. Bidder shall maintain a current DIR registration for the duration of the project.
2. Bidder shall include the requirements of Labor Code sections 1725.5 and 1771.1 in its contract with subcontractors and ensure that all subcontractors are registered at the time of bid opening and maintain registration status for the duration of the project.
3. Failure to submit this form or comply with any of the above requirements may result in a finding that the bid is non-responsive.

Name of Bidder RDI/ Resource Design Interiors

Signature 

Name and Title Maryann McCarthy, Principal

Dated February 5, 2018

1.8 Contractor's Certificate Regarding Workers' Compensation.

I am aware of the provisions of section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this Contract.

Name of Bidder RDI / Resource Design Interiors

Signature

Name Maryann McCarthy

Title Principal

Dated February 5, 2018

TOWN OF COLMA
COLMA
AUGUST 5, 1924
CALIFORNIA

STAFF REPORT

TO: Mayor and Members of the City Council

FROM: Brian Dossey, City Manager

MEETING DATE: February 14, 2018

SUBJECT: Status Update to 2017-19 Strategic Plan

RECOMMENDATION

Staff recommends that the City Council pass the following motion:

MOTION TO ACCEPT UPDATE TO 2017-19 TOWN OF COLMA STRATEGIC PLAN

EXECUTIVE SUMMARY

The attached document provides a status update on each program of the approved 2017-19 Strategic Plan. The updated Strategic Plan also includes a few newly proposed initiatives for City Council to consider. Staff will seek direction on prioritization of the programs for 2018, and whether to include the newly proposed initiatives into the 2017-2019 Strategic Plan.

FISCAL IMPACT

There is no direct fiscal impact associated with this action. Each individual program in the Strategic Plan has a fiscal impact, however. Some of these programs are already in progress and, as such, are already budgeted or have been completed.

BACKGROUND

The attached Strategic Plan Status Update provides updates to each of the initiatives in the 2017-19 Strategic Plan, as approved by the City Council in November 2016. The February 14, 2018 status updates are shown in **bold text**. The original plan reflected the prioritization of proposed programs as determined by the City Council at the October 2016 Strategic Planning Study Session.

ANALYSIS

Staff has made significant progress in meeting the goals of the 2017-19 Town of Colma Strategic Plan. Most of the programs in the plan are either underway or have been completed. Staff has introduced a few new initiatives in the program areas of:

1. Climate Action Plan
2. Economic Development
3. Quality of Life

Council Adopted Values

Accepting the status update to the Strategic Plan is a *responsible* action because it provides certainty of the framework of priorities for Staff to follow. The goals and programs of the Strategic Plan consider the Town's long-term financial stability and promote innovation and vision for the Town's operations as well.

Sustainability Impact

Several components of the Strategic Plan directly further the Town's Climate Action Plan and sustainability efforts.

Alternatives

The Council could not accept the status update and could, instead, direct staff to bring back a more comprehensive review of the Plan.

CONCLUSION

Staff recommends the Council pass a motion accepting the status update.

ATTACHMENTS

A. Status Update to 2017-19 Strategic Plan

2017-19 STRATEGIC PLAN

Value Statement

Treat all persons, claims and transactions in a fair and equitable manner.

Make responsible decisions by taking the long-range consequences into consideration.

Base decisions on, and relate to each other with honesty, integrity and respect.

Be innovative in improving the quality of life in our business and residential communities.

Goals and Priority Programs

Area:	**Significant Mandates**	**Town Operations**	**Economic Development**	**Financial Planning**	**Quality of Life**
Goals:	*Ensure compliance with the law*	*Ensure friendly, efficient and timely delivery of services*	*Implement three programs from the Economic Development Plan*	*Ensure long-term financial health*	*Make our Town safe, clean and attractive*
Programs:	Update General Plan	Complete Town Hall Renovation	Prepare Auto Row improvements and Master Plan	Prepare plan to address unfunded liabilities	Offer more community-based programs
	Implement Federal/State/ Local Mandates	Increase the use of technology to enhance customer services	Commit resources to developing a hotel business	Study feasibility of establishing Lighting District	Continue Police Department outreach to residents and youths
	Implement Climate Action Plan	Body Camera implementation for Police Department	Commit resources to support expansion or relocation of businesses	Study Feasibility of Sewer Enterprise Fund	Increase Access to Residents/ Businesses for Quality of Life Programs

DETAILED PROGRAM DESCRIPTIONS

*Priority Programs are shown with an Asterisk **

Significant Mandates

*Update General Plan**

Description: The Planning Department is continuing work on updating the General Plan and plans to complete the following during the timeframe of this strategic plan:

- Safety Element update that is consistent with the Local Hazard Mitigation Plan.
- Land Use Element update incorporating the Urban Design Study.
- Circulation Element update.
- Noise Element update.
- Open Space and Conservation Element update.
- Hiring of consultant and draft of Program Environmental Impact Report (PEIR).

