

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE _____ PAGE _____ OF _____ PAGES

2. AMENDMENT/MODIFICATION NO. _____		3. EFFECTIVE DATE _____	4. REQUISITION/PURCHASE REQ. NO. _____	5. PROJECT NO. <i>(If applicable)</i> _____
6. ISSUED BY _____ CODE _____		7. ADMINISTERED BY <i>(If other than Item 6)</i> _____ CODE _____		

8. NAME AND ADDRESS OF CONTRACTOR <i>(No., street, county, State and ZIP Code)</i> CODE _____ FACILITY CODE _____	(X)	9A. AMENDMENT OF SOLICIATION NO. _____
		9B. DATED <i>(SEE ITEM 11)</i> _____
		10A. MODIFICATION OF CONTRACT/ORDER NO. _____
		10B. DATED <i>(SEE ITEM 11)</i> _____

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:
 (a) By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)* _____

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation date, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER <i>(Specify type of modification and authority)</i>

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER <i>(Type or print)</i>		16A. NAME AND TITLE OF CONTRACTING OFFICER <i>(Type or print)</i>	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
<i>(Signature of person authorized to sign)</i>		<i>(Signature of Contracting Officer)</i>	

Item 14. Continued.

CHANGES TO BID OPENING DATE

1. Standard Form 1442, First Page, Item No. 13.A.- In the second line, change the bid opening date from "18 DECEMBER 2001, 2 P.M. LOCAL TIME" to "17 JANUARY 2002, 2 P.M. LOCAL TIME".

CHANGES TO THE SPECIFICATIONS

2. New Sections - Add the following accompanying new section, bearing the notation "ACCOMPANYING AMENDMENT NO. 0003 TO SOLICITATION NO. DACA63-02-B-0001," and add to the Table of Contents:

13930 WET PIPE SPRINKLER SYSTEM, FIRE PROTECTION

3. Replacement Sections - Replace the following sections with the accompanying new sections of the same number and title, bearing the notation "ACCOMPANYING AMENDMENT NO. 0003 TO SOLICITATION NO. DACA63-02-B-0001:"

01420	BASIC STORM WATER POLLUTION PREVENTION PLAN
05500	MISCELLANEOUS METAL
10508	METAL LOCKERS

CHANGES TO THE DRAWINGS

4. Replacement Drawings.- Replace the drawings listed below with the attached new drawings(s) of the same number, bearing the notation "AM #0003":

fp02.cal	FP02	Automatic Sprinkler Plan
fp03.cal	FP03	Fire Alarm / Detection / Suppression Plans
fp04.cal	FP04	Fire Protection Legend And Schematics
fp05.cal	FP05	Fire Protection Schematics

END OF AMENDMENT

SECTION 01420

BASIC STORMWATER POLLUTION PREVENTION PLAN
AM#0003

PART 1 GENERAL

1.1 SUMMARY

This Section provides a basic Stormwater Pollution Prevention Plan (SWPPP) for a National Pollutant Discharge Elimination System (NPDES) General Permit.

1.2 PROJECT IDENTIFICATION AND NOTES

PROJECT TITLE: ENLISTED BARRACKS, COMPLEX II

LOCATION: FORT HOOD, TEXAS

A separate NPDES Storm Water Construction Permit (and separate SWPPP narrative and pollution prevention site maps) is required for separate project location. This basic SWPPP is provided as a reference for the Contractor to prepare a detailed SWPPP and the basic SWPPP shall not limit the Contractor's ability to determine construction and stabilization methods and their phasing. The detailed SWPPP to be prepared by the contractor shall be in accordance with Federal Register Notice published in Volume 63, Number 128, July 6, 1998, as stipulated by the Clean Water Act. Specific contractual information such as quantities and costs is not included in either the basic or the detailed SWPPP, unless it is necessary for Environmental Protection Agency (EPA) to comprehend the pollution prevention measures. The temporary and permanent stabilization methods, pollution prevention control structures, control locations, types and typical details shall be discussed in the SWPPP narrative and on pollution prevention site maps. The Contractor's detailed SWPPP narrative and pollution prevention site maps shall be submitted to the Government for review.

1.3 PROJECT DESCRIPTION

This project shall include construction of new facility and demolition of existing underground utility pipes and site support structures at two separate sites in close proximity to each other. The new construction shall include a 480-person Barrack Complex, a Soldier Community Building (SCB), a Dining Facility of 501 to 800 persons capacity, and five Company Operations Buildings at one site. The barrack complex shall have living/sleeping rooms, private baths, walk-in closets, and balconies for the barracks buildings. The SCB shall have a social gathering area, recreational and meeting space, laundry facilities, mail boxes, kitchens, activity rooms, linen issue, manager's office. The CDF shall have shower and dressing areas. The new Barracks Complex (BC) shall have supporting

facilities such as intrusion detection systems, information systems, utilities, electric service, exterior lighting, fire protection, and alarm systems, paving, side walks, storm drainage systems with surface grates. In addition, barracks shall have pavilions with barbecue grills and surrounding landscaping. Air conditioning (740 tons) shall be provided by a central energy plant, chilled water distribution and a chilled water storage tank. Construction activities associated shall include (i.e. clearing and grubbing; grading; concrete and asphalt pavement; fencing; landscaping; site construction and utility service lines; and demolition of existing pipes and other site support structure, recycling of construction debris, etc). The total project area for the proposed construction of BC and SCB is approximately 6.1 hectares and all of which shall be disturbed.

The other construction site for Central Energy Plant and Dining Facility is approximately 1.7 hectares and all of which shall be disturbed.

1.4 STANDARD INDUSTRIAL CLASSIFICATION (SIC)

The proposed construction project has the following Standard Industrial Classification (SIC) Codes in accordance with Standard Industrial Classification Manual published by Office of Management and Budget (OMB).

A. 1522 General Contractors: Residential Buildings, other than Single Family (i.e barracks)

B. 1771 Concrete Work (includes asphalt, i.e. access drives and parking lots, culvert construction)

C. 1623 Water, Sewer, Pipeline, and Communications and Power Line Construction

D. 9711 National Security (a general category for military facilities)

1.5 LOCATION

The proposed project site is in Coryell County. There shall be two separate construction locations for this project. All new work is in the cantonment area of Fort Hood. The barracks and soldier community building is bounded by Old Iron Side Avenue on the north, Battalion Avenue on the south, 50th Street on the east and 52nd Street on the west. The barracks and community building is at latitude N 31 degrees 08 minutes 32 seconds and longitude W 97 degrees 46 minutes 37 seconds. The other site shall have the Central Energy Plant and the Dining Facility. It is bounded by Battalion Avenue on the south, and is between 52nd Street on the east and 57th on the west. The other site is at latitude N 31 degrees 08 minutes 30 seconds and longitude W 97 degrees 46 minutes 10 seconds.

1.6 RECEIVING WATERS

The proposed site is located in the Brazos River watershed. Surface runoff flows southeast and south to Nolan Creek. The watershed flows east to Nolan River and then to Leon River. Belton Lake is constructed on the Leon River that ultimately flows into the Brazos River.

PART 2 SITE DESCRIPTION

2.1 EXISTING CONDITIONS

The existing Barracks complex site slopes generally from north to south. Storm runoff sheet flows into ditches, storm grates and drain line, then subsequently into a large swale south of the site, and eventually flows west. The existing Dining Facility site slopes sharply from east to west. Storm runoff is collected by existing curb inlets into the subsurface drainage systems west of the site. The runoff coefficient (C) for the existing site condition ranges from 0.10 to 0.25.

2.2 FUTURE CONDITIONS

The runoff coefficient (C) for the site after project completion shall range from 0.50 to 0.80. The initial three (3) meters shall slope away from the building structures at a minimum of 5 %. The parking areas shall have slopes ranging from 1 to 2 %. All paved areas shall have a minimum slope of roughly 0.5% in the direction of drainage. Sidewalks shall have maximum 12 % longitudinal slope and transverse slope of roughly 2 %. Swales shall have minimum slope of 0.5 %. All other turfed areas shall have slopes varying from 1 to 25 %. The existing storm drainage systems at both sites shall be completely or partially demolished. New storm drainage system to be constructed shall collect storm drainage on site via new storm grates, storm drain lines, graded ditches, and eventually into existing ditch north of Battalion Avenue. New concrete headwalls at discharge points and pipe culverts under access roads shall be constructed along ditches to minimize erosion.

2.3 CONSTRUCTION PHASING

The project construction shall probably begin in Jan and Feb 2002 and complete in Jan and Feb 2003. The Base Bid of this project shall include the SCB, the barrack complex, three company operation buildings, and the central energy plant. The Bid Options of this project shall include:

1. Dining Facility
2. Two Company Operations Buildings
3. Chilled Water Storage Tank
4. Additional POV Parking Lot located west of the new Company Operations Buildings.

The major construction activities shall include:

- A. Establishing, Inspecting and Maintaining Erosion and Sediment Control Structures:
The Contractor shall establish these control structures in accordance with the approved detailed SWPPP.
- B. Clearing and Grubbing: The small brush, concrete curb and gutters and underground pipes at the existing site shall be removed.
- C. Grading and Drainage: The site shall be graded to minimize erosion. Grading shall remove most of the storm water from site via sheet flow into curb and surface inlets, and eventually into the existing storm

drainage system.

D. Implementing Construction Phasing Activities: The Contractor's detailed SWPPP shall include discussion of the construction phasing activities and Bid Options to be included with the awarded contract.

E. Stabilizing Disturbed Site: The Contractor detailed SWPPP shall address method for temporary and permanent stabilization and the location of such activities. The erosion control structures shall be removed by the Contractor after approval by the Contracting Officer.

2.4 SOILS DATA

The following soils information is from the Soil Survey of Coryell County, Texas, issued in March 1977, by the United States Department of Agriculture, Soil Conservation Service. The site contains one soil type. The Topsy-Urban land complex association is characterized by deep and gently sloping land with slopes ranging from 3 to 8 percent, with an average slope of 4 percent. Typically, the surface layer is dark grayish brown clay loam and is approximately 7 inches deep. The subsoil measures approximately 22 inches and is grayish brown clay loam containing calcium carbonate and shale fragments. The underlying material consists of stratified layers of marl and shale. This soil type is generally well drained; however, permeability is moderately slow and occurs at the rate of 0.6 to 2.0 inches per hour. Availability of water is medium. Runoff is medium to rapid, and erosion is severe. The root zone is easily penetrated by plant roots. The Unified Soil classification of this soil type is C. Potential for shrink-swell is moderate. Soil reaction (pH) ranges from 7.9 to 8.4.

2.5 DRAWINGS

Sheet No. C1, Project Location, depicts the two separate sites and the haul route. Sheet No. H1 through H13, STORMWATER CONTROL PLANS I through XIII, depicts the locations and types of erosion control structures. Sheet No. H14, EROSION AND SEDIMENT CONTROL DETAILS, depicts the details of the suggested types of control structures.

PART 3 EROSION AND SEDIMENT CONTROLS

3.1 TEMPORARY STABILIZATION

Temporary stabilization shall require when construction activities cease for periods of 21 days or more, or when there are contract delays in the turfing operation, or when seasonal conditions preclude immediate permanent stabilization measures. The Contractor shall provide temporary soil stabilization, a quick cover to prevent erosion, for all unpaved, graded, and disturbed portions of the site. Reference specification section 02915 MULCHING FOR EROSION CONTROL.

