CITY OF FORT BRAGG

STANDARD SPECIFICATIONS
AND
STANDARD PLANS

APRIL 2008

CITY OF FORT BRAGG
416 North Franklin Street
Fort Bragg, California 95437

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STANDARD SPECIFICATIONS AND STANDARD PLANS

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SECTION 1. GENERAL

1-1.01 Referenced Specifications. Public improvements within the City of Fort Bragg shall be constructed in accordance with the most recent version of the Standard Specifications of the State of California, Department of Transportation, Division of Highways, which specifications are hereinafter referred to as the State Standard Specifications, and in accordance with the following modifications and revisions, and City of Fort Bragg Standard Plans.

Whenever in the State Standard Specifications the terms State of California, Department of Transportation, Director, Division of Highways or Engineer are used, the following terms shall be understood and interpreted to mean and refer to such substituted terms as follows:

For State of California substitute City of Fort Bragg.

For Department--The Public Works Department of the City of Fort Bragg.

For Director--The City Engineer of the City of Fort Bragg.

For Division of Highways--The Public Works Department of the City of Fort Bragg.

For Engineer--The City Engineer, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

In the event of discrepancy between contract documents, the order of precedence from highest to lowest shall be as follows: (1) Contract Change Order, (2) Permits from other agencies, as may be required by law, (3) Special Provisions, (4) Plans, (5) Standard Plans, (6) The modifications and revisions contained herein, and (7) State Standard Specifications.

Specifications pertaining to the administration of City contracts will be contained in the Special Provisions for the contract.

City Standards shall mean City of Fort Bragg Standard Specifications and Standard Plans. ATSM shall mean American Society for Testing and Materials latest edition of the specifications. Standard Specifications for Public Works Construction (commonly called the "Green Book"), shall mean the latest edition of the Standard Specifications written and promulgated by the Southern California Chapter, American Public Works Association and the Southern California District, Association General Contractors of California, a Joint Cooperation Committee.

1-1.02 Construction Limitations. The contractor will be expected to conduct his operations in a manner that causes minimum damage to the natural vegetation and landscape. Ingress and egress for all off road work shall be via the existing driveways. Care shall be exercised to avoid hazards that may cause injury to persons, animals or property either during working hours or after work hours, which will include dust control, noise control, signage and striping, backfilling trenches immediately following pipe laying and temporary fencing as required.

Prior to working in the City right-of-way, the Contractor shall obtain an encroachment permit

from the City. Work by City contract does not require an encroachment permit. A copy of the permit shall be kept on site at all times.

The Contractor will be responsible for obtaining permission from the property owners for any construction outside of the work site or easements as shown on the plans. Equipment will be restricted to the immediate area of construction. Pipe trenches will be backfilled as soon as possible.

Receptacles for construction residue, including oil, cleaning fluids and litter will be covered. Such residues will be disposed of in a proper manner.

Dust control and prohibition of burning of waste construction materials or vegetation will be enforced for all construction activity.

All construction activity, except for emergency situations, will be confined to Monday through Friday, between the hours of 7 a.m. and 7 p.m., to minimize nuisances to local businesses or residences.

Mufflers and/or baffles will be required on all construction equipment.

Construction activity within the existing right-of-way will be scheduled to minimize traffic inconvenience and safety hazards to motorists, pedestrians and cyclists.

1-1.03 Water for Construction and Dust Control. The Contractor shall be responsible for providing all water necessary for construction and testing.

1-1.04 Protection of Existing Facilities and Property. The Contractor shall notify Underground Service Alert (USA) for marking the locations of existing underground facilities.

The existing underground facilities in the area of work may include telephone, television and electrical cables, gas mains, water mains, sewer pipe and drainage pipe. The various utility companies shall be notified before trenching begins and at such other times as required to protect their facilities. Underground facilities shall be located and exposed ahead of trenching to prevent damage to the facilities, and to determine the depth and character of all facilities that cross or infringe on the trench prism. The Contractor shall immediately notify the City Engineer of any facilities found to differ from those shown on the drawings. If damage should occur to the existing facilities, the utility company and the City shall be notified immediately and repairs acceptable to the utility company shall be made at the Contractor's expense.

The locations of the existing facilities are typically compiled from the best information available during design. However, the locations of the underground facilities shown on the drawing are approximate only and should not be taken as final or all inclusive. The Contractor is cautioned that the drawings may be incomplete and the Contractor shall repair all damage done to existing facilities at his own expense.

Existing facilities shall not be intentionally disturbed and shall be supported and protected against injury and maintained in good operating condition at the expense of the Contractor for the entire duration of the contract.
Any proposed disruption of the existing facilities shall be approved by and coordinated with the Engineer.

1-1.05 Traffic Control. The site of the work shall be enclosed by suitable barricades, signs and lights to warn and protect traffic effectively and shall be in accordance with those procedures as set by the State of California Department of Transportation manual of warning signs, lights and devices. The Contractor shall submit to the Engineer for review and approval traffic control plans prior to beginning construction. The Contractor shall have a copy of the approved traffic control plans on site at all times.

Excavation shall be backfilled before leaving the work for the night. All trenching in the travel-way shall be plated with non-skid plates or paved (temporary or permanent) before leaving the work for the night. Flasher barricades or illuminated cones shall be placed adjacent to the trench plates if required by the Engineer.

All detours and traffic control shall be between 8:00 a.m. and 5:00 p.m.; unobstructed two-way traffic shall be maintained daily between 5:00 p.m. and 8:00 a.m. Any work within Caltrans right-of-way will require a separate encroachment permit from Caltrans.

Adequate traffic control, flag persons, signing and barricades shall be provided by the Contractor at all times as approved by the Engineer.

If at any time, work continues for more than one working day, advance warning signs affixed to 4" x 4" wooden posts anchored to the ground shall be used. At no time shall construction signs be attached in any way to power or light poles.

The Contractor shall be responsible for keeping the police, fire department and the local schools informed of obstructions to either private or public roads caused by reason of his operations. The Contractor shall make provisions for the safe passage of pedestrians around the area of work at all times.

1-1.06 Plan for Protection from Caving. In accordance with the latest requirements of the California Occupational Safety and Health Act (Cal-OSHA) and all such similar legislation, the Contractor shall submit to the Engineer for reference in advance of excavation a Cal-OSHA approved detailed plan showing the design, shoring, bracing, sloping or other provision to be made for work or protection from the hazard of caving ground during the excavation of such trench or trenches located in the public right-of-way. If such plan varies from the shoring system standards, the plan shall be prepared by a Registered Civil or Structural Engineer.

The plan shall be kept on the job site at all times. The Contractor shall have a competent person, conversant with the plan on site at all times.

Nothing in this section shall be deemed to allow the use of shoring, sloping or protective system less effective than that required by the Cal-OSHA.

Nothing in this section shall be constructed to impose tort liability on the City or Engineer.

1-1.08 Shop Drawings. When shop drawings or other drawings are required by the Plans and Specifications, or requested by the Engineer, they shall be prepared in accordance with current Engineering practice and at the Contractor's expense. Drawings shall be of a size and scale to clearly show necessary details and shall be transmitted by letter to the Engineer for approval or correction within at least fifteen (15) days of the Contract award.

Materials shall not be furnished or fabricated, nor any work done for which drawings are required before approval of the drawings.

When first submitted by the Contractor, each drawing shall be a good quality transparency accompanied by two prints. If approved without change or correction, three approved copies on paper will be furnished to the Contractor. If extensive additions or corrections are required, the Engineer will return one marked up copy together with a transparency to the Contractor for correction and resubmission. Approved transparencies will be retained by the Engineer. Approval of drawings by the Engineer shall not relieve the Contractor of the responsibility for errors or omissions in the drawings or from deviation from the contract documents, unless such deviations were those specifically called to the attention of the Engineer, and in the letter of transmittal submitted with the drawings. The Contractor shall be responsible for the correctness of the drawings for shop fits and fuel connections and for the results obtained by use of such drawings.

Drawings required for conventional stock pumps, motors and all other manufactured equipment may be brochures or catalogue sheets submitted in quadruplicate and shall show all necessary dimensions required for the proper location and installation of tie down bolts, brackets, plumbing and other appurtenant detail.

When required by the Special Provisions, assembly drawings, parts lists, nomenclature lists or diagrams shall be furnished.

1-1.09 Clean Up. Attention is directed to Section 4-1.02 of the State Standard Specifications.

Before final inspection of the work, the Contractor shall clean the construction site and all ground occupied by him in connection with the work, of all rubbish, excess materials, false work, temporary structures and equipment. All parts of the work shall be left in a neat and presentable condition.

Nothing herein shall require the Contractor to remove warning, regulatory, and guide signs prior to formal acceptance by the Engineer.

SECTION 6. CONTROL OF MATERIALS

6-1.01 General. California Test 231 (Nuclear Gage Determination of In-Place Density) is amended as follows:

In-place density and relative compaction may be determined on the basis of individual test sites in lieu of the area concept, at the discretion of the Engineer.

6-1.02 Relative Compaction (field density). ASTM D 2922-81 amended as follows:

a. Gage calibration will be based on the six California Transportation Laboratory Master Standard Density Blocks (CTLMSDB), located in Sacramento, California. These blocks are the Standard Reference blocks for the California Department of Transportation.

b. Percent Relative compaction shall be calculated using lab curves for each individual test location unless otherwise permitted by the Engineer. If permitted by the Engineer, composite samples may be taken for certain manufactured or otherwise uniform materials according to California test method 231 - Part II "METHODS OF APPLYING THE AREA CONCEPT AND DETERMINING PERCENT RELATIVE COMPACTION".

The use of sand cone methods (such as ASTM 1556 or CT 216) for determining field densities will not be allowed as a substitute.

6-1.03 Statistical Testing. Statistical means will not be used for determination of specification compliance. Whenever both individual test results and moving average requirements are specified in these specifications, the moving average requirements shall apply to the individual test results.

SECTION 16. CLEARING AND GRUBBING

16-1.01 Description. The following shall apply in lieu of Section 16-1.01 of the State Standard Specifications: This work shall consist of removing all objectionable material within the limits shown on the plans and as directed by the Engineer. Clearing and grubbing shall be performed in advance of grading operations and in accordance with the requirements of these specifications.

16-1.02 Preservation of Property. All existing street designation and traffic control signs and posts within the aforementioned limits of work shall be carefully removed, cleaned of excess earth and delivered to the City Corporation Yard, except those required for traffic control as determined by the Engineer.

16-1.03 Construction. The area to be cleared and grubbed shall be the area shown on the plans, unless otherwise specified in the Special Provisions.

All stumps, large roots and other objectionable material shall be removed to a depth of three feet below finished grade in the area between the curbs, and to a depth of 12 inches below finished grade in the area between curb and property line. The resulting spaces shall be backfilled with suitable material placed and compacted in accordance with the applicable provisions of Section 19-6.02 of the State Standard Specifications.

16-1.04 Removal and Disposal of Materials. Burning within the limits of the project will not be allowed. Combustible debris shall be disposed of away from the site of the work.

16-1.05 Tree Preservation. The Contractor shall comply with all requirements of the tree preservation plan if one is included as part of the Improvement Plans.

All trees to be removed shall be marked in the field. A representative of the City must field review the trees to be removed prior to removal.

16-1.06 Site Development. The Contractor shall comply with all Site Development Regulations of the City of Fort Bragg, Title 18, as contained in the Land Use & Development Code, anytime there is grading work conducted.

SECTION 19. EARTHWORK

19-1.01 General. Earthwork shall conform to the provisions of Section 19 of the State Standard Specifications.

19-1.02 Protection of Vegetation. When it is necessary to excavate adjacent to existing trees, shrubs or hedges, the Contractor shall use all possible case to avoid injury to the trees, shrubs or hedges and their roots. Roots or limbs two (2) inches or larger in diameter shall not be cut without the express approval of the Engineer. All roots two (2) inches in diameter and larger left in place shall be wrapped with burlap to prevent scarring and excessive drying. When it is necessary to cut limbs and branches of trees to provide clearance for equipment used in construction, the Contractor shall make pruning cuts just beyond the branch bark ridge. All cuts through ½-inch or larger roots and limbs shall be hand-trimmed and cleanly cut before being repaired.

19-1.03 Sub Grade Preparation. Sub grade shall be smooth and uniform, and true to the required grade cross-section, and shall be within the tolerance specified in these Specifications or as shown on the plans. The Contractor shall repair at his expense any damage to a prepared sub grade caused by his operations or by use of public traffic. No material shall be placed upon the prepared sub grade until the sub grade is in the condition meeting the requirements specified.

Sub grade that does not conform to the above requirements shall be reshaped to conform to the specified tolerances and recompacted, all at the Contractor's expense.

19-1.04 Grade Tolerance. Immediately prior to placing subsequent layers of material thereon, the grading plane shall conform to one of the following.

A. When aggregate sub base or aggregate base are to be placed on the grading plane, the grading plane shall not vary more than 0.05' above or 0.1' below the grade established by the Engineer.

B. When asphalt concrete base is to be placed on the grading plane, the grading plane shall not vary more than 0.05' above or below the grade established by the Engineer.

19-1.05 Unsuitable Material. The following shall apply in lieu of Section 19-02 of the State Standard Specifications: Material below the natural ground surface in embankment areas and basement material below the grading plane in excavation areas that is determined by the Engineer to be unsuitable for the planned use shall be excavated and disposed of or stabilized as directed or approved by the Engineer.

When unsuitable material is removed and disposed of, the resulting space shall be filled with material suitable for the planned use. Such suitable material shall be placed and compacted in layers as hereinafter specified for constructing embankments.

Stabilization of unsuitable material shall comply with the following provisions:

A. Unsuitable material may be processed in place, may be excavated and placed on the grade or other locations suitable for further processing, or may be partially excavated and partially processed in place.

B. Processing may consist of drying to provide a stable replacement material or mixing with hydrated lime or granular quicklime.

C. Stabilized material shall be placed and compacted in layers as hereinafter specified for constructing embankments.

19-1.06 Trench Excavation. The Contractor shall perform all excavations of every description and all substances encountered to the depth indicated on the drawings. During excavation, that material suitable for backfilling shall be deposited in an orderly manner a sufficient distance from the banks for the trench to avoid overloading and to prevent slides or cave-ins. All excavated material not required or suitable for backfill shall be removed and disposed of outside the streets right-of-way. The Contractor shall first obtain a written permit from the property owner on whose property the disposal is to be made and he shall file with the City Engineer said permit, together with a written release from the property owner absolving the City from any and all responsibility in connection with the disposal of material on said property. Material shall not be disposed of within any floodway in the City of Fort Bragg or County of Sonoma, or within the normal channel of any river, creek, stream, ditch, canal, swale or other watercourse and within portions of same as required to efficiently carry the flood flow as determined by the Engineer.

Trenches shall be the necessary width for proper laying of the pipe, and the banks shall be as nearly vertical as practicable. The bottoms of the trenches shall be accurately graded to provide uniform bearing and support for each section of pipe on the prepared pipe bedding at every point along its entire length. Trenches shall be excavated to the depth indicated on the drawings and care shall be taken not to excavate beyond the depth indicated or required.

The Contractor shall at all times furnish, install and maintain sufficient bracing and shoring in trenches to ensure the safety of workmen and to protect and facilitate the work. All such bracing and shoring shall be removed from the trench as backfilling proceeds.

The Contractor shall furnish, install and operate such pumps or other devices as may be necessary for removing water from the trenches during construction.

19-1.07 Structure Backfill. Specifications for pipe bedding, trench backfill and surfacing shall be as shown on Std. 300, "Standard Trench Detail," of the City of Fort Bragg Standard Plans.
Except for structure backfill placed at specific locations described and enumerated in Sec. 19-3.06 of the State Standard Specifications, structure backfill material specifications and

compaction requirements shall be as follows:

Structure backfill shall have a Sand Equivalent of not less than 30 and shall conform to the following grading:

Sieve Sizes	Percentage Passing
3"	100
No. 4	40-100

Structure backfill shall be compacted to not less than 90 percent relative compaction, except that when placed under any roadbed, relative compaction shall not be less than 95 percent within three feet of finished grade, as determined by California Tests 216 and 231.

19-1.08 Relative Compaction. 95 percent--California tests 216 and 231. The following shall apply in lieu of Sec. 19-5.03 of the State Standard Specifications.

Relative compaction of not less than 95 percent shall be obtained for a minimum depth of 0.5-foot below the grading plane for the full width of the planned structural section, whether in excavation or embankment.

Any area of the sub grade determined by the Engineer to be unstable, as evidenced by excessive deflection under the movement of equipment, shall be brought to satisfactory stability by additional rolling, reworking, removal and replacement of unsuitable material, or stabilization with lime, as directed by the Engineer.

Lime-treated materials shall be compacted to not less than 95 percent relative compaction in accordance with the provisions of Section 24, except when lime is used to stabilize unsuitable material as specified in Sec. 19-2.02 of the State Standard Specifications.

Relative compaction of not less than 95 percent shall be obtained for embankment under bridge and retaining wall footings without pile foundations within the limits established by incline planes sloping 1.5:1 out and down from lines one foot outside the bottom edges of the footing.

19-1.09 Relative Compaction. 90 percent--California Tests 216 and 231. The following shall apply in lieu of Sec. 19-5.04 of the State Standard Specifications.

Relative compaction of not less than 90 percent shall be obtained in all materials in embankment except as specified herein to be 95 percent. Material placed in accordance with the provisions of Sec. 19 2.02, "Unsuitable Materials," of the State Standard Specifications shall be compacted to not less than 90 percent relative compaction.

19-1.10 Excess Material. Excess trench material shall be removed promptly and disposed of

elsewhere by the Contractor at his own expense. The Contractor shall not dump material on any private property without the permission of the owner thereof.

19-1.11 Samples for Approval. Representative samples of all material to be imported shall be sufficiently in advance of installation operations for testing and approval of the Engineer. All costs associated with testing shall be paid by the Contractor. Imported material shall not be installed until it has been so approved.

Tests will be made in accordance with the following standards:

1. Grading--ASTM C114 and C136
2. Plasticity Index--ASTM D424
3. Sand Equivalent Value--Test Method No. Calif. 217 (CALTRANS)**CTION**

24. LIME TREATMENT

24-1.01 Description. The following shall apply in lieu of Sec. 24-1.01 of the State Standard Specifications. This work consists of stabilizing basement soil, mixing in place material, lime and water, and spreading and compacting the mixture to the lines, grades and dimensions shown on the plans and as specified in these Specifications and the Special Provisions.

Where designated by the Engineer, basement soil below the planned lime-treated sub grade shall be stabilized in the following manner:

The material shall be excavated to the lines and grades specified by the Engineer and spread in a uniform layer over another portion of the grade.

Dry lime in the amount specified by the Engineer shall be spread and mixed into the material as provided in Sec. 24-1.04, "Mixing" of the State Standards. The material shall then be used to backfill the original excavation in 6" compacted layers. Each layer below a plane 12" below the grading plane shall be compacted to not less than 90 percent relative compaction. Each successive 6" layer up to the bottom of the planned lime-treated sub grade shall be compacted to not less than 92 percent relative compaction.

24-1.02 Materials. When permitted by the Engineer in writing, and when accompanied by an adequate safety program to be proposed by the Contractor, granular quicklime conforming to the specifications of ATSM Designation C51 may be used in lieu of commercial hydrated lime. Hydrated lime shall be used only when permitted by the Engineer in writing.

When sampled by the Engineer at the point of delivery, the sample of quicklime shall contain not less than 90 percent calcium oxide (CaO), as determined by ATSM: C25-67.

When granular quicklime is used, initial mixing shall continue until the quicklime is uniformly distributed throughout the material. Water shall be added as required to provide sufficient moisture for hydration. The mixture shall be cured for not less than 16 hours prior to final mixing.

The Contractor shall provide a grade checker to ensure mixing to the full depth as specified.

Water shall be added during the final mixing operations until the water content of the mixture is approximately two percent above the test optimum moisture content.

24-1.03 Spreading and Compacting. Lime-treated material shall be compacted to not less than 95 percent, as determined by Test Method No. California 216 and 231. The sample of lime-treated soil used for determining the maximum wet density shall be obtained from the test site at the time of testing.

24-1.04 Curing. The curing seal requirement may be waived at the discretion of the Engineer when it can be shown that placement of a subsequent layer of aggregate base or asphalt concrete can proceed within 24 hours after the completion of final rolling.

SECTION 25. AGGREGATE SUB BASES

25-1.01 Description. Aggregate Sub base shall be Class 4.

25-1.02 Materials. Aggregate Sub base--Class 4 shall have a minimum sand equivalent of 21, a minimum R value of 50 and shall conform to the following grading:

Sieve Size	Percent Passing
3"	100
1½"	90-100
3/4"	50-90
#4	25-55
#200	2-11

The material retained on the #4 screen shall consist of 100% crushed particles.

Representative samples of all material to be imported shall be supplied sufficiently in advance of installation operations for testing and approval of the Engineer. All costs associated with testing shall be paid by the Contractor. Tests for sieve analysis, R-value, sand equivalent and relative compaction shall be per Caltrans Standards.

25-1.03 Grade Tolerance. The sub grade to receive aggregate sub base, immediately prior to spreading, shall not vary more than 0.05-foot above or 0.1-foot below the grade established by the Engineer.

25-1.04 Compacting. The surface of finished aggregate sub base shall be firm and unyielding. Any visible movement vertically or horizontally of the aggregate sub base under the action of construction equipment or other maximum legal axle loads shall considered as evidence that the aggregate sub base does not meet this requirement.

SECTION 39. ASPHALT CONCRETE

39-1.01 Description. A minimum of two weeks prior to the placement of any asphalt concrete, the Contractor shall notify the Engineer of which asphalt plant will be used to supply the mix. For any job, asphalt concrete shall be supplied from a single plant.

39-1.02 Asphalts. Asphalt binder to be mixed with aggregate for asphalt concrete surface, leveling, or open graded courses shall be AR-4000 grade paving asphalt.

Asphalt binder to be mixed with aggregate for asphalt concrete base shall be AR-8000 grade paving asphalt.

39-1.03 Aggregate. The aggregate grading of the various types of asphalt concrete shall conform to one of the following as directed by the Engineer:

Surface Course ..... Type A--½" Maximum, Medium or Coarse, or ¾" Maximum, Coarse
Leveling Course .....Type A--¾" Maximum, Coarse
Asphalt Concrete Base ..... Type A or B--¾" Maximum, Medium
Open Graded .....3/8" Maximum

39-1.04 Grade Tolerance. The sub grade to receive asphalt concrete or asphalt concrete base immediately prior to applying prime coat shall not vary more than 0.05-foot above or below the grade established by the Engineer.

39-1.05 Tack Coat. Tack coat shall be diluted SS1 or CSS1, or undiluted RS-1 or CRS-1 type asphalt emulsion.

39-1.06 Haul Vehicles. Prior to loading asphalt concrete, the bed of the haul vehicle shall be clean and free from all soil, sand, gravel and other deleterious substances.

All haul vehicles shall be equipped with tarps that are in working order. Tarps shall be used on haul vehicles unless prior approval is obtained from the City Engineer.

When spraying diesel or other parting agents in the bed of the haul vehicle, the minimum amount necessary to moisten the surface shall be used. In no instance will the parting agent be allowed to accumulate in the bed of the vehicle.

39-1.07 Spreading Equipment. The asphalt concrete shall be deposited from the haul vehicle into the hopper of the paving machine.

The practice of depositing the material on the roadbed in a windrow and subsequently using a pick-up machine to deposit the material in the hopper of the asphalt paver will not be allowed.

39-1.08 Compacting Equipment. Compaction rollers shall be either two-axle steel-tired rollers, pneumatic-tired rollers or approved double-drum vibratory rollers. Steel-tired static compaction rollers shall weigh not less than 12 tons.

Double-drum vibratory rollers shall be operated at a maximum speed of 135-feet per minute (approximately 1.5 mph). Double-drum vibratory rollers shall have a minimum frequency of 2400 VPM and the amplitude shall be field-adjustable.

All pneumatic-tired rollers shall be equipped with an approved wind skirt unless otherwise permitted by the Engineer. Pneumatic-tired rollers used for compaction of asphalt concrete base shall be so equipped that the air pressure in all tires may be regulated uniformly by the operator while the roller is in motion.

Finish rollers shall be two-axle steel-tired tandem rollers weighing not less than eight tons.

39-1.09 General Requirements. Asphalt concrete shall not be placed on any roadbed until all utility construction beneath the roadbed has been completed, sewer and water lines have been tested and water lines chlorinated. The surface course of asphalt concrete shall not be placed until final utility connections have been made unless otherwise permitted by Engineer.

Asphalt concrete shall not be placed less than thirty (30) minutes before sunset, as established by weather bureau, except as otherwise authorized the Engineer.

Asphalt concrete or asphalt concrete base shall not be placed during rainy weather or on a wet surface. Asphalt concrete shall not be placed when the atmospheric temperature is below fifty (50) degrees Fahrenheit or conditions indicate it will drop below fifty (50) degrees Fahrenheit before the material can be satisfactorily compacted. Asphalt concrete base shall not be placed when the atmospheric temperature is below forth (40) degrees Fahrenheit or conditions indicate it will drop below forty (40) degrees Fahrenheit before the material can be satisfactorily compacted. Material that cannot be placed in compliance with these requirements shall be rejected.

The compacted thickness of asphalt concrete layers shall be as directed by the Engineer. The normal minimum and maximum compacted lift thickness for asphalt concrete surfacing are 0.17' and 0.25' respectively.

39-1.10 Compacting. The temperature of the asphalt concrete shall be specified by the Engineer. Unless lower temperatures are specified by the Engineer, all mixtures shall be spread and the first coverage of initial or breakdown compaction shall be performed when the temperature of the mixture is not less than 200°F at mid-depth. Additional rolling equipment shall be required or the rate of spread shall be reduced to permit compliance with this requirement.

A. Asphalt concrete surface course and leveling courses.

1. Equipment required

If production in any one hour exceeds the limits set forth below, the Contractor shall cease his paving operation until additional rolling equipment has arrived on the project.

a. 125 tons per hour or more.
The Contractor will be required to furnish a minimum of two approved double-drum vibratory rollers and one eight-ton tandem finish roller for each roller.

A pneumatic roller may be substituted for one of the vibratory rollers if approved by the Engineer.

b. 50-125 tons per hour.
The required minimum rolling equipment specified above may be reduced to one approved double-drum vibratory roller and one eight-ton tandem roller for each asphalt paver, with a separate operator for each roller when the compacted thickness is not less than 0.17'.

c. 50 tons per hour or less, at any location.
The required minimum rolling equipment specified above may be reduced to one approved double-drum vibratory roller, weighing not less than 12 tons, for each paving machine.

2. Compaction requirements.

Compaction rolling shall consist of a minimum of four complete vibratory coverages with an approved double-drum vibratory roller.

Finish rolling shall consist of one or more coverages with an eight-ton tandem roller immediately following completion of compaction rolling.

B. Asphalt Concrete Base.

1. Equipment required.

The Contractor shall be required to furnish one approved double-drum vibratory roller and a minimum of one pneumatic-tired roller, with a separate operator for each roller.

An approved double-drum vibratory roller may be substituted for the pneumatic-tired roller specified above.

2. Compaction requirements.

   Compaction rolling shall consist of the following: a minimum of two complete vibratory coverages with an approved double-drum vibratory roller and two complete coverages with a pneumatic-tired roller. The order of rolling shall be specified by the Engineer.

   Final rolling shall consist of one coverage with the vibrating units turned off.

Approval of vibratory rollers: The Engineer may approve initial use of a double-drum vibratory roller not previously approved on the basis of tests by other agencies or other information provided by the Contractor.

Approval for subsequent use of the roller shall be based on cores taken from test sections designated by the Engineer and compacted with different numbers of coverages.

Test sections shall be compacted under the following conditions:

1. Asphalt concrete temperature at mid-depth shall be between 270 and 280 degrees Fahrenheit at the beginning of rolling. Rolling shall not continue after the mix temperature has dropped to 200 degrees Fahrenheit. The compacted thickness shall be between 2" and 3.5".

2. The Contractor or manufacturer's representative shall specify the operating conditions of frequency and amplitude.

The basis for approval shall be the attainment of 97% relative compaction and satisfactory surface condition following final rolling. The number of coverages required shall be the minimum number required to obtain 97% relative compaction.

The mix will be sampled during paving of the test sections, and the test maximum density will be the average density of specimens compacted in accordance with California Test 304. The in-place density for each test section shall be the average of three core densities. Relative density will be the ratio of in-place density to test maximum density.

39-1.11 Pavement Reinforcing Fabric. Those areas to receive the reinforcing fabric will be marked in the field by the Engineer and shall consist of the following materials and shall be applied in accordance with those procedures outlined below:

The fabric and placement of fabric shall conform to the provisions of Section 88 of the State Standard Specifications and these Special Provisions.

Prior to placing the fabric, the existing pavement to receive the fabric shall be cleaned of all materials such as, but not limited to, leaves, sand, dirt, gravel, water and vegetation.

Placement of the fabric shall be made only under the following conditions:

1. The ambient air temperature is above 50 degrees Fahrenheit and rising.

2. The pavement is dry and the pavement temperature is above 40 degrees Fahrenheit and rising.

The surface area to receive the fabric shall be sprayed with steam-refined paving asphalt type AR-4000 at the rate of 0.22 - 0.28 gallons per square yard. The Contractor's attention is directed to Section 92-1.04, "Applying", of the State of California Standard Specifications. The exact rate of application will be determined by the Engineer. The asphalt shall be sprayed with a suitably metered truck and the truck must have been recently calibrated by test method California No. 399A. The temperature of the asphalt binder must be spread between 290 degrees F. and 365 degrees F.

The width of asphalt application will be the fabric width plus 4 inches. Paving asphalt shall be applied no farther in advance of the fabric than the distance the Contractor can maintain free of traffic. The paving operation shall closely follow fabric placement and no more fabric than can be covered up with the hot mix that working day shall be placed.

The fabric shall overlap 2-6 inches at all joints. No joints shall be lapped with more than two layers of fabric. Transverse joints shall be shingled in the direction of the paving to prevent edge pickup by the paver.

The fabric shall be placed on the asphaltic binder with a minimum of wrinkles and broomed or squeegeed to remove any bubbles prior to the binder cooling. The equipment for placing the fabric shall be mechanized and capable of handling full rolls of material and shall be capable of laying the fabric without forming excessive wrinkles and/or folds. As directed by the Engineer, if folds or wrinkles ½ inch in height or greater exist, the fabric shall be slit and allowed to lay flat. Brooming will maximize fabric contact with the pavement surface. The equipment used to place the fabric is subject to approval by the Engineer.

At all utility covers which could be covered with fabric, the fabric shall be neatly cut around the cover to allow for raising the cover to finished grade.

SECTION 51. STORM DRAIN STRUCTURES

51-1.01 Curb Inlets. Curb inlets to be installed shall be in conformance with the City of Fort Bragg Standard Plans and the details shown on the plans and as directed by the City Engineer.

51-1.02 Storm Drain Manholes. Storm drain manholes shall consist of a precast unit or a cast-in-place unit in conformance with Section 51 of the State Standard Specifications, or a combination thereof.

Manholes shall be fitted with either an eccentric cone or a flat "reducer" slab. Manholes shall be adjusted to match the finished grade with no less than two precast grade rings fitted with a cast iron frame and cover not less than 24" in diameter.

The inside diameter of the manhole shall be of such size that it accommodates the outside diameter of the largest adjoining pipe, however, in no case shall the inside diameter of any manhole be less than 48 inches. All pipe ends shall be rounded and all joints grouted. No pipe ends shall extend into the barrel of the manhole.

When the flowline of the manhole is over seven (7) feet below the top of the cover the inside of the manhole will be no less than 60 inches in any direction.

Turning of the paving machine or other vehicles should be gradual and shall be kept to a minimum to avoid damage to the membrane. Should equipment tires stick to the fabric during pavement operations, small quantities of asphaltic concrete shall be broadcast ahead to prevent sticking.

SECTION 63. CAST-IN-PLACE CONCRETE PIPE

63-1.01 Description. Cast-in-place concrete pipe shall conform to Section 63 of the State Standard Specifications

63-1.02 Materials. Consistency of the concrete shall be determined in accordance with ASTM C-143. Maximum slump shall be 2 inches.

63-1.03 Structures. Where shown on the plans, inlet and outlet structures shall be constructed or installed in connection with cast-in-place concrete pipe. Where such structures are constructed or installed, the ends of pipes shall be placed flush or cut off flush with the structure face, unless otherwise directed by the Engineer.

A starter section shall be used at the beginning of each run of cast-in-place concrete pipe, and a closing section shall be used where a run cannot be completed because of lack of clearance ahead in the trench. Starter sections shall be six feet in length and of the same inside diameter as the cast-in-place concrete pipe. Manhole bases may be formed by opening and troweling the cast-in-place concrete pipe on continuous runs.

Storm drain manholes shall be standard four or five foot diameter precast manholes as detailed in the Standard Plans. Storm drain manhole barrels and taper sections shall be precast concrete sections using Type II Portland Cement complying with ASTM C-150.

Catch basins shall be constructed as shown in the Standard Plans. Concrete for cast-in-place catch basins shall be Class B. Bar reinforcing steel shall conform to and be placed in accordance with the provisions of Section 52 of the State Standard Specifications.

Connections to existing storm drain structures shall be made with care to avoid unnecessary damage to any existing curb and gutter or sidewalk. Any damaged section of curb and gutter or sidewalk shall be removed and replaced in accordance with City Standards and as approved by the Engineer. Pipe connections to the existing structures shall be sealed with cement mortar.

63-1.04 Curing and Protection Concrete and Backfill. The following shall apply in lieu of Section 63-1.06 and Section 63-1.07 of the State Standard Specifications.

Backfill shall be placed in accordance with Standard 300, "Standard Trench Detail" of the City of Fort Bragg Standard Plans, except that the pipe bedding specifications shall not apply.

Curing and protecting concrete shall comply with the following requirements:

When Type E trench backfill is designated, the cast-in-place concrete pipe shall be cured by placing backfill material to an approximate depth of one foot over the top of the pipe.

When either Type A, B, C or D backfill is designated the concrete shall be cured by placing trench backfill complying with the specifications contained in Standard 300 to an approximate depth of 0.5-foot following application of either a waterproof membrane or a pigmented curing compound as provided in Section 90-7, "Curing Concrete" of the State Standard Specifications.

Hand spraying of the curing compound will be permitted. During the period following the placement of the concrete, the ends of the pipeline shall be covered with suitable material to maintain a humid condition within the pipe for a minimum of seven days.

Initial backfill placement shall be made immediately after the concrete has hardened sufficiently to prevent injury to the pipe during backfill operations. When Type E backfill is designated, only soft, damp and loose material shall be used for the initial placement of backfill.

The concrete pipe shall be protected as provided in Section 90-8, "Protecting Concrete" of the State Standard Specifications.

After the pipeline has been completed, but not prior to seven days following the placement of the concrete, the Contractor shall backfill the pipe trench in accordance with the requirements of Std. Dwg. 300.

In all cases, the Contractor shall be responsible for correcting any damage to cast-in-place concrete pipe caused by premature or excessive loading prior to the end of a seven day curing period.

SECTION 64. PLASTIC STORM DRAIN

64-1.01 Description. Plastic storm drain pipe (ADS N-12) shall conform to the provisions of Section 64, "Plastic Pipe" of the State Standard Specifications. Plastic pipe shall be Type S corrugated polyethylene pipe with a smooth inner lining and corrugated outer wall.

64-1.02 Placing. Excavation and backfill shall be as shown on Std. Dwg. 412, "HDPE Trench Detail" of the City of Fort Bragg Standard Plans.

No pipe shall be laid which is damaged or which, in the opinion of the Engineer, is unsuitable for use.

SECTION 65. REINFORCED CONCRETE PIPE

65-1.01 Description. Reinforced concrete pipe shall be either Class III, Class IV, or Class V, as shown on the plans and shall conform to the provisions of ASTM C-76.

65-1.02 Earthwork. Excavation and backfill shall be as shown on Std. Dwg. 300, "Standard Trench Detail" of the City of Fort Bragg Standard Plans.

65-1.03 Structures. Storm drain manholes shall be standard four or five foot diameter precast manholes as detailed in the Standard Plans. Storm drain manholes barrels and taper sections shall be precast concrete sections using Type II Portland Cement complying with ASTM C-150.

Catch basins shall be constructed as shown in the Standard Plans. Concrete for cast-in-place catch basins shall be Class B. Bar reinforcing steel shall conform to and be placed in accordance with the provisions of Section 52 of the State Standard Specifications.

Connections to existing storm drain structures shall be made with care to avoid unnecessary damage to any existing curb and gutter or sidewalk. Any damaged section to be removed and replaced in accordance with City Standards and as approved by the Engineer. Pipe connections to the existing structures shall be sealed with cement mortar.

65-1.04 Laying Culvert Pipe. No pipe shall be laid which is cracked, checked, spalled, or damaged and which in the opinion of the Engineer is unsuitable for use.

SECTION 66. CORRUGATED METAL PIPE

66-1.01 Description. Corrugated metal pipe shall conform to the provisions of Section 66-3, "Corrugated Steel Pipe" of the State Standard Specifications. Corrugated metal pipe shall not be used in the street right-of-way.

66-1.02 Placing. Excavation and backfill shall be as shown on Standard 300, "Standard Trench Detail" of the City of Fort Bragg Standard Plans.

No pipe shall be laid which is damaged or which, in the opinion of the Engineer is unsuitable for use.

SECTION 67. STORM SEWER ACCEPTANCE

67-1.01 Video Inspection. The Contractor shall hire an independent television inspection service to perform a closed-circuit television inspection of all newly constructed sewers. A video tape of the television inspection shall be produced and delivered to the City in color VHS format, together with a typed log of their inspection.

The following Conditions shall exist prior to the television inspection:

a. All storm sewer lines shall be in stalled, backfilled and compacted;
b. All structures shall be in place, all channeling complete and all pipelines accessible from structures;
c. All other underground facilities, utility piping and conduit within two feet of the storm sewer main, shall be installed;
d. All compaction required shall be completed;
e. Immediately before the television inspection, run fresh water into the storm sewer until it passes through the downstream manhole.
f. No more than 1" deep water will be present at all times during video inspection.

When the above work has been completed, the Contractor shall notify the City 48 hours in advance of the date for television inspection. During this inspection, the Contractor or his authorized representative shall be present to observe the video pictures as provided by the television camera. Cameras shall be pointed upstream and all video inspections shall run upstream.

The following video tape observations shall be considered defects in the construction of the storm sewer pipelines and will require corrections prior to acceptance:

a. Off grade – 0.08 foot, or over, deviation from grade.
b. Joint separations – over ¾";
c. Offset joints;
d. Chips in pipe ends – none more than ¼" deep;
e. Cracked or damaged pipe or evidence of the presence of an external object bearing upon the pipe (rocks, root, etc.);
f. Infiltration;
g. Debris or other foreign objects;
h. Other obvious deficiencies when compared to Approved Plans and Specifications, these Standards and Standard Drawings.

The Contractor shall be notified in writing of any deficiencies revealed by the television inspection that will require repair, following which the Contractor shall excavate and make the necessary repairs and request a television re-inspection. Television re-inspection shall be at the Contractor's expense.

SECTION 71. SEWERS

71-1.01 Materials. Sewer pipe shall be polyvinyl chloride pipe or ductile iron pipe.

71-1.01A Polyvinyl Chloride (PVC) Pipe. PVC solid wall sewer pipe and fittings for gravity sewers shall be made for all new, rigid, unplasticized polyvinyl chloride in accordance with ASTM Standard Specifications D3034 and F-679 and shall have a wall thickness of at least SDR 35. Joints shall consist of an integral thickened bell-and-rubber ring and shall conform to ASTM D3212. Gaskets shall conform to ASTM E477. Joints shall be assembled using only manufacturers recommended lubricant.

All pipe shall have a home mark to indicate full penetration of the spigot when the joint is made.

All PVC pipe entering or leaving a concrete structure shall have a standard manhole gasket, as supplied by the pipe manufacturer, firmly clamped around the pipe exterior and cast into the structure base or near the structure wall center as a water stop.

After pipe installation and placement and compaction of backfill, but prior to placement of pavement, all pipe shall be cleaned and then mandreled to measure for obstructions. Obstructions shall included, but not be limited to deflections, joint offsets and lateral pipe intrusions. A rigid mandrel, with an effective circular cross section having a diameter of at least 95% of the specified base inside diameter shall be pulled through the pipe by hand. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe. All obstructions encountered by the mandrel shall be corrected by the Contractor.

Obstructions due to deflection shall be corrected by replacement of the over-deflected pipe, not by re-rounding in place.

If a section of pipe fails to meet the mandrel test and is reinstalled and fails the second time, said section(s) of pipe shall be replaced with an approved rigid pipe material.

The manufacturer shall furnish to the City a 5% deflection mandrel and proving ring as shown on the District Standards for the City's retention and use.

The average inside diameter for PVC Solid Wall Sewer Pipe shall be the "Average Outside Diameter" (see ASTM D3034 and F679) minus 2.12 times the "Minimum Wall Thickness" (see ASTM D3034 and F619).

The Contractor shall retest the solid wall pipe using a mandrel with an effective circular cross section having a diameter of at least 95% of the specified average inside diameter eleven (11) months after recordation of Notice of Completion of a City contract or after the acceptance by the City Council of a subdivision. Any pipe which fails to pass the mandrel test shall be replaced at the expense of the Contractor. The City reserves the right to determine the

longitudinal limits of any pipe that is required to be replaced. Pipe replacement shall be guaranteed by the project maintenance bond.

Lateral wyes added after pipe installation shall be solvent welded saddles, not mechanically connected wyes.

71-1.01 Ductile Iron Pipe (DIP). Ductile iron pipe shall be cement lined, new pipe conforming to ANSI. A 21.51-1976 or most recent issue, if any, as sponsored by the American Water Works Association for thickness class 50 Ductile Iron Pipe. The pipe shall be furnished with either bell and spigot ends, "Tyton Joints", or mechanical joints except where specifically specified on the plans.

All ductile iron pipe buried underground shall be encased in polyethylene film in the tube form. Polyethylene material and installation procedure for the encasement shall conform to ANSI/AWWA C105/A21.5-82 or most recent issue, if any. Installation Method "A" as described in aforementioned specification shall apply.

Couplings for connection to the sewer main shall be of a type approved by the City.

71-1.02 Excavation and Backfill. Excavation and backfill shall be as shown on Std. Dwg. 300, "Standard Trench Detail" of the City of Fort Bragg Standard Drawing.

All stumps and large roots encountered during trenching operations shall be removed to the satisfaction of the City. The trench shall be opened sufficiently ahead of the pipe laying operations to reveal obstructions. Trench crossings shall be provided as necessary to accommodate public travel and to provide convenient access to adjacent properties. Flow shall be maintained in any sanitary sewers, storm drains, water lines, or water courses encountered in trenching.

All cutting, handling and disposal of asbestos cement pipe shall be done in accordance with the Contractor's State Licensing Law and all applicable laws and regulations.

71-1.03 Existing Manholes. Existing manholes and cleanouts located within the street right of way shall be adjusted to conform to finished pavement grades in accordance with the details shown on the plans.

Prior to the removal of an existing manhole frame, a platform shall be constructed in the manhole above the top of the sewer to prevent any dirt or debris from falling into the sewer. The platform shall remain in place until all work on the manhole has been completed and the asphalt concrete has been placed around the manhole. Prior to the removal of the platform from the manhole, all dirt and debris shall be removed.

Lowering of the manhole ring and cover shall be accomplished by the removal of existing concrete grade rings below the manhole ring or by removing the upper section of manhole barrel and substituting therefore a shorter section of barrel.

At the Contractor's option, in lieu of removing and replacing barrel sections as above provided, the top of the existing upper barrel section may be trimmed and the taper section replaced on such trimmed surface provided, however, that such trimming shall not crack or otherwise damage the remaining portion of barrel section.

In the event that the portion of barrel section to remain is cracked or damaged or otherwise made unsuitable for use by such trimming, the entire section shall be removed and replaced with a new section of barrel. Trimming of taper sections will not be permitted.

All sections of the manhole shall be set in cement mortar or in approved gasket material. Trim excess gasket material and plaster inside joints smoothly. Manhole sections set in cement mortar shall be smoothly plastered inside and out.

After placing the surface course of asphalt concrete, all manholes and cleanouts shall be located and marked with white paint before the close of that work day.