STATUS FEBRUARY 2018:

The Planning Department is working on drafts of the Safety Element, Land Use Element and Open Space Elements.

GOALS FOR 2018

The Planning Department intends to present these elements to the City Council in 2018. Draft completion of the remaining elements and the hiring of a consultant to work on the Program Environmental Impact Report (PEIR) are scheduled for fiscal year 2018-19.

*Implement Local/State/Federal Mandates**

Description: The programs listed in this section are required under either local, state or federal mandates.

- American with Disabilities Act (ADA) Implementation Plan: The seven-year ADA Self Evaluation and Transition Plan that was adopted by City Council in November 2010 will conclude with the completion of the Town Hall renovation project in the fall 2017. Over the next two years staff will continue to monitor and evaluate programs, facilities, streets, and sidewalks ensuring compliance under the ADA. The following actions are planned during the timeframe of this strategic plan:
  - Prepare ADA Self Evaluation & Transition Plan update to City Council
  - Prepare barrier removal plan for section(s) of Mission Road improving accessibility
  - Conduct ADA Customer Service Training

STATUS FEBRUARY 2018:

The ADA Self Evaluation and Transition Plan update was postponed until completion of the Town Hall project. Once the Town Hall project is complete, staff will update the City Council on the seven-year ADA Transition Plan. Staff will continue to monitor for ADA barriers, and schedule them for mitigation and removal based on priority and available funding.

Upon completion of Veteran's Village Housing Project (2019) and the Town's Capital Improvement Program (CIP #903) Mission Road project, ADA barriers along the east side of Mission Road should be removed and accessibility for pedestrians and bicyclists enhanced.

Staff conducted ADA customer service training in the spring of 2017 and will do so again in 2019.

- Local Hazard Mitigation Plan (LHMP): The Planning Department and other Town Departments will work with San Mateo County to implement action items identified in the LHMP. The following actions are planned during the timeframe of this strategic plan:
    - Develop a full Continuity of Operations (COOP) for Town government.
    - Coordinate and assist in the development of COOP plans for the Town's cemeteries.
    - Establish a public/private partnership program between the Town of Colma and the private owners of identified critical facilities, including the Town's cemeteries and large retailers.
    - Develop a Debris Management Plan in coordination with jurisdictional partners.
    - Identify and equip an alternative EOC location in case of primary EOC disruption or destruction.
    - Develop an outreach campaign for encouraging Colma residents and daily commuters into Colma to sign up for SMC Cell Phone Alert notifications.
    - Develop a standing Master Services Agreement with the Colma Fire Protection District to formalize the existing administrative and technical services relationships.
    - Continue to support the County actions in the LHMP.

STATUS FEBRUARY 2018:

The Public Works Department has supported the efforts to move this program forward. The most significant accomplishment was to join a cooperative agreement(s) allowing the Town's Public Works and Building Department to share services, labor and equipment with agencies throughout the County.

The Colma Police Department has identified the Broadmoor Police Department Emergency Operations Center as the Town's alternate location in case Colma's primary Emergency Operations Center is disrupted or destroyed.

Colma Police Department staff has handed out SMC Alert information and made efforts to sign up those residents who came to the Colma Police Department to renew their parking permits. Commander Lum also presented the importance of registering for SMC Alerts at a fall City Council meeting and the Mayor proclaimed October 25th to be SMC Alert Day. Detective Marchetti presented on how to sign up at a couple of Senior Luncheons this past fall.

Information on how to sign up for SMC Alerts has been publicized via social media, Livewire and Neighborhood Watch. There is also SMC Alert information available for the public at every City Council meeting at the side table. Staff will continue to publicize the importance of SMC Alerts at the February 21, 2018 "Are You Ready" disaster preparedness workshop and throughout the remainder of the year.

GOALS FOR 2018

In 2018, staff will work towards solidifying agreements with the various cemeteries and businesses that would allow us to share and/or acquire resources when a disaster takes place.