3.2 PERMANENT STABILIZATION

Permanent soil stabilization shall be initiated 14 days after last site disturbance activities have ceased. All unpaved, graded, and disturbed

areas within the limit of erosion and sediment control resulting from the Contractor's construction activities shall receive turfing treatment in accordance with specification sections 02926 ESTABLISHMENT OF TURF and 02923 PLANTING OF TREES, SHRUBS, AND VINES.

3.3 TEMPORARY SEDIMENT BASINS

A temporary sediment basin is not attainable for this project because the construction site is not available for use as a basin. Storm runoff is primarily sheet flow and captured by storm grates, subsurface storm drain pipes, and ditches along the new access road or the existing roads.

3.4 STRUCTURAL CONTROLS

The Contractor shall establish erosion control structures at disturbed areas, downstream from disturbed site, material borrow areas (on-site and off-site), material stockpiled areas, construction staging and disposal areas, staging areas. Type of controls applicable to this site shall, as a minimum, include silt fence, staked straw bales dike, sediment log, and stabilized construction entrance/exit.

PART 4 STORM WATER MANAGEMENT CONTROLS

4.1 RUNOFF COMPUTATIONS

The changes in site conditions after construction shall increase storm water runoff. Runoff computation shall be based on 10-year storm return frequency, storm duration of 30 minutes, and rainfall intensity of 107 mm (4.2 inches) per hour. The runoff coefficient (C) values are discussed in paragraph FUTURE CONDITIONS. Permanent structures to minimize erosion at the project site shall include curbs and gutters, storm drains, drainage swales, regraded and enlarge ditches, concrete headwalls, and pipe culverts.

4.2 OUTFALL VELOCITY DISSIPATION DEVICES

The concrete headwalls and pipe culverts shall be constructed as velocity dissipation devices. They shall provide non-erosive flow conditions at the point of storm water discharge to unpaved ditches.

PART 5 BEST MANAGEMENT PRACTICES (BMP) DURING CONSTRUCTION

The Contractor, or its subcontractors, shall be responsible to minimize sediment pollution and erosion from storm water runoff. The Contractor shall discuss BMP in the detailed SWPPP to be submitted for review and approval.

5.1 WASTE MATERIALS

Solid waste materials (trash and construction debris) shall be placed in covered and appropriate waste containers. Waste containers shall be emptied regularly to avoid overflow. The disposal area of excavated material from project construction shall not be utilized for waste disposal. Routine janitorial service shall be provided for all

construction buildings and surrounding grounds. No construction waste materials, including concrete, shall be buried or otherwise disposed on-site. All site personnel shall have briefings on the correct procedures for solid waste disposal.

5.2 HAZARDOUS WASTE

All hazardous waste shall be handled, stored, and disposed in accordance with all Federal, State, and local regulations and prior to all other construction activities. The Contractor shall coordinate transport, storage of hazardous substance on and off base with DPW Directorate of Environment. Reference specification section 01368 Special Projects Procedures at Fort Hood for detailed information. Chemical waste shall be stored in clearly labeled, corrosion-resistant containers, and in designated areas before removal from the site. Materials in excess of job requirements shall not be stored on-site. All site personnel shall have briefings on the correct procedures for hazardous waste disposal. Lead pipe joints and asbestos cement pipes may be encountered during demolition of existing concrete site structures and below grade utilities. Asbestos-containing materials shall be managed and disposed of per specification section 13280-ASBESTOS ABATEMENT prior to building demolition. Contaminated lead debris shall be managed and disposed of per specification section 13281-LEAD HAZARD ACTIVITY.

5.3 SANITARY WASTE

The on-site sanitary facilities shall be established. Facility location, design, maintenance, and waste collection practices shall be in accordance with requirements of Fort Hood Sanitary Landfill. Recycling is highly recommended to minimize disposal to landfill. Reference specification section 01368 Special Projects Procedures at Fort Hood.

5.4 OFF-SITE VEHICLE TRACKING AND DUST

The Contractor shall describe practices to keep vehicles from tracking soils from the project construction, material borrow and disposal sites in the detailed SWPPP. The Contractor shall describe practices for dust control (i.e. sprinkling, chemical treatment, light bituminous treatment, or similar methods) in the detailed SWPPP. The Contractor shall describe practice in hauling construction material or debris (i.e. open-bed vehicles shall be covered or otherwise stabilized to avoid their loss during transport) in the detailed SWPPP. Temporary parking area(s) to be used 30 calendar days or more for the Contractor's equipment or personal vehicles shall be stabilized and it shall be removed by the Contractor upon project completion. The method of stabilization shall be addressed in the detailed SWPPP and approved by the Contracting Officer.

5.5 FERTILIZERS

If fertilizers are used they shall be applied in the stated amounts as recommended by the manufacturer, and per specification sections 02915 and 02926, when weather conditions are appropriate.

5.6 CONSTRUCTION VEHICLE MAINTENANCE AND REPAIR

Specific areas shall be designated for equipment maintenance and repair to minimize potential impact on storm runoff. Locations shall have minimum potential impacts on receiving streams and waterways. These locations shall be approved by the Contracting Officer, and structural controls shall be provided. All construction vehicles shall receive regular inspection for leaks and scheduled maintenance to reduce the potential for leaks.

5.7 VEHICLE FUELING

Vehicle fueling at the project site shall be in accordance with good safety practices to reduce the potential for leaks and spills. Only properly constructed fuel containers shall be used on-site and shall be labeled and stored in accordance with applicable Federal, state, and local codes. Washing and curing waters shall be drained into a retention basin constructed by the Contractor. Sediment shall be removed and cleaned up by the Contractor, to the satisfaction of the Contracting Officer, after project completion.

PART 6 TIMING OF CONTROLS AND ACTIVITIES.

The Contractor shall prepare a sequence of major activities that include the installation of erosion control structures in advance to each earth disturbing activity. Temporary and permanent stabilization shall be identified in the sequence of activities and shall be implemented within the time frame specified in the NPDES permit or a permit extension shall be filed. Several general principles shall be utilized in preparation of the sequence of major activities, (1) install downslope and sideslope perimeter controls before earth disturbing activity, (2) do not disturb an area until it is necessary for construction to proceed, (3) cover or stabilize disturbed areas as soon as possible, (4) time construction activities to limit impacts from seasonal climate changes or weather events, (5) delay construction of infiltration measures until the end of the construction project when upstream drainage areas have been stabilized, (6) do not remove temporary perimeter controls after upstream area is finally stabilized.

PART 7 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

In compliance with the National Environmental Policy Act of 1969, as amended, a Record of Environmental consideration was issued in June, 2001 for the proposed action, Enlisted Barracks Complex, Phase II. This proposed action qualifies for Categorical Exclusion A-7, Appendix A, AR 200-2. It is a site previously occupied by building structures and there are no anticipated environmental impacts as a result of this action. The proposed site is in the cantonment area and is not a known historical or cultural site. A review was conducted in accordance with 36 CFR 800. It is in compliance with the National Historical Preservation Act (Public Law 89-665) as amended, and Executive Order (EO) 11593. The proposed site has no significant archeological resources. There are no known federal-listed, state-listed endangered and threatened species, or their critical habitats at the proposed site.

Army Regulation 200-1 requires that all Department of Defense installations

and Contractors are required to comply with Federal environmental protection statutes, which include a provision to observe State, and local environmental regulations.

In compliance with the Clean Water Act, a construction site of 5.0 acres in size, or above, is required to obtain a National Pollutant Discharge Elimination System (NPDES) Storm Water Construction Permit. The Federal Register Notice is published in Volume 63, Number 128, July 6, 1998.

PART 8 MAINTENANCE AND INSPECTION PROCEDURES

The Contractor shall inspect, maintain and repair the erosion control structures on the disturbed site and to ensure they are in good operating condition until the disturbed areas are completely and permanently stabilized. All pollution prevention structural controls measures shall be inspected at least once every seven (7) days and within twenty-four (24) hours following any storm producing 13mm or or more of rainfall.

The Contractor shall designated a site inspector to perform SWPPP maintenance, inspection, and record keeping. The inspector shall thoroughly understand the requirements of the Contractor's detailed SWPPP, the Federal Register Notice Volume 63, Number 128, July 6, 1998 and the NPDES requirements. He shall have a basic knowledge of the engineering principles and control for reducing runoff pollution.

Temporary stabilization or grading shall be inspected for erosion and soil loss from the site. Temporary erosion control measures shall be inspected for bare spots and washouts. Discharge points shall be inspected for signs of erosion or sediment. Locations where vehicles enter and leave the site shall be checked for signs of off-site sediment tracking, including erosion control structures at material storage, borrow, disposal, and stockpiled areas. The Best Management Practices and pollution control maintenance procedures shall be reviewed for adequate erosion control by the Contractor during construction. All damages or deficiencies and records of repair to the erosion control structures shall be noted in the Inspection and Maintenance Report, posted at the project bulletin board, and updated into the detailed SWPPP. A copy shall also be submitted to the Contracting Officer after each inspection and repair completion. Corrections to the erosion control structures and to the Contractor's SWPPP shall be implemented as soon as practicable but no later than seven (7) calendar days after inspection. After final stabilization has been achieved, the Contractor shall inspect the site once a month until final inspection and project acceptance by the Contracting Officer.

PART 9 MATERIAL INVENTORY

All materials or substances brought on-site during construction shall have a Material Safety Data Sheet (MSDS) available to the Contracting Officer. These materials include concrete, paints, sealants, petroleum-based products, cleaning solvents, fertilizers, tar, asphalt, and steel reinforcing bars. The list of materials shall be stated in the Contractor's detailed SWPPP.

PART 10 NON-STORM WATER DISCHARGE

Non-storm water discharge shall not be allowed during construction of the project except for emergency fire-fighting flows and other flows permitted in accordance with 63 FR 128, July 6, 1998. In addition, any spill of a hazardous substance in excess of reporting quantities shall be reported as required under 40 CFR Parts 110, 117 and 302. Spill containment, notification, and clean-up in accordance with applicable Federal, State, and Local regulations, and to the satisfaction of the Contracting Officer shall be required. In the event of a Reportable Quantity (RQ) release during the construction period, the following items of work shall be required, (1) notify the National Response Center immediately at (800) 424-8802, (2) within 14 days, submit a written description of the release to the EPA Region 6, providing data and circumstances of the release to be taken to prevent another release, (3) modify the Contractor's detailed SWPPP to include information listed in above items.