Within two working days of paving, all manholes and cleanouts shall be adjusted to grade and inspected.

71-1.04 Pipe Laying. Where ground water occurs, pumping shall continue until backfilling has progressed to a sufficient height to prevent flotation of the pipe. Water shall be disposed of in such a manner as to cause no property damage or not be a hazard to public health or the environment.

Where projects consist of construction or new mains or extensions of existing mains, contractors must make provisions to keep flow from entering the sewer collection system. This shall include the installation of a positive sealing plug on the outlet of the new mains closest manhole to the existing main. Additionally, if any new laterals enter the new main between the existing main and the closest manhole on the new main, each lateral shall be individually plugged with a positive sealing plug. The Contractor shall be held responsible to periodically check that all plugs are holding tight. The Contractor shall ensure that the water contained in the new main is not contaminated with human or hazardous waste, prior to removal of any plugs. The Contractor shall make provisions to dewater the new mains without disposal into the sewer collection system and without cause of property damage or hazard to the public health or environment. Failure to comply may result in penalties.

Where construction consists of constructing a new main or extension of an existing main, the downstream end of the new main shall be securely closed with a tight fitting plug until the construction is accepted by the City.

If the new sewer main is connecting to an existing main at a location other than an existing manhole, the Contractor shall pothole the existing sewer main to verify invert grades and locations.

Sewer pipe shall be installed on the alignment and grade as shown on the plans and in accordance with the Standard Specifications, or as directed by the Engineer. Existing sewer laterals shall be removed and replaced at the locations shown on the plans, or as directed by the Engineer.

Sewer pipe shall be laid in straight lines and on uniform rates of grade between points where changes in alignment or grade are shown on the plans. The interior of the pipe shall be free of foreign matter before lowering into the trench.

The pipe manufacturer's written instructions covering the installation of his pipe shall be closely followed unless otherwise directed by the Engineer or these Special Provisions. The trench shall not be backfilled until authorized by the Engineer. Pipe laying shall proceed upgrade with the spigots pointing in direction of flow.

Electro-optical grade setting devices must be used and shall be operated by a person proficient in its operation.

Any section of pipe found to be defective or which has had grade or joints disturbed shall be re-laid by the Contractor at his expense.

Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and efficient execution of the work. All pipe, fittings and accessories shall be carefully lowered into the trench by means of derrick, ropes, or other suitable equipment in such a manner as to prevent damage to pipe and fittings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench. The pipe and accessories shall be inspected for visible defects prior to lowering into trench. Any visibly defective or unsound pipe shall be replaced.

The line and grade of existing utilities shall not be altered. Any leakage caused in existing utilities by reason of the Contractor's operations shall be immediately repaired at the Contractor's expense.

Existing storm drains shall be supported or removed and replaced at the Contractor's option. In any case, the Contractor shall be responsible for maintaining the existing line and grade of the storm drains.

Existing water lines shall be supported in place with service maintained during construction. The Contractor shall be responsible for any damage resulting from improper backfilling.

Existing Sewer lines shall be supported in place with service maintained during construction. The Contractor may, at his option, remove and replace any sewer laterals which are not in use during construction. The Contractor shall be responsible for damage to sewer lines during construction and any damage resulting from improper backfilling.

71-1.05 Sewer Laterals and Services. Sewer lateral inverts shall be set above the mid point of the sewer main.

71-1.05A Grades and Alignment. Service sewers shall be run in practical alignment at a uniform slope of not less than 1/4 inch per foot toward the main sewer; provided that where it is impractical due to the depth of the main sewer or to the structural features or the arrangement of any building or structure, to obtain a slope of 1/4 inch per foot, any such piping may have a slope of not less than 1/8 inch per foot when approved by an Engineer.

71-1.05B Pipe Cover and Clearance. Lateral sewers - shall be installed at sufficient depth to serve the parcel involved, but in no case less than three (3) feet clear cover at the property line.

Building sewers - shall have a clear cover of eighteen (18) inches minimum from finished grade. Where clear cover is less than eighteen (18) inches, cast iron pipe shall be used. Where building sewers are located in or cross driveways, ductile iron pipe shall be used.

71-1.06 Sewer Structures. Manholes shall be standard precast concrete manholes as detailed on Std. Dwg. 301. Mains larger than 18" in diameter or deeper than eight feet require 60" diameter manholes.

Manhole bases may be poured-in-place concrete on undisturbed earth. The bases shall be poured full thickness against the side of the manhole excavation or to dimensions shown on the plans. The manhole excavation site shall be dewatered before pouring.

Precast manhole bases, conforming to City Standard in dimensions and the requirements outlined below for materials may be used. Such pre-cast bases shall be placed on a minimum 12-inch thick cushion of drain rock, as specified in Std. Dwg. 301. The drain rock shall extend a minimum of 6 inches beyond the outside edges of the base.

Concrete for manhole bases shall be Class A Portland cement concrete conforming to the applicable requirements. The Portland cement shall be Type V conforming to ASTM Designation: C 150 or low-alkali-Type II cement meeting the requirements for Type V cement.

Where steel reinforcement is required in manhole base construction, such reinforcement shall be furnished and placed as shown on the plans and in accordance with the applicable provisions.

The base slab and initial riser section shall be connected with integrally poured concrete to create a watertight joint. Flow channels shall be constructed as shown on the plans. Changes in size or grade shall be made gradually and changes in direction by smooth curves. All finished surfaces shall be smoothly troweled with a steel trowel. All manhole barrels and taper section shall be precast concrete sections using Type V Portland cement complying with ASTM Designation : C 150 or low-alkali Type II cement meeting the requirements for Type V

cement.

The 48-inch and 60-inch diameter barrels and taper sections shall be constructed in accordance with the applicable provisions of ASTM Designation: C 478 and shall be inspected by the City to determine that the interior surfaces are smooth and free of pockets or depressions. The inside face of all barrels, tapers and rings shall be aligned with and flush to adjacent sections.

Manhole frames and covers shall be in accordance with the City Std. Dwg. 303.

At locations where sewer is to be installed into or out of existing manholes, the manhole wall and base shall be chipped to accept the new size of pipe and to form a flow channel in the manhole base. The Contractor shall dry pack around the pipe between the pipe and the chipped out opening. The Contractor shall also backfill the area around the pipe with concrete to insure a watertight connection.

Mainline cleanouts shall be installed per Std. Dwg. 307 at the locations shown on the Plans.

All joints in manholes shall be sealed by means of a preformed, self-bonding, self-sealing plastic gasket, such as "Ram-Nek", manufactured by the K.T. Snyder Company, Houston, Texas, or approved equal. Joint seals shall be installed in full compliance with the manufacturer's current recommendations. All manholes shall be water tight prior to grouting.

After placing the surface course of asphalt concrete, all manholes and cleanouts shall be located and marked with white paint before the close of that work day.

Within 48 hours of paving, all manholes and cleanouts shall be adjusted to grade and inspected.

71-1.07 Testing of Sewers. Testing of all portions of the sewer including manholes will be required.

For either exfiltration or infiltration test, the maximum leakage shall not exceed 50 gallons per inch of pipe diameter per mile per 24 hours as measured over a period of 30 minutes minimum. Should the leakage exceed the maximum allowable rate, the Contractor shall repair, overhaul, or rebuild the defective portion of the sewer line to the satisfaction of the City at no additional cost to the City. After repairs have been completed by the Contractor, the line shall be retested as specified above, all at no cost to the City.

The test shall be performed after the line has been laid and all backfill placed and compacted as specified elsewhere in these specifications. The Contractor, at his option, may test the line at any time during construction. However, the final test for acceptance shall be made only after all backfill is in place and compacted.

In the event that the exfiltration test prescribed above is impractical due to wet trench conditions, these portions of the sewer line where such conditions are encountered will be tested for infiltration. The Engineer shall determine whether the exfiltration or infiltration test

will be used. Even though the test for leakage is within the prescribed limits, the Contractor shall repair any obvious leaks.

Low pressure air testing may be used in lieu of water testing at the option of the Contractor. Water testing may be required by the City. The following procedure shall be used for air testing.

1. Clean pipe to be tested by propelling a snug fitting inflated rubber ball through the pipe with water. Remove any debris.

2. Plug all pipe outlets with suitable test plugs. Brace each plug securely.

3. If the pipe to be tested is submerged in ground water, Inspector may require that gauge pressures be increased to compensate for groundwater hydrostatic pressure.

4. Add air slowly to the portion of the pipe installation under test until the internal pressure is raised to 4.0 psig.

5. Check exposed pipe and plugs for abnormal leakage by coating with a soap solution. If any leakage is observed, bleed off air and make necessary repairs.

6. After an internal pressure of 4.0 psig is obtained, allow at least two minutes for air temperature to stabilize, adding only the amount of air required to maintain pressure.

7. After the two minute period, disconnect the air supply.

8. When pressure decreases to 3.5 psig, start stop watch. Determine the time in seconds that is required for the internal air pressure to reach 2.5 psig. The minimum allowable time in seconds shall be based on the diameters and lengths of pipe under test. The Contractor will be allowed to manually bleed air as required to drop the internal pressure to 3.5 psig to start test.

Air test data sheets and nomograph with directions for computing the specification time are available at the office of the City Engineer.
The Contractor shall hire an independent television inspection service to perform a closed-circuit television inspection of all newly constructed sewers. A video tape of the television inspection shall be produced and delivered to the City in color VHS format, together with a typed log of their inspection.

The following conditions shall exist prior to the television inspection:

a. All sewer lines shall be in installed, backfilled and compacted;
b. All structures shall be in place, all channeling complete and all pipelines

accessible from structures; c. all other underground facilities, utility piping and conduit within two feet of the sewer main, shall be installed;

d. All compaction required shall be completed;
e. Pipelines to be inspected shall be balled, flushed and mandrel tested;
f. The final air or water test shall have been completed.
g. Immediately before the television inspection, run fresh water into the sewer until it passes through the downstream manhole.
h. No more than 1" deep water will be present at all times during video inspection.

When the above work has been completed, the Contractor shall notify the City 48 hours in advance of the date for television inspection. During this inspection, the Contractor of his authorized representative shall be present to observe the video pictures as provided by the television camera. Cameras shall be pointed upstream and all video inspections shall run upstream.

The following video tape observations shall be considered defects in the construction of the sewer pipelines and will require corrections prior to acceptance:

a. Off grade - 0.08 foot, or over, deviation from grade
b. Joint separations - over 3/4";
c. Offset joints;
d. Chips in pipe ends - none more than 1/4" deep;
e. Cracked or damaged pipe or evidence of the presence of an external object bearing upon the pipe (rocks, root, etc.);
f. Infiltration;
f. Debris or other foreign objects;
h. Other obvious deficiencies when compared to Approved Plans and Specifications, these Standards and Standard Drawings.

The Contractor shall be notified in writing of any deficiencies revealed by the television inspection that will require repair, following which the Contractor shall excavate and make the necessary repairs and request a television re-inspection. Television re-inspection shall be at the Contractor's expense.

71-1.08 Trench Resurfacing. Trench resurfacing shall be as shown on STD DWG 115, "Standard Trench Detail".

SECTION 73. CONCRETE CURB, GUTTER AND SIDEWALK

73-1.01 Description. Concrete curb, gutter and sidewalks shall conform to Section 73 of the State Standard Specifications. The following shall apply in lieu of Section 73-1.01.

This work shall consist of constructing curbs, sidewalks, gutter, depressions, island paving, and driveways of the form and dimensions shown on the plans, and as specified in these specifications and the Special Provisions. The concrete shall attain a minimum compressive strength of 3000 psi at 28 days, and shall contain not less than six sacks of cement per cubic yard. Maximum slump of the concrete shall be 4 inches, as determined in accordance with ASTM C-143.

All miscellaneous concrete shall meet the above criteria unless directed otherwise by the City Engineer.

A pedestrian ramp shall be constructed in all curb returns in accordance with Std. Dwg. 208, "Pedestrian Ramp Type A, B or C", of the City of Fort Bragg Standard Plans.

Reinforcement shall conform to the provisions in Section 52, "Reinforcement" of the State Standard Specifications.

73-1.02 Sub Grade Preparation. The sub grade shall be constructed true to grade and cross section, as shown in the plans or directed by the Engineer. It shall be watered and thoroughly compacted, and unsuitable material removed and replaced, to provide a stable grade with above optimum moisture content for a minimum depth of 0.5-foot.

Base material under curb and gutter and sidewalk shall comply with the provisions of Section 26, "Aggregate Bases" of these Standard Specifications and shall be a minimum of 4 inches in compacted thickness.

Sidewalks constructed across driveways, and driveway ramps constructed between curb and edge of sidewalk, shall be six inches thick.

The completed sub grade shall be tested for grade and cross section by means of a template supported on the side forms, and shall not project into the planned concrete cross section at any point. The sub grade and forms shall be wet immediately in advance of placing concrete.

73-1.03 Curb Construction. Attention is directed to Std. Dwg. 205, "Curb, Gutter and Sidewalk", of the Standard Plans.

Weakened plane joints shall be constructed at 15-foot intervals, except that when Portland Cement concrete pavement is adjacent thereto, the joints shall coincide with the weakened plane joints in the adjacent pavement. The joints shall be constructed to a minimum depth of 1½ inches by scoring with a tool which will leave the corners rounded with a ¼ inch radius

and insure a free movement of the concrete at the joint.

Expansion joint filler strips shall have the top edge placed and securely held ¼ inch below the surface. Expansion joints shall be edged with an edging tool having a radius of ¼ inch.

The finished surface of the top of the curb shall not vary more than 0.01 foot above or below the staked grade.

73-1.04 Sidewalk, Gutter Depression, Island Paving and Driveway Construction. The surface of sidewalks shall be marked into rectangles per Standard 205, "Curb, Gutter and Sidewalk".

Weakened plane joints shall be constructed to a minimum depth of one inch with a tool which will leave the corners rounded with a ¼ inch radius and insure a free movement of concrete at the joint.

Expansion joint filler strips shall have the top edge placed and securely held ¼ inch below the surface. Expansion joints shall be edged with an edging tool having a radius of ¼ inch. Scoring lines shall be made with jointer tools having a radius of ¼ inch.

SECTION 81. MONUMENTS

81-1.01 General. The following shall apply in lieu of Section 81 of the State Standard Specifications.

This work shall consist of furnishing and installing cast-in-place survey monuments at the locations shown on the plans and in accordance with Std. Dwg. 219, "Standard Permanent Monument" of the City of Fort Bragg Standard Plans.

The exact location of the monuments will be established by the City Engineer for City contracts and by the sub divider's Engineer for subdivisions, and upon completion, the monuments will be checked and the center point stamped by the City Engineer of the sub divider's Engineer/Surveyor.

Standard City brass markers shall be furnished by the Contractor. They shall be placed in survey monuments before the concrete block has acquired its initial set and shall be firmly bedded in the concrete. The concrete block shall be so located that when the marker is installed, the reference point will fall within a one-inch circle in the center of the marker.

SECTION 99. WATER MAIN CONSTRUCTION

99-1.01 Description. All water mains and related appurtenances shall be constructed in accordance with the City of Fort Bragg Water System Design Standards.

99-1.02 Pipe. The pipe, except where otherwise specified on the plans, can either be Ductile Iron or Polyvinyl Chloride (PVC), all in accordance with the following:

A. Ductile Iron Pipe shall be cement lined, new pipe conforming to ANSI A 21.51 1976 or most recent issue, if any, as sponsored by the American Water Works Association for thickness Class 50 Ductile Iron Pipe. The pipe shall be furnished with either Bell and spigot end, "Tyton Joints" or Mechanical Joints except where otherwise specified on the plans.

All Ductile Iron Pipe buried underground shall be encased in Polyethylene film in tube form. Polyethylene material and installation procedure for the encasement shall conform to A.N.S.I. A21.5 1972 or most recent issue, if any. Installation Method "A" as described in aforementioned specification shall apply.

B. Polyvinyl Chloride (PVC) Pipe 4-inch through 12-inch shall be minimum class 150, or as shown on the plans and conforming to the requirements of AWWA C900 "Standard for Polyvinyl Chloride Pressure Pipe, 4-inch through 12-inch for Water" and shall be furnished with either bell ends or couplings designed to effect an elastomeric pressure seal. PVC pipe greater than 12-inch shall be Class 235 (DR18) unplasticized polyvinyl conforming to AWWA C905 and ASTM D2241.

Each and every length of pipe and coupling shall be marked with the manufacturer's name, lot number and the date the pipe was tested. The pipe shall be tested in accordance with the most recent American Water Works Standard Specifications and amendments thereto for the pipe furnished. The testing shall be performed in a State licensed materials testing laboratory where the testing standards meet or exceed State of California testing standards.

Accompanying or preceding each load of pipe delivered, a certificate shall be furnished to the City certifying that the pipe which is (to be) delivered has been tested and meets the requirements of the American Water Works Association Standard Specifications. The certificate shall identify the pipe by manufacturer's name, lot number and date tested by a State certified materials testing laboratory.

A number 10 insulated copper wire shall be laid on top of and along the entire length of all non-metallic service laterals and mains and shall be extended to the surface at all valve, blow-off and meter box locations sufficiently for locator equipment to be attached.

99-1.03 Service Tubing. All water service tubing shall be copper conforming to the latest AWWA standards as described in ANSI/AWWA C800 or the latest revision and with ASTM B88. One inch (1") tubing shall be Type "K" soft temper and 1½" and 2" tubing shall be Type "K" hard temper tubing.

Polyethylene tubing may only be used if specifically authorized by the City Engineer in writing. Polyethylene tubing shall be SDR 9 conforming to ASTM D-2737 with a water pressure rating of 200 psi.

99-1.04 Fittings. All fittings shall be new gray iron or ductile iron fittings conforming to ANSI/AWWA C110/C153 or latest revision and shall have the proper type of ends to match the type of pipe used. Gray iron fittings shall be coated inside and outside with a petroleum asphaltic coating conforming to AWWA C110 and shall meet or exceed the pressure rating of the pipe to be installed.

Ductile iron fittings shall be cement mortar lined in accordance with AWWA C104 or latest revision and shall have a petroleum asphaltic coating conforming to AWWA C110. Ductile iron fittings shall have a minimum pressure rating of 250 psi and shall otherwise meet or exceed the pressure rating of the pipe to be installed and shall have a minimum Class 53 thickness rating.

99-1.05 Gate Valves. Gate valves shall conform to AWWA Standard C509 or latest revision and shall be the resilient seat type with non-rising stem, opening counter-clockwise with O-ring stem seal and suitable ends for connections to type of pipe or fitting used. The working pressure rating of gate valves shall meet or exceed the pressure rating of the pipe specified on the plans. External bolts and nuts shall be 304 stainless or poly wrapped.

99-1.06 Butterfly Valves. Butterfly valves shall conform to AWWA Standard C504 or latest revision and shall be of the rubber seat type. Valve discs shall rotate 90 degrees for the full open position to the tight shut position. The valve seat shall provide a tight shutoff at a pressure differential of 150 psi upstream and 0 psi downstream in either direction. The valve operator shall be the traveling nut type. Valve shall open with a counter-clockwise rotation of the operating nut.

99-1.07 Valve Boxes. Each gate valve shall be covered by a precast 8" valve box set flush with street surface with cast iron ring and cover marked "WATER." The valve boxes are to be Christy G5, VG8, or approved equal.

99-1.08 Fire Hydrant and Lateral Assembly. At the location(s) shown on the plans, the Contractor shall provide and install a fire hydrant and lateral assembly per Std. Dwg. 502.

No bends will be allowed in fire hydrant laterals without approval of the City Engineer.

Fire hydrants shall conform to the list of approved fire hydrants shown on the Engineer's

Approved List.

Residential fire hydrants will have one 2 ½ inch outlet and one 4 ½ inch outlet.

Commercial fire hydrants will have two 2 ½ inch outlets and one 4 ½ inch outlet.

All hydrants shall be painted in accordance with the specifications shown on Std. Dwg. 502.

All hydrants shall be installed plumb.

Before a fire hydrant may be placed in service, a high velocity flushing of the hydrant lateral shall be witnessed and approved by City personnel.

99-1.09 Asbestos Cement Pipe. The installation of asbestos cement pipe is prohibited. All cutting, handling and disposal of asbestos cement pipe shall be done in compliance with the Contractor's State Licensing Law and all applicable laws and regulations.

99-1.10 Excavation and Backfill. Excavation and backfill of the water pipe shall be as shown on Std. Dwg. 300.

Excess Material from excavation shall become the property of the Contractor and shall be disposed of to the satisfaction of the City Engineer.

Prior to disposal of any materials or operation of any equipment on sites provided by the Contractor for disposal of excess trench excavation owned by him, the Contractor shall submit to the City Engineer written authorization for such disposal of materials and entry permission signed by the owners of the disposal site and the required permits.

99-1.11 Laying and Handling Pipe Materials. Proper implements, tools and facilities satisfactory to the City Engineer shall be provided and used by the Contractor for safe, convenient and workmanlike prosecution of the work. All pipe fittings and valves shall be carefully lowered into the trench in such a manner as to prevent damage to pipe coatings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench. Before lowering and while suspended, the pipe shall be inspected for defects and the cast iron pipe rung with a light hammer to detect cracks. Any defective, damaged or unsound pipe shall be rejected and sound material furnished. Cutting of pipe for inserting valves, fittings or closure pieces shall be done in a neat and workmanlike manner without damage to pipe. All pipe stockpiled on the job shall be stored with the ends covered to prevent the entrance of foreign matter.

Whenever it is necessary, either in the vertical or horizontal plane, to avoid obstructions, or when long radius curves are permitted, the amount of deflection shall not exceed the maximum recommended by the pipe manufacturer or that required for satisfactory jointing.

Each length of pipe shall be free of any visible evidence of contamination, dirt and foreign

material before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying. At times when pipe laying is not in progress, the open ends of any pipe which have been laid shall be closed by approved means to prevent the entrance of small animals or foreign material. Trench water shall not be permitted to enter the pipe.

99-1.12 Laying PVC Pipe. Individual pieces of pipe, valves and fittings shall be joined by placing the rubber rings on the machined ends of the pipe and pulling the couplings, valves or fittings in accordance with the manufacturer's recommendations. The rings shall be checked to be sure they are in the proper position after the coupling is in place. Care shall be taken to insure proper seating of the rings, and adapters shall be utilized for connections as required by the manufacturer.

Fittings for PVC pipe shall be either the mechanical joint type or the push-on type.

PVC pipe shall be as specified in and installed per AWWA C900 or latest revision and in accordance with the manufacturer's recommendations.

99-1.13 Laying of Ductile Iron Pipe (DIP). The flame cutting of pipe by means of oxyacetylene torch shall not be allowed.

Ductile iron pipe shall be as specified in and installed per AWWA C600 or latest revision and in accordance with the manufacturer's recommendations.

99-1.14 Thrust Backing. All tees, bends and plugs shall be provided with thrust backing and/or harness as shown on the plans or in accordance with Std. Dwg. 520.

99-1.15 Hydrostatic Test. The test shall be performed after the line has been laid and all backfill placed and compacted as specified elsewhere in these specifications. The Contractor, at his option, may test the line at any time during construction. However, the final test for acceptance shall be made only after all backfill is in place. Each valved section of pipe, or combined sections, as approved by the City Engineer, shall be subjected to a hydrostatic pressure of not less than 200 psi for 15 minutes, then 150 psi for 30 minutes for a total duration of 45 minutes. Valves on existing mains in services required to be operated in connection with this job shall be operated only by City personnel. Each section of pipe shall be slowly filled with water and the specified test pressure shall be applied by means of a pump connected to the pipe in a satisfactory manner. The pump, pipe connection, all necessary apparatus, gauges and measuring devices shall be furnished by the Contractor. The Contractor shall make the taps into the pipe and shall furnish all necessary assistance for conducting the tests. Before applying the test pressure, all air shall be expelled from the pipe. To accomplish this, taps shall be made, if necessary, at the points of the highest elevation, and afterward tightly plugged.
Suitable means shall be provided by the Contractor so that the City can determine the quantity of water leakage under the test pressure. No pipe installation will be accepted until all leakage is stopped. The Contractor shall, at his own expense, locate the cause and repair any leakage.

99-1.16 Chlorination of Pipeline. Chlorine may be applied by any of the standard methods indicated in AWWA C651, subject to the approval of the City. The point of application of the chlorination agent shall be at the beginning of the pipe extension, or any valved section of it, and through a corporation stop inserted in the newly laid pipe.

Water from the existing distribution system shall be controlled to flow very slowly in the newly laid pipe during the application of chlorine. Valves on existing mains in service shall be operated only by City personnel. The rate of chlorine feed shall be in such proportion to the rate of water entering the pipe that the chlorine dose applied to the water entering the newly laid pipe shall be at least 100 ppm. Precautions shall be taken to prevent back pressure causing a reversal of flow into treated pipe.

Treated water shall be retained in the pipe for a period of twenty-four hours. After the chlorine treated water has been retained for the required time, the chlorine residual at the pipe extremities and at representative points shall be at least five (5) parts per million. In the process of chlorinating, all valves and other appurtenances on the newly laid main shall be operated.

Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe line. The water throughout its length shall, upon test, be proven both chemically and bacteriologically equal to the water quality serving the public from the existing water supply system.

Should the initial treatment, in the opinion of the City prove ineffective, the chlorination procedure shall be repeated until confirmed tests show that the water sampled from the newly laid pipe conforms to the aforementioned requirements.

Care shall be taken, and if necessary provisions shall be made by the Contractor to insure no highly chlorinated water from treated pipelines enters any natural surface waters either directly or by way of any storm drainage systems.

There shall be a 24-hour waiting period after blowing off the main prior to taking bacteria samples. The initial bacteria test shall be of the 28-hour duration type, in accordance with the State Department of Health Services requirements. If the initial bacteria test fails, two consecutive passing bacteria tests must be obtained prior to making the tie-in. The first of these two subsequent tests shall be of the 24-hour duration type, and the second shall be of the 72-hour duration type. Bacteria tests are valid for only 30 days. If there is more than a 30-day lapse between a passing bacteria test and the applicable tie in, the bacteria test must be repeated prior to water main tie-in. Contractor shall be responsible for reimbursing the City for all costs associated with performing sample gathering and testing.

99-1.17 Water Main Tie Ins. Water main tie-ins are not permitted on Fridays or days preceding a holiday except as authorized by the City Engineer.

The Contractor shall notify the Engineer 24 hours prior to individual mainline shutdowns required to facilitate his tie-in operations. Tie-ins will not be scheduled until a written passing bacteria test has been received by the Engineer. All shutdowns and valve turning operations shall be performed by City personnel only. A City inspector must be present during all tie-in operations. No tie-ins shall be performed without prior authorization of the Engineer.

Pipe and fittings furnished for tie-ins shall be no smaller than the existing water main to which each tie-in is made.

Contractors or parties who fail to keep field appointments may be billed for scheduled City personnel waiting or standby time which was used and the contractor shall bear the costs incurred by the City for re-notification of its customer.

Interruption of service to commercial customers shall, as much as practical, be coordinated with the customer's needs. The Contractor will contact the customer, consider the customer's interests and inform the City accordingly.

After hours work or weekend work is to be avoided whenever possible and any overtime costs shall be borne by the contractor requesting such after hours work. Normal working hours are: 8:00 a.m. to 5:00 p.m. Monday through Friday.

Contractors or parties requiring work of any kind by the City shall request such services a minimum of 24 hours in advance of the time such services are desired. Work requests, which will involve City personnel for more than 8 hours and/or extensive number of City supplied parts, including installation of new meters, shall be requested a minimum of 7 calendar days in advance.

If it is necessary to terminate service to any customer, the contractor shall make the request for such work an additional 72 hours (three additional working days for a total of five working days advance notice) in advance of the time such services are desired, to allow the customers affected to have a minimum of 72 hours notice.

During the work, the Contractor shall exercise all necessary precautions to prevent the entrance of trench water or any other foreign material into the water main and shall conduct all operations in accordance with the most stringent sanitation practices. The interior of all appurtenances being installed shall be thoroughly swabbed with a strong HTH solution prior to installation.

99-1.18 Water System Component Reporting. The Contractor shall submit the material type, manufacturer and model number of all water system components to the City prior to final testing.

99-1.19 Construction Water. Construction water shall be obtained from the City only at the point(s) designated by the City.

Hydrant meters shall only be connected to hydrants which have been accepted by the City.

A refundable deposit for each meter will be required.

Contractors are prohibited from operating gate valves or fire hydrants on the City system. Acquisition of water through appropriation at un-metered fire hydrants or other facilities is a violation of City Ordinance and the State law. Use of construction water from sources other than the City Water System must be approved by the City.

STREET STANDARD SPECIFICATIONS

TABLE OF CONTENTS

STREET DESIGN

I. Definitions

"Alley" means any unnamed street contained in the public right-of-way twenty-four feet or less in width, used primarily for vehicular service access to the back or side of properties.

"All weather surface" means any surface that provides unobstructed access to conventional drive vehicles, including sedans and fire engines, is capable of supporting a 40,000 pound load during wet weather conditions. The surface treatment must be either concrete or paving unless otherwise approved by the city engineer and the Fort Bragg Fire Protection District.

"Arterial street" shall mean a street whose primary purpose is to carry through traffic and means a fast or heavy street of considerable continuity which is used primarily as a traffic way to facilitate movement of heavy traffic between major residential areas or major residential areas and commercial areas.

"Bike lane" means those on-street bikeways that are part of the normal street section and provide marked bike lanes that delineate the separate rights-of-way assigned to bicyclists and motorists.

"Bike path" means a separate, off-street bike path or trail that is not part of the normal street section.

"Collector street" shall have the primary purpose of intercepting traffic from intersecting minor streets and handling traffic to the nearest arterial street or intercepting traffic from one collector street and handling traffic to another collector street. It shall serve as an access to abutting properties.

"Cul-de-sac street" shall have the primary purpose of serving abutting land use and connecting to the nearest minor street or collector street. It is not intended to pass traffic through to another street and is a local street with only one outlet.

"Curb cut" shall mean an opening or depression in the street curb installed and intended for pedestrian or vehicular use. Curb cuts shall be measured across the "flat bottom" width of the opening or depression.

"Dead end road" means any road that has only one point of vehicular ingress/egress. Dead end roads shall include cul-de-sacs.

"Development" means and includes, but is not limited to, the subdivision of land into two or more parcels, the construction of new structures or buildings, and changes in or renovations to existing structures or buildings and the attendant construction of improvements, either of public or private nature, for which approval by the City of Fort Bragg is required prior to commencement.

"Driveway" For the purposes of single family detached housing, "driveway" means a way or place in private ownership for vehicular traffic providing access to two or fewer residential units or buildings less than 50 feet from a public roadway over a common parcel or easements(s), primarily

by the owners or occupants of the common parcel or easement(s), and necessary service and emergency vehicles, but from which the general public may be excluded, and which are not maintained by a public agency. Driveways shall meet all provisions, as adopted, of the Uniform Fire Code with respect to Fire Department access. Access to driveways shall be via a curb cut per City Standard 209.

"Fire Department access road" means a access road reserved for emergency vehicles and the conduct of fire fighting or rescue operations, or as designated by the fire department, and posted in accordance with Vehicle Code section 22500.1.

"Hillside" shall mean properties or portions of properties that have an average cross-slope of ten percent or greater.

Properties or portions of properties to which this definition applies or which have other demonstrated hillside characteristics qualify for consideration for use of hillside design standards. Determination of the appropriateness of use of such standards shall rest with the City Engineer.

"Industrial street" shall have the primary purpose of handling industrial and manufacturing type business traffic. It is a street that provides access to or through an industrial zone, commercial zone, or an area of high truck and other large vehicle traffic.

"Minor street" shall have the primary purpose of serving abutting land use and handling traffic to the nearest collector street.

"Pathway (equestrian)" shall mean a public or private paved or rock-surfaced path, excluding sidewalks, for the use of pedestrians and horses.

"Pathway (mixed use)" shall mean a public or private paved or rock-surfaced path, excluding sidewalks, for the use of pedestrians, horses and bicycles.

"Pathway (pedestrian)" shall mean a public or private paved or rock-surfaced path, excluding sidewalks, for the use of pedestrians.

"Private road or street" means a way for vehicular traffic providing access to lots or units over a common parcel, primarily by the owners or occupants of the common parcel, and necessary service and emergency vehicles, but from which the general public may be excluded, and which is not maintained by a public agency.

Such roads or streets may be designed and constructed to different standards than public streets in the following areas: width, pavement, street lighting, signing and entry islands. Private streets should not connect two or more public streets (except when necessary for internal circulation or emergency vehicle access) and shall be designed and constructed to the standards of private roads or streets as defined within these standards in terms of minimum width, structural section, curb, gutter, sidewalk, and all other aspects not specifically referenced above or in this section. No City enforcement of "no parking" signs or other such regulatory signs shall be provided for such streets.

"Public street" means a way for vehicular traffic, whether designated as a minor street, collector street, arterial thoroughfare, freeway, or other designation, which is improved to City standards, dedicated for general public use and maintained by a public agency. The term "street" shall include alleys as defined above.

"Public way" shall mean any street, channel, viaduct, subway, tunnel, bridge, easement, right-of-way or other way in which a public agency has a right of use.

"Sidewalk" shall mean a Portland Cement Concrete (PCC) surfaced area for pedestrian usage located within the public or private street right-of-way or sidewalk easement and included as a standard element of a street section.

"Street right-of-way" width shall mean the shortest distance between the lines delineating the right-of-way of a street.

"Street width" means the distance between the curb faces of a street or edge of pavement where a curb face may be omitted by approval of the City Engineer.

"Turnout" means a widening on a roadway to allow vehicles to pass. All turnouts shall be per city standard and shall be intervisible.

II. General

A. For purposes of street layout and design, streets shall be classified as:

1. Arterial Streets
2. Industrial Streets
3. Collector Streets
4. Minor Streets
5. Cul-de-Sac Streets
6. Alleys
7. Driveways

B. Street design standards shall be used for the design and construction of all private and public streets and for flatland streets and hillside streets.

C. Deviations from these standards may be granted by approval of the City Engineer.

D. The standards are considered minimum and do not preclude the City use to a higher standard.

III. Requirements for Submittal of Improvement Plans

The City has requirements for submittal of Improvement Plans and Parcel Maps/Final Maps. Submittal forms shown in Figures A and B contain minimum submittal requirements. Submittal forms which have been filled out and signed by the engineer or surveyor must be included with all submittals. Current submittal forms may be obtained from the City of Fort Bragg.

FIGURE A **CHECK LIST**

CITY OF FORT BRAGG **IMPROVEMENT PLANS**

PROJECT ADDRESS	APN	FILE NO.
PROJECT NAME	NO. OF PROPOSED LOTS	RELATED FILES
APPLICANT'S NAME	ADDRESS	PHONE
PROPERTY OWNER'S NAME (PRINT)	ADDRESS	PHONE
ENGINEER & LICENSE NO.	MAILING ADDRESS	PHONE

NOTE: Improvement Plans must be prepared by a California Registered Civil Engineer. All submitted plans and calculations must be signed and stamped. Incomplete submittals will not be accepted.

SUBMITTAL REQUIREMENTS

____ FINAL MAP (Associated with these plans)
____ PARCEL MAP (Associated with these plans)
____ NO MAP (Associated with these plans)

If a rezoning or zoning permit is associated with these Improvement plans, has that rezoning been approved by the City?

____ Yes ____ No

NUMBER OF COPIES

( ) Eight blue-line or black-line copies (24" x 36"). (DO NOT SUBMIT ORIGINAL DOCUMENTS UNTIL REQUESTED BY THE CITY ENGINEER).

GENERAL

( ) 1. North arrow (to be upward facing if practical) and sheet number (all sheets).
( ) 2. Scale, written and graphic (all sheets).
( ) 3. Location Map
( ) 4. Benchmark (established City, or County USGS benchmark).
( ) 5. Symbols Legend.
( ) 6. Abbreviation legend.
( ) 7. Index to drawings including reference to sheet numbers.
( ) 8. General Notes with reference to City Standard 100.
( ) 9. City Engineer approval block.
( ) 10. Title block (all sheets):
  ( ) A. Name of Engineering firm.
  ( ) B. R.C.E. seal, signature, and expiration date.
  ( ) C. Date prepared.
  ( ) D. Title of project.
( ) 11. Clear and distinct delineation of project boundaries.
( ) 12. Nature and dimension of existing and proposed easements.
( ) 13. Typical section of all streets.
  ( ) A. Width of street, right-of-way, easements, curb, gutter, sidewalk and landscape parcels (if required).
  ( ) B. Crown and centerline location.
  ( ) C. Pavement and base type and thickness, traffic index and R-value.
  ( ) D. Cut and fill slopes (maximum & minimum and limits).
  ( ) E. Saw cut line 1' minimum into existing paving.
( ) 14. City Standards applicable to construction.

STREETS

Plan View:

( ) 15. Centerline data (submit calculations).
( ) 16. Street names, widths (including right-of-way widths).
( ) 17. Property lines and lot numbers.
( ) 18. Centerline stationing:
  ( ) B. Conform to existing stationing if previously set.
  ( ) B. All B.C.'s, E.C.'s and grade breaks, driveways, etc.
( ) 19. Gutter slopes and flow arrows showing magnitude and direction between grade breaks and around curb returns, cul-de-sacs and knuckles.
( ) 20. Flow arrows showing slope and direction from roadway crown or center of intersection to ¼ points of curb returns, cul-de-sacs and knuckles.
( ) 21. Direction of flow arrows.
( ) 22. Top of curb elevations and stationing at curve points, grade breaks, and lot lines.

( ) 23. Required sidewalk and handicap ramps.
( ) 24. Monument location at all E.C.'s, B.C.'S and street intersections
( ) 25. Existing improvements (shown in dashed lines).
( ) 26. Length and location of all transitions in curb and gutter.
( ) 27. Redwood headers and barricades.
( ) 28. Radius, length and delta of all curb returns, centerline curves and curves at face of curb.
( ) 29. Driveway gradients.
( ) 30. Striping, Signing and Lighting Plan. (Shown on a separate sheet from street and utility improvements).

Profile View:

( ) 31. Existing ground surface at centerline of streets (100' each direction beyond improvements, 200' for major streets).
( ) 32. Profile of improvement:
- ( ) C. Stationing and elevation at all grade breaks.
- ( ) C. Vertical curve data.

( ) 33. Cross sections every 25 feet for all half streets with future x-sections, see 31 above.
- ( ) C. Stationing.
- ( ) C. Existing and proposed elevations.
- ( ) C. Existing and proposed cross-slopes.
- ( ) C. Centerline, existing edge of pavement (conform) and top of curb elevations.
- ( ) C. Scale - vertical - maximum of 1" = 5'; horizontal - maximum of 1" = 50'.

( ) 34. Street centerline slope.

STORM DRAINAGE

Plan View:

( ) 35. Direction of flow arrows.
( ) 36. Stationing of all drainage structures within streets.
( ) 37. Specified size/type for all drainage structures.
( ) 38. Inlet and manhole numbers corresponding to profile view.
( ) 39. Pipe diameter and length (radius for curved section).
( ) 40. Pipe material (may be specified instead in general note or shown on profile) and class of pipe.
( ) 41. Open channels or swales:
- ( ) C. Flowline elevation at the beginning, end and all grade breaks.
- ( ) C. Slope of swale.
- ( ) C. Typical section.
- ( ) C. Existing and proposed improvements clearly delineated as such.

Profile View:

( ) 42. Invert grades/flowlines at all drainage structures.
( ) 43. Inlet/manhole numbers corresponding to plan view.
( ) 44. Existing ground surface and finished grade.
( ) 45. Pipe diameter and length.
( ) 46. Pipe slopes.
( ) 47. Utility crossings (show with clearance).
( ) 48. Profile open channels.

UTILITIES

( ) 49. Existing and proposed utilities (sewer, water, street lighting, etc.).
- ( ) C. Location.
- ( ) C. Type, size, length, class, and slope.
- ( ) C. Material (can specify in General Note).
- ( ) C. Clear delineation between public and private utilities.

SEWER

( ) 50. Plan:
- ( ) C. Manhole/cleanout numbers corresponding to profile view.
- ( ) C. Stationing of structures within street right-of-way.
- ( ) C. Direction of flow arrows.
- ( ) C. Lateral locations (include invert at upstream end of lateral for other than 2% slope or where cover is critical).

( ) 51. Profile:
- ( ) C. Existing and finished grade over the line.
- ( ) C. Invert elevations (in and out) and slopes.
- ( ) C. Manhole cleanout numbers corresponding to plan review.

WATER

( ) 52. Plan View: (Profile only necessary when conflicts occur).

- ( ) C. Applicable City standards (500 series) & depth of pipe note.
- ( ) C. Value size and locations, valve boxes.
- ( ) C. Fire hydrants and service lateral information.

STREET LIGHTING

( ) 53. Plan:
- ( ) F. Compliance with City Standards.
- ( ) F. Light locations, stationing and standard.
- ( ) F. Pull box location and standard when not located adjacent to light pole.
- ( ) F. conduit location; size and type.
- ( ) F. service point location.

( ) 54. Exact horizontal & vertical location of all existing high pressure gas line(s) shown every 100 ft.

GRADING

( ) 55. Existing and finished contours (and grade elevations at all grade breaks).
( ) 56. Existing and proposed (if known or required) structures (i.e., houses, wells, septic systems, etc.).
( ) 57. Flow arrows, drainage plan.
( ) 58. Existing trees noted as to whether to be saved or removed (base elevations for trees to be saved).
( ) 59. Typical cross-section and conform grades at all property lines.
( ) 60. Erosion and sediment control measures proposed (show on separate plan for grading).
( ) 61. Creek cross-sections to establish setback per City ordinance.
( ) 62. Provisions for lot drainage, lot-to-lot drainage is not allowed.
( ) 63. Provisions for accepting off-site drainage.
( ) 64. Top of curb elevation and stationing of property lines.
( ) 65. Slope rounding details for top of cuts.
( ) 66. Retaining wall details and engineering calculations (2 copies if applicable).
( ) 67. Specify soils engineer's control of grading in compliance with Chapter 70 U.B.C. and soil's investigation (note on grading plan).
( ) 68. Provisions for pad drainage when exterior grades are higher.
( ) 69. Existing structures and dimensions from new lot lines to structures to be saved.
( ) 70. Typical lot drainage details.
( ) 71. Quantities of cut and fill.
( ) 73. Elevation of pads, including property corners.
( ) 1. Sidewalk drains (minimum 1 per lot).

SUPPORTING DATA

( ) 2 copies of the Resolution of Approval.
( ) 2 copies of the Soils Report
( ) 2 copies of the Engineer's Estimate
( ) 2 copies of the design calculations (structural sections, walls, etc.).
( ) 1 copy of fire flow calculations.
( ) 1 copy of sewer demand calculations.
( ) 1 copy of house fire sprinkler and water service demand calculations for water meter sizing.
( ) 1 copy curb and centerline calculations of all streets.
( ) 1 copy of any necessary off-site letters of permission.
( ) 2 copies of on-site easements/rights-of-way deeds and plats (if map is not included).
( ) 2 copies of all required off-site easements/rights-of-way deeds and plats.
( ) 2 copies of Arborist's Report.
( ) 4 sets of Site Lighting Plans (if applicable).
( ) 4 sets of Site Parking and Signing Plans (if applicable).
( ) Copies of transmittal letters to:

- ( ) A. Sonoma County Water Agency.
- ( ) B. P G & E.
- ( ) C. Pacific Bell.
- ( ) D. Corps of Engineers (as necessary).
- ( ) E. Caltrans (as necessary).
- ( ) F. Other

I HAVE READ THE FOREGOING AND HAVE SUPPLIED ALL OF THE INFORMATION REQUESTED (OR HAVE PROVIDED A WRITTEN EXPLANATION WHICH ACCOMPANIES THIS CHECKLIST WHICH EXPLAINS ANY OMISSIONS) AND HAVE SIGNED AND STAMPED ALL SUBMITTALS OTHER THAN NORMAL CORRESPONDENCE.

SIGNATURE AND STAMP OF ENGINEER_____ **DATE**

FIGURE B

CHECK LIST

CITY OF FORT BRAGG **PARCEL MAP/FINAL MAP**

PROJECT ADDRESS	APN	FILE NO.
NAME OF PROPOSED PROJECT	NO. OF PROPOSED LOTS	RELATED FILES
APPLICANT'S NAME	ADDRESS	PHONE
PROPERTY OWNER'S NAME (PRINT)	ADDRESS	PHONE
SURVEYOR/ENGINEER & LICENSE NO.	MAILING ADDRESS	PHONE
NOTE: Final Maps and Parcel Maps must be prepared by a person licensed in California to perform land surveying. All submittals must be signed and stamped. Incomplete submittals will not be accepted.		

SUBMITTAL REQUIREMENTS
Number of Copies

( ) Five (5) blue-line or black-line copies (18" x 26") showing the proposed division clearly and legibly with accurate dimensions and including the following information (check, or mark as not applicable): **DO NOT SUBMIT ORIGINAL DOCUMENTS UNTIL REQUESTED BY THE CITY ENGINEER.**

CERTIFICATES AND ACKNOWLEDGEMENTS
(Required on the first sheet or sheets)

( ) 1. Owner's certificate and acknowledgement (individual/partnership/corporate).
( ) 2. City Clerk's Certificate.
( ) 3. Trustee (if such exists) certificate and acknowledgement.
( ) 4. Engineer's or Surveyor's statement and seal.
( ) 5. Owner's of interest certificate (if applicable).
( ) 6. City Engineer's statement.
( ) 7. City Treasurer's certificate
( ) 8. County Tax Collector's certificate.
( ) 9. County Clerk's certificate.
( ) 10. Public Utility Easement Statement.
( ) 11. Improvement certificate.
( ) 12. County Recorder's certificate.
( ) 13. Planning Commission certificate

Note: All certificates shall be in accordance with state law and in the format kept on file in the offices of the City Engineer.

TITLE BLOCK

Required on all sheets:
( ) 14. Title block located in lower right hand corner of drawing.
( ) 15. Assessor's parcel number(s).
( ) 16. Name of project or parcel map number.
( ) 17. Total number of lots.
( ) 18. Total number of common parcels (if applicable).
( ) 19. Total project acreage (to the nearest 0.01 acre).
( ) 20. Date prepared.
( ) 21. Sheet number and number of sheets (if more than one sheet is required).
( ) 22. Name of party (company) responsible for preparing the map.

GENERAL INFORMATION

Required on all sheets:
( ) 1. Sheet size 18" x 26" (outside dimensions).
( ) 24. 1" blank margin all around the edge of the sheet.
( ) 25. No use of ditto marks.

CHECK LIST

CITY OF FORT BRAGG **PARCEL MAP/FINAL MAP**

Required on Specific Sheets:

( ) 26. Key map (if more than two map sheets are required).

( ) 27. Location map (to be located on the first map sheet or the key map, if one is required, and to be oriented in the same direction as the parcel/final map).

( ) 28. Title company name, located inside the border in the lower left corner of the first sheet only.

MAP REQUIREMENTS

General Requirements (Required on all Map sheets):

( ) 29. North arrow (to be upward facing, if practical).

( ) 30. Scale (written and graphic).

( ) 31. Symbols legend.

( ) 32. Basis of bearings with tie shown to the subdivision.

( ) 33. The exterior boundary of the subdivision designated by a distinctive border.

( ) 34. Reference to adjoining tracts or lots (record data).

( ) 35. Reference to adjoining map sheets (if more than one map sheet is required).

( ) 36. Reference to adjoining railroads and highways.

( ) 37. Existing easements (on-site and off-site):

- ( ) B. Locations and dimensions.
- ( ) B. Noted with deed reference.
- ( ) B. Purpose and nature (public or private).

( ) 38. Proposed easements.

- ( ) B. Locations and dimensions.
- ( ) B. Noted with deed reference.
- ( ) B. Purpose and nature (public or private).

( ) 39. Each lot shown entirely on one sheet.

( ) 40. All dimensions in feet and hundredths.

( ) 41. Pertinent record data shown in parenthesis or per legend designation (next to measure data).

( ) 42. Existing monuments shown along with relevant information (found, set, retagged, or removed).

( ) 43. Monuments to be set shown and labeled with relevant information (size, location, type and tag).

( ) 44. Reference to additional map sheets.

Street Requirements:

( ) 45. Approved names.

( ) 46. Existing and proposed street widths.

( ) 47. Distance from centerline to edge of right-of-way.

( ) 48. Centerline monuments.

( ) 49. Distance between centerline monuments.

( ) 50. Centerline bearing.

( ) 51. Centerline curve data (delta, radius, and length).

( ) 52. Right-of-way curve data.

( ) 53. Private streets designated as such.

Lot Requirements:

( ) 54. Lots numbered (beginning with number 1 or letter A and continuing consecutively without duplication or omission. No circles or other figures shall be placed around lot numbers except for the last number where such placement shall be optional).

( ) 55. Lot line dimensions.

( ) 56. Lot line bearings.

( ) 57. Lot line curve data (delta, radius, and length).

( ) 58. Survey tie to boundary (for planned unit developments or condominium "footprints").

"Designated Remainder" and "Remaining Lands":

( ) 59. "Designated remainder" - Government Code Sections 66424.6 and 66434(e) shall be treated as follows:

- ( ) B. If greater than or equal to 5 acres in size, shown by deed reference.
- ( ) B. If less than 5 acres in size, shown as part of the survey.

( ) 60. "Remaining Lands" (future phases) labeled with a document number, and if less than 5 acres in size, shown as part of the survey.

Additional Map sheet:

( ) 61. Net acreage to the nearest square foot (0.01 acre for lots over 1 acre in size).

( ) 62. Soils report notation.

( ) 63. Area(s) subject to inundation identified as such.

( ) 64. Building setback lines.

( ) 65. Building envelope with survey tie to lot line or boundary (if applicable).

( ) 66. Vehicular access restriction notation (if applicable).

( ) 67. Seismic setback lines (if applicable).

( ) 68. Archaeological sites (if applicable).

( ) 1. Creek setback lines (if applicable).

CHECK LIST

CITY OF FORT BRAGG **PARCEL MAP/FINAL MAP**

SUPPORTING DATA

( ) 70. One (1) Copy of Tentative Map.

( ) 71. One (1) Copy of Resolution of Approval.

( ) 72. One (1) copy of Preliminary Title Report (issued within the most recent three months).

( ) 73. Two (2) copies of computer printout documenting survey closure calculations for the following:

- ( ) C. Blocks
- ( ) C. Lots
- ( ) C. Street centerlines
- ( ) C. Survey ties
- ( ) C. Proposed easements (when not parallel to property lines)

( ) 74. One (1) copy of records referenced and used to prepare the survey (Examples: record of survey, filed maps, recorded deeds, and easements, etc.).

( ) 75. Two (2) copies of the legal descriptions and plats for all dedications performed by separate instrument(on-site and off-site).

( ) 76. Two (2) copies of project conditions, covenants, and restrictions.

( ) 2. Additional submittals involving condominium and townhouse projects:

- ( ) C. Two (2) copies of condominium and townhouse plans.
- ( ) C. One (1) copy of architectural drawings.
- ( ) C. One (1) copy of computer printout establishing the location of the building footprint(s) within the subdivision.

I HAVE READ THE FOREGOING AND HAVE SUPPLIED ALL OF THE INFORMATION REQUESTED (OR HAVE PROVIDED A WRITTEN EXPLANATION WHICH ACCOMPANIES THIS CHECKLIST WHICH EXPLAINS ANY OMISSIONS AND HAVE SIGNED AND STAMPED ALL SUBMITTALS OTHER THAN NORMAL CORRESPONDENCE.

SIGNATURE AND STAMP OF SURVEYOR_____ **DATE**_____

IV. Street Design

A. Geometric Standard Cross Sections

Item	Minimum Width	Street Classification
Travel lane	14 feet	Industrial
	12 feet	Arterial, Collector
	10 feet	Minor, Cul-de-sac, Alley
Parking lane or shoulder	8 feet	Collector streets
Parking lane or shoulder	7 feet	Minor streets
Curb lane (no parking)	2 ft increase face of curb	All streets
Bike lane	6 feet against curb	All streets
	5 feet against parking	All streets
Curb radius for cul-de-sac	43 feet (see Std. #212)	Cul-de-sac
One-way loop, hillside street	20 feet width	Minor - 100 ft ℄ radius
One-way loop, flatland street	20 feet width	Minor - 200 ft ℄ radius
Maximum length of cul-de-sac street measured from projected curb or edge of pavement line of inter-secting street to center of turnaround.	500 feet (or as approved by City Engineer)	Cul-de-sac

Length of streets allowed with no cul-de-sac	150 ft. from the projected curb or edge of pavement line of the cross street to end of dead-end street	All Streets
Sidewalk	6 feet	All Streets (widen at obstructing locations to provide 4-foot minimum clear sidewalk)

Item	**Minimum Width**	**Street Classification**
Sidewalk - meandering (where permitted by Std.)	6 feet	Where applicable
Sidewalk easement	To back of sidewalk	All streets where required
Public utility easement	5 feet in back of property line or as required	All streets where required
Double left turn lane	Two 12-foot lanes	All streets where required
Single left turn lane	12 feet	All streets
2-Way left turn lane	14 feet	All streets
Right turn lanes	12 feet	All streets

B. Access to Public Right-of-Way - Curb Cuts

1. Each vehicular passageway to any parking or loading facility to or across a public right-of-way shall comply with the following requirements:

   a. Curb cuts shall be a maximum of 40 feet in width for non-residential uses. The width is not to exceed 35% of each lot frontage, except as otherwise approved. Min. width of 20 ft for each legal lot of record.

   b. Driveway widths, within residential areas, shall be a minimum of 12 feet in width for single driveways, a minimum of 16 feet for double or triple driveways up to a maximum of 24 feet, except as otherwise approved.

   c. Wherever feasible, curb cuts serving adjacent uses shall be combined to minimize the number of entrances onto a public right-of-way on any block. No curb island is allowed when it is less than ten feet between uses.

d. Only one curb cut may be installed for any parking or loading facility, except that one or more additional curb cuts may be allowed if the City Engineer determines that each such additional curb cut is necessary for the efficient operation of the facility and will not significantly reduce street capacity and traffic safety. Twenty feet top to top on the curb island is required between driveways on a single parcel.

e. Any curb cut in a residential area on a corner lot shall be located at the farthest point possible from the curb return and outside of the sight vision triangle. Curb cuts shall be located a minimum of 10 feet from curb returns, except as otherwise approved by the City Engineer.

f. In commercial/industrial area, a minimum of 200 feet required separation between driveway and the intersection of two arterial, industrial and/or collector streets except as otherwise approved by the City Engineer. At no time shall a curb cut be located closer than 20 feet from a curb return or 30 feet from a crosswalk which ever distance is greater.

g. Except as otherwise approved by the City Engineer, curb cuts for any circular or "through" residential driveway must meet the following requirements:

1.) The curb cuts for such driveway shall be at least twenty feet apart top to top and a minimum of 10 feet from the side property line.

2.) Property frontage of 50' or less shall be limited to one driveway with not more than two driveways to be provided to any single property frontage.

V. Street Alignment

A. Streets shall be aligned with adjacent existing streets by continuations of the center lines thereof, or by adjustment by curves, and shall be laid out for the most advantageous development of the entire area.

1. Minimum centerline horizontal curve radii shall be as follows:

a.	Arterial Streets	500 feet
b.	Collector & Industrial Streets	300 feet
c.	Minor Streets (flatland)	200 feet
d.	Cul-de-Sac Streets	200 feet
e.	Minor Streets (hillside)	100 feet

2. Lesser radii may be used only when sufficient evidence is presented to the City Engineer to show that the radii described above are not practicable. Any deviations require specific City Engineer's approval.

3. Super elevations are required on curves for the design of all arterial streets and for any other street with a design speed above 25 miles per hour, except as otherwise approved by the City Engineer.

B. Where necessary to give access to or permit satisfactory future subdivision of adjoining land, streets shall extend to the boundary of the property and resulting dead-end streets greater than 150 feet (measured from the projected curb or edge of pavement line of the cross street) shall have a temporary turnaround. Design of turnarounds other than the standard temporary turnarounds in the standard drawings requires specific approval by the City Engineer.

VI. Street Grades

A. All street grades shown on the improvement plans shall refer to U.S.G.S. benchmarks as established in the City of Fort Bragg. Assumed benchmark elevations will not be allowed.

1. All arterial and industrial streets shall have no grade rate in excess of 7 percent.

2. Collector, minor, and cul-de-sac streets in the flatland shall have no grade rate in excess of 10 percent, except as specifically approved by the City Engineer.

3. Collector, minor, and cul-de-sac streets in the hillside shall have no grade rate in excess of 15 percent unless specifically approved by the City Engineer.

4. Minimum grade rate for all streets shall be 0.5 percent.

5. The grade of the pavement surface across an intersection shall not be more than 7 percent, except as approved by the City Engineer.

6. The gradient of each street entering an intersection shall not be more than 7 percent within a distance of 25 feet from the near curb line of the crossing street, except as approved by the City Engineer.

7. Vertical parabolic curves shall be used to connect grade profiles where the algebraic difference in grade rates exceeds one percent. The length of vertical curve required shall be determined by the following:

	Minimum Stopping Sight Distance	Minimum Length of Curve
Arterial and Industrial Streets	350 feet	200 feet
Collector Streets	200 feet	100 feet
Minor Streets	100 feet	100 feet
Cul-de-Sac	100 feet	100 feet

8. Minimum cross-slopes for all streets shall be 2 percent. Maximum cross-slopes shall be 5 percent.

9. Maximum cross slopes in cul-de-sac bulbs shall be 5 percent in flatland and 8 percent in hillside.

10. Driveway, private road and fire department access road grades shall conform to the requirements of minor streets.

11. Exceptions to this section require specific approval by the City Engineer.

VII. Intersections

A. All streets entering upon any given street shall have their centerlines directly opposite each other or separated by at least 200 feet, except as otherwise authorized by the City Engineer.

B. All streets shall intersect at right angles, or along radial lines when the intersection is within a curve, and shall have at least 50 feet of centerline tangent adjacent to the intersection, except as specifically approved by the City Engineer.

C. Curb return radius:

Arterial/Industrial/Commercial	35 feet
Collector	30 feet
Residential	20 feet

At all intersections, the curb return radius to be utilized will be determined by the highest street classification (e.g., a minor-arterial street intersection will require 35' radius).

VIII. Typical Sections

A. Typical sections for the improvement of streets and alleys shall be shown on the Improvement Plans. Curb and gutter sections, curb return radii, parking strip widths, and sidewalk widths may be modified where these improvements have been constructed in a portion of a block to other than the sections shown. However, any modifications require the specific approval of the Engineer.

IX. Pavement Design

Design of the structural section for all streets shall be in accordance with the following criteria:

A. Traffic Index

1. Street classification shall be determined by the City Engineer.

2. Within subdivisions for residential and residential collector streets, use Standard Drawing No. 201, "Traffic Index Chart for Flexible Pavements". For all other streets, the T.I. will be determined by the City Engineer.

3. In no instance will the T.I. be less than the following:

(1)	Arterial & Industrial Streets	a minimum T.I. of 7.0
(2)	Collector Streets	a minimum T.I. of 5.5
(3)	Minor & Cul-de-Sac Streets	a minimum T.I. of 4.5

4. For all street design use Standard Drawing No. 202, "Structural Design Chart for Flexible Pavements" and these "Street Design Standards".

B. Soils Reports

1. Resistance "R" Values

   a. A qualified Soils Engineer shall obtain sufficient soil samples within the proposed street right-of-way to permit the determination of the R-Value of the various materials that lie immediately under the planned structural section. The cost of sampling and testing shall be at the Owner's expense.

   b. The basement soil shall be tested according to California Test 301 "Method for Determination of the Resistance "R" Value of Treated and Untreated Bases, Sub bases, and Basement Soils by the Stabilometer" in use by the California Department of Transportation, Transportation Laboratory. Design of the structural section for a particular street will normally be based on the lowest R-Value material encountered.

   c. If the Engineer elects to utilize an "R" Value of 5, then R-Value tests will not be required.

   d. The Owner's Soils Engineer shall submit to the City a Materials Report showing the location and elevation of sampling points and R-Value data. The Owner's Soils Engineer may be required to make a field survey of soil conditions when rough sub grade has been cut to

verify data presented in the Materials Report. The cost of any additional sampling and testing shall be at the Owner's expense.

2. Material Testing

   a. A minimum of one sample of asphalt shall be tested for all developments installing public street improvements to ensure that the asphalt is meeting with city specifications. If developments are installing in excess of 500 tons of asphalt, one test shall be required for every 500 tons used.

C. Gravel Equivalents

1. Structural sections are to be determined using the following formula applied to determine the G.E. of the cover required over the basement soil and intermediate structural section layers.

   GE = 0.0032 (TI)(100-R)

   where:

   GE = gravel equivalent in feet
   TI = traffic index
   R = R-Value of the material to be covered.

2. Structural sections using aggregate base shall have the gravel equivalent of the asphalt concrete layer increased by 0.20 feet.

3. In no instance shall a structural section be less than as follows:

Arterial & Industrial Streets:	0.37' asphalt concrete 1.00' Class 2 aggregate base
Collector Streets:	0.27' asphalt concrete 0.80' Class 2 aggregate base
Minor & Cul-de-Sac Streets:	0.25' asphalt concrete 0.50' Class 2 aggregate base

D. Gravel Equivalent Factors & R Values

1. The gravel equivalent factor for asphalt concrete surface courses shall be obtained from the following equation: $G_f = 2.5\ (5.14/T.I.)^{0.5}$

   In no case shall the gravel equivalent factor exceed 2.5.

2. Gravel factors and R-Values for design shall be as follows:

Materials	Gravel Equivalent	R Value
Class 2 A.B.	1.1	78
Class 4 A.S.B.	1.0	50

E. Improvement Plan Notation

1. All Improvement Plans shall include the design "R" Value and the Traffic Index. This information shall be included in the typical section or in a note or table on the same sheet as the typical sections.

X. Requirements for Emergency Access During Construction

A. Sub grade Conditions

	Good	Poor
Summer April 1 - Sept. 30	Excavated & Drained Sub grade	Excavated & Drained Sub grade
Winter October 1 - March 31	6 inches rock	6 inches rock & fabric

1. For structures with a ridge line of at least 35 feet above adjacent rough fire access grade, or for structures with three or more stories, 1½ inches of asphalt base over 4 inches of aggregate base shall be provided in all proposed and approved fire access areas from the structure out 150 feet.

2. Winter conditions shall take effect and be enforced by the City Engineer on October 1. The City Engineer shall have the authority to move this date up as early as September 1, depending on the particular season's rainfall and projections.

3. Sub grade defined as native soil at bottom of street section (base and paving), excavated to the approximate lines and grades shown on the project grading plan, and provided with a discharge for collected water, as approved by the City Engineer.

4. Base shall be Class 2 aggregate base or alternative recommended by Soils Engineer and approved by the City Engineer.

5. Poor sub grade defined as R-Value 10 or less.

6. Base shall be placed only on an unyielding excavated and drained sub grade, and to be compacted to at least 90% relative compaction.

7. Fabric to be a ground stabilization fabric such as Mirafi 600X or equivalent.

XI. Requirements for Driveways, Private Roads and Fire Department Access Roads

a) Private driveways shall be in conformance with City Standard 209 with a maximum length of 150 feet from a public road and serve a maximum of two residential buildings. The width of driveways serving one residential building shall be a minimum of 12 feet and a maximum of 24 feet. Driveways serving two residential buildings shall have a minimum width of 24 feet.

b) Private driveways serving one residential building that has a distance greater than 150 feet from a public road shall be considered a Fire Department Access Road and shall have a minimum width of 24 feet.

c) Any driveway or access road serving more than 2 residential buildings shall be considered a private road.

d) The structural section of all private roads, driveways and fire department access roads shall be constructed in conformance with City Standards and shall have a minimum designed live-load capacity of HS 20.

e) Any private road serving more than one parcel shall be required to be named.

f) Fire Department Access Roads shall have an all weather access road surface width of not less than 20 feet and an unobstructed vertical clearance of not less than 15 feet. The widths and clearances required by this section shall be increased when the fire chief or city engineer determines that such widths and clearances are not adequate under the particular circumstances to provide fire apparatus access.

g) The turning radius of either a Fire Department Access Road or private road shall be a minimum of 25 feet.

h) All private roads and fire department access roads shall have intervisible turnouts.

i) No private road, fire department access road or driveway shall have a maximum grade in excess of fifteen percent (15%).

j) No fire department access road or private road shall have a vertical curve whose length is less than one hundred (100) feet.

k) No private road, driveway or fire department access road shall have a horizontal inside radius of curvature of less than fifty (50) feet.

l) When a bridge is required to be used as access for a private driveway, private road or fire department access road, it shall be constructed and maintained in accordance with the applicable sections of the Building Code and the Standard Specifications for Highway Bridges, and using designed live loading sufficient to carry the imposed loads of fire apparatus. The minimum designed live load capacity shall be HS 20, as defined by the American Association of State Highway and Transportation Officials. All bridges shall have appropriate signing identifying bridge capability, including weight and vertical clearance limits.

m) The required roadway width of a fire department access road shall not be obstructed in any manner, including parking of vehicles. Minimum required widths and clearances established under this section shall be maintained at all times. No owner, lessee, or other person in charge or control of any premises shall, after receiving notice thereof, permit or allow any activity, practice, or condition to occur or exist on the premises which lessens, obstructs, or impairs the access required under this section.

n) When required, approved signs or other approved notices shall be provided and maintained for fire department access roads to identify such roads and prohibit the obstruction thereof or both. When used, "NO PARKING" signs shall comply with the provisions of the California Vehicle Code. Where curbs exist adjacent to hydrants located along the roadway of a fire department access road, the curbs shall be painted red or otherwise appropriately marked by the owner, lessee, or other person in charge or control of the premises to prohibit parking for a distance of fifteen (15) feet in either direction from any such hydrant.

o) Parking of vehicles on a fire department access road may be prohibited when the fire chief determines that it is necessary to keep the roadway clear and unobstructed. In such case, the chief may require the owner, lessee, or other person in charge or control of the premises to paint the curbs red or install signs or other appropriate notice to the effect that parking is prohibited by order of the fire department. It shall be the property owners' responsibility to maintain in good condition the signs or paint. When a fire department access road is marked or signed as provided herein, no person shall park or leave standing any vehicle on the roadway.

SANITARY SEWER STANDARD SPECIFICATIONS

TABLE OF CONTENTS

SANITARY SEWER SYSTEM

I. Connection to an Existing Public Sewer

A. A proposed sewer design must show a point of connection to an existing public sewer main. It is common for a project on one property to require the construction of sewer on an adjacent property before it can connect to the public sewer. Sewer system designs shall incorporate the design of any off-site sewer that is required for the connection to the public main. Appropriate portions of the City approved designs shall be included in the plans unless the mains have been accepted for maintenance by the City.

II. Materials

A. Gravity sewer mains shall be Polyvinyl Chloride (PVC) SDR 35 or Ductile Iron Pipe.

B. Large diameter gravity mains may be concrete cylinder pipe or reinforced concrete pipe with City Engineer approval.

C. If a gravity sewer main is installed outside of a paved roadway, Ductile Iron Pipe is required.

D. All Ductile Iron Pipe shall be polyethylene encased.

E. Use of Asbestos Cement Pipe is not allowed under <u>any</u> circumstances.

F. Sewer force mains shall conform with the materials requirements for water mains. Non-metallic pipes require tracer wire in accordance with Std. Dwg. 500.

III. Alignment

A. Follow the State of California, Department of Health Services, "Criteria for the Separation of Water and Sanitary Sewer Main."

B. Public sewer mains outside the public street shall be kept to a minimum.

C. Horizontal separation from storm drains shall be a minimum five feet clear.

D. Horizontal separation from other utilities, such as gas, underground electric, underground television cable, etc., shall be a minimum of four feet clear between the pipes.

E. Horizontal and vertical curves in gravity sewer mains will not be allowed unless specifically authorized by the City Engineer.

F. In general, public sewer mains run parallel to street centerline.

IV. Manholes and Cleanouts

A. A manhole is required at every horizontal or vertical change in alignment.

B. Maximum distance between manholes is 300 feet.

C. A manhole is required at the end of every main.

D. Cleanouts may be installed in lieu of manholes at the end of a sewer main where the distance is less than 200 feet to the nearest manhole and the main size is 8" or less.

E. Minimize the number of manholes.

F. 60" diameter manholes are required for mains larger than 18" in diameter, or deeper than 8'(indicate manhole diameter on plans).

G. Private sewer mains must connect to the public main at a manhole.

H. Provide sufficient drop through the manhole to compensation for energy loss caused by change of alignment. A minimum drop of 0.10 foot is required for deflection angles greater than 30°.

I. When pipe size increases, set inlet crown at least as high as the outlet crown.

V. Drop Manholes

A. Minimize the number of manholes.

B. Standard drop manhole installations are required when the drop in the manhole is greater than 2 feet.

VI. Accessibility

A. All-weather vehicle access is required to every manhole.

B. Sewer easements are to be a minimum of 15' in width.

C. All access roads must be a minimum 12' in width.

D. Acceptable types of access road are:

1. 6" of blue shale for slopes up to 10%.
2. 2" of AC on 6" of aggregate base for slopes in excess of 10%.

E. All access roads longer than 100' must have an approved turn-around.

VII. Size

A. Mains shall be sized to provide adequate capacity and a minimum 2 feet per second velocity.

B. The minimum public main is 8" in diameter.

C. The minimum private main is 6" in diameter.

VIII. Cover

A. Minimum cover for all gravity sewers is 24".

B. Where cover is less than 36", Ductile Iron Pipe must be used.

C. Definition of cover: distance from the top of the pipe to finished grade.

IX. Slope

A. Design all gravity sewers to achieve a minimum velocity of 2 feet per second. Use n = 0.013 for new pipe and n = 0.015 for the existing system.

B. The minimum slope for 8" sewers is 0.5%, or ½' per 100'.

C. Maximum slope for gravity sewers is 15%, or 15' per 100'.

X. Sewer Laterals

A. Each lot should be served by one lateral.

B. When more than one residential or commercial lot is served by a single lateral, the lateral must meet the private main standards.

C. All laterals must connect to the main with a wye connection.

D. Minimum slope of sewer laterals is 2% or ¼" per foot, unless otherwise approved by the City Engineer.

XI. Lift Stations

A. General Requirements.

1. Lift stations will not be allowed where an alternative gravity route exists.

2. Design the lift station to serve the entire tributary at build-out densities conforming to the General Plan. (Submit flow calculations).

3. Lift stations must be of the wet-well, above ground lift station type. Submersible pump lift stations may not be used.

4. Lift stations are not allowed within the street right-of-way.

5. Provide a paved access road to allow service vehicle to be parked off the street and clear of the sidewalks. Turn-arounds may be required for stations constructed along heavily traveled streets. Provide service vehicle access to wet-well.

6. Provide a reinforced concrete base slab sized adequately to counteract buoyancy. Provide supporting design calculations.

7. Wet-well to be a minimum of 60" diameter. Provide resilient seat gate valve on-line into wet-well.

8. Provide a wet-well vent system. Venting through a grated sewer manhole cover will not be allowed.

9. Provide water service with reduced pressure backflow preventer.

10. Provide a spare air release valve prior to acceptance.

11. Provide calculations to determine the need for hydrogen sulfide suppression in force main.

B. Pumping Equipment.

1. Lift station standard is 6' x 6' diameter, above underground lift station by Gorman-Rupp.

2. All pumps, motors, internal valves and piping, level indicators, control switches, ladder, alarms, blower and dehumidifier shall be manufactured and assembled as a package. Supply and warranty shall be through one company.

3. The pumps shall be self-priming, horizontal, centrifugal, sewage pumps.

Pumps shall pass a maximum solid, 2½" diameter sphere.

4. Provide two pumps and controls to alternate lead and lag pump.

5. Provide a spare rotating mechanism to replace either pump.

6. Provide one set of routine service replacement parts for the pumps.

7. Provide calculations used to determine the capacity of the wet-well and specifications for the pump.

8. Provide hour meters for each pump.

9. Provide an echo processing liquid level control system wired into the Gorman-Rupp control panel at the factory. Level control standard is Milltronics Hydro-Ranger 1.

10. Provide for automatic pump alternation.

11. Provide an automatic dialing remote monitoring system. City Standard is RACO Verbatim VSS-4C, 4-channel auto dialer wired at the factory into the control panel.

12. Provide the following:

    a. Alarm horn
    b. Alarm light
    c. Station light
    d. Pump sequence selector switch
    e. Hand-off-auto switch
    f. High pump temperature protection
    g. Pump run lights
    h. Elapsed time indicator
    i. Duplex ground fault interrupting receptacle
    j. Motor overload re-setter
    k. Ventilator fan.

13. Provide a 10-year warranty for the pump enclosure.

14. Provide a 5-year warranty for all pumps, equipment, apparatus and parts.

C. Electrical Service.

1. Provide electrical service required by the pump station manufacturer.

2. All electrical circuitry shall be designed and installed in accordance with the

Uniform Electrical Code and National Electric Code.

3. Provide a telephone service for the auto-dialer.

D. Details Required on Improvement Plans.

1. Site Plan: Locations of power pole, wet-well, ground slab, driveway, fencing, water service.

2. Wet-well: influent piping (standard inside drop manhole); suction piping (min. 6" off bottom of manhole; emergency suction line; water/alarm levels (pump on, pump off, low level, high level), redundant high water float switch.

3. Force Main Discharge Manhole: Inverts, channelization.

STORM DRAIN STANDARD SPECIFICATIONS

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STORM DRAIN STANDARD SPECIFICATIONS

I. General

A. These standards are minimum standards and do not preclude the use of a higher standard.

II. Waterways Defined

A. A "waterway" is defined as being a natural or artificial channel or depression in the surface of the earth or an underground conduit system which provides a course for water flowing as a consequence of storm water runoff.

B. Major Waterways - having a tributary drainage area of four (4) square miles or more; shall require a design frequency of reoccurrence of once in 100 years.

C. Secondary Waterways - having a tributary drainage area of between one (1) and four (4) square miles; shall require a design frequency of reoccurrence of once in 25 years.

D. Minor Waterways - having a tributary drainage area less than one (1) square mile; shall require a design frequency of reoccurrence of once in 10 years.

III. Entrance and Exit Losses

Entrance and exit losses shall be calculated using the loss coefficients in Plate No. 1.

IV. Submittal Requirements

A. Assumptions used in preparing calculations shall be itemized.

B. The design aids and references which are used in support of the calculations for design of drainage improvements shall be listed. Supply the City with copies of reference data. If computers are used, the input and output sheets provided shall be sufficient to allow easy checking.

C. Hydrology map(s) shall be provided for both on and off-site drainage areas. The maps shall be of sufficient scale and detail to show drainage areas. Drainage areas shall be numbered and outlined to facilitate checking and with arrows to show drainage problems. The area of each drainage area shall be shown on the hydrology map. A separate 100 year flood map delineating the escape-route shall be provided.

D. Hydrologic and hydraulic calculations showing beginning hydraulic gradeline, energy losses at junctions, bends, structures, friction slopes, etc. shall be submitted.

E. In addition to the calculations, the hydraulic gradeline, and the energy gradeline shall

be shown for all open or closed drainage improvements except gutters.

F. Plan views, profiles, cross-sections, and details of all drainage facilities including a lot grading plan showing how each lot will drain shall be submitted.

G. Entrance capacity and gutter depth calculations shall be submitted for all drainage inlets.

H. Additional information may be required as determined by the City Engineer.

PLATE 1 - BOX WIDTH IN FEET

PIPE DIAMETER

Kx/Ke	1.0’	1.5’	2.0’	2.5’	3.0’	4.0’	5.0’	6.0’
8”-12”	0.23/0.16	0.59/0.41	0.76/0.53	0.84/0.59	0.89/0.62	0.94/0.65	0.96/0.67	0.97/0.68
15”	0.03/0.02	0.40/0.23	0.63/0.44	0.76/0.53	0.83/0.58	0.90/0.63	0.94/0.63	0.96/0.67
18”		0.23/0.16	0.50/0.35	0.66/0.46	0.76/0.53	0.86/0.60	0.91/0.64	0.94/0.65
24”			0.23/0.16	0.44/0.31	0.59/0.41	0.76/0.59	0.84/0.59	0.89/0.62
30”				0.23/0.16	0.40/0.28	0.63/0.44	0.76/0.53	0.83/0.58
36”				0.06/0.04	0.23/0.16	0.50/0.35	0.66/0.46	0.76/0.53
42”					0.08/0.06	0.36/0.25	0.55/0.39	0.68/0.47
48”						0.23/0.16	0.44/0.31	0.59/0.41
54”						0.11/0.08	0.33/0.23	0.50/0.35
60”						0.03/0.02	0.23/0.16	0.40/0.28
66”							0.13/0.09	0.13/0.22
72”							0.06/0.04	0.23/0.16

Definitions:

Kx = Exit Loss coefficient
Exit loss for an outlet into a creek = 1.0

Ke = Entrance Loss coefficient
Loss coefficients are to be applied to the velocity head to determine the minor loss.

V. Materials

A. Storm drain main lines shall be Class I, Class II, or Class III RCP or HDPE pipe as required by the Engineer and shown on the approved plans.

B. Storm drain laterals shall be PVC, SDR35, HDPE or RCP as approved by the Engineer.

C. Minimum diameter for all storm drain main lines shall be 18”.

VI. Manholes

A. A manhole is required at every horizontal or vertical change in alignment.

B. Maximum distance between manholes is 300 feet.

C. A manhole is required at the end of every main.

D. Minimize the number of manholes.

E. 60" diameter manholes are required for mains larger than 36" in diameter, or deeper than 7' (indicate manhole diameter on plans).

F. When pipe size increases, set inlet crown at least as high as the outlet crown.

VII. Cover

A. Minimum cover for all storm drain lines is 24" from top of pipe to finished grade, or 12” from top of pipe to bottom of structural section, whichever is more restrictive.

B. If conditions do not allow for minimum cover, storm drain line shall be capped or pipe material shall be changed per the direction of the City Engineer.

VIII. Testing and Acceptance

A. All storm drain lines shall be cleaned of construction debris and sediment before final inspection.

B. Prior to acceptance by the City, all storm drain lines shall be video taped as required in this Standard Construction Specification.

WATER SYSTEM STANDARD SPECIFICATIONS

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WATER SYSTEM STANDARD SPECIFICATIONS

I. Materials

A. Service laterals shall be constructed per applicable City standards.

B. 8" and 12" water mains shall be Polyvinyl Chloride (PVC) C900, Class 150, minimum, or Ductile Iron Pipe, C151, Class 50, minimum.

C. 14", 16" or 18" diameter water mains shall be Ductile Iron Pipe or PVC C905, 165 psi or as shown on plans and specifications.

D. 20" and larger water mains shall be Concrete Cylinder pipe, Wrapped Steel pipe, or Ductile Iron Pipe.

E. Asbestos Cement pipe shall not be allowed under any circumstances.

F. Ductile Iron Pipe must be polyethylene encased and have approved cathodic protection (see Section XII-A).

G. Mains outside the paved roadway or crossing a delineated fault zone (see Section XII-B) must be Ductile Iron Pipe unless the City Engineer approves an alternative.

H. Where the normal mainline static pressure exceeds 100 psi, Ductile Iron Pipe or Class 200 PVC must be used.

II. Alignment

A. Public water mains outside the public street are not allowed without special permission from the City Engineer.

B. Minimum allowable radius for 8" diameter water mains is 250 feet and for 12" diameter water mains is 350 feet.

C. New mains must match the grade and centerline offset of existing water mains where possible.

D. Maintain a constant distance from centerline wherever possible.

E. Conform to the State of California Department of Health Services "Criteria for the Separation of Water Main and Sanitary Sewers".

F. Install felt expansion material between pipes with 1" or less vertical clearance.

G. Minimum horizontal separation from existing gas, electrical, and telephone lines shall be 3 feet between pipes.

H. Minimum clear horizontal separation from a metallic pipeline with an induced current shall be 5 feet.

I. Minimum clear horizontal separation from a storm drain shall be 5 feet.

III. Size

A. Water mains must be sized to meet minimum Fire Code requirements. (See Section VIII).

B. For residential/commercial installations, public and private mains shall be 8" minimum.

C. For industrial installations, looped system shall be a minimum 8" in diameter, and a dead end system requires a minimum of 12" diameter pipe.

D. The minimum main size for all new projects is 8".

E. The City Engineer may require increased pipe size for overall system benefit.

IV. Cover

A. Definition: Cover is the distance from the top of the pipe to finished grade.

B. Standard installation shall be in accordance with Standard No. 500 Note 3.

C. Where cover is greater than 32", but less than standard cover, Class 50 Ductile Iron Pipe is required.

D. Where cover exceeds 8', special permission from the City Engineer is required.

E. Service laterals must have minimum cover in accordance with the approved standards.

V. Connection to an Existing Main

A. In most major streets, or in new streets, the new water main must be bored and jacked into place. Conditions should be verified with the City Engineer.

B. For connecting 2" diameter pipes and smaller, use a hot tap.

C. For connections of pipes 4" - 12" in diameter, a hot tap or a cut-in tee may be done in conformance with the provisions of Standard 500, Note 26.

D. Cut-in tee must be used if additional valves are required on the existing main. If the

new lateral is larger than the existing main, the tee shall be the size of the new lateral and reduced to size of the existing main.

E. Size-on-size taps are allowed up to 8" in accordance with the approved standards.

F. 12" size-on-size taps are allowed only under emergency situations and with the specific approval of the City Engineer.

G. A mechanical joint tapping sleeve must be used in accordance with approved City standards.

VI. Valving

A. Valving at intersections shall be in accordance with the following:

Tee - 3 valves
Cross - 4 valves

B. Main line valves within 250' of an intersection may be considered as part of the intersection.

C. All hydrants must be on separately valved sections of the public main.

VII. Service Laterals and Water Meters

A. Size of water meter shall be determined by the Designer using the current AWWA guidelines.

B. Maintain a minimum 5' separation from the sewer lateral.

C. All meters must be located within public right-of-way. Meters (including backflow detection meters) can only be installed outside of the right-of way- upon approval by the City Engineer.

D. Residential (single unit)
1. One meter per lot.
2. Individual 1" services, 1" meter.
3. Rubber seated check valves shall be required to separate the domestic and fire systems on the site.

E. Apartments (2 - 6 units)
1. May be master metered with the size based on the total demand.
2. Individual meters must be clustered and located within the public right-of-way.

F. Apartments (7 or more units) and Mobile Home Parks
1. Must be master metered with the size based on the total demand.

2. Separate irrigation meters are required.
3. This may require a combination water service.
4. Mobile home park owners may sub-meter to the tenants at their own expense.

G. Condominiums
1. Shall be individually metered.
2. Individual meters must be clustered and located within the public right-of-way.
3. A maximum of six meters per manifold.
4. Separate irrigation meters for common areas are required.
5. Combination of water services may be required.

H. Commercial
1. Size of the meter and service are based on calculations by the Designer in accordance with AWWA standards.
2. A separate irrigation meter is required.
3. A minimum 1" service shall be required for office use.
4. A minimum 2" service lateral for a shell building or light industrial if the lot is greater than ½ acre.
5. A minimum 8" service for industrial lots and shopping centers on lots of 12 acres or larger.
6. Most commercial installations will require backflow prevention. (See Section IX).

I. Combination Services
1. 8" laterals are the minimum required for most installations.
2. Combination services are required in commercial subdivisions per Std. Drawing. 513 and 514.

J. Irrigation
1. Separate irrigation meters must be provided for all commercial users, master metered condominiums, P.U.D.s, apartment complexes and mobile home parks.
2. All irrigation services must have reduced pressure backflow devices.
3. Irrigation meter size shall be determined by the maximum flow required at any one control valve.
4. Sizing of irrigation meters shall be coordinated with the City Engineer.
5. Backflow devices specified on the irrigation plan must conform to City Standard and must be on the current USC Approved List of Devices.

K. Private Fire Systems
1. Private fire systems must be installed per NFPA 24.
2. Before combustible materials may be stored or constructed on site, the Fire District must approve fire flow and access. Before a fire hydrant may be placed in service, a high velocity flush of the fire hydrant shall be witnessed and approved by City Personnel.

3. Lateral size must be the same or larger than the size required for the sprinkler system or the private hydrant system.
4. All private fire systems require backflow prevention assemblies in accordance with City Standards.
5. Reduced pressure backflow assemblies are required if fire systems are used with chemical additives such as:
    a. Antifreeze
    b. Auxiliary water supply (well) exists on site
    c. A health hazard exists on the site.
6. On residential systems, rubber seated check valve assemblies approved by the Fire District must be installed where fire system connects to the domestic water system.
7. Fire Department connection location must be approved by the Fire District
8. A fire hydrant shall be installed within 50’ of a Fire Department connection or at a location approved by the Fire Chief.
9. The maximum length of a fire hydrant lateral from a private main to the hydrant bury is 40'.
10. Private fire line installation must keep joints exposed until after inspection and pressure testing is complete.

K. Cathode Protection
1. All water services shall have cathodic protection installed using a zinc anode as shown in City Standards 530 and 531.

VIII. Fire Hydrants

A. Before combustible materials may be stored or constructed on site, the Fire Department must approve fire flow and access. Before a fire hydrant may be placed in service, a high velocity flush of the fire hydrant shall be witnessed and approved by City Personnel.

B. Location of fire hydrants must be approved by the Fire Department.

C. Each hydrant must be on a separate valved main line section.

D. Whenever possible, locate hydrants at street intersections.

E. If it's not possible to locate at an intersection, locate the hydrant near a property line or where it will minimize interference with property use.

F. Locate hydrants a minimum of 10' from roll down of driveways.

G. Residential areas -
1. Space fire hydrants every 300' or as approved by the Fire Marshal.
2. Evenly distribute hydrants throughout the project.
3. No building may be more than 150' from the nearest hydrant.

H. Commercial and Industrial Areas -
   1. General hydrant spacing shall be every 300'.
   2. Evenly distribute hydrants throughout the project.
   3. No building may be more than 150' from the nearest hydrant.

I. Minimum fire flow required at all fire hydrants shall be per the requirements as specified in the Fire Code or per the following whichever is greater.
   1. Residential and commercial areas - 1,000 gallons per minute with a 20-psi residual.
   2. Commercial areas 2,000 gallons per minute with a 20-psi residual.
   3. Industrial areas – 3,000 gallons per minute with a 20-psi residual.

J. Require water analysis study unless otherwise specified by the City Engineer.

IX. Backflow Devices

A. Backflow devices are required to be installed by State of California Title 17.

B. All backflow devices that are installed must be on the approved USC list.

C. Backflow assemblies must be installed as near as possible to the water meter.

D. Where residential fire sprinklers are installed, rubber sealed check valve devices are required where the fire service connects to the domestic service. The backflow preventer must be accessible for testing and maintenance.

E. Properties with private sewer lift stations must have reduced pressure backflow assemblies on their water systems.

F. All irrigation services require reduced pressure backflow assemblies.

G. Parcels with two or more water service laterals must have double check valves installed on each service.

H. Properties using a well for irrigation must have a reduced pressure backflow preventer on the domestic service.

X. Pressure

A. Maximum allowable main line pressure is 150 psi measured at a fire hydrant.

B. Maximum allowable static service pressure measured at a faucet is 80 psi.

C. Minimum service pressure measured at the meter is 40 psi.

D. If the service pressure exceeds the maximum of 80 psi, an individual pressure regulator will be required on the service line.

E. Fire flows must be calculated for all projects.

F. For calculating pressures in all water zones, calculate the minimum pressure using the elevation of the reservoir at one-half full.

XI. Specialty Items

A. Air relief valves.
   1. Air relief valves are required at locations in the system that are one pipe diameter or more, higher than the remainder of the system, such as over a hilltop. A fire hydrant may be used in place of an air relief valve at the discretion of the City Engineer.
   2. Air relief valves are not required in residential areas if services are installed at or near the crown within one pipe diameter vertically of the high point.

B. Pressure reducing valves are installed to maintain overall system balance.

C. Surge or pressure relief valves are installed where pressure could potentially reach above the maximum allowable.

XII. Special Conditions

A. The need for cathodic protection will be determined by the City Engineer for each project. This may require soils reports or other additional information.

B. Delineated fault zones.
   1. Ductile Iron Pipe must be installed in delineated fault zones and extend to 100' outside each side of the delineated fault boundaries.
   2. Pumper connections or fire hydrants shall be installed approximately 50' outside each side of the delineated fault zone.
   3. Flextend assembly, as manufactured by EBAA Iron, Inc. of Eastland, Texas, or approved alternative, with valve must be installed adjacent to and on the fault side of the pumper connection or fire hydrant.
   4. A valve must be located between the Flextend assembly and the fire hydrant.

C. Abandon water mains and services.

1. For water lines 1" or smaller, expose lateral at the main, close the corporation stop, disconnect the lateral and plug or cap the corporation stop.
2. For lines 1½" or larger, remove the valve and plug the main.
3. Valve boxes for abandoned valves must be removed.
4. Abandoned mains, valves and risers located within the street structural section must be removed.
5. All water mains 12" and larger, within the public right-of-way must be broken every 50' and filled with sand slurry.

D. Private water mains vs. Public water mains
1. Public water mains may not be constructed outside the street right-of-way without specific approval of the City Engineer.
2. Fire hydrants required on site to serve one lot would be private systems.
3. Water mains and fire hydrants located on site shall be private systems.
4. Normally, where the water mains are publicly maintained, the sewer mains should also be publicly maintained.
5. Fire mains must be installed per NFPA 24.

E. Water mains installed at a slope of 15% or greater shall be constructed with restrained joints.

F. Water mains installed outside of the paved roadway must be Ductile Iron Pipe and shall have suitable access.

XIII. Engineer's Approved List

STANDARD NO. 502

Hydrants

Residential (All 1-2½" & 1-4½" outlet)		Commercial & Industrial (4½", 4½", 2½")	
Clow	950	Clow	865
Long Beach	614	Long Beach	435

STANDARD NO. 503

Angle Meter Ball Valve (House side & Street side) – 1"

Ford	BA43-444WG
Jones	J1963W-SG
Mueller	B24258

Corporation Stop (Ball Valve) – 1"

Ford	FB1000
Jones	1937SG
Mueller	B25008

Tapping Service Saddle

	C-900 Pipe
Ford	FC202

Jones	J-996
Rockwell	313 or 317-Nylon coated
Romac	202N (Double) 101-N

Ductile Iron Pipe

Ford	FCV202
Rockwell	313
Romac	202N

Existing ACP

Ford	FS202
Rockwell	317

Meter Boxes and Covers

1" (Non-Traffic Loading Area)

Box:		Cover:	
Christy	B16	Christy	B30
Quazite	PG1730BA12	Quazite	PG1739WAP250

1" (Traffic Loading Area)

Box:		Cover:	
Christy	N30	Christy	B36P-61G
Quazite	PG1730BA12	Quazite	PG1730HAP250

STANDARD NO. 505

2" Fl. x M.I.P Brass Ball Meter Valve

Ford	BF83-777
Jones	J1915W Fl. x F.I.P.
Mueller	B24337

2" Fl. x F.I.P Brass Ball Valve

Ford	BFA 13-777W
McDonald	4604B
Mueller	B24337

2" Brass M.I.P. x Compression Coupling

Jones	J-2605
	J-2605-SG
McDonald	4753-T
Mueller	B25028

2" Resilient Seated Gate Valve

Clow	F-6103
Ford	B81-777
Jones	J-2816

2" Bronze Comp 90° E11

Jones	J2611
Romac	202N

Meter Boxes and Covers

(Non-Traffic Loading Area)

Box:		Cover:	
Christy	B36	Christy	B36E
Extension	1395		
Quazite	PG1730BA12	Quazite	PG1730WAP250

(Traffic Loading Area)

Box:		Cover:	
Christy	B1730	Christy	B1730-61G

STANDARD NO. 506 & NO. 507

Size on Size 10” and over (examples 10” on 10”, 12” on 12”)

Existing ACP use only:

Clow M.J.	F-5205 & 5207
Mueller M.J.	H-615 & H-619
Power Seal	Model 3400

Meter Boxes and Covers

(Non-Traffic Loading Area)

Box:		Cover:	
Christy	B48 w/ext.	Christy	B48M
Quazite	PG3048BA18	Quazite	LG3048WAQ150

(Traffic Loading Area)

Box:		Cover:	
Christy	B48 w/ext.	Christy	B48-62GH

STANDARD NO. 508

Tapping Sleeves

Refer to Standard 506 on Approved List.

Meter Boxes and Covers

(Non-Traffic Loading Area)

Box:		Cover:	
Christy	B48 w/ext.	Christy	B48M
Quazite	PG3048BA18	Quazite	LG3048WAQ150

(Traffic Loading Area)

Box:		Cover:	
Christy	B48 w/ext.	Christy	B48-62GH

STANDARD NO. 515 & NO. 516

2” Brass Ball Valve

Ford	B11-777
Jones	J-1900W
Mueller	B-20200

3” Brass ball Valve

Watts	Series WBV

Meter Box, Valves and Covers

Box:		Cover:	
Christy	B30	Christy	B30D
Quazite	PG1324BA12	Quazite	PG11324WA50

STANDARD NO. 525

Tapping Service Saddle

Refer to Standard 503 on Approved List

Ball Valve #1

Ford	B11-444
Jones	J-1900
Mueller	B25008

Corporation Stop (Ball Valve) – 1”

Ford	FB400
Jones	J-1943
Mueller	B2245

1” M.I.P. x Comp - 90° ell

Ford	L84-44G
Jones	J2619-SG
McDonald	4779-MT
Mueller	H15531

1” F.I.P. x Comp- 90° ell (Brass)

Ford	L14-44
Jones	K2621-SG
Mueller	H15533

Combination Valves

APCO	143C
Crispin	AL10
Golden-Anderson	945-Kinetic

Meter Boxes and Covers

(Non-Traffic Loading Area)

Box:		Cover:	
Christy	B36	Christy	B36D
Quazite	PG17330WA12	Quazite	PG1730WA50

(Traffic Loading Area)

Box:		Cover:	
Christy	B36	Christy	36-61D
Quazite	PG1730BA12	Quazite	PG1730HAR250

STANDARD NO. 531

Zinc Anode

Farwest Corrosion Control	01-12500

STREET LIGHT

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STREET LIGHT STANDARDS

I. Definitions and Abbreviations

"Arterial Street" shall mean a street whose primary purpose is to carry through traffic and means a fast or heavy street of considerable continuity which is used primarily as a traffic way to facilitate movement of heavy traffic between major residential areas or major residential areas and commercial areas.

"Average Maintained Foot-candles" is the average level of horizontal Illumination on the roadway pavement when the output of the lamp and luminaire is diminished by the maintenance factors; expressed in average foot-candles for the pavement area.

"California Standard Plans" shall mean the latest edition of the Standard Plans adopted by the California Department of Transportation.

"California Standard Specifications" shall mean the latest edition of the Standard Specifications adopted by the California Department of Transportation.

"Candela" is the unit of luminous intensity. Formerly the term "candle" was used.

"Collector Street" shall have the primary purpose of intercepting traffic from intersecting minor streets and handling traffic to the nearest major street or intercepting traffic from one collector street and handling traffic to another collector street. It shall serve as an access to abutting properties.

"Cul-de-sac Street" shall have the primary purpose of serving abutting land use and connecting to the nearest minor street or collector street. It is not intended to pass traffic through to another street and is a local street with only one outlet.

"Electrolier" is the complete street light assembly consisting of street light pole, luminaire, ballast, and lamp.

"Foot-candle" is the Illumination on a surface one square foot in area on which there is uniformly distributed a light flux of one lumen.

"Illumination" is the density of the luminous flux incident on a surface; it is the quotient of the luminous flux divided by the area of the surface when the latter is uniformly illuminated.

"Lateral Light Distribution" is a pattern of light distributed upon a series of longitudinal and transverse roadway lines, based on the location of the luminaire as related to the area to be lighted.

"Luminaire" is a complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power supply.

"Minor Street" shall have the primary purpose of serving abutting land use and handling traffic to the nearest Collector Street.

"Public Works Department" shall mean the Public Works Department of the City of Fort Bragg.

"Street Light Standard Plan" shall mean a typical standard of the Street Light Standards of the City of Fort Bragg.

Uniformity Ratio" is the ratio of average foot-candles of illumination on the pavement area, to the foot-candles at the point of minimum illumination on the pavement.

ASTM American Society for Testing and Materials

AWG American Wire Gauge

FC Foot-candle

HID High Intensity Discharge

IES Illuminating Engineering Society of North America

NEC National Electric Code

NEMA National Electrical Manufacturer's Association

PG & E Pacific Gas & Electric Company

PVC Polyvinyl Chloride

UL Underwriter's Laboratories, Inc.

U/R Uniformity Rating

II. General

A. These Street Light Standards shall be used for all street lights on public streets in the City of Fort Bragg.

B. These standards shall apply as of the date of adoption and are not considered retroactive.

C. Deviations from these standards shall require specific approval of the City Engineer.

D. These standards are minimum standards and do not preclude the use of a higher standard.

E. The purpose of the standards and specifications contained herein is to establish

uniform standards for street lights on public streets in the City of Fort Bragg, installed after the date of adoption of these standards. This document is not intended or designed as, nor does it establish, a legal standard for lighting.

F. Encroachment onto any City street, right-of-way, or public utility easement shall require an encroachment permit issued by the City of Fort Bragg.

G. Street light spacing shall be staggered and located at property lines when possible. Street light designs utilizing one side, median or opposite configurations shall require specific approval of the City Engineer.

H. Electrical service shall conform to the requirements of Standard Plan 603.

I. All street lighting projects are subject to approval by the City Engineer. Design shall conform to these requirements except as otherwise approved by the City Engineer.

J. The City Engineer shall only authorize energizing after City acceptance of the installation.

K. The following additional requirements apply to street light systems installed by private developers:

1. The developer/engineer shall make arrangements with PG&E for service points. Service points shall be shown on the improvement plans. The developer shall be responsible for all costs associated therewith which shall be paid directly to PG&E. The contractor shall verify the street light service point location(s) with PG&E prior to installation. The City will request energizing from PG&E.

2. The developer shall install the following in accordance with the Street Light Standard Plans: concrete foundations, galvanized steel poles, mast arms of the appropriate lengths, wiring, and standard luminaire.

3. All street light systems utilizing street lamps up to, and including, 150 watts shall be designed for 120 volt service unless connecting to an existing system. In the latter case, the design shall conform to the system being connected to and must be specifically approved by the City Engineer. Street light systems utilizing street light lamps above 150 watts shall require 240-volt service.

III. Roadway Illumination Requirements

A. Design Conformity

The design of all street light systems shall conform to the average maintained foot-candle and uniformity ratio requirements of these specifications.

B. Area Classifications

1. Area classifications shall be used when determining the required Illumination levels for street lighting systems. The area classification selected for designing the street light system shall be determined by the City Engineer.

   a. "Commercial" shall mean that portion of the city in a business development where ordinarily there are large numbers of pedestrians and a heavy demand for parking space during periods of peak traffic or a sustained high pedestrian volume and a continuously heavy demand for off-street parking space during business hours. This definition applies to densely developed business area outside of, as well as those that are within, the central part of the city.

   b. "Intermediate" shall mean that portion of the city which is outside of a downtown area but generally within the zone of influence of a business or industrial development, often characterized by a moderately heavy nighttime pedestrian traffic and a somewhat lower parking turnover than is found in a commercial area. This definition includes densely developed apartment area, hospitals, public libraries, and neighborhood recreational centers.

   c. "Residential" shall mean a residential development, or a mixture of residential and commercial establishments, characterized by few pedestrians and a low parking demand or turnover at night. This definition includes areas with single family homes, townhouses, and/or small apartments. Regional parks, cemeteries, and vacant lands are also included.

C. Average Maintained Foot-candle Requirements

1. The design of all street lighting systems shall conform to these illumination requirements. Evidence which demonstrates that the street lighting system conforms with these requirements shall be submitted to the City with the proposed design.

2. The below-listed chart shall be used for determining the average maintained foot-candle (Avg. Maint. FC) and Uniformity Ratio (U/R) requirements for the specific roadway and area types:

Roadway Classification	Area Classification	Avg. Maint. FC	U/R
Major	Commercial	.75	3:1
	Intermediate	.75	3:1
	Residential	.75	3:1

Collector	Commercial	.30	5:1
	Intermediate	.30	5:1
	Residential	.30	5:1
Minor	Intermediate	.20	4:1
	Residential	.20	4:1

D. Lateral Light Distribution

1. Lateral light distribution patterns shall conform to Illuminating Engineering Society of North America (I.E.S.) lateral light distribution patterns.

   a. Street lights mounted at the terminus of a cul-de-sac: I.E.S. Type 4.

2. Design shall conform to these requirements except as specifically approved by the City Engineer.

IV. Street Lights

A. Cobra Style Street lights

1. The luminaire shall be an American Electric Series 113, Hubbell RM-150, General Electric M250R2, or an approved equal.

2. Street light poles and mastarms shall be galvanized steel.

3. The street light poles shall be an Ameron Series PL, Landmark Lighting S3508, Pacific Union Metal LA 10120, or an approved equal.

4. Street light pole heights shall conform to Street Light Standards 601. Alternate pole heights shall require specific approval of the City Engineer.

5. Street light mast arm lengths shall conform to Street Light Standard 601. Alternate mast arm lengths shall require specific approval of the City Engineer.

6. The concrete footing requirements shall conform to the requirements of Street Light Standard Plan 602.

7. The wiring for the electrolier shall conform to the requirements of Street Light Standard Plan 604.

8. Cut off lenses and devices shall require specific approval of the City Engineer.

V. Wiring

A. Except as noted, all wiring methods and equipment construction shall conform to the National Electric Code (N.E.C.) and applicable sections of the California Standard Specifications.

B. All splices shall be made with solderless and waterproof connectors.

C. Unless authorized otherwise, all wiring shall be ThW A.W.G. stranded, copper only. Unless otherwise specified on the Street Light Standard Plans, all wiring shall be of the following sizes:

1. All field wiring: #8 minimum (N.E.C.)

2. Pullbox to electrolier: #10 minimum (N.E.C.)

3. All wire in pole: #10 minimum (N.E.C.)

VI. Photocells

A. For streetlights equipped with photoelectric control, the photocell shall be Type IV consisting of a photoelectric unit which plugs into an EEI-NEMA twist lock receptacle integral with the luminaire and shall conform to the provisions of the California Standard Specifications. The photoelectric controls shall be operable within a minimum voltage range between 105 and 280 volts. All photoelectric controls shall be oriented to the north.

VII. Conduit

A. All conduit to be used shall be a minimum of 2 inch diameter, schedule 40 PVC, except from each street light to the adjacent pull box which shall be 1½ diameter galvanized steel and shall have a 2-foot minimum cover from the top of conduit to the finished grade of the sidewalk, parkway, or roadway.

B. All steel conduit and other metal parts, including bonding bushing, shall be N.E.C. approved parts and shall be continuously bonded and grounded per N.E.C. requirements.

C. All bends and/or offsets shall be made with factory sections using approved couplers per N.E.C. requirements.

D. All empty conduits shall have a one-quarter inch polypropylene pull rope provided inside and sealed with a duct seal, approved by the City Engineer, on both ends of the conduit.

E. The ends of all conduits installed shall be sealed with a duct seal approved by the City Engineer. Conduits stubbed for future extension shall be capped.

VIII. Pull boxes

A. Unless otherwise approved by the City Engineer, a No. 5 concrete pull box conforming to California State Standard Plan ES-8 shall be installed within five feet of the base of all street light poles.

B. All pull boxes shall be installed per Street Light Standard Plan 602.

C. Pull boxes shall not be more than 250 feet apart on long runs.

D. Pull boxes shall not be placed where they will be subject to vehicular traffic. Exceptions shall require specific approval of the City Engineer.

E. All pull box covers shall be inscribed with "Street Lighting" and be secured with 3/8 inch bolts, capscrews, or studs, and nuts which meet the provisions of the California Standard Specifications.

TRAFFIC CONTROL STANDARD SPECIFICATIONS

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TRAFFIC CONTROL STANDARD SPECIFICATIONS

I. Definitions

"Alley" means any unnamed street contained in the public right-of-way, twenty-four feet or less in width, used primarily for vehicular service access to the back or side of properties.

"Arterial Street" shall mean a street whose primary purpose is to carry through traffic and means a fast or heavy street of considerable continuity which is used primarily as a traffic way to facilitate movement of heavy traffic between major residential areas or major residential areas and commercial areas.

"Bike Lane" means those on-street bikeways which are part of the normal street section and provide marked bike lanes which delineate the separate rights-of-way assigned to bicyclists and motorists.

"Collector Street" shall have the primary purpose of intercepting traffic from intersecting minor streets and handling traffic to the nearest major street or intercepting traffic from one collector street and handling traffic to another collector street. It shall serve as an access to abutting properties.

"Cul-de-sac Street" shall have the primary purpose of serving abutting land use and connecting to the nearest minor street or collector street. It is not intended to pass traffic through to another street and is a local street with only one outlet.

"Minor Street" shall have the primary purpose of serving abutting land use and handling traffic to the nearest collector street.

"Public Street" means a way for vehicular traffic, whether designated a minor street, collector street, major thoroughfare, freeway, or other designation, which is improved to City standards, dedicated for general public use or maintained by a public agency. The term "street" shall include alleys as defined above.

"Public Works Department" shall mean the Public Works Department of the City of Fort Bragg.

"Rural District" for the purpose of sign installations, shall mean an area where streets have unimproved shoulders without curb, gutter, sidewalks or improved pedestrian facilities.

"Sidewalk" shall mean a Portland Cement Concrete (PCC) surfaced area for pedestrian usage located within the public or private street right-of-way or sidewalk easement and included as a standard element of a street section.

"Street" shall include avenues, highways, lanes, alleys, courts, crossings or intersections which have been dedicated and accepted according to the law or which have been in common and undisputed use by the public for a period of not less than five years next preceding, or which have been dedicated to a semi-public use.

"Street right-of-way" shall mean the shortest distance between the lines delineating the right-of-way of a street used for public access.

"Street Standard Plan" shall mean a typical street standard of the Street Design and Construction Standards of the City of Fort Bragg.

"Traffic Standard Plan" shall mean a typical traffic standard of the Traffic Control Standards of the City of Fort Bragg.

"Traveled Way" means a way or place of whatever nature publicly maintained and open to the use of the public for purposes of vehicular travel.

"Urban District" for the purpose of sign installations, shall mean an area where streets have improved shoulders with curb, gutter and sidewalk.

II. General

A. Traffic Standards shall be used for all public streets in the City of Fort Bragg.

B. The purpose of the standards and specifications contained herein is to establish uniform policies and procedures for traffic engineering functions of the Fort Bragg Public Works Department. It is neither intended as, nor does it establish, a legal standard for these functions.

C. Deviations from these standards shall be granted only upon specific approval of the City Engineer.

D. These standards are considered minimum and do not preclude the use of a higher standard as approved by the City Engineer.

E. Encroachment onto any City street or right-of-way shall require an encroachment permit issued by the City of Fort Bragg.

III. Traffic Signs

A. General

1. The base metal of all signs shall be new sheet aluminum of alloys 6061-T6 or 5052-H38 conforming to the requirements of ASTM Designation B 209.

2. Unless otherwise specified by the City Engineer, the thickness of all signs shall be .080 inches, except for mast-arm mounted signs which shall be 0.125 inches.

3. All regulatory and warning signs shall be constructed to the standard size and specifications of the State of California, Department of Transportation.

Signs larger than the standard sign may be required or may be granted approval by the City Engineer.

4. The following signs shall be constructed using High Intensity encapsulated lens sheeting and lettering: stop signs (R1), yield signs (R1-2), keep right signs (R7), no u-turn signs (R34), stop ahead signs (W17), chevron signs (W81), mast-arm mounted street name signs, advance street name signs, street name signs, and Type N markers. This sheeting and lettering shall hold a minimum warranty of 10 years. Other traffic signs may require high intensity sheeting and lettering as specified by the City Engineer.

B. Traffic Sign Installation - Urban Areas

1. Signs shall be installed as per these specifications and facing traffic in the lane adjacent to which the sign is installed. "No Parking" signs shall be installed at a 30° angle toward the traveled way. All other signs shall be installed at an angle toward the traveled way per the sign manufacturer's reflective requirements.

2. Signs in the median area shall be placed midway between curbs. These signs shall be mounted no closer than six inches to, and no farther than six feet from, the edge of the traveled way which the sign faces.

3. Typical installations shall conform to the requirements of Traffic Standard Plan 701, or as specifically approved by the City Engineer.

4. The minimum mounting height for signs shall be seven feet measured from the bottom of the sign to the near edge of the pavement, except as otherwise noted below, or as specifically approved by the City Engineer.

5. The height to the bottom of a secondary sign mounted below a primary sign shall be a minimum of six feet measured from the bottom of the sign to the near edge of the pavement.

6. In areas not subject to pedestrian traffic, the Chevron (W81) and ONE WAY (R10) signs shall be mounted at a height of three feet, measured from the bottom of the sign to the near edge of the pavement.

C. Traffic Sign Installation - Rural Areas

1. Signs shall be installed as per these specifications and facing traffic in the lane adjacent to which the sign is installed. "No Parking" signs shall be installed at a 30° angle toward the traveled way. All other signs shall be installed per the sign manufacturer's reflective requirements.
2. Typical installations shall conform to the requirements of Traffic Standard Plan No. 702 or as specifically approved by the City Engineer.

3. The minimum mounting height for signs shall be five feet, measured from the bottom of the sign to the horizontal extension of the near edge of the pavement, except as otherwise noted below, or as specifically approved by the City Engineer.

4. The height to the bottom of a secondary sign mounted below a primary sign shall be a minimum of four feet, measured from the bottom of the sign to the horizontal extension of near edge of the pavement.

5. The CHEVRON (W81) and ONE WAY (R10) sign shall be mounted at a height of three feet, measured from the bottom of the sign to the horizontal extension of the near edge of the pavement.

D. Standard Street Name Sign

1. Standard street name signs shall conform to the requirements of Traffic Standard Plan 704.

2. Street name signs installed at signalized intersections shall conform to the following requirements:

   a. Street name signs shall be mounted to the traffic signal standard by the use of a heavy duty arm bracket for electrical mounting.

   b. Two sets of street name signs shall be mounted at each signalized intersection.

3. The mounting location at non-signalized intersections shall conform to Traffic Standard Plan 703.

E. Pole Standard Installation

1. All poles shall be 2-inch I.D. galvanized steel, schedule 40 ASTM 120 and shall be threaded at both ends.

2. In concrete or other finished surfaces, a 2½-inch diameter hole shall be rock drilled to a minimum depth of 18 inches. Upon installation, the pole shall be set using sand and cement.

3. In rural districts, an 8-inch diameter hole shall be dug to a minimum depth of 18 inches. Upon installation, the pole shall be set using concrete mix.

4. For the bolting of signs directly to the pole, 5/16-inch x 3 inch long Grade 3 bolts with a flat washer shall be used.

IV. Pavement Markings

A. Raised Pavement Markings

1. Raised pavement markers shall conform to the shape, types and dimensions of State of California Standard Plan A-20A.

2. Except as indicated below, raised pavement markers shall conform to the requirements and applicable provisions of Section 85 of the State of California Standard Specifications. The following specifications shall be added to the applicable provisions:

   A hot melt bitumen adhesive may be used to cement the markers to the pavement, instead of the Rapid Set Type or Standard Set Type adhesive. The bitumen adhesive material, if used, shall conform to the following:

Specification	ASTM Test Method	Requirement
Flash point, CCC, F	D 92	550 Min.
Softening Point, F	D 36	200 Min.
Brookfield Viscosity, 400° F	D 2196	7500 cP, Max
Penetration, 100g 5 sec. 77° F	D 5	10-20 dmm

Specification	ASTM Test Method	Requirement
Filler Content, % by weight (insoluble in 1,1,1 Trichlorethane)	D 23711	50-75

Filler material shall be calcium carbonate and shall conform to the following fineness:

Sieve Size	Percent Passing
No. 100	100
No. 200	95
No. 325	75

Bitumen adhesive shall be indirectly heated in an applicator with continuous agitation. The adhesive shall be applied at a temperature between 400° F and 425° F. Markers shall be placed immediately after application of the adhesive.

Placement of markers using bitumen adhesive shall conform to the requirements for placing markers in Section 85-1.06 of the State of California Standard Specifications, except as follows:

a. Markers shall not be placed when the pavement or air temperature is 50° F or less.

b. Blast cleaning of clean, new asphalt concrete surfaces will not be required.

3. For application of the raised pavement marker to the pavement surface, the adhesive shall completely surround the perimeter of the marker after the marker has been pressed into place.

4. The configuration to be used in the placement of raised pavement markers shall conform to Traffic Standard Plan 705, or as specifically authorized by the City Engineer.

5. Lane widths as shown on design documents shall be measured from centerline to centerline of adjacent striping patterns, or, from face of curb to the centerline of the striping pattern.

B. Bike Lane Markings

1. Bike lane markings shall conform to the requirements of Traffic Standard Plan 707.

2. Bike lane markings shall be used on all streets designated for Class II bike lanes.

3. The standard pavement markings shall be the words BIKE LANE with an arrow showing the direction of travel, placed in the center of the bicycle lane.

4. The solid bike lane line shall be dropped 96 feet in advance of the intersection, and a broken line carried to the intersection.

5. There shall be a minimum of three feet between the lip of the gutter and the 6-inch bike lane line.

6. Design shall conform to these requirements except as otherwise approved by the City Engineer.

C. Durable Pavement Markings (Tape)

1. At the discretion of the City Engineer, pavement markings may be required to be composed of durable pavement tape of one of two types:

a. General purpose high durability retro-reflective pliant polymer film, or
b. Durable retro-reflective pavement marking film.

2. General purpose high durability retro-reflective pliant polymer film shall be used for preformed longitudinal, transverse and word/symbol markings subjected to high traffic volumes and severe wear conditions such as repeated shear action from crossover or encroachment on edge and channelization lines, and stop, start, or turn movements, or where required by the City Engineer.

3. Durable retro-reflective pavement marking film shall be used for preformed markings subjected to moderate, well-channelized, free rolling traffic volumes, less severe wear, and where there is a need for higher reflectivity or where required by the City Engineer.

4. The preformed markings shall consist of white or yellow films with pigments selected and blended to conform to standard highway colors through the expected life of the film. Glass beads shall be incorporated to provide immediate and continuing retro-reflection.

5. The size, quality and refractive index of the glass beads shall be such that the performance requirements for the markings shall be met and the bead adhesion shall be such that beads are not easily removed.

6. Preformed words and symbols, and traffic striping, shall conform to the applicable shapes, sizes, and colors as outlined in the California Department of Transportation Traffic Manual or as required by the City Engineer.

7. The preformed markings shall be capable of being adhered to asphalt concrete or Portland cement by a pre-coated pressure sensitive adhesive. A primer may be used to precondition the pavement surface. The preformed marking film shall mold itself to pavement contours by the action of traffic. The pavement marking films also shall be capable of application on new, dense and open graded asphalt concrete wearing courses during the paving operation. After application, the markings shall be immediately ready for traffic. All solvents and/or primers (where necessary), equipment necessary for application, and recommendations for application that will assure the materials shall be suitable for use shall be identified to the City Engineer.

8. The general purpose high durability retro-reflective pliant polymer film, when applied according to the recommendations of the manufacturer, shall provide a neat, durable marking that will not flow or distort due to temperature if the pavement surface remains stable. The film shall be weather resistant and, through normal traffic wear, shall show no fading, lifting or shrinkage which will significantly impair the intended usage of the marking throughout its useful life and shall show no significant tearing, roll back or other signs of poor adhesion.

9. The durable retro-reflective pavement marking film, when applied according to the recommendations of the manufacturer, shall provide a neat, durable making that will not flow or distort due to temperature if the pavement surface remains stable. The film shall be weather resistant and, through normal traffic wear, shall show no fading, lifting or shrinkage which will significantly impair the intended usage of the marking throughout its useful life and shall show no significant tearing, roll back or other signs of poor adhesion.

D. Pavement Marking Paint

1. Traffic striping shall conform to the applicable provisions of Section 84 of the California Standard Specifications and as directed by the City Engineer.

2. The paint shall be commercial quality, solvent or water borne paint and be applied in two coats to achieve the designed coverage.

3. The kind of paint to be used (solvent borne or water borne) shall be determined by the City Engineer.

4. Glass beads used for reflective pavement markings will conform to the modified California State Specification No. 8010-51j-22 (Type II).

5. Thinner shall not be mixed with paint. Paint shall dry "track free" in not less than thirty (30) minutes and not more than ninety (90) minutes.

6. All painted pavement markings shall be clean and sharp as to dimensions. Ragged ends of segments, fogginess along the sides, or objectionable dribbling along the unpainted portions of the pavement marking shall not be permitted.

7. The painted pavement marking shall have an opaque, well-painted appearance with no black or discolorations showing through.

8. Words, symbols and traffic striping shall conform to the applicable shape, sizes and colors as outlined in the California Department of Transportation Traffic Manual or as required by the City Engineer.

E. Thermoplastic Pavement Markings

1. At the discretion of the City Engineer, pavement markings may be required to be composed of thermoplastic pavement marking material. In private developments, this requirement shall be noted on the improvement plans.

2. The furnishing and applying of thermoplastic pavement marking material shall conform to the requirements of the modified California State Specification No. 8-10-41G-21.

3. Glass beads applied to the surface of the molten thermoplastic material shall conform to the requirements of the modified California State Specification No. 8010-51J-22 (Type II).

F. Eradication of Pavement Markings

1. Pavement marking paint and thermoplastic shall be removed by sand blasting.

2. Painting over as a means of pavement marking eradication shall not be permitted.

G. Temporary Pavement Markings

1. When pavement markings have been obliterated or damaged in construction work zones, temporary pavement markings shall be installed in accordance with these specifications.

2. At the end of each day's work, temporary pavement markings shall be in place on each paving lift that is open to normal traffic flow.

3. Temporary pavement marking materials shall be approved by the City Engineer prior to installation.

4. Temporary pavement marking configurations shall be in accordance with the California Department of Transportation Traffic Manual or as specified by the City Engineer.

5. The temporary pavement markings shall be maintained and replaced by the Contractor until they are covered with the next paving course or are replaced with durable pavement markings applied on the final wearing course.

6. Temporary pavement markings shall be applied to clean, dry surfaces in accordance with the manufacturer's recommendations or a method approved by the City Engineer.

V. Construction Area Traffic Control

A. General

1. All contractors, permit holders or agencies doing work in public streets or public right-of-way shall:

a. Obtain all necessary permits.

b. Install and maintain required traffic control devices.

c. Provide flaggers when required.

d. Provide adequate safeguards for workers and the general public.

e. Assure that survey crews and other employees working in or adjacent to a traveled roadway wear flagging garments as required for flaggers.

f. Patrol the construction site as required to insure that all devices are in place and operating at all times.

g. Remove traffic control devices when they are no longer needed.

2. A traffic control plan **shall be required** and submitted for review and approval for all requested road closures, detours, land closures or other work within the public right-of-way. Exceptions to the requirement of a traffic control plan shall require the specific approval of the City Engineer. Such plans shall include delineator placement, type and location of all signs (construction signs, detour signs, street name plates, etc.), barricade placement, flaggers, temporary pavement markings, and any other pertinent information.

3. The latest edition of the California Department of Transportation's Manual of Traffic Controls for Construction and Maintenance Work Zones and Traffic Control Standard Plans No. 508 through No. 510 shall be used as references for determining appropriate signing. Consideration shall be given to such items as bus routes and locations of bus stops, school walking routes and school crossings, and work hour restrictions such as not allowing work during peak commute hours.

4. If a traffic control plan is necessary, it shall be approved by the signature of the City Engineer.

VI. Traffic Signals

A. General

1. Traffic signal and safety lighting equipment shall comply with the requirements of the applicable provisions of Section 86 of the California State Specifications and Standard Plans, these traffic control standards, and as required by the City Engineer.

2. Foundations for traffic signal standards shall be constructed per the applicable California State Standard Plans and as required by the City Engineer.

3. All traffic signals shall be equipped with a Fire Department approved Opticon device.

B. Traffic Signal Poles, Steel Pedestals and Posts

1. Traffic signal poles, arms, and related appurtenances shall be installed per the requirements of the California State Standard Plans or as required by the City Engineer.

2. The chase outlet shown on the California State Standard Plans in the mast arm mounting plate, and in the mast arm mounting plate on the pole, shall be 1½ inch minimum diameter and shall be smoothed after galvanizing to facilitate installation of conductors without damaging the insulation.

3. Each pole shall be provided with one 3 inch x 5 inch minimum handhole for wiring, located within one foot of the base and on the same side of the pole as the mast arm.

4. Design shall conform to these requirements except as otherwise approved by the City Engineer.

C. Model 170 Traffic Signal Controller

1. Model 170 traffic signal controller units shall conform to the requirements of the latest edition of the "Traffic Signal Control Equipment Specifications," issued by the California Department of Transportation, and to all addendums thereto.

2. The power supply shall be a Ferro-resonant type of transformer. Linear and switching power supplies shall not be acceptable.

3. The controller shall have a minimum of eight kilobytes of battery-backed RAM memory on the CPU board.

4. The CPU power control circuitry shall be located on the CPU board.

5. The ACIA baud rates shall be jumper selectable from 300 to 19K baud.

6. The controller shall be capable of supporting one additional ACIA auxiliary communication adaptor port at addresses 6002/6003.

7. The standby battery assembly shall be located on the front panel swing-out assembly, and shall be easily accessible for maintenance and testing purposes.

8. Design shall conform to these requirements except as otherwise approved by the City Engineer.

D. Traffic Signal Controller Cabinet

1. The controller cabinet shall be Type 332 or Type 303 as specified by the City Engineer.

2. When the controller is not used, conduit shall run directly to the pull box.

3. The controller cabinet shall be mounted no closer than four feet from the service cabinet.

4. Design shall conform to these requirements except as otherwise approved by the City Engineer.

E. Traffic Signal Service Cabinet

1. The traffic signal service cabinet shall meet the following requirements:

a. Inside dimensions:

	Minimum	**Maximum**
Height	41 inches	45 inches
Width	11¾	19 inches
Depth	8¼	10½

b. 12-gauge steel treated with primer and two coats of baked-on enamel or electro statically applied thermosetting polyester.

c. A provision for reading the service meter through a window without opening any doors shall be provided. The window shall be clear glass, Lexan or plastic.

d. The cabinet shall be watertight with a weatherproof door and window.

2. Foundation shall be 24 inches deep below ground level and constructed per section 86-2.03 of the California State Specifications.

3. Timer, flasher, and spare shall be used only when specified by the City Engineer.

4. The cabinet shall be no closer than six feet from the distribution pole.

5. The cabinet shall be mounted no closer than four feet from the traffic signal controller cabinet.

6. Design shall conform to these requirements except as otherwise approved by the City Engineer.

F. Conduit

1. Conduit requirements shall conform to the following:

   a. Service run conduit shall be 2 inch minimum diameter.

   b. Conduit under any street shall be 3 inch minimum diameter and shall have a minimum of 24 inches of cover.

   c. Conduit under sidewalk or planter area shall have a minimum of 24 inches of cover.

   d. Conduit from the main pull box to the controller shall be two (2) 3 inch diameter conduits.

   e. Any signal run and interconnect conduit shall be 2 inch minimum diameter.

2. All conduits shall be Schedule 40 PVC, except pole risers which shall be Schedule 80 PVC.

3. All underground conduits and metal parts shall be continuously bonded and grounded.

4. All bends and/or offsets shall be made with factory manufactured sections.

5. All empty conduit shall have a one-quarter inch polypropylene rope provided inside along its entire length and extending 24 inches out of each end.

6. After conduits, wire and rope have been installed, the ends of all conduits terminating in pull boxes shall be sealed with an approved type of sealing compound. Conduits stubbed for future extension shall be capped.

7. Design shall conform to these requirements except as otherwise approved by the City Engineer.

G. Pull Boxes

1. All pull boxes shall be #5 concrete (California Standard Plan No. ES-8) except the main pull box which shall be 30 inch x 48 inch minimum size concrete pull box and shall have double covers. Covers shall be marked "Traffic Signal".

2. Traffic signal interconnect conduit shall be installed in separate concrete pull boxes and their covers shall be marked "I.C.".

3. Pull boxes subjected to vehicular travel shall be installed with one-quarter inch steel plate covers (galvanized after fabrication) with a diamond-type cover surface.

4. All pull box covers shall be bolted.

5. Pull box foundation requirements shall conform to City Standard Plan 602

6. Bottoms of pull boxes shall be grouted prior to the installation of conductors. A layer of roofing paper shall be placed between the grout and the crushed rock sump. A one inch drain hole shall be provided in the center of the pull box through the grout and the roofing paper.

7. Design shall conform to these requirements except as otherwise approved by the City Engineer.

H. Conductors

1. All conductors for traffic signal or street lighting systems shall conform to the requirements of Section 86 of the California State Specifications, or as specified herein.

2. All conductors shall be cooper and be rated for 600-volt operation.

3. All conductors shall conform to the latest requirements of the National Electric Code (NEC) and be labeled by Underwriter's Laboratories, Inc.

4. Colored stripes on conductor insulation to identify each phase of vehicle signals, pedestrian signals, pedestrian push buttons, and detectors shall be required.

5. All conductors shall be pulled by hand and shall be installed in conduit runs in one operation. The use of winches or other power actuated equipment shall not be permitted.

6. The maximum number of wires in the conduit shall conform to the specifications of the National Electric Code.

7. #14 AWG conductors shall be used for the following:

   a. Each traffic signal lamp on each phase.

   b. Each pedestrian signal indication on each phase.

c. Each pedestrian push button and pedestrian push button common installed into the controller.

d. Three for spares under each street.

e. 12-pair (branches) or 50-pair (main run), or as determined by the City Engineer, for interconnect.

8. #8 AWG conductors shall be used for the following:

a. Two for each safety light 120/240V.

b. One for equipment ground.

c. One neutral for traffic signal.

9. #4 AWG conductors shall be used from the utility service point to service cabinet for traffic signals and safety lights.

I. Wiring

1. No splices of traffic signal lights, pedestrian signal lights, or pedestrian push button wires shall be allowed in any pull box. Ground wires may be spliced in pull boxes.

2. Straight splices in signal neutral and multiple lighting conductors shall be insulated in conformance with Method "A" as shown on the California State Standard Plans.

3. Wiring shall conform to the requirements of Traffic Standard Plan 711.

4. Conductors shall be permanently identified as to function. Identification shall be placed on each conductor or each group of conductors comprising a signal phase in each pull box and near the end of conductor termination.

5. Identification shall be by tags or bands fastened to the conductors using nylon wire ties in such a manner that they will not move along the conductors. Conductors comprising a single signal phase may be grouped together and tagged with a single band provided the band is designed to tie conductors together as well as tag them.

6. Marking on tags shall be by mechanical methods (scribing, etc.) and shall be permanent.

7. Design shall conform to these requirements except as otherwise approved by the City Engineer.

J. Loop Detector Wiring

1. Traffic signal loop detector wiring shall conform to the requirements of Traffic Standard Plan 712.

2. All loops shall be Type A in accordance with California State Standard Plan No. ES-5B unless otherwise noted, and shall be installed in accordance with the details shown on the California State Standard Plans.

3. Each lane shall have one shielded cable pair lead-in continuous to controller.

4. No splicing of shielded cable pair lead-in shall be permitted.

5. Loop wire shall be #12 AWG stranded conductor with USEXLP insulation.

6. Detector lead-in cable shall be Type B per California State Specifications.

7. Detector lead-in cables shall be permanently and clearly marked at cabinet and pull boxes.

8. All advance loop detectors shall have their own detector lead-in cable per approach lane.

9. At the discretion of the City Engineer and when indicated on the improvement plans, sensor units shall be provided for inductive loop traffic counting equipment.

10. Type "A" detector hand holes shall be installed per California State Standard Plan No. ES-5E.

11. Design shall comply with these requirements except as otherwise approved by the City Engineer.

K. Detector Loop Wire Sealant

1. The encapsulated shall be one-part elastomeric compound requiring no mixing, measuring or application of heat prior to or during its installation.

2. The elastomeric sealant shall be a polyurethane material of a composition that will, within its stated shelf life, cure only in the presence of moisture. Sealant shall be suitable for use in both asphalt concrete and Portland cement concrete. The cured sealant shall have the following performance characteristics:

Property Results	Measuring Standards and Conditions
Hardness (indentation) 65-85	ASTM D 2240 Rex. Type A, Model 1700 77°F. (25°C) 50% relative humidity
Tensile strength-- 500 psi minimum	ASTM D 412 Die C, pulled at 20 IPM
Elongation-- 400% minimum	ASTM D 412 Die C, pulled at 20 IPM

Property Results	Measuring Standards and Conditions
Flex at -40°F.-- No cracks	25 mil Free Film Bend (180°) over ½ inch mandrel
Weathering Resistance-- (slight chalking)	ASTM D 822 Weatherometer 350 hours. Cured 7 days at 77°F. (25°C.) 50% relative humidity
Salt Spray Resistance-- 500 psi, minimum tensile; 400%, minimum elongation	ASTM D 117 28 days at 100°F. (38°C.) 5% NaC1, Die C, pulled at 20 IPM
Dielectric Constant-- less than 25% change over a temperature range of -30°C. to 50°C.	ASTM D 150

3. Specifications shall conform to these requirements except as otherwise approved by the City Engineer.

L. Electrical Service

1. Electrical service shall be underground service and shall conform to the requirements of City Standard Plan 713. Overhead service requires the specific approval of the City Engineer and shall conform to the requirements of City Standard Plan 714.

2. Design shall conform to these requirements except as specifically approved by the City Engineer.

M. Pedestrian Signals

1. A solid state neon pedestrian signal shall be used. The pedestrian signal shall be an Indicator Controls Corporation Model 4094D, Econolite Model 4483661, or equal.

2. Messages shall be lunar white WALKING PERSON and Portland Orange UPRAISED HAND (symbol type) per California State Standard Plan No. ES-3B and the Institute of Traffic Engineers, Standards: "Adjustable Face Pedestrian Signal Head Standard".

3. One of the following types of screen shall be provided. The type of screen shall be chosen at the discretion of the contractor.

   a. An aluminum honeycomb screen with 3/16 inch cells, 3/8 inch thick, shall be installed tilting downward, at an angle of 15 degrees (± 2 degrees) out from the top, and shall completely cover the message plate.

      The honeycomb screen shall be covered with a clear, 1/8 inch minimum thickness, acrylic plastic cover supported in an aluminum frame, or with a 1/16 inch nominal thickness, formed, polycarbonate plastic cover. Screen and cover shall be held firmly in place by the use of stainless steel or aluminum clips or stainless steel metal screws.

   b. A 1½ inch deep egg crate type screen and mounting frame of 0.032 inch minimum thickness 5052-H32 aluminum alloy shall be provided to cover the message plates. The screening shall be mounted in a frame constructed of 0.04 inch minimum thickness aluminum alloy.

      The egg crate type screen shall be installed parallel to the face of the message plate and shall be held in place by the use of stainless steel screws.

4. The screen and frame shall be fabricated from aluminum anodized flat black or may be finished with flat black enamel as specified in Section 91-4.01 of the California State Standard Specifications.

5. Alternate methods may be substituted by the contractor for the above screens providing the results are equal to or superior to those obtained with the above specified screens as determined by the City Engineer.

6. Design shall conform to these requirements except as otherwise approved by the City Engineer.

SUBDIVISION GENERAL NOTES

DESCRIPTION

100 SERIES - SUBDIVISIONS

100 Subdivision General Notes

CITY OF FORT BRAGG

SUBDIVISION GENERAL NOTES (REQUIRED ON ALL PLANS)

GENERAL NOTES

1. ALL MATERIAL, WORKMANSHIP AND CONSTRUCTION SHALL CONFORM TO THE CITY OF FORT BRAGG STANDARD SPECIFICATIONS AND STANDARD PLANS AND THE STATE OF CALIFORNIA D.O.T. STANDARD PLANS AND SPECIFICATIONS, LATEST EDITION.

2. CONTRACTOR SHALL OBTAIN AN ENCROACHMENT PERMIT FROM THE CITY OF FORT BRAGG 416 N. FRANKLIN STREET. BEFORE START OF WORK. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE PERMIT.

3. CONTRACTOR SHALL OBTAIN REQUIRED PERMITS FROM ALL AGENCIES AND PAY ALL FEES PRIOR TO COMMENCEMENT OF ANY WORK.

4. CONTRACTOR SHALL GIVE THE CITY OF FORT BRAGG PUBLIC WORKS DEPARTMENT 48 HOURS NOTICE BEFORE STARTING WORK. CALL (707) 961-2823 OR CONTACT AT 416 N. FRANKLIN STREET, FOR INSPECTION SERVICES.

5. A PRE CONSTRUCTION MEETING IS REQUIRED PRIOR TO BEGINNING OF WORK. CONTACT CITY ENGINEERING TO SCHEDULE SUCH MEETING. CALL (707) 961-2823.

6. WORK HOURS ARE LIMITED TO MONDAY THROUGH FRIDAY, 7:00 A.M. TO 6:00 P.M. INSPECTION WILL BE AVAILABLE MONDAY THROUGH FRIDAY FROM 8:00 A.M. TO 4:30 P.M. CONTRACTORS SHALL SCHEDULE INSPECTIONS 48 HOURS IN ADVANCE BY CALLING (707) 961-2823.

7. ANY DISCREPANCY DISCOVERED BY CONTRACTOR IN THESE PLANS OR ANY FIELD CONDITIONS DISCOVERED BY CONTRACTOR THAT MAY DELAY OR OBSTRUCT THE PROPER COMPLETION OF THE WORK PER THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE CITY ENGINEER AND OWNER IMMEDIATELY UPON DISCOVERY. NOTIFICATION SHALL BE IN WRITING.

8. ITEMS SPECIFIED ON THE STANDARD PLANS ARE APPROVED FOR USE BY THE CITY OF FORT BRAGG. ALL SUBSTITUTES OR ALTERATIONS SHALL BE SUBMITTED TO THE CITY OF FORT BRAGG FOR REVIEW AND APPROVAL.

9. THE DEVELOPER ASSUMES ALL RESPONSIBILITY FOR THE APPROVAL OF MAIL BOX LOCATIONS BY THE LOCAL BRANCH OF THE UNITED STATES POST OFFICE. SIDEWALK WARPS ARE REQUIRED PER THE CITY OF FORT BRAGG STANDARD DETAIL 206.

10. ALL EXISTING OVERHEAD UTILITIES AND PROPOSED UTILITIES, BOTH ON-SITE AND ALONG PROJECT FRONTAGES, SHALL BE PLACED UNDERGROUND. ELECTRIC TRANSMISSION LINES OF 26,000 VOLTS OR MORE ARE EXEMPT FROM THIS REQUIREMENT. THIS DOES NOT INCLUDE SURFACE MOUNTED TRANSFORMERS, PEDESTAL MOUNTED TERMINAL BOXES AND METER CABINETS.

11. SURFACE MOUNTED TRANSFORMERS SHALL NOT BE USED UNLESS LOCATION OF SUCH UTILITIES ARE SHOWN ON THE PLANS AND APPROVED BY THE CITY.

12. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING NOISE, ODORS, DUST AND DEBRIS TO MINIMIZE IMPACTS ON SURROUNDING PROPERTIES AND ROADWAYS. CONTRACTOR SHALL BE RESPONSIBLE TO ASSURE THAT ALL CONSTRUCTION EQUIPMENT IS EQUIPPED WITH MANUFACTURERS APPROVED MUFFLER'S AND BAFFLES. FAILURE TO COMPLY MAY RESULT IN THE ISSUANCE OF A STOP WORK ORDER.

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GENERAL NOTES (CONTINUED)

13. IN THE EVENT THAT ARCHEOLOGICAL SITE INDICATORS (CHIPPED CHERT, OBSIDIAN TOOLS, WASTE FLAKES, GRINDING IMPLEMENTS, DARKENED SOIL CONTAINING BONE FRAGMENTS AND SHELLFISH REMAINS, OR CERAMICS, GLASS OR METAL FRAGMENTS) ARE UNCOVERED, THE CITY ENGINEER SHALL BE CONTACTED IMMEDIATELY. ALL GROUND DISTURBING WORK SHALL CEASE IN THE VICINITY OF ANY DISCOVERY UNTIL AN ARCHEOLOGIST COMPLETES AN EVALUATION OF SIGNIFICANCE.

14. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL HALT CONSTRUCTION IMMEDIATELY, NOTIFY THE CITY, AND IMPLEMENT REMEDIATION (AS DIRECTED BY THE CITY OR ITS AGENT) IN ACCORDANCE WITH ANY REQUIREMENTS OF THE MENDOCINO COUNTY ENVIRONMENTAL HEALTH DEPARTMENT AND THE NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD.

15. THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN TRAFFIC FLOW ON AFFECTED ROADWAYS DURING NON-WORKING HOURS, AND TO MINIMIZE TRAFFIC RESTRICTION DURING CONSTRUCTION. NO EXITING STREET SHALL BE ALLOWED TO BE COMPLETELY CLOSED WITHOUT THE EXPRESSED WRITTEN PERMISSION OF THE DIRECTOR OF PUBLIC WORKS. THE CONTRACTOR SHALL BE REQUIRED TO FOLLOW TRAFFIC SAFETY MEASURES IN ACCORDANCE WITH THE CALTRANS "MANUAL OF TRAFFIC SAFETY CONTROLS FOR CONSTRUCTION AND MAINTENANCE WORK ZONES." THE CITY'S EMERGENCY SERVICE PROVIDERS SHALL BE NOTIFIED OF PROPOSED CONSTRUCTION SCHEDULED BY THE CONTRACTOR(S). THE CONTRACTOR(S) SHALL NOTIFY EMERGENCY SERVICE PROVIDERS IN WRITING AT LEAST 24 HOURS IN ADVANCE OF ITS PROPOSED SCHEDULE OF WORK.

16. A TRAFFIC HANDLING PLAN SHALL BE DELIVERED TO CITY ENGINEERING FOR REVIEW 10 WORKING DAYS BEFORE CONSTRUCTION BEGINS.

17. GRADE BREAKS ON CURBS AND SIDEWALKS SHALL BE ROUNDED OFF IN FORMS AND SURFACE FINISHING.

18. SIDEWALK WARPS SHALL BE PROVIDED TO ALLOW A CLEAR 4-FOOT WALKWAY IN ALL LOCATIONS INCLUDING WHERE MAILBOXES, UTILITY POLES, FIRE HYDRANTS, STREET SIGNS AND GUY WIRES ARE TO BE INSTALLED. SIDEWALK WARPS ARE REQUIRED PER THE CITY OF FORT BRAGG STANDARD DETAIL 206.

19. CONSTRUCTION TRAFFIC SHALL BE LIMITED TO THE FOLLOWING HAUL ROUTE:
(THE ENGINEER SHALL FILL IN THE HAUL ROUTES TO BE USED. CONSTRUCTION TRAFFIC SHALL BE CONFINED TO MAJOR STREETS.)

NOTIFICATION FOR INSPECTIONS

APPROVAL OF ALL WORK SHALL BE NECESSARY AT THE COMPLETION OF EACH OF THE FOLLOWING STAGES OF WORK AND SUCH APPROVAL MUST BE OBTAINED BEFORE SUBSEQUENT STAGES OF WORK MAY BE COMMENCED. ADDITIONALLY, THE INSPECTOR SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF ANY OF THE FOLLOWING STAGES OF WORK. ANY CONSTRUCTION OR EXCAVATION REQUIRING INSPECTION THAT IS UNDERTAKEN WITHOUT INSPECTION IS SUBJECT TO RECONSTRUCTION AND REEXCAVATION AT THE CONTRACTOR'S EXPENSE. INSPECTION MUST BE SCHEDULED FOR THE FOLLOWING WORK:

1. PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES TO CHECK FOR INSTALLATION OF ADEQUATE TREE PROTECTION FENCING, WHERE APPROPRIATE.

2. COMPACTION AND PREPARATION OF EMBANKMENTS, EXCAVATIONS, AND SUBGRADE.

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NOTIFICATION FOR INSPECTIONS (CONTINUED)

3. A. CONSTRUCTION OF FORMS FOR ALL CONCRETE STRUCTURES, INCLUDING CURBS, GUTTERS, AND SIDEWALKS.
   B. EXCAVATION FOR STORM DRAINS AND CULVERTS.

4. A. PLACING OF CONCRETE IN STRUCTURES, INCLUDING CURBS, GUTTERS AND SIDEWALKS.
   B. PLACING OF STORM DRAINS AND CULVERT PIPES.

5. EXCAVATION AND BACK FILL FOR STRUCTURES AND PIPES AND PUBLIC UTILITIES. WATER AND SEWER FACILITIES MUST BE INSPECTED BY THE COMPANY/AGENCY WITH JURISDICTION, INCLUDING PRIVATE FACILITIES.

6. CONSTRUCTION OF ROADSIDE DITCHES AND OTHER DRAINAGE WAYS.

7. PLACING AND COMPACTING OF BASE MATERIAL. IF MORE THAN ONE COURSE OR TYPE OF BASE OR SUBBASE IS TO BE USED, APPROVAL SHALL BE NECESSARY FOR EACH COURSE AND/OR TYPE.

8. PLACING OF PAVEMENT OR SURFACING. WITHIN 48 HOURS OF PAVING, ALL WATER VALVE BOXES, CLEANOUTS AND MANHOLE FRAMES AND COVERS SHALL BE BROUGHT TO GRADE AND INSPECTED.

9. STRIPING AND SIGNING LAYOUT AND PLACEMENT.

10. FINAL CLEAN UP.

11. UPON COMPLETION OF CONSTRUCTION, FINAL CONNECTION WILL BE MADE BY THE CONTRACTOR AT THE DEVELOPER'S EXPENSE UNDER INSPECTION BY THE CITY UNLESS OTHERWISE SPECIFIED ON THE PLANS.

GRADING NOTES

1. A GRADING OR ENCROACHMENT PERMIT, SHALL BE ISSUED BY THE CITY OF FORT BRAGG PUBLIC WORKS DEPARTMENT PRIOR TO ANY GRADING SHOWN ON THESE PLANS, UNLESS EXEMPT UNDER THE UNIFORM BUILDING CODE.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE GEOTECHNICAL ENGINEER (FILL IN GEOTECHNICAL ENGINEER'S NAME, REPORT TITLE, PROJECT NUMBER AND DATE OF REPORT. INCLUDE SUPPLEMENTARY REPORTS IF THEY EXIST.) ALL GRADING SHALL BE PERFORMED TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER AND SHALL BE IN CONFORMANCE WITH THE PRELIMINARY GEOTECHNICAL REPORT AND CHAPTER 33–APPENDIX AND 70–APPENDIX OF THE ADOPTED UNIFORM BUILDING CODE.

3. STREET SUB GRADE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION TO A DEPTH OF NO LESS THAN 6" IN THE ROADWAY SECTION. ASPHALT CONCRETE AND CLASS 2 AGGREGATE BASE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.

4. THE USE OF THE SAND CONE METHODS (SUCH AS ASTM 1557 OR CAL 216) FOR DETERMINING FIELD DENSITIES WILL NOT BE ALLOWED AS A SUBSTITUTE FOR NUCLEAR GAUGE TESTING.

5. ALL EXISTING WELLS, SEPTIC TANKS AND/OR UNDERGROUND FUEL STORAGE TANKS SHALL BE ABANDONED UNDER PERMIT AND INSPECTION OF THE MENDOCINO COUNTY ENVIRONMENTAL HEALTH DEPARTMENT OR OTHER DESIGNATED AGENCY.

6. ANY EXCESS MATERIALS SHALL BE CONSIDERED THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AWAY FROM THE JOB SIDE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

7. ALL TREE PROTECTION FENCING MUST BE INSTALLED AND INSPECTED PRIOR TO COMMENCEMENT OF GRADING OPERATIONS. FENCING SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

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DUST CONTROL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE DUST CONTROL MEASURES FOR THE ENTIRE CONSTRUCTION PERIOD OF THIS PROJECT TO THE SATISFACTION OF THE CITY ENGINEER.

2. CONSTRUCTION EQUIPMENT SHALL BE MAINTAINED IN PROPER WORKING ORDER AND SHALL NOT BE ALLOWED TO IDLE FOR A PERIOD OF LONGER THAN 30 MINUTES.

3. TO MINIMIZE FUGITIVE DUST AND THE RELEASE OF PM10, THE CONTRACTOR SHALL IMPLEMENT A DUST CONTROL PROGRAM. DUST CONTROL MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   - A. ACTIVE CONSTRUCTION SITE SHALL BE WATERED AS NEEDED, PREFERABLE IN THE LATE MORNING AND WHEN WORK HAS CEASED FOR THE DAY.
   - B. STOCKPILES OF LOOSE MATERIAL SHALL BE COVERED AT ALL TIMES, EXCEPT WHEN THIS WOULD INTERFERE WITH IMMEDIATE CONSTRUCTION ACTIVITIES.
   - C. ALL CLEARING, GRADING, EARTH MOVING OR EXCAVATION ACTIVITIES SHALL CEASE WHEN THE AVERAGE WIND SPEED FOR ONE HOUR EXCEEDS 20 MILES PER HOUR (MPH).
   - D. THE AREA DISTURBED BY EXCAVATION OR GRADING SHALL BE KEPT TO THE MINIMUM REQUIRED TO IMPLEMENT THE PROJECT.
   - E. WHEN TRAVELING ON EXPOSED SOILS, CONSTRUCTION SITE VEHICLE SPEED SHALL BE LIMITED TO 15 MPH.
   - F. HAUL VEHICLES SHALL BE COVERED WHEN NOT ACTIVELY ENGAGED IN SITE CONSTRUCTION ACTIVITY.
   - G. STREETS SHALL BE SWEPT REGULARLY AND KEPT FREE OF DIRT AND DEBRIS.

4. ANY PROJECT RELATED DEBRIS, DEBRIS AND WASTE SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL STATUES AND REGULATIONS.

EROSION CONTROL NOTES

1. A NOTICE OF INTENT SHALL BE FILED BY THE OWNER FOR ALL PROJECTS OVER ONE (1) ACRE IN AREA. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE PERMIT.

2. EROSION CONTROL MEASURES SHALL BE INSTALLED AND IN PLACE BETWEEN OCTOBER 1 AND APRIL 30. INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPROVED EROSION CONTROL PLAN.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTANT MAINTENANCE OF EROSION CONTROL MEASURES. SITE EROSION CONTROL SHALL BE INSPECTED BY THE CONTRACTOR AND CLEANED IF NECESSARY AFTER EVERY MAJOR STORM.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEANUP OF MUD AND DEBRIS CARRIED ONTO SURROUNDING STREETS TO THE SATISFACTION OF THE CITY ENGINEER.

5. ALL GRADED AREAS AND EXPOSED SOIL WITHIN THIS PROJECT SHALL BE SEEDED FOR EROSION CONTROL BY THE CONTRACTOR. SEED AND MULCH WILL BE APPLIED BY OCTOBER 1ST TO ALL CUT AND FILL SLOPES WITHIN OR ADJACENT TO PROJECT ROADS. SEED AND FERTILIZER WILL BE APPLIED HYDRAULICALLY OR BY HAND AT THE RATES SPECIFIED BELOW. ON SLOPES, STRAW WILL BE APPLIED BY BLOWER OR BY HAND AND ANCHORED IN PLACE BY PUNCHING.

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EROSION CONTROL NOTES (CONTINUED)

6. HYDROSEEDING MIX SHALL CONFORM TO THE FOLLOWING:

ITEM	POUNDS PER ACRE
"BLANDO BROME"	30
ANNUAL RYE GRASS	20
FERTILIZER (16–20–0 & 15% SULFUR)	500
STRAW MULCH	4000 OR 3500 LB. OF WOOD CELLULOSE

7. ALL CRITICAL EARTHWORK OPERATIONS SHALL BE PERFORMED DURING THE DRY WEATHER SEASON, FROM MAY 1ST TO OCTOBER 1ST OR AS OTHERWISE APPROVED BY THE CITY ENGINEER. THE CLEARING OF EXISTING VEGETATION SHALL BE CONFINED TO WITHIN THE LIMITS OF ACTUAL EARTHWORK. INCREMENTAL DEVELOPMENT SHALL BE REQUIRED TO ENSURE THAT THE AMOUNT OF LAND CLEARED AT ANY TIME IS LIMITED TO THE AREA THAT CAN BE DEVELOPED DURING THE CONSTRUCTION PERIOD. STORM WATER SHALL NOT BE ALLOWED TO FLOW DIRECTLY DOWN UNPROTECTED SLOPES. ENERGY DISSIPATING STRUCTURES AND EROSION CONTROL DEVICES SHALL BE PLACED AT ALL DRAINAGE OUTLETS WHICH DISCHARGE TO NATURAL CHANNELS AS SHOWN ON THESE PLANS. ALL SEDIMENT TRAPS SHALL BE MAINTAINED BY THE OWNER UNTIL SUCH TIME AS THE CITY ACCEPTS MAINTENANCE RESPONSIBILITY.

GENERAL UNDERGROUND NOTES

1. NO GUARANTEE IS INTENDED THAT UNDERGROUND OBSTRUCTIONS, NOT SHOWN ON THESE PLANS, WILL NOT BE ENCOUNTERED. THOSE SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE AND THE CONTRACTOR IS CAUTIONED THAT THE OWNER, THE ENGINEER, AND THE CITY OF FORT BRAGG ASSUME NO RESPONSIBILITY FOR ANY OBSTRUCTIONS EITHER SHOWN OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL COOPERATE WITH ALL UTILITY COMPANIES WORKING WITHIN THE LIMITS OF THIS PROJECT.

2. CONTRACTOR SHALL NOT BEGIN EXCAVATION UNTIL ALL EXISTING UTILITIES HAVE BEEN MARKED IN THE FIELD BY THE APPLICABLE ENTITY RESPONSIBLE FOR THAT PARTICULAR UTILITY. THE CONTRACTOR SHALL NOTIFY EACH APPLICABLE ENTITY AT LEAST 24 HOURS BEFORE STARTING WORK. HAND DIGGING IS REQUIRED IF TRENCH IS WITHIN 12" OF ANY EXISTING UTILITY.

3. UNDERGROUND SERVICE ALERT: CALL TOLL FREE (800) 642–2444 AT LEAST 48 HOURS PRIOR TO EXCAVATION.

4. THE CONTRACTOR SHALL OBTAIN A TRENCH PERMIT FROM THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY BEFORE EXCAVATION OF TRENCHES. A COPY OF THE PERMIT MUST BE ON FILE WITH THE CITY BEFORE TRENCH EXCAVATION MAY BEGIN.

5. CONTRACTOR SHALL UNCOVER EXISTING BURIED UTILITIES WITH UTILITY OWNER TO VERIFY LOCATIONS AND ELEVATIONS OF UTILITIES. BURIED UTILITIES INCLUDE BUT ARE NOT LIMITED TO WATER MAINS AND LATERALS, SEWER MAINS AND LATERALS, STORM DRAINS, GAS MAINS AND LATERALS, ELECTRICAL DISTRIBUTION LINES, CABLE TELEVISION LINES, AND TELEPHONE LINES. ALL UTILITIES CONFLICTING WITH THE PROPOSED CONSTRUCTION SHALL BE RELOCATED BEFORE THE START OF CONSTRUCTION.

6. THE CONTRACTOR SHALL VERIFY EXISTING INVERTS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. THE PROJECT AND/OR DESIGN ENGINEER MAY ADJUST THE GRADE OF NEW SEWER AND STORM DRAIN CONSTRUCTION ACCORDINGLY WITH CONCURRENCE FROM THE CITY ENGINEER.

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GENERAL UNDERGROUND NOTES (CONTINUED)

7. DISTANCES AND INVERTS ARE TO AND AT THE CENTER OF THE MANHOLES, CLEANOUTS, DROP INLETS, CATCH BASINS, AND YARD DRAINS OR AS MARKED ON THE DRAWINGS.

8. ALL UNDERGROUND IMPROVEMENTS SHALL BE INSTALLED AND APPROVED PRIOR TO PAVING.

9. THE CONTRACTOR SHALL STAMP THE LETTER "S" ON THE FACE OF CURB DIRECTLY ABOVE THE SEWER LATERAL, AND THE LETTER "W" ON THE FACE OF CURB DIRECTLY ABOVE WATER SERVICES, AND "B" ON FACE OF CURB DIRECTLY ABOVE A BLOW OFF OR AIR RELIEF VALVE. AT A DRIVEWAY THE STAMP SHALL BE PLACED AT THE BACK OF RAMP. THE LETTERS SHALL BE 4" HIGH AND COMPLETELY LEGIBLE.

SANITARY SEWER NOTES

1. GRAVITY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC), SDR 35 OR DUCTILE IRON PIPE, CLASS 52, POLYETHYLENE ENCASED.

2. SEWER MAIN INSTALLED OUTSIDE OF PAVED ROADWAYS SHALL BE DUCTILE IRON.

3. ALL SANITARY SEWER MANHOLES SHALL BE A MINIMUM OF 48" IN DIAMETER. UNLESS OTHERWISE NOTED, MANHOLE FRAME AND COVER SHALL HAVE 24" CLEAR OPENING, AND BE HEAVY DUTY NON–ROCKING. RAISED LETTERS ON TOP OF THE COVER SHALL READ "SANITARY SEWER."

4. TRENCHING, BACKFILL AND RESURFACING REQUIRED FOR INSTALLATION OF SEWER SYSTEM FACILITIES SHALL BE SHALL BE IN ACCORDANCE WITH CITY STANDARD 300.

STORM DRAIN NOTES

1. STORM DRAIN PIPE SHALL BE REINFORCED CONCRETE, HIGH DENSITY POLYETHYLENE, OR CAST IN PLACE CONCRETE PIPE CONFORMING TO CALTRANS STANDARD SPECIFICATIONS. CAST IN PLACE PIPE MAY NOT BE USED IN EXISTING STREETS WITHOUT THE EXPRESS AUTHORIZATION OF THE CITY ENGINEER.

2. THE MINIMUM COVER OVER STORM DRAIN PIPE SHALL BE 24" MEASURED FROM SUB GRADE AND THE MAXIMUM ALLOWABLE COVER SHALL BE LIMITED TO 11 FEET MEASURED FROM FINISHED SURFACE.

3. TRENCHING, BACKFILL AND RESURFACING FOR STORM DRAIN PIPE SHALL BE IN ACCORDANCE WITH CITY STANDARD 412.

4. ALL STORM DRAIN MANHOLES SHALL BE A MINIMUM OF 48" IN DIAMETER. UNLESS OTHERWISE NOTED, MANHOLE FRAME AND COVER SHALL HAVE 24" CLEAR OPENING, AND BE HEAVY DUTY NON–ROCKING. RAISED LETTERS ON TOP OF THE COVER SHALL READ "STORM DRAIN". PIPES SHALL NOT PROTRUDE INSIDE THE MANHOLE AND PIPE ENDS SHALL BE ROUNDED.

5. STORM DRAIN WITHIN CITY MAINTAINED ROADS SHALL BE MINIMUM 18 INCH DIAMETER, WITH THE EXCEPTION OF LATERALS WHICH MAY BE 15 IN. DIAMETER.

6. PRIOR TO ACCEPTANCE OF THE STORM DRAIN SYSTEM, THE CONTRACTOR SHALL VIDEO ALL STORM DRAIN LINES TO ENSURE THEY ARE FREE AND CLEAR OF ALL DEBRIS AND SILT. ALL VIDEO TAPES SHALL BE SUBMITTED TO THE CITY WITH WRITTEN REPORTS AND SHALL BE SUBJECT TO REVIEW AND APPROVAL. IF CLEANING OF THE PIPES ARE NEEDED, THE CONTRACTOR SHALL NOT BE ALLOWED TO WASH SILT AND/OR DEBRIS INTO THE EXISTING CITY STORM DRAIN SYSTEM INCLUDING ANY CREEKS OR OPEN WATERWAYS.

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WATER SYSTEM NOTES

1. START EXCAVATION BY EXPOSING END OF EXISTING WATER MAIN TO DETERMINE ITS LINE AND GRADE. START NEW MAIN 8–10 FEET FROM AND ON SAME LINE AND GRADE AS EXISTING MAIN. PIPE LAYING SHALL THEN BE ADJUSTED SO DEPTH OF NEW MAIN CONFORMS TO NOTE #2.

2. MINIMUM DEPTH OF COVER FROM FINISHED GRADE SHALL BE: 32" FOR 6" MAINS, 36" FOR 8" MAINS, 44" FOR 12" MAINS, 48" FOR 14" AND LARGER MAINS.

3. A NO. 10 INSULATED COPPER WIRE SHALL BE LAID ON TOP OF AND ALONG ENTIRE LENGTH OF ALL MAINS AND SHALL BE EXTENDED TO THE SURFACE AT ALL VALVES, BLOWOFFS AND METER BOX LOCATIONS SUFFICIENTLY FOR LOCATOR EQUIPMENT TO BE ATTACHED. FASTEN THE WIRE TO THE TOP OF THE PIPE SO AS NOT TO BE DISPLACED BY BACKFILLING PROCEDURE (ONE METHOD OF ACCOMPLISHING THIS IS TO AFFIX THE WIRE TO THE TOP OF THE PIPE WITH DUCT TAPE AT APPROXIMATELY 10 FEET INTERVALS).

4. WATER MAINS TO BE CONSTRUCTED WITHIN 10' OF SEWER MAIN REQUIRE SPECIAL INSTALLATION AND DESIGN MUST BE IN ACCORDANCE WITH THE STATE OF CALIFORNIA DEPARTMENT OF HEALTH STANDARDS. THE DESIGN SHALL BE SPECIFICALLY APPROVED BY THE CITY ENGINEER.

5. ALL TRENCHING, BACKFILL AND RESURFACING REQUIRED FOR INSTALLATION OF WATER SYSTEM FACILITIES SHALL BE SHALL BE IN ACCORDANCE WITH CITY STANDARD 300.

6. ALL METER BOXES, VAULTS AND PITS SHALL BE BEDDED ON A 3" MINIMUM THICK, 3/4" DRAIN ROCK, CLASS 2 AGGREGATE BASE, OR OTHER CLEAN MATERIAL WITH TYPICAL SAND EQUIVALENT OF 20 MINIMUM, UNCONTAMINATED BY NATIVE SOIL, AGAINST COMPACTED OR UNDISTURBED BASE. THE GRAVEL BED SHALL EXTEND TO A 4" MINIMUM BEYOND ALL SIDES OF THE METER BOX. BOX SHALL BE SET FLUSH WITH TOP OF CURB, SIDEWALK OR GROUND, WHICHEVER IS APPLICABLE.

7. METER BOXES SHALL BE LOCATED OUT OF TRAFFIC LOADING AREAS.

8. WHEN HYDRANTS ARE CONSTRUCTED, BURLAP BAGS SHALL BE PLACED OVER THE HYDRANTS (INDICATING THAT THE HYDRANT IS NOT IN SERVICE) UNTIL SUCH TIME THAT THE CITY HAS FLOW TESTED THE HYDRANT AND VERIFIED THAT IT IS WORKING CORRECTLY.

SIGNING, STRIPING AND PAVEMENT MARKINGS

1. CONTRACTOR SHALL NOTIFY THE CITY OF FORT BRAGG PUBLIC WORKS DEPARTMENT, (707) 961–2836 OR (707) 961–2823, OF INTENT TO PLACE ANY PAVEMENT MARKER, TRAFFIC STRIPE, AND PAVEMENT MARKING LAYOUT LINES 10 WORKING DAYS BEFORE THE LAYOUT WORK IS TO BE PERFORMED. ALL LABOR EQUIPMENT AND MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR.

2. ALL LAYOUT WORK IS TO BE PERFORMED BY THE CONTRACTOR AND SHALL BE FIELD APPROVED BY A CITY INSPECTOR BEFORE THE ACTUAL WORK BEGINS.

3. PAVEMENT MARKERS AND TRAFFIC STRIPE DETAIL REFERENCE NUMBERS ARE SHOWN ON CALTRANS STANDARD PLAN SHEETS A20–A, A20–B, AND A20–C.

4. ROADSIDE SIGNS SHALL BE LOCATED AS SHOWN ON THE PLANS IN CONFORMANCE WITH CITY STANDARDS AND AS DIRECTED BY THE CITY ENGINEER. SIGN INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF SECTION 56, "SIGNS", OF THE STANDARD SPECIFICATIONS, AND AS DIRECTED BY THE CITY ENGINEER.

CITY OF FORT BRAGG CALIFORNIA	SUBDIVISION GENERAL NOTES				STD. NO. 100
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg100.dwg Layout Name: 100 (7of8) Plot Date: Feb 02, 2009 at 17:21

SIGNING, STRIPING AND PAVEMENT MARKINGS

5. SIGN PANELS SHALL CONFORM TO THE CURRENT CALTRANS SIGN PANEL SPECIFICATIONS.

6. SIGN PANELS SHALL BE MOUNTED ON METAL POSTS AS DESIGNATED ON THE PLANS. WOOD POST INSTALLATION SHALL BE AS SHOWN ON THE PLANS, INCLUDING STANDARD PLANS. WOOD POSTS SHALL BE PROVIDED WITH BREAKAWAY FEATURE. METAL POSTS SHALL BE 2-INCH SCHEDULE 40 GALVANIZED STEEL PIPE CONFORMING TO ASTM A120 WITH GALVANIZED TOP CAPS. EACH SIGN PANEL SHALL BE ATTACHED TO METAL POSTS WITH A MINIMUM OF (2) 5/16-INCH SELF-TAPPING SCREWS OR BOLTS. ALL FASTENERS AND ATTACHMENT HARDWARE SHALL BE GALVANIZED.

7. MARKERS AND DELINEATORS SHALL BE INSTALLED AT LOCATIONS AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE PROVISIONS OF SECTION 82, "MARKERS AND DELINEATORS" OF THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE CITY ENGINEER.

8. TRAFFIC STRIPES AND PAVEMENT MARKINGS SHALL BE AS SHOWN ON THE PLANS, IN ACCORDANCE WITH THE PROVISIONS OF SECTION 84, "TRAFFIC STRIPES AND PAVEMENT MARKINGS" OF THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE CITY.

9. ALL PAVEMENT MARKINGS, INCLUDING STOP LINES, AND ALL CHANNELIZING LINES SHALL BE THERMOPLASTIC. ALL OTHER TRAFFIC STRIPES SHALL BE PAINTED, UNLESS OTHERWISE SHOWN OR NOTED ON THE PLANS.

10. THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS SHALL CONFORM TO THE PROVISIONS OF SECTION 84-2 "THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS" OF THE STANDARD SPECIFICATIONS.

11. SECTIONS 84-102, "MATERIALS" AND 84-2.03 "MANUFACTURING, PACKAGING AND LABELING", OF THE STANDARD SPECIFICATIONS ARE DELETED.

12. THERMOPLASTIC MATERIAL SHALL BE APPLIED AT A MINIMUM THICKNESS OF 0.125 INCH.

13. THERMOPLASTIC MATERIAL SHALL CONFORM TO STATE SPECIFICATION 8010-21C-21 or 8010-21C-19. GLASS BEADS TO BE APPLIED TO THE SURFACE OF MOLTEN THERMOPLASTIC MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF STATE SPECIFICATION 8010-11E-22 (TYPE II) OR AASHTO DESIGNATION M-247(TYPE I).

14. STATE SPECIFICATIONS FOR THERMOPLASTIC MATERIAL AND GLASS BEADS MAY BE OBTAINED FROM THE TRANSPORTATION LABORATORY, P.O. BOX 19128, SACRAMENTO, CA. 95819 (TELEPHONE: 916-739-2400)

15. PAVEMENT MARKERS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 85, "PAVEMENT MARKERS" OF THE STANDARD SPECIFICATIONS. PAVEMENT MARKERS SHALL BE PLACED TO THE LINE ESTABLISHED BY CITY.

16. EXISTING PAINTED/THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS WHICH CONFLICT WITH NEW TRAFFIC STRIPING AND PAVEMENT MARKING PLANS SHALL BE REMOVED BY THE CONTRACTOR, IN ACCORDANCE WITH SECTION 15 OF THE STANDARD SPECIFICATIONS.

CITY OF FORT BRAGG CALIFORNIA	SUBDIVISION GENERAL NOTES				STD. NO. 100
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg100.dwg Layout Name: 100 (8of8) Plot Date: Feb 02, 2009 at 17:21

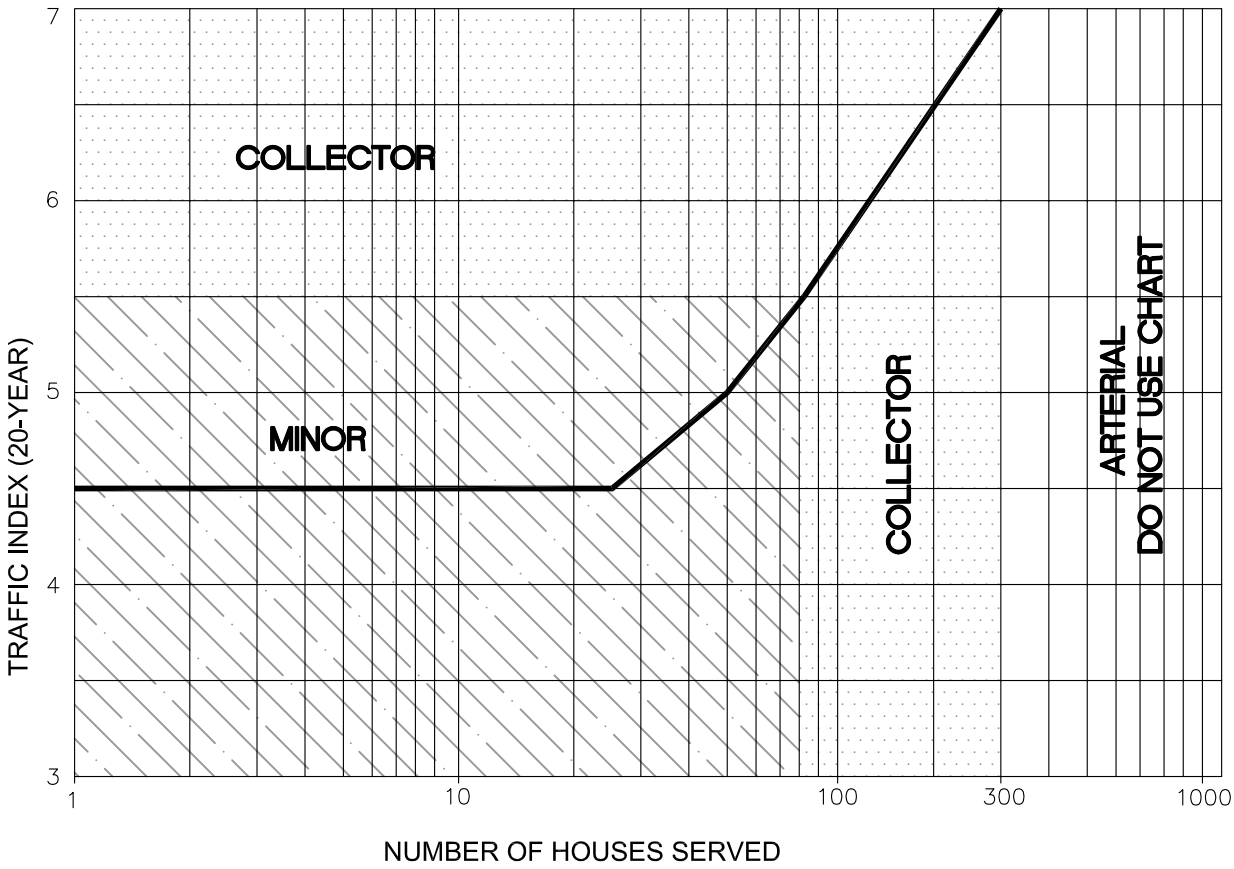
STREET STANDARD PLANS

DESCRIPTION

200 SERIES - STREETS

201	Traffic Index Chart for Flexible Pavements
202	Structural Design Chart for Flexible Pavements
203	STANDARD REMOVED
204	STANDARD REMOVED
205	Curb, Gutter and Sidewalk
206	Curb Return and Sidewalk Warp
207	STANDARD REMOVED
208	Pedestrian Ramp Type A, B & C
209	Driveway
210	STANDARD REMOVED
211	Emergency Vehicle Turnout
212	Residential Cul-de-Sac
213	Standard Street Knuckle - Residential and Minor Streets
214	Hammerhead Turn Around - Residential Private Streets and Access Ways
215	Street Widening/Paveout Detail
216	Side Street and End of Overlay Conform
217	Edge Grinding at Lip of Gutter for Overlay
218	Standard P.C.C. Cross Gutter
219	City Monument
220	Lot Corner Reference Monument at Street Frontage

CHART FOR ESTIMATION OF TRAFFIC INDEX
USING A HOUSE COUNT



$$T.I. = 2.472\ (HOUSES)^{0.1825}$$

MIN. T.I. = 4.5

NOTES:

FOR USE WITHIN SUBDIVISIONS, RESIDENTIAL AND RESIDENTIAL COLLECTOR STREETS. FOR ALL OTHER STREETS, THE T.I. WILL BE DETERMINED BY THE CITY ENGINEER.

CHART IS BASED ON A 20 YEAR DESIGN LIFE.

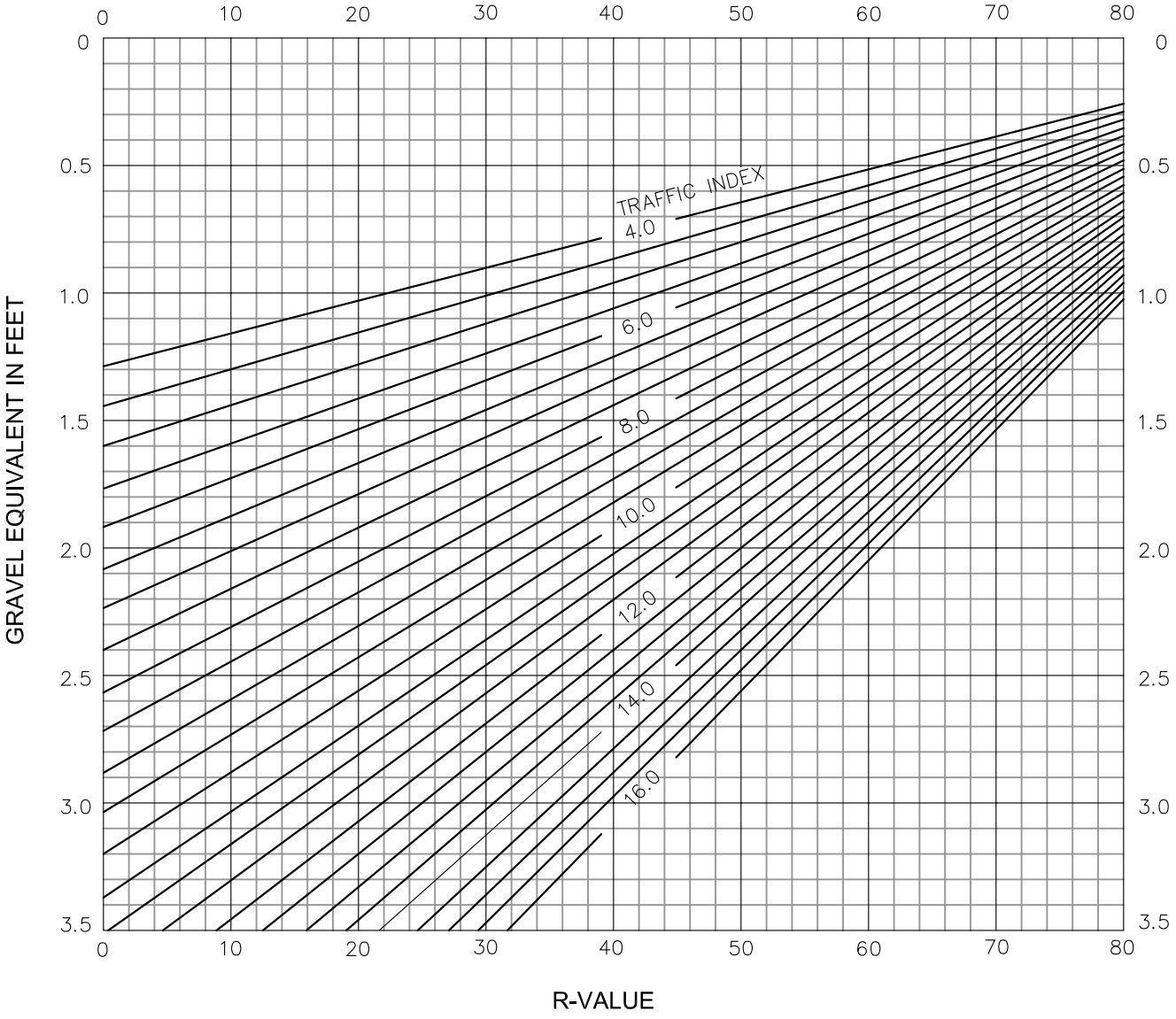
CITY OF FORT BRAGG CALIFORNIA	TRAFFIC INDEX CHART FOR FLEXIBLE PAVEMENTS				STD. NO. 201
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_5136\FortBragg201-210draft.dwg Layout Name: 201 Plot Date: Feb 02, 2009 at 16:26

STRUCTURAL DESIGN CHART
FOR FLEXIBLE PAVEMENTS

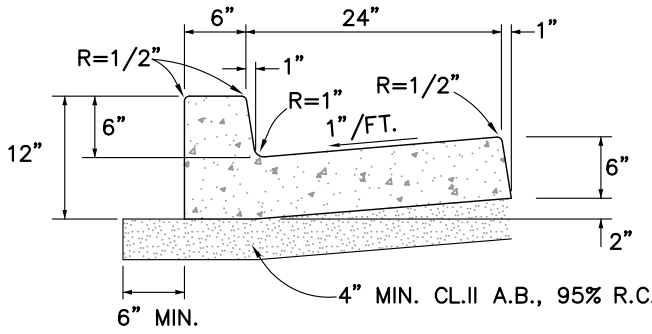
EQUATION:
G.E. = 0.0032 (T.I.)(100−R)

G.E. = GRAVEL EQUIVALENT
T.I. = TRAFFIC INDEX
R = RESISTANCE VALUE



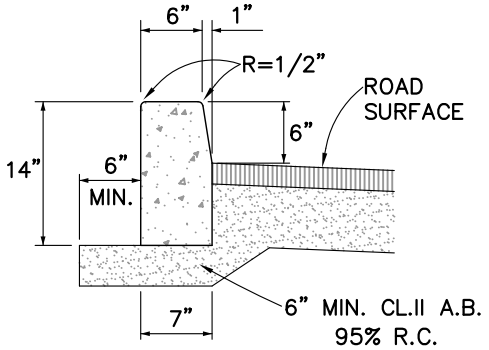
CITY OF FORT BRAGG CALIFORNIA	STRUCTURAL DESIGN CHART FOR FLEXIBLE PAVEMENTS				STD. NO. 202
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_5136\FortBragg201-210draft.dwg Layout Name: 202 Plot Date: Feb 02, 2009 at 16:26



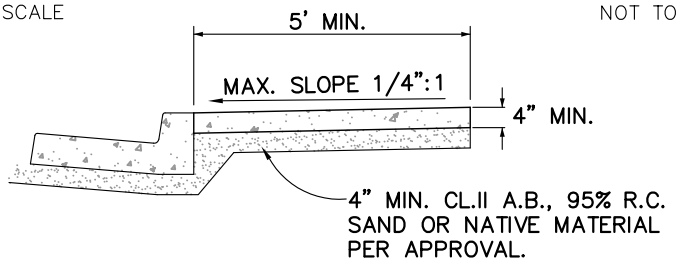
STANDARD CURB AND GUTTER

NOT TO SCALE



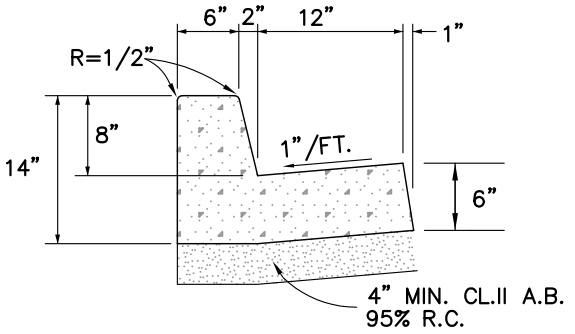
STANDARD VERTICAL CURB

NOT TO SCALE



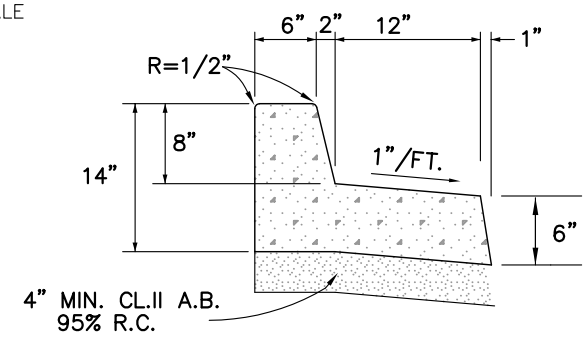
STANDARD SIDEWALK

NOT TO SCALE



TYPE B MEDIAN CURB

NOT TO SCALE



TYPE A MEDIAN CURB

NOT TO SCALE

NOTES:

1. CONCRETE SHALL BE CLASS A AND SHALL CONTAIN NOT LESS THAN 6 SACKS OF CEMENT PER CUBIC YARD.
2. DEEP SCORES (1/4 WAY THROUGH THICKNESS OF CONCRETE) EVERY 12 FEET.
3. SIDEWALKS SHALL BE SCORED INTO 5 FOOT SQUARES UNLESS OTHERWISE SPECIFIED BY ENGINEER.
4. IF EXTRUSION MACHINE IS USED, EXPANSION JOINTS SHALL BE DEEP SCORED 1/3 THE THICKNESS.
5. WEIGHT OF CURB AND/OR SIDEWALK AND CLASS 2 AGGREGATE SHALL EXCEED THE EXPANSION PRESSURE OF THE BASEMENT SOIL 'R' VALUE.

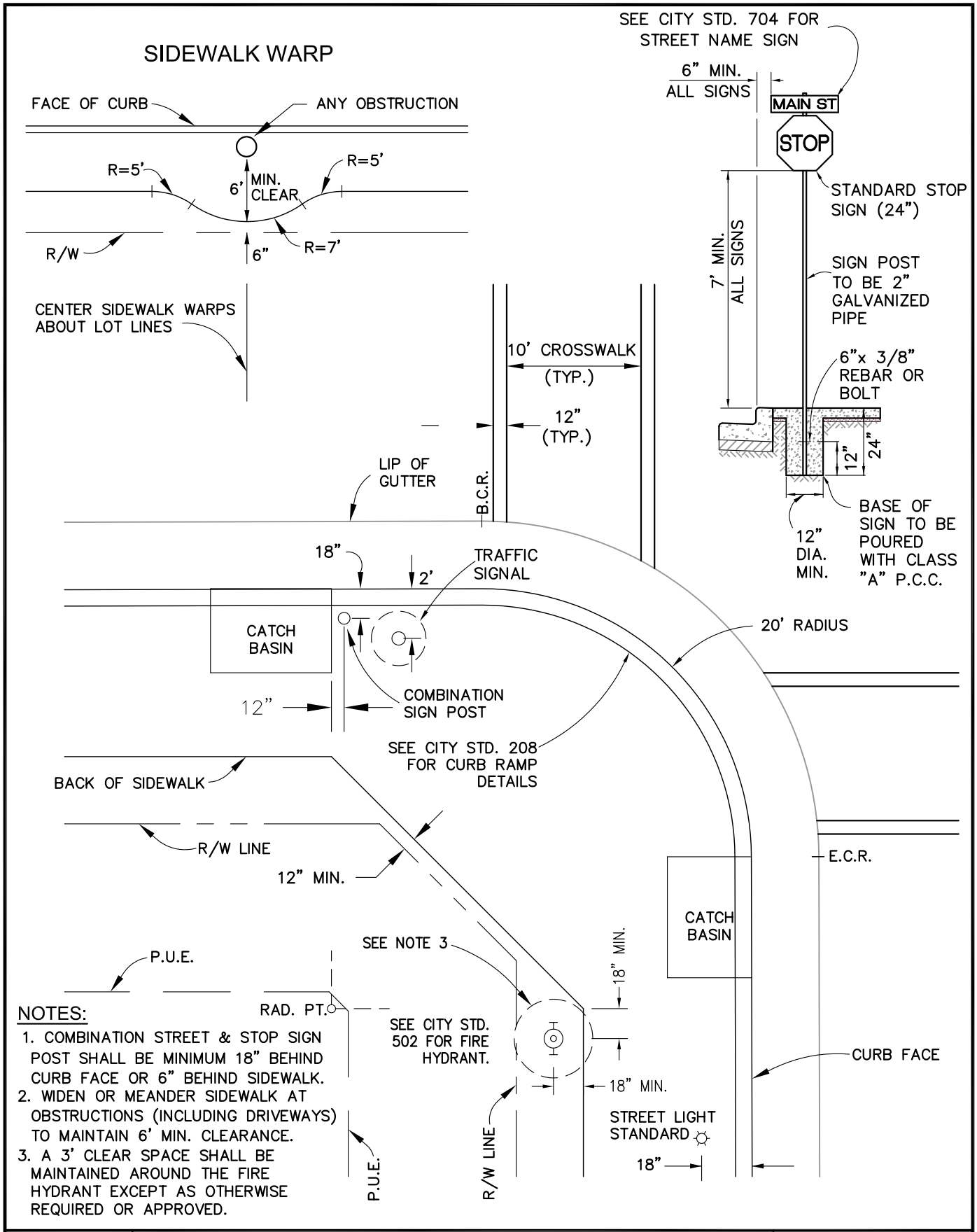
CITY OF FORT BRAGG CALIFORNIA

CURB, GUTTER AND SIDEWALK

STD. NO. 205

SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: NOV 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_5136\FortBragg201-210draft.dwg Layout Name: 205 Plot Date: Feb 02, 2009 at 16:26



NOTES:

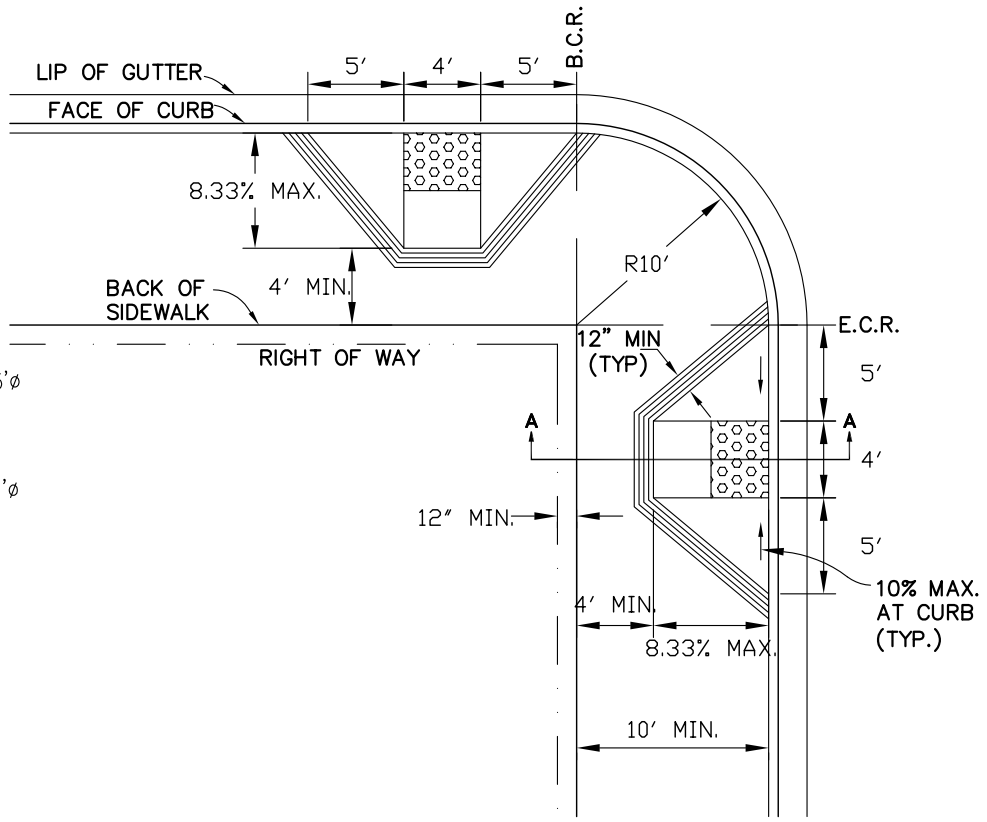
1. COMBINATION STREET & STOP SIGN POST SHALL BE MINIMUM 18" BEHIND CURB FACE OR 6" BEHIND SIDEWALK.
2. WIDEN OR MEANDER SIDEWALK AT OBSTRUCTIONS (INCLUDING DRIVEWAYS) TO MAINTAIN 6' MIN. CLEARANCE.
3. A 3' CLEAR SPACE SHALL BE MAINTAINED AROUND THE FIRE HYDRANT EXCEPT AS OTHERWISE REQUIRED OR APPROVED.

CURB RETURN AND SIDEWALK WARP

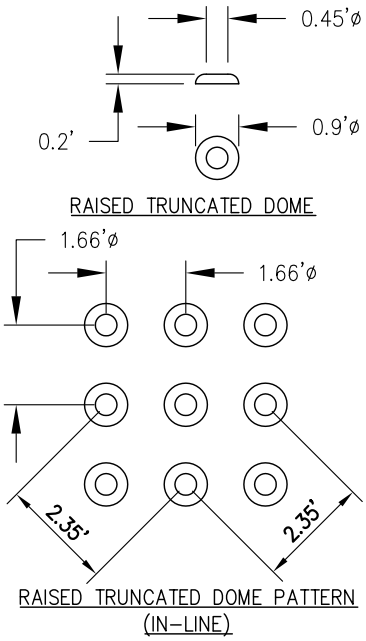
STD. NO. 206

SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

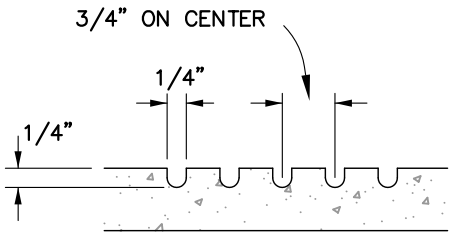
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_5136\FortBragg201-210draft.dwg Layout Name: 206 Plot Date: Feb 02, 2009 at 16:26



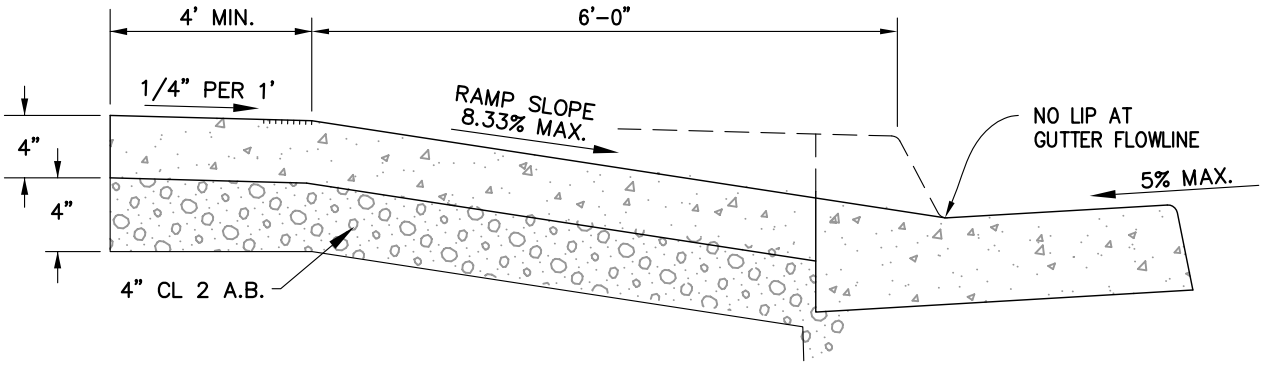
PLAN



DETECTABLE WARNING SURFACE



GROOVING DETAIL



SECTION A-A

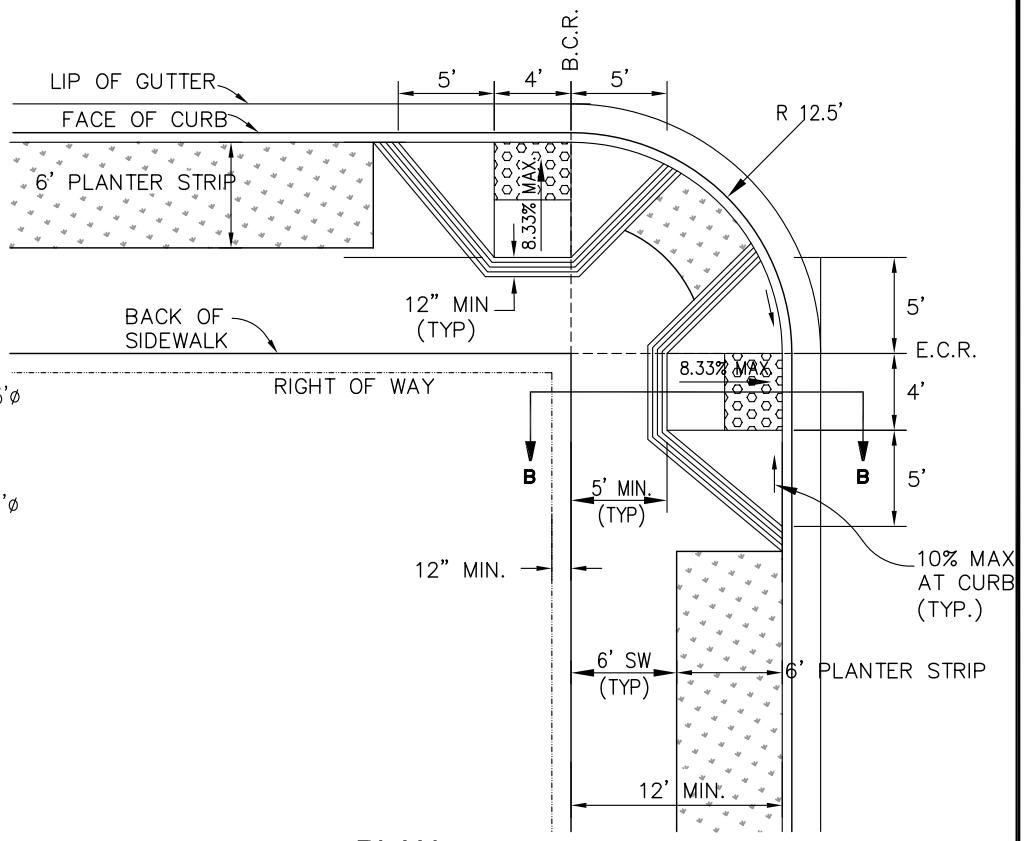
SHEET 1 of 6

PEDESTRIAN RAMP TYPE A

STD. NO. 208

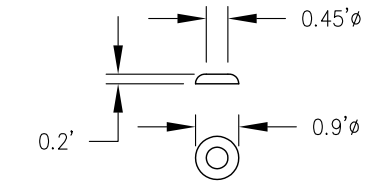
SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_5136\FortBragg201-210draft.dwg Layout Name: 208-1 Plot Date: Feb 02, 2009 at 16:26

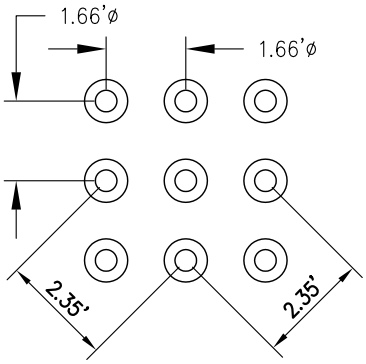


PLAN

NOT TO SCALE

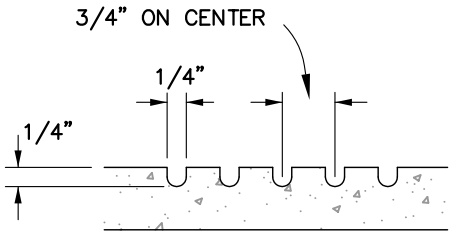


RAISED TRUNCATED DOME

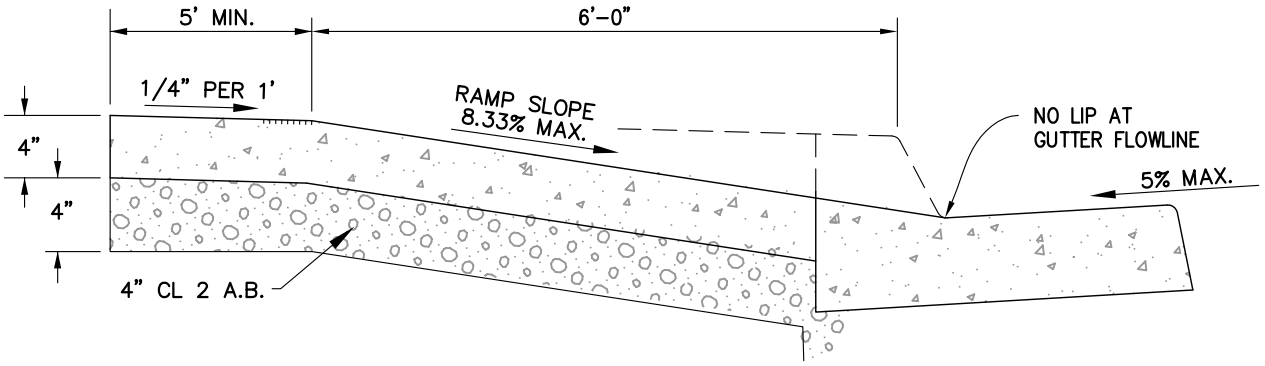


RAISED TRUNCATED DOME PATTERN
(IN-LINE)

DETECTABLE WARNING SURFACE



GROOVING DETAIL



SECTION B-B

PEDESTRIAN RAMP TYPE B

STD. NO. 208

SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

Images: Xrefs:
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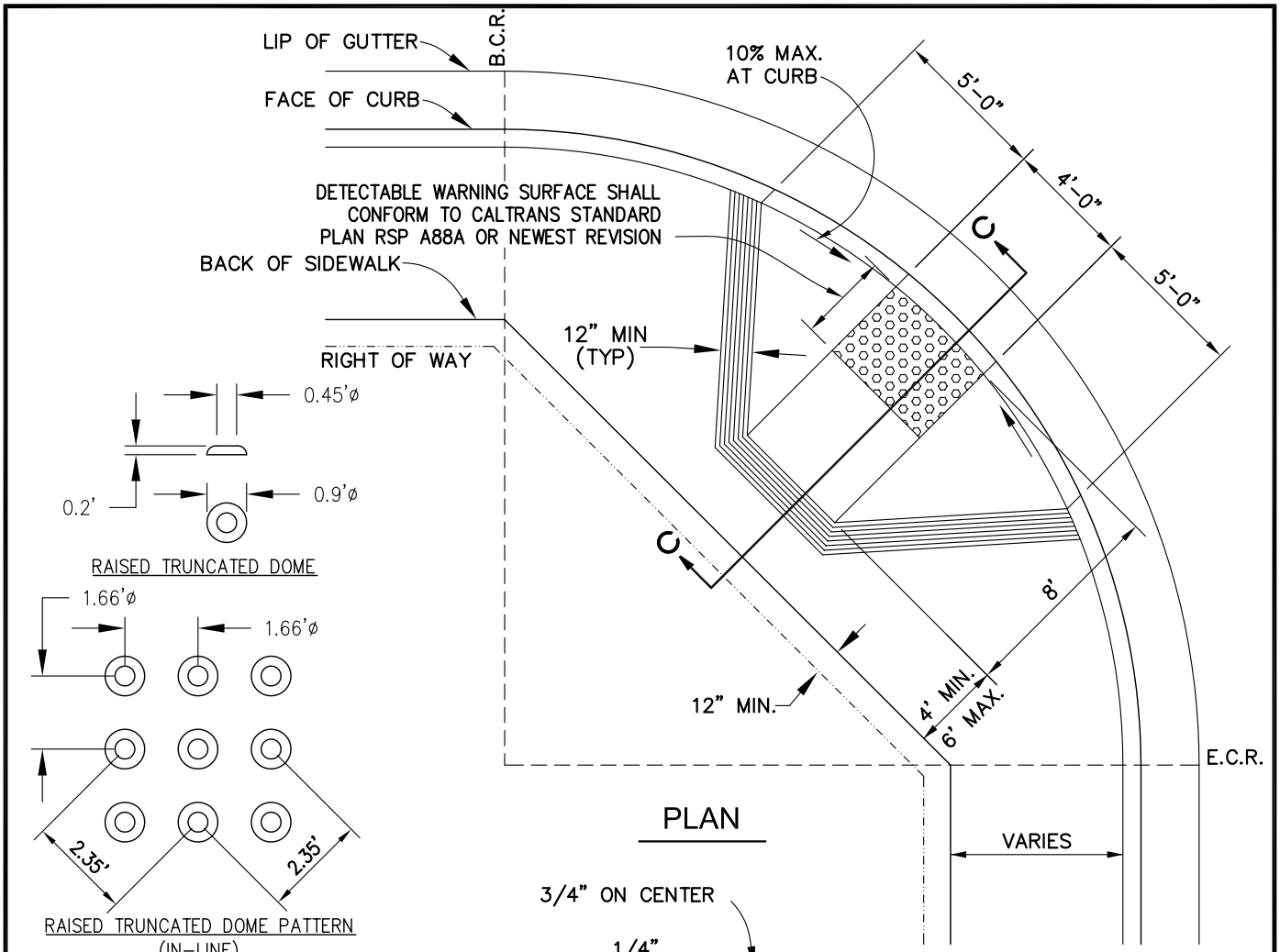
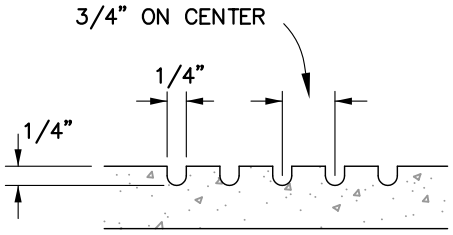


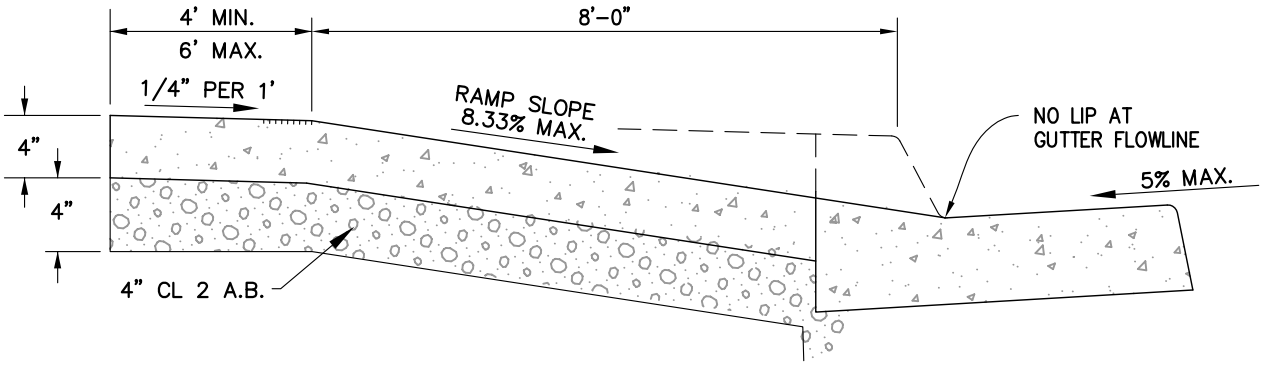
RAISED TRUNCATED DOME

RAISED TRUNCATED DOME PATTERN (IN-LINE)

DETECTABLE WARNING SURFACE



GROOVING DETAIL



SECTION C-C

SHEET 3 of 6

PEDESTRIAN RAMP TYPE C

STD. NO. 208

SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

Images: Xrefs:
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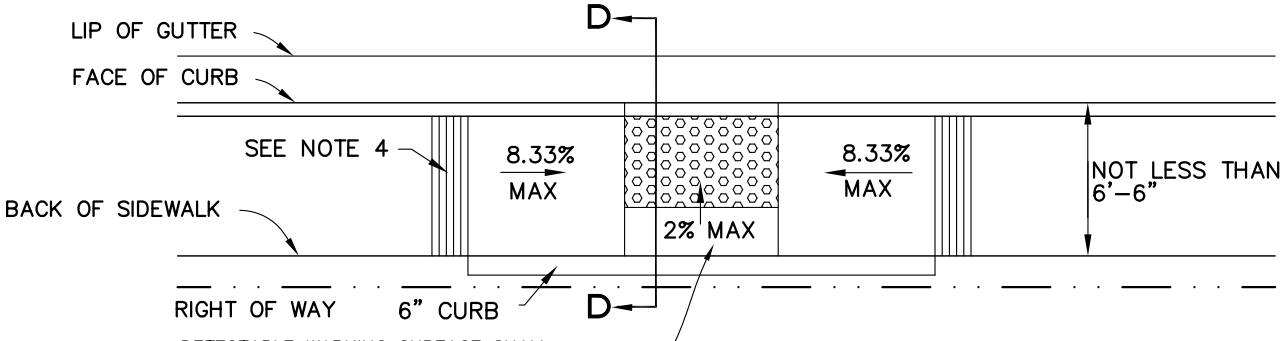
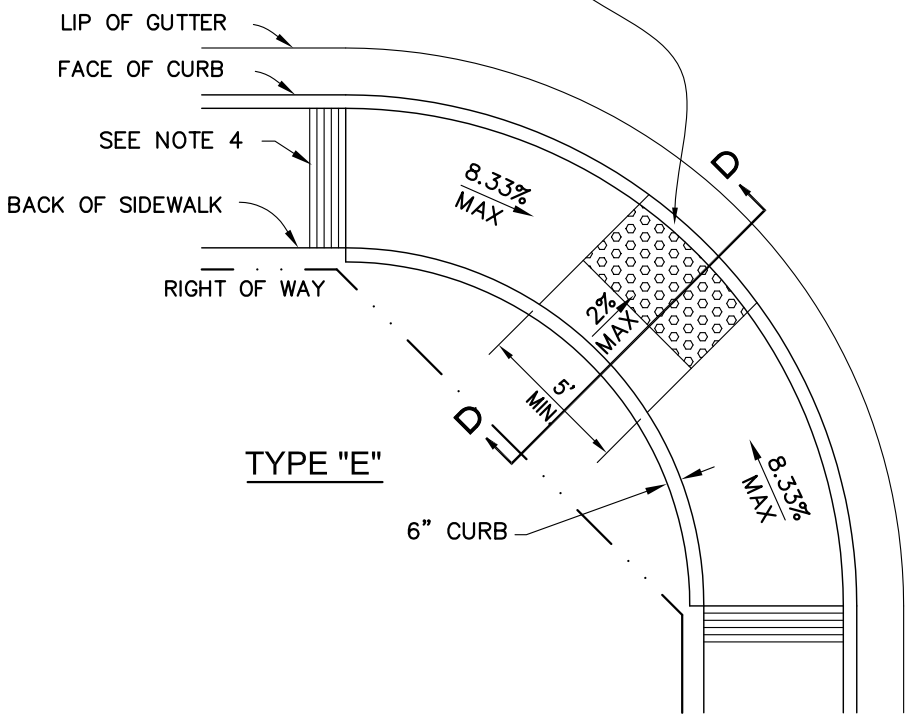
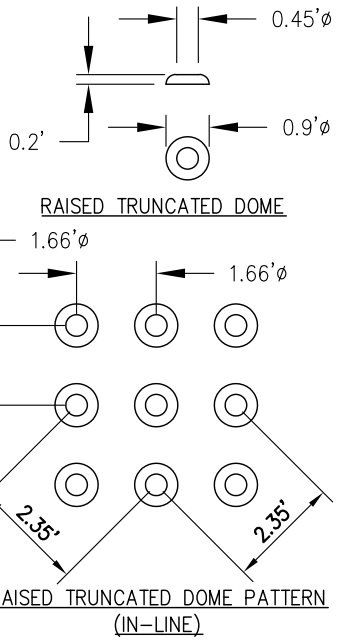


TYPE "D"

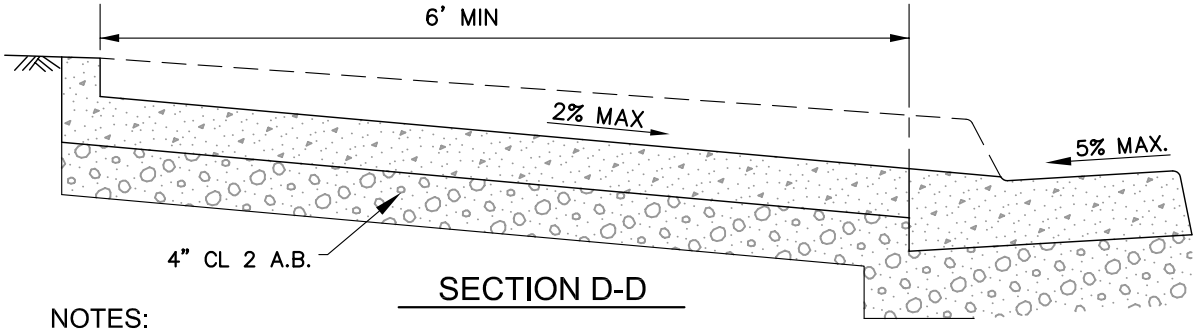
DETECTABLE WARNING SURFACE SHALL CONFORM TO CALTRANS STANDARD PLAN RSP A88A OR NEWEST REVISION



TYPE "E"



DETECTABLE WARNING SURFACE



SECTION D-D

NOTES:

1. RAMP SHALL BE CONSTRUCTED WITH NO LIP AT GUTTER FLOWLINE.
2. TYPE A, TYPE C AND TYPE F RAMPS SHALL BE LOCATED AT THE CENTER OF THE CURB RETURN.
3. CONCRETE SHALL BE CLASS "A" WITH NOT LESS THAN 6 SACKS OF CEMENT PER CUBIC YARD. SIDEWALK AND RAMP THICKNESS SHALL BE 4".
4. GROOVING DETAIL SHOULD BE PER SHEET 1 of 6.
5. DESIGN SHALL CONFORM TO THESE REQUIREMENTS, EXCEPT AS OTHERWISE APPROVED BY THE CITY ENGINEER.

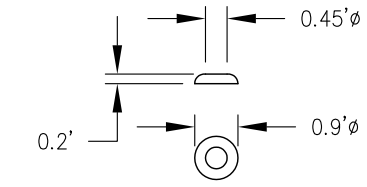
CITY OF FORT BRAGG CALIFORNIA

PEDESTRIAN RAMP TYPE D AND E

STD. NO. 208

SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_5136\FortBragg201-210draft.dwg Layout Name: 208-4 Plot Date: Feb 02, 2009 at 16:26



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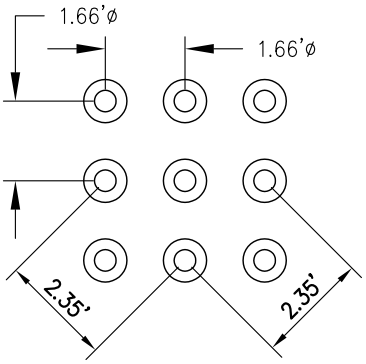
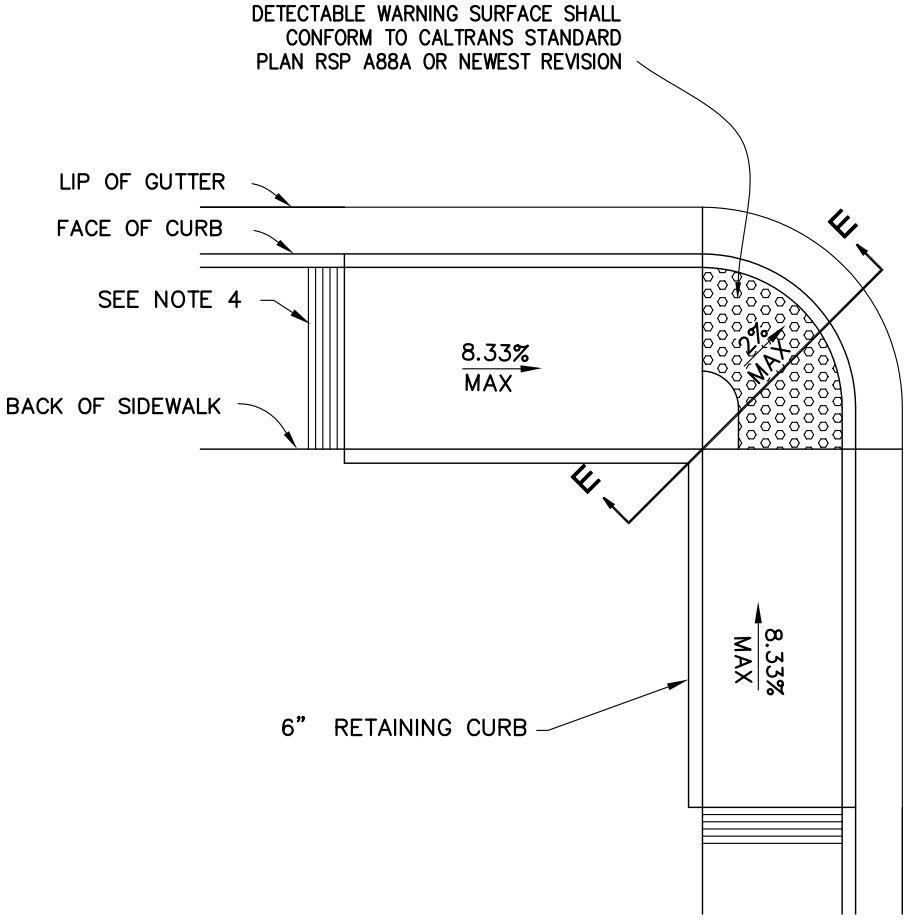
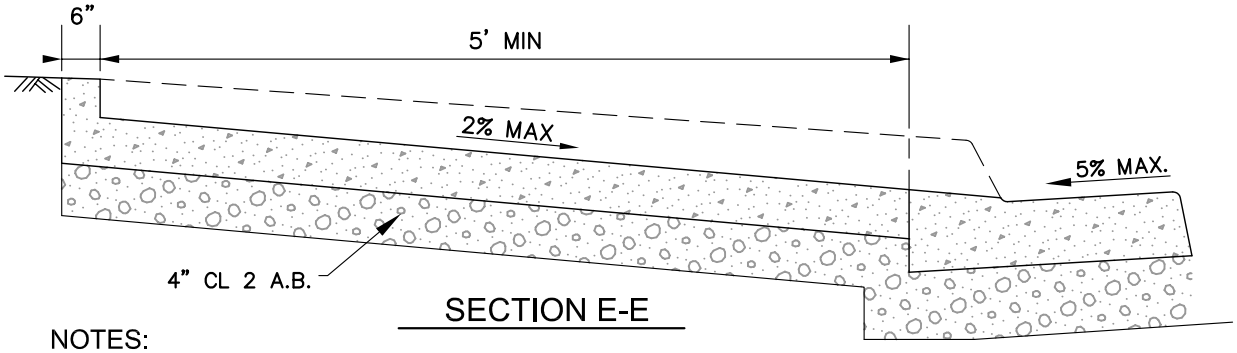


RAISED TRUNCATED DOME PATTERN
(IN-LINE)

DETECTABLE WARNING SURFACE





SECTION E-E

NOTES:

1. RAMP SHALL BE CONSTRUCTED WITH NO LIP AT GUTTER FLOWLINE.
2. TYPE A, TYPE C AND TYPE F RAMPS SHALL BE LOCATED AT THE CENTER OF THE CURB RETURN.
3. CONCRETE SHALL BE CLASS "A" WITH NOT LESS THAN 6 SACKS OF CEMENT PER CUBIC YARD. SIDEWALK AND RAMP THICKNESS SHALL BE 4".
4. GROOVING DETAIL SHOULD BE PER SHEET 1 of 6.
5. DESIGN SHALL CONFORM TO THESE REQUIREMENTS, EXCEPT AS OTHERWISE APPROVED BY THE CITY ENGINEER.

CITY OF FORT BRAGG CALIFORNIA

PEDESTRIAN RAMP TYPE F

STD. NO. 208

SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

Images: Xrefs:
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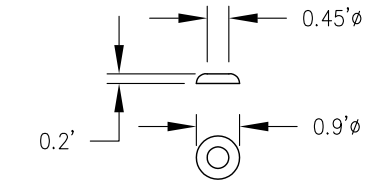
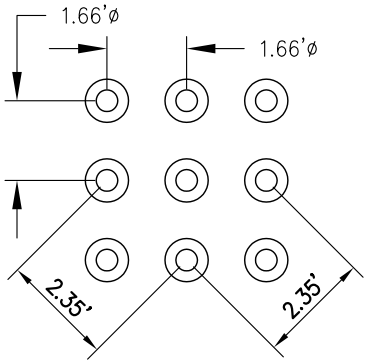
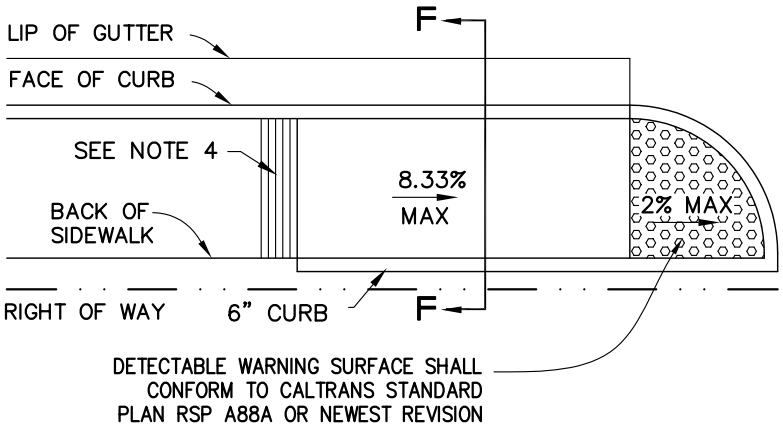


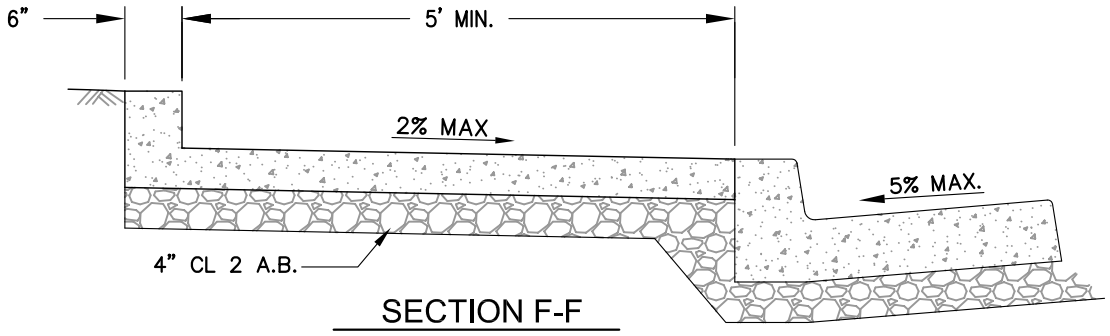
RAISED TRUNCATED DOME



RAISED TRUNCATED DOME PATTERN
(IN-LINE)

DETECTABLE WARNING SURFACE





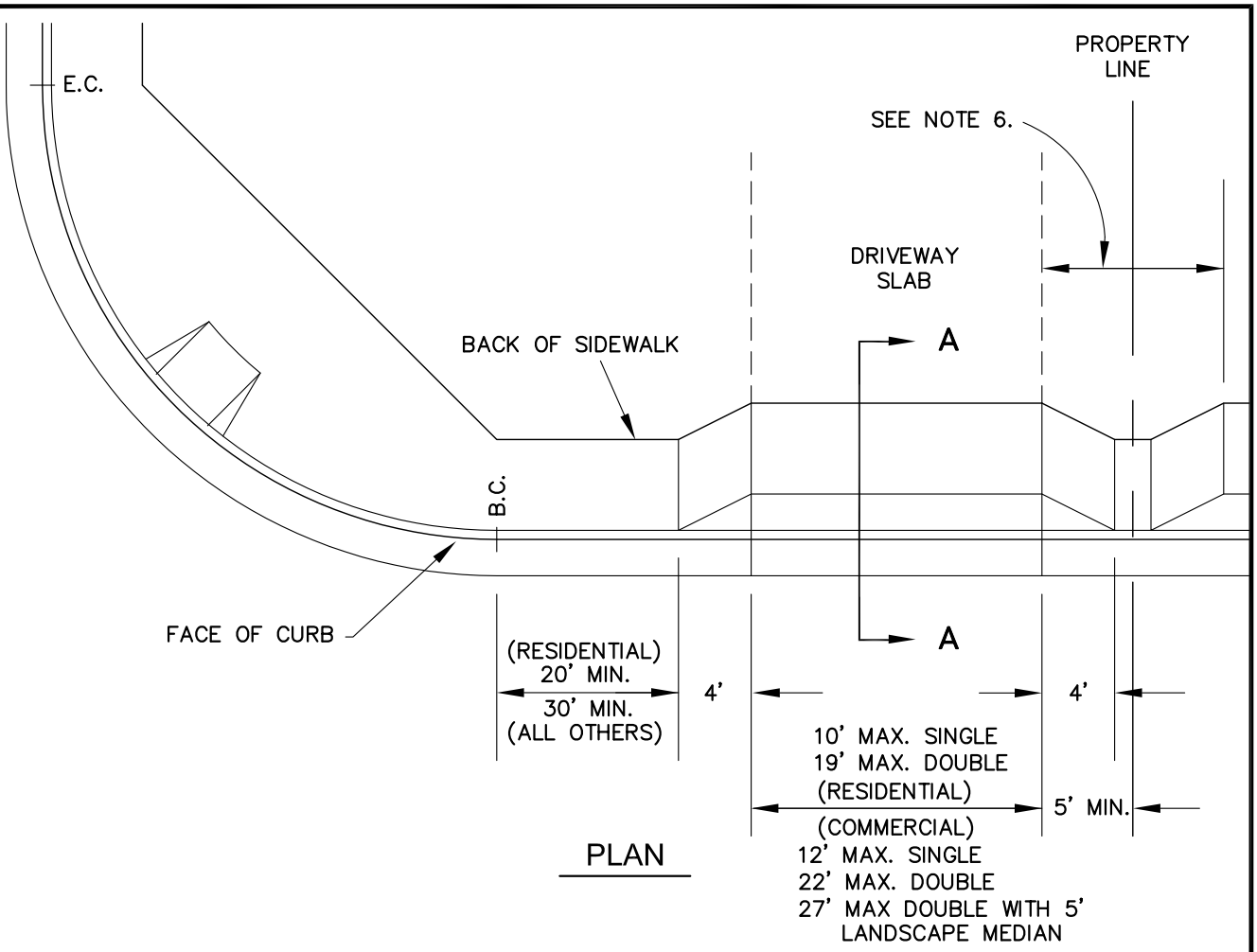
SECTION F-F

NOTES:

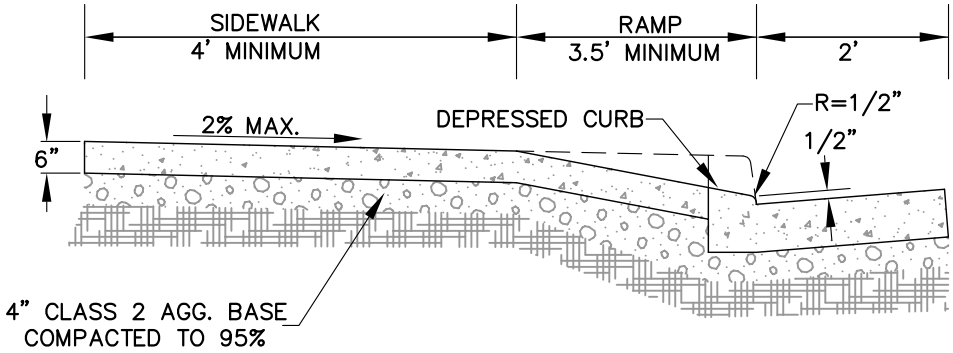
1. RAMP SHALL BE CONSTRUCTED WITH NO LIP AT GUTTER FLOWLINE.
2. CONCRETE SHALL BE CLASS "A" WITH NOT LESS THAN 6 SACKS OF CEMENT PER CUBIC YARD. SIDEWALK AND RAMP THICKNESS SHALL BE 4".
3. GROOVING DETAIL SHOULD BE PER SHEET 1 of 6.
4. DESIGN SHALL CONFORM TO THESE REQUIREMENTS, EXCEPT AS OTHERWISE APPROVED BY THE CITY ENGINEER.

CITY OF FORT BRAGG CALIFORNIA	PEDESTRIAN RAMP TYPE G				STD. NO. 208
	SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_5136\FortBragg201-210draft.dwg Layout Name: 208-6 Plot Date: Feb 02, 2009 at 16:26



PLAN



SECTION A-A

NOTES:

1. WEAKENED PLANE JOINTS SHALL BE INSTALLED AT THE CENTER OF ALL DRIVEWAYS OVER 20' WIDE.
2. MAXIMUM SIDEWALK CROSS SLOPE (1/4" PER FOOT).
3. WIDEN OR MEANDER SIDEWALK AT OBSTRUCTIONS (INCLUDING DRIVEWAYS) TO MAINTAIN 6' MIN. CLEARANCE.
4. ALL CONCRETE SHALL BE CLASS "A" CONTAINING NOT LESS THAN 6 SACKS OF CEMENT PER CUBIC YARD.
5. WELDED WIRE FABRIC (4"x4",10/10) SHALL BE PLACED THROUGHOUT COMMERCIAL AND INDUSTRIAL DRIVEWAYS WITHIN THE STREET RIGHT OF WAY.
6. IF DISTANCE BETWEEN DRIVEWAYS IS LESS THAN 10', OMIT CURB ISLAND.

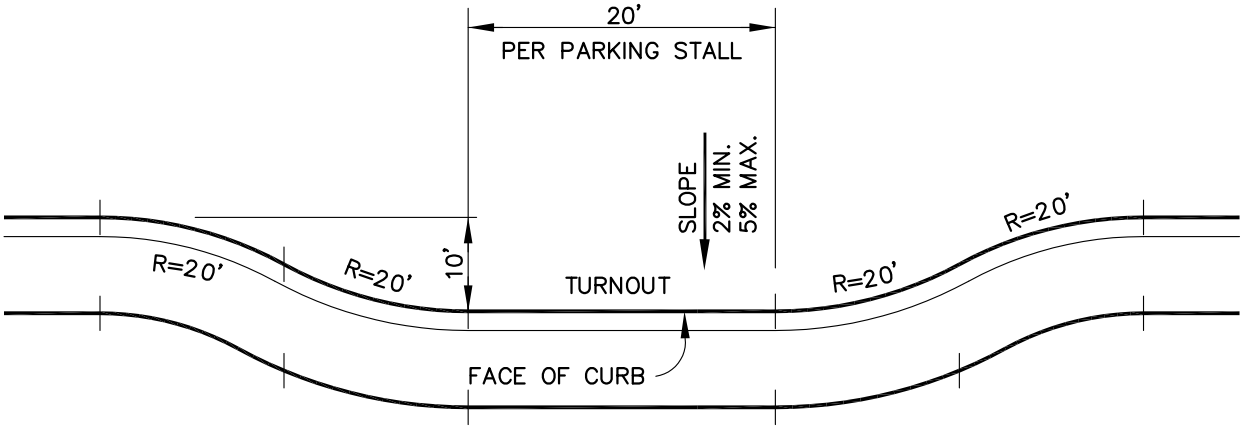
CITY OF FORT BRAGG CALIFORNIA

DRIVEWAY

STD. NO. 209

SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_5136\FortBragg201-210draft.dwg Layout Name: 209 Plot Date: Feb 02, 2009 at 16:26

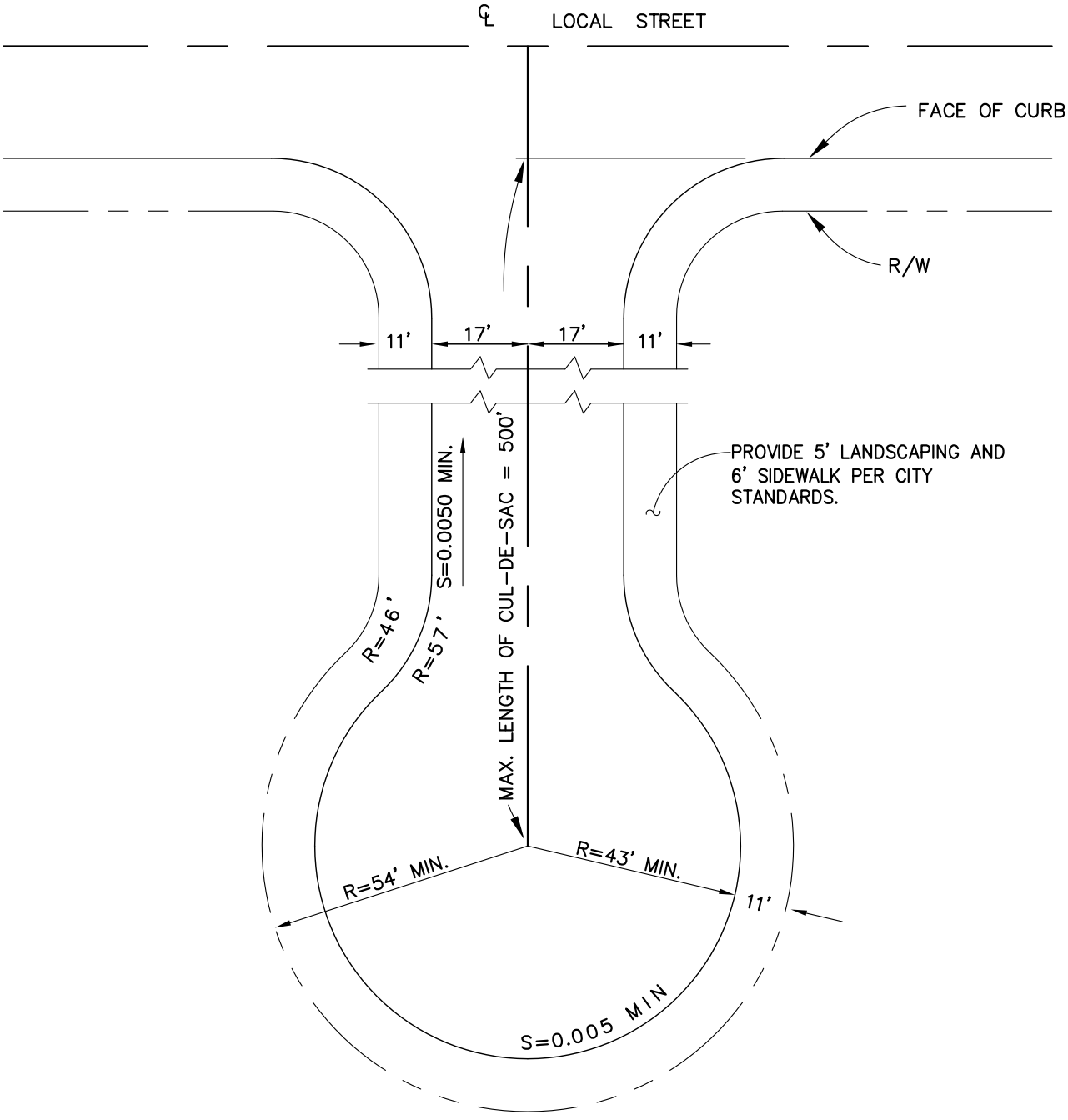


NOTES:

1. EMERGENCY TURNOUT TO BE USED AS APPROVED BY THE CITY ENGINEER.
2. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

CITY OF FORT BRAGG CALIFORNIA	EMERGENCY VEHICLE TURNOUT				STD. NO. 211
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 211 Plot Date: Feb 02, 2009 at 16:40



CROSS SLOPE IN BULB AREA
SHALL BE MIN 2%.

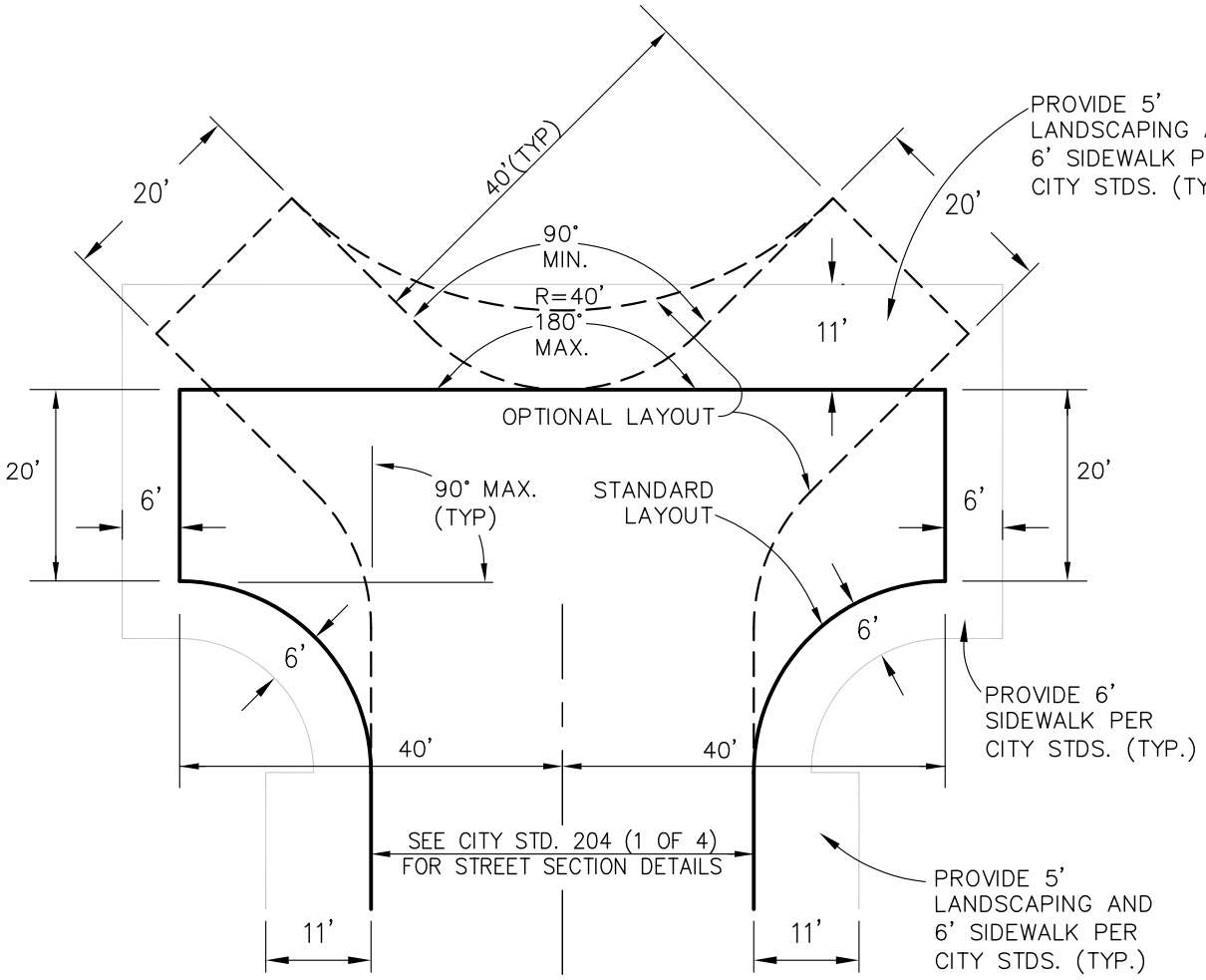
SHEET 1 OF 2

RESIDENTIAL CUL-DE-SAC

STD. NO. 212

SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 212-1 Plot Date: Feb 02, 2009 at 16:40



NOTES:

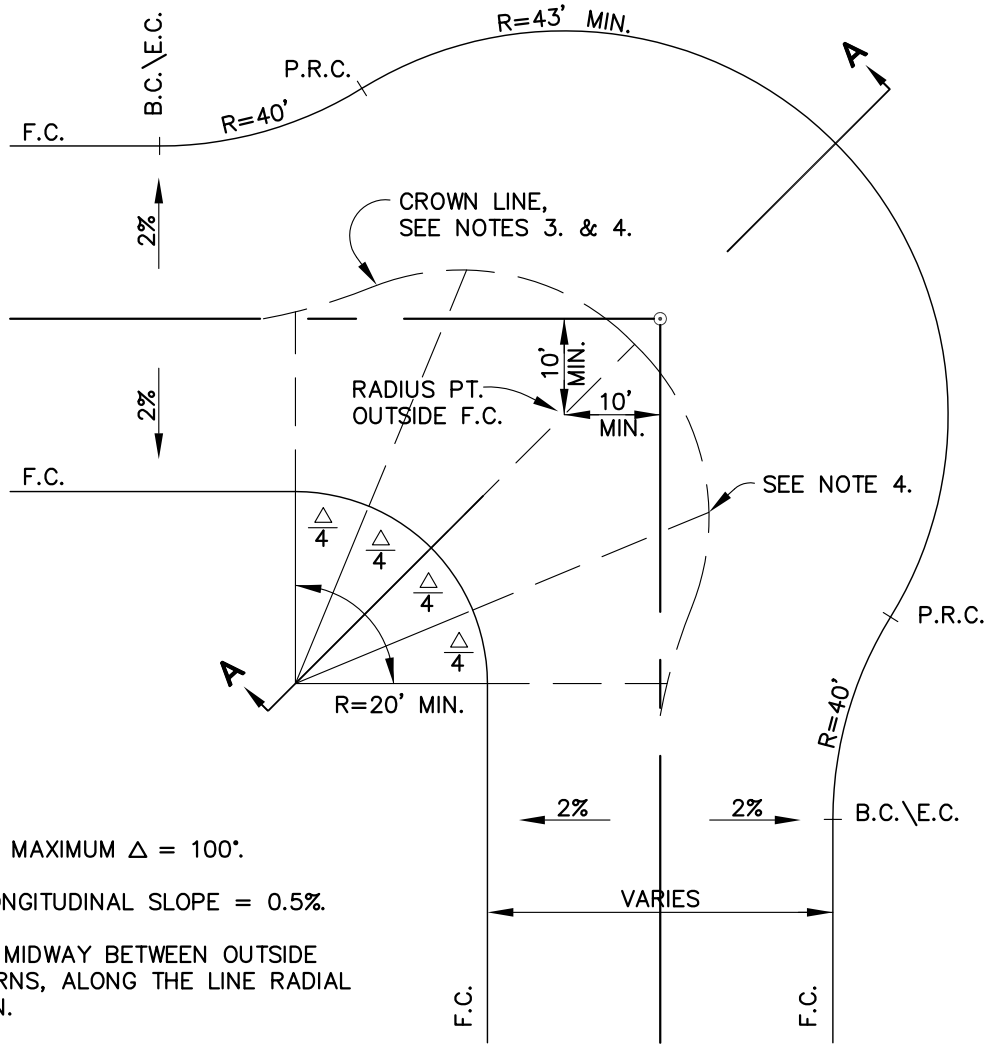
1. FOR RESIDENTIAL AND PRIVATE STREETS. SEE CITY STD. 204 (1 OF 4) FOR STREET SECTION DETAILS.
2. TO BE USED ONLY WHEN SPECIFICALLY AUTHORIZED BY THE CITY ENGINEER AND FIRE PROTECTION DISTRICT.
3. ALL RADII 20', EXCEPT AS NOTED.
4. SINGLE SIDED TURNAROUNDS OF EQUIVALENT DIMENSIONS MAY BE USED.

HAMMERHEAD TURN AROUND

STD. NO. 212

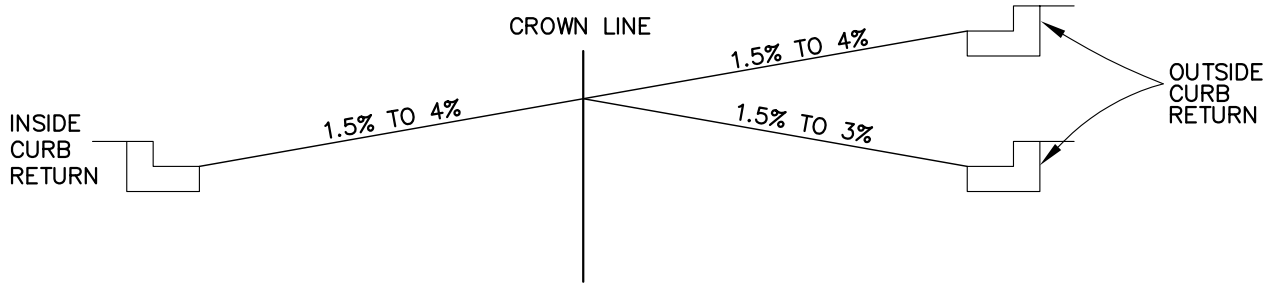
SCALE: NONE	DRAWN: CLG	CHK: HEU	APPVD:	DATE: JAN 2009

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 212-2 Plot Date: Feb 02, 2009 at 16:40



NOTES:

1. MINIMUM △ = 60°, MAXIMUM △ = 100°.
2. MINIMUM CURB LONGITUDINAL SLOPE = 0.5%.
3. CROWN LINE LIES MIDWAY BETWEEN OUTSIDE AND INSIDE RETURNS, ALONG THE LINE RADIAL TO INSIDE RETURN.
4. CROWN LINE ELEVATION TO BE SHOWN ON THE PLANS AT △/4 POINTS.
5. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.



SECTION A-A

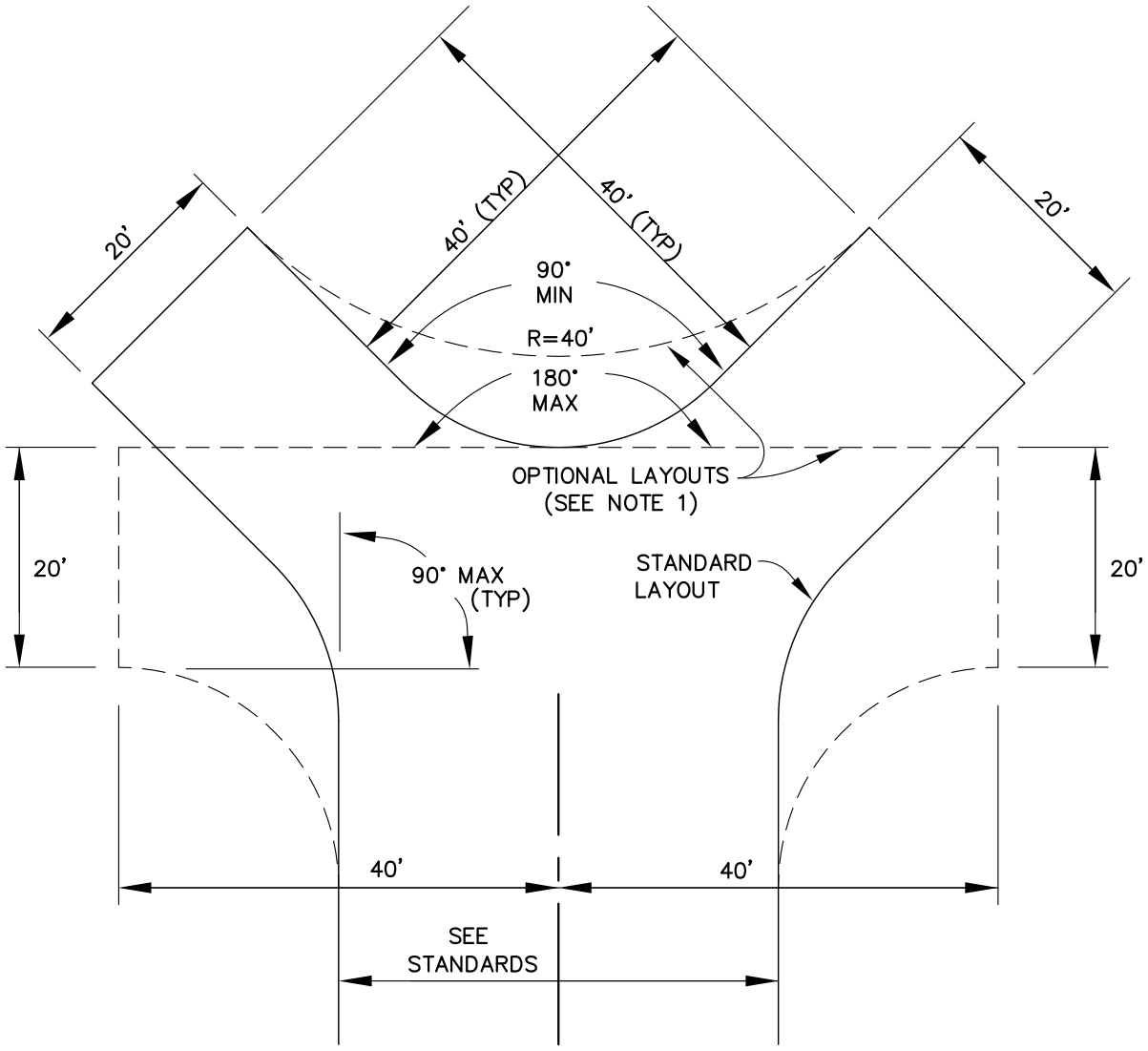
MAXIMUM & MINIMUM CROSS SLOPES

STANDARD STREET KNUCKLE RESIDENTIAL & MINOR STREETS

STD. NO. 213

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 213 Plot Date: Feb 02, 2009 at 16:40



NOTES:

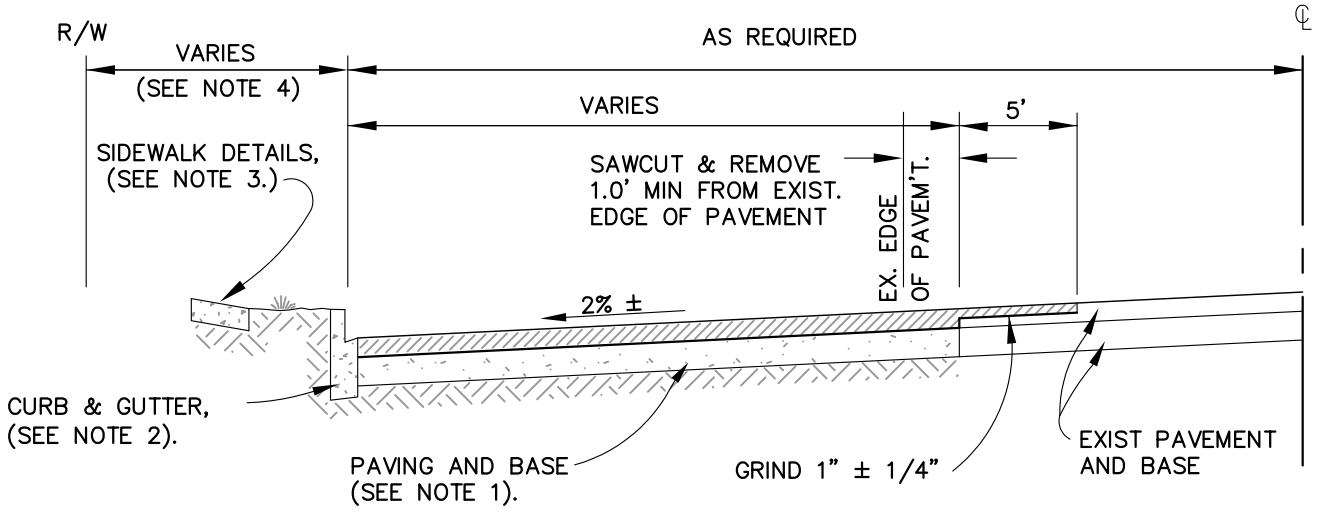
1. TO BE USED ONLY WHEN SPECIFICALLY AUTHORIZED BY THE DIRECTOR OF PUBLIC WORKS AND FIRE MARSHALL.
2. ALL RADII 20', EXCEPT AS NOTED.
3. SINGLE SIDED TURNAROUNDS OF EQUIVELENT DIMENSIONS MAY BE USED.

HAMMERHEAD TURN AROUND RESIDENTIAL PRIVATE STREETS AND ACCESS WAYS

STD. NO. 214

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 214 Plot Date: Feb 02, 2009 at 16:40



NOTES:

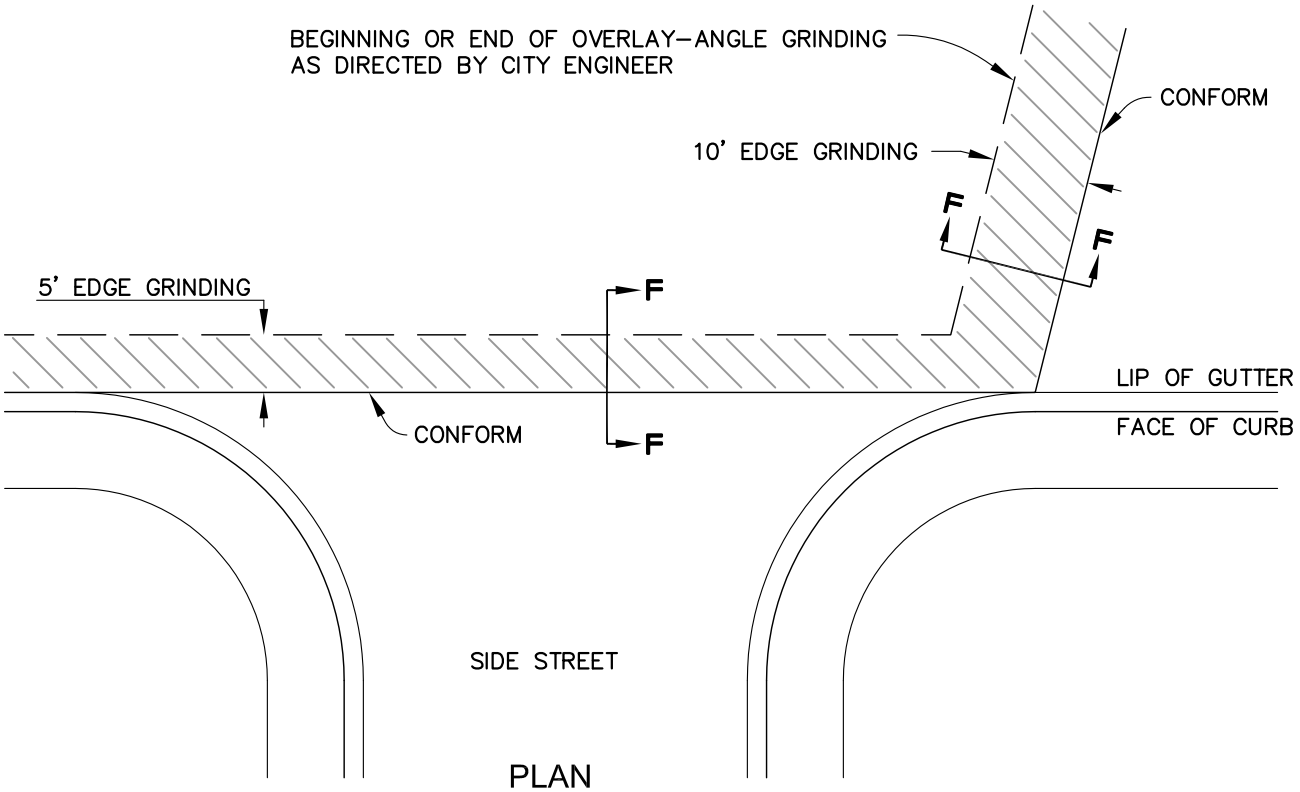
1. PAVING AND BASE THICKNESS TO BE DETERMINED USING CITY PAVEMENT DESIGN STANDARDS. MINIMUM PAVEMENT THICKNESS TO BE 0.25'.
2. SEE STD. 205 FOR SIDEWALK DETAILS.
3. SEE STD. 205 FOR CURB & GUTTER DETAILS.
4. DISTANCE BETWEEN FACE OF CURB AND RIGHT-OF-WAY TO BE PER STDS. 203 AND 204.

STREET WIDENING/PAVEOUT DETAIL

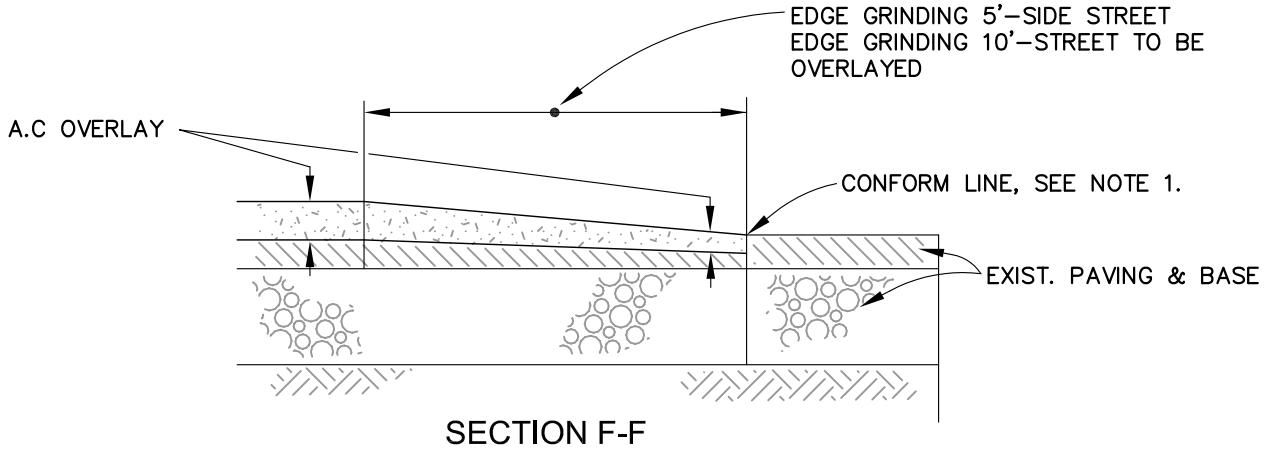
STD. NO. 215

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 215 Plot Date: Feb 02, 2009 at 16:40



PLAN



SECTION F-F

NOTES:

1. EDGE GRINDING SHALL BE 1"±1/4".

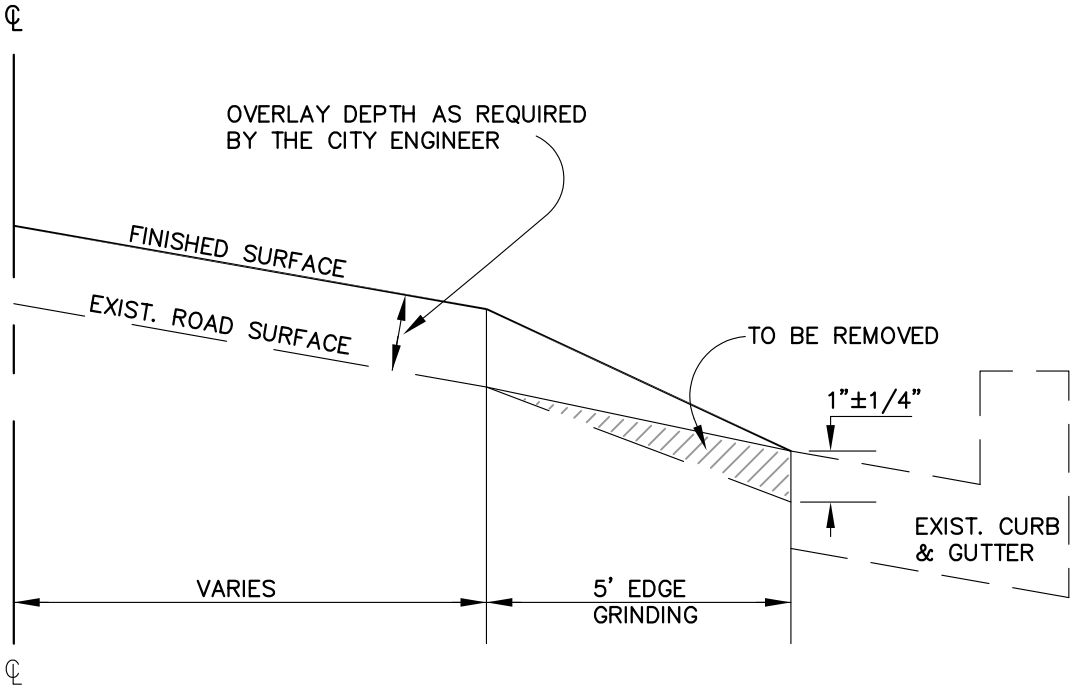
2. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPTS AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

SIDE STREET AND END OF OVERLAY CONFORM

STD. NO. 216

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 216 Plot Date: Feb 02, 2009 at 16:40

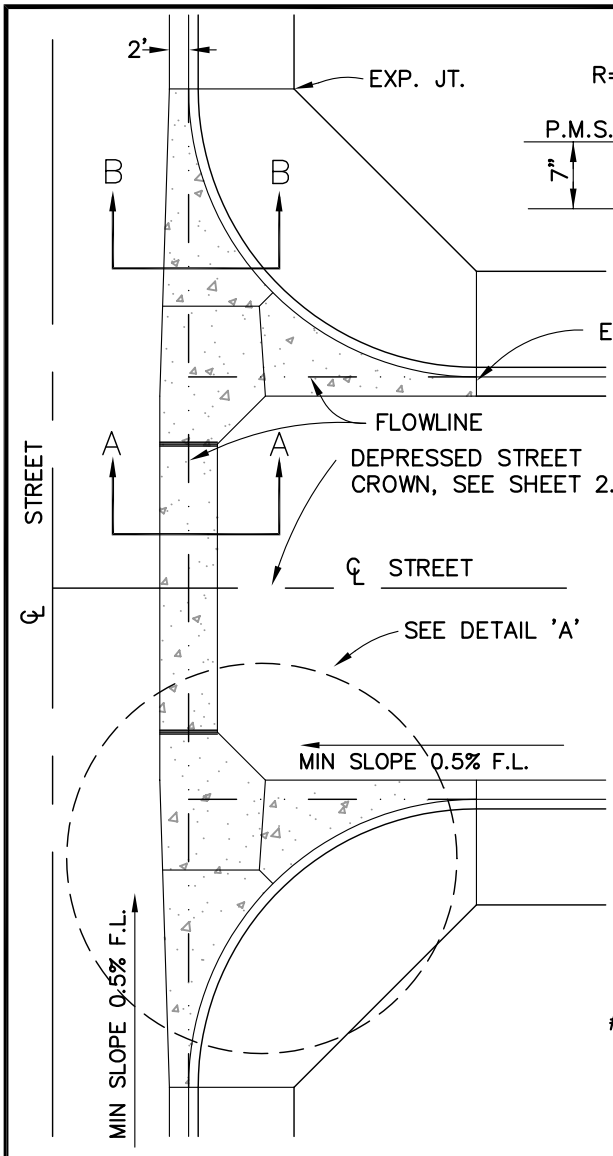


NOTES:

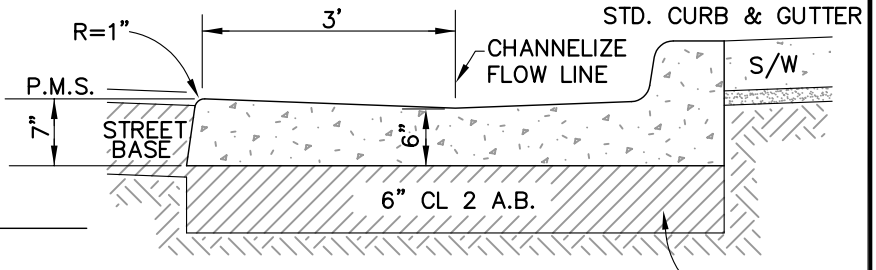
1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

CITY OF FORT BRAGG CALIFORNIA	EDGE GRINDING AT LIP OF GUTTER FOR OVERLAY				STD. NO. 217
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

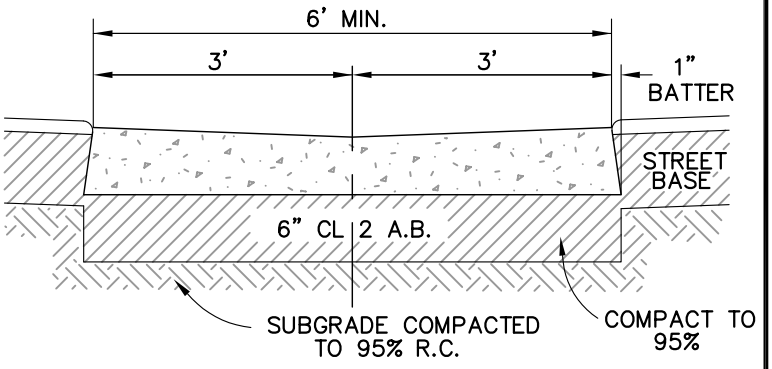
Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 217 Plot Date: Feb 02, 2009 at 16:40



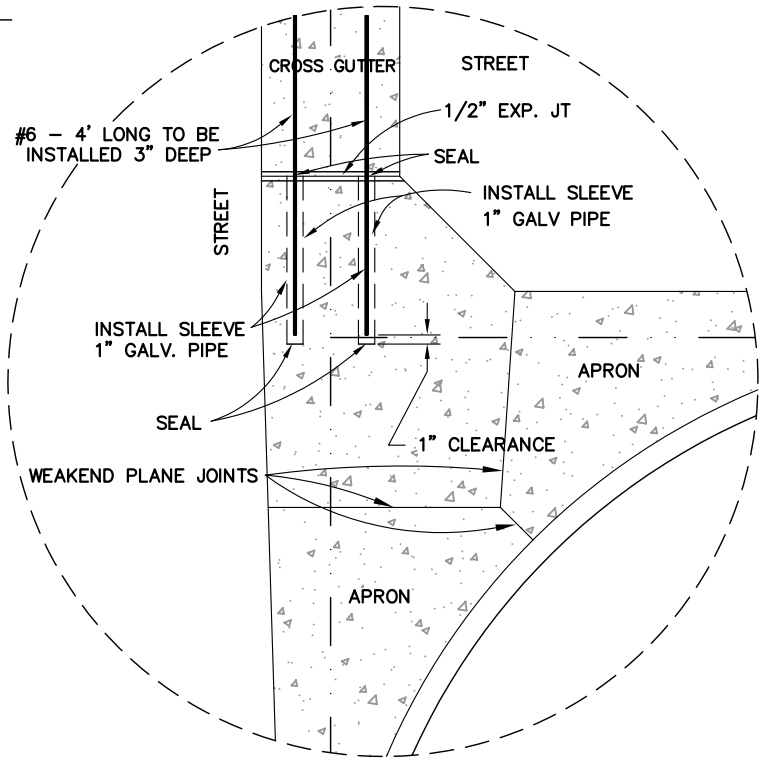
TYP. CROSS-GUTTER PLAN



SECTION B-B



SECTION A-A



DETAIL "A"

TYPICAL BOTH SIDES

NOTE:

ALL CONCRETE TO BE CLASS "A"
(6 SACK/CU. YARD)

LEGEND

EXP. JOINT — 1/2" EXPANSION JOINT

AREA OF APRON & CROSS GUTTER

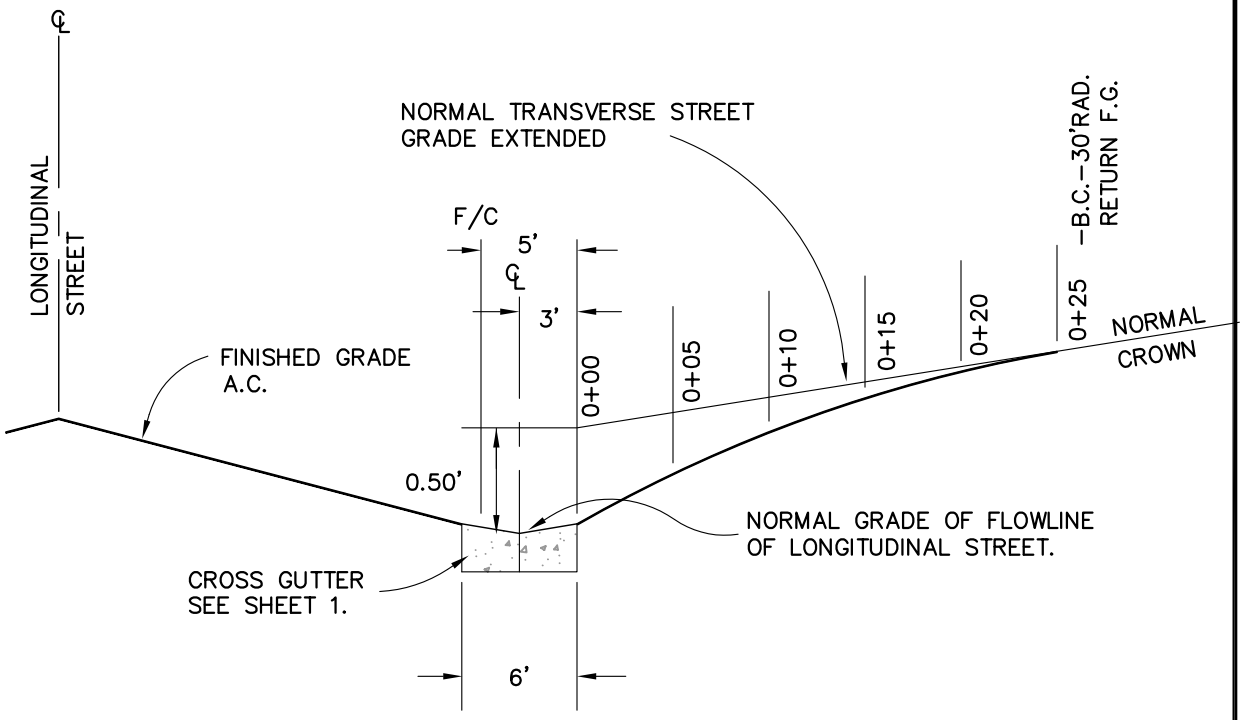
SHEET 1 OF 2

STANDARD P.C.C. CROSS GUTTER

STD. NO. 218

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 218 (1 of 2) Plot Date: Feb 02, 2009 at 16:40



PROFILE ALONG ℄ TRANSVERSE STREET

NOTE:

ORDINATES, IN DECIMAL PARTS OF A FOOT, ESTABLISH THE DISTANCE OF THE PAVEMENT SURFACE OF THE TRANSVERSE STREET BELOW THE NORMAL STREET GRADE, FROM STA 0+00 TO 0+25.

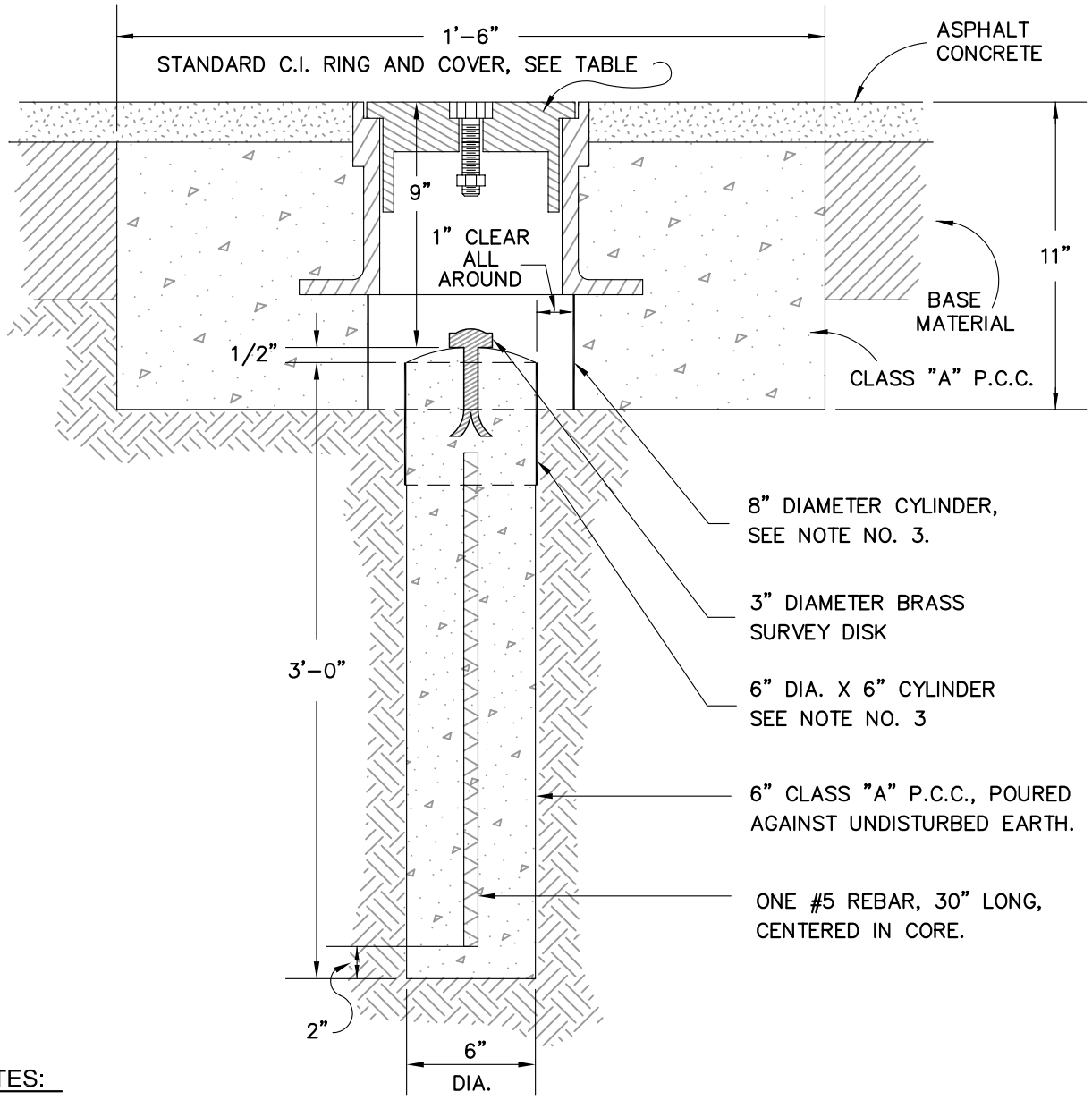
A.C. SURFACING						
STA	0+00	0+05	0+10	0+15	0+20	0+25
ORDIN	0.42	0.31	0.20	0.09	0.02	0.00

STANDARD STREET PROFILE AT P.C.C. CROSS GUTTER

STD. NO. 218

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 218 (2 of 2) Plot Date: Feb 02, 2009 at 16:40



NOTES:

1. SURVEYOR OR ENGINEER SETTING THE MONUMENT SHALL INDICATE EXACT POINT BY MAKING A CROSS ON THE CAP AND SHALL STAMP YEAR SET AND HIS/HER LICENSE TYPE AND NUMBER.
2. THE DEPTH OF THE MONUMENT POST SHALL BE LENGTHENED OR SHORTENED AS DICTATED BY THE GROUND CONDITIONS OR AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS. IN SOFT GROUND OR FILL AREAS THE MONUMENT POST SHALL BE LENGTHENED TO BED IT ON A STABLE BASE.
3. CYLINDER MATERIAL SHALL BE THINWALL A.B.S. OR P.V.C. PLASTIC PIPE.
4. TOP OF MONUMENT CORE SHALL BE FINISHED SMOOTH AND ROUNDED WITH NO CONCRETE ABOVE EDGE OF BRASS SURVEY MARKER.
5. ASTM CLASS 30 IRON CASTINGS DIPPED IN ASPHALT PAINT

APPROVED MONUMENT COVERS:

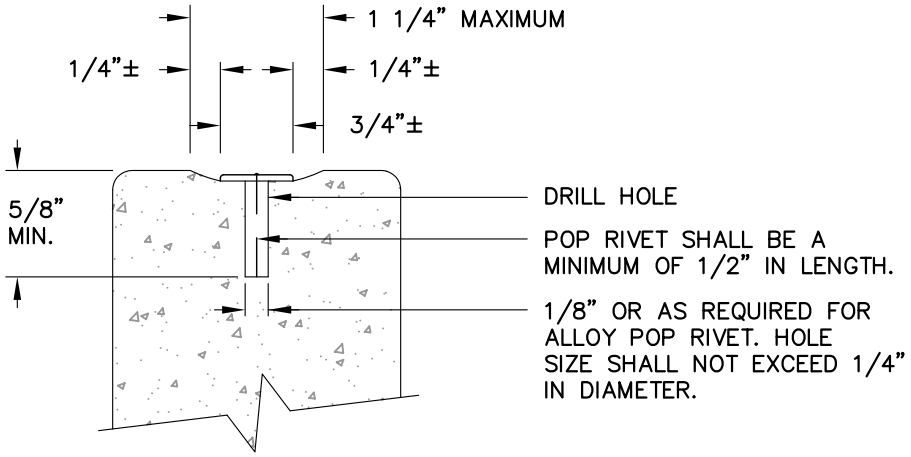
1. SOUTH BAY FOUNDRY SBF 1201
2. "VISCO NO. 129"
3. "AMERICAN BRASS AND IRON FOUNDARY MODEL 5020-21"
4. ARTMARK PROD. CO. APC-51
5. SANTA ROSA CAST PRODUCTS SP-51

CITY MONUMENT

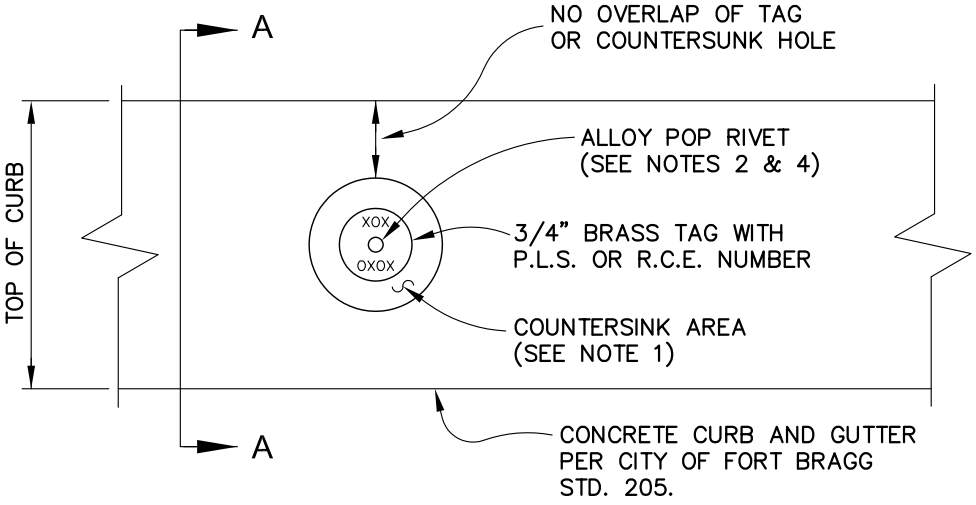
STD. NO. 219

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 219 Plot Date: Feb 02, 2009 at 16:40



SECTION A-A



NOTES:

1. BRASS TAG SHALL BE COUNTERSUNK SO THAT TOP OF TAG AND RIVET IS AT OR BELOW THE SURFACE OF THE TOP OF CURB. BRASS TAG SHALL BE SET TO ENSURE A PERMANENTLY PLACED MONUMENT. EPOXY RESIN MAY BE USED IN ADDITION TO ABOVE METHODS.

2. DRILL HOLE SHALL BE DRILLED ONLY. AN ALLOY POP RIVET SHALL BE USED TO ATTACH BRASS TAG TO TOP OF CURB.

3. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS / CITY SURVEYOR.

4. IMPACT FASTENERS ARE NOT ALLOWED.

LOT CORNER REFERENCE MONUMENT AT STREET FRONTAGE

STD. NO. 220

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Draft Rev JAN 09\FortBragg211-220draft.dwg Layout Name: 220 Plot Date: Feb 02, 2009 at 16:40

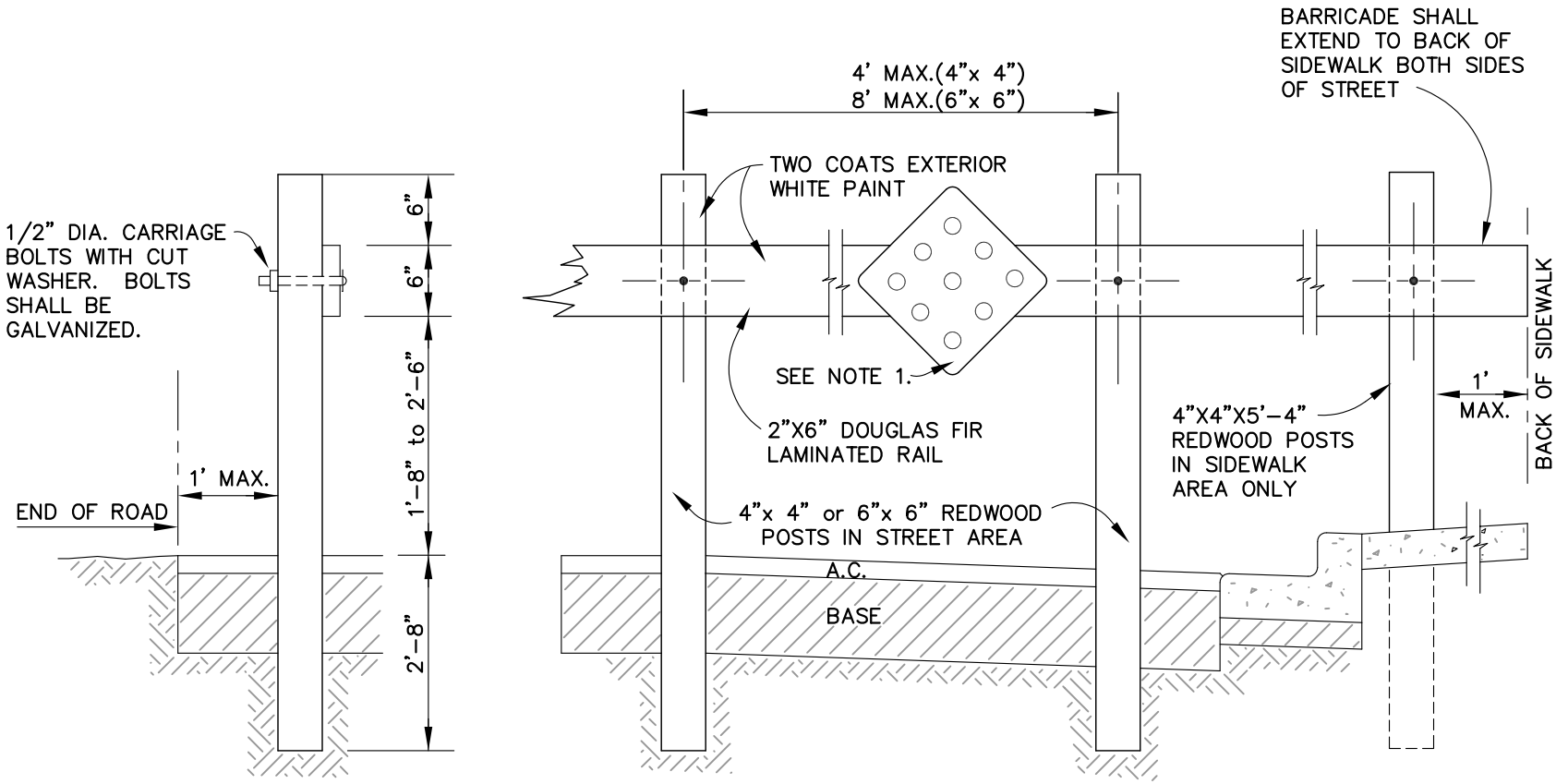
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg221-223.dwg Layout Name: 221 Plot Date: Feb 02, 2009 at 17:25

CITY OF FORT BRAGG CALIFORNIA

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

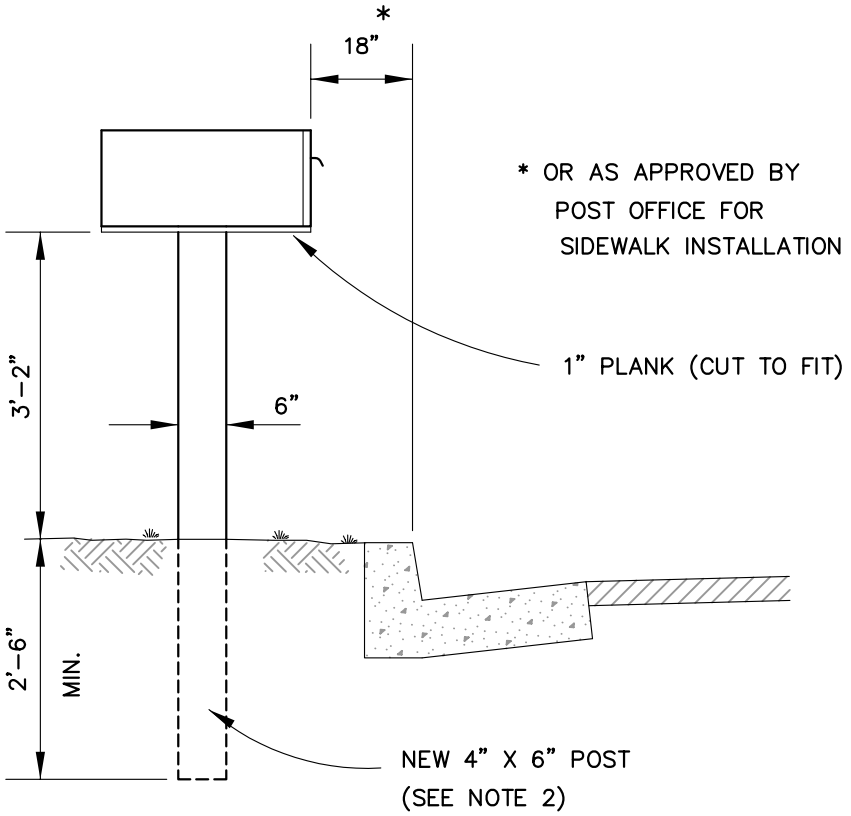
STANDARD BARRICADE

STD. NO. 221



NOTES:

1. INSTALL 18" X 18" ALUMINUM TYPE N-2 REFLECTOR, NO MORE THAN 8' o.c., MINIMUM 3
2. SIDEWALKS ONLY – INSTALL 4" YELLOW REFLECTORS.



NOTES:

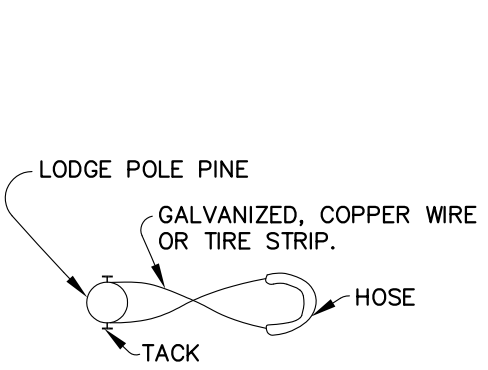
1. ALL WOOD TO BE USED SHALL BE PRESSURE TREATED OR HEART REDWOOD.
2. AN APPROVED STEEL POST MAY BE USED FOR SIDEWALK INSTALLATION.
3. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

MAILBOX DETAIL

STD. NO. 222

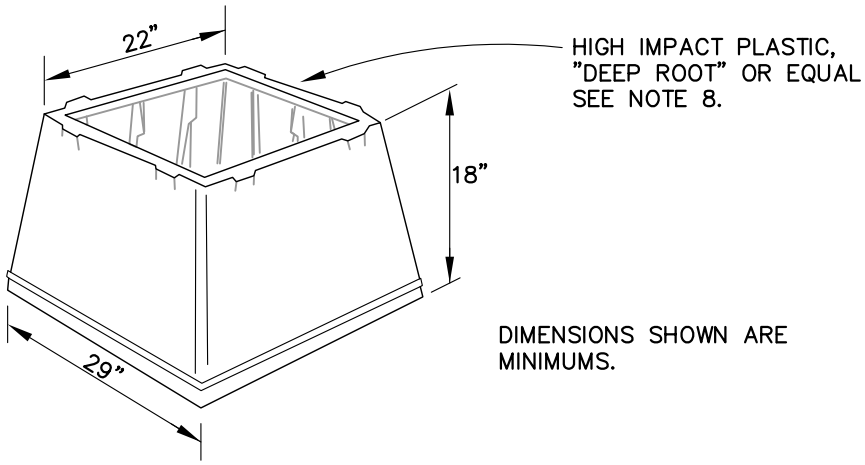
SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg221-223.dwg Layout Name: 222 Plot Date: Feb 02, 2009 at 17:25



TREE TIE DETAIL

PLANTING DETAIL



DEEP ROOT PLANTER

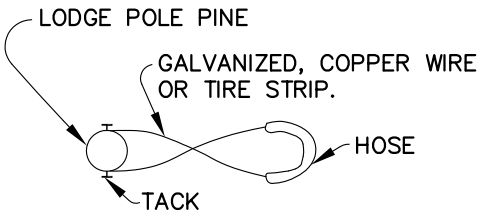
SHEET 1 OF 4

STREET TREE PLANTING IN TREE WELL

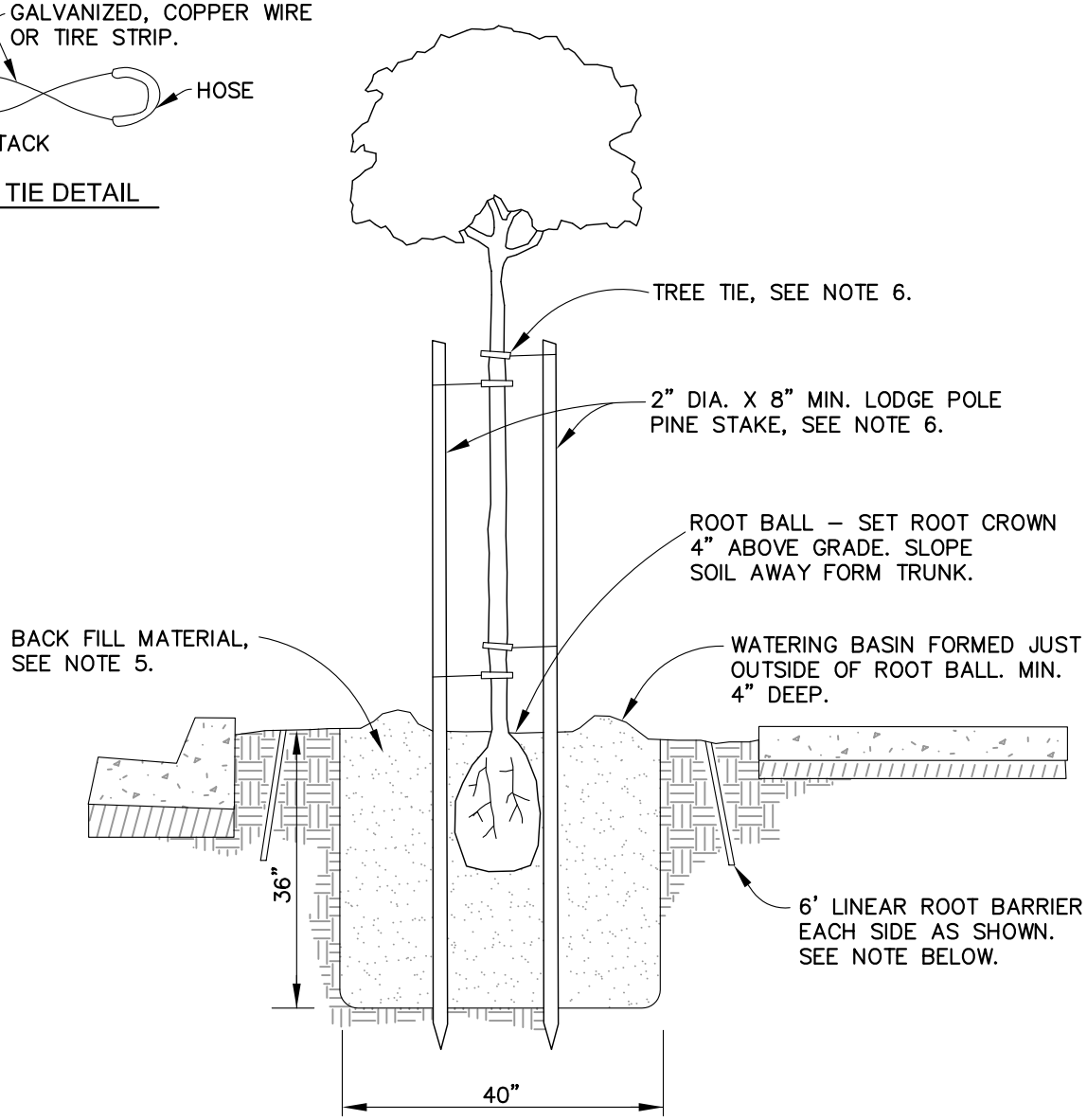
STD. NO. 223

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg221-223.dwg Layout Name: 223 (1 of 4) Plot Date: Feb 02, 2009 at 17:25



TREE TIE DETAIL



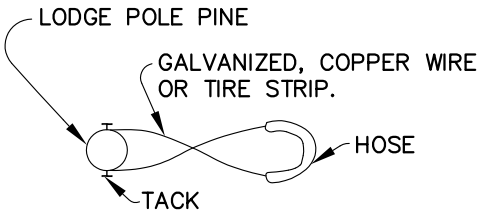
PLANTING DETAIL

NOTE:

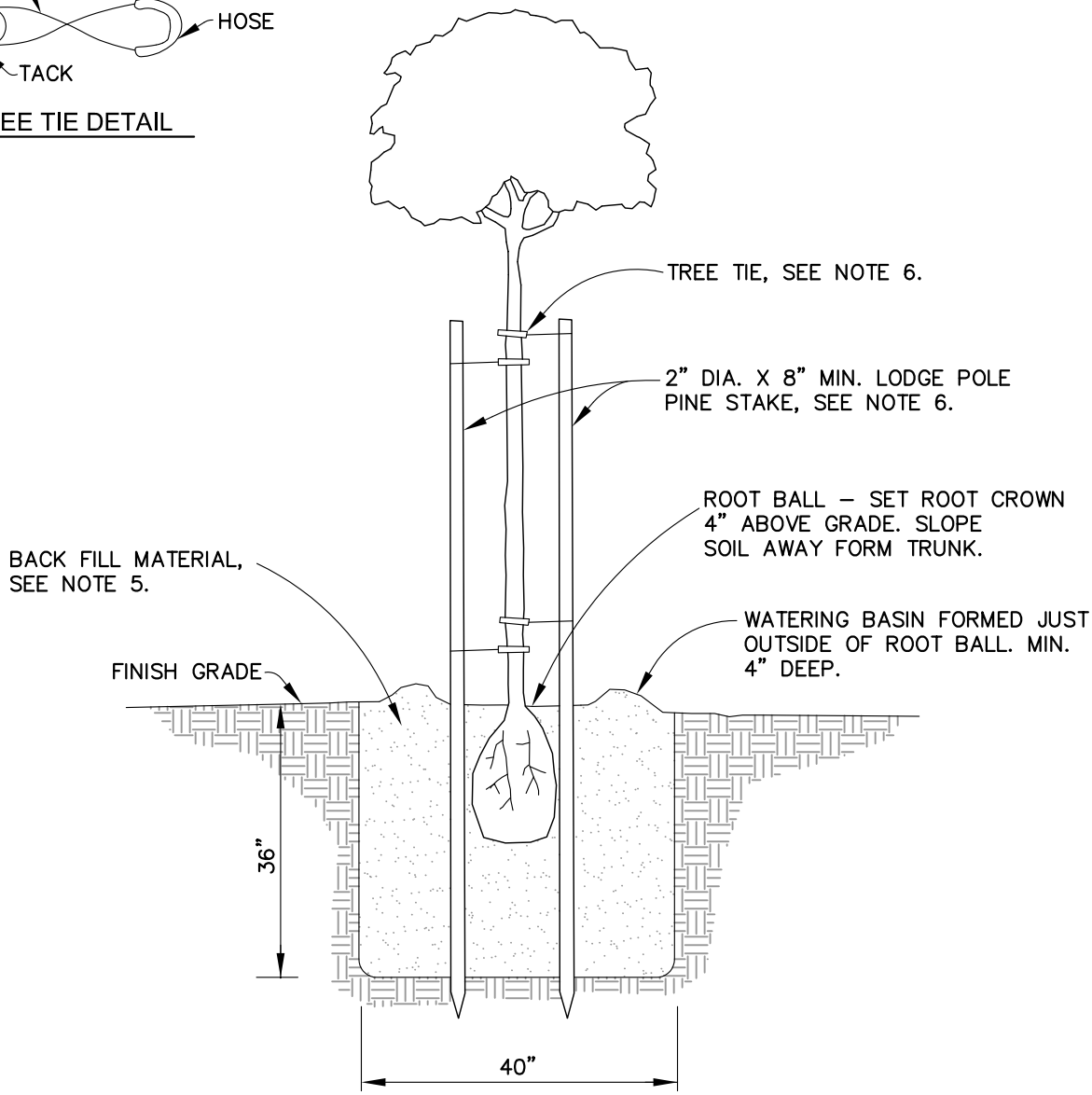
ROOT BARRIER MATERIAL SHALL BE APPROVED BY CITY ENGINEERING. THE BARRIER SHALL BE PLACED BETWEEN THE TREE AND CURB, AND SIDEWALK. BARRIER SHALL BE A MINIMUM 14" DEEP AND INSTALLED AT A 10° SLANT AS SHOWN.

CITY OF FORT BRAGG CALIFORNIA	STREET TREE PLANTING IN PARKWAY				STD. NO. 223
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg221-223.dwg Layout Name: 223 (2 of 4) Plot Date: Feb 02, 2009 at 17:25



TREE TIE DETAIL



PLANTING DETAIL

SHEET 3 OF 4

CITY OF FORT BRAGG CALIFORNIA	TYPICAL TREE PLANTING				STD. NO. 223
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg221-223.dwg Layout Name: 223 (3 of 4) Plot Date: Feb 02, 2009 at 17:25

GENERAL NOTES:

1. TREES SHALL BE OF A SIZE NOT LESS THAN 8 FT. IN HEIGHT NOR LESS THAN 1 INCH CALIPER. A TREE MAY BE REJECTED IT IS NOT OF A SHAPE OR CONDITION ACCEPTABLE TO THE CITY.

2. THE TREE SHALL BE PLANTED IN DEEP ROOT PLANTER BOX. THE PLANTER BOX MUST BE A MINIMUM OF 22 INCHES AT THE TOP, 29 INCHES AT THE BOTTOM AND 18 INCHES DEEP.

3. THE TREE SHALL BE PLANTED IN A HOLE 40 INCHES SQUARE BY 36 INCHES DEEP.

4. INSTALL TWO DEEP WATERING PERFORATED PLASTIC PIPES AS SHOWN. FILL PIPES WITH 3/4 INCH CLEAN DRAIN ROCK.

5. TREES SHALL BE PLANTED IN A MIXTURE OF 1/2 NATIVE SOIL AND 1/2 LEAF MOLD OR REDWOOD MULCH.

6. TREES SHALL BE STAKED WITH TWO 2 INCH BY 8 FT. MINIMUM LODGE POLE PINE STAKES OR EQUAL. STAKES SHALL BE COATED WITH GREEN PRESERVATIVE STAIN. TREES SHALL BE TIED WITH "GRO STRAIT" TREE TIES, OR SIMILAR.

7. TREES SHALL BE PLANTED A MINIMUM OF 20 FT. APART TO A MAXIMUM OF 50 FT. APART DEPENDING ON THE TYPE OF THE TREE. TREES SHALL BE PLANTED A MINIMUM OF 20 FT. FROM CURB RETURNS, 15 FT. FROM STREET LIGHTS AND 6 FT. FROM DRIVEWAYS, SEWER LATERALS AND WATER SERVICES OR AS OTHERWISE APPROVED BY THE CITY.

8. DEEP ROOT PLANTER SHALL BE FABRICATED FROM A HIGH DENSITY AND HIGH IMPACT PLASTIC SUCH AS POLYVINYL CHLORIDE, ABS OR POLYETHYLENE AND HAVE A MINIMUM THICKNESS OF 0.06 INCH. THE PLASTIC SHALL HAVE 1/2 INCH HIGH RAISED VERTICAL RIBS ON THE INNER SURFACE SPACED NOT MORE THAN SIX (6) INCHES APART.

9. ALL STREET TREES TO BE PLANTED SHALL BE SELECTED FROM THE CURRENT "CITY APPROVED STREET TREE LIST".

CITY OF FORT BRAGG CALIFORNIA	STREET TREE PLANTING	STD. NO. 223

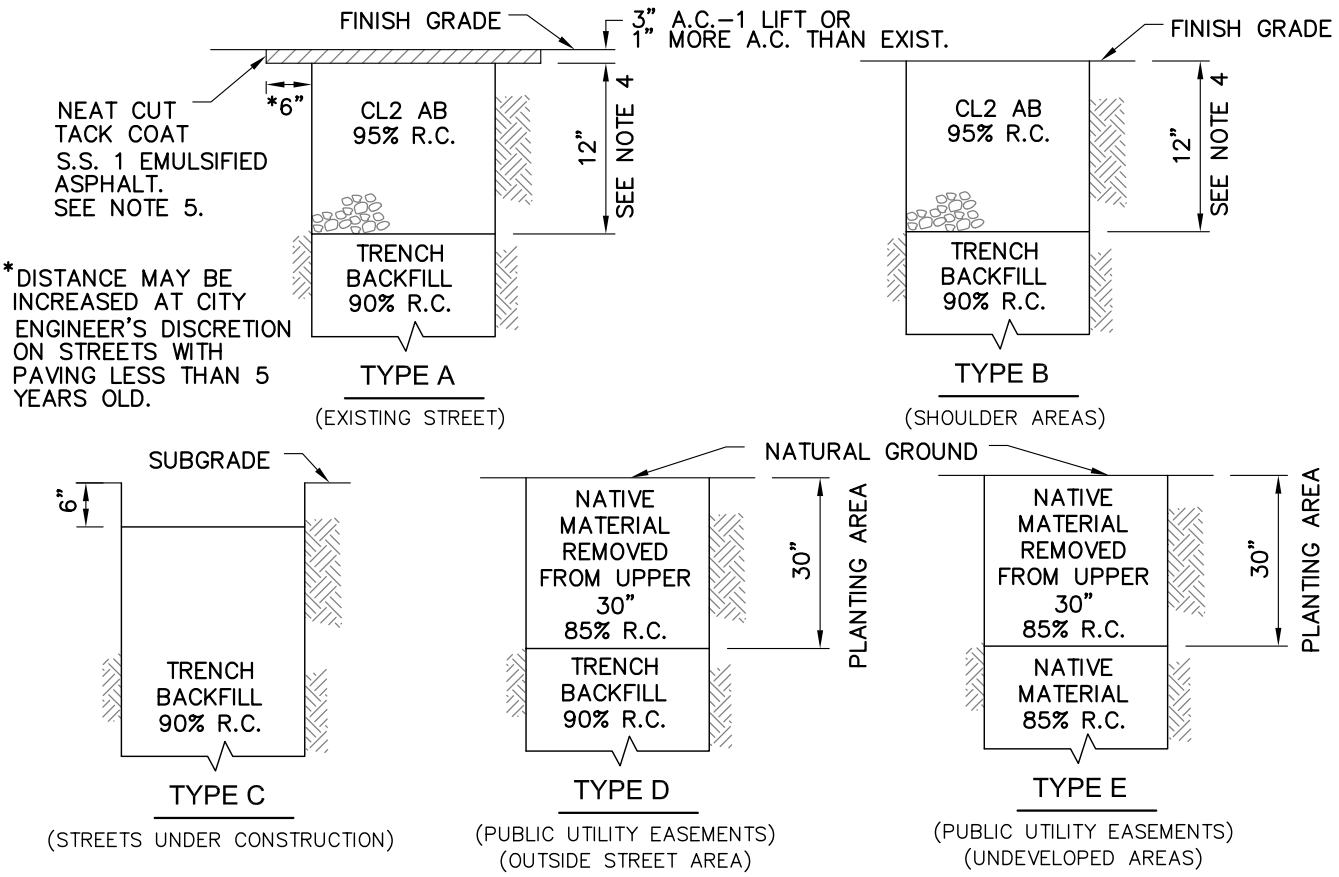
SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg221-223.dwg Layout Name: 223 (4 of 4) Plot Date: Feb 02, 2009 at 17:25

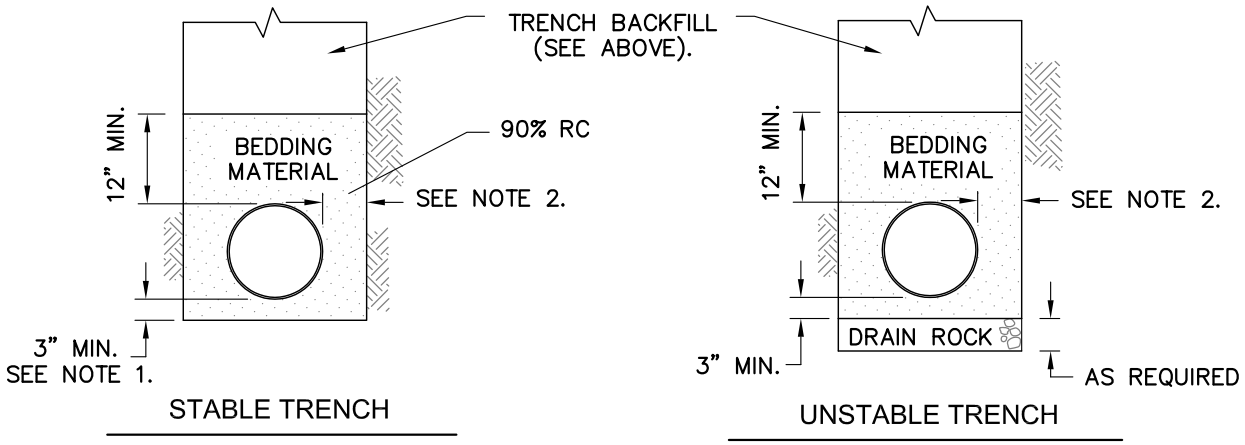
SEWER STANDARD PLANS

DESCRIPTION

300 SERIES - SEWERS



TRENCH BACKFILL AND SURFACING



PIPE BEDDING

NOTES:

1. 1/4 PIPE O.D. OR 4" MIN. WHEN EXCAVATION IS IN ROCKY GROUND.
2. PIPE DIAMETER 18" OR LESS: 6" MIN., 9" MAX. PIPE DIAMETER GREATER THAN 18": 9" MIN., 12" MAX.
3. RELATIVE COMPACTION DESIGNATED R.C.
4. THE STREET STRUCTURAL SECTION SHALL BE A MIN. OF 3" A.C. ON 12" A.B. OR MATCH EXISTING PAVEMENT THICKNESS PLUS 1" A.C., WHICHEVER IS THICKER OR AS SPECIFIED ON PLANS.
5. NEATLY CUT PAVEMENT SIX INCHES FROM EDGE OF TRENCH AFTER TRENCH IS BACKFILLED.

CITY OF FORT BRAGG CALIFORNIA	STANDARD TRENCH DETAIL				STD. NO. 300
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg300-310.dwg Layout Name: 300 (1of2) Plot Date: Feb 23, 2009 at 16:49

MATERIAL SPECIFICATIONS:

DRAIN ROCK SHALL BE EITHER OF THE NOMINAL SIZES DESIGNATED AS 1–1/2" BY 3/4" OR 2–1/2" BY 1–1/2".

PIPE BEDDING AND TRENCH BACKFILL MATERIAL SHALL BE A WELL GRADED AGGREGATE (PEA GRAVEL WILL NOT BE ACCEPTED) MATERIAL AND SHALL HAVE A MINIMUM SAND EQUIVALENT VALUE OF 30 AND SHALL CONFORM TO THE FOLLOWING GRADINGS:

	PERCENT PASSING			
	3"	1"	3/4"	NO. 4
PIPE BEDDING		100	95–100	55–100
TRENCH BACKFILL	100			40–100

AGGREGATE BASE SHALL BE CLASS 2, 1–1/2" MAX. OR 3/4" MAX CONFORMING TO THE PROVISIONS OF SECTION 26 OF THE STATE STANDARD SPECIFICATIONS.

NATIVE MATERIAL SHALL NOT CONTAIN ROCKS LARGER THAN 3".

COMPACTION REQUIREMENTS: (AS SHOWN ON SHEET 1 AND IN THE FOLLOWING MODIFICATIONS).

DRAIN ROCK SHALL BE CONSOLIDATED WITH A SURFACE VIBRATOR.

PIPE BEDDING MATERIAL USED TO GRADE THE TRENCH SHALL BE CONSOLIDATED WITH A SURFACE VIBRATOR WHEN IT IS PLACED OVER DRAIN ROCK OR WHEN DEPTH IS GREATER THAN 12".

PIPE BEDDING MATERIAL SHALL EITHER BE HAND TAMPED UNDER AND AT THE SIDES OF THE PIPE IN LIFTS NOT GREATER THAN 6" OR SHAPED AND COMPACTED PRIOR TO PIPE INSTALLATION.

GENERAL: THE COMPACTION REQUIREMENTS SHALL BE ACHIEVED UTILIZING METHODS AND EQUIPMENT APPROVED BY THE CITY. ANY METHOD OF COMPACTION WHICH FAILS TO UNIFORMLY ACHIEVE THE REQUIRED LEVELS OF COMPACTION THROUGHOUT THE LENGTH AND DEPTH OF TRENCHES SHALL BE DISCONTINUED. COMPACTION METHODS AND EQUIPMENT SHALL BE SUCH AS NOT TO DAMAGE THE INSTALLED PIPE, EXCEED ITS LOADING CAPACITY, OR DISTURB ITS ALIGNMENT. FLOODING, PONDING, OR THE USE OF DROP HAMMER TYPE COMPACTION EQUIPMENT WILL NOT BE ALLOWED.

MECHANICAL COMPACTION: TRENCH BACKFILL SHALL BE PLACED IN UNIFORM, HORIZONTAL LAYERS NOT EXCEEDING EIGHT (8) INCHES IN THICKNESS BEFORE COMPACTION. EACH LAYER SHALL BE COMPACTED, USING MECHANICAL MEANS, TO THE SPECIFIED DENSITY SHOWN ON THE PLANS.

THE CONTRACTOR MAY, AT HIS SOLE OPTION AND AT HIS SOLE EXPENSE, CONSTRUCT A TEST TRENCH SECTION WHICH DEMONSTRATES METHODS, EQUIPMENT, OR MATERIALS WHICH WILL RELIABLY ACHIEVE THE REQUIRED COMPACTION IN LIFTS GREATER THAN 8 INCHES. AT ITS SOLE DISCRETION, THE CITY MAY INCREASE THE MAXIMUM ALLOWABLE LIFT THICKNESS PERMITTED BASED UPON THE RESULTS DEMONSTRATED BY THE TEST TRENCH SECTION. SHOULD SUBSEQUENT TESTING DEMONSTRATE THAT THE REQUIRED COMPACTION IS NOT BEING RELIABLY ACHIEVED, THE CITY MAY, AT ITS SOLE DISCRETION, REDUCE THE MAXIMUM LIFT THICKNESS TO ITS ORIGINAL VALUE OF 8 INCHES.

JETTING: JETTING IS NOT ALLOWED.

CITY OF FORT BRAGG CALIFORNIA

STANDARD TRENCH DETAIL

STD. NO. 300

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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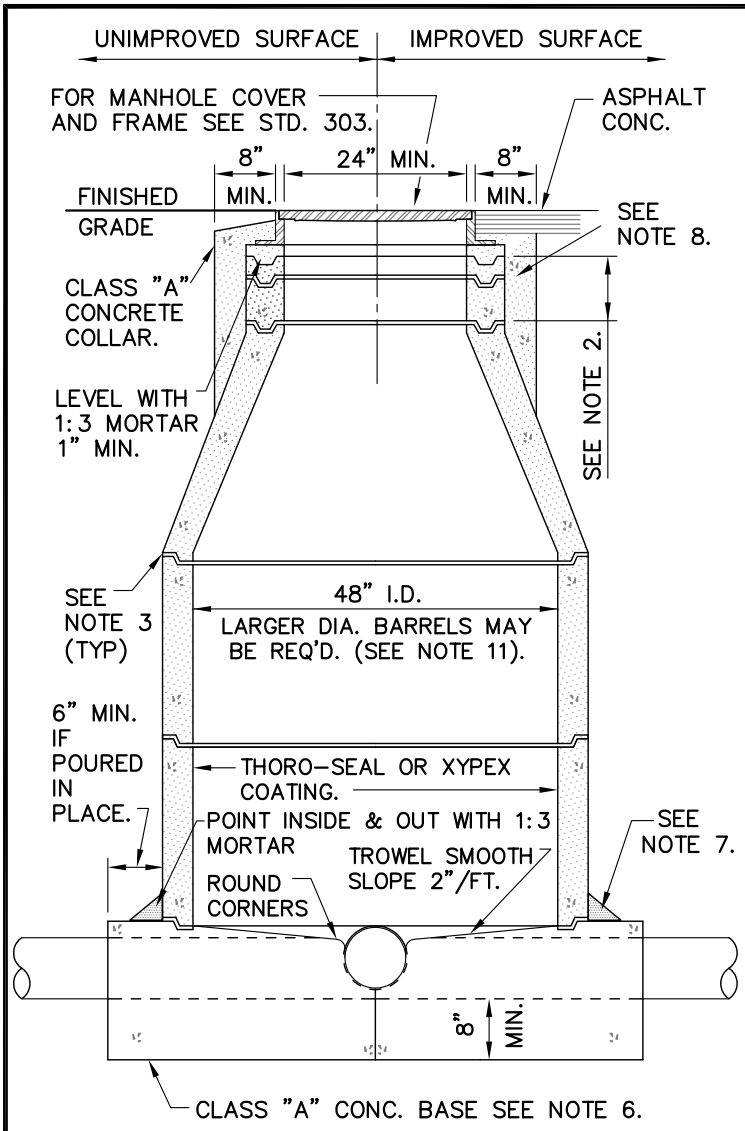

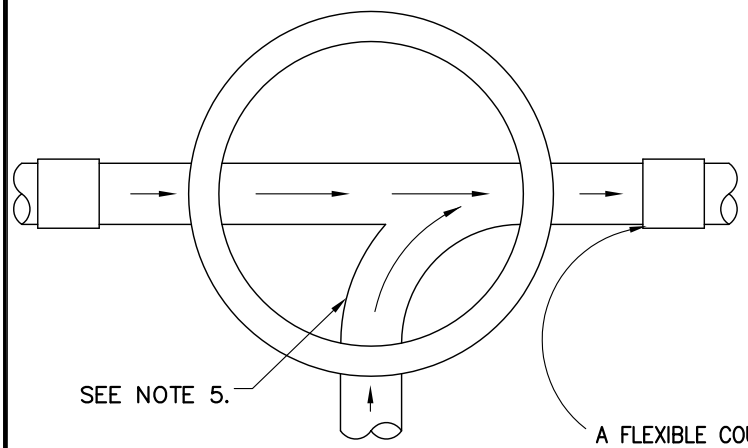

MANHOLE BASE

CHANNELIZATION PLAN

NOTES:

1. WHEN MANHOLES ARE INSTALLED IN UNIMPROVED AREAS, THE TOP OF THE COVER SHALL BE A MIN. OF 1 FOOT ABOVE ADJACENT FINISHED GRADE.
2. MIN. OF ONE 3" AND ONE 6" GRADE ADJUSTMENT RINGS. MAX. HEIGHT OF GRADE ADJUSTMENT RINGS = 20". ALTERNATELY, CONTRACTOR MAY CAST GRADE ADJUSTMENT RINGS IN PLACE.
3. SET ALL BARREL SECTIONS & TAPER SECTIONS IN PLASTIC GASKET, RAM-NEK OR APPROVED ALTERNATE. TYP JOINT 1-1/2" (3/4 X 2-1/2") RAM-NEK SEAL. (2 SEALS IN HIGH WATER TABLE AREAS).
4. CONE SECTION (TAPER) MUST BE CONCENTRIC FOR 48" MANHOLE UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
5. CONSTRUCT ALL FLOW CHANNELS OF PIPE WHEREVER POSSIBLE. AFTER LOWER RING SECTION IS SET, BREAK OUT TOP HALF OF PIPE FLUSH WITH INSIDE FACE OF M.H. WALL AND CONSTRUCT SHELF AND U-SHAPED CHANNEL. MAKE ELEVATION CHANGES GRADUALLY AND DIRECTIONAL CHANGES WITH SMOOTH CURVES.
6. POURED-IN-PLACE BASE SHALL BE POURED FULL THICKNESS TO UNDISTURBED SIDES OF EXCAVATION OR SHALL BE FORMED. PRECAST BASE TO BE FROM A DISTRICT APPROVED LIST AND PLACED ON 12" THICK 3/4" DRAIN ROCK SUBBASE INSTALLED AGAINST UNDISTURBED EARