AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF PAGES
N/A	1	65

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0003	AUG 18, 2003	N/A	SPEC. NO. 1312

6. ISSUED BY CODE

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
SACRAMENTO, CALIFORNIA 95814-2922

7. ADMINISTERED BY *(If other than Item 6)* CODE

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS,LOS ANGELES DISTRICT
P.O. BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE FACILITY CODE

(√) X

9A. AMENDMENT OF SOLICITATION NO.
DACA09-03-B-0009

9B. DATED *(SEE ITEM 11)*
N/A

10A. MODIFICATION OF CONTRACTS/ORDER NO.
N/A

10B. DATED *(SEE ITEM 13)*
N/A

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 1 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 you 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)*
N/A

NOTE: ITEM 13 BELOW IS N/A.

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

(√)	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. N/A
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* 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 *(Specify type of modification and authority)* N/A

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.)*

UAV Training Facility
Ft. Huachuca, AZ

2 Encl

1. Revised Pages: Request for Information, Section 02811, Section 02870, Section 02950, 07413-6, 07416-13, 08110-6, 10800-4, 10800-5, 11311-3, 13120-15, 14630-8
2. Revised Drawings: A4.00,A4.01,A4.02,A5.08,C130,C1.32,C1.40,C1.41,C1.42,C1.43,C1.50,C1.51,C1.52,C1.53,C1.54,C1.55, C1.60, C1.61,C1.62,C1.63,C1.64,C2.01,C2.02,C2.03,C5.01,C5.02,C5.03,C5.04,C5.05,C5.06,E1.05,E6.04

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

REQUEST FOR INFORMATION REPORT

REPORT NO. **UAV-001**

DATE RECEIVED	12/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
ARCHITECT	NEUMYER	**PHONE**	213-452-3249/916-557-6935
DATE COMPLETED	12/08/03	**REQUESTED BY**	CESPL
APPROVED BY	_____	**SPEC. NO.**	1312

PROBLEM TITLE: Downspout boot and Rucksack Storage cubicles

PROBLEM STATEMENT: What does downspout boot tie in to? More information needed on Rucksack storage cubicles: names of manufacturers, attachment details, dimension from first shelf to floor

RESPONSE:

1. 3″ storm drain shall connect to the boots and graded to daylight 10′ from the building.

2. Names of manufacturers: E-Z Shelving Systems, Inc., RAKKS Architectural Shelving Systems, Montel High Density Storage Systems.

3. Dividers can be attached to the shelves with self tapping screws, pop-rivets or as recommended by the shelving manufacturer, so long as ends of screws do not present a hazard to the contents of the adjacent shelf.

4. Numbers can be attached with pop-rivets, one on each side of each number.

5. The side and back panels can be attached to the shelving support structure, as recommended by the manufacturer.

6. The dimension from the bottom shelf to the floor is 4″ or the depth of the bottom shelving bracket, whichever is greater.

CC: CSS, PM, TECH MGR, CESPL-CO

REQUEST FOR INFORMATION REPORT

REPORT NO. **UAV-002**

DATE RECEIVED	12/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
LANDSCAPE ARCH.	P. HILL	**PHONE**	213-452-3249/916-557-6935
ENGINEER	GROSSARTH	**REQUESTED BY**	CESPL
DATE COMPLETED	12/08/03	**SPEC. NO.**	1312
APPROVED BY	_____		

PROBLEM TITLE: Site Furnishings and Roof Framing plans

PROBLEM STATEMENT: As per Section 02870 – Site Furnishings, paragraph 2.6, Shade Structures: We cannot find the 16’ x 16’ Shade Structure (Basketball Area) on the drawings. There is a Structural Roof Framing plan S1.04 for the AIB Annex. There are no other Roof Framing Plans.

RESPONSE:

1. The Basketball area does not exist, however the shade structure does. See Sheets C1.55 and L1.0.

2. This is correct. The pre-engineered building manufacturer is responsible for the design and therefore there are no framing plans for those buildings.

CC: CSS, PM, TECH MGR, CESPL-CO

REQUEST FOR INFORMATION REPORT

REPORT NO. **UAV-003**

DATE RECEIVED	12/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
ARCHITECT	NEUMYER	**PHONE**	213-452-3249/916-557-6935
DATE COMPLETED	12/08/03	**REQUESTED BY**	CESPL
APPROVED BY	_____	**SPEC. NO.**	1312

PROBLEM TITLE: Site Furnishings, Trench Drain, Oil/Water Separator, Soils Report, Comm Racks

PROBLEM STATEMENTS: 1. Site furnishings as per specification Section 02860 that are not shown on drawings include: bike racks, barbeque grills, volleyball posts and net, volleyball court, basketball components, basketball court striping.

2. Regarding the Trench Drain and oil Water Separator at the Maintenance Facility, shown on A1.01 and 16,17/A5.08, please clarify the following: Detail 17/A5.08 calls for Precast Concrete Spill Containment Trench. Detail 16/A5.08 shows a Concrete Cast-in-Place Trench. Please clarify.

3. Does a Soils Report for the project exist? If it does, how can we get a copy?

4. Regarding Specification Section 14630, Overhead Electric Cranes, Paragraph 1.4.4, “Nuclear Safety Analysis”. We do not understand this requirement Please clarify.

5. At the AIB Annex, SheetA1.00, the Control Console Layout calls for two (2) CFCI Equipment Racks. No other information regarding the CFCI Equipment Racks can be found. Please clarify.

6. Sheet C1.61, Note 3 refers to Sheet A1.01 for continuation of Trench Drain Plumbing. No information shown on Sheet A1.01.

7. Specification Section 11 call for an Above Grade Mounted Oil Water Separator. Please verify the stipulation that it is to be above grade.

8.Sheet C1.61 refers to a not #7 but the note does not exist. Please advise.

RESPONSES:

1. These amenities were inadvertently left in the specification. They do not apply to this project and are to be disregarded.

CC: CSS, PM, TECH MGR, CESPL-CO

2. Both details show the same construction type. One is called out as precast. It does not have to be. Therefore delete the work “precast” from the detail.

3. The Geotechnical Report may be obtained from the Corps of Engineers, Los Angeles District.

4. For information refer to ASME NOG-1, but para. 1.4.4 does not apply to this project and is to be disregarded. The next amendment will included deletion of para. 1.4.4.

5. See sheet E2.09.

6. Trench drain connection to sewer line shall be per oil/water separator manufacturer’s specifications.

7. Below grade oil/water separator shall be used.\

8. Note #7 is a general note for all utility trench bedding and backfilling.

CC: CSS, PM, TECH MGR, CESPL-CO

REQUEST FOR INFORMATION REPORT

REPORT NO. **UAV-004**

DATE RECEIVED	12/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
ARCHITECT	NEUMYER	**PHONE**	213-452-3249/916-557-6935
DATE COMPLETED	12/08/03	**REQUESTED BY**	CESPL
APPROVED BY	_____	**SPEC. NO.**	1312

PROBLEM TITLE: UPS System

PROBLEM STATEMENTS: 1. Can UPS systems with mechanical energy storage be considered vs. chemical energy storage? 2. How many 80kVA units will be required? 3. Is there a stand by generator on site as back up to the UPS?

RESPONSES:

1. No. See sht. E6.09. Spec section 16265A.

2. One. See sht. E6.09.

3. No. See sht. E6.09.

CC: CSS, PM, TECH MGR, CESPL-CO

REQUEST FOR INFORMATION REPORT

REPORT NO. UAV-005

DATE RECEIVED	12/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
ARCHITECT	NEUMYER	**PHONE**	213-452-3249/916-557-6935
DATE COMPLETED	12/08/03	**REQUESTED BY**	CESPL
APPROVED BY	_____	**SPEC. NO.**	1312

PROBLEM TITLE: Landscape items

PROBLEM STATEMENTS: **1**. Sheet L1.01 shows layout for the Masonry Site Walls. Most of the dimensions are not modular. This will require extensive cutting of CMU. Are these the correct dimensions?

2. There is no mention of Durowal in Spec. Section 04200. Does this mean none is required?

3. We find no Product ID or Manufacturer for the “Octo Stone” Pavers. Is there a Manufacturer?

4. Sheet L1.01 shows two (2) radius Walls. The radius is too small to use 8 x8x16 CMU. We are figuring to use 8x8x8 halves. Please confirm.

5. Drawing C!.61 makes reference to a Match Line show on C1.62. The match Line shown on C1.62 does not appear to match the line shown on C1.61. This will affect the length of the utility lines. Please clarify.

RESPONSES:

1. The dimensions on sheet L1.01 indicate the locations/dimensions for the ground paving and pavers not the cmu walls. The cmu walls should be placed adjacent to the paved areas. The actual cmu wall does not have to be the exact length of the pavement area because it located within corner and turns in the pavement. On the circular entry wall that will serve as a visual screen for the mechanical equipment that is located in front of the new building there may have to be some cutting to make that work.

2. Correct. Durowal is not part of this project.

3. You are correct. I was trying to match the paver blocks on existing UAV building. A block that looks similar to the existing UAV building will be acceptable. I believe the uni-decostone is a pretty similar and commonly available. See graphic below of the shape.

CC: CSS, PM, TECH MGR, CESPL-CO

4. You are correct.

5. Matchline corrected on Amendment #1.

CC: CSS, PM, TECH MGR, CESPL-CO

REQUEST FOR INFORMATION REPORT

REPORT NO. UAV-006

DATE RECEIVED	13/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
~~**ARCHITECT**~~**ENGINEER**		~~NEUMYER~~JONES	**PHONE** 213-452-3249/916-557-6935
DATE COMPLETED	~~12~~14/08/03	**REQUESTED BY**	CESPL
APPROVED BY	_____	**SPEC. NO.**	1312

PROBLEM TITLE: Conduit
~~Landscape items~~

PROBLEM STATEMENT~~S~~: MH#'s are not in order from E1.06 to E1.08. Please Clarify.~~**1**. Sheet L1.01 shows layout for the Masonry Site Walls. Most of the dimensions are not modular. This will require extensive cutting of CMU. Are these the correct dimensions? **2**. There is no mention of Durowal in Spec. Section 04200. Does this mean none is required? **3**. We find no Product ID or Manufacturer for the "Octo Stone" Pavers. Is there a Manufacturer? **4**. Sheet L1.01 shows two (2) radius Walls. The radius is too small to use 8 x8x16 CMU. We are figuring to use 8x8x8 halves. Please confirm. **5**. Drawing C!.61 makes reference to a Match Line show on C1.62. The match Line shown on C1.62 does not appear to match the line shown on C1.61. This will affect the length of the utility lines. Please clarify.~~

RESPONSE~~S~~: The manhole numbering designations are wrong on sheets 1.06, 1.08 and 1.10. See below.

	Current Designation		Correct Designation
Sht E1.06	MH-C19		MH-C20
	MH-C20		MH-C21
	MH-C21		MH-C22
	MH-C22		MH-C23
Sht E1.07	MH-C16		MH-C18
	MH-C17		MH-C19
Sht. E1.10	MH-C23		MH-C24
	MH-C25		MH-C26

CC: CSS, PM, TECH MGR, CESPL-CO

-	MH-C26 MH-C27	-	MH-C27 MH-C28

~~1.~~

~~2. Correct. Durowal is not part of this project.~~

~~3.~~

~~4.~~

~~5. Matchline corrected on Amendment #1.~~

CC: CSS, PM, TECH MGR, CESPL-CO

REQUEST FOR INFORMATION REPORT

REPORT NO. UAV-

DATE RECEIVED	13/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
~~**ARCHITECT**~~**ENGINEER**		~~NEUMYER~~MORITA **PHONE**	213-452-3249/916-557-6935
DATE COMPLETED	~~12~~14/08/03	**REQUESTED BY**	CESPL
APPROVED BY	_____	**SPEC. NO.**	1312

PROBLEM TITLE: Fire Protection Sprinkler System
~~Landscape items~~

PROBLEM STATEMENT~~S~~: In reference to the fire protection drawings FP1.01, is the fire protection sprinkler system to extend to~~**1**. Sheet L1.01 shows layout for the Masonry Site Walls. Most of the dimensions are not modular. This will require extensive cutting of CMU. Are these the correct dimensions? **2**. There is no mention of Durowal in Spec. Section 04200. Does this mean none is required? **3**. We find no Product ID or Manufacturer for the "Octo Stone" Pavers. Is there a Manufacturer? **4**. Sheet L1.01 shows two (2) radius Walls. The radius is too small to use 8 x8x16 CMU. We are figuring to use 8x8x8 halves. Please confirm. **5**. Drawing C!.61 makes reference to a Match Line show on C1.62. The match Line shown on C1.62 does not appear to match the line shown on C1.61. This will affect the length of the utility lines. Please clarify.~~ the underfloor area of the Simulator Room, Room 102?