PART 11 CONTRACTOR COMPLIANCE

The Contractor shall use this basic SWPPP as a guidance to prepare a detailed SWPPP that includes both narrative and drawings (Stormwater Control Plans). The detailed SWPPP shall state the following as a minimum:

- (1) the project start and completion dates,
- (2) bid options to be executed with the project,
- (3) sequence of construction activities and pollution control measures,
- (4) discussion of the Best Management Practices (BMP) and implementation during project execution,
- (5) identify the list of materials brought on-site,
- (6) runoff computation of each drainage area (see paragraph 4.1),
- (7) revise stormwater control plans to include all locations that require structural controls (i.e. site entrance and exit, staging, stockpiled, borrow, and disposal areas) and the type of storm control structures,
- (8) provide name and qualification of a site inspector assigned to inspect, maintain/repair erosion control structures,
- (9) the inspector shall document major construction activities (such as control establishment, grading, construction cease date, temporary and permanent stabilization), perform repair to control structures for the duration of construction, report releases of reportable quantities (RQ) for oil and hazardous substances per 40 CFR Parts 110, 117 and 302,
- (10) the Contractor shall train workers to install the erosion control structures,
- (11) the Contractor shall be responsible to update the Contractor's SWPPP when the inspector observes inadequate pollution prevention from construction activities,
- (12) the Contractor shall maintain all records (i.e Contractor's detailed SWPPP, all reports required by the NPDES permit, and data to complete NOI) for three (3) years after completion of final stabilization.

Being responsible for the daily operations at the construction site, the Contractor shall submit the detailed SWPPP (including the revised Stormwater Control Plans), and a Notice of Intent (NOI) for the Stormwater Discharges Associated with Industrial Activity under NPDES General Permit to EPA. The NOI (EPA Form 3510-6) shall be submitted no later than 48 hours before start of construction. A separate NOI is required for each construction contract or each phase of the construction activities. The mailing address for NOI submittal is:

Stormwater Notice of Intent (4203),
USEPA, 401 M Street, SW
Washington, D. C. 20460

The Contractor's detailed SWPPP (including the revised Stormwater Control Plans) and a copy of submitted NOI shall be provided to the Contracting Officer before start of construction. A copy of the U.S. Army Corps of Engineers NOI (obtained from the Contracting Officer), the Contractor's NOI, and a brief project description shall be posted on the project bulletin board. The Contractor's detailed SWPPP shall be kept on-site at all times. During construction, the Contractor shall perform work as required per paragraph, MAINTENANCE AND INSPECTION PROCEDURES in this section.

NO later than 10 working days after acceptance of final stabilization, the Contractor shall submit the Notice of Termination (NOT), EPA Form 3510-7 to EPA. Two copies of the submitted NOT shall be provided to the Contracting Officer's project file. EPA Forms are available on web site at <http://www.epa.gov/earthlr6/6en/w/forms.htm>. It is not required but the Contractor may choose to provide the NOT to the Environmental Division of the Fort Worth District. The Environmental Division shall file both the USACE and Contractor's NOT to EPA to facilitate project closeout. The mailing address for the Contractor's prepared and signed NOT is:

ATT: Ms Kathy Mitchell,
CESWF-EV-EE (RM 3A14)
U.S.Army Corps of Engineers
819 Taylor Street
Fort Worth, TX 76102-0300

PART 12 ATTACHMENTS

12.1 OWNER CERTIFICATION

OWNER CERTIFICATION
FOR
ENLISTED BARRACKS COMPLEX II, FORT HOOD, TEXAS))

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

MICHAEL J. MOCEK, P.E.
DEPUTY DISTRICT ENGINEER

Date Certified: _____

Attachments:

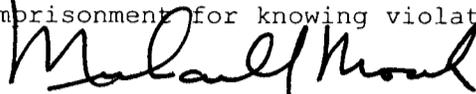
Sheet No.	Title
C1	PROJECT LOCATION MAP
H1	STORMWATER CONTROL PLAN I (BASE BID)
H2	STORMWATER CONTROL PLAN II (BASE BID)
H3	STORMWATER CONTROL PLAN II I (BASE BID + OPTIION #2)
H4	STORMWATER CONTROL PLAN IV (BASE BID + OPTION #4)
H5	STORMWATER CONTROL PLAN V (BASE BID + OPTIONS #2 & #4)
H6	STORMWATER CONTROL PLAN VI (BASE BID)
H7	STORMWATER CONTROL PLA7 VII (BASE BID + OPTIION #1)
H8	STORMWATER CONTROL PLAN VIII (BASE BID + OPTION #4)
H9	STORMWATER CONTROL PLAN IX (BASE BID + OPTIONS #1 & #4)
H10	STORMWATER CONTROL PLAN X (BASE BID)
H11	STORMWATER CONTROL PLAN XI (BASE BID + OPTIION #1)
H12	STORMWATER CONTROL PLAN XII (BASE BID + OPTIION #3)
H13	STORMWATER CONTROL PLAN XIII (BASE BID + OPTIONS #1 & #3)
H14	EROSION AND SEDIMENT CONTROL DETAILS

PART 12 ATTACHMENTS

12.1 OWNER CERTIFICATION

OWNER CERTIFICATION
FOR
ENLISTED BARRACKS COMPLEX II, FORT HOOD, TEXAS))

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



MICHAEL J. MOCEK, P.E.
DEPUTY DISTRICT ENGINEER

Date Certified: 5 Dec 01

NPDES
FORM



United States Environmental Protection Agency
Washington, DC 20460
Notice of Intent (NOI) for Storm Water Discharges Associated with
CONSTRUCTION ACTIVITY Under a NPDES General Permit

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by a NPDES permit issued for storm water discharges associated with construction activity in the State/Indian Country Land identified in Section 11 of this form. Submission of this Notice of Intent also constitutes notice that the party identified in Section I of this form meets the eligibility requirements in Part I.B. of the general permit (including those related to protection of endangered species determined through the procedures in Addendum A of the general permit), understands that continued authorization to discharge is contingent on maintaining permit eligibility, and that implementation of the Storm Water Pollution Prevention Plan required under Part IV of the general permit will begin at the time the permittee commences work on the construction project identified in Section 11 below. IN ORDER TO OBTAIN AUTHORIZATION, ALL INFORMATION REQUESTED MUST BE INCLUDED ON THIS FORM. SEE INSTRUCTIONS ON BACK OF FORM.

I. Owner/Operator (Applicant) Information

Name: US Army Corps of Engineers (CESWF-PER-EE) Phone: (817) 886 - 1709
Address: 819 Taylor Street, P.O. Box 17300 Status Of
City: Fort Worth Owner/Operator: F
State: TX Zip Code: 76102

II. Project/Site Information

Project Name: Enlisted Barracks, Complex II
Project Address/Location Fort Hood
City: _____
State: TX Zip Code _____

Is the facility located on Indian
Country Lands?
Yes No X

Latitude: N 31° 08' 37" Longitude: W 97° 46' 37" County: Coryell

Has the Storm Water Pollution Prevention Plan (SWPPP) been prepared? Yes: X No

Optional: Address of location of SWPPP for viewing Address in Section I above X Address in section 11 above _____ Other address (if known) below:

SWPPP Address _____ Phone: _____
City: _____ State: _____ Zip Code: _____

Name of Receiving Water: Nolan Creek

01 10 2002 02 10 2003
Month Day Year Month Day Year

Based on instruction provided in Addendum A of the permit, are there any endangered or threatened species, or designated critical habitat in the project area?

Estimated Construction Start Date Estimated Completion Date

Estimate of area to be disturbed (to nearest acre): 19 Yes: No: X

Estimate of Likelihood of Discharge (choose only one);

I have satisfied permit eligibility with regard to protection of endangered species through the indicated section of Part

1. ___ Unlikely 3. ___ Once per week 5. ___ Continual
2. X once per month 4. ___ Once per day

I.B.3.e.(2) of the permit (check one or more boxes):
(a) X (b) (c) (d)

III. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name: Michael J. Mocek, Deputy District Engineer Date: 5 Dec 01

Signature: *Michael J. Mocek*

12.2 STORMWATER POLLUTION PREVENTION PLAN

STORMWATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

INSPECTOR: _____ DATE: _____

INSPECTOR'S
QUALIFICATION: _____

DAYS SINCE LAST RAINFALL: _____ AMOUNT OF LAST RAINFALL: _____ INCHES

STABILIZATION MEASURES

AREA	DATE SINCE LAST DISTURBANCE	DATE OF NEXT DISTURBANCE	STABILIZED? (YES/NO?)	STABILIZED WITH	CONDITION
------	-----------------------------------	--------------------------------	--------------------------	--------------------	-----------

STABILIZATION REQUIRED:

TO BE PERFORMED BY: _____ ON or BEFORE: _____

STORMWATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

OTHER CONTROLS - STABILIZED CONSTRUCTION ENTRANCE

IS MUCH SEDIMENT TRACKED ONTO THE ROAD?	ARE DUST AND SEDIMENT CONTROL MEASURES WORKING?	DOES ALL TRAFFIC USE THE STABILIZED ENTRANCE TO THE SITE?	ARE ASSOCIATED DRAINAGE STRUCTURES WORKING?
---	--	--	--

MAINTENANCE REQUIRED FOR CONSTRUCTION ENTRANCE:

TO PERFORMED BY: _____ ON OR BEFORE: _____

OTHER CONTROLS - DEVELOP SITE SPECIFIC TABLES AS NEEDED

FOR ALL STABILIZATION MEASURES, STRUCTURAL, AND NON-STRUCTURAL CONTROLS
CHANGES/CORRECTIONS REQUIRED IN POLLUTION PREVENTION PLAN:

REASONS FOR CHANGES:

INSPECTOR'S SIGNATURE: _____ DATE: _____

STORMWATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

MAINTENANCE REQUIRED FOR SEDIMENT LOG(S):

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

STRUCTURAL CONTROLS - SILT FENCE(S)

FROM	TO	IS THE BOTTOM OF THE FABRIC STILL BURIED?	IS THE FABRIC IN GOOD CONDITION?	HOW DEEP IS THE SEDIMENT?
------	----	---	--	------------------------------

MAINTENANCE REQUIRED FOR THE SILT FENCE (S):

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

STORMWATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

STRUCTURAL CONTROLS - STRAW BALES DIKES(S) AT CURB NAD SURFACE INLETS

FROM	TO	IS DIKED STABILIZED?	IS THERE EVIDENCE OF WASH-OUT OR OVERTOPPING?
------	----	----------------------	--

MAINTENANCE REQUIRED FOR THE STRAW BALES DIKE(S):

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

-- End of Section --

SECTION 05500

MISCELLANEOUS METAL
07/97

Amends 0002 and 0003

PART 1 GENERAL

1.1 REFERENCES

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

ALUMINUM ASSOCIATION (AA)

AA DAF-45 (1997) Designation System for Aluminum Finishes

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A14.3 (1992) Ladders - Fixed - Safety Requirements

ANSI MH28.1 (1982) Design, Testing, Utilization, and Application of Industrial Grade Steel Shelving

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36/A 36M (1997ael) Carbon Structural Steel

ASTM A 53 (1999b) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM A 123/A 123M (1997ael) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 283/A 283M (1998) Low and Intermediate Tensile Strength Carbon Steel Plates

ASTM A 467/A 467M (1998) Machine and Coil Chain

ASTM A 475 (1998)

