

ATTACHMENT 1.14.1

PROJECT DESIGN DOCUMENTS/SCOPE OF WORK

FOR DESIGN DOCUMENTATION PLEASE REFER TO
22-DES-ITB-317 ARMY NAVY DRIVE & ATTACHMENTS

ATTACHMENT 1.14.2

FORM 2798 - SPACE USE REQUEST APPLICATION

**APPLICATION/PERMIT FOR USE OF SPACE
ON THE PENTAGON RESERVATION**

INSTRUCTIONS

Type or print in ink. Attach this request to a cover letter which includes information required by Part II of the "Exhibits, Displays, Performances, Special Events, and Ceremonies Policies, Procedures, and Guidelines." Include copies, samples, drawings, and descriptions of the materials to be displayed or distributed. Failure to complete this form will delay the issuance of a permit and could result in a denial of the permit requested. See Conditions on back.

SECTION I (To be completed by applicant)

1. APPLICANT

a. NAME		b. ORGANIZATION	
c. ADDRESS (Include Room Number)			
d. TELEPHONE NUMBER (Include Area Code)	e. FAX NUMBER (Include Area Code)	f. E-MAIL ADDRESS	

IF APPLICANT WILL ACT ON HIS/HER OWN BEHALF, GO TO ITEM 3.

2. ORGANIZATION SPONSORING, PROMOTING, OR CONDUCTING THE PROPOSED ACTIVITY

a. ORGANIZATION NAME		b. NAME OF AUTHORIZED REPRESENTATIVE		c. TITLE
d. ADDRESS (Include Room Number)				
e. TELEPHONE NUMBER (Include Area Code)	f. FAX NUMBER (Include Area Code)	g. E-MAIL ADDRESS		

3. DETAILED DESCRIPTION OF PROPOSED ACTIVITY, INCLUDING EXACT LOCATION (Cover letter may be used)

TEMPORARY EXHIBIT
 PERMANENT EXHIBIT
 CEREMONY
 PERFORMANCE
 SPECIAL EVENT

DESCRIPTION:

4. APPROXIMATE NUMBER OF PERSONS TO BE ENGAGED IN THE ACTIVITY

5. PROPOSED DATES AND HOURS OF THE ACTIVITY

<input type="checkbox"/> INDEFINITE (Permanent Exhibit)	<input type="checkbox"/> TEMPORARY (Complete below)			
	(1) MONTH	(2) DAY	(3) YEAR	(4) HOUR
a. FROM				
b. TO				

6a. SIGNATURE OF APPLICANT	b. DATE SIGNED
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IMPORTANT: If the applicant represents an organization, a letter or other documentation that the applicant has authority to represent the organization is required to be submitted with this form.

7a. SIGNATURE OF ORGANIZATION'S AUTHORIZED REPRESENTATIVE (If applicable)	b. DATE SIGNED
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SECTION II (To be completed by the Building Management Office)

8. DESIGNATED LOCATION AND ACTUAL DATES AND HOURS FOR WHICH THE ACTIVITY IS APPROVED

<input type="checkbox"/> APPROVED	<input type="checkbox"/> DISAPPROVED	a. LOCATION		
b. PERMIT NUMBER	c. DATE(S)	d. HOURS		
9a. SIGNATURE OF APPROVING OFFICIAL		b. DATE SIGNED		

CONDITIONS

The applicant and, if applicable, the organization sponsoring, promoting, or conducting the activity and its authorized representative shall be the permittee(s) for the purposes of the following conditions.

1. The permittee(s) shall indemnify and save harmless the United States, its agents, and employees against any and all loss, damage, claim, or liability whatsoever for personal injury or death, or damage to property, due to the exercise by the permittee(s) of the privilege granted by this permit or due to the permittee's failure to comply with the conditions of the permit. In addition, the permittee(s) shall be liable for any damage to Government property due to the exercise by the permittee(s) of the privilege granted by this permit or due to the permittee's failure to comply with the conditions of the permit.

2. The permittee(s) shall be subject to the rules governing conduct on the Pentagon Reservation (32 CFR Part 234). Permittee(s) shall remain within the location(s) designated by the permit. In addition, the permittee(s) shall:

- a. Not misrepresent his or her identity to the public or conduct any activities in a misleading or fraudulent manner.
- b. Not discriminate on the basis of race, creed, color, sex, age, or national origin in conducting the permitted activities.
- c. Not leave leaflets or other material unattended at any place on DoD-controlled property.
- d. Not attach posters or banners to the walls or columns of the building unless approved by the Building Management Office.
- e. Not direct any sound producing equipment toward the building, nor use it in the building.
- f. Not engage in any activities that are obscene within the meaning of obscenity as defined in 18 USC 1461-65 or that violate the prohibition against political solicitations found in 18 USC 607.
- g. Not obstruct free ingress and egress of the users of public areas or otherwise interfere with access to public areas. Unencumbered safe passage must be maintained.
- h. Not interfere with approved uses of the property by tenants or by the public.
- i. Not damage any property.
- j. Not use combustible fuels or compressed gas.

3. All permittees shall wear an identification badge at all times while conducting permitted activities on Government property. The identification badges shall be provided by the Building Management Office and shall contain:

- a. Person's name
- b. Name of group or organization
- c. Permit number.

4. A representative of the Building Management Office or a Defense Protective Service official may cancel the permit at any time if the permittee's activities violate any condition of this permit.

I/We understand and agree to abide by the terms of this permit and the conditions for use of Government space.

a. SIGNATURE OF APPLICANT	b. DATE SIGNED
c. SIGNATURE OF ORGANIZATION'S AUTHORIZED REPRESENTATIVE (If applicable)	d. DATE SIGNED

ATTACHMENT: Conduct on the Pentagon Reservation, June 1998



CONDUCT ON THE PENTAGON RESERVATION

Title 32, Code of Federal Regulations, Part 234

May 2007

Authority: 10 U.S.C. 131 and 2674(c).

Definitions. (32 CFR 234.1)

As used in this part.

Authorized person. An employee or agent of the Pentagon Force Protection Agency, or any other Department of Defense employee or agent who has delegated authority to enforce the provisions of this part.

Operator. A person who operates, drives, controls, otherwise has charge of, or is in actual physical control of a mechanical mode of transportation or any other mechanical equipment.

Pentagon Reservation. Area of land and improvements thereon, located in Arlington, Virginia, on which the Pentagon Office Building, Federal Building Number 2, the Pentagon heating and sewage treatment plants, and other related facilities are located. Pursuant to 10 U.S.C. 674, the Pentagon Reservation also includes the area of land known as Raven Rock Mountain Complex ("RRMC"), located in Adams County, Pennsylvania, and Site "C," which is located in Washington County, Maryland, and other related facilities. The Pentagon Reservation shall include all roadways, walkways, waterways, and all areas designated for the parking of vehicles.

Permit. A written authorization to engage in uses or activities that are otherwise prohibited, restricted, or regulated.

Possession. Exercising direct physical control or dominion, with or without ownership, over property.

State law. The applicable and nonconflicting laws, statutes, regulations, ordinances, and codes of the state(s) and other political subdivision(s) within whose exterior boundaries the Pentagon Reservation or a portion thereof is located.

Traffic. Pedestrians, ridden or herded animals, vehicles, and other conveyances, either singly or together, while using any road, path, street, or other thoroughfare for the purposes of travel.

Vehicle. Any vehicle that is self-propelled or designed for self-propulsion, any motorized vehicle, and any vehicle drawn by or designed to be drawn by a motor vehicle, including any device in, upon, or by which any person or property is or can be transported or drawn upon a highway, hallway, or pathway; to include any device moved by human or animal power, whether required to be licensed in any state or otherwise.

Weapons. Any loaded or unloaded pistol, rifle, shotgun, or other device which is designed to, or may be readily converted to, expel a projectile by the ignition of a propellant, by compressed gas, or by spring power; any bow and arrow, crossbow, blowgun, spear gun, hand-thrown spear, slingshot, irritant gas device, explosive device, or any other implement designed to discharge missiles; any other weapon, device, instrument, material, or substance, animate or inanimate that is used for or is readily capable of, causing death or serious bodily injury, including any weapon the possession of which is prohibited under the laws of the state in which the Pentagon Reservation or portion thereof is located; except that such term does not include a pocket knife with a blade of less than 2 1/2 inches in length.

Applicability. (32 CFR 234.2)

The provisions of this part apply to all areas, lands, and waters on or adjoining the Pentagon Reservation and under the jurisdiction of the United States, and to all persons entering in or on the property. They supplement those penal provisions of Title 18, United States Code, relating to crimes and criminal procedure and those provisions of State law that are federal criminal offenses by virtue of the Assimilative Crimes Act, 18 U.S.C. 13.

Admission to property. (32 CFR 234.3)

- Access to the Pentagon Reservation or facilities thereon shall be restricted in accordance with AI Number 30 and other applicable Department of Defense rules and regulations in order to ensure the orderly and secure conduct of Department of Defense business. Admission to facilities or restricted areas shall be limited to employees and other persons with proper authorization. Forward written requests for copies of the document to Washington Headquarters Services, Executive Services Division, Freedom of Information Division, 1155 Defense Pentagon, Washington, DC 20301-1155.
- All persons entering or upon the Pentagon Reservation shall, when required and/or requested, display identification to authorized persons.
- All packages, briefcases, and other containers brought into, on, or being removed from facilities or restricted areas on the Pentagon Reservation are subject to inspection and search by authorized persons. Persons entering on facilities or restricted areas who refuse to permit an inspection and search will be denied entry.
- Any person or organization desiring to conduct activities anywhere on the Pentagon Reservation shall file an application for permit with the applicable Building Management Officer or Installation Commander. Such application shall be made on a form provided by the Department of Defense specified by the Department of Defense. Violation of the conditions of a permit issued in accordance with this section is prohibited and may result in the loss of access to the Pentagon Reservation.

Trespassing. (32 CFR 234.4)

- Trespassing, entering, or remaining in or upon property not open to the public, except with the express

invitation or consent of the person or persons having lawful control of the property, is prohibited. Failure to obey an order to leave under paragraph (b) of this section, or reentry upon property after being ordered to leave or not reenter under paragraph (b) of this section, is also prohibited.

- Any person who violates a Department of Defense rule or regulation may be ordered to leave the Pentagon Reservation by an authorized person. A violator's reentry may also be prohibited.

Compliance with official signs. (32 CFR 234.5)

Persons on the Pentagon Reservation shall at all times comply with official signs of a prohibitory, regulatory, or directory nature.

Interfering with agency functions. (32 CFR 234.6)

The following are prohibited:

- Interference.** Threatening, resisting, intimidating, or intentionally interfering with a government employee or agent engaged in an official duty, or on account of the performance of an official duty.
- Violation of a lawful order.** Violating the lawful order of a government employee or agent authorized to maintain order and control public access and movement during fire fighting operations, search and rescue operations, law enforcement actions, and emergency operations that involve a threat to public safety or government resources, or other activities where the control of public movement and activities is necessary to maintain order and public health or safety.
- False information.** Knowingly giving a false or fictitious report or other false information:
 - To an authorized person investigating an accident or violation of law or regulation, or
 - On an application for a permit.
- False report.** Knowingly giving a false report for the purpose of misleading a government employee or agent in the conduct of official duties, or making a false report that causes a response by the government to a fictitious event.

Disorderly conduct. (32 CFR 234.7)

A person commits disorderly conduct when, with intent to cause public alarm, nuisance, jeopardy, or violence, or knowingly or recklessly creating a risk thereof, such person commits any of the following prohibited acts:

- Engages in fighting or threatening, or in violent behavior.
- Uses language, an utterance, or gesture, or engages in a display or act that is obscene, physically threatening or menacing, or done in a manner that is likely to inflict injury or incite an immediate breach of the peace.
- Makes noise that is unreasonable, considering the nature and purpose of the actor's conduct, location, time of day or night, and other factors that would govern the conduct of a reasonably prudent person under the circumstances.
- Creates or maintains a hazardous or physically offensive condition.
- Impedes or threatens the security of persons or property, or disrupts the performance of official duties by Department of Defense employees, or obstructs the use of areas such as entrances, foyers, lobbies, corridors, concourses, offices, elevators, stairways, roadways, driveways, walkways, or parking lots.

Preservation of property. (32 CFR 234.8)

Willfully destroying or damaging private or government property is prohibited. The throwing of articles of any kind from or at buildings or persons, improper disposal of rubbish, and open fires are also prohibited.

Explosives. (32 CFR 234.9)

- Using, possessing, storing, or transporting explosives, blasting agents or explosive materials is prohibited, except pursuant to the terms and conditions of a permit issued by the applicable Building Management Officer or Installation Commander. When permitted, the use, possession, storage and transportation shall be in accordance with applicable Federal and State law.
- Using or possessing fireworks or firecrackers is prohibited.
- Violation of the conditions established by the applicable Building Management Officer or Installation Commander or of the terms and conditions of a permit issued in accordance with this section is prohibited and may result in the loss of access to the Pentagon Reservation.

Weapons. (32 CFR 234.10)

- Except as otherwise authorized under this section, the following are prohibited:
 - Possessing a weapon.
 - Carrying a weapon.
 - Using a weapon.
- This section does not apply to any agency or Department of Defense component that has received prior written approval from the Pentagon Force Protection Agency or the Installation Commander to carry, transport, or use a weapon in support of a security, law enforcement, or other lawful purpose while on the Pentagon Reservation.

Alcoholic beverages and controlled substances. (32 CFR 234.11)

- Alcoholic beverages.** The consumption of alcoholic beverages or the possession of an open container of an alcoholic beverage within the Pentagon Reservation is prohibited unless authorized by the Director, Washington Headquarters Services, or his designee, the Installation Commander, or the Heads of the Military Departments, or their designees. Written notice of such authorizations shall be provided to the Pentagon Force Protection Agency.
- Controlled substances.** The following are prohibited:
 - The delivery of a controlled substance, except when distribution is made by a licensed physician or pharmacist in accordance with applicable law. For the purposes of this paragraph, delivery means the actual, attempted, or constructive transfer of a controlled substance.
 - The possession of a controlled substance, unless such substance was obtained by the possessor directly from, or pursuant to a valid prescription or order by, a licensed physician or pharmacist, or as otherwise allowed by Federal or State law.
- Presence on the Pentagon Reservation when under the influence of alcohol, a drug, a controlled substance, or any combination thereof, to a degree that may endanger oneself or another person, or damage property, is prohibited.

Restriction on animals. (32 CFR 234.12)

Animals, except guide dogs for persons with disabilities, shall not be brought upon the Pentagon Reservation for other than official purposes.

Soliciting, vending, and debt collection. (32 CFR 234.13)

- Commercial or political soliciting, vending of all kinds, displaying or distributing commercial advertising, collecting private debts or soliciting alms upon the Pentagon Reservation is prohibited. This does not apply to:
- National or local drives for funds for welfare, health, or other purposes as authorized by 5 CFR parts 110 and 950, Solicitation of Federal Civilian and Uniformed Services Personnel for Contributions to Private Voluntary Organizations, issued by the U.S. Office of Personnel Management under Executive Order 12353, 3 CFR, 1982 Comp., p. 139, as amended.
 - Personal notices posted on authorized bulletin boards, and in compliance with building rules governing the use of such authorized bulletin boards, advertising to sell or rent property of Pentagon Reservation employees or their immediate families.
 - Solicitation of labor organization membership or dues authorized by the Department of Defense under the Civil Service Reform Act of 1978.
 - Licensees, or their agents and employees, with respect to space licensed for their use.
 - Solicitations conducted by organizations composed of civilian employees of the Department of Defense or members of the uniformed services among their own members for organizational support or for the benefit of welfare funds for their members, after compliance with the requirements of § 234.3(d).

Posting of materials. (32 CFR 234.14)

Posting or affixing materials, such as pamphlets, handbills, or fliers on the Pentagon Reservation is prohibited except as provided by § 234.13(b) or when conducted as part of activities approved by the applicable Building Management Office or Installation Commander under § 234.3(d).

Use of visual recording devices. (32 CFR 234.15)

- The use of cameras or other visual recording devices on the Pentagon Reservation is prohibited, unless the use of such items are approved by the Pentagon Force Protection Agency, the Installation Commander, or the Office of the Assistant to the Secretary of Defense for Public Affairs.
- It shall be unlawful to make any photograph, sketch, picture, drawing, map or graphical representation of the Pentagon Reservation without first obtaining permission of the Pentagon Force Protection Agency, Installation Commander, or the Office of the Assistant to the Secretary of Defense for Public Affairs.

Gambling. (32 CFR 234.16)

Gambling in any form, or the operation of gambling devices, is prohibited. This prohibition shall not apply to the vending or exchange of chances by licensed blind operators of vending facilities for any lottery set forth in a State law and authorized by the provisions of the Randolph-Sheppard Act (20 U.S.C. 107, et seq.).

Vehicles and traffic safety. (32 CFR 234.17)

- In general.** Unless specifically by regulations in this part, traffic and the use of vehicles within the Pentagon Reservation are governed by State law. Violating a provision of State law is prohibited.
- Open container of an alcoholic beverage.**
 - Each person within a vehicle is responsible for complying with the provisions of this section that pertain to carrying an open container. The operator of a vehicle is the person responsible for complying with the provisions of this section that pertain to the storage of an open container.
 - Carrying or storing a bottle, can, or other receptacle containing an alcoholic beverage that is open or

has been opened, or whose seal is broken, or the contents of which have been partially removed, within a vehicle on the Pentagon Reservation is prohibited.

- This section does not apply to:
 - An open container stored in the trunk of a vehicle or, if a vehicle is not equipped with a trunk, an open container stored in some other portion of the vehicle designed for the storage of luggage and not normally occupied by or readily accessible to the operator or passengers; or
 - An open container stored in the living quarters of a motor home or camper.
- For the purpose of paragraph (a)(3)(i) of this section, a utility compartment or glove compartment is deemed to be readily accessible to the operator and passengers of a vehicle.
- Operating under the influence of alcohol, drugs, or controlled substances.
 - Operating or being in actual physical control of a vehicle is prohibited while:
 - Under the influence of alcohol, a drug or drugs, a controlled substance or controlled substances, or any combination thereof, to a degree that renders the operator incapable of safe operation; or
 - The alcohol concentration in the operator's blood or breath is 0.08 grams or more of alcohol per 100 milliliters of blood or 0.08 grams or more of alcohol per 210 liters of breath. Provided, however, that if State law that applies to operating a vehicle while under the influence of alcohol establishes more restrictive limits of alcohol concentration in the operator's blood or breath, those limits supersede the limits specified in this paragraph.
 - The provisions of paragraph (c)(1) of this section shall also apply to an operator who is or has been legally entitled to use alcohol or another drug.
- Tests.**
 - At the request or direction of an authorized person who has probable cause to believe that an operator of a vehicle within the Pentagon Reservation has violated a provision of paragraph (c)(1) of this section, the operator shall submit to one or more tests of the blood, breath, saliva, or urine for the purpose of determining blood alcohol, drug, and controlled substance content.
 - Refusal by an operator to submit to a test is prohibited and may result in detention and citation by an authorized person. Proof of refusal may be admissible in any related judicial proceeding.
 - Any test or tests for the presence of alcohol, drugs, and controlled substances shall be determined by and administered at the direction of an authorized person.
 - Any test shall be conducted by using accepted scientific methods and equipment of proven accuracy and reliability operated by personnel certified in its use.
- Presumptive levels.**
 - The results of chemical or other quantitative tests are intended to supplement the elements of probable cause used as the basis for the arrest of an operator charged with a violation of this section. If the alcohol concentration in the operator's blood or breath at the time of the testing is less than the alcohol concentration specified in paragraph (c)(1)(ii) of this section, this fact does not give rise to any presumption that the operator is or is not under the influence of alcohol.
 - The provisions of paragraphs (c)(3) and (c)(4) (i) of this section are not intended to limit the introduction of any other competent evidence bearing upon the question of whether the operator, at the time of the alleged violation, was under the influence of alcohol, a drug or drugs, or a controlled substance or controlled substances, or any combination thereof.

Enforcement of parking regulations. (32 CFR 234.18)

Parking regulations for the Pentagon Reservation shall be enforced in accordance with the Pentagon Reservation Parking Program and State law; violating such provisions is prohibited. A vehicle parked in any location without authorization, or parked contrary to the directions of posted signs or markings, shall be subject to removal at the owner's risk and expense, in addition to any penalties imposed. The Department of Defense assumes no responsibility for the payment of any fees or costs related to such removal which may be charged to the owner of the vehicle by the towing organization. This section may be supplemented from time to time with the approval of the Director, Washington Headquarters Services, or his designee, or the Installation Commander, by the issuance and posting of such parking directives as may be required, and when so issued and posted such directive shall have the same force and effect as if made a part hereof.

Penalties and effect on other laws. (32 CFR 234.19)

- Whoever shall be found guilty of willfully violating any rule or regulation enumerated in this part is subject to the penalties imposed by Federal law for the commission of a Class B misdemeanor offense.
- Whoever violates any rule or regulation enumerated in this part is liable to the United States for a civil penalty of not more than \$1,000.
- Nothing in this part shall be construed to abrogate any other Federal laws.

WASHINGTON HEADQUARTERS SERVICES

ATTACHMENT 1.14.3

DOD-WHS EXCAVATION PERMIT APPLICATION



PENTAGON RESERVATION EXCAVATION PERMIT APPLICATION

**WASHINGTON HEADQUARTERS SERVICES – FACILITIES SERVICES
DIRECTORATE**



SUBMIT TO WHS.PENTAGON.FSD.MBX.ECM-CMD-EXCAVATION-PERMIT@MAIL.MIL

A. PROJECT INFORMATION *TO BE COMPLETED BY CONTRACTOR OR GOVERNMENT PROJECT MANAGER (GPM)*

AGENCY/GPM _____ PHONE: _____

CONTRACTOR / POC: _____ POC PHONE: _____

REQUESTED START DATE: _____ PLANNED END DATE: _____ DURATION (CAL.DAYS): _____

LIMIT OF DISTURBANCE: _____ *(Specify Square-fee or Acre)*

ATTACH A SCALED PDF DRAWING OF THE EXCAVATION SITE – ALL DOCUMENTS MUST BE DIGITAL – NO PAPER. WHEN REQUESTING A PERMIT FOR BORINGS, THE EXACT LOCATION MUST BE SHOWN

DESCRIPTION OF THE WORK TO BE PERFORMED: BORINGS/TEST PITS CONSTRUCTION *(Check One)*

B. PERMIT INSTRUCTIONS, CONTRACTOR CERTIFICATION AND FSD APPROVAL

1. This permit shall be used for any work on the Pentagon reservation that may disrupt underground communication or utility lines, including easements, or any below or above ground right of ways - including work that will penetrate more than 6" below ground level. Contractor questions regarding this permit should be directed to the Government POC.
2. Applicant **MUST** also submit an application to the Pentagon Building Management Office (PBMO) for a Space Use Permit DD Form 2798 (phone: 703-697-7351). Contractor **MUST** have BOTH the approved Excavation Permit and the PBMO Space Use Permit prior to commencing any on-site work. Permits shall then be posted on-site for the duration of the work.
3. The review and approval process is typically 20 business days. For any comments that are not addressed by the applicant within 5 business days the permit application will be subject to an extended review and potential cancellation. It will be the responsibility of the applicant to submit a new permit package. Review and issuance of this permit takes place **PRIOR** to applying for a Space Use Permit.
4. **PRIOR TO SUBMITTAL THE CONTRACTOR MUST:**
 - A. Contact the enterprise Facility Information Center (eFIC) office, convey scope of the dig and obtain existing conditions drawings. For geotechnical borings, provide locations. 703-614-1200
<https://forms.office.com/pages/responsepage.aspx?id=BHxJVV-Tb0WGw4A3rOzszb9ntS7V77hFnj8dhTzGMixUNE1DU0ZDU0hJWTNEOUtZQ09RQIJYSDVNUSQIQCN0PWcu>
 - B. Contact Miss Utility (1(800)257-7777) and convey the scope of the dig and obtain a clearance number and clearance date. Enter Clearance Number and date in Section C. (Contacting Miss Utility is for their awareness only. See instruction #3).
 - C. Contractor is solely responsible for tracing and marking all underground utilities within the area to be excavated. (Miss Utility does not have jurisdiction on Pentagon Reservation to mark utilities - but must be made aware of the excavation).
5. Contractor **MUST** use a utility locator to mark, then hand dig or use vacuum excavation within five feet of any written or known locations of an underground utility or communication line and within ten feet of all building boundaries. The use of Ground Penetrating Radar equipment requires an additional permit and an extended review period. Please contact PBMO for application and requirements.
6. **Reporting Damage to Government Property:** Contractor shall immediately notify the Building Operation Command Center (BOCC-703-614-1597) and during business hours the Government POC for ANY damage to utility or communication lines.
7. **Reporting unmarked utilities:** If during excavation any unmarked utilities are encountered contractor shall immediately contact BOCC at 703-614-1597 and during business hours, the Government POC.
8. Consistent with contract terms, contractors are responsible for damages caused by activities associated with this permit, and compliance with contract terms and requirements for immediate repairs. Repairs must meet all current regulatory and code requirements and must be approved by the Government. The Government may exercise any remedy available under a contract, Pentagon policies and procedures, or the law if damages are not promptly remedied to the Government's satisfaction.

9. **CLOSE OUT: Applicant MUST provide all closeout information (redlines, as-built drawings, spatial information, photographs, CAD files and verification documents) to eFIC office, when close out leads to site excavation. Redlines should show location of new or relocated utilities and other information which should be confirmed by the eFIC office. Permits will show an "open" status, and prohibit final project close out, until Government POC has confirmed receipt of the requested items**

C. CONTRACTOR/COR ROUTING to MISS UTILITY/EFIC

- 1. MISS UTILITY 1(800) 257-7777 Clearance No: _____ Clearance Date: _____
- 2. Third Party Utility Marking Company: _____ Utility Marking Date: _____
Signature (Government Representative) _____
- 3. Will this project involve moving or removing any utilities? Yes ____ No ____

D. WHS/COORDINATION AND REVIEW ROUTING:

- 1. Pentagon Building Management Office (703) 697-7351 (Jonathan Van Hoose) _____ Received Date _____ Return Date _____
- 2. Heating & Refrigeration Plant, (703) 571-0690 (Justin Mann) _____ Received Date _____ Return Date _____
- 3. Arlington National Cemetery, (as required) (703) 614-0318 (Joseph Bunton) _____ Received Date _____ Return Date _____
- 4. Washington Aqueduct Division, (202-587-9366) (Hanif Drzal) _____ Received Date _____ Return Date _____
- 5. JSP - Telecommunications Infrastructure (703) 697-0700 (Evelyn King) _____ Received Date _____ Return Date _____

E. INFORMATION ONLY

- 1. SCD-Occupational Health Branch (703) 693-3683 (Michael Gargano) _____ Received Date _____ Return Date _____
- 2. Pentagon Force Protection Agency – PFPA (703) 695-0851 (Leo Pereira) _____ Received Date _____ Return Date _____
- 3. WMATA _____ Received Date _____ Return Date _____
- 4. VDOT _____ Received Date _____ Return Date _____
- 5. Dominion Energy _____ Received Date _____ Return Date _____

F. ATTACHMENTS

- Excavation area exhibit MISS UTILITY documents Arlington county Land Disturbance Approval NPDES Permit (≥1ac)
- Other _____

I HAVE READ AND FULLY UNDERSTAND THE ABOVE INSTRUCTIONS AND WILL CONTACT THE APPLICABLE AGENCIES LISTED IN PART C BELOW FOR SITE CLEARANCE PRIOR TO COMMENCING WORK.

THIS PERMIT HAS BEEN REVIEWED AND COORDINATED WITH THE COMPONENTS LISTED IN PART D BELOW. THIS PERMIT EXPIRES ON THE DATE SHOWN BELOW AND MUST BE RENEWED IF WORK IS NOT COMPLETE.

Contractor Printed Name Date

WHS-FSD APPROVAL (SIGNATURE)

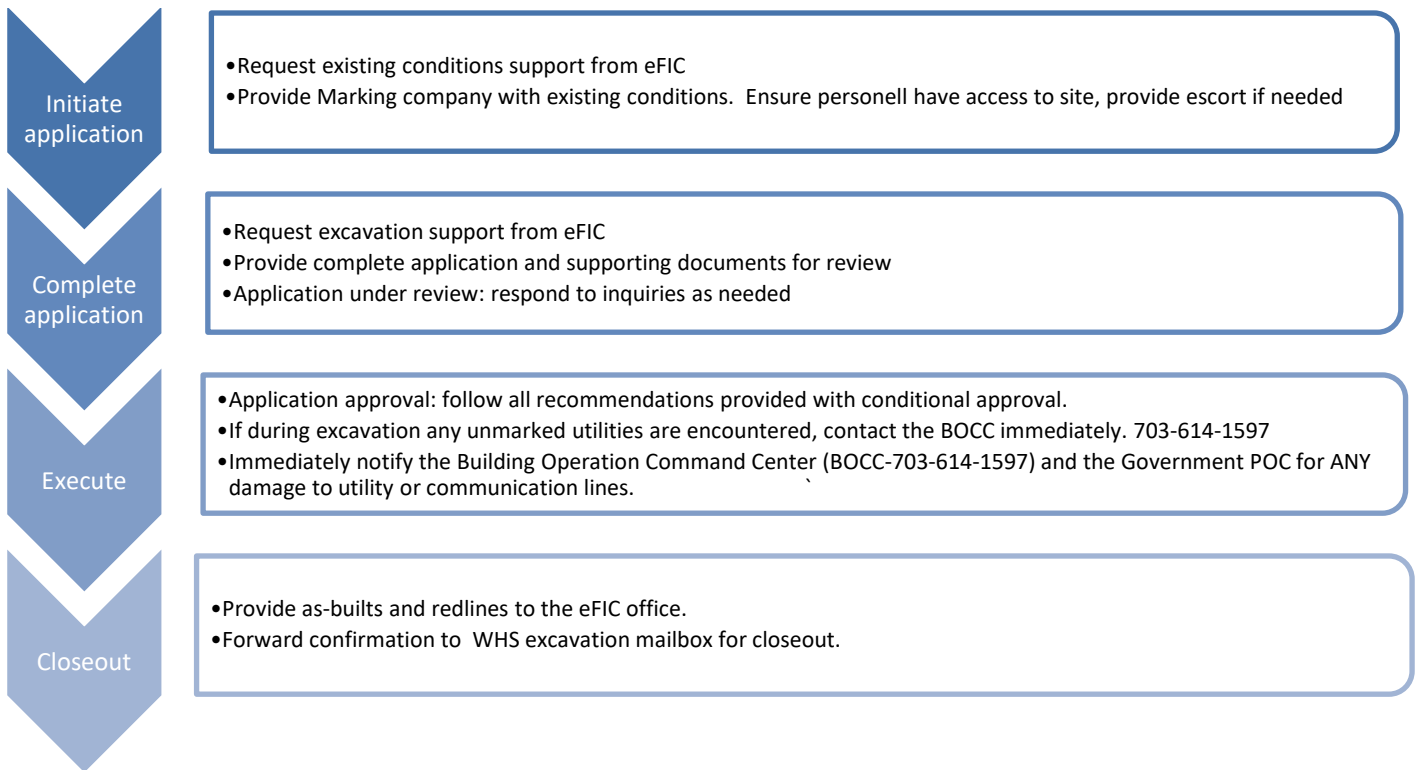
Contractor Signature Date

EXCAVATION PERMIT NO: _____
ISSUE DATE: _____
EXPIRATION DATE: _____

Government Printed Name Date

Government Signature Date

PROCESS OVERVIEW



ATTACHMENT 1.14.4

WHS-PBMO RIA INSTALLATION APPLICATION

UNCLASSIFIED

Pentagon Reservation Installation Application (RIA)



Title

Date

Prepared by (include company or government agency name):

**Insert Name, Agency, Mailing Address, E-mail Address,
and Telephone Number**

Submitted to:

Washington Headquarters Service
Mr. Donald O. Bussard Jr., Facilities Operations Specialist
Pentagon Building Management Office, Room 2E1040, Pentagon
donald.o.bussard4.civ@mail.mil

Date Submitted:

Insert the actual date this application is submitted to WHS/PBMO

**Insert the classification of this document into Header and Footer; normally
it will be UNCLASSIFIED**

Insert the classification of this document into Header and Footer; normally it will be UNCLASSIFIED

RESERVATION INSTALLATION APPLICATION (RIA)	
▶ Required Information	Revision: 2020-05-20
USER INFORMATION	
1. ▶ Authorizing Official: Required*	Phone/Email:
2. Government Sponsor (POC) Agency/Office:	Phone/Email:
3. Structure Type (Permanent, Temp):	
4. Installation Description {Attach supporting documentation/technical data/diagrams}:	
5. Installation Contractor:	
6. Installation Contractor POC:	Phone/Email Office:
7. Start/Completion Dates of Installation:	
8. Location (Pentagon Room #)	
9. DD Form 1494 (JF 12 #):	
10. ▶ FCC ID# {Located on the FCC sticker attached to the radio itself or documented as an internal component used by radio} Required*	
11. ▶ WiFi and/or Bluetooth MAC Addresses: Required*	
12. Transmit/Receive Frequencies:	
13. Transmitter Nomenclature (Manufacturer/Model #):	
14. Transmitter Antenna Nomenclature (Model #):	
15. Receiver Nomenclature (Model #):	
16. Receiver Antenna Nomenclature (Model #):	
17. Antenna Location and Orientation:	
<p>18. NOTES: Insert a full description of the system to be installed, modifications to an existing system to be performed, or information related to relocation of an existing system here.</p> <p>Please provide the name of the manufacturer of your transmitters/receivers and provide the exact model number as supplied by the manufacturer often labeled onto the radio itself.</p> <p>Please provide the FCC ID Number. The FCC Number is located on a sticker required by the FCC to be attached to the transmitters exterior surface. Radio transmitters without FCC or equivalent approval cannot be approved for use on the Pentagon Reservation. If you cannot locate the FCC ID number to show that your radio has been legally approved for use in the US then please turn in the RIA form without it and indicate that <i>assistance is requested</i> in the FCC ID # field of the form. The Joint Spectrum Center will contact you and attempt to assist to locate the required information.</p> <p>Please provide the Media Access Control (MAC) Address for each Laptop, WiFi or Bluetooth enabled device to be used by your equipment. You may have to examine control software or firmware for this. MAC addresses are often located on the bottom sticker of WiFi or Bluetooth devices. The format of a MAC address is xx-xx-xx-xx-xx-xx where each xx is a Hexadecimal number.</p> <p>Please Insert additional pages to augment this description as needed. Provide as much system parametric data as possible including block diagrams and component specification data sheets. If available please provide item 9. DD Form 1494 (JF 12 #)</p> <p>Failure to provide complete information will delay the E3 assessment to be performed by the DoD Joint Spectrum Center (JSC) as an essential step in gaining approval of the proposed installation.</p>	

Insert the classification of this document into Header and Footer; normally it will be UNCLASSIFIED

Insert the classification of this document into Header and Footer; normally it will be UNCLASSIFIED

Continuation Sheets (as needed):

Insert the classification of this document into Header and Footer; normally it will be UNCLASSIFIED

ATTACHMENT 1.14.5

DOD-WHS COMMUNICATIONS PROTOCOL

Communications Protocol Document

This Communications Protocol (Protocol) has been developed to facilitate communications between the parties as it relates to the Army Navy Drive Complete Streets Project as set forth in the Memorandum of Agreement (MOA) to which this Communications Protocol will be appended. This Communication Protocol contains protocols for the construction phases of the project. Defined terms in the MOA are incorporated herein. In the event of a conflict between this Protocol and the MOA, the MOA shall supersede this Protocol.

1. Construction Phase

The following protocols will be utilized during the construction of the Army Navy Drive Complete Streets Project

1.1 Personnel approved for access/Changes in Personnel

All persons requiring access to the Pentagon Reservation to perform any work associated with the Army Navy Drive Complete Streets Project must be pre-approved for access by Pentagon Force Protection Agency (PFPA). For pre-approval, Arlington County's Contractor shall submit the name, date of birth, driver's license number and state, and social security number s to PFPA point of contact (POC) in conjunction with the three-week look ahead schedule. Approved personnel will be added to a master list.

In the event of any additions or deletions of personnel to the master list each concerned party (Arlington County and any contractor or subcontractors) will provide a complete updated personnel list to PFPA's POC for submission to PFPA for approval. On the updated list, the changes are to be highlighted to facilitate identification of the changes. An updated list should be provided at least 72 hours prior to the request for the additional personnel to access the Pentagon Reservation. Deletions to the master list must be provided to PFPA's POC as soon as they are made.

PFPA's POC shall communicate to Arlington County's Contractor approval, or if applicable, denial, of the request for personnel to access the Pentagon Reservation as determined by PFPA through the clearance process. Such approval shall be granted or denied and communicated to Arlington County's Contractor within 5 business days.

1.2 Primary Points of Contact

The primary points of contact for each party are included in Attachment A, appended to this document.

This list shall be updated and redistributed as necessary throughout the life of the project, with updates provided to PSD's POC. Unless otherwise noted in this document, all notifications and approvals shall be directed to these primary points of contact.

1.3 Advance notification prior to accessing Pentagon Reservation

Prior to accessing the Pentagon Reservation to perform any Work associated with the Army Navy Drive Complete Streets Project, advance notification shall be provided to PFPA's POC the minimum number of days, as noted below, in advance of the desired access date noted below PFPA's POC based on the type of impact. For continuous operations (for example, consecutive nights) one prior notice for the entire operation will suffice. No access shall be allowed prior to receipt of confirmation from PFPA's POC.

1.3.1 Bi-Weekly Progress Meeting for Work

PSD's POC (WHS) will coordinate bi-weekly progress meetings with Arlington County's Contractor and the construction manager(s) to discuss scheduling and ongoing or upcoming impacts to critical path activities on the Pentagon Reservation. Progress meetings may be held via teleconference or other similar technology. The bi-weekly progress meeting will address the status of safety inspections and reports, RFIs, quality control and submittals, and work schedules and delays. Inspections of critical elements will also be scheduled during this meeting. Prior to each bi-weekly progress teleconference, Arlington County's Contractor will provide PSD's POC (WHS) the three-week look-ahead schedule.

In addition to regular progress meetings, Arlington County's Contractor will provide PSD's POC (WHS) a monthly progress schedule. In addition to regular progress meetings, Arlington County's Contractor shall provide a thirty-day initial advance notice prior to commencing the Work on the Pentagon Reservation.

1.3.2 Work with no changes in impacted areas (ongoing work in already impacted area)

Arlington County's Contractor will provide an anticipated schedule of Work via the three-week look ahead at the bi-weekly progress meeting. Any variances to the Work schedule provided in the bi-weekly progress meeting should be communicated to the Pentagon Operations Center and the Building Operations Command Center 24 hours in advance of the variance. Variances include working when not previously scheduled and not working when scheduled. No advance notice is required to work in already impacted areas if such Work is consistent with the Contractor's provided schedule. Changes to the three-week look ahead should be transmitted to PSD's POC, the Pentagon Operations Center, and the Building Operations Command Center as soon as they are known.

1.3.3 Changes in impacted areas (new areas to be impacted / previously impacted areas returned to DoD/WHS for use)

The minimum advanced notification required for already permitted Work in areas not previously impacted by ongoing Work shall be 30 days in advance of the desired access date.

1.3.4 Changes to traffic patterns/available parking/roadway closures

The minimum advanced notification required for work requiring changes to existing traffic patterns, available parking, or roadway closures shall be at least twenty-one days in advance of the desired access date, provided to the PSD POC. In order to reduce adverse impacts to security, the MOT plan is subject to review and revision pending WHS approval. Identified changes to the MOT shall be communicated to the WHS PSD POC as soon as practicable, or 14 days in advance of the change.

1.3.5 Outages Necessary to Complete Work

If an outage to any utility is needed or requested to complete the work, such outage must be requested at least three weeks in advance. Requests must be made at the Pentagon's weekly Tuesday outage meeting and attendance can be coordinated either through the Building Operations Command Center or by contacting one of the Pentagon Building Management Office POCs.

1.4 Daily Access to the Pentagon Reservation

Once prior approval has been received for access, no additional daily check-in procedure will be required. All persons accessing the Pentagon Reservation to perform Work shall have a valid form of identification at all times. Crew supervisors accessing the Pentagon Reservation to perform work related to the Army Navy Drive Complete Streets Project shall have the following with them at all times:

- a copy of the approved Use of Space permit. ,
- a copy of any other specific permit relating to the work being performed, and

1.5 Monthly Construction Inspection Reports

For Work performed on Pentagon Reservation property, a monthly construction inspection report will be provided to PSD's POC to ensure safety standards are met.

1.6 Notice of Completion

When the Design-Build Contractor is ready for final review and acceptance of the work on the Pentagon Reservation, notification is to be provided to PSD's POC. Upon receipt of this notice of completion, the DoD/WHS will conduct a final review of the work and either advise of any observed deficiencies from what is what is specified in the construction contract documentation, or provide appropriate notice of acceptance to Arlington County.

1.7 DoD/WHS construction review

1.7.1 Notification of concerns and issues

With the exception of life-threatening situations or urgent safety concerns, any concerns or issues resulting from review of the active work site will be routed through EAD's POC. All such comments will receive due consideration and an appropriate response will be returned to Arlington County.

1.8 DOD Inspection of Work

DoD/WHS may conduct a final review of the Work and either advise of any observed deficiencies from what is what is specified in the construction contract documentation for Work on the Pentagon Property,

DoD/WHS construction review

1.8.1 Notification of concerns and issues

With the exception of life-threatening situations or urgent safety concerns, any concerns or issues resulting from review of the active work site will be routed through EAD's POC. All such comments will receive due consideration and an appropriate response will be returned to Arlington County.

1.9 Incident Notification Procedure

All emergency response type calls made from a cell phone while on the Pentagon Reservation must use the Pentagon Force Protection Agency (PFPA) emergency number of (703) 697-1001. All emergency response must be coordinated with PFPA. Use of 911 for emergency response while performing work on the Pentagon Reservation is not recommended.

In the event an incident occurs on the Pentagon Reservation property, refer to the Emergency Contact List in Attachment A.

The Pentagon Force Protection Agency will respond to all incidents that occur on the Pentagon Reservation. For incidents occurring outside of the Pentagon Reservation, Arlington County Police should be called to respond. Law enforcement and authority to enforce rules and regulations will follow procedures under current agreements between Arlington County and the PFPA

1.10 Signage and notifications

Arlington County's Contractor will be responsible for erecting, maintaining and removing all temporary traffic control required for the construction of the Work for Army Navy Drive Complete Streets Project.

Any internal DoD/WHS notifications, such as advisories of coming changes, will be the responsibility of DoD/WHS.

Attachment A: Points of Contact

Pentagon Services Division (PSD):

Michael Jarrell (Transportation)
571-372-0904
michael.a.jarrell8.civ@mail.mil

Hugh McGloin (Transportation Program Manager)
703-697-1850
hugh.m.mcglain.civ@mail.mil

Pentagon Building Management Office (PBMO):

Robert Candido (Building Manager)
703-697-7351
robert.h.candido.civ@mail.mil

Thomas Boardman (Horticulturist)
703-614-4638
thomas.d.boardman.civ@mail.mil

Engineering and Architecture Divisions (EAD):

Matthew Muhlenkamp (Structural Engineering Lead)
703-695-3257
matthew.j.muhlenkamp.civ@mail.mil

Office of the General Counsel (OGC):

Lisa Wischkaemper (OGC, Legal)
lisa.a.wischkaemper.civ@mail.mil

Real Property:

Todd Laging (Real Property Program Manager)
703-571-1775
todd.r.laging.civ@mail.mil

Bill Oliver (Real Property Specialist)
703-695-6786
william.h.oliver85.civ@mail.mil

Facilities Services Division (FSD):

Brian King (Environmental Engineer)
703-614-3658

brian.r.king.civ@mail.mil

Allan Obaldo (eFIC Operation Manager)

703-614-1322

allan.n.obaldo.civ@mail.mil

Jillianne Mattox (eFIC Operation Manager)

jillianne.I.mattox.civ@mail.mil

Brendan Wilson (Engineering Architecture Division, EAD)

{Excavation permits}

brendan.l.wilson2.civ@mail.mil

Safety and Compliance Division:

Brian Ringwelski (Safety and Compliance, Fire Protection Engineer)

703-695-3459

brian.a.ringwelski.civ@mail.mil

Jacob Morton (Radiological Defense Chief)

jacob.b.morton.mil@mail.mil

703-695-3672

Pentagon Force Protection Agency (PFPA):

Ronald Wilkins (Pentagon Force Protection Agency)

571-256-4286

ronald.s.wilkins2.civ@mail.mil

Henry Woods (Pentagon Force Protection Agency)

571-372-5645

henry.f.woods2.civ@mail.mil

Other:

Pentagon Operations Center Non-Emergency (POC)

703.697.1001

Pentagon Operations Center Emergency (POC)

703.697.5555

Pentagon Building Operations Command Center

703.614.1597

ATTACHMENT 1.14.6

PENTAGON RESERVATION

EXTERIOR STANDARDS MANUAL VERSION 1.1

Facilities Services Directorate
Washington Headquarters Services
Department of Defense



PENTAGON RESERVATION EXTERIOR STANDARDS MANUAL

March 3, 2010
Version 1.1 – March 2, 2014

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A. INTRODUCTION



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A.1. Executive Summary

The Pentagon Reservation Exterior Standards Manual has been developed for the Washington Headquarters Services (WHS) for the purpose of defining future standards for the design of exterior building and site elements on the Pentagon Reservation in Arlington, Virginia. The Pentagon is a designated National Historic Landmark originally constructed in 1943. A set of reference guidelines is required for future exterior repairs, design, and construction activities, to provide clarity as to how to preserve the historic elements protected by the National Historic Preservation Act and its implementing regulations.

The Reservation includes the exterior envelope of the Pentagon Building itself, as well as all contiguous and associated site areas, including the central courtyard and surrounding landscaped and hardscaped areas owned by the U.S. Department of Defense and used to support Pentagon functions.

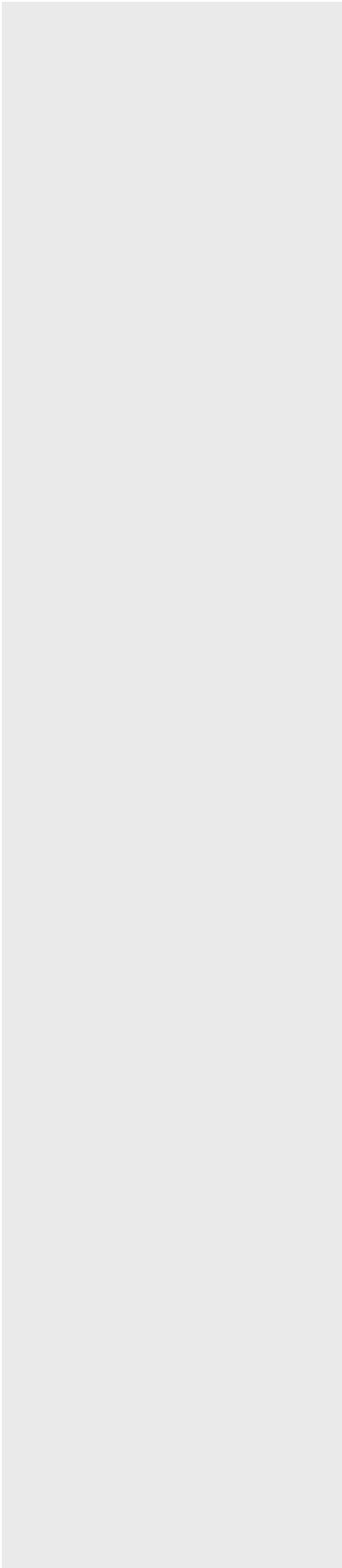
These standards have been developed taking into consideration

- Aesthetics and appropriateness to the Pentagon's historic context
- Functional requirements
- First cost
- Maintenance requirements
- Sustainability and energy usage

In addition to conducting reviews of existing drawings, reference documents, and applicable standards, the study team has conducted extensive site survey of existing conditions. The team has further solicited input from a variety of stakeholders at the Reservation, including the Director of the Defense Facilities Directorate; WHS Engineering and Technical Services Division (ETSD), WHS Pentagon Building Management Office (PBMO); WHS Safety and Environmental Management Branch (SEMB); Pentagon Renovation & Construction Program Office (PENREN); and Pentagon Force Protection Agency (PFPA). Guidance and feedback have been utilized to inform the standards development.

This manual is an outgrowth of, and should be used in conjunction with, the *Pentagon Reservation Master Plan, 2005*. The guidelines contained herein are based on an overview of existing conditions and patterns of use, but anticipate the implementation over time of the recommendations made in the Master Plan.

The Master Plan established a zoned approach to the Pentagon Reservation, with general guidelines for the visual character of each zone. The Exterior Standards Manual refines the Master Plan zones and further assigns a hierarchy based on proximity to the Pentagon's National Historic Landmark boundary. Areas within the NHL boundary are to receive the highest level of preservation care, with original features retained and restored, and missing features replicated to the extent possible. Outside of the NHL boundary, areas closer to the building are generally to be treated with higher quality and more replicative



materials and designs, whereas areas farther from the building may be treated with somewhat greater flexibility. This approach provides a balanced strategy to deal with historic preservation, cost, and constructibility issues across the Reservation.

In general, a palette of materials and site furnishings is recommended that is consistent with the subdued, yet dignified, original design intent of the Pentagon. A more “historic” group of elements is recommended at the Central Courtyard and River Terrace. At all other areas of the Reservation outside the Pentagon envelope, elements are more contemporary in nature. The elements are summarized in the Exterior Materials Control List, including detailed product specifications and standards requirements for each item. An additional palette of recommended colors and finishes for exterior building and site elements on the Reservation is also provided.

This Exterior Standards Manual does not mandate design solutions, nor is it intended to serve as a maintenance manual or a comprehensive or detailed assessment of existing material or structural conditions. Rather, its purpose is to ensure that a cohesive and pertinent guide recommends appropriate aesthetic language for all development within the Pentagon Reservation.

The Manual addresses predominant elements that can be reasonably expected to be required at the Pentagon Reservation throughout the term of the Master Plan implementation. It cannot address unique or atypical conditions, or specific requirements of building types. Rather, the Manual focuses on prototypical, representative, and/or significant features that contribute in a meaningful way to the identity of the Pentagon Reservation.

A.2. Parties Involved in Preparation of the Exterior Standards Manual

A.2.1. Owner

Washington Headquarters Services

Ralph Newton, Director, Defense Facilities Directorate

JoAnn Avants, Contracting Officer, Acquisitions and Procurement Office

Michael Ryon, Contracting Officer's Representative, ETSD

Martin Mamawal, Chief FEB / ETSD

A.2.1.2. Study Team

Shalom Baranes/HSMM Joint Venture

Project Management, Architecture, Lighting, Signage

Gerald Tritschler, AIA (SBA), Project Manager

Melissa Hendrix, AIA (SBA), Task Leader

Patrick Burkhart, AIA (SBA), Senior Designer

Kevin Milstead, AIA (SBA), Project Architect

Lyn Payton, RA, LEED AP (HSMM/AECOM), Project Architect

Robert Allen, AIA, LEED AP (HSMM/AECOM), Project Architect

Christine Brazill, PE, LEED AP (HSMM/AECOM), Electrical Engineer

Lee + Papa and Associates, PC

Landscape

Jeff Lee, ASLA, Lead Landscape Designer

Craig Atkins, Landscape Designer

Timmons Group

Civil

Bruce McCloy, PE, Lead Civil Engineer



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A.3. How to Use the Exterior Standards Manual

The Pentagon Reservation Exterior Standards Manual is intended to serve as a concise, user-friendly document. It has been divided into seven sections:

Section A – Introduction. This section contains summary information on the Manual and its development.

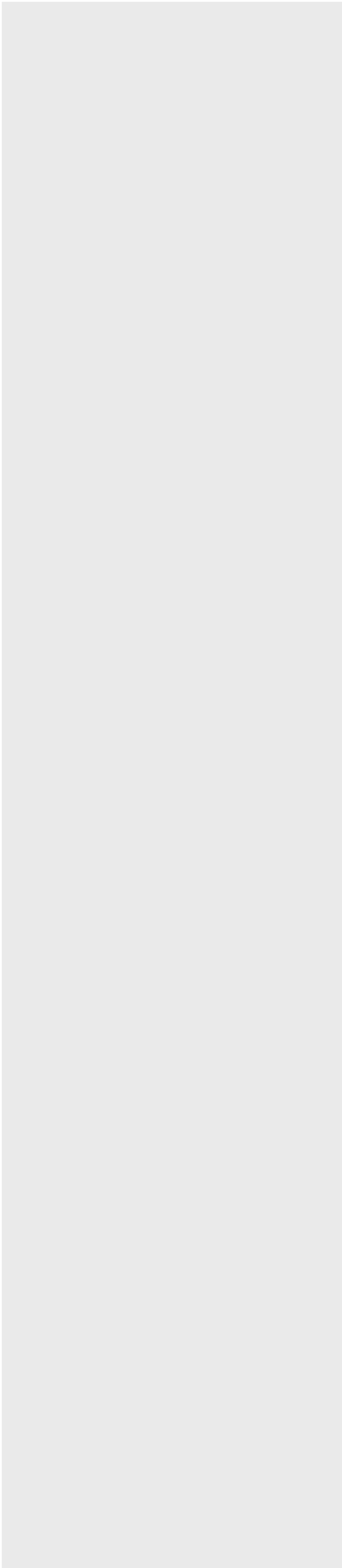
Section B – Background. This section contains a brief overview of the original Pentagon Reservation design, as well as significant changes to the Reservation over time. Section B serves as a succinct guide to the fundamental aesthetic vision of the original Pentagon designers, establishing a basis for the design recommendations contained in this Manual.

Section C – Zones. This section establishes a subdivision of the overall Reservation into distinct zones based on historic, functional, and geographic criteria. A summary of historic preservation issues is provided, as well as background information from the 2005 Master Plan. Seven zones are identified, ranging from Zone 0 (the Pentagon Building) to Zone 6 (the existing Industrial Zone). It is important to note that these zones represent a refinement from those identified in the 2005 Master Plan. For reference, a key plan is provided identifying the recommended Reservation Zones, as well as descriptive information for each.

Section D – Exterior Standards. This section contains recommended design guidelines for all significant exterior elements on the Reservation. For clarity, and to document broad aesthetic goals, an initial subsection is provided for certain topics with wide applicability across the Reservation. These include general, overall (sitewide) guidelines, as well as signage, lighting, landscaping, parking areas, pavements, security stations, shelters, and miscellaneous equipment. Where applicable, brief discussion of the purpose and historic background of the specific topic is provided, and detailed guidelines are provided for each.

Additional subsections are provided for each of the seven Reservation Zones. Each contains general design guidelines applicable to the particular Zone, as well as a detailed listing of building materials and site elements permitted in that Zone. All materials and site elements listed are as identified in Section E – Control List of this Manual. They are organized by general category and specific type in order to facilitate cross reference with that Section. Items not listed in a particular Zone, whether included in the Control List or otherwise unidentified, are generally not permitted in the Zone.

Section E – Control List. This section documents the palette of building and site materials, fixtures, and furnishings that have been approved for use on the Pentagon Reservation. As such, the Control List is divided into two general categories: Building Elements and Site Elements. Within each category, a



detailed listing of approved elements is provided. Each item on the Control List is provided with the following information:

- Designation (type)
- Material or Product name
- Description
- Requirements (specifications and manufacturer/supplier information)
- Standards/References
- Sustainability information
- Durability information

Following the Control List is a Color Schedule identifying the palette of paint colors and metal finishes to be used throughout the Reservation. This schedule is the basis of all color designations identified in the Manual.

Section F – Implementation. This section pertains to practical use of the Manual. Included are recommendations for remediation of existing conditions significantly deficient as compared to the Standards; procedures for updating the Manual in the future; a brief summary of internal and external review processes that would need to be considered in conjunction with manual use; and a concluding Manual summary.

Section G - Appendix. This section contains a summary listing of standards and references applicable to the Exterior Standards Manual.

B. Background



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B.1. Background and Existing Conditions

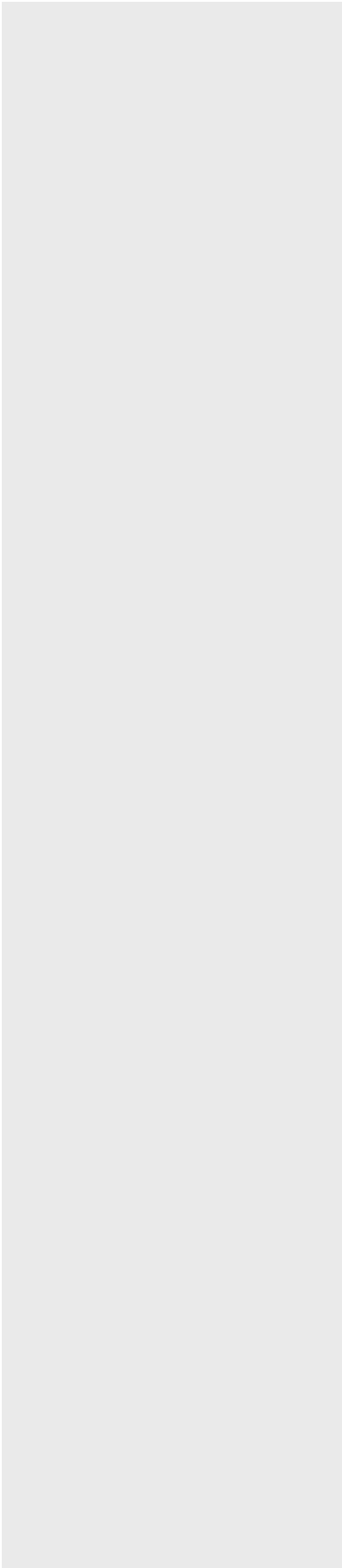
B.1.1. Overview

The Pentagon is one of the most significant and most recognized buildings in the world. Headquarters of the U.S. Department of Defense, the monumental structure contains over 5 million square feet of interior space. Located in Arlington, VA outside the federal government's downtown Washington, DC enclave, the Pentagon Building rests on a vast, 258-acre site (the Pentagon Reservation) surrounded by major traffic arteries and bounded on its east side by the Potomac River.



Constructed in 1943, the building is a designated National Historic Landmark whose notable features include its five-sided shape; broad, colonnaded exterior facades; concrete interior facades; landscaped central courtyard, and original site terraces. The Pentagon Building was originally conceived as a self-contained structure housing a multitude of office and supporting functions within its uniformly detailed envelope. As typical operations were intended to take place solely within the building, site improvements (with the exception of two ceremonial terraces) were generally limited to roadways, pathways, and parking areas necessary to access and service the building. Much of the site remained a simple, green landscape of lawns and meadow grasses with masses of tree plantings, enhancing the view of the headquarters building resting above a continuous ground plane.

Over time, expanding functions and security needs have resulted in an altered landscape. Several structures have been built adjacent to the building itself, including both temporary and permanent facilities. Perimeter and internal security measures have been implemented in the wake of September 11, 2001, including new screening stations, vehicle control measures, and fencing.



At the same time, the Pentagon Reservation has experienced increased pressures from public traffic. The highly secure facility now contains both an intermodal transit hub and well-visited public memorial within its perimeter boundary. The conflicting demands of security and openness challenge the Reservation's operations, exacerbated by a lack of appropriate signage. Further, the Reservation lacks a clear identification as a major federal departmental headquarters. Of particular note are the largely unmarked vehicle entry points and pedestrian tunnel from Amy-Navy Drive.

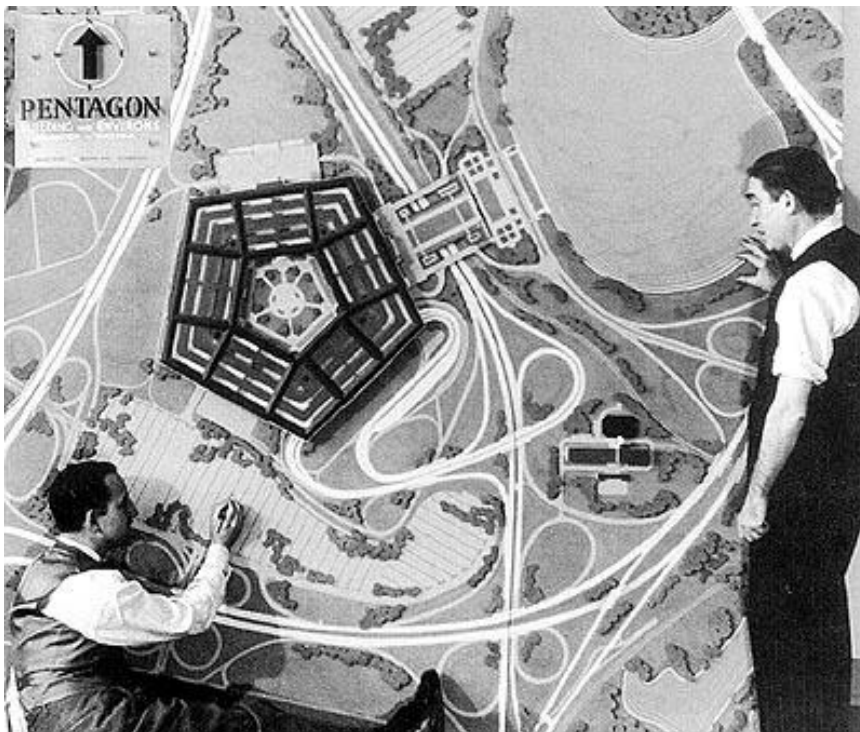
This Exterior Standards manual has been developed in response to the conditions noted above. Its purpose is to define a consistent, overall aesthetic approach for all construction and site work conducted on the Reservation, restoring and reinforcing the Pentagon's essential historic features while optimizing maintenance, energy efficiency, and sustainability of the site.

B.1.2. Original Design

In the period just before the United States' entrance into World War II, the branches of the U.S. Department of War were located in seventeen buildings in Washington, DC. In the early 1940's the U.S. military was in the midst of a massive buildup of forces, and this *ad hoc* arrangement was recognized as hugely inefficient. The Commander of Army Services Supply, General Brehon Burke Somervell, proposed and was instrumental in securing Congressional approval to consolidate all departmental functions under a single roof. Authorization for a new headquarters building in Arlington, Virginia, was signed by President Roosevelt on August 25, 1941.

The site of the new building adjacent to the George Washington Parkway and Potomac River provided an optimum location for the monumental new building. Well served by major traffic arteries and expansive enough to house both the headquarters building and large areas of parking, the site was also visible from Washington's central core.

The new building's configuration derived from a number of factors. A massive size was required to house the expanding Department, while a relatively low height was called for to facilitate efficient vertical movement of personnel via interior ramps. A series of concentric rings linked with radial corridors was determined to provide an ideal layout, with an interior courtyard providing accessibility for maintenance and emergency vehicles to the building interior, as well as a place for personnel to relax during lunchtime. The building's multi-sided shape, developed in response to an earlier proposed site, was finalized in its iconic pentagonal form upon selection of the Arlington property.



◀ Model of the Pentagon, early 1940's

In its form and detailing, the Pentagon Building was designed as an extension of the federal presence across the Potomac River. Its Starved Classical style, with monumental limestone facades devoid of overt ornamentation, was typical of major governmental buildings of the 1930's and 1940's.

▼ Rendering of the Pentagon's east (River) facade



The Starved Classical style is marked by monumentality, hierarchical composition, symmetry, spare ornamentation and the use of traditional classical elements such as columns and moldings transformed into austere, greatly simplified components of a distinctly functional, modern style. This style is exhibited at the Pentagon in the limestone exterior facades with their simple but dignified porticos. Similarly, the Courtyard Façade with its extruded profile mimicks the limestone E-Ring Facades, utilizing a more humble material, exposed cast-in-place concrete. These elements contribute to the solemn expression of the ceremonial character deemed appropriate to the official government and military commands housed within this important structure.

Detail View of Pentagon's east (River) façade, showing stripped classical detail ▶



The materials utilized in the construction of the Pentagon were a direct result of the need to conserve steel and other materials during World War II and the speed of construction necessitated by the wartime imperative to co-locate the major decision-makers of the War Department and military branches and their huge staffs. Reinforced concrete formed the majority of the building envelope, with limestone used at the perimeter facades.

While its five colonnaded sides were geometrically equivalent, special consideration was given to those sides facing the National Mall and Potomac River. On the north (Mall) side, a terrace projected from the building, overlooking a 1000-foot long, landscaped parkland toward Columbia Island and the Jefferson Memorial. On the east (river) side, a longer terrace extended, cascading in a series of steps to the riverfront with views to the lagoon and the Capital beyond. Each of these two sides was designed to provide a dignified approach to the building for officials visiting by land or water.

Overall, the broad facades punctuated with simple porticos were intended to present a direct, yet subdued grandeur suited to the mission of the Department it housed. The building's placement in the center of a simple swath of verdant, largely flat landscape enhanced its visual prominence when viewed from surrounding roadways.

The Pentagon's siting adjacent to the George Washington Memorial Parkway had a strong influence on the character of the original landscape and many of its site features. The parkway was the first modern motorway built by the federal government, and was illustrative of the ideals of national parkway system of the 1930's. It integrated efficient and functional roadways with an attractive, naturalistic landscape punctuated by sweeping views and rustic site elements. Many of the original features of the Pentagon Reservation, including its informal landscaping and the rustic fieldstone detailing of its River Terrace overpasses, can be considered an extension of the parkway concept.



◀ Postcard View of the Pentagon from Lagoon, 1940's



◀ View of the north (Mall) side of the Pentagon, 1964



◀ River Terrace bridge across Route 110, 1964

B.1.3. Site Developments

The Pentagon's vast size was a direct consequence of the desire to house within the building proper all operations required to support the War Department. As such, the building operated as a self-contained, small city within the confines of its federal headquarters envelope. For many years, the Pentagon Building operated in this manner, surrounded by an extensive open landscape interrupted only by internal roadways and several large parking lots.

In recent years, however, expanding mission-related needs have resulted in an outgrowth of functions beyond the original building footprint, impacting the overall Reservation and the landmark building itself. Other modifications have been made to address security concerns.

Aerial View of the Pentagon,
circa 2006 ▶



Significant examples include:

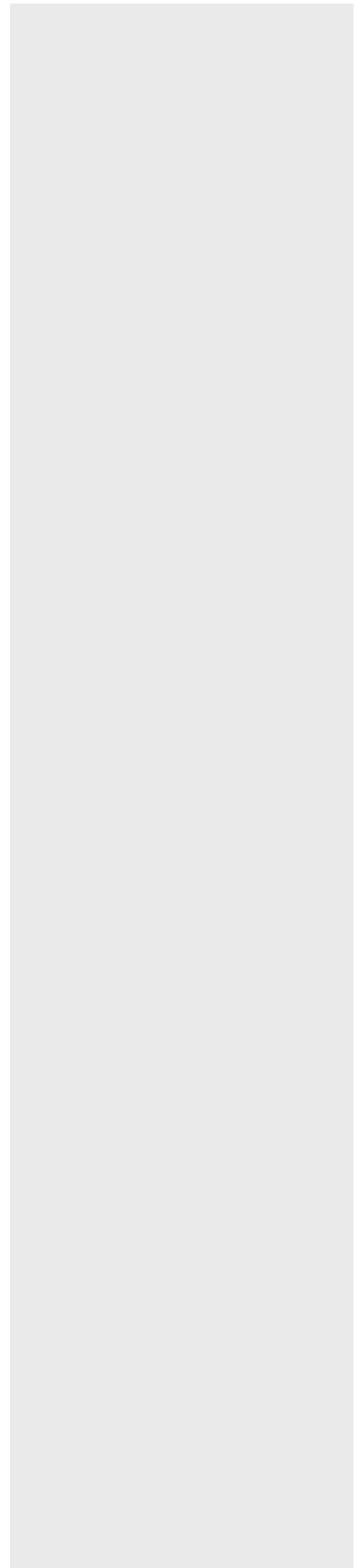
- Realignment of Route 110
- Remote Delivery Facility (RDF) and Pentagon Athletic Center (PAC)
- Pentagon Library and Conference Center (PLCC)
- Metro Entrance Facility (MEF)
- Rotary Road and South Bridges
- Pentagon Memorial

In addition to site-wide construction, several major building efforts have been undertaken at the Pentagon Building itself, with resulting impact on exterior facades:

- Wedges 1-5 Modernization
- The Phoenix Project

A multitude of smaller alterations have also taken place, including modifications to parking areas and pathways; installation of security equipment, fencing, and barricades; and addition of site furnishings not contemplated in the original design, such as bicycle racks and bus shelters.

A final impact has been a significant change to site access to the Reservation. The original Pentagon design anticipated a vast influx of personnel arriving by automobile and bus. Major pedestrian approaches to the building were located at the east (River Terrace) side at Corridor 8, from the north parking area; and at the south side from the south parking area. Each approach was considered in the original site design. Over time, however, as the adjacent Arlington area became more developed, an additional approach not part of the original site concept has come into use. This is the pedestrian tunnel under the Shirley Memorial Highway that links the south parking lot to Amy Navy Drive and nearby public parking garages. The tunnel has now become one of the major entry points to the site for visitors.



B.1.6. Pentagon Master Plan

In response to the heightened security concerns arising from the attack of September 11, 2001 on the Pentagon, and in response to the numerous changes that occurred on and around the Reservation in preceding years, a comprehensive Master Plan was developed for the Pentagon Reservation in 2005. With a focus on completion of a permanent secure perimeter and implementation of enhanced sustainability strategies, the *Pentagon Reservation Master Plan (2005)* called for substantial redevelopment of the site.

Major recommendations of the Master Plan included enhanced perimeter security; modifications to pedestrian and vehicular circulation; replacement of existing surface parking with parking garages to the south and east of the building; construction of a new heliport and visitors' center flanking the River Terrace; and restoration of substantial areas of landscape.

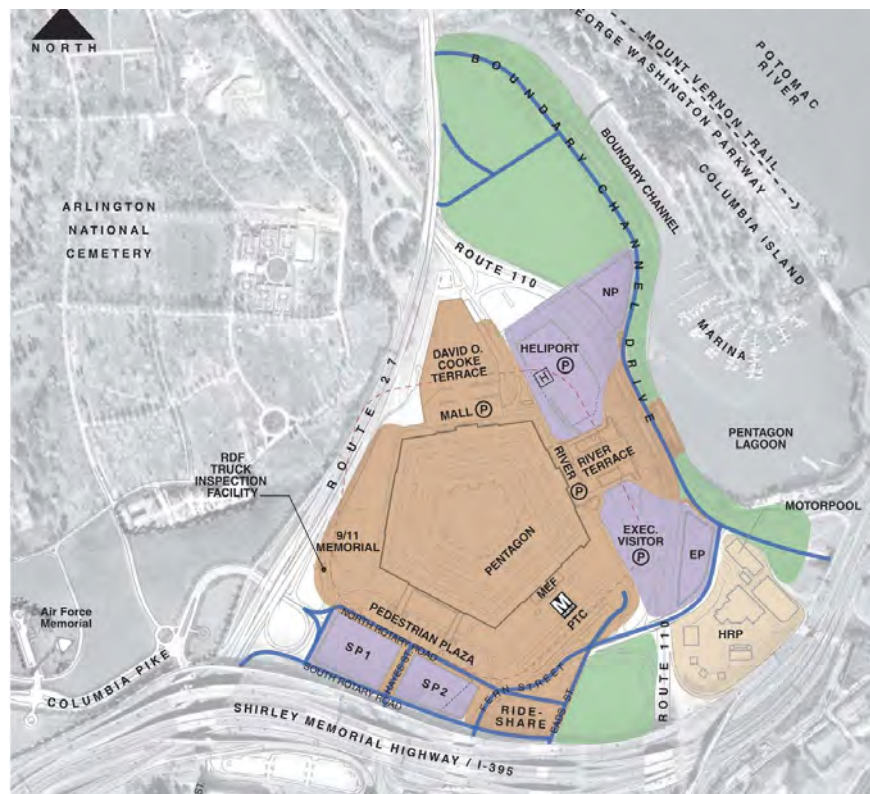
Five Character Zones were established for the overall Reservation, with the primary zone (Character Zone A) consisting of the most historically significant, formal, and highly visible areas of the site. Included in Character Zone A were the Pentagon Building itself; the River Terrace; the Mall Terrace and RDF; and a swath of site surrounding the building and including the MEF, South Bridges, and Pentagon Memorial. The Master Plan further established a set of general design guidelines, based on the Character Zones, to enhance and protect the historic nature of the Pentagon Reservation.

The recommendations of the *Pentagon Reservation Master Plan* form the foundation for the current Exterior Standards Manual.

CONTEXTUAL CHARACTER ZONE DIAGRAM

- Character Zone A
- Character Zone B
- Character Zone C
- Character Zone D
- Major roadways

Character Zone Diagram, Pentagon Master Plan, 2005 ▶

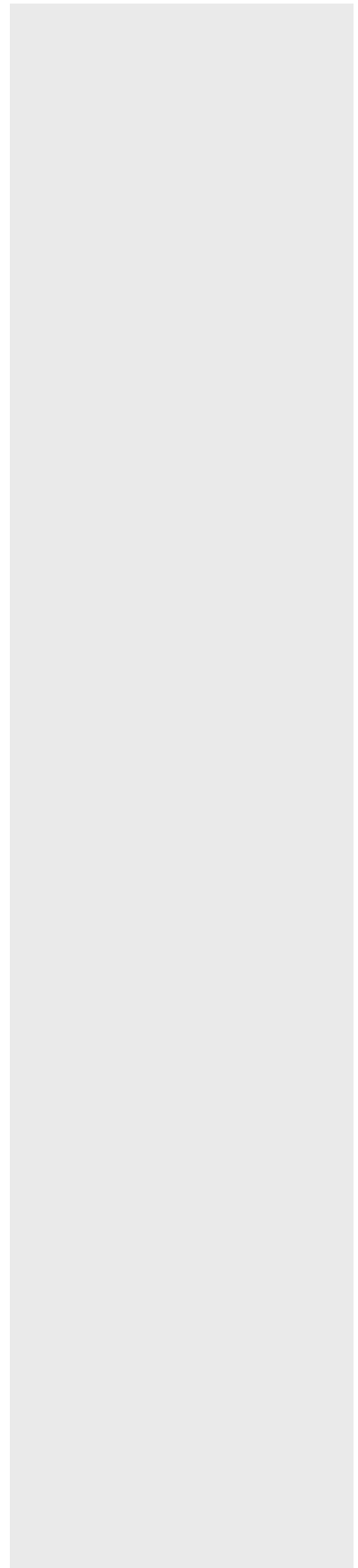


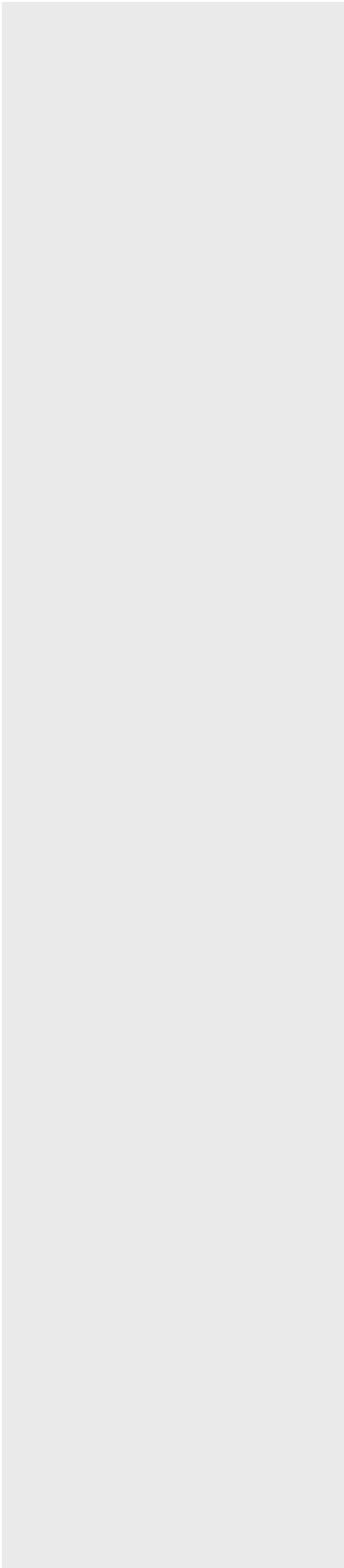
B.1.7. Conclusion

Currently underway, once the Pentagon Wedges renovation is fully complete the historic context of the building interior itself will be generally completed to a consistent standard, and with a full range of critical support facilities. The exterior environment of the Reservation, however, might otherwise characterize a less unified state if left unregulated. Numerous current and recently completed projects have reflected planning and functional integrity but lacked overall consistency and conformance to aesthetic intent.

The challenge currently facing the Reservation is the weaving together of these disparate projects through a consistent approach to the landscape. This holistic approach must be focused on the broad initiatives of the Master Plan, but must also include a thoughtful and consistent attention to plantings, site furnishings, graphics, and all the elements that together form the visual environment. In particular, the Reservation today displays understandable disorder at the interstitial spaces between the many and varied projects, and it is in the thoughtful clean-up following ten years of intensive construction that the Pentagon will return to a more unified and consistent visual environment.

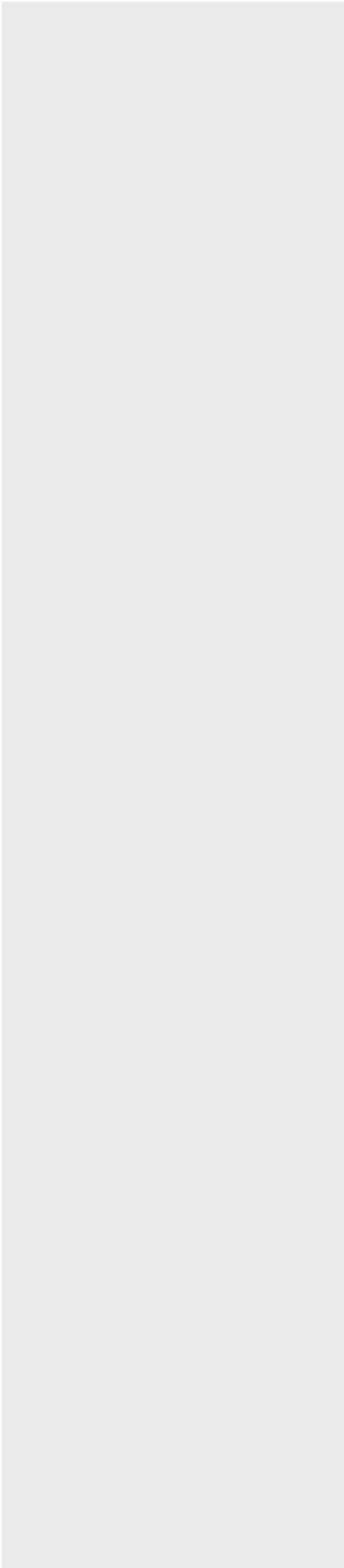
In addition, the need for more effective security has resulted in a wholesale rethinking of how Pentagon personnel and their visitors access and utilize the site. This has been a process of evolution, and will likely continue to be such a process as technology and the perception of the threats to our safety change over time. While the physical threats have been and continue to be addressed, the visual impacts of those initiatives are additive, and the sum of them has a real impact on the way that the Reservation looks and feels. The discussion throughout the Capital of how to achieve needed levels of safety without losing the dignity of our federal facilities has been lively, and it is appropriate that such a discussion be part of the planning process at the Pentagon as well.





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C. ZONES



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C.1 Historic Preservation Baseline

The Pentagon is designated a National Historic Landmark (NHL), whose Statement of Significance includes the following:

“Completed in 1943, the Pentagon is associated with events and people that have shaped America’s geopolitical role in the post-World War II period. In the decades since its construction, the Pentagon has become an internationally recognized symbol for the United State’s emergence as a military “superpower” and is closely linked to the our [sic] Nation’s national defense establishment.”

