

2.01 BIKE LANES

- A. In addition to specific project requirements, all new road construction and road replacement or improvement projects on the College Park Campus shall provide for minimum four (4) foot bike lanes adjacent to the curb or a minimum 16 foot usable lane width. Physical hazards such as excessive drop-offs at the gutter pan, open joints, unsafe drain grates or utility covers will not be allowed in the area to be used by bicycles.
- B. Bike lanes shall be developed in accordance with the latest edition of the following Design Guidelines and Standards:
1. North Carolina Bicycle Facilities Planning and Design Guidelines

North Carolina Department of Transportation
Office of Bicycle and Pedestrian Transportation
P. O. Box 25201
Raleigh, North Carolina 27611-5201
Telephone number: 919-773-2804
Facsimile number: 919-715-4422
 2. American Association of State Highway and Transportation Officials (AASHTO), Guide for the Development of Bicycle Facilities (1991)
 3. AASHTO Standard - Specifications for Highway Bridges, Fourteenth Edition (1989)
 4. AASHTO Roadside Design Guide (1989)
 5. AASHTO Maintenance Manual (1987)

2.02 EXTERIOR CONSIDERATIONS (12-2-02)

- A. Provide termite treatment as required (particularly for existing facility renovations).
- B. Pest control contracts are required during the construction phase for rodent control.
- C. Include porticos, and adjacent plazas in the design of new projects as well as renovations.
- D. Connect general building downspouts to campus storm drain system. Specify cast iron boots minimum of 4' above ground. Certain exceptions may be permitted depending on the location of the building and possible stormwater management requirements.
- E. Selection of trees, shrubs, plants, sod, seed, etc. shall be coordinated by the Department of Architecture, Engineering and Construction with assistance by the Landscape Services Division.
- F. Sidewalks shall be at least eight (8) feet wide unless otherwise specified by the University. Minimize the use of steps; ramps conforming with ADA are preferred.
- G. Walks for fire vehicle access shall be in accordance with state fire code, state building code, and UMCP design guidelines for fire protection and safety.
- H. Bottom of footings to be a minimum of 2 feet 6 inches below finished grade and rest on undisturbed soil.
- I. Properly sign and number building(s) and rooms.
- J. Exterior signs shall be placed in such a manner to eliminate the need for mowing beneath or around the sign.
- K. A minimum of one (1) 3/4" freeze proof hose bib every 100 feet. and two (2) weather proof duplex electrical outlets shall be located on each face of a building.
- L. Provide sign height to eliminate interference with pedestrian traffic.

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- M. Provide positive slope away from buildings. Include adequate drainage to eliminate water from ponding at building entrances.
- N. Design exterior building features to discourage pigeon roosting.
- O. Roadway, crosswalks, and street markings shall be as required from MSHA specifications. ***Shuttle-UM bus turning radius shall meet the requirements of DCFS Section 2.03.B.2.c, as described for turning fire apparatus, 50' minimum radius.***
- P. Restrict the use of small raised, interior parking lot islands.
- Q. Exterior painted surfaces should be discouraged and maintenance free exterior surfaces encouraged.
- R. Avoid types of plant materials that could cause safety, security or maintenance problems. Also Reference 2. Fire Apparatus Accessibility Guidelines.
- S. Do not provide mowing strip next to building surfaces.
- T. No construction activity, storage, parking, access or egress to the site shall occur within the critical root zone of established trees to remain on the site. The critical root zone is defined as a distance of 3 feet equal distance from the trunk, for each inch of trunk diameter.
- U. Tree protection fences within the critical root zone must be completed prior to any construction. The fences must be maintained through the entire construction period.
- V. Trees which cannot be fully protected shall have a certified arborist provide recommendations, before final design decisions are made.

2.03 FIRE APPARATUS ACCESSIBILITY (12-2-02)

A. Mandatory Codes

The Maryland State Fire Prevention Code adopts by reference the NFPA 1 National Fire Prevention Code which provides that "the code official shall require and designate public or private fire lanes as deemed necessary for the efficient and effective operation of fire apparatus. Fire lanes shall have a minimum width of 20 feet". NFPA 1, 3-5.2. Where buildings are under construction, alteration or demolition, fire department access and fire lane requirements are defined by Section NFPA 1, 41-2.1.

The State Building Code (**IBC**) provides an option to increase building area provided there is access to an open space by a street or fire lane **20** feet wide.

B. Reference Standards

The latest edition of the following code and standards include fire lane information and guidance:

NFPA 1	Fire Prevention Code
NFPA 241	Safeguarding Construction, Alteration and Demolition Operations
NFPA 1141	Fire Protection in Planned Building Groups

1. Definitions

- a. Access Control means the method used to limit access, such as breakable or removable bollards, gates or control arms.
- b. Entry Point means the area of transition from one type of fire lane to another.
- c. Fire Department Connection means piped inlet or outlet which is used by the fire department to supply water to a fire protection system.
- d. Fire Hydrant means a valved connection on a water supply system which is used to supply water to the Fire Department.

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- e. Fire Lane means a roadway, driveway, sidewalk or other area necessary for the passage or positioning of fire apparatus, personnel, or equipment. A fire lane is a Street (Type I), Fire Access Road (Type II), Fire Access Sidewalk (Type III), or Fire Access Surface (Type IV), Access Control, Entry Point, or area of Fire Protection Water Supply.
 - 1. Type I means a paved surface open to the passage of all vehicles at all times. (Street)
 - 2. Type II means a paved surface open to the passage of fire apparatus and emergency vehicles, but closed to the general public or controlled to allow only authorized entry. (Fire Access Road)
 - 3. Type III means a paved surface ordinarily used for pedestrian traffic, but required for emergency access. (Fire Access Sidewalk)
 - 4. Type IV means a ground cover not 100% paved, but available for emergency access. (Fire Access Surface)
- f. Fire Protection Water Supply is the prescribed amount of water required for a building, hazard, or fire protection system calculated by the methods and standards of the Washington Suburban Sanitary Commission, Insurance Services Office and the National Fire Protection Association. Fire Protection Water Supply includes Water Mains, Fire Hydrants, and fire Department Connections.
- g. High Rise Building Means a building or structure defined in the High Rise Building Safety Law or the State of Maryland. The Law defines all buildings four (4) or more stories or 45 feet above the lowest grade as High-Rise

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Buildings.

1. High-Rise Buildings above 75 feet are fully sprinklered.
 2. High-Rise Buildings below 75 feet = fully sprinklered -OR- accessibility provided on the sides (50%) of the building perimeter by a street (minimum 21 feet in width) and accessible to allow fire department aerial equipment to reach the building to 75 feet in height.
2. Fire Lane Structure
 - a. Fire Lanes shall be structurally capable of supporting minimum vehicular weights of twenty-five (25) tons (35 tons is preferred) in all weather-conditions.
 - b. Fire Lanes shall be clear of all obstructions overhead to a minimum height of 13 feet 6 inches (14 feet is preferred) above grade.
 - c. Fire Lanes shall provide a complete surface adequate for turning fire apparatus. The turning path shall have a **50** foot minimum **centerline** turning radius and a **20** foot path width increasing to 22 feet at the widest part of the turn.
 - d. Fire Lane slopes and gradients shall not restrict fire apparatus movement or position, but provide adequate drainage. (Should not exceed 10% and 3% within 100 feet of intersections)
 - e. Fire Lanes shall be structured and maintained clear of all obstructions or impediments.
 3. Fire Lane Design
 - a. Fire Lanes shall be designed as required by the Maryland High-Rise Building Safety Law

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where the law applies.

- b. Fire Lanes shall be installed within ten (10) feet of each building on all sides except as noted below:
 1. Fire Lanes shall be installed on a minimum of two sides of a building (50% of the perimeter) where no more than three (3) levels or thirty (30) feet exist above the lowest grade level.
 2. Fire Lanes shall be installed on a minimum of one side of a building (25% of the perimeter) where no more than three (3) levels or thirty (30) feet exist above the lowest grade level and the building is fully sprinklered. Exception: A building may require a wet standpipe or additional access where large ground spaces are provided.
 3. Fire Lanes shall be installed on a minimum of two sides of a building (50% of the perimeter) exceeding three (3) levels or thirty (30) feet above the lowest grade level and the building is fully sprinklered and a complete wet standpipe system is available for fire department use.
- c. No less than two (2) Fire Lanes (primary and secondary) shall be provided to reach each building or building complex. Any combination of fire lane types may be used to provide fire apparatus access to a building within noted travel distance and use restrictions. Exception: Additional Fire Lanes may be required where a deficiency of Fire Protection Water Supply or an extra hazard exist.
- d. Fire Lanes shall be marked as required to permit legal enforcement as identified below:

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1. Curbs shall be painted yellow and stenciled in red "NO PARKING FIRE LANE".
 2. Signs shall be red letters on white background "NO PARKING FIRE LANE".
 3. A maximum spacing of 75 feet between signs or stencils is required.
4. Fire Lane Type I - Street
- A street shall meet the same minimum requirements as Fire Access Roads.
5. Fire Lane Type II - Fire Access Road
- a. Fire Access Roads shall be provided to every building where no more than three (3) levels or thirty (30) feet exist above the lowest grade level and set back more than **150** feet from a Public Road.
 - b. Fire Access Roads shall be provided to every building exceeding three (3) or more levels or thirty (30) feet above the lowest grade level and set back more than **50** feet from a street.
 - c. Any dead-end more than **150** feet long shall be provided with a turn-around **with a minimum centerline radius of 50 feet.**
6. Fire Lane Type III - Fire Access Sidewalk
- a. Fire Access Sidewalks leading toward a Fire Lane at a building shall be no less than ten (10) feet in width increasing in width to accommodate turns.
 - b. Fire Access Sidewalks at a building shall be no less than **20** feet in width. No obstruction is permitted where aerial fire apparatus positioning is required.
 - c. Fire Access Sidewalks may be used as a

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secondary fire access to every building set-back no more than four hundred (400) feet from a street or Fire Access Road.

7. Fire Lane Type IV - Fire Access Surface
 - a. Fire Access Surfaces shall be the same minimum dimensions as a Fire Access Sidewalk.
 - b. Fire Access Surfaces may be provided in lieu of Fire Access Sidewalks as a secondary means of access.
 - c. Fire Access Surfaces shall not exceed two hundred (200) feet travel distance.
 - d. A Fire Access Surface may be used as a border for a Fire Access Sidewalk at a building, provided that a minimum sidewalk width of ten (10) feet is maintained.
 - e. The boundaries of a surface shall be obvious or marked so that the fire department can readily see the limits of the surface.
8. Entry Points
 - a. Entry Points shall be of sufficient size to allow fire apparatus turning into a fire lane on a completely paved surface without the necessity of stopping and backing up. (note 2.c.)
 - b. Curb cuts or drop roll top curbs shall be provided at Entry Points when the elevation difference is more than (4) inches in height.
 - c. No less than two (2) Entry Points, as separate and remote from each other as possible, shall be provided for fire apparatus access to every building, building complex, or courtyard.
9. Access Control

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- a. Access Control devices shall be approved (in accordance with the project procedure) for each individual application. **Access control gates are the preferred method.**
 - b. Use only the minimum number of bollards required for access control.
 - 1. Bollards shall not present a hazard when removed.
 - 2. Bollards shall be the UMCP standard breakable or removable bollard (Reference SECTION 2 SITE STANDARDS).
 - c. Each Access Control device shall have a simple and uniform method of operation. No more than one (1) locking method shall be provided on each Access Control Device. Locks and keyways shall be "UMCP FD-1."
 - d. Any swinging gate shall swing in the direction of entry or in both directions.
 - e. No more than one (1) Access Control may be provided for any Fire Lane or combination of fire lanes to a building or building complex.
10. Fire Protection Water Supply
- a. Sufficient numbers and types of Fire Lanes shall exist to deliver the amount of water required by calculated fire flow demand to the building, building complex, or hazard.
 - b. Fire Hydrants shall be located on Fire Lanes as required by this section.
 - 1. Fire Lanes shall be arranged so that the distance from Fire Hydrants to buildings is minimal, but not more than **one** hundred (**100**)feet for the first hydrant (primary) and four hundred (400) feet for the second hydrant (secondary).

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2. Where the same Fire Hydrant is used for a number of buildings, the Fire Hydrant shall be located at a Fire Lane intersection.
 3. Fire Hydrants shall not be located closer than fifteen (15) feet to an Entry Point. Avoid obstructions to fire hydrant operation or visibility.
 4. Fire Hydrants at Entry Points with Access Control shall be located at the exterior (public) side of the Access Control.
- c. Fire Lanes shall be arranged so that the distance from a Fire Lane to a Fire Department Connection is no further than 100 feet.
 - d. Fire Department Connections shall be visible and unobstructed. The planting plan shall be arranged not to degrade visibility or make obstructions over time.
11. Construction, Alteration and Demolition Plans and Temporary Fire Access
 - a. Utilize existing fire lanes and access.
 - b. Observe guidelines above.
 - c. Follow the information and guidance of NFPA 241.

2.04 FIRE HYDRANTS AND ASSOCIATED WATER MAINS

A. MANDATORY CODES AND STANDARDS (latest editions)

1. State of Maryland Fire Prevention Code **NFPA 1 National Fire Prevention Code**
2. State of Maryland Model Performance Code (BOCA National Building Code --. Section 917)
3. WSSC - Washington Suburban Sanitary Commission (Note: Projects not in the jurisdiction of the Washington Suburban Sanitary Commission (WSSC), substitute local water authority, State of Maryland Plumbing Code, International (BOCA) Plumbing Code and NFPA 24 as applicable)

B. GENERAL DESCRIPTION

- a. The campus receives water supply from WSSC and by legal agreement, complies with WSSC rules and regulations, including, but not limited to design standards and specifications.
- b. The campus facilities are serviced by two methods: metered and unmetered.
Metered: The contiguous campus is connected to WSSC by a number of underground fire flow bypass meters. The double meters record ordinary domestic flow and when large volumes are demanded, open a second, larger size meter.
Unmetered: Individual buildings and locations generally not on the contiguous campus have unmetered systems where all fire protection systems are supervised for flow with an executed fire supervision agreement with WSSC. The alternative is a meter set in the building or an outside shed constructed for the purpose.
- c. The campus system between the WSSC meters and the various buildings and site facilities is the "campus on-site" system, and consists of mains up to 12 inches in diameter of various ages and conditions. Individual buildings and locations not on the campus are "on-site" systems for those buildings or complexes and usually consist of a single main.

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- d. The campus on-site system is the underground distribution from WSSC meters for all campus building and facilities including, but not limited to, domestic, irrigation, mechanical, fire protection systems, and fire hydrants. Individual building or complex on-site systems provide services required for the individual building or facilities.
- e. The campus on-site system with multiple supply point meters, loops, and grids minimally performs at 2,000 gallons per minute (gpm) at 20 pounds per square inch (psi) fire flow over almost all the system. Individual building or complex facilities were provided fire flow in accordance with the calculated facility requirements.

C. WATER SERVICE

- a. Sufficient fire flow shall be provided for the individual project as determined by a recognized standard method. Fire flow is additive to-all other-demand flows. The campus on-site system extension by loop, grid, or individual fire hydrant shall result in not less than 2,000 gpm at 20 psi residual. Individual buildings or complexes shall meet minimum WSSC criteria (1,000 gpm at the last fire hydrant and 500 gpm additional at the adjacent fire hydrant at not less than 20 psi residual).
- b. The minimum size of additions or replacement mains to the campus on-site system (loop or-grid is 8-inch. Mains to single fire hydrants are minimum 6-inch but must maintain minimum fire flow. The minimum size of on-site mains to individual buildings shall be as calculated and meet WSSC criteria (minimum 8-inch where the fire flow requirement is over 1,000 gpm).

D. VALVES

- a. In the campus on-site system, gate valves shall be provided to sectionalize the system so that any outage will minimally affect fire protection.
 - 1. Valves shall be provided for each hydrant lead-in connection so that no more than one fire hydrant may be out of service at any time.

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2. Valves shall be installed so that fire hydrants and fire suppression systems for an individual building will not be out of service at the same time.
 3. Valves shall be installed on each side of a tee or cross to maintain the loop or grid flow.
- b. Valves shall be located in streets, sidewalks or other paved surfaces. Where a paved surface is not possible, valve boxes shall be set in a 12 inch by 12 inch by 4 inch deep reinforced concrete square.
 - c. Valve box covers shall be marked "WSSC WATER" where owned and maintained by WSSC and "WATER" on the campus on-site system and where owned or maintained by the university.