Zinc-Coated Steel Wire Strand

ASTM A 500	(1999) Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A 653/A 653M	(1999) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A 924/A 924M	(1999) General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM B 26/B 26M	(1998) Aluminum-Alloy Sand Castings
ASTM B 221	(1996) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B 221M	(1996) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM B 429	(1995) Aluminum-Alloy Extruded Structural Pipe and Tube
ASTM D 2047	(1993) Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
ASTM F 1267	(1997) Metal, Expanded, Steel
AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)	
ASCE 7	(1995) Minimum Design Loads for Buildings and Other Structures
AMERICAN WELDING SOCIETY (AWS)	
AWS D1.1	(1998) Structural Welding Code - Steel
COMMERCIAL ITEM DESCRIPTIONS (CID)	
CID A-A-344	(Rev B) Lacquer, Clear Gloss, Exterior, Interior
NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)	
NAAMM MBG 531	(1994) Metal Bar Grating Manual
NAAMM MBG 532	(1994) Heavy Duty Metal Bar Grating Manual

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 211 (1996; Errata 96-1) Chimneys, Fireplaces,
Vents and Solid Fuel-Burning Appliances

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are 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 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Miscellaneous Metal Items

Detail drawings indicating material thickness, type, grade, and class; dimensions; and construction details. Drawings shall include catalog cuts, erection details, manufacturer's descriptive data and installation instructions, and templates. Detail drawings for the following items:

- a. Access doors and frames
- b. Vents
- c. Cleanout doors
- d. Corner guards and shields
- e. Door guards
- f. Pipe guards
- g. Expansion joint covers
- h. Floor gratings and frames
- i. Floor plates
- j. Foundation vents
- k. Handrails/Guardrails
- l. Partitions, diamond-mesh type
- m. Roof scuttles
- n. Safety nosing
- o. Shelving
- p. Steel stairs
- q. Trench covers, frames, and liners
- r. Ladders
- t. Miscellaneous
- u. Wall Louvers and Screens
- v. Suspended Ceiling System
- w. Kitchen Equipment- Custom fabricated
- x. Vent Wells
- y. Closet Rod and Shelf Brackets
- z. Roll-Up Floor Mats (am#2)**

SD-04 Samples

Miscellaneous Metal Items; G.

Samples of the following items one of each type: Refer to list

above. Samples shall be full size, taken from manufacturer's stock, and shall be complete as required for installation in the structure. Samples may be installed in the work, provided each sample is clearly identified and its location recorded.

1.3 GENERAL REQUIREMENTS

The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication. Welding to or on structural steel shall be in accordance with AWS D1.1. Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot-dip galvanized after fabrication. Galvanizing shall be in accordance with ASTM A 123/A 123M, ASTM A 653/A 653M, or ASTM A 924/A 924M, as applicable. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall provide strength and stiffness. Joints exposed to the weather shall be formed to exclude water.

1.4 DISSIMILAR MATERIALS

Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure-treated wood, or absorptive materials subject to wetting, the surfaces shall be protected with a coat of bituminous paint or asphalt varnish.

1.5 WORKMANSHIP

Miscellaneous metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed, and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

1.6 ANCHORAGE

Anchorage shall be provided where necessary for fastening miscellaneous metal items securely in place. Anchorage not otherwise specified or indicated shall include slotted inserts made to engage with the anchors, expansion shields, and power-driven fasteners when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; and lag bolts and screws for wood.

1.7 ALUMINUM FINISHES

Unless otherwise specified, aluminum items shall have anodized finish. The thickness of the coating shall be not less than that specified for protective and decorative type finishes for items used in interior locations or architectural Class I type finish for items used in exterior locations in AA DAF-45. Items to be anodized shall receive a polished satin finish. Aluminum surfaces to be in contact with plaster or concrete during construction shall be protected with a field coat conforming to CID A-A-344.

1.8 SHOP PAINTING

Surfaces of ferrous metal except galvanized surfaces, shall be cleaned and shop coated with the manufacturer's standard protective coating unless otherwise specified. Surfaces of items to be embedded in concrete shall not be painted. Items to be finish painted shall be prepared according to manufacturer's recommendations or as specified.

PART 2 PRODUCTS

2.1 ACCESS DOORS AND PANELS

Doors and panels shall be flush type unless otherwise indicated. Frames for access doors shall be fabricated of not lighter than 1.52 mm (16 gauge) steel with welded joints and finished with anchorage for securing into construction. Access doors shall be a minimum of 350 by 500 mm and of not lighter than 1.9 mm (14 gauge) steel, with stiffened edges, complete with attachments. Access doors shall be hinged to frame and provided with a flush face, screw driver operated latch. Exposed metal surfaces shall have a shop applied prime coat.

2.2 VENTS

Vents shall be designed and constructed in accordance with NFPA 211. Vents shall be designed and constructed to withstand a wind pressure of 1.4KPa in accordance with ASCE 7. Vents shall be constructed of black-steel plates not less than 5 mm thick conforming to ASTM A 36/A 36M. Seams and joints shall be welded, except that an angle flange shall be provided for connection to the boiler, other equipment, and vent support.

2.3 CLEANOUT DOORS

Cleanout doors shall be galvanized, shall be provided with frames, and unless otherwise indicated, shall be sized to match flues. The frames shall have a continuous flange and anchors for securing into masonry. The doors shall be smokeproof, hinged, and shall have fastening devices to hold the door closed.

2.4 DOOR GUARDS

Door guards shall be constructed of woven steel wire or expanded metal framed with structural steel shapes. Expanded metal guards shall be of 38 mm No. 10 mesh, welded to 25 by 25 by 3 mm angle frame. Woven-wire panel shall be of 10 gauge, 38 mm mesh secured through weaving to 25 mm channel

frame or around a 10 m round bar frame. Corners of frames shall be mitered and welded. Guards shall be sized as indicated.

2.5 PIPE GUARDS

Pipe guards shall be heavy duty steel pipe conforming to ASTM A 53, Type E or S, weight STD, black finish.

2.6 EXPANSION JOINT COVERS

Expansion joint covers shall be constructed of extruded aluminum with anodized satin finish for walls and ceilings and with standard mill finish for floor covers and exterior covers. Plates, backup angles, expansion filler strip and anchors shall be designed as indicated. Expansion joint system shall provide a one hour fire rating.

2.7 FLOOR GRATINGS AND FRAMES

Unless otherwise specified in Specification Section 11400 FOOD SERVICE EQUIPMENT, Steel grating shall be designed in accordance with NAAMM MBG 531 to meet the indicated load requirements. Edges shall be banded with bars 6 mm less in height than bearing bars for grating sizes above 19 mm. Banding bars shall be flush with the top of bearing grating. Frames shall be of welded steel construction finished to match the grating. Floor gratings and frames shall be galvanized after fabrication.

2.8 FLOOR PLATES

Floor plates shall be 6 mm thick, raised thread steel, galvanized, slip-resistant, carbon steel conforming to ASTM A 283/A 283M having a minimum static coefficient of friction of 0.50 when tested in accordance with ASTM D 2047. Wearing surface shall be aluminum oxide or silicon carbide.

2.9 FOUNDATION VENTS

Foundation vents noted as crawl space vents (C.V.) in the drawings, shall be the same size as the concrete opening, and shall be of extruded aluminum with integral water stop and sliding interior closer or damper operable from the outside. Insect screen shall be provided at the back of the vent.

Louvered opening shall have top and bottom drip lips, and the net ventilating area with closer or damper open shall be at least 35 percent of the gross wall opening. The frames shall have a structural strength adequate to permit use in concrete foundation walls without a lintel.

2.10 HANDRAILS

Handrails shall be designed to resist a concentrated load of 890 N (200 pounds) in any direction at any point of the top of the rail or 292 Newtons per meter (20 pounds per foot) applied horizontally to top of the rail, whichever is more severe.

2.10.1 Steel Handrails/Guardrails

Steel handrails and guardrails, including inserts in concrete, shall be steel pipe conforming to ASTM A 53 and structural tubing conforming to ASTM A 500, Grade A or B of equivalent strength as detailed in drawings. Steel railings shall be 50 mm nominal size. Railings shall be hot-dip galvanized and shop painted. Except stainless steel shall be provided at serving lines as shown in drawings.

- a. Joint posts, rail, and corners shall be fabricated by one of the following methods:

(1) Flush type rail fittings of commercial standard, welded and ground smooth with railing splice locks secured with 10 mm hexagonal recessed-head setscrews.

(2) Mitered and welded joints by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding smooth. Railing splices shall be butted and reinforced by a tight fitting interior sleeve not less than 150 mm long.

- b. Removable sections, toe-boards, and brackets shall be provided as indicated.

2.11 LADDERS

Ladders shall be galvanized steel or aluminum, fixed rail type in accordance with ANSI A14.3.

2.12 MISCELLANEOUS

Miscellaneous plates and shapes for items that do not form a part of the structural steel framework, such as lintels, sill angles, miscellaneous mountings, and frames, shall be provided to complete the work.

2.13 PARTITIONS, DIAMOND MESH TYPE

Partitions shall be constructed of metal fabric attached to structural steel framing members. Fabric shall be 10 gauge steel wires woven into 38 mm diamond mesh with wire secured through weaving channels. Framing members shall be channels 38 by 3 mm minimum size. Channel frames shall be mortised and tenoned at intersections. Steel frames, posts, and intermediate members shall be of the sizes and shapes indicated. Cast-iron floor shoes and caps shall have setscrew adjustment. Doors and grilles shall be provided as indicated, complete with hardware and accessories including sliding mechanisms, locks, guard plates, sill shelves and brackets, and fixed pin butts. Doors and grilles shall have cover plates as indicated. Dutch doors shall have a lock for each leaf. Reference Specification Section 09000 BUILDING COLOR AND FINISH SCHEDULE for acceptable manufacturers. A continuous rubber bumper shall be provided at bottom of grille frame. Locks shall be bronze, cylinder, mortise type. Keying shall be coordinated with Section 08700 BUILDERS' HARDWARE. Ferrous metal portions of partitions and accessories shall be galvanized.

2.14 ROOF SCUTTLES

Roof scuttles shall be of galvanized steel not less than 2.0 mm (14 gauge), with 75 mm beaded flange welded and ground at corners. Scuttle shall be sized to provide minimum clear opening of 940 by 760 mm. Cover and curb shall be insulated with 25 mm thick rigid insulation covered and protected by galvanized steel liner not less than 0.55 mm (26 gauge). The curb shall be equipped with an integral metal cap flashing of the same gauge and metal as the curb, full welded and ground at corners for weathertightness. Scuttle shall be completely assembled with heavy hinges, compression spring operators enclosed in telescopic tubes, positive snap latch with turn handles on inside and outside and neoprene draft seal. Fasteners shall be provided for padlocking on the inside. The cover shall be equipped with an automatic hold-open arm complete with handle to permit one hand release.

2.15 SAFETY NOSING

Safety nosings shall be of cast aluminum with cross-hatched, abrasive surface. Nosing shall be 75 mm wide and terminating at not more than 150 mm from the ends of treads, except nosing for metal pan cement-filled treads shall extend the full length of the tread. Safety nosings shall be provided with anchors not less than 19 mm long. Integrally cast mushroom anchors are not acceptable.

AM#3

2.16 SHELVING

Unless otherwise specified in Specification 11400 FOOD SERVICE EQUIPMENT, shelving shall conform to ANSI MH28.1 and shall be bolted and capable of resisting a uniform load of 700 kg per square meter. Minimum dimensions and number of shelves shall be as indicated.