Staff will also look to establish a plan with Republic Services, the Town's solid waste hauler, that may be able to assist and manage a temporary disposal site, and the various logistical hurdles that come with managing such a site. It is imperative to secure a site or two where this could take place.

- California Drought Response: The following actions are planned during the timeframe of this strategic plan:
    - Continue to look for ways to reduce municipal water use by updating irrigation systems and selective removal of turf from Town-owned facilities (lawn areas at police station and Creekside villas).
    - Continue to offer water rebates to residents (up to $2,000 total budgeted in each fiscal year).
    - Continue to work with Colma cemeteries and the Resource Conservation District (RCD) to implement recommendations on the water audits prepared for cemeteries and to look for grant funding opportunities to make improvements.
    - Continue to work with Daly City, Cal Water and the SFPUC on the recycled water system currently under study.
    - Review alternative landscaping and land use schemes for the Town's center line medians that meet drought conditions that still have aesthetic value to the community at large.

STATUS FEBRUARY 2018:

The Public Works Department continues to be diligent in reducing water usage in the various landscaping venues at the various Town-owned facilities and in the Right of Way medians. Without removal of the Town-owned facility turf areas, the Public Works crew along with the Town's contract maintenance firm stretched the watering cycle to a point where the lawn areas are on the verge of being stressed. In other words, staff is trying to use the least amount of water possible. The Public Works Department has abstained (under the Governor's mandate) from irrigating the highway and street turfed medians.

Town staff sponsored outreach meetings with Daly City and San Francisco Water to help promote the advancement of a reclaimed water system potentially coming into the Town.

Staff continues to offer water rebates to residents; however, only one rebate was requested in 2017.

Staff completed water and energy efficiency assessments for five cemeteries in partnership with Resource Conservation District (RCD). Staff will continue to partner with RCD to coordinate on potential grants for implementation of water and energy conservation measures that were recommended in the assessments.

City Council adopted a resolution to participate in the Mayors Climate Network supporting climate protection programs and working to meet the goals of the Paris Climate Protection Agreement.

GOALS FOR 2018

The Public Works Department will explore establishing a long-term plan regarding turf at certain facilities and the Right of Way medians. The plan will:

- **Identify the facilities and Right of Way medians that need to be addressed.**
- **Review drought resistant landscape designs including irrigation changes.**
- **Develop a capital program (CIP) for landscape replacement within the Right of Way medians including funding expectations.**
- **Estimate annual costs for long term maintenance of medians.**
- **Explore funding opportunities and options, present to City Council (possibly establish an assessment district, for example, Street Light and Landscape District, research potential grants and explore use of the general fund).**
- **Continue to work with Daly City and San Francisco Water (SFPUC) to help promote the advancement of a reclaimed water system coming into the Town.**
- **Staff will continue to offer water rebates to residents.**

*Implement Town's Climate Action Plan**

Description: AB32 and newly adopted SB 32 established statewide greenhouse gas (GHG) reduction targets. The Town's Climate Action Plan (CAP) contains programs and policies that will facilitate Colma achieving reduction targets and improve the quality of life for those who live, work and visit Colma. During the timeframe of this strategic plan staff will:

- Study feasibility of transitioning to a paperless office and implementation of a centralized purchasing system to decrease waste.
- Continue to promote to residents free or low-cost programs and rebates that increase energy efficiency, conserve water or promote alternative transportation.
- Continue to promote to businesses free or low-cost programs that increase energy efficiency, conserve water, divert solid wastes, or support alternative transportation for employees.
- Continue to look for opportunities to reduce municipal GHG emissions and reduce waste.
- Continue to participate in the Mayor's Water Conservation Challenge.
- Continue involvement with San Mateo County Energy Watch and continue to follow regional and state trends and regulations.
- Continue to work with Republic Services, residents and businesses to increase waste diversion rates.
- Continue Colma Creek clean-up, Town-wide clean-up and garage sale.
- Continue Section 132 pre-tax transportation cost program.
- Continue hosting break station for Bike to Work day.

STATUS FEBRUARY 2018:

Town staff completed compliance reporting to the state agency, CalRecycle, who enforces state mandate AB 939 to meet or exceed 50% diversion from landfill. Colma is in compliance with AB 939. Staff completed additional compliance reporting for AB 341 (large business recycling requirements) and AB 1826 (requires businesses to recycle organics/food). Colma is in compliance with both mandates.

