

SECTION 28 08 00
SECURITY SYSTEMS COMMISSIONING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including all General and Supplementary Conditions and Division 1 Specification sections shall apply to this section and shall be considered as forming an integral part of this Work. These documents are referred to as the Project General Conditions in the remainder of these Specifications.
- B. The General Security Requirements specification Section 28 05 00 shall apply to Work specified in this Section. Where similar requirements headings are listed herein, they are to augment the requirements indicated within the General Security Requirements Section. Nothing herein shall be construed as relieving Contractor from the requirements identified in the General Security Requirements specification Section.
- C. Consult other Divisions: determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete and operational system.
- D. Section 28 05 00 – Common Work Results for Electronic Safety and Security
- E. Section 28 08 00 – Security System Commissioning
- F. Section 28 13 00 – Access Control and Alarm Monitoring System
- G. Section 28 23 00 – Video Surveillance System
- H. Division 8 – Door Hardware
- I. Division 26 – Electrical

1.02 SCOPE OF WORK

- A. This scope of work shall include full testing of the completed security system, including the following elements:
 - 1. Complete pretest of the security system
 - 2. Final walk test with the Owner
 - 3. Test Results Record Documentation

1.03 SUMMARY OF SYSTEM COMMISSIONING ACTIVITIES

- A. Overview
 - 1. The purpose of system commissioning is to ensure the security system operates properly when it is needed most. Security systems are very complex from both equipment and programming standpoint, and thorough testing is necessary to ensure correct operation.
 - 2. Perform testing activities when the system is “quiet” and the building is generally unoccupied. This will minimize the amount of irrelevant activity in the system activity reports that will be used as a record of the pre and final test results
- B. Pre-Test
 - 1. Perform a 100% pre-test of all system aspects to verify correct operation prior to scheduling the final test. The pre-test will help to make the final test run smoothly when demonstrating the system’s operation to the Owner.

2. Document the results of the pre-test using the approved test forms and submit a copy to the Owner along with the system activity reports.

C. Final Test

1. Perform a final test of the system in the presence of the Owner to demonstrate correct operation of the security system.
2. Recommendation for acceptance by the Owner or the Owner's Representative will be generated if all of the following conditions have been satisfied:
 - a. All items conform to the plans and specifications.
 - b. All previous deficiencies or errors have been corrected.
 - c. All deficiencies noted during the final test are corrected.
 - d. All systems are complete and working according to the intent of the Contract Documents.
3. If deficiencies still exist, recommendations for acceptance will be withheld or qualified until all items have been corrected and re-inspection is completed as outlined above.
4. Final acceptance will not occur, even if all systems are acceptable, until all documentation to include as-built drawings and operation/service manuals have been received, reviewed, and approved by the Owner or the Owner's Representative.
5. The warranty/guarantee period shall commence once final testing of the system has been completed, all manuals and documentation have been reviewed and approved, and the Owner has accepted the system in writing.

1.04 SUBMITTALS

- A. Submit in accordance with the requirements of Section 280500: Common Work Results for Electronic Safety and Security, the following items:
 1. Sample Test forms
 - a. Provide sample test forms that will be used in the pre and final system tests. Furnish the required quantity of each submittal indicated in Division 1.
 2. Operation and Maintenance Manuals: Submit the following for review and comment at the completion of the project and before final testing occurs:
 - a. Functional Design Manual
 - b. Hardware Manual
 - c. Software Manual
 - d. Operator's Manual which full explains all procedures and instructions for the operation of the system and includes
 - e. Maintenance Manual
 - f. Test Results Manual, which includes the document results of all tests, required under this Specification, organized by System, Floor, and Door.
 - g. Record Drawings Manual
 3. Record Drawings:

- a. Submit for review and comment at the completion of the project:
- b. Final acceptance will not be made until the record drawings approved by the Owner.