2.17 STEEL STAIRS

Steel stairs shall be complete with structural or formed channel stringers, metal pan cement-filled treads, landings, columns, handrails, and necessary bolts and other fastenings as indicated. Structural steel shall conform to ASTM A 36/A 36M. Stairs and accessories shall be galvanized. Risers on stairs with metal pan treads shall be deformed to form a sanitary cove to retain the tread concrete. Integral nosings shall have braces extended into the concrete fill. Gratings for treads and landings shall conform to NAAMM MBG 531. Grating treads shall have slip-resistant nosings.

2.18 TRENCH COVERS, FRAMES, AND LINERS

Trench covers shall be designed to meet the indicated load requirements. Trench frames and anchors shall be all welded steel construction designed to match cover. Covers shall be secured to frame, and shall be cast-iron grating. Grating opening widths shall not exceed 25 mm. Trench liners shall be cast iron with integral frame for cover. Reference Specification section 11400 FOOD SERVICE EQUIPMENT for interior work in the "Dining Facility".

2.19 VENT WELLS

Vent wells shall be not lighter than 1.5 mm (16 gauge), corrugated sheet steel, hot-dip galvanized after fabrication. Top edge of walls shall have a 19 mm bead or rolled top. Window wells shall be semicircular or semielliptical in form and shall overlap the vent by at least 75 mm on each side. Removable cover, hot-dip galvanized after fabrication, consisting of steel bar grate with bars spaced at not more than 50 mm centers and welded to 25 by 6 mm frame shall be designed to fit into and rest on top edge of vent well.

2.20 Closet Rod and Shelf Brackets

Closet rod and shelf brackets shall be Heavy-Duty Shelf and Rod Support, Item No. FSR 123 as manufactured by CAL-ROYAL PRODUCTS, INC. (800) 222-3316 or approved equal.

2.21 ROLL-UP FLOOR MATS

Roll-up floor mats shall be of aluminum construction with carpet surface. Roll-up mats shall be sized as shown in the drawings and for use in level surface areas. Manufacturer's color samples shall be submitted to COE District Interior Designer for selection. (am#2)

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

All items shall be installed at the locations shown and according to the manufacturer's recommendations. Items listed below require additional procedures as specified.

3.2 REMOVABLE ACCESS PANELS

A removable access panel not less than 300 by 300 mm shall be installed directly below each valve, flow indicator, damper, or air splitter that is located above the ceiling, other than an acoustical ceiling, and that would otherwise not be accessible.

3.3 INSTALLATION OF VENTS

Vents shall be installed in accordance with NFPA 211.

3.4 DOOR GUARD FRAME

Door guard frame shall be mounted over the glazed opening using 6 mm lag bolts on the interior of wood doors or tamperproof through bolts on the interior of metal doors.

3.5 INSTALLATION OF PIPE GUARDS

Pipe guards shall be set vertically in concrete piers. Piers shall be constructed of, and the hollow cores of the pipe filled with, concrete

specified in SECTION 03300 CAST-IN-PLACE STRUCTURAL CONCRETE, having a compressive strength of 21 MPa.

3.6 ATTACHMENT OF HANDRAILS/GUARRAILS

Toeboards and brackets shall be installed where indicated. Splices, where required, shall be made at expansion joints. Removable sections shall be installed as indicated.

3.6.1 Installation of Steel Handrails/Guardrails

Installation shall be base plates bolted to stringers or structural steel framework. Rail ends shall be secured by steel pipe flanges anchored by expansion shields and bolts to adjacent masonry.

3.7 PARTITION POSTS AND OPENINGS

Posts shall be set in shoes bolted to the floor and in caps tap-screwed to clip angles in overhead construction, as indicated. Openings shall be formed using channels similar to the partition frames at ducts, pipes, and other obstructions.

3.8 INSTALLATION OF SAFETY NOSINGS

Nosing shall be completely embedded in concrete before the initial set of the concrete occurs and shall finish flush with the top of the concrete surface.

3.9 TRENCH FRAMES AND COVERS

Trench frames and covers shall finish flush with the floor.

3.10 INSTALLATION OF VENT WELLS

Vent wells shall be placed as shown with the walls securely anchored to foundation surface. The area within the well shall be excavated to the bottom of the well and covered with a 100 mm thick layer of coarse gravel or crushed rock.

3.11 Custom Fabricated Kitchen Equipment

Contractor shall verify field measurements prior to fabrication by manufacturer. Refer to Specification Section 11400 FOOD SERVICE EQUIPMENT.

3.12 Closet Rod and Shelf Brackets

Brackets shall be spaced and installed per manufacturer's instructions.

3.13 ROLL-UP FLOOR MATS

Contractor shall verify field measurements prior to releasing materials for fabrication by the manufacturer. A mat frame shall be used to ensure recess

accuracy in size, shape, and depth. Frames shall be assembled onsite and installed so that upper edge will be level with finished floor surface. A cement base shall be screeded inside the mat recess frame area using the edge provided by the frame as a guide. The frame shall be anchored into the cement with anchor pins a minimum of 610 mm on centers. (am#2)

-- End of Section --

SECTION 10508

METAL LOCKERS
AMEND 0003

PART 1 GENERAL

1.1 REFERENCES

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

FEDERAL SPECIFICATIONS (FS)

FS AA-L-00486 (Rev H; Am 1, Notice 1) Lockers, Clothing, Steel

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are 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 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Metal Lockers

Furnish installation details. The manufacturer's printed literature will be acceptable in lieu of detail drawings provided this literature accurately shows the items proposed to be furnished and the method of installation.

SD-03 Product Data

Metal Lockers

Manufacturer's Catalog Data

PART 2 PRODUCTS

AM#3

2.1 METAL LOCKERS

In the Company Operations' TA-Gear area the lockers shall be fabricated in accordance with FS-AA-L-00486, Type II (double-tiered, semi-louvered door) sectional groups, size 450 mm wide, by 600 mm deep and 2 meters high. Provide sloped hoods per manufacturer's standard, equal to locker in metal gauge. For color see Section 09915- COLOR SCHEDULE.

In the Company Operations' toilet room areas the lockers shall be fabricated in accordance with FS-AA-L-00486, Type II (double-tiered, semi-louvered door) sectional groups, size 300 mm wide, by 600 mm deep and 2 meters high. Provide sloped hoods per manufacturer's standard, equal to locker in metal gauge. For color see Section 09915- COLOR SCHEDULE.

PART 3 EXECUTION

3.1 INSTALLATION

Metal lockers shall not be installed until after the room painting and finishing operations are complete. Damaged, spotted, or otherwise defective lockers shall be removed and replaced with new lockers or repaired to the original state at no additional cost to the Government.

3.2 SCHEDULE

Metal lockers shall be provided in rooms noted on the drawings.

-- End of Section --

SECTION 13930

WET PIPE SPRINKLER SYSTEM, FIRE PROTECTION
AMEND 0003

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 47/A 47M	(1999) Ferritic Malleable Iron Castings
ASTM A 53/A 53M	(1999b) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 135	(1997c) Electric-Resistance-Welded Steel Pipe
ASTM A 183	(1983; R 1998) Carbon Steel Track Bolts and Nuts
ASTM A 536	(1984; R 1999e1) Ductile Iron Castings
ASTM A 795	(1997) Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use
ASTM B 88	(1999) Seamless Copper Water Tube
ASTM B 88M	(1999) Seamless Copper Water Tube (Metric)
ASTM F 442/F 442M	(1999) Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)

ASME INTERNATIONAL (ASME)

ASME B16.1	(1998) Cast Iron Pipe Flanges and Flanged Fittings
ASME B16.3	(1998) Malleable Iron Threaded Fittings
ASME B16.4	(1998) Cast Iron Threaded Fittings
ASME B16.9	(1993) Factory-Made Wrought Steel Buttwelding Fittings

- ASME B16.11 (1996) Forged Fittings, Socket-Welding and Threaded
- ASME B16.18 (1984; R 1994) Cast Copper Alloy Solder Joint Pressure Fittings
- ASME B16.21 (1992) Nonmetallic Flat Gaskets for Pipe Flanges
- ASME B16.22 (1995; B16.22a1998) Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
- ASME B18.2.1 (1996) Square and Hex Bolts and Screws (Inch Series)
- ASME B18.2.2 (1987; R 1993) Square and Hex Nuts (Inch Series)

AMERICAN SOCIETY OF SANITARY ENGINEERING FOR PLUMBING AND SANITARY RESEARCH (ASSE)

- ASSE 1015 (1993) Double Check Backflow Prevention Assembly

AMERICAN WATER WORKS ASSOCIATION (AWWA)

- AWWA EWW (1999) Standard Methods for the Examination of Water and Wastewater
- AWWA B300 (1999) Hypochlorites
- AWWA B301 (1992; addenda B301a - 1999) Liquid Chlorine
- AWWA C104 (1995) Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
- AWWA C110 (1998) Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (75 mm through 1200 mm), for Water and Other Liquids
- AWWA C111 (1995) Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
- AWWA C151 (1996) Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids
- AWWA C203 (1997; addenda C203a - 1999) Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape - Hot-Applied
- AWWA M20 (1973) Manual: Water Chlorination

Principles and Practices

FACTORY MUTUAL ENGINEERING AND RESEARCH (FM)

- FM P7825a (1998) Approval Guide Fire Protection
FM P7825b (1998) Approval Guide Electrical Equipment

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS
INDUSTRY (MSS)

- MSS SP-71 (1997) Gray Iron Swing Check Valves,
Flanges and Threaded Ends

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

- NFPA 13 (1999) Installation of Sprinkler Systems
NFPA 13R (1999) Installation of Sprinkler Systems
in Residential Occupancies Up to and
Including Four Stories in Height
NFPA 24 (1995) Installation of Private Fire
Service Mains and Their Appurtenances
NFPA 230 (1999) Fire Protection of Storage
NFPA 1963 (1998) Fire Hose Connections

NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES
(NICET)

- NICET 1014-7 (1995) Program Detail Manual for
Certification in the Field of Fire
Protection Engineering Technology (Field
Code 003) Subfield of Automatic Sprinkler
System Layout

UNDERWRITERS LABORATORIES (UL)

- UL 668 (1995; Rev thru Dec 1998) Hose Valves For
Fire Protection Service
UL Bld Mat Dir (1999) Building Materials Directory
UL Fire Prot Dir (1999) Fire Protection Equipment Directory

1.2 GENERAL REQUIREMENTS

Wet pipe sprinkler system shall be provided in all areas of the building .
The sprinkler system shall provide fire sprinkler protection for the entire
area. Except as modified herein, the system shall be designed and
installed in accordance with NFPA 13 . Pipe sizes which are not
indicated on drawings shall be determined by hydraulic calculation. The

Contractor shall design any portions of the sprinkler system that are not indicated on the drawings including locating sprinklers, piping and equipment, and size piping and equipment when this information is not indicated on the drawings or is not specified herein. The design of the sprinkler system shall be based on hydraulic calculations, and the other provisions specified herein.