Town staff used grant funds from the CalRecycle and City and County Payment Programs to purchase new recycling and trash containers for bus stop locations and Town facilities

GOALS FOR 2018

Town staff will continue to meet with Republic Services staff on site at various Colma businesses ensuring compliance by the hauler and businesses in diversion mandates set by AB 1826 and AB 341.

The Public Works Department will finalize procuring an energy efficiency grant from the San Mateo County Energy Watch Program/CCAG Project for $50,000 to update lighting

and mechanical systems at the Police Department, Colma Community Center and Sterling Park Recreation Center.

Town staff will continue to promote new programs as identified in Republic Services franchise agreement for residents and business. The goal is to expand on household hazardous waste, e-waste, shredding events and compost giveaways, and business outreach improving recycling/organics practices.

Town staff will apply for funding through CalRecycle and City and County Payment Programs, to purchase new recycling and trash containers to meet Town facilities or other Right of Way needs.

Staff will continue with the following programs in 2018:

- **Continue to promote to the residential community free or low-cost programs and rebates that increase energy efficiency, conserve water or promote alternative modes of transportation.**
- **Continue to participate in the Mayor's Water Conservation Challenge.**
- **Continue Colma Creek clean-up, Town-wide clean-up and garage sale.**
- **Continue Section 132 pre-tax transportation cost program.**
- **Continue hosting break station for Bike to Work day.**
- **Business outreach workshop/lunches that promote energy conservation (Minimum two times a year).**
- **Report back to the City Council on the status of meeting the goals with in the Town Climate Action Plan and the States requirements set with AB32 and SB 32.**

Proposed New Initiative to Town's Climate Action Plan

Move to 100% Peninsula Clean Energy (With City Council approval) from 50% at Town operated facilities.

Town Operations

*Renovate Town Hall**

Description: The Town Hall Renovation Project has been broken down into six phases. Four of the six phases are either completed or will be completed by the end of 2016. The status of the final two phases of construction are:

- Complete Infill Package and Site Work, Phase V
  - Bid opening - October 25, 2016
  - Award of Contract – City Council Meeting, November 9, 2016

- Notice to Proceed with Phase V, January 2017
- Substantial completion – Fall of 2017
- Completion of Parking Lot Work - Once the facility can be occupied, the contractor will be authorized to move ahead with removing the Annex mobile units and complete the landscaping and upper parking lot features. This work is scheduled to take 45 to 60 days.

- Furnish Furniture, Fixtures and Equipment, (Phase VI)
  - Staff is currently reviewing furniture options for the Town Hall Facility and City Council Chamber.
  - Solicit office furniture vendors via Request for Proposal, (RFP), to bid on supplying and installing furniture for the Town Hall Facility and City Council Chamber.
  - Award Phase VI contract to office furniture vendor at the City Council Meeting in March of 2017.
  - Substantial Completion of Phase Fall of 2017

STATUS FEBRUARY 2018:

The beginning of 2017 was the proposed start of the last major phase of the Town Hall Construction (Phase IV) project. A few months into the year Town staff was working with the proposed contractor and the Architect of Record to "Value Engineer" (VE) and reduce the project cost without diminishing the Town Hall remodel project. In the midst of the VE effort the Town was negotiating with the Contractor to enter into an agreement to complete Phase IV. It wasn't until the later part of April 2017 that Contractor withdrew from the project leaving the staff in a position of not being able to move the project forward into the final stages of construction.

The goals that were posted in the 2017 plan were not met due to the withdrawal of the Contractor. What was accomplished was the completion of the VE effort, sending the project to re-bid and the selection of a new Contractor who started the final construction efforts in October of 2017. City Council approved a contract amendment with the Town's Architect to complete the Design of the Furniture, Fixture and Equipment package. This portion of the project went to bid in January 2018.

GOALS FOR 2018

Today, completion of the Town Hall project is well under way. It is anticipated that the new addition and remodel of the 1941 building will be completed at the end of June to early part of July 2018. The second part of the project, removal of the Annex Modular Buildings and construction of the public parking lot will take place once staff is moved into the new facility. The second part of the project is estimated to be completed September/October time frame. All other work involved with the facility such as Furniture, Access Control is in the process of being awarded and will be installed and operational at the time of occupancy.