RESPONSE~~S~~: This depends on the following: Power cables installed in the ceiling plenum or below the raised floor shall meet the requirements of NFPA 70, except that use of nonmetallic conduit shall not be permitted. Data..... If plenum rated cable or conduit is not provided, an extinguishing system shall be provided in the under floor or ceiling area where the volume of the space exceeds 5000 sq. ft. This requirement stems from MIL-HDBK-1008C, "Fire Protection for Facilities Engineering, Design, and Construction."

~~1.~~

~~2. Correct. Durowal is not part of this project.~~

~~3.~~

~~4.~~

~~5. Matchline corrected on Amendment #1.~~

CC: CSS, PM, TECH MGR, CESPL-CO

REQUEST FOR INFORMATION REPORT

REPORT NO. UAV-

DATE RECEIVED	13/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
~~**ARCHITECT**~~**ENGINEER**		~~NEUMYER~~Jones	**PHONE** 213-452-3249/916-557-6935
DATE COMPLETED	~~12~~14/08/03	**REQUESTED BY**	CESPL
APPROVED BY	_____	**SPEC. NO.**	1312

PROBLEM TITLE: Security System
~~Landscape items~~

PROBLEM STATEMENT~~S~~: ~~**1**. Sheet L1.01 shows layout for the Masonry Site Walls. Most of the dimensions are not modular. This will require extensive cutting of CMU. Are these the correct dimensions? **2**. There is no mention of Durowal in Spec. Section 04200. Does this mean none is required? **3**. We find no Product ID or Manufacturer for the "Octo Stone" Pavers. Is there a Manufacturer? **4**. Sheet L1.01 shows two (2) radius Walls. The radius is too small to use 8 x8x16 CMU. We are figuring to use 8x8x8 halves. Please confirm. **5**. Drawing C!.61 makes reference to a Match Line show on C1.62. The match Line shown on C1.62 does not appear to match the line shown on C1.61. This will affect the length of the utility lines. Please clarify.~~ We are interested in providing a price to install the Security System called for under section 13720. We meet the specification for performance however there is a reference on the drawings to use a Simplex/Grinnell "Sensor Matic" product because of the need to use the same cards. There is reference also to Sensor Matic and ADT as equals, however these are the same company (owned by Tyco) so there wouldn't be much competition even if all three of these companies bid on the project. The security system appears to be a "stand-alone" system that is not networked into any existing system. My question is, can Climatec bid an equal system that can use the existing card system? We can normally transfer databases from any type of access control security system using comma delimited file transfers, so that is not normally a problem. Please let me know if you need further clarification.

RESPONSE~~S~~: The RFI has been reviewed and it has been determined that an equal system may be bid for following reasons:

The card key system is a stand-alone system and is not tying into the existing system at the existing AIB so another system that meets the requirements of the manufacturer will suffice.

"Or Equal" is not stated on drawings or in specs and there is no sole source justification nor a reason for a sole source justification.

CC: CSS, PM, TECH MGR, CESPL-CO

A benefit of the new card key system for the new AIB annex is to have the capability to accept existing card keys from the existing AIB so people will not have to keep two card keys. The existing card key system used at the existing AIB is a different system than the proprietary system being specified in drawing/specs so if the reason was to maintain compatibility w/ existing card keys, this reason would not be valid. It does not matter anyway because other card key systems can be programmed to accept existing cards.

As part of the next addendum "Or Equal" will be specified for the card key system. I have given a verbal to the individual submitting the RFI.

~~1.~~

~~2. Correct. Durowal is not part of this project.~~

~~3.~~

~~4.~~

~~5. Matchline corrected on Amendment #1.~~

CC: CSS, PM, TECH MGR, CESPL-CO

REQUEST FOR INFORMATION REPORT

REPORT NO. UAV-

DATE RECEIVED	13/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
~~**ARCHITECT**~~**ENGINEER**		~~NEUMYER~~Little/Morita	**PHONE** 213-452-3249/916-557-6935
DATE COMPLETED	~~12~~1x/08/03	**REQUESTED BY**	CESPL
APPROVED BY	_____	**SPEC. NO.**	1312

PROBLEM TITLE: Fire Protection
~~Landscape items~~

PROBLEM STATEMENT~~S~~: ~~**1**. Sheet L1.01 shows layout for the Masonry Site Walls. Most of the dimensions are not modular. This will require extensive cutting of CMU. Are these the correct dimensions? **2**. There is no mention of Durowal in Spec. Section 04200. Does this mean none is required? **3**. We find no Product ID or Manufacturer for the "Octo Stone" Pavers. Is there a Manufacturer? **4**. Sheet L1.01 shows two (2) radius Walls. The radius is too small to use 8 x8x16 CMU. We are figuring to use 8x8x8 halves. Please confirm. **5**. Drawing C!.61 makes reference to a Match Line show on C1.62. The match Line shown on C1.62 does not appear to match the line shown on C1.61. This will affect the length of the utility lines. Please clarify.~~ We have reviewed the fire protection water supply information for the new maintenance facility #2 building on drawings C1.61 and C1.62. We request clarification on the following:

1. The water test data on C1.62 note 2 states 80 psi static pressure, residual pressure 62 psi at 20 psi.

Please confirm which value, the 62 psi or 20 psi is the pitot reading in order to determine available water supply.

Please confirm the size of the orifice used to measure the pitot reading and coefficient.

This information is needed to size the fire protection piping. Our preliminary calculations based upon the 62 psi reading being the pitot reading with a 2.5" outlet indicates the water supply and 6" under ground supply pipe is inadequate for the foam fire protection.

In addition, we request the same clarification for the water supply information stated on drawing C1.63 as well as the location of the hydrant for this flow data. The location of the hydrant is not noted on drawing C1.63

CC: CSS, PM, TECH MGR, CESPL-CO

RESPONSES~~:~~ The notes regarding water pressure on both drawings were stated incorrectly and removed from the drawings. Pressure at the New Maintenance Facility #2 will be sufficient to supply adequate water supply at the base of the riser. The Ft. Huachuca will adjust pressure reducers above the facility to provide adequate pressure. The New AIB has sufficient water supply existing for the needed fire system as indicated on the mechanical drawings.

~~1.~~

~~2. Correct. Durowal is not part of this project.~~

~~3.~~

~~4.~~

~~5. Matchline corrected on Amendment #1.~~

CC: CSS, PM, TECH MGR, CESPL-CO

REQUEST FOR INFORMATION REPORT

REPORT NO. UAV-

DATE RECEIVED	13/08/03	**PROJECT**	UAV Training Facilities
RECEIVED BY	NEUMYER	**LOCATION**	Ft. Huachuca AZ
DATE NEEDED	ASAP	**P.O.C.**	Sandra Oquita/Garry Hill
~~**ARCHITECT**~~**ARCHITECT**		NEUMYER~~NEUMYER~~	**PHONE** 213-452-3249/916-557-6935
DATE COMPLETED	~~12~~13/08/03	**REQUESTED BY**	CESPL
APPROVED BY	_____	**SPEC. NO.**	1312

PROBLEM TITLE: Metal wall and roof panels
~~Landscape items~~

PROBLEM STATEMENT~~S~~: ~~**1**. Sheet L1.01 shows layout for the Masonry Site Walls. Most of the dimensions are not modular. This will require extensive cutting of CMU. Are these the correct dimensions? **2**. There is no mention of Durowal in Spec. Section 04200. Does this mean none is required? **3**. We find no Product ID or Manufacturer for the "Octo Stone" Pavers. Is there a Manufacturer? **4**. Sheet L1.01 shows two (2) radius Walls. The radius is too small to use 8 x8x16 CMU. We are figuring to use 8x8x8 halves. Please confirm. **5**. Drawing C!.61 makes reference to a Match Line show on C1.62. The match Line shown on C1.62 does not appear to match the line shown on C1.61. This will affect the length of the utility lines. Please clarify.~~ 1. What type of wall panel does the Corps want on the three (3) pre-engineered buildings? Wall panel spec (7413A, 1.2.2) says "panel profile shall be as shown on the drawings." 2.1.1 says, "concealed fasteners." Only profiles for wall panels on pre-engineered bldgs that I can find are on A5.06 where a "ribbed" panel is shown. Ribbed panels are not concealed fastener type panels.

2. What type roof panel does the Corps want on the three (3) pre-engineered buildings? Spec. calls for standing seam roof panels. Only profiles for roof panels on pre-engineered buildings that I can find are on Sheet A5.03 where a "ribbed" panel is shown. Ribbed panels are not standing seam panels.

3. What thickness of finish is required on roof and wall panels, interior and exterior? Spec 07416A, 2.6 and 07413A, 2.2 say both interior and exterior nominal 1 mil dry film thickness, however calls for 0.7 mil top coat and 1.0 mil primer for exterior. This equals 1.7 mil total. Spec. 13120A, 2.3.4 says nominal 2 mil thickness for exterior and same for interior. Standard in the industry is 0.7-0.8 mil top coat and 0.2-0.25 mil primer, which is a total of 1.0 mil nominal.

RESPONSE~~S~~:

CC: CSS, PM, TECH MGR, CESPL-CO

1. Spec section 7413A addresses standing seam products and procedures for assembly. These are to be used on the AIB Annex. The shape to be used on the three pre-engineered buildings shall be a shape standard with the manufacturer, and shall be compatible with the existing maintenance facility, which is a ribbed design and is shown on A5.06. Fasteners shall be standard for this product type and profile as indicated in para. 2.4 of 7413A. ~~1.~~

~~2. Correct. Durowal is not part of this project.~~

~~3.~~

~~4.~~

~~5. Matchline corrected on Amendment #1.~~

2. Spec section 7413A addresses standing seam products and procedures for assembly. These are to be used on the AIB Annex. The shape to be used on the three pre-engineered buildings shall be a shape standard with the manufacturer, and shall be compatible with the existing maintenance facility, which is a ribbed design and is shown on A5.03. Fasteners shall be standard for this product type and profile.

3. The primer thickness shall be not less than 0.2 mil instead of the 1.0 mil specified and the total shall be 1.0 mil nominal. The specifications will be corrected by amendment.

CC: CSS, PM, TECH MGR, CESPL-CO

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02811

IRRIGATION SYSTEMS

-- End of Section Table of Contents --

SECTION 02811

IRRIGATION SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

The irrigation design is not included in this design package. The Contractor shall provide the design and installation to achieve full irrigation coverage of all plantings and turf. Provide a complete automatic turf and drip irrigation system for all plantings as per specifications and details. Layout of circuits shall be clearly defined into hydrozones/microclimates with similar water requirements and precipitation rates. Ensure each plant receives the required amounts of water without over or under saturating other plants within the same circuit. The irrigation system shall be designed based on the static pressure at the backflow preventer at the time of installation. A pressure test shall be performed prior to the start of work. Design shall meet all local codes and regulations and shall operate properly within the acceptable use of all equipment used.