1.2.1 Hydraulic Design

The system shall be hydraulically designed to discharge a minimum density of L/min per square meter as shown on plans over the hydraulically most demanding 280 square meters of floor area. The minimum pipe size for branch lines in gridded systems shall be 32 mm . Hydraulic calculations shall be in accordance with the Area/Density Method of NFPA 13. Water velocity in the piping shall not exceed 6 m/s .

1.2.1.1 Hose Demand

An allowance for exterior hose streams in L/min as shown on plans shall be added to the sprinkler system demand at the point of connection to the existing system.

1.2.1.2 Basis for Calculations

The design of the system shall be based upon a water supply with a static pressure of 4.83 bar, and a flow of 116 L/s at a residual pressure of 4.0 bar. Water supply shall be presumed available at the point of connection to existing . Hydraulic calculations shall be based upon the Hazen-Williams formula with a "C" value of 120 for steel piping, 150 for copper tubing, 140 for new cement-lined ductile-iron piping, and 100 for existing underground piping.

1.2.2 Sprinkler Spacing

Sprinklers shall be uniformly spaced on branch lines. Maximum spacing per sprinkler shall not exceed limits specified in NFPA 13 for light or ordinary hazard occupancy.

1.3 COORDINATION OF TRADES

Piping offsets, fittings, and any other accessories required shall be furnished as required to provide a complete installation and to eliminate interference with other construction. Sprinkler shall be installed over and under ducts, piping and platforms when such equipment can negatively effect or disrupt the sprinkler discharge pattern and coverage.

1.4 DELIVERY AND STORAGE

All equipment delivered and placed in storage shall be housed in a manner to preclude any damage from the weather, humidity and temperature variations, dirt and dust, or other contaminants. Additionally, all pipes shall either be capped or plugged until installed.

1.5 FIELD MEASUREMENTS

The Contractor shall become familiar with all details of the work, verify all dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing the work.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are 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 01330 SUBMITTAL PROCEDURES::

SD-02 Shop Drawings

Sprinkler System Shop Drawings; G, ED.

Three copies of the Sprinkler System Shop Drawings, no later than 21 days prior to the start of sprinkler system installation.

The Sprinkler System Shop Drawings shall conform to the requirements established for working plans as prescribed in NFPA 13.

Drawings shall include plan and elevation views demonstrating that the equipment will fit the allotted spaces with clearance for installation and maintenance. Each set of drawings shall include the following:

- a. Descriptive index of drawings in the submittal with drawings listed in sequence by drawing number. A legend identifying device symbols, nomenclature, and conventions used.
- b. Floor plans drawn to a scale not less than 1:100 which clearly show locations of sprinklers, risers, pipe hangers, seismic separation assemblies, sway bracing, inspector's test connections, drains, and other applicable details necessary to clearly describe the proposed arrangement. Each type of fitting used and the locations of bushings, reducing couplings, and welded joints shall be indicated.
- c. Actual center-to-center dimensions between sprinklers on branch lines and between branch lines; from end sprinklers to adjacent walls; from walls to branch lines; from sprinkler feed mains, cross-mains and branch lines to finished floor and roof or ceiling. A detail shall show the dimension from the sprinkler and sprinkler deflector to the ceiling in finished areas.
- d. Longitudinal and transverse building sections showing typical branch line and cross-main pipe routing as well as elevation of each typical sprinkler above finished floor.
- e. Details of each type of riser assembly; pipe hanger; sway bracing for earthquake protection, and restraint of underground water main at point-of-entry into the building, and electrical devices and interconnecting wiring.

As-Built Shop Drawings; .

As-built shop drawings, at least 14 days after completion of the Final Tests. The Sprinkler System Drawings shall be updated to reflect as-built conditions after all related work is completed and shall be on reproducible full-size mylar film.

SD-03 Product Data

Fire Protection Related Submittals; .

A list of the Fire Protection Related Submittals, no later than 7 days after the approval of the Fire Protection Specialist.

Components and Equipment Data; G, ED.

Manufacturer's catalog data included with the Sprinkler System Drawings for all items specified herein. The data shall be highlighted to show model, size, options, etc., that are intended for consideration. Data shall be adequate to demonstrate compliance with all contract requirements. In addition, a complete equipment list that includes equipment description, model number and quantity shall be provided.

Hydraulic Calculations; G, ED.

Hydraulic calculations, including a drawing showing hydraulic reference points and pipe segments.

Spare Parts; .

Spare parts data shall be included for each different item of material and equipment specified. The data shall include a complete list of parts and supplies, with current unit prices and source of supply, and a list of parts recommended by the manufacturer to be replaced after 1 year and 3 years of service. A list of special tools and test equipment required for maintenance and testing of the products supplied by the Contractor shall be included.

Preliminary Tests Procedures; G, ED.

Proposed procedures for Preliminary Tests, no later than 14 days prior to the proposed start of the tests.

Final Acceptance Test Procedures; G, ED.

Proposed procedures for Final Acceptance Test, no later than 14 days prior to the proposed start of the tests.

On-site Training Schedule; G, RE.

Proposed On-site Training schedule, at least 14 days prior to the start of related training.

Preliminary Tests; G, RE.

Proposed date and time to begin Preliminary Tests, submitted with the Preliminary Tests Procedures.

Final Acceptance Test; G, RE.

Proposed date and time to begin Final Acceptance Test, submitted with the Final Acceptance Test Procedures. Notification shall be provided at least 14 days prior to the proposed start of the test. Notification shall include a copy of the Contractor's Material & Test Certificates.

Fire Protection Specialist Qualifications; G; ED.

The name and documentation of certification of the proposed Fire Protection Specialists, no later than 14 days after the Notice to Proceed and prior to the submittal of the sprinkler system drawings and hydraulic calculations.

Sprinkler System Installer Qualifications; G, ED.

The name and documentation of certification of the proposed Sprinkler System Installer, concurrent with submittal of the Fire Protection Specialist Qualifications.

SD-06 Test Reports

Preliminary Tests Report; G; ED.

Three copies of the completed Preliminary Tests Reports, no later than 7 days after the completion of the Preliminary Tests. The Preliminary Tests Report shall include both the Contractor's Material and Test Certificate for Underground Piping and the Contractor's Material and Test Certificate for Aboveground Piping.

All items in the Preliminary Tests Report shall be signed by the Fire Protection Specialist.

Final Acceptance Test Report; G, ED.

Three copies of the completed Final Acceptance Tests Reports, no later than 7 days after the completion of the Final Acceptance Tests. All items in the Final Acceptance Report shall be signed by the Fire Protection Specialist.

SD-07 Certificates

Fire Protection Specialist Inspection; G, ED.

Concurrent with the Final Acceptance Test Report, certification by the Fire Protection Specialist that the sprinkler system is

installed in accordance with the contract requirements, including signed approval of the Preliminary and Final Acceptance Test Reports.

SD-10 Operation and Maintenance Data

Wet Pipe Sprinkler System; .

Six manuals listing step-by-step procedures required for system startup, operation, shutdown, and routine maintenance, at least 14 days prior to field training. The manuals shall include the manufacturer's name, model number, parts list, list of parts and tools that should be kept in stock by the owner for routine maintenance including the name of a local supplier, simplified wiring and controls diagrams, troubleshooting guide, and recommended service organization (including address and telephone number) for each item of equipment.

1.7 HYDRAULIC CALCULATIONS

Hydraulic calculations shall be as outlined in NFPA 13 except that calculations shall be performed by computer using software intended specifically for fire protection system design using the design data shown on the drawings. Software that uses k-factors for typical branch lines is not acceptable. Calculations shall be based on the water supply data shown on the drawings. Calculations shall substantiate that the design area used in the calculations is the most demanding hydraulically. Water supply curves and system requirements shall be plotted on semi-logarithmic graph paper so as to present a summary of the complete hydraulic calculation. A summary sheet listing sprinklers in the design area and their respective hydraulic reference points, elevations, actual discharge pressures and actual flows shall be provided. Elevations of hydraulic reference points (nodes) shall be indicated. Documentation shall identify each pipe individually and the nodes connected thereto. The diameter, length, flow, velocity, friction loss, number and type fittings, total friction loss in the pipe, equivalent pipe length and Hazen-Williams coefficient shall be indicated for each pipe. For gridded systems, calculations shall show peaking of demand area friction loss to verify that the hydraulically most demanding area is being used. Also for gridded systems, a flow diagram indicating the quantity and direction of flows shall be included. A drawing showing hydraulic reference points (nodes) and pipe designations used in the calculations shall be included and shall be independent of shop drawings.

1.8 FIRE PROTECTION SPECIALIST

Work specified in this section shall be performed under the supervision of and certified by the Fire Protection Specialist. The Fire Protection Specialist shall be an individual who is a registered professional engineer and a Full Member of the Society of Fire Protection Engineers or who is certified as a Level III Technician by National Institute for Certification in Engineering Technologies (NICET) in the Automatic Sprinkler System Layout subfield of Fire Protection Engineering Technology in accordance with NICET 1014-7. The Fire Protection Specialist shall be

regularly engaged in the design and installation of the type and complexity of system specified in the Contract documents, and shall have served in a similar capacity for at least three systems that have performed in the manner intended for a period of not less than 6 months.

1.9 SPRINKLER SYSTEM INSTALLER QUALIFICATIONS

Work specified in this section shall be performed by the Sprinkler System Installer. The Sprinkler System Installer shall be regularly engaged in the installation of the type and complexity of system specified in the Contract documents, and shall have served in a similar capacity for at least three systems that have performed in the manner intended for a period of not less than 6 months.

1.10 REGULATORY REQUIREMENTS

Compliance with referenced NFPA standards is mandatory. This includes advisory provisions listed in the appendices of such standards, as though the word "shall" had been substituted for the word "should" wherever it appears. In the event of a conflict between specific provisions of this specification and applicable NFPA standards, this specification shall govern. Reference to "authority having jurisdiction" shall be interpreted to mean the Contracting Officer.

PART 2 PRODUCTS

2.1 STANDARD PRODUCTS

Materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacture of such products and shall essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening.

2.2 NAMEPLATES

All equipment shall have a nameplate that identifies the manufacturer's name, address, type or style, model or serial number, and catalog number.

2.3 REQUIREMENTS FOR FIRE PROTECTION SERVICE

Materials and Equipment shall have been tested by Underwriters Laboratories, Inc. and listed in UL Fire Prot Dir or approved by Factory Mutual and listed in FM P7825a and FM P7825b. Where the terms "listed" or "approved" appear in this specification, such shall mean listed in UL Fire Prot Dir or FM P7825a and FM P7825b

2.4 UNDERGROUND PIPING COMPONENTS

2.4.1 Pipe

Piping from a point 150 mm above the floor to a point 1500 mm outside the building wall shall be ductile iron with a rated working pressure of 1034 kPa conforming to AWWA C151, with cement mortar lining conforming to AWWA C104. Piping more than 1500 mm outside the building walls shall comply

with Section 02510 WATER DISTRIBUTION SYSTEM.

2.4.2 Fittings and Gaskets

Fittings shall be ductile iron conforming to AWWA C110. Gaskets shall be suitable in design and size for the pipe with which such gaskets are to be used. Gaskets for ductile iron pipe joints shall conform to AWWA C111.

