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USACE / NAVFAC / AFCEA / NASA UFGS-28 40 01 (April 2006)  
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Preparing Activity: NAVFAC Replacing without change  
UFGS-13799 (February 2003)

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UML dated 18 July 2006

Latest change indicated by CHG tags.

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04/06

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## SECTION 28 40 01

### WATCHTOUR SYSTEM [FOR BRIG FACILITIES] 04/06

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NOTE: This guide specification covers the requirements for watchtour system.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

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NOTE: This system is designed/used to report the guard's presence at designated locations at particular times of the tour. Each activation of the system is recorded in the Central System printer for record.

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NOTE: The following information shall be shown on the project drawings:

1. Watchtour station location and mounting
2. Watchtour panel location and mounting
3. Watchtour station construction
4. Watchtour panel construction

5. Conduit routing from station to panel to printer

6. Printer location.

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PART 1 GENERAL

1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2005) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

UL 50 (1995; Rev thru Sep 2003) Enclosures for Electrical Equipment

UL 6 (2000; Rev thru May 2003) Rigid Metal Conduit

UL 797 (2004) Electrical Metallic Tubing -- Steel

1.2 PERFORMANCE REQUIREMENTS

1.2.1 Integration and Services

Provide in the prisoner housing units a watchtour system with the capabilities of printing on its systems printer a log of watchtours conducted. Provide two sets of auxiliary relay contacts for the interfacing of the interior fire alarm system to the watchtour system printer for log of fire alarm system alarms. The watchtour system shall consist of a series of watchtour stations auxiliary relays, a watchtour panel and printer directly wired to each other.

### 1.2.2 Sequence of Operation

Where watchtour stations are indicated to be installed in a housing area, the combination of stations shall operate in the following manner as a system. On the watchtour control panel located in the guard control station, the touring officer shall select one of the three "watchtour start" key switches labeled "MEDICAL OFFICER," "COMMANDING OFFICER," or "CONTROL OFFICER." Turning the "watchtour start" momentary action key switch on the watchtour panel shall cause the amber light emitting diode (LED) and all green station LED to illuminate and a signal to be sent to the system printer which shall print the tour start, location, time, and date. Activation of a watchtour station shall cause a corresponding green LED on the watchtour panel to extinguish. Reset shall occur when the last green LED is extinguished. Once all stations in the area have been activated, regardless of order but within the time frame, a "tour complete" green LED on the watchtour panel shall illuminate and a signal shall be sent to the system printer to print "tour complete," location, time and date. Pressing the "reset" momentary action switch shall cause all LEDs associated with the watchtour system to turn off. Activation of a watchtour station after a "reset" action but before a "start" action, shall have no effect. Alarm shall be generated on fifteen minute interval at watchtour control panel to alert guard to begin watchtour.

### 1.3 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-02 Shop Drawings

##### Watchtour system

Submit for the overall system to include the watchtour station, watchtour panel, and start station, auxiliary relay, control power transformer, wire and conduit. Indicate how each item of equipment will function in the system and include an overall system schematic indicating relationships of watchtour system devices on one line diagram.

#### SD-03 Product Data

##### Watchtour system components

Submit for materials and equipment to be incorporated in work.

#### SD-07 Certificates

##### Watchtour system components

#### SD-10 Operation and Maintenance Data

##### Watchtour system, Data Package 2

Submit in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

### 1.4 QUALITY ASSURANCE

The watchtour system shall be an integrated design of a single supplier.

#### 1.4.1 Watchtour system

Submit, attesting that materials meet specified requirements.

## PART 2 PRODUCTS

### 2.1 WATCHTOUR SYSTEM EQUIPMENT

Equipment and components of watchtour systems shall conform to applicable requirements of Article 810, NFPA 70.

#### 2.1.1 Watchtour Station

The watchtour station shall be recessed mounted with face plate mounted flush on wall 1830 mm 6 feet above the area finished floor. Round key operators shall be spring return keyswitch with key removable only in off position, momentary contact, normally open-rated at 10 amperes, 120 V ac. Device plate shall be brown nylon attached to outlet box with nonremovable fasteners.

### 2.1.2 Watchtour Panels

Provide panel for the watchtour system controls. Watchtour panel shall be custom built for the specific area.

#### 2.1.2.1 Fabrication

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NOTE: Insure maximum dimensions required are shown  
on the drawing.  
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Watchtour panel shall be constructed of 14 gage sheet steel, with 38 mm 1 1/2 inch flange on all sides, and cover for mounting devices hinged to frame at top. Hinge shall be continuous piano-type hinge. Overall general dimensions indicated are maximum dimensions. Coordinate mounting dimensions and support requirements with masonry work.

#### 2.1.2.2 Finish

Surfaces of the panel, except that containing the front, shall be prime finished with rust inhibiting paint and two coats of hammertone finish gray enamel. A reverse silkscreen polyester plastic film or lexan panel with nomenclature shall be attached to the front portion.

### 2.1.3 Start Station

The watchtour "start" station shall be unembossed, nontactile, momentary contact membrane type switches. Operating force of membrane type switches shall be 2.22 N 8 ounces. Membrane switches shall be supplied with silver contacts and proper circuitry to perform functions specified.

### 2.1.4 Visual Indicators

Visual indicators shall be T 1 3/4 light emitting diodes (LED), with resistors and protective diodes as required for operation of 24 V ac. The indicators shall be rated for not less than 50,000 hours of operation at 20 milliamps ac, and produce a minimum of 147 and 570 lumens/watt for green and yellow devices respectively. Resistors shall be sized according to the manufacturer's instructions and adjusted to produce uniform brightness among LEDs. Resistors and protective diodes shall be mounted on stand-off terminal blocks mounted adjacent to the LED served, on the underside of the panel. Mounting hardware shall not be visible from the face of the panel. Resistors and protective diodes may be an integral part of the LED. Include a red LED in the panels for each electrically controlled and monitored door.