E. FIRE HYDRANTS

- a. The number and spacing of fire hydrants provided shall be sufficient for the calculated fire flow and distribution requirements.
 1. The campus on-site system requirement is approximately 300 feet between fire hydrants. Individual building or complex fire hydrant spacing is project dependent (WSSC criteria for dense, built-up areas is 250 to 300 feet).
 2. Provide additional fire hydrants if the building is more than 300 feet from an existing campus on-site fire hydrant or public (WSSC) fire hydrant.
 3. Fire hydrants should be available so that the first-hydrant is no more than **100** feet from the building and the-second fire hydrant no more than 400 feet from the building.
 4. A fire hydrant shall be within 100 feet of a fire protection system fire department connection (siamese).
- b. Fire hydrants shall be located only on streets and fire lanes as follows:

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1. Locate at street and fire lane intersections but not within 15 feet of the intersection.
 2. Locate fire hydrants on public sides of street or fire lane access controls (gates, bollards).
 3. Locate fire hydrants 2 feet from curbs and streets (per WSSC detail). Exceptions shall not be granted except in case of unusual site conditions.
 4. The pumper connection shall directly face the street or fire lane. Elevations of the center line of the pumper connection shall be between 12 and 24 inches above finished grade.
 5. Locate fire hydrants so there are no obstructions to operation or visibility.
- c. Fire hydrants shall be as specified by WSSC.
- d. Fire hydrants shall be painted as follows:
1. WSSC owned and maintained are grey with green tops (WSSC specifications).
 2. UMCP on-site campus system (metered) are chrome yellow (paint # _____ or equal) with black (paint # _____ or equal) tops and caps (2,000 gpm and over at 20 psi). (Note: for fire hydrants under 2,000 gpm, the cap and top colors are as listed in NFPA 291).
 3. UMCP individual building or facility fire hydrants (unmetered) are red (paint # _____ or equal).
- e. Unmetered fire hydrants under the WSSC fire supervision agreement are electrically supervised as follows:
1. Waterflow alarm (pressure) switch (listed or approved) in NEMA 4 enclosure strapped securely to the hydrant barrel above grade. The switch is provided with a 1/2 inch tap into the hydrant barrel.

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2. Metallic conduit, minimum 3/4 inch rigid with conductors.
3. Underground to building. Connect to building monitoring system or fire alarm system unless contracting with commercial alarm company (depending on project location and scope).

F. CONSTRUCTION, ALTERATIONS, AND DEMOLITION

- a. Design water service and fire hydrants to be installed, in service, and accessible to fire department apparatus before construction -begins -or combustibles -are present on the site.
- b. Design installation to minimize outages of existing fire protection.
- c. Design replacement fire protection to be installed prior to demolition of existing fire protection,
- d. Require that fire hydrants not in service be provided with a secure sign or marking which states "OUT OF SERVICE" or install a secured opaque covering.

2.05 IRRIGATION SYSTEMS

A. GENERAL

1. Irrigation Piping

- a. Irrigation piping shall be pvc Sdr-21 except for the following.
 - Pipes under sidewalks shall be Sch.-40.
 - Pipes under roadways shall be Sch.-80.
- b. Sch.-40 or Sch.-80 pipes shall be 1 size larger than the Sdr-21, so that G.P.M. requirements below can be met.
- c. Pipe over 3" no matter the Sdr. or Sdr.rating shall be gasketed due to expansion and contraction during winter and summer months.

2. Main Lines

- a. Main lines shall be sized 100% larger than largest zone on the system.
- b. Main lines under 2" going under sidewalks shall be the next size equal to or over the A.W.W.A. guidelines and consist of PVC Sch.-40. for strength and not effect the designed system as stated above except for 6" pipe and over. Pipe 6" and over will be sized to the next available size.
- c. Piping Sch.-80 shall be piped the next size larger than the Sdr.-21 as long as it meets system requirement above. Reference see requirement for 6" pipe and over 2.a. above.
- d. Systems shall be designed at no more than 70 PSI after all device and pipe friction losses have been accounted for, or a pump is in the plans to make up the pressure to an adequate level.
- e. Systems shall have a starting PSI of 80 PSI, unless a 16 hour observation of source from 4 am to 8 pm Monday through Friday proves differently. Testing shall be done during the spring months (April - June). No testing shall be accepted if conducted during a

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holiday.

3. Solenoid Valves

- a. Solenoid valves shall be connected with the tee from main to a 45° elbow at least 8" above main line but under 12" from grade.
- b. Backflow preventers and meters shall have 2 ball valves each, one in front of each device, one behind each device. For easy access there shall be one union in front of each device and one union behind each device.
- c. Meters and backflow preventers shall meet W.S.S.C's requirements regarding room in front, behind, and below each device.
- d. Backflow devices and meters shall be the same size as the irrigation main.
- e. Pipes from potable water to backflow and meter to the underground irrigation main will be copper type K at the time it shall be changed to PVC.
- f. No system pipes will be used to support these devices, a separate rack shall be installed.
- g. Spray or rotor system that is 45 psi or less can have a drip system added on as long as the pressure to run system stays 45 psi. If this is utilized even precipitation rates shall be maintained and a 200 mesh filter shall be installed at point of drip connection with lateral and a pressure regulator shall be installed before zone valve.

B. Drip Irrigation System

1. Drip Irrigation

Shall have polybutylene, polyethylene or PVC Sdr-21 pipe only, and be a looped system, designed at 45 PSI or less. In addition it shall have:

- a. 200 mesh or disk filter before pressure reducer

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- b. Pressure reducer before electric solenoid valve
 - c. Vacuum relief valve at highest elevation of system
 - d. Flush valve at lowest elevation of system
 - e. Pressure reducing solenoid valve (see Valves).
2. The potable main installations shall be the same as A.3.e above, except when approved by Facilities Management - Grounds Maintenance Department.
 3. Can be adapted to existing or in conjunction with spray or rotor zone as long as above are met, and will not need a separate solenoid valve.
 4. Emmitters shall have been tested by Center for Irrigation Technologies (CIT) for 5 years and have a Coefficient Value of 0.03% (CV) as given by CIT.
- C. Spray Heads
1. Spray heads shall have nozzle-turret sizes to match precipitation rates +/- .027 in/hr. and not use more than 3.7 GPM at 30 PSI nor exceed 7.86 in/hr. precip. rate. In addition, spray heads shall have:
 - a. Internal check valve that hold up to and over 8 feet in elevation. In addition, it must be serviceable from top of head.
 - b. Stem pressure regulator to prevent excessive water run-off saving water and to maintain all heads on system at a even pressure.
 - c. Pop-up head sizes 4-6-12 inches in height.
 - d. Trajectory of 25°. In addition, spray heads shall have been tested by CIT with a Coefficient Value not to exceed 1.3%cv.
 2. Spray systems shall have been evaluated against a comparable drip system, and will only be used if drip system is found not to be effective and systems will have a drip system around zones next to roads and sidewalks.

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D. Medium Rotors

1. Under no circumstances will golf or large rotors or impacts of any type or size be used.
2. Medium rotors shall pop up at least 4" to 6" and not exceed 20 GPM. In addition it shall have a:
 - a. Radius of 38', but not more than 62'
 - b. Spacing of 38', but nor more than 74'.
3. System heads shall have a 200% or physical head to physical head coverage, not have a precip. rate over .95 in/hr, and operate between 30 but not more than 80 PSI system pressure. In addition it shall have:
 - a. One (1") inch female npt pipe threads
 - b. At least 4 nozzles or turrets but no more than 6 sizes
 - c. Adjustable arc from 40° - 360° in 10 degree increments, and have a dedicated 360 full circle non adjustable head
 - d. At least a 5 year warrantee. In addition, it shall conform to Section C.2. above.

E. Controllers

1. Controllers shall be TC-2 compatable and UL listed and shall have a:
 - a. Rain shutdown program programmable from 1-99 days
 - b. Electrical input of 117 VAC +/- 10%
 - c. Output voltage of 26.5 VAC at 1.5 A.
 - d. Station load of 24 VAC
 - e. Diagnostic circuit breaker that skips over

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- overloaded circuits
 - f. Backup power supply fuse and holder
 - g. program backup non-volatile
 - h. Self-contained 10 year lithium memory
 - i. Battery backup 9 VDC nicad rechargeable with an established life of 3-5 days without power during outage
 - j. Lifetime lightning and surge protection warrantee
 - k. Cycle and soak program without having to tie up another program or start time
 - l. Programmable day on day off
 - m. Four programs with 8 start times per program, programmable in quarter hour increments
 - n. 365 day calendar that adjust for leap year
 - o. Non-volatile memory for Time, Program, and Program retention
 - p. Master valve on/off by station
 - q. Station status indicator lights and sensor status indicator light
 - r. Programmable under battery power
 - s. Vandal and weather resistant cabinets and key lockable door
 - t. Odd/even/cyclical programming schedules
 - u. Water budget program programmable in 10% increments from 0-200%
 - v. Test program variable from 1-99 minutes with a default of 2 minutes.
2. Controllers shall be installed with a power cut off switch for controller only and 2 outlets within 1'

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from controller and be connected to a ground fault breaker. Breaker information shall be printed on front cover with building name, room, and panel number.

3. Controllers installed inside or on outside of building shall be 5' from floor or grade, and have a clearance of 30" on all sides and in front of for accessibility.
4. Controllers shall have three (3) lightning rods spaced 8' apart in a triangle formation. These rods should be covered by 6" round valve boxes.

F. Small Rotors

1. Small rotor shall have a minimum of 4 but no more than 6 nozzles or turrets and not use more than 9.46 GPM, and operate at pressures of 25 but no more than 65 PSI, and shall have a:
 - a. Precip rate of at least .25 but no more than 1.26 in/hr.
 - b. Spacing no less than 16' but no more than 50'
 - c. Trajectory low angle 11°-15° and normal 23°-25°
 - d. Have Arc adjustments from 25° to 350° and a separate 360° head non-adjustable. All rotors to be adjustable wet or dry
 - e. Three (3) year warrantee
 - f. Conform with ASAE S398.1 and have been tested by CIT.

G. Electric Valves

Electric valves shall be pressure regulating and heavy duty plastic and have a:

1. Course threaded solenoid
2. Pressure regulating range of 15-100 PSI
3. Thumb wheel adjustment.

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H. Miscellaneous

1. Under no circumstance will water be allowed to hit sidewalks or road.
2. Systems shall have one (1) reduced pressure backflow preventer and one (1) meter, both of which shall pass WSSC permit requirements.
3. Valves will be installed with 7 fittings, 1 tee from main 4-45's, 2 male adapters only, with the valve resting 8" above the pipe.

2.06 REFORESTATION (6-01)

The College Park campus has an approved simplified Forest stand delineation which may be utilized, where appropriate, when submitting requirements to the Department of Natural Resources. A forest conservation plan is also required for each project that disturbs more than 40,000 square feet of surface area. The College Park campus also has an approved long-term forest protection easement which has been developed for specific existing and future projects. The intent of establishing the forest protection easement is provide for mitigation requirements as determined by the forest conservation plan for each project. Reference all forest conservation plans to the long-term forest protection easement in order for the mitigation requirements for reforestation or afforestation to be reconciled.

The consultant is solely responsible for submitting all requirements of the Forest Conservation Act to the Department of Natural Resources. All projects shall be developed in accordance with the Forest Conservation Act and its pertinent Regulations as established in 1991 and in the revised third edition, 1997.

Copies of all of the Forest Conservation Manual may be obtained from the Division of State Documents, P.O. Box 2249, Annapolis, MD 21404-2249.

Additional information may be obtained by contacting:

Department of Natural Resources
Forest Service
Tawes State Office Building, E-1
Annapolis, MD 21401
Phone: 1-877-620-8367

2.07 PAVEMENT AND DRAINAGE CONSTRUCTION AND PARKING FOR MOTORCYCLES

- A. Within the development of any requirement for parking, approximately 1% of the total number of parking spaces shall be designated and configured to permit the parking of motorcycles. The designated area for motorcycle parking shall have a concrete base. This pad shall be based on a dimensioned area of 4'-0" x 8'-0" for each required motorcycle space.
- B. Unless otherwise specified in the construction documents all road and parking pavement construction and all storm drainage shall conform to the latest specifications, standards and details of the Maryland State Highway Administration (MSHA). Permanent and temporary roadway signage, striping, marking, signals or other control devices shall conform to MSHA standards or to the latest edition of the Manual on Uniform Traffic Control Devices published by the Federal Highway Administration.
- C. Bicycle racks shall be provided where appropriate.

2.08 PARKING STANDARDS(9-30-04)

The following information has been established as standards for UMCP lot and space designations and configurations must be approved by the Department of Campus Parking.

A. Garages:

1. Minimum space size of 8.5' x 16'
2. Height Clearance-minimum of 6'8"
3. Elevator Shafts-Designed to allow access to clean the outside of the car window, or have contractor provide a system which will allow for cleaning of the windows
4. Elevator Pits-Design pit with Oil/Grit Separation system (see item C.).
5. Washdown capabilities for both cleaning and general maintenance include:
 - a. The washdown process consists of a University mobile vehicle equipped with a storage tank which accepts a 1-1/2 inch threaded hose connection to fill the tank. The maintenance process consists of a 3/4 inch threaded hose connection for normal FM - Grounds maintenance.
 - b. Each parking level shall contain the following hose bibb installations:
 1. Washdown Hose bibbs shall be located 150 feet apart, a minimum of two (2). Supply piping shall be 1-1/2 inch type L copper with a 1-1/2" threaded hose connection outlet.
 2. One (1) maintenance hose bibb located at or near the center of structure. Supply piping shall be 3/4" I.D. type L copper with a 3/4" threaded hose connection outlet.
 3. All hose bibbs shall be tamper proof with a slotted or square operator key and shall have an integral vacuum breaker with a standard hose thread and include a cap and chain.
 4. Design will include a positive shut-off valve located at an accessible (and identified) location to drain hose bibb piping system in months when freezing temperatures are expected.
 5. Hose bibbs shall terminate 30 inches from the finished floor and be protected by a permanent bollard(s).
 6. Floor Drains-2' X 2' minimum
 7. Ramp Drains-Continuous Trench Drain at base of each ramp, minimum 6 inch pipe.
 8. Stairwells and Elevator Shafts - all glass for safety
 9. Add-on capability - all future design work should investigate possibility of building the garage

with the ability to add additional levels in the future.

B. Surface Lots

1. Space sizes and configurations - to be determined by DCP and AEC. All motorcycle pads shall be in concrete.

Minimum space sizes are as follows:

- a. Faculty Staff - 8.5' x 16'
- b. Students - 8' x 16'

2. Drive Lanes

- a. Two way - 24' minimum
- b. One way - 13.5' minimum with angled (60°) parking

3. **All spaces to be striped with traffic WHITE non-lead base paint including handicapped spaces (9-30-04).**

4. End Islands - painted, no concrete.

5. Disabled - number of spaces and marking in accordance with ADA standards with blue symbols.

6. Sign & Sign Standards - See Drawings.

7. Meter Pole Standards - See Drawings.

C. Oil/Grit Separators in Garages

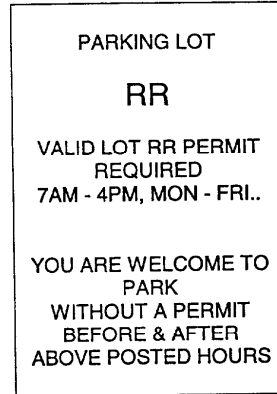
Typically oil/grit separators would not be included in the storm drain system in garages. Instead, an automatic system to recover oil spills or discharges from hydraulic elevator pumps shall be provided whenever the sumps drain by gravity or by a self activating pump. An oil recovery system would not be required in cases where the elevator sump area is manually pumped to the drain system.

SIGN SPECIFICATIONS

PWD



PARKING LOT



Lot/Space designations and installation locations must be pre-approved by designated Department of Campus Parking Representatives.

Parking lot signs, Service Parking signs, State Vehicle signs, and sign Standards must be procured through the University of Maryland Facilities Management, Sign Shop.

PWD SIGN MATERIALS:

Sign is made of .080 Aluminum covered with Handicap Blue high performance (2-mil) vinyl transfer film and legend of while high performance (2-mil) vinyl transfer film baked on..

PWD SIGN MEASUREMENTS:

Sign is 30" X 30" square with rounded corners, mounted on standard with top of sign even with top of standard.

PWD SIGN CONTENTS:

Sign shall contain disability emblem, the words NO STOPPING OR STANDING, TOW - AWAY ZONE And MIN \$250.00 FINE.

!!!!!!!!!!!!!!!!NOTE!!!!!!!!!!!!!!
There shall be no addendums

PARKING LOT SIGN MATERIAL:

Sign is made of 13mm White Sintra with red vinyl lettering and border.

PARKING LOT SIGN MEASUREMENT:

Sign is 30" X 48" with square corners, mounted on standard with top of sign even with top of standard.

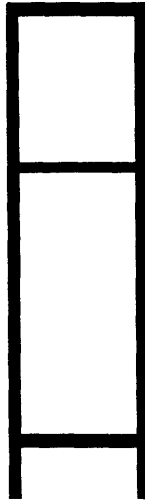
PARKING LOT SIGN CONTENTS:

Sign shall contain wording as prescribed by DCP to designate **Lot number, and all applicable restrictions** for specific lot.

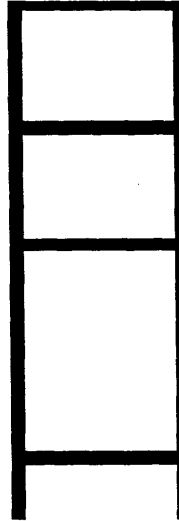
!!!!!!!!!!!!!!!!NOTE!!!!!!!!!!!!!!
There shall be no addendum permanently added to standard below sign.