2.4.3 Gate Valve and Indicator Posts

Gate valves for underground installation shall be of the inside screw type with counter-clockwise rotation to open. Where indicating type valves are shown or required, indicating valves shall be gate valves with an approved indicator post of a length to permit the top of the post to be located 900 mm above finished grade. Gate valves and indicator posts shall be listed in UL Fire Prot Dir or FM P7825a and FM P7825b.

2.5 ABOVEGROUND PIPING COMPONENTS

Aboveground piping shall be steel .

2.5.1 Steel Piping Components

2.5.1.1 Steel Pipe

Except as modified herein, steel pipe shall be galvanized as permitted by NFPA 13 and shall conform to applicable provisions of ASTM A 795, ASTM A 53/A 53M, or ASTM A 135. Pipe in which threads or grooves are cut shall be Schedule 40 or shall be listed by Underwriters' Laboratories to have a corrosion resistance ratio (CRR) of 1.0 or greater after threads or grooves are cut. Pipe shall be marked with the name of the manufacturer, kind of pipe, and ASTM designation.

2.5.1.2 Fittings for Non-Grooved Steel Pipe

Fittings shall be cast iron conforming to ASME B16.4, steel conforming to ASME B16.9 or ASME B16.11, or malleable iron conforming to ASME B16.3. Galvanized fittings shall be used for piping systems or portions of piping systems utilizing galvanized piping. Fittings into which sprinklers, drop nipples or riser nipples (sprigs) are screwed shall be threaded type. Plain-end fittings with mechanical couplings, fittings that use steel gripping devices to bite into the pipe and segmented welded fittings shall not be used.

2.5.1.3 Grooved Mechanical Joints and Fittings

Joints and fittings shall be designed for not less than 1200 kPa service and shall be the product of the same manufacturer. Fitting and coupling houses shall be malleable iron conforming to ASTM A 47/A 47M, Grade 32510; ductile iron conforming to ASTM A 536, Grade 65-45-12. Gasket shall be the flush type that fills the entire cavity between the fitting and the pipe. Nuts and bolts shall be heat-treated steel conforming to ASTM A 183 and shall be cadmium plated or zinc electroplated.

2.5.1.4 Flanges

Flanges shall conform to NFPA 13 and ASME B16.1. Gaskets shall be non-asbestos compressed material in accordance with ASME B16.21, 1.6 mm thick, and full face or self-centering flat ring type. Bolts shall be squarehead conforming to ASME B18.2.1 and nuts shall be hexagon type conforming to ASME B18.2.2.

2.5.2 Pipe Hangers

Hangers shall be listed in UL Fire Prot Dir or FM P7825a and FM P7825b and of the type suitable for the application, construction, and pipe type and sized to be supported.

2.5.3 Valves

2.5.3.1 Control Valve and Gate Valve

Manually operated sprinkler control valve and gate valve shall be outside stem and yoke (OS&Y) type and shall be listed in UL Bld Mat Dir or FM P7825a and FM P7825b.

2.5.3.2 Check Valve

Check valve 50 mm and larger shall be listed in UL Bld Mat Dir or FM P7825a and FM P7825b. Check valves 100 mm and larger shall be of the swing type with flanged cast iron body and flanged inspection plate, shall have a clear waterway and shall meet the requirements of MSS SP-71, for Type 3 or 4.

2.6 ALARM CHECK VALVE ASSEMBLY

Assembly shall include an alarm check valve, standard trim piping, pressure gauges, bypass, retarding chamber, testing valves, main drain, and other components as required for a fully operational system.

2.7 WATERFLOW ALARM

Mechanically operated, exterior-mounted, water motor alarm assembly shall be provided and installed in accordance with NFPA 13. Water motor alarm assembly shall include a body housing, impeller or pelton wheel, drive shaft, striker assembly, gong, wall plate and related components necessary for complete operation. Minimum 20 mm galvanized piping shall be provided between the housing and the alarm check valve. Drain piping from the body housing shall be minimum 25 mm galvanized and shall be arranged to drain to the outside of the building. Piping shall be galvanized both on the inside and outside surfaces.

2.8 ALARM INITIATING AND SUPERVISORY DEVICES

2.8.1 Sprinkler Waterflow Indicator Switch, Vane Type

Switch shall be vane type with a pipe saddle and cast aluminum housing. The electro-mechanical device shall include a flexible, low-density

polyethylene paddle conforming to the inside diameter of the fire protection pipe. The device shall sense water movements and be capable of detecting a sustained flow of 38 L/min or greater. The device shall contain a retard device adjustable from 0 to 90 seconds to reduce the possibility of false alarms caused by transient flow surges. The switch shall be tamper resistant and contain two SPDT (Form C) contacts arranged to transfer upon removal of the housing cover, and shall be equipped with a silicone rubber gasket to assure positive water seal and a dustproof cover and gasket to seal the mechanism from dirt and moisture.

2.8.2 Valve Supervisory (Tamper) Switch

Switch shall be suitable for mounting to the type of control valve to be supervised open. The switch shall be tamper resistant and contain one set of SPDT (Form C) contacts arranged to transfer upon removal of the housing cover or closure of the valve of more than two rotations of the valve stem.

2.9 FIRE DEPARTMENT CONNECTION

Fire department connection shall be projecting type with cast brass body, matching wall escutcheon lettered "Auto Spkr" with a polished brass finish. The connection shall have two inlets with individual self-closing clappers, caps with drip drains and chains. Female inlets shall have 65 mm diameter American National Fire Hose Connection Screw Threads (NH) per NFPA 1963 .

2.10 SPRINKLERS

Sprinklers with internal O-rings shall not be used. Sprinklers shall be used in accordance with their listed spacing limitations. Temperature classification shall be as indicated. Sprinklers in high heat areas including attic spaces or in close proximity to unit heaters shall have temperature classification in accordance with NFPA 13. Orifice of extended coverage sprinklers shall not exceed 13.5 mm .

2.10.1 Pendent Sprinkler

Pendent sprinkler shall be of the fusible strut or glass bulb type, recessed quick-response type with nominal 12.7 mm orifice. Pendent sprinklers shall have a polished chrome finish.

2.10.2 Upright Sprinkler

Upright sprinkler shall be brass quick-response type and shall have a nominal 12.7 mm or 13.5 mm orifice.

2.10.3 Sidewall Sprinkler

Sidewall sprinkler shall have a nominal 12.7 mm orifice. Sidewall sprinkler shall have a polished chrome finish. Sidewall sprinkler shall be the quick-response type.

2.10.4 Dry Sprinkler Assembly

Dry sprinkler assembly shall be of the type as indicated. Assembly shall include an integral escutcheon. Maximum length shall not exceed maximum indicated in UL Fire Prot Dir. Sprinklers shall have a polished chrome finish.

2.11 DISINFECTING MATERIALS

2.11.1 Liquid Chlorine

Liquid chlorine shall conform to AWWA B301.

2.11.2 Hypochlorites

Calcium hypochlorite and sodium hypochlorite shall conform to AWWA B300.

2.12 ACCESSORIES

2.12.1 Sprinkler Cabinet

Spare sprinklers shall be provided in accordance with NFPA 13 and shall be packed in a suitable metal or plastic cabinet. Spare sprinklers shall be representative of, and in proportion to, the number of each type and temperature rating of the sprinklers installed. At least one wrench of each type required shall be provided.

2.12.2 Pendent Sprinkler Escutcheon

Escutcheon shall be one-piece metallic type with a depth of less than 20 mm and suitable for installation on pendent sprinklers. The escutcheon shall have a factory finish that matches the pendent sprinkler heads.

2.12.3 Pipe Escutcheon

Escutcheon shall be polished chromium-plated zinc alloy, or polished chromium-plated copper alloy. Escutcheons shall be either one-piece or split-pattern, held in place by internal spring tension or set screw.

2.12.4 Sprinkler Guard

Guard shall be a steel wire cage designed to encase the sprinkler and protect it from mechanical damage. Guards shall be provided on sprinklers located as indicated.

2.12.5 Identification Sign

Valve identification sign shall be minimum 150 mm wide x 50 mm high with enamel baked finish on minimum 1.214 mm steel or 0.6 mm aluminum with red letters on a white background or white letters on red background. Wording of sign shall include, but not be limited to "main drain," "auxiliary drain," "inspector's test," "alarm test," "alarm line," and similar wording as required to identify operational components.

2.13 DOUBLE-CHECK VALVE BACKFLOW PREVENTION ASSEMBLY

Double-check backflow prevention assembly shall comply with ASSE 1015. The assembly shall have a bronze, cast-iron or stainless steel body with flanged ends. The assembly shall include pressure gauge test ports and OS&Y shutoff valves on the inlet and outlet, 2-positive-seating check valve for continuous pressure application, and four test cocks. Assemblies shall be rated for working pressure of 1034 kPa. The maximum pressure loss shall be 40 kPa at a flow rate equal to the sprinkler water demand, at the location of the assembly. A test port for a pressure gauge shall be provided both upstream and downstream of the double check backflow prevention assembly valves.

PART 3 EXECUTION

3.1 FIRE PROTECTION RELATED SUBMITTALS

The Fire Protection Specialist shall prepare a list of the submittals from the Contract Submittal Register that relate to the successful installation of the sprinkler systems(s). The submittals identified on this list shall be accompanied by a letter of approval signed and dated by the Fire Protection Specialist when submitted to the Government.

3.2 INSTALLATION REQUIREMENTS

The installation shall be in accordance with the applicable provisions of NFPA 13, NFPA 24 and publications referenced therein. Installation of in-rack sprinklers shall comply with applicable provisions of NFPA 230.

3.3 INSPECTION BY FIRE PROTECTION SPECIALIST

The Fire Protection Specialist shall inspect the sprinkler system periodically during the installation to assure that the sprinkler system is being provided and installed in accordance with the contract requirements. The Fire Protection Specialist shall witness the preliminary and final tests, and shall sign the test results. The Fire Protection Specialist, after completion of the system inspections and a successful final test, shall certify in writing that the system has been installed in accordance with the contract requirements. Any discrepancy shall be brought to the attention of the Contracting Officer in writing, no later than three working days after the discrepancy is discovered.

3.4 ABOVEGROUND PIPING INSTALLATION

3.4.1 Piping in Exposed Areas

Exposed piping shall be installed so as not to diminish exit access widths, corridors or equipment access. Exposed horizontal piping, including drain piping, shall be installed to provide maximum headroom.

3.4.2 Piping in Finished Areas

In areas with suspended or dropped ceilings and in areas with concealed spaces above the ceiling, piping shall be concealed above ceilings. Piping shall be inspected, tested and approved before being concealed. Risers and similar vertical runs of piping in finished areas shall be concealed.

3.4.3 Pendent Sprinklers

Drop nipples to pendent sprinklers shall consist of minimum 25 mm pipe with a reducing coupling into which the sprinkler shall be threaded. Hangers shall be provided on arm-overs to drop nipples supplying pendent sprinklers when the arm-over exceeds 300 mm . Where sprinklers are installed below suspended or dropped ceilings, drop nipples shall be cut such that sprinkler ceiling plates or escutcheons are of a uniform depth throughout the finished space. The outlet of the reducing coupling shall not extend more than 25 mm below the underside of the ceiling. On pendent sprinklers installed below suspended or dropped ceilings, the distance from the sprinkler deflector to the underside of the ceiling shall not exceed 100 mm . Recessed pendent sprinklers shall be installed such that the distance from the sprinkler deflector to the underside of the ceiling shall not exceed the manufacturer's listed range and shall be of uniform depth throughout the finished area.