*Increase the Use of Technology to Enhance Customer Services**

Description: The goal is to take advantage of opportunities to improve services through the use of technology. Representative action items include the following:

- Continue to improve the Town website to allow (1) forms to be completed and submitted on-line (2) better analytics (3) greater searching ability.
- Implement credit card payment option on-line, in Public Works and potentially the Police Department.
- Analyze and plan for implementation of GIS system

STATUS FEBRUARY 2018:

After attending an "Emerging Local Government Leaders" workshop centered around technology in the fall of 2016, staff contracted with web designers "Proud City." Proud City's word press "user based" platform was the solution to enhancing the online experience when using the Town's website. The project achieved staff's goals allowing forms to be submitted online, better analytics and greater searching ability. The new site was launched in May of 2017 and staff has received positive feedback from the community.

In 2017, staff continued to collect data on the Town's tree inventory, and sidewalk and roadway maintenance inventory in an effort to build out the Geographical Information System (GIS).

GOALS FOR 2018

Once the inventory of the landscaping features, streets and sidewalk and various infrastructure systems is complete, the data can be uploaded to the GIS. Another task to be considered in 2018 is to identify the various traffic parking zones throughout the Town and upload to the GIS. This will help assist the Police Department to quickly identify enforcement of the parking zones per the Colma Parking Code.

Town staff will also look to implement the use of credit cards at Town Hall, the Police Department and on the Town's website in 2018.

*Plan for and Implement Body Cameras in Police Department**

Description: In response to the Grand Jury report titled, "Body Worn Cameras, The Reel Truth," the Colma Police Department is developing a BWC policy that will be consistent with Athertons policy on BWC. The Colma Police Department POA has already voted on the draft BWC policy. Currently the Colma Police Department is researching the video storage needs of a BWC system and costs associated with storage, taking into consideration retention rules in accordance with the established records retention schedule (Government Code § 34090.6). Research also needs to be conducted into software programs that would automatically save and delete evidentiary recordings in accordance with law, judicial proceedings, citizen complaints, civil suits and other retention schedules.

The Grand Jury recommended that the councils of those cities/towns that have not adopted body-worn cameras direct their respective chiefs of police to develop an

appropriate body-worn camera implementation plan and advise the public of their plan by November 30, 2016.

STATUS FEBRUARY 2018:

In response to the Grand Jury report titled, "Body Worn Cameras, The Reel Truth." The response letter advised the Grand Jury that the Town may or may not be ready to implement a Body Worn Camera (BWC) plan by November 30, 2016.

The Colma Police Department did, however, develop a BWC policy that would be consistent with other San Mateo County agencies and their policies on BWC. The Colma Police Department Police Officers Association (POA) voted on the draft BWC policy.

Commander Lum conducted research on BWC products and pricing in comparison with other agencies that have recently purchased BWC. Recently, the District Attorney's Office implemented an electronic report filing system with an emphasis on developing a Cloud based evidentiary system where the District Attorney (DA) would have the capability to view and maintain evidence, without a police department having to send video recordings from BWC and in car cameras. The system that is implemented by the DA can affect which BWC system police agencies elect to purchase based on compatibility.

Some police agencies have elected to hold off on their BWC purchasing due to this reason while other agencies, such a Redwood City Police Department, have abandoned their BWC implementation all together.

GOALS FOR 2018

The Colma Police Department will continue to research the video storage needs of a BWC system and cost associated with storage, taking into consideration retention rules in accordance with the established records retention schedule. Research will also be conducted reviewing software programs that will automatically save and delete evidentiary recordings in accordance with law, judicial proceedings, citizen complaints, civil suits and other retention schedules.

The position held by the Colma Police Department at this time is to wait and see what system the DA implements, therefore, dictating the decision made by the Colma Police Department.

The current in car camera system is currently (6) years old with a life expectancy of approximately 7-9 years. Technology improvements for in car cameras will be discussed and researched in our updated Capital Improvement Program (CIP).

Implement the Town's Urban Forest Management program.

Description: The Urban Forest Management program is an ABAG PLAN Best Management Practice aimed at reducing the risks of injury and damages from falling trees. The program requires that the Town first identify and inventory all trees within Town limits and then to regularly inspect and maintain the Town's trees. In the upcoming

fiscal year, the Town should retain a consultant to inventory and assess the overall health of all Town-owned trees.

STATUS FEBRUARY 2018:

The Public Works Department started individually tagging each Town-owned tree within the Town's boarders. This effort included tagging the tree, identifying the species of the tree, estimating the size and overall health of the tree.