SIGN STANDARD SPECIFICATIONS

STATE VEHICLE
SERVICE ONLY



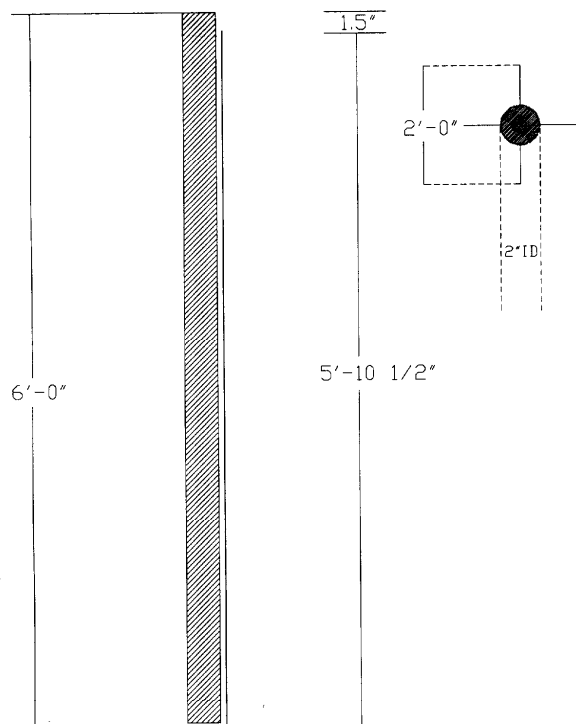
LOT SIGNS
PWD SIGNS



Specifications for Standards:

- Material:** 2" X 2" 11 gauge hot rolled square tubing except for a 1" flat bar support 1' from the bottom of the standard. All joints shall be welded to a smooth finish.
- Measurements:** Length of the standard is 10', width 2' for special signs (State Vehicle Only and Service), 2.5' for Lot signs. The top-section of the special sign standard shall form a 2' X 2' square, the normal standard shall have two top sections each of which will be 2.5'x 2', square. PWD signs shall be mounted on Normal Sign Standards.
- Coverings:** Standard should be primed and completely finished with Handicap Blue, Gloss Black, or Rhonan White depending upon use.
- Installation:** Standard shall be seated in two (2) feet of concrete with eight (8) feet of the standard above around level.

METER POLE SPECIFICATIONS



The Poles shall be 2" ID Galvanized Pipe 6" long with anti-theft bar of $\frac{1}{2}$ " rebar or similar material welded the entire length except for the top $1\frac{1}{2}$ " to allow for insertion into the meter head. The bottom of the pole will have four (4) radials of at least 1" in length and placed at 90 degrees to the post and 90 degrees to each other. The posts shall have 2' of length buried in concrete and shall extend 4' above the ground surface. The posts shall not be painted.

**2.09 PERT TELEPHONE (POLICE EMERGENCY REPORTING TELEPHONES
INSTALLATION CRITERIA (12-2-02)**

- A. The number, type (free-standing or wallmounted) and location of PERT telephones will be recommended by the Consultant to the University on a project-by-project basis.
- B. Free Standing Emergency Telephone (See Division 16.11)
1. The Contractor shall furnish and install an outdoor emergency telephone (manufactured by *Talk-A-Phone Company*, stock No. **ETP-MT/R OP4/CP**, no substitutions, with vandal resistant security unit with speakerphone with keypad and University of Maryland Software, blue light and strobe. Furnish with nicklad 2000 finish in Midnight Blue to match existing on campus in location shown on the drawings. Installation requirements include the following:
 - a. A concrete foundation for the communication tower of 24" square and a minimum of 36" deep with a slight slope from center. Stub-up electrical and communication conduit (two 1-1/2") including a 8' x 5/8" copper ground rod in the center of foundation as shown on the attached drawing.
 - b. A dedicated (unswitched) 120 volt, 20 ampere electrical power circuit in conduit from the University designated location to the location of the communication tower.
 - c. A 1" conduit with six (6) 24 AWG, filled telephone cable from the University designed location to the communication tower. Reference Section
 2. Referencing the attached Drawing #ETP-MT/R FOUNDATION, installation instructions for the Emergency Lighting and Communications Tower include:

- a. Install the four (4) 3/4" - 10 x 24 long anchor bolts below grade **with five inches (5") projecting above grade**. Use the template provided to properly position the bolts within the concrete foundation.

- b. After removing its protective shipping wrap, install the blue light/strobe assembly on top of the tower, feeding the 110 VAC power cord and control wires through the top of the tower. Fasten the blue light/strobe to the tower with three (3) 10 x 24 pan head/spanner screws (provided). Secure the 10" x 12" protective housing to the top of the tower using four (4) 1/4 x 20 pan head security screws (also provided).

Note: It is not necessary to connect 110VAC power lines at this point.

- c. Install the fluorescent light ballast assembly over the Emergency Phone opening with the two security screws provided. Make sure the power is off, then install the fluorescent bulb. An acrylic window and frame cover the bulb. Peel the protective paper off the acrylic window and install the window and frame using the four security screws provided.

- d. Install one 3/4" nut and one washer on each anchor bolt (2" to 2.5" above grade to top of nut) and verify that the nuts are level (0° pitch).

NOTE: To insure proper grounding of all electrical components, a grounding strap is required by the National Electrical Code. We recommend the use of an insulated, 6 AWG stranded wire connected between the electrical conduit (within the concrete base) and the tower. The best place to connect the ground wire to the tower is via one of the four anchor bolts. It is necessary to remove the paint from the inside edge of one of the anchor bolt holes and the inside surface around the bolt hole to ensure the grounding wire makes a good electrical connection to the tower. This must be done before installing the tower.

After removing the cover plate from the tower's rear access opening, install the tower onto the bolts with the Emergency Phone opening oriented in the desired direction.

**2.09 PERT TELEPHONE (POLICE EMERGENCY REPORTING TELEPHONES
INSTALLATION CRITERIA (12-2-02)**

Install second set of nuts and washers. Wrap the 6 AWG grounding wire around the mounting bolt where the paint has been removed. Tighten the upper nuts; the bottom set is only for leveling. The possibility of corrosion where paint has been removed can be reduced by painting the nut assembly where the grounding wire has been attached.

e. Wire incoming 110 VAC power to the blue light/strobe and to the fluorescent light. Depending upon installation preference, use the electric plugs provided for the blue light/strobe and fluorescent light, or remove the plugs for hard-wiring.

f. Connect the black control wire of the blue light/strobe to the black wire of the Emergency Phone. This is the common wire. Then connect the orange control wire of the blue light/strobe to the orange wire of the Emergency Phone. This is the AUX 2 output lead. Attach the Emergency Phone to the tower with six (6) 10-24 spanner security screws (provided). Connect the phone line coming into the tower to the male RJ11 connector coming from the Emergency Phone. An outdoor rated RJ11 female modular jack on the end of the incoming phone line is strongly recommended.

g. Re-attach the cover plate over the access opening at the rear of the tower with the two (2) tamper resistance 1/4" spanner screws provided. You may discard the two regular screws which held the cover plate in place during shipment.

C. Wall-Mounted Emergency Telephone

1. The contractor shall furnish and install an outdoor, wall-mounted Emergency Telephone manufactured by *Talk-A-Phone Company*, Stock No. **ETP-WM/CP**, with vandal resistant security unit with speakerphone with keypad and University of Maryland software, blue light and strobe.

2. Referencing the attached Drawing, #ETP-WM, installation instructions for the Emergency Lighting and Telephone include:

a. The ETP-WM is held to the wall with 4 screws. Install two screws of the appropriate type to the wall as shown on the enclosed template (top two holes). Note that the screws should be located so that the ETP-WM will be at the desired height and in the correct position to receive any conduit connections.

b. Electric power and the telephone line can be brought into the unit in one of two ways.

i) There are three large openings in the back of the unit to allow the unit to be mounted over a standard electrical outlet box and/or telephone connector box.

ii) There are two conduit openings available on the bottom of the unit for connection of power and/or telephone line. (**Note:** Power and telephone lines cannot be run in same conduit.)

c. Remove the cap lid from the ETP-WM by removing the four #10 spanner security screws located on the side of the unit. **DO NOT REMOVE THE LEXAN® LENS.** Mount the unit on the wall using the two keyholes on the top rear of the unit to the two screws mounted to the wall in step a.

d. Install two additional screws of the appropriate type in the holes in the lower rear of the unit. Tighten all four screws.

e. Install conduit to hole(s) in bottom of unit, if this method is being used (see

**2.09 PERT TELEPHONE (POLICE EMERGENCY REPORTING TELEPHONES
INSTALLATION CRITERIA (12-2-02)**

step 2), and bring power line and/or telephone line to inside of unit.

f. To wire the Blue Light/Strobe, find the AC power cord and the orange and black control lines coming from the strobe inside of the ETP-WM enclosure. Connect the power cord to the power source, and connect the orange and black wires from the Blue Light/Strobe to the orange and black wires (auxiliary output #2) extending from the Emergency Phone.

g. The faceplate light and ballast is installed prior to shipment. Be sure to connect the power cord to the power source.

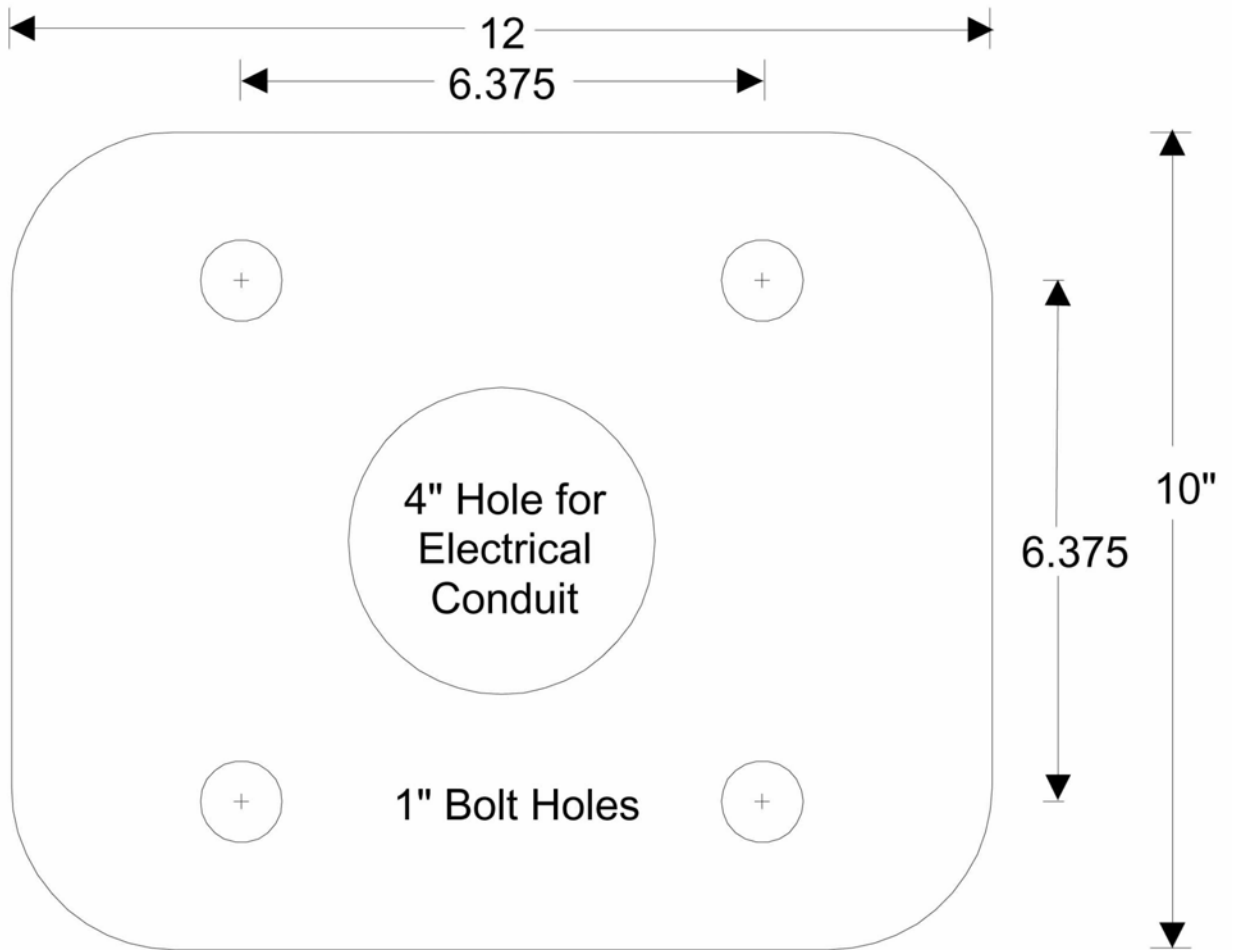
h. Connect the RJ-11 plug extending from the Emergency Phone to a phone line connection box.

i. Mount the Emergency Phone into the recessed opening of the ETP-WM using the 6 #10-24 security screws provided.

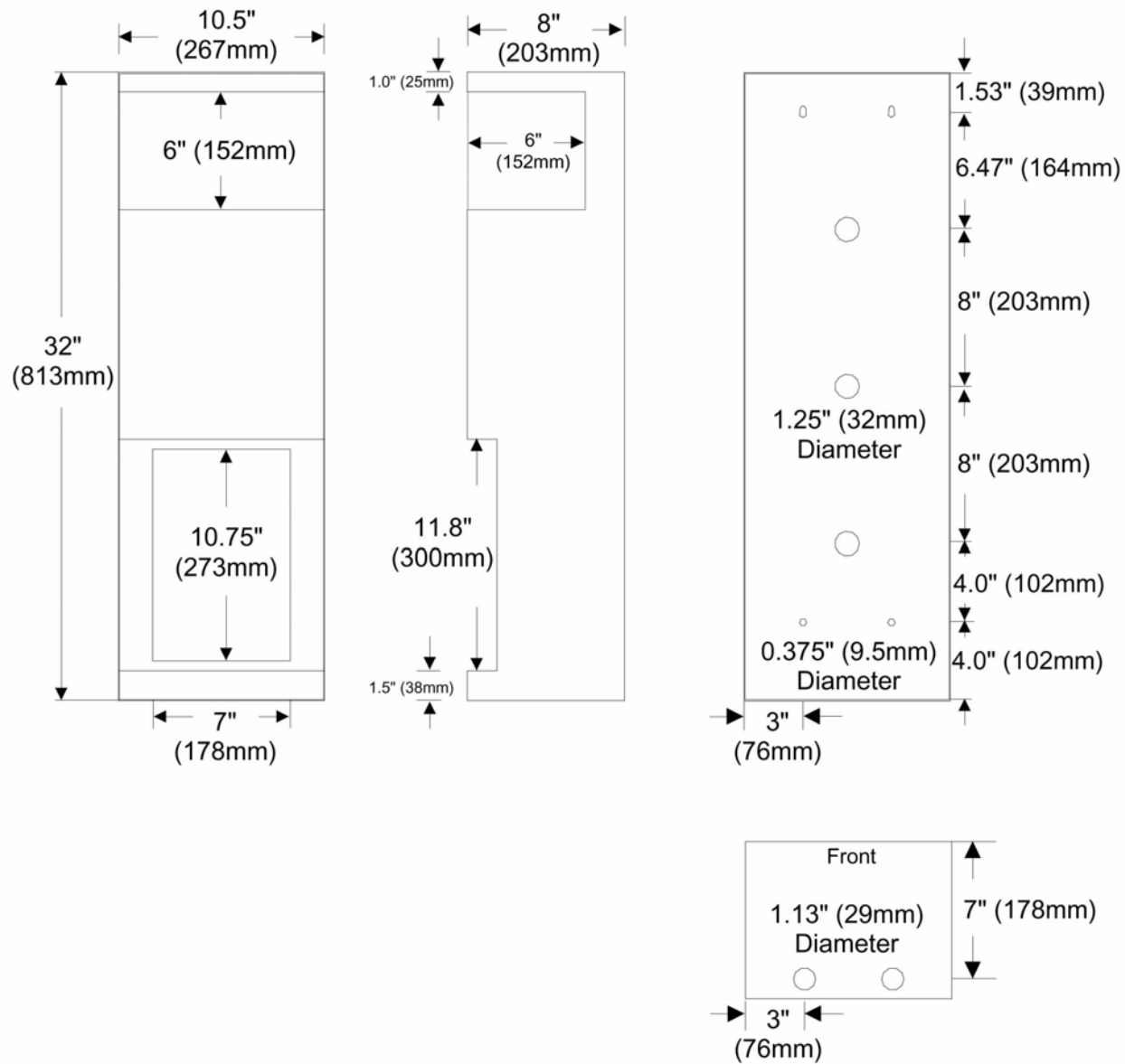
j. Re-install the cap lid that covers the blue light/strobe.

3. No exposed conduit is permitted in any new construction and unless proper approval is received from the University, the same applies to retrofit projects.

**2.09 PERT TELEPHONE (POLICE EMERGENCY REPORTING TELEPHONES
INSTALLATION CRITERIA (12-2-02)**

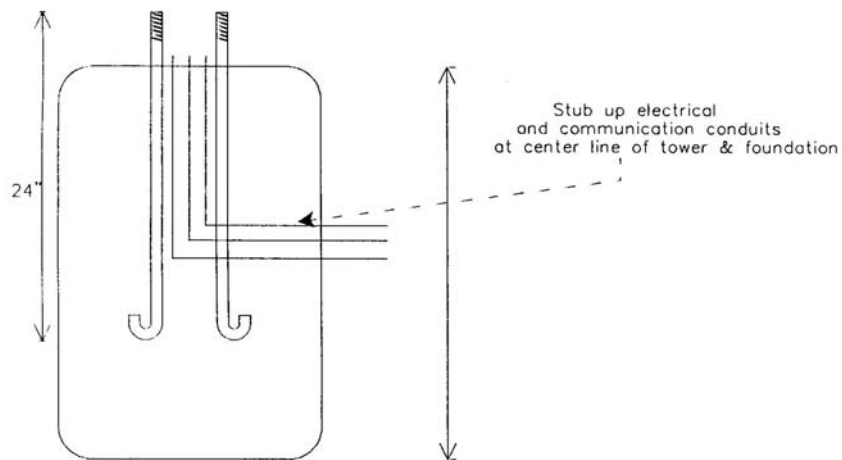
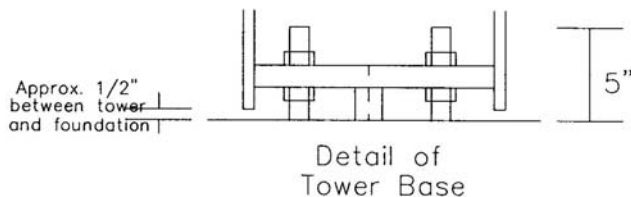
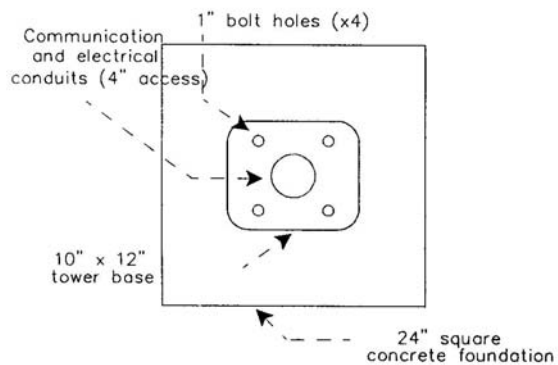


**2.09 PERT TELEPHONE (POLICE EMERGENCY REPORTING TELEPHONES)
 INSTALLATION CRITERIA (12-2-02)**



**2.09 PERT TELEPHONE (POLICE EMERGENCY REPORTING TELEPHONES
INSTALLATION CRITERIA (12-2-02)**

ETP-MT/R FOUNDATION



Installation must comply with all National, State and Local Construction and Electrical Cod

Talk-A-Phone Co. Rev. 3/8/99
5013 North Kedzie Avenue Chicago, Illinois 60625-4988
Phone: (773) 539-100 Fax: (773) 539-1241
e-mail: info@talkaphone.com http://www.talkaphone.com

2.10 SANITARY SEWER AND WATER LINES

- A. Buildings shall **typically** be designed to permit gravity flow of sanitary and storm drainage. Where sewage ejectors or sump pumps are required, they shall be:
 - 1. Located to have sufficient headroom to pull the pump shaft straight up through the floor plate.
 - 2. Provided with lifting eyes or trolley beams to facilitate the removal of the equipment.
 - 3. Provided with emergency power if failure of the pump should flood electrical or mechanical equipment.
 - 4. Provided with a high level alarm, that is interfaced to the building's CCMS.
- B. Pipes penetrating exterior walls below grade must be installed properly to prevent breakage due to building settlement or expansive soil.
- C. Inverts shall be shown on all drawings.
- D. All connections to campus distribution systems or public utilities shall be precisely located by dimensions or coordinates.
- E. Depth of piping shall be shown and installed below all freeze lines (minimum) and inverts shall be shown at manholes and other critical points.
- F. Access shall be provided to all working parts of plumbing devices. Do not permanently seal in wall any plumbing items requiring periodic maintenance.
- G. Cleanouts shall be located at each 90 degree bend and every **100** feet in straight runs of 3" or larger piping.
- H. Plumbing riser diagrams must be drawn in isometric form and there must be one for each riser on the project. Risers must be shown on all plans.
- I. All domestic water applications shall be separated from non-potable connections via a back flow preventer (PRZ);

2.10 SANITARY SEWER AND WATER LINES

acceptable manufacturers/series include: Watts 909 Series, FEBCO 800 Series, and Wilkens (Zurn) 500 Series.

PRZ installations shall be installed per plumbing code in the horizontal run at a height of 4 feet.

- J. Sanitary sewer and water lines shall be designed in accordance with WSSC guidelines.

2.11 SEASONAL ISSUES

- A. Contractor shall maintain emergency vehicle access to the construction site at all times. Snow, mud, debris, unsuitable driving surfaces, locked gates, and other obstructions shall not be allowed to interfere with access to the site.
- B. Contractor shall police construction site of trash and maintain construction material in a secured fashion so as to prevent them from being blown from the site during periods of high winds.
- C. Contractor shall maintain security lighting in the area of construction so there is adequate lighting in all pedestrian and parking areas adjacent to the construction site.
- D. Contractor shall not interfere with University special events by disrupting traffic, engaging in operations with loud noise, or allowing debris to remain in roadways. Special events are primarily but not limited to Commencement and class registrations. The University will provide dates and times of any special events at the time of bid.
- E. Account for conditions/restrictions such as, sun orientation, wind, leaf accumulation, snow drifting, noise and environmental factors. Prevent abnormal accumulation of leaves, and snow due to wind direction in relation to building location. Consider mowing requirements and grass cuttings when siting and orienting buildings or site amenities.

2.12 SITE CONSTRUCTION SIGNS

- A. During construction, contractor shall provide, install and maintain signs for parking, traffic control, direction to project site, detours, construction material deliveries, pedestrian and property signs, vehicle directions, etc. of materials and finish as required by the Maryland Department of Transportation State Highway Administration Standards for Highways and Incidental Structures or approved equal as determined by the University of Maryland.

- B. Upon completion of the project, the Contractor must remove all such signs and deliver them to the University as directed.

2.13 SITE STANDARDS (10-28-05)

Site standards have been established for the following:

- A. Benches
- B. Bike Racks
- C. Bollards
 - 1. Steel Removable/Non-Removable
 - 2. Wooden Breakaway
 - 3. Pedestrian Bollard and Chain
- D. Cigarette Urns
- E. Concrete Dumpster Pads
 - 1. Plan View
 - 2. Section
- F. Concrete Steps
- G. Curbs
 - 1. Bituminous Concrete Curb
 - 2. 6" and 8" Concrete Curb and Gutter
 - 3. 8" Mountable Curb
 - 4. 4" Concrete Landscape Curb
- H. Electric Parking Gates
 - 1. Single Gate (out)
 - 2. Double Gate (in/out)
- I. Fencing
 - 1. Board-on-board
- J. Handrails
- K. Kiosks
- L. Outdoor Drinking Fountains
- M. Paving
 - 1. Concrete Pavers
 - 2. Concrete Walks
 - 3. Bituminous Asphalt Paving
 - 4. Brick on Concrete
- N. Picnic Tables

2.13 SITE STANDARDS (10-28-05)

- O. Planting Details
 - 1. Trees
 - 2. Shrubs
- P. Ramps for Persons with Disabilities (PWD)
 - 1. PWD Ramp, Plan View
 - 2. PWD Ramp, Section
- Q. Security Gates
- R. Trash Receptacles
- S. Tree Grates
 - A. BENCHES (6' - 8')
 - 1. Material: Teakwood
 - 2. Manufacturer: Country Casual; **7601 Rickenbacker Drive, Gaithersburg, Md. 20879 (301)-926-9195**
 - 3. Model: Windermere
 - 4. Description: A teak wooden bench without back rest and arm rests; intended for low traffic/high visual quality areas.
 - 5. Performance: The Windermere style has strong, durable construction and hardwood to resist carving and vandalism; slats with spacers to allow air movement for comfort and long life; angled brackets for securing to pads and galvanized hardware throughout.
 - 6. Related Details: Bench Anchorage. (See Drawing No. 37).

2.13 SITE STANDARDS (10-28-05)

B. Bike Racks

1. Material: 1-1/2" schedule 40 (.148" wall) black iron pipe O.D. - 1.90".
2. Manufacturer: Fabricated
3. Model: Fabricated
4. Description: Black arched schedule 40 pipe with concrete footings. Space racks 4' on center. Paint pipe with one (1) coat red primer and two (2) coats flat black enamel paint.
5. Performance: Durable and can be used with any type bike lock. Placed near major building entrances.
6. Related Details: Brick paving with concrete band. (See drawing No.09).

C. Bollards

C.1. Steel Removable/Non-Removable Vehicular

1. Material: Painted schedule 80 steel pipe.
2. Manufacturer: Fabricated
3. Model: Fabricated
4. Description: Removable: Bollards constructed of heavy-duty steel painted black with a security padlock.
Non-Removable: Painted heavy-duty steel installed and filled completely with concrete.
5. Performance: Removable vehicular bollards are for high use service areas. Non-Removable bollards are placed around utility

2.13 SITE STANDARDS (10-28-05)

- features to prevent damage, i.e. dumpsters, gas meters, hydrants.
6. Related Details: See drawings No.10 and 11.
- C.2. Wooden Breakaway
1. Material: Pressure treated No. 2 Southern Yellow Pine posts.
2. Manufacturer: Fabricated
3. Model: Fabricated
4. Description: 6" X 6" wooden post, unpainted and modified to serve as a bollard. Install in #6 crusher run.
5. Performance: Bollards are routed and sawcut at the base to allow breakaway access for emergency vehicles.
6. Related Details: See drawing No.12.
- C.3. Pedestrian Bollard and Chain
1. Material: Pressure treated No. 2 Southern Yellow Pine posts.
2. Manufacturer: Fabricated
3. Model: Fabricated
4. Description: 4" X 4" wooden posts connected by a 3/16" self-colored coil steel chain.
5. Performance: Control of pedestrian foot traffic.
6. Related Details: See drawing No.13.
- D. Cigarette Urns
1. Material: Concrete Urn
2. Manufacturer: Shemins Nursery
Burtonsville, Md. (301-421-1220)
3. Model: P-8600 - white concrete finish.
4. Description: Ornate white concrete urns. Placed near high volume pedestrian areas.

2.13 SITE STANDARDS (10-28-05)

- 5. Performance: Aesthetically compatible with the white columns of the building facades. Fill with white sand.
 - 6. Related Details: N/A.
- E. Concrete Dumpster Pad
- E.1. Plan View
 - E.2. Section
- 1. Material: See item 6. below
 - 2. Manufacturer: See item 6. below
 - 3. Model: See item 6. below
 - 4. Description: See item 6. below
 - 5. Performance: See item 6. below
 - 6. Related Details: See drawings No.14 and 15.
- F. Concrete Steps
- 1. Material: See item 6. below
 - 2. Manufacturer: See item 6. below
 - 3. Model: See item 6. below
 - 4. Description: See item 6. below
 - 5. Performance: See item 6. below
 - 6. Related Details: See drawing No.16.
- G. Curbs
- G.1. Bituminous Concrete Curb
 - G.2. 6" and 8" Concrete Curb and Gutter
 - G.3. 8" Mountable Curb
 - G.4. 4" Concrete Landscape Curb
- 1. Material: See item 6. below
 - 2. Manufacturer: See item 6. below
 - 3. Model: See item 6. below
 - 4. Description: See item 6. below
 - 5. Performance: See item 6. below
 - 6. Related Details: See drawings No.17,18, and 19.
- H. Electric Parking Gates
- H.1. Single gate (out)
 - H.2. Double Gate (in/out)
- 1. Material: Steel housed bases, wooden arms, a programmable control unit and detector loops.
 - 2. Manufacturer: AMANO AGP 1700
Coordinate with Campus

2.13 SITE STANDARDS (10-28-05)

- Parking
3. Related Details: See drawings No.21 and 22.
- I. Fencing
- I.1. Board-on-Board
1. Material: See item 6. below
2. Manufacturer: See item 6. below
3. Model: See item 6. below
4. Description: See item 6. below
5. Performance: See item 6. below
6. Related Details: See drawing No.23.
- J. Handrails
1. Material: Moulded steel with flat black paint finish.
2. Manufacturer: Acme Iron Works, Inc. Tuxedo, Md.
3. Model: Style #104 or similar style
4. Description: Moulded steel with red enamel primer and black flat paint finish. Moulded top bar, 1/2" square pickets spaced 4" O.C. and a lamb's tongue.
5. Performance: Placed on steps of more than three treads and as required by ADA Standards.
6. Related Details: See drawing No.24.
- K. Kiosks
1. Material: 24" diameter concrete pipe with 2" x 4" No.2 pressure treated Southern Pine.
2. Manufacturer: Fabricated
3. Model: N/A
4. Description: 24" diameter (inside) concrete pipe, open top with 3/16" steel mesh cover, attached with 4 anchor bolts. Boards attached to pipe with two circular brackets. Metal

2.13 SITE STANDARDS (10-28-05)

materials shall be galvanized and wood shall be sanded and stained.

5. Performance: Sturdy, relatively easily maintained and placed at intersection of heavily used pedestrian walks.
 6. Related Details: See drawing No.25.
- L. Outdoor Drinking Fountains
1. Material: Exposed concrete, stainless steel exterior metal components.
 2. Manufacturer: Haws or approved Equal.
 3. Model: #3177FR/#3060FR
 4. Description: Single Fountain: Cylinder, exposed aggregate finish. Banner free fountain, "L" shaped exposed aggregate finish.
 5. Performance: Single fountain/barrier-free fountain, freeze resistant valve system.
 6. Related Details: N/A
- M. Paving
- M.1. Interlocking Concrete Pavers
 - M.2. Concrete Walk
 - M.3. Bituminous Asphalt Paving
 - M.4. Brick on Concrete
1. Material: See item 6. below
 2. Manufacturer: See item 6. below
 3. Model: See item 6. below
 4. Description: See item 6. below
 5. Performance: See item 6. below
 6. Related Details: See drawings No.26, 27, 28, and 29.
- N. Picnic Tables
1. Material: See item 6. below
 2. Manufacturer: See item 6. below
 3. Model: See item 6. below
 4. Description: See item 6. below
 5. Performance: See item 6. below
 6. Related Details: See drawing No.30.

2.13 SITE STANDARDS (10-28-05)

O. Planting Details

- O.1. Tree
- O.2. Shrub

- 1. Material: See item 6. below
- 2. Manufacturer: See item 6. below
- 3. Model: See item 6. below
- 4. Description: See item 6. below
- 5. Performance: See item 6. below
- 6. Related Details: See drawings No.31 and 32.

P. Ramps for Persons with Disabilities (PWD)

- Q.1. PWD Ramp, Plan View
- Q.2. PWD Ramp, Section

- 1. Material: See item 6. below
- 2. Manufacturer: See item 6. below
- 3. Model: See item 6. below
- 4. Description: As per ADA
- 5. Performance: See item 6. above
- 6. Related Details: See drawings No.33 and 34.

Q. Security Gates

- 1. Material: See item 6. below
- 2. Manufacturer: See item 6. below
- 3. Model: See item 6. below
- 4. Description: See item 6. below
- 5. Performance: See item 6. below
- 6. Related Details: See drawing No.35.

R. Trash Receptacles

- 1. Material: Electrostatically, polyester, power-coated steel receptacle with plastic liner.
- 2. Manufacturer: Victor Stanley, Inc. P.O. Drawer 330, Dunkirk, Md. (301)-855-8300)
- 3. Model: S-42 Ironsides
- 4. Description: All steel bars and structural support, 39-1/2" x 23-3/4" spunsteel concave lid with 32

2.13 SITE STANDARDS (10-28-05)

- gallon highdensity plastic liner.
5. Performance: Durable, vandal-proof, with easy lift-out liner containing drainage holes. Vinyl coated steel aircraft cable attaches lid to receptacle. Attach base to concrete surface through center anchor bolt hole.
6. Related Details: N/A
- S. Tree Grates
1. Material: Cast Iron
2. Manufacturer: Neehan Foundry Company or Equal.
3. Model: As specified
4. Description: 90 degree round with cast iron angle frame.
5. Performance: Install flush with adjacent surfaces.
6. Related Details: See drawing No.36 & 36A.
- T. Trash Receptacles
1. Material: Reinforced concrete container with an exposed granite chip finish.
2. Manufacturer: Carolina Container; Coward, S.C. (1-803-389-6161)
3. Model: Carolina Container model #5000C or Wausau Tile model #W-24 with WO-24 top.
4. Description: Both models are constructed of reinforced concrete with an exposed white granite chip finish sealed with an acrylic base sealer. The top shall be a black vacuum formed ABS material attached with a chain and having a 7" opening.

2.13 SITE STANDARDS (10-28-05)

- | | | |
|----|------------------|---|
| 5. | Performance: | An aesthetically pleasing receptacle for high use areas. The container is durable and vandal-proof. The receptacle has an easy lift-out liner containing drainage holes which eliminates major maintenance costs. |
| 6. | Related Details: | N/A |

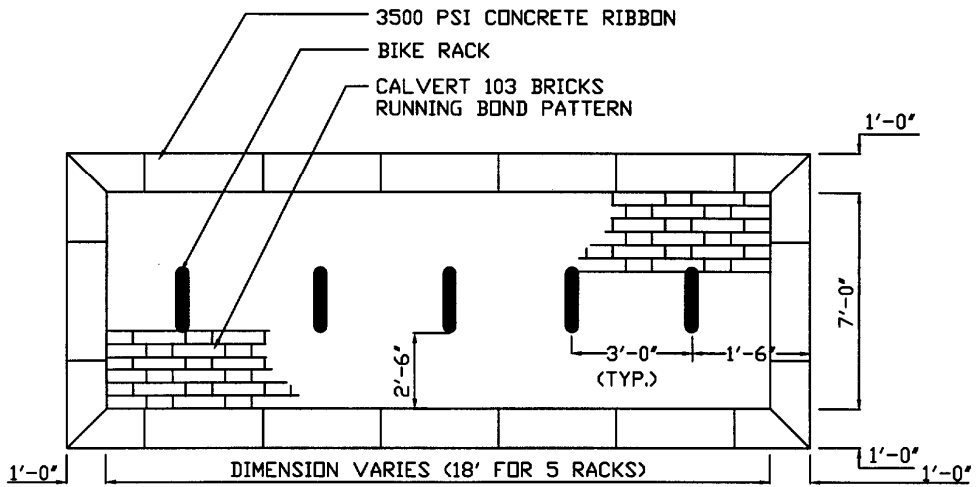
U. Water Valves

- | | | |
|----|------------------|-----------------|
| 1. | Material: | See 4. below |
| 2. | Manufacturer: | See 4. below |
| 3. | Model: | See 4. below |
| 4. | Description: | To be developed |
| 5. | Performance: | See 4. above |
| 6. | Related Details: | See 4. above |

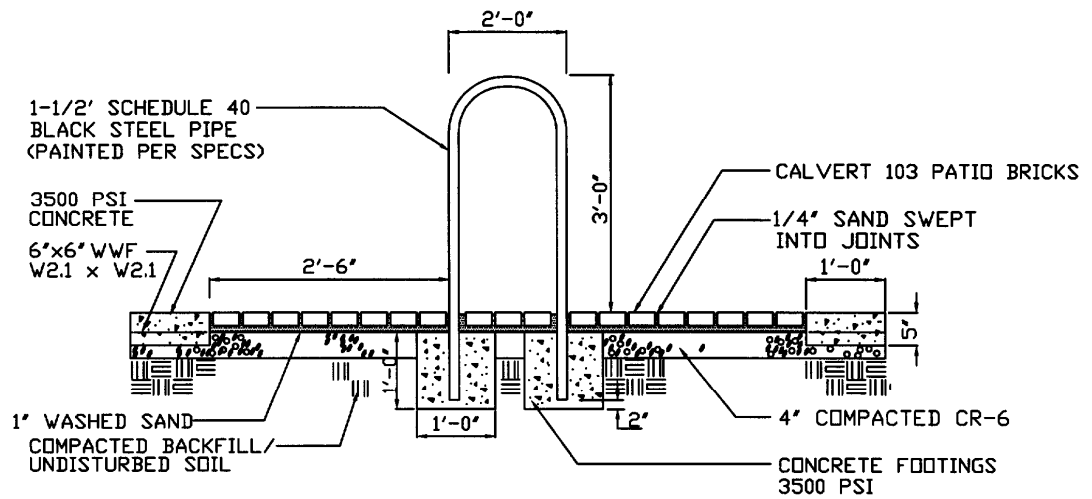
2.13 SITE STANDARDS (10-28-05)

2.13 SITE STANDARDS

DWG. NO. 09

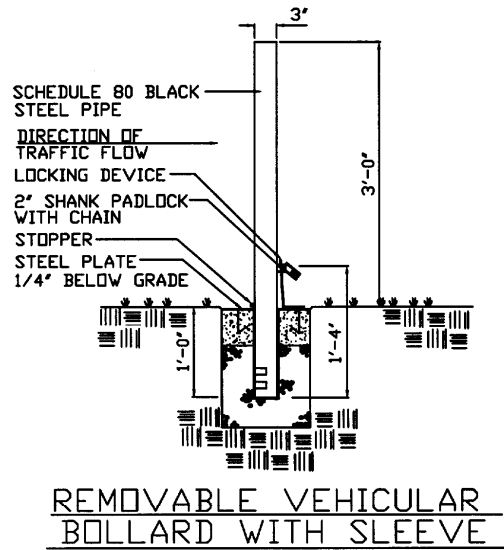
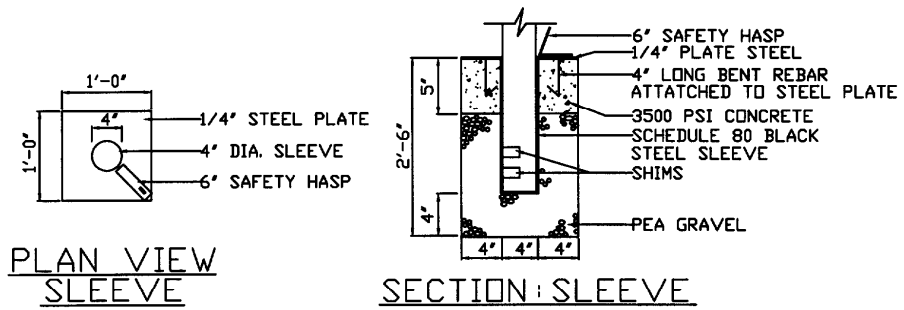


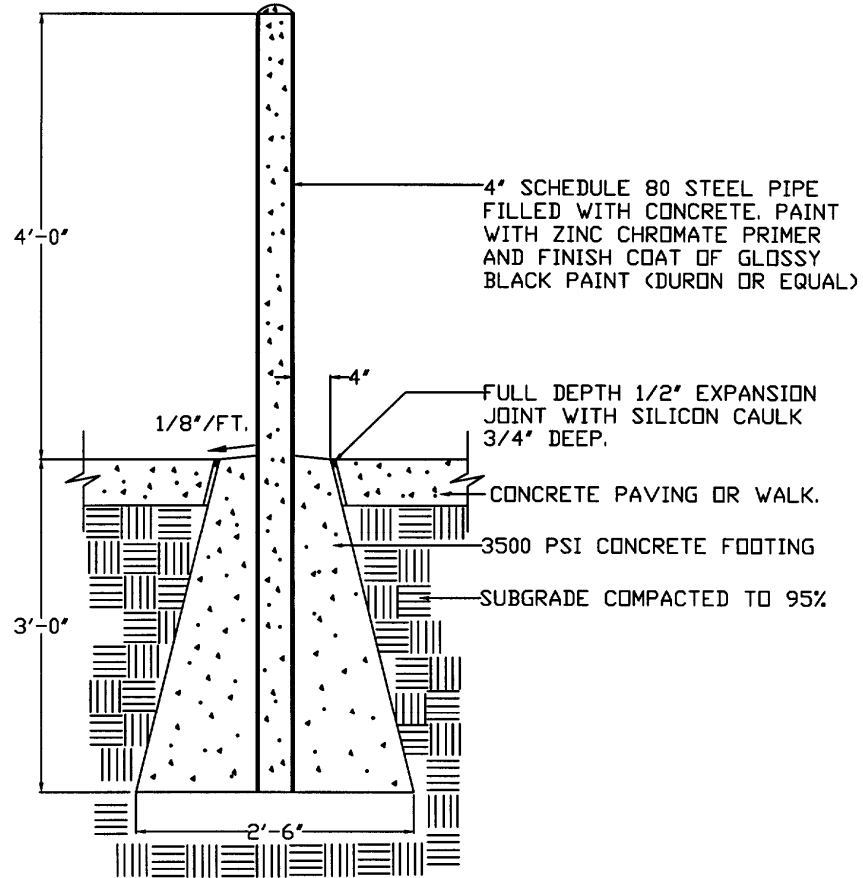
PLAN VIEW



BIKE RACK SECTION

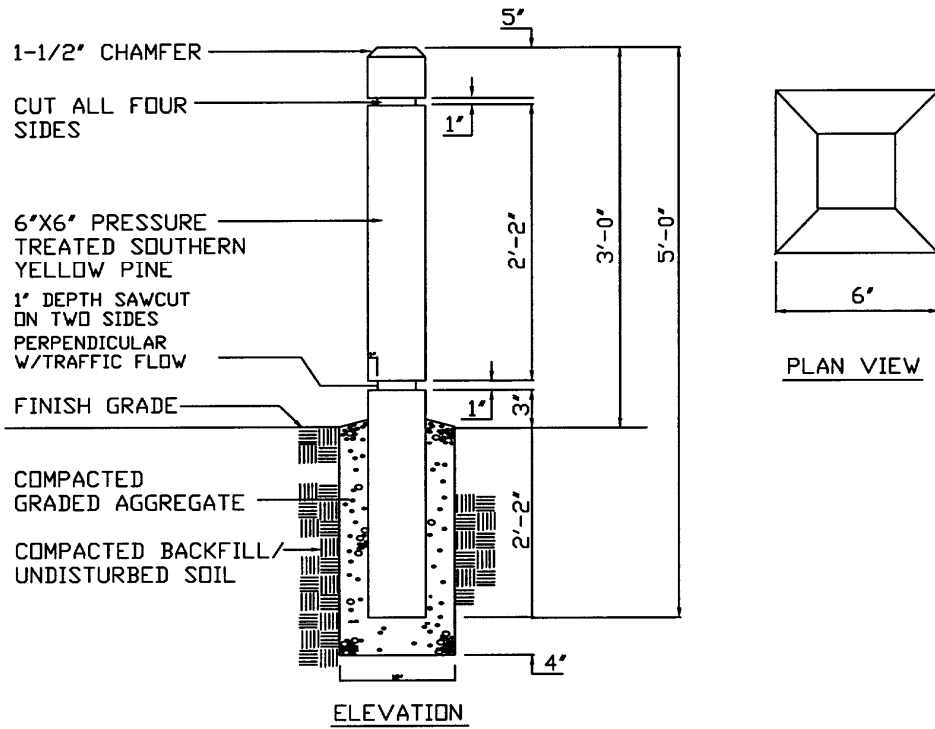
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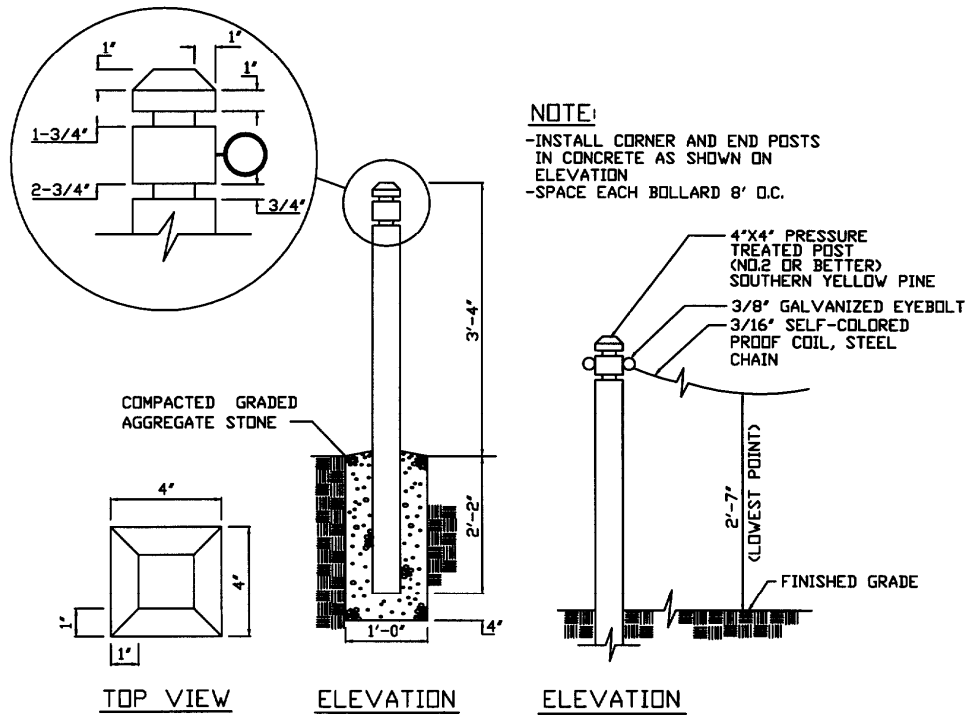


NON-REMOVABLE VEHICULAR
STEEL BOLLARD

NTS

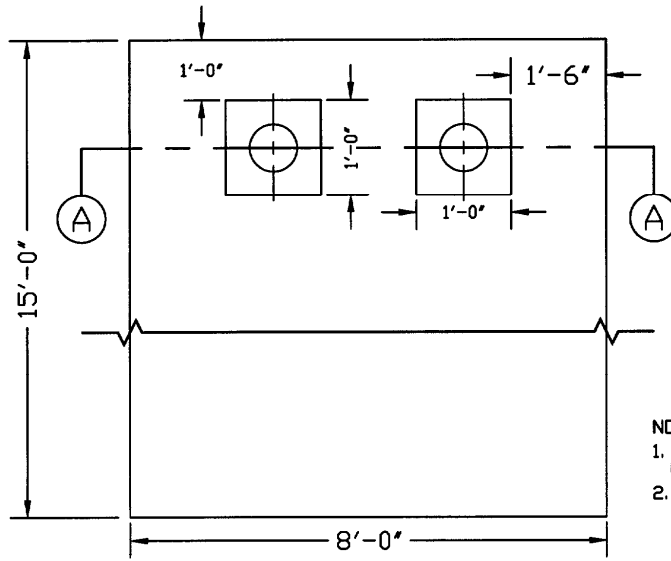


WOODEN BREAKAWAY BOLLARD
NTS



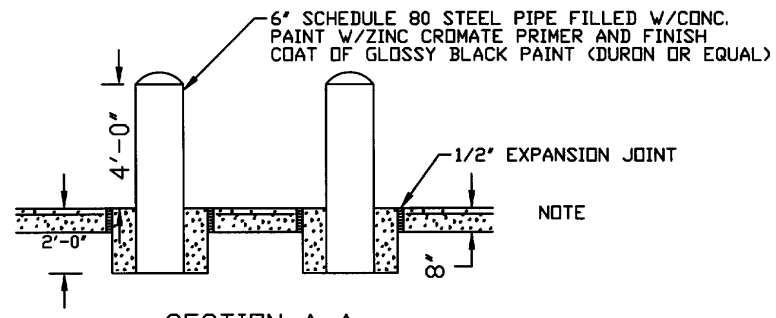
PEDESTRIAN BOLLARD AND CHAIN

NTS



- NOTE
- 1. LENGTH DESIGNED TO INCORP. FRONT TIRES OF TRUCK
 - 2. ADJUST REBAR & WWM SIZE IF PAD DIM. INCREASES

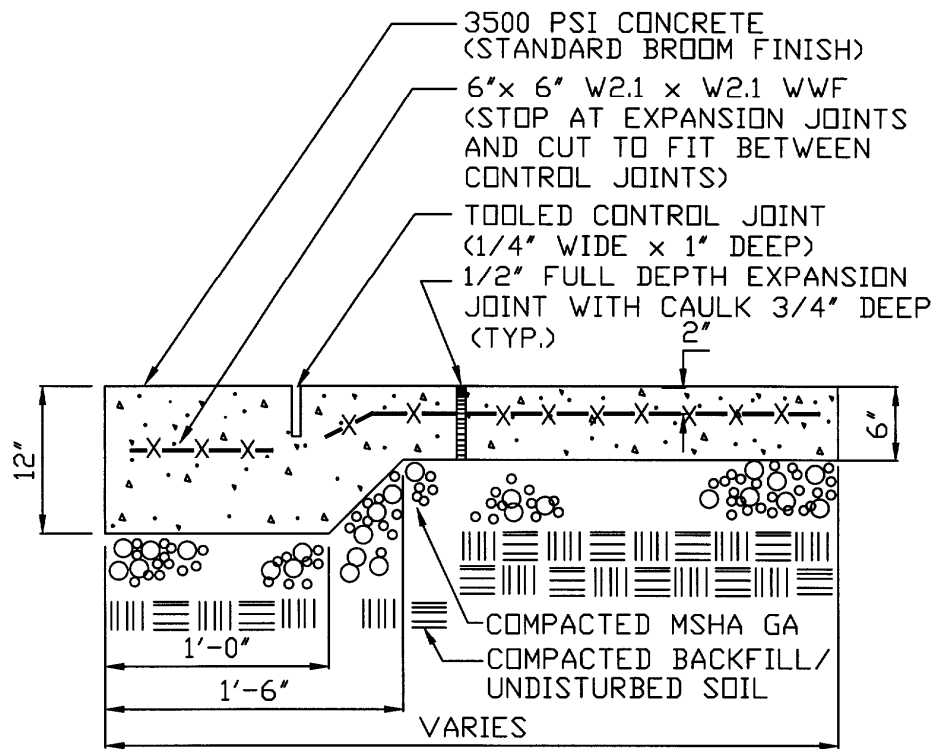
PLAN VIEW



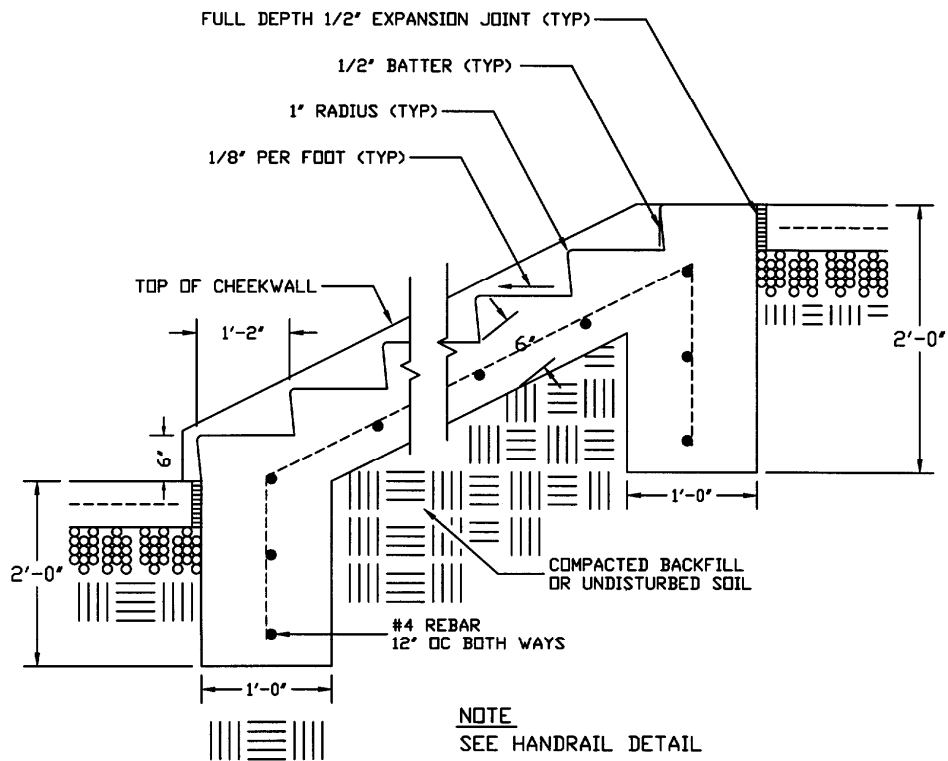
NOTE

SECTION A-A

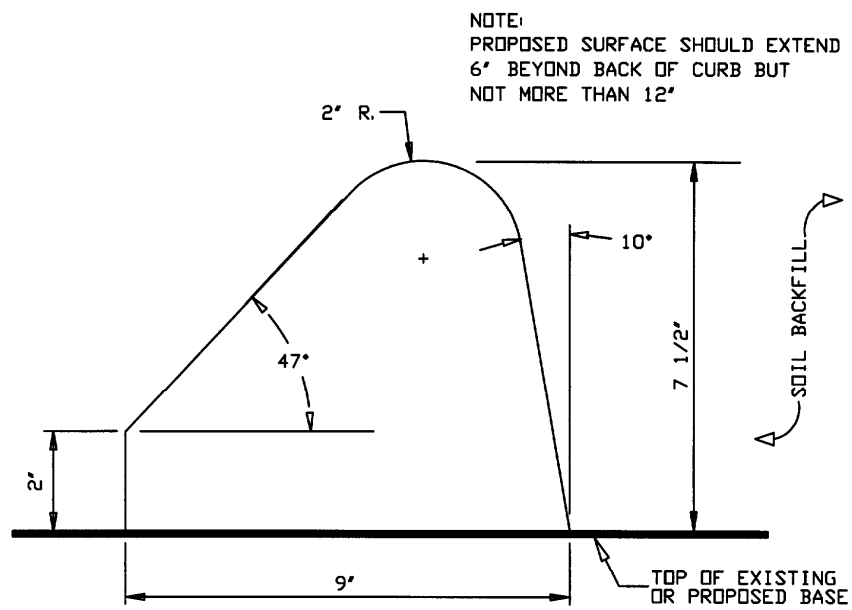
CONCRETE DUMPSTER PAD
NTS



CONCRETE DUMPSTER PAD
NTS

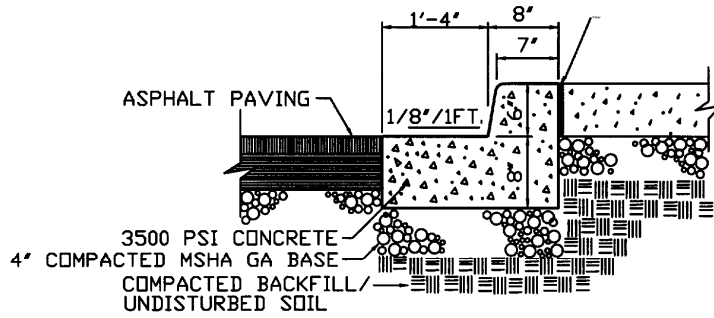


CONCRETE STEPS
NTS

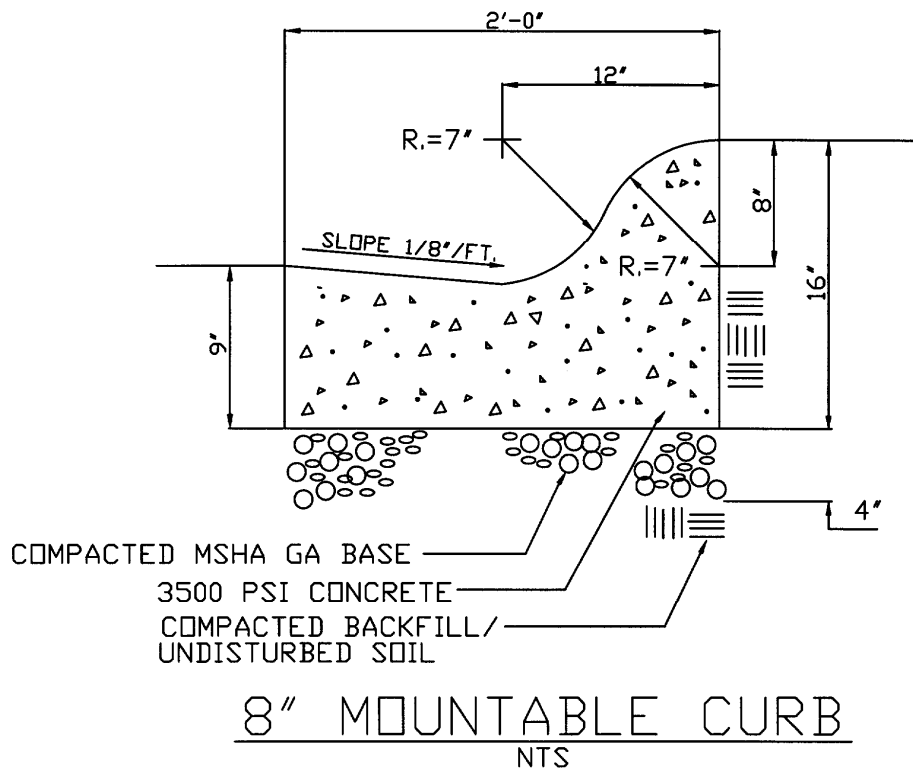


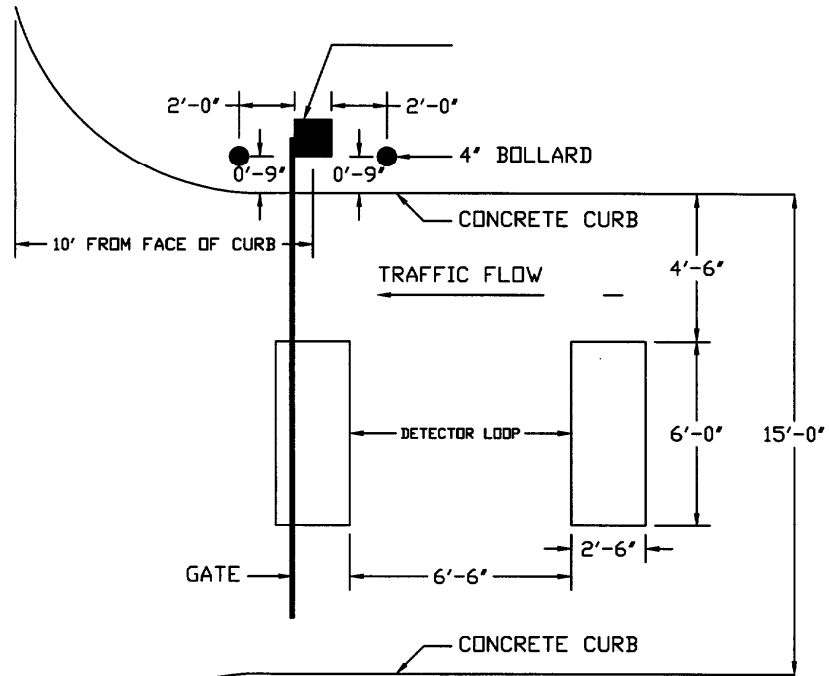
BITUMINOUS CONCRETE CURB

NTS



6\" & 8\" CONCRETE CURB AND GUTTER
NTS

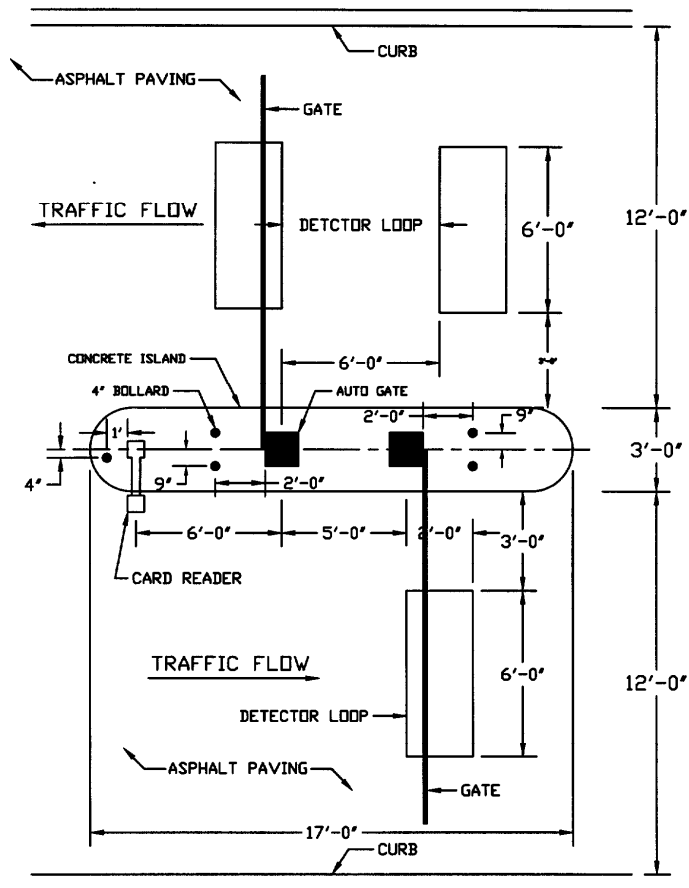




PLAN VIEW

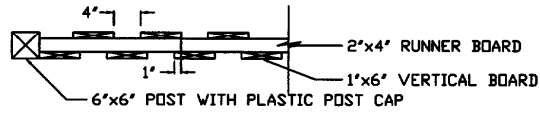
SINGLE ELECTRIC PARKING GATE - INGRESS

NTS

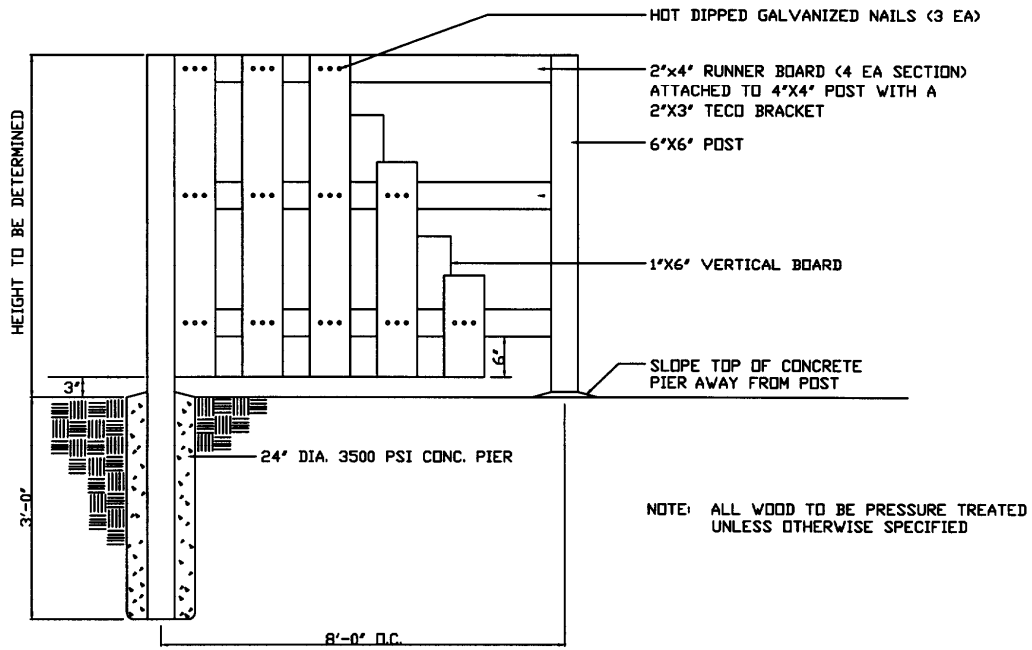


PLAN VIEW

DOUBLE ELECTRIC PARKING GATE
INGRESS AND EGRESS
 NTS

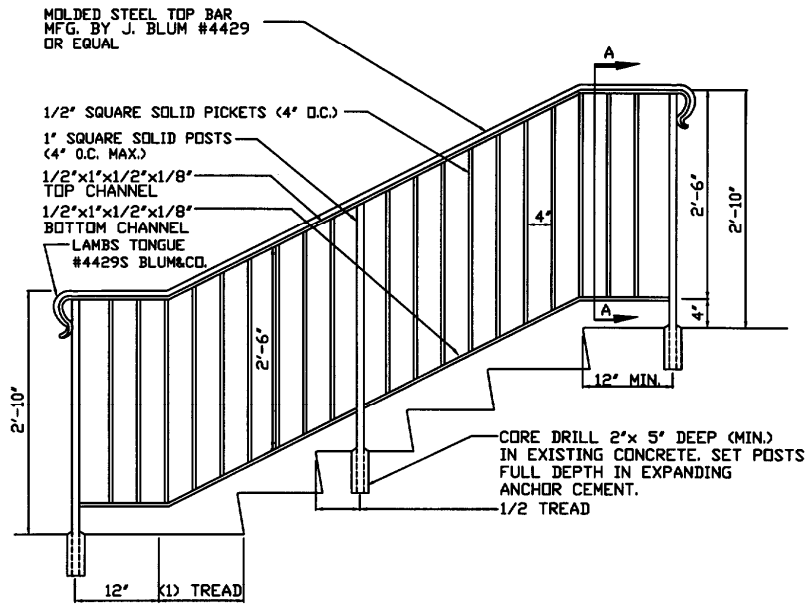


PLAN VIEW



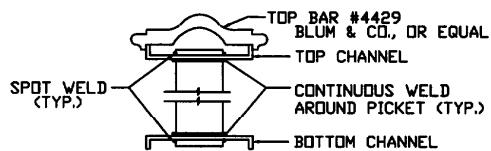
BOARD-ON-BOARD FENCE

NTS



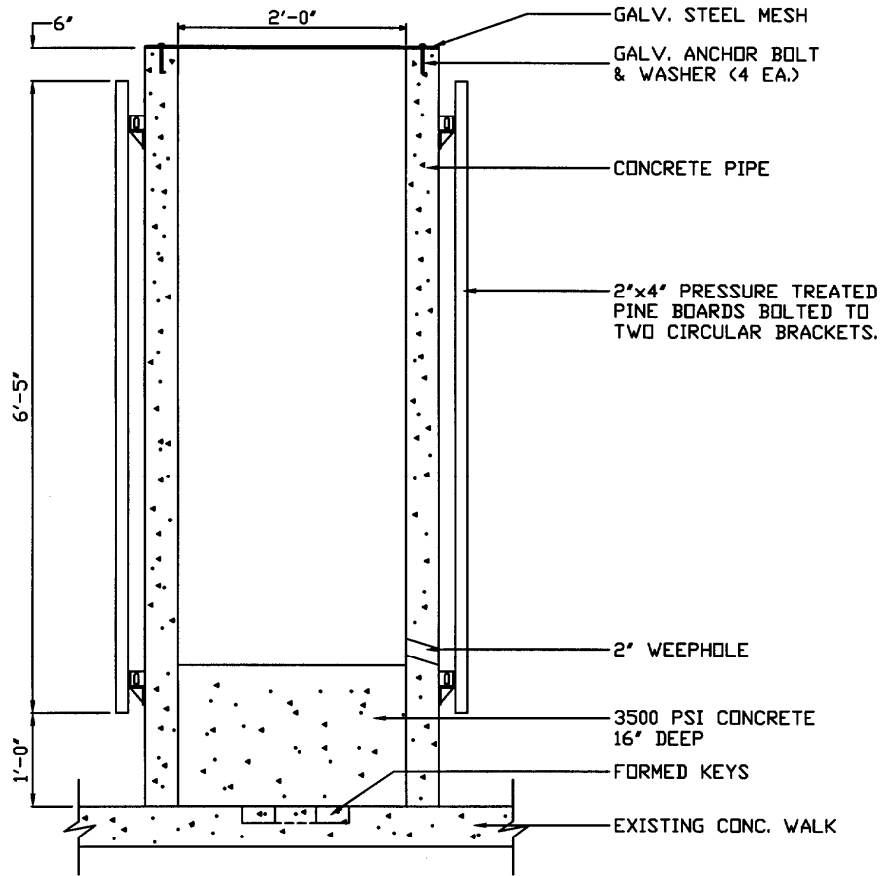
NOTE:

1. PROVIDE HORIZONTAL RAILINGS AT LANDING
2. SLOPE ANCHOR CEMENT AWAY FROM POST AND CONTAIN CLEANLY WITHIN 2" HOLE
3. ALLOW 1" CLEARANCE BETWEEN LAMBS TONGUE AND END POST
4. ALTERNATIVE RAILINGS WILL BE CONSIDERED.

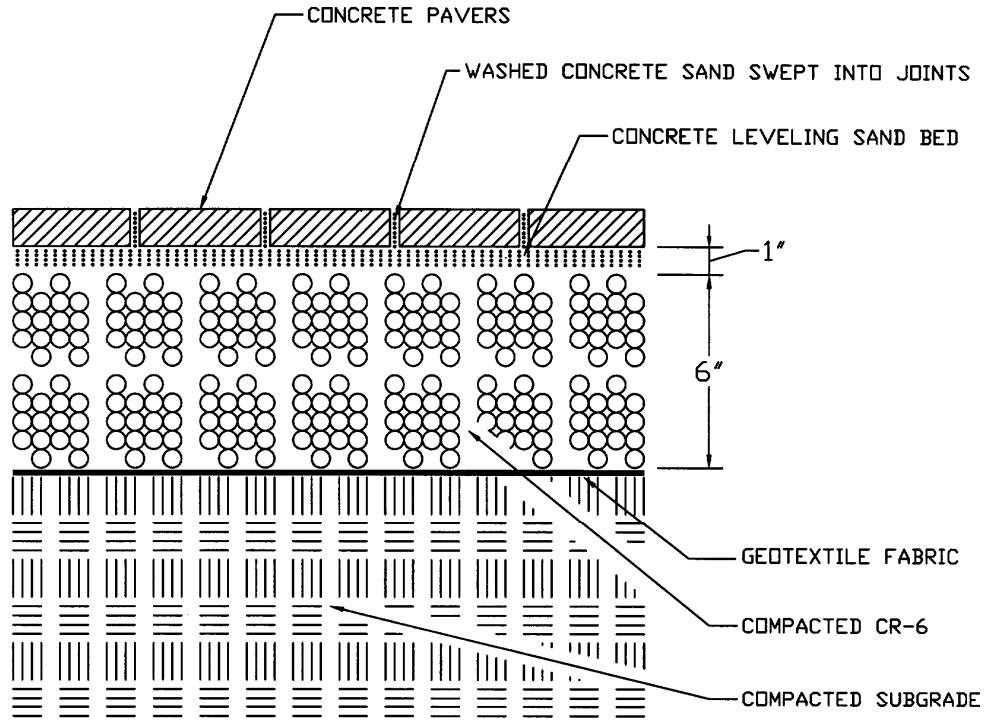


SECTION A-A
NTS

HANDRAIL
NTS

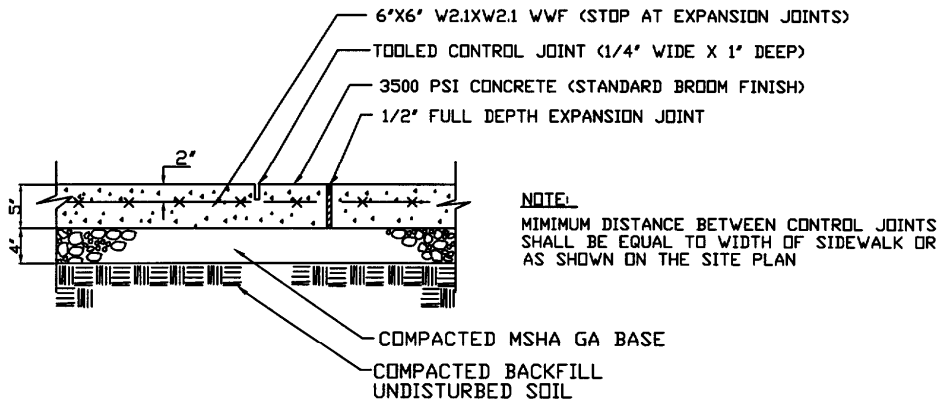


KIOSK
NTS

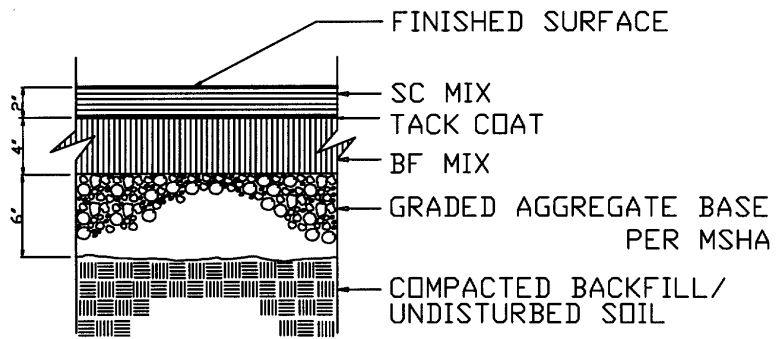


INTERLOCKING CONCRETE PAVERS
NTS

NOTE: CONCRETE PAVER TO BE COMPACTED
WITH VIBRATORY TAMPER

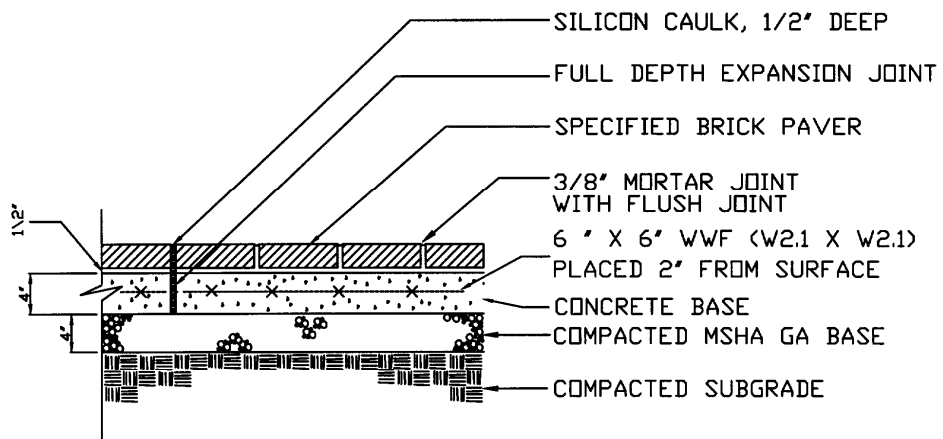


CONCRETE WALK
NTS



BITUMINOUS ASPHALT PAVING NTS

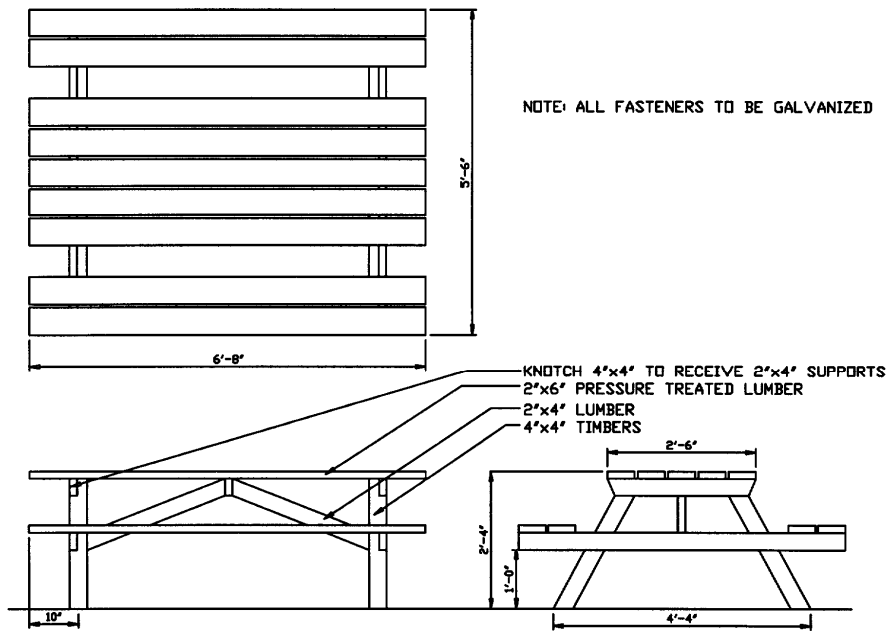
NOTE: PROVIDE THIS SECTION ONLY IF ENGINEERED DESIGN IS NOT FEASIBLE, AND ONLY WITH APPROVAL FROM FACILITIES MANAGEMENT



SECTION

BRICK ON CONCRETE
NTS

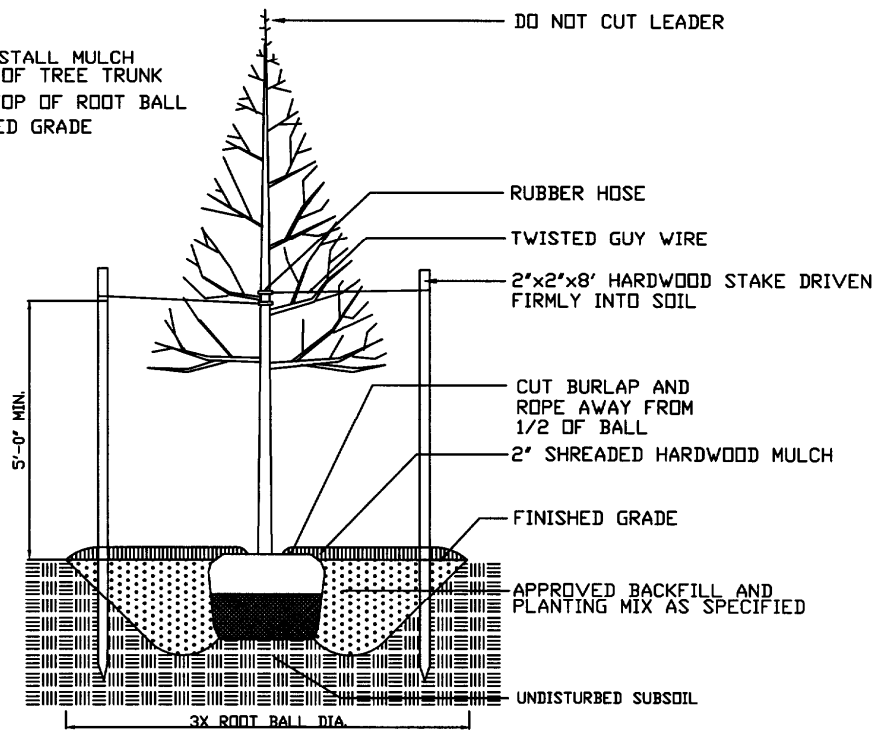
NOTE: FOR USE IN NON-VEHICULAR AREAS. SEE CONCRETE PAVEMENT DETAIL FOR TYPICAL VEHICULAR PAVEMENT APPLICATION



PICNIC TABLE
NTS

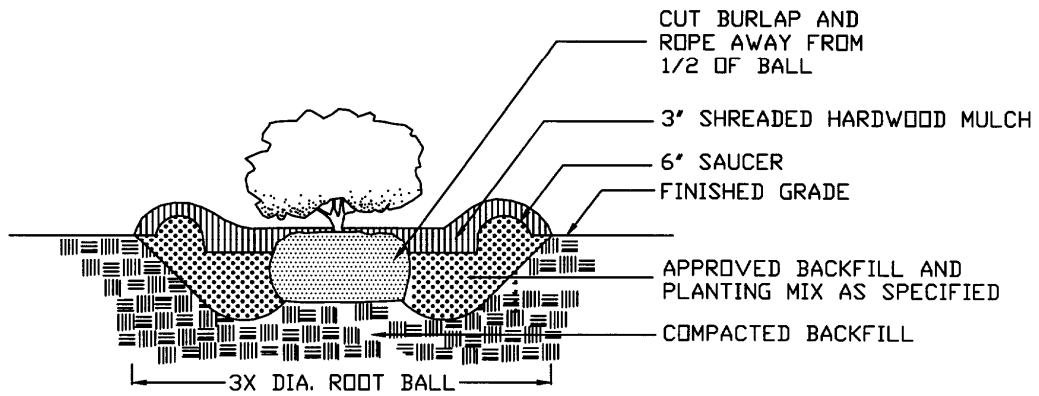
NOTE:

1. DO NOT INSTALL MULCH WITHIN 6" OF TREE TRUNK
2. INSTALL TOP OF ROOT BALL AT FINISHED GRADE



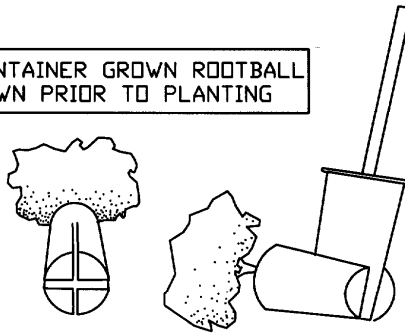
TREE PLANTING DETAIL

NTS

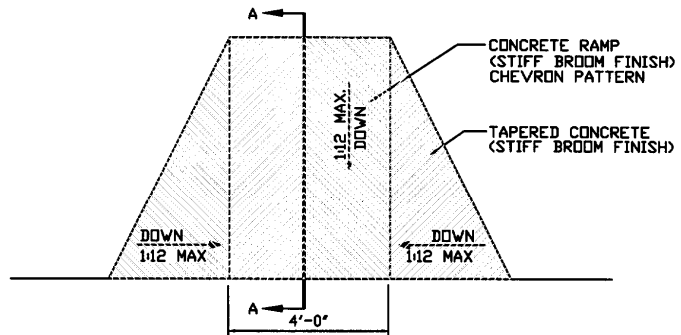


NOTE:
PLANT TOP OF ROOT BALL 2" ABOVE GRADE

CUT CONTAINER GROWN ROOTBALL AS SHOWN PRIOR TO PLANTING



SHRUB PLANTING DETAIL
NTS

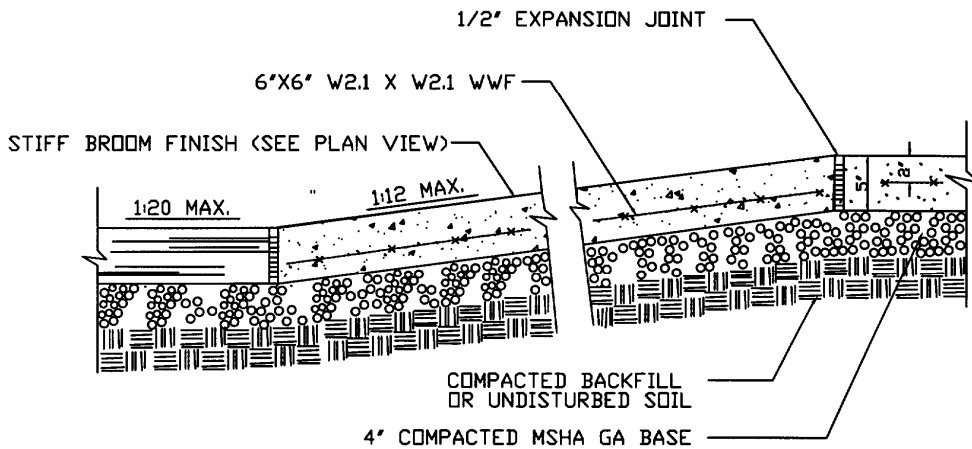


NOTE

- 1. SEE SECTION A-A
- 2. REFER TO ADA STANDARDS FOR SPECIFIC ADJUNCT SITE REQUIREMENTS

PLAN VIEW

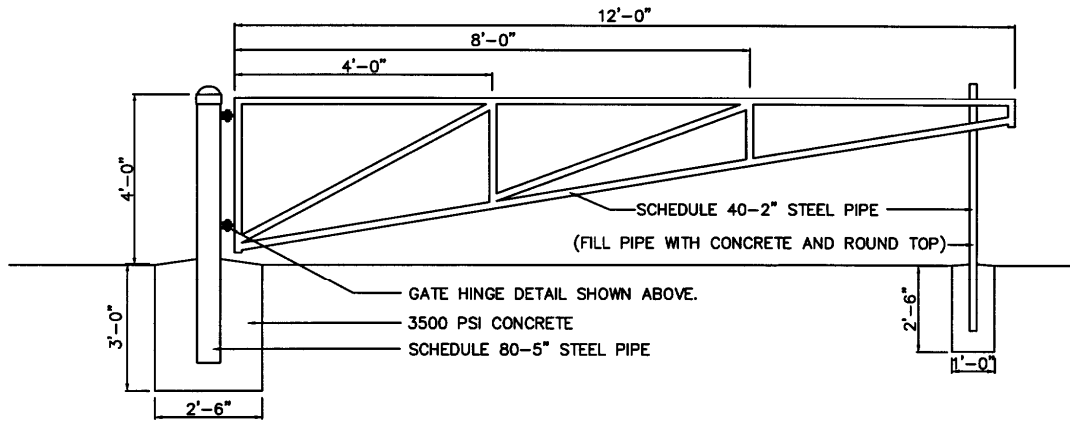
CURB RAMP
NTS



NOTE
3500 PSI CONCRETE (STIFF BROOM FINISH)

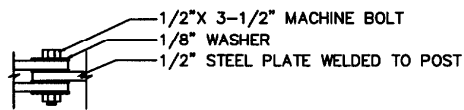
SECTION 'A-A'
NTS

PWD RAMP
NTS



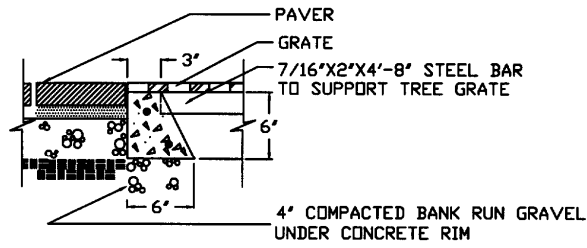
NOTE

1. WELDED JOINTS TO BE CONTINUOUS WELD.
2. APPLY ONE COAT PRIMER AND TWO COATS ENAMEL PAINT, COLOR PER OWNER
3. ATTATCH SIGN TO GATE USING GALVANIZED BOLTS.

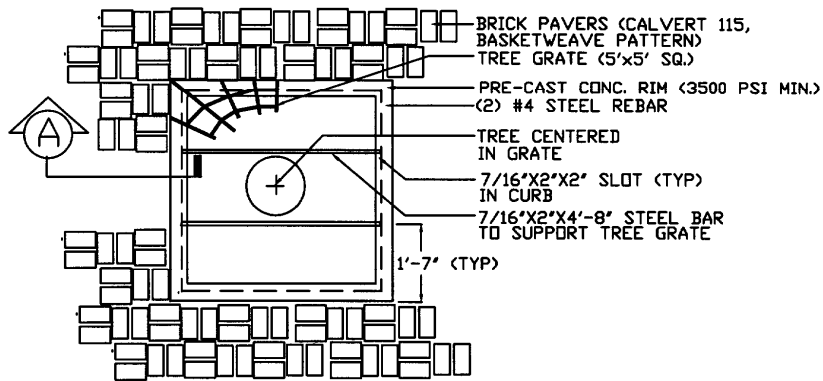


HINGE DETAIL
NTS

SECURITY GATE
NTS



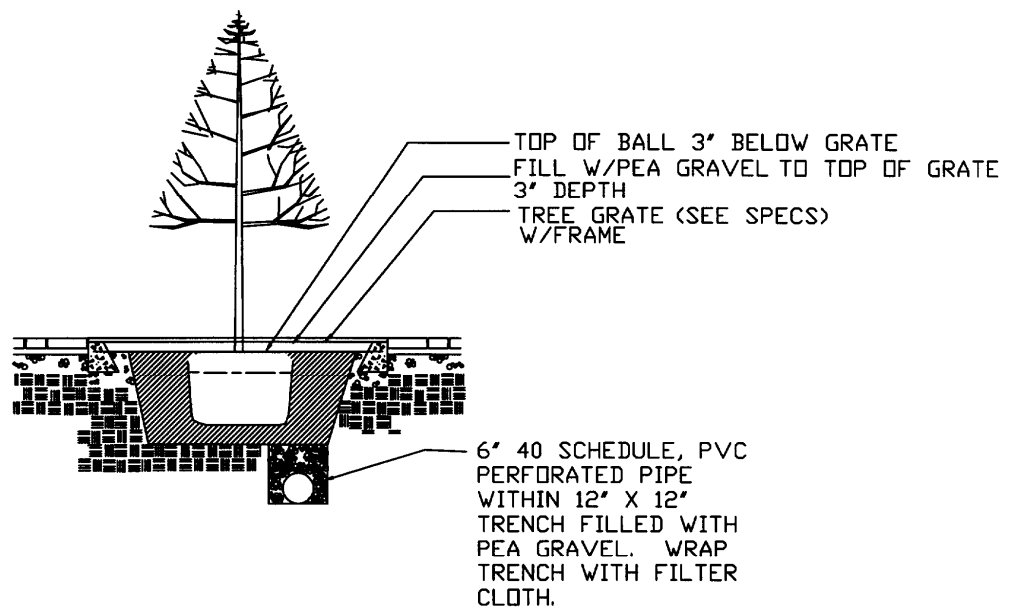
SECTION 'A-A'



PLAN VIEW

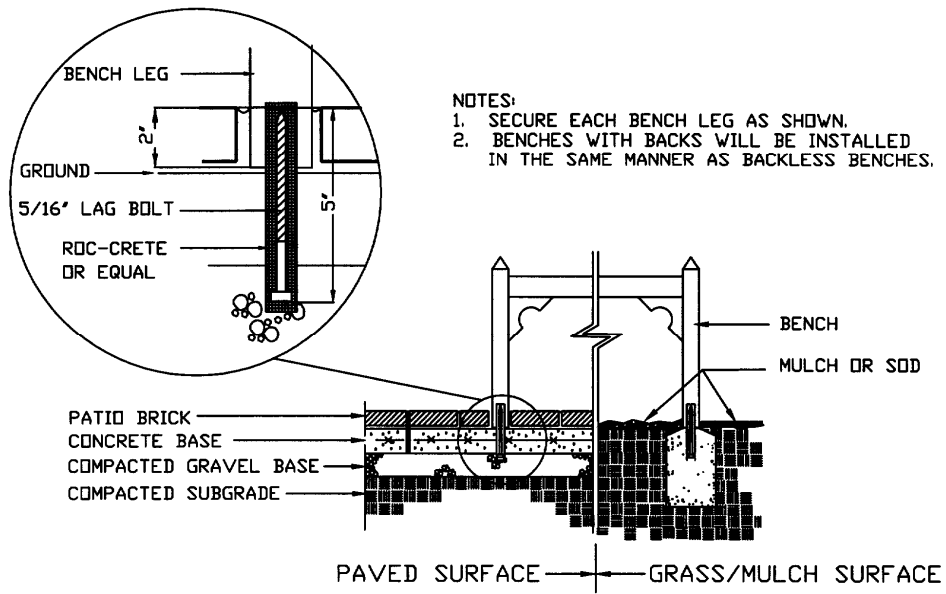
TREE GRATE

NTS



TREE GRATE

NTS



BENCH ANCHORAGE

2.14 SOIL PREPARATION

- A. The top 18" of soil at the project site shall be tested to determine it's suitability as a component of the planting media. If it is determined to be suitable, the contractor shall be required to remove and stockpile the top 18" of soil in areas that are to be regraded or otherwise disturbed. This includes staging areas and areas where equipment or materials is stockpiled.

- B. If the top 18" is found not to be suitable, it must be amended to meet minimum specifications listed in item #2 prior to placement on site. In addition, soil prepared for backfilling shall be protected from compaction and contamination.
 - 1. Landscape installation shall be accomplished by companies that are skilled in landscape installation and planting must be accomplished during the appropriate season. The successful bidder shall have on staff a "Certified Professional Horticulturalist" or Registered Landscape Architect and show proof of having satisfactory completion of similar size landscaping projects in both dollar value and size of plant material to be installed.

 - 2. Stripped soil used for the planting media shall be tested by the contractor and amended if necessary to meet specifications prior to placement on the site. Soil shall be a sandy loam or silt loam in texture with a minimum of 3% organic matter, stones and debris no larger than 2", pH of 5.0 - 7.0, and soluble salts not greater than 500ppm. Suitable soil shall then be mixed with compost not to exceed 1/3 by volume and blended so the mixture is uniform.

 - 3. Placement of the backfill planting media shall be done so there is no equipment driven over the top soil. This will require that utilities be installed at specified depth and landscape plants be placed onto the sub-grade before installation of soil backfill. After utilities and plants have been installed, place soil and compact as specified starting from one end of the site and working away from finished areas.

2.15 STEAM ACCESS OPENINGS (MANHOLES)

- A. Minimum size: 10' x 10' x 8'
- B. Minimum size lids: 24" (larger as required) - 2 required
- C. Minimum number of vents: 2
- D. Sump with steam driven pump (where applicable) connected to storm drain (to keep manhole dry).
- E. Insulation: Foam Glass Insulation with Pitt Wrapping (interior of manhole only).
- F. Construction Material: Precast Concrete

2.16 STORMWATER MANAGEMENT AND SEDIMENT AND EROSION CONTROL

- A. Design Documents shall be submitted for sediment & erosion control and stormwater management (or submit an application for stormwater management (SWM) waiver) for approval to the Maryland Department of the Environment (MDE), Water Management Administration, 2500 Broening Highway, Baltimore, Maryland in conformance with the requirements of the following two publications:

Stormwater Management Guidelines for
State and Federal Projects; and

Erosion and Sediment Control Guidelines
for State and Federal Projects.

Both publications are issued by the Maryland Department of the Environment (MDE), Water Management Administration.

- B. Quantitative and qualitative stormwater management, as required by the Maryland Department of the Environment, shall be included in the site drainage design. Stormwater Management must be addressed on a project if more than 5,000 square feet of surface area is disturbed.

The University of Maryland College Park campus is comprised of over 1,200 acres. Accordingly, the particular approach to meeting stormwater management requirements at UMCP often is somewhat different from that which would be appropriate for a smaller self-contained site. It is therefore necessary that the approach to meeting SWM requirements be coordinated with the University before submittal to MDE.

Furthermore, early coordination with the reviewing agency (MDE) is essential to preclude delays. In general, a site/grading plan adequately developed to provide a complete sediment control plan and stormwater management plan including required supporting calculations must be submitted at or immediately following the Design Development submittal stage.

2.16 STORMWATER MANAGEMENT AND SEDIMENT AND EROSION CONTROL

- C. Erosion and sediment control practices shall be in conformance with:

1994 Maryland Standards and Specifications
for Soil Erosion and Sediment Control

published jointly by Water Resources Administration, Soil Conservation Service and State Soil Conservation Committee. Sediment and erosion control approval must be obtained from MDE if more than 5,000 square feet of surface area or more than 100 cubic yards is disturbed.

2.17 TREE PROTECTION

A. Tree protection requirements are to be included in the construction contract. Prior to beginning any construction activity, the following steps are required to protect trees from damage:

1. Identify trees which will remain on the site. This includes not only those trees within the limit of work but also those which may have critical root zones within the area. This includes:

- Chemical and fuel storage
- Chemical waste of any kind
- Concrete washout areas
- Construction office placement and subcontractors offices
- Construction parking
- Construction vehicle corridors
- Crane placement and crane corridors for moving material (if applicable)
- Limb clearance of buildings and other features approved by University
- Material storage
- Other sub-contractors working areas must be approved by University
- Painting procedures and clean-up
- Soil stockpiling
- Steel make-up areas
- Trash stockpiling and hauling sites

The roots of a healthy tree growing in uncompacted soil has a root system as much as five times the spread of the canopy. This is the area which must be initially considered.

2. Provide written report by a certified arborist identifying root evaluations of the trees which are in potential conflict with construction to determine the critical root zones.

3. Provide written report by a certified arborist indicating the best methods of construction which will minimize the impact on the critical root zone. Obtain specifications from the arborist for tree protection as required for the specific project in question with penalties to the contractor if the protected areas are violated.

4. Specifications will include the requirement that

2.17 TREE PROTECTION

inspectors and contractors be trained as to the reasons why intrusion into the critical root zone will be detrimental to the trees' survival. Training should occur prior to the start of construction.

- B. Do not store materials, soil, equipment, etc. within the Critical Root Zone (CRZ) of trees which are to remain.
- C. Provide, install and maintain a four (4) foot high temporary fence around the CRZ.
- D. No construction activity, storage, parking, access or egress to the site shall occur within the critical root zone of established trees to remain on the site. **The critical root zone is defined as a ratio of 3 feet in diameter from the center of the trunk, for each inch of trunk DBH (diameter at breast height).**
- E. Tree protection fences within the critical root zone must be completed prior to any construction. The fences must be maintained through the entire construction period.
- F. Trees which cannot be fully protected shall have a certified arborist provide recommendations, before final design decisions are made.

2.18 TRASH DUMPSTER & COMPACTOR PADS (12-2-02)

- A. Trash dumpsters/dumpster pads shall be located adjacent to, or as part of, loading dock area or receiving areas. In the event the facility does not have a loading dock/receiving area, the dumpster pads are to be located in a manner that does not distract from the aesthetic attributes of the facility and its surrounding site, but is located relatively adjacent to the facility and in accord with the following requirements for placement and configuration.
- B. Trash dumpster pads shall have a concrete base and apron designed to support an impact load of 25 tons. The pad shall have concrete filled steel bollards for protection and centering at rear and sides as necessary. UMCP uses standard front-end loader dumpsters which are 6'-10" (82") in width. The inside distance between side bollards shall be a minimum of 10'-0" (120"). In order to specify the minimum width, the specifications should include a straight path for the trash truck of at least 45'-0" feet for trash truck access. If the trash truck must pick up the dumpster box at any angle, rather than a direct straight approach, then the inside distance between bollards may require more than 10'-0" (120"). Also reference Section 2.13, Site Standards, Concrete Dumpster Pad, Drawing No. 14 and 15 with adjustments.
- C. The dumpster(s) shall be accessible to building housekeepers from the loading dock level to eliminate the need to lift heavy trash bags above head height.
- D. Trash Dumpster Siting shall address the following:
1. Do not place in proximity with:
 - a. Outside air intakes for mechanical ventilation systems.
 - b. Other locations which may create a public nuisance such as
 - operable windows
 - designated smoking areas
 - food service handling areas
 - lunchbreak/picnic areas
 - storm drain inlets

2.18 TRASH DUMPSTER & COMPACTOR PADS (12-2-02)

2. Comply with Applicable Standards:
 - a. ASHRAE 62-1989/5.5 (Ventilation systems)
 - b. ICC/IMC 401.7.1 (Intake openings)
 - c. COMAR 26.11.06.08 (Nuisances)
 - d. OSHA 29CFR1910.141 (g) (2) & 29CFR1910.141 (H) (Sanitation)

- D. Trash Compactor shall have a reinforced concrete base designed to support a rolloff trash truck with a fully loaded trash compactor, total gross weight of 80,000 pounds. Reinforced concrete pad shall be 10' wide and 25' long. The trash compactor has dimensions of approximately 22'-11" in length x 8'-0" in width x 8'-8" in height, with an empty weight of 11,300 pounds and a possible full weight of 41,300 pounds. The trash compactor vender will install guide tracks and a stop plate into the concrete pad during installation of the trash compactor.

General Contractor shall provide the following electrical service within six feet of the concrete pad:

 1. A fused electrical disconnect with 208 volt, 3 phase electrical power.
 2. A 110volt, 20 amp service electrical outlet to power the ozone generator.

2.19 UTILITIES

- A. New and existing demands on utilities in the building area are to be examined. A recommendation as to alignments and new connections are to be submitted at an early design stage of the project. Any impact on the capacity of the existing utilities to the on-site and campus-wide utility network shall be brought to the attention of the University.
- B. A complete system design of all new utility extensions from the points of the connection with existing systems to the building site is required. This includes establishing the precise location and size of all underground utilities and/or services in the construction area performing a thorough investigation of all existing utilities, (location and capacities) in order to properly design and locate the new utility services.
- C. With the development of building details, the adequacy of all existing utilities based on the anticipated increase in load to serve the new construction must be determined. If deficiencies are present, an upgrade of the insufficient utility systems must be included in the project's scope.
- D. New and existing demand shall be coordinated with the Department of **Operations and Maintenance** through DAEC to insure that all issues are considered (adequate capacities at tie-in points and this area of campus, etc.). Calculations showing usage for each utility shall be furnished.
- E. The design of water and sanitary utilities are to meet the requirements and approval of the Washington Suburban Sanitary Commission for areas within WSSC jurisdiction.
- F. The storm drainage system and components shall be designed in accordance with Maryland State Highway standards. Closed systems shall typically be designed and constructed to adequately convey the ten (10) year storm.
- G. Underground Utilities
 - 1. Primary telephone and electrical underground utility lines shall be encased in concrete.

2.19 UTILITIES

2. Use utility vaults for multiple use utility trenches.
3. Place steam lines under paved surfaces where possible.
4. Use removable concrete pavers over utility lines where possible.

2.20 WETLANDS AND FLOODPLAIN

The identification of regulated wetlands and areas within the 100 year floodplain areas within the site limits is required in accordance with Maryland Department of the Environment (MDE) or U.S. Army Corps of Engineers (COE) regulations and guidelines. The identification of such areas shall be the first priority of the site design and the existence of these areas shall be brought to the immediate attention of the University.

Any disturbance within a nontidal wetland or its buffer is subject to regulation as is construction within the 100-year floodplain. Approval from the appropriate reviewing agency(s) is necessary for any such disturbance or construction.