1.05 QUALITY ASSURANCE

- A. General
 - 1. All testing work shall be completed in a neat, high quality manner acceptable to the Owner.
- B. Project Management and Coordination Services
 - 1. Provide a project manager to coordinate the security system commissioning work with all other trades.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 SCHEDULING

- A. Prepare a construction schedule based on the schedule developed in Section 28 00 00 for the testing activities. Prepare updated schedules whenever there are modifications.
- B. Approved Substitutions: Due to the presence of an existing system that will share database information with this project, no substitutions will be considered.

3.02 TESTING REQUIREMENTS

- A. Site Tests
 - 1. Perform a 100% pretest of the system prior to final testing by the Owner. The pretest must occur prior to substantial completion of the system, with the final inspection no later than seven (7) days prior to final acceptance in order to meet the Owner's timetable for systems familiarization.
 - 2. The Security Contractor shall include the cost of these tests and adjustments in his bid proposal, and shall furnish all equipment necessary and perform all work required to determine or modify the performance of the System in accordance with the Contract Documents.
 - 3. At the conclusion of the work on a floor, test the system on that floor to verify proper operation and reporting of devices.
 - 4. Work with the door hardware supplier to resolve any electric hardware failures and door alignment/closure problems.
 - 5. At the completion of all work, test the entire system to verify proper operation. These tests shall include:
 - a. Card Reader Door Test: Test doors to ensure alarm contact provide alarm activation and relock when closed, rex shunts door and command card reader bypasses alarm inputs for area when applicable.
 - b. Card Reader/ADA Test: Test doors according to card reader test above. In addition, test ADA push plate interlocking function to ensure door does not operate when locked. Test that interior ADA actuator always functions.

- c. Door Contact Test: Test doors to ensure local alarm, activation and deactivation of alarm output.
 - d. Motion Detector Test: Test motion to ensure local alarm, activation and deactivation of alarm output.
 - e. Help Button Test: Test help button devices to ensure activation and alarm reporting.
 - f. CCTV System Test: Test and verify CCTV system viewable from workstations.
 - g. Security Equipment Room Test: Inspect all system panels, power supplies, and other related security equipment located in these areas. Test AC, Battery, and communications loss.
- 6. Recommendation for acceptance will be generated if all of the following conditions have been satisfied:
 - a. All items conform to the Contract Documents and the site specific drawings and statement of work.
 - b. All previous deficiencies noted during the final inspection are corrected.
 - c. All systems are complete and working in accordance with operational criteria.
 - d. All documentation and submittals required by the Contract documents and the site specific drawings have been received and approved by the owner.
- B. Test Preparation
 - 1. Provide device identification numbers that differ from or were not included on the original contract drawing set.
 - 2. Furnish a complete systems point list.
 - 3. Include both new locations and existing locations that have new readers installed in the testing and commissioning process.
 - 4. During testing, provide a minimum of one technician familiar with the installation to assist with the test.
 - 5. Furnish radios for use by the Owner during testing.

3.03 TEST PROCEDURES

- A. Card / biometric reader door
 - 1. Verify that the reader LED is in the RED state with the door closed.
 - 2. Check to see if door is locked.
 - 3. Present an invalid card. Reader should beep and not unlock door. An invalid card alarm will be generated in the access control system
 - a. Biometric reader will turn red and not unlock door. No alarms will occur in system
 - 4. Present a valid card / finger. Reader LED should flash green and red during the unlock time. Unlock time should be set to 5 seconds.
 - a. Biometric reader will turn amber. Presenting a valid finger causes the LED to illuminate green.
 - 5. Open door and hold open until a held open alarm is generated.