1.2 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 53	(1989a) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM B 32	(1989) Solder Metal
ASTM B 43	(1988) Seamless Red Brass Pipe, Standard Sizes
ASTM B 88	(1989) Seamless Copper Water Tube
ASTM D 1785	(1989) Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
ASTM D 2241	(1989) Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)
ASTM D 2287	(1981; R 1988) Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds
ASTM D 2464	(1989) Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
ASTM D 2466	(1989) Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40

ASTM D 2564	(1988) Solvent Cements for (Poly Vinyl Chloride) (PVC) Plastic Pipe and Fittings
ASTM D 2774	(1972; R 1983) Underground Installation of Thermostatic Pressure Piping
ASTM D 2855	(1983) Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings
ASTM D 3261	(1988a) Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
ASTM F 441	(1989) Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME A112.26.1M	(1984) Water Hammer Arresters
ASME B1.2	(1983) Gages and Gaging for Unified Inch Screw Threads
ASME B16.3	(1985) Malleable Iron Threaded Fittings, Classes 150 and 300
ASME B16.15	(1985) Cast Bronze Threaded Fittings, Classes 125 and 250
ASME B16.18	(1984) Cast Copper Alloy Solder Joint Pressure Fittings
ASME B16.22	(1989) Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
ASME B40.1	(1985) Gauges - Pressure Indicating Dial Type - Elastic Element

AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE)

ASSE 1012	(Sep 1978) Backflow Preventers with Intermediate Atmospheric Vent
ASSE 1013	(Apr 1988) Reduced Pressure Principle Backflow Preventers
ASSE 1020	(Feb 1989) Pressure Vacuum Breaker, Assembly (Recommended for Outdoor Usage)

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C509	(1987) Resilient-Seated Gate Valves, 3 through 12 NPS, for Water and Sewerage Systems
AWWA C901	(1988; Errata) Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. Through 3 in., for Water Service

FEDERAL SPECIFICATIONS (FS)

FS 0-F-506	(Rev C) Flux, Soldering; Paste and Liquid
FS WW-H-001220	(Basic) Head, Sprinkler, (Underground Connected)
FS WW-S-610	(Rev B; Am 1) Sprinkler, Lawn, (Surface Connected)

FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH (FCCHR)

FCCHR-01	(Jun 1988; 8th Ed) Manual of Cross-Connection Control

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

MSS SP-80	(1987) Bronze Gate, Globe, Angle and Check Valves
MSS SP-85	(1985) Cast Iron Globe and Angle Valves - Flanged and Threaded Ends

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA ICS 2	(1988; Rev 1) Industrial Control Devices, Controllers and Assemblies
NEMA ICS 6	(1988; Rev 1) Enclosures for Industrial Control and Systems

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(1990) National Electrical Code

1.3 PERFORMANCE REQUIREMENTS

System shall operate with a minimum water pressure of 50 pounds per square inch (psi) at connection to main.

1.4 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL DESCRIPTIONS:

SD-01 Data

Design Analysis and Calculations; GA.

Design analyses and pressure calculations verifying that system will provide the irrigation requirements.

Spare Parts; GA.

Spare parts data for each different item of material and equipment specified, after approval of the related submittals and not later than the start of the field tests. The data shall include a complete list of parts and supplies, with current unit prices and source of supply.

SD-04 Drawings

Sprinkler System; GA.

Detail drawings showing all irrigation work including valves, sprinkler heads, backflow preventers, automatic controllers, emitter heads, lateral and mainlines. Drawing shall include legends and a complete list of equipment and materials, and manufacturer's descriptive and technical literature, performance charts and curves, catalog cuts, and installation instructions. Drawings shall also contain complete wiring and schematic diagrams and any other details required to demonstrate that the system has been coordinated and will function as a unit. Drawings shall show proposed system layout, type and number of heads and emitters, zone valves, drain pockets, backflow devices, controllers, and mounting details of controllers.

As-built Drawings which provide current factual information after construction showing locations of mains, heads, valves, and controllers including deviations from and amendments to the drawings and changes in the work shall be included.

SD-09 Reports

Field Tests; GA.

Performance test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, upon completion and testing of the installed system. Each test report shall indicate the final position of control valves.

Operations & Maintenance Manuals; GA.

Six copies of operations and six copies of maintenance manuals for the equipment furnished. One complete set prior to field testing and the remainder upon acceptance. Manuals shall be approved prior to the field training course. Operating manuals shall detail the step-by-step procedures required for system startup, operation, and shutdown. Operating manuals shall include the manufacturer's name, model number, parts list, and brief description of all equipment and their basic operating features. Maintenance manuals shall list routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides. Maintenance manuals shall include piping and equipment layout, simplified wiring and control diagrams of the system as installed, and system programming schedule.

SD-13 Certificates

Sprinkler System; GA.

The material supplier's or equipment manufacturer's statement that the supplied material or equipment meets specified requirements. Each certificate shall be signed by an official authorized to certify in behalf of material supplier or product manufacturer and shall identify quantity and date or dates of shipment or delivery to which the certificates apply.

1.5 DELIVERY AND STORAGE

All equipment delivered and placed in storage shall be protected from the weather; excessive humidity and temperature variation; direct sunlight (in the case of plastic or rubber materials); and dirt, dust, or other contaminants.

1.6 FIELD MEASUREMENTS

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

PART 2 PRODUCTS

2.1 GENERAL MATERIALS AND EQUIPMENT REQUIREMENTS

2.1.1 Standard Products

Materials and equipment shall be the standard products of a manufacturer who has produced similar systems which have performed well for a minimum period of 2 years prior to bid opening. Equipment shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the site.

2.1.2 Nameplates

Each item of equipment shall have the manufacturer's name, address, type or style, model or serial number, and catalog number on a plate secured to the item of equipment.

2.1.3 Extra Stock

The following extra stock shall be provided: Ten heads of each size and type, two valve keys for operating manual valves, two wrenches for removing and installing each type of head, two quick coupler keys and hose swivels, and four irrigation controller housing keys.

2.2 PIPING MATERIALS

2.2.1 Copper Tubing and Associated Fittings

2.2.1.1 Tubing

Tubing shall conform to requirements of ASTM B 88, Type K.

2.2.1.2 Fittings

Fittings shall conform to ASME B16.22 and ASME B16.18, solder joint. Solder shall conform to ASTM B 32 95-5 tin-antimony. Flux shall conform to FS 0-F-506, Type I.

2.2.2 Red Brass Pipe and Associated Fittings

2.2.2.1 Pipe

Pipe shall conform to requirements of ASTM B 43, regular.

2.2.2.2 Fittings

Fittings shall be Class 250, cast bronze threaded conforming to the requirements of ASME B16.15.

2.2.3 Galvanized Steel Pipe and Associated Fittings

2.2.3.1 Pipe

Pipe shall conform to requirements of ASTM A 53, Schedule 40.

2.2.3.2 Fittings

Fittings shall be Class 150 conforming to requirements of ASME B16.3.

2.2.4 Polyvinyl Chloride (PVC) Pipe, Fittings, Solvent Cement, and Risers

2.2.4.1 Pipe

Pipe shall conform to the requirements of ASTM D 1785, PVC 1120 Schedule 40; and ASTM D 2241, PVC 1120 SDR 21, Class 200.

2.2.4.2 Fittings

Solvent welded socket type fittings shall conform to requirements of ASTM D 2466, Schedule 40. Threaded type fittings shall conform to requirements of ASTM D 2464, Schedule 80.

2.2.4.3 Solvent Cement

Solvent cement shall conform to the requirements of ASTM D 2564.

2.2.4.4 Risers

Risers shall be schedule 80 PVC threaded at both ends and shall conform to ASTM D 2241.

2.2.5 Polyethylene (PE) Plastic Piping

2.2.5.1 Pipe

Pipe shall conform to AWWA C901, outside diameter base with dimension ratio (DR) of 9.3 to provide 150 psi minimum pressure rating.

2.2.5.1.# Distribution Tubing

Distribution tubing shall be linear low density polyethylene tubing. It shall have a nominal reference of 1/4 inch, outside diameter of .350 inch, inside diameter of .250 inch, and a average wall thickness of .050 inch. Tubing shall be vinyl plastic extruded from non-rigid chloride, integrally algae-resistant, homogeneous throughout, smooth inside and outside, free from foreign materials, cracks, serrations, blisters and other effects.

2.2.5.1.# Fittings

Fittings shall conform to ASTM D 3261, DR of 9.3.

2.2.6 Dielectric Fittings

Fittings shall conform to ASTM F 441, Schedule 80, CPVC threaded pipe nipples, 4-inch minimum length.

2.3 HEADS

2.3.1 Multi-Outlet Emitters

Multi-outlet emitter heads shall be self-cleaning, pressure compensating diaphragm with six self-piercing barbed outlets; each capable of emitting 2 gallons per hour flow. Emitter body shall be ultraviolet stabilized, algae, and heat resistant plastic construction.

2.3.2 Rotary Pop-Up Sprinklers

Sprinklers shall be gear driven with adjustable and full circle arc models. Sprinklers shall be capable providing various radius coverages at low precipitation rates. Pop-up head design shall be 3-3/4" pop up with adjustable radius capabilities. Construction shall be of high impact molded plastic with filter screen, drain check valve, and come with multiple nozzles.

2.3.3 Bubblers

Bubblers shall be fully adjustable flow with operation over a wide range of pressures. Heads to be of molded plastic and stainless steel construction.

2.4 VALVES

2.4.1 Gate Valves, Less than 3 Inches

Gate valves shall conform to the requirements of MSS SP-80, Type 1, Class 150, threaded ends.

2.4.2 Gate Valves, 3 Inches and Larger

Gate valves shall conform to the requirements of AWWA C509 and have encapsulated resilient wedge, parallel seats, non-rising stems, and open by counterclockwise turning. End connections shall be flanged. Interior construction of valves shall be bronze including stem containing a maximum 2 percent aluminum and maximum 16 percent zinc.

2.4.3 Quick Coupling Valves

Quick coupling valves shall have brass parts and shall be two-piece unit consisting of a coupler water seal valve assembly and a removable upper body to allow spring and key track to be serviced without shutdown of main. Lids shall be lockable vinyl with spring for positive closure on key removal.

2.4.4 Remote Control Valves, Electrical

Remote control valves shall be solenoid actuated globe valves of 3/4- to 3-inch size, suitable for 24 volts, 60/50 cycle, and designed to provide for shut-off in event of power failure. Valve shall be cast bronze or brass or plastic housing suitable for service at 150 psi operating pressure with external flow control adjustment for shut-off capability, external plug at diaphragm chamber to enable manual operation, filter in control chamber to prevent valve body clogging with debris, durable diaphragm, and accessibility to internal parts without removing valve from system.

2.4.5 Automatic Drain Valves

Automatic valves shall be brass or plastic, spring loaded ball drip type, 150 pounds and threaded ends, designed to close at 6-foot pressure head with positive seal at 3 psi pressure or greater and be open to drain at less than 3 psi pressure.

2.4.6 Reduced Pressure Backflow Preventer Assembly

Reduced pressure backflow preventer assemblies shall be tested, approved, and listed in accordance with FCCHR-01. Reduced pressure backflow preventers shall be in accordance with ASSE 1013. Backflow preventers shall be 150-pound flanged bronze mounted gate valve and strainer, stainless steel or bronze internal parts. Total pressure drop through complete assembly shall be a maximum of 10 psi at rated flow. Piping shall be galvanized steel pipe and fittings. Strainers shall be bronze or brass construction with gasket caps. Units shall have 200-mesh stainless steel screen elements.

2.5 ACCESSORIES AND APPURTENANCES

2.5.1 Valve and Emitter Boxes

Valve and emitter boxes shall be cast iron, plastic lockable, or precast concrete. Box sizes shall be adjustable for valve or emitter used. Cast iron box shall have bituminous coating. Boxes shall be sized as required to provide for easy access. The following inscription shall be burnt or permanently marked into the appropriate boxes lid:

Type of Box	Inscription
Drip valve assembly box	"Valve"
Quick coupling valve box	"QC"
Gate valve box	"GV"
Automatic drain valve box	"DV"
Emitter box	"Emitter"

2.5.2 Pressure Gauges

Pressure gauges shall conform to requirements of ASME B40.1, single style pressure gauge for water with 4-1/2-inch dial brass or aluminum case, bronze tube, gauge cock, pressure snubber, and siphon. Scale range shall be suitable for irrigation sprinkler systems.

2.5.3 Service Clamps

Service clamps shall be bronze flat, double strap, with neoprene gasket or "O"-ring seal.

2.5.4 Water Hammer Arresters

Water hammer arrester shall conform to the requirements of ASME A112.26.1M; stainless steel construction with an encased and sealed bellows compression chamber.

2.5.5 Drip Valve Assembly Accessories

2.5.5.1 Wye Strainer

Strainer shall be provided at inlet to each drip line. Strainer shall have stainless steel screen having equivalent of 140-mesh filtration capacity and incorporate flush valves within strainer to clean screen without disassembling unit.

2.5.5.2 Pressure Regulator

Pressure regulator shall be constructed of heat-resistant plastic and be provided with each remote control valve. The pre-set outlet pressure shall be 25 psi. Pressure regulator shall have a 3/4" female threaded inlet and outlet.