GOALS FOR 2018

In 2018 the Public Works Department will continue the tree inventory process until completion. Once completed, the information will be transferred to the Town GIS map system. This will help staff project annual costs for tree maintenance, such as pruning and thinning, and in some cases replacement.

Town staff will be looking at separating the Town's tree maintenance portion of the Town's Landscaping Maintenance contract as a standalone contract with a qualified firm that specializes in tree health and maintenance. The benefit to the Town is to have a firm that could assist the Public Works Department in long term maintenance needs and annual budget projections. By managing the Town's trees through GIS and documenting regular tree health and maintenance, the Town will be able to reduce its potential fallen tree liability.

Economic Development

*Prepare Auto Row Master Plan**

Description: Conduct feasibility study in 2016/17 for the beautification of Auto Row, and a more complete implementation of infrastructure improvements. A Master Plan for Auto Row will provide a more cohesive economic engine than simply providing beautification projects here and there along Auto Row. City Council approved the expenditure to perform a detailed study of the Serramonte area in June 2015. This study will serve as the first step of the Master Plan and will provide a wider picture of Serramonte Boulevard regarding economic development, public safety, environmental issues, aesthetic upgrades, and an urban design to tie into the potential of the proposed Town Center. The study will also review the potential of Collins Avenue and how it relates to Serramonte Boulevard.

STATUS FEBRUARY 2018:

The Serramonte Boulevard/ Collins Avenue Master Plan was awarded to a consultant to start the study that will address four elements as follows:

- **Economic Development**
- **Land Use and Urban Design**
- **Street Scape and Traffic Control**

- **Sustainability**

GOALS FOR 2018

In 2018 the Consultant will start their outreach to the public, various stakeholders in the Serramonte/Collins corridor. The Consultant will be presenting progress reports and options to the Stakeholders and City Council during the year, seeking guidance and approvals. The final report and masterplan for the Serramonte/Collins Master Plan is estimated to be completed in October of 2018.

*Commit resources to developing a hotel business**

Description: Identify potential sites and willing landowners for a business traveler's hotel; conduct feasibility study; adopt transit occupancy tax and submit to voters.

- A transient occupancy tax must be approved by the voters at a general municipal election. The Town holds its general municipal elections in November of every even-numbered year. Council should put a measure adopting a TOT ordinance on the November 2018 ballot.

STATUS FEBRUARY 2018:

Town staff conducted a TOT study session in 2017.

GOALS FOR 2018

The City Attorney's office has worked with Town staff to prepare the various resolutions and approvals that would be required to place a TOT tax measure on the November 2018 ballot. Town staff is planning to bring a recommendation to the City Council in the spring of 2018.

*Commit resources to planning for expansion or relocation of businesses**

Description: Continue reaching out to local businesses and potential business to offer assistance when and where appropriate.

- Partner with key businesses to identify potential sites for expansion or relocation.
- Adopt General Plan and update local regulations to accommodate economic development (if necessary), including modification of Town regulations to accommodate Town Center (Urban Design) plan.
- Enter into a contract this year with HdL to produce an economic profile for the Town that maybe used to attract businesses to Colma.
- Continue working with the Town's shopping centers to address infrastructure needs.

STATUS FEBRUARY 2018:

In 2017 staff worked with a car dealership and owner of the closed landfill site to arrange for much needed auto storage. This allows the auto dealer to store a larger inventory providing a variety of automobiles with the various packages for car shoppers, and the

land use of an underutilized area. Staff will continue to meet and communicate with shopping center managers, owners and businesses to ensure that business needs are being addressed by the Town.

GOALS FOR 2018

In 2018, incorporation of the Town Center plan and other regulations concerning economic development will be included in the draft land use element.

Town staff will schedule a meeting with HdL in the spring to consider entering into a contract for an economic profile for the Town. The economic profile may be used to attract and sustain businesses. Staff will also consider contracting with an individual or firm for economic development assistance that may also benefit the Town.

Proposed New Initiative to Economic Development

Coordinate events that bring businesses and Town staff together to discuss future impacts of new laws and mandates, industry trends and recognition for outstanding service to the business and residential community. Events for consideration are; Auto Summit, Business Recognition Event, and Cemetery work group.

Consider funding a temporary shuttle program between shopping centers on weekends during the holidays.

Financial Health

*Establish plan to address Town unfunded liabilities **

Description: Review, evaluate and recommend plan to address the Town's unfunded liabilities (PERS, OPEB).