6. Test for forced open. On a double door always check both leafs for forced.
7. Egress out the door and make sure you don't get a forced. On double doors exit out both leafs separately to ensure that both doors have a REX signal.
8. Verify the door has a door closer.
9. Open the door let it close on its own. Make sure that the door properly locks. If there are adjustments to be made, make a note.
10. Note if there are any door stops installed. Note if there are any and recommend that they be removed.
11. Verify that card reader is labeled.
12. Verify that camera trigger is set up in the access control system.
- B. Card in / card out / door management alarm
 1. Verify that INBOUND reader LED is in the RED state with the door closed.
 2. Check to see if door is locked.
 3. Present an invalid card. Reader should beep and not unlock door. An invalid card alarm will be generated in the access control system.
 4. Present a valid card. Reader LED should flash green and red during the unlock time. Unlock time should be set to 5 seconds. Door management alarm LED will turn green and local audible horn and door alarm will be bypassed.
 5. Allow door to close behind you. Door management alarm should revert back to the armed state and LED will go RED.
 6. Verify that OUTBOUND reader LED is in the RED state with the door closed.
 7. Verify door is free egress.
 8. Verify that the door management alarm is in the armed state and the LED is red.
 9. Present an invalid card. Reader should beep and not unlock door. An invalid card alarm will be generated in the access control system.
 10. Present a valid card. Reader LED should flash green and red during the unlock time. Unlock time should be set to 5 seconds. Door management alarm LED will turn green and local audible horn and door alarm will be bypassed.
 11. Open door and hold open until local alarm / horn begins to sound. Once horn begins to sound a forced door alarm will be generated in the access control system.
 12. Allow door to close behind you. Acknowledge alarm in the access control system and reset door management alarm by disarming and arming the DMA unit via the key switch. Door management alarm should revert back to the armed state and LED will go RED after a period of 5 - 15 seconds.
 13. Verify the door management alarm is in the armed state and the LED is Red.
 14. Key switch should be in the vertical position when armed. No alarms present in access control system.
 15. Force door open when in the armed state. Horn should sound and forced alarm is generated by Access control system.
 16. Close door and horn should discontinue sounding and access control should still have an alarm.
 17. Acknowledge forced alarm in access control system.

18. Turn the key switch to horizontal position to bypass alarm and to disable the sounder. (Key switch should be in the horizontal position when bypassed.) LED should turn green in the bypassed state and the access control system should show a key switch bypass alarm.
 19. Verify key switch bypass alarm is generated in the access control system.
 20. Open the door in the bypassed state and ensure no forced alarms are generated and sounder is silenced. Open and close the door, system should continue to see door status.
 21. Verify that camera trigger is set up for forced and key bypass alarms.
- C. Exit alarm doors
1. Make sure that in the armed state the LED is Red.
 2. Key switch should be in the vertical position when armed. No alarms present in access control system.
 3. Force door open when in the armed state. Horn should sound and forced alarm is generated by Access control system.
 4. Close door and horn should continue sounding and access control should still have an alarm.
 5. Acknowledge forced alarm in access control system.
 6. Turn the key switch to horizontal position to bypass alarm and to disable the sounder. (Key switch should be in the horizontal position when bypassed.) LED should turn green in the bypassed state and the access control system should show a key switch bypass alarm.
 7. Open the door in the bypassed state and ensure no forced alarms are generated and sounder is silenced.
 8. Close door and turn the key switch to armed state (vertical position).
 9. Acknowledge the key switch bypass alarm in the access control system.
 10. Have the operator remotely put the exit alarm in bypass mode. LED should turn green and the key switch will still be in the vertical position.
 11. Verify key switch bypass alarm is generated in the access control system.
 12. Open the door in the bypassed state and ensure no forced alarms are generated and sounder is silenced. Open and close the door, system should continue to see door status.
 13. Verify that camera trigger is set up for forced and key bypass alarms.
- D. Door contacts / cabinet tamper switches
1. Open door. Alarm is generated by access control system.
 2. Close door. Alarm remains until acknowledged.
 3. Acknowledge the alarm in the access control system.
- E. EPO covers
1. Open cover. Horn should sound and alarm is generated by access control system.
 2. Close cover. Horn should be silenced. Alarm remains until acknowledged.
 3. Acknowledge the EPO cover alarm.