2.5.5.3 Riser Adapters

Riser adapters shall be provided with a rigid piping system.

2.5.5.4 Tubing Stakes

Tubing stakes shall be plastic coated steel, or other non-corrosive strong material to secure tubing.

2.5.5.5 Emitter Outlet Check Valve (Insect Cap)

Check valves shall be provided at end of each emitter outlet distribution line. Caps shall permit free flow of water with minimum restriction; prevent back siphoning, entry of insects, and contamination into outlet ports.

2.5.5.6 Closure Caps

Closure caps shall be in accordance with manufacturer's recommendations.

2.6 AUTOMATIC CONTROLLERS, ELECTRICAL

Controller shall conform to the requirements of NEMA ICS 2 with 120-volt single phase service, operating with indicated stations, and grounded chassis. Enclosure shall conform to NEMA ICS 6 Type 3R, with locking hinged cover, wall-mounted. Controller shall be programmed for various schedules by setting switches and dials equipped with the following features: A switch for each day of week for two schedules, allowing each station to be scheduled individually as to days of watering; a minute switch for each station with a positive increment range of 0-99 minutes or 0-9.9 hours, set time within one percent; a switch allowing selected schedules to be repeated after each completion of initial watering schedule and allowing each operation to be scheduled throughout a 24-hour day; a circuit breaker for surge protection; and circuit for a 9-volt rechargeable NiCad battery.

2.7 ELECTRICAL WORK

Wiring and rigid conduit for electrical power shall be in accordance with NFPA 70, and Section 16375, ELECTRICAL DISTRIBUTION SYSTEM, UNDERGROUND.

2.8 CONCRETE MATERIALS

Concrete shall have a compressive strength of 2500 psi at 28 days as specified in Section 03300, CONCRETE FOR BUILDING CONSTRUCTION.

2.9 WATER SUPPLY MAIN MATERIALS

Tapping sleeves, service cut off valves, and connections to water supply mains shall be in accordance with Section 02660, WATER LINES.

2.10 INSULATING JOINTS

Insulating joints and dielectric fittings shall be in accordance with Section 02660, WATER LINES.

2.11 PEA GRAVEL

Pea gravel shall be approximately 3/8" in size and shall be washed smooth gravel clean of dirt and debris.

PART 3 EXECUTION

3.1 INSTALLATION

Sprinkler system shall be installed after site grading has been completed. Excavation, trenching, and backfilling for sprinkler system shall be in accordance with the applicable provisions of Section 02222, EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS, except as modified herein. Provide a 3/4" valve and capped line to shade structure for future misting system installation.

3.1.1 Trenching

Backfill shall be hand tamped over excavation. When rock is encountered, trench shall be excavated 4 inches deeper and backfilled with silty sand (SM) or well-graded sand (SW) to pipe grade. Trenches shall be kept free of obstructions and debris that would damage pipe. Subsoil shall not be mixed with topsoil. Existing concrete walks, drives and other obstacles shall be bored at a depth conforming to bottom of adjacent trenches. Pipe sleeves for bored pipe shall be two pipe diameters larger than irrigation pipe.

3.1.1.1 Underground Utility and Communications

Before start of trenching, the Contractor shall mark all known underground utility and communication line locations as shown on drawings. Work crews shall note these locations and care shall be taken when working in their vicinity.

3.1.2 Piping System

3.1.2.1 Cover

Underground piping shall be installed as to meet the minimum depth of backfill cover specified on plans.

3.1.2.2 Clearances

Minimum horizontal clearances between lines shall be 4 inches for pipe 2 inches and less; 12 inches for 2-1/2 inches and larger. Minimum vertical clearances between lines shall be 1 inch for lateral lines. Do not place lateral lines directly over main line.

3.1.2.3 Minimum Slope

Minimum slope shall be 6 inches per 100 feet in direction of drain valves.

3.1.3 Piping Installation

3.1.3.1 Polyvinyl Chloride (PVC) Pipe

a. Solvent-cemented joints shall conform to the requirements of ASTM D 2855.

b. Threaded joints shall be full cut with a maximum of three threads remaining exposed on pipe and nipples. Threaded joints shall be made tight without recourse to wicks or fillers, other than polytetrafluoroethylene thread tape.

c. Piping shall be joined to conform with requirements of ASTM D 2774 or ASTM D 2855, and pipe manufacturer's instructions. Pipe shall be installed in a serpentine (snaked) manner to allow for expansion and contraction in trench before backfilling. Pipes shall be installed at temperatures over 40 degrees F.

3.1.3.2 Soldered Copper Tubing

Pipe shall be reamed and burrs removed. Contact surfaces of joint shall be cleaned and polished. Flux shall be applied to male and female ends. End of tube shall be inserted into fittings full depth of socket. After soldering, a solder bead shall show continuously around entire joint circumference. Excess acid flux shall be removed from tubings and fittings.

3.1.3.3 Threaded Brass or Galvanized Steel Pipe

Prior to installation, pipe shall be reamed. Threads shall be cut in conformance with ASME B1.2. Pipe joint compound shall be applied to male end only.

3.1.3.4 Insulating Joints

Insulating and dielectric fittings shall be provided where pipes of dissimilar metal are joined and at connections to water supply mains as shown. Installation shall be in accordance with Section 02660, WATER LINES.

3.1.4 Valves

3.1.4.1 Remote Control Valves, Electrical

Remote control valves shall be pressure regulating, self-cleaning, solenoid actuated globe valves of 3/4 to 2-1/2 inch size, suitable for 24 volts, 60/50 cycle, and designed to provide for shut-off in event of power failure. Valve shall a be glass filled nylon or plastic housing suitable for service at 150 psi. operating pressure with external flow control adjustment for shut-off capability, external plug at diaphragm chamber to enable manual operation, filter in control chamber to prevent valve body clogging with debris, durable diaphragm, and accessibility to internal parts without removing valve from system.

3.1.4.2 Drip Valve Assembly

With each automatic valve, provide and assemble a wye strainer and a pressure regulator as shown on drawings. Valve assembly shall be set plumb

in a valve box extending from grade to below valve body, with minimum of 4-inch cover measured from grade to top of valve.

3.1.4.3 Drain Valves

Entire system shall be manually or automatically drainable. Low points of system shall be equipped with drain valve draining into an excavation containing 1 cubic foot pea gravel. Pea gravel shall be covered with weed fabric then backfilled with excavated material and covered with surface mulch as designated on drawings.

3.1.5 Quick Coupling Valves

Quick coupling valves in valve boxes shall be installed plumb and level with terrain.

3.1.6 Installation of Drip Irrigation System

3.1.6.1 Distribution Tubing

Distribution tubing shall be connected to multi-outlet emitter and shall extend below ground to the plant as shown on the drawings. Tubing shall surface above subgrade at the plant and shall be placed below the mulch material. Install an insect cap at the end of each distribution tubing. When cutting tubing, shearing tools such as a pipe cutter, knife, or shears shall be used. Manufacturer's recommended tool and procedures when punching hose for emitters shall be followed.

3.1.6.2 Multi-Outlet Emitters

Emitters shall be installed in a plastic emitter box. Emitter on a rigid PVC nipple shall be connected to PVC drip lateral with a tee or elbow. Tubing shall be attached to barbed fitting and daylight distribution tubing at root ball secured with stake, with bug cap at end of secured distribution tubing. After installing emitters and before operating system, end of drip lateral shall be opened and flushed clean. The number of emitters on a line shall not exceed manufacturer's recommendations for that hose or distribution tubing size and length. All orifices of the multi-outlet emitters that have been opened but are unused shall be installed with a closure cap.

3.1.6.3 Tubing Stakes

Distribution tubing shall be secured with stakes where line is above ground. Stakes shall be spaced to ensure that tubing does not shift location in presence of foot traffic, operations, gravity on slope installations, or environmental effects. Discharge of the emitter distribution tubing shall be staked to ensure that discharge point of emitter will be maintained at specified position in relation to plant material to be irrigated.

3.2 Turf heads

Install pop up heads to provide 100% coverage of all turf areas. Install as per detail. Adjust radius and arcs where appropriate.

3.2.1 Reduced Pressure Backflow Preventer Assembly

Reduced pressure backflow preventer assembly shall be installed in new

connection to existing water distribution system, between connection and control valves. Reduced pressure type shall be installed as follows: Flush pipe lines prior to installing device and protect device by a strainer located upstream. Device shall not be installed in pits or where any part of device could become submerged in standing water. Locate in shrub beds only.

3.2.1.1 Insulation

All exposed piping and fittings shall be wrapped neatly with 1/2 inch minimum thickness of insulation tape or manufactured freeze protection blanket.

3.2.2 Control Wire and Conduit

3.2.2.1 Wires

Low voltage wires may be buried beside pipe in same trench. Rigid conduit shall be provided where wires run under paving. Wires shall be number tagged at key locations along main to facilitate service. One control circuit shall be provided for each zone and a circuit to control irrigation system.

3.2.2.2 Loops

A 12-inch loop of wire shall be provided at each valve where controls are connected.

3.2.2.3 Expansion and Contraction

Multiple tubes or wires shall be bundled and taped together at 10-foot intervals with 12-inch loop for expansion and contraction.

3.2.2.4 Splices

Electrical splices shall be waterproof.

3.2.3 Automatic Controllers

Controllers shall be wall mounted to building wall, 48 inches above finish grade. See drawings for automatic controller location. Coordinate the electrical service to these locations. Install in accordance with manufacturer's recommendations and NFPA 70.

3.2.4 Thrust Blocks

Concrete shall be placed so that sides subject to thrust or load are against undisturbed earth, and valves and fittings are serviceable after concrete has set. Thrust blocks shall be as specified in Section 02660, WATER LINES.

3.2.5 Backfill (Minimum Cover)

Depth of cover shall be 12 inches for non-pressure lateral pipe; 24 inches for pressure mainline pipes and for pipes under traffic loads, farm operations, and freezing temperatures; and 24 inches for low-voltage wires. Remainder of trench or pipe cover shall be filled to within 2 inches of top with excavated soil, and compact soil with plate hand-held compactors

to same density as undisturbed adjacent soil. Surface shall be covered with mulch as specified.

3.2.6 Disinfection

Irrigation system fed from a potable water system shall be disinfected upstream of backflow preventer in accordance with Section 02660, WATER LINES.

3.2.7 Cleaning of Piping

Prior to the hydrostatic and operation tests, the interior of the pipe shall be flushed with clean water until pipe is free of all foreign materials. Flushing and cleaning out of system pipe, valves, and components shall not be considered completed until witnessed and accepted by Contracting Officer.

3.3 FIELD TESTS

All instruments, equipment, facilities, and labor required to conduct the tests shall be provided by Contractor.

3.3.1 Hydrostatic Pressure Test

Piping shall be tested hydrostatically before backfilling and proved tight at a hydrostatic pressure of 150 psi without pumping for a period of one hour with an allowable pressure drop of 5 psi. If hydrostatic pressure cannot be held for a minimum of 4 hours, Contractor shall make adjustments or replacements and the tests repeated until satisfactory results are achieved and accepted by the Contracting Officer.

3.3.2 Leakage Tests

Leakage tests for service main shall be in accordance with Section 02660, WATER LINES.

3.3.3 Operation Test

At conclusion of pressure test, emitter heads, quick coupling assemblies, and hose valves shall be installed and entire system tested for operation under normal operating pressure. Operation test consists of the system operating through at least one complete programmed cycle for all areas to be irrigated.

3.4 POSTING FRAMED INSTRUCTIONS

Framed instructions containing wiring and control diagrams under glass or in laminated plastic shall be posted where directed. Condensed operating instructions, prepared in typed form, shall be framed as specified above nd posted beside the diagrams. The framed instructions shall be posted before acceptance testing of the system. After as-built drawings are approved by Contracting Officer, controller charts and programming schedule shall be prepared. One chart for each controller shall be supplied. Chart shall be a reduced drawing of actual as-built system that will fit the maximum dimensions inside controller housing. Black line print for chart and a different pastel or transparent color shall indicate each station area of coverage. After chart is completed and approved for final acceptance, chart shall be sealed between two 20-mil pieces of clear plastic.