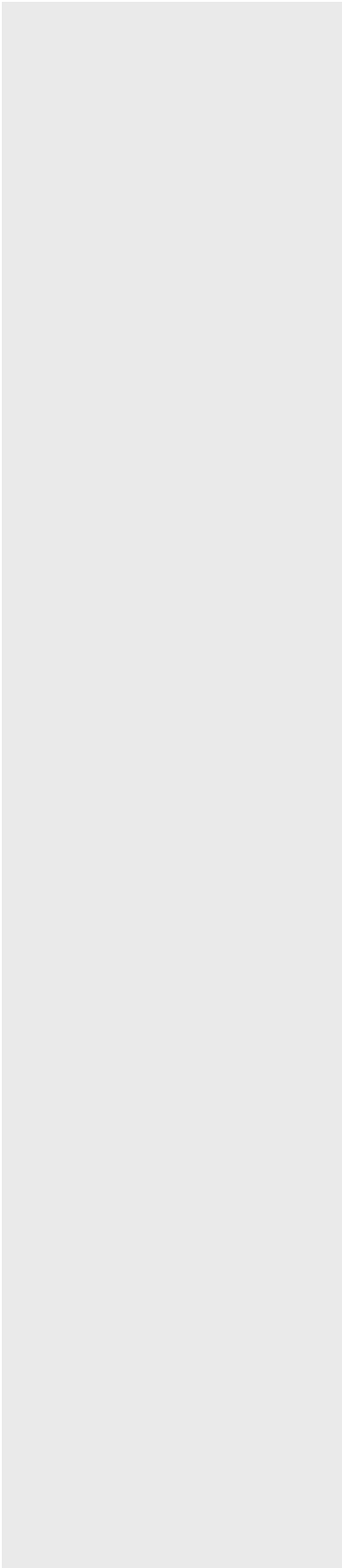
Prior to its NHL designation in 1992, the Pentagon was listed in the National Register of Historic Places in 1989. The Statement of Significance in both the NHL and National Register nominations note that the Pentagon embodies the distinctive characteristics of the ‘Starved Classical’ (also known as ‘Government International’) architectural style of the second quarter of the 20th century.

Five features are included in the Pentagon’s NHL and National Register status:

- The five outer facades of the Pentagon Building
- The building’s Central Courtyard and its surrounding facade
- The terrace fronting the Mall Entrance
- The terrace fronting the River Entrance
- The Pentagon’s distinctive five-sided shape.

As of the time of the NHL and National Register nominations, the building exterior, terraces, and Central Courtyard were essentially intact in their original forms. However, the surrounding site had been extensively modified since its inception in the 1940’s, and was therefore not considered part of the historic resource. The NHL and National Register boundary consists of the perimeter of the original Pentagon Building, including the original Mall and River Terraces, as illustrated in the excerpt from the NHL Map below.





Subsequent to the landmark designation, a number of changes have been implemented within the NHL boundaries, including addition of the RDF/PAC, MEF, and South Bridges, and the re-routing of Route 110 and addition of the PLCC. However, the landmarked features of the Pentagon complex remain substantially intact.

The Pentagon is additionally listed on the Virginia Landmark Register.

As a local and National Historic Landmark, the Pentagon must be treated with great care in terms of renovations and new construction. While a substantial portion of the Pentagon Reservation falls outside the NHL/National Register boundary, and thus has no historic designation, the overall site nonetheless was an integral feature of the original design, and its development must be evaluated to determine whether it has an impact on the landmarked features of the Pentagon Complex. For this reason, it is recommended that, for planning purposes, all projects within the Reservation be evaluated consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. Given the need to balance preservation goals with demands of an active Department of Defense facility, the appropriate Secretary's Standard is *Rehabilitation*. It is likely that work within the NHL boundary will require review under Section 106 of the NHPA, as well as work outside the boundary with the potential to impact landmarked features.

The following Historic Preservation Baseline has been established for the Pentagon Reservation and utilized as the basis for further development of the Exterior Standards Manual:

- All work on the Reservation is to be planned consistent with the *Secretary of the Interior's Standards for Rehabilitation*.
- Within the *Rehabilitation* standard, Reservation areas that fall within the NHL boundaries are to receive a higher level of restoration care. Areas that fall within this category include the exterior envelope of the Pentagon Building (including outer and inner facades, and roofscape), the Central Courtyard, the River Terrace, and the original Mall Terrace. Their original appearance is to be retained to the extent practicable where it still exists, and recreated to the extent practicable where altered. All original and replicative elements are to be retained in place, maintained and repaired in kind as required and practicable. Extraneous or inappropriate non-original elements should be removed and, where required and practicable, replaced with elements replicating original conditions. If no historic precedent for an element exists, new elements sensitive to the historic character of the zones should be provided.

- Outside of the NHL boundaries, greater flexibility is permissible. However, a general hierarchy based on proximity to the Pentagon Building is desirable, with those areas closer to the building receiving higher quality and/or more refined elements, and more complete restoration of original site conditions. At the portions of the Reservation surrounding the Pentagon Building within surrounding boundary roads, it is desirable to return this area to a state more closely approximating the original landscape, while acknowledging current functions. Here, new features may be provided that are compatible with the overall site understanding and Pentagon aesthetic. A consistent language of site furnishings is appropriate. Site areas to the east of Route 110 are more remote from the Pentagon Building, and thus greater aesthetic leeway is permissible. At the same time, a certain level of consistency with other areas of the Reservation is desirable in order to maintain a Pentagon identity. Additionally, areas facing the lagoon and Potomac River beyond must take into consideration their visual consistency with the Pentagon as viewed from the waterfront, as well as adjacency to the George Washington Memorial Parkway.
- The original understanding of the Pentagon Building as a singular, monumental structure within a simple landscaped field should be maintained and restored to the extent practicable.
- The Central Courtyard possesses a unique, park-like character original to the building and distinct from the surrounding site. This distinction should be maintained.
- The original Pentagon site maintained a direct stylistic connection to the adjacent federal parkway system. This connection should be reinstated and strengthened.



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C.2 Reservation Zoning

Overlayment of the Historic Preservation Baseline on the site plan established in the 2005 Master Plan results in a refinement of the Character Zones identified in that document. In particular, Character Zone A of that plan is further subdivided in response to the hierarchy established by historic significance and proximity to the landmark Pentagon Building.

The Pentagon Building itself is considered Zone 0. Additional zones, beginning with Zone 1, the Central Courtyard, radiate outward from the building. In general, the lower the Zone number, the higher degree of restoration, design care, and quality of materials is desirable.

A description of each zone and its characteristics follows.

LEGEND:

	ZONE 1
	ZONE 2A
	ZONE 2B
	ZONE 3A
	ZONE 3B
	ZONE 4
	ZONE 5
	ZONE 6
	NHL BOUNDARY



C.2.1. Zone 0 - Pentagon Building

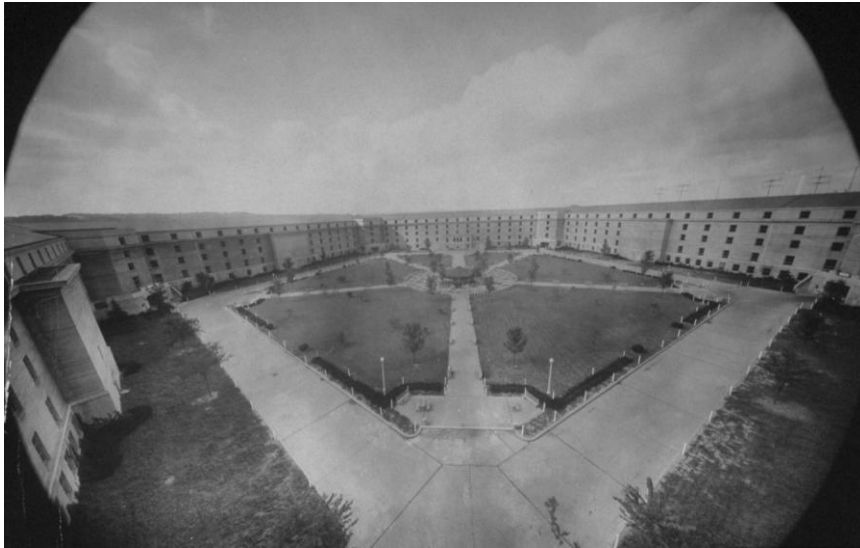
The Pentagon Building itself is designated as its own zone, as special consideration must be given to the historic structure itself, independent of other site features. This zone includes the entire building envelope, including exterior facades, roofs, and porticos, as well as elements directly engaged with the building such as steps and railings. The courtyard façades and the outer, or E-Ring, façades are specifically listed as contributing elements in the National Register nomination of the Pentagon. As such, they may not be significantly altered without having undertaken Section 106 Review of the proposed changes.

Historic Aerial View of
Pentagon Building ▶



C.2.2. Zone 1 - Central Courtyard

Located at the center of the Pentagon, this zone is characterized by its simple but monumental concrete facades, the geometric pattern of its concrete circulation paths, and the contrasting picturesque landscape that includes many large specimen trees in an informal layout. Always intended to be a place of relaxation for building employees, the Central Courtyard remains essentially intact in its original condition, although a variety of site furnishings have been added or replaced. Existing concrete light standards are not original, although they closely replicate the original design. The café building at the hub of the courtyard has recently been rebuilt. The Courtyard is central to the efficient functioning of the Pentagon Building.



◀ Central Courtyard, 1945



◀ Central Courtyard, 2008



C.2.3. Zone 2A - River Terrace

This zone is the most formal and monumental of any on the Reservation. It has a strong axial focus, centered on the massively proportioned portico of the building entry. That axis extends out over the terraced parade ground and terminates in a promontory that looks over the Potomac River basin to the monumental city core beyond. Its edges are defined by stone and concrete retaining walls and clipped Hornbeam hedges, and its landscape reflects the spare formality of the Pentagon itself. The parade ground remains essentially intact to its original form, with some non-original site furnishings. Other areas of the terrace have been modified through the realignment of Route 110 and insertion of conference facilities.

River Terrace Parade Ground, 1964 ▶



River Terrace Parade Ground, 2008 ▶



Views of River Terrace, 2008 ▶



C.2.4. Zone 2B - Mall Terrace/RDF

Similar to the River Terrace, this zone is also axially focused and centered on its portico, but the original picturesque landscape has been infilled by the low profile of the Remote Delivery Facility. The roof of that facility is a more modern evocation of the formal terrace at the River, and its plantings are a precedent for the greening of roofs on vehicular facilities within the Reservation. The landscape concept in this area was altered to accommodate helicopter landings on a long-term but ultimately temporary basis. When the heliport is relocated to a more functional location nearby, that original landscape plan should serve as a guide to the completion of these terraces, so that it can function more like an urban park.



◀ Aerial View of Pentagon, date unknown



◀ Remote Delivery Facility, 2006



C.2.5. Zone 3A - Inner Building Perimeter

The building perimeter on all areas other than Mall and River Terraces was originally left substantially empty save for scattered specimen trees, a simple green lawn terminating at the building edge and deferring to the stern monumentality of the massive facades. Over time a number of functions have intruded into this zone, but the original concept is still evident, particularly at the west side of the site between the Pentagon and the new Memorial, and at the east side of the site flanking the new Metro Entry Facility. Over time the restoration of this zone to its original uncluttered and spare aesthetic would serve to heighten the power of the Pentagon Building itself within the landscape of the Reservation.

C.2.6. Zone 3B - Outer Building Perimeter

While similar to Zone 3A, this Zone can and must accommodate a range of functional requirements, most significantly vehicular circulation for buses, fire trucks, service vehicles, executives, and vehicles operated by handicapped persons. This zone should be used to relieve pressure on Zone 3A, pulling intrusive elements away from the base of the building. At the same time it is directly in the line of sight of the building and careful insertion of those functions is appropriate so that the overall environment is deferential to the original Pentagon.

Aerial View of Pentagon,
1964 ▶



Aerial View of Pentagon,
2006 ▶



C.2.7. Zone 4

This zone is the most remote of the areas immediately surrounding the Pentagon, wrapping around it on the north, east and south. Its current use is largely for parking, and that use is anticipated to remain over time. However, the Master Plan foresees the consolidation of that parking function into new low-profile green-roofed structures, which should serve to heighten the view of the building as an object in the landscape, evoking the original concept. Between these parking structures the focus must be the reinforcement of the parkland imagery and views to the building beyond, while still accommodating pedestrian and vehicular circulation paths, security controls, and other functional needs. Buffered by Zones 3A and 3B, this zone is the most flexible of those surrounding the building.



◀ Pentagon South Parking, 1964



◀ Pentagon South Parking, 2009



C.2.8. Zone 5

This zone lies largely across Route 110 from the remainder of the Pentagon Reservation. It is primarily open land with a major parking lot in its northern portion and a compound of temporary buildings at its apex. In the near future, the parking function is anticipated to remain, while the temporary structures will be removed upon completion of the Wedge 2-5 renovation. The Master Plan anticipates converting this part of the Reservation to parkland. In this scenario, it would become, in effect, an extension of the George Washington Parkway landscape seen across the Boundary Channel and Pentagon Lagoon, with recreational facilities set into a natural environment. Its transformation would heighten the primary approach to the Pentagon from the Capitol and integrate the Pentagon into the picturesque landscape that extends along the banks of the Potomac facing the monumental core. While new parking structures would be located at the termination of the pedestrian bridges that flank each side of the River Terrace, they would be recessed into the ground and planted with green roofs.

Pentagon North Parking,
1951 ▶



Pentagon North Parking,
2009 ▶



C.2.9. Zone 6

This zone is occupied by various service functions and has an industrial/utilitarian character. It is physically isolated from the Pentagon by the major Route 110 highway. It has a number of tall elements that are very visible from the main reservation. Recent studies have included preparing Design/Build Specifications for a new facility in Zone 6, the PFFA Hazardous Material Response Facility and CBRNE Headquarters. It would be located on the site of the existing solar farm, which is a demonstration project that will be displaced by the new facility.

The Master Plan recommends relocation of the Motor Pool to a new building north of the HRP complex. The schedule for this is undetermined, but it is a use sympathetic to the character of the Zone



◀ Pentagon Heating and Refrigeration Plant, 1964



◀ Pentagon Heating and Refrigeration Plant, 2009



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D. EXTERIOR STANDARDS



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D.1. Exterior Standards - All Zones

D.1.1. Overall Design Guidelines

The following fundamental design guidelines apply to all exterior work undertaken at the Pentagon Reservation.

- **D.1.1.1. Primacy of the Pentagon Building.** All new work on the Pentagon Reservation is to defer in visual prominence to the Pentagon Building. All new work is also to reinforce the original reading of the Pentagon Building as a free-standing monumental structure in a broad, informally landscaped ground plane. Building massing and heights are to follow general guidelines of the *2005 Pentagon Reservation Master Plan*.
- **D.1.1.2. Historic Standards.** All work will be planned to be consistent with the *Secretary of the Interior's Standards for Rehabilitation*.
- **D.1.1.3. Consistency and harmony.** Common elements are to be utilized throughout the Reservation to provide a unified and appropriate site identity. Buildings and structures are to utilize a common palette of materials and general design features. Where multiple elements of the same type and function are provided, they are to be identical in all respects, excepting modifications as may be required to adapt to a particular locale.
- **D.1.1.4. Subdued and dignified aesthetic.** The sobriety of the original Pentagon Building design is to be maintained and extended to all new work. Exuberant, eclectic, or highly figural buildings or site elements are not likely to be appropriate to the mission of the Pentagon or the nature of the Reservation.
- **D.1.1.5. Simplicity of lines and massing.** Building massing should be primarily rectilinear in nature, comprising planar wall treatments relieved by crisp, linear, horizontal projections and reflective of the massive character of the overall Pentagon Building itself. Rooflines are to be horizontal or low slope. Vaulted or curvilinear roofs are not likely to be appropriate. Building sight lines, including rooflines, are to be continuous and clear of visible equipment to the extent practicable and consistent with mission requirements.
- **D.1.1.6. Appropriate detailing.** Architectural designs should reflect the simple and uncluttered expression of the Pentagon Building. Excessive or ornate surface treatments or embellishment are not likely to be appropriate. Jointing is to be subtle, without significant shadow lines. Exposed framing as a design motif should be avoided. Time-

tested techniques such as drip edges and water courses should be employed. Windows inset at least 3” within walls are preferred above flush glazing.

- **D.1.1.7. Restrained palette.** Materials are to be used judiciously to prevent visual cacophony. All materials and colors are to harmonize with the historic Pentagon Building. Highly reflective or brightly colored finishes are to be avoided to the greatest extent possible. Glazing is to present a clear finish to the exterior, free from obvious tinting or reflective coatings, except where such glazing supports a DoD mission. Ballistic or blast-resistant layups are to utilize low-iron glazing, except where they support a DoD mission. Excessive color contrast is to be avoided, with the exception of miscellaneous dark metal elements against lighter colored masonry and ground planes. Grilles, copings, cornices, and other similar trim are to harmonize with predominant wall and roof planes in color. Mortar and sealants are to closely match surrounding materials in color, although subtle tonal shifts are acceptable.
- **D.1.1.8. Hierarchy of construction.** Buildings and structures in closer proximity to the Pentagon Building generally require a higher level of material quality, detailing, and finish than those installed in more remote locations. Exceptions are structures such as security booths and shelters, which are to have a consistent design language throughout the Reservation, depending on mission requirements.
- **D.1.1.9. Durability and longevity.** All exterior building and site work is to be of durable and lasting quality, to ensure operational and visual performance while minimizing maintenance requirements. This requirement applies to all materials, products, systems, and installation methods. Best industry practices are to be utilized in design and construction.
- **D.1.1.10. Sustainability.** All exterior building and site work is to support and optimize the Pentagon Reservation’s sustainability goals, including those regarding energy efficiency, light pollution, heat island reduction, and stormwater quality and control.

D.1.2. Signage

The Pentagon Reservation currently lacks a clear and cohesive signage system for vehicles and pedestrians entering and navigating the site.

At the Reservation perimeter, no significant elements exist to appropriately identify one of the federal government's most important installations. Notably lacking at the perimeter are boundary markers at site entrances. This deficiency results in confusion regarding passage into the Reservation proper, and detracts from the sense of dignified arrival at the Pentagon.

In recent years, general traffic attempting to access or requiring access to the Reservation has intensified with the addition of the Pentagon Metro intermodal transit hub and the Pentagon Memorial. Attempted site entry by unauthorized vehicles represents a significant traffic management and security issue; therefore, improved definition of boundary edges of the Reservation must be addressed.

The quantity and variety of signs currently located within the Reservation cause problems for both vehicular and pedestrian traffic. The quantity of signs is distracting to drivers, and the lack of uniformity of signs means that similar information is presented in so many different ways that wayfinding is difficult. The lack of clearly defined pedestrian routes across parking areas to the building zone, for instance from the Tunnel to the Pentagon across the South Parking area, is a safety issue.

The construction of the Metro Entrance Facility (MEF) at the Pentagon Metro Stop has added to the confusion of pedestrian wayfinding. Despite its close proximity to the Pentagon Building, it is not clear to first-time visitors leaving the Metro how to proceed to the Pentagon Building security entrance.

The completion of the Pentagon Memorial on the west side of the building has increased the number of public visitors at the Pentagon Reservation. Since there is only very limited visitor parking, the majority of visitors either park in nearby public garages, are dropped off, or arrive via the Metro. The number of people requesting directions from security personnel causes a security problem.

The overall impression of current signage is one of visual clutter. The lack of guiding principles and of a signage hierarchy contributes to the sense of confusion around the exterior of the Pentagon. A comprehensive signage program should be implemented throughout the Reservation.

Signage must clearly delineate official and non-official pedestrian traffic, and facilitate segregation of Pentagon Memorial traffic from official Pentagon traffic to the extent possible.

D.1.2.1. Historic Background. No significant signage program appears to have been implemented at the exterior of the Pentagon, or across the site. Photographic and survey evidence suggests that signage was essentially limited to bronze plaques mounted directly to the Pentagon Building at entry points, and designation of courtyard entry points.



D.1.2.2. Signage Types. The following sign types are required at the Pentagon Reservation:

D.1.2.2.1. Signage Type 1. Vehicular Directional Sign. Vehicular directional signs provide information for those arriving at and departing from the reservation by automobile. A subtype, **Signage Type 1S**, is provided as a Vehicular Directional Sign with Security Information. A sign plaque, color coded to appropriate security level, can be attached to the bottom of Type 1 signs on an as-needed basis.

D.1.2.2.2. Signage Type 2. Pedestrian Wayfinding. Pedestrian wayfinding signs provide directions to specific destinations and buildings throughout the reservation.

D.1.2.2.3. Signage Type 3. Pedestrian Directory. Pedestrian directories provide more detailed wayfinding information and include an overall site map of the Pentagon Reservation and a list of destinations. The directories are located at key points such as the Pentagon Building security entrance adjacent to the MEF and outside the entrance to the Pentagon Memorial.

D.1.2.2.4. Signage Type 4. Street Sign. Names of all streets at the reservation should be identified on poles located at street intersections. The street sign can be combined with the light fixture pole.

D.1.2.2.5. Signage Type 5. Building-Mounted Identification Sign. All buildings on the Pentagon Reservation should be identified by a sign attached to the building façade. Important entrances at the Pentagon Building should have the same identification sign.

D.1.2.2.6. Signage Type 6. Regulatory Sign. Regulatory signs include standard traffic control signage. A single sign may be mounted on a single post.

- **Signage Type 6A.** Regulatory Sign on Double Post. More than one non-traffic control sign may be combined and mounted together on double posts.
- **Signage Type 6T.** Regulatory Sign combined with Temporary Message. A temporary sign can be attached to the bottom of Type 6A signs on an as-needed basis.

D.1.2.2.7. Signage Type 7. Temporary Sign. Temporary signs provide a short-term solution to provide information to personnel and/or visitors. An example of a temporary signage need is to redirect pedestrians around a construction area.

D.1.2.2.8. Signage Type 8. Boundary Marker.

D.1.2.3. Signage Characteristics. Signage types with similar characteristics may be grouped. These shared characteristics include materials, color and type of information or direction displayed. Signage Types 1, 2, 3 and 7 belong in one sign family, while Signage Type 4, Type 5 and Type 6 are all unique. Type 4 is related to the pedestrian light standard, Type 5 replicates the existing bronze plaques mounted on the Pentagon, and Type 6 must adhere to strict requirements for traffic control and pedestrian safety signage.

D.1.2.4. Boundary Marker Characteristics. Boundary markers have common characteristics: the name of the Reservation, a sense of substantial or monumental presence, and a permanent installation.

D.1.2.5. General Signage Design Guidelines.

- **D.1.2.5.1.** A hierarchy of sign types is to be utilized for the Pentagon Reservation. The signage hierarchy is to start at the perimeter of the Reservation and move inward to the Pentagon Building. The amount and type of information needed on signs will vary based on the sign's location in the entry or exit sequence for personnel or public visitors.

Signage hierarchy is as follows:

- Markers at Entry Points to Reservation
 - Primary Wayfinding
 - Pedestrian Directory
 - Building Identification
-
- **D.1.2.5.2.** All signage site-wide is to maintain a consistent and coherent identity. Signs that are intended to direct vehicular traffic will differ from signs that are oriented to pedestrians in terms of overall sign height, quantity and detail of information displayed, and type size of message text. At the same time, all sign types are to have in common a similar vocabulary of material, color, typeface, and nomenclature to establish a more cohesive and clear wayfinding experience.
 - **D.1.2.5.3.** Signage material and color palette is to be consistent with the overall Reservation palette.
 - **D.1.2.5.4.** Boundary markers and vehicular directional and pedestrian wayfinding signs are to be ground-mounted and self-supporting. An exception is street signage that may be mounted on light poles.
 - **D.1.2.5.5.** Signage is not permitted to be mounted to buildings or other structures, with the exception of signage at the MEF, and building identity signage as permitted herein.
 - **D.1.2.5.6.** Temporary signage is discouraged, but if it is necessary for redirecting circulation temporarily, for example during construction, then the signs are to be designed according to the permitted sign type.
 - **D.1.2.5.7.** Universal symbols, such as the wheelchair symbol for accessible entrances and parking spaces, are to be used.
 - **D.1.2.5.8.** Boundary markers are to be provided at points of penetration into the Reservation. Boundary marker design is to be monumental and unique to the Pentagon.
 - **D.1.2.5.9.** At critical wayfinding points, provide pedestrian directory with wayfinding map of the Pentagon Reservation.
 - **D.1.2.5.10.** All signage shall adhere to the signage standards incorporated in the “Corps of Engineers Sign Standards Manual EP-310-1-6a”, latest edition, with the following permitted exceptions due to the historic and aesthetic character of the Pentagon Reservation and its significance:

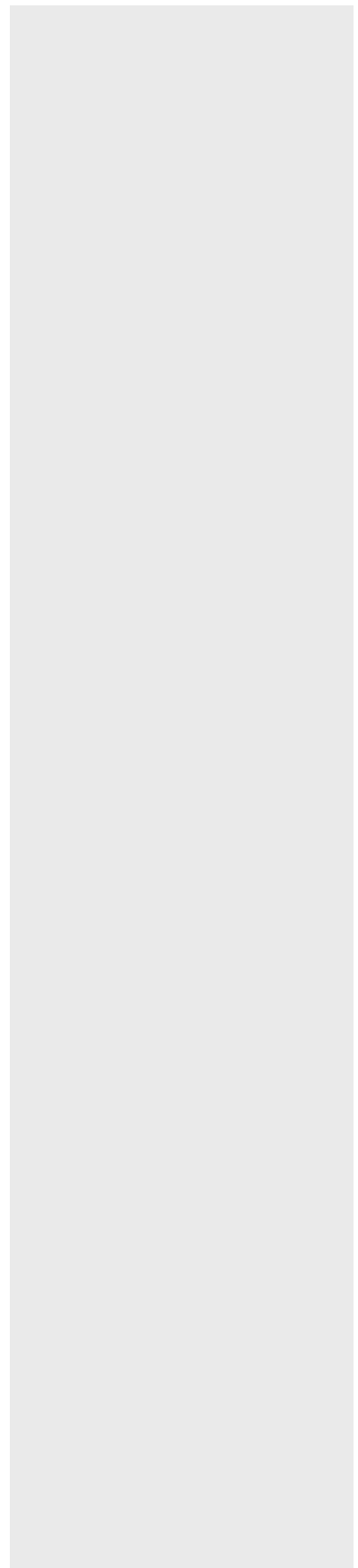
- *Section 2, Principles and Guidelines, Sign Panel Design, 2). Sign Format, b). Borders.* Contrasting border at sign panel is not required.
- *Section 2, Principles and Guidelines, Typography; and Section 4, Design Standards, Typography for Sign Legends.* Haas Helvetica fonts are not required for sign legends, with the exception of regulatory signage.
- *Section 2, Principles and Guidelines, Typography, 1). Upper and Lower Case Legends.* Lower case legends (initial capitals only) are not required.
- *Section 2, Principles and Guidelines, Viewing Distance Guide, Table B; and Letter Size and Sign Placement, Table 1.* Letter size may be reduced to 3" for speeds up to 25 mph, and to 4" up to 35 mph, with the exception of signage near site entry points where driver reaction time is deemed critical for security reasons.
- *Section 2, Principles and Guidelines, Sign Mounting and Placement.* Wood posts for ground-mounted signs are not permitted.
- *Section 4, Design Standards, Signature.* US Army Corps of Engineers logo is not permitted, with the exception of temporary construction signage.
- *Section 4, Design Standards, Color Standards.* Background color is to be Color 1 per this Exterior Standards Manual, and lettering is to be white, with the exception of Signage Types 5 and 8, and regulatory signage.
- *Section 5, Identification Signs.* Section is superceded by the design guidelines in this Exterior Standards Manual.
- *Section 6, Directional Signs.* Section is superceded by the design guidelines in this Exterior Standards Manual.
- *Section 8, Symbol Signs.* Universal symbols as identified in this section are to be utilized. Symbols are to be integrated into other informational signage where feasible, in lieu of individual or gang mounting. Symbols are to have white graphics on Color 1 backgrounds, consistent with other signage, except that prohibitory symbols may have red and black graphics on white backgrounds. Prohibitory symbols with white backgrounds are to be placed on signs with Color 1 backgrounds.
- *Section 9, Traffic Signs.* Parking signs are to have white graphics on Color 1 backgrounds, consistent with other signage, except that prohibitory parking signs may have red "circle and slash" graphics.
- *Section 10, Property Markers.* Section is superceded by the design guidelines in this Exterior Standards Manual.

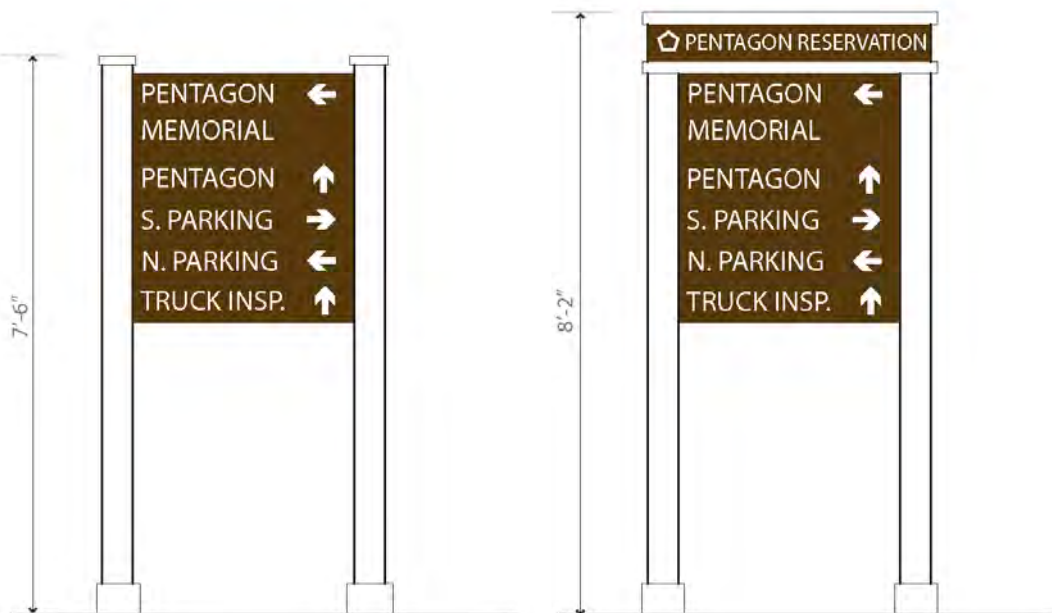
- *Section 16, Construction Project Signs.* Background color, lettering color, and typography are to match the Reservation standard.

- **D.1.2.5.11.** All regulatory signage (for traffic control and safety) is to meet the standards of Arlington County and the Manual on Uniform Traffic Control Devices (MUTCD).

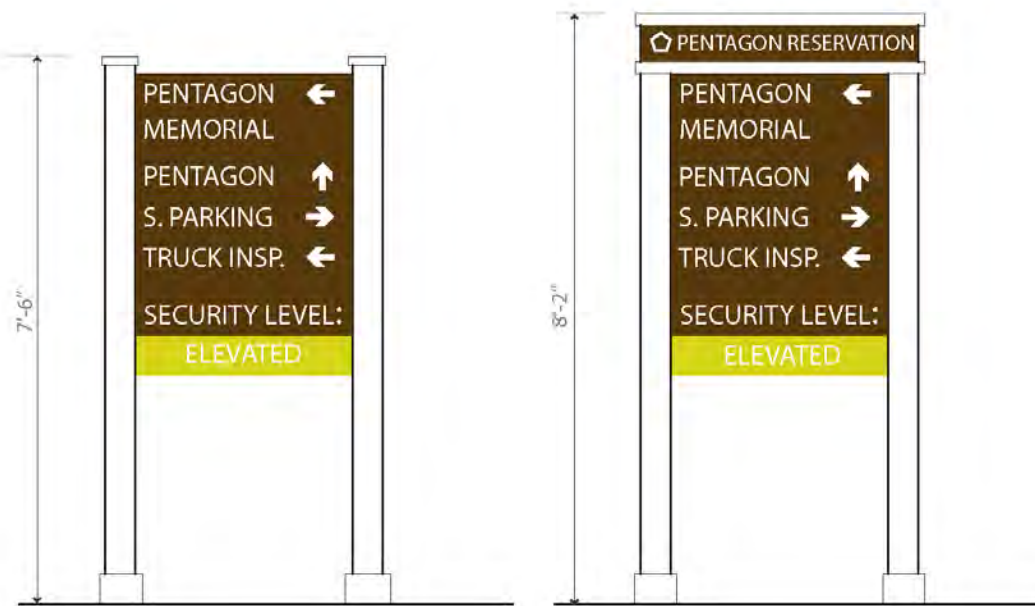
D.1.2.6. The following illustrations of each signage type are provided as reference. Illustrations are suggestive only of general types, and are not to be considered final design recommendations.

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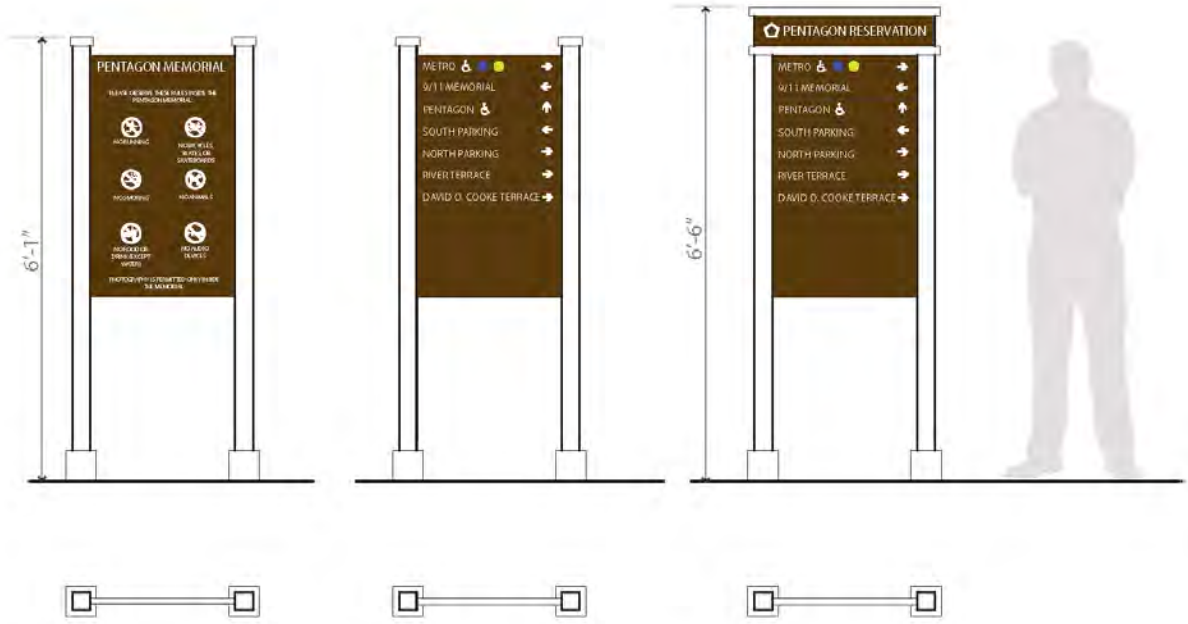




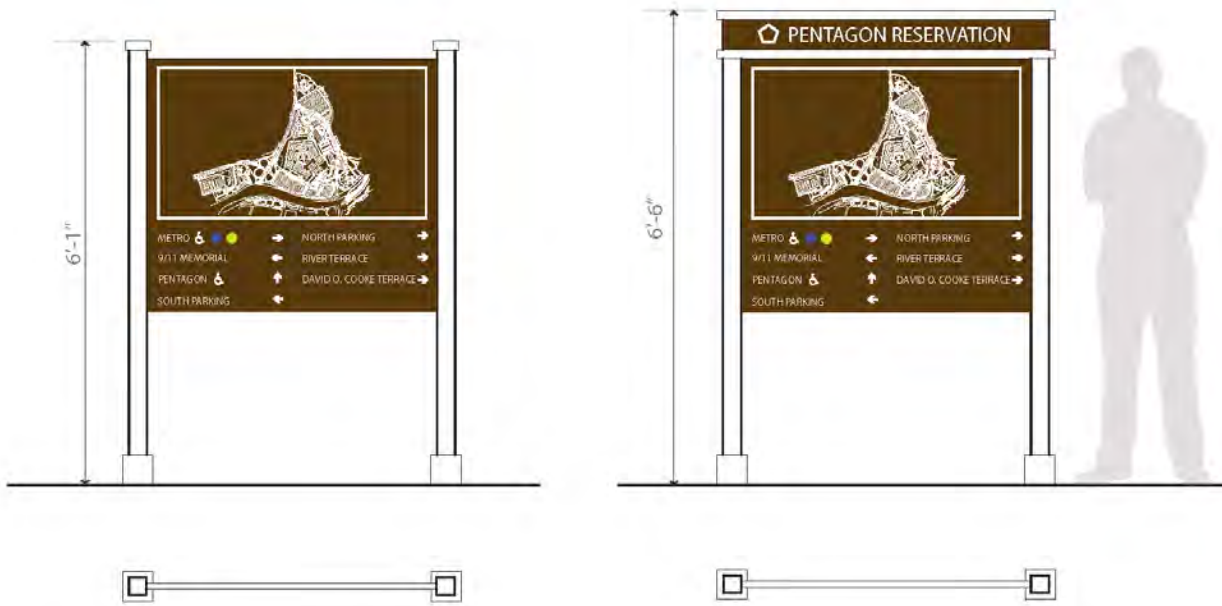
Signage Type 1: Vehicular Directional Sign



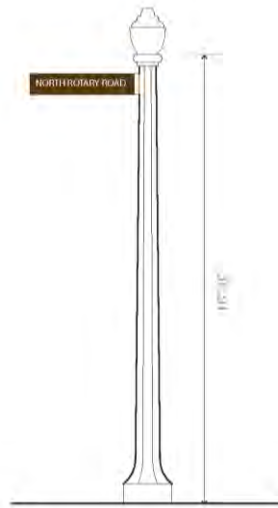
Signage Type 1S: Vehicular Directional Sign with Security Information



Signage Type 2: Pedestrian Wayfinding



Signage Type 3: Pedestrian Directory



Signage Type 4: Street Sign
(Mounted to Site Lighting Poles)



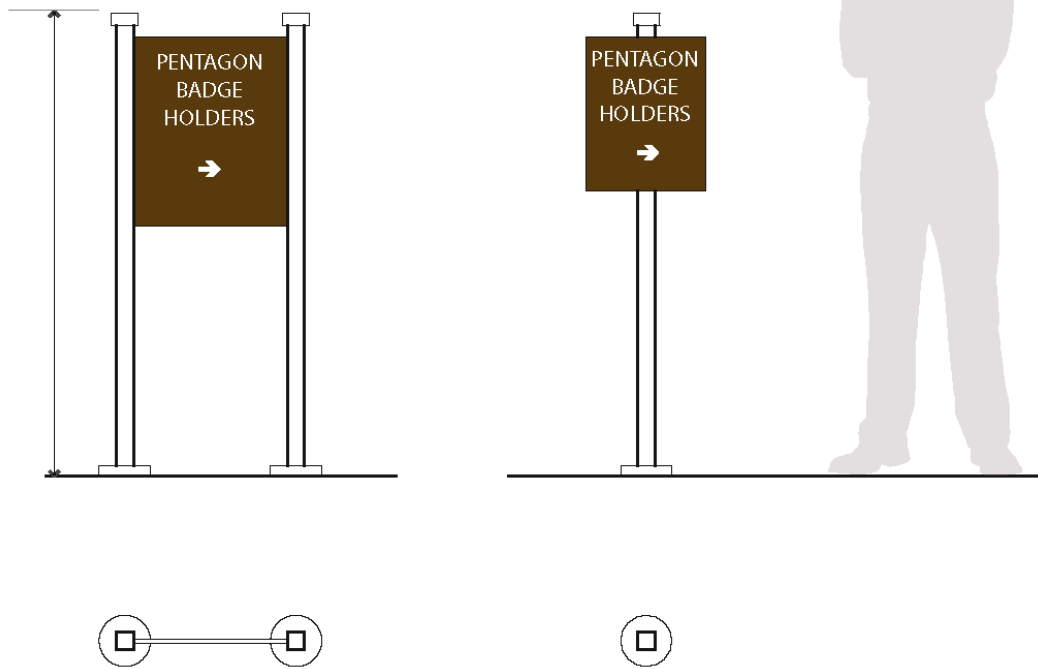
Signage Type 5: Building Mounted Identification Sign
(Cast Bronze Sign with Raised Letters to Match Historic)



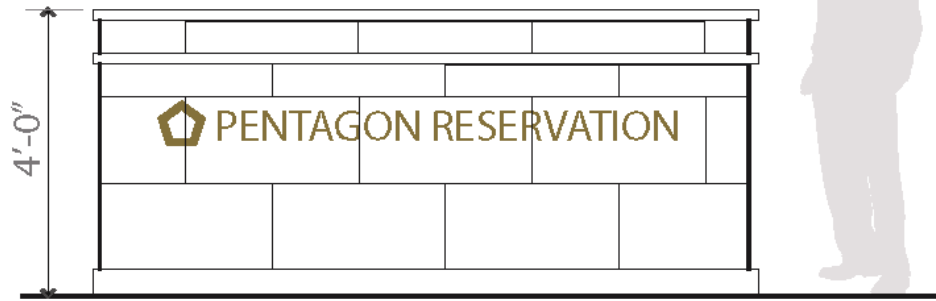
Signage Type 6A: Regulatory Sign

Signage Type 6T: with Temporary Sign

(Per VDOT Standard, with Pentagon Color Scheme if Permitted)



Signage Type 7: Temporary Sign



Signage Type 8: Boundary Marker

D.1.2.7. Signage Types Permitted

D.1.2.7.1. Zone 0: Type 5 – Building-Mounted Identification Sign

D.1.2.7.2. Zone 1: Type 2 – Pedestrian Wayfinding

D.1.2.7.3. Zone 2A: Type 2 – Pedestrian Wayfinding

D.1.2.7.4. Zone 2B: Type 2 – Pedestrian Wayfinding

D.1.2.7.5. Zone 3A: Type 2 – Pedestrian Wayfinding

D.1.2.7.6. Zone 3B: Type 1 – Vehicular Directional Sign
Type 2 – Pedestrian Wayfinding
Type 3 – Pedestrian Directory

D.1.2.7.6. Zone 4: Type 1 – Vehicular Directional Sign
Type 2 – Pedestrian Wayfinding
Type 4 – Street Sign
Type 6 – Regulatory Sign
Type 8 – Boundary Marker

D.1.2.7.7. Zone 5: Type 1 – Vehicular Directional Sign
Type 4 – Street Sign
Type 6 – Regulatory Sign
Type 8 – Boundary Marker

D.1.2.7.8. Zone 6: Type 1 – Vehicular Directional Sign
Type 4 – Street Sign
Type 5 – Building-mounted Identification Sign
Type 6 – Regulatory Sign
Type 8 – Boundary Marker

D.1.3. Site and Exterior Lighting

Site and exterior building lighting represents one of the major opportunities to address energy reduction and sustainability goals on the Pentagon Reservation. In addition, lighting design has a significant impact on the visual appearance of the Pentagon Reservation. Implementation of a comprehensive, unified site-wide lighting scheme is essential to achieve long-term sustainability goals, as well as to enhance the historic nature of the Reservation.

The existing, piecemeal approach to exterior lighting at the Pentagon Reservation is visually and functionally inappropriate. Varying fixtures, lamping, and mounting methods are inefficient from a maintenance standpoint, chaotic aesthetically, and substandard in terms of current energy efficiency and light pollution criteria.

The Pentagon Reservation is a secure facility monitored at all times by security personnel. Some flexibility exists to minimize light levels throughout the site, and to limit illumination to those areas essential for pedestrian and vehicular travel.

D.1.3.1. Historic Background. Based on photographic evidence, exterior lighting was originally quite minimal at the Pentagon Reservation - perhaps judicious for a military headquarters building conceived of in a time of war. Site lighting appears to have been largely limited to street lamps along primary parking roadways; torcheres and wall sconces at Pentagon Building entrances; and pole-mounted light standards in the Central Courtyard. A 1964 photograph shows spotlights mounted at the River Terrace portico.



View of Pentagon Reservation, 1964. Note minimal site lighting. ▶

D.1.3.2. Sustainability Issues. Exterior lighting should address sustainability concerns of light pollution and energy efficiency. Using LEED as a basis for recommended solutions, fixtures should provide no more than 5% uplight, with full cutoff solutions preferred. Energy efficient lamp sources are recommended.

Using LEDs as a light source is proposed in some situations. They use less energy than other sources, do not contain mercury or lead, and last 10-15 years. However they provide a very directional light source, instead of a spread of light needed for area lighting situations. Limited photometric information is available from manufacturers, mainly due to the rapidly-changing technology. The light component of fixtures, made up of an LED array and driver, has no standard sizes, colors, or means of replacement. To replace an aged LED array, the entire fixture would need to be replaced.

As LEDs age, their light output reduces. They should be replaced at 70% of their output, but without LEDs burning out at the end of their life like other sources, there is no indication of when they should be replaced. This could lead to installations with significantly reduced light output, creating safety and security concerns.

As LED technology changes, manufacturer's offering of fixtures changes. Many manufacturers do not offer the same LED solution for longer than two years. In a large installation, this could mean that over time the installed fixtures would vary, and replacement in-kind of fixtures would be difficult. With no LED standards, colors of the light source could vary as technology changes.

In large area situations such as parking lots and pedestrian pole-mounted lighting, LEDs are not a recommended light source. For smaller installations such as bollards and recessed steplights, LEDs may, however, be an appropriate choice.

D.1.3.3. General Exterior Lighting Design Guidelines

- **D.1.3.3.1.** Exterior lighting is to provide an appropriate level of illumination for wayfinding, security, and pedestrian safety, while recalling the subdued illumination of the original Reservation. Intense illumination, general façade lighting, and prominent feature lighting are to be avoided. Do not illuminate areas unnecessarily.
- **D.1.3.3.2.** All lighting is to maintain the visual prominence of the Pentagon Building within the Reservation.
- **D.1.3.3.3.** Exterior lighting is to be primarily site-located. Fixtures may not be surface mounted to building exteriors, with the exception of permitted wall sconces at building entrances and exits.

- **D.1.3.3.4.** A consistent level and pattern of illumination is to be maintained at all similar areas.
- **D.1.3.3.5.** Consistent fixture types and lamping are to be provided at all similar areas.
- **D.1.3.3.6.** Where historic precedent exists, provide fixtures replicating the originals to the extent possible. Known historic elements include concrete light standards with glass globes at the Central Courtyard and bronze and glass wall sconces at the Pentagon entrances. Existing replicative fixtures include torcheres at the River and Mall Entrances.
- **D.1.3.3.7.** Exterior lighting fixtures are to be selected and installed to maximize energy efficiency and reduce light pollution to the greatest extent possible. Do not exceed ASHRAE 90.1 exterior lighting power densities. Utilize full-cutoff light fixtures where appropriate to reduce light pollution and light trespass. Utilize IESNA recommended lighting levels for all areas.

D.1.3.4. Lighting Design Guidelines for Parking Areas

- **D.1.3.4.1.** Uniformity and minimizing glare are important considerations in parking areas. Illumination of parking areas is to be designed so that motorists can distinguish features of the area such as pedestrians and signage.
- **D.1.3.4.2.** Fixtures used in parking areas are to be full cut-off to minimize light pollution. Limit spill light beyond the boundary of parking lots so that maximum initial illuminance is no greater than 0.01 horizontal footcandles 15 feet beyond the site.
- **D.1.3.4.3.** All light poles are to be a uniform height of 12' for pedestrian lighting, 25' for parking lighting.
- **D.1.3.4.4.** Parking and drive areas in Zones 1-3B are to be illuminated with pedestrian scale lighting only, as permitted in each zone.
- **D.1.3.4.5.** Within Zone 4 provide a minimum maintained illuminance of 0.5 footcandles measured on the parking surface with a maximum-to-minimum uniformity ratio of 15:1.
- **D.1.3.4.6.** Within Zones 5 and 6 provide a minimum maintained illuminance of 0.2 footcandles measured on the parking surface with a maximum-to-minimum uniformity ration of 20:1.
- **D.1.3.4.7.** Higher illuminance should be placed along key routes such as exits, entrances, gate access, and internal connecting roadways.

- **D.1.3.4.8.** Use metal halide light source.

D.1.3.5. Lighting Design Guidelines for Walkways

- **D.1.3.5.1.** Within Zone 1, replicated light standards only are permitted, installed in historic locations, except where different lighting supports desired levels of safety or security.
- **D.1.3.5.2.** Fixtures used at walkways are to be semi or full cut-off to minimize light pollution.
- **D.1.3.5.3.** Within Zones 2-4 provide a minimum average of 1 footcandle maintained illuminance throughout pedestrian walkways, except where different illumination supports desired levels of safety or security.
- **D.1.3.5.4.** Within Zones 5 and 6 provide a minimum average of 0.6 footcandle maintained illuminance for pedestrian walkways, except where different illumination supports desired levels of safety or security
- **D.1.3.5.5.** The average-to-minimum uniformity ratio should not exceed 4:1, except where a different ratio supports desired levels of safety or security.

D.1.3.6. Lighting Design Guidelines for Building Entrances

- **D.1.3.6.1.** Modeling of faces, glare, and shadows are important considerations at building entrances. Provide adequate lighting at all major building entrances for security and safety, including screening checkpoints and security control areas.
- **D.1.3.6.2.** Color appearance of luminaires is important and must be uniform at all building entrances, except where non-uniformity supports desired levels of safety or security. Use metal halide or similarly-colored light source.

D.1.4. Landscaping

The historic landscape approach to the overall Pentagon Reservation was one of an informal, open park-like setting. As documented in original landscape drawings dating to 1942, the intent was that the Pentagon Building serve as the primary object in a “green field.” This approach was implemented during the initial construction, and deviation from it occurred only for ceremonial (the River Terrace) and some utilitarian (parking) uses. The field was characterized by low growing plant material, primarily lawn and meadow grass, with masses of large shade tree plantings providing a very informal atmosphere. More formal plantings were placed at entry points to help provide definition and directional clues for pedestrians moving through the reservation.

Over the years the Reservation has moved away from this approach as a consequence of a variety of construction projects. Multiple interventions have broken down the original historic ideal, and have now placed the Pentagon Building in a sea of asphalt and concrete with a few patches of green.

The Pentagon Reservation is one of the most important and distinctive sites in the world. Its original concept acknowledged this by giving the building a simple, dignified landscape, tying into the green nature of the nation’s capital. Providing as much green space and shade as possible, while allowing for the utilitarian requirements were a primary goal illustrated in early plans. The current state of the reservation is one that does not serve that original ideal well and should be addressed. Implementing the strategies outlined for each zone will help to return the Reservation to its role as a model site for the Department of Defense. While the utilitarian aspects of the site can never be denied, returning the Reservation closer to its original intent will provide a suitable and respectful landscape for this important facility.

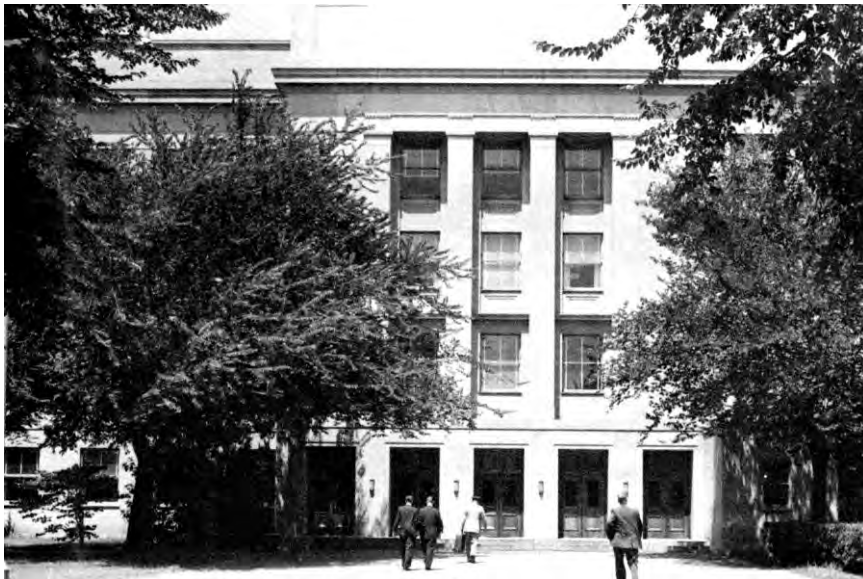
The Exterior Standards Manual Landscape recommendations include reestablishing and emulating the original design intent of the Reservation. While specific plant materials are not discussed herein, the broad concepts defined for each zone provide guidance for future design and construction projects to accomplish this goal.

D.1.4.1. Historic Background. The Pentagon’s siting adjacent to the George Washington Memorial Parkway had a strong influence on the character of the original landscape and many of its site features. Plantings reflected the parkway’s general emphasis on informal, naturalistic and wooded landscapes and its strategy of framing important views with open, grassy fields punctuated with tree groupings. This approach was consistent with the sense of restraint that typified the Pentagon’s wartime construction. Even the Pentagon’s singular outdoor ceremonial area, the River Terrace, was marked by a notable austerity, with simple rectangles of grass framed by clipped hedges. In large measure, the landscaping was intended as a building backdrop only; exceptions include the Parade Ground, used for ceremonial functions, and the Central Courtyard,

intended as a place of relaxation within the secure building confines. Shade trees were used throughout the Reservation to provide a softening effect to the vast Pentagon Building, to enhance the views from adjacent roadways, and to alleviate otherwise austere expanses of parking.



◀ Central Courtyard, 1964.



◀ South Entrance, 1964.



◀ South Parking, 1964.

D.1.4.2. General Landscape Design Guidelines

D.1.4.2.1. The original 1942 landscape drawings, including planting lists, are to be used as a primary reference in the design of new landscape treatments at the Pentagon Reservation.

D.1.4.2.2. All plant material is to be comprised of native, non-invasive species. Plant selection must take into consideration durability and maintenance requirements.

D.1.4.2.3. Zone 1. This zone is the Pentagon's internal courtyard. It is essentially intact and all ensuing projects within the courtyard should follow and preserve the historic nature of this important part of the building. The primary landscape space should be maintained as open lawn with trees interspersed informally throughout allowing for an open park-like character. Trees in this zone should be mid-sized shade trees that will grow to a maximum of about 30-50' in height. Multi-stemmed trees could be used judiciously to add additional interest to the Courtyard area. The use of groundcovers and evergreen shrubs is appropriate at the intersections of the paths.

D.1.4.2.4. Zone 2A. This zone, The River Terrace, is the most formal and monumental of any on the Reservation. Axially focused on the Pentagon's entry portico and traditionally functioning as the primary parade ground for the building, it is a zone tightly constrained by historic preservation concerns. Organized path systems, lawn panels and taller edge plantings characterize its landscape. As with Zone 1, the historic concept is to be preserved. As plantings on the edges of the lawn require replacement, the same or similar material, principally Hornbeam hedges, should be provided to maintain the uniform appearance of the parterres. New plantings should not be introduced into the lawn panels, as they should be preserved as open space.

D.1.4.2.5. Zone 2B. The original landscape of this zone, The Mall Terrace, has been substantially altered by the construction of the Remote Delivery Facility. The roof of that facility was originally designed as a more modern evocation of the formal River Terrace but conversion for use as a temporary helicopter pad has once again altered the Mall Terrace's landscape. When the heliport is relocated to a more functional location, the landscape plan as designed should be implemented. This would entail restoration of the lawn panels and implementation of vertical planting material along the edges of the terrace similar to the character of the River Terrace. The original functions of the Mall Terrace as more of an urban park and additional ceremonial parade ground will thus be restored.

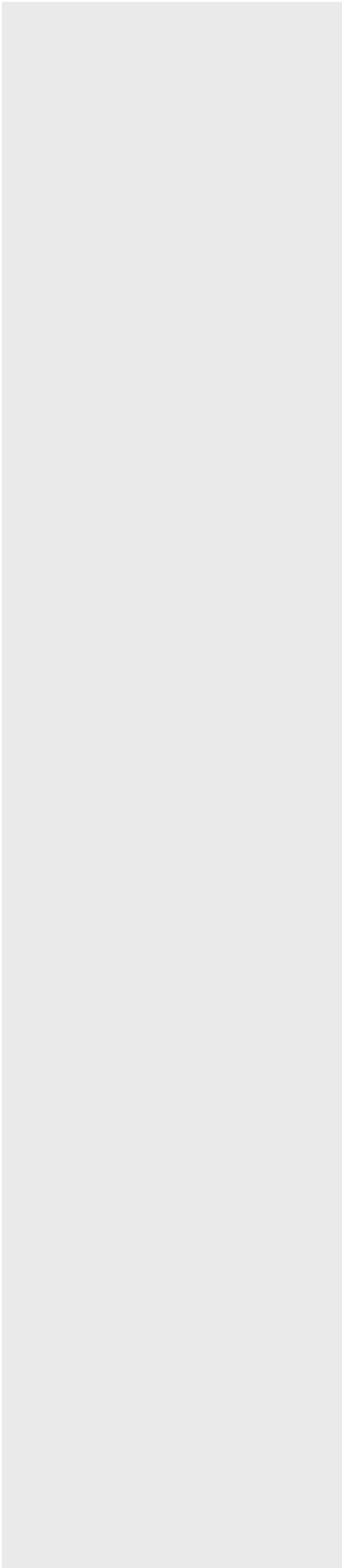
D.1.4.2.6. Zone 3A. Adjacent to the building's perimeter, Zone 3A most obviously emphasized the historical concept of the building as a monumental object set upon a simple landscape. This landscape consisted of mainly lawn

with large shade trees placed within the zone to soften the building appearance. Over time various functions have disrupted the quality of this zone and the restoration of the original uncluttered and spare aesthetic would serve to emphasize the building's prominence within the landscape of the Reservation. This zone should be distinguished by its expanse of simple green lawn and tree clusters from the building face to the boundary of Zone 3B with interruptions confined to access points into the building. At these locations, the use of smaller deciduous ornamental trees, evergreen hedging, shrubs, groundcovers and seasonal color will serve to reinforce the primary building entrances.

D.1.4.2.7. Zone 3B. While similar to Zone 3A, Zone 3B must accommodate a range of functional requirements which are prohibited from the immediate proximity of the building including limited vehicular circulation and the public access to the Pentagon Memorial. To maintain consistency with Zone 3A, the simple green landscape should dominate the expression with randomly placed deciduous shade trees offering canopy and definition to walkways relieving the negative influence of hardscaped areas while reinforcing deference toward the Pentagon structure.

D.1.4.2.8. Zone 4. Surrounded by highways, Zone 4 wraps around the Pentagon on three sides. The current and future anticipated use of this zone is largely for parking. While the Master Plan envisions future phased consolidation of the existing surface parking lots into new low-profile green-roofed structures that would reinforce the original concept of a green meadow along the 395 highway embankment, this effort is not likely to take place in the near future. In the interim, the existing parking lots can and should be enhanced to provide areas of green and large shade trees to provide scale and comfort for users, strengthen the parkland imagery of the reservation, reduce heat absorption and support a more sustainable landscape. The primary landscape elements of the zone should consist of large deciduous shade trees and associated areas of plantings wherever space permits or efficiencies can be made, within the expanses of parking and paved surfaces. The introduction of stormwater management and bio-retention plantings where possible will reinforce the Reservation's overall sustainability and stormwater management reduction goals. Refer to the **Parking Area** discussion following this section.

D.1.4.2.9. Zone 5. Historically, this zone was not intended to have built facilities but extended green space and parking. A heavily planted buffer was to exist between the Reservation development and the lagoon to help preserve the water body. While the Master Plan recommends the restoration of this part of the Reservation for recreational uses as an extension of the George Washington Parkway landscape, this effort is not likely to take place in the near future. In the interim, the existing parking lot can and should be treated similar to those in Zone 4, with areas of green and large shade trees to provide scale and comfort for users, strengthen the parkland imagery of



the reservation, reduce heat absorption and support a more sustainable landscape. Should the Master Plan be implemented in the future, a return to the intended parkland and recreational uses would unify the views to and from the Pentagon and the City's monumental core. At that time, the area should be planted heavily in a manner similar to the rest of the parkway and the water's edge including a mix of large deciduous trees and tall evergreens where appropriate. Care should be taken to adhere to the Chesapeake Bay Act and repair the riparian buffer. A minimum of 100' of buffer should be recreated or preserved between the lagoon and developed area. Trees, shrubs, groundcovers, and mulch should be used to promote natural conditions and to offer development stormwater cleansing before entering the tidal waters. Due to current development and roadways this buffer may be unattainable in all locations but should be established wherever possible and to the greatest extent the constraints will allow.

D.1.4.2.10. Zone 6. This zone is primarily industrial, isolated from the Pentagon both physically and visually by a major highway. Its utilitarian character does not necessitate any great landscaped areas, but the use of large deciduous shade trees should be promoted where possible to provide some shade. Evergreen shrubs should be used at the perimeter of this zone to help reduce the visual impact of the utilitarian surroundings. Functionality characterizes this zone and landscape should be minimized to help it maintain its low profile and deferential status with respect to the building and views beyond.

D.1.5. Parking Areas

A substantial percentage of the Pentagon Reservation is dedicated to continuous areas of surface parking. These impervious asphalt surfaces, currently devoid of vegetation, present significant problems in terms of heat buildup and stormwater runoff, and represent a major liability to the Reservation's overall environmental performance. Further, pedestrians crossing the lots from remote areas and the pedestrian tunnel from Amy-Navy Drive must traverse vast, open spaces exposed to heat, cold, and wind with no means of shelter or relief.

The 2005 Master Plan envisioned replacement of the existing surface parking lots with new, multi-story parking garages with green roofs. Consolidation of the parking within these structures would allow for recapture of previous paved areas as landscaped zones, minimize walking distances for employees, and greatly improve the overall sustainability performance of the site. However, the viability of constructing the parking structures remains uncertain, and a near-term strategy should be implemented to improve the existing parking lots to the extent feasible.

Executive vehicle parking is provided at the upper levels of the Mall and River Terraces, adjacent to the building porticoes. This arrangement is original to the building, is anticipated to remain, and is excluded from the discussion following.

D.1.5.1. Historic Background. From its inception, the Pentagon has always been served by large parking areas accommodating its many employees arriving by automobile. The North and South Parking lots are original to the Pentagon design. However, as evidenced by the original model and vintage photographs, the broad expanses of pavement were once mitigated with tree groupings providing shade and visual relief. 1964 photographs show trees scattered informally through the parking area, planted in small landscaped islands. Today, all plantings have been removed.

D.1.5.2. Sustainability Issues. Maximizing parking efficiency is one of the simplest means of mitigating the environmental effects of the parking lots. By reducing parking area requirements, additional site area can be opened up for landscape use without a reduction in the number of existing parking spaces. Additional strategies that may be considered include the use of swales or bio-retention areas, plantings, shade trees, and pervious pavement systems within paved areas.

In addition to introducing shade and color to Reservation parking lots, bio-swale planting strips with clustered trees would provide enhanced stormwater management and pollutant removal for the impervious parking surface. They would serve as a means to capture the "first flush" from rainfall events, reducing the amount of runoff from the parking lot going directly into the storm system during a normal two-year storm. In larger storms, rainwater would be captured by overflow devices to prevent localized flooding. This process would allow the

bioswales to contribute to the sustainability/ LEED initiatives on the Pentagon Reservation. Consideration should be given in the design of bioswales to pedestrian cross-routes through the parking areas, as well as to engineering of stormwater drainage and subsoils.

To minimize maintenance requirements and avoid the need for irrigation, adaptive native vegetation should be selected, suited to both wet and dry conditions as appropriate. Primary maintenance issues in dealing with these areas would include initial plant establishment, removing solid debris from the stormwater area, keeping overflow drains clean, general yearly plant maintenance, and periodic deep tilling to reestablish infiltration capabilities of the soil media.

Consideration should be given in the design of bioswales to pedestrian cross-routes through the parking areas, as well as to engineering of stormwater drainage and subsoils.

Another method of reducing the overall impervious surfaces and stormwater generation on the site would be the use of pervious paving materials. Pervious pavement systems utilize aggregate with little or no sand content, creating a network of highly permeable, interconnected voids that drain quickly. Such pavements capture stormwater and allow it to seep into the ground, reducing stormwater runoff and helping to recharge groundwater. Pervious pavement systems can offer significant environmental benefits.

Given the vast scale of the parking lots, the maximum use of permeable pavement is desirable. It is recommended that, at minimum, a permeable pavement system be provided at parking stalls. Additional use of permeable pavement at drive aisles and traffic lanes is desirable, but must utilize a system capable, in terms of strength and durability, of withstanding the higher level of use found in these areas. Newer generations of permeable systems are being developed in response to high-traffic demands; however, as their long-term performance data are not yet available, their use throughout the parking lots cannot be recommended at this time. Given the significance of this issue, the Pentagon may wish to implement a pilot program to test the viability of permeable pavement at drive areas.

Any pervious pavement project would require soils testing and possible replacement due to the fact that permeable pavement must be installed on well-draining and uncontaminated soil. Annual or semi-annual maintenance is required to clear pervious pavements of built up sand and other material that would compromise the void structure. Maintenance requirements should be balanced against the extent of paving installed and the benefits such areas offer in regard to stormwater management.

The following diagram indicates a potential bio-swale and pervious pavement introduction within the standard aisle width of 62' that currently exists at the

Pentagon Reservation. In this module, a 10' wide bio-swale planting strip is introduced between two lanes of parking, with adjacent stalls repaved with permeable material and restriped to 16' (compact vehicle) length. The 10' planting width is the minimum recommended dimension to provide a meaningful visual and functional benefit from the landscaping. A continuous strip is recommended in lieu of isolated planting islands, thereby maximizing maintenance efficiency.

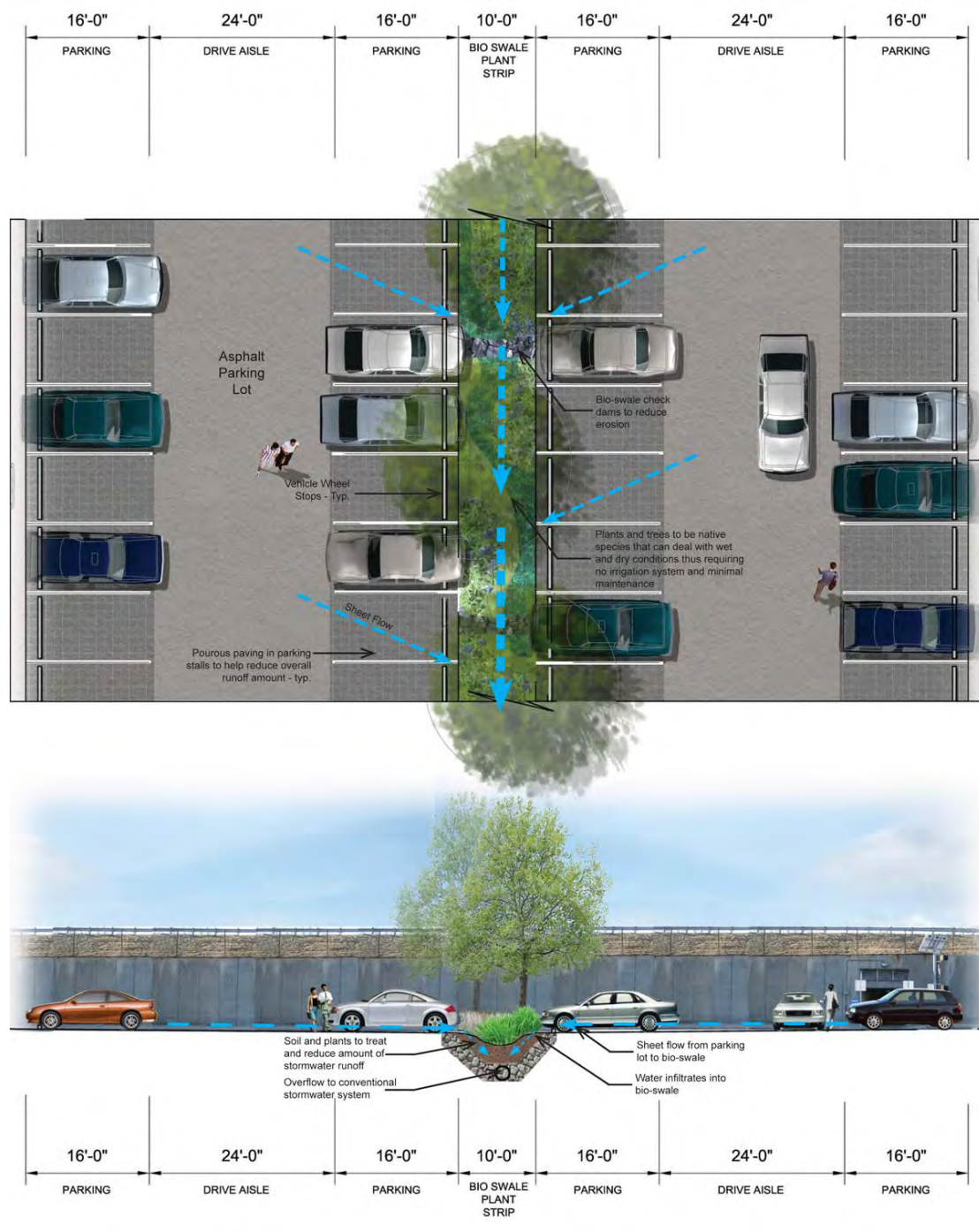


Figure D.1.5.2.1. Typical Bio-Swale Planting Strip at Parking Area.

It is understood that implementation of this module within existing parking areas would need to be coordinated with Reservation parking standards. A comprehensive plan should be developed for the parking areas, to fully understand where efficiencies can be had, and compact parking can be feasible, to allow for the introduction of such plantings. While this may be difficult to retrofit into the current conditions, this strategy should be considered for further planning efforts.

D.1.5.3. General Parking Area Design Guidelines.

- **D.1.5.3.1.** Consolidate parking as feasible through the introduction of compact parking stalls. Maintain maximum 24' wide drive aisles.
- **D.1.5.3.2.** Re-introduce vegetated areas to the extent possible, including continuous, landscaped bio-retention swales with shade trees in clustered groups. Do not utilize individual planted islands.
- **D.1.5.3.3.** Evaluate grading to ensure that runoff flows into bio-retention areas, and that areas to be depressed have sufficient holding capacity to slowly drain and treat the water. Provide engineered overflows and under drains as required, tied into the Reservation stormwater system, along with any sub-grade measures.
- **D.1.5.3.4.** A variety of plant materials may be used in bio-retention swales, ranging from trees to grasses; however, plant material must be able to tolerate both wet and drought conditions. Lower growing plant materials should be utilized for the majority of the swale area, with shade trees planted at random intervals. Select and locate shade trees to minimize maintenance problems associated with bird roosting. Coordinate with PFFA regarding security camera sightlines.
- **D.1.5.3.5.** Provide pedestrian crossings periodically at bioswales for convenience of personnel traversing parking area.
- **D.1.5.3.6.** Introduce pervious paving treatments at parking stalls to the extent possible, and at pathways where high pedestrian traffic is not required to be accommodated.

D.1.5.4. A recommendation for pervious pavement mix is contained in the **Exterior Materials Control List**.

D.1.6. Pavements

In addition to parking areas, various types of paved surfaces exist throughout the Reservation, including vehicular roadways and drives; sidewalks; ramps; jogging trails, and bicycle paths. These various elements require a comprehensive standard to ensure visual consistency along with functional requirements.

D.1.6.1. Historic Background. Based on historic documentation and extant fabric, roadways, pedestrian walks, and parking areas appear to have been originally constructed of medium to light-colored concrete. Over time, the majority of vehicular surfaces, with the exception of the Central Court, have been paved with asphalt. New sidewalks have been constructed, and existing walks patched, with varying materials (primarily concrete). A public bicycle path of asphalt currently abuts the Pentagon Reservation along its west side.

It should be noted that efforts have been made in recent years as various projects have been undertaken to replicate the original concrete appearance. The original aggregate was supplied from the site itself; a comparable supply is no longer available. An alternative mix incorporating gravel and sand from Goose Bay Aggregates, Inc. has been utilized in recent years, as follows:

LeHigh cement	259 pounds
Blue Circle Atlantic NewCem	259 pounds
Goose Bay #57 Gravel	2000 pounds
Goose Bay Sand	992 pounds

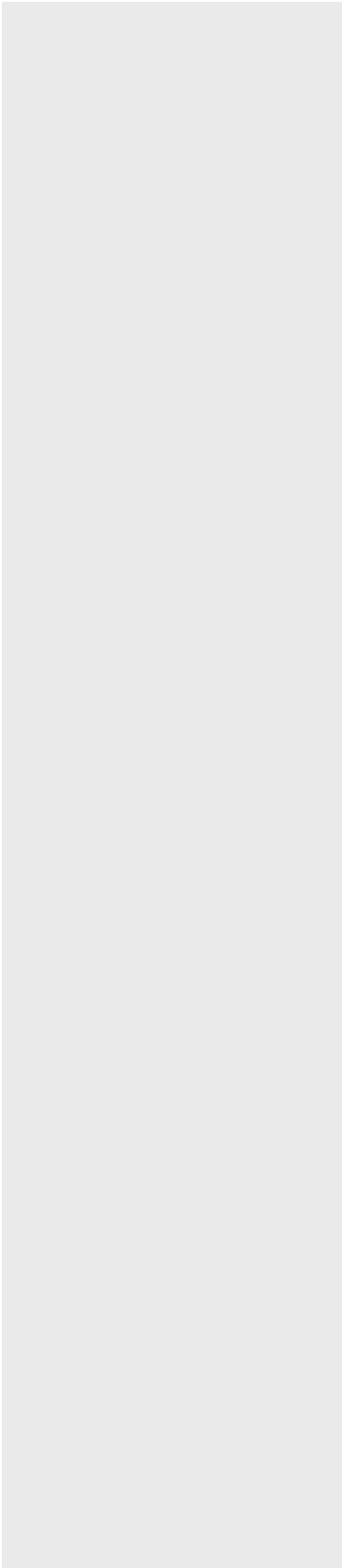
Given the proprietary nature of this concrete, its use was limited to those areas where replication of the historic appearance was considered of paramount importance. However, it is understood that the Goose Bay aggregate source has now been depleted, and that a new, more readily available mix is now being implemented. This concrete is recommended as the Reservation standard.

D.1.6.2. Sustainability Issues. Pervious pavement materials should be considered to the extent possible, as well as locally sourced materials.

D.1.6.3. General Pavement Design Guidelines.

- **D.1.6.3.1.** All paving materials are to conform the Pentagon Reservation standards as listed in this manual, to the greatest extent practicable. Visual conformance is paramount. Patching with material dissimilar in appearance is not permitted. All curbs and sidewalk ramps are to match sidewalk material.

D.1.6.3.2. Within Zones 1, 2A, 2B, 3A, and 3B, all pedestrian and vehicular pathways are to be concrete to reinterpret the historic condition to the greatest extent practicable. Pedestrian pathways at Zones 1, 2A, and 2B (historic terrace) are to match the Reservation standard concrete mix. Public pathways to the



Pentagon Memorial in Zone 3B may be designated with panels of a distinct (exposed aggregate) finish in the standard concrete field.

- **D.1.6.3.3.** Within Zone 4, 5, and 6, asphalt is to be used at all roadways and parking areas, with the exception that permeable pavement may be used at parking stalls. Bands of Reservation standard concrete pavement are to be utilized at all vehicular entry points into the Reservation as identifying markers. Reservation standard concrete is to be used for all sidewalks to the greatest extent practicable. At pedestrian pathways through parking areas, permeable pavement may be considered at low-traffic areas.
- **D.1.6.3.4.** Within Zones 4 and 5, jogging paths/bicycle trails are to be asphalt, except that crushed stone is recommended in the parkland east of Boundary Channel Drive.

D.1.7. Security Stations

In a number of locations throughout the Reservation, the Pentagon Force Protection Agency (PFPA) operates security stations to monitor activity and screen incoming and outgoing vehicles and pedestrians. Their personnel work from portable buildings of varying sizes based on the particular requirements of the location. In some locations there is merely space for one or two guards, while the largest include extensive screening functions. The types of facilities include:

- Guard posts at entrances to the Reservation
- Vehicle screening posts at entrances to the secure perimeter
- DoD and badged personnel screening posts at building entrances
- Visitor screening posts at the Metro Entry Facility

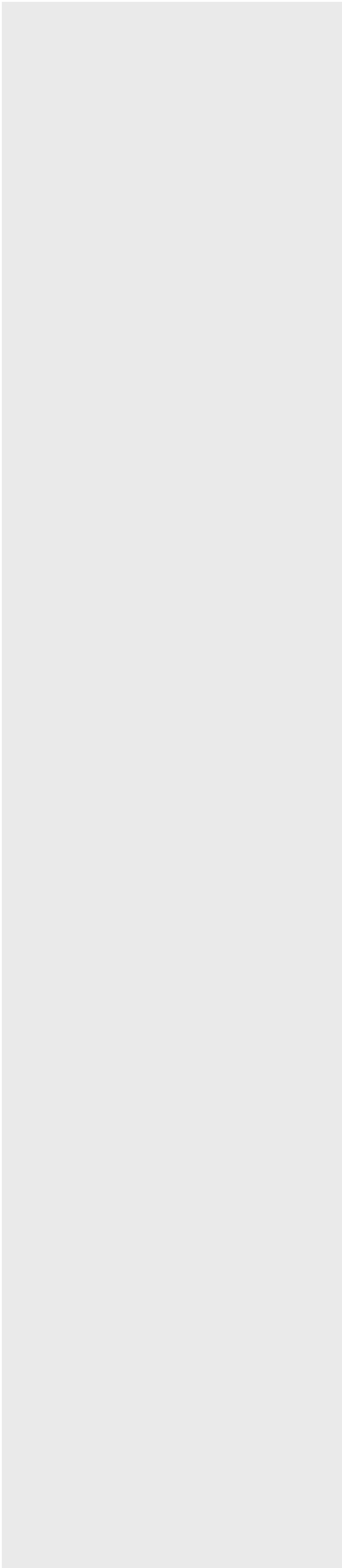
Some care has been given to the selection of these structures and their siting, and it is possible for them to be relatively unobtrusive in many locations. The primary aesthetic concern, however, is not so much the structures themselves as the required infrastructure that supports them. Typically each structure has been altered by the inclusion of surface mounted lighting, security cameras, signage, HVAC equipment, electrical and communications panels, sliding doors surface mounted over the building facades, and extensive exposed conduit runs. As a result, these areas have taken on a temporary/ad hoc appearance that belies the care taken in the selection of the original structure.

Where the security stations are located immediately adjacent to building entrances (Corridors 2, 3, 8, and the MEF) the existing prefabricated structures must be replaced by permanent construction. Concepts for the design of that work are underway. These structures will be constructed of materials consistent with their aesthetic zone: primarily limestone and glazing in aluminum framing. The supporting infrastructure must be carefully integrated into their designs to reinforce the image of permanence and dignity that they should convey as the gateways to the Pentagon.

At the other security stations located throughout the Reservation, the following guidelines should be applied.

D.1.7.1. General Security Station Design Guidelines

- **D.1.7.1.1.** A consistent design language is to be applied to all security stations.
- **D.1.7.1.2.** All stations within a zone are to utilize a common palette of colors and materials.
- **D.1.7.1.3.** Prefabricated structures may be utilized, with customization as required to meet recommended standards.