- F. Access control panel tests
 - 1. Verify installation is clean, neat, and per design
 - 2. Verify device cables and panels are labeled.
 - 3. Verify that panels are grounded to Earth Ground.
 - 4. Identify Power Source type:
 - a. Normal
 - b. Emergency
 - c. UPS
 - 5. Identify Power Circuit Information:
 - a. Power Panel #
 - b. Breaker
 - c. Location
 - 6. Verify Batteries are connected if wall mounted. If not wall mounted, ensure panel is connected to UPS.
 - a. Quantity
 - b. VDC
 - c. AH
 - 7. Validate battery fail alarm.
 - 8. Configuration Communication Functional?
 - 9. Verify that primary communications are functional.
 - 10. Validate panel tamper alarms work upon opening and closing of Equipment racks or wall mounted
 - 11. Verify key locks are installed.
 - 12. Verify 110VAC is hardwired (wall mount applications only)
 - 13. Verify network drop is secured inside locked enclosure.
 - 14. Verify fire relay is installed and test.
 - 15. Verify enable learn mode.
 - 16. Validate the following:
 - a. Supports Card Usage Remaining
 - b. Support Disabling Door Alarms
 - c. Support Extended Triggers
 - d. Supports User Initiated Door Times
 - e. Anti-Pass Back Set
- G. System test (performed by Managed Services)
 - 1. Log on Test
 - 2. Log Off Test
 - 3. On/Off Line Test Via Monitor

4. On/Off Line Test Via File Server
5. Comm Fail/Comm Return Test
6. Primary Communications Test
7. General System Control Test
8. (Dates, Passwords, Schedules, Etc)
9. Alarm Test (Including Silence and Acknowledge)
10. Display Screen Graphics on Alarm Test
11. Input Response to Alarm Test
12. Remote Panel Supervision Alarms Test
13. Supervisory Alarms with/without Auto-Offline
14. Operator Access Level Test
15. Command File Test
16. Command File Scheduling Test
17. Linkage Test
18. Class and Card Assignments Test
19. Backup Database Test
20. Backup History Test
21. Generate Database Reports Test
22. Generate History Reports Test
- H. NVR test (may require Managed Services to validate several items)
 1. Verify that the installation is clean, neat, and per design.
 2. Verify that NVR is properly named.
 3. Verify settings are per Specification check sheet (note exceptions)
 4. Ensure that unnecessary services are disabled.
 5. Validate the latest approved OS service packs are installed.
 6. Validate the latest approved OS service patches are installed.
 7. Validate NVR stores recorded video for a minimum of 30 days.
 8. Verify if time and date are correct.
 9. Perform a Communications Fail / Restore Test by pulling the network cable and reinstalling.
 10. Validate labeling of NVR units.
- I. Camera test (may require Managed Services to validate several items)
 1. Verify that the installation is clean, neat and per design.
 2. Verify in system that the name is correct.
 3. Verify 2 CIF
 4. Verify 7 FPS
 5. Verify field of view and focus is set per design.

6. Verify that motion field is set.
 7. Verify PTZ Controls are operational
 8. Verify that camera presets are defined and set.
 9. Identify IP Camera IP Address.
 10. Verify if time and date are correct.
 11. Verify that system graphics are completed.
 12. Validate after 30 days video retention.
 13. Validate labeling of camera cabling at head-end location.
- J. Intercom
1. Push button on intercom and confirm bi-directional audio from intercom to master intercom.
 2. Verify that the installation is clean, neat, and per design.

3.04 DOCUMENTATION

- A. Provide an 11x17 drawing containing a detailed wiring diagram (layout of equipment/elevation, complete parts list, and a complete wiring diagram for each ACU & I/O Board) for each ACP. Fold the diagram and place it inside a clear plastic pocket affixed to the inside door of the ACP.
- B. Provide a service log on the inside door of each ACP. Service log shall include columns for the following information: date of service, description of work performed, service technician(s), and service company. Place the service log inside a separate clear plastic pocket affixed to the inside door of the ACP.

3.05 DEMONSTRATION

- A. On completion of the acceptance test, provide the Owner instruction in the operation and testing of the system, at a time convenient to them as defined in Section 28 05 00.

END OF SECTION 28 0800