3.5 FIELD TRAINING

A field training course shall be provided for designated operating and maintenance staff members. Training shall be provided for a total period of 2 hours of normal working time and shall start after the system is functionally complete but prior to final acceptance tests. Field training shall cover all of the items contained in the operating and maintenance manuals.

3.6 CLEANUP

Upon completion of installation of system, all debris and surplus materials resulting from the work shall be removed.

3.7 WATER PROGRAM

3.7.1 Irrigation Program

The Contractor shall develop an irrigation program based on local evapotranspiration calculations, soil type, hydrozone, and plant establishment needs. The program shall provide watering rates and times for all valve circuits and provide a complete table of recommended seasonal irrigation times. Submit irrigation program along with the required As-builts to the Contracting Officer at the end of the maintenance period.

3.7.2 Irrigation Program Adjustment

Upon completion of planting, the Contractor shall commence automatic irrigation of the plantings. Adjust and fine tune all parts of the irrigation system carefully to meet water needs and requirements for each plant and hydrozone.

3.8 MAINTENANCE

See Section 02950, PLANTING AND LANDSCAPING, 3.11 for required maintenance and period.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02870

SITE FURNISHINGS

-- End of Section Table of Contents --

SECTION 02870

SITE FURNISHINGS

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

FF-H-116E	Hinges, Hardware, Builders

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 36/A 36m-87	Structural Steel

AMERICAN WELDING SOCIETY (AWS)

D1.1-86	Structural Welding Code-Steel

AMERICAN CONCRETE INSTITUTE (ACI)

318-8	Building Code Requirements for Reinforced Concrete (with Commentary)

PRESTRESSED CONCRETE INSTITUTE (PCI)

MNL-116	Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products
MNL-120-78	Design Handbook - Precast and Prestressed Concrete (2nd Ed., Errata)

1.2 INSPECTION OF CONDITIONS

Examine related work and surfaces before starting work of this section and report to the Contracting Officer in writing conditions which will prevent the proper provision of this work. Beginning the work of this section without reporting unsuitable conditions to the Contracting Officer constitutes acceptance of conditions. Any required removal, repair or replacement of this work caused by unsuitable conditions shall be done at no additional cost to the Government.

1.3 ACCEPTABLE MANUFACTURERS

Manufacturer named items are for standard of reference and do not necessarily limit supply to named manufacturers. Contracting Officer approved items of same physical size, function, and performance are acceptable.

1.3.1 Footings

Site furniture tables, trash receptacle, and benches shall be capable of being located directly on concrete paving finish grade with no additional reinforcement necessary to the pavement section to accommodate additional loads. Contractor shall verify with manufacturer and notify Government if additional footings and anchors are required by manufacturer specifications. All footing surfaces shall be cured to reach full design strength before placement of site amenities. For benches designated off of pavement areas, concrete footing pads shall be installed in coordination with manufacturer specifications.

1.4 DELIVERY AND HANDLING

Delivery shall be made to the job site and unloaded with a crane equipped-delivery truck as per manufacturer's recommendation. All site furnishings shall be unpacked and inspected for damage at time of delivery. Contractor shall also verify that model numbers, color, materials, etc. are as specified for the project. The Contracting Officer shall be notified of the visual confirmation.

1.5 GUARANTEE

Manufacturer shall guarantee, in writing, from defects in materials and workmanship all products supplied for a minimum period of one calendar year.

1.6 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Manufacturer Information; FIO.

Submit catalog cuts, product data and color samples for Government approval. Manufacturer's installation instructions and manufacturer's warranty for all items to be provided to the Contracting Officer. Manufacturer's footing specifications and calculations shall be provided.

SD-04 Drawings

Shop Drawings; FIO.

Submit shop drawings or manufacturer details for all the following products described herein including materials, design, layout, and assembly before installation.

PART 2 PRODUCTS

2.1 BENCH

2.1.1 General

Construction shall be of precast reinforced concrete material with steel reinforcing rods used throughout, welded at all points. Bench shall be

designed to be set on standard concrete pavement section.

2.1.2 Finish

The concrete finish shall be medium sandblasted with an integral sand or tan color. Utility surfaces shall be smooth. Concrete shall be sealed with an acrylic sealant as per manufacturer's specifications. Type and color shall be approved by the by the Contracting Officer and match picnic tables and trash receptacles.

2.2 TRASH RECEPTACLE

2.2.1 General

The receptacle shall be a pre-cast concrete receptacle with rough dimensions of 25-inches square by 34 inches in height. The receptacles shall be supplied with a metal lid and plastic liner container.

2.2.2 Finish

The concrete finish shall be medium sandblasted with an integral sand or tan color. Concrete shall be sealed with an acrylic sealant as per manufacturer's specifications. The attached lid shall be a dark brown to match building metal. Type and color shall be approved by the Contracting Officer and match picnic tables and benches.

2.3 PICNIC TABLE

2.3.1 General

Construction shall be of precast reinforced concrete material with steel reinforcing rods used throughout, welded at all points. Bench shall be designed to be set on standard concrete pavement section.

2.3.2 Finish

The concrete finish shall be medium sandblasted with an integral sand or tan color. Utility surfaces shall be smooth. Concrete shall be sealed with an acrylic sealant as per manufacturer's specifications. Type and color shall be approved by the by the Contracting Officer and match picnic tables and trash receptacles.

2.4 SHADE STRUCTURE

2.4.1 General

Pre-fabricated structure shall be an all steel structure designed in accordance to the Uniform Building Code using: minimum live load of 30 psf: minimum wind load of 100 mph: and a minimum seismic load of Zone 4. All framing and roofing shall be factory primed with rust inhibitor and finish coated with 2 coats in field. Structure shall be hip roofed as shown on detail. Size of roof area shall be 20' x 20'

2.4.2 Finish

Structure finish and color shall match building roofing and railing colors.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 General

All site furnishings shall be located as shown on the drawings, and assembled and installed as per the manufacturer's specifications. The locations of all furnishings are to be marked in the field for the Contracting Officer's review and approval. The Contractor shall notify the Contracting Officer 24 hours in advance of needed approval of location marking. Site furnishing installation schedule shall be coordinated with other contractors to avoid conflict and possible damage.

3.1.2 Benches

Benches shall be located, leveled, and installed on finished concrete grade as shown on plans. Exact field spacing shall be as per Contracting Officer's direction.

3.1.3 Trash Receptacles

Receptacles shall be located, leveled, and set on finished concrete grade as shown on plans. Exact field spacing shall be as per Contracting Officer's direction.

3.1.4 Picnic Tables

Tables shall be located, leveled, and installed on finished concrete grade as shown on plans. Exact field spacing shall be as per Contracting Officer's direction.

3.1.5 Shade Structure

Coordinate installation with other work of grading, concrete, electrical. Install as per manufacturer specifications. Touch up all damaged primer coating areas and paint with 2 coats of finish paint. Layout and orient to field conditions and concrete work. Contracting Officer shall approved all layouts.

3.2 CLEAN-UP

3.2.1 General

General wiped clean with all tags and labels removed.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02950

PLANTING AND LANDSCAPING

-- End of Section Table of Contents --

SECTION 02950

PLANTING AND LANDSCAPING

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 NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z60.1	(1986) American Standard for Nursery Stock

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 2607	(1969) Peats, Mosses, Humus, and Related Products

FEDERAL SPECIFICATIONS (FS)

FS 0-F-241	(Rev D) Fertilizers, Mixed, Commercial

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL DESCRIPTIONS:

SD-07 Schedules

Delivery Schedule; FIO

Delivery Schedule, before work is started, at least 10 days prior to the intended date of the first delivery.

SD-09 Reports

Soil Test; FIO.

Percolation Test; FIO.

Certified reports of inspections and laboratory tests, prepared by an independent testing agency, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

SD-13 Certificates

Soil Amendments;FIO.

Plants;FIO.

Certificates of compliance certifying that materials meet the requirements specified, prior to the delivery of materials. Reports for the following materials shall be included.

a. Topsoil: Not Applicable.

b. Fertilizer: For chemical analysis and composition percent.

c. Agricultural Limestone: (Not Applicable)

d. Peat: (Not Applicable)

e. Plant Materials: For botanical and common name, size, quantity by species, grade, nursery grown.

f. Pesticide Material: For EPA registration number and registered uses.

SD-18 Records

Maintenance Period;FIO.

Written calendar time period for the beginning of the plant establishment period. When there is more than one establishment period, the boundaries of the planted areas covered for each period shall be described.

Maintenance Report;FIO.

Written record of maintenance work performed and quantity of plant losses and replacements.

Maintenance Instructions;FIO.

Written instructions for year-round care and upkeep of installed plants, landscaping, and irrigation system.

1.3 SOURCE INSPECTIONS

1.3.1 Plant Materials

Plant materials shall be subject to inspection at the growing site by the Contracting Officer.

1.4 SHIPMENT, DELIVERY, INSPECTION, STORAGE, AND HANDLING

1.4.1 Shipment

1.4.1.1 Preparation

Preparation for shipment shall be done in a manner that will not cause shock or damage to branches, trunk, or root systems. Container grown plant sizes shall be provided as recommended by ANSI Z60.1. Plants shall be grown in a container sufficiently long for new fibrous roots to have developed and for root mass to retain its shape and hold together when removed from container. Container shall be sufficiently rigid to hold ball shape and protect root mass during shipping.

1.4.1.2 Antidesiccant Application

Plants shall be sprayed with an antidesiccant as leaf budding occurs or when plant material has soft growth.

1.4.2 Delivery

1.4.2.1 Identification

Plants shall be identified with durable waterproof labels and weather-resistant ink. Plants shall have attached labels stating the correct plant name and size.

1.4.2.2 Protection During Delivery

Plants shall be protected during delivery to prevent desiccation of the plant or damage to the roots or balls. Branches of plants shall be protected by tying-in the branches and covering all exposed branches.

1.4.2.3 Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

1.4.2.4 Pesticide

Pesticide materials shall be delivered to the site in the original unopened containers bearing legible labels indicating the Environmental Protection Agency (EPA) registration numbers and the registered uses.

1.4.3 Inspection

Plant material shall be inspected upon arrival at the job site by the Contracting Officer for conformity to the paragraph PLANTS and paragraph Shipment, and any unacceptable plant material shall be removed from the job site.

1.4.4 Storage

1.4.4.1 Plant Storage

Plants not installed on the day of arrival at the site shall be stored and protected in areas designated by the Contracting Officer. Plants shall be protected from exposure to wind and shaded from the sun. Covering that will allow air to circulate and prevent internal heat from building up shall be provided. All plants shall be kept in a moist condition by watering with a fine mist spray until planted.

1.4.4.2 Storage of Other Materials

Soil amendments shall be stored in dry locations away from contaminants. Pesticide materials shall not be stored with other landscape materials. Storage of materials shall be in areas designated or as approved by the Contracting Officer.

1.4.5 Handling

Care shall be taken to avoid injury to plants. Materials shall not be

dropped from vehicles. Container-grown plants shall be handled by the container. Plants shall not be handled by the trunk or stems.

1.4.5.1 Time Limitation

Mulch: Limitation of time between installing plant and placing mulch is 48 hours.

1.5 WARRANTY

Furnished plants shall be guaranteed to be in a vigorous growing condition for a period of 12 months regardless of the contract time period. A plant shall be replaced one time under this guarantee. A written calendar time period for the guarantee of plant growth shall be furnished to the Contracting Officer.

PART 2 PRODUCTS

2.1 PLANTS

2.1.1 Varieties

Plants shall be nursery grown or plantation grown stock conforming to ANSI Z60.1 and shall be of the varieties specified in the plant list bearing botanical names listed in one or more of the publications listed under "Nomenclature" in ANSI Z60.1.

2.1.2 Substitutions

Substitutions will not be permitted without written request from the Contractor for approval by the Contracting Officer.

2.1.3 Growing Conditions

All plants shall be grown under climatic conditions similar to those in the locality of the project or acclimatized for a period of 6 months prior to installation.

2.1.4 Quality

Well shaped, well grown, vigorous, healthy plants having healthy and well branched root systems shall be provided. Plants shall be provided free from disease, harmful insects and insect eggs, sun-scald injury, disfigurement and abrasion. Plants shall be provided that are typical of the species or variety and conforming to standards as set forth in ANSI Z60.1 and as specified herein.

2.1.4.1 Shade and Flowering Trees

A height relationship to caliper shall be provided as recommended by ANSI Z60.1. Height of branching should bear a relationship to the size and variety of tree specified and with the crown in good balance with the trunk. Trees shall not be "poled" or the leader removed.

a. Single stem: Trunk shall be reasonably straight and symmetrical with crown and have a persistent main leader.

b. Specimen: A plant shall be provided that is well branched and pruned naturally according to the species. The form of growth desired,

which may not be in accordance with natural growth habit, shall be as indicated.

2.1.4.2 Deciduous Shrub

Plants shall be provided that have the height and number of primary stems as recommended by ANSI Z60.1. An acceptable plant shall be well shaped with sufficient well-spaced side branches recognized by the trade as typical for the variety grown in the region.

2.1.4.3 Coniferous Evergreen

Trees shall be provided that have the height-to-spread ratio as recommended by ANSI Z60.1. Trees shall not be "poled" or the leader removed. An acceptable plant shall be exceptionally heavy, well shaped and trimmed to form a symmetrical and tightly knit plant. The form of growth desired shall be as indicated.

2.1.4.4 Broadleaf Evergreen

Plants shall be provided that have ratio of height-to-spread as recommended by ANSI Z60.1. An acceptable plant shall be well shaped and recognized by the trade as typical for the variety grown in the region.

2.1.4.5 Vines

Plants shall be provided with the minimum number of runners and length of runner as recommended by ANSI Z60.1. Plants shall be furnished that have heavy, well developed and balanced top with vigorous well developed root system and shall be furnished in containers.

2.1.4.6 Palms

Palms shall be in vigorous health with no trunk or rootball damage. Plants shall be boxed or balled and burlaped for transport with fronds tied and wrapped as per industry standards for protection.

2.1.5 Size

Plants shall be furnished in sizes indicated. Palm heights are for brown trunk length. Plants larger in size than specified may be provided at no additional cost to the Government.

2.1.6 Measurement

Plant measurements shall be in accordance with ANSI Z60.1.

2.2 TOPSOIL

No topsoil is available or required for the project site.

2.2.1 Soil Test

A soil test shall be performed for Ph, particle size, chemical analysis and mechanical analysis to establish the quantities and type of soil amendments required to meet local growing conditions for the type and variety of plants specified.

2.3 SOIL AMENDMENTS

Soil amendments consist of lime, fertilizer, bonemeal, organic soil amendments and soil conditioner.

2.3.1 Lime

Lime shall be agricultural limestone and shall have a minimum calcium carbonate equivalent of 90 percent and shall be ground to such a fineness that at least 90 percent will pass a 10-mesh sieve and at least 50 percent will pass a 60-mesh sieve.

2.3.2 Dry Fertilizer

Dry fertilizer shall be commercial grade, free flowing, uniform in composition and conforming to FS 0-F-241. Fertilizer shall be controlled-release fertilizer consisting of nitrogen-phosphorous-potassium ratio: 20 percent nitrogen, 10 percent phosphorous, and 5 percent potassium. Controlled-release fertilizer shall be in tablet form.

2.3.3 Bonemeal

Bonemeal shall be a finely ground, steamed bone product containing from 2 to 4 percent nitrogen and 16 to 40 percent phosphoric acid.

2.3.4 Soil Amendments

2.3.4.1 Peat (Not Applicable)

2.3.4.2 Sand

Sand shall be clean and free of toxic materials and at least 95 percent by weight shall pass a 10-mesh sieve, and 10 percent by weight shall pass a 16-mesh sieve.

2.3.4.3 Rotted Manure

Rotted manure shall be unleached stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials and containing no chemicals or ingredients harmful to plants. The manure shall be heat treated to kill weed seeds and be free of stones, sticks, and soil.

2.3.4.4 Decomposed Wood Derivatives

Decomposed wood derivatives shall be ground bark, sawdust, or other wood waste material free of stones, sticks, and toxic substances harmful to plants and stabilized with nitrogen and having the following properties:

Particle size	Minimum percent by weight passing
No. 4 mesh screen	95
No. 8 mesh screen	80

Nitrogen Content	Minimum percent based on dry weight
Redwood Sawdust	0.5
Fir Sawdust	0.7
Fir or Pine Bark	1.0

Nitrogen Content	Minimum percent based on dry weight

2.3.5 Soil Conditioner

For single use or in combination to meet requirements for planting backfill.

2.3.5.1 Gypsum

Gypsum shall be commercially packaged, free flowing, and a minimum of 95 percent calcium sulfate by volume.

2.3.5.2 Aluminum Sulfate

Aluminum sulfate shall be commercial grade.

2.4 MULCH

Mulch shall be of an inert mulch material and free from weeds, debris, and other deleterious materials.

2.4.1 Rock Mulch

Rock mulch shall be 3/4" minus tan/gold color quarried material that matches adjacent new dormitory landscaping. Submit sample to Contracting Officer for approval.

2.4.2 River Rock

River rock shall be 4 to 12 inches natural smoothed stream bed river-run stone and tan, brown, red, grey, and blue mixed colors. River rock shall match adjacent new dormitory landscaping. Submit sample to Contracting Officer for approval.

2.5 BOULDERS

Boulders shall be of locally available quarried material with colors in tans, browns, and reds. Boulders are to be surface grade or quarried rock. Size shall be as designated on drawings. A sample shall be approved by the Contracting Officer.

2.6 WEED FABRIC (GEOTEXTILE):

2.6.1 Nonwoven Polypropylene

Nonwoven polypropylene shall be spunbonded, water permeable, non-brittle, weigh a minimum 4 ounces per square yard, be a minimum 10 mils thick and come in 6-feet-wide rolls.

2.6.2 Nonwoven polyester

Nonwoven polyester shall be spunbonded, water permeable, non-brittle, weigh a minimum 4 ounces per square yard, be a minimum 10 mils thick and come in 6-feet-wide rolls.

2.7 STAKING MATERIAL

2.7.1 Bracing Stakes

Bracing stakes for tree support shall be pentachlorophenol treated lodge pole pine free of any defects that would impair the strength. Bracing stakes shall be minimum 2" diameter by 8' long and pointed at one end.

2.7.2 Tree Ties

Material for holding tree to stake shall be a commercially available rubber tie.

2.8 WATER

Water shall not contain elements toxic to plant life. Water will be furnished from the project mainline or a Government fire hydrant on the base.

2.9 ANTIDESICCANT

Antidesiccant shall be an emulsion that will provide a film over plant surfaces permeable enough to permit transpiration, and shall not damage the plant.

2.10 PRE-EMERGENT HERBICIDE

Pre-emergent herbicide shall be in a commercially available dry or liquid form that is easily applied and meet all local and state regulations.

2.11 RAISED PLANTERS (Not Applicable)

2.12 LANDSCAPE BERMS AND MOUNDS

Landscape berms shall be formed from clean native soil that is free from foreign or construction debris. Coordinate with CMU wall construction and rough grading. Compact and settle by construction equipment walking. Rough grade shall be ripped to 8 inches to break up construction compaction before placement of berm material.

PART 3 EXECUTION

3.1 EXAMINATION

3.1.1 Verify Grades

The Contracting Officer shall verify the finished grades are as indicated on drawings, and smooth grading has been completed in accordance with Section 02210 GRADING before start of landscape berm placement and other landscape operations.

3.1.2 Underground Obstructions to Planting

The location of underground utilities and facilities shall be verified. Damage to underground utilities and facilities shall be repaired at the Contractor's expense.

3.2 SITE PREPARATION

3.2.1 Layout

Landscape berms, CMU walls, plant material locations, and mulch outlines

shall be staked on the project site before any excavation is made. Plant material, berms, mulch, and boulder locations may be adjusted by the Contracting Officer to meet field conditions.

3.3 EXCAVATION

3.3.1 Obstructions Below Ground or Poor Drainage

When obstructions below ground or poor drainage affect the contract operation, proposed adjustments to landscape element locations, type of plant and planting method or drainage correction shall be submitted to and approved by the Contracting Officer.

3.3.2 Plant Pits

Plant pits shall be dug to produce vertical sides and flat, uncompacted bottoms. When pits are dug with an auger and the sides of the pits become glazed, the glazed surface shall be scarified. The size of all plant pits, except for palms, shall be 1-1/2 times rootball depth and a minimum of 4 times rootball depth.

3.3.3 Rough Grading and Landscape Berms

All grades and landscape berms shall follow the designed slope and swales for drainage.

3.3.3.1 [Enter Appropriate Subpart Title Here]

All rough grades shall drain away from buildings and be 2" below finish grade of walks, curbs, etc. to allow for mulch placement.

3.3.3.2 Landscape berms

Landscape berms shall be laid out and constructed as shown on plans and as adjusted to meet field conditions. Coordinate with CMU wall construction and rough grading. Berms shall be constructed in one foot lifts and compacted by construction equipment walking. Final shaping shall be to provide natural contours and transitions to adjacent areas with positive drainage to swales and streets.

3.4 PERCOLATION TEST

Test for percolation shall be done to determine positive drainage of plant pits and beds. The Contracting Officer shall be notified in writing of all soil and drainage conditions detrimental to growth of plant material and shall submit proposal for correcting the condition.

3.5 PLANTING TIMES AND CONDITIONS

For best results, install container grown plant material in the fall before the chance of the first frost or in the spring after the last chance of frost. Planting operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture or other unsatisfactory conditions prevail, the work shall be stopped when directed. Contractor shall schedule planting in the mornings to avoid stressing plants during installation, if the planting schedule calls for installation when the temperature is expected to be 90 degrees Fahrenheit or greater. When special conditions warrant a variance to the planting operations, proposed planting times shall be submitted to and approved by

the Contracting Officer.

3.6 INSTALLATION

3.6.1 Backfill Mixtures

Backfill shall be installed as part of the installation operations. The backfill mixture shall be a proportioned mixture thoroughly mixed by volume of clean native soil and selected organic soil amendment(s) of a decomposed wood derivative nature.

3.6.1.1 Backfill Soil Mix

The basin backfill soil mixture shall be placed in the planting pits during plant installation operations. The basin backfill soil mixture shall be as follows:

Clean Native Soil	= 1 part to mixture
Organic Soil Amendment(s)	= 2 parts to mixture

3.6.2 Setting Plants

Plants shall be set plumb and held in position until sufficient backfill soil mix has been firmly placed around roots or ball. Plants shall be set in relation to surrounding grade so that they are even with the depth at which they were grown in the nursery, or container. Plants root crown shall be set above subgrade as specified on drawings.

3.6.2.1 3.6.2.1 Palms

Palms shall be installed as per industry standards and detail. Ensure palms are plumb and root balls elevated and protected from damage.

3.6.3 Rain Basins

A depressed rain basin shall be formed around individual plants. Basin shall be excavated from around planting, and shall be level and continuous around plant.

3.6.4 Dry Fertilizer

Dry fertilizer shall be placed in tablet form in the plant pit in the immediate vicinity of the feeding roots in accordance with the manufacturer's recommendations. Space tablets at equal distances from each other and the rootball. The tablets shall be allotted as follows:

Palms	= 8 tablets (21 grams each or equivalent)
24" box container plants	= 6 tablets (21 grams each or equivalent)
15 gallon container plants	= 4 tablets (21 grams each or equivalent)
5 gallon container plants	= 3 tablets (21 grams each or equivalent)
1 gallon container plants	= 1 tablets (21 grams each or equivalent)

3.6.5 Container-Grown Plants

Non-biodegradable containers shall be removed without damage to the plant or root system. Biodegradable containers shall be split. The backfill mix shall be completed, tamped and watered.

3.6.6 Staking

All trees shall be held in place with two bracing stakes driven vertically into ground and placed on opposite sides. Stakes shall not injure the ball or roots. The tree shall be held firmly between the stakes with a double strand of wire. Chafing guards shall be used where the wire contacts the tree. Nursery stakes shall be untied and removed from stem, if applicable. Care shall be taken so that the stem is supported during this operation and is not allowed to bend to the point of damage before the tree stakes are in place and the tree is secured.

3.7 FINISHING

3.7.1 Pruning

The total amount of foliage shall be pruned by one-fourth to one-third on installed trees and shrubs to compensate for loss of roots and transplanting shock. The typical growth habit of individual plants shall be retained. Clean cuts shall be made flush with the parent trunk. Improper cuts, stubs, dead and broken branches shall be removed. "Headback" cuts at right angles to the line of growth shall not be permitted. Trees shall not be poled or the leader removed, nor shall the leader be pruned or "topped off." Cuts or wounds measuring a minimum 1/2 inch in diameter shall be painted with the specified tree wound dressing.

3.7.2 Pre-emergent Herbicide

Pre-emergent herbicide shall be applied as per manufacturer's specifications on all landscape areas after finish grading and prior to rock mulch installation.

3.7.3 Weed Fabric (Geotextile):

Before placement of rock mulches, install under all areas to be rock mulched, excluding boulders. All edges shall be heel toed into grade with all material overlaps a minimum of 12". Steel stake as per manufacture's specifications.

3.7.4 Boulders

Boulders shall be placed in locations as shown on drawings. Locations shall be staked on the ground and approved by the Contracting Officer prior to installation. Place boulders prior to installation of mulch and plants. Place boulders individually with appropriate equipment to prevent scarring of boulder surface. Position boulders so that natural weathered surface of boulder is exposed above grade as it was in its natural native setting. Boulders which have been surface scarred by mechanical equipment or excessively chipped or cracked during mining, delivery, storage, or handling will be rejected and removed from the worksite by the contractor.

3.7.5 Mulch

After irrigation installation and rough grading, mulch bed outlines shall be marked on the ground as per drawings and field conditions for approval by the Contracting Officer prior to installation of any mulch or plantings. Pre-emergent herbicide shall be applied before placement of any mulch or weed fabric.

3.7.5.1 Rock Mulch

Rock mulch shall be placed after pre-emergent application and spread to a uniform depth of a minimum of 2 inches. Install rock to form smooth transitions to existing landscape. Excess stockpiled rock shall be spread out evenly over landscape areas.

3.7.5.2 River Rock

River rock shall be spread and hand placed where necessary to a minimum depth of 8 inches so that grades are not visible after placement of rock. Care shall be taken to insure the rock is well mixed so that smaller rock will fill voids left by larger rock. Excessive cracked, chipped, and broken pieces of river rock and organic debris shall be removed from installation. Location of rock shall be placed in all major drainage swales and at areas as shown on the drawings.

3.7.6 Water

Plants shall be watered as necessary to maintain an adequate supply of moisture within the root zone. Run-off, puddling and wilting shall be prevented.

3.7.7 Antidesiccant Application

Plants requiring further protection shall be sprayed with anti-desiccant in accordance with manufacturer's recommendations.

3.8 MAINTENANCE DURING PLANTING OPERATION

Installed plants shall be maintained in a healthy growing condition. Maintenance operations shall begin immediately after each plant is installed and shall continue until the plant establishment period commences. The maintenance includes irrigation system upkeep, watering, pruning, wound dressing, straightening and other necessary operations. Plant beds and earth water basins shall be kept free of weeds, grass and other undesired vegetation. Plants shall be checked for settlement and shall be reset proper grade as necessary. Run-off, puddling and wilting shall be prevented.

3.9 APPLICATION OF PESTICIDE MATERIAL

When pesticide becomes necessary to remove a disease or pest, a state-certified applicator shall apply required pesticide in accordance with State EPA label restrictions and recommendations. Hydraulic equipment shall be provided for the liquid application of pesticides with a leak-proof tank, positive agitation methods, controlled application pressure and metering gauges. A pesticide treatment plan shall be provided to the Contracting Officer as specified in paragraph SUBMITTALS.

3.10 RESTORATION AND CLEAN UP

3.10.1 Restoration

Pavements and facilities that have been damaged from the planting operation shall be restored to original condition at the Contractor's expense.

3.10.2 Clean Up

Excess and waste material from the planting operation shall be removed and disposed of off the site. Adjacent paved areas shall be cleared.

3.11 MAINTENANCE PERIOD

3.11.1 Commencement

On completion of the last day of the planting and landscaping operation and all other construction activity including architectural, civil, etc., the maintenance period for maintaining irrigation, hardscape, and installed plants in a healthy growing condition shall commence upon written notice of 'start of maintenance period' from the Contracting Officer. The maintenance period shall be in effect for 365 calendar days.

3.11.2 Maintenance During Establishment Period

3.11.2.1 General

Maintenance of plants and landscape shall include straightening plants, tightening stakes and guying material, repairing tree wrapping, protecting plant areas from erosion, maintaining erosion control material, supplementing mulch, accomplishing wound dressing, removing dead or broken tip growth by pruning, maintaining edging of beds, checking for girdling of plants and maintaining plant labels, watering, weeding, removing and replacing unhealthy plants, and adjusting and maintaining irrigation system as required.

3.11.2.2 Water

The plants shall be watered as necessary to maintain an adequate supply of moisture within the root zone and encourage deep rooting. An adequate supply of moisture is estimated to be the equivalent of one inch of absorbed water per week delivered in the form of natural rain or augmented as required by periodic watering. Run-off, puddling and wilting shall be prevented.

3.11.2.3 Weeding

Grass and weeds in earth water basins and landscape areas shall not be allowed to reach a height of 3 inches before being completely removed, including the root growth.

3.11.2.4 Unhealthy Plants

A plant shall be considered unhealthy or dead when the main leader has died back, or 25 percent of the crown is dead. Determine the cause for an unhealthy plant. Unhealthy or dead plants shall be removed immediately and shall be replaced as soon as seasonal conditions permit.

3.11.2.5 Settlement

Native soil or mulch material shall be added to maintain grade and coverage. Serious settlement affecting the setting of the plant in relation to the depth at which it was grown requires replanting in accordance with paragraph INSTALLATION.

3.11.2.6 Pesticide Treatment

Treatment for diseases or pest shall be in accordance with paragraph APPLICATION OF PESTICIDE MATERIAL.

3.11.2.7 Maintenance Report

A written record shall be furnished to the Contracting Officer of the maintenance work performed, irrigation adjustments and repairs, the quality of plant losses, cause for plant loss and replacements made on each site visit.

3.11.2.8 Maintenance Instruction

Written instructions shall be furnished to the Contracting Officer for year-round care of installed plants and irrigation system.

3.11.3 Replacement Plants

Plants shall be provided for replacement in accordance with paragraph PLANTS. Replacement plants shall be installed in accordance with paragraph INSTALLATION. No extended plant establishment period shall be required for replacement plants. A plant will be replaced in accordance with paragraph WARRANTY.

3.12 FINAL ACCEPTANCE

3.12.1 Preliminary Inspection

Prior to the end of the maintenance period, a preliminary inspection shall be held by the Contracting Officer. Time for the inspection shall be established in writing. A checklist of items to be done will be determined, such as irrigation adjustments, plants to be replaced, mulch replacement, etc. These items will be checked for completion at the Final Inspection.

3.12.2 Final Inspection

At the end of the maintenance period, a final inspection shall be held by the Contracting Officer to determine that deficiencies noted in the preliminary inspection have been corrected. Time for the inspection shall be established in writing. Acceptance of the planting is subject to the guarantee of plant vigor and growth.

-- End of Section --

2.1.2 Steel Panels

Zinc-coated steel conforming to ASTM A 653/A 653M; aluminum-zinc alloy coated steel conforming to ASTM A 792/A 792M, AZ 50 coating; or aluminum-coated steel conforming to ASTM A 463/A 463M, Type 2, coating designation T2 65.

2.2 FACTORY COLOR FINISH

Panels shall have a factory applied polyvinylidene fluoride finish on the exposed side. The exterior finish shall consist of a baked-on topcoat with an appropriate prime coat. Color shall match the color indicated on the drawings . The exterior coating shall be a nominal 1 mil thickness consisting of a topcoat of not less than 0.7 mil dry film thickness and the paint manufacturer's recommended primer of not less than 0.2 ~~1.0~~ mil thickness. The interior color finish shall consist of a nominal 1 mil thick PVF2 finish otherwise the same as the exterior . The exterior color finish shall meet the test requirements specified below.

2.2.1 Salt Spray Test

A sample of the sheets shall withstand a cyclic corrosion test for a minimum of 2016 hours in accordance with ASTM D 5894, including the scribe requirement in the test. Immediately upon removal of the panel from the test, the coating shall receive a rating of not less than 10, no blistering, as determined by ASTM D 714; 10, no rusting, as determined by ASTM D 610; and a rating of 6, 1/16 to 1/8 inch failure at scribe, as determined by ASTM D 1654.

2.2.2 Formability Test

When subjected to testing in accordance with ASTM D 522 Method B, 1/8 inch diameter mandrel, the coating film shall show no evidence of fracturing to the naked eye.

2.2.3 Accelerated Weathering, Chalking Resistance and Color Change

A sample of the sheets shall be tested in accordance with ASTM G 154, test condition UVA-340 lamp, 8h UV at 60 degrees C followed by 4h CON at 45 degrees C for 12 total hours. The coating shall withstand the weathering test without cracking, peeling, blistering, loss of adhesion of the protective coating, or corrosion of the base metal. Protective coating with an adhesion rating of less than 4B when tested in accordance with ASTM D 3359, Test Method B, shall be considered as an area indicating loss of adhesion. Following the accelerated weathering test, the coating shall have a chalk rating not less than No. 8 in accordance with ASTM D 4214 test procedures, and the color change shall not exceed 5 CIE or Hunter Lab color difference (delta E) units in accordance with ASTM D 2244. For sheets required to have a low gloss finish, the chalk rating shall be not less than No. 6 and the color difference shall be not greater than 7 units.

2.2.4 Humidity Test

When subjected to a humidity cabinet test in accordance with ASTM D 2247 for 1000 hours, a scored panel shall show no signs of blistering, cracking, creepage or corrosion.

2.2.5 Impact Resistance

2.4.2 Bolts

Bolts shall be not less than 1/4 inch diameter, shouldered or plain shank as required, with locking washers and nuts.

2.4.3 Structural Blind Fasteners

Blind screw-type expandable fasteners shall be not less than 1/4 inch diameter. Blind (pop) rivets shall be not less than 9/32 inch minimum diameter.

2.5 SUBPURLINS

Cold formed supporting structural members/subpurlins shall have a minimum thickness of 0.059 inches and a minimum tensile yield strength of 50000 psi. Hot rolled structural members shall have a minimum thickness of 0.25 inches and a minimum tensile yield strength of 36000 psi. Subpurlins shall be shop painted.

2.6 FACTORY COLOR FINISH

Panels shall have a factory applied polyvinylidene fluoride finish on the exposed side. The exterior finish shall consist of a baked-on topcoat with an appropriate prime coat. Color shall match the color indicated on the drawings . The exterior coating shall be a nominal 1 mil thickness consisting of a topcoat of not less than 0.7 mil dry film thickness and the paint manufacturer's recommended primer of not less than 0.2 ~~1.0~~ mil thickness. The interior color finish shall consist of a nominal 1 mil thick PVF2 finish otherwise the same as the exterior . The exterior color finish shall meet the test requirements specified below.

2.6.1 Salt Spray Test

A sample of the sheets shall withstand a cyclic corrosion test for a minimum of 2016 hours in accordance with ASTM D 5894, including the scribe requirement in the test. Immediately upon removal of the panel from the test, the coating shall receive a rating of not less than 10, no blistering, as determined by ASTM D 714; 10, no rusting, as determined by ASTM D 610; and a rating of 6, over 21/16 to 1/8 inch failure at scribe, as determined by ASTM D 1654.

2.6.2 Formability Test

When subjected to testing in accordance with ASTM D 522 Method B, 1/8 inch diameter mandrel, the coating film shall show no evidence of cracking to the naked eye.

2.6.3 Accelerated Weathering, Chalking Resistance and Color Change

A sample of the sheets shall be tested in accordance with ASTM G 154, test condition UVA-340 lamp, 8h UV at 60 degrees C followed by 4h CON at 45 degrees C for 12 total hours. The coating shall withstand the weathering test without cracking, peeling, blistering, loss of adhesion of the protective coating, or corrosion of the base metal. Protective coating with an adhesion rating less than 4B when tested in accordance with ASTM D 3359, Test Method B, shall be considered as an area indicating loss of adhesion. Following the accelerated weathering test, the coating shall have a chalk rating not less than No. 8 in accordance with ASTM D 4214 test procedures, and the color change shall not exceed 5 CIE or Hunter Lab color

assembly to door to form watertight assembly. Form louvers of hot-dip galvanized steel of same gage as door facings. Louvers shall have steel-framed insect screens secured to room side and readily removable. Provide aluminum wire cloth, 18 by 18 or 18 by 16 inch mesh, for insect screens . Net-free louver area to be before screening.

2.4.3 Moldings

Provide moldings around glass of interior and exterior doors and louvers of interior doors. Provide nonremovable moldings on outside of exterior doors and on corridor side of interior doors. Other moldings may be stationary or removable. Secure inside moldings to stationary moldings, or provide snap-on moldings. Muntins shall interlock at intersections and shall be fitted and welded to stationary moldings.

2.5 INSULATION CORES

Insulated cores shall be of type specified, and provide an apparent U-factor of .48 in accordance with SDI 113 and shall conform to:

a. Rigid Polyurethane Foam: ASTM C 591, Type 1 or 2, foamed-in-place or in board form, with oxygen index of not less than 22 percent when tested in accordance with ASTM D 2863; or

b. Rigid Polystyrene Foam Board: ASTM C 578, Type I or II; or

c. Mineral board: ASTM C 612, Type I.

2.6 STANDARD STEEL FRAMES

ANSI A250.8, except as otherwise specified. Form frames to sizes and shapes indicated, with welded corners ~~or knock-down field-assembled corners~~. Provide steel frames for doors, and interior glazed panels, unless otherwise indicated.

2.6.1 Welded Frames

Continuously weld frame faces at corner joints. Mechanically interlock or continuously weld stops and rabbets. Grind welds smooth.

~~2.7.2 Knock-Down Frames~~

~~Design corners for simple field assembly by concealed tenons, splice plates, or interlocking joints that produce square, rigid corners and a tight fit and maintain the alignment of adjoining members. Provide locknuts for bolted connections.~~

2.6.2 Stops and Beads

Form stops and beads from 20 gage steel. Provide for glazed and other openings in standard steel frames. Secure beads to frames with oval-head, countersunk Phillips self-tapping sheet metal screws or concealed clips and fasteners. Space fasteners approximately 12 to 16 inches on centers. Miter molded shapes at corners. Butt or miter square or rectangular beads at corners.

2.6.3 Terminated Stops

Where indicated, terminate interior door frame stops 6 inches above floor. Do not terminate stops of frames for soundproof doors.

silver coating of a thickness which shall provide reflectivity of 83 percent or more of incident light when viewed through 1/4 inch thick glass, and shall be free of pinholes or other defects. Copper protective coating shall be pure bright reflective copper, homogeneous without sludge, pinholes or other defects, and shall be of proper thickness to prevent "adhesion pull" by mirror backing paint. Mirror backing paint shall consist of two coats of special scratch and abrasion-resistant paint and shall be baked in uniform thickness to provide a protection for silver and copper coatings which will permit normal cutting and edge fabrication.

2.2.3 Combination Paper Towel Dispenser/Waste Receptacle Units (PTDWR)

Dispenser/receptacle shall be semi-recessed and shall have a capacity of 600 sheets of C-fold, single-fold, or quarter-fold towel. Waste receptacle shall be designed to be locked in unit and removable for service. Locking mechanism shall be tumbler key lock. Waste receptacle shall have a capacity of 12 gallons. Unit shall be fabricated of not less than 0.30 inch stainless steel welded construction with all exposed surfaces having a satin finish. Waste receptacle that accepts reusable liner standard for unit manufacturer shall be provided.

2.2.4 Sanitary Napkin Disposer (SND)

Sanitary napkin disposal shall be constructed of Type 304 stainless steel with removable leak-proof receptacle for disposable liners. Fifty disposable liners of the type standard with the manufacturer shall be provided. Receptacle shall be retained in cabinet by tumbler lock. Disposer shall be provided with a door for inserting disposed napkins, and shall be surface mounted.

2.2.5 Sanitary Napkin and Tampon Dispenser (SNTD)

Sanitary napkin and tampon dispenser shall be ~~[surface mounted] [~~***recessed***~~]~~***. Dispenser, including door shall be Type 304 stainless steel and shall dispense both napkins and tampons with a minimum capacity of 20 each. Dispensing mechanism shall be for*** ~~[~~***complimentary***~~]~~ ~~[coin]~~ ***operation.*** ~~Coin mechanisms shall have minimum denominations of 10 cents, 25 cents, 50 cents, [_____] [free].~~ ***Doors shall be hung with a full-length corrosion-resistant steel piano hinge and secured with a tumbler lock. Keys for coin box shall be different from the door keys.***

2.2.6 Soap Dispenser (SD)

Soap dispenser shall be surface mounted, liquid type consisting of a vertical Type 304 stainless steel tank with holding capacity of 40 fluid ounces with a corrosion-resistant all-purpose valve that dispenses liquid soaps, lotions, detergents and antiseptic soaps.

2.2.7 Toilet Tissue Dispenser (TTD)

Toilet tissue holder shall be Type II - surface mounted with two rolls of standard tissue stacked vertically. Cabinet shall be stainless steel, satin finish.

2.2.8 Toilet Seat Cover Dispenser (TSCD)

Toilet seat cover dispensers shall be Type 304 stainless steel and shall be surface mounted. Dispenser shall have a minimum capacity of 500 seat covers.

2.2.9 Mop Rack (MBH)

Mope rack shall be 18 gauge, Type 304 stainless steel, satin finish, located where indicatd. Mop rack shall be 16 inches long and shall be consist of a minimum of three spring activted rubber cams on plated steel retainers.

PART 3 EXECUTION

3.1 INSTALLATION

Toilet accessories shall be securely fastened to the supporting construction in accordance with the manufacturer's approved instructions. Accessories shall be protected from damage from the time of installation until acceptance.

3.2 CLEANING

Material shall be cleaned in accordance with manufacturer's recommendations. Alkaline or abrasive agents shall not be used. Precautions shall be taken to avoid scratching or marring of surfaces.

3.3 SCHEDULE

Accessories Required

Room	PTDWR	TSCD	MG	GB	SND	SD	TTD	MBH	SNTD
AIB Annex									
110	X	X	X	X	X	X	X		X
111								X	
112	X	X	X	X		X	X		
MAINTENANCE FACILITY #2									
108								X	
109	X	X	X	X		X	X		
FLIGHT OPERATIONS BLDG									
109	X	X	X	X		X	X		
110	X	X	X	X	X	X	X		X
112								X	
MAINTENANCE OPERATIONS BLDG									
101	X	X	X	X		X	X		
103								X	
104	X	X	X	X	X	X	X		X

-- End of Section --

SECTION 11311

OIL/WATER SEPARATOR

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 PETROLEUM INSTITUTE

API Publication 421	Design and Operation of Oil-Water Separators

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36	(1997) Standard Specification for Carbon Structural Steel
ASTM E 165	(1995) Standard Test Method for Liquid Penetration Examination

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	(1996) Structural Welding Code - Steel

FEDERAL SPECIFICATIONS (FS)

FS SS-S-210	(Rev. A Reinst) Sealing Compound, Preformed Plastic for Expansion Joints and Pipe Joints

1.2 SYSTEM DESCRIPTION

The Contractor shall furnish and install an ~~above~~***below*** grade prefabricated oil/water separator with an integral oil storage reservoir. The separator shall comply with the requirements of this specification and shall be approved by the Contracting Officer's representative. The separator shall be comprised of a tank with an inlet compartment, oil separation compartment with parallel plates, an integral oil storage compartment or area, and an outlet compartment. The tankage shall be rectangular in shape and shall be installed completely ~~above~~***below*** grade. Cylindrical separators with manway access shall not be acceptable. The physical size and capacity of the separator required by these specifications may not match the manufacturer's stated nominal capacity. Oil/water/sediment separator design shall be in accordance with design principles commonly accepted for sedimentation or clarification chambers at wastewater treatment plants and API Publication 421.

2.2 FRAMING AND STRUCTURAL MEMBERS

Steel 1/8 inch or more in thickness shall conform to ASTM A 36/A 36M, ASTM A 529/A 529M, ASTM A 572/A 572M, or ASTM A 588/A 588M. Uncoated steel less than 1/8 inch in thickness shall conform to ASTM A 570/A 570M, ASTM A 606, or ASTM A 607. Galvanized steel shall conform to ASTM A 653/A 653M, G 90 coating designation, 0.045 inch minimum thickness. Structural pipe shall conform to ASTM A 53/A 53M, ASTM A 252, ASTM A 500, ASTM A 501, ASTM A 618, ASTM B 221, ASTM B 241/B 241M or ASTM B 429. Holes for structural connections shall be made in the shop.

2.3 ROOFING AND SIDING

Roofing and siding shall be steel and shall have a factory color finish.

2.3.1 Roofing

Roofing is specified in Section 07416A STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM.

2.3.2 Siding

Siding is specified in Section 07413a METAL SIDING.

2.3.3 Steel Panels

Steel roofing panels are specified in Section 07416A STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM.

2.3.4 Factory Color Finish

Panels shall have a factory applied polyvinylidene fluoride finish on the exposed side. The exterior finish shall consist of a baked-on topcoat with an appropriate prime coat. Color shall match the color indicated on the drawings. The exterior coating shall be a nominal ~~2~~ 1 mil thickness consisting of a topcoat of not less than 0.7 mil dry film thickness and the paint manufacturer's recommended primer of not less than ~~1.0~~ 0.2 mil thickness. The interior color finish shall consist of the same coating and dry film thickness as the exterior. The exterior color finish shall meet the test requirements specified below.

2.3.4.1 Salt Spray Test

A sample of the sheets shall withstand a cyclic corrosion test for a minimum of 2016 hours in accordance with ASTM D 5894, including the scribe requirement in the test. Immediately upon removal of the panel from the test, the coating shall receive a rating of not less than 10, no blistering, as determined by ASTM D 714; 10, no rusting, as determined by ASTM D 610 and a rating of 6, over 1/16 to 1/8 inch failure at scribe, as determined by ASTM D 1654.

2.3.4.2 Formability Test

When subjected to testing in accordance with ASTM D 522 Method B, 1/8 inch diameter mandrel, the coating film shall show no evidence of cracking to the naked eye.

2.3.4.3 Accelerated Weathering, Chalking Resistance and Color Change

with a minimum of 10 years of specialized experience in designing and manufacturing the type of overhead crane required to meet requirements of the Contract Documents.

1.4 TESTING AND INSPECTIONS

1.4.1 Pre-Delivery Inspections

Contractor shall be responsible for performance of quality control inspections, testing and documentation of steel castings, hook assembly and nuclear safety as follows.

1.4.2 Inspection of Steel Castings

Load-carrying steel castings shall be visually inspected and tested using the magnetic-particle inspection method. Allowable degree of discontinuities shall be referenced to ASTM E 125, and shall be related to service loads and stresses, critical configuration, location and type. Methods of repairing the discontinuities shall be subject to review by the Contracting Officer.

1.4.3 Inspection of Hook Assembly

Hook and nut shall be inspected by a magnetic-particle type inspection or X-rayed prior to delivery. Documentation of hook inspection shall be furnished to Contracting Officer at the field operational testing. As part of the acceptance standard, linear indications will not be allowed. Welding repairs of hook will not be permitted. A hook showing linear indications, damage or deformation will not be accepted, and shall be replaced.

~~1.4.4 Nuclear Safety Analysis~~

~~Nuclear certification, testing, and rules of construction shall be in accordance with ASME NOG-1. Contractor shall submit analysis and test reports to Contracting Officer for approval.~~

1.5 DESIGN CRITERIA

Cranes shall operate in the given spaces and shall match the runway dimensions and rails indicated. Hook coverage, hook vertical travel, clear hook height, lifting capacity, and load test weight shall not be less than that indicated.

1.5.1 General

The hoisting equipment shall include the following:

Number of cranes; 1, located in building name; _Maintenance Facility 2 with a number of , electric overhead traveling crane. The Contractor shall assure that the manufacturer supplying the hoist equipment in Section 14630 is also the manufacturer supplying the hoist equipment in this section.

1.5.2 Classification

Crane shall be designed and constructed to [CMAA 74 Class B Light service]service] requirements for operation in hazardous environment with hoist in accordance with [ASME HST-1]