### 2.1.5 Pushbutton

The watchtour panel shall contain a "press to test" pushbutton which shall test Visual and Audible indicators.

### 2.1.6 Auxiliary Relays

Auxiliary relays shall be general purpose, glass enclosed socket type with 24 V ac control coil, and with industry standard pin arrangement. Relays shall be rated for continuous duty. Operating voltage range shall be within plus or minus 10 percent of nominal voltage. Contact arrangement shall be two pole double throw rated at not less than five amperes at 24 V

ac. Sockets with screw type terminals rated at five amperes shall be provided for each relay.

#### 2.1.7 Control Power Transformer

Control power transformer shall be provided to furnish 24 V ac power to the watchtour system. Transformer volt-ampere rating shall be not less than one and one half times the sum of the volt-ampere rating of all the relays on the watchtour system. Transformer primary voltage shall be 120 volts. Provide transformer secondary with glass cartridge fuse rated at 125 percent of transformer full load current.

#### 2.1.8 System Printer

The system printer shall consist of main control unit, printer section, alarm monitor section, and auxiliary unit with power supply and auxiliary components. The total unit shall contain electronic circuitry and connections and input circuit devices to receive and log by time and date starting and completion of the watchtour system. The total unit shall be desk mounted in a rack type desk enclosure. Unit shall be for operation on 120 V ac. Provide auxiliary contact for additional printing out of fire detection system alarms.

##### 2.1.8.1 Printer Speed and Output

Printer shall be medium speed, three lines per second, roll type with take up device for 216 mm 8 1/2 inch roll paper. Unit shall contain controls for manual and automatic printout.

##### 2.1.8.2 Printer Clock

Clock shall provide time log data for month, day, hour, and minute. Clock shall also alarm at designated time to remind control of tour start. If tour start has been activated, alarm shall not sound. Devices for setting and adjusting time controls shall be behind a locked panel. Time shall be adjustable from 0 to 60 minutes. Unit shall contain display for time and date.

##### 2.1.8.3 Printer Input

Input devices shall provide alpha-numeric print-out for each watchtour system from relay contact closure indicated on system wiring diagram. Auxiliary devices shall be provided to interconnect into individual watchtour wiring systems.

##### 2.1.8.4 Printer Control Panel

Front control panel shall contain power on switch and pilot lamp and manual print-out switch.

#### 2.2 WIRE AND CONDUIT

Wire and conduit shall conform to UL 6 and UL 797. Cabinets and boxes shall conform to UL 50.

##### 2.2.1 Power Wiring

Provide power wiring, conduit, and outlet boxes for the watchtour system as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.



### 2.2.2 Control Circuit Wiring

Provide control circuits in accordance with Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Wire and number of conductors as recommended by the watchtour system manufacturer.

## PART 3 EXECUTION

### 3.1 INSTALLATION

#### 3.1.1 Backboxes

Provide backboxes having characteristics suitable for watchtour stations mounted in them.

#### 3.1.2 Equipment Cabinet

Provide surface mounted cabinet for control power transformer and auxiliary relays. Provide cabinet with hinged cover and latch. At the contractor's option the control power transformer and auxiliary relays may be installed in the locking control auxiliary relay/terminal cabinet.

#### 3.1.3 Wire Grouping

Group wiring on underside of display and lace with nylon tie straps, supported at intervals not exceeding eight inches and terminated on identified terminal blocks at top of panel adjacent to hinged side. Wiring spanning hinge shall be stranded conductors. All such conductors shall be terminated with crimp type lugs of both sets of terminal blocks. Leave 155 mm six inches of slack in conductors.

### 3.2 FIELD QUALITY CONTROL

Conduct testing specified herein in the presence of the Contracting Officer.

#### 3.2.1 Watchtour System Test

Perform an operational system test to verify conformance of the Watchtour System to this specification. Notify Contracting Officer two weeks prior to when tests are to be performed so that test may be witnessed by Contracting Officer. These tests shall include activation of the system alarming to the Central Control printer, and completion of each system.

#### 3.2.2 Equipment

##### 3.2.2.1 Unit

Unit shall function to log each watchtour system with not less than the following data:

- a. Watchtour zone: location, (example: watchtour zone Housing Unit 1-1)
- b. Watchtour start: date, time, (example: 10-3-75 11:25 p.m.)
- c. Watchtour completion: date, time, (example: 10-3-75 11:40 p.m.)

#### 3.2.2.2 System

System shall receive watchtour signals as initiated by individual zones, store signals received simultaneously, and print out data as specified herein. The system shall have automatic reset, so that acknowledge function shall not be required at central unit for signal input.

#### 3.2.3 Retesting

Rectify deficiencies indicated by test and completely retest work affected by such deficiencies.

#### 3.2.4 Fasteners

Nonremovable fasteners shall be installed after the system has been thoroughly tested.

#### 3.2.5 Inspection

Verify that units and controls are properly labeled, and interconnecting wires and terminals identified. Contracting Officer will observe system features specified.

### 3.3 INSTRUCTING GOVERNMENT PERSONNEL

Upon completion of the work and at a time designated by the Contracting Officer, furnish a competent technician regularly employed or authorized by the manufacturer of the duress system to instruct Government personnel in the proper operation, maintenance, safety, and emergency procedures of the watchtour system. The period of instruction shall be four eight-hour working days. Conduct training at the job site.

-- End of Section --