3.4.3.1 Pendent Sprinkler Locations

Pendent sprinklers in suspended ceilings shall be a minimum of 150 mm from ceiling grid.

3.4.4 Upright Sprinklers

Riser nipples or "sprigs" to upright sprinklers shall contain no fittings between the branch line tee and the reducing coupling at the sprinkler. Riser nipples exceeding 750 mm in length shall be individually supported.

3.4.5 Pipe Joints

Pipe joints shall conform to NFPA 13, except as modified herein. Not more than four threads shall show after joint is made up. Welded joints will be permitted, only if welding operations are performed as required by NFPA 13 at the Contractor's fabrication shop, not at the project construction site. Flanged joints shall be provided where indicated or required by NFPA 13. Grooved pipe and fittings shall be prepared in accordance with the manufacturer's latest published specification according to pipe material, wall thickness and size. Grooved couplings and fittings shall be from the same manufacturer.

3.4.6 Reducers

Reductions in pipe sizes shall be made with one-piece tapered reducing fittings. The use of grooved-end or rubber-gasketed reducing couplings will not be permitted. When standard fittings of the required size are not manufactured, single bushings of the face type will be permitted. Where used, face bushings shall be installed with the outer face flush with the face of the fitting opening being reduced. Bushings shall not be used in elbow fittings, in more than one outlet of a tee, in more than two outlets of a cross, or where the reduction in size is less than 15 mm (.

3.4.7 Pipe Penetrations

Cutting structural members for passage of pipes or for pipe-hanger fastenings will not be permitted. Pipes that must penetrate concrete or masonry walls or concrete floors shall be core-drilled and provided with pipe sleeves. Each sleeve shall be Schedule 40 galvanized steel, ductile iron or cast iron pipe and shall extend through its respective wall or floor and be cut flush with each wall surface. Sleeves shall provide required clearance between the pipe and the sleeve per NFPA 13. The space between the sleeve and the pipe shall be firmly packed with mineral wool insulation. Where pipes penetrate fire walls, fire partitions, or floors, pipes shall be fire stopped in accordance with Section 07840 FIRESTOPPING. In penetrations that are not fire-rated or not a floor penetration, the space between the sleeve and the pipe shall be sealed at both ends with plastic waterproof cement that will dry to a firm but pliable mass or with a mechanically adjustable segmented elastomer seal.

3.4.8 Escutcheons

Escutcheons shall be provided for pipe penetration of ceilings and walls. Escutcheons shall be securely fastened to the pipe at surfaces through which piping passes.

3.4.9 Inspector's Test Connection

Unless otherwise indicated, test connection shall consist of 25 mm pipe connected to the remote branch line ; a test valve located approximately 2 meters above the floor; a smooth bore brass outlet equivalent to the smallest orifice sprinkler used in the system; and a painted metal identification sign affixed to the valve with the words "Inspector's Test."

The discharge orifice shall be located outside the building wall directed so as not to cause damage to adjacent construction or landscaping during full flow discharge.

3.4.10 Drains

Main drain piping shall be provided to discharge at a safe point outside the building . Auxiliary drains shall be provided as indicated and as required by NFPA 13. When the capacity of trapped sections of pipe is less than 11 liters, the auxiliary drain shall consist of a valve not smaller than 15 mm and a plug or nipple and cap. When the capacity of trapped sections of piping is more than 11 liters, the auxiliary drain shall consist of two 25 mm valves and one 50 x 300 mm condensate nipple or equivalent, located in an accessible location. Tie-in drains shall be provided for multiple adjacent trapped branch pipes and shall be a minimum of 25 mm in diameter. Tie-in drain lines shall be pitched a minimum of 15 mm per 3 mm .

3.4.11 Installation of Fire Department Connection

Connection shall be mounted on the exterior wall approximately 900 mm above finished grade . The piping between the connection and the check valve shall be provided with an automatic drip in accordance with NFPA 13 and arranged to drain to the outside.

3.4.12 Identification Signs

Signs shall be affixed to each control valve, inspector test valve, main drain, auxiliary drain, test valve, and similar valves as appropriate or as required by NFPA 13. Hydraulic design data nameplates shall be permanently affixed to each sprinkler riser as specified in NFPA 13.

3.5 UNDERGROUND PIPING INSTALLATION

The fire protection water main shall be laid, and joints anchored, in accordance with NFPA 24. Minimum depth of cover shall be 900 mm . The supply line shall terminate inside the building with a flanged piece, the bottom of which shall be set not less than 150 mm above the finished floor. A blind flange shall be installed temporarily on top of the flanged piece to prevent the entrance of foreign matter into the supply line. A concrete thrust block shall be provided at the elbow where the pipe turns up toward the floor. In addition, joints shall be anchored in accordance with NFPA 24 using pipe clamps and steel rods from the elbow to the flange above the floor and from the elbow to a pipe clamp in the horizontal run of pipe. Buried steel components shall be provided with a corrosion protective coating in accordance with AWWA C203. Piping more than 1500 mm outside the building walls shall meet the requirements of Section 02510 WATER DISTRIBUTION SYSTEM.

3.6 EARTHWORK

Earthwork shall be performed in accordance with applicable provisions of Section 02315 EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS.

3.7 ELECTRICAL WORK

Except as modified herein, electric equipment and wiring shall be in accordance with Section 16415 ELECTRICAL WORK, INTERIOR. Alarm signal wiring connected to the building fire alarm control system shall be in accordance with Section 13851 Fire Alarm and Detection System, Addressable. Wiring color code shall remain uniform throughout the system.

3.8 DISINFECTION

After all system components are installed and hydrostatic test(s) are successfully completed, each portion of the sprinkler system to be disinfected shall be thoroughly flushed with potable water until all entrained dirt and other foreign materials have been removed before introducing chlorinating material. Flushing shall be conducted by removing the flushing fitting of the cross mains and of the grid branch lines, and then back-flushing through the sprinkler main drains. The chlorinating material shall be hypochlorites or liquid chlorine. Water chlorination procedure shall be in accordance with AWWA M20. The chlorinating material shall be fed into the sprinkler piping at a constant rate of 50 parts per million (ppm). A properly adjusted hypochlorite solution injected into the system with a hypochlorinator, or liquid chlorine injected into the system through a solution-fed chlorinator and booster pump shall be used. Chlorination application shall continue until the entire system is filled. The water shall remain in the system for a minimum of 24 hours. Each valve in the system shall be opened and closed several times to ensure its proper

disinfection. Following the 24-hour period, no less than 25 ppm chlorine residual shall remain in the system. The system shall then be flushed with clean water until the residual chlorine is reduced to less than one part per million. Samples of water in disinfected containers for bacterial examination will be taken from several system locations which are approved by the Contracting Officer. Samples shall be tested for total coliform organisms (coliform bacteria, fecal coliform, streptococcal, and other bacteria) in accordance with AWWA EWW. The testing method shall be either the multiple-tube fermentation technique or the membrane-filter technique. The disinfection shall be repeated until tests indicate the absence of coliform organisms (zero mean coliform density per 100 milliliters) in the samples for at least 2 full days. The system will not be accepted until satisfactory bacteriological results have been obtained. After successful completion, verify installation of all sprinklers and plugs and pressure test the system.

3.9 PIPE COLOR CODE MARKING

Color code marking of piping shall be as specified in Section 09900 PAINTING, GENERAL.

3.10 PRELIMINARY TESTS

The system, including the underground water mains, and the aboveground piping and system components, shall be tested to assure that equipment and components function as intended. The underground and aboveground interior piping systems and attached appurtenances subjected to system working pressure shall be tested in accordance with NFPA 13 and NFPA 24. Upon completion of specified tests, the Contractor shall complete certificates as specified in paragraph SUBMITTALS.

3.10.1 Underground Piping

3.10.1.1 Flushing

Underground piping shall be flushed in accordance with NFPA 24. This includes the requirement to flush the lead-in connection to the fire protection system at a flow rate not less than the calculated maximum water demand rate of the system.

3.10.1.2 Hydrostatic Testing

New underground piping shall be hydrostatically tested in accordance with NFPA 24. The allowable leakage shall be measured at the specified test pressure by pumping from a calibrated container. The amount of leakage at the joints shall not exceed 1.89 liters per hour per 100 gaskets or joints, regardless of pipe diameter.

3.10.2 Aboveground Piping

3.10.2.1 Hydrostatic Testing

Aboveground piping shall be hydrostatically tested in accordance with NFPA 13 at not less than 1400 kPa or 350 kPa in excess of maximum system

operating pressure and shall maintain that pressure without loss for 2 hours. There shall be no drop in gauge pressure or visible leakage when the system is subjected to the hydrostatic test. The test pressure shall be read from a gauge located at the low elevation point of the system or portion being tested.

3.10.2.2 Backflow Prevention Assembly Forward Flow Test

Each backflow prevention assembly shall be tested at system flow demand, including all applicable hose streams, as specified in NFPA 13. The Contractor shall provide all equipment and instruments necessary to conduct a complete forward flow test, including 65 mm diameter hoses, playpipe nozzles, calibrated pressure gauges, and pitot tube gauge. The Contractor shall provide all necessary supports to safely secure hoses and nozzles during the test. At the system demand flow, the pressure readings and pressure drop (friction) across the assembly shall be recorded. A metal placard shall be provided on the backflow prevention assembly that lists the pressure readings both upstream and downstream of the assembly, total pressure drop, and the system test flow rate. The pressure drop shall be compared to the manufacturer's data.

3.10.3 Testing of Alarm Devices

Each alarm switch shall be tested by flowing water through the inspector's test connection. Each water-operated alarm devices shall be tested to verify proper operation.

3.10.4 Main Drain Flow Test

Following flushing of the underground piping, a main drain test shall be made to verify the adequacy of the water supply. Static and residual pressures shall be recorded on the certificate specified in paragraph SUBMITTALS. In addition, a main drain test shall be conducted each time after a main control valve is shut and opened.

3.11 FINAL ACCEPTANCE TEST

Final Acceptance Test shall begin only when the Preliminary Test Report has been approved. The Fire Protection Specialist shall conduct the Final Acceptance Test and shall provide a complete demonstration of the operation of the system. This shall include operation of control valves and flowing of inspector's test connections to verify operation of associated waterflow alarm switches. After operation of control valves has been completed, the main drain test shall be repeated to assure that control valves are in the open position. In addition, the representative shall have available copies of as-built drawings and certificates of tests previously conducted. The installation shall not be considered accepted until identified discrepancies have been corrected and test documentation is properly completed and received.

3.12 ON-SITE TRAINING

The Fire Protection Specialist shall conduct a training course for operating and maintenance personnel as designated by the Contracting

Officer. Training shall be provided for a period of 4 hours of normal working time and shall start after the system is functionally complete but prior to the Preliminary Tests and Final Acceptance Test. Training shall be provided on two consecutive days. The On-Site Training shall cover all of the items contained in the approved Operating and Maintenance Instructions.

-- End of Section --