- 
- **D.1.7.1.4.** Security stations are to follow general building design guidelines as detailed in this Manual.
 - **D.1.7.1.5.** Utilities are to be concealed within the station construction, or screened in enclosures designed to complement the structures.
 - **D.1.7.1.6.** Associated equipment, including vehicle barriers and bollards, is to be consistent with Reservation standards, including those for finishes.
 - **D.1.7.1.7.** Exterior lighting is to be positioned adjacent to, rather than on, the structures. Fixtures and mounting are to be consistent with Reservation site lighting standards.
 - **D.1.7.1.8.** Conduit is to be concealed rather than surface mounted.
 - **D.1.7.1.9.** Signage is to be consistent with Reservation standards.
 - **D.1.7.1.10.** Landscape may be utilized to soften the station appearance, while not compromising function by obstructing views. Landscaping is to be consistent with Reservation standards.

D.1.8. Shelters

A number of semi-permanent pedestrian shelter structures have been installed in various locations throughout the Pentagon Reservation. While their original function may have been to provide temporary protection to persons waiting for buses, this need has been eliminated with the construction of the Metro Entrance Facility. Currently, the structures serve as shelters for persons desiring to smoke outside the Pentagon Building. This need is anticipated to remain, and some shelters may be desired for public use on the route to the Pentagon Memorial.

The current shelters have a generic and flimsy appearance at odds with the dignified setting of the Pentagon. An improved solution is required.

Standard manufactured products offer little improvement to the existing site shelters. A custom design is recommended, consistent in material and detailing with the Exterior Standards contained herein and identifiable as associated with the Pentagon. The custom design should be used for all shelters throughout the Reservation.

D.1.9. Miscellaneous Equipment

Throughout the Reservation, various types of equipment, generally related to security needs, are located on building walls, rooftops, eaves, and on various light standards and poles. While security concerns are paramount in the selection and mounting of such devices, consistency should be applied to both mounting methods and locations to the extent feasible. Where possible, cameras and other such devices should be mounted to site light poles in lieu of building surfaces. Bracket selection may vary based on specific device requirements. However, a standard mounting bracket should be utilized throughout the Reservation where possible, with coloration to match the element to which it is attached. (Typically, Color 1, as identified in Section E.3, Color Schedule). Brackets should be streamlined in construction, without prominently exposed fasteners. Pipe construction (tubular or square) and gooseneck profile should be avoided if possible. Equipment housings should be colored to match the brackets.

Representative camera bracket:
Pelco IWM Series.



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D.2. Exterior Standards - Zone 0

D.2.1. Zone-Specific Design Guidelines

- **D.2.1.1.** The existing Pentagon Building is to be retained essentially as-is. No significant alterations may be undertaken that would modify or disrupt its historic facades without first fulfilling applicable historic preservation requirements. New construction abutting the building is to be avoided to the greatest extent possible.
- **D.2.1.2.** Original materials are to be retained and repaired to the greatest extent possible. Where retention is not feasible, materials are to be replaced in kind. Repairs and alterations as may be required for ongoing maintenance are to match historic materials and methods to the greatest extent possible.
- **D.2.1.3.** Where new building elements are required, they are to replicate original or historic elements to the greatest extent possible in configuration, material, and finish. Examples include windows, exterior doors, light fixtures, railings, and signage.
- **D.2.1.4.** Attachment of fixtures and equipment to the building exterior is not permitted without first fulfilling applicable historic preservation requirements, with the exception of replicative feature lighting and signage.

D.2.2. Exterior Building Materials Permitted

D.2.2.1. Exterior Wall Systems/Finishes

Type 1 at E-Ring facades

Type 2 at Courtyard Facades

D.2.2.2. Roofing Systems

Type 1

Type 4

D.2.2.3. Window Systems/Glazing

Type 1, Color 6

D.2.2.4. Doors

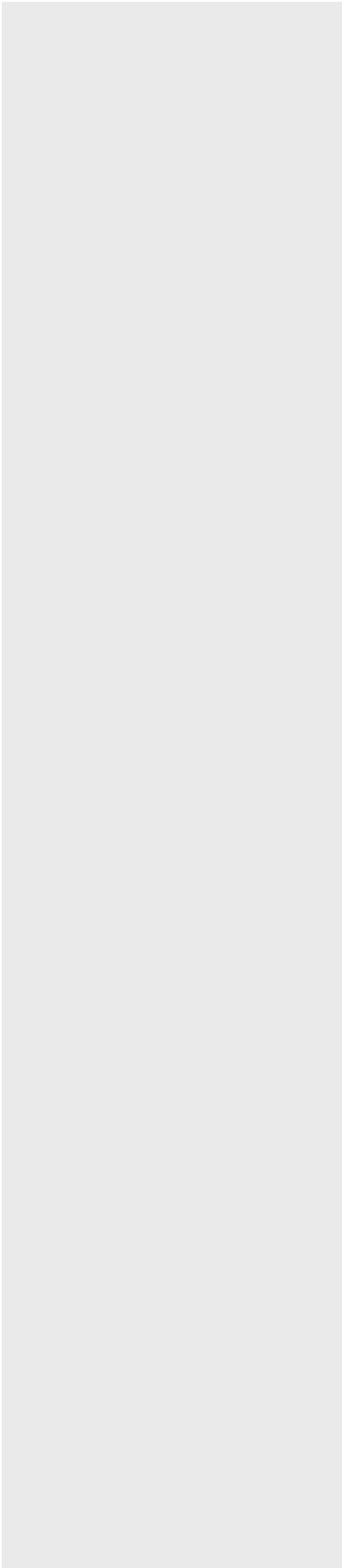
Type 1 at Primary Entrances at E-Ring Facades

Type 2, Color 6

Type 3, Color 6 at openings in Courtyard façade

D.2.2.5. Overhead Doors

Type 1, Color 6



D.2.2.6. Canopies

Type 1, Colors 1, 6, Metal Finish 1

D.2.2.7. Railings

Type 1

Type 2

D.2.2.8. Light Fixtures

Type 1 at historic locations only, River and Mall Entrances.

Type 2 at historic locations only, River and Mall Entrances.

Type 3

D.2.3. Exterior Site Elements Permitted

D.2.3.1. Pavement - Walkways

Type 2 at entrances and steps

End of Exterior Standards - Zone 0.

D.3. Exterior Standards - Zone 1

D.3.1. Zone-Specific Design Guidelines

- **D.3.1.1.** The Central Courtyard is to be maintained essentially as-is, as a park-like open space. Introduction of new structures is to be avoided to the greatest extent possible in this zone. If a new structure is required, it is to be small in scale and located well away from both axial pathways and courtyard facades. Temporary facilities may be permitted, subject to approval by the Director, Defense Facilities Directorate.
- **D.3.1.2.** All design projects are to maintain and strengthen the clear organization and direct circulation of this zone. The original layout of pathways may not be altered without first fulfilling applicable historic preservation requirements.
- **D.3.1.3.** Original materials are to be retained and repaired to the greatest extent possible. Where retention is not feasible, materials are to be replaced in kind. Where missing, new material is to be provided to match the original condition. Repairs and alterations as may be required for ongoing maintenance are to match historic materials and methods to the greatest extent possible.
- **D.3.1.4.** Where new site elements are required, they are to replicate original or historic elements to the greatest extent possible in configuration, material, and finish. Examples include benches and site lighting.
- **D.3.1.5.** Landscaping is to reinforce the clarity of circulation and recall the original design intent.
- **D.3.1.6.** Concrete pavements to match the Reservation standard mix are to be provided at all walkways. Concrete pavement is to be used at all drives. Extra care should be made in this zone to match the color of adjacent original concrete to remain.

D.3.2. Exterior Building Materials Permitted

D.3.2.1. Exterior Wall Systems/Finishes (Café and custom shelters only)

Type 3

Type 5

D.3.2.2. Roofing Systems (Café and custom shelters only)

Type 1

Type 2

D.3.2.3. Window Systems/Glazing (Café only)

Type 3

Type 4

D.3.2.4. Doors

Type 3

D.3.2.5. Canopies

Type 1

D.3.2.6. Railings

Type 1

D.3.2.7. Light Fixtures

Type 3

D.3.3. Exterior Site Elements Permitted

D.3.3.1. Pavement – Walkways

Type 1

D.3.3.2. Pavement – Vehicular

Type 1

D.3.3.3. Bollards

Type 2

Type 3

D.3.3.4. Site Lighting

Type 1

D.3.3.5. Benches

Type 1

Type 3

D.3.3.6. Trash Receptacles

Type 1

D.3.3.7. Courtyard Furniture

Type 1

Type 2

Type 3

End of Exterior Standards - Zone 1.

D.4. Exterior Standards - Zone 2A

D.4.1. Zone-Specific Design Guidelines

- **D.4.1.1.** The River Terrace is to be maintained essentially as-is, as a formal parade ground space. Introduction of new structures is not permitted in this zone without first fulfilling applicable historic preservation requirements. Temporary structures are discouraged.
- **D.4.1.2.** All design projects are to maintain and strengthen the clear organization and direct circulation of this zone. The original layout of pathways may not be altered without first fulfilling applicable historic preservation requirements.
- **D.4.1.3.** Original materials are to be retained and repaired to the greatest extent possible. Where retention is not feasible, materials are to be replaced in kind. Where missing, new material is to be provided to match the original condition. Repairs and alterations as may be required for ongoing maintenance are to match historic materials and methods to the greatest extent possible.
- **D.4.1.4.** Concrete pavements are to be provided at the parking area and drives.

D.4.2. Exterior Building Materials Permitted

D.4.2.1. Exterior Wall Systems/Finishes

- Type 1
- Type 2

D.4.2.2. Roofing Systems

- Type 1 (Security Stations)
- Type 2 (Security Stations)
- Type 6 (Library and Conference Center)
- Type 7 (Library and Conference Center)

D.4.2.3. Window Systems/Glazing

- Type 1
- Type 3 (Library and Conference Center)
- Type 4 (Library and Conference Center)

D.4.2.4. Doors

- Type 3

D.4.2.5. Canopies

Type 1

D.4.2.6. Railings

Type 1

Type 2

D.4.2.7. Light Fixtures

Type 2

Type 3

D.4.3. Exterior Site Elements Permitted

D.4.3.1. Pavement – Walkways

Type 1

Type 2

D.4.3.2. Pavement – Vehicular

Type 1

D.4.3.3. Site Wall Finish

Type 1

Type 2

Type 3

D.4.3.4. Fencing

Type 2 (Site Perimeter only)

D.4.3.5. Bollards

Type 2

Type 3

D.4.3.6. Screening

Type 3

D.4.3.7. Site Lighting

Type 1

D.4.3.8. Benches

Type 2

D.4.3.9. Trash Receptacles

Type 2

End of Exterior Standards - Zone 2A.

D.5. Exterior Standards - Zone 2B

D.5.1. Zone-Specific Design Guidelines

- **D.5.1.1.** The Mall Terrace/RDF should maintain an expansive vista recalling the original views from the north side of the Pentagon Building. Introduction of new structures should be avoided to the greatest extent possible in this zone. Temporary structures are discouraged.
- **D.5.1.2.** All design projects are to maintain and strengthen the clear organization and direct circulation of this zone. Lines of sight toward the National Mall may not be altered without first fulfilling applicable historic preservation requirements. The horizontal ground plane of the terrace and RDF deck is to remain the predominant visual feature.
- **D.5.1.3.** Where new building and site elements are required at the RDF deck, they are to be sympathetic in design to the historic Mall Terrace and Pentagon Building.
- **D.5.1.4.** At the historic terrace, original materials are to be retained and repaired to the greatest extent possible. Where retention is not feasible, materials are to be replaced in kind. Where missing, new material is to be provided to match the original condition. Repairs and alterations as may be required for ongoing maintenance are to match historic materials and methods to the greatest extent possible.
- **D.5.1.5.** At the historic terrace, concrete pavements are to be provided at the parking area and drives.

D.5.2. Exterior Building Materials Permitted

D.5.2.1. Exterior Wall Systems/Finishes

- Type 1
- Type 2
- Type 4

D.5.2.2. Roofing Systems

- Type 2
- Type 5
- Type 6
- Type 7

D.5.2.3. Window Systems/Glazing

Type 1

Type 2

Type 3

Type 4

D.5.2.4. Doors

Type 3

D.5.2.5. Overhead Doors

Type 1

D.5.2.6. Canopies

Type 1

D.5.2.7. Railings

Type 1

Type 2

D.5.2.8. Light Fixtures

Type 3

D.5.3. Exterior Site Elements Permitted

D.5.3.1. Pavement – Walkways

Type 1 (at historic terrace)

Type 2

Type 5

D.5.3.2. Pavement – Vehicular

Type 1

D.5.3.3. Site Wall Finish

Type 2

Type 3

D.5.3.4. Bollards

Type 1

Type 2

Type 3

D.5.3.5. Screening

Type 1

Type 2

Type 3

D.5.3.6. Site Lighting

Type 2

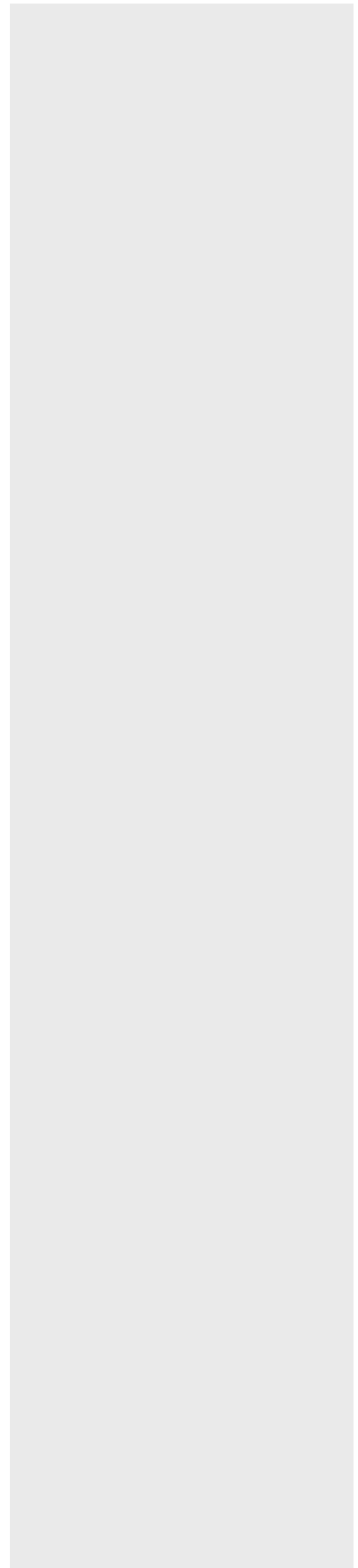
D.5.3.7. Benches

Type 2

D.5.3.8. Trash Receptacles

Type 2

End of Exterior Standards - Zone 2B.





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D.6. Exterior Standards - Zone 3A

D.6.1. Zone-Specific Design Guidelines

- **D.6.1.1.** Restoration of an primarily open, grass ground plane around the building perimeter is to be emphasized in this zone. This greenscape is to be maintained as clear as possible of structures, pavements, and site elements. Introduction of new structures is to be avoided to the greatest extent possible. Temporary structures are discouraged.
- **D.6.1.2.** If a new structure is required, its design must be respectful of the Pentagon Building, particularly in regard to the relationship of new construction to the original building. Symmetry, scale, and appropriate proportion of the new structure must be of paramount concern. The distinction between original and new construction must be clearly and appropriately addressed.
- **D.6.1.3.** Building and site elements are to be sympathetic in design to the historic Pentagon Building.
- **D.6.1.4.** Pathways and roadways are to be limited to those essential to access the building interior. Pathways are to provide the shortest possible route from public space through this zone.
- **D.6.1.5.** Concrete pavements are to be provided at all sidewalks, pathways, parking areas and drives.

D.6.2. Exterior Building Materials Permitted

D.6.2.1. Exterior Wall Systems/Finishes

Type 1

D.6.2.2. Roofing Systems

Type 4

Type 5

Type 6

Type 7

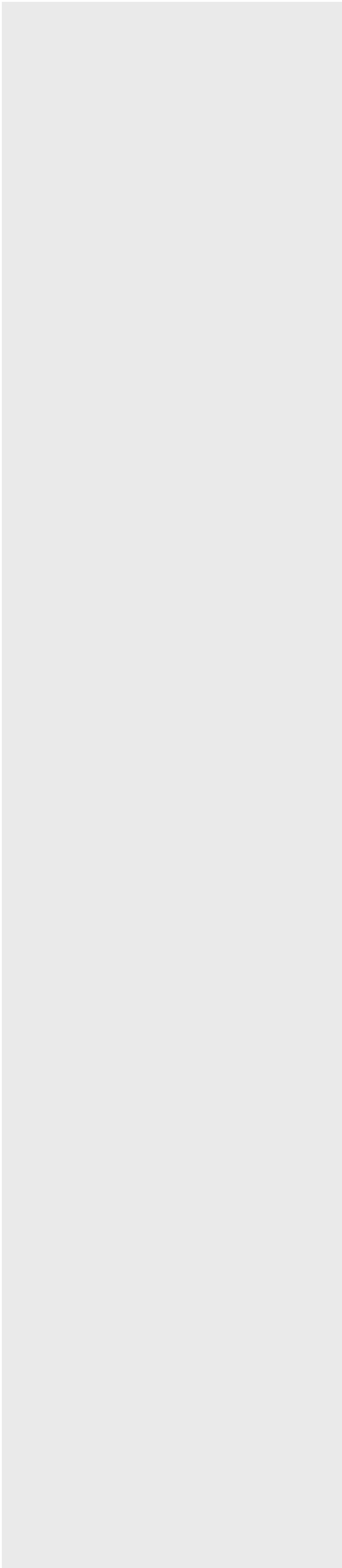
D.6.2.3. Window Systems/Glazing

Type 1

Type 2

Type 3

Type 4



D.6.2.4. Doors

Type 2

Type 3

D.6.2.5. Canopies

Type 1

D.6.2.6. Railings

Type 1

Type 2

D.6.2.7. Light Fixtures

Type 3

D.6.3. Exterior Site Elements Permitted

D.6.3.1. Pavement – Walkways

Type 1

D.6.3.2. Pavement – Site

Type 1

D.6.3.3. Pavement – Vehicular

Type 1

D.6.3.4. Site Wall Finish

Type 2

Type 3

D.6.3.5. Bollards

Type 1

Type 2

Type 3

D.6.3.6. Vehicle Barriers

Type 1

D.6.3.7. Screening

Type 4 (temporary, as required)

D.6.3.8. Site Lighting

Type 2

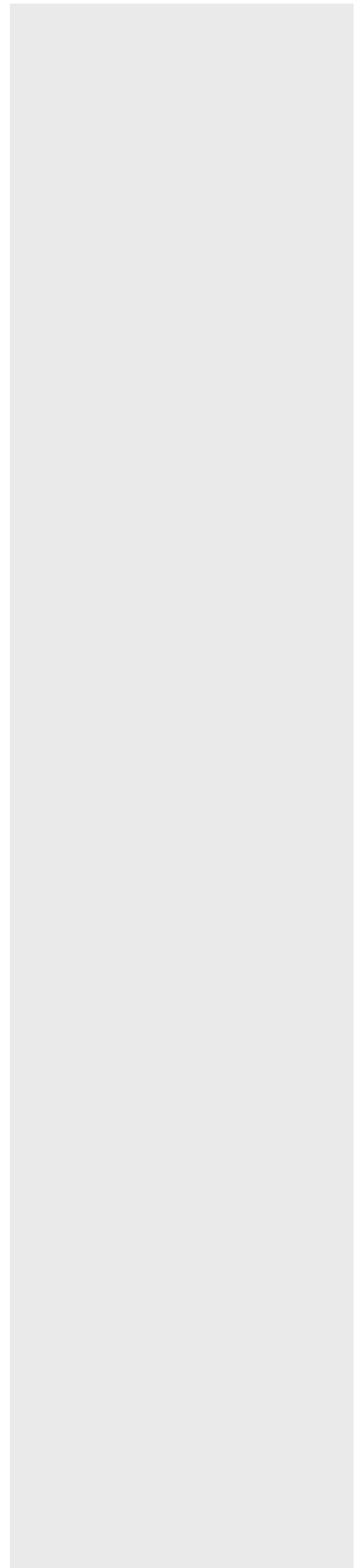
D.6.3.9. Benches

Type 2

D.6.3.10. Trash Receptacles

Type 2

End of Exterior Standards – Zone 3A.





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D.7. Exterior Standards - Zone 3B

D.7.1. General Design Guidelines

- **D.7.1.1.** Restoration of a primarily open, grass ground plane around the building perimeter is to be emphasized in this zone. This greenscape is to be maintained as clear as possible of structures, pavements, and site elements. Introduction of new structures is to be avoided to the greatest extent possible. Temporary structures are discouraged.
- **D.7.1.2.** If a new structure is required, its design must be respectful of the Pentagon Building, particularly in regard to the relationship of new construction to the original building. Symmetry, scale, and appropriate proportion of the new structure must be of paramount concern. The distinction between original and new construction must be clearly and appropriately addressed.
- **D.7.1.3.** Primary public pathways are to be provided in this zone. Pathways are to provide clear and direct routes around the building perimeter.
- **D.7.1.4.** Distinction is to be made between general (public) access routes and official routes.
- **D.7.1.5.** Concrete pavements are to be provided at all sidewalks, pathways, parking areas and drives.

D.7.2. Exterior Building Materials Permitted

D.7.2.1. Exterior Wall Systems/Finishes

- Type 1
- Type 2
- Type 4

D.7.2.2. Roofing Systems

- Type 4
- Type 5
- Type 6
- Type 7



D.7.2.3. Window Systems/Glazing

Type 1

Type 2

Type 3

Type 4

D.7.2.4. Doors

Type 2

Type 3

D.7.2.5. Canopies

Type 1

D.7.2.6. Railings

Type 1

Type 2

D.7.2.7. Light Fixtures

Type 3

D.7.3. Exterior Site Elements Permitted

D.7.3.1. Pavement – Walkways

Type 1

Type 3 (at primary public routes)

D.7.3.2. Pavement – Site

Type 1

D.7.3.3. Pavement – Vehicular

Type 1

D.7.3.4. Site Wall Finish

Type 2

Type 3

D.7.3.5. Bollards

Type 1

Type 2

Type 3

D.7.3.6. Vehicle Barriers

Type 1

Type 2 (at zone perimeter only)

Type 3 (at zone perimeter only)

Type 4 (at zone perimeter only)

Type 5

D.7.3.7. Screening

Type 4 (temporary, as required)

D.7.3.8. Site Lighting

Type 2

D.7.3.9. Benches

Type 2

D.7.3.10. Bicycle Racks

Type 1

Type 2

D.7.3.11. Drinking Fountains

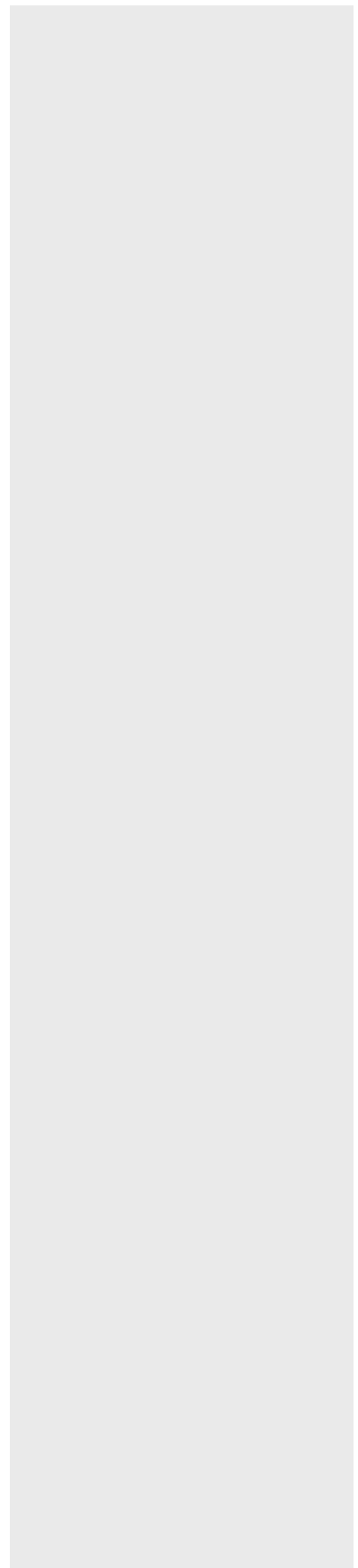
Type 1

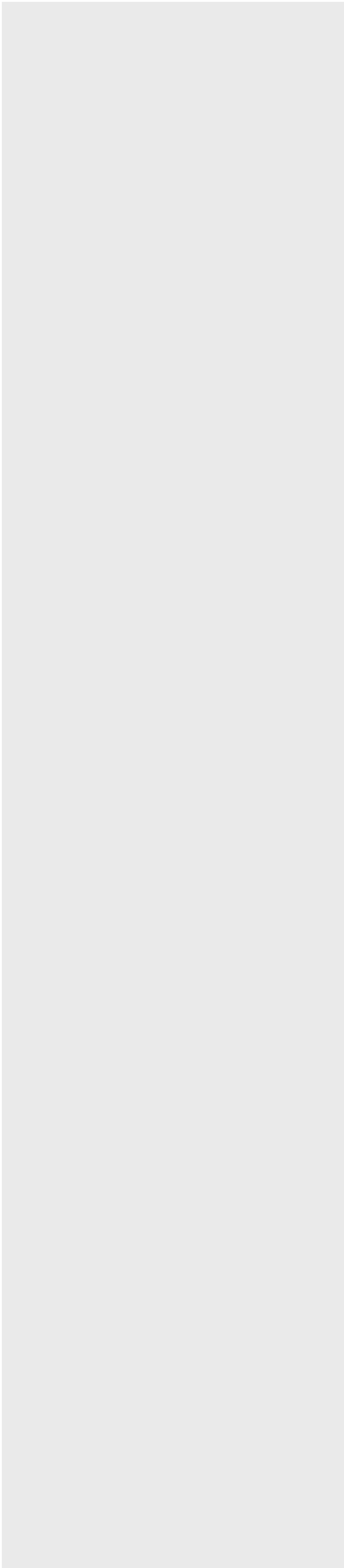
D.7.3.12. Trash Receptacles

Type 2

Type 3

End of Exterior Standards - Zone 3B.





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D.8. Exterior Standards - Zone 4

D.8.1. Zone-Specific Design Guidelines

- **D.8.1.1.** This zone is to maintain open views of the Pentagon Building, particularly as seen from primary site entry points and major roadways. New parking structures and security facilities may be introduced in conformance with general design guidelines. Temporary facilities may be permitted, subject to approval by the Director, Defense Facilities Directorate.
- **D.8.1.2.** Building and site elements may be sympathetic in design to the historic Pentagon Building, or more modern in character.
- **D.8.1.3.** Landscaping and sustainable strategies are to recall the informal nature of the original design.
- **D.8.1.4.** Pedestrian pathways are to be identifiable and distinct in material from roadways and parking surfaces. Pathways are to be provided with site furnishings and landscaping, including trees, to enhance the pedestrian experience.
- **D.8.1.5.** Site walls and fencing are to be consistent along any visible stretch of Reservation perimeter.
- **D.8.1.6.** Vehicular Pavement Type 1 is to be provided at boundary marker locations (vehicular entrances) to Reservation.

D.8.2. Exterior Building Materials Permitted

D.8.2.1. Exterior Wall Systems/Finishes

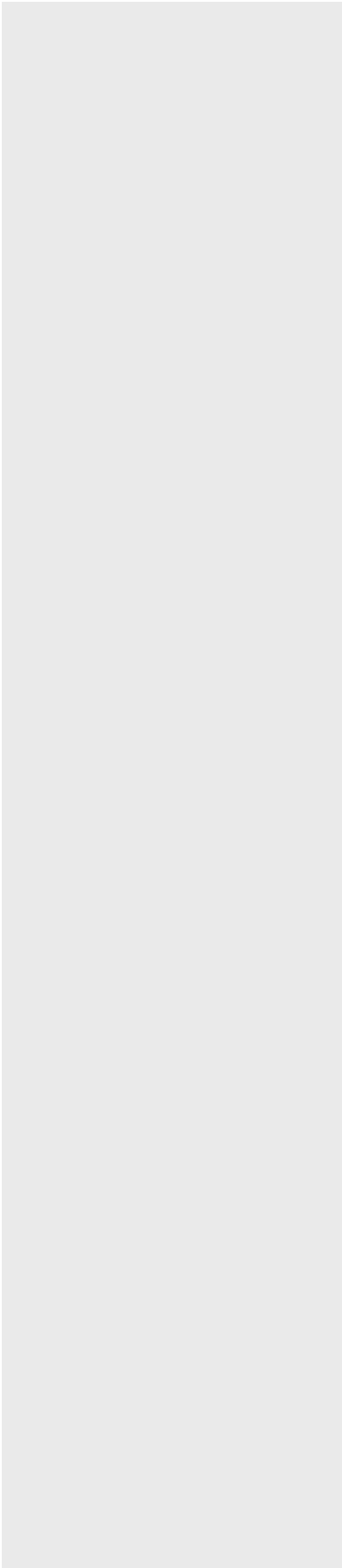
- Type 1
- Type 2
- Type 4

D.8.2.2. Roofing Systems

- Type 2
- Type 3
- Type 4
- Type 5
- Type 6
- Type 7

D.8.2.3. Window Systems/Glazing

- All types



D.8.2.4. Doors

Type 3

D.8.2.5. Canopies

Type 1

D.8.2.6. Railings

Type 1

Type 2

D.8.2.7. Light Fixtures

Type 3

D.8.3. Exterior Site Elements Permitted

D.8.3.1. Pavement – Walkways

Type 1

Type 3 (accents at primary public routes)

Type 4

Type 6

D.8.3.2. Pavement – Site

Type 1

D.8.3.3. Pavement – Vehicular

Type 1 (at vehicular entrances)

Type 2

Type 3 (at parking stalls)

D.8.3.4. Site Wall Finish

Type 1

Type 4 (near RDF)

D.8.3.5. Manhole Covers

Type 1

D.8.3.6. Storm Grates

Type 1

D.8.3.7. Fencing

Type 1 (interior of zone)

Type 2 (Reservation perimeter)

D.8.3.8. Bollards

All types

D.8.3.9. Vehicle Barriers

All types

D.8.3.10. Screening

All types

D.8.3.11. Site Lighting

Type 2

Type 3

D.8.3.12. Benches

Type 2

D.8.3.13. Bicycle Racks

All types

D.8.3.14. Drinking Fountains

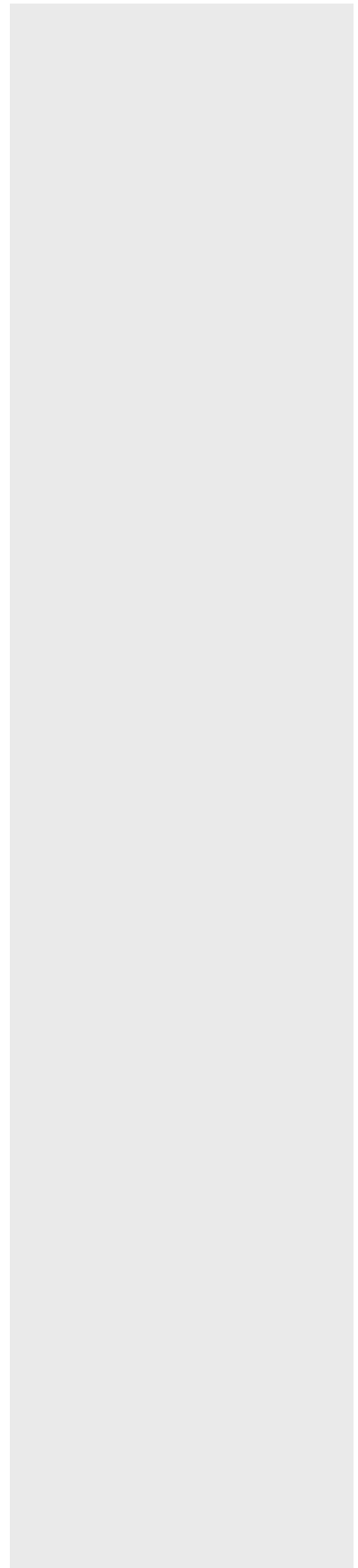
Type 1

D.8.3.15. Trash Receptacles

Type 2

Type 3

End of Exterior Standards - Zone 4.





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D.9. Exterior Standards - Zone 5

D.9.1. Zone-Specific Design Guidelines

- **D.9.1.1.** New structures and security facilities may be introduced in conformance with general design guidelines. Temporary facilities may be permitted, subject to approval by the Director, Defense Facilities Directorate.
- **D.9.1.2.** Building and site elements may be sympathetic in design to the historic Pentagon Building, or more modern in character. Consideration is to be given to the proximity to the George Washington Memorial Parkway.
- **D.9.1.3.** Landscaping and sustainable strategies are to recall the informal nature of the original design.
- **D.9.1.4.** Pedestrian pathways are to be identifiable and distinct in material from roadways and parking surfaces. Pathways are to be provided with site furnishings and landscaping, including trees, to enhance the pedestrian experience.
- **D.9.1.5.** Site walls and fencing are to be consistent along any visible stretch of Reservation perimeter.
- **D.9.1.6.** Vehicular Pavement Type 1 is to be provided at boundary marker locations (vehicular entrances) to Reservation.

D.9.2. Exterior Building Materials Permitted

D.9.2.1. Exterior Wall Systems/Finishes

- Type 2
- Type 3
- Type 4
- Type 5

D.9.2.2. Roofing Systems

- Type 2
- Type 3
- Type 4
- Type 5
- Type 6
- Type 7

D.9.2.3. Window Systems/Glazing

- All types

D.9.2.4. Doors

Type 3

D.9.2.5. Overhead Doors

Type 1

D.9.2.6. Canopies

Type 1

D.9.2.7. Railings

Type 1

Type 2

D.9.2.8. Light Fixtures

Type 3

D.9.3. Exterior Site Elements Permitted

D.9.3.1. Pavement – Walkways

Type 1

Type 3 (at primary public routes)

Type 4

Type 5

Type 6

D.9.3.2. Pavement – Site

Type 1

D.9.3.3. Pavement – Vehicular

Type 1 (at vehicular entrances)

Type 2

Type 3 (at parking stalls)

D.9.3.4. Site Wall Finish

Type 1

D.9.3.5. Manhole Covers

Type 1

D.9.3.6. Storm Grates

Type 1

D.9.3.7. Bollards

All types

D.9.3.8. Vehicle Barriers

All types

D.9.3.9. Screening

All types

D.9.3.10. Site Lighting

Type 2

Type 3

D.9.3.11. Benches

Type 2

D.9.3.12. Bicycle Racks

All types

D.9.3.13. Drinking Fountains

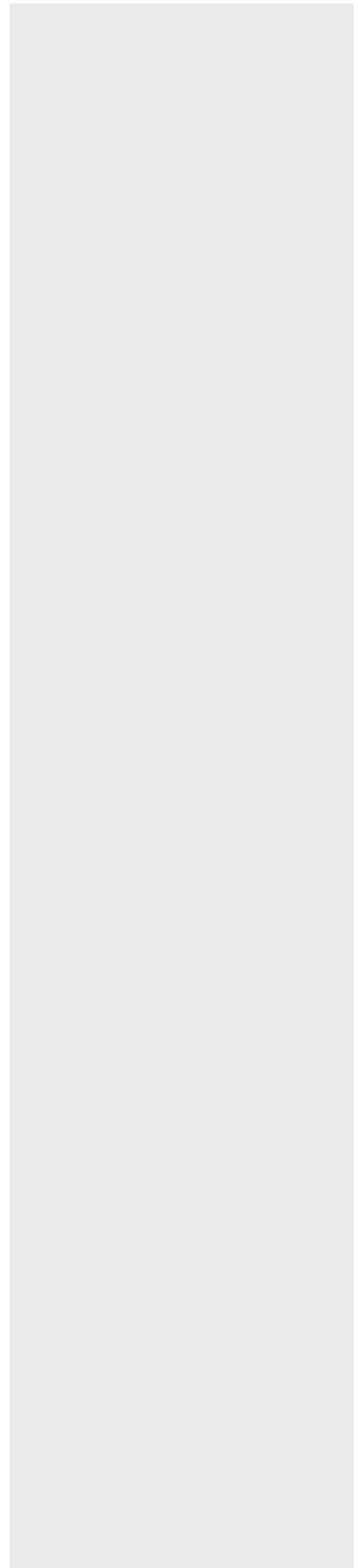
Type 1

D.9.3.14. Trash Receptacles

Type 2

Type 3

End of Exterior Standards - Zone 5.





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D.10 Exterior Standards - Zone 6

D.10.1. Zone-Specific Design Guidelines

- **D.10.1.1.** This zone may retain its straightforward aesthetic character. Any modifications or enhancements should be undertaken with the goal of not calling attention to these facilities, but rather, maintaining their ordered and discrete presence. New structures and security facilities may be introduced in conformance with general design guidelines. Temporary facilities may be permitted, subject to approval by the Director, Defense Facilities Directorate.
- **D.10.1.2.** Building and site elements may be more modern in character.
- **D.10.1.3.** Effort should be made to screen facilities in this area from major view corridors.
- **D.10.1.4.** Site walls and fencing are to be consistent along any visible stretch of Reservation perimeter.
- **D.10.1.5.** Vehicular Pavement Type 2 is to be provided at boundary marker locations (vehicular entrances) to Reservation.

D.10.2. Exterior Building Materials Permitted

D.10.2.1. Exterior Wall Systems/Finishes

Type 2
Type 3
Type 4
Type 5

D.10.2.2. Roofing Systems

Type 2
Type 3
Type 4
Type 5
Type 6
Type 7

D.10.2.3. Window Systems/Glazing

All types

D.10.2.4. Doors

Type 3

D.10.2.5. Overhead Doors

Type 1

D.10.2.6. Canopies

Type 1

D.10.2.7. Railings

Type 1

Type 2

D.10.2.8. Light Fixtures

Type 3

D.10.3. Exterior Site Elements Permitted

D.10.3.1. Pavement – Walkways

Type 1

Type 3 (at primary public routes)

Type 4

D.10.3.2. Pavement – Site

Type 1

D.10.3.3. Pavement – Vehicular

Type 1 (at vehicle entrances)

Type 2

Type 3 (at parking stalls)

D.10.3.4. Site Wall Finish

Type 1

D.10.3.5. Manhole Covers

Type 1

D.10.3.6. Storm Grates

Type 1

D.10.3.7. Bollards

All types

D.10.3.8. Vehicle Barriers

All types

D.10.3.9. Screening

All types

D.10.3.10. Site Lighting

Type 2

Type 3

D.10.3.11. Benches

Type 2

D.10.3.12. Bicycle Racks

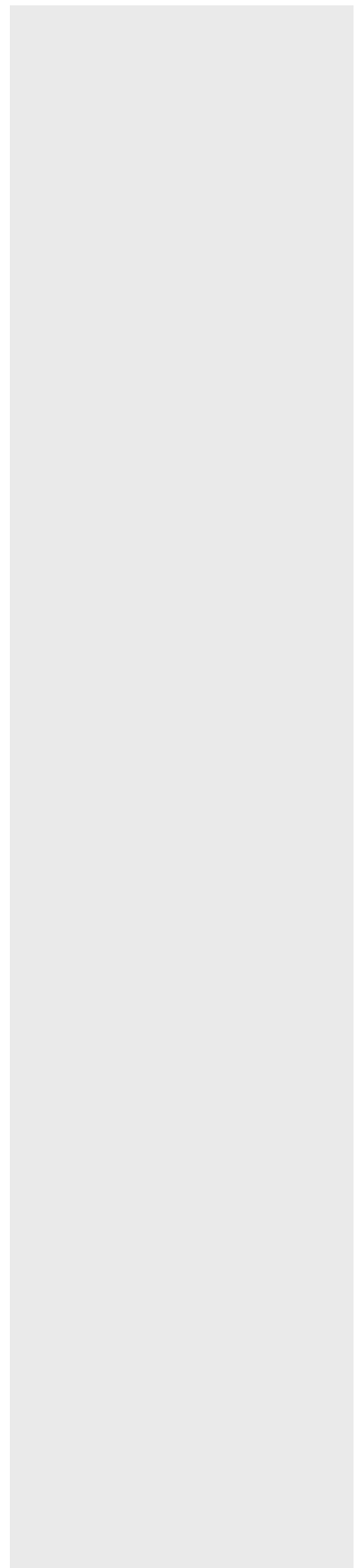
All types

D.10.3.13. Trash Receptacles

Type 2

Type 3

End of Exterior Standards - Zone 6.





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E. EXTERIOR MATERIALS CONTROL LIST



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E.1 Exterior Materials Control List: Building Elements

E.1.1. Building Elements Index

Exterior Wall Systems/Finishes

- Type 1: Limestone
- Type 2: Cast-in-Place Concrete-
- Type 3: Metal Panel Wall Cladding
- Type 4: Pre-Cast Concrete
- Type 5: Arch Terra Cotta

Roofing Systems/ Finishes

- Type 1: Slate Roofing
- Type 2: Standing Seam Metal Roofing
- Type 3: Standing Seam Solar Roofing
- Type 4: Low Slope/Built-Up Roof
- Type 5: Low Slope/Membrane Roofing
- Type 6: Built in Place Green Roofing
- Type 7: Modular Green Roofing

Window Systems/ Glazing

- Type 1: Double Hung/Simulated Double Hung Window
- Type 2: Window Wall
- Type 3: Storefront
- Type 4: Skylights
- Type 5: Solar Skylights

Doors

- Type 1: Wood Stile And Rail Entrance Door
- Type 2: Metal Secondary Entrance Doors
- Type 3: Metal and Glass Stile and Rail Entrance Door

Overhead Doors

- Type 1: Overhead Door

Canopies

- Type 1: Glass and Metal Canopy

Railings

- Type 1: Bronze Handrail With Bronze Posts/Wall-Mounted.
- Type 2: Bronze Guardrail



Lighting

Type 1: Exterior Torchere Historic Replica

Type 2: Exterior Wall Sconce Historic Replica

Type 3: Modern Wall sconce

Products, materials and suppliers are listed in the Control List to establish visual and aesthetic appropriateness to the overall design intent for Reservation use. In many cases, very similar products and materials are available from more than one provider. It is the responsibility of the design contractor for each project to verify that equivalent/alternate products and materials specified are of suitable quality and durability for use on the Reservation.

E.1.2. Exterior Wall Finishes.

E.1.2.1. Exterior Wall Finish: Type 1

E.1.2.1.1. Material or Product: Limestone.

E.1.2.1.2. Description: Limestone cladding to be used for restoration and new construction in designated zones.

E.1.2.1.3. Requirements: Match historic limestone unless an alternate is approved after applicable historic preservation requirements are fulfilled. Indiana Oolitic limestone as quarried in Lawrence, Monroe and Owen Counties, Indiana.

Potential Source:

Bybee Stone Company, Inc.

P.O. Box 968

Bloomington, IN 47402

800-457-4530

www.bybeestone.com

Mortar: Riverton Flamingo C247A-1 [Campbell Sand (6)/Lime (1/2)]

Restoration applications: thickness, backing construction, joint type and size, and all other detailing to match existing. Use stainless steel anchors.

New construction applications: design contractor to determine thickness and backing construction at new construction. Mortar set construction is preferred over installation with sealant joints.

E.1.2.1.4. Standards/References: Comply with ASTM C568, Classification II. Standard Grade.

E.1.2.1.5. Sustainability: Material must be non-locally sourced.

E.1.2.1.6. Durability: Properly detailed and installed, limestone is highly durable and low maintenance.

Restoration Application ▶



New Construction
Application ▶



E.1.2.2. Exterior Wall Finish: Type 2

E.1.2.2.1. Material or Product: Cast-in-Place Concrete

E.1.2.2.2. Description: Match historic cast-in-place concrete, formed with real or simulated wood board forms to match historic pattern on main building, unless an alternate finish is approved after applicable historic preservation requirements are fulfilled. Smooth finish is also allowed. Visible grained plywood forms not allowed. Utilize materials and resources from source to produce concrete that matches historic installations in color and texture. Sample panels should be required to verify match of historic concrete appearance.

At restoration locations, repair concrete and apply Sealer/Mineral Coating System, see below. This sealer system has been used during the renovation and should be maintained for future work. At new construction, Sealer/Mineral Coating System is allowed but not required.

E.1.2.2.3. Requirements: Concrete Mix: Blended hydraulic cement composition as follows:

- LeHigh Cement 306 pounds
- Blue Circle Atlantic NewCem 306 pounds
- Vulcan Stone Crushed Blue 1800 pounds
- Blades Sand 1123 pounds
- Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures: color stable, free of carbon black, non-fading and resistant to lime and other alkalides.
- Final color to match Pantone Color: DS 28-8 U.
- Manufacturer: Scofield Systems, CHROMIX P (powdered) or CHROMIX ML (mixed liquid. Color: #6063 Winter Beige.

Potential Sources:

Lehigh Cement Company
7660 Imperial Way
Allentown, PA 18195
800 523 5488
www.lehighcement.com

Virginia Concrete Co. Inc
6860 Commercial Dr.
Springfield, VA 22151
703-354-7100

DuBROOK Concrete, Inc.
4215 Lafayette Center Dr, Ste 1
Chantilly, VA 20151

703-222-6969

www.dubrookconcrete.com

Aggregate Industries, Inc.
7529 Standish Place, Suite 200
Rockville, MD 20855
301-284-3600

www.aggregate.com

Concrete Wall Sealer/Mineral Coating System:

1st Coat – Aquanil Plus 100

2nd Coat – Colorsil – primer coat

3rd Coat – Colorsil – top coat

Colorsil Color: Custom color—use approved Reservation color.

ChemMasters, Specialty Construction Products

300 Edwards Street

Madison, Ohio 44057-3112

Tel: 440-428-2105

www.chemmasters.net

L. M. Scofield Company

280 Park Ave.

Rutherford, NJ 07070

Phone: (800) 800-9900

www.scofield.com



E.1.2.2.4. Standards/References: ASTM and ACI standards. Architectural specifications and control sample on file with WHS.

E.1.2.2.5. Sustainability: Utilize locally sourced material to the extent possible. (Aggregate may not be available locally).

E.1.2.2.6. Durability: Properly mixed, formed, and placed, concrete is highly durable and low maintenance.

E.1.2.3. Exterior Wall Finish: Type 3

E.1.2.3.1. Material or Product: Metal Panel Wall Cladding.

E.1.2.3.2. Description: High-performance coated, aluminum composite material (ACM) panel system. Smooth finish with no texturing or patterning. Colors: per finish palette. Individual projects will determine final types and sizes. However, panel systems may not include warehouse type corrugated metal building systems.

E.1.2.3.3. Requirements: Panels to be comprised of two sheets of smooth .02" aluminum continuously thermobonded to a polyethylene or insulated core. Panels to be pre-finished with premium polyvinylidene fluoride (PVDF) resin-based coating with custom color.

Potential Sources:

Centria, Inc
Baltimore, MD
Phone: 410.549.6018
www.centria.com

Reynobond
Alcoa Architectural Products
50 Industrial Boulevard
Eastman, GA 31023-4129
Tel: 478-374-4746
www.alcoa.com

Metl-Span LLC
1497 N. Kealy
Lewisville, TX 75057
(877) 585-9969
www.metl-span.com

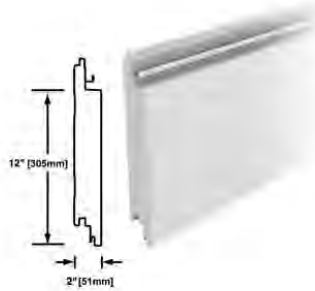
E.1.2.3.4. Standards/References: ASTM Standards.

E.1.2.3.5. Sustainability: Utilize recycled content to the extent possible. Rainscreen technology may be employed.

E.1.2.3.6. Durability: Aluminum composite panels are a durable and low-maintenance material. Particular care is required in design of anchoring systems and joints.



**FORMAWALL DIMENSION SERIES:
2" (51 mm)**



NOTE: The drawing files below are in pdf format. To download the CAD format (dwg or zip), click here to login to the e-CENTRIA Portal

- Portfolio
- Product Options
- Integrated Options
- Coatings
- Details
- Product Specifications
- Load Span Tables
- Green / Sustainability

General & Technical Data

Features

- Horizontal (FWDS-H) and vertical (FWDS-V) designs available
- A variety of reveal, thickness and profile configurations are available, providing design flexibility and options for exterior walls
- Concealed clips and fasteners plus dry gaskets and concealed sealants provide a clean, uninterrupted appearance while minimizing exterior dirt, streaking and staining
- Factory foamed for dependable thermal performance
- Profiled and flat panels integrate with CENTRIA Formavue® window systems, and most glass wall and window systems
- Rainscreen Principle horizontal joinery provides superior weather resistance
- Pressure equalization achieved through vents along the panel length where required
- Factory-formed sheet metal flashing or extruded aluminum trim available
- Can be easily curved or formed
- Panel mitring permits clean, sharp corners, beam and column wraps
- Trimless ends
- Thermal break between face and liner
- Lightweight - easy to handle and install; less framing required
- Stainless, striated, smooth and embossed surface treatments available

Panel Description

Metal

- Standard - 22/26, 22/22 gage
- Optional gages available, consult CENTRIA
- G-90 galvanized steel; optional stainless steel available, consult CENTRIA

Surface Finish

- Exterior - Non-directional embossing, smooth or striated
- Interior (liner) - Directional embossing, planked if 22 gage or lighter

Joinery (with concealed fasteners)

- Vertical - Double tongue-and-groove
- Horizontal - Rainscreen Principle Panel Width
- Standard - 24", 30", 36"
- Custom - 10" to 40"

Panel Depth

- 2", 3" nominal

"R" Value

- 2" - Depth R14*
- 3" - Depth R20*

*R-Values are based on ASTM C236 and C518 testing. Air films are included.

Research Reports

- BOCA Report, 95-40, 97-42
- SBOCI Report No. 9609
- Fire Tests
 - UL Tunnel Test, Subject 723, ASTM E84
 - Flame Spread 25 max.
 - Smoke Developed, 450 max.
 - UL Room Corner Test, UL 1715
 - Factory Mutual Approval: FM 4880; 50' High Large Scale Corner Test for Unlimited Height Approval for Walls and Ceilings
 - SWRI: ASTM E108 Fire Test
 - SwRI: Multistory Fire Test, UBC 26-4
 - ASTM D2015; BTU Content Test
 - ASTM D 1929; Ignition Properties
 - UL Fire Wall Designs: 1 hr., 2 hr., 3 hr., U017,U617, U040, U645, U605

CENTRIA Formawall Dimension Series panels have been tested in accordance with requirements of BOCA National Building and ICBO Uniform Building Codes. Contact CENTRIA for more information.

Special Approvals

- City of Los Angeles
- New York City, MEA 64-95-M
- Dade County Approval HOA 00-1107-01

Consult CENTRIA for test reports.

E.1.2.4. Exterior Wall Finish: Type 4

E.1.2.4.1. Material or Product: Pre-Cast Concrete.

E.1.2.4.2. Description: Pre-Cast Concrete wall panels and trim elements. Color and texture to simulate historic limestone. This material has been used in the Reservation where limestone would be cost prohibitive. This use may be continued when needed in designated zones.

E.1.2.4.3. Requirements: Concrete Mix: Varies, to match general color and texture of existing historic limestone.

Potential Sources:

Arban & Carosi, Inc

13800 Dawson Beach Rd.

Woodbridge, VA 22191

703-491-5121

www.arbanarosi.com

Smith-Midland Company

PO Box 300

Midland, VA 22728

540-439-3266

www.smithmidland.com

Oldcastle Precast

1002 15th Street, SW, Suite 110

Auburn, WA 98001

253-833-2777

www.oldcastleprecast.com

E.1.2.4.4. Standards/References: ASTM Standards.

E.1.2.4.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.2.4.6. Durability: Properly detailed, fabricated, and installed, pre-cast concrete is highly durable and low maintenance. Particular care is required in design of anchoring systems and joints.

Example of Precast
Concrete ▶



E.1.2.5. Exterior Wall Finish: Type 5

E.1.2.5.1. Material or Product: Architectural Terra Cotta.

E.1.2.5.2. Description: Modular architectural ceramic wall cladding system. Color and texture similar in appearance to historic limestone.

E.1.2.5.3. Requirements: Wall tiles are to be flat, unglazed, buff-colored architectural terracotta, uniform in color and texture, and with less than 6.5% water absorption. Tile size and configuration to maintain a predominantly horizontal expression.

“TerraClad” by Boston Valley Terra Cotta, color “Limestone”, or equal.

Potential Sources:

Boston Valley Terra Cotta
6860 South Abbott Road
Orchard Park, NY 14127
716-649-7490
www.bostonvalley.com

Telling Architectural Systems
68 Fox Run
Cranston, RI 02921
401-632-4577
www.tellingarchitectural.com

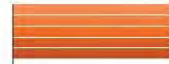
Pohl Inc. of America
6161 W. Double Eagle Circle
Salt Lake City, UT 84118
801-988-1305
www.pohlusa.com

E.1.2.5.4. Standards/References: ASTM Standards.

E.1.2.5.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible. Rainscreen technology may be employed.

E.1.2.5.6. Durability: Terracotta tile is a durable and low-maintenance material. Low water absorption characteristics are required to avoid deterioration due to freezing and thawing cycles. Particular care is required in design of anchoring systems and joints.

Panelized Cladding System



Exterior Wall Finish: TYPE 5



Versatile Cladding

Our rainscreen cladding system allows maximum design flexibility. This mortarless panel system creates a wide range of design possibilities.

A flexible manufacturing process allows for many panel sizes and surface profiles. Large color selection is available in both raw material selection and glazing applications.



A System Designed for Protection and Aesthetics

Rainscreen systems help to meet today's tough requirements for moisture control for both building longevity and air quality. Terra Cotta provides the high performance surface characteristics and natural warmth to maintain a building's aesthetics for many years.



TerraClad™

5

Pressure Equalized Rainscreen

Exterior Wall Finish: TYPE 5

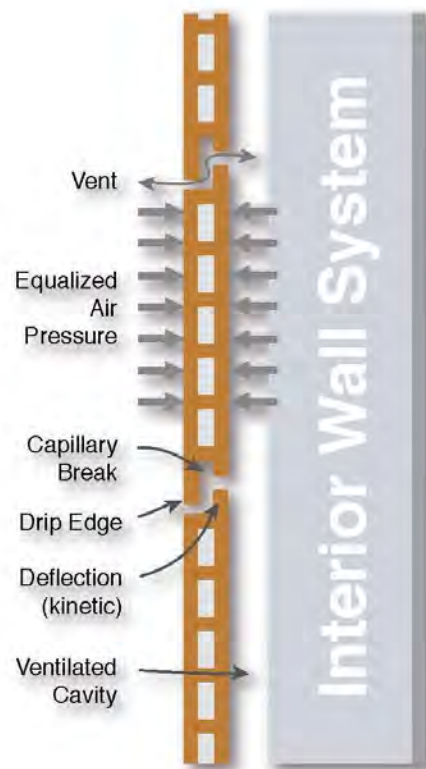


How TerraClad™ Helps Keep Water Out

The TerraClad™ Architectural Terra Cotta Rainscreen System is designed to deal with the physical methods of rain entry.

Rainscreen Principals

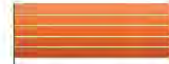
Rainscreen principals use techniques to address failures in conventional sealed systems. The panels direct rain along the surface while venting and panel shape prevents pressure and wind respectively from driving water into the wall system. Venting also keeps the wall cavity dry. The mounting rail and gaskets channel water out at the joints.



Boston Valley Terra Cotta

6

Technical Data



Exterior Wall Finish: TYPE 5

Property/Characteristic	Value/Criteria
Absorption	4.2-6.5%/ASTM C67-02C
Modulus of Rupture (depending on color selected)	2231-3717 lbs/in ² /ASTM C99
Flexural Strength (depending on color selected)	2280-3457 lbs/in ² /ASTM C880
Dimensions and Tolerances	.06" for any cut length up to 60"
Height:	(± 1/16) ± .0625" up to 10" (± 3/32) ± .09375" up to 15" (± 1/8) ± .125 up to 20"
Thickness: (cross section of panel)	(± 1/16) ± .0625
Straightness: ("sweep")	± 0.25% of length
Diagonal Flatness:	± 0.25% of diagonal
Vertical Flatness:	± 1.0% of height
Torsion:	± 0.25% of diagonal
Weight Weight per Unit Area	130-135 lbs/ft ² /ASTM C67-02C 13-16 lbs/ft ²
Linear Coefficient of Thermal Expansion	3.5 x 10 ⁻⁴ percent (0.035%)
Freeze and Thaw Test	300 cycles passed/ASTM C67-02C
Hardness Resistance Mohs Scale	Various Standard Colors 7-9
Efflorescence	not effloresced/ASTM C67-02C
Chemical Resistance	no change in color or texture/ ASTM C126-99

Subject to change without notice, October, 2008

TerraClad™

E.1.3. Roof Systems/Finishes

E.1.3.1. Roof System/Finish: Type 1

E.1.3.1.1. Material or Product: Slate Roofing.

E.1.3.1.2. Description: Slate shingles to match color, texture and individual slate size of historic slate shingles on Pentagon building, unless alternate shingles are approved after all historic preservation requirements have been fulfilled.

E.1.3.1.3. Requirements: Slate Shingles: Unfading Green, random width (9 to 14 inches) and graduated length (14 to 24 inches), installed with 4-inch headlap. Nominal 3/8 inch thick.

Potential Sources:

American Slate Company
1900 Olympic Blvd., Suite 200
Walnut Creek, CA 94596
925.977.4880
www.americanslate.com

New England Slate Company
363 VT Rt. 30 S
Poultney, Vermont 05764
888-637-5283
www.neslate.com

Durable Slate Company
1050 North Fourth Street
Columbus, Ohio 43201
614-299-5522
www.durableslate.com

E.1.3.1.4. Standards/References: Slate shingles to meet ASTM C 406, Grade S1.

E.1.3.1.5. Sustainability: Material may be non-locally sourced.

E.1.3.1.6. Durability: Properly designed and installed, slate tile roofing is a highly durable and low-maintenance material.



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E.1.3.2. Roof System/Finish: Type 2

E.1.3.2.1. Material or Product: Standing Seam Metal Roofing.

E.1.3.2.2. Description: High-performance coated aluminum or steel standing seam roofing system. Colors: per finish palette.

E.1.3.2.3. Requirements: Metal roofing system with panels of aluminum or steel, suitable for use in low-slope configuration. Roofing system may be snap on, mechanically field seamed, integral lock and seam, or one-piece with positive locking type. Panels to have flat pans, wide battens not allowed. Panels to be pre-finished with premium polyvinylidene fluoride (PVDF) resin-based coating.

Potential Sources:

Englert Corp.
1200 Amboy Avenue
Perth Amboy
New Jersey 08861
800-638-2580
www.englertinc.com

Peterson Aluminum Corp.
9060 Junction Drive
Annapolis Junction, MD 20701
800-344-1400
www.pac-clad.com

Fabral Corp.
3449 Hempland Rd.
Lancaster, PA 17604
800-477-2741
www.fabral.com

E.1.3.2.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-020-01 DoD Security Engineering Facilities Planning Manual; UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.1.3.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.3.2.6. Durability: Properly designed and installed, metal roofing is a durable and low-maintenance material.



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E.1.3.3. Roof System/Finish: Type 3

E.1.3.3.1. Material or Product: Standing Seam Solar Roofing.

E.1.3.3.2. Description: Aluminum or steel roofing system with integrated photovoltaics.

E.1.3.3.3. Requirements: Building Integrated Photovoltaics (BIPV) metal roofing system consisting of 24-20 gage aluminum or steel substrate and thin-film solar laminate with non-directional embossing or smooth, flat (non-planked) surface finish. Suitable for use in low-slope configuration.

Potential Sources:

Interlock Roofing, Ltd.

9969 River Way

Delta, British Columbia

Canada V4G 1M8

866.909.8083

www.interlockroofing.com

Peterson Aluminum Corp.

9060 Junction Drive

Annapolis Junction, MD 20701

800-344-1400

www.pac-clad.com

Fabral Corp.

3449 Hempland Rd.

Lancaster, PA 17604

800-477-2741

www.fabral.com

E.1.3.3.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-020-01 DoD Security Engineering Facilities Planning Manual; UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.1.3.3.5. Sustainability: Integrate with solar power collection system. Utilize locally sourced material and recycled content to the extent possible.

E.1.3.3.6. Durability: Thin film solar laminate is a new technology whose long-term performance is unknown.

Roof System/Finish: TYPE 3

INTRODUCING

Interlock[®] Solar Roofing Systems

REVOLUTIONARY AND PRACTICAL SOLAR ROOFING SOLUTION THAT ALLOWS YOU TO HARVEST CLEAN, RENEWABLE SOLAR ENERGY THAT'S SENT DIRECTLY INTO THE POWER GRID.



“Finally, an affordable, best-of-breed solar standing seam roof system has arrived.”



PREMIUM BUILDING INTEGRATED PHOTOVOLTAICS (BIPV)

In manufacturing Interlock® Solar Roofing, thin-film solar laminate is fused to the surface of the roofing panel substrate. The panel/laminate bond that's created has been tested and proven to withstand winds of 160 mph.

The flexibility and durability of this laminate make them ideal for metal roofs, where expansion, contraction and curving are considerations. Unlike polycrystalline photocells that are heavy and fragile, no roof penetrations and no additional structural support are required. In fact, you can walk on the laminates, which maintains the roof's overall serviceability.

And when it comes to generating electricity, compared to any other technology, Interlock's solar laminates, manufactured by United Solar Ovonic, achieve higher relative efficiency under high temperatures and low light.



Architects and building owners challenged our industry with five key essentials for a successful solar roofing product, all of which Interlock Roofings' Interlock® Solar Roofing delivers.

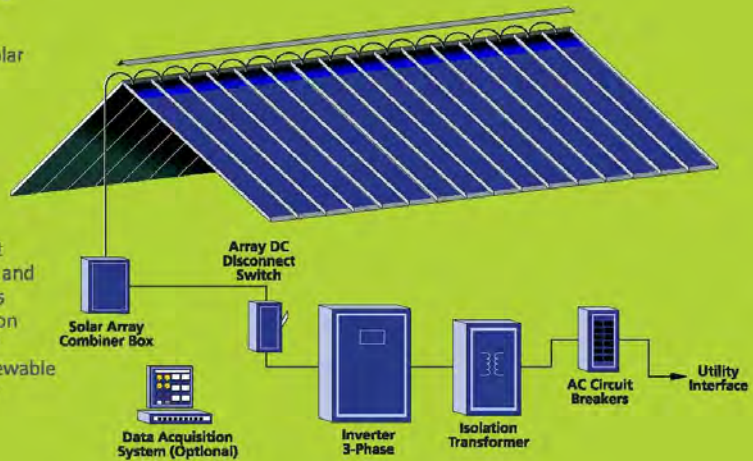
- 1 Photovoltaics that are integrated into the roofing panel (BIPV).
- 2 A complete, standardized solar roof system that includes all schematics and specifications for all electrical components.
- 3 Product delivery and installation from a reputable standing seam roof installer.
- 4 Payback 10 years or less in some states.
- 5 20-year warranty

A SYSTEM SIZE FOR ANY BUDGET OR REQUIREMENT

No matter what your budget or your building's requirement, Interlock Roofing has a Interlock Solar standing seam roof system for you, including 3, 5, 10, 15, 30, 60, and 120 kW systems.

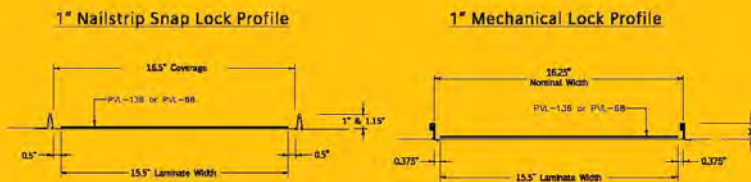
ELECTRIC IS INCLUDED

When you specify Interlock Solar Roofing you get the complete system. This includes all schematics and specifications for wiring and electrical components for an electrical subcontractor to implement. Upon commissioning of the system, your Interlock Solar Roofing System will begin generating clean, renewable electric power that's sent directly into the power grid through the building's electric meter.



AVAILABLE INTERLOCK SOLAR ROOFING PROFILES

Solar PV 15.5" wide, 9' or 18' lengths. Standing Seam panels run up to 26'.



REQUEST AN ROI ANALYSIS TODAY

Interlock Solar Roofing is appropriate anywhere you would ordinarily specify standing seam roofing. If you have a project that can use Interlock Solar Roofing, let us run the numbers for you to determine your ROI. Visit www.interlockroofing.com/solar to get started. Or call your Interlock Roofing representative today.

E.1.3.4. Roof System/Finish: Type 4

E.1.3.4.1. Material or Product: Low Slope Built-Up Roofing.

E.1.3.4.2. Description: Bituminous built-up roof system, to be used for repair of existing roofing systems at the interior rings of the Pentagon Building.

E.1.3.4.3. Requirements: Mechanically fastened base sheet (secured to nailable concrete fill or other substrate) and a 4-ply coal tar built-up- roofing system using premium-grade tar-coated felts. Surfacing is slag to comply with size requirements of ASTM D 1863, No. 6 or 67.

Potential Sources:

Henry Company

909 N. Sepulveda Blvd., Ste 650

El Segundo, CA 90245

800-486-1278

www.henry.com

Carlisle Syn Tec

PO Box 7000

Carlisle, PA 17013

800-479-6832

www.carlisle-syntec.com

GAF Materials Corporation

1361 Alps Road

Wayne, New Jersey 07470

(973)628-3000

www.gaf.com

E.1.3.4.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-020-01 DoD Security Engineering Facilities Planning Manual; UFC 4-030-01 Sustainable Design; PenRen Field Guide to Sustainable Design.

E.1.3.4.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.3.4.6. Durability: Built-up roofing requires intermittent maintenance, and has a shorter life span than other materials. It is susceptible to damage from maintenance activities.



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E.1.3.5. Roof System/Finish: Type 5

E.1.3.5.1. Material or Product: Low Slope Membrane Roofing.

E.1.3.5.2. Description: Single-ply TPO or white EPDM membrane roofing system in low-slope application.

E.1.3.5.3. Requirements: White/light-colored membrane roofing with Initial Solar Reflectance greater than or equal to 0.65, and maintenance of Solar Reflectance greater than or equal to 0.50 three years after installation under normal conditions. Roofing system to be ENERGY STAR rated.

Potential Sources:

Carlisle Syn Tec
PO Box 7000
Carlisle, PA 17013
800-479-6832
www.carlisle-syntec.com

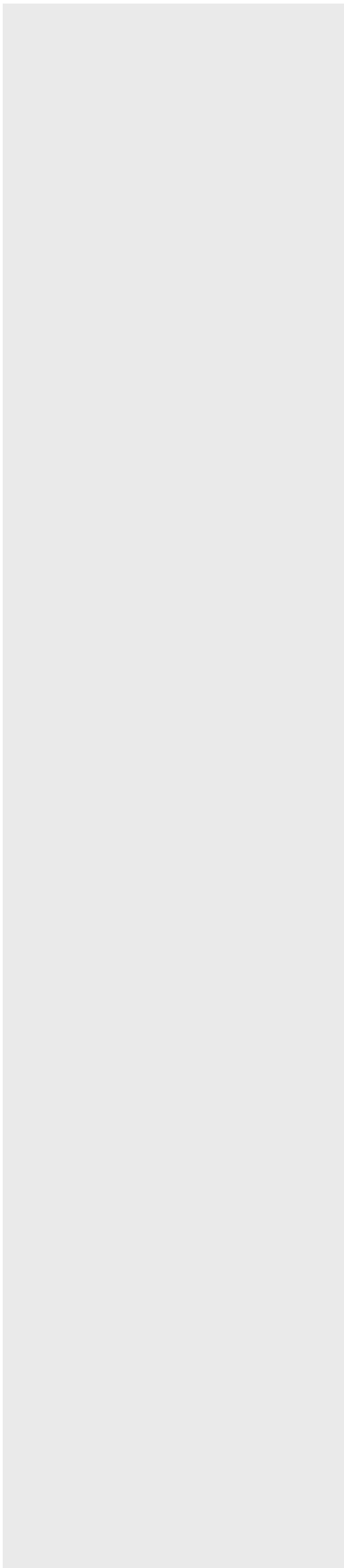
GAF Materials Corporation
1361 Alps Road
Wayne, New Jersey 07470
(973)628-3000
www.gaf.com

Firestone Building Products
250 West 96th Street
Indianapolis, IN 46260
(800) 428-4442
www.firestonebpc.com

E.1.3.5.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-020-01 Dod Security Engineering Facilities Planning Manual; UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.1.3.5.5. Sustainability: Comply with performance criteria noted. Utilize locally sourced material and recycled content to the extent possible. High reflectance roofing materials help reduce heat island effect.

E.1.3.5.6. Durability: Membrane roofing is relatively durable, although it is susceptible to damage from maintenance activities.



E.1.3.6. Roof System/Finish: Type 6

E.1.3.6.1. Material or Product: Built-in-Place Green Roofing.

E.1.3.6.2. Description: Green roofing system installed in conjunction with membrane waterproofing system. Green roofing to utilize shallow growing media depth and plants durable to climate, and require limited maintenance.

E.1.3.6.3. Requirements: Extensive-type green roofing system, consisting of the following:

- Vegetation
- Growing Media (3"-4")
- Filter Material
- Drain board
- Optional moisture mat
- Extruded foam protection board
- Root stop
- Waterproofing membrane

Vegetation may include sedum, herbs, grasses and other plants that can withstand harsh growing conditions. Provide soil mixture composed primarily of mineral materials mixed with organic medium.

Potential Sources:

"Garden Roof" by
American Hydrotech, Inc.
303 E. Ohio Street
Chicago, IL 60611
800-877-6125
www.hydrotechusa.com

"Roof Garden" by
Carlisle Syn Tec, Inc.
PO Box 7000
Carlisle, PA 17013
800-479-6832
www.carlisle-syntec.com

E.1.3.6.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-020-01 DoD Security Engineering Facilities Planning Manual; UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.1.3.6.5. Sustainability: Comply with performance criteria noted. Utilize locally sourced material and recycled content to the extent possible. Consider use of green roofing at extensive roof areas. Green roofing is to be used at any new parking garages.

E.1.3.6.6. Durability: Durability of green roofing is dependent on proper design and installation.

Roof System/Finish: TYPE 6



American Hydrotech, Inc.,
303 E. Ohio Street, Chicago, IL 60611
Phone: 800-877-6125 Fax: 312-661-0731

Home

- COMPANY PROFILE
 - | WATERPROOFING
 - | ROOFING
 - | ULTIMATE ASSEMBLY
 - | GARDEN ROOF
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-
- PROJECT PROFILES
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 - | INTERNATIONAL
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Extensive Assembly

An extensive Garden Roof® uses a select range of hardy plants, making it attractive to look at while requiring little maintenance. Extensive green roofs are not intended for recreational use, but are usually chosen for their appearance or to help reduce the "urban heat island" effect and minimize stormwater run-off. Extensive roofs only require a shallow growing media depth, generally as little as 3" - 4", and therefore add little weight (typically 18-34 lb/sf wet weight) to the roof structure below.

Features:

- Are lightweight with only 3" - 4" of growing media
- Ideal for inaccessible roofs
- Can be used on flat or sloping roofs
- Reduce stormwater runoff
- Help to mitigate the urban heat island
- Require minimum maintenance

The water stored in the growing media and drainage/retention layer is sufficient to sustain the drought resistant plants between periods of rainfall. Irrigation systems are not normally required except in extreme climates.

Extensive green roofs can be applied to flat roofs and sloping roofs with a pitch of up to 12:12 or 45°, provided the appropriate measures are taken to cope with the shear forces and soil retention. Please contact Hydrotech for additional information regarding sloped applications.



Click on a picture below to view Extensive Garden Roof project photos



Ballard Library - WA



Vancouver Library - BC



Oak Park Library - IL



29 Garden Street - MA

E.1.3.7. Roof System/Finish: Type 7

E.1.3.7.1. Material or Product: Modular Green Roofing.

E.1.3.7.2. Description: Pre-planted, modular green roofing system installed above existing or new waterproofing system by others. Green roofing to utilize shallow growing media depth and plants durable to climate, and require limited maintenance.

E.1.3.7.3. Requirements: Extensive-type modular green roofing system, consisting of polyethylene trays filled with growing media (4" depth) and pre-planted with vegetation. Vegetation may include sedum, herbs, grasses and other plants that can withstand harsh growing conditions. Provide soil mixture composed primarily of mineral materials mixed with organic medium.

Potential Sources:

'GreenGrid' by
Weston Solutions, Inc.
Suite 500
750 E Bunker Court
Vernon Hills, IL 60061
www.greengridroofs.com

"Roof Garden GreenGrid" by
Carlisle Syn Tec, Inc.
PO Box 7000
Carlisle, PA 17013
800-479-6832
www.carlisle-syntec.com

E.1.3.7.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-020-01 DoD Security Engineering Facilities Planning Manual; UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.1.3.7.5. Sustainability: Comply with performance criteria noted. Utilize locally sourced material and recycled content to the extent possible. Consider use of green roofing at extensive roof areas. Green roofing is to be used at any new parking garages.

E.1.3.7.6. Durability: Durability of green roofing is dependent on proper design and installation.





Specifications Summary

ELEMENT	DESCRIPTION
Module sizes (nominal)	2 ft x 2 ft x 2.5 in (~ 61 cm x 61 cm x 6 cm) 2 ft x 2 ft x 4 in (~ 61 cm x 61 cm x 10 cm) 2 ft x 4 ft x 4 in (~ 61 cm x 122 cm x 10 cm) 40 in x 40 in x 4 in (~ 102 x 102 cm x 10 cm) 2 ft x 2 ft x 2.8 ft x 4 in (~ 61 cm x 61 cm x 85 cm x 10 cm) (triangle) 2 ft x 2 ft x 8 in (~ 61 cm x 61 cm x 20 cm) 2 ft x 4 ft x 8 in (~ 61 cm x 122 cm x 20 cm)
Depth of modules (three depths)	2.5 in (~ 6.4 cm), 4 in (~ 10 cm), and 8 in (~ 20 cm) (nominal)
Weight of planted modules (when wet)	2.5-in depth – Approx. 11-13 lb/ft ² (53.7 – 63.5 kg/m ²) 4-in depth – Approx. 18-22 lb/ft ² (87.9 – 107.4 kg/m ²) 8-in depth – Approx. 35+ lb/ft ² (170.8+ kg/m ²) <i>(Weight may vary based on requirements for project-specific vegetation selections and variations in regional materials incorporated in growth media.)</i>
Module material	100% post-industrial recycled High Molecular Weight Polyethylene. Protected with UV inhibitors and stabilizers. – 150 mil (2.5 and 4 in) – 200 mil (8 in)
Module drainage clearance above roof	0.5 in (1.3 cm)
Color of modules	Black
Drainage/root resistance medium	3-oz spunbonded polypropylene geotextile
Growth media	Proprietary mixture consisting of organic and inorganic material
Slip sheet protection fabric	6-oz non-woven geotextile slip sheet. <i>(Installation of slip sheet between GreenGrid® modules and roof surface is recommended.)</i>
Vegetation	Drought-resistant groundcovers, natives, perennials, and/or ornamental grasses specifically selected for climate, hardiness zone, color, and size.



OPTIONAL ELEMENTS

Paver size	2 ft x 2 ft (~ 61 cm x 61 cm) (various depths available)
Paver material	100% recycled rubber
Paver colors (standard)	Forest green, charcoal, brick red, black, and blue <i>(other, non-standard colors available)</i>
Paver weight	7.5 lb/ft ² , based on 1.75-in depth (36.8 kg/m ² , based on 4.5-cm depth)
Edge treatments	Aluminum or steel, available in various colors and designs.

GreenGrid and ABC Supply Co. are trademarks of American Builders & Contractors Supply Co., Inc. The GreenGrid® System is a proprietary technology of ABC Supply. U.S. and International patents pending. WESTON® is the exclusive licensee of the GreenGrid® System in the U.S.



E.1.4. Window Systems/Glazing

E.1.4.1. Window System/Glazing: Type 1

E.1.4.1.1. Material or Product: Double Hung or Simulated Double Hung Window.

E.1.4.1.2. Description: Painted metal double hung or simulated double hung window to match historic windows at Pentagon building, unless alternate windows are approved after all historic preservation requirements have been fulfilled. This type may take the form of blast windows or more typical operable windows. Any usage of the type should maintain the appearance of a true double hung window with the upper sash in front of the lower sash. Muntins that create divided lights are not allowed. At restoration locations, replicate important details such as hardware and sash frame profiles, such as shown below.

E.1.4.1.3. Requirements: Thermally broken aluminum or steel window framing and sash with custom profiles as required. Metal components to be pre-finished with premium polyvinylidene fluoride (PVDF) resin-based coating. Colors: per finish palette. Provide glazing in conformance with General Design Guidelines.

Potential Sources:

Graham Architectural Products
1551 Mount Rose Avenue
York, Pennsylvania 17403
800-755-6274
www.grahamarch.com

Winco
6200 Maple Avenue
St Louis, MO 63130
800-525-8089
www.wincowindow.com

EFCO Corp
PO Box 609
Monett, MO 65708
(800) 221-4169
www.efcocorp.com

E.1.4.1.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria: UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

E.1.4.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.4.1.6. Durability: Properly designed metal window systems are more durable than wood systems. Properly finished, low maintenance can be expected.



E.1.4.2. Window System/Glazing: Type 2

E.1.4.2.1. Material or Product: Window Wall.

E.1.4.2.2. Description: Aluminum window wall system.

E.1.4.2.3. Requirements: Aluminum window wall system with standard or custom profiles. Framing to be pre-finished with premium polyvinylidene fluoride (PVDF) resin-based coating. Colors: per finish palette. Provide glazing in conformance with General Design Guidelines.

Potential Sources:

Wausau Window and Wall Systems

7800 International Drive

Wausau, WI 54401

877-678-2983

www.wausauwindow.com

EFCO Corp

PO Box 609

Monett, MO 65708

800-221-4169

www.efccorp.com

Kawneer North America

555 Guthridge Ct.

Technology Park/Atlanta

Norcross, GA 30092

770-449-5555

www.kawneer.com

E.1.4.2.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

E.1.4.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

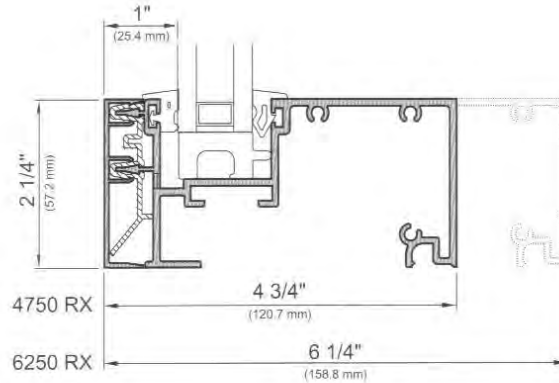
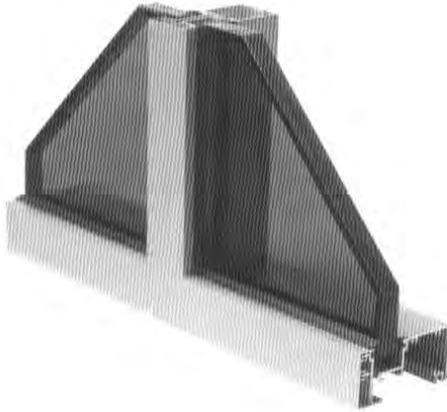
E.1.4.1.6. Durability: Properly designed and finished aluminum window wall systems are durable and low maintenance.



Window Wall

4750/6250-RX Series

Used for almost any application - punched openings, vertical strip windows, horizontal ribbon windows or low-rise curtainwall



Features:

- 4 3/4" and 6 1/4" frame depth with cPVC thermal isolator clips
- Two-sided vertical structural glazed available
- Two-color finish option
- Narrow 2 1/4" sightlines
- Factory or field glazed
- Inside and outside 90° corners
- Head, sill and/or jamb receptors optional
- Accomodates seismic and/or inter-story differential movements
- Screw-spline construction
- 1/4" and 1" glazing infills
- Glazed-in vents available



Performance and Specifications:

<u>Allowable Air</u>	<u>Water</u>	<u>U-Factor</u>	<u>CRFf*</u>	<u>STC*</u>
0.06 cfm/sqft @6.24 psf	15 psf	0.50 - 0.61	46 - 60	29 - 34

*Test results vary with glass type and air space. Test reports are not available on all frame/glass combinations. *Please consult Wausau for design options that may improve performance rating shown.*

1415 West Street • P.O. Box 1746 • Wausau, Wisconsin 54402-1746 • Phone 715.846.3201 • Fax 715.843.4350

E.1.4.3. Window System/Glazing: Type 3

E.1.4.3.1. Material or Product: Storefront.

E.1.4.3.2. Description: Aluminum storefront system.

E.1.4.3.3. Requirements: Thermally broken aluminum storefront system with standard or custom profiles similar to Encore system by Kawneer. Framing to be pre-finished with premium polyvinylidene fluoride (PVDF) resin-based coating with custom color per finish palette or dark bronze anodized finish. Provide glazing in conformance with General Design Guidelines.

Potential Sources:

Kawneer Company, Inc
Technology Park / Atlanta
555 Guthridge Court
Norcross, GA 30092
770.449.5555
www.kawneer.com

EFCO Corp
PO Box 609
Monett, MO 65708
800-221-4169
www.efcooocorp.com

Vistawall by Oldcastle Glass Engineered Products
803 Airport Rd
Terrell, TX 75160
800-869-4567
www.vistawall.com

E.1.4.3.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

E.1.4.3.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.4.3.6. Durability: Properly designed and finished aluminum storefront systems are durable and low maintenance.



EnCORE® Thermal Framing System

Window System/Glazing: TYPE 3

A Proven Performer
Recognized for
Economical Installation



Manitowoc Public Library, Manitowoc, WI
Architect: Engberg Anderson Design Partnership, Milwaukee, WI
Glazing Contractor: Sheboygan Glass Company, Inc., Sheboygan, WI

Taking center stage in Kawneer's lineup, EnCORE® Thermal Framing System is a two-piece, face-and-gutter system that offers thermal economy, a Structural Silicone Glazing (SSG) option and numerous design choices. Engineered for easy installation and lower costs, features include the unique QuickSeal® self-sealing system, a broad selection of system depths and a 1-3/4" (44.5) minimal sightline. EnCORE® readily adapts to remodel projects and new construction, whether traditional or modern architecture.

Economy

EnCORE's patented QuickSeal® dry-glazed framing system is the first to eliminate joint sealant at horizontal joints, making it more cost effective. The vertical gasket runs through, and when "pinched" by the head, sill and intermediate horizontals, a watertight seal is created, eliminating the need for sealant.



By using the same extrusions for horizontal and vertical mullions, metal utilization is maximized. In addition, the tongue on the extrusions eliminates the need for a secondary, continuous water deflector, thus economizing on installation costs and time.

EnCORE® also requires no setting block chair at intermediate horizontals. And at the sill, the system utilizes a simple setting block chair that fits snugly within the glazing pocket and requires no fastening. The system accepts standard 1" (25.4) or 1/4" (6.4) infills and can also be adapted to accept other infills in 1/8" (3.2) increments.

The top-loaded glazing gaskets are the same as those used in Trifab® 400, and Trifab® VG (VersaGlaze®) 450, 451 and 451T (Thermal) Framing Systems, which helps to reduce field labor and minimize inventory requirements.

Providing single-source responsibility, Kawneer Entrances, Windows, GLASSvent™, Curtain Walls and Slope Glazing are compatible with EnCORE®.

Performance

EnCORE's specially engineered thermal clip eliminates metal-to-metal contact by snapping onto the mullion. The cover then snaps onto the clip for true thermal integrity. In addition, the clip has an extended leg on one side, which acts as a "w" block and prevents shifting of glass due to climate changes and building movement.

Engineered to meet or exceed certified performance requirements for air and water infiltration, EnCORE® has been fully tested according to ASTM E283 and ASTM E331. Thermal testing was completed in accordance with AAMA 1503.

EnCORE® also offers architects and building owners the ability to determine project-specific U-factors by referring to thermal tables in the architectural manual. Unique to Kawneer, these tables enable U-factor calculations for each project by utilizing the total glass percentage and the project's center of glass (COG) U-factor.

Aesthetics

For additional freedom of expression, EnCORE® offers front or center glazing options. A Structural Silicone Glazing (SSG) option is also available. And to provide greater design flexibility, EnCORE's adjustable face-and-gutter system offers system depths of 3-9/16" (90.5), 4-1/2" (114.3) or 6" (152.4) front glazed and 4-1/2" (114.3) center glazed.

The 1-3/4" (44.5) minimal sightline provides consistent design aesthetics, while a 1-3/4" (44.5) perimeter sightline is also available.

Note: Numbers in parentheses () are millimeters unless otherwise noted.

Kawneer Company, Inc.
Technology Park / Atlanta
555 Guthridge Court
Norcross, GA 30092

kawneer.com
770 . 449 . 5555

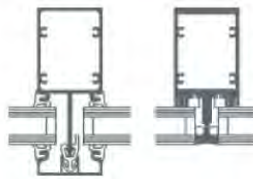
© Kawneer Company, Inc. 2007 LITHO IN U.S.A. Form No. 07-2052



Window System/Glazing: TYPE 3



Customer Service Center, Blue Cross and Blue Shield of Louisiana, Baton Rouge, LA
Architect: Architectural Group of Baton Rouge, Baton Rouge, LA
Glazing Contractor: Louisiana Glass Company, Baton Rouge, LA



Since the exterior face and interior mullions are separate pieces, two-color design considerations are easily realized. Another key feature of EnCORE's separate components is that they are easily adapted to curved applications. EnCORE® is available in three fabrication methods: screw spline, shear block or Type B, which is a combination of both.

For the Finishing Touch

Permanodic® Anodized finishes are available in Class I and Class II in seven different color choices.

Painted finishes, including fluoropolymer, that meet or exceed AAMA 2605 are offered in many standard choices and an unlimited number of specially-designed colors.

Solvent-free powder coatings add the "green" element with high performance, durability and scratch resistance that meet the standards of AAMA 2604.



E.1.4.4. Window System/Glazing: Type 4

E.1.4.4.1. Material or Product: Skylight.

E.1.4.4.2. Description: Framed aluminum skylight with thermal glazing.

E.1.4.4.3. Requirements: Structural aluminum framing with snap-on caps at rafters and flush glazing at horizontal joints. Caps may have standard or custom profile. Configuration to be single slope, double slope, or pyramidal only. Provide glazing in conformance with General Design Guidelines.. Colors: per finish palette.

Potential Sources:

Super Sky
10301 N Enterprise Drive
Mequon WI 53092
800.558.0467
www.supersky.com

Kawneer Company, Inc
Technology Park / Atlanta
555 Guthridge Court
Norcross, GA 30092
770.449.5555
www.kawneer.com

Vistawall by Oldcastle Glass Engineered Products
803 Airport Rd
Terrell, TX 75160
800-869-4567
www.vistawall.com

E.1.4.4.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

E.1.4.4.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.4.4.6. Durability: Skylight performance is directly related to detailing and construction quality. Maintain manufacturer’s recommended minimum slopes and utilize tested framing systems.



EMBASSY SUITES HOTEL St. Charles, Missouri
Architect: Butler Rosenbury and Partners

Photos: William Lemire

At Super Sky Products we set the standards, create the traditions and establish the principles for skylighting excellence. With almost 80 years in skylighting, our involvement in the conceptual stages of a skylight project has contributed greatly to the successful completion of over 10,000 projects *worldwide*. Super Sky's success is backed by strong financial resources and bonding capabilities.

Super Sky is your single source solution for each project...from initial concept to final installation...backing each project with our manufacturer's ten (10) year guarantee against defective design, materials, construction and leakage.

NORDSTROM CHANDLER FASHION CENTER Chandler, Arizona
Architect: Callison Architecture

E.1.4.5. Window System/ Glazing: Type 5

E.1.4.4.1. Material or Product: Solar Skylight.

E.1.4.5.2. Description: Framed aluminum skylight with thermal glazing and integrated photovoltaics.

E.1.4.5.3. Requirements: Building Integrated Photovoltaics (BIPV) skylight system consisting of standard skylight (Window System/ Glazing Type 4) with thin-film solar laminate with non-directional embossing or smooth, flat (non-planked) surface finish. Suitable for use in low-slope configuration. Colors: per finish palette.

Potential Source:

Super Sky

10301 N Enterprise Drive

Mequon WI 53092

800.558.0467

www.supersky.com

(Multiple manufacturers were not found)

E.1.4.5.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual; UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.1.4.5.5. Sustainability: Integrate with solar power collection system. Utilize locally sourced material and recycled content to the extent possible.

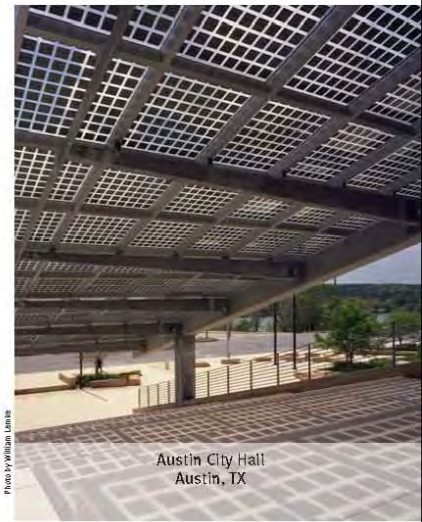
E.1.4.5.6. Durability: Skylight performance is directly related to detailing and construction quality. Maintain manufacturer’s recommended minimum slopes and utilize tested framing systems. Thin film solar laminate is a new technology whose long-term performance is unknown.

Photovoltaic

Building Integrated Photovoltaics (BIPV) generate power from solar collection surfaces that create savings in electricity costs, reduce fossil fuel consumption, and emission of ozone depleting gases. BIPV skylights allow solar power to produce some of the electricity used in your building, while adding an architectural interest that tells the world you are committed to renewable energy and green building.

- ▶ Building Integrated Photovoltaics (BIPV) allows the client the capability of adding solar power to their buildings, with as little additional cost to construct as possible. By changing the glass lites in a skylight to PV modules, the benefits of natural daylighting, solar shading, and green power generation can be realized.
- ▶ Super Sky Products is not only the world leader in skylighting, we are also the United States leader in BIPV skylights. Super Sky has constructed hundreds of projects incorporating our high standards of skylight design, construction and weatherproofing, as well as photovoltaic power generation. Because of this experience, we can offer a turn-key approach to your BIPV project.
- ▶ Due to our years of experience in BIPV, Super Sky worked with Underwriters Laboratories (UL) to help develop their new category “Building-Integrated Photovoltaic Mounting Systems” (QHZQ). *We are also the first company to have an approved UL Classified BIPV mounting system. Our UL Classification file number is E247515.*

Photo by William Leithe



ADVANTAGES OF A SUPER SKY BIPV SKYLIGHT

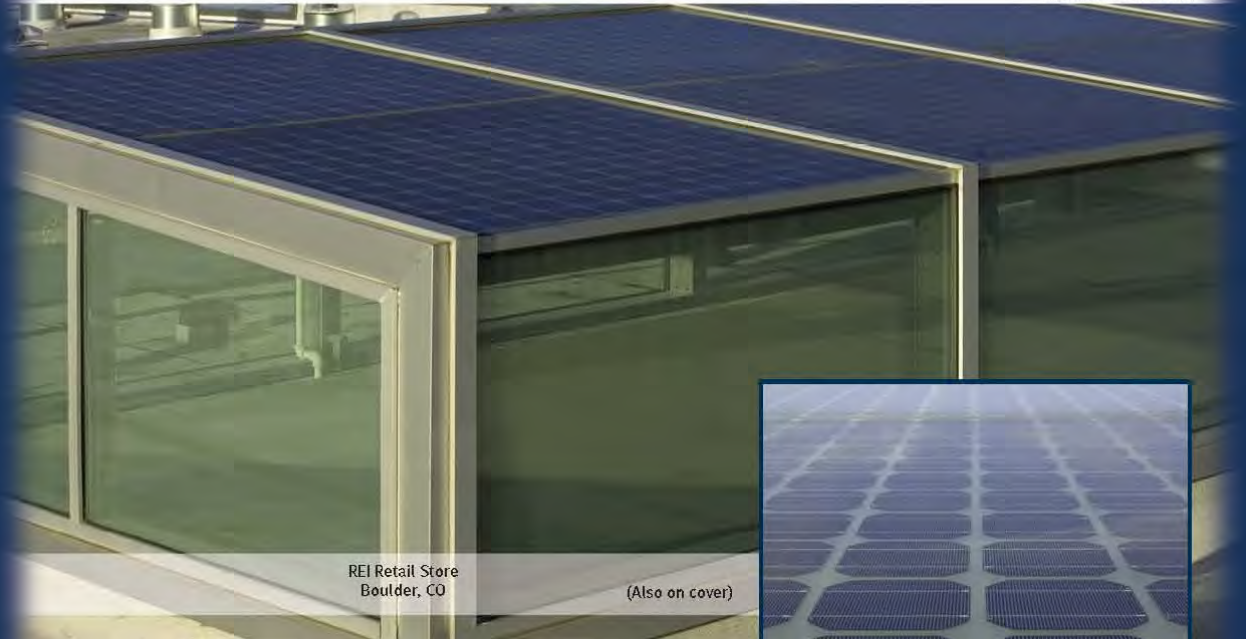
Window System/Glazing: TYPE 5

- ▶ Same advantages of a standard Super Sky skylight, including natural daylighting, solar shading, high quality design, workmanship and industry leading ten (10) year warranty against leakage.
- ▶ Incorporates photovoltaics into your building project with the minimal possible additional cost for infrastructure. The skylight glass is changed to photovoltaic modules. Wiring is handled internally in the skylight extrusions.
- ▶ Green building recognition in a highly visible way. Shows our corporate commitment to renewable energy and green building.
- ▶ LEED points (USGBC)  for natural daylighting and photovoltaics.
- ▶ Turn key design for the BIPV system, encompassing the proper skylight design and construction, photovoltaic array design, coordination of all electrical components with building electrical systems, and commissioning of installed product.
- ▶ Custom sizes and unlimited design configurations, utilizing custom thin film and crystalline (mono or poly) PV modules, are possible.
- ▶ Combining standard glazing products with PV modules creates architectural interest and generates electricity.
- ▶ Unlimited possibilities; covered walkways, shaded parking, entrances, gas stations, transit canopies, atriums, etc.



BIPV CASE STUDY

REI photo by Paul Bröcher Photography

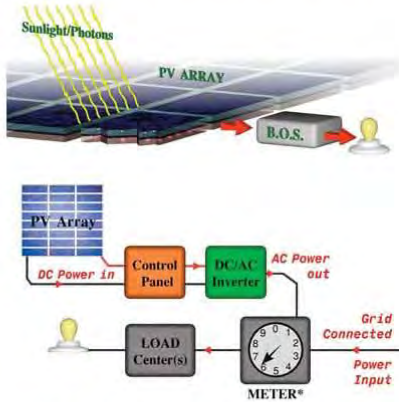


REI Retail Store
Boulder, CO
(Also on cover)



Super Sky is working with companies like REI, to help them reduce their environmental footprint. The Boulder store was designed to meet the USGBC's LEED Silver standards for commercial buildings.

Super Sky manufactured and installed this single slope skylight. The sloping portion was glazed with photovoltaic panels, which produce roughly 2% of the store's energy. The vertical portions were glazed with clear/silkscreened insulated Low "E" glass, allowing natural daylight into the building.



The BOS (Balance of System) converts DC energy to AC – the standard for utility supply throughout the world.

Apart from the engineering to ensure that the maximum yield of energy will be harvested from the solar array, safety measures are designed to isolate each component of the system.

A UL approved 'grid following inverter' provides alternating current to match perfectly with the utilities' supply. The utility can provide a meter that will spin in both directions to allow the site to purchase energy, or sell energy back to the utility – depending upon the specific site conditions.

Super Sky Products, Inc. 1-800-558-0467 262-242-2000 Fax 262-242-7409 www.supersky.com S O L A R S K Y



E.1.5. Doors

E.1.5.1. Door: Type 1

E.1.5.1.1. Material or Product: Wood Stile and Rail Entrance Door.

E.1.5.1.2. Description: Stained wood stile and rail entrance door to match historic primary entrance doors to the Pentagon building, unless alternates are approved after all historic preservation requirements have been fulfilled. Match existing stile and rail dimensions and molding profiles.

E.1.5.1.3. Requirements:

Primary Exterior Stile and Rail Doors. Species: Red Oak; Cut: Quarter Sawn
Finish: Natural with Flame Control Fire-retardant Varnish, Clear High Gloss Top Coat

Potential Sources:

Bloch Industries, LLC
Door and Millwork Division
140 Commerce Drive
Rochester, NY 14623
585-334-9220
www.blochindustries.com

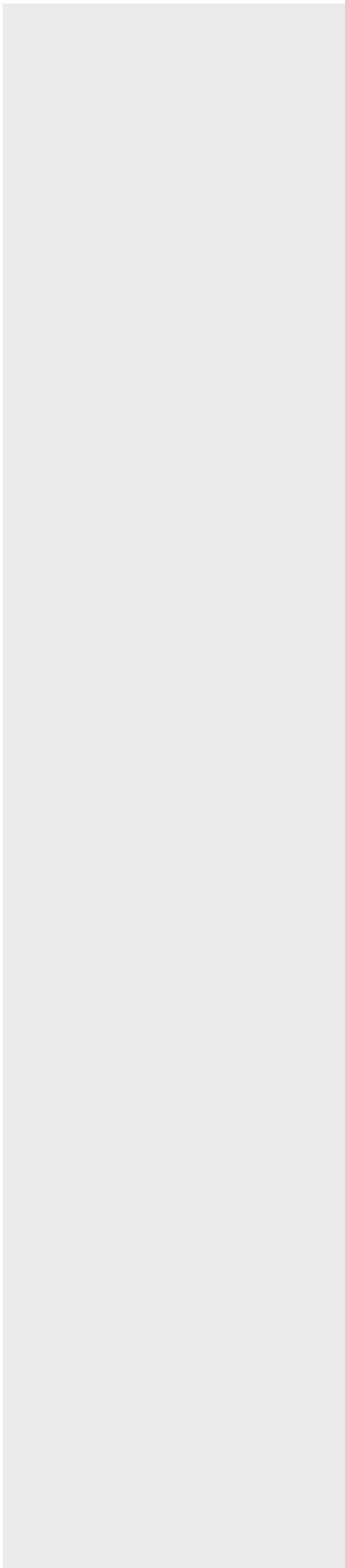
Eggers Industries
One Eggers Drive
Two Rivers, WI 54241
920.793.1351
www.eggersindustries.com

The Maiman Company
3839 East Mustard Way
Springfield, MO 65803
417-862-0681
www.maiman.com

E.1.5.1.4. Standards/References:

E.1.5.1.5. Sustainability: Utilize locally sourced material to the extent possible. Utilize Forest Stewardship Council (FSC) certified wood.

E.1.5.1.6. Durability: Wood exterior doors are less durable than metal, although required for historic reasons. Maintenance is required.



E.1.5.2. Door: Type 2

E.1.5.2.1. Material or Product: Metal Secondary Entrance Door.

E.1.5.2.2. Description: Painted steel entrance door with applied trim to simulate original stile and rail doors to the Pentagon building. Colors: per finish palette.

E.1.5.2.3. Requirements: Exterior grade hollow metal door with steel bars/trim applied to door to simulate historic stile and rail door.

Potential Sources:

Steelcraft

9017 Blue Ash Road

Cincinnati, OH 45242

800-930-8585

www.steelcraft.com

Ceco Door

9159 Telecom Drive

Milan, TN 38358

731-686-8345

www.cecodoor.com

AMBICO LIMITED

1120 Cummings Avenue

Ottawa, Ontario, Canada K1J 7R8

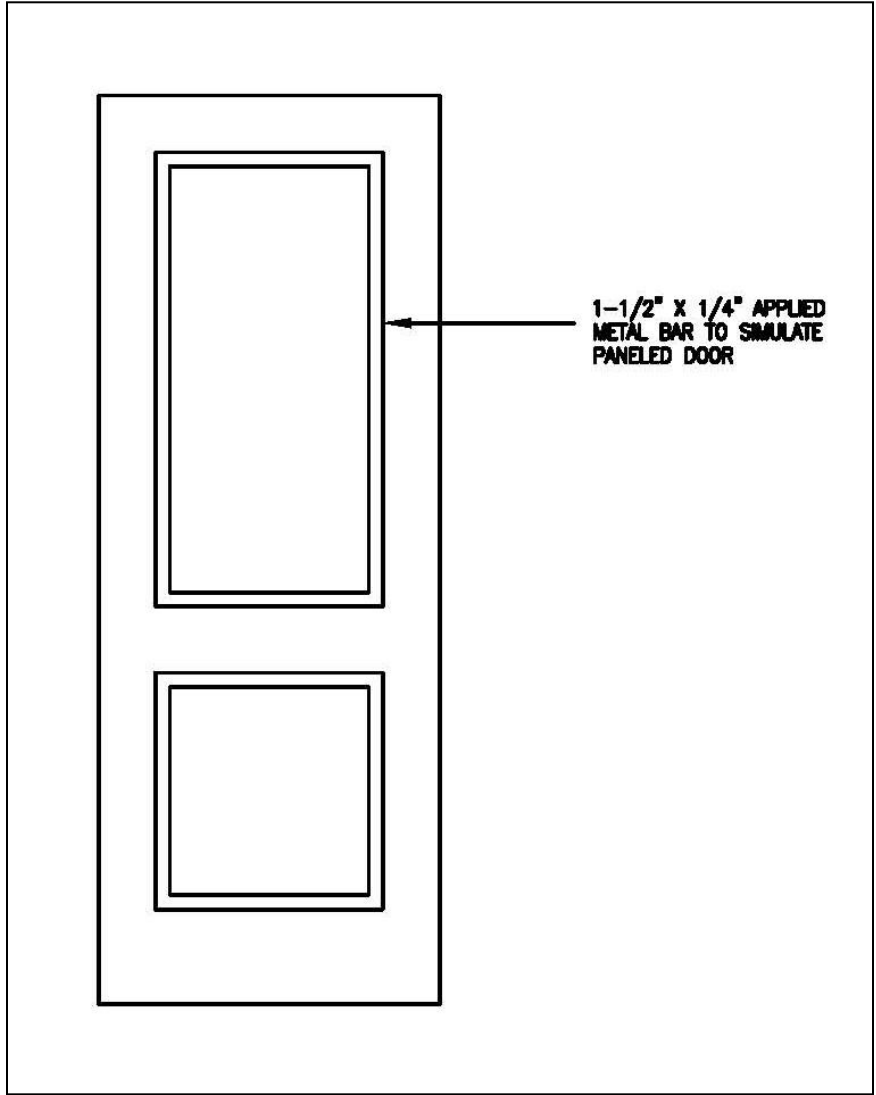
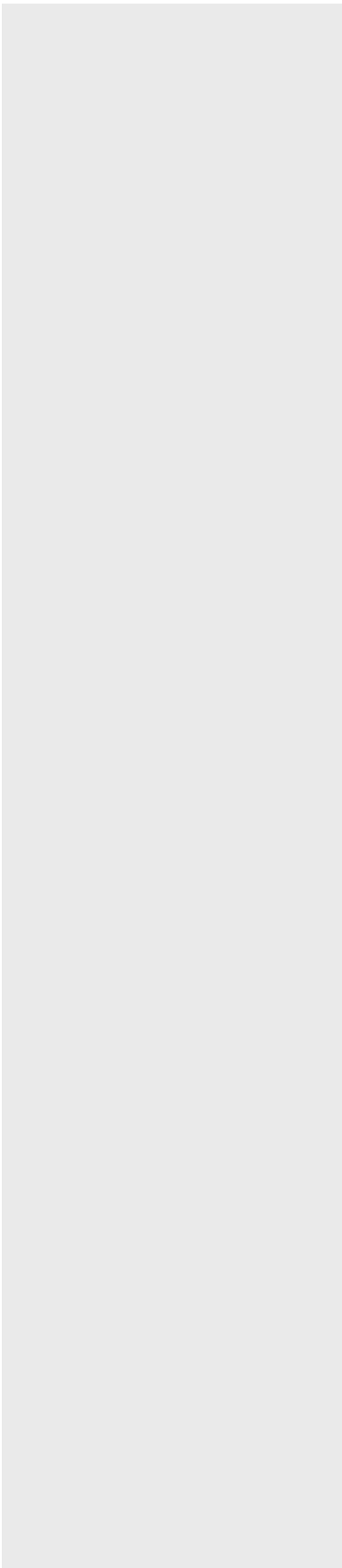
888-423-2224

www.ambico.com

E.1.5.2.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

E.1.5.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.5.2.6. Durability: Metal doors offer good long-term durability.



E.1.5.3. Door: Type 3

E.1.5.3.1. Material or Product: Metal and Glass Stile and Rail Entrance Door.

E.1.5.3.2. Description: Aluminum, medium- or wide- stile and rail swing door, with or without glass.

E.1.5.3.3. Requirements:

Doors to be equal to “350/500 Tuffline Entrances” by Kawneer. Doors to be pre-finished with premium polyvinylidene fluoride (PVDF) resin-based coating with custom color or bronze anodized finish as allowed by zone. Provide glazing in conformance with General Design Guidelines.

Potential Sources:

Kawneer Company, Inc
Technology Park / Atlanta
555 Guthridge Court
Norcross, GA 30092
770.449.5555
www.kawneer.com

EFCO Corp
PO Box 609
Monett, MO 65708
800-221-4169
www.efcocorp.com

Oldcastle Glass
2425 Olympic Boulevard
Suite 525-East
Santa Monica, CA 33607
866 653-2278
www.oldcastleglass.com

E.1.5.3.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

E.1.5.3.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.5.3.6. Durability: Metal and glass doors offer good long-term durability.



350 and 500 Tuffline® Entrances

Door: TYPE 3

Entrance Systems that
are Tougher than
all the Rest



Colorado Convention Center, Denver, CO
Architect: Fentress Bradburn Architects Ltd., Denver, CO
Glazing Contractor: Elward Construction, Lakewood, CO

Kawneer's 350 and 500 Tuffline® Entrances are a complete system of door, frame and hardware, designed and engineered to create total performance. Total toughness. For schools, university buildings, shopping malls, stadiums and convention centers. For any building entrance where traffic is heavy and the potential for abuse is high. The choice is in the stiles – 350 Tuffline® has a 3-1/2" wide stile, while 500 Tuffline® has a 5" wide stile.

Performance

Tuffline® Entrances are much more than typical, heavy-wall doors. The walls are heavier – 3/16" throughout the doors and frames, with 5/16" wall thicknesses wherever hinging/pivoting hardware is applied. Tuffline® has heavy duty hinges and pivots directly mounted to these extra reinforced parts of the doors and frames. There is no cut away material that can weaken the members and no reinforcement plates to come loose. 350 and 500 Tuffline® are thicker with a door depth of 2 inches. Their 2" x 4-1/2" frame sight lines have the substantial quality necessary in extra tough entrances.

 **KAWNEER**
AN ALCOA COMPANY



Other heavy wall doors are installed in standard door frames, so there's a risk of their hardware pulling out of the frames. But not 350 and 500 Tuffline®. The door frames have 3/16" walls engineered to match the doors' intrinsic toughness. The Tuffline® door frame design interlocks with the special door stile extrusions to provide continuous security and ability to withstand all types of weather. Heavy duty steel brackets tie the threshold into the frame, so Tuffline® Entrances are more durable and long lasting.

350 and 500 Tuffline® Entrances have corner construction that join stiles to rails by mechanical clips with two high strength fasteners, 3/16" steel nut plates, two SIGMA deep penetration plug welds and two SIGMA fillet welds – a total of 16 welds per door. This is the famed Kawneer "dual moment" corner construction, that comes with a Lifetime Warranty. Tuffline® door corners effectively resist the lever arm and torsion forces that constantly act on doors.

Because a tough entrance needs to stand up to onslaughts of all kinds, 350 and 500 Tuffline® Entrances are now offered with Panic Guard® exit devices which provide continuous security. This patented continuous aluminum astragal bar in the meeting stile of a pair of doors resists probing with devices like coat hangers that could circumvent crash bar panic device security. Tuffline® Entrances have always been available with panic hardware options, including Kawneer's Paneline®. Now, they are even more secure.

Aesthetics

Despite heavy walls and reinforcements, 350 and 500 Tuffline® deliver the same clean aesthetics you expect in Kawneer Entrance Systems, including a choice of beveled or square glass stops for various glazing options. There's a door stile option that accepts the use of continuous hinges. And a one-piece cross rail that matches the Paneline® Panic Device sight line. With these options, Tuffline® provides more design potential.

When it's a tough call, there's 350 and 500 Tuffline®. Complete entrance systems engineered for performance. For protection. For design flexibility. For endurance. And tougher than the rest.

For the Finishing Touch

Permadonic Anodized finishes are available in Class I and Class II in seven different colors.

Painted Finishes, including fluoropolymer that meet or exceed AAMA 2605, are offered in many standard choices and an unlimited number of specially-designed colors.

Solvent-free powder coatings add the "green" element with high performance, durability and scratch resistance that meet the standards of AAMA 2604.



Comerica Park Stadium, Detroit, MI
 Architects: HOK Sport Facilities Group, Kansas City, MO;
 Smith, Hinchman and Grylls (SH&G), Detroit, MI;
 Rockwell Group, New York, NY
 Glazing Contractor: Universal Glass & Metals, Inc., Detroit, MI

Kawneer Company, Inc.
 Technology Park / Atlanta
 555 Guthridge Court
 Norcross, GA 30092

kawneer.com
 770 . 449 . 5555

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E.1.6. Overhead Doors

E.1.6.1. Overhead Door: Type 1

E.1.6.1.1. Material or Product: Overhead Door.

E.1.6.1.2. Description: Painted aluminum or steel coiling door. Slats to be flat to provide a simple appearance. Door may be insulated if required. Overhead doors installed on E-Ring face of Pentagon to be painted factory-applied custom color to match Color 6, other zones colors per finish palette..

E.1.6.1.3. Requirements: Doors to be equal to “Stomtite Series 625” by Overhead Door Corporation.

Potential Sources:

Overhead Door Corporation
2501 South State Highway 121
Suite 200
Lewisville, TX 75067
800 275-3290
www.overheaddoor.com

Cornell Iron Works, Inc.
100 Elmwood Ave.
Mountaintop, PA 18707
800.233.8366
www.cornelliron.com

McKeon Rolling Steel Door Co., Inc. ·
44 Sawgrass Drive
Bellport, NY 11713
800-266-9392
www.mckeondoor.com

E.1.6.1.4. Standards/References:

E.1.6.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.6.1.6. Durability: Metal doors offer good long-term durability.

The Genuine. The Original.



Rolling Service 625



The Stormtite 625 Series is an insulated, heavy-duty rolling service door that is an ideal choice for applications requiring a moderate level of

thermal protection. Designed in sizes up to 30' wide and 28' high (9144mm and 8534mm), these doors are constructed with a CFC-free, foamed-in-place polyurethane insulation. Vinyl weatherstripping on the bottom bar, exterior curtainside guide and hood baffle provides additional protection against air infiltration.

Standard Features At a Glance

Max. standard width	30' (9144 mm)
Max. standard height	28' (8534 mm)
Curtain	24 ga. galvanized steel front 24 ga. galvanized steel back
Slat profile	Flat, insulated, type F-265I
STC Rating	21
Insulation	Foamed-in-place, CFC-free polyurethane
R-value	7.7* (1.35 W/Msq)*
Finish	Gray or tan
Hood	24 ga. galvanized steel
Windload	20 psf
Standard mounting	Face of wall
Operation	Chain hoist
Standard springs	20,000 cycle
Weatherseals	Bottom, exterior curtain-side guide, interior hood baffle
Guides	Structural steel
Bottom bar	Primed steel with vinyl weatherseal
Lock	Chain keeper
Warranty	15-month limited

Options

- Electric operator
- Aluminum or stainless steel slats
- Bottom sensing edge
- Crank operation

- Between-jambs mounting
- High-usage package
- High-windload option
- Weatherseal for interior side guide
- Lintel seal
- Bottom sensing edge
- Galvanized steel bottom bar angle guides
- Cylinder lock
- Pass doors
- Exhaust ports
- Powder-coat paint finish in 197 standard colors, or color-matched to specification

*If your project requires a higher R-value, ask your Overhead Door Ribbon distributor about our Thermacore® door system, which offers R-values to 17.50 (3.09 W/Msq).

Overhead Door: TYPE 1

Overhead Door: TYPE 1

E.1.7. Canopies

E.1.7.1. Canopy: Type 1

E.1.7.1.1. Material or Product: Glass and Metal Canopy.

E.1.7.1.2. Description: Metal or metal and glass canopy with bronze or painted metal framing and fasteners. Colors: per finish palette.

The predominant purpose of canopies is a functional one—protection from the elements at building entrances or secondary doors. Canopies are not to present an overly assertive appearance. Configuration is to be single or double sloped. Barrel-vaulted shapes are not allowed. Canvas awnings/canopies are not allowed. The design and level of detail should be appropriate to the zone.

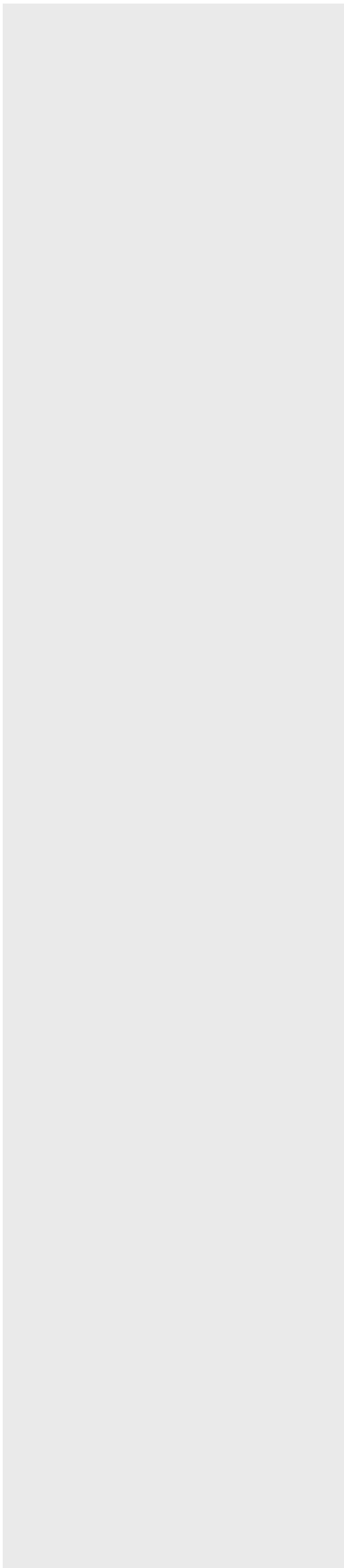
E.1.7.1.3. Requirements: Custom canopy design with the following components:

- Framing: Painted steel, aluminum, or solid bronze. Steel and aluminum to be coated with high-performance coatings or anodized as allowed by zone.
- Panels: Painted steel, aluminum composite material, or glass. Steel and aluminum to be pre-finished with premium polyvinylidene fluoride (PVDF) resin-based coating with custom color as allowed by zone. Glazing is to be in conformance with General Design Guidelines.

E.1.7.1.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 4-022-01 Security engineering: Entry Control Facilities / Access Control Points.

E.1.7.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.7.1.6. Durability: Canopies require appropriate detailing.



E.1.8. Railings

E.1.8.1. Railing: Type 1

E.1.8.1.1. Material or Product: Bronze Handrail with Bronze Posts/Wall Mounted.

E.1.8.1.2. Description: Freestanding, bronze handrail and posts to be used at stairs and ramps at middle of run, similar to usage at River Entrance – (Type 1A.).

Wall-mounted handrail uses same rail cap and mounting brackets – (Type 1B).

E.1.8.1.3. Requirements:

- Rail Cap – Julius Blum #4538 Bronze Handrail mounted to 25mm x 75mm bar.
- Bracket – Julius Blum #387 Bronze railing bracket
- Posts – 75mm x 75mm Bronze Post
- Bronze Flange Base Cover – min. 50mm x 25mm x 3 mm bronze caps to cover core drills for setting posts
- Finish: Dark Oil Rubbed

Potential Source:

Julius Blum Co. Inc

PO Box 816

Carlstadt, NJ 07072

800-526-6293

www.juliusblum.com

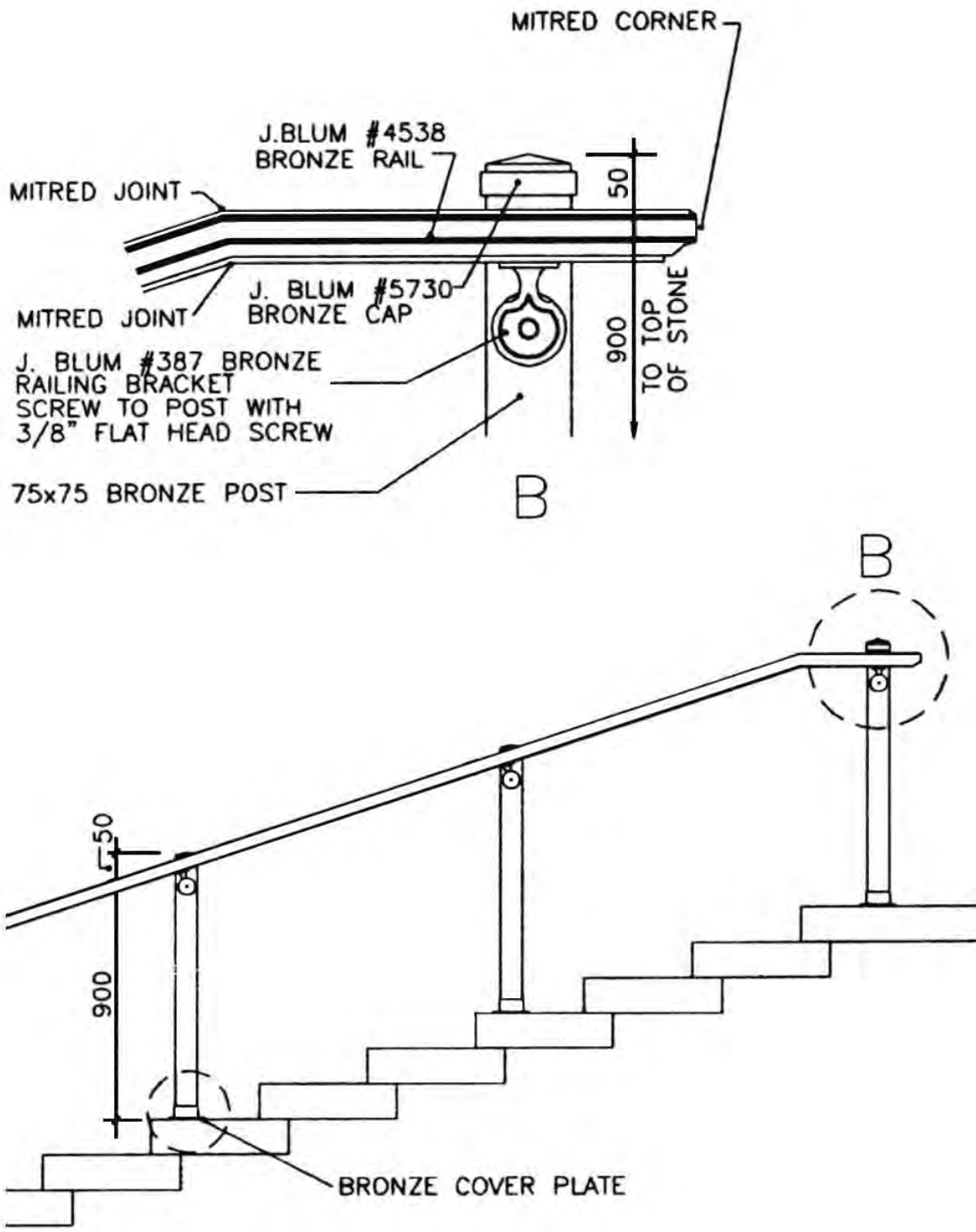
Julius Blum Co. supplies the components of the railings. A local metal fabricator will assemble and finish the work.

E.1.8.1.4. Standards/References: Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities.

E.1.8.1.5. Sustainability: Utilize recycled content to the extent possible.

E.1.8.1.6. Durability: Bronze railings offer greater durability than painted metal, which is susceptible to rust, although periodic maintenance of the oil rubbed finish is required.





Drawing of post and railing

E.1.8.2. Railing: Type 2

E.1.8.2.1. Material or Product: Bronze Guardrail.

E.1.8.2.2. Description: Freestanding, ornamental bronze guardrail to be used where required, similar to usage at River Entrance.

E.1.8.2.3. Requirements:

- Rail – Julius Blum #4538 Bronze Handrail
- Horizontal and Vertical Members – 12mm x 38mm Solid Bronze Bar Stock
- Bronze Flange Base Cover
- Posts – 75mm x 75mm Bronze Post (where required)
- Finish: Dark Oil Rubbed

Potential Source:

Julius Blum Co. Inc

PO Box 816

Carlstadt, NJ 07072

800-526-6293

www.juliusblum.com

Julius Blum Co. supplies the components of the railings. A local metal fabricator will assemble and finish the work.

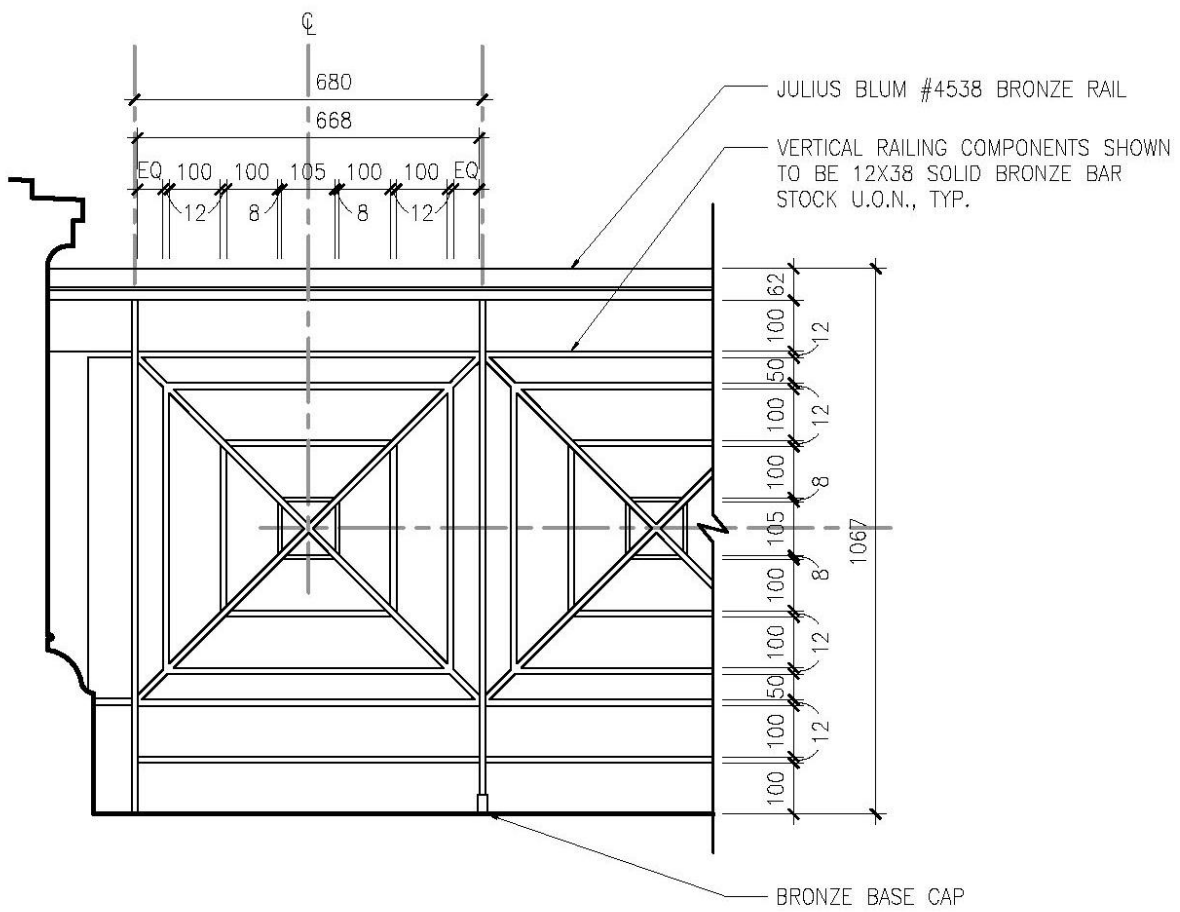
E.1.8.2.4. Standards/References:

Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities.

E.1.8.2.5. Sustainability: Utilize recycled content to the extent possible.

E.1.8.2.6. Durability: Bronze railings offer greater durability than painted metal, which is susceptible to rust, although periodic maintenance of the oil rubbed finish is required.





Drawing of railing

E.1.9. Lighting

E.1.9.1. Light Fixture: Type 1

E.1.9.1.1. Material or Product: Exterior Torchere (Historic Replica).

E.1.9.1.2. Description: Custom replicated wood torchere with stone base, bronze bobèche (dish) and glass globe, to match existing at Pentagon building. To be used only at restoration locations where previously used. Not allowed at new locations.

E.1.9.1.3. Requirements: Match existing torcheres in material (where possible), color, and profile. Provide fluorescent lamping. Note that previous reproductions by Serra Designs substituted painted polymer resin for the carved wood posts.

Potential Source:

Serra Designs

920 N. Adams St.

Henderson, KY 42420

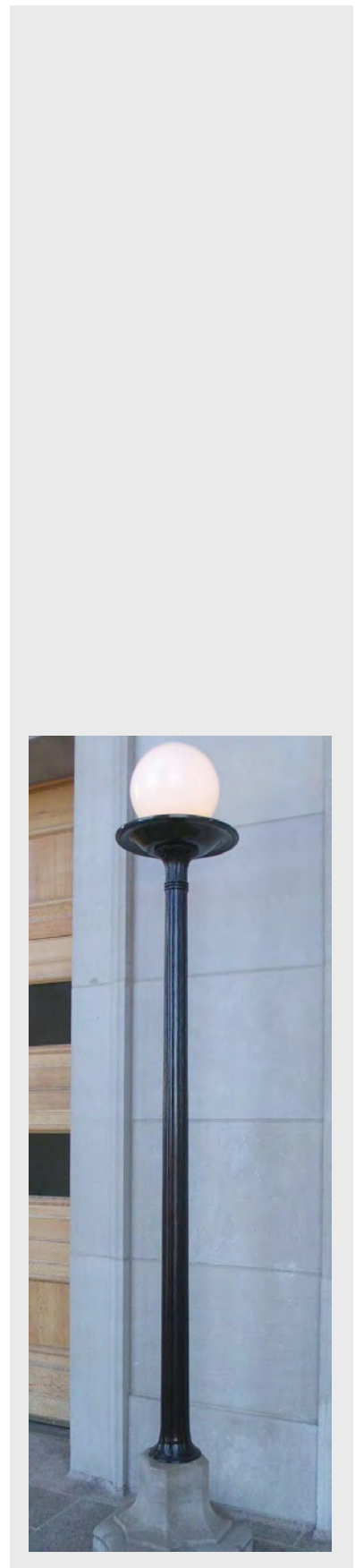
270-826-8775

www.serradesignsinc.com

E.1.9.1.4. Standards/References: N/A.

E.1.9.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible. Utilize FSC certified wood.

E.1.9.1.6. Durability: Durability is unknown, but historic replication is required.





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E.1.9.2. Light Fixture: Type 2

E.1.9.2.1. Material or Product: Exterior Wall Sconce (Historic Replica).

E.1.9.2.2. Description: Custom replicated bronze and glass exterior wall sconce, to match historic sconces at Pentagon building. To be used only at restoration locations where previously used.

E.1.9.2.3. Requirements: Utilize the remaining assumed original fixtures at the Corridor 8 entrance portal as a model for custom reproduction fixtures. Provide fluorescent or LED lamping.

Potential Source:

Crenshaw Lighting

592 Paradise Lane

Floyd, VA 24091

540-745-3900

www.crenshawlighting.com

E.1.9.2.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria – UFC 3-530-01 Design: Interior and Exterior Lighting and Controls

E.1.9.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.9.2.6. Durability: Bronze and glass offer long-term durability.





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E.1.9.3. Lighting: Type 3

E.1.9.3.1. Material or Product: Exterior Wall Sconce

E.1.9.3.2. Description: Metal and glass exterior wall sconce to match existing at Pentagon building south entrances.

E.1.9.3.3. Requirements:

Provide fixture equal to “ADVENT, Harbor – Exterior Wall Sconce”, #AEW1014-2F26-277. Provide fluorescent lamping. Finish: as allowed by zone.

Potential Sources:

SPI Lighting

10400 North Enterprise Drive

Mequon, WI 53092

Tel: 262-242-1420

www.spilighting.com

Visa Lighting Corp

1717 W. Civic Dr.

Milwaukee, WI 53209

800-788-8472

www.visalighting.com

E.1.9.3.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria UFC 3-530-01 Design: Interior and Exterior Lighting and Controls

E.1.9.3.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.1.9.3.6. Durability: Metal and glass offer long-term durability.

AEW101A-2F26-277-BBR

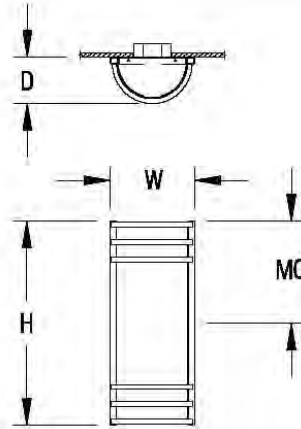
ADVENT SPECIFICATION SHEET

Lighting : TYPE 3

HARBOR

EXTERIOR WALL SCONCE
AEW1014

Job Name	Type
Model No.	AEW1014- 2F26- 277- BBR
Lamp	



DESCRIPTION

Accenting the Harbor AEW1014 half cylinder sconce are four 1/4" x 1/2" horizontal decorative bars. The clean lines of this exterior sconce are perfect for multiple applications including offices, retail buildings and health care facilities. Choose from a palette of both painted and metal finishes.

FEATURES

- Formed opal acrylic lens
 - Opal acrylic top and bottom lenses
 - Mounts to standard 4" octagonal junction box
 - All fluorescent ballasts are integral and electronic and are rated for 0° F starting temperature
 - Lamps supplied with fixtures, fluorescent lamps are 3500° K color temperature unless otherwise specified
 - UL listed for wet location
- Indoor companion fixtures available (see AIW1050)

FINISH

Housing finish = BBR(Brushed solid brass)

DIMENSIONS

	W	H	D	MC
AEW1014	9"	22"	5"	11"
	(229 mm.)	(569 mm.)	(127 mm.)	(280 mm.)

PRODUCT MODIFICATIONS



WEIGHT

Consult factory.

E.2. Exterior Materials Control List: Site Elements

E.2.1. Site Elements Index

Pavement – Walkways

- Type 1: Concrete Pavement
- Type 2: Granite Pavement
- Type 3: Concrete Pavement with Exposed Aggregate Finish
- Type 4: Permeable Pavement
- Type 5: Crushed Stone Pedestrian Path
- Type 6: Asphalt Pedestrian Path

Pavement – Site

- Type 1: Washed River Stone

Pavement – Vehicular

- Type 1: Heavy Duty Concrete Pavement
- Type 2: Asphalt Concrete Surface Pavement
- Type 3: Pervious Pavement

Site Walls

- Type 1: Fieldstone Wall Facing
- Type 2: Limestone Wall Facing
- Type 3: Cast-in-Place Concrete Historic Mix
- Type 4: Cast-in-Place Concrete Rusticated Wall Facing

Manhole Covers

- Type 1: Cast Iron Manhole Cover

Storm Grates

- Type 1: Storm Grates

Fencing

- Type 1: Metal Fencing.
- Type 2: Metal Security Fencing

Bollards

- Type 1: Crash-Rated Security Bollard
- Type 2: Fixed Pedestrian Bollard
- Type 3: Removable Pedestrian Bollard



Vehicular Barriers

- Type 1: Operable Vehicle Barrier
- Type 2: Site Wall with Berms
- Type 3: Site Wall
- Type 4: Collapsible Pavement
- Type 5: Temporary Vehicle Barrier

Screening

- Type 1: Vegetative Screening (Modular)
- Type 2: Vegetative Screening (Built-in-Place)
- Type 3: Vegetative Screening (Hedge)
- Type 4: Temporary Construction Screening

Site Lighting

- Type 1: Pedestrian Light Standard (Courtyard)
- Type 2: Pedestrian Light Standard (General)
- Type 3: Parking Area Light Standard

Benches

- Type 1: Exterior Bench (Courtyard)
- Type 2: Exterior Bench (Site)
- Type 3: Exterior Bench - Moveable (Courtyard)

Bicycle Racks

- Type 1: Single Rack
- Type 2: Multiple Rack
- Type 3: Portable/Temporary Multiple Rack

Drinking Fountains

- Type 1: Pedestal-Mounted Drinking Fountain

Trash Receptacles

- Type 1: Trash Receptacle (Courtyard)
- Type 2: Trash Receptacle (General Use)
- Type 3: Blast Resistant Receptacle

Courtyard Furniture

- Type 1: Dining Area Table
- Type 2: Dining Area Seating
- Type 3: Dining Area Umbrella

Products, materials and suppliers are listed in the Control List to establish visual and aesthetic appropriateness to the overall design intent for Reservation use. In many cases, very similar products and materials are available from more than one provider. It is the responsibility of the design contractor for each project to verify that equivalent/alternate products and materials specified are of suitable quality and durability for use on the Reservation.

E.2.2. Pavement - Walkways

E.2.2.1. Pavement/Walkways: Type 1

E.2.2.1.1. Material or Product: Concrete Pavement .

E.2.2.1.2. Description: Reservation standard concrete pavement with custom mix to simulate historic concrete at the Central Courtyard of the Pentagon Building. Utilize materials and resources from source to produce concrete that matches historic installations in color and texture.

E.2.2.1.3. Requirements: Blended hydraulic cement composition as follows:

- LeHigh Cement 306 pounds
- Blue Circle Atlantic NewCem 306 pounds
- Vulcan Stone Crushed Blue 1800 pounds
- Blades Sand 1123 pounds
- Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures: color stable, free of carbon black, non-fading and resistant to lime and other alkalides.
- Final color to match Pantone Color: DS 28-8 U.
- Manufacturer: Scofield Systems, CHROMIX P (powdered) or CHROMIX ML (mixed liquid. Color: #6063 Winter Beige.

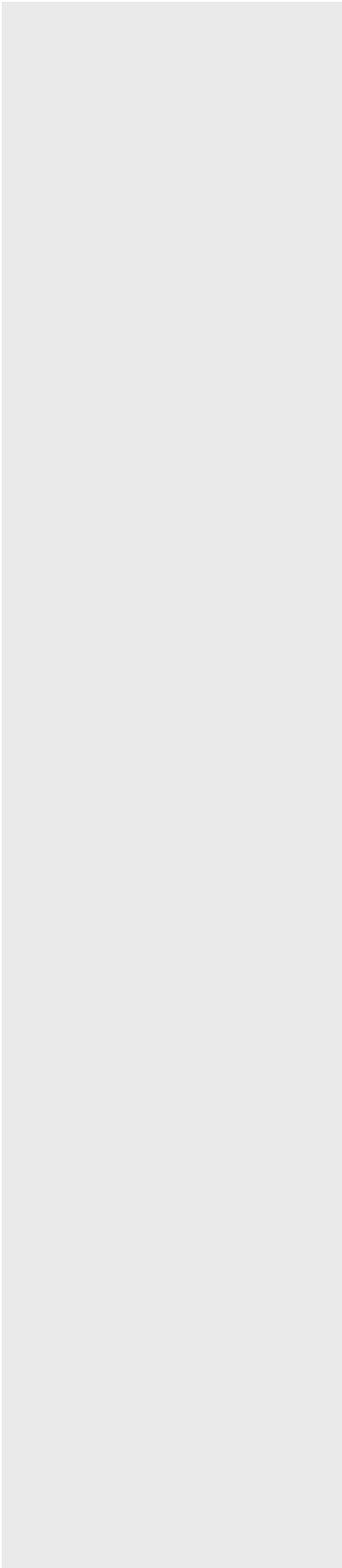
- Provide curbs and sidewalks ramps to match.
- Cement shall be from a single source to ensure consistency.
- Pedestrian sidewalks shall be 3,000 psi minimum
- Design mix to include air-entraining admixture

Note the above mix is new as of May 2009 and should be confirmed and matched to the historic concrete. Contractor shall pour a series of concrete pavement samples, no smaller than 5' by 5', for evaluation and selection by Pentagon Reservation Representative. Confirmation of the above mix shall be conducted by design contractor and approved by WHS. Should alteration be required, the revised mix shall be incorporated into this manual which shall become the reservation standard. See Manual Updating Process.

Potential Sources:

Lehigh Cement Company
7660 Imperial Way
Allentown, PA 18195
800 523 5488
www.lehighcement.com

Virginia Concrete Co. Inc
6860 Commercial Dr.
Springfield, VA 22151



703-354-7100

DuBROOK Concrete, Inc.
4215 Lafayette Center Dr, Ste 1
Chantilly, VA 20151
703-222-6969
www.dubrookconcrete.com

Aggregate Industries, Inc.
7529 Standish Place, Suite 200
Rockville, MD 20855
301-284-3600
www.aggregate.com

L. M. Scofield Company
280 Park Ave.
Rutherford, NJ 07070
Phone: (800) 800-9900
www.scofield.com

E.2.2.1.4. Standards/References: Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities; Whole Building Design Guide – Uniform Facilities Criteria UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design. Architectural specifications and control sample of historic mix on file with WHS.

E.2.2.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.2.1.6. Durability: Properly mixed, formed, and placed, concrete is highly durable and low maintenance.

E.2.2.2. Pavement/Walkway: Type 2

E.2.2.2.1. Material or Product: Granite Pavement.

E.2.2.2.2. Description: Granite pavement to match historic pavement at Pentagon building porticos, unless alternate pavement is approved after all historic preservation requirements have been fulfilled. To be used for restoration of stairs and walkways at historic entrances and significant pavement at new construction.

E.2.2.2.3. Requirements: Pink Granite to match historic color and grain, Grade A, with thermal finish. Columbia Pink Granite was used in the historic installation. Apparently the supplying quarry has been closed.

Selection of new matching granite shall be conducted by design contractor and once approved by WHS, the specific type shall be incorporated into this manual which shall become the reservation standard. See Manual Updating Process.

E.2.2.2.4. Standards/References: ASTM standards.

E.2.2.2.5. Sustainability: Locally sourced material may not be available.

E.2.2.2.6. Durability: Granite pavement is highly durable and low maintenance.



◀ Granite at River Entrance



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E.2.2.3. Pavement/Walkway: Type 3

E.2.2.3.1. Material or Product: Concrete Pavement with Exposed Aggregate Finish.

E.2.2.3.2. Description: Concrete pavement with exposed aggregate finish to match existing at Pentagon Reservation, in order to provide accent areas within larger areas of standard concrete.

E.2.2.3.3. Requirements:

- Exposed Aggregate shall be cracked river stone from a single source for consistency.
- Cement shall be from a single source to ensure consistency.
- Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures: color stable, free of carbon black, non-fading and resistant to lime and other alkalides.
- Final color to match Pantone Color: DS 28-8 U.
- Manufacturer: Scofield Systems, CHROMIX P (powdered) or CHROMIX ML (mixed liquid. Color: #6063 Winter Beige.

- Pedestrian sidewalks shall be 3,000 psi minimum.
- Design mix to include air-entraining admixture.

Contractor shall pour a series of exposed aggregate samples, no smaller than 5' by 5', for evaluation and selection by Pentagon Reservation Representative. Selection of final mix shall be conducted by design contractor and once approved by WHS, the specific mix shall be incorporated into this manual which shall become the reservation standard. See Manual Updating Process.

Provide curbs and sidewalks ramps to match pavement field type.

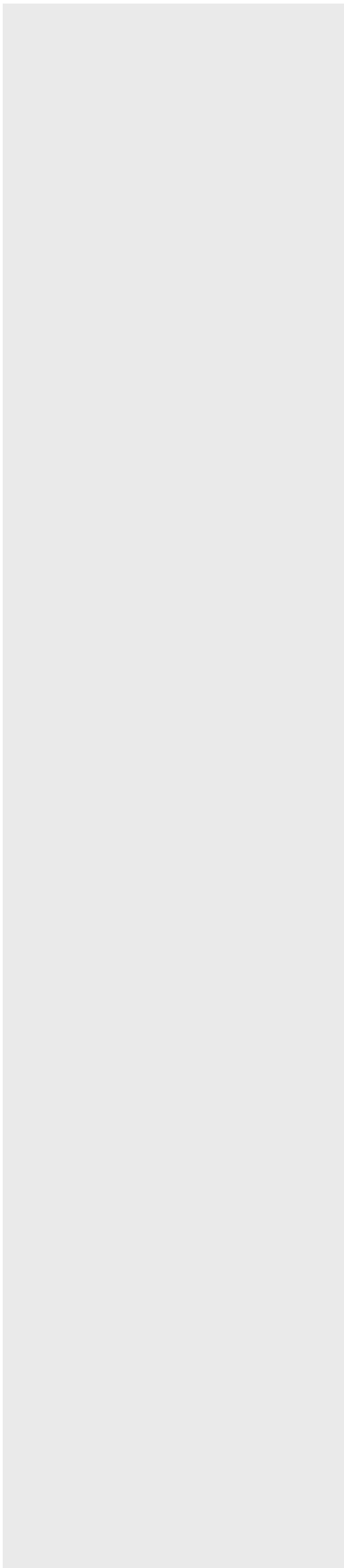
Reference E.2.2.1 for list of suppliers.

E.2.2.3.4. Standards/References:

Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities; Whole Building Design Guide – Uniform Facilities Criteria UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.2.2.3.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.2.3.6. Durability: Properly mixed, formed, and placed, concrete is highly durable and low maintenance.



E.2.2.4. Pavement/Walkways: Type 4

E.2.2.4.1. Material or Product: Pemeable Pavement.

E.2.2.4.2. Description: Flexible, porous pavement with a firm, textured, porous walking surface that complies with the American Disabilities Act, for pedestrian areas adjacent to major walkways. Pavement to be comprised of a porous geo-textile fabric, molded directly to an integrated ring and grid system.

E.2.2.4.3. Requirements:

Gravel Pave 2 by Invisible Structures, Inc., consisting of the following:

- Base Course: Sandy Gravel material from local source, "Crusher Run".
- Paving Units: Lightweight injection molded plastic units with hollow rings rising from an open grid with geo-textile fabric fused to bottom of grid. Color Gray or approved alternate.
- Gravel Fill: Clean crushed fine stone or sharp, decorative gravel. Stone to be sharp and angular, granite hardness, size 3/16" to 3/8". Stone type to be locally sourced.

Potential Sources:

Invisible Structures, Inc

1600 Jackson Street, Suite 310

Golden, CO 80401

800-233-1510

www.invisiblestructures.com

(Similar product)

Presto Geosystems

P.O. Box 2399

670 North Perkins Street

Appleton, WI 54912-2399

800-548-3424

www.prestogeo.com

E.2.2.4.4. Standards/References:

Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities; Whole Building Design Guide - Uniform Facilities Criteria UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

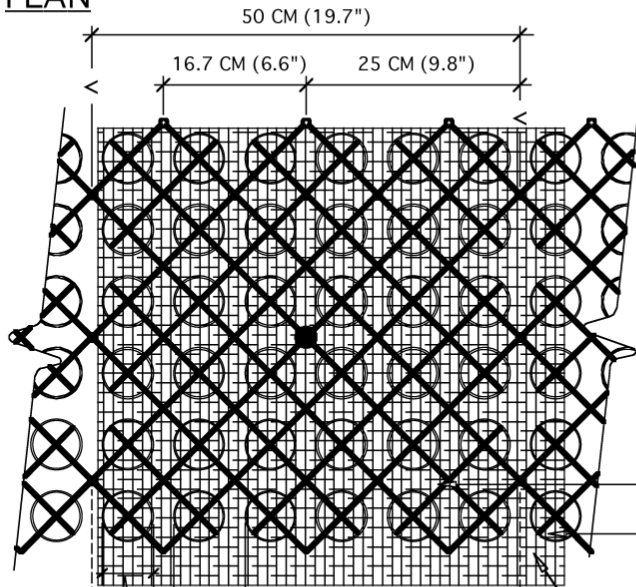
E.2.2.4.5. Sustainability: Utilize locally sourced material to the extent possible. Consider use adjacent to pedestrian pathways at parking areas.

E.2.2.4.6. Durability: Some maintenance is required to keep porous surface clear.



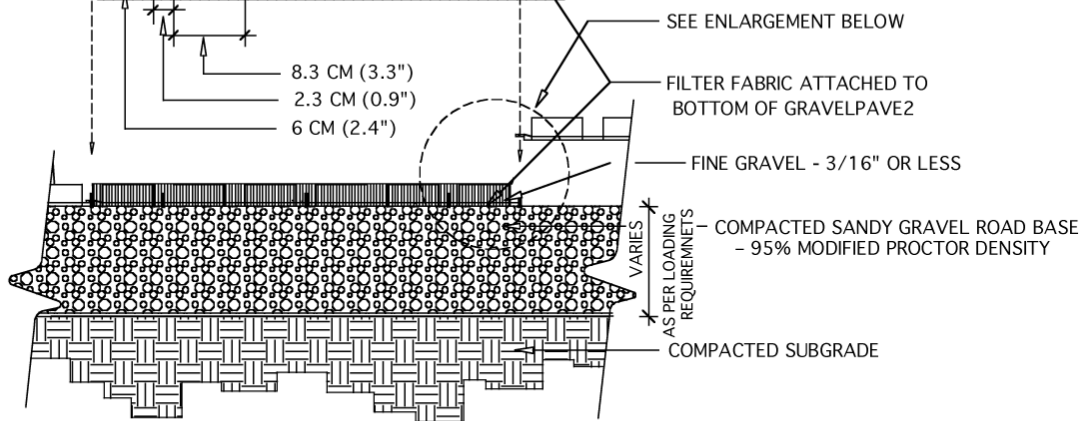
NOTES: TURN OFF DOFF LAYER PRIOR TO PLOTTING.
 HATCH DOFF HATCH LIMITS IN PLAN & ENLARGEMENT TO MATCH YOUR PLOT CONFIG.

PLAN

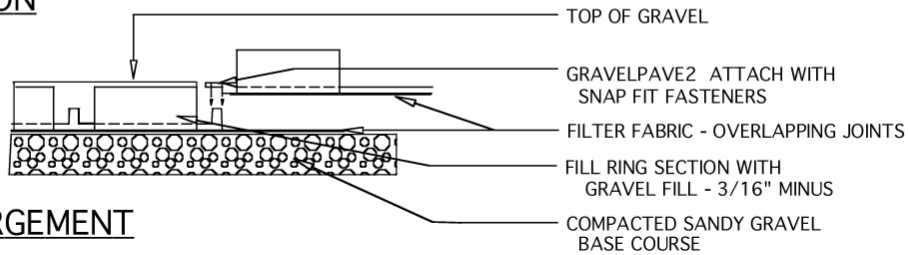


SPECIFICATIONS

- UNITS
- UNIT SIZE - 50 CM X 50 CM X 2.5 CM
(20" X 20" X 1")
- AVAILABLE IN 9 STANDARD ROLL SIZES
- UNIT WEIGHT - 538 GRAMS (19 OZ.)
OR 2.2 KG (4.8 POUNDS)
- STRENGTH - 402 KG/CM² (5720 PSI)
- COLOR - BLACK (STANDARD)
- RESIN - 100% POST-CONSUMER
RECYCLED HDPE/LDPE
- FABRIC
- WEIGHT - 3.5 OZ/SY (120 GM/M²)
- TENSILE - 120 LB/FT² (585 KG/M²)
- FLOW - 275 GAL/MIN/SF (11,200 L/MIN/M²)
- OPTIONS - CUSTOM FABRIC TO 6 OZ
AVAILABLE.



SECTION



ENLARGEMENT

E.2.2.5. Pavement/Walkways: Type 5

E.2.2.5.1. Material or Product: Crushed Stone Pedestrian Path

E.2.2.5.2. Description: Crushed stone pedestrian path used as a biking, jogging, or walking path. Width of trail can vary and shall be edged with steel edging.

E.2.2.5.3. Requirements:

Top Layer

- Color – Culpeper Red, #8 or equal
- Maintain minimum 4” depth at crown

Sub-grade Layer

- Color – Culpeper Red, #26 or equal
- Maintain minimum 2” depth

Steel Edging at perimeter

Potential Source:

Luck Stone Center

1700 South Sterling Blvd

Sterling, VA 20164

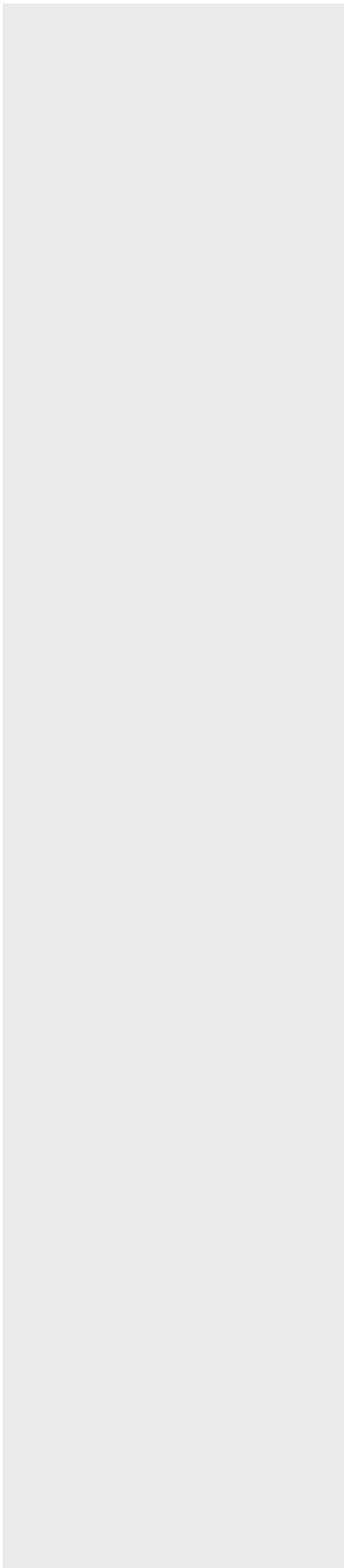
703-674-2240

www.charlesluck.com

E.2.2.5.4. Standards/References:

E.2.2.5.5. Sustainability: Utilize locally sourced material to the extent possible. The Culpeper Red stone is quarried at the Luck Stone Culpeper plant, which is approximately 75 miles from the Pentagon.

E.2.2.5.6. Durability: Crushed stone is generally highly durable. Limited maintenance may be required to keep stone in place.



E.2.2.6. Pavement/Walkways: Type 6

E.2.2.6.1. Material or Product: Asphalt Pedestrian Path

E.2.2.6.2. Description: Asphalt pedestrian path used as a biking, jogging, or walking path. Width of trail can vary.

E.2.2.6.3. Requirements:

- Asphalt Paving SM-9.0 – VDOT mix at 2” minimum depth
- 4” aggregate base material, Type 1, #21A Stone. Extend 1’-2’ beyond asphalt paving.
- Pedestrian walks shall be 3,000 psi minimum. All roadway or heavy-duty asphalt areas shall meet strength requirements specified by geotechnical engineer and meet all current VDOT standards.

E.2.2.6.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.2.2.6.5. Sustainability: Utilize locally sourced material to the extent possible.

E.2.2.6.6. Durability: Asphalt is highly durable and low maintenance.





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E.2.3. Pavement – Site

E.2.3.1. Pavement/Site: Type 1

E.2.3.1.1. Material or Product: Washed River Stone.

E.2.3.1.2. Description: Washed river stone, consisting of a mixture of white, gray, cream and tan stone, laid in a 2' to 3' wide strip adjacent to walkways and providing a loose textured surface to serve as a natural pedestrian deterrent.

E.2.3.1.3. Requirements:

- Color-Ponistone Quartzite, 1-3" diameter
- Maintain 4" minimum depth
- Steel Edging

Potential Source:

Luck Stone Center

1700 South Sterling Blvd

Sterling, VA 20164

703-674-2240

www.charlesluck.com

E.2.3.1.4. Standards/References:

E.2.3.1.5. Sustainability: Utilize locally sourced material to the extent possible.

E.2.3.1.6. Durability: River stone is generally highly durable. Limited maintenance may be required to keep stones in place.





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E.2.4. Pavement – Vehicular

E.2.4.1. Pavement/Vehicular: Type 1

E.2.4.1.1. Material or Product: Heavy Duty Concrete Pavement

E.2.4.1.2. Description: Reinforced concrete pavement mix to harmonize with historic concrete at Pentagon Courtyard but at lesser cost, utilizing locally available Portland cement concrete with color pigment additives. This Type does not utilize designated source for components.

Selection of final mix for concrete shall be conducted by design contractor and once approved by WHS, the specific mix of aggregates, color additives, etc. shall be incorporated into this manual which shall become the reservation standard. See Manual Updating Process.

E.2.4.1.3. Requirements:

VDOT Class A4 General modified as follows:

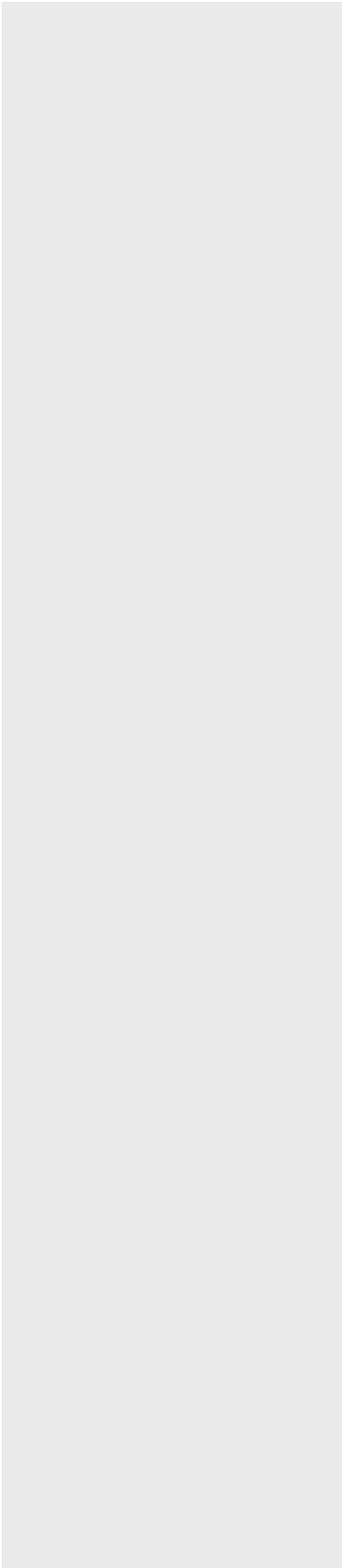
- LeHigh Cement 306 pounds
- Blue Circle Atlantic NewCem 306 pounds
- Vulcan Stone Crushed Blue 1800 pounds
- Blades Sand 1123 pounds
- Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures: color stable, free of carbon black, non-fading and resistant to lime and other alkalides.
- Final color to match Pantone Color: DS 28-8 U.
- Manufacturer: Scofield Systems, CHROMIX P (powdered) or CHROMIX ML (mixed liquid. Color: #6063 Winter Beige.
- Cement shall be from a single source to ensure consistency.
- All roadway or heavy duty concrete shall meet strength requirements specified by geotechnical engineer and meet all current VDOT Standards.
- Cement shall be from a single source to ensure consistency.
- Design mix to include air-entraining admixture.

Contractor shall pour a series of exposed aggregate samples, no smaller than 5' by 5', for evaluation and selection by Pentagon Reservation Representative. Selection of final mix shall be conducted by design contractor and once approved by WHS, the specific mix shall be incorporated into this manual which shall become the reservation standard. See Manual Updating Process.

Reference E.2.2.1 for list of suppliers.

E.2.4.1.4. Standards/References:

Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.



E.2.4.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.4.1.6. Durability: Properly mixed, formed, and placed, concrete is highly durable and low maintenance.

E.2.4.2. Pavement/Vehicular: Type 2

E.2.4.2.1. Material or Product: Asphalt Concrete Surface Pavement.

E.2.4.2.2. Description: Asphalt concrete pavement to provide smooth driving surface in accordance with VDOT standards.

E.2.4.2.3. Requirements:

VDOT Asphalt Concrete Type SM-9.50 mix.

Use of Reclaimed Asphalt Pavement (RAP) is permitted in accordance with VDOT standards.

E.2.4.2.4. Standards/References:

Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.2.4.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.4.2.6. Durability: Asphalt is highly durable and low maintenance.



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E.2.4.3. Pavement/Vehicular: Type 3

E.2.4.3.1. Material or Product: Pervious Pavement.

E.2.4.3.2. Description: Pervious pavement with a similar appearance to asphalt.

E.2.4.3.3. Requirements: The development of a Reservation Standard mix should be undertaken in the initial project to use this material. Testing materials beforehand through trial batching is strongly recommended so that properties that can be important to performance (setting time, rate of strength development, porosity, and permeability, among others) can be determined. Once finalized, this mix should be incorporated into this manual as the reservation standard. See Manual Updating Process. Guidelines for development of standard mix include the following:

- Portland cements (ASTM C 150, C 1157) and blended cements (ASTM C 595, C 1157) may be used in pervious concrete.
- Supplementary cementitious materials (SCMs) such as fly ash, pozzolans (ASTM C 618), and ground-granulated blast furnace slag (ASTM C 989) may be used.
- Fine aggregate content is limited in pervious concrete, and coarse aggregate is kept to a narrow gradation. Commonly-used gradations of coarse aggregate include ASTM C 33 No. 67 ($\frac{3}{4}$ in. to No. 4), No. 8 ($\frac{3}{8}$ in. to No. 16), and No. 89 ($\frac{3}{8}$ in. to No. 50) sieves [in metric units: No. 67 (19.0 to 4.75 mm), No. 8 (9.5 to 2.36 mm), and No. 89 (9.5 to 1.18 mm)]. Single-sized aggregate up to 1 inch (25 mm) has also been used. ASTM D 448 also may be used for defining gradings. A narrow grading is the important characteristic. Larger aggregates provide a rougher surface.
- Water-to-cement ratios between 0.27 and 0.30 are used routinely with proper inclusion of chemical admixtures.
- Use of chemical admixtures should closely follow manufacturer's recommendations. Air-entraining admixtures can reduce freeze-thaw damage in pervious concrete, and are used where freeze-thaw is a concern. ASTM C 494 governs chemical admixtures, and ASTM C 260 governs air-entraining admixtures. Proprietary admixture products that facilitate placement and protection of pervious pavements are also used.

Reference E.2.2.1 for list of suppliers.

E.2.4.3.4. Standards/References:

Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-030-01 Sustainable Development; PenRen Field Guide to Sustainable Design.

E.2.4.3.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible. Utilize pavement at parking stalls in surface parking areas.

E.2.4.3.6. Durability: Some maintenance is required to keep porous surface clear. Material is not suited to highly trafficked surfaces.



E.2.5. Site Walls

E.2.5.1. Site Wall Finish: Type 1

E.2.5.1.1. Material or Product: Fieldstone Wall Facing.

E.2.5.1.1. Description: Dressed fieldstone wall facing with granite coping and edging, to match existing facing at bridge abutments at Pentagon Reservation and George Washington Memorial Parkway. Wall structural construction as required by specific use and location.

E.2.5.1.2. Requirements:

Opening edges to be Granite set in regular coursed ashlar running bond and arched form. Wall plane to be mixed colors of fieldstone set in random, broken coursed ashlar pattern. Fieldstone on the Reservation is believed to match other bridges along GW Parkway. Historic American Building Survey records indicate mixed color Mica-Schist quarried locally at Stoneyhurst Quarry in Cabin John, MD. This quarry may be closed, but similar stone is available from the supplier listed below.

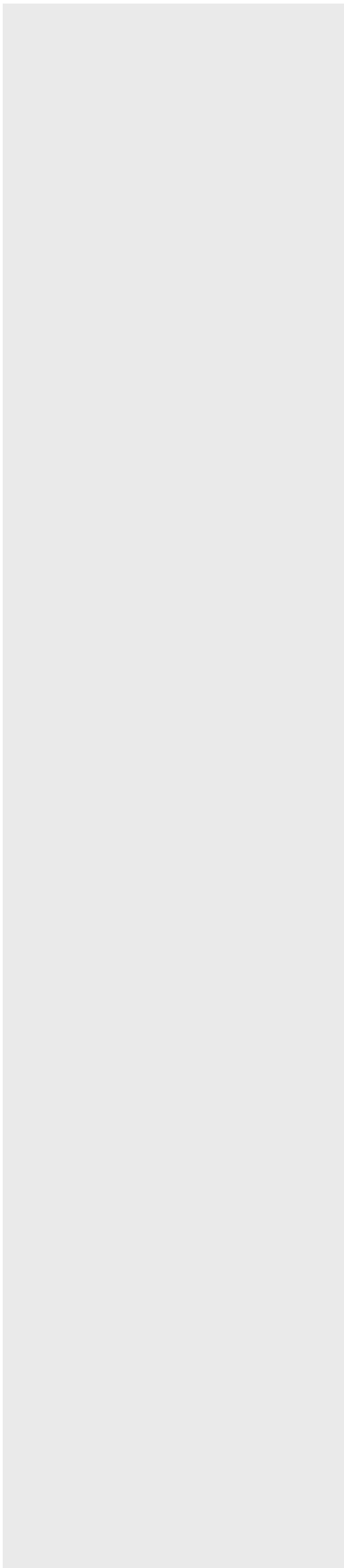
Selection of new matching granite and fieldstone shall be conducted by design contractor and once approved by WHS, the specific types shall be incorporated into this manual which shall become the reservation standard. See Manual Updating Process.

Potential Source:
Tri-state Stone
8200 Seven Locks Road
Bethesda, MD 20817
301-365-2100
www.carderock.com

E.2.5.1.3. Standards/References:

E.2.5.1.4. Sustainability: Utilize locally sourced material to the extent possible.

E.2.5.1.5. Durability: Properly detailed, fieldstone is highly durable and low maintenance.



E.2.5.2. Site Wall Finish: Type 2

E.2.5.2.1. Material or Product: Limestone Wall Facing.

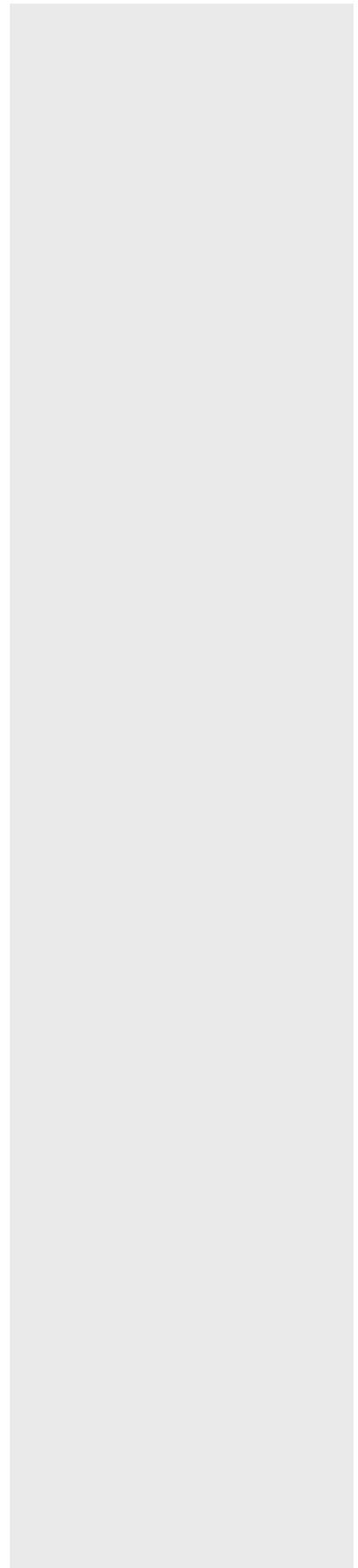
E.2.5.2.2. Description: Ashlar limestone wall facing and coping, to match existing historic facing at Mall and River Terraces, unless alternates are approved after all historic preservation requirements have been fulfilled. This type is to be used near the Pentagon Building and at new construction with a prominent position on the Reservation.

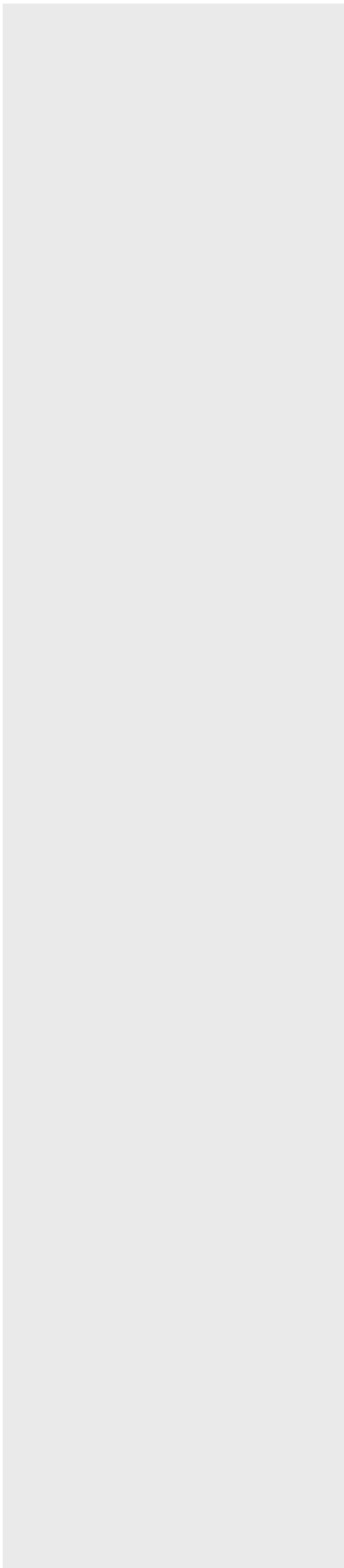
E.2.5.2.3. Requirements: See Building Elements: Wall Finish Type 1.

E.2.5.2.4. Standards/References: See Building Elements: Wall Finish Type 1.

E.2.5.2.5. Sustainability: See Building Elements: Wall Finish Type 1.

E.2.5.2.6. Durability: See Building Elements: Wall Finish Type 1.





E.2.5.3. Site Wall Finish: Type 3

E.2.5.3.1. Material or Product: Cast-in-Place Concrete (Historic Mix).

E.2.5.3.2. Description: Match historic cast-in-place concrete with smooth finish, unless an alternate is approved after all historic preservation requirements have been fulfilled. Visible board or grained plywood forms not allowed.

The mix contains all natural colors, and requires no artificial coloring. Utilize materials and resources from source to produce concrete that matches historic installations in color and texture.

Assumed original site wall at the River Terrace remains in place. New construction is to use similar design with concrete coping.

E.2.5.3.3. Requirements: See Building Elements: Wall Finish Type 2.

E.2.5.3.4. Standards/References: See Building Elements: Wall Finish Type 2.

E.2.5.3.5. Sustainability: See Building Elements: Wall Finish Type 2.

E.2.5.3.6. Durability: See Building Elements: Wall Finish Type 2.





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E.2.5.4. Site Wall Finish: Type 4

E.2.5.4.1. Material or Product: Cast-in-Place Concrete “Rusticated” Wall Facing.

E.2.5.4.2. Description: Cast-in-place concrete wall facing to mimic rusticated stone, to match existing facing at Pentagon RDF perimeter wall.

E.2.5.4.3. Requirements: [Per RDF Specifications]

Reference E.2.2.1 for list of suppliers.

E.2.5.4.4. Standards/References:

E.2.5.4.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.5.4.6. Durability: Properly mixed, formed, and placed, concrete is highly durable and low maintenance.



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E.2.6. Manhole Covers

E.2.6.1. Manhole Cover: Type 1

E.2.6.1.1. Material or Product: Cast Iron Manhole Cover.

E.2.6.1.2. Description: Cast iron manhole cover with customized design for use in prominent locations.

E.2.6.1.3. Requirements: Cast iron (grey iron) non-rocking manhole cover with custom Pentagon logo. Provide security seal as required.

Potential Sources:

East Jordan Iron Works
301 Spring Street
East Jordan, MI 49727
800.874.4100
www.ejiv.com

O.K. Foundry Company, Inc.
1005 Commerce Rd.
Richmond, VA 23224
804-233-9674
www.okfoundrycompany.com

Neenah Foundry Co.
2121 Brooks Avenue,
Neenah, WI 54956
800-558-5075
www.nfco.com

E.2.6.1.4. Standards/References:

E.2.6.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.6.1.6. Durability: Cast iron is highly durable and low maintenance.



Promote **YOUR** identity

Customize **YOUR** Casting

Gaining in popularity, custom covers may feature a slogan, logo, mascot or a popular characteristic. EJIW provides custom logo and lettered covers for many municipalities, utilities and universities in a multitude of cover designs. Specialized lettering, in any language, lets you specify the city, corporation and type of structure beneath the cover. Customized logos and lettering are available on a wide selection of EJIW manhole covers.



YOUR CUSTOM LOGO AND LETTERING HERE!



E.2.7. Storm Grates

E.2.7.1. Storm Grate: Type 1

E.2.7.1.1. Material or Product: Storm Grate.

E.2.7.1.2. Description: Cast iron storm grate with bicycle-safe openings.

E.2.7.1.3. Requirements: Model “R33-62L-48”, by Neenah, or equal.

Potential Sources:

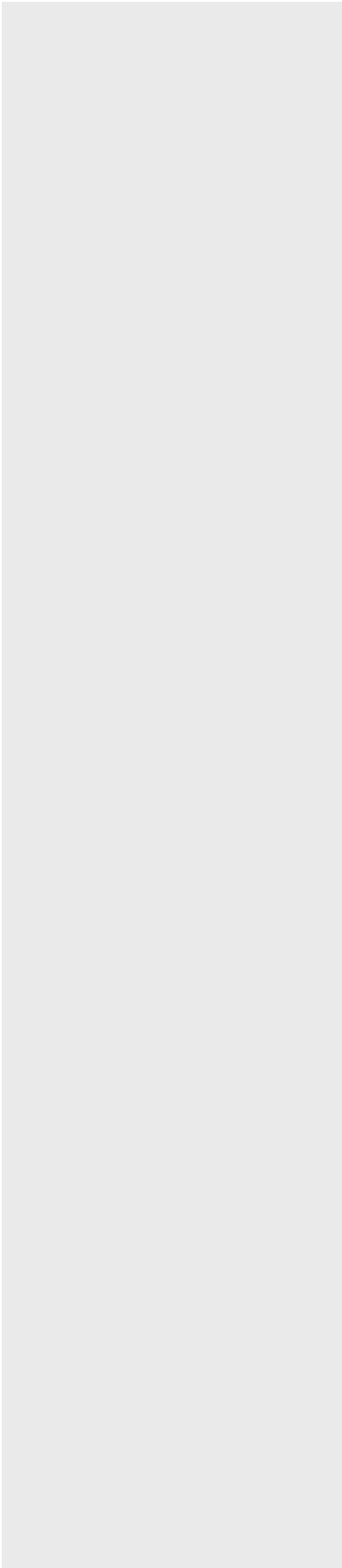
Neenah Foundry Co.
2121 Brooks Avenue,
Neenah, WI 54956
800-558-5075
www.nfco.com

ABT, Inc.
PO Box 837
259 Murdock Road
Troutman, NC 28166
800-483-6057
www.abtdrains.com

E.2.7.1.4. Standards/References:

E.2.7.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.7.1.6. Durability: Cast iron is highly durable and low maintenance.



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E.2.8. Fencing

E.2.8.1. Fencing: Type 1

E.2.8.1.1. Material or Product: Metal Fencing.

E.2.8.1.2. Description: Painted metal fencing to match existing at Pentagon Memorial.

E.2.8.1.3. Requirements: Fusion welded, painted, galvanized steel fencing in configuration to match existing, with no finials. Height to match existing. Factory finish with high-performance powder coating system utilizing epoxy powder base coat and polyester top coat. Color black.

Fencing to be constructed with the following components:

- Pickets: 3/4" Square x 14 Ga.
- Rails: 1-7/16"x1-1/2"x14 Ga. (Ribbed)
- Posts: 2-1/2" Sq. x 12 or 14 Ga.

"Montage Plus/Majestic M3" by Ameristar.

(Substitute designs not accepted; contracting competition requirements may result in an alternate source).

Potential Source:

Ameristar Fence Products

1555 North Mingo

Tulsa, OK 74116

800-321-8724

www.ameristarfence.com

E.2.8.1.4. Standards/References:

E.2.8.1.5. Sustainability: Utilize recycled content to the extent possible.

E.2.8.1.6. Durability: Painted metal requires some regular maintenance.

Montage Plus®

Fencing: TYPE 1

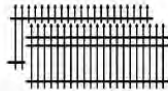
Fusion Welded Steel Construction

Montage Plus® is crafted with an inherent beauty that adds a decorative touch to any landscape. The fusion welded steel construction makes it applicable for all types of commercial installations such as retail businesses, storage facilities, schools, health care facilities and golf courses and recreational parks. The maintenance-free electro-deposition coating (E-Coat) makes Montage Plus® suitable for any climate, hot or cold, wet or dry; Ameristar® uses the same cyclic testing technology used in the automotive industry to ensure that the coating will withstand repeated shifts in temperature and humidity.

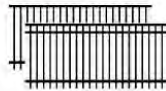
COMPONENT SIZES

System	Pickets	Rails	Posts
Montage Plus® Commercial	3/4" x 16 GA.	1-7/16" x 0.072 Top 1-1/2" x 0.072 Sides	2-1/2" Square x 16 Ga.

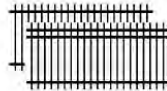
STYLES



CLASSIC™
Style C2 (2-Rail)
Style C3 (3-Rail)



MAJESTIC™
Style M2 (2-Rail)
Style M3 (3-Rail)



GENESIS™
Style G2 (2-Rail)
Style G3 (3-Rail)

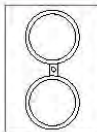
ADORNMENTS



Quad Flare



Triad



Ring



Ball Cap



GATES

Gates are fabricated by welding Montage Plus® panel material to 1-3/4" square gate ends.

DESIGN ADVANTAGES

• All Terrain fence (ATF)™ Panel Design

Architectural design and construction technology have progressed to enable new facility construction on rough and uneven terrain that was previously considered unfeasible for permanent structures. Montage Plus® ATF maintains its rigid strength, while adapting to slopes as severe as a 30 inch rise in an 8 foot run.



• Pool, Pet & Play (PPP)™ Picket Space Option

In many cases related to child care, public swimming pools, and containment, a narrower space may be desired or required for added safety or security. Montage Plus® offers the optional 3" space.



• Flush Bottom Rail Option

For some applications, a flush bottom rail may be necessary to meet local building codes or simply to meet an aesthetic preference.

WARRANTY

The E-Coat combination of galvanized steel, zinc phosphate pre-treatment, and epoxy and acrylic double coating provide the protection necessary to withstand adverse weathering effects and justify the 'best-in-the-business' 20 Year Warranty.

COLORS, AVAILABILITY & MAINTENANCE

Montage Plus® color chip samples can be requested for actual color. Availability and maintenance information are the same as for the Aegis II® and Aegis Plus® steel fence systems.

E.2.8.2. Fencing: Type 2

E.2.8.2.1. Material or Product: Metal Security Fencing.

E.2.8.2.2. Description: Painted metal security fencing to match existing at Pentagon Reservation perimeter.

E.2.8.2.3. Requirements: Painted, galvanized steel fencing in configuration to match existing, with “trident” style pales. Height to match existing. Factory finish with high-performance powder coating system utilizing epoxy powder base coat and polyester top coat. Color black.

Fencing to be constructed with the following formed steel components:

- Pickets: high-strength corrugated shape, 3/4” x 2-3/4”, with trident head.
- Rails: 2” x 2-1/2”
- Posts: I-beam shape, 1-3/4” x 4”

“Impasse/Trident T3” by Ameristar.

(Substitute designs not accepted; contracting competition requirements may result in an alternate source).

Potential Source:

Ameristar Fence Products

1555 North Mingo

Tulsa, OK 74116

800-321-8724

www.ameristarfence.com

E.2.8.2.4. Standards/References:

E.2.8.2.5. Sustainability: Utilize recycled content to the extent possible.

E.2.8.2.6. Durability: Painted metal requires some regular maintenance.

Detect

Deter

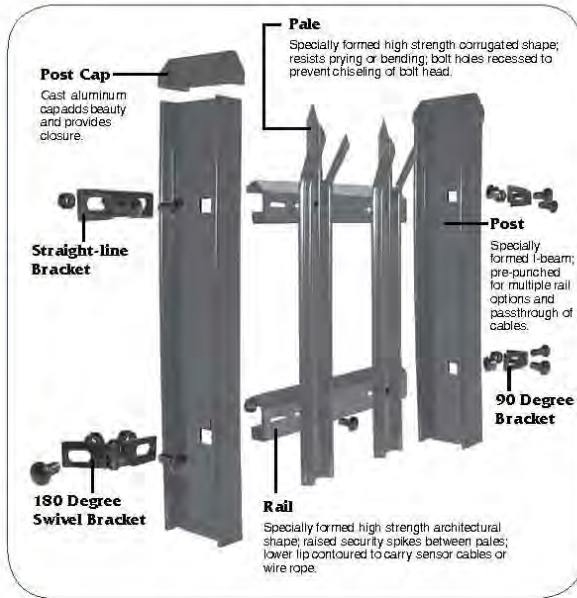
IMPASSE®

Ornamental Pale Security Fence

Delay

Deny

Traditional security fences of chain-link or wire mesh and barbed razor tape are no longer enough to meet today's increased security demands. They do not delay serious attacks or intrusion attempts for more than a few seconds. Ameristar's (Patent Pending) Impasse Security Fence offers the resistive strength of heavy-duty steel spears secured vertically to a framework of specially formed steel rails and I-beam posts. The stylish design of the Impasse, combined with its strength and security, provides a successful first line of defense. The structural configuration of the Impasse system not only delays aggressive attacks, but also allows for the seamless integration of additional security features such as anti-ram cables, sensors and alarm systems.



Standard security features of the Impasse® fence include the unique roll-formed Impasse® I-beam which acts as a strong barrier to support the entire fence system. The mounting bracket, a solid steel flat bar, fits through slotted holes pre-punched into the post. Heavy stainless steel tamperproof nuts and bolts attach adjacent rails to either end of the mounting bracket, ensuring a solid and secure connection. Tamperproof carriage bolts fit snugly into the recessed depression on the face of each pale, deterring attempts to pry or chisel the bolt head.

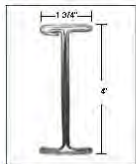


Break-Away Hex Nut

Stainless steel security nut prevents tampering or removal by normal tools.

The Impasse® Pale (picket) is designed with a special corrugated shape to ensure greater resistance to bending loads, particularly with attempts at pale separation.

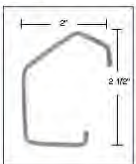
Impasse® I-Beam



Structural Parameters	Impasse® I-Beam	Std RSJ H-Post	Square Post	Round Post
Architectural Profile of Post				
Bending Strength (lb/in)	93,700	68,875	36,950 54,520	24,400 43,900

NOTE: Materials roll-formed to achieve a double wall effective thickness of 0.200"

Impasse® Rail



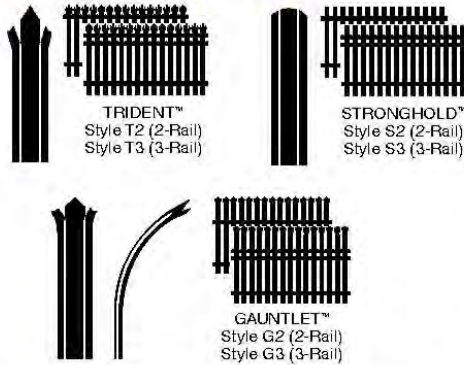
Structural Parameters	Impasse® Rail	Std RSA Rail	U-Channel Rail	Square Rail	Round Rail
Architectural Profile of Rail					
Design Load (Vert)	P_{vd} 6" Span: 425 P_{vd} 8" Span: 319	338 253	178 134	211 158	191 143



COMPONENT SIZES

System	Pales	Rails	Posts
Impasse® High Security	3/4" x 2-3/4"	2" x 2-1/2"	1-3/4" x 4"

STYLES



Also available 4-Rail and 5-Rail

COLORS

Request Color Chip samples for actual color



BIASABILITY

No Stair Stepping Required



Panel will rack over 30 degrees without special drilling or assembly operations.

GATES



Contact the Ameristar Architectural Department for detailed information and literature on gates.

WIND LOADING

Height (FT)	Rail Length	I-Post Size	Impasse® Wind Load Capacity Factor (PSF)	Wind Speed Capacity (3 Second Gust) (MPH)
6	6	1-3/4x4x12Ga	100.3	206.8
	8	1-3/4x4x12Ga	75.3	179.1
7	6	1-3/4x4x12Ga	73.8	177.4
	8	1-3/4x4x12Ga	55.3	153.5
8	6	1-3/4x4x12Ga	56.5	155.2
	8	1-3/4x4x12Ga	42.4	134.4
9	6	1-3/4x4x12Ga	44.6	137.9
	8	1-3/4x4x12Ga	33.5	119.5
10	6	1-3/4x4x12Ga	36.1	124.1
	8	1-3/4x4x12Ga	27.1	107.5

Note: Mph calculated using ANSI/ASCE 7-98, "American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures" Exposure Category C (open terrain with scattered obstructions having lengths generally less than 30 feet). For wind loading applicable to a particular specification, consult the appropriate Building Code.

PERMACOAT® FINISH

See Pages 4 and 5 for a detailed discussion of the PermaCoat® process and its comparative advantages over other coating systems.

AVAILABILITY

Shipping

Impasse® security fence components (e.g., pales, rails, posts, etc.) are carefully layered in bulk on special pallets to ensure the most economical damage-free shipping.

Ordering Information

To order, simply specify the fence or gate design series, color and height desired. Then figure and provide the quantities needed. Contact Ameristar® for the nearest distributor or if any other assistance is needed.

WARRANTY

A written 15 year limited warranty is extended on Ameristar's Impasse® fence systems. Call Ameristar® for a copy.

MAINTENANCE

Little or no maintenance is required for the fence and gate systems supplied by Ameristar®. The PermaCoat® epoxy and polyester coated steel in Impasse® will remain corrosion free for years to come. Damages to coated surfaces can be readily covered with Ameristar's matching custom finishes (either spray or paint pen application).

Trident™

Fencing: TYPE 2

The Impasse® Trident™ is designed for high-risk security applications. It is the most suited first line of defense to surround a military installation, a government complex, an airport or seaport, a nuclear or chemical plant, a munitions facility or armory, a reservoir, or any other facility in need of the utmost protection from the possibility of attack. High-tensile steel corrugated pales rise above the topmost rail and terminate with a menacing triple-pointed and splayed spear tip.



The Impasse Trident is made of high-tensile steel corrugated pales that rise above the topmost rail and terminate with a menacing triple-pointed and splayed spear tip.



Page 18

E.2.9. Bollards

E.2.9.1. Bollard: Type 1

E.2.9.1.1. Material or Product: Crash Rated Security Bollard.

E.2.9.1.2. Description: Powder-coated metal security bollard with crash rating. Fixed (non-operable) installation. Appearance is to match sketch concept below. All new bollards should follow the concept which calls for a base, main shaft in length as required by condition, a high collar and topped by a domed cap.

E.2.9.1.3. Requirements: Provide concrete-filled steel bollard with required crash/impact rating by Delta Scientific Corp. or approved alternate rater. Provide with custom cover with custom color powder-coated finish. Color to match Color 5. Level of crash resistance will depend on requirements of particular location. Crash rating can be achieved either by specified product or by engineer-designed solutions—see below.

Potential Sources:

Delta Scientific Corporation

7954 Angleton Court

Lorton, VA 22079

703-541-9114

www.deltascientific.com

Secure USA

4250 Keith Bridge Road

Cumming, GA 30041

888-222-4559

www.secureusa.net

Engineer-designed Solutions: Some bollard manufacturers do not provide crash-tested products, but their products can be part of an engineer-designed solution that provides equivalent crash resistance.

Provide steel bollard with required crash/impact rating by incorporating standard bollard product into complete design by structural engineer. Utilize fabricated finished bollard or cover plain steel bollard with a custom decorative sleeve. Note that existing bollards could be left in place and upgraded with a decorative sleeve. Provide modified B-1 Series style by Fair Weather Site Furnishings or approved alternate. Color to be: 5 BUFF (similar Benjamin Moore #RME-73-Briarwood) powder coating.



Potential Sources:
Fair Weather Site Furnishings
1540 Leader International Drive
Port Orchard, WA 98367
800-323-1798

www.fairweathersf.com

Reliance Foundry Co. LTD.
#207 - 6450 148th Street,
Surrey, British Columbia, Canada V3S-7G7
888-735-5680

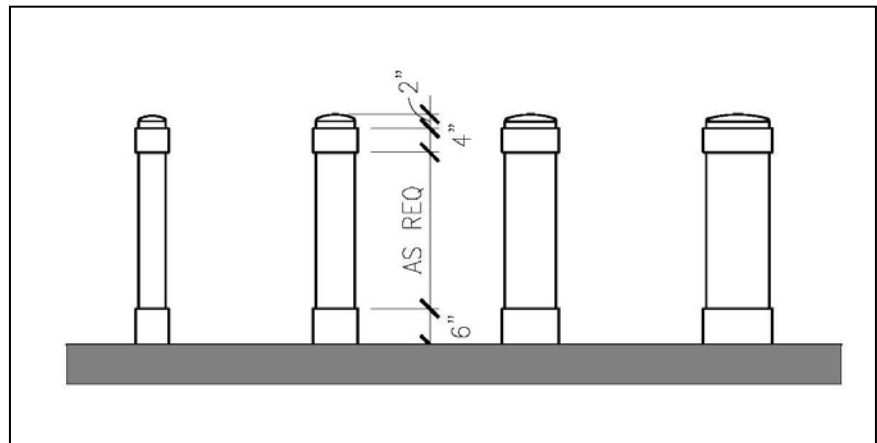
www.bollards.ca

E.2.9.1.4. Standards/References:

Whole Building Design Guide - Uniform Facilities Criteria - UFC 4-020-01 -
DoD Security Engineering Facilities Planning Manual.

E.2.9.1.5. Sustainability: Utilize recycled content to the extent possible.

E.2.9.1.6. Durability: Powder-coated metal is a durable finish.



E.2.9.2. Bollard: Type 2

E.2.9.2.1. Material or Product: Fixed Pedestrian Bollard.

E.2.9.2.2. Description: Powder-coated metal security bollard. Appearance is to match sketch concept below. All new bollards should follow the concept which calls for a base, main shaft in length as required by condition, a high collar and topped by a domed cap.

E.2.9.2.3. Requirements: Provide steel pedestrian bollard. Provide modified B-1 Series style by Fair Weather Site Furnishings. Bollard diameter size to be 4" or 6" as required by specific condition. Provide chains as required for pedestrian control. Provide with powder coating on bollards and chains. Color to be color 5 (similar Benjamin Moore #RME-73-Briarwood) powder coating. Note that existing bollards could be left in place and upgraded with a decorative metal sleeve in the same design.

Potential Sources:

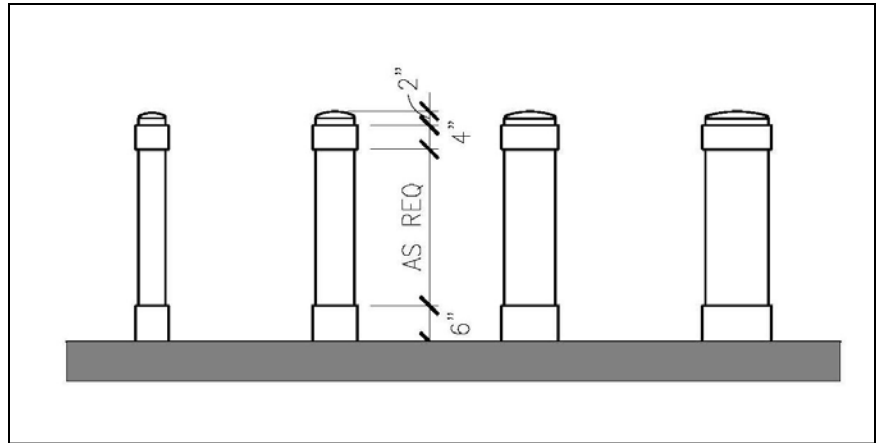
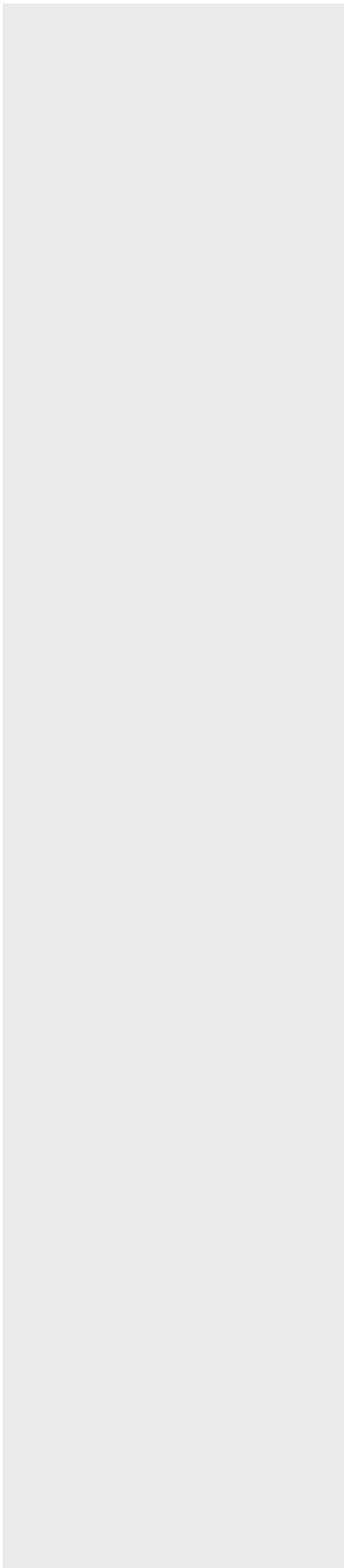
Fair Weather Site Furnishings
1540 Leader International Drive
Port Orchard, WA 98367
800-323-1798
www.fairweathersf.com

Reliance Foundry Co. LTD.
#207 - 6450 148th Street,
Surrey, British Columbia, Canada V3S-7G7
888-735-5680
www.bollards.ca

E.2.9.2.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-020-01 - DoD Security Engineering Facilities Planning Manual.

E.2.9.2.5. Sustainability: Utilize recycled content to the extent possible.

E.2.9.2.6. Durability: Powder-coated metal is a durable finish.



E.2.9.3. Bollard: Type 3

E.2.9.3.1. Material or Product: Removable Pedestrian Bollard.

E.2.9.3.2. Description: Powder-coated metal security bollard. Removable installation. Appearance is to match Bollard Type 2.

E.2.9.3.3. Requirements: Match Type 2 Bollard. Provide removable mounting to allow vehicle drive thru.

Potential Sources:

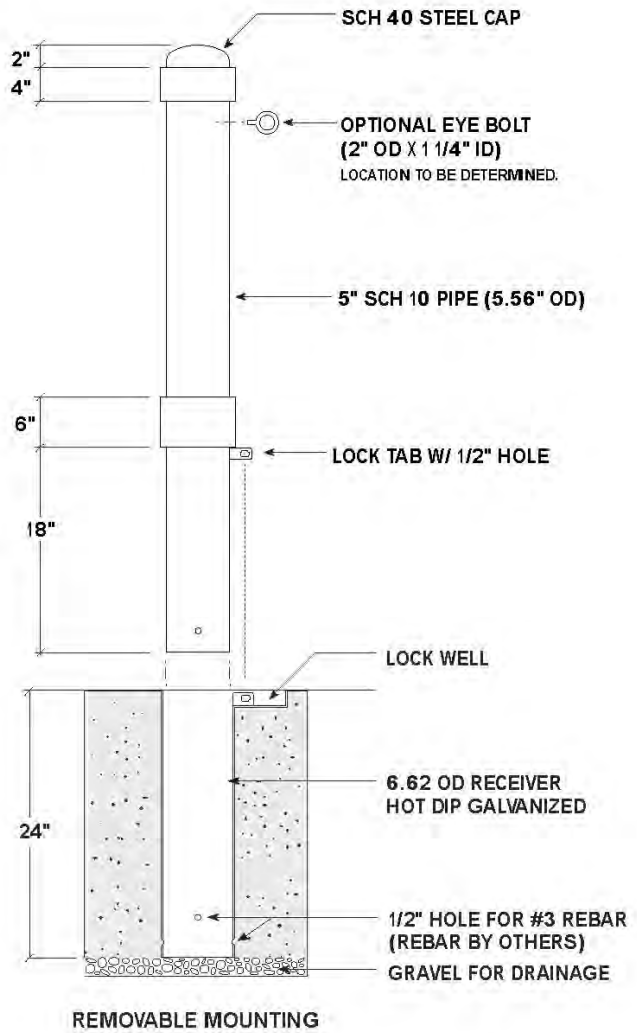
Fair Weather Site Furnishings
1540 Leader International Drive
Port Orchard, WA 98367
800-323-1798
www.fairweathersf.com

Reliance Foundry Co. LTD.
#207 - 6450 148th Street,
Surrey, British Columbia, Canada V3S-7G7
888-735-5680
www.bollards.ca

E.2.9.3.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-020-01 - DoD Security Engineering Facilities Planning Manual.

E.2.9.3.5. Sustainability: Utilize recycled content to the extent possible.

E.2.9.3.6. Durability: Painted metal requires some regular maintenance.



E.2.10. Vehicle Barriers

E.2.10.1. Vehicle Barrier: Type 1

E.2.10.1.1. Material or Product: Operable Vehicle Barrier.

E.2.10.1.2. Description: Crash rated, rising vehicle barrier with moving wedge. Recessed installation.

E.2.10.1.3. Requirements: Hydraulic, rising barricade. Provide K-12 crash rating certified by U.S. Dept. of Defense. Delta Model TT205 or equivalent. Powder-coated finish on all exposed components, Color 1 or 1A. Provide white "STOP" lettering.

Potential Sources:

Delta Scientific Corporation

7954 Angleton Court

Lorton, VA 22079

703-541-9114

www.deltascientific.com

SecureUSA

4250 Keith Bridge Road

Cumming, GA 30041

888-222-4559

www.secureusa.net

E.2.10.1.4. Standards/References:

Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-020-01 - DoD Security Engineering Facilities Planning Manual.

E.2.10.1.5. Sustainability: Utilize recycled content to the extent possible.

E.2.10.1.6. Durability: Products from reputable manufacturer may be more reliable. Painted metal requires some regular maintenance.

TT SERIES - Crash Rated Rising Road Barricades

Vehicle Barrier: TYPE 1

BARRICADE SIZE:

TT205 24"(610mm):TT20730" (762mm)
TT207S 38" (965mm). **BARRICADE WEDGE LENGTH:** Sized to suit application.

CRASH RATING:

The TT207S has been awarded the performance evaluation per Dept of State specification SD-SDT-0201 (April 1985-J-K12/L3.0.

Level 1 = Normal operation, vehicle stopped and Barricade operational. Level 2 = High Energy attack. Vehicle stopped, Barricade sustained damage.

TT205:

L1 .15,000lbs at 63mph (66.7kn at 101 kph)
L1 .22,500lbs at 52mph (100kn at 84kph)
L2 .15,000lbs at 75mph (66.7kn at 120kph)
L2.33,000lbs at 50mph (147kn at 81 kph)

TT207:

L1 .18,000lbs at 58mph (80.0kn at 93kph)
L1 .22,500lbs at 54mph (100kn at 87kph)
L2.30,000lbs at 55mph (133kn at 89kph)
L2.60,000lbs at 40mph (267kn at 64kph)

TT207S:

L1 .15,000lbs at 72mph (66.7kn at 116kph)
L1 .20,000lbs at 65mph (88.9kn at 105kph)
L2.20,000lbs at 78mph (88.9kn at 126kph)
L2.33,000lbs at 61 mph (147kn at 98kph)

STANDARD FEATURES:

Hydraulic or Pneumatic powered from remote unit, the barricade is powered up and lowered by means of hydraulic or pneumatic cylinders. This control circuit is

designed so that at all times in its cycle the barricade is prepared for an impact, there being no window of vulnerability. Multiple barricades can be powered from a single power unit. Barricades can be supplied to remain UP or to LOWER on mains power failure. Power units supplied for installation in suitable location. GRP or steel enclosures are available. The control system is designed to provide precisely controlled power to the barricades on a reliable basis with the minimum of maintenance. System design allows barricades to be separated from the power source by 50ft as standard, but line lengths up to 150ft can be provided for, with operational speeds being maintained.

POWER OFF OPERATION:

The Delta power source can provide for operation of the barricade(s) during mains failure, maintaining site security at all times. The system can be recharged using the manual hand pump for periods of extended mains failure. Power off barricade cycles designed to suit site requirements. A 24Vdc battery backed up control circuit is optional.

EMERGENCY FAST

OPERATION:

The Delta barricade design incorporates an Emergency Fast Operation circuit allowing the barricade to fully raise in under 1.5 seconds. Normal operating speeds are field adjustable, normally 4 sees.

CONSTRUCTION:

Delta TT series barricades are manufactured from heavy steel welded

components complying with crash certification. Axle loading in EXCESS of 20 tons as standard. The barricade is raised, locked and lowered by means of a precision hydraulic or pneumatic cylinder. Finished in black epoxy with yellow markings to rising wedge. Other finishes available.

CONTROLS:

The control circuit provides for both MASTER and SLAVE stations, providing ultimate control.

SAFETY:

Delta recommend that rising barricade system designs incorporate safety induction road loops or other safety devices. Barricades incorporate limit switch for traffic light sequencing.

ELECTRICAL:

280/230/460 VAC - 3ph-60Hz
220/380/440 VAC - 3ph-50Hz Other voltages available

INSTALLATION:

Detailed drawings and full installation/maintenance and operation manuals are supplied with each system.

AXLE LOADINGS:

Delta barricades are capable of taking axle loadings in excess of any permitted North American or European road transport vehicles.

DELTA SCIENTIFIC CORPORATION:

24901 West Avenue Stanford
Valencia, CA 91355 USA
Tel: (661) 257-1800 Fax: (661) 257-0617
Email: info@DeltaScientific.com

DELTA SCIENTIFIC CORPORATION Eastern Operations

7902-A Hill Park Court
Lorton, VA 22079
Tel: (703) 541-9114 Fax: (703) 541-9117
Email: info@DeltaScientific.com

DELTA SCIENTIFIC CORP. (UK) LTD:

Delta House, 70 South View Avenue,
Caversham Reading, Berkshire, RG4 5BB
UK. Tel: (44) 0 118 948 1133 Fax: (44) 0
118 948 1122
Email (UK): deltasuk@aol.com

Web: <http://www.DeltaScientific.com>



ACTUAL CERTIFIED CRASH TEST OF THE TT207S, UNRETOUCHED PHOTOGRAPH

COMPLETE DESIGN, INSTALLATION AND CONSULTING SERVICES AVAILABLE WORLDWIDE.

Due to Delta's policy of continued product development, information herein is subject to change without notice. E. & O. E.



DELTA SCIENTIFIC CORPORATION

E.2.10.2. Vehicle Barrier: Type 2

E.2.10.2.1. Material or Product: Site Wall with Bems.

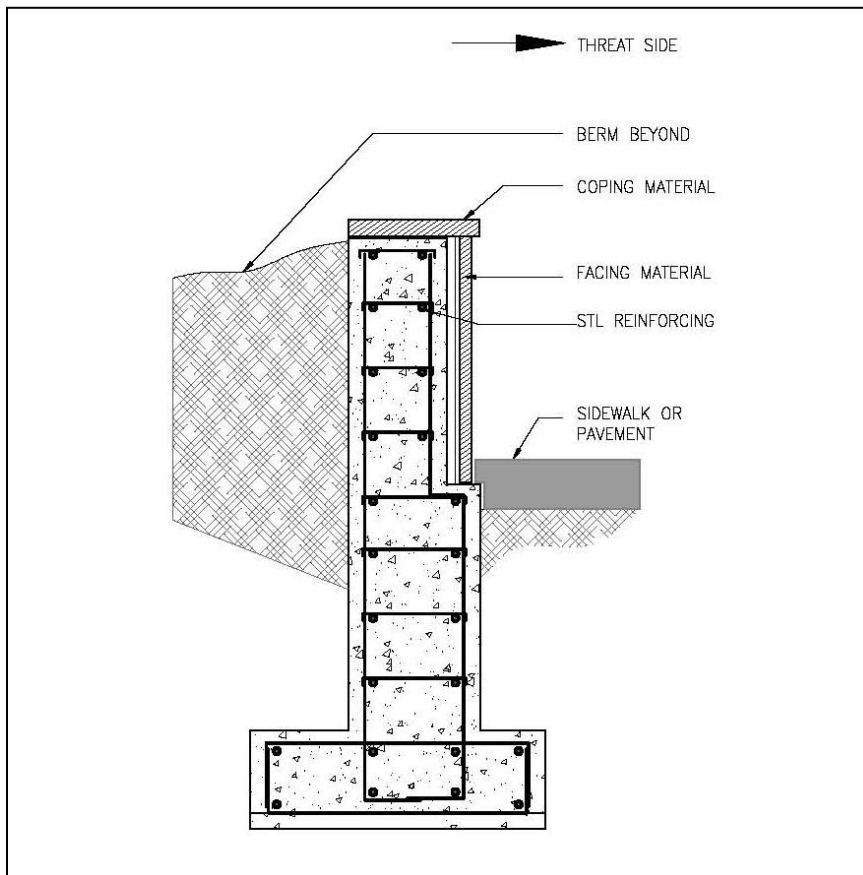
E.2.10.2.2. Description: Site wall (material as allowed per zone) with adjacent berm, designed for vehicle control.

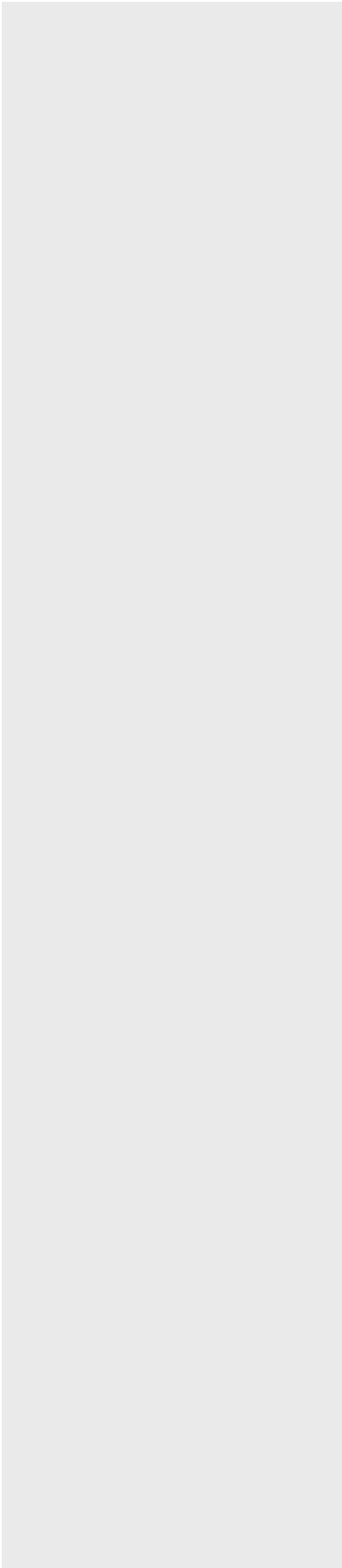
E.2.10.2.3. Requirements: See Site Elements: Site Wall Finish for allowable wall facing types. Provide design and engineering for required crash rating.

E.2.10.2.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-020-01 - DoD Security Engineering Facilities Planning Manual.

E.2.10.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible. Incorporate plantings per **General Landscape Design Guidelines**.

E.2.10.2.6. Durability: Reference Site Elements: Wall Finishes





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E.2.10.3. Vehicle Barrier: Type 3

E.2.10.3.1. Material or Product: Site Wall.

E.2.10.3.2. Description: Site wall (material as allowed per zone) designed for vehicle control.

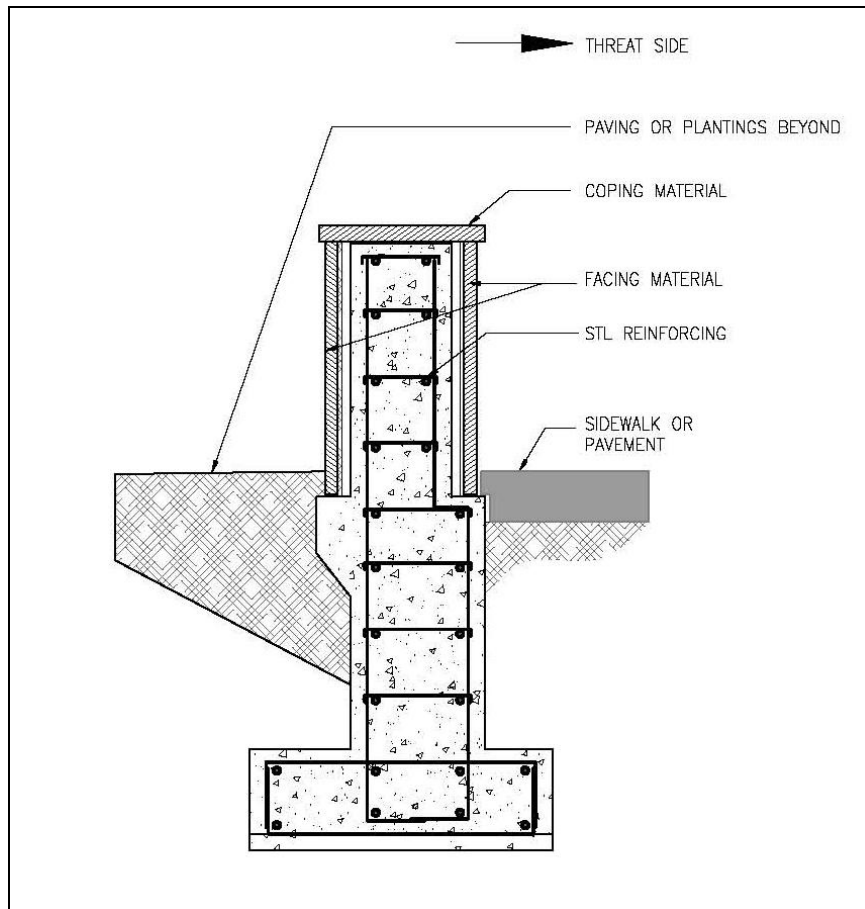
E.2.10.3.3. Requirements: See Site Elements: Site Wall Finish for allowable wall facing types. Design installation for required crash rating.

E.2.10.3.4. Standards/References:

Whole Building Design Guide - Uniform Facilities Criteria - UFC 4-020-01 - DoD Security Engineering Facilities Planning Manual.

E.2.10.3.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible. Incorporate plantings per **General Landscape Design Guidelines**.

E.2.10.3.6. Durability: Reference Site Elements: Wall Finishes.





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E.2.10.4. Vehicle Barrier: Type 4

E.2.10.4.1. Material or Product: Collapsible Pavement.

E.2.10.4.2. Description: Collapsible pavement system designed for vehicle control.

E.2.10.4.3. Requirements: Collapsible pavement system comprised of compressible concrete capable of supporting pedestrian traffic, but designed to collapse under the weight of a vehicle. The concrete bed may be covered with plantings or pavement.

“Tiger Trap” system by Engineered Arresting Systems Corporation, or approved alternate.

Potential Source:

Engineered Arresting Systems Corporation.

2550 Market Street

Aston, PA 19014

610-494-8000

www.esco.zodiac.com

E.2.10.4.4. Standards/References:

Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-020-01 - DoD Security Engineering Facilities Planning Manual.

E.2.10.4.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible. Incorporate plantings per **General Landscape Design Guidelines**.

E.2.10.4.6. Durability: Unknown.



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E.2.10.5. Vehicle Barrier: Type 5

E.2.10.5.1. Material or Product: Temporary Vehicle Barrier.

E.2.10.5.2. Description: Moveable concrete barrier to be used in long and short-term temporary conditions to provide more attractive alternative to standard “Jersey Barrier.”

E.2.10.5.3. Requirements: Pre-cast, reinforced concrete barrier with cap, base and paneled body. Barrier to be equal to “TF8055” by Wausau Tile, or approved alternate. Color to match “B-4 Weatherstone Buff”

Potential Sources:

Wausau Tile, Inc
Site Furnishings Division
PO Box 1520
Wausau, WI 54402
800-388-8728
www.wausautile.com

Universal Safety Response
277 Mallory Station Road, Suite 112
Franklin, TN 37067
615-224-0400
www.usrgrab.com

Concentric Security
7560 Main Street
Sykesville, MD 21784
800-854-0050
www.concentricsecurity.com

E.2.10.5.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-020-01 - DoD Security Engineering Facilities Planning Manual.

E.2.10.5.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.10.5.6. Durability: Concrete is a very durable material.



Rochester International Airport, MN

TF8055



Size:	96"L x 24"W x 35" H
Weight:	4000 Lbs.
Material:	Reinforced concrete
Reinforcing:	1/2" Dia. steel rebar
Logo Options:	Inkjet or cast
Features:	Fork lift slots

Weatherstone:

Gray - French Gray - Sand - Buff - Cream - Brown - Brick Red -
Light Charcoal - Souldard Green



Colors

Recycled Glass Aggregate (Weatherstone):

Clear - Emerald - Blue - Amber - Champagne - Charcoal



Finishes

Custom Options Available

Site Furnishing Division PO Box 1520, Wausau, WI 54402-1520 (800 388-8728)



E.2.11. Screening

E.2.11.1. Screening: Type 1

E.2.11.1.1. Material or Product: Vegetative Screening (Modular).

E.2.11.1.2. Description: Modular panelized screening system incorporating plant materials.

E.2.11.1.3. Requirements: Modular trellis system utilizing pre-manufactured, galvanized, welded wire panels. Factory finish with high-performance powder coating system utilizing epoxy powder base coat and polyester top coat. Color to be manufacturer's standard green or black. Other colors per finish palette.

Potential Source:

GreenScreen, Inc.

1743 S. La Cienega Boulevard

Los Angeles, CA 90035

www.greenscreen.com

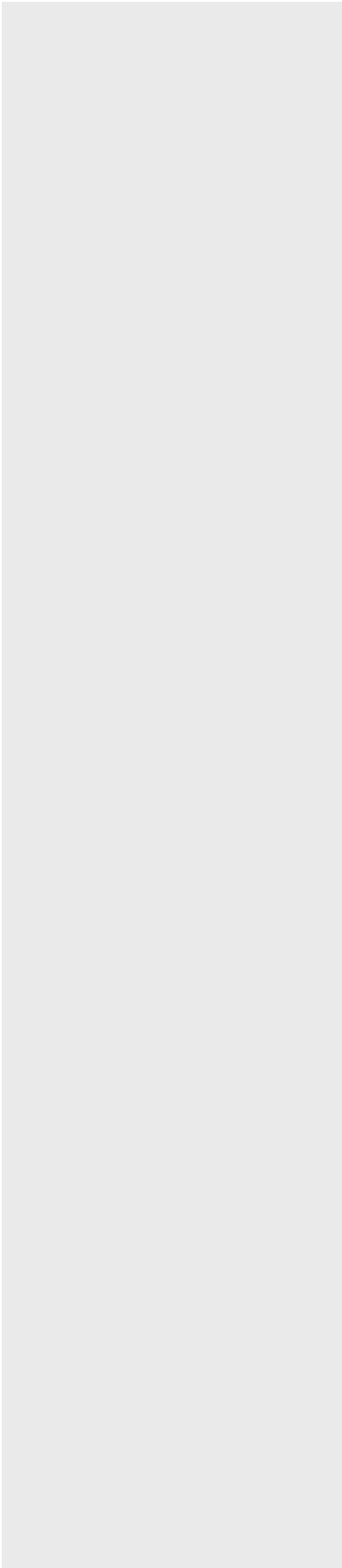
E.2.11.1.4. Standards/References:

Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

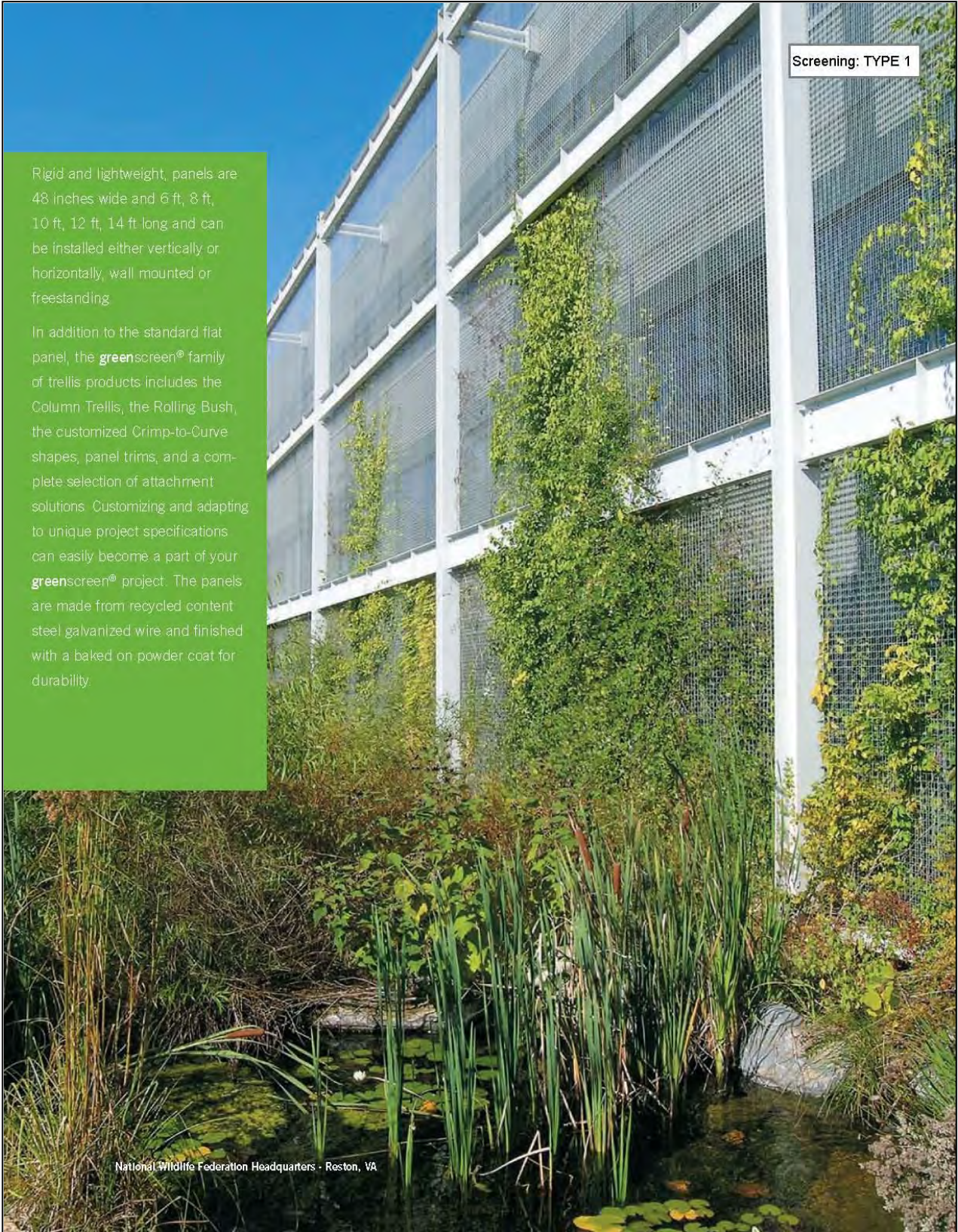
E.2.11.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible. Incorporate plantings per **General Landscape Design Guidelines**.

E.2.11.1.6. Durability: Dependent on landscaping selected. Painted metal may require some maintenance.





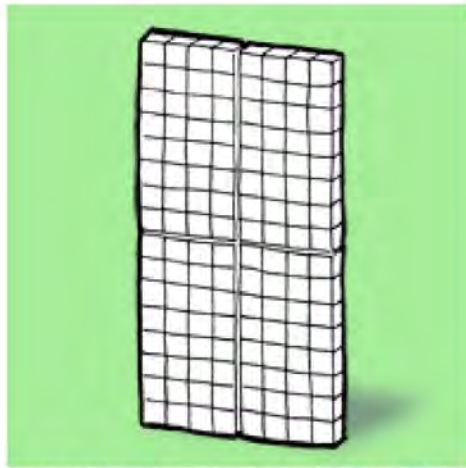
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Rigid and lightweight, panels are 48 inches wide and 6 ft, 8 ft, 10 ft, 12 ft, 14 ft long and can be installed either vertically or horizontally, wall mounted or freestanding.

In addition to the standard flat panel, the **greenscreen®** family of trellis products includes the Column Trellis, the Rolling Bush, the customized Crimp-to-Curve shapes, panel trims, and a complete selection of attachment solutions. Customizing and adapting to unique project specifications can easily become a part of your **greenscreen®** project. The panels are made from recycled content steel galvanized wire and finished with a baked on powder coat for durability.

National Wildlife Federation Headquarters - Reston, VA



Modular, Wall Hung Trellis Panels

for covering large areas of existing walls or facades

Size: 4' wide x 6', 8', 10', 12' or 14' tall x 2" or 3" thick also available in 2" increments up to 4' x 14' in multiple panels

Finish: galvanized wire panels with multigrade alkaline wash, epoxy thermal-set primer, and baked on powder coat finish in gloss green, black, silver, white; matte wrinkle green or wrinkle black.

Options: #5104 or #5105 trim, full range of mounting hardware



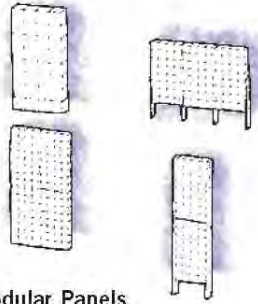
[previous](#) | [next](#)

http://greenscreen.com/Elements/element_2.html

basic elements

greenscreen® is a three-dimensional, welded wire trellising system.

The distinctive modular trellis panel is the building block of greenscreen.®



Modular Panels

Use for covering walls, as freestanding fences, screens or enclosures.

Standard Sizes:

width: 48" wide

length: 6', 8', 10', 12', 14'

depth: 2" or 3"

Custom dimensions available in 2" increments, length and width.

See our Accessory Items, Mounting Options and Detail Examples that work together to provide efficient solutions.



Column Trellis

Use as a vertical freestanding element or as a cover for existing posts. Coiled or flat for easy field installation in standard or custom diameters.

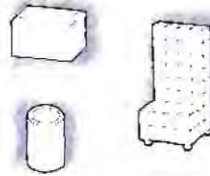
Standard Sizes:

dia: 15½"

height: 6', 8', 10', 12', 14'

Custom heights in 2" increments

thickness: 2" or 3" panel



Planter Options

Fiberglass Planter: 4 ft width allows for various height panels and can be placed in permanent or semi-permanent locations.

Column Planter: for attaching standard radius columns of varying heights, available with or without casters.

Rolling Bush: made with greenscreen® panels and an integral rolling planter for both climbing and trailing vines, ideal for both temporary or changing venues.



Crimp-to-Curve

Use for describing curved surfaces, for covering walls, as freestanding fences, screens, or enclosures.

Standard Sizes:

radius: standard radius 4 ft to 12 ft at 12" increments

length: 7 ft to 12 ft in 4" increments.

depth: 3" screen

Custom radius and lengths up to 12 ft available. Width variable in 2" increments, length variable in 4" increments.



Custom

Using our basic panel as the building block, we are always available to discuss creative options. Panels can be notched, cut "off grid" to create a taper, mitered and are available in crimp-to-curve combinations.

Colors

Our standard powder coated colors are gloss; green, black, silver, white; matte; wrinkle green or wrinkle black. Custom colors are available.



Accessories

greenscreen® is a complete trellis system that includes a versatile array of mounting clips for almost every application of panels and columns. Our trims are factory installed before finishing. All clips, posts and caps are finished to match your project colors. Our Accessory Items list, Mounting Options section, and Detail Examples all work together to provide efficient solutions.

E.2.11.2. Screening: Type 2

E.2.11.2.1. Material or Product: Vegetative Screening (Built-in-Place).

E.2.11.2.2. Description: Custom-built screening system incorporating plant materials.

E.2.11.2.3. Requirements: Custom-built trellis system utilizing stainless steel cabling, wire mesh, and fittings. Jakob Inc. products or equal.

Potential Sources:

Jakob Inc.

955 NW 17th Ave, Suite B

Delray Beach FL 33445

561-330-6502

www.jakob-usa.com

Carl Stahl DecorCable, Inc.

660 W Randolph St

Chicago, IL 60661-2114

800-444-6271

www.decorable.com

Hayn Enterprises, LLC

51 Inwood Road

Rocky Hill, CT 06067

800-346-4296

www.hayn.com

E.2.11.2.4. Standards/References:

Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

E.2.11.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible. Incorporate plantings per **General Landscape Design Guidelines**.

E.2.11.2.6. Durability: Dependent on landscaping selected. Stainless steel has good durability.

Adhesive-sucker climbers support themselves with short lateral shoots tipped with glandular discs that adhere to any surface, even those that are quite smooth. Although these plants require **no auxiliary means of support**, they can cause damage to buildings.

- Boston Ivy (*Parthenocissus tricuspidata*)

Adventitious root climbers require **no auxiliary means of support**. They attach themselves firmly to rocks, tree trunks or façades. These climbers, too, can cause damage to buildings.

- Ivy
- Climbing hydrangea
- Trumpet vine (*Campsis*)
- *Eucrymus tortuosa*

Vines twine around their supports as a result of the circular movement of their stem tips (circumnutation). Only a single vertical support (wire rope) is required.

- Wisteria, honeysuckle (*Lonicera*)
- Staff tree (*Celastrus*)
- Hops (*Humulus*)
- Morning glory (*Ipomoea*)

A ADHESIVE-SUCKER CLIMBER



B ROOT CLIMBERS



C VINES (TWINING PLANTS)



STRUCTURAL DAMAGE AND INSECTS

Climbing plants do not bore holes or cause cracks in the masonry. This is why most of them are harmless. Nevertheless, exceptions and potential hazards should not be disregarded. Certain climbers (e.g. the Ivy) can grow into joints and cracks, widening them, and thereby causing permanent damage. Collaboration with greening specialists helps to avoid such risks and to optimise the many benefits that result from greening a building.

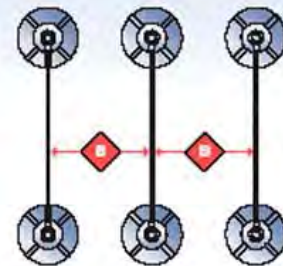
Greened façades replace the natural greenery that has become rare in urban environments and, at the same time, offer a new biosphere for animal life. Insects are more likely to be beneficial than harmful. They are essential for the pollination of numerous cultivated plants and also act as public health officers while serving as a basic food supply for other creatures. Regular inspections and trimming where it is necessary help to prevent damage and an invasion by unwelcome guests.

ROPE SPACING FOR VINES



for slow-growing to moderately vigorous climbers (e.g. *Lonicera*) approx. 200 – 400

for very vigorous climbers (e.g. *Wisteria*) approx. 400 – 800



DIMENSIONS

- The ideal height and width of the climber supports
- distances from wall
- wire rope spacing for vines
- lattice size
- wire rope or rod diameters

depend on the vigor, size and climbing pattern of the desired climber as well as on the architecture of the structure and the aesthetics of the greening concept.



10.1



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CLIMBING PATTERNS/TRAINING SYSTEMS Screening: TYPE 2

Leaf-stem climbers form coils around their supports with their leaf stems. Grid-like or reticular structures provide the best supports.

- Clematis (most varieties)
- Nasturtiums (Tropaeolum)

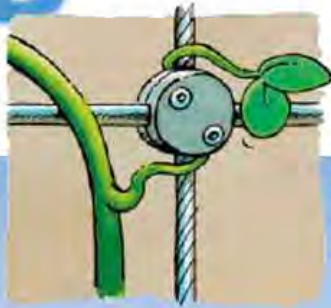
Leaf climbers develop clinging, often beautiful structures that respond to external stimuli. Grid-like or reticular structures provide optimum supports.

- Grape vines (Vitis)
- Ampelopsis
- Passion flowers (Passiflora)
- Cucurbitaceae

Scrambling plants work their way up by using epidermal outgrowths such as prickles, hook-like thorns and bristles.

- Climbing and rambler roses
- Bramble-like shrubs (Rubus)
- Winter-flowering jasmine

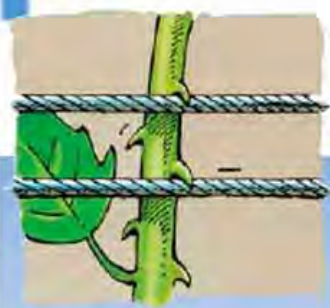
D LEAF-STEM CLIMBERS



E LEAF CLIMBERS



F SCRAMBLING PLANTS



LATTICE SIZES

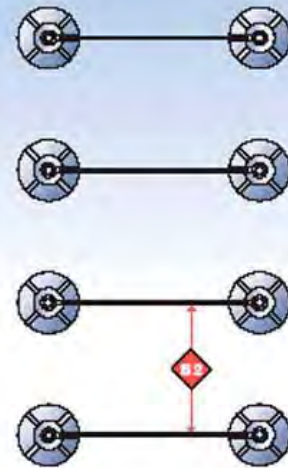
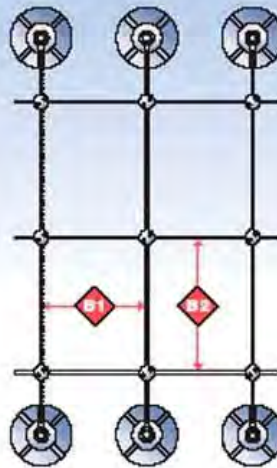
81 82 mm

for slow-growing to moderately vigorous climbers (e.g. Clematis)

approx. 150 x 250

for very vigorous climbers (e.g. Vitis)

approx. 300 x 500



CDEF

DISTANCES FROM WALL

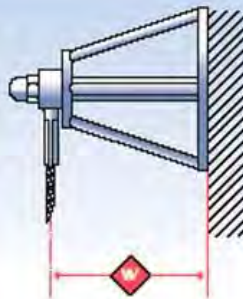
80 mm

for slow-growing to moderately vigorous climbers (e.g. Clematis, Lonkera)

approx. 80

for very vigorous climbers (e.g. Wisteria, Celastrus, Fallopia)

approx. 150

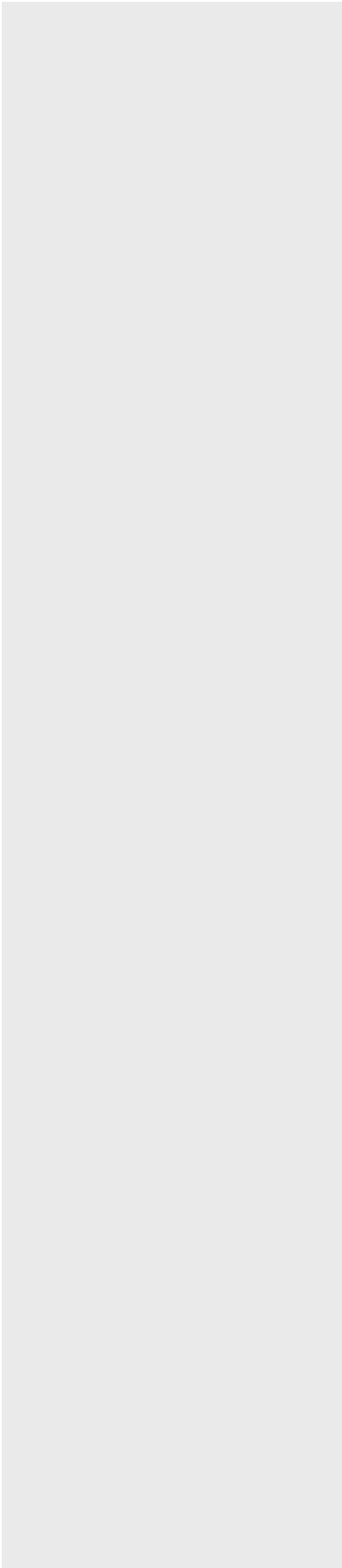


Plants with different climbing patterns can be combined perfectly well. The plants themselves as well as the configurational and aesthetic aspects determine the choice of the climbing supports. Any desired configuration can be created with the Jakob® INOX LINE.

Qualified greening specialists should be consulted when the plants are chosen.

The rope and rod diameters of the Jakob® INOX LINE can be used for all climbing and epalpered plants. Jakob® INOX LINE combines the practicability and aesthetic attributes with versatility, stability and durability.

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 an Fachhändler. © 2008 by GARDEN ALLIANCE GMBH



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E.2.11.3. Screening: Type 3

E.2.11.3.1. Material or Product: Vegetative Screening (Hedge).

E.2.11.3.2. Description: Continuous evergreen hedging.

E.2.11.3.3. Requirements: Plantings: evergreen hedging durable to climate and providing vision-obscuring coverage.

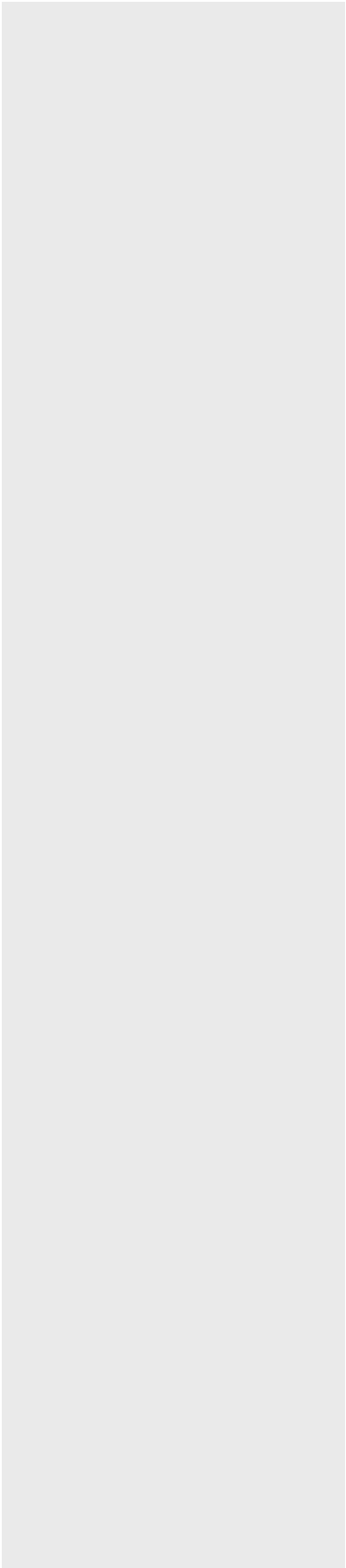
E.2.11.3.4. Standards/References:

Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

E.2.11.3.5. Sustainability: Utilize locally sourced plant material to the extent possible. Incorporate plantings per **General Landscape Design Guidelines**.

E.2.11.3.6. Durability: Dependent on landscaping selected.





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E.2.11.4. Screening: Type 4

E.2.11.4.1. Material or Product: Temporary Construction Screening.

E.2.11.4.2. Description: Wire mesh construction fencing with printed screening fabric.

E.2.11.4.3. Requirements: Galvanized steel mesh fencing system with fixed (in-ground) installation where possible. Provide continuous fabric screening to completely conceal mesh. Fabric to be printed in colors and design as determined in consultation with Director, Defense Facilities Directorate. Provide temporary plantings to soften appearance of fencing where feasible.

E.2.11.4.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria – UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings; UFC 4-020-01 DoD Security Engineering Facilities Planning Manual.

E.2.11.4.5. Sustainability: Utilize locally sourced materials and recycled content to the extent possible. Incorporate plantings per **General Landscape Design Guidelines**.

E.2.11.4.6. Durability: N/A



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E.2.12. Site Lighting

E.2.12.1. Site Lighting: Type 1

E.2.12.1.1. Material or Product: Pedestrian Light Standard (Courtyard).

E.2.12.1.2. Description: Exterior light standard with concrete pole and glass globe to closely replicate original fixture at Center Courtyard.

E.2.12.1.3. Requirements: Light standard to consist of the following components (all by Sternberg, or equal). All metal components to be pre-finished (powder coated) custom Color 1 or 1A.

- Pole: Tapered octagonal concrete, match height of existing courtyard poles, color to harmonize with historic limestone, etched finish. Model "CM Claremont", color "Ash White".
- Light Fixture: 27" high, prismatic acorn style fixture with cast aluminum fitter, cast ballast housing assembly, cast aluminum pineapple finial, and a high efficiency polycarbonate globe with semi-cutoff reflector. Model "Princeton 653" with Model "508" fitter (modified as required to fit concrete post), "BF" ball finial, "RSC" Semi-Cutoff Reflector.
- Lamping: 277V metal halide lamping with photocell control for dusk-to-dawn operation.

Potential Sources:

LIGHT FIXTURE & CONCRETE POLE

Sternberg Lighting

555 Lawrence Avenue

Roselle, IL 60172

847-588-3400

www.sternberglighting.com

StressCrete Group

1153 State Route 46 North

P.O. Box 266

Jefferson, Ohio 44047

800-268-7809

www.stresscrete.com

CONCRETE POLE

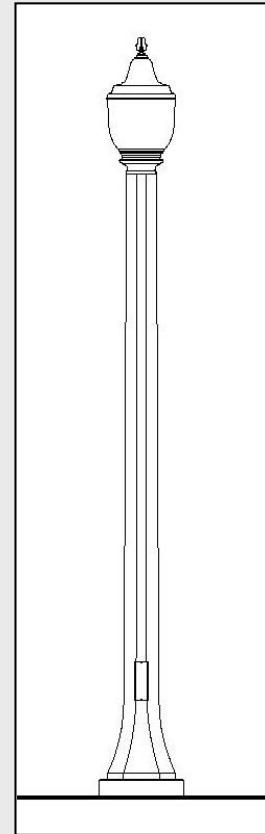
North Pacific

10200 SW Greenburg Rd

Portland, Oregon 97223

800-547-8440

www.northpacific.com





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E.2.12.14. Standards/References:

Whole Building Design Guide – Uniform Facilities Criteria – UFC 3-530-01 Design: Interior and Exterior Lighting and Controls, UFC 4-030-01 Sustainable Development.

E.2.12.15. Sustainability: Comply with performance criteria noted. Provide enhanced “Dark Sky” light cut-off features when available from mfg. Utilize recycled material to the extent possible.

E.2.12.16. Durability: Concrete poles provide long-term durability and low maintenance.



STERNBERG

Prismatic Acorns

Site Lighting: TYPE 1

A653 /A655 PRINCETON SERIES

SPECIFICATIONS

GENERAL

The A653/A655 Princeton series is a stylized Victorian acorn fixture which consists of a decorative cast aluminum fitter, cast ballast housing assembly and a high efficiency polycarbonate or acrylic prismatic acorn globe. It shall be appointed with a cast aluminum decorative 4-vane finial.

FITTER - STANDARD

The fitter shall be heavy wall cast aluminum, 319 alloy for high tensile strength. It shall have an 8" inside diameter opening to attach to the 8" neck of the acorn globe. When ordered with a Sternberg aluminum pole, the fitter shall be welded to the pole top or tenon for safety and to ensure the fixture will be plumb, secure and level over the life of the installation. The fitter shall have a one-piece ring bug gasket to resist insect penetration into lamp assembly.

FITTER -TL FOR QUICK & TOOL-LESS REMOVAL OF ACORN (OPTIONAL)

The fitter shall be heavy wall cast aluminum, 319 alloy for high tensile strength. It shall have a 9 1/4" inside diameter opening to attach to the 8" neck of the acorn globe. When ordered with a Sternberg aluminum pole, the fitter shall be set screwed to the pole top or tenon. The fitter shall have an aluminum die cast twist-lock mechanism for tool-less, 1/4 turn installation and removal of acorn globe. The acorn is provided with a die cast mating collar which is easily removed and reused if acorn replacement is ever performed.

980 FITTER OPTION

The fitter shall be heavy wall cast aluminum, 319 alloy for high tensile strength. It shall have a 9 1/4" inside diameter opening to attach to the 8" neck of the acorn globe. It shall have a hinged, tool-less entry door that provides open access to all of the components. The 980 shall have a terminal block for ease of wiring, an optional Roto-Lock Photo-cell receptacle, an optional GFIC outlet for auxiliary power needs. The top mounted ballast mounting plate shall be cast aluminum and provide tool-less removal from the housing using 2 ea finger latches. When ordered with a Sternberg aluminum pole, the fitter shall be set screwed to the pole top or tenon. The fitter shall have a one-piece ring bug gasket to resist insect penetration into lamp assembly.

980 FITTER -TL FOR QUICK & TOOL-LESS REMOVAL OF ACORN (OPTIONAL)

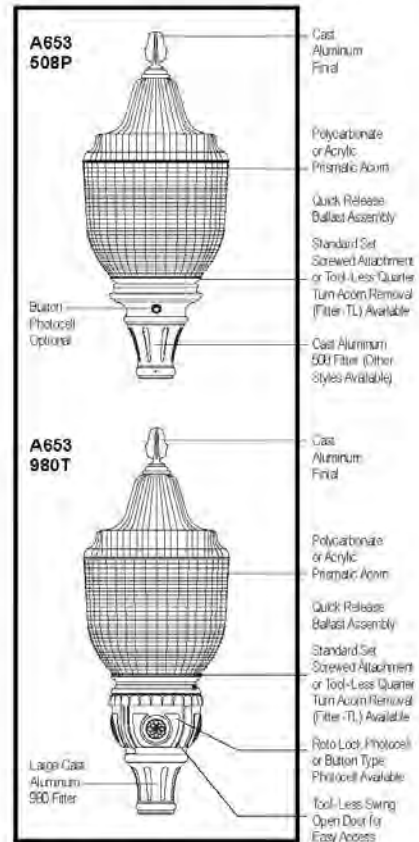
The fitter shall be heavy wall cast aluminum, 319 alloy for high tensile strength. It shall have a 9 1/4" inside diameter opening to attach to the 8" neck of the acorn globe. It shall have a hinged, tool-less entry door that providing an open access to all of the components. The 980 shall have a terminal block for ease of wiring, an optional Roto-Lock Photo-cell receptacle, an optional GFIC outlet for auxiliary power needs. The top mounted ballast mounting plate shall be cast aluminum and provide tool-less removal from the housing using 2 ea finger latches. When ordered with a Sternberg aluminum pole, the fitter shall be set screwed to the pole top or tenon. The fitter shall have a one-piece ring bug gasket to resist insect penetration into lamp assembly. The fitter shall have an aluminum die cast twist-lock mechanism for tool-less, 1/4 turn installation and removal of acorn globe. The acorn is provided with a die cast mating collar which is easily removed and reused if acorn replacement is ever performed.

BALLAST HOUSING

The ballast housing shall be heavy wall cast aluminum, 319 alloy for high tensile strength. The housing shall be cast as an integral part of the fitter to prevent water entry into the ballast compartment and to ensure high capacity heat sinking of ballast temperatures, keeping the ballast cooler and ensuring long life. The ballast mounting plate shall be cast aluminum and provide tool-less removal from the housing using 2 ea finger latches.

ELECTRICAL

Fixture shall be U.L. or E.T.L listed. H.I.D. ballasts shall be high power factor with lamp starting down to -30 degrees C. Medium base and mogul base porcelain sockets are 4KV rated. The ballast/socket assembly shall be pre-wired when



LIST NO.
A653 /A655
PRINCETON
SERIES

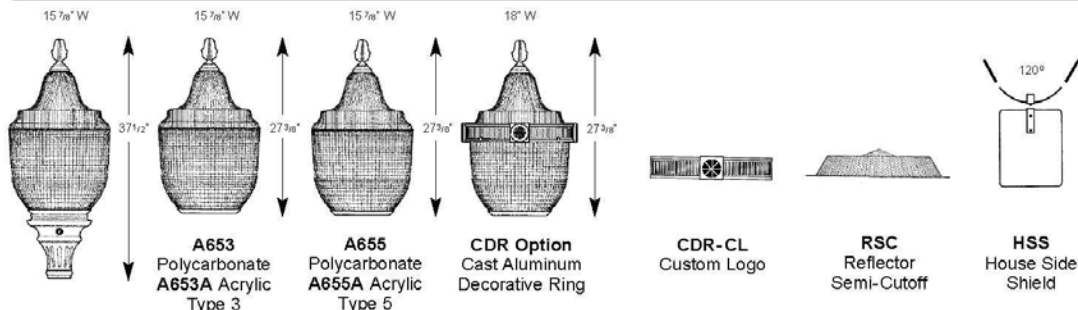
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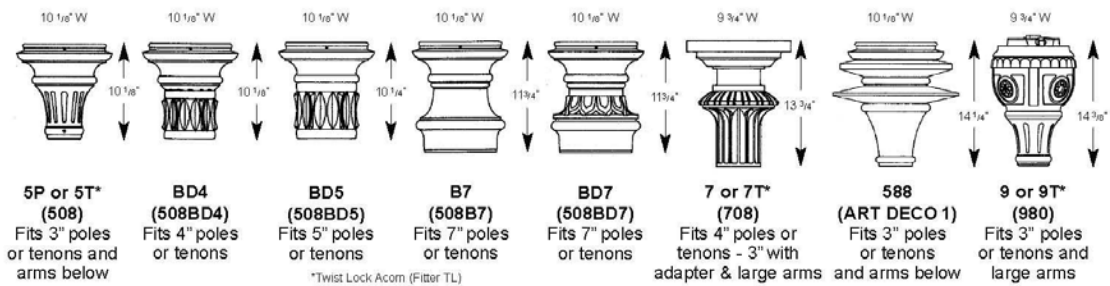
A653/A655 PRINCETON

ACORNS / FITTERS / ARMS PM - WB

ACORNS / OPTIONAL TOPS / OPTICAL SYSTEMS

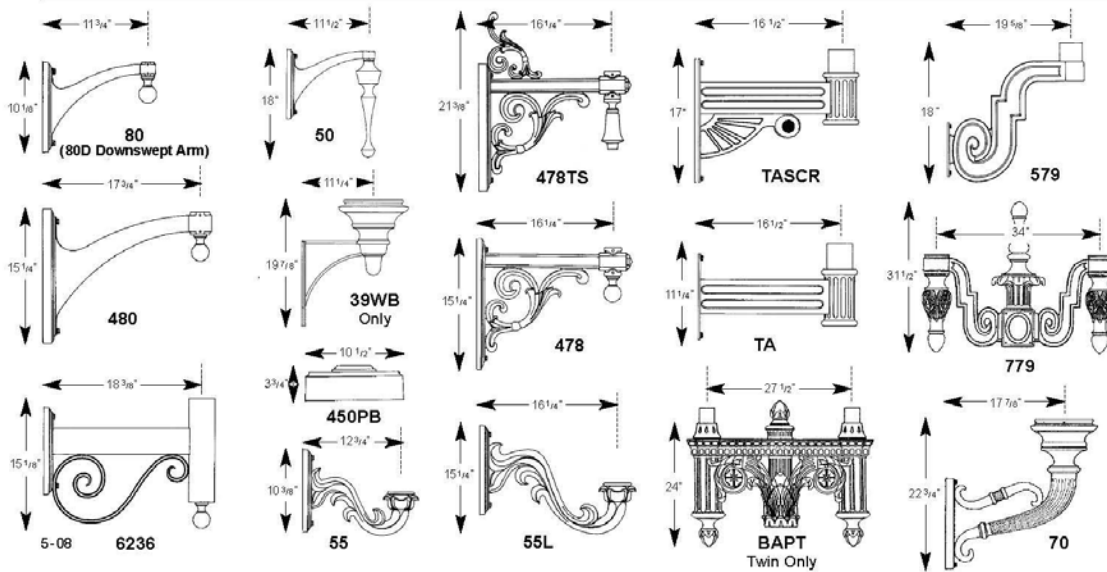


FITTERS



ARMS - POST MOUNT (PM) or WALL BRACKETS (WB)

See Arms Section for more information



CM CLAREMONT SPECIFICATIONS

GENERAL

The ___ ft tall decorative post shall be pre-stressed concrete construction. The 18" diameter diameter base shall be designed with a round lower section which quickly transitions into a gently tapering octagonal smooth sided shaft section. Tenons are available in aluminum or steel. Clear coat Acrylic or Anti-Graffiti coating is available. The Model shall be Sternberg Lighting Number #CM _____.

CONSTRUCTION

The post shall meet design criteria of the latest revisions of ASTM C1089 and CSA A14-M. The post shall be made of quality HSF (high silica fume) cement. The post shall be centrifugally spun to produce the ultimate in density and durability. The post shall be pre-stressed using wire that conforms to ASTM A615 and CSA standard G270M. Helical reinforcing shall meet the requirements of ASTM A82 and CSA G30.3 and shall have a hot dipped galvanized coating per ASTM A641, Class 3. Minimum concrete strength shall be 8000 psi.

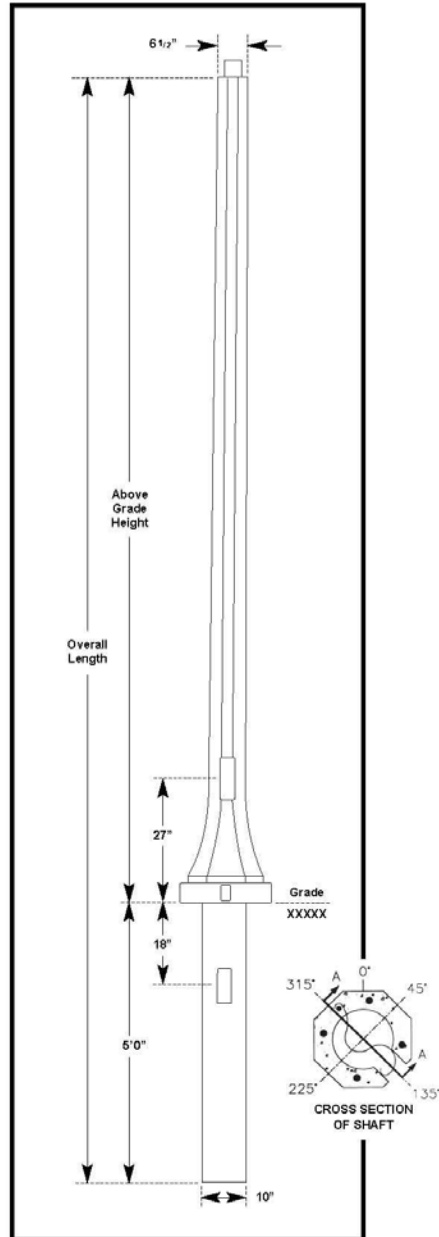
INSTALLATION

The post shall be direct embedded into the earth through an augered hole lined with gravel then back filled with native soil. Concrete poles can be manufactured for either a base or socket mount for applications where embedment is either undesirable or unfeasible. Post comes with a grounding ¼" diameter continuous grounding rod cast into the concrete. An access door shall be provided for wiring. It shall be secured with tamper proof, stainless steel hardware.

Base Size:	19 1/2" Oct. Diameter
Base Width:	18"
Height:	10' - 25' Available
Shaft:	Tapers 1/8" per ft.
Material:	Pre-stressed Concrete
Finish:	Etched
Installation:	Direct Embedment Anchor Bolt Mtg. Available

Model Numbers with Post Heights

CM Number & Finish	Above Grade	Embedment Depth	Overall Length
CM10E	10'	3'	13'
CM12E	12'	4'	16'
CM14E	14'	4'	18'
CM16E	16'	4'	20'
CM20E	20'	5'	25'
CM25E	25'	5'	30'



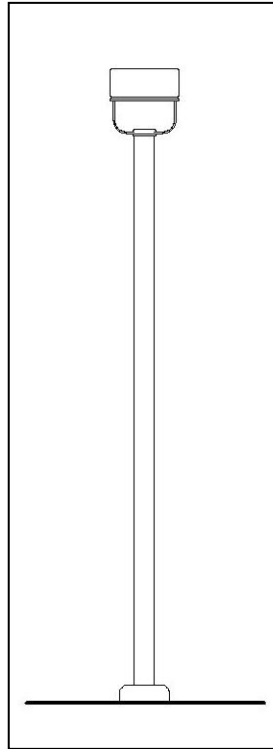
2. Site Lighting: Type 2

E.2.12.2.1. Material or Product: Pedestrian Light Standard (General).

E.2.12.2.2. Description: Exterior light standard for general site lighting.

E.2.12.2.3. Requirements: Light standard to consist of the following components (all by KIM Lighting, or equal). All metal components to be pre-finished custom color (powder coated) Color 1 or 1A. All fixtures to have 277V metal halide lamping with photocell control for dusk-to-dawn operation, and Dark Sky light control.

- Pole: 12' high, non-tapered round steel with plain base. Model "KRS12-4120".
- Light Fixture: Cylindrical down light with flat lens and post top mount. Full cutoff. Model "CCS".



Potential Sources:

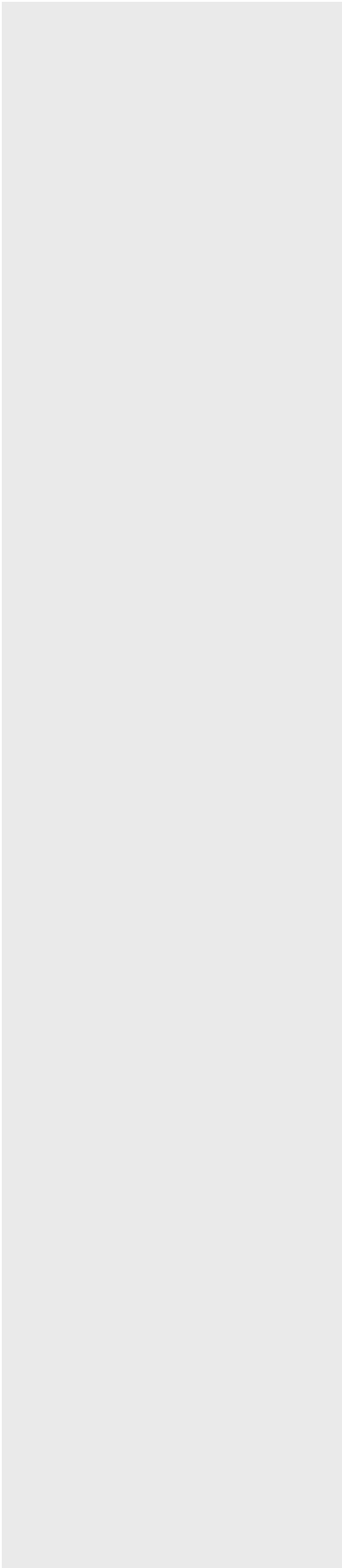
KIM Lighting
16555 East Gale Avenue
City of Industry, CA 91745
626-968-5666
www.kimlighting.com

Cooper Lighting
1121 Highway 74 South
Peachtree City, GA 30269
800-685-0610
www.cooperlighting.com

Gardco Lighting
1611 Clovis Barker Road
San Marcos, TX 78666
800-227-0758
www.sitelighting.com

E.2.12.2.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria – UFC 3-530-01 Design: Interior and Exterior Lighting and Controls, UFC 4-030-01 Sustainable Development.





E.2.12.2.5. Sustainability: Comply with performance criteria noted. Utilize recycled material to the extent possible. Note that the bulk of materials are recyclable.

E.2.12.2.6. Durability: Prefinished metal has good longevity and low maintenance.

CC/CCS

Site Lighting: TYPE 2

Curvilinear Cutoff Series

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Post Top Mount Specifications	16-17
Proportion Guide	19
Lamp and Electrical Guide	20-21



SITE / AREA
PARKING STRUCTURE
ROADWAY
ARCHITECTURAL FLOOD
ACCENT
LANDSCAPE

MAILING ADDRESS:
P.O. BOX 60080
CITY OF INDUSTRY, CA
91716-0080

BUSINESS ADDRESS:
16555 EAST GALE AVENUE
CITY OF INDUSTRY, CA 91745
U.S.A.
PHONE 626 / 968-5666
FAX 626 / 369-2695

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Star View.
DarkSky
compliant



Printed in U.S.A.
5501608081
Version 1.1 (3/08)



The **CC/CCS Series** of performance luminaires are conceived as a total integration of design and technology. Kim's third generation of Curvilinear Cutoff luminaires represents the most current technology in specification-grade outdoor lighting.

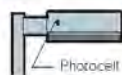
This family of cutoff luminaires is a direct response to the needs of today, engineered with tomorrow's insight. The CC/CCS product line is designed to surpass tough demands, such as energy efficiency, glare control, light trespass, aesthetic and structural integrity, all manufactured to Kim's standards for quality, longevity, and performance.



5 Optional Photocell:

Factory installed photocell in housing with fully gasketed sensor on side wall.

- * Fixture with photocell
- s slave unit(s)



Mounting (see page 10)		Wattage per fixture	Voltage	Cat. No.
1A, 1W	2B	150 to 400W	750 & 1000W	A-30
2L	3T, 3Y		208	A-31
	4C	150 to 250W	240	A-32
	4C		Each fixture has a photocell	277
	4C	400W	480	A-34
	4C		120	A-35
	4C		208	2A-30
	4C		240	2A-31
	4C		277	2A-32

6 Optional Convex Glass Lens:



Cat. No.: **CGL** Tempered convex glass lens replaces standard flat lens. **NOTE:** Changes Full Cutoff to Cutoff.

7 Optional Polycarbonate Lens:



Cat. No.: **L17** for 17" models
L21 for 21" models
L25 for 25" models
Polycarbonate Lens replaces standard tempered glass lens. 250 watt maximum. May be used with 400HPS in outdoor locations where ambient air temperature during fixture operation will not exceed 85°F. See **"CAUTION"** on page 13.

8 Optional Houseside Shield:



HS for flat lens only

Cat. No.: **HS** For 17", 21", and 25" models with Types II, III, or IV distributions only. Recommended for use with clear lamps only. Effectiveness is reduced for coated lamps.



HSC for convex lens or polycarbonate lens

Cat. No.: **HSC** For fixtures with optional convex glass lens or polycarbonate lens. Not for use with Type V light distributions.

9 Optional Vertical Slipfitter Mounts:

Allows standard fixture and arm to be mounted to poles having a 2" pipe-size steel tenon (2 3/8" O.D. x 4 1/2" min. length).



Cat. No.	Mounting Configuration
VSF-1A	1A - Single arm mount
VSF-2B	2B - 2 at 180°
VSF-2L	2L - 2 at 90°
VSF-3T	3T - 3 at 90°
VSF-3Y	3Y - 3 at 120°
VSF-4C	4C - 4 at 90°

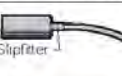
10 Optional Support Arm:

NOTE: Refer to Kim Lighting's Architectural Arms Catalog for complete details. Table shows EPA for fixture and arm.

*Same as standard arm

Arm Cat. No.	AA01	AA03	AA05	AA07	AA09	AA11									
	Swept Solid Arm	Swept Hollow Arm	Upsweep Solid Arm	Upsweep Hollow Arm	Uplift Adjustable Aluminum Arm	Uplift Adjustable Stainless Steel Arm									
Fixture		Mounting Cat. No.				Mounting Cat. No.									
Fixture	Arm Cat. No.	1A	2B	2L	3T	3Y	4C	Fixture	Arm Cat. No.	1A	2B	2L	3T	3Y	4C
CC17A	AA01	1.3	2.6	2.0	3.3	3.3	3.6	CC25A	AA01	1.7	3.4	2.9	4.6	4.6	5.1
	AA03	1.0	2.0	1.7	2.7	2.7	3.0		AA03	1.4	2.8	2.6	4.1	4.1	4.7
	AA05	1.5	3.0	2.2	3.7	3.7	4.0		AA05	1.9	3.8	3.1	5.1	5.1	5.7
	AA07	1.1	2.2	1.8	2.9	2.9	3.2		AA07*	1.5	3.0	2.7	4.3	4.3	4.9
	AA09/AA11	1.8	3.6	2.5	4.3	4.3	4.6		AA09/AA11	2.2	4.4	3.4	5.4	5.4	6.9
CC21A	AA01	1.6	3.2	2.6	4.2	4.2	4.7	CC29A	AA01	2.0	4.0	3.5	5.5	5.5	6.2
	AA03	1.3	2.6	2.3	3.6	3.6	4.1		AA03	1.7	3.4	3.2	4.9	4.9	5.6
	AA05	1.8	3.6	2.8	4.6	4.6	5.1		AA05	2.2	4.4	3.7	5.9	5.9	6.6
	AA07	1.4	2.8	2.4	3.8	3.8	4.3		AA07*	1.8	3.6	3.3	5.2	5.2	5.9
	AA09/AA11	2.1	4.2	3.1	5.2	5.2	5.7		AA09/AA11	2.5	5.0	4.0	6.5	6.5	7.2

11 Optional Horizontal Slipfitter Mount:



Cat. No.: **HSF** Replaces standard mounting arm with a slipfitter for mounting to a horizontal pole davit-arm with 2" pipe-size mounting end (2 3/8" O.D.).

12 Optional Accent Reveals:

For CC-series only.



Color: Black, Dark Bronze, Light Gray, Stealth Gray*, Platinum Silver, White, Custom Colors.
Cat. No.: **BL-REV** **DB-REV** **LG-REV** **SG-REV** **PS-REV** **WH-REV** **CC-REV**
Consult representative for custom colors.

13 Poles:

See Kim Pole Catalog for a complete selection of round and square poles in aluminum or steel.



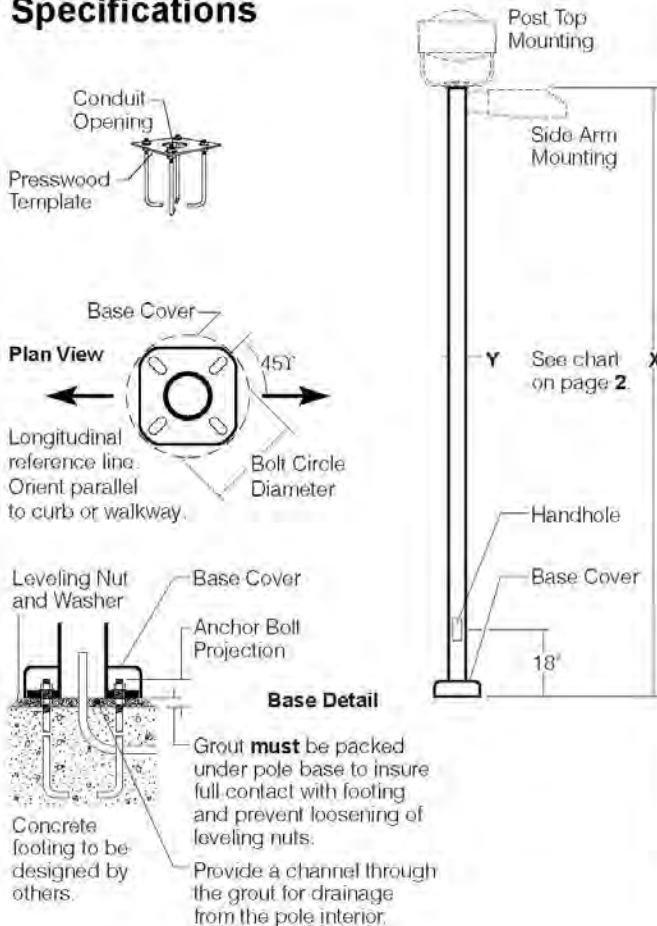
Type:
 Job:
 Catalog number:

Approvals:

KRS12-4120 /	/	/	/	/	/
Pole	Mounting	Structural Luminaire Option	Finish	Optional Anchor Bolt Covers	Optional Duplex Receptacle
See page 2		See page 3			

Date:
 Page: 1 of 4

Specifications



Pole Construction: One-piece non-tapered round shaft of low carbon steel (ASTM-A500 Grade B, 42,000 PSI min. yield) with one flush-welded vertical seam. Shaft is welded to a flat steel anchor base (ASTM-36, 36,000 PSI min. yield).

Base Cover: Base has a two-piece cast aluminum full cover of 319 alloy, secured by stainless steel screws. Optional anchor bolt covers available (see page 3).

Pole Cap: A flush-sided cast aluminum pole cap is provided for side arm mounted luminaires. A rounded cast aluminum pole cap is provided for twin mounted luminaires (NS only).

Handhole: 18" up from base, with a gasketed cover and ground lug. 2' x 4" handhole provided on poles up to 16'. Reinforced 3' x 6" handhole provided on poles 20' and taller.

Anchor Bolts: Four fully galvanized anchor bolts provided (ASTM-36, 36,000 PSI min. yield), complete with eight galvanized nuts, eight galvanized flat washers, and a presswood template.

Strength: Poles will withstand wind loads as listed in chart (see page 2) when luminaires are mounted per fixture installation instructions.

Finish: Super TGIC thermoset polyester powder coat paint, 2.5 mil nominal thickness. 5 stage steel pretreatment to include phosphoric acid etch, followed by iron phosphate bath and chromate sealer for corrosion resistance. Standard colors are Black, Dark Bronze, Light Gray, Stealth Gray™, Platinum Silver, and White. Custom colors are available.

CAUTION: Installation of poles without luminaire(s) will compromise pole strength. Any accessories attached to pole, or other modifications will compromise pole strength and may result in pole failure.

Maintenance: A regularly scheduled maintenance program must be established to insure the protective paint coating is intact, corrosion or structural damage has not occurred, and anchor bolt nuts are tight. Failure to do so could lead to pole collapse and serious personal injury.



E.2.12.3. Site Lighting: Type 3

E.2.12.3.1. Material or Product: Parking Area Light Standard.

E.2.12.3.2. Description: Exterior light standard for general parking area lighting.

E.2.12.3.3. Requirements: All poles to be 25' high or as required by condition. All fixtures to have 277V metal halide lamphousing with photocell control for dusk-to-dawn operation, full cutoff, and Dark Sky light control. Light standard to consist of the following components (all by KIM Lighting, or equal). All components to be pre-finished custom color (powder coated) Color 1 or 1A.

- Pole: Tapered round steel. Model "PTRS25-68120".
- Arms (Where Required): Metal, arched pole davit arm with 2" pipe-size mounting end (2-3/8" O.D.).
- Finial Cap: Pyramidal metal cap. Model "RC".
- Light Fixture: Cylindrical down light with flat lens. Model "CCS".

Potential Sources:

KIM Lighting
16555 East Gale Avenue
City of Industry, CA 91745
626-968-5666
www.kimlighting.com

Cooper Lighting
1121 Highway 74 South
Peachtree City, GA 30269
800-685-0610
www.cooperlighting.com

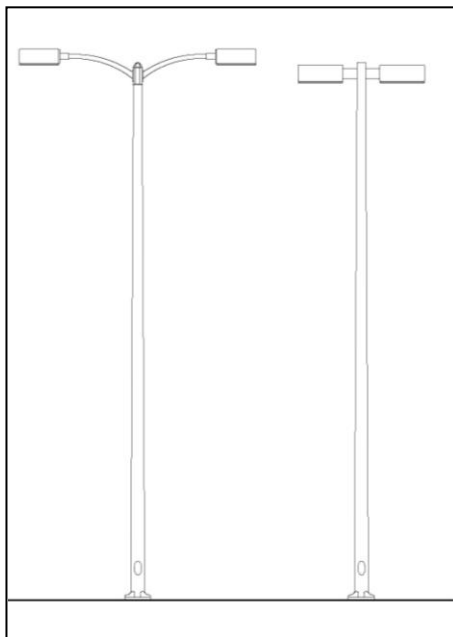
Gardco Lighting
1611 Clovis Barker Road
San Marcos, TX 78666
800-227-0758
www.sitelighting.com



E.2.12.3.4. Standards/References: Whole Building Design Guide – Uniform Facilities Criteria – UFC 3-530-01 Design: Interior and Exterior Lighting and Controls, UFC 4-030-01 Sustainable Development.

E.2.12.3.5. Sustainability: Comply with performance criteria noted. Utilize recycled material to the extent possible. Note that bulk of materials in each option are recyclable.

E.2.12.3.6. Durability: Prefinished metal has good longevity and low maintenance.



Ordering Information

Site Lighting: TYPE 3

Curvilinear Arm Mount



Ordering Example:
For Standard Fixture and Pole

Mounting: **1A** / Fixture: **CC25A3** / Electrical Module: **400MH277** / Finish: **LG-P** / Options: **AA05** / Accent Reveals: **BL-REV** / Pole: **PRA30-6250A** / **LG-P**

1 2 3 4 5-11 12 13
For CC only. See separate Kim Pole Catalog. Omit for 1W Wall Mount.

1 Mounting:
3Y configuration is available for round poles only.

Plan View:	1A	2B	2L	3T	3Y	4C	1W
Cat. No.	1A	2B	2L	3T	3Y	4C	1W
EPA 17"	0.9	1.8	1.6	2.5	2.5	2.8	
21"	1.2	3.4	2.2	3.4	3.4	3.9	
25"	1.5	3.0	2.7	4.3	4.3	4.9	
29"	1.8	3.6	3.3	5.2	5.2	5.9	

2 Fixture:
Cat. No. designates CC/CCS fixture and light distribution.



CC fixtures have 3 horizontal reveals.



CCS fixtures have 1 horizontal groove.

See the Kim Site/Roadway Optical Systems Catalog for detailed information on reflector design and application.

Fixture:	Light Distribution:	Type II Full Cutoff	Type III Full Cutoff	Type IV Full Cutoff	Type V Square Full Cutoff
CC 17"	CCS 17"	CC17A2 CCS17A2	CC17A3 CCS17A3	CC17A4 CCS17A4	CC17A5 CCS17A5
CC 21"	CCS 21"	CC21A2 CCS21A2	CC21A3 CCS21A3	CC21A4 CCS21A4	CC21A5 CCS21A5
CC 25"	CCS 25"	CC25A2 CCS25A2	CC25A3 CCS25A3	CC25A4 CCS25A4	CC25A5 CCS25A5
CC 29"	CCS 29"	CC29A2 CCS29A2	CC29A3 CCS29A3	CC29A4 CCS29A4	CC29A5 CCS29A5

3 Electrical Module:

- PMH = Pulse Start Metal Halide
- MH = Metal Halide
- HPS = High Pressure Sodium
- PL = Compact Fluorescent



Lamp Watts	Lamp Type	Line Volts
400	MH	277

CC/CCS 17"			CC/CCS 21" and 25"			CC/CCS 29"		
70PMH120	70HPS120	175MH120	250PMH120	175MH120	150HPS120	750PMH120	750HPS120	750HPS120
70PMH208	70HPS208	175MH208	250PMH208	175MH208	150HPS208	750PMH208	750HPS208	750HPS208
70PMH240	70HPS240	175MH240	250PMH240	175MH240	150HPS240	750PMH240	750HPS240	750HPS240
70PMH277	70HPS277	175MH277	250PMH277	175MH277	150HPS277	750PMH277	750HPS277	750HPS277
70PMH347	70HPS347	175MH347	250PMH347	175MH347	150HPS347	750PMH347	750HPS347	750HPS347
70PMH480	70HPS480	175MH480	250PMH480	175MH480	150HPS480	750PMH480	750HPS480	750HPS480
100PMH120	100HPS120	42PL120	320PMH120	250MH120	250HPS120	1000PMH120	1000HPS120	1000HPS120
100PMH208	100HPS208	42PL208	320PMH208	250MH208	250HPS208	1000PMH208	1000HPS208	1000HPS208
100PMH240	100HPS240	42PL240	320PMH240	250MH240	250HPS240	1000PMH240	1000HPS240	1000HPS240
100PMH277	100HPS277	42PL277	320PMH277	250MH277	250HPS277	1000PMH277	1000HPS277	1000HPS277
100PMH347	100HPS347	57PL120	320PMH347	250MH347	250HPS347	1000PMH347	1000HPS347	1000HPS347
100PMH480	100HPS480	57PL208	320PMH480	250MH480	250HPS480	1000PMH480	1000HPS480	1000HPS480
150PMH120	150HPS120	57PL240	350PMH120	400MH120	400HPS120	1000MH120		
150PMH208	150HPS208	57PL277	350PMH208	400MH208	400HPS208	1000MH208		
150PMH240	150HPS240	60PL120	350PMH240	400MH240	400HPS240	1000MH240		
150PMH277	150HPS277	60PL208	350PMH277	400MH277	400HPS277	1000MH277		
150PMH347	150HPS347	60PL240	350PMH347	400MH347	400HPS347	1000MH347		
150PMH480	150HPS480	60PL277	350PMH480	400MH480	400HPS480	1000MH480		
			400PMH120					
			400PMH208					
			400PMH240					
			400PMH277					
			400PMH347					
			400PMH480					

4 Finish:
Super TGIC powder coat paint over titanium zirconium conversion coating.

Color:	Black	Dark Bronze	Light Gray	Stealth Gray*	Platinum Silver	White	Custom Colors:
Cat. No.:	BL	DB	LG	SG	PS	WH	CC Consult representative for custom colors.

10 KIM LIGHTING

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5 Optional Photocell:

Factory installed photocell in housing with fully gasketed sensor on side wall.
 * Fixture with photocell
 s Slave unit(s)



Mounting (see page 10)		Wattage per fixture	Voltage	Cat. No.
1A, 1W	2B	150 to 400W	750 & 1000W	A-30
2L	3T, 3Y		208	A-31
	4C	150 to 250W	240	A-32
	4C		277	A-33
	4C	400W	480	A-34
	4C		347	A-35
			120	2A-30
			208	2A-31
			240	2A-32
		277	2A-33	
		480	2A-34	
		347	2A-35	

6 Optional Convex Glass Lens:



Cat. No.: **CGL** Tempered convex glass lens replaces standard flat lens.
NOTE: Changes Full Cutoff to Cutoff.

7 Optional Polycarbonate Lens:



Cat. No.: **L17** for 17" models
L21 for 21" models
L25 for 25" models
 Polycarbonate lens replaces standard tempered glass lens. 250 watt maximum. May be used with 400HP3 in outdoor locations where ambient air temperature during fixture operation will not exceed 85°F. See "CAUTION" on page 13.

8 Optional Houseside Shield:



Cat. No.: **HS** For 17", 21", and 25" models with Types II, III, or IV distributions only. Recommended for use with clear lamps only. Effectiveness is reduced for coated lamps.
 Cat. No.: **HSC** For fixtures with optional convex glass lens or polycarbonate lens. Not for use with Type V light distributions.

9 Optional Vertical Slipfitter Mounts:

Allows standard fixture and arm to be mounted to poles having a 2" pipe-size steel tenon (2 3/8" O.D. x 4 1/2" min. length).



Cat. No.	Mounting Configuration
VSF-1A	1A - Single arm mount.
VSF-2B	2B - 2 at 180°
VSF-2L	2L - 2 at 90°
VSF-3T	3T - 3 at 90°
VSF-3Y	3Y - 3 at 120°
VSF-4C	4C - 4 at 90°

10 Optional Support Arm:

NOTE: Refer to Kim Lighting's Architectural Arms Catalog for complete details.
 Table shows EPA for fixture and arm.
 †Same as standard arm

Arm Cat. No.	AA01	AA03	AA05	AA07	AA09	AA11								
	Sweep Solid Arm	Sweep Hollow Arm	Upsweep Solid Arm	Upsweep Hollow Arm	Uplift Adjustable Aluminum Arm	Uplift Adjustable Stainless Steel Arm								
Fixture		Mounting Cat. No.				Mounting Cat. No.								
Arm Cat. No.	1A	2B	2L	3T	3Y	4C	1A	2B	2L	3T	3Y	4C		
CC17A	AA01	1.3	2.6	2.0	3.3	3.3	3.6	AA01	1.7	3.4	2.9	4.6	4.6	5.1
	AA03	1.0	2.0	1.7	2.7	2.7	3.0	AA03	1.4	2.8	2.6	4.1	4.1	4.7
	AA05	1.5	3.0	2.2	3.7	3.7	4.0	AA05	1.9	3.8	3.1	5.1	5.1	5.7
	AA07	1.1	2.2	1.8	2.9	2.9	3.2	AA07	1.5	3.0	2.7	4.3	4.3	4.9
	AA09/AA11	1.8	3.6	2.5	4.3	4.3	4.6	AA09/AA11	2.2	4.4	3.4	5.4	5.4	6.9
CC21A	AA01	1.6	3.2	2.6	4.2	4.2	4.7	AA01	2.0	4.0	3.5	5.5	5.5	6.2
	AA03	1.3	2.6	2.3	3.6	3.6	4.1	AA03	1.7	3.4	3.2	4.9	4.9	5.6
	AA05	1.8	3.6	2.8	4.6	4.6	5.1	AA05	2.2	4.4	3.7	5.9	5.9	6.6
	AA07	1.4	2.8	2.4	3.8	3.8	4.3	AA07	1.8	3.6	3.3	5.2	5.2	5.9
	AA09/AA11	2.1	4.2	3.1	5.2	5.2	5.7	AA09/AA11	2.5	5.0	4.0	6.5	6.5	7.2

11 Optional Horizontal Slipfitter Mount:



Cat. No.: **HSF** Replaces standard mounting arm with a slipfitter for mounting to a horizontal pole davit arm with 2" pipe-size mounting end (2 3/8" O.D.).

12 Optional Accent Reveals:

For CC-series only.



Color:	Black	Dark Bronze	Light Gray	Stealth Gray*	Platinum Silver	White	Custom Colors
Cat. No.:	BL-REV	DB-REV	LG-REV	SG-REV	PS-REV	WH-REV	CC-REV
							Consult representative for custom colors.

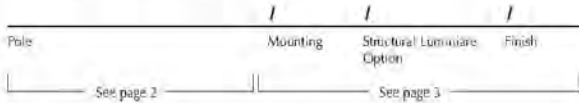
13 Poles:

See Kim Pole Catalog for a complete selection of round and square poles in aluminum or steel.



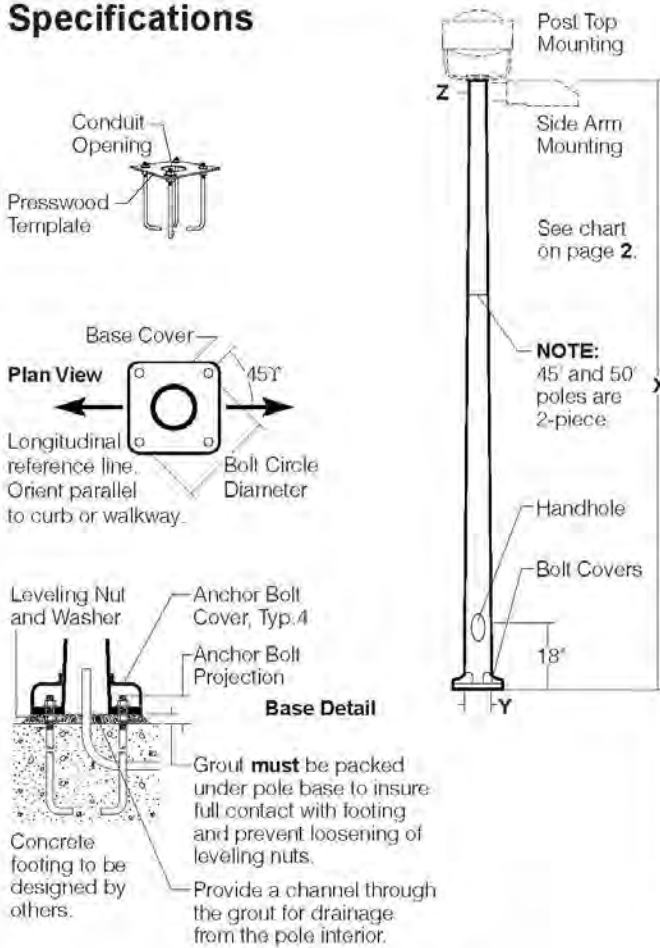
Type:
 Job:
 Catalog number:

Approvals:



Date:
 Page: 1 of 4

Specifications



Pole Construction: One-piece tapered round shaft of high tensile carbon steel (55,000 PSI min. yield) with one vertical welded seam, ground flush to the shaft. Poles above 39' include an overlapping tapered slip-fit field joint (at 25 1/2' for PTRS45-10120 and PTRS50-10120, and at 39' for PTRS50-11188), with both sections taper spun. Shaft is welded to a flat steel anchor base.

Bolt Covers: Cast aluminum anchor bolt covers with stainless steel hold down screws included.

Pole Cap: A flush-sided cast aluminum pole cap is provided for side arm mounted luminaires.

Handhole: 4" x 6 1/2" reinforced oval handhole with a gasketed cover and grounding nut provided, 18" up from base.

Anchor Bolts: Four galvanized anchor bolts provided, complete with eight nuts, eight flat washers, and a presswood template.

Strength: Poles will withstand wind loads as listed in chart (see page 2) when luminaires are mounted per fixture installation instructions.

Finish: Standard TGIC thermoset polyester powder coat paint, 2.5 mil nominal thickness. Standard colors are Black, Dark Bronze, Light Gray, Stealth Gray™, Platinum Silver, and White. Custom colors are available.

CAUTION: Installation of poles without luminaires will compromise pole strength. Any accessories attached to pole, or other modifications will compromise pole strength and may result in pole failure.

Maintenance: A regularly scheduled maintenance program must be established to insure the protective paint coating is intact, corrosion or structural damage has not occurred, and anchor bolt nuts are tight. Failure to do so could lead to eventual pole collapse and serious personal injury.



E.2.13. Benches

E.2.13.1. Bench: Type 1

E.2.13.1.1. Material or Product: Exterior Bench (Courtyard).

E.2.13.1.2. Description: Informal bench for use at Central Courtyard.

E.2.13.1.3. Requirements: Concrete and wood bench to replicate historic benches at Center Courtyard, unless an alternate design is approved. A mock-up or sample should be built for testing of comfort. Minor adjustments in wood slat proportions are allowed to improve ergonomic performance.

Utilize cast concrete (Type 1) end supports in custom design to match historic with sandblasted finish. Wood slats to be natural wood. Consider Ipe or mahogany for long-term durability. Bench requires setting in concrete base foundation.

E.2.13.1.4. Standards/References:

Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities;
PenRen Field Guide to Sustainable Design.

E.2.13.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible. Utilize Forest Stewardship Council (FSC) certified wood.

E.2.13.1.6. Durability: Concrete is a highly durable material. Wood may require some ongoing maintenance; however, use of durable hardwood species such as Ipe is recommended.



◀ Historic Image of
Courtyard Bench



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E.2.13.2. Bench: Type 2

E.2.13.2.1. Material or Product: Exterior Bench (Site).

E.2.13.2.2. Description: Bench for use at all areas except Central Courtyard.

E.2.13.2.3. Requirements: 6' long, precast reinforced concrete bench utilizing custom concrete mix to hamonize with historic limestone of the Pentagon Building. Bench to be simple and rectilinear in form, equal to Doty & Sons Model B5460. [Color: TBD]

Potential Sources:

Doty & Sons Concrete Products, Inc.

1275 East State Street

Sycamore, IL 60178

800-233-3907

www.dotyconcrete.com

Belson Outdoors, Inc.

111 North River Road

North Aurora, IL 60542

800-323-5664

www.belson.com

E.2.13.2.4. Standards/References: Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities; PenRen Field Guide to Sustainable Design.

E.2.13.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.13.2.6. Durability: Concrete is a highly durable material. Painted metal may require some ongoing maintenance

BE22



72" MORRISON STYLE BENCH (B5460 SHOWN)

ITEM NUMBER	LENGTH	WEIGHT
B5400	40"	293 lbs
B5440	48"	310 lbs
B5450	60"	350 lbs
B5460	72"	390 lbs
B5470	84"	430 lbs

FEATURE

One piece construction
Diamond ground seat surface available

FINISH SHOWN

SB6 (Sandblast Natural Gray Color)

FINISHES AVAILABLE

SB Finishes (Sandblast)

[RETURN TO PRODUCTS PAGE](#)

FOR MORE INFORMATION PLEASE CALL US TOLL FREE AT 800.233.3907

E.2.13.3. Bench: Type 3

E.2.13.3.1. Material or Product: Exterior Bench - Moveable (Courtyard).

E.2.13.3.2. Description: Bench for use at Central Courtyard when portability is required.

E.2.13.3.3. Requirements: Provide backless wood bench in Ipe wood. Match “Bonita Backless Bench” 6 foot length by Barco Products or equal.

Potential Sources:

Barco Products Company

11 N. Batavia Ave

Batavia, IL 60510

800-338-2697

www.barcoproducts.com

New Hemisphere Furniture

456 Skinner Blvd

Dunedin, FL 34698

www.ipefurniture.com

E.2.13.3.4. Standards/References: Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities; PenRen Field Guide to Sustainable Design.

E.2.13.3.5. Sustainability: Utilize sustainably grown wood and recycled content to the extent possible.

E.2.13.3.6. Durability: Ipe wood is a highly durable material.



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E.2.14. Bicycle Racks

E.2.14.1. Bicycle Rack: Type 1

E.2.14.1.1. Material or Product: Single/Double Bike Rack

E.2.14.1.2. Description: Painted steel system for single or double bicycle parking/storage.

E.2.14.1.3. Requirements: “Bollard Cycloops” Model 2172-P-C by Columbia Cascade or approved equal. Mounting can be either post embed or surface attachment per the requirements of particular installation. Color 1.

Potential Sources:

Columbia Cascade

1300 SW Sixth Avenue, Suite 310

Portland, OR 97201

800-547-1940

www.timberform.com

Madrax

1080 Uniek Drive

Wauwaukee, WI 53597

800-448-7931

www.madrax.com

Huntco Supply

P.O. Box 10385

Portland, OR 97296-0385

800.547.5909

www.huntco.com



E.2.14.1.4.

Standards/References:

PenRen Field Guide to Sustainable Design.

E.2.14.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.14.1.6. Durability: Painted metal may require some ongoing maintenance

Bollard CycLoops®

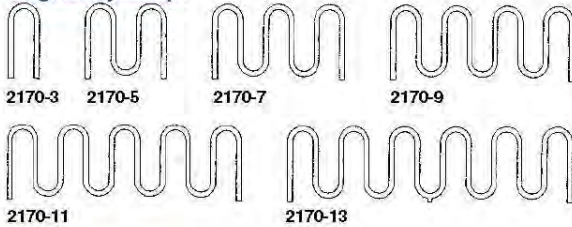
Bollard CycLoops are domed 4-1/2" (115mm) diameter ASTM schedule 40 steel posts that are 3' (915mm) tall. Integral steel loop(s) are at bike height. Select from one, two or three loop models. Polyester color powder coating, polished stainless steel or galvanizing are finish options. Mounting is pedestal (surface) mount with matching base cover or embedment. A removable version is offered for special applications. See additional information and standard colors.



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Original CycLoops



Original CycLoops Specifications

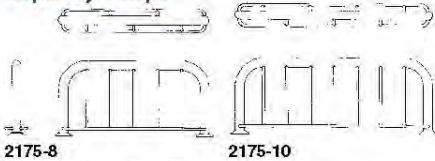
Model	Length	Width	Height	Maximum Bikes
2170-3	1' 3"	3"	3' 0"	Three
2170-5	3' 3"	3"	3' 0"	Five
2170-7	5' 3"	3"	3' 0"	Seven
2170-9	7' 3"	3"	3' 0"	Nine
2170-11	9' 3"	3"	3' 0"	Eleven
2170-13	11' 3"	3"	3' 0"	Thirteen

Supplied as standard for embedment (permanent) mounting.

- P Suffix for pedestal (fixed surface) mounting option.
- C Suffix for powder-coated steel version.
- G Suffix for galvanized version.
- S Suffix for stainless steel version.

Notes: Includes matching base covers on -P pedestal mounting option only.

Super CycLoops



2175-8 2175-10

Super CycLoops Specifications

Model	Length	Width	Height	Maximum Bikes
2175-8	6' 5"	1' 0"	3' 3"	Eight
2175-10	8' 5"	1' 0"	3' 3"	Ten

- E Suffix for embedment (permanent) mounting option.
- P Suffix for pedestal (fixed surface) mounting option.
- C Suffix for powder-coated steel version.
- G Suffix for galvanized version.
- S Suffix for stainless steel version.

Notes: Includes matching base covers, as shown, on -P pedestal mounting option only.

Wall CycLoops



2174

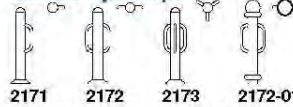
Wall CycLoops Specifications

Model	Length	Width	Height	Maximum Bikes
2174	1' 2"	2"	4"	One

- C Suffix for powder-coated steel version.
- G Suffix for galvanized version.
- S Suffix for stainless steel version.

Notes: Wall mounting bolts by others.

Bollard CycLoops



2171 2172 2173 2172-01

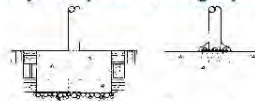
Bollard CycLoops Specifications

Model	Length	Width	Height	Maximum Bikes
2171	9"	5"	3' 0"	One
2172	12"	5"	3' 0"	Two
2173	11"	10"	3' 0"	Three
2172-01	12"	8"	3' 3"	Two

- E Suffix for embedment (permanent) mounting option.
- P Suffix for pedestal (fixed surface) mounting option.
- R Suffix for removable mounting option.
- C Suffix for powder-coated steel version.
- G Suffix for galvanized version. (n/a 2172-01)
- S Suffix for stainless steel version. (n/a 2172-01)

Notes: Includes matching base cover, on -P pedestal mounting option only.

CycLoops Mounting Options



Embedment **Pedestal**
(re-bar and anchoring bolts not included)

E.2.14.2. Bicycle Rack: Type 2

E.2.14.2.1. Material or Product: Multiple Bike Rack

E.2.14.2.2. Description: Painted steel system for multiple bicycle parking/storage.

E.2.14.2.3. Requirements: "Cycloops" Model 2170-(#)-P-C by Columbia Cascade or approved equal. Provide size as required by specific location. Mounting can be either post embed or surface attachment per the requirements of particular installation. If location requires that racks be moveable for maintenance or events, mount the surface posts on flat steel plates or bars that will serve as support feet. Color 1.

Potential Sources:

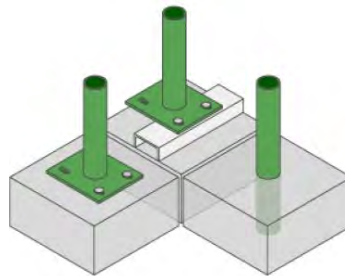
Columbia Cascade

1300 SW Sixth Avenue, Suite 310

Portland, OR 97201

800-547-1940

www.timberform.com



DuMor Inc.

P.O. Box 142

Mifflintown, PA 17059

800-598-4018

www.dumor.com

Available in a surface mount, in-ground mount, and free standing rail mount.

Dero Bike Rack Co.

2657 32nd Ave S

Minneapolis, MN 55406

800-891-9298

www.dero.com

E.2.14.2.4. Standards/References:

PenRen Field Guide to Sustainable Design.

E.2.14.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.14.2.6. Durability: Painted metal may require some ongoing maintenance





2170-11-P-C



2170-9-P-C



2170-13-P-C



2170-9-C



2170-5-P-C

Original CycLoops are the time-proven favorite of the design community. These looped bike racks are offered in five standard lengths to accommodate from three through 13 bicycles. Each is formed from a single 2-3/8" (60mm) diameter ASTM schedule 40 steel pipe. Standard mounting is by embedment. Pedestal (surface) mounting with matching base covers are optional. Choose from 10 standard color-coating hues or from a wide spectrum of nearly 200 special CASPAX-7™ designer colors. CASPAX-7 is an electrostatically applied colored polyester powder coating applied to a thickness of 6-8 mils (.15 - .2mm) and oven cured at 400° F (204° C) to chemically bond the finish to the metal substrate. A polished stainless steel version (schedule 40, type 304) is offered for elegant settings. A galvanized version is available for utilitarian applications. See additional information and standard colors on page 7.

"For Signature Projects"

7

Original CycLoops

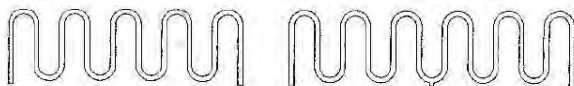


2170-3

2170-5

2170-7

2170-9



2170-11

2170-13

Original CycLoops Specifications

Model	Length	Width	Height	Maximum Bikes
2170-3	1' 3"	3"	3' 0"	Three
2170-5	3' 3"	3"	3' 0"	Five
2170-7	5' 3"	3"	3' 0"	Seven
2170-9	7' 3"	3"	3' 0"	Nine
2170-11	9' 3"	3"	3' 0"	Eleven
2170-13	11' 3"	3"	3' 0"	Thirteen

Supplied as standard for embedment (permanent) mounting.

-P Suffix for pedestal (fixed surface) mounting option.

-C Suffix for powder-coated steel version.

-G Suffix for galvanized version.

-S Suffix for stainless steel version.

Notes: Includes matching base covers on -P pedestal mounting option only.

E.2.14.3. Bicycle Rack: Type 3

E.2.14.3.1. Material or Product: Portable/Temporary Multiple Bike Rack

E.2.14.3.2. Description: Portable painted steel system for multiple bicycle parking/storage.

E.2.14.3.3. Requirements: “Event Rack” by Dero Bike Rack Co. or approved equal. Provide size as required by specific location. Color 1 or 1A.

Potential Sources:

Dero Bike Rack Co.
2657 32nd Ave S
Minneapolis, MN 55406
800-891-9298
www.dero.com

CycleSafe
4630 Ada Drive SE, Suite B
Ada, Michigan 49301
888-950-6531
www.cyclesafe.com

Huntco Supply
P.O. Box 10385
Portland, OR 97296-0385
800-547-5909
www.huntco.com

E.2.14.3.4. Standards/References:
PenRen Field Guide to Sustainable Design.

E.2.14.3.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.14.3.6. Durability: Painted metal may require some ongoing maintenance

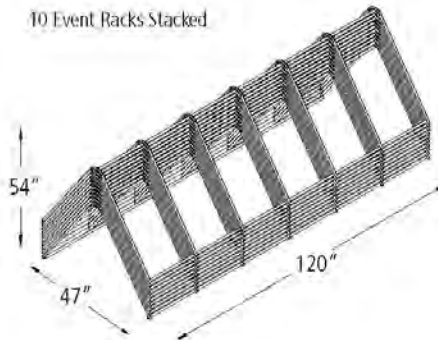


EVENT RACK

Specifications and Space Use

Bicycle Rack, TYPE 3

10 Event Racks Stacked



Product

Dero Event Rack
As manufactured by Dero Bike Racks

Materials

.75" steel tube



Finishes

An after fabrication hot dipped galvanized finish is standard.



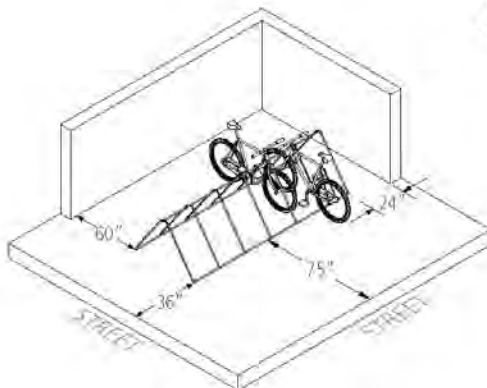
Installation Methods

The Event Rack is a freestanding unit that can easily be placed by two people.



Space Use and Setbacks

The Event Rack is 47"W x 120"L x 36"H. Each unit holds 14 bikes and can be stored on a standard 48"W pallet.

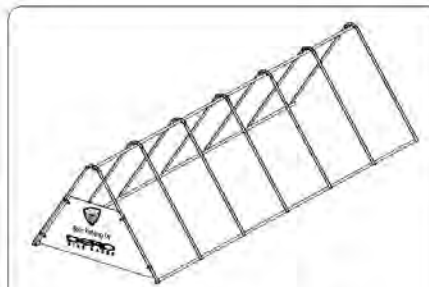
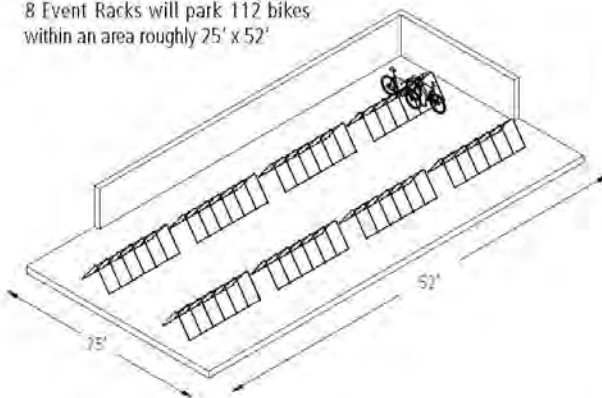


Wall Setback: A minimum of 60" should be left between the wall and the long side of the rack.

Street Setback: For racks set parallel to the street, a 75" setback is recommended. For racks installed perpendicular to the street, 24" is the minimum setback. 36" is recommended.

Between Racks: For racks set next to each other, 24" is the minimum setback. 36" is recommended.

8 Event Racks will park 112 bikes within an area roughly 25' x 52'



Personalize Your Parking

Promote your sponsors or message with the optional ad kit. Dero can produce full color signage with your own customized message and graphics. Use ad revenue to offset bike parking costs.

Contact us for more details on this option.



www.dero.com 1-800-290-4915

E.2.15. Drinking Fountains

E.2.15.1. Drinking Fountain: Type 1

E.2.15.1.1. Material or Product: Pedestal-mounted drinking fountain.

E.2.15.1.2. Description: Pedestal mounted, dual height, wheel chair accessible, outdoor drinking fountain. Provide with integral freeze protection. Provide powder coated finish in Color 1.

E.2.15.1.3. Requirements: Model GRM by Murdoch Fountains (custom color as allowed by zone), or approved alternate.

Potential Sources:

Murdoch-Super Secur, Inc.

P.O. Box 3527

City of Industry, CA 91744

800-453-7465

www.murdock-supersecur.com

Most Dependable Fountains, Inc.

5705 Commander Drive,

Arlington, TN 38002

800-552-6331

www.mostdependable.com

Halsey Taylor

2222 Camden Ct.

Oak Brook, IL 60523

630-574-3500

www.halseytaylor.com

E.2.15.1.4. Standards/References:

Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities.

E.2.15.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.15.1.6. Durability: Painted metal may require some ongoing maintenance





CONTEMPORARY DRINKING FOUNTAINS

GR Series

MODEL GRM45
BARRIER FREE, BI-LEVEL,
PEDESTAL MOUNTED
DRINKING FOUNTAIN

STANDARD FEATURES

- Resistant to sunlight, heat, moisture and wear
- 18 gage, 304 stainless steel bowl
- 11 gage, heavy duty welded steel, corrosion and scratch resistant finish
- Polished chrome plated brass, anti-rotation non-squirt bubbler
- 100 mesh inlet strainer
- Access door, heavy duty steel, vandal resistant

SUGGESTED SPECIFICATIONS

Model GRM45 is a barrier free pedestal mounted, vandal resistant, bi-level round drinking fountain made from 18 gage, 304 stainless steel bowls mounted into a green powder coated 11 gage, heavy duty galvanized welded steel pedestal. Unit shall be activated by front mounted self-closing buttons, by using less than 5 pounds of force, which activates internally mounted valves with adjustable stream regulators controlling the water flow. Bubblers shall be polished chrome plated brass with non-squirt features and operate on water pressure range of 20 - 105 psig. Unit shall adhere to ANSI A117.1 and Americans with Disabilities Act of 1990 frontal approach and protruding objects requirements, Adult ADA parallel and frontal approach and ANSI/NSF 61, Section 9.



□ Standard Model: GRM45

OPTIONAL ACCESSORIES

(additional costs may be incurred)

- - CH30 Child height, 30" bubbler height
- - FRU2 Freeze resistant valve (see separate submittal sheet)
- - FS Foot spray
- - HB1 Hose bibb, compression, with hose threaded outlet/VB
- - HB2 Hose bibb, loose key, with hose threaded outlet/VB
- - HB3 Hose bibb, loose key, vandal resistant, with hose threaded outlet/VB
- - IGM In-ground 14" mounting
- - JF1 Jug filler, plain end with self-closing valve
- - JF2 Jug filler, recessed, plain end with self-closing valve
- - NP2 Non-pollutable, freeze resistant valve
- - PF Pet fountain receptor
- "4" All stainless steel (Use model GRM44)
- "6" Firehouse red powder coated finish (Use model GRM46)
- "7" Alpine blue powder coated finish (Use model GRM47)

Custom color finishes available upon request

Please visit www.murdock-supersecur.com for most current specifications.

Complies with the following standards:



MURDOCK-SUPER SECUR A Member of Acorn Engineering's Family of Companies
15125 Proctor Avenue • City of Industry, CA 91746 USA • Phone 800-591-9880 or 626-333-2543 • Fax 626-855-4860

GRM45

Rev. B 7/21/08

E.2.16. Trash Receptacles

E.2.16.1. Trash Receptacle: Type 1

E.2.16.1.1. Material or Product: Trash Receptacle (Courtyard)

E.2.16.1.2. Description: Coordinated collection of trash receptacles to accommodate varied needs of specific locations within the reservation. Include recycling station version. Appearance to be historically appropriate for use in Courtyard.

E.2.16.1.3. Requirements:

“Scarborough” family of litter receptacles by Landscape Forms, or approved alternate. Provide with lid covers. Custom color to match Color-1.

Potential Sources:

Landscape Forms, Inc.
431 Lawndale Avenue
Kalamazoo, MI 49048
800-430-6209
www.landscapefoms.com

Wesnic
6000 Bowdendale Ave.
Jacksonville, FL 32216
800-874-8558
www.wesnic.com

E.2.16.1.4. Standards/References:

PenRen Field Guide to Sustainable Design.

E.2.16.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.16.1.6. Durability: Painted metal may require some ongoing maintenance





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scarborough™

litter receptacles

Scarborough was designed for the urban landscape. It is street smart, yet sophisticated. Lighthearted, but a true heavyweight in its class. Scarborough's styling transcends categories and remains current over time.

features

- > **NEW!** Recycling styles now available
- > coordinates with Scarborough benches
- > lid formed of spun metal; lifts on stainless steel pivot post for emptying

> complementary products

> more details

- 30-gallon capacity
- 2 metal side panel styles
- spun metal top
- liner included
- top or side opening
- optional sand pan
- optional keyed lock
- recycling option: aluminum, plastic, newspapers
- freestanding
- surface mount
- variety of colors



designed by Arno Yurk, AIA, 103A

More Details :: [Recycling](#) [Sustainability and LEED](#) [Dimensions](#) [To Specify](#) [Complementary Products](#)

- 30-gallon capacity polyethylene liner included
- Side panel options: square rods or vertical flat metal straps
- Side or top opening
- Deflector ring to assure litter falls into the liner
- Optional ash pan insert on side-opening unit
- Lid may be secured with an optional keyed lock
- Metal parts finished with Panguard II® powdercoat available in standard colors
- Optional powdercoat colors available for an upcharge
- Freestanding/surface mount support standard
- Coordinating Scarborough bench

Recycling Receptacle Style

- For details refer to our Recycling Receptacles.

Sustainability and LEED

- Scarborough receptacles have a recycled material content of 74% or greater. The post consumer content of the litter is 42% or greater and the post industrial content is 33% or greater. All Scarborough receptacles are 100% recyclable.
- Landscape Forms Panguard II (R) Powdercoat finish contains no heavy metals, is HAPS-free and has extremely low VOCs.
- For more information about Landscape Forms sustainable products and policies, please refer to our Environmental Statement.

Dimensions

- Side Opening: 25in. w x 40in. h
- Top Opening: 25in. w x 33in. h

recycling receptacles

Trash Receptacle: Recycling

Classic designs with a renewed purpose. These popular receptacle styles now offer special openings and clear graphics to collect recyclables or waste on college campuses, city streets or corporate courtyards.

features

- > 3 popular styles offered
- > special sized openings and signage to collect recyclables
- > standard openings also available with signage
- > Scarborough unit may be divided to collect waste and recyclables
- > **complementary products**
- > **more details**
 - 3 receptacle styles
 - selection of standard signs
 - liner included
 - single or dual purpose for Scarborough
 - freestanding/surface mount
 - variety of colors



More Details :: [Chase Park](#) [Petoskey](#) [Scarborough](#) [Sustainability and LEED](#) [Complementary Products](#)

- Choose from 3 popular receptacle styles
- Features special sized and standard openings to collect recyclables or waste
- Labels printed on high performance, exterior grade, UV protected vinyl - mounted securely to each unit
- All units include polyethylene liner
- All metal is finished with Landscape Forms' proprietary Pangard II® polyester powdercoat, a hard yet flexible finish that resists rusting, chipping, peeling and fading. A selection of standard colors are available as well as many optional color for an additional charge.

Chase Park Recycling Receptacle

- Opening for collection is in top and may be 5" diameter or standard 10" diameter (refer to Chase Park litter receptacle for standard 10" diameter top opening images)
- Selection of standard signage options ([click here to view](#))
- 40 gallon capacity polyethylene liner included
- Side door swings open allowing liner to slide out; content is emptied by lifting trash bag out of liner
- Side door may be specified with a lock
- Constructed of cast aluminum sides and door; spun aluminum top; cast iron base
- Door hinge and latch are stainless steel
- May be left freestanding or surface mounted on site
- Dimensions: 24" dia x 38"h
- To specify: Select Chase Park Top Opening Receptacle with Signage. Choose 5" diameter or standard 10" diameter opening, standard wording option for signage, with or without lock and powdercoat color.

E.2.16.2. Trash Receptacle: Type 2

E.2.16.2.1. Material or Product: Trash Receptacle (General Use)

E.2.16.2.2. Description: Coordinated collection of trash receptacles to accommodate varied needs of specific locations within the reservation. Include recycling station version.

E.2.16.2.3. Requirements: “Petoskey” family of litter receptacles by Landscape Forms. Custom Color 1, or approved alternate.

Potential Sources:

Landscape Forms, Inc.

431 Lawndale Avenue

Kalamazoo, MI 49048

800.430.6209

www.landscapeforms.com

Columbia Cascade

1300 S.W. Sixth Avenue, Suite 310

Portland, Oregon 97201-3464

503-223-1157

www.timberform.com

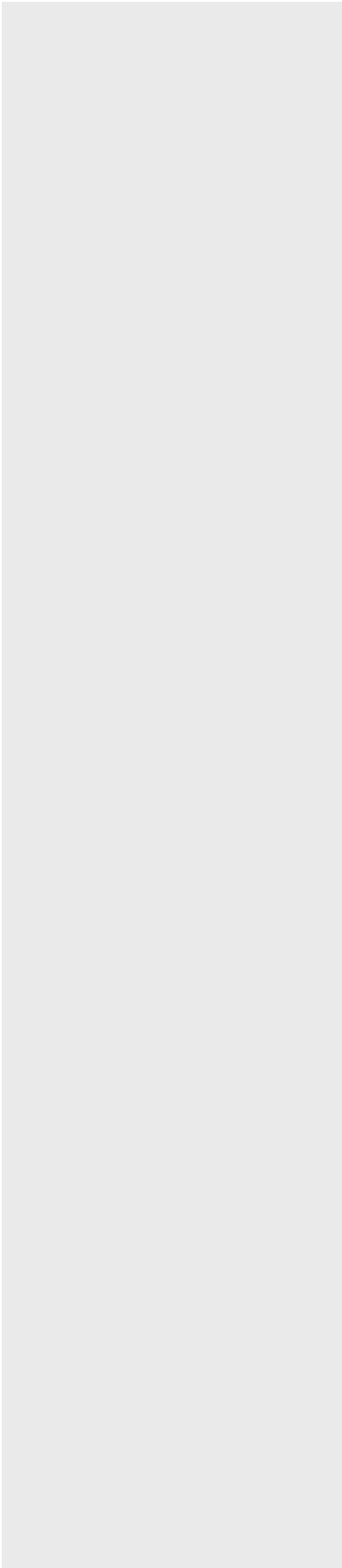
E.2.16.2.4. Standards/References:

PenRen Field Guide to Sustainable Design.

E.2.16.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.16.2.6. Durability: Painted metal may require some ongoing maintenance





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petoskey™ group

Petoskey is engineered for active commercial and institutional spaces and has become a favorite for courtyards, city parks, university campuses, mixed use retail areas and transportation hubs.

features

- > **NEW!** Recycling styles now available
- > coordinates with Petoskey bench, picnic table and many other Landscape Forms products
- > **complementary products**
- > **more details**
 - perforated metal
 - 30-gallon capacity
 - liner included
 - side opening
 - optional sand pan
 - recycling option: aluminum, plastic, newspapers
 - freestanding
 - surface mount
 - embedded
 - variety of colors



U.S. Patent No. D319,520

More Details :: [Recycling](#) [Sustainability and LEED](#) [Dimensions](#) [To Specify](#) [Complementary Products](#)

- 30-gallon capacity litter receptacle; polyethylene liner included
- Receptacle formed of 11-gauge steel; Ash Urn of 14 gauge.
- Receptacle with 3in. o.d. steel tube support may be surface mount or embedded
- Hinged lid receptacle and ash urn: freestanding/surface mount standard
- Metal parts finished with Panguard II® powdercoat available in standard colors
- Optional powdercoat colors available for an upcharge

Recycling Receptacle Style

- For details refer to our [Recycling Receptacles](#).

Sustainability and LEED

- Petoskey Litter Receptacle has a recycled material content of 88% or greater. The post consumer content of the litter is 56% or greater and the post industrial content is 30% or greater.
- Petoskey Ash Urn has a recycled material content of 90% or greater. The post consumer content of the ash is 59% or greater and the post industrial content is 31% or greater.
- All litters and ash urns are 100% recyclable.
- Landscape Forms Panguard II (R) Powdercoat finish contains no heavy metals, is HAPS-free and has extremely low VOCs.
- For more information about Landscape Forms sustainable products and policies, please refer to our [Environmental Statement](#).

Dimensions

- Receptacle with tube mount: 20in. dia. x 46in. h
- Receptacle with hinged lid: 20in. dia. x 42in. h
- Ash urn: 12in. dia. x 21in. h

To Specify: Select Petoskey Receptacle

To Specify recycling unit please refer to [Recycling Receptacles](#).

recycling receptacles

Trash Receptacle: Recycling

Classic designs with a renewed purpose. These popular receptacle styles now offer special openings and clear graphics to collect recyclables or waste on college campuses, city streets or corporate courtyards.

features

- > 3 popular styles offered
- > special sized openings and signage to collect recyclables
- > standard openings also available with signage
- > Scarborough unit may be divided to collect waste and recyclables
- > **complementary products**
- > **more details**
 - 3 receptacle styles
 - selection of standard signs
 - liner included
 - single or dual purpose for Scarborough
 - freestanding/surface mount
 - variety of colors



More Details :: [Chase Park](#) [Petoskey](#) [Scarborough](#) [Sustainability and LEED](#) [Complementary Products](#)

- Choose from 3 popular receptacle styles
- Features special sized and standard openings to collect recyclables or waste
- Labels printed on high performance, exterior grade, UV protected vinyl - mounted securely to each unit
- All units include polyethylene liner
- All metal is finished with Landscape Forms' proprietary Pangard II® polyester powdercoat, a hard yet flexible finish that resists rusting, chipping, peeling and fading. A selection of standard colors are available as well as many optional color for an additional charge.

Chase Park Recycling Receptacle

- Opening for collection is in top and may be 5" diameter or standard 10" diameter (refer to Chase Park litter receptacle for standard 10" diameter top opening images)
- Selection of standard signage options ([click here to view](#))
- 40 gallon capacity polyethylene liner included
- Side door swings open allowing liner to slide out; content is emptied by lifting trash bag out of liner
- Side door may be specified with a lock
- Constructed of cast aluminum sides and door; spun aluminum top; cast iron base
- Door hinge and latch are stainless steel
- May be left freestanding or surface mounted on site
- Dimensions: 24" dia x 39"h
- To specify: Select Chase Park Top Opening Receptacle with Signage. Choose 5" diameter or standard 10" diameter opening, standard wording option for signage, with or without lock and powdercoat color.

E.2.16.3. Trash Receptacle: Type 3

E.2.16.3.1. Material or Product: Blast resistant trash receptacle.

E.2.16.3.2. Description: Trash receptacle capable of containing blast from devices placed within. Varying blast levels available.

E.2.16.3.3. Requirements: EXCR Citadel Model by Security Pro USA or approved equal. Custom powder coat/paint Color 1 with SS top ring. Note this selection is based on performance and visual requirements. Provide lid covers where required for exterior locations.

Potential Sources:

Security Pro USA
2265 Westwood Blvd, Suite 17
Los Angeles, CA 90064
800-264-8273
www.securityprousa.com

Bomb Resistant Waste Receptacles
383 West Route 59
Spring Valley, NY 10977
845-371-3333
www.bombreceptacles.com

Centerpoint Manufacturing, Inc.
Robertsdale Industrial Park
17175 John Glenn Ave
Robertsdale, AL 36567
866-256-0114
www.centerpointmfg.com

E.2.16.3.4. Standards/References:

PenRen Field Guide to Sustainable Design.

E.2.16.3.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.16.3.6. Durability: Painted metal may require some ongoing maintenance



- Personal Protection
- Spy Dept
- Survival Gear
- Home Security
- Office Products
- Police Supplies
- Electronics
- Knives & Swords
- Books & News
- Government
- Military Import/Export
- Big Sale
- Security Services
- Bodyguards
- Security Consultations
- Private Investigators
- Crime Sc. Inv. Supplies
- About Us
- Privacy Policy



[Home](#) » [BxB; Bomb Explosion Bin](#) : [Explosion Resistant Trash Receptacles \(bomb proof bins\)](#)

BxB; Bomb Explosion Bin

Code: cp_EXB
 Options: Model: Level Rampart
 Availability: Usually ships in 2-3 business days.
 Regular price: \$3,200.00
 Quantity: 1



+ zoom bookmark



Features of EXCR™ Explosion Resistant Trash Receptacles

- * Triple wall patented technology, tested at U.S. testing agencies and qualified to withstand multiple location, full capacity explosions without horizontal or metal fragmentation.
- * Internal blast is directed vertically. Unique Compression Absorption Resilient (CAR) layers are used with all models.
- * Unique, patented design with no metal parts of container in blast path to become airborne damaging debris.
- * Galvanized edges, walls, and drains provide corrosion resistance in most environments.
- * Sturdy galvanized exterior walls may be covered with your choice of factory installed color laminates. Laminates can also be custom designed with special logos or seals. Dings and dents will be minimized with laminates over metal and laminates also resist fading compared to painted surfaces.
- * Laminate exterior can be replaced by a local laminator if damaged or color schemes are revised.
- * Brushed Finish.
- * 304 Brushed Finish Stainless Steel exterior is available instead of galvanized exterior covered with laminate.
- * Optional painted finishes by Duron® or Sherwin-Williams® can be applied in a variety of colors. This coating is superior to powder coating for heavy metal finishes. Consult factory for current color selection.
- * Attractive and durable 304 Spun Stainless Steel top is standard.
- * The radiused and angled stainless top is designed to tip items into container to prevent explosives being placed above protective zone.
- * Heavy patented locking plastic liner accepts multiple garbage bags at the same time, which are easily removed when full. Attendant, concession or security can remove a full bag and prevent an explosive being placed above containment area during peak usage.
- * Plastic liners are full capacity thirty (30) and forty (40) gallon, not nominal sizes.
- * Drainage options are standard. Seepage around top can be stored internally for later clean up. Any liquids within the garbage bag are contained by the heavy plastic liner if the bag leaks.
- * An accessory weatherproof cover is available that keeps outdoor installation contents dry or hides unsightly contents at any location. The only cover in the industry is made from sun resistant, flexible molded plastics that will become part of vertical blast and not contribute to secondary metal shrapnel effect.
- * Standard pallet jacks and lifting equipment locate and install receptacle. The special lifting tool is provided with every order.
- * Easy on-site placement, leveling, and anchoring with single point pickup and stainless, concrete anchor which resists over 4000 pounds in shear (horizontal) or tension (vertical) forces. Ten minutes is all the time needed to install once the receptacle is at its location.
- * Installation and maintenance instructions included with each receptacle. Technical assistance is available via email and phone. On site supervision can be provided.
- * All EXCR™ models use the same size exterior dimensions that are 29.25" outside diameter and 37.5" high with up to 1.5" additional height when feet are extended. The same size top and exteriors are used on all models. This standardization defeats any attempt to visually determine the protection of the container purchased. The qualified force protections of the EXCR™ models and your location are never published. These features add to your security.
- * Custom sizes for many models have been developed. Contact the factory for consultation.
- * Each receptacle is individually packaged with sturdy pallet and protective, custom designed packaging.
- * ADA compliant.
- * Designed and built in the USA using US purchased materials.



BxB; Bomb Explosion Bin

**** Available Colors (please make a note in the "comments" section of the order form to specify color):

Stainless Steel

Red, Blue, Green, Custom Logos

Triple wall patented technology

Vertically directed internal blast

Galvanized edges, walls, and drains

Weatherproof cover is available

Installation and Maintenance instructions included

ADA compliant

Designed and built in the USA

Unique, patented design

E.2.17. Courtyard Furniture

E.2.17.1. Courtyard Furniture: Type 1

E.2.17.1.1. Material or Product: Dining area table

E.2.17.1.2. Description: Dining table for new outdoor seating area adjacent to the new Food Court.

E.2.17.1.3. Requirements: Provide 48” diameter tubular steel dining table equal to “Cambi #805” by EMU or approved alternate. Provide with 1.5” minimum center hole to insert umbrella. Custom color to match provided color palette.

Potential Sources:

EMU

104 Broadway, STE 500

Denver, CO 80203

800-726-0368

www.emuamericas.com

Spacify

www.spacify.com

TablesNChairs.com, LLC

5428 90th Avenue Circle East

Parrish, FL 34219

1-888-524-2582

www.tablesnchairs.com

E.2.17.1.4. Standards/References:

PenRen Field Guide to Sustainable Design.

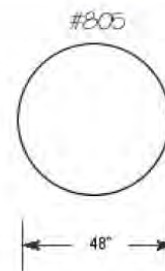
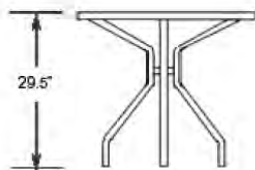
E.2.17.1.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.17.1.6. Durability: Painted metal requires some regular maintenance.



Cambi

Design: A. Gabatti



Item #805 Patented
Outdoor/Indoor Umbrella Tables
Legs: Tubular Steel
Top: Steel Mesh
Finish: See Price List
Foot Caps: Polyethylene
Diameter of Umbrella Hole: 1 9/16"
Weight Each: 26.5 lbs. (#803), 35.7 lbs. (#804),
41.9 lbs. (#805), 31 lbs. (#813)
Units Per Box: 1
Box Volume: 2.3 Cubic Ft. (#803), 3.95 Cubic Ft. (#804),
5.15 Cubic Ft. (#805), 3.1 Cubic Ft. (#813)
Assembly Required

E.2.17. Courtyard Furniture

E.2.17.2. Courtyard Furniture: Type 2

E.2.17.1.2. Material or Product: Dining area seating

E.2.17.2.2. Description: Dining chair for new outdoor seating area adjacent to the new Food Court.

E.2.17.2.3. Requirements: Provide stackable tubular steel dining chair equal to “Topper HD” by EMU, or approved alternate. Custom color to match provided color palette.

Potential Sources:

EMU

104 Broadway, STE 500

Denver, CO 80203

800-726-0368

www.emuamericas.com

Spacify

www.spacify.com

TablesNChairs.com, LLC

5428 90th Avenue Circle East

Parrish, FL 34219

1-888-524-2582

www.tablesnchairs.com

E.2.17.2.4. Standards/References:

PenRen Field Guide to Sustainable Design.

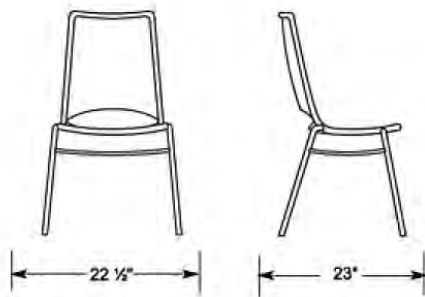
E.2.17.2.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.17.2.6. Durability: Painted metal requires some regular maintenance.



Topper HD

Design: Chiaromonte-Mann



Item #151S14 Patented
Outdoor/Indoor Stacking Heavy Duty
Side Chair
Frame: Tubular Steel
Seat/Back: Interlace Steel Mesh
Finish: See Price List
Foot Caps: Plastic
Weight Each: 12.5 Lbs.
Units Per Box: 4
Box Volume: 16.5 Cubic Ft.

E.2.17. Courtyard Furniture

E.2.17.3. Courtyard Furniture: Type 3

E.2.17.3.2. Material or Product: Dining area umbrellas

E.2.17.3.2. Description: Umbrella for use with tables for the new outdoor seating area adjacent to the new Food Court.

E.2.17.3.3. Requirements: Provide a 9' diameter commercial grade umbrella with 8 ribs, a 1.5" diameter aluminum pole, single vent with 84": minimum headroom, equal to "MONT 908" by California Umbrella, or approved alternate. Provide with 70lbs simple base equal to "CMFT 170 " by California Umbrella, or approved alternate. Custom color for umbrella fabric to match accent colors 7, 8, 9 or 10. Colors for pole and base to match provided color palette.

Potential Sources:

California Umbrella
1480 E Grand Ave
Pomona, CA 91766
909-622-4800

www.californiaumbrella.com

Galtech International
2581 Turquoise Circle
Newbury Park, CA 91320
805-376-1060

www.galtechcorp.com

Outdoor Living Showroom
ATG Stores
11730 118th Ave NE, Suite 400
Kirkland, WA 98034
425-814-2515

www.outdoorlivingshowroom.com

E.2.17.3.4. Standards/References:

PenRen Field Guide to Sustainable Design.

E.2.17.3.5. Sustainability: Utilize locally sourced material and recycled content to the extent possible.

E.2.17.3.6. Durability: Painted metal and umbrella fabric requires some regular maintenance.



 MONT

MODEL: MONT 908 MONT118
SIZE: 9'X8 RIBS 11'X8 RIBS
POLE DIAMETER 1.5" 1.5"

DELUXE PULLEY LIFT
SINGLE PIECE POLE DESIGN
CHOICES OF FRAME COLORS
COMMERCIAL GRADE ALUMINUM
WALL THICKNESS

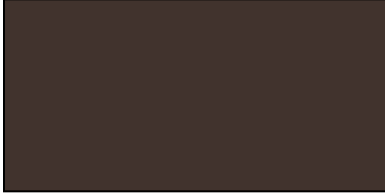


CMFT 170
WEIGHT: 70 LBS
DIAMETER: 1.75"
MATERIAL: STEEL COVER
WITH CONCRETE
COLORS: BLACK, BRONZE,
DOUBLE KNOTS FOR
BETTER SECURITY

E.3. Color Schedule

E.3.1. Painted Finishes

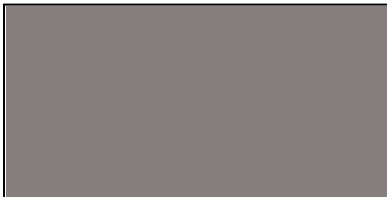
E.3.1.1. Color 1: Dark Brown/Bronze.
Sherwin Williams: #SW 7048



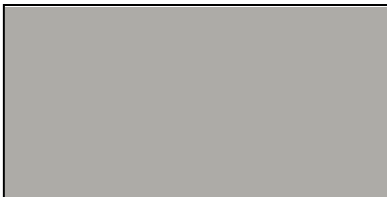
E.3.1.1. Color 1A: Mineral Bronze.
Metallic Powder Coating: Match
“Mineral Bronze by Fairweather Site Furnishings.”



E.3.1.2. Color 2: Dark Grey.
Benjamin Moore: #2112-40



E.3.1.3. Color 3: Medium Grey.
Benjamin Moore: #2112-50

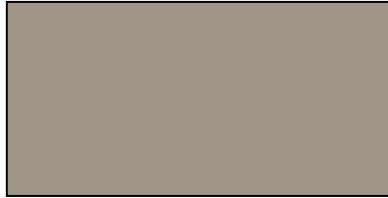


Colors in printed versions of the Manual should not be used for matching purposes. Use only actual color sheets or samples from manufacturers for accurate colors.

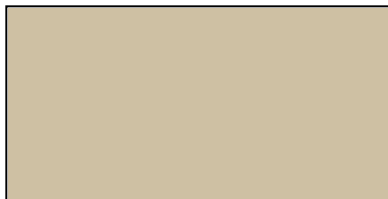
E.3.1.4. Color 4: Light Grey
Benjamin Moore: #2112-60



E.3.1.5. Color 5: Buff
Benjamin Moore: #RME-73 “Briarwood – Ready Mixed”

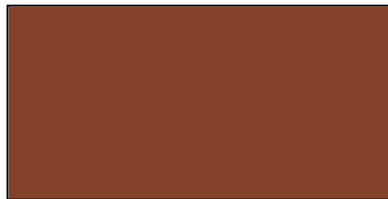


E.3.1.6. Color 6: Cream
Paint: Benjamin Moore: #HC-90
Fluoropolymer: Linetec Fluoropon LT442799, Pentagon Tan



Accent colors to be used only at non-permanent items such as furniture, fabrics, umbrellas, banners, etc.

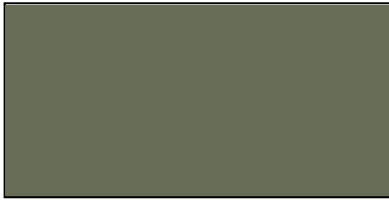
E.3.1.7. Color 7: (Accent Color)
Benjamin Moore: #2174-10



Colors in printed versions of the Manual should not be used for matching purposes. Use only actual color sheets or samples from manufacturers for accurate colors.

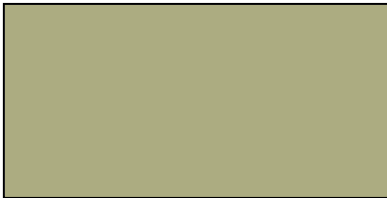
E.3.1.8. Color 8: (Accent Color)

Benjamin Moore: #2141-30



E.3.1.9. Color 9: (Accent Color)

Benjamin Moore: #2142-40



E.3.1.10. Color 10: (Accent Color)

Benjamin Moore: #2160-40



Sample sheets of paint colors can be ordered from the manufacturers at the websites listed below:

Benjamin Moore: <http://bm.faicentral.com/logina/>

Sherwin Williams: <http://sherlink2.sherwin.com/resource/ctools/login.do>

E.3.2. Metal Finishes

E.3.2.1. Finish 1: Dark Oxidized/Oil Rubbed (Statuary) Bronze

E.3.2.2. Finish 2: Satin Finish Bronze

E.3.2.3. Finish 3: Polished Bronze

E.3.2.4. Finish Type 4: Satin Stainless Steel

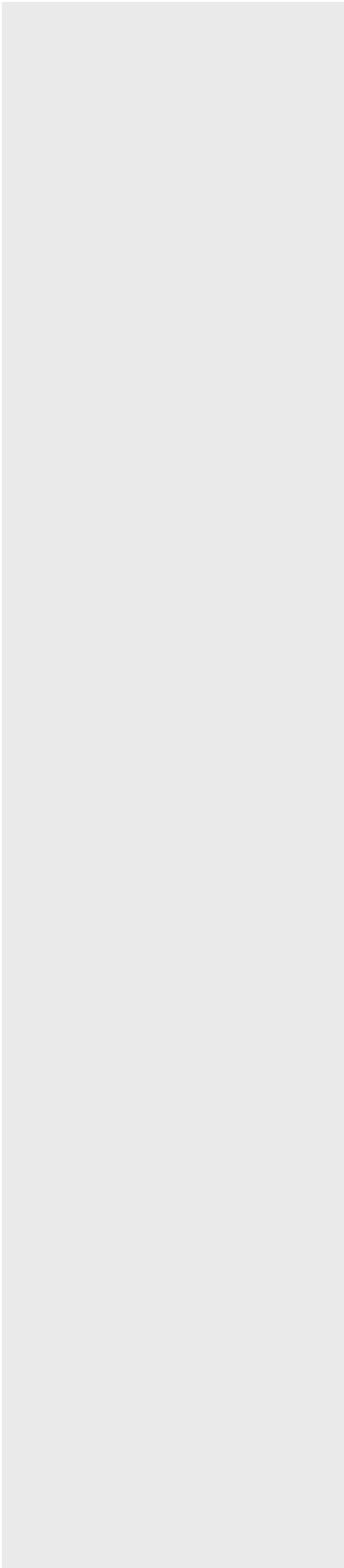
E.3.2.5. Finish Type 5: Dark Bronze Anodized Aluminum

Colors in printed versions of the Manual should not be used for matching purposes. Use only actual color sheets or samples from manufacturers for accurate colors.



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F. IMPLEMENTATION



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F.1. Below Standard Exterior Conditions and Recommendations for Improvement

[As of 2009]

F.1.1. All Zones

- **F.1.1.1.** Perimeter fencing varies in style around the site. Portions of fencing should be replaced to provide a consistent appearance.
- **F.1.1.2.** The Reservation lacks an appropriate and distinctive site-wide signage program. A comprehensive signage system, including pedestrian signage, vehicular signage, and boundary markers, should be implemented.
- **F.1.1.3.** Security facilities vary in nature around the site, and typically present a cluttered and temporary appearance. Equipment and installation details vary. A consistent program of security stations should be implemented in conformance with recommended standards.
- **F.1.1.4.** Site lighting is varied and, in many locations, non-existent. A comprehensive and consistent lighting program based on pole-mounted site lighting should be implemented.

F.1.2. Zone 0

- **F.1.2.1.** Visually obtrusive lighting fixtures at building rooftop should be replaced with site mounted security lighting.

F.1.3. Zone 1

- **F.1.3.1.** Existing, non-original concrete pavement at walkways is aesthetically inconsistent with this zone. It should be replaced with concrete of the recommended mix, with jointing to match the original design.
- **F.1.3.2.** Existing site furnishings, including benches, trash receptacles, and site lighting, are not original to the courtyard and detract somewhat from its appearance. They should be replaced with recommended furnishings.
- **F.1.3.3.** The existing metal canopy attached to the building face should be removed and replaced with a new canopy designed to recommended standards.

F.1.4. Zone 2A

- **F.1.4.1.** Existing, non-original asphalt pavement at parking area and drives is aesthetically inconsistent with this zone. It should be replaced with concrete of the recommended mix.
- **F.1.4.2.** Existing benches are not original to the Parade Ground and detract from its appearance. They should be replaced with recommended furnishings.
- **F.1.4.3.** The modified pedestrian overpasses above Route 110 are of cast concrete construction aesthetically inconsistent with the parkway design language. These structures are recently constructed, however, and may remain in place.
- **F.1.4.4.** Cast concrete site walls flanking the relocated Route 110 are aesthetically inconsistent with the parkway design language. However, they relate acceptably to the original Mall Terrace construction, and are recently constructed. These walls may remain in place.

F.1.5. Zone 2B

- **F.1.5.1.** The designed landscape at the RDF deck has been largely removed and replaced with artificial turf for the temporary helicopter facility. Upon relocation of this facility, the landscaping of the RDF should be fully installed as designed.
- **F.1.5.2.** Existing building and site elements, including wall finishes, railings, and lighting, are distinct to this zone. Ornamental cast iron light standards in particular are inconsistent with the simplified aesthetic of the Reservation. These elements are recently installed and may remain as-is. Alternatively, they may be upgraded over time to conform to recommended standards.
- **F.1.5.3.** Cementitious wall finishes at the RDF terrace/PAC roof appear to be a concern for the future. While of recent construction, their parged finish already is showing signs of distress: cracking, patched areas, irregular surface finish, and discoloration. It is likely that this material was selected with the goal of construction cost-savings, but given its prominent location and exposure to the elements it is more likely to become a source of higher maintenance costs as it ages further. Wall finishes should be of consistent quality in this zone and repairs should conform to recommended wall types.

F.1.6. Zone 3A

- **F.1.6.1.** The existing South Bridges and MEF intrude into this zone and impact the historic building facades. The MEF includes a large, tripartite, limestone-clad entry structure that obscures completely an extensive, if unarticulated, portion of the original façade. However, it is a permanent installation that will remain in place.

Possible future interventions include security screening facilities intended to make that security function more remote from the Pentagon itself, replacing temporary structures currently in place. Ideally these functions could be accommodated in an axially located structure immediately in front of the MEF, but other considerations may dictate their off-center placement. In any event they will require careful design. Solid areas of their facades should incorporate limestone to match the MEF and, to the extent possible, should include extensive glazing to lighten their mass. If glazing is impractical, other means of reinforcing a “pavilion” imagery should be considered. Repeating the solid block massing of the existing MEF should be avoided.

Consideration may be given to removal of the South Bridges. These elements span a roadway that is no longer in any significant use. If the bridges are to remain in place, permanent security accommodations will be required; either integrated into the existing permanent construction, or designed as independent structures of a pavilion-like character.

- **F.1.6.2.** The existing, walled-in area between the South Bridges containing temporary trailers for concessions is visually obtrusive. When the trailers are removed from the original Loading Dock, its use for that function is anticipated to be limited to a pair of bays for emergency use. Ideally, the dock zone would then be altered to recall the original Pentagon design for those areas where the façade simply meets the ground: a green lawn terminating at the monumental building edge. These alterations would need to be made in concert with permanent security provisions.
- **F.1.6.3.** At the west facade, facing Washington Boulevard, an access road /fire lane is located in close proximity to the building face, separated only by a sidewalk and narrow planting bed. Ideally this roadway could be shifted farther from the building, to the outer edge of the zone. As the road approaches the Wedge 2 Apex, it incorporates an executive parking lot, which too should be shifted away from the building edge and softened by a landscape treatment that is informal in character, consistent with zone requirements.

- **F.1.6.4.** Existing, non-original asphalt pavement at parking area and drives is aesthetically inconsistent with this zone. It should be replaced with concrete of the recommended mix.
- **F.1.6.5.** All shrubbery within this zone should be removed, and a simple green lawn to the building edge restored, with plantings as recommended.

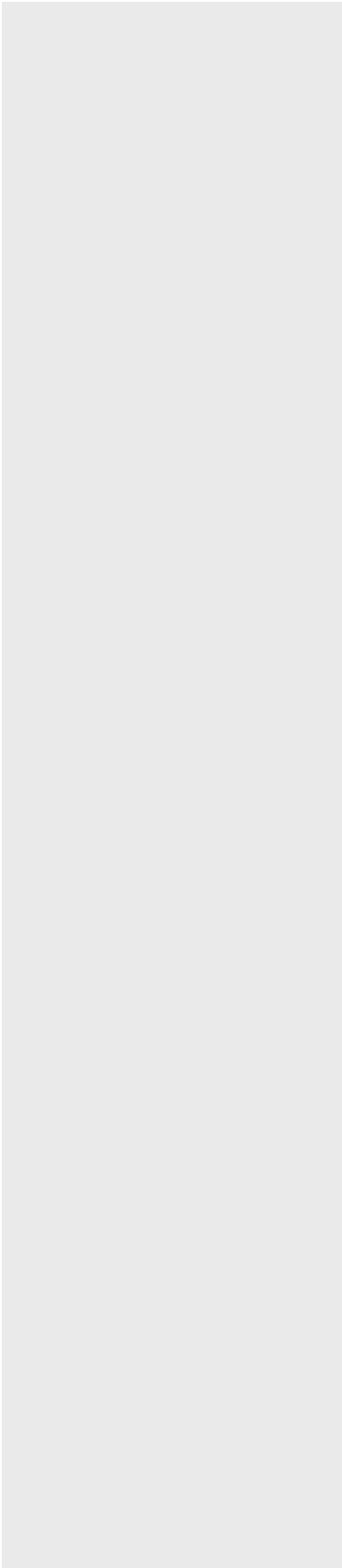
F.1.7. Zone 3B

- **F.1.7.1.** See Zone 3A. for discussion of South Bridges.
- **F.1.7.2.** Consideration should be given to improving the plaza area in front of the South Bridges. Currently, a proliferation of bollards, pedestrian barriers, and paving types creates visual disarray. Simplification and standardization of site elements should be implemented.
- **F.1.7.3.** The existing public pathway from the MEF to the Pentagon Memorial is poorly marked and indistinguishable from other, more official areas. Because no visitor parking exists on site the Metro is the primary means for visitors to access the Memorial. At the Wedge 5 apex they are diverted from the logical path along the building face to a path at the edge of the South parking lot, much further removed from the building. An improved walkway is recommended, including signage, paving, landscaping and amenities to mitigate its circuitous route and great length. Distinction should be made from official use areas, utilizing recommended site elements.
- **F.1.7.4.** The existing shoring and lagging abutting the former Route 110 roadbed is in poor condition, and will have to be replaced in the short term. Grading and landscaping in this area should be developed to minimize the intrusion of vehicular lanes so close to the building and emphasize the view of the Wedge 3 apex above the landscape.
- **F.1.7.5.** If the Corridor 8 temporary entrance is to be retained on a permanent basis for users of adjacent parking areas in the abandoned roadbed, a more appropriate but discrete architectural enclosure is required.
- **F.1.7.6.** Extensive temporary lay-down areas associated with construction projects exist at the Wedge 4 apex. They should be removed and the areas between the former Route 110 roadbed and the Pentagon landscaped.
- **F.1.7.7.** The canopy of the temporary RDF truck screening facility is inappropriate on the Reservation. Concepts have been developed for a

new structure that would replace the temporary canopy. They would incorporate restroom facilities to serve the memorial, and are designed to be perceived as a part of the landscape rather than a prominent structure.

F.1.8. Zone 4

- **F.1.8.1.** The existing pedestrian entry from Army-Navy Drive through the tunnel under Shirley Highway is an unpleasant experience. The tunnel itself is poorly marked, dark and dreary, and the pathway from its discharge to the Pentagon Building is ill-defined. Boundary markers and site signage should be provided at parking areas on Army-Navy Drive. The pedestrian route should be enhanced through the use of paving and landscaping treatments. Lighting in the tunnel should be replaced. [Fixture selection TBD]. Note that work inside the tunnel would require coordination with Arlington County and/or VDOT.
- **F.1.8.2.** Existing vehicle barrier planters at the boundary of Zone 3B at the south side of the building are massive and ill proportioned, with low plantings of ragged appearance. The planters are aesthetically inappropriate in material color and detailing. They should be removed in their entirety, and alternative strategies implemented as required, in conformance with recommended standards.
- **F.1.8.3.** Existing surface parking lots on the south and west sides of the building are inefficient, inhospitable and environmentally unsound. Parking lighting is varied and inefficient. The parking areas should be modified to introduce landscaping and sustainable strategies. Existing parking lighting should be replaced with consistent new lighting fixtures providing required energy efficiency and light cutoff characteristics.
- **F.1.8.4.** The existing, abandoned Child Care Center does not serve a useful function and detracts from the appearance of this part of the Reservation. It should be removed in its entirety, and either new landscape or new parking areas provided following the recommended standards.
- **F.1.8.5.** Other areas vacated by the relocation of Route 110 have the distinct appearance of an abandoned highway. They detract seriously from the environment of the Reservation. All miscellaneous unused structures, fencing, curbs, walkways, etc. should be removed, and buffering landscape provided per the recommended standards.
- **F.1.8.6.** The cast concrete site wall surmounted with fencing at the parking area at the north apex of the zone, flanking the former Route 110 roadway, is inconsistent with the site wall at the RDF perimeter, as well as the parkway aesthetic. If possible, this site wall should be



replaced with a new wall in conformance with the recommended standard. This wall extends into Zone 2A (the River Terrace); a reasonable transition point between wall types would need to be established.

- **F.1.8.7.** The bridge structure over the abandoned route 110 has many exposed conduits, abandoned devices, etc. mounted to its surface. All surface mounted items should be removed or consolidated to improve their appearance.

F.1.9. Zone 5

- **F.1.9.1.** The large, existing surface parking lot is inefficient, inhospitable and environmentally unsound. Parking lighting is varied and inefficient. The parking areas should be modified to introduce landscaping and sustainable strategies. Existing parking lighting should be replaced with consistent new lighting fixtures providing required energy efficiency and light cutoff characteristics.
- **F.1.9.2.** The Mobile Office Complex should be removed and that area converted to parkland. This effort could be undertaken well in advance of any change to the parking lot. The remnants of the Pentagon's original sewage treatment facility, now abandoned within the MOC complex, should also be removed, along with the temporary security complex. This initial step in the improvement to the Reservation landscape would be significant given the MOC's site at one of the Reservation "gateways".

F.1.10. Zone 6

- **F.1.10.1.** While this zone is industrial in nature, additional improvements could be made to screen facilities from view, thereby mitigating visual impact on the Reservation. The use of plantings and green screens is suggested.

F.2. Manual Updating Process

The success of the Exterior Design Standards will lie in its becoming a dynamic document, one that is used and, as a result of that use, updated and revised so as to maintain its timeliness and timelessness. Both aspects are of importance, not only that it reflects current thinking, program requirements, and technology, but that it also reflects an overall aesthetic and practical sensibility that makes it relevant over a long period of time. This aspect of the Standards must be supported by a standard protocol for proposing change, for reviewing the proposed change over a range of expertise, and for disseminating the results.

While WHS may want to formulate this protocol based on its own organizational characteristics, the Metropolitan Washington Airports Authority has in place a relevant model. MWAA publishes a Design Manual that governs all work undertaken at its historic facilities at both Dulles and Ronald Reagan Washington National Airports. Review of proposed projects is typically undertaken, at least in part, by confirming their compliance to the standards outlined in the Manual. The multi-volume Design Manual is issued annually, typically in soft copy, to Airport officials and staff, contractors, and other interested parties.

Throughout the year, MWAA's Design Manager entertains proposed revisions, documented on a simple flexible electronic form similar to that attached. The form includes specifics regarding current and proposed language, as well as an opportunity to provide narrative in support of the proposal. The revision is assigned a log number for tracking, and the proposal is reviewed and formal action is taken, ranging from:

- Approval of the proposed change, to
- Approval of a revised proposal, to
- Request for further study, to
- Determination that the proposal will not be implemented.

A review group is identified that includes the range of interested parties and varying expertise, so that the changes can be properly vetted within the different areas of the organization. Prior to the re-issuance of the Manual each year, the changes are incorporated in the text and graphic materials, identified as "edited" portions of the Manual. In addition, an outline summary of changes accompanies each issuance so that changes will be apparent to the users.

For this process to be successful over time it will require that WHS clarify issues of both authority and responsibility, so that the importance of the Standards can be made evident through all levels of its organization. This can be accomplished by:

- Identifying the WHS office with the authority to authorize charges, such as the Director, DFD, or his delegate, and
- Identifying the WHS office that will maintain the Standard, distribute it, process requests for revisions, and implement them when directed.

Supporting the WHS office responsible for maintaining the Standard will be a reviewer group that includes the following areas of expertise, at a minimum:

- Operations and Maintenance
- Historic Preservation
- Sustainability
- Safety

Suggested revision form for Exterior Standards Manual

Date:		Log Number:	
To:	(Designated Individual Within WHS Organization)		
From:			
Exterior Standards Manual Section:			
Exterior Standards Manual Paragraph:			
Exterior Standards Manual Page:			

Background: (Narrative describing the issues that support a suggested revision, such as a change in WHS program, change in existing conditions, completion of related projects, newly available technology or product, etc.)

2009 Exterior Standards Manual Text: (Insert current text proposed for revision. Attach current graphic where applicable.)

Proposed 2010 Exterior Standards Manual Text: (Insert proposed revised text. Attach proposed new or revised graphic, where applicable.)

F.3. Implementation of Standards

F.3.1. Internal Processes

Implementation of the Exterior Standards Manual will require WHS to establish clear protocols for its use. The Pentagon is a dynamic place where the physical facilities are under constant stress due to evolving needs and hard use. The number of repair, renovation, and expansion activities required over the course of a month or year, and the number of individuals and organizations who influence those actions, is not easily determined, but sure to be considerable. As the Standard is evaluated and finalized, the following issues need to be considered:

- The status of the Standard, as either guidance or requirement, must be clearly articulated.
- If compliance is a requirement, then a means of monitoring that compliance is necessary.
- Existing standards for monitoring compliance on the Reservation, using models ranging from the permit process to the activities of the Corridor Committee, should be evaluated as precedents for enforcement of the Exterior Standards.
- The breadth of the Standard will require a review/approval authority that reflects a range of expertise. WHS is not in need of “Design Police”, rather it is in need of a group of problem-solvers who have an understanding of, and appreciation for, the importance of the Pentagon as emblematic of the order, discipline and strength of our military.

In addition to compliance, WHS will need to consider how the Standard can be maintained as an evolving and responsive document that reflects changing reality. Such evolution is essential if it is to remain relevant over time. Considerations include not only change of mission in the Pentagon’s user groups, but also changing technology, the availability of approved/standard products, fluctuation in appropriations for physical improvements, and phased implementation of the Master Plan. All of these considerations will impact the Standard over time.

F.3.2. External Approvals

The Pentagon Office Building Complex is a federally-owned historic property designated as a National Historic Landmark. It is also listed on the Virginia Landmark Register. As such, all undertakings on the Reservation must be in compliance with applicable environmental and preservation laws, including Section 106 (Advisory Council) Review.

Further, the Pentagon Reservation falls under the jurisdiction of the National Capital Planning Commission (NCPC), the federal government’s central planning agency for federal land and buildings in the National Capital Region. The NCPC is charged with protecting and enhancing the extraordinary historical, cultural, and natural resources of the nation's capital. Finally, the Commission of

Fine Arts (CFA) has historically reviewed projects at the Pentagon Reservation under its Federal Direct Submission process.

Within WHS, the responsibility for coordination of requirements related to Cultural Resources rests with the Cultural Resource Program Manager, within the Engineering and Technical Services Division (ETSD) Safety and Environmental Management Branch (SEMB). The Cultural Resources Program Manager will serve as the Pentagon's lead in all external review processes, including the following.

- **F.3.2.1. Section 106 Review.**

A well-developed Standard Operating Procedure for Section 106 Consultation has been developed by WHS/DFD/SEMB, which describes specifically the steps of that process, the consulting parties, and the varying levels of review that may be required. When an undertaking is identified, its potential impact on elements having historic significance must be identified. Currently, only the Pentagon itself is designated as having historic significance. The Sewage Treatment Plant, parking areas and roadways are specifically not designated, nor is any landscaping designated outside the Center Court. However, there are a number of facilities on the Reservation that have not been considered, most dating from the past twenty years, following the completion of the NRHP nomination form that evaluated structures on the Pentagon Reservation. The SOP describes the steps required when the proposed undertaking might affect those facilities, which at a minimum require the SEMB Cultural Resources Manager to submit findings of no historic significance to the VA State Historic Preservation Officer. Other requirements will apply in instances where the Pentagon itself will be affected.

F.3.2.2. National Capital Planning Commission. The National Capitol Planning Commission (NCPC) is a twelve member Commission comprised of local and federal interests and constituencies that shape planning in the nation's capital. It includes Presidential Appointees, Mayoral Appointees, and Ex-Officio Members, one of whom is the Secretary of Defense. The currently designated Alternate to the Secretary is the Director of the Defense Facilities Directorate.

One of NCPC's primary mandates is to protect the beauty and historic fabric of the nation's capital. The Commission accomplishes this by ensuring that the plans it approves meet the highest standards of design and comply with the *Comprehensive Plan for the National Capital: Federal Elements*. As opposed to within the District of Columbia, the NCPC's role in review of projects at the Pentagon Reservation is advisory.

Among the projects of interest to the NCPC are the following:

- Perimeter Security Projects

- Project Plans
- Master Plans
- Antennae on Federal Property in the National Capital Region
- Environmental and Historic Preservation Policies and Procedures

F.3.2.3. Commission of Fine Arts. The Commission of Fine Arts (CFA), established in 1910 by Act of Congress, is charged with giving expert advice to the President, Congress and the heads of departments and agencies of the federal and District of Columbia governments on matters of design and aesthetics, as they affect the Federal interest and preserve the dignity of the nation's capital. The Commission consists of seven "well qualified judges of the fine arts" who are appointed by the President.

The CFA has historically reviewed exterior projects at the Pentagon Reservation under its Federal Direct Submission process.

There are two levels of review for direct submissions, Concept and Final. For an initial concept review, the Commission recommends that several design alternatives be provided for consideration. Typically, a concept design for a new project is reviewed before the completion of the schematic design phase. The final review of a project should occur at a point where no significant design changes are anticipated. Large, complex, or highly significant projects may require multiple reviews.

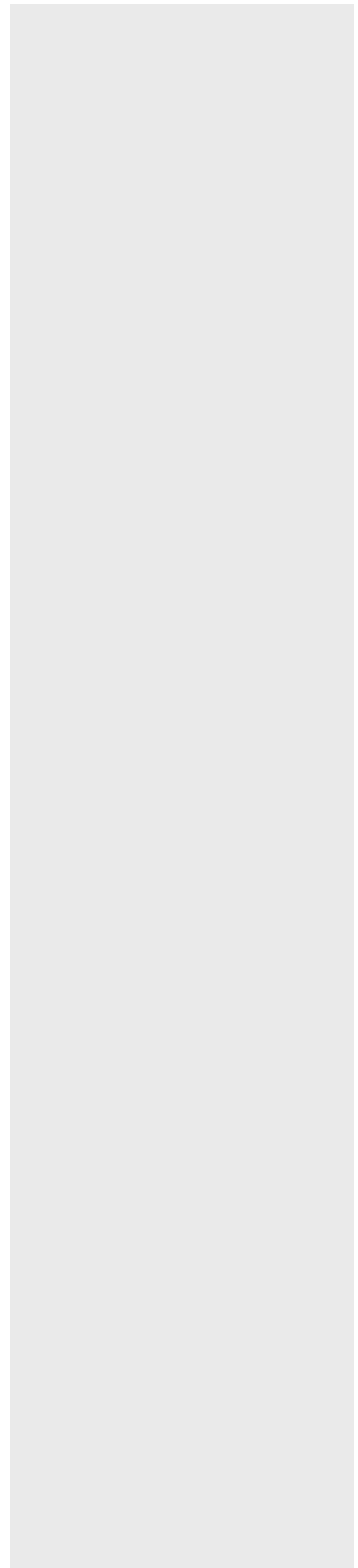
Applicants are encouraged to consult with the staff, as early as possible after a design project is initiated, as well as during the project's design development. A consultation meeting with the staff should be arranged prior to submitting the project for either a concept or final review.



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F.4. Summary

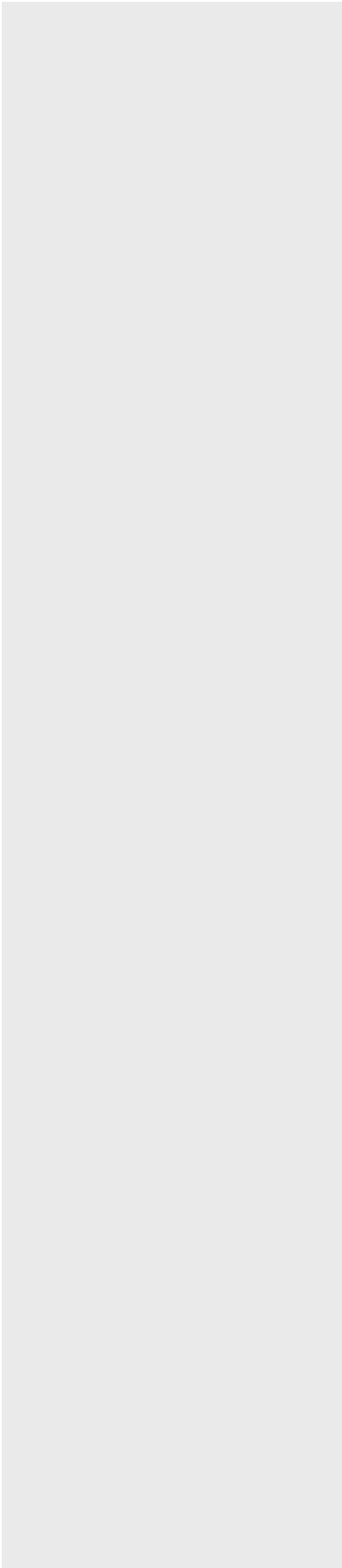
This Exterior Standards Manual has been prepared for the Washington Headquarters Services to guide the aesthetic development of the Pentagon Reservation. The guidelines presented herein provide a unified and consistent palette that, if implemented over time, will provide a visual coherence to the building and site in a manner that is appropriate, cost effective, enduring, and sustainable. It is anticipated that the Manual will be a “living document,” updated on an ongoing basis to reflect technological developments and material availability. However, its clear framework will provide a basis for future changes in harmony with the ideals defined in this document. Consistent use of the Exterior Standards Manual will ensure that the unique history and dignified stature of the Pentagon Reservation is protected and enhanced indefinitely.





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G. APPENDIX



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G.1. Standards and References

G.1.1. Military Standards

- Department of Defense Unified Facilities Criteria; in particular:
 - UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings, 10-08-2003
 - UFC 4-020-01 DoD Security Engineering Facilities Planning Manual, 09-11-2008
 - UFC 4-022-01 Security Engineering: Entry Control Facilities/Access Control Points, 05-25-2005
 - UFC 3-530-01 Design: Interior and Exterior Lighting and Controls, 08-22-2006

G.1.2. Greening/Sustainability Standards

- Field Guide for Sustainable Construction, June 2004, Pentagon Renovation and Construction Program Office
- Green Building Initiatives: DOE, EPA, US Green Building Council
- Department of Defense Unified Facilities Criteria: UFC 4-030-01 Sustainable Development, 12-21-2007

G.1.3. Historic Standards

- Historic Preservation documents for the Pentagon Reservation filed with the Virginia Department of Historic Resources
- National Historic Preservation Act of 1966
- National Capital Parks and Planning Commission (NCPC) Guidance
- ISEFMS Cultural Resources Management and SOP for National Historic Preservation Act (as prepared by WHS-ETSD-SEMB), Draft Version 1.0, last updated 26 February 2008
- National Historic Landmark Nomination Form, Pentagon Office Building Complex, April 30, 1992
- National Register of Historic Places Nomination Form, Pentagon Office Building Complex, June 15, 1989
- The Secretary of the Interiors' Standards for the Treatment of Historic Properties

G.1.4. Building Codes/Standards

- ABA - Architectural Barriers Act (ABA) Accessibility Standards for Federal Facilities (adopted by U.S. Department of Defense to replace the Uniform Federal Accessibility Standards (UFAS) effective October 31, 2008)
- Pentagon Reservation Building Code, 21 December 2006

G.1.5. Referenced Design Documents

- Pentagon Reservation Master Plan, SmithGroup, Inc., January 10, 2005
- Pentagon Reservation Pedestrian Plaza and Security Perimeter Measures, Ritter Architects, 2006
- DRAFT Exterior Design and Standard, Ritter Architects

G.2. The Secretary of the Interior's Standards for Rehabilitation

The Standards are applied to projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

ATTACHMENT 1.14.7

WHS-FSD CONSTRUCTION MANAGEMENT

GENERAL REQUIREMENTS - VERSION 9

ATTACHMENT A1

FSD CONSTRUCTION MANAGEMENT

GENERAL REQUIREMENTS

Version 9

January 24, 2020

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GENERAL REQUIREMENTS

Refer to the Statement of Work (SOW), Section 3.0 Submittal Requirements, for due dates, format, and review periods for Sections 01 through 09.

1.0 ADMINISTRATION

1.1 Project Kick-off Meeting

After contract award, the Contractor must meet with the Government and/or designated technical personnel at a mutually agreeable time to discuss and develop mutual understandings concerning schedule and administering work. All Contractors' key personnel must attend this meeting.

1.2 eFIC Kick-Off Meeting

Immediately following the Project Kick-Off Meeting, the Contractor and Design Team members must meet with the Pentagon's Enterprise Facility Information Center (eFIC), located in the Remote Delivery Facility (RDF), to review Pentagon standards (EDS, GIS, and BIM) applicable to the SOW. At a minimum, the Contractor's PM, the DOR, and the CADD Technician must attend this meeting. The COR may waive this meeting requirement if the Contractor is currently working on, or has recently worked on, an FSD project.

1.3 Coordination with Building Entities

The Contractor must coordinate, through CMD, all work with the following Pentagon organizations, as appropriate, for design and construction:

- Engineering and Architecture Division (EAD)
- Enterprise Facility Information Center (eFIC)
- Pentagon Building Management Office (PBMO)
- Heating and Refrigeration Plant (HRP)
- Leased Facilities Division (LFD)
- Space Portfolio Management Division (SPMD)
- Standards and Compliance Division (SCD)
 1. Office of the Pentagon Fire Marshal (OPFM)
 2. Environmental, Sustainability, and Energy Branch (ESEB)
 3. Occupational Safety and health Branch (OSHB)
- Pentagon Force Protection Agency (PFPA)
- Enterprise Information Technology Services Directorate (EITSD)
- Joint Service Provider (JSP)

This list is not all inclusive.

1.4 Weekly Progress Meetings

The Contractor must meet weekly with the Government for the purpose of jointly reviewing the actual progress on the project and discussing any ongoing or upcoming impacts to critical path activities. The meeting will also address the status of Safety, RFI's, RFP's, Quality Control and Submittals.

- 1.4.1 Required attendees from the Contractor include the Project Manager, Designer of Record, and the LEED Professional (as applicable) during Design and Construction. During construction, the Site Superintendent must also attend these meetings. The Site Safety Officer, the QC Manager, Scheduler, and the DOR must attend as requested by the Government. The DOR must attend Pre-Final and Final Project Meetings for certification of design compliance.
- 1.4.2 The Contractor must submit the following to the Government 24 hours in advance of the progress meeting:
- A. The agenda, with notes from the previous week's meeting.
 - B. A 2 week look ahead schedule, a 1 week look back schedule and the critical path in PDF format. The Contractor must provide a schedule narrative explaining any activity variances from the accepted baseline schedule and corrective actions that have been introduced.
 - C. Any supplemental schedules covering work in progress or scheduled to begin within the next 30 days.
 - D. The up-to-date Pre-Construction or Construction Submittal Register.
 - E. An RFI Log showing a record of all RFIs, both open and closed.
 - F. Status Report on all Long Lead (over 30 calendar days from order to delivery) Material Orders.
- 1.4.3 Weekly Progress Meeting Minutes: The Contractor is responsible for maintaining minutes for these meetings. The minutes must include all pertinent information reviewed, as well as responsible parties and resolution dates on all open items. The minutes must be sent to the COR/GPM for review within two (2) business days of the meeting. The COR/GPM will provide feedback to the Contractor within three (3) calendar days. The Contractor must incorporate comments and transmit these minutes for recording purposes.

1.5 Requests for Information (RFI)

The Contractor must use the Government provided RFI template and fill in all requested information. See SOW Attachment F: Document Control, "RFI Template".

1.6 Permit Parking Only

Parking on the Pentagon Reservation is by permit only. A maximum of four (4) parking permits are available per project, unless otherwise approved by the Government. Illegally parked and/or unregistered vehicles may be towed at the owner's expense. Parking of construction or privately owned vehicles must be coordinated through and authorized by the Government.

2.0 KEY PERSONNEL

The Contractor must provide separate and distinct individuals to fulfill the Key Personnel roles. Any deviations must be approved by the Government. Prior to making assignment changes, the Contractor must notify the Government, in writing, 30 calendar days prior to the proposed change, for Government

acceptance. Any replacements must possess equivalent or better qualifications.

- A. The Contractor may utilize the Quality Control Manager (QCM) as a dual role position for the Site Safety and Health Officer (SSHO), contingent upon submission of justification and demonstrating compliance with the minimum qualification requirements listed under the SSHO description.
- B. All Contractor key personnel, with the exception of the Designer of Record (DOR) and Scheduler, must be direct employees of the prime Contractor. If the DOR and/or Scheduler are sub-contractors, they must be directly contracted to the prime Contractor.

The Contractor must submit resumes of all key personnel to the Government that documents the following Qualification Requirements:

Position	Minimum Qualification Requirements
Project Manager	<ul style="list-style-type: none"> - 10 years design-build construction management experience, BS degree in construction management or engineering related field, and at least one of the following certifications or registrations: - Active Certified Construction Manager (CCM) certified by the Construction Manager Certification Institute. <li style="text-align: center;">OR - Active Project Management Professional (PMP) certification issued by the Project Management Institute <li style="text-align: center;">OR - Active Certified Professional Constructor (CPC) certified by the American Institute of Constructors & Constructor Certification Commission <li style="text-align: center;">OR - Active Designated Design-Build Professional certification administered by the DBIA <li style="text-align: center;">OR - Active Licensed Professional Registration in Virginia, Maryland, District of Columbia, or Pennsylvania. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>If no Certification or License, then Project Manager must have 20 years of Construction Management experience.</p> </div>
Designer of Record	<ul style="list-style-type: none"> - BS degree in an engineering or architectural discipline. - 10 years of design experience. - Active Licensed Professional Registration in Virginia, Maryland, District of Columbia, or Pennsylvania.
Qualified Fire Protection Engineer (QFPE)	<ul style="list-style-type: none"> - Registered professional engineer (P.E.). - Has passed the fire protection engineering examination administered by NCEES. - Has 5 years of fire protection engineering experience.

Site Safety and Health Officer (SSHO)	<ul style="list-style-type: none"> - 5 years of continuous construction industry safety experience in supervising/managing general construction or three years if they possess a Certified Safety Professional (CSP) or safety and health degree. - Must have completed the 30-hour OSHA Construction Safety Class or, as an equivalent, 30 hours of formal construction safety and health training covering the subjects of the OSHA 30-hour course (see EM385-1-1, Appendix A, paragraph 3.d.3) applicable to the work to be performed and given by qualified instructors.
Quality Control Manager	- Refer to SOW Attachment G: Quality Control.
Site Superintendent	<ul style="list-style-type: none"> - 10 years of experience as Construction Site Superintendent - Completion of OSHA training
Contractor's Scheduler	- See Attachment K: Schedule Requirements for Qualification Requirements
LEED Professional (Required for projects that are pursuing LEED certification)	<ul style="list-style-type: none"> - Active LEED AP certification - Experience certifying at least 3 LEED projects

2.1 Project Manager

The Contractor must designate a Project Manager that has overall responsibility for the contract. The Project Manager must be responsible for the execution and coordination of all administration, design (if applicable), quality control, safety, and construction of the contract. The Project Manager must ensure that the controls and procedures in place are followed, in order to eliminate conflicts, errors and omissions, and to ensure that all technical requirements are met and standards are adhered to. This individual will serve as the single Point of Contact (POC) and liaison between the Government and the Contractor. The Project Manager must have proven experience in the management of design/build construction contracts. All Submittals under Section 3.0 Site, 4.0 Cost-Schedule-Invoice, and 5.0 Quality Control and Safety requires the Project Manager's signature of review upon submission to the Government.

2.2 Designer of Record (DOR)

The Contractor must assemble and manage a full service team of licensed professionals, as required, to carry out all applicable disciplines and phases of the project. This design team must either be the Prime Contractor or a first-tier sub-contractor to the Prime Contractor. They must also obtain the services of a designated Registered Architect/Professional Engineer, as defined in the UFC, to serve as the Designer of Record. The DOR must have an active license in the State or District in which the work is being performed. The DOR must have proven experience in design, installation, and commissioning, if applicable, in similar projects and is the design certifying authority throughout the project. The DOR must ensure that staff designers possess the required expertise in AutoCAD 2013 (.dwg) or later version for the production of the Construction Documents for this Contract. The DOR must be involved in every step of the project and is responsible for the execution and coordination of all architecture-engineering elements, applicable disciplines, phases, and compliance with Electronic Data Standards. The DOR must review and sign a statement certifying compliance with contract requirements on each design submission PRIOR

to submitting it to the Government, or the Government will not review the submission. The DOR must attend project site visits to review quality of workmanship, verify design compliance and submit to the Government a monthly report, with photos indicating such compliance. The DOR is responsible to provide a Design Quality Control Plan. All Submittals under Section 3.0: Site, Section 6.0: Design & Construction, and Section 8.0: Closeout, requires the DOR's stamp/signature of approval upon submission to the Government.

2.3 Qualified Fire Protection Engineer (QFPE)

The Contractor must designate a Qualified Fire Protection Engineer (QFPE) that has overall responsibility for every aspect of fire protection and life safety design, construction, and testing/commissioning, throughout all phases of Major Projects as defined by UFC 3-600-01. The QFPE must be either the Designer of Record (DOR) or a first-tier sub-contractor to the DOR, and must meet the qualifications listed above. The QFPE is responsible, at a minimum, for providing all Fire Protection Engineering Services identified in UFC 3-600-01, Section 1-7.

2.4 Site Safety Health Officer (SSHO)

The Contractor must designate an SSHO that has overall responsibility for safety and must submit the resume for the designated SSHO identified in the APP to the project for review and acceptance by the Government. The individual's credentials will only be reviewed per the requirements listed in EM-385-1-1. Upon acceptance, the SSHO will be placed on a 6 month probationary period and may be removed from the project at the discretion of the Government for unsatisfactory performance. The SSHO is responsible for managing, implementing and enforcing the Contractor's Safety and Health Program in accordance with the accepted APP. The SSHO must be on site whenever work is being performed. An alternate SSHO must be named to perform these duties in the primary SSHO's absence. The Site Superintendent or the Project Manager may not be the SSHO.

2.5 Quality Control Manager (QCM)

The Contractor must designate a QCM, who is responsible for ensuring the project is constructed in accordance with the established standards. The QCM role includes direct oversight and review of the entire documentation and physical inspection phase of the construction process, as well as working with other key personnel (e.g.: Project Managers, Superintendents, etc.) to produce and document a quality product. The QCM must report to an officer of the firm and must not be subordinate to the Project Superintendent or the Project Manager. The designated QCM must be present on the site at all times to oversee all construction or demolition activities. An alternate QCM must be named to perform these duties in the primary QCM's absence. Refer to SOW Attachment G: Quality Control, "UFGS 01 45 00.00 10". All Submittals under Sections 6.0: Design and Construction and 8.0: Closeout requires the QCM's signature of approval and stamped upon submission to the Government.

2.6 Site Superintendent

The Contractor must designate a Site Superintendent that has overall responsibility for the day to day construction functions required for this contract. The Site Superintendent must have proven experience in the management/coordination of a construction project.

2.7 Contractor's Scheduler

See Attachment K: Schedule Requirements for Qualification Requirements

2.8 LEED Professional

For projects that are pursuing LEED certification, the Contractor must designate a LEED Professional. This individual must be an active LEED Accredited Professional (AP), with certification from the U.S. Green Building Council (USGBC) and experience in certifying at least three (3) LEED projects. The LEED Professional is responsible for leading and coordinating the certification process. The LEED Professional must submit the proposed LEED scorecard to the Government, with all design submissions, beginning with the BOD. Once the complete design is approved by the Government (acceptance of IFC documents), this individual must submit the design credits to the Government for review and approval, prior to submitting them to USGBC for design review. This will ensure the project is on track to meet LEED certification, prior to the final LEED submission, which also must be reviewed and approved by the Government, before submission to USGBC. This individual must periodically report to the Government on the status of the construction credits. The LEED Professional must meet regularly with the Government to provide updates on the status of LEED documentation collection, and must provide updated LEED scorecards prior to each meeting.

3.0 **SITE**

3.1 Project Coordination Plan (PCP)

The Project Coordination Plan is the Contractor's detailed plan to accomplish the project. The PCP includes all project phases, anticipated permits, staging, outages, work stoppages (due to weather and/or special events), risks associated with work stoppages, and facility/reservation areas the Contractor requires access to in order to execute the project.

The Contractor must provide a PCP for review and acceptance by the Government. The PCP must include the following sections:

3.1.1 **Phasing Plan:** The Contractor must present a written planned approach to complete the project and communicate phasing objectives that are planned for project execution. Phasing should be determined by clearly defined design factors, building restrictions (i.e. permit restrictions, required outages, building closures, etc.), and/or other logistical considerations. All determinants for phasing must be delineated and their impact and timeline identified. Each phase requires an overall summary, explanation, and justification for all work encompassed in a phase (diagrams and charts are acceptable as submissions).

- A. Include diagram/graphic limits of work, dimensions of space, proposed laydown area, dumpster location, requested permit dates, and materials/equipment to be stored within the area (see Section 3.1.4).
- B. Address any anticipated modifications or closures of existing egress routes or public spaces/corridors.
- C. Address any anticipated impact to tenants, e.g.: noise, public space modifications/closures, no parking areas, etc.

3.1.2 **Permit Plan:** The PCP must include a permit plan that outlines all anticipated permits. The

permit plan must include permitting lead times, locations, and length of time the Contractor is responsible for obtaining and maintaining any necessary licenses and permits, as well as complying with any Federal, State, and Municipal laws, codes, and regulations applicable to the performance of the work in accordance with Federal Acquisition Regulation (FAR). There are various permit requirements at the Pentagon and it is recommended that the permits, along with required supporting documents, are submitted early in the pre-construction stage. Refer to the WHS Building Code for a comprehensive list and descriptions of all permits governed by WHS. The most commonly used WHS permits for construction projects are:

- A. Building Code Permit - Any construction, alteration, modification, or change in occupancy being completed on property under the jurisdiction of the WHSBC. Submit concurrently with first Design Submission. Permitting office issues approval based on design compliance with codes.
 - B. Confined Space Permit - For any work that requires an individual to enter a confined space, supervise an entry, or approve an entry. (Submit Daily)
 - C. Excavation Permit - For any work on the Pentagon Reservation that may disrupt underground communication or utility lines, or above ground rights of ways. (May take up to 20 working days for approval)
 - D. Hot Work Permit - Any operation involving open flames or producing heat and/or sparks, hot slag, or dross. Hot work includes, but is not limited to, brazing, cutting, grinding, soldering, arc welding, work on a pipe that would conduct heat through a wall or in contact with a wall, or torch-applied roofing. (Submit Daily)
 - E. Photo Permit - Whenever photography is required to complete a project/scope of work on WHS property. (May take up to 30 calendar days for approval)
 - F. Use of Space on the Reservation Permit (to include land) - Whenever events, installations, projects, etc. require use of PBMO controlled or public spaces on WHS property. Use of equipment such as barbeque grills and open flames must be included in the Space Use Permit. (May take up to 30 calendar days for approval)
- 3.1.3 Environmental Requirements, to include Federal, State, or Local Permits, may be required for contract-related activities that have a potential environmental impact. Include the following permits and state which permits are not required in the PCP. Regulations that govern activities of concern, and may have permitting requirements, include, but are not limited to:
- A. Clean Water Act (applies to activities such as stormwater and other discharges, pollution control, erosion and sediment control, and wetlands protection).
 - B. Arlington County Land Disturbing Activity (LDA) Permit: The Contractor must ensure that any project that disturbs greater than 2,500 SF of land meets Arlington County stormwater and erosion and sediment control requirements. The Contractor must create and submit all documents required to obtain an Arlington County LDA Permit per the Environmental, Sustainability, and Energy Branch's (ESEB) "Guidance Document for Land Disturbing Activity Permits" (see SOW Attachment A14). The Contractor must submit appropriate documentation to the Arlington County Department of Environmental Services (DES) to obtain an LDA Permit. Copies of all available supporting calculations

and submitted documentation (e.g., permit applications, stormwater management plan, calculations, and design narratives) must be reviewed and accepted by the Government prior to submission to Arlington County.

- C. Virginia Construction General Permit: For any project that disturbs more than one acre (43,560 SF) of land, the Contractor must prepare and submit the required documents to obtain a Virginia Construction General Permit through Arlington County. Copies of all available supporting calculations and submitted documentation (e.g., permit applications, stormwater management plan, calculations, and design narratives) must be reviewed and accepted by the Government prior to submission to Arlington County.
- D. Clean Air Act (applies to activities such as asbestos removal, natural gas/diesel fuel fired equipment installation/operation, incineration, and other air emissions).
- E. Solid Waste Disposal Act (applies to activities such as construction debris and hazardous waste disposal).

3.1.4 Staging Plan: The Contractor must present a detailed plan to show how the site will operate during construction. This staging plan must be presented in a written report and can include photographs, drawings, and diagrams. The staging plan should indicate the square footage of total land disturbance, including laydown areas. The plan must identify and address:

- A. Site Protection: The Contractor is responsible for all damages to persons or property that occurs as a result of the Contractor's negligence. The Contractor must protect building drains, equipment, and materials at all times during construction. The Contractor must take all necessary precautions to ensure that all elements, both natural and man-made components, affected by this work are not negatively impacted. The Contractor is fully responsible to restore all property on the Pentagon Reservation damaged during the execution of this contract to its original condition or better at no additional cost to Government.
- B. Project Limits: This plan must define the perimeter of work to be completed. Work outside of the project limits must be coordinated with the Government as needed. All access to the space prior to Construction Mobilization must be coordinated through the Government.
- C. Laydown Areas: Work must include the use of just-in-time delivery construction practices to the fullest extent. When long lead items must be ordered with contingency time, the Contractor must provide storage facilities off-site until the item is required. Staging and storage areas for this contract may be limited to the workspace and designated staging and laydown areas. These areas must be approved by the Government prior to demolition/construction start via the Use of Space Permit.
- D. Construction Egress Plan: The Contractor must provide a detailed plan for safe egress routes during construction by submitting a Construction Egress Plan for Government review and acceptance prior to mobilization. Egress routes in the plan must comply with NFPA 101, Life Safety Code and Occupational Safety and Health Administration (OSHA).

3.1.5 System Outage Schedule: The Contractor must provide an initial schedule of anticipated major utility outages and tie-ins for the project, and must accompany the

Government to outage coordination meetings. The Contractor must not impede, hinder, disrupt or cause a discontinuation in any manner or period to the utilities, infrastructure or facilities functions that may impact the occupancy, access, security, life safety, mission or activities of the Pentagon or other DoD facilities in performance of work under this contract.

- 3.1.6 Anticipated Areas for Access Request (core key/swipe): The Contractor must list the room numbers that they will need access to for the purpose of surveying, construction, commissioning, etc. Contractor must specify whether the access requested will be needed for the duration of the project or just pre/post construction. Contractor must refer to Section 3.12 for more information on Access Requests.
- 3.1.7 Traffic Control Plan: The Contractor must provide the complete details of the proposed traffic control plan for the maintenance of traffic and access through the contract work area with the PCP. Contractor must refer to SOW Attachment J, Safety Requirements “EM-385: Safety and Health Requirements” for Traffic Control requirements.

3.2 Existing Conditions Report

All record documents provided to the Contractor are for the Contractor’s reference only. The Contractor must provide to the Government an Existing Conditions Report based on existing conditions surveys and tests. The Contractor must identify all system and aesthetic deficiencies to notify the Government of the defects/flaws and the potential impact to the project and the end user. Failure to identify deficiencies indicates the Contractor’s concurrence that such systems and the work site are in good working condition.

- 3.2.1 Existing Conditions Survey: The Contractor must conduct a detailed and comprehensive existing site survey to understand, confirm, and document the existing conditions of the project site described in this statement of work and in any Government provided existing condition documents. The Contractor must notify the Government immediately of any potential hazardous conditions.
- 3.2.2 Existing Conditions Tests: The Contractor is responsible for performing any tests necessary to confirm that existing conditions are adequate for the full execution of all planned work (e.g. soil characteristics, moisture content of floors, floor level to receive finishes). If the Contractor proceeds with the work before testing and confirmation have been completed, any rework due to issues with unsuitable existing conditions must be at the cost of the Contractor. This includes implementation of manufacturer’s recommendations, recommended tests, and validation of product’s installation requirements. If testing electrical or mechanical systems, the Contractor may need to submit an outage request per Section 3.11.

3.3 Construction Air Quality Management Plan

The Contractor must develop and implement a construction Indoor Air Quality (IAQ) management plan that complies with the following:

- ASHRAE Standard 189.1 Section 10.3.1.5 (Moisture Control)
- ASHRAE Standard 189.1 Section 10.3.1.4 (IAQ Construction Management) for new construction and renovation of unoccupied existing buildings

- SMACNA *IAQ Guidelines for Occupied Buildings under Construction* Second Edition 2007 for renovation of occupied existing buildings

3.3.1 Planning and Design

Occupied Areas: The Contractor must submit a plan to isolate work areas from occupied areas. Where demolition or construction work will occur adjacent to occupied space, the Contractor must erect appropriate barriers (e.g., noise, dust, and odor) and take necessary steps to minimize interference with the occupants. This includes maintaining acceptable temperature, humidity, and ventilation in the occupied areas. The Contractor must establish dedicated pathways (i.e., hallways, stairs, and elevators) for worker and material movement, if feasible.

3.3.2 During Construction

- A. HVAC Protection: The Contractor must protect all HVAC equipment, including HVAC returns, from dust and other contaminants of concern that can settle in the system and be released back into the air. The Contractor must deliver and store all HVAC materials properly (e.g., keep ends of stored duct work sealed in 6-mil plastic sheeting to prevent contamination and store in clean protected areas shielded from rain and other sources of moisture). If possible, the Contractor must avoid using permanent HVAC equipment serving construction areas, de-energize the supply/return fans, and seal the return/supply grills. In new construction and unoccupied existing buildings, permanent HVAC systems must not be used during construction, except for system startup, testing, balancing, and commissioning. The Contractor must provide temporary exhaust during construction operations. Construction and demolition waste materials must not be stored in mechanical rooms with return-side equipment.
- B. Ventilation: During construction in occupied buildings, the Contractor must maintain a negative pressure relative to adjacent spaces to prevent contaminants from entering occupied spaces.

Where HVAC equipment must be relocated within the renovated space, the Contractor must ensure that the equipment in the renovated space is placed to maintain and optimize IEQ and meet associated requirements, including ASHRAE Standard 55-2017 and ASHRAE Standard 62.1-2016, or latest versions.

For renovations in occupied existing buildings, the permanent HVAC system may be used during construction only if all of the following conditions are met:

1. A complete air filtration system with minimum efficiency reporting value (MERV) 8 filters at each return air grill, installed and properly maintained (The filter MERV rating must be determined by ASHRAE Standard 52.2-2017).
2. Filter media is inspected on a weekly basis and replaced if excessive loading or filter damage is noted.
3. No permanent diffusers are used.
4. No plenum type return air system is employed.
5. The HVAC duct system is adequately sealed to prevent the spread of airborne particulate and other contaminants.

- C. Emissions and Moisture: The Contractor must perform regular visual inspections of materials before and immediately after installation for signs of moisture or mold growth. All materials with signs of mold growth must be discarded by the Contractor. The Contractor must discard furniture, carpet, or similar porous materials with persistent, musty odors or that have been wet for more than 24 hours. Contractor must verify that vapor barriers, without punctures and/or damage, are installed and sealed completely.
- D. The Contractor must establish a schedule for interior finishes and install porous and absorptive materials (e.g., carpet, wood, furniture) after activities such as drywall and painting (sources of contaminants) are complete.
- E. Carpet: The Contractor must sequence the installation of carpet so that materials that are high emitters of volatile organic compounds (VOCs) are installed and allowed to cure before installing finish carpet materials.
- F. Storage: The Contractor must protect all carpet, tile, wall material, doors, furniture, and other materials stored and installed onsite from dust, dirt, and moisture damage by storing the materials off the floor on pallets or via other methods in the original packaging, covered, or sealed.
- G. Housekeeping: The Contractor must institute cleaning procedures to regularly control dust, debris, and contaminants in building spaces during construction and prior to occupancy, including, but not limited to, the following:
 - 1. Maintain clean and orderly worksites by using materials and methods that reduce or control dust and debris, such as vacuum assisted drywall sanding equipment and sticky walk-off mats.
 - 2. Avoid dry sweeping; if necessary, use a dust suppressant.
 - 3. Consider using wet methods (e.g., damp rags, wet mops, and wet scrubbers) and vacuums with high-efficiency particulate air (HEPA) filters to improve dust collection efficiency.
 - 4. Remove spills or excess applications of solvent-containing products as soon as possible.
 - 5. Increase cleaning frequency in adjacent occupied areas based on visible inspections.
 - 6. Maintain clean surfaces, including on top of ledges, behind furniture and inside mechanical equipment.

3.3.3 After Construction

- A. IAQ Testing or Flush-out: After construction ends, the building has been completely cleaned, all interior finishes and movable furnishings have been installed, and major VOC punch list items have been completed, the Contractor must conduct IAQ testing or a flush-out in accordance with ASHRAE Standard 189.1 Section 10.3.1.4 (IAQ Construction Management).
- B. HVAC Cleaning and Testing: Contractor must clean all ductwork used to move supply or

return air during construction with HEPA vacuums. Air in the ductwork must be tested to demonstrate cleanliness, in accordance with the National Air Duct Cleaners Association (NADCA) specifications. Cleaning, testing, and demonstration must be completed after the building flush-out/testing period and immediately prior to occupancy to avoid contamination from construction dust and other airborne particulates.

- C. Contractor must provide and install new MERV 13 (or better) air filtration media after flush-out/testing and before occupancy. Consult with PBMO about filter purchase and ensure PBMO logs the date of the filter installation at each location where a new filter was installed.
- D. Contractor must coordinate with PBMO to conduct HVAC system testing, adjusting, and balancing after HVAC system alterations to ensure system is operating according to design specifications and confirm uniform and adequate delivery of forced air to maintain design temperature, building pressure, and ventilation.

3.3.4 Air Quality: The Contractor must not use materials containing VOCs when available. Where not available, the Contractor must use low-VOC materials that meet ASHRAE Standard 189.1 Section 8.4.2 (Materials). If any sealant and adhesive products are used, they must not contain formaldehyde or heavy metals (heavy metals are any of several hazardous metallic elements with high atomic weights, including mercury, chromium, cadmium, arsenic, and lead).

3.3.5 Dust Mitigation Plan: Prior to any demolition/construction work, the Contractor must provide a dust analysis and dust mitigation plan for review and acceptance by the Government. Dust must not cause any adverse effects to building occupants. This plan must identify work activities that have the potential to produce dust levels greater than 15mg/m³ limits during normal working hours.

3.4 Stormwater Management

Through coverage under a Phase II Municipal Separate Storm Sewer System (MS4) Permit, WHS is required to reduce the total maximum daily load (TMDL) of nitrogen, phosphorus, and sediment in the Pentagon's stormwater runoff. The Contractor must implement low impact development (LID) technologies for all land disturbing activities greater than 2,500 SF in accordance with the Arlington County Stormwater Management Ordinance. The Contractor must consult the WHS LID Manual before designing these practices. The Contractor must ensure that proposed LID technologies are appropriately sized and are selected to minimize maintenance burden. Proposed LID technologies must be coordinated with the Pentagon Building Management Office (PBMO), the project COR/GPM, and ESEB. For all LID practices and/or technologies installed, the Contractor must provide detailed operations and maintenance procedures and training, if necessary.

3.4.1 The Contractor must ensure that any projects that create more than 5,000 SF of new impervious surface and/or include the construction or expansion of one or more buildings as part of their primary scope, must maintain pre-development hydrology per the Energy Independence and Security Act (EISA) Section 438. Contractor must provide documentation in accordance with UFC 3-210-10 (July 2015), Section 2-3 Documentation (including calculations and narratives justifying compliance) to the Government prior to the delivery of final design documents. EISA Section 438 compliance may be achieved by either retaining the 95th percentile rain event on the site or implementing stormwater management practices to

replicate pre-development hydrology, which is proved by performing a site-specific hydrologic analysis comparing pre- and post-development conditions. Both compliance options are outlined in EPA's Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act. Refer to the following website: https://www.epa.gov/sites/production/files/2015-08/documents/epa_swm_guidance.pdf.

3.4.2 All LID practices must be designed per the Virginia Stormwater Best Management Practices (BMP) Clearinghouse specifications unless written permission is granted by the Government to meet different design criteria. The Contractor must provide documentation with each design submittal describing the specifications of all LID features installed, and the assumptions and calculations used to determine the amount of stormwater treated or mitigated on site. Information provided should include the type(s) of technology used, area treated, volume of stormwater treated, and estimated pollutant (nitrogen, phosphorous, and total suspended solids) reductions due to implementation of the technology, per the Virginia Stormwater BMP Clearinghouse Pollutant Removal Efficiencies for the installed LID practice.

3.4.3 The Contractor must perform and provide to the Government a post-construction analysis to validate the effectiveness of as-built stormwater features per UFC 3-210-10. The Contractor must provide documentation to validate that the as-built LID best management practices meet the design requirements and analyses. This documentation must be submitted to the Government POC, including ESEB, at *WHS.environmental@mail.mil*, as a part of the as-built documents.

The Contractor must meet or exceed goals and objectives stated in E.O. 13508, "Strategy for Protecting and Restoring the Chesapeake Bay Watershed", as applicable.

3.5 Debris Removal / Waste Management Plan / Waste Recycling Reports

3.5.1 The Contractor must provide Construction Debris Carts and transport debris to the Remote Delivery Facility (RDF) or to Contractor provided dumpsters as required by the nature of the project. The Contractor must submit Debris Removal documentation to the Government monthly during construction and at substantial completion.

A. Debris must be transported in corridors and public areas during Off Hours only.

B. The carts must be clearly labeled/stenciled with the Contracting Company name and phone number. Space in the Pentagon is limited for debris carts. Only rubberized wheel carts may be used in the Pentagon corridors to protect existing finishes.

C. The Contractor must designate a location for these carts to be on site for the duration of the project. The Contractor must ensure that all access routes are cleaned daily and any fallen debris during transportation is collected. Carts are not to be loaded to obstruct the vision of the operator and may not be parked in corridors unattended.

3.5.2 The Contractor must prepare and submit a Construction and Demolition (C&D) Waste Management Plan (WMP) to be approved by the Government prior to site disturbance. The Contractor must prepare and submit to the Government and appropriate agencies all submittals and permit applications relevant to the Waste Management Plan.

- A. WPM General: The WMP must include design and implementation procedures for a controlled disassembly process that preserves the integrity of construction materials to facilitate reuse and recycling, as applicable. The Contractor must give priority to reusing materials when possible and appropriate to avoid purchase and installation of new materials, Contractor must ensure that materials identified for reuse are removed during demolition, saved, and reinstalled in the renovated space, or saved for use in space to be renovated in the future.
- B. WPM Recycling: The WMP must establish methods to maximize recycling of waste materials associated with the work to be performed. The primary intent of the WMP is to maximize the diversion of C&D waste from landfills to the extent possible (through reuse, recycling, and composting) and to reduce project cost through the sale or reuse of recycled materials. The WMP provided and implemented on site by the Contractor must achieve a recycling/waste diversion rate of 60 percent by weight and include a goal of diverting 100 percent of all non-hazardous C&D waste from landfills. The recycling/waste diversion total must not include land clearing debris or material used as alternative daily cover.
- C. Waste Recycling Reports: The WMP must include a provision for reporting on the amount (weight) of C&D debris disposed of, or recycled/reused, during the life cycle of this project. The Contractor must track and report the total weight of all C&D waste generated, as well as the total weight of waste that is recycled. Reports should be submitted to the COR/GPM and ESEB on a monthly basis to document cumulative waste totals, with a final report submitted at substantial completion and before final submittals. Weights of material disposed of in a sanitary landfill must be based on the weight tickets. Material disposed of in other types of landfills, which do not have weight scales, as well as the weight of materials recycled, may be estimated as accurately as possible.
- D. Identification of Recycling Firms: The WMP must identify markets, firms, or other available locations to transport recyclable materials. The Contractor must provide documentation of means for the transporting and delivery of recyclable materials to the recycling destination.
- E. Management, Monitoring, and Reporting: The WMP must provide instruction to workers in the identification, separation and handling of recyclable materials, and management of the process for the duration of the contract.
- F. Hazardous Waste: The Contractor must handle and remove hazardous and universal waste in accordance with federal, state, local, and other applicable regulations. Hazardous and universal waste encountered during demolition or construction may include lead, asbestos, polychlorinated biphenyls (e.g., fluorescent lamp ballasts), or other harmful substances.

Contractor must also ensure that new and used fluorescent lamps are stored properly in labeled containers that will prevent them from breaking and releasing mercury.

3.6 Pre-Construction Submittal Register

The Contractor must provide a pre-construction submittal register, documenting all submittals that are required for all pre-construction activities. Each submittal on the register must identify their respective SOW Section requirement fulfilled. All submittals under Section 3.0 Site, 4.0 Cost-Schedule-Invoice,

5.0 Quality Control & Safety, and 6.0 Design & Construction must be included in this register.

3.7 Contractor Badging

The Contractor's on-site staff will be required to obtain a DOD issued badge to access the Pentagon Reservation and must be a U.S. person.

- 3.7.1 **Badging:** The Contractor, Sub-Contractors, and representatives, must not begin construction work on Government property without first obtaining an appropriate badge. All Government-issued badges are the property of the Government. The Contractor is accountable for all badges issued to Contractor employees, Sub-Contractors, and representatives, from the time of issue until each badge is returned.
- 3.7.2 **Escort Requirements:** The Contractor is responsible for prompt submission of complete and accurate badge application packages, as required by SOW Attachment A1: "FSD Construction Management General Requirements" and PBMO Access and Outage SOP (included in Project Kick-Off Meeting documents).
- 3.7.3 **HRP Access:** Following government approval of Building Pass or PFAC, Contractors, Sub-Contractors, and representatives, must submit an HRP Swipe Access Request Form for all staff requesting access through the HRP turnstile. All individuals who are working at HRP with a red escort required badge must be escorted at all times by a badged individual from their company who has escort privileges. Individuals with a red escort required badge are not permitted to walk around inside or outside of the facility without being escorted. Individuals and companies found violating this rule will be held accountable. No individuals are allowed to be at this facility unless they have badged HRP workers/visitors who have been submitted for roster access or have been approved to come in through the RDF.

3.8 Site Access and Maintenance

- 3.8.1 **Security Entry and Control:** The Contractor must provide and maintain a physical barrier around the perimeter of the worksite at all times for the duration of the construction project. During all activities, the Contractor must protect finished work from damage along access routes into and out of the construction zone. The Contractor must keep access routes clean daily and repair any damage immediately. The Contractor is responsible to keep all project spaces secure from the unauthorized entry or removal of furnishings, materials, etc.
- 3.8.2 **Upkeep:** The Contractor must be responsible for maintenance and upkeep, from mobilization until the project is turned over to the Government.

3.9 Delivery Screening of Equipment, Materials, Tools, and Supplies

The Contractor is responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract. All equipment, materials, tools and supplies delivered to the Pentagon Reservation are required to be screened through the RDF. RDF hours of operation are Monday through Friday, 0500 – 1700; the RDF is closed on weekends and Federal Holidays. Any weekend and after-hour deliveries need to be requested through the Government at least 72 hours in advance. .

- 3.9.1 Clearance of Drivers: All requests for clearance of badge-holding drivers must be submitted to the Government. For clearance of drivers without a badge, requests must be submitted. Once onsite, all deliveries must be unloaded immediately and the truck, vehicle, or equipment used for delivery and unloading must exit the Pentagon Reservation immediately, unless approved otherwise by the Government. All drivers must register vehicles for clearance; registered vehicles must be driven by their registered drivers. The Government reserves the right to deny access to the site as deemed appropriate.
- 3.9.2 Equipment and Material Deliveries: All equipment and material deliveries must be included within the baseline schedule as an external dependency to all construction activities. Contractor is responsible for allowing appropriate time to gain access to a secure facility through a secure inspection checkpoint and maintain said access for the duration of the project.
- 3.9.3 Long Lead Items: It is the Contractor's responsibility to plan for long-lead items. Equipment and materials with long-lead times must be included within the baseline schedule as an external dependency to all construction activities. These items must also be tied to the submission and approval of the respective construction submittal. All Government review times must be included. A late submittal does not constitute a Government delay.

3.10 Construction Signage

The Contractor must provide and maintain appropriate signage at all times. All proper signage must be in place prior to the start of any work on-site, and must be maintained at all times. Signage must include, but is not limited to: Egress, Construction Zones, Danger Areas, Closed Areas, Construction Waste Collection Areas, etc.

3.11 Outage Requests

Outage Requests must be submitted to the Government 30 calendar days in advance of the outage activity.

- 3.11.1 Outage Work Plan: All outages must be accompanied with a complete and detailed work plan (Method of Procedure [MOP]) with a timeline of outage events and outage specific drawings at the time the outages are requested. The MOP must include: tools used, machines used, material used, and start to end installation timeline. Contractor must assume that all outages will occur on weekends or Off Hours, unless otherwise requested by Contractor and authorized by the Government. Outage requests will be reviewed during the weekly (Tuesday) PBMO Access and Outage Meeting, and must be submitted by the Thursday prior to the meeting in order to be considered for review.
- 3.11.2 Facility Coordination: In the event where an outage is needed for specific facilities, coordination and scheduling of outages must include the facility representative.
- 3.11.3 Temporary Work: All items used for temporary work must be removed in their entirety immediately at the conclusion of the work, in accordance with the acceptance/direction of the Government.

- 3.11.4 Reporting Damage to Government Property: In the event of an outage or damage to a utility system, equipment or component of a system, caused by the construction activity of the Contractor, the Contractor's first response must be to report the issue to the Building Operation Command Center (BOCC) at 703-614-1597. The BOCC will be able to notify applicable building personnel to come to the site and assist with any necessary valve closures, etc. The Contractor must also notify the Government at the time of the incident and upon final resolution. If the incident occurs during Off Hours, the Contractor must notify the Government as soon as Normal Hours resume.
- 3.11.5 Unscheduled Outage: In the event of an unscheduled outage or Contractor caused system, equipment or component failure during the construction project, the Contractor must furnish all necessary labor, material, supplemental equipment and all necessary system equipment to repair, support, or mitigate the affected system. The Building's mission must be supported at all times, with no exceptions.
- 3.11.6 Schedules: The Government reserves the right to deny, delay, reschedule or postpone requests or establish schedules based on the best interest of the Government. This includes, but is not limited to; resource availability, concurrent requirements, occupant/activity impacts and any other factor requiring consideration for specific requests.
- 3.11.7 Outage Delays: Time that may be lost due to submitting an outage late, or not having provided proper documentation, information, or research, is the sole responsibility of the Contractor. The Contractor must provide all resources required to ensure the outage/assistance process does not impact the schedule. This includes the attendance of weekly outage coordination meetings with the Building or Facility Representative.
- 3.12 Access Request Form
- 3.12.1 In order to access tenant or secured spaces for any project related work or investigations, the Contractor must complete and submit a PBMO Access Request Form. Refer to the PBMO Access and Outage SOP for details. Additional technical details may be required based on the scope of work being completed. Access requests may only be submitted for a duration of one (1) week or until project completion (whichever is shorter), after which a new access request must be submitted.
- 3.12.2 Requestors must coordinate for access into a tenant space through Tenant Facility Representatives utilizing an Access Request Form. Proof of this tenant coordination will be confirmed with a digital signature on the form. Upon approval of the request, PBMO will email the requestor with notification and whether or not a PBMO escort is required.
- 3.12.3 Upon approval of access, requestors will be placed on a list to sign out keys from the IEOC/BOCC to access the space. Keys must be returned to the IEOC/BOCC at the completion of work each day. Additionally, at the completion of activities/work, the requestor must notify the PBMO O&M Program Manager and Deputy O&M Program Manager, who will determine if a joint inspection of the space is required. The Contractor must also notify CMD at the conclusion of their work in order for the Government representative to inspect the space where

work was performed to verify no damage or debris were left behind. Any damage or debris found during this inspection, which was not brought to the Government's attention prior to the commencement of work, will be the sole responsibility of the Contractor to repair/remediate (see PBMO access/outage SOP).

3.13 Fire Protection

Fire Protection During Construction: When a required fire protection system is anticipated to be taken out of service or impaired for more than four (4) hours, including impairments caused by the removal of ceilings, a fire watch or a two (2) hour fire resistance barrier, or equivalent method as approved by the Pentagon Fire Marshal must be provided to separate the affected area prior to system impairment. An impairment plan, in accordance with the WHSBC and NFPA 25, Chapter 15, may also be required.

3.14 Landscape Excavation/Damage Repair Requirements

- 3.14.1 The Contractor must leave the Pentagon Reservation Landscape in the same or better condition than when they arrived. Contractor must provide a Landscaping Protection and Restoration Plan to the Government for review and approval.
- 3.14.2 The Contractor must not pile soil/spoils directly on turf or landscaped areas. The Contractor must take care to protect the surrounding turf areas and plant life from being damaged due to their activities. The Contractor must replace any plant life damaged or destroyed due to their activities with plant materials of like kind and species or an Arlington County native substitute as authorized by the PBMO Horticulturists.
- 3.14.3 The Contractor must not drive any vehicles within the drip line of any tree. The Contractor must replace any tree damaged from their activities with material(s) of like species and size or an Arlington County native substitute as authorized by the PBMO Horticulturists.
- 3.14.4 The Contractor must fill any and all holes, trenches, and/or ruts for which it is responsible with PBMO Horticulturist-approved screened topsoil. The Contractor must scarify soil between each layer and rake soil to meet the existing height and grade of surrounding landscape.
- 3.14.5 The Contractor must replace removed or damaged turf within the black security fence with certified sod consisting of ninety (90) percent turf type tall fescue cultivar(s) and ten (10) percent Kentucky blue grass. The Contractor must ensure the sod is ninety-eight (98) percent undamaged, healthy, vigorous, uniform in color and density, and pest/weed free. The Contractor must ensure the installed sod has a uniform surface, conforms to the existing grade, and is secure with no gaps.
- 3.14.6 The Contractor must replace mulch as required to meet or exceed the existing landscaped area(s) aesthetics.
- 3.14.7 The Contractor must coordinate any desired irrigation shut off with PBMO Horticulturists no less than one (1) business day in advance. The Contractor is responsible for protecting existing irrigation systems. The Contractor must replace any irrigation system component(s) damaged by its activities, to include heads, lines, valves, valve boxes, wiring, control boxes, pumps, etc.

The Contractor must replace any damaged component(s) with like or better quality equipment. The Contractor must ensure no debris, stones, soil, etc. enters the irrigation system. The Contractor must not bury irrigation repaired/replaced components until demonstrating successful operation.

- 3.14.8 The Contractor must return any area used as a lay-down to the same or better condition than it was prior to their arrival. The Contractor must leave no soil waste, contamination, gravel, debris, trash, etc. as a result of their activities on the Pentagon Reservation. The Contractor must remove all trash, debris, gravel, and fill base and replace it with no less than 4” of PBMO Horticulturist- approved, screened topsoil. The Contractor must till new topsoil with surrounding soil to prevent interfacing, and fine-rake the soil to meet the existing height and grade of the surrounding landscape, ensuring proper drainage. The Contractor must install turf consisting of ninety (90) percent turf type tall fescue cultivar(s) and ten (10) percent Kentucky blue grass. The Contractor must not install any other turf types. The Contractor must ensure the installed turf is ninety-eight (98) per cent undamaged, healthy, vigorous, uniform in color and density, and pest/weed free. The Contractor must ensure the resulting turf has a uniform surface, and conforms to the existing grade. The Contractor must warranty its landscape products and installation, to include maintenance, for one (1) year from Government acceptance.
- 3.14.9 Contractor must coordinate installation of planting materials during optimal planting season for each type of plant material required, as specified by any applicable sub division of UFGS Division 32 and PBMO Horticulturalist. Contractor must refer to Section 2.2.2 (10) and 2.7.6 for additional requirements.

4.0 COST-SCHEDULE-INVOICE

Failure of the Contractor to comply with any of the requirements listed herein will be the basis for the Government to determine whether the Contractor is executing the work with sufficient diligence to ensure completion within the time specified in the contract. In accordance with the FAR, upon such determination, the Government may retain a portion of the progress payments and may ultimately terminate the Contractor’s right to proceed with the work, or any separable part of it, in accordance with the default terms of the contract. In regard to Project Schedule Requirements, Contractors must follow all instructions documented within the FSD Unified Facilities Guide Specification 01 32 01.00 (SOW Attachment K: Schedule Requirements).

The Government reserves the right to retain project funds equal to the estimated “cost to complete” project activities throughout the duration of the project. In addition, re-procurement costs may be considered in the cost to complete.

4.1 Schedule of Values (SOV)/Cost Loaded Initial Planned Schedule (IPS)/Cost Loaded Baseline Schedule (CLBS)

Prior to submitting the first invoice, the Contractor must submit a SOV and an IPS for review and approval by the Government. The IPS and the CLBS will be the basis for determining contract earnings during each progress update period and, therefore, the amount of each progress payment.

- 4.1.1 **Schedule of Values (SOV):** The Contractor must submit a list of the costs associated with each major activity or sub-process required in the performance of the contractual requirements. In addition to being summarized to show costs by contractual milestones,

the SOV must also be grouped and sub-totaled to show that the contract award Contract Line Item Numbers (CLINs) are balanced, as long as the line items remain visible. The Contractor must provide a projected total cost per period for all line items for the duration of the project.

Summary level costs may be acceptable for aspects of contractual work not yet fully designed. However, Government approval must be requested/received prior to submission of a SOV with only summary level detail. In such instances, a revised SOV must be submitted when the level of detail is determined for approval in accordance with the Revised Schedule of Values section of this contract. Under no circumstances must invoicing be allowed for work only indicated by summary level SOV costs.

4.1.2 Pencil Copy of Pay Application: Unless otherwise authorized, the monthly update period must be the first day of the month through the last day of the month. The pencil copy and invoicing requirements supplement the contract clause requirements. In the event of any conflict, contract clauses are controlling. The Contracting Officer is the sole approval authority for completion percentage.

- A. The Contractor must provide to the Government a pencil copy (marked up copy) showing their proposed changes to AIA Forms G702 and G703. The changes must be reflective of approved materials stored on site and work performed during the update period (excluding OGC activities) and must include percentages of completion for each activity. A pencil copy of the Progress Schedule and a Schedule Narrative must be submitted with the pay application, and must indicate the percentage of completion, actual start date, and actual finish date.
- B. The Contractor must provide to OGCs directly contracted to this project a turnaround document which they must fill in with their changes to percentages, actual start, and actual finish dates for their activities. OGC's must be notified to provide data no later than three calendar days after the last day of the month. The Government must be copied on all correspondence and immediately notified of an OGC's failure to comply.
- C. The Contractor must schedule a site walk within three (2) days of submitting the pencil copy to the Government to verify actual percentages completed during the update period. Upon agreement of actual percentages completed, the Contractor must submit their updated pay application with their complete pay application package, as required per Pay Application Package. The Government Contracting Officer has the sole approval authority of the preliminary review of the recommendation. In the event the actual percentage completeness changes as a result of the site walk, the Contractor must make all necessary adjustments to the progress schedule to maintain consistency with the pay application.

4.1.3 Monthly Pay Application Package: The Contractor must submit their pay application package, plus any substantiation requirements identified by the Government Contracting Officer or any contract clause, per the SOW, Section 3.0 Submittal Table, after the job walk and acceptance of the Pencil copy of the Pay Application. No changes to the data verified by the Government during the job walk, or to the data provided by OGC's, is authorized without prior written consent. The monthly pay application package must consist of:

- A. The updated Pay Application (AIA Forms G702/G703).

- B. Updated Redline Drawings: The Contractor must maintain up-to-date redline documents on-site during construction. The Contractor must document to the Government, in writing, justification for redline changes to the IFC documents. The DOR or QCM must initial for accuracy all redlines sets and submit scanned copies of red-lined sheets with each monthly requisition for payment. Failure to do so may be a cause to withhold monthly progress payments or retainage.
- C. The updated Progress Schedule in accordance with Attachment K: Schedule Requirements.
- D. Safety Man Hours Report
- E. Monthly Waste Report (Recycling and Debris Removal)

4.1.4 Wide Area Work Flow (WAWF): Upon Government acceptance of the monthly pay application package, the Contractor must submit their invoice into WAWF. Invoices submitted into WAWF with unresolved issues from the monthly pay application package may be rejected by the Government.

4.2 Revised Schedule of Values/Cost Loaded Baseline Schedule

- 4.2.1 A revised CLBS (re-baseline) must be submitted for Government review and acceptance, as a result of:
 - a. a non-administrative contract modification
 - b. a contract modification effecting a change in scope

Contract Modifications: When notified by the Government of a non-administrative contract modification, the Contractor must submit a revised SOV and associated CLBS for Government review and acceptance. If the contract modification includes a time extension, the critical path logic and/or the activity durations must be modified, such that the new contract completion date is accurately shown. The Contractor may not invoice for any work associated with a contract modification, to include work covered by a no-cost time extension, without a Government approved revised CLBS.
- 4.2.2 Recovery Plan/Recovery Schedule Progress Report: If the schedule reflects a variance greater than the duration listed in the SOW Submittals Table, a report must be provided by the Contractor. If at any time, the Government believes that the Contractor is in jeopardy of not being able to complete the entire work in accordance with the contract requirements, the Government must require the Contractor to take steps necessary to improve its progress at no additional cost to the Government. Upon request by the Government, the Contractor must submit for Government approval, a recovery plan and schedule to demonstrate how the Contractor anticipates regaining adequate progress such that all work required by the contract will be completed within the contract period of performance. Once the Contractor's recovery schedule is approved by the Government, the Contractor must incorporate that recovery schedule into a revised CLBS. That revised CLBS must become the basis for all future progress payments.
- 4.2.3 Summary Level Break Down: In the event the Government accepted summary level SOV

data for contractual work not yet fully designed, a full expansion of that summary level information must be detailed, at the activity level, for review and approval prior to invoicing for any work contained within the summarized work. The resulting revised SOV must not reassign costs outside of the previously approved summary costs .The resulting revised CLBS must become the basis for all future progress payments.

4.3 Progress Schedule

See SOW Attachment K: Schedule Requirements.

4.4 Coordination with OGC Schedules

The Contractor is responsible for making timely and proper requests for schedule data from any OGCs directly contracted to their project for baseline input, monthly update input, and changes. Coordination must include setting up working meetings and discussions. The Contractor is responsible for input and maintenance of all OGC activities. The Contractor must immediately notify the Government of any instances where an OGC does not comply with a proper request for schedule updates. Failure by the Contractor to properly coordinate will be considered a deficiency. When properly informed, the Government must address any failure by an OGC to comply and the Contractor must not be considered in non-compliance.

5.0 QUALITY CONTROL & SAFETY

5.1 Design Quality Control Plan (DQC)

The Contractor must provide a project specific DQC Plan in accordance with the requirements of this contract for review and acceptance by the Government, including, but not limited to, the following requirements:

- 5.1.1 DQC Plan must meet the requirements listed in the PFGS Specification 01 45 00.00 10 Section 3.2.2.
- 5.1.2 Include a design management approach, team organization, quality control procedures, design-to-cost control, value engineering, coordination of in-house disciplines and sub-contractors, and prior experience of the Contractor and any significant consultants on similar projects.
- 5.1.3 Design submittals must be stamped by the Quality Control Manager (QCM).
- 5.1.4 Cost Minimization: Contractor must design to the awarded budget and provide value engineering services where needed.
- 5.1.5 Computer Aided Design Drawing (CADD) and AutoCAD Experience: The DQC Plan must clearly demonstrate that the Contractor's design team members have appropriate experience in AutoCAD 2013 or later versions to create and edit design document submittals. This qualification must be demonstrated by listing the years of experience using at least one of these CADD programs for each of the design team members. Team member resumes must include a list of projects for which they have used the CADD program(s).

5.1.6 Include delivery milestones for each design submission.

No design submission will be accepted until the DQC Plan is accepted by the Government.

5.2 Construction Quality Control (CQC)

The Contractor must provide a project specific CQC Plan in accordance with the requirements of this contract for review and acceptance by the Government, including, but not limited to, the following requirements:

5.2.1 CQC Plan must meet the requirements listed in the PFGS Specification 01 45 00.00 10 Section 3.2.1.

5.2.2 Develop the CQC Plan employing the three phases of control as referenced under the latest Unified Facilities Guide Specifications, UFGS-01 45 00.00 10.

5.2.3 The CQC must consist of plans, procedures, forms, and organization as necessary to produce an end product which complies with the contract requirements.

5.2.4 CQC activities (such as preparatory meetings, initial inspections, and follow-on final inspection) must be outlined within the CQC Plan as an external dependency to all construction activities.

5.2.5 Testing and Acceptance:

- A. Verification of satisfactory construction and system performance and confirmation that work is in compliance with requirements of the contract must be via Performance Verification Testing, Acceptance Tests, and submittal of test reports certified by the DOR. The Government reserves the right to witness all Performance Verification and Acceptance Tests, review test data, and request other such additional inspections and repeat tests as necessary to ensure that the system and provided services conform to the stated requirements. The Contractor must pay the cost of all testing.
- B. The Qualified Testing Organization (QTO) must provide the Acceptance Tests and Inspections Test Plan and perform the Acceptance Tests and inspections. Test methods, procedures, and test values must be performed and evaluated in accordance with appropriate industry standards and the manufacturer's recommendations. The Contractor must supply to the QTO complete sets of shop drawings, settings of adjustable devices, and other information necessary for an accurate test and inspection of the system prior to the performance of any final testing. The Contractor must notify and receive approval from the Government twenty-one (21) days prior to performing pre-tests and/or tests that may impact the tenants and building operation.

Physical Construction must not proceed until the submitted CQC Plan has been accepted by the Government.

5.3 Accident Prevention Plan (APP) and Activity Hazard Analysis (AHA)

Before initiation of work, the Contractor must develop, and submit to the Government for acceptance, a comprehensive site specific APP that follows Appendix "A" format and an AHA in PDF, in accordance with U.S. Army Corps of Engineer Safety and Health Requirements Manual (latest edition at time of solicitation on website: <http://www.usace.army.mil/CESO/Pages/Home.aspx>). Government acceptance does not relieve the Contractor's responsibility of compliance with laws, rules, regulations, statutes or codes.

- 5.3.1 Compliance Requirements: The Contractor must comply with the FAR for all site, safety, health, environmental, personal protection and pedestrian/vehicular traffic control plans. The APP and AHA must comply with OSHA rules/regulations/laws; Corps of Engineers Safety and Health Requirements EM385-1-1; Virginia Department Of Transportation (VDOT) regulations/standards/recommendations; Federal Highway Administration (FHWA) standards/recommendations; Architectural Barriers Act (ABA); Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926; and all other applicable laws, codes, rules, regulations, executive orders, and Authority Having Jurisdiction (AHJ) guidelines applicable or associated with the type of work required under this contract, prior to the start of on-site work. In the event of conflict between any requirements, the more stringent requirement must apply.
- 5.3.2 Non-English Speaking Employees: For non-English speaking employees, there must be a bilingual foreman on-site who can effectively communicate with the employees.
- 5.3.3 OGC's Construction Zone: In the event the Contractor's activities requires them to traverse into an OGC's construction zone, the Contractor and their sub-contractors must be responsible for participating in the OGC's safety training program.
- 5.3.4 First Response Coordinator for Emergency Services: The Contractor's SSHO must ensure that all of their employees are aware that Pentagon Force Protection Agency (PFPA) serves as the first-response coordinator for all Emergency Services, including response from the Pentagon DiLorenzo TRICARE Health Clinic, Police, Fire, and Ambulance. In Case of Emergency, call (703) 697-5555. Calling 911 from a cell phone will result in a slowed response, as Arlington County Virginia Police/Fire will have to coordinate with PFPA for access.
- 5.3.5 Contractor must submit a safety man hour report monthly during construction with the Monthly Pay Application Package.

5.4 Construction Daily Reports

The Contractor's Quality Control Manager (QCM) must submit daily QC, safety and production reports to the Quality Assurance Inspector, Project Manager and COR/GPM (see SOW Attachment G: Quality Control for additional information).

6.0 DESIGN & CONSTRUCTION

The Contractor is responsible for effective management of the design process. The Contractor must

provide design on time submittals that meet all project requirements. The Contractor is responsible for all unexcused delays. All Government provided record documents should be field verified by the Contractor for accuracy. The Contractor must collect all relevant data needed to produce the required design (as applicable) and construction documentation in order to execute the project in accordance with all contract requirements. The Contractor must confirm existing structural components and identify all existing utility locations, capacity, connections and depths within the limits of work.

6.1 Basis of Design (BOD)

The BOD is the documentation that supports the thought processes and assumptions behind design selections, solutions, and decisions that are made to meet the design intent.

The Contractor must provide a project specific BOD in accordance with the requirements of this contract for review and acceptance by the Government, including, but not limited to, the following requirements:

- 6.1.1 The BOD narrative, broken out by discipline, must include design and engineering calculations in support of the design and must describe the systems, components, conditions, and methods chosen to meet the project requirements and design intent.
- 6.1.2 Fire protection and life safety aspects of the BOD must follow the requirements for Design Analysis in UFC 3-600-01.
- 6.1.3 The BOD must also identify the anticipated specification sections to be prepared during design.
- 6.1.4 The BOD must include narratives, descriptions, comparisons, and life cycle cost analyses of energy efficiency design alternatives to meet minimum requirements outlined in UFC 1-200-02 and the Guiding Principles for Sustainable Federal Buildings. Designs must exceed minimum requirements of energy and water efficiency, where (1) total cost of ownership is reduced, or (2) mission assurance or resiliency is increased. The feasibility to include renewable and alternative energy must be investigated and documented in the BOD.
- 6.1.5 The Contractor must submit an Energy Compliance Analysis (ECA), including energy models and life-cycle cost analyses, with each design submission. The ECA documentation must provide annual and monthly energy use and costs, life-cycle costs for the baseline scenario and each design option. The ECA must include raw energy modeling files and simulation output reports. Energy modeling must be conducted per UFC 1-200-02 and ASHRAE 90.1, Appendix G. Life cycle cost analyses must be conducted per 10 CFR 436, Subpart A-Methodology and Procedures for Life Cycle Cost Analysis, NIST Handbook 135 (the Life Cycle Costing Manual for FEMP), and NIST Annual Supplement to Handbook 135. Total life cycle cost, not initial capital investment, must be used as the principal criteria for eliminating design options.

The BOD must be submitted to the Government for review prior to the first design document submittal and updated with each design document submittal.

6.2 Historic Approval Documents

- 6.2.1 The Contractor must assist the Government in obtaining waivers, approvals, and presentation documentation as required for reviews by the National Capital Planning Commission (NCPC), the Commission of Fine Arts (CFA), and the Commonwealth of Virginia State Historic Preservation Office (SHPO) for all exterior work on the Pentagon Reservation.
- 6.2.2 The Contractor must contact the COR/GPM for current NCPC, CFA, and SHPO submission deadlines and review dates and incorporate these deadlines and review periods into the schedule. Prior to agency submission deadlines, the Contractor must submit a presentation package to the Government with all documents necessary to obtain required approvals, including, but not limited to, multiple renderings, narratives, finish selections, and site location. Construction must not begin until the Contractor receives all NCPC, CFA, SHPO and other appropriate agencies and commission approvals from the Government.
- 6.3 Design Intent Documents (DIDs)
- 6.3.1 There are two (2) required DID submissions. The purpose of the DID must be to provide the tenant(s) with the Contractor's design intentions and approach before design documents are created and developed. The Contractor's DID process must be based on a "problem solving" approach with the goal of incorporating all tenant requirements and achieving tenant sign-off prior to the design document submittals.
- 6.3.2 The Contractor must refer to the Sample DID as an example of how furniture layout, power/telephone/data, finishes, reflected ceiling plan, workstation location numbers, suite security classifications, general notes for IT drops, and life safety/egress information can be presented to the tenant. The DID must include elevations and sections as required illustrating intent. Refer to SOW Attachment A12: "Sample DID". Label all deliverables For Official Use Only (FOUO).
- 6.3.3 DID 1 Submission: The Contractor must provide a CADD drawing which is inclusive of all tenant provided requirement information, to include furniture and equipment.
- 6.3.4 DID 2 Submission: The Contractor must incorporate any redlines and comments into a DID 2 submission. This document will then be used for Tenant sign off. This plan must also include a sign-off block on each page.
- 6.3.5 DID Meetings: There are two (2) required DID Meetings per tenant. These meetings will be facilitated by FSD with the purpose of achieving Tenant sign-off on the design. Contractor participants at the DID Meetings must include, but are not limited to, the Contractor Project Manager, DOR, key A/E team members, and other key personnel. At each DID meeting, the Contractor must bring one (1) full size drawing of the DID for markup and a finish board (for the 2nd DID meeting). The Contractor may use the Government-provided agenda. Refer to SOW Attachment A13: "Sample DID Meeting Agenda".

- A. DID 1 Meeting:
 - A. Review and finalize layout, adjacencies, wall types, and door types.
 - B. Coordinate with OGC to locate specific data, security, IT and A/V requirements.
 - C. Set tenant expectations and clarify requirements.
- B. DID 2 Meeting (Seven (7) calendar days after submission of the 100% Design Documents):
 - A. Review and finalize all information from DID 1 Meeting.
 - B. Obtain Tenant sign-off on drawings.
 - C. The finish board brought to the meeting must clearly demonstrate nature of each finish material and indicate each material's proposed use (i.e. wall finish, floor finish, etc.).

6.3.6 DID Meeting Minutes: The Contractor must submit meeting minutes, including scanned redlines and all comments with responses, to the Government within three (3) calendar days of the OBR. The Government will review and provide feedback to the Contractor three (3) calendar days after receipt. The Contractor must incorporate the Government's comments into the official meeting minutes and transmit them for record.

6.4 Design Document Submittals

The Contractor must ensure that each of the design document submittals adhere to the approved DQC Plan (including design-to-cost control) and must include dual approval signatures of both the DOR and the QCM prior to submission to the Government for each review. Contractor must design to the awarded budget and provide value engineering services where needed. Contractor must proceed sequentially through the design submissions listed in Section 6.0 Design & Construction of the Submittal Table within the SOW. Contractor must not proceed to the next design submission milestone until Government approval for the previous submission has been received.

- 6.4.1 Refer to Unified Facilities Criteria (UFC), UFC 1-300-09N, for guidelines on the level of design required for each design document submission. Drawings must include all applicable disciplines including, but not limited to, architectural, civil, structural, mechanical, electrical, fire protection/detection/notification, life safety, plumbing, HVAC controls, security equipment, communications, computer data transmission, IT/AV, furniture, signage and equipment. The drawings must incorporate all documentation from OGCs directly contracted to this project.
- 6.4.2 The Contractor must provide project specifications that, in conjunction with the drawings, demonstrates compliance with materials, equipment, execution, and field quality control requirements, as well as incorporating all controls and procedures for acceptance by the Government. Project Specifications must be in Pentagon Facilities Guide Specification (PFGS) format or Unified Facilities Guide Specification (UFGS) format if an applicable PFGS does not exist. The Contractor must propose an alternative specification to the Government in the event that PFGS or UFGS are not applicable to a specific feature of work. The products specified must include equipment, fixtures, devices, and systems to be utilized in the construction of this project. The Contractor must submit files noting the

tracked changes, as well as the SpecsIntact quality assurance reports, prior to the 100% submittal, for ease of Government review.

6.4.3 Document Compliance: The Contractor must submit all drawings in AutoCAD 2013 (.dwg) or later version and in PDF format for each design file. In addition, if the contractor utilized another CAD software to produce its design documents, the original working software source files must also be submitted in its native file format. All submittals must incorporate all project requirements following the most current version of the Pentagon's Electronic Data Standards (EDS) as well as the A/E/C Standard. The CAD Standards section of the WHS EDS establishes the guidelines and procedures for preparing, organizing, managing, archiving, plotting, and delivering CAD drawings, to include common drafting standards for the project. The A/E/C CAD Standard release addresses topics such as presentation graphics, layer assignments, electronic file naming, and standard symbology.

- A. CAD Deliverables: The Contractor must submit drawings in Adobe PDF softcopy format using D-Paper size (in 24"x36") unless another defined standard paper size is justified and approved by Government Project Manager. Enterprise Facilities Information Center (eFIC) will provide the Contractor with the Directory Structure and files to support a consistent working environment, configurable by the designer to effectively and efficiently assemble and organize their drawings and project files. The Directory Structure, sheet files, support files, and templates with related data files must be delivered by the government.
- B. eFIC Kickoff Meeting: Immediately following the Project Kickoff Meeting, the Contractor and Design team must meet with the Pentagon's eFIC office located in the Remote Delivery Facility (RDF) to review the Pentagon's EDS applicable to the SOW. Required attendance at this meeting must be the Contractor's Project Manager (PM), the Designer of Record (DOR), and the Computer-Aided Design (CAD) Technician.
- C. At each "Design Milestone", eFIC must review the project submission against the current EDS for compliance. eFIC will generate Quality Assurance (QA) reports that will list all EDS deficiencies. The Contractor must utilize these reports when updating its drawings for the next EDS Design Review submission. All comments on the QA report must be addressed and closed in order for the drawings to be considered compliant. The EDS review meetings may be conducted in person at the RDF or virtually from remote locations. Required attendance at these meetings must be the Contractor's PM, the DOR, and the CAD Technician.
- D. At the first and 100% design submissions, and the "As Built" submission, eFIC will review and provide a QA Report to identify submission deficiencies. No additional QA Reports will be provided.

6.4.4 Design Review Process: The Government will review and comment on each submittal. The Contractor must respond to these comments using a Government provided (web-based) database. The Government will provide the Contractor with usernames, passwords, and instructions on how to navigate through the database.

- A. All design review comments from earlier submissions must be incorporated into the current submission, unless the Contractor has worked out and documented alternative

solutions with the Government and provided a narrative for deferment. All applicable drawing review comments must be visibly distinguishable from the prior submission.

- B. Once the Government has provided design review comments to the Contractor, the Contractor must respond to each comment with its resolution. The Contractor must review their response with the Government for full understanding and integration into the design documents.
 - C. Any Contractor-initiated changes to the drawings or specifications after the Government accepts the 100% Design Documents will require an additional Government review for acceptance of the revised 100% design documents.
 - D. All comments must be resolved, incorporated into the 100% set, and accepted by the Government, prior to proceeding to IFC documents. There must be no deferment for 100% design document submittals. The IFC submission is delivered to the Government for record only. The Government will acknowledge receipt of the IFC documents. The DOR must seal, date, and sign the IFCs in hard copy form as released for construction and provide copies for distribution from the original set in accordance with UFC.
 - E. Acceptance by the Government of any design or construction submission by the Contractor does not relieve the Contractor of its sole responsibility to comply with all contract requirements. If the Contractor proceeds with construction without fully addressing all comments in the Issue for Construction Documents, the Contractor proceeds at their own risk.
 - F. The Government must provide an official response to the Design Document Submission within three (3) Calendar Days of an On Board Review Meeting.
 - G. Outstanding EDS deficiencies will be cause for withholding Cost to Complete until all issues are resolved.
- 6.4.5 On Board Review (OBR) Meetings: The Contractor must facilitate and document the on-board review; OBR meetings will occur after each Government review of the Contractor's design submittals, with the exception of the Issue for Construction submittal. The Contractor must lead each meeting. Participants at the Review Meeting must include, but are not limited to, the Contractor Project Manager, Superintendent, the Designer of Record, Government representatives and other key design personnel. The Contractor must bring one original, full-size copy of each deliverable for markup purposes.
- A. Site Walks: A site walk may be requested by the Government to support discussion for an OBR.
 - B. OBR Meeting Minutes: The Contractor must submit meeting minutes, including scanned redlines and all comments from the Government provided (web-based) database, to the Government within three (3) calendar days of the OBR. Prior to submission of meeting minutes, the Contractor must enter final responses to all comments in the database and include these responses in the minutes. The Government will review and provide feedback to the Contractor within three (3) calendar days. The Contractor must incorporate the Government's comments into the official meeting minutes and transmit them for record.

6.5 Construction Submittals Register/Material Samples/Cut Sheets/Shop Drawings and Status Reports

on Materials Orders/Fire Alarm Shop Drawings

- 6.5.1 All Contract submittals and the Pre-Construction Submittal Register must be included in the Construction Submittal Register.
- 6.5.2 The Contractor must provide Material Samples, Cut Sheets, and Shop Drawings for all equipment, components, materials, finishes, systems operating and maintenance manuals etc. to the Government for review and final acceptance prior to installation.
- 6.5.3 The Contractor must provide submittals prior to the relevant work commencing. No payment will be made for installation of materials that have not been submitted and accepted prior to invoicing.
- 6.5.4 No submittals will be reviewed until corresponding specifications have been reviewed and accepted. This may require specifications for long lead time items to be submitted earlier in the schedule.
- 6.5.5 The DOR and the QCM must review all construction submittals, except the submittals register and the status report on Material Orders, and dually sign an approval stamp or other statement certifying compliance with contract requirements for each submission, to include indicating the specification number.
- 6.5.6 Installation of all construction components prior to receiving Government acceptance of related submittals must be at the Contractor's risk.
- 6.5.7 A final submittal register must be transmitted to the Government for acceptance concurrent with the final submittal.
- 6.5.8 Fire Alarm Shop Drawings: Provide complete information on system alterations, including specifications, type of system, shop drawings, input/output matrix, battery calculations, and point-to-point wiring diagrams for initiating devices and notification appliance circuits, and notification appliance circuit voltage drop calculations to the Government for approval.
- 6.5.9 The Contractor must submit for approval by the Government an initial Status Report on all Materials Orders. The Initial Report must be generated at the 100% Design Submission and updated and re-submitted prior to the start of construction. The report must list, in chronological order by need date, material orders necessary for completion of the contract.

The following information will be required for each material order listed:

- A. Material name, supplier, and invoice number
- B. Critical Path Method (CPM) activity number affected by the order
- C. Delivery date needed to allow directly and indirectly related work to be completed within the contract performance period.

- D. Current delivery date agreed on by supplier
- E. When item D exceeds item C, note the effect that delayed delivery date will have on contract completion date
- F. When item D exceeds item C, a summary of efforts made by the Contractor to expedite the delayed delivery date to bring it in line with the needed delivery date, including efforts made to place the order (or subcontract) with other suppliers

6.6 Transfer & Acceptance of Military Real Property (DD Form 1354)

- 6.6.1 The DD Form 1354 Data Sheets contain a summary of project information used to transfer the facility to the owner agency. The data sheet is divided into two parts; Facility and Features within the 5-foot line and Features outside the 5-foot line.
- 6.6.2 Contractor must provide information to support the Government during the three (3) phases (draft, interim and final) of the DD Form 1354. The draft form is updated as construction progresses. The Interim form is prepared when the asset is ready for use and can be accepted for beneficial occupancy. There may be punch lists to be completed at this time. The final form is due at contract completion.
- 6.6.3 The Contractor must promptly furnish and must cause any sub-contractor or supplier to furnish, in like manner, unit prices and descriptive data required by the Government for Property Record purposes of fixtures and equipment furnished and/or installed by the Contractor or sub-contractor
- 6.6.4 At completion the final DD Form 1354 information will be updated with information provided by the Contractor to reflect all as-built information, including inspections reports, equipment data, manufacturer's names and model numbers, and other SOW attachments, as necessary.

6.7 Sustainability Design Requirements

All projects will be planned, programmed, budgeted, designed, built, and reported to meet the 2016 Guiding Principles for Sustainable Federal Buildings, UFC 1-200-02, UFC 3-210-10, UFC 3-401-01, UFC 3-410-01, UFC 3-530-01, the Implementing Instructions for E.O. 13834 Efficient Federal Operations, and the following additional requirements. If the requirements as defined below conflict with the above references, then the more stringent must apply.

- 6.7.1 The Contractor, along with the Government, must consider the environmental impacts of siting decisions and use an integrated project team to establish energy and other environmental performance goals in the design process; follow sustainable landscape design principles; evaluate electric vehicle charging needs; consider design choices that improve environmental performance; support health and wellness of building occupants; consider climate risks; and consider all stages of the building's life cycle.
- 6.7.2 For all construction projects funded by the MILCON Energy Resilience and Conservation

Investment Program or financed as an Energy Savings Performance Contract or Utility Energy Services Contract, the Contractor must develop a Measurement and Verification (M&V) plan to determine actual energy performance before (if applicable) and after construction. The Contractor must refer to the most recent version of FEMP's M&V Guidelines: Measurement and Verification for Performance-Based Contracts, and OSD policy for guidance.

6.7.3 Metering Requirements

- A. For all new buildings greater than or equal to 5,000 gross square feet, the Contractor must install advanced energy (electrical, steam, chilled water, hot water, and gas) and water meters to capture total building energy and water use. Buildings less than 5,000 gross square feet are not subject to this requirement.
- B. Meters must meet UFC 4-010-06. Meter data must be transmitted to the centralized energy monitoring control system (EMCS). Meters must be capable of measuring and reporting instantaneous usage and 15-minute consumption data. The Contractor is responsible for selecting meter types and sizing meters for the specific applications. Meter discrepancies must not exceed +/-1%. The Contractor is responsible for physically connecting meters to the coral network in coordination with PBMO and Joint Service Provider (JSP). The Contractor is responsible for integrating meters into relevant ECMS.
- C. The Contractor must install advanced sub-meters to measure the power usage effectiveness (PUE) of any data centers included in the project.
- D. The Contractor must install advanced water sub-meters for:
 - 1. Cooling tower make-up water and blowdown water;
 - 2. Permanent irrigation systems at facilities that have greater than 25,000 square feet of irrigated landscape, and
 - 3. Any other equipment or subsystem that consumes more than 1,000 gallons of water per day.

6.7.4 The Contractor must meet the daylighting requirements of ASHRAE Standard 189.1 Section 8.4.1.2 (Minimum Side Lighting Effective Aperture for Office Spaces and Classrooms) or Section 8.5.1.2 (Usable Daylight Illuminance in Office Spaces and Classrooms), must use automatic daylight dimming controls (in accordance with UFC 3-530-01), and use shade and glare control. Locate all regularly occupied spaces (e.g. classrooms, offices) on exterior walls or other locations where it is feasible to provide daylighting.

6.7.5 The design must meet the water use reduction requirements of Sections 6.3.2 (Building Water Use Reduction), 6.4.2 (Building Water Use Reduction), and 6.4.3 (Special Water Features) of ASHRAE Standard 189.1-2014. Use of single-pass cooling water is prohibited. If water is used to achieve energy efficiency, water conservation technologies must be applied to the extent that the technologies are life cycle cost-effective.

The Contractor must consider alternative sources of water that are life-cycle, cost-effective and permitted by local laws and regulations. Alternative water sources include, but are not limited to, rainwater, foundation drain water, condensate from air-handler equipment,

treated greywater, and HVAC equipment blowdown.

- 6.7.6 The Contractor must follow the landscaping design, construction, and maintenance recommendations in the Guidance for Federal Agencies on Sustainable Practices for Designed Landscapes to reduce, with the goal to eliminate, the use of potable water, natural surface water, and groundwater withdrawals for landscape irrigation. New landscaping must include only plant species that are native to Arlington County, non-invasive, drought tolerant, and low maintenance.
In addition, they must not require irrigation from potable water, other than for plant establishment. Ornamental or potable water features are prohibited.

- 6.7.7 For all product types included in the federal Green Procurement Compilation that are within the project scope, use products that meet the required specifications, standards and ecolabels identified under the “Federal” and “Department of Defense” sections of the Green Procurement Compilation: <https://sftool.gov/greenprocurement>. In accordance with the Federal Acquisition Regulation (FAR), Part 23, the Contractor must purchase ENERGY STAR certified or FEMP designated energy efficient equipment, WaterSense labeled and other water-efficient fixtures, Biopreferred® biobased products, products with recycled content, and environmentally preferable, least toxic products. Consult the Green Procurement Compilation located at <http://sftool.gov/greenprocurement> to determine all applicable federal sustainable purchasing requirements.

The Green Procurement Compilation includes purchasing requirements for products and materials used during construction and repair projects. This includes, but is not limited to, products and materials related to appliances, building finishes, building furnishings, cafeteria products, cleaning products, construction materials, doors and windows, HVAC and mechanical equipment, landscape products, office products, plumbing systems, and refrigeration systems.

In addition to the Green Procurement Compilation requirements, products must meet ASHRAE Standard 189.1 Section 8.4.2 (Materials), which addresses emission or VOC content requirements.

- 6.7.8 The Contractor must meet ASHRAE Standard 189.1 Section 9.3.3 (Refrigerants) and use alternatives to ozone-depleting substances and chemicals with high global warming potential (GWP), as identified by the EPA Significant New Alternative Policy (SNAP) program. For all new refrigerant-containing equipment, the Contractor must specify and install equipment that uses the lowest global warming potential refrigerant available, that also meets functional and safety requirements.

Fire protection systems are exempt from these requirements. Contractor must refer to UFC 3- 600-01 for fire protection requirements.

6.8 Electrical

- 6.8.1 New electrical panel boards, transformers and wiring serving the project area must have a minimum of 15% empty space and spare capacity (ampacity) with one spare conduit, minimum 3/4-inch for every three empty spaces.

- 6.8.2 All low voltage wiring, including security, IT, and controls, must be in continuous raceways. These raceways are to be furnished and installed by the Contractor after fully coordinating and documenting the locations with OGCs, as applicable. Raceways are to be of flex steel conduit(s), rigid conduit(s), or cable tray(s), and installed in accordance with the applicable code(s).
- 6.8.3 Interior cable(s) and raceway(s) must be permanently labelled at a minimum of every 50 feet when unobstructed, every 25 feet when view is obstructed, within 5 feet of any wall or floor/ceiling penetration, at all junction boxes, all terminations and within 12 inches of electrical or control panels unless prohibited by security requirements. Labels must follow ANSI (ASME) A13.1 for location and size and comply with the Pentagon Labelling Standard(s).
- 6.8.4 For any new and/or temporary electrical work, the Contractor must provide a design analysis and electrical study per the requirements set forth in the current version of the UFC 3-501-01 Electrical Engineering, Chapter 3-2. The Contractor must use SKM for electrical system modeling. Existing SKM files are not guaranteed to be available from the Government. If available, existing files may be provided at the Contractor's request, but are for reference only, and are not guaranteed to be complete or accurate. The Contractor is responsible for providing all equipment and personnel that may be necessary to collect information (e.g.: software, computers, cables, trained personnel, etc.) to collect field equipment settings. Any required equipment or modifications as a result of these studies are the responsibility of the Contractor. All electrical testing must be done in accordance with the InterNational Electrical Testing Association (NETA). Where there is deviation between NETA and the manufacturer's requirements, the most stringent requirement apply. Contractor must have all new or modified existing mechanical and electrical equipment location, and controls tied/added or modified on the BAS (Building Automation System).

6.9 Fire Alarm System

The Pentagon fire alarm system is manufactured by Simplex. Any new equipment must be manufactured by, or fully compatible with, Simplex to operate accurately and reliably within the existing system. Panels must be inter-connected to the twelve pair fiber optic Class X backbone. New detectors must be programmed such that sensitivity levels can be changed from any Simplex Node that is currently used for such changes. The network must provide a means to log into any node on the system and have complete network access for diagnostics, maintenance reporting, and information gathering of all nodes. All Global Workstations will see and control any and all panels within the renovated areas natural geographical boundaries. They must provide for different visual indicators for Trouble, Supervisory, Priority 2, Alarm, and Normal conditions. All numbering systems associated with the fire alarm system must be based upon the building standard equipment numbering system. The Contractor is responsible for the design and installation of the Fire Alarm system.

6.10 Fire Protection

- 6.10.1 Shunt Trip of Elevators: The shunt trip of elevators must occur on both heat detector and sprinkler water flow for sprinklers in elevator machine rooms and pits/shafts. Refer to UFC 3- 600-01 for additional requirements. The shunt trip must have zero time delay.

6.10.2 For replacement of fire sprinkler piping, any schedule 10 piping must be replaced with schedule 40 piping. Design must be coordinated with OPFM and PBMO.

6.11 Structural

The Contractor must verify if the existing floor slab is capable of supporting the added weight from project requirements. If the verification requires conducting any structural tests, load calculations, structural analysis or studies, work must be completed at the sole expense of the Contractor.

6.12 Limits of Work Affecting Historic Building Elements

The Contractor must adhere to the Pentagon Reservation Exterior Standards Manual and the Pentagon's Historic Concrete Specifications. The Contractor must reference these manuals in the SOW Attachment A: Project Requirements.

6.13 Material Compatibility

All systems, devices, equipment, and other materials designed and/or installed by the Contractor must be compatible with, and operate in conjunction with, existing systems.

6.14 Energy and Water Efficiency in Equipment, Appliances and Products

The Contractor must ensure that newly procured equipment, appliances, and products (e.g., cool roof products; heating, ventilation, and air conditioning (HVAC) systems; computer and presentation equipment; commercial appliances; and plumbing fixtures), are FEMP-designated, ENERGY STAR certified, or WaterSense labeled, where applicable. For products in categories not rated by ENERGY STAR or FEMP, products must be in the top 25 percent of their product category based on energy efficiency. The Contractor must also ensure that new devices that use external standby power, or that contain internal standby power functions, conform to E.O. 13221, Energy Efficient Standby Power Devices, as applicable.

6.15 Information Technology (IT) & Network Integration (NI)

6.15.1 All applicable Pentagon IT and NI standards and procedures must be followed in order for any network changes and additions to take place.

6.15.2 During any demolition of IT infrastructure, no lines must be cut without prior coordination with the IT OGC to ensure that all lines are inactive.

6.16 Codes

The Contractor must ensure that their project is constructed in a manner that meets all current Local, State, and Federal code requirements, as well as additional requirements outlined in the current version of the WHS Building Code (WHSBC) and the WHS Fire Regulations (WHSFR). Refer to SOW attachments or online resources as necessary for these documents. This includes all items in the space, not just those associated with impacted systems. The cost for this work must be covered within the

Contractor's proposal. This applies to renovation or construction of new spaces. This does not apply to SOWs limited to repair and replacement within a space.

6.16.1 The WHSBC and WHSFR: The most current WHSBC and WHSFR at the time of contract award must be the primary building code and fire code for this contract, unless otherwise specified. The WHSBC adopts by reference UFC 1-200-01 which includes by reference the International Building Code; NFPA 101, Life Safety Code; and UFC 3-600-01 Fire Protection Engineering for Facilities.

6.16.2 The Government has final authority concerning all code and Pentagon regulation interpretation issues and must make the final determination concerning any compliance with applicable codes and Pentagon regulations. Contractor must coordinate with the Pentagon Governing Authority for coordination of design interpretations.

6.17 Unified Facilities Criteria (UFC) Requirements / Pentagon Facility Guide Specifications (PFGS)

6.17.1 The UFC is a design and construction standardization initiative for DoD facilities that combines building codes, guide specifications and technical manuals into a comprehensive best practices guide for all DoD facilities. Projects under this SOW must abide by the UFC. Not every individual UFC document will be applicable to every project. UFC requirements beyond those listed in the WHSBC (most current version) will be specified in this contract if/when necessary. UFC provisions may be added by change order after suitable analysis of cost and schedule impact and subject to the availability of funding. Recommendations set forth in the Pentagon Facilities Guide Specification (PFGS) and Unified Facilities Guide Specifications (UFGS) must be followed.

6.17.2 The PFGS must be applied to all planning, design, construction, sustainment, restoration, and modernization of the Pentagon, Metro Entrance Facility (MEF), and the Remote Delivery Facility (RDF), regardless of funding source. It is a requirement of FSD to use materials, equipment, and parts common to the Pentagon building's systems. Copies of the specifications are available upon request from the Standards and Compliance Division at <https://my.whs.mil/services/standards-and-compliance> or 703-695-3300. The application of the PFGS to projects affecting Pentagon facilities must fulfill the requirement found within Department of Defense Directive 4270.5 to use the UFGS. The guidance found within the PFGS must take precedence over any guidance found within the UFGS. Contractor must refer to SOW Attachment A4, "Pentagon Facility Guide Specifications".

6.18 Health and Safety Standards

The facilities, systems, and equipment design standards of the Occupational Safety and Health Act, Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926, as applicable, must be incorporated by the DOR into all design and analyses furnished pursuant to this contract. Any problems in incorporating these standards due to conflicts with other technical criteria will be promptly submitted to the Contracting Office for decision. The Contractor must comply with all aspects of the WHS Standards & Compliance Division (SCD) and Occupational Safety Health Branch (OSHB) Safety Program. Failure to comply with the OSHB Safety Program may result in sanctions including, without limitations, termination for default.

6.19 Building Monitoring Systems

All building monitoring systems that are part of the SOW must be tied into the building Facilities Related Control System (FRCS). See SOW Attachment A: Project Requirements, "WHS Building Code" for additional information.

6.20 General Inspection Procedures

The Contractor must follow these procedures for Inspections and Acceptance:

- 6.20.1 The Contractor must notify the Government 48 hours in advance of all inspections.
- 6.20.2 There will be no inspection on the weekends or after hours.
- 6.20.3 Concealed project elements not able to be readily inspected at the completion of the project, such as utilities and interior structural elements, must be inspected prior to being concealed or closed-in.

6.21 Construction Daily Reports

The Contractor must provide a construction Daily Report. The report must be provided to the Government Representative (COR, CM, QA, and Scheduler).

6.22 Design Support During Construction

The DOR must verify field construction on a regular basis and perform design administration to ensure that the design is correctly implemented. If differences occur from the original design due to site conditions, the Contractor must immediately submit a Request for Information (RFI), following RFI standard procedures, describing the issue and providing possible solutions. The solution must be verified and coordinated with the DOR and must include a sketch and design narrative. If a new product is required, a specification for this product must be included as part of the RFI.

6.23 On-Site Drawings and Permits

A signed and DOR sealed set of the most current accepted drawings and all approved permits must be on the project site at all times.

6.24 Pentagon Reservation Sign Displacement

Any signage displaced due to construction must be removed, stored, and reinstalled or replaced with a new sign.

6.25 Demolition Requirements

Any existing mechanical, electrical, and plumbing (MEP) and sprinkler system components being deconstructed and/or removed in conjunction with the execution of the work must be capped at the following points:

- 6.25.1 Electrical and communication/data wiring and pathways must be removed back to the source.

6.25.2 Ductwork, mechanical and plumbing lines identified on the existing conditions documents must be removed back to the originating riser or tap.

6.25.3 Ductwork, mechanical and plumbing lines NOT identified on existing conditions documents must be capped immediately outside of the perimeter of the space.

6.26 Outages

The Contractor is responsible for any and all temporary structures, systems and components required to perform all outages. Outages will be reflected within the project schedule (see SOW Attachment K: Schedule Requirements for details).

6.27 Soil Removal or Procurement

6.27.1 Soil removed from, or brought onto, the Pentagon Reservation must comply with the ESEB Guidance Document for Proper Handling of Soil at the Pentagon.

6.27.2 If soil will be removed from the Pentagon as part of the project, the Contractor must identify the disposal facility and perform contamination testing, as required by the disposal facility.

6.27.3 If soil will be brought onto the Pentagon, the Contractor must verify the soil is tested to ensure contamination is not present prior to bringing it onto the Reservation. Topsoil required for site work and landscaping must be tested by the Contractor to ensure sufficient organic matter and nutrients are present to support plant growth.

6.27.4 Contractor must also refer to Section 3.14: Landscape Excavation/Damage Repair Requirements for further information.

7.0 COMMISSIONING

If Commissioning is included in the SOW, then the associated commissioning requirements of this contract are included herein. The Government will retain an independent third-party commissioning specialist to develop and oversee any required functional performance tests. The Contractor is responsible for coordinating testing with the Government commissioning specialist, ESEB, PBMO, OPFM, PFPA, and any other OGCs involved. Commissioning will be reflected within the project schedule (see SOW Attachment K: Schedule Requirements).

7.1 Resources

The Contractor and OGCs, as required, must supply the personnel and technical resources necessary to execute all project commissioning (Cx) activities. This process must be coordinated with, and overseen by, the Government's Commissioning Specialist (CxS) in accordance with the WHS Master Commissioning Plan.

7.1.1 The Commissioning Team (CxT) serves as the Government's agent for inspecting systems (e.g.: mechanical, plumbing, electrical, Supervisory Control and Data

Acquisition (SCADA), fire, security, and energy management and control systems) in preparation for turnover in accordance with the Project Specific Commissioning Plan. Using the WHS Master Commissioning Plan as a guide, the Contractor, as integrator and Commissioning Authority (CxA), will develop and execute the final project specific WHS Master Cx Plan and Procedures Manual concurrent with design and construction.

- 7.1.2 The Contractor must provide personnel and technical resources necessary to execute all project commissioning activities throughout the project, including during the warranty period. This process must be coordinated with the CxS in accordance with the WHS Master Commissioning Plan.

7.2 Pre-Construction Commissioning Coordination

The Contractor is responsible for the following Commissioning Activities during Pre-Construction:

- 7.2.1 The Contractor must incorporate commissioning requirements into the construction specifications.
- 7.2.2 The Contractor must incorporate commissioning activities into the master schedule and integrate Cx activities (including design, construction, and OGC Cx activities) into the Initial Planned Schedule.
- 7.2.3 The Contractor must prepare, author, and submit initial Systems Operation and Maintenance Manuals (SOMMs). This must pertain to any changes of the existing systems, and systems which in some cases may serve areas outside the construction boundary. Refer to the SOW Submittals Table for more details.
- 7.2.4 The Contractor must prepare and submit the detailed master equipment list (DMEL). The DMEL must be submitted in Excel format for incorporation into MAXIMO.

7.3 Construction Commissioning Coordination

The Contractor is responsible for the following Commissioning Activities during Construction. Contractor must reflect this activity within the project schedule.

- 7.3.1 The Contractor must attend the Commissioning Kick-Off and subsequent commissioning meetings called by the CxA or the Government Commissioning Specialist. At a minimum, the meetings must be held on a monthly basis. As construction progresses, the meetings must be held on a bi-weekly or weekly basis, as deemed necessary by the CxA or Government's Commissioning Specialist.
- 7.3.2 The Contractor must prepare and submit required forms and systems information for review and comment, such as equipment specific shop drawings, product data, wiring diagrams, etc. For building systems and equipment not included for Cx under the WHS Master Commissioning Plan, Contractor must develop detailed, equipment-specific testing procedures and submit them to the Government for review, as well as scheduling and coordinating commissioning efforts.

- 7.3.3 The Contractor must submit training plans and materials and provide a response to all comments by the CxA for Pre-functional Checklists, and Functional Performance Tests (FPT).
- 7.3.4 The Contractor must prepare and submit final SOMM(s) to the Government, including instruction postings, diagrams, hyperlinks, etc. Contractor must maintain an onsite record set of shop drawings, product data, warranties, test reports, balance reports, start-up certifications, and red lined drawings at all times for the Government to reference in the event of any field discrepancies.
- 7.3.5 The Contractor must set up and perform system performance trend analysis.
- 7.3.6 The Contractor must complete 100% of the pre-functional checklists and submit all successful results along with other installation certification testing, start-up reports, certification inspection reports etc.
- 7.3.7 The Contractor must complete controls point to point checkout and submit to the Government prior to performing any functional testing.
- 7.3.8 The Contractor must complete the Testing Adjusting and Balancing (TAB). The Contractor must meet all manufacturer's recommended testing requirements and procedures.
- 7.3.9 Upon completion of all Pre-Functional Checklists (PFC's) and TAB, the Contractor must notify the Government within 14 calendar days to schedule functional testing.
- 7.3.10 Contractor must review and approve the preliminary field and final testing, adjusting, and balancing (TAB) reports. TAB verification by the third-party Commissioning Agent must not commence until the completed and approved preliminary field report is submitted and reviewed. The third-party Commissioning Agent has 5 calendar days to review this report prior to scheduling the TAB verification with the Contractor.
- 7.3.11 If the design entails interconnection to any security or fire alarm system, the Contractor is responsible for commissioning of the complete operational system.
- 7.3.12 The Contractor must re-commission any control or security systems taken out of service.

7.4 Third Party Cx Punchlist

Third-Party Cx Plan Comments: During the Commissioning process, discrepancies are noted and compiled into a list. A copy of the outstanding discrepancies must be obtained from the Third-Party Cx Contractor. Updates to the list must be provided during closeout with the transition updates.

7.5 Building Systems Turnover and Operation

- 7.5.1 Due to the size and nature of some of the projects, there will be times when a system (e.g. multi- zoned air-handling unit) encompasses such a large area that it may not be practical or efficient to turn over the complete system. When planning for these large area system turnovers, the Contractor must ensure that the systems are tested as complete sub-systems or branches in accordance with the Statement of Work. A sub-system is defined as a complete branch line or end of the line (downstream side) system, including all downstream connections, taps, etc., required to make the sub-system complete and operable. For example, a multi-zoned air-handling unit will have all zones operational and balanced before the system turnover inspection of the air handler. When components upstream of the sub-system being turned over, that must be energized to support the operation of a space planned for turnover (e.g., a multi-zoned air-handling unit is operational to support the zone serving a space being accepted), the Contractor must provide all temporary utilities required to provide service to those components, e.g. steam, chilled water, electricity, etc
- 7.5.2 The Contractor must maintain the equipment according to manufacturer's recommendations and must keep a maintenance log, which must be turned over with the SOMM(s).
- 7.5.3 Before the final commissioning inspections, the Contractor must ensure that all systems training is complete and that appropriate SOMMs are provided to the Cx Team for review and acceptance, as required by the Cx Plan. This will allow the Government to become knowledgeable on the equipment and systems that will be inspected and which the Government will be responsible for following acceptance. The SOMMS must include a list of responsible Contractor Teams and sub- contractor Teams with contact telephone numbers for warranty on each of the systems. Generally, systems will not be re-inspected during the pre-final inspections. However, the Government reserves the right to make any inspections at any time and especially if the issue is Life Safety or code related. The Government and Government QA will re-inspect for Final Inspection. At the completion of system turnover inspections, the Government will be ready to accept the systems for operation and maintenance along with the turnover of the space served by the system.
- 7.5.4 The warranty period must begin when the component / complete subsystem, as defined above, is turned over to the Government.

7.6 Government

Acceptance will occur when:

- 7.6.1 The Contractor has successfully performed all Functional Performance Tests (FPTs) witnessed by the third-party Cx using calibrated test instruments provided by the Contractors.
- 7.6.2 The Contractor has resolved outstanding commissioning related issues/deficiencies.

- 7.6.3 The Contractor has coordinated and scheduled retesting.
- 7.6.4 The Contractor has finalized record documentation.
- 7.6.5 The Contractor completes Contractor Provided Training. The Contractor must prepare and conduct a systems level equipment training program for the Government and OGC operators. All training must be scheduled for Wednesdays or Thursdays at 0800 and 1600. Duration will be determined by the Contractor, but must not last for more than four hours per session.
- 7.6.6 The Contractor has received the Certificate of Occupancy.

8.0 CLOSEOUT

Listed below are contractual documents required for the project closeout. These submittals must be shown on the Integrated Project Schedule (IPS). A transition checklist will be provided to the Contractor after award. The transition package will be the official notification that the spaces have been delivered to the Government for Use and Possession and that the warranty period has started. Details regarding the elements of a transition package are included below. Final payment will not be made until the following applicable requirements are complete:

8.1 Closeout Kick-Off Meeting

The Contractor must attend a Closeout Kick-off meeting at the 75% Work-in-Place milestone of the project to review the requirements for a timely completion of the project. Contractor's project scheduler is required to attend this meeting. During this meeting the current progress schedule will be reviewed to determine if modifications to close-out activities and durations are required by the Contractor. Percentage of completion of the closeout activities must be determined during the invoicing process. Following the Closeout Kick-Off meeting, closeout activities will be discussed at all remaining progress meetings.

8.2 Punchlists

The Contractor must follow the General Inspection Procedures and perform the following tasks to prepare a punch list for Pre-Final and Final Inspections:

- 8.2.1 The Contractor must provide their own quality assurance and quality control for the work performed in the contract. Contractor must continuously inspect the workspace and correct all deficiencies or non-conforming work. Contractor must provide a log of the corrected deficiency or non-conforming work to the Government.
- 8.2.2 Contractor must add deficiencies into progress schedule, tracking them as new activities. Contractor must work with the Government to create an accepted action plan to address these items. All requested inspections must be reflected as milestones. The updated project schedule must be submitted to the Government for review and acceptance. After Government acceptance, the Contractor's schedule will be the baseline for construction execution (see SOW Attachment K: Schedule Requirements).

- 8.2.3 Correct all items on the deficiency log and schedule a Pre-Final Inspection with the Government.
- 8.2.4 Submit a list of all punch list items to the Government 48 hours prior to the Pre-Final Inspection.
- 8.2.5 All deficient punch list items must be documented by the Contractor during the pre-final inspection with input from the Government team. These items must be corrected by the Contractor prior to a final inspection and a status update provided periodically to the Government. The inspectors operating on behalf of the Government are not a replacement for the Contractor's own quality assurance and quality control.
- 8.2.6 After all items on the punchlist have been corrected, schedule a final inspection with the Government to verify that all items are complete.
- 8.2.7 Building/Tenant Inspections must occur concurrently with pre-final and final Inspections.
- 8.2.8 If the Government deems that all punchlist items have been satisfactorily completed, the project will be accepted as Construction Complete.
- 8.2.9 The Government will sign on each closed punchlist item or each punchlist page to verify the issue(s) closure.

8.3 Training

The Contractor must conduct all systems training and provide a training schedule, agenda, and report, including copies of the training sign in sheets, which will be inserted into the final SOMM Manual. All training must be provided prior to Transition. If training cannot be provided before Transition, a formal update by the Contractor is required with a deliverable date as to when the training will be completed. Training must not commence until Draft O&M and SOMMS manuals have been provided so that they can be utilized for training.

8.4 Systems Operations and Maintenance Manuals (SOMMs)

SOMMs must include information on all MEP systems in strict accordance with Cx specifications, as well as SOW Attachment D: Commissioning Requirements. If there are known issues or concerns with the SOMMs, they must be listed on the submittal to the Government. Special emphasis must be placed on system operation and recovery from failure in the development of the SOMMs. The SOMMs must also include a recommended schedule of maintenance requirements and frequency.

8.5 Operation & Maintenance Manuals (O&Ms)

- 8.5.1 O&M Manuals must be submitted separately from the SOMMs. They must be submitted in one binder with separation tabs. Once accepted by the Government, the final O&Ms must be inserted into the final SOMMs binder in compliance with Cx specifications.
- 8.5.2 Maintenance Logs: Copies of maintenance logs must be provided for major equipment energized prior to transition and operated for longer than the required maintenance period. The maintenance logs must demonstrate that the equipment is being turned over without unnecessary wear and tear due to lack of maintenance.

8.6 NFPA 72 Form-Record of Completion

The Contractor must submit this document for Government Acceptance to document the successful testing of the fire alarm system. The Contractor must use the Record of Completion template from the applicable edition of NFPA 72. An NFPA 72 form may not be required if the project does not require a fire alarm system, the project does not alter the existing fire alarm system, or if the area transitioned is covered by only a portion of a new or altered fire alarm system. In the latter case, the Contractor must verify that the fire alarm system in the spaces to be occupied by the tenant has been tested, is fully functional, and will remain so until the entire system is tested and the NFPA 72 Record of Completion Form is provided.

8.7 NFPA 13 Contractor's Material and Test Certificate for Aboveground Piping

The Contractor must submit this document for Government Acceptance to document the successful installation and testing of a sprinkler system. Upon completion of work, inspection and tests must be made by the Contractor and witnessed by the Government or their authorized agent. All defects must be corrected and the system left in service prior to construction completion.

8.8 Design Master Equipment List (DMEL)

The Contractor must submit the DMEL for Government Acceptance and allow time for the Government to upload information into the Building's maintenance software program. This must meet the requirements specified by the System Operations and Maintenance Manual (SOMM) specification as outlined in The Cx Plan. At least one electronic version of this document must be in the Microsoft Excel format.

8.9 As-built Documents

8.9.1 The as-built review process is as follows:

- A. Contractor must submit electronic versions of the as-builts to eFIC for approval.
- B. Contractor must coordinate a meeting with eFIC 72 hours in advance in order for an Axiom Report to be generated for on-site review of all deficiencies.
- C. Items 1 and 2 will repeat as necessary until all deficiencies have been resolved.
- D. Once all deficiencies have been resolved, and eFIC has approved the electronic submission, hard copies and final electronic versions of the as-builts must be submitted to the Government for review (see SOW, Submittal Table 3.0 for submission requirements).

8.9.2 The Contractor must incorporate as-built review time into their schedule. Contractor must allow for at least 2 reviews or more depending on the size of the project. After receiving approval from eFIC, the Contractor must submit as-built drawings, specifications, and a copy of the final redline drawings for Project Close Out (see SOW Attachment K: Schedule Requirements). The as-built Submittal must:

- A. Follow the same WHS CADD and EDS requirements as the design document submittals. The Contractor must submit all drawings in AutoCAD 2013 (.dwg) or later version and in PDF format for each design file. In addition, if the contractor utilized another CAD software to produce its design documents, the original working software source files must also be submitted in its native file format. All submittals must incorporate all project requirements following the most current version of the Pentagon's Electronic Data Standards (EDS) as well as the A/E/C Standard.
- B. Reflect revisions for all Design Documents throughout the duration of the project.
- C. Encompass all redlines by OGCs directly contracted to this project.
- D. Include the sprinkler as-built drawings (include source files) developed by the installer for their submission.
- E. Provide Fire Alarm as-built shop drawings, including source files. There must be no exclusion of documenting small diameter wires as applied specifically to fire alarm initiating circuits and fire alarm notification appliance circuit.
- F. Provide LID compliance documentation, as described in General Requirements, Section 3.4.1.
- G. Contain a review date and signature of DOR and QCM verifying Quality Control review and acceptance.

8.10 Issue for Record As-Built Documents

All as-built submittal comments must be resolved and accepted by the Government prior to delivering the Issue for Record As-Built Documents. This submission is delivered to the Government for record only. The Government will acknowledge receipt of these documents. The DOR and QCM must date and sign these documents for the hard copy and PDF forms.

- 8.10.1 Issue for Record As-Built activities must start at the 75% construction completion mark with a kick-off meeting. Issue for Record As-Built documents must be reviewed at all following progress meetings.
- 8.10.2 Contractor's successful completion of the Issue for Record As-Built drawings will be factored into their CPARS rating.

8.11 Warranty Binder

A one year warranty is required for all work/equipment incorporated into the Project, as well as work or modifications made to existing conditions, systems, and equipment, including security equipment.

- 8.11.1 A list of points of contact for warranty issues with contact information and specific areas of coverage must be provided, including the General Contractor and all of the main sub-contractors, mechanical, electrical, plumbing, architectural, landscaping, etc.

- 8.11.2 The Contractor and the main sub-contractor(s) must provide separate, signed letters confirming the Contractor will provide the required warranty. Letters must include warranty start and end dates and specific areas of warranty coverage.
- 8.11.3 Extended warranties must include the specification section to which they apply. Extended warranties are in addition to, and do not replace, the Contractor's warranty under this provision and applicable regulations.
- 8.11.4 The Contractor must maintain current record drawings and documentation to reflect any changes made as the result of warranty item resolution. In the event of a warranty item resulting in a design change, the Contractor must record it in their as-built documents and notify the Government Transition Team of the change.
- A. Warranty Binder activities must start at the 75% construction completion mark with a kick-off meeting. Warranty documents must be reviewed at all following progress meetings.
 - B. Contractor's successful completion of the Warranty Binder activities will be factored into their CPARS rating.

8.12 Waivers

If any waivers have been requested, or are anticipated to be requested, a log detailing each waiver, with description and status, is provided as part of the transition package.

8.13 Elevator and Escalator Certificates of Operation

The Elevator and Escalator Installation Contractor must arrange for third-party certification prior to turning over the equipment for Building use. When occupants of a facility use the elevators or escalators, the Building Manager must be in possession of the certificates. The key factor is the point of need. If there is an early occupancy and elevators or escalators are in operation, then this is the point of need. If barrier walls are removed and tenants have access to elevators or escalators in a joint use area, that is when the certificate is needed. To operate without certification is a violation of the local codes and regulations.

8.14 Attic Stock Delivered Inventory

The Contractor must provide a listing of items and quantities delivered and signed for by the Government at the RDF.

8.15 Certificate of Occupancy

A Certificate of Occupancy indicating completion of the work for which a Building Permit Application was issued must be obtained prior to any occupancy of a structure. No building, structure, or area will be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof will be made, until the Building Code Official has issued a certificate of occupancy as provided herein. Issuance of a certificate of occupancy must not be construed as an approval of a

violation of the provisions of the Washington Headquarters Services Building Code.

8.16 Guiding Principles Checklist

For new construction and modernization, the Contractor must complete a checklist demonstrating compliance with the Guiding Principles for Sustainable Federal Buildings. The checklist references support documentation provided by the Contractor, indicating how each Guiding Principle was implemented.

8.17 Substantial Completion

Substantial Completion is the point at which, as certified in writing by the Government, a project is at the level of completion, in strict compliance with the contract, where:

- A. Necessary approval by public regulatory authorities has been given.
- B. The Owner has received all required warranties and documentation.
- C. The Owner may enjoy beneficial use or occupancy and may use, operate, and maintain the project in all respects, for its intended purpose.

8.18 Final/Construction Completion

Construction Complete is when the Government deems that all punch list items have been satisfactorily completed. Certificate of Final Completion is a legal document verified by the DOR, the Contractor, and the Owner of a construction project, that the project is complete and is ready for final payment. Such a certificate specifies the name and address of the Owner of the contract, Contractor, and Architect. It establishes the date of Owner's acceptance, Owner's contract number, and the project name. It also specifies the date on which such certificate is issued, the total cost of the construction and the amount paid as sales tax by the Contractor. Warranties required by the contract documents will commence on the date of final completion of the work unless otherwise provided in the certificate of substantial completion.

8.19 Contract Completion

All close out/transition documentation received, accepted, and executed by the Owner.

8.20 Utility Room List

A list of utility rooms must be provided to highlight these spaces for the Building Maintenance Crews. Joint Use rooms must be indicated both on the Boundary Plan and on the list of utility rooms.

8.21 Joint Use Rooms List

Joint use spaces contain equipment or systems needed for continuing work in areas yet to be completed, such as MEP rooms. The need for such spaces typically occurs during phased turnover of

projects. This list must also include a marked riser diagram or drawing, specifying responsibility for the maintenance of each component: Government or the Contractor. All joint use rooms need to be transitioned to the Government no later than the last phase of construction complete.

8.22 Cost to Complete

The Government reserves the right to retain project funds equal to the estimated "cost to complete" project activities throughout the duration of the project. In addition, re-procurement costs may be considered in the cost to complete.

8.23 Final Submittal Register

Contractor must provide a finalized register with all final statuses, submission and approval dates, transmittal and identification numbers, and submittal descriptions.

9.0 CHANGES TO THE CONTRACT

9.1 General

- 9.1.1 Contract terms and conditions govern all post-award changes. The clauses that apply to individual contracts vary based on the value of the requirement, nature of the change, and other characteristics. Only a warranted Contracting Officer is authorized to change the contract. All changes must be negotiated through, and approved by, the Contracting Officer, in writing.
- 9.1.2 Contractors have a duty to inquire with the Contracting Officer before completing any work that may be out of scope or may constitute a change. The Contracting Officer is the only individual authorized to make scope determinations.
- 9.1.3 Any change that increases cost or price is subject to availability of funds. The Contracting Officer cannot execute a contract modification that increases price unless sufficient funds are made available first.
- 9.1.4 The Contractor is responsible for timely submission of any request for equitable adjustment or desired no-cost change. Timely means any specific time period established by a contract clause, term, or condition. When no time period is established by a clause, term, or condition, timely means within thirty (30) days unless a different period is authorized in writing by a Contracting Officer.

9.2 Differing Site Conditions

- 9.2.1 Contract clauses establish terms and conditions that apply to differing site conditions or changed conditions. The clauses that apply to individual contracts vary based on the value of the requirement and other characteristics. For purposes of these clauses: (1) Differing site conditions has the same meaning as changed conditions, (2) "Prompt" notice to the Contracting Officer means within two (2) business days, unless stated otherwise in the contract or task order, and (3) the COR must be copied on all notices of differing site conditions or changed conditions.

9.2.2 The RFI process does not satisfy notice requirements for differing site conditions or changed conditions.

The Contractor must submit a proposed solution or solution alternatives for differing site conditions in a timely manner. Timely means within ten (10) calendar days, unless the Contracting Officer extends the time available. The solution(s) must describe estimated impacts to cost and schedule, and a brief summary of risks and recommendation. The Government generally prefers solution(s) that minimize impacts to cost and schedule when practicable.

ATTACHMENT 1.14.8

DOD-WHS GUIDANCE DOCUMENT FOR
LAND-DISTURBING ACTIVITY (LDA) PERMITS

Washington Headquarters Services Guidance Document for Land Disturbing Activity Permits



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1. INTRODUCTION

The Washington Headquarters Services (WHS) Municipal Separate Storm Sewer System (MS4) permit for the Pentagon site, issued by the Virginia Department of Environmental Quality (DEQ), requires that construction site stormwater runoff controls are approved by a Virginia Erosion and Sediment Control Program (VESCP) authority and installed during construction activities. The WHS MS4 permit also requires that post-construction stormwater management is approved by a Virginia Stormwater Management Program (VSMP) authority and installed on the project site when applicable.

To satisfy these regulations, construction activities on the Pentagon site that disturb at least 2,500 square feet of land must acquire a Land Disturbing Activity (LDA) permit through the Arlington County Department of Environmental Services (DES), which is a VESCP and VSMP authority.

The purpose of this document is to provide guidance to WHS project managers and contractors on the procedures and best practices for completing the Arlington County LDA permit process.

The primary resource for LDA permit guidance is the Arlington County website (<https://building.arlingtonva.us/land-disturbing-activity-permit>), which contains information and up-to-date links to related documents.

2. ROLES AND RESPONSIBILITIES

The contractor will prepare and submit all documents required to receive an approved LDA permit in accordance with this guidance document and all referenced documents. The contractor will respond to and revise, as appropriate, the LDA permit submittal package based on the review comments provided by the Environmental, Sustainability, and Energy Branch (ESEB), within the Facilities Services Directorate (FSD) of WHS. The contractor will remediate any deficiencies identified in the ESEB construction inspection reports as soon as possible after notification of an issue.

ESEB will review and provide comments as necessary on all LDA permit submittal packages before the contractor submits them to Arlington County. ESEB will conduct stormwater best management practice installation inspections and erosion and sediment control (E&S) inspections to ensure the appropriate controls are in place before and during soil-disturbing activities. Based on these inspections, ESEB will prepare and submit summary inspection reports to the WHS Construction Management Division (CMD) Project Manager (PM).

The CMD PM will incorporate this LDA permit process in the project schedule and ensure the contractor adheres to the above responsibilities.

3. PROCEDURE

Figure 1 shows the LDA permit process steps during the pre-construction, construction, and post-construction phases. The steps are separated to show actions performed by the contractor (with oversight by CMD), and by ESEB. The sections below further detail each action.

3.1 Delineate Disturbed Area

The contractor will delineate the area of land to be disturbed as early as possible to determine applicable LDA permit requirements. The contractor will provide a plan to ESEB that clearly delineates the proposed disturbed area with square footage labeled.

Land disturbance includes:

- Clearing and grading of the site
- Demolition of existing structures
- Any new building footprint added to the site
- Access pathway for construction equipment (e.g., backhoe, wheelbarrows)
- Area for construction dumpster
- Storage or lay-down areas for construction materials
- Grading for drainage
- Grading/excavation for construction of building footing
- Excavated soil storage areas
- New concrete/paved areas, including driveways
- Trenching or excavating to install, replace, remove, or cap underground utility lines related to the land development project
- New sidewalks, paths, or stairs
- Landscaping areas

Land disturbance does not include:

- Routine maintenance that is performed to maintain original line and grade, hydraulic capacity, or original construction of the project (e.g., milling and paving).
- Clearing of lands specifically for agricultural purposes and the management, tilling, planting, or harvesting of agricultural, horticultural, or forest crops.

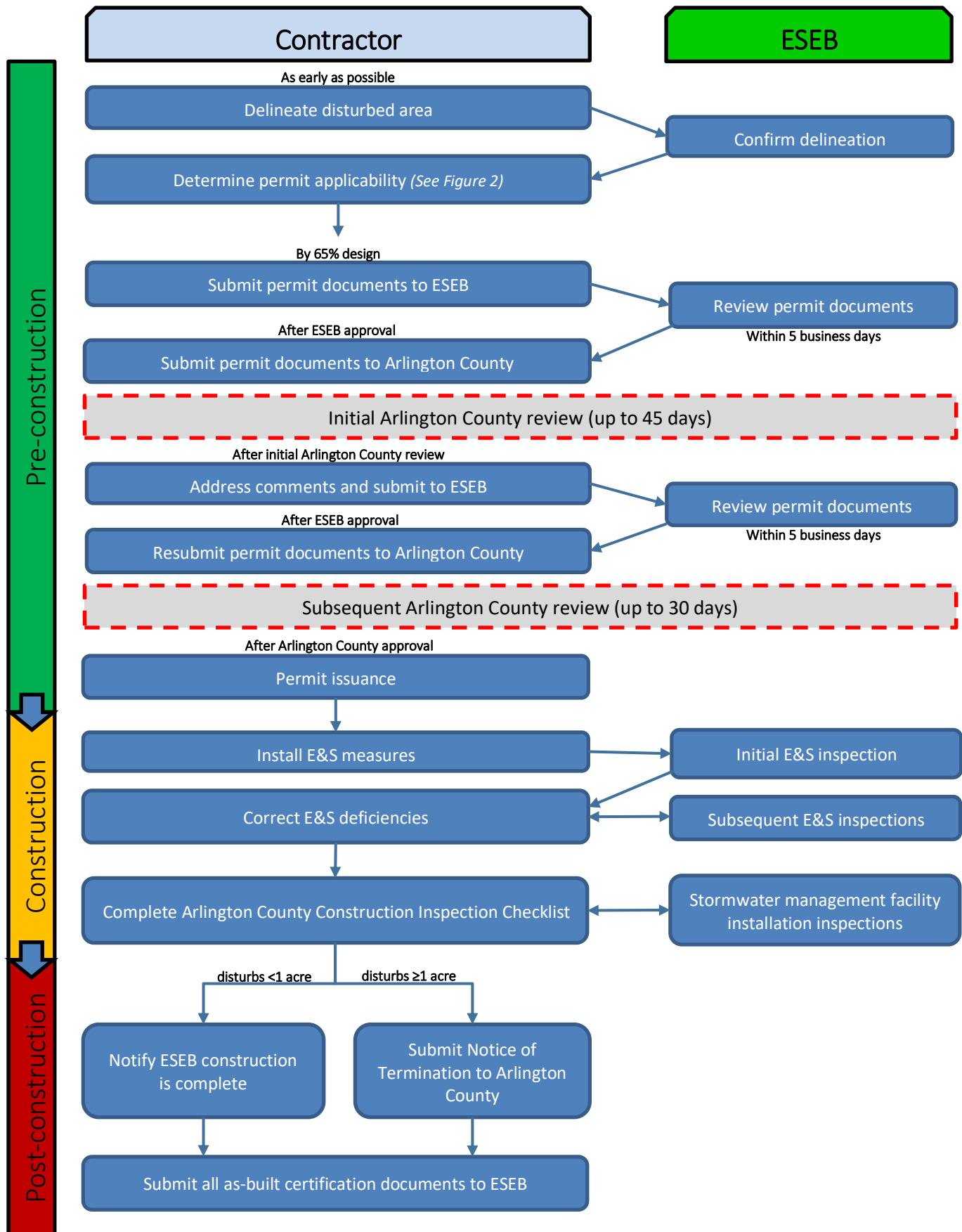


Figure 1. WHS LDA Permit Procedure

3.2 Determine Permit Applicability

The flow chart in Figure 2 shows the required submissions depending on the area of land disturbance.

If the delineation reviewed by ESEB demonstrates that the land disturbance of the project is less than 2,500 square feet, no LDA permit is required. If the land disturbance of the project is 2,500 square feet or greater, the contractor is required to obtain an LDA permit before any land disturbing activities can begin.

If the land disturbance of the project is one acre or greater, the contractor is required to obtain coverage under a Construction General Permit. The Construction General Permit is granted by DEQ but administered by Arlington County, so the application for this permit coverage should be submitted to Arlington County with the LDA permit submittal package.

Note that Arlington County typically imposes additional requirements on projects located in a Resource Protection Area (RPA), which is the sensitive area within 100 feet of a stream, river, or water body (i.e., stream or wetland buffer). However, per the Arlington County Stormwater Management Ordinance Guidance Manual, federal properties are exempt from RPA requirements, though they still need to adhere to the General Performance Standards for Development in Chesapeake Bay Preservation Areas.

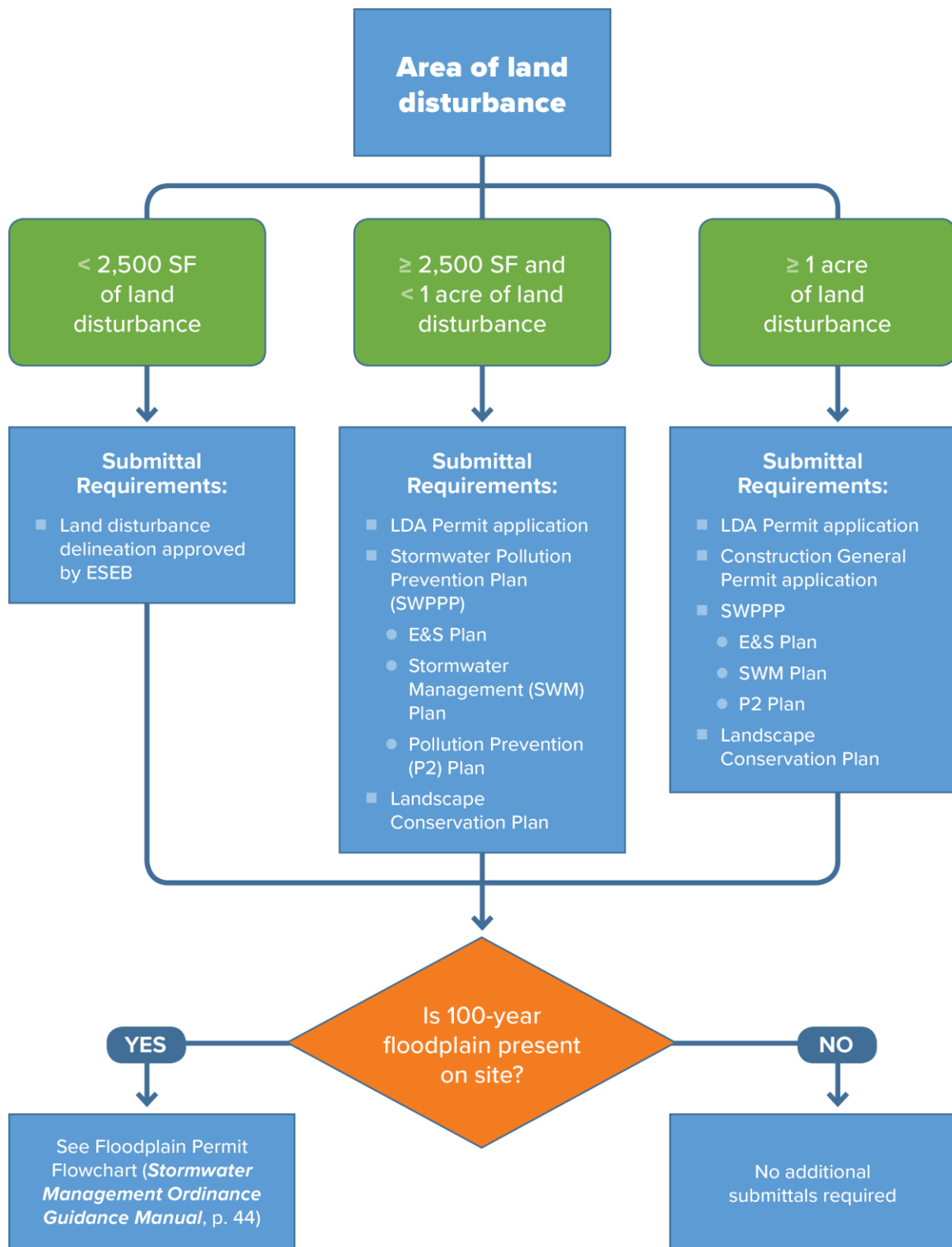


Figure 2. Regulatory Flow Chart for Determining Required LDA Submissions

3.3 Prepare LDA Permit Documents

The Arlington County Stormwater Management Ordinance website contains numerous resources to help prepare required submissions (<https://topics.arlingtonva.us/building/stormwater-management-ordinance>). These resources include the Stormwater Management Ordinance Guidance Manual,¹ the LDA permit application, the Minimum Acceptance Checklist, and several design spreadsheets. The contractor will consult these resources throughout the design process and complete all applicable checklists and spreadsheets before submission.

The most recent version of the Stormwater Management Ordinance Guidance Manual is the primary reference document and will be adhered to in its entirety with the following modifications:

- **Section 2.6: Stormwater Facility Maintenance and Monitoring Agreement (MMA):** Construction projects on the Pentagon site are exempt from completing the Stormwater Facility MMA due to existing internal WHS inspection and maintenance requirements.
- **Section 2.8: Enforcement:** ESEB, not Arlington County, will conduct construction inspections. Inspection reports will be transmitted via email to the CMD project manager. The contractor will perform E&S self-inspections at the frequency identified in any issued permits.
- **Section 3: Landscape Conservation Plan Requirements:** Because the Pentagon site is located in Zone S-3A, projects are exempt from all tree canopy requirements. However, tree protection must still be met.

For any construction activities resulting in land disturbance equal to or greater than one acre, the contractor will submit a Registration Statement for the Construction General Permit to Arlington County with the SWPPP. Once DEQ receives the Construction General Permit application from Arlington County, the contractor will receive an email from DEQ that will provide payment instructions for the state portion of the fee. The remainder of the fee is due at the time of LDA permit issuance.

3.4 Submit LDA Permit Documents to ESEB

The contractor will submit all required documents to ESEB for review and acceptance no later than the 65-percent completion phase for the overall project. ESEB will complete review and provide comments within five business days.

3.5 Submit LDA Permit Documents to Arlington County

Once ESEB has completed a satisfactory review, the contractor will submit paper plans to Arlington County. The Arlington County ePlan permitting system cannot be used for submissions as it does not currently recognize addresses on the Pentagon site.

¹Arlington County DES. *Stormwater Manual: A Guide to Stormwater Requirements for Land Disturbing Activities in Arlington County*. (March 2018) <https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/38/2016/09/DES-Stormwater-Management-Ordinance-Guidance-Manual.pdf>

3.6 Initial Arlington County Review

Once documents are submitted, Arlington County may take up to 45 days to complete the initial review. Permit status and comments can be viewed at any time, by anyone with the LDA permit number, at the Arlington County permit search website (https://permits.arlingtonva.us/Query_by_Number.aspx).

3.7 Resubmit LDA Permit Documents

The contractor will address all Arlington County comments and resubmit the documents to ESEB for review. ESEB will complete a review and provide comments within five business days. The contractor will address any comments and resubmit the documents to Arlington County. Arlington County may take up to 30 days to complete all subsequent reviews. As needed, this process will be repeated until Arlington County grants the LDA permit.

3.8 LDA Permit Issuance

The LDA permit is issued once all documents have been approved. Projects that disturb between 2,500 square feet and one acre of land are required to pay a fee to Arlington County at the time of permit issuance. Projects that disturb one acre of land or greater, which have coverage under the Construction General Permit, are required to pay a higher fee to Arlington County at the time of permit issuance.

The contractor must employ a certified Responsible Land Disturber (RLD) before the LDA permit can be issued. Obtaining an RLD certificate requires individuals to complete an online course available at DEQ's website. This course takes approximately 40 minutes to complete.

3.9 Construction

Land disturbing activities may not begin until the project's LDA permit has been issued.

Before excavation, ESEB will verify that E&S measures are installed as described in the E&S plan. ESEB will also perform periodic E&S inspections throughout construction. Reports based on these inspections will be submitted to the CMD PM. The contractor will remediate any deficiencies identified in the ESEB inspection reports before continuing construction.

If the project involves constructing a permanent (i.e., post-construction) stormwater management facility, the contractor will complete the Arlington County As-Built Certification & Construction Inspection Checklist for the specific type of facility. However, the contractor will submit all as-built certification documents, including construction checklists, photographs, and material delivery tickets, to ESEB rather than Arlington County.

3.10 Project Completion

For projects that disturb more than one acre of land, the contractor will submit a formal Notice of Termination to Arlington County once construction has been completed (<https://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/21/2014/06/DES-Notice-of-Termination-General-VPDES-Permit-for-Discharges.pdf>).

For all other LDA permit projects, the contractor or CMD PM will notify ESEB once construction has been completed. ESEB will send an informal notice of termination to Arlington County via email.

4. CONTACTS

Environmental, Sustainability, and Energy Branch

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Arlington County, Department of Environmental Services

<https://departments.arlingtonva.us/des/>

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