STATUS FEBRUARY 2018:

The 2016-17 Audit will include added information on the Town's PERS liabilities (pursuant to GASB 68).

A study of the Town's Retiree Medical (OPEB) benefits (pursuant to GASB 75) was completed in September 2017. This information will be included in the 2017-18 Audit and will be reviewed with the City Council to discuss the Town's current OPEB program and policy.

In December 2017 staff presented a study session to the City Council regarding the PERS liabilities. The City Council will receive a report and recommendations on paying down or retiring some of the "side fund" PERS liabilities to reduce long term pension expenses in the Spring 2018.

*Analyze potential landscape/lighting district**

Description: Establishing a landscape/lighting district could reduce the General Fund's exposure to costs associated with streetscape lighting costs. During FY 2017/18 staff will

analyze whether a lighting and landscaping District is recommended and will bring that recommendation to Council.

STATUS FEBRUARY 2018:

Half the street lighting in Town is currently owned by the Colma Street Lighting District, which is operated by the County of San Mateo. The City Attorney's office has provided advice to Town staff on legal issues assoicated with the long-term financial viability of a landscape and lighting district.

GOALS FOR 2018

Staff will evaluate the feasibility of taking over the District and taking possession of the County owned street lights.

Town staff is currently contemplating options to ensure the long term financial viability and a City Council update is expected in the near future.

*Identify and Address Other Threats to Town's long-term fiscal health**

Description: Continue evaluation of long-term funding of staff and evaluate the pros and cons of creating enterprise funds. This program includes the ongoing discussion with the Town's wastewater treatment providers regarding Colma's contracts with each entity.

GOALS FOR 2018:

The Public Works Department will work with Finance on an upgraded Capital Improvement Budget that will include a multi-year budget for Capital projects and an Unfunded Projects List.

Finance will develop a Request for Proposals (RFP) for Independent Auditor services. The Town has used the same Independent Audit firm for 10 years. Best practice in this area is to go to the market every 5 years to review these services.

The City Manager's office will also review current contracts and consider preparing RFP's for Property Management and Information Technology firms.

The Public Works Department will take the lead to complete the Cost of Services study reviewing the cost of providing services (Building, Engineering and Planning Departments), the fees the Town charges for these services, and the recommended amount of subsidy that each service should receive from the General Fund.

Staff will reach out to the two Sewer Districts that the Town has contracts with in regard to updating and modifying our agreements.

The Public Works Department will study the cost and funding of Sewer Line replacements, Sewer Treatment expenses and capacity in a Sewer System Master Plan for City Council review and consideration.

Quality of Life

Offer more community-based programs

Description: Examples include partnering with the cemeteries for Movies in the Cemetery" night, or cultural events (i.e. Dia De Los Muertos - Day of the Dead or the Chiang Mai Festival.) Staff will also look to host an event on the new Town Hall Plaza where the area is opened up to pedestrians on a weekend and has different vendors, music, and entertainers on hand selling goods, services, etc.

- New events with cemeteries or on plaza at Town Hall
- Recreation facility upgrades (Sterling Park Play Structure)
- Dog Park upgrades (removal of gravel and replace with decomposed granite, mulch, etc., picnic table with shade)
- Examine and plan for more recreational opportunities for the Town's teen population
- Examine feasibility and plan for bicycle rodeo

STATUS JANUARY 2018:

Staff has collaborated with Republic Services to recognize Town businesses (Woodlawn Cemetery) during the Holiday House Decorating Contest.

Staff created the 1st Dia De Los Muertos Alter display located at the Colma Community Center.

In 2017 staff created and developed two new teen programs to provide recreation opportunities to Colma teens.

Open Teen Center has gained traction as it has now established a reoccurring group of youth participants on a weekly basis.

The Teen Advisory Board has yet to be established. Staff is using the opportunity to develop relationships with teens through the Open Teen Center to create and establish the Teen Advisory Board. Once established, the Teen Advisory Board will learn about city government and establish program ideas and provide teens with community service opportunities.

In 2017 Staff created and implemented the Colma Community Street Fair and Bike Rodeo. The community event brought in over 200 participants to the Colma Community Center. Live Music, Food Truck and over 20 businesses and craft vendors participated in the event. The bike rodeo consisted of a bike obstacle course, a bike repair station and a BMX bike stunt show and safety workshop.

GOALS FOR 2018

Staff is considering creating a community event surrounding the Dia De Los Muertos Celebration in 2018. The event would include an Alter Competition, Danza (Aztec Dancers) Performance, Music and family friendly activities.

In 2018 staff plans to develop a community-based event for the opening of Town Hall. In collaboration with the grand opening of the Town Hall and Town Hall Plaza. Staff proposes a meet and greet with City Council, Live Music and Food (Hot Dogs/Burgers). Tours of the new Town Hall will be conducted throughout the event and a grand ceremony will be conducted for the ribbon cutting.

In 2018 staff intends to continue and expand the Colma Community Fair and Bike Rodeo. Staff would like to add more craft vendors and create a Tiny Tots bike race, a bike repair station and a bicycle safety workshop. Event would also include several food truck options, live music and family friendly activities.

Staff is in the process of presenting a bid package approval for the Sterling Park Playground upgrade. Pending project costs, the upgrade will include an expanded playground area, additional picnic tables and par course work out equipment. If approved the project is anticipated to be completed in the early summer of 2018.

During the Fiscal Year 2018-19 budget process staff intends to introduce a Capital Improvement Project upgrading the Bark Park.

Continue Police Department outreach to residents and youths

Description: Continue to increase Police Department visibility throughout the residential and business communities through various programs:

- Emergency preparedness trainings (Are You Ready; EOC Exercises)
- Address parking issues in the Sterling Park neighborhood
- Establish and maintain bicycle patrols in the residential and business areas
- Continue to have officers walk neighborhoods and business communities
- Crime education and police department transparency via social media

STATUS FEBRUARY 2018:

In 2017 the Police Department conducted 2,187 residential patrol checks, 494 residential foot patrols and 818 business checks.

Officers were involved in a total of 96 community events in 2017. Many of these events involved the Town's youth and seniors, in collaboration with the Recreation Services Department. The Police Department will continue to maintain these efforts throughout 2018.

In 2017 the Colma Police Department, in partnership with the Colma Fire Department, held an "Are You Ready" training session at the Colma Community Center. We extended the invitation to Broadmoor PD and their residents for this emergency preparedness training session. Two Emergency Operations Center (EOC) exercises were conducted with Town staff. The first exercise was an incident involving an earthquake scenario. The second was a Web EOC exercise, training staff on how to report incidents and requests resources county-wide during a natural disaster.

In 2017 Police Department staff worked on potential solutions to parking problems in the Sterling Park neighborhood and other areas of Town. Staff recommended changing the number of preferential parking permits to (4) four per household, and eliminating guest permits altogether. Temporary parking permits may be requested from the Police Department for fourteen days at a time and no more than fifteen times per year. These changes were adopted by City Council in 2017.

Other parking areas that were identified as needing attention were businesses on El Camino Real, fronting Sterling Park and parking zones north of F Street on El Camino Real. This area was changed to a two-hour parking zone all day, every day.

Police Department enforcement efforts have resulted in 354 parking citations in the Sterling Park neighborhood and a total of 1,252 Town wide. The Police Department received authorization from City Council to hire a part time Community Services Officer to enhance our parking enforcement efforts.

GOALS FOR 2018

The Police Department has scheduled an "Are You Ready" training session on February 21, 2018 at the Colma Community Center and will conduct an EOC operation for a disaster during the first quarter of 2018.

In 2018, Staff will continue to research and find solutions to hazardous areas of Town and Sterling Park to include examination of the intersections at F Street and Clark Ave., E Street and Clark Ave., and B Street and Clark Ave. Red zones in these areas may assist with the line of sight for drivers and controlling the intersections with stop signs. Collins Ave. is experiencing a high volume of parking that has impacted the businesses in that area and along Mission Road. Parking on F Street between Clark Ave. and 601 F Street will be redefined for residents and commercial vehicles early in 2018.

Maintaining the bicycle patrol unit with adequate staffing was challenging in 2017. In 2018 1-2 additional officers will be trained to continue bike patrols in our residential and business communities.

Continue to utilize the Colma Police Department social media sites to educate, share information with the public, and to be more transparent. These sites include, Facebook, Twitter, Nixle, and Next Door Colma.

Proposed New Initiative to Quality of Life

- Regularly scheduled Farmers Market or Off the Grid event
- Complete the Age Friendly Cities Initiative
- Sterling Park Neighborhood Improvements – Develop master plan on how to manage trees, sidewalk damage from trees and pedestrian safety
- Police Department to conduct youth outreach and programming utilizing $10,000 in grant money received

TOWN OF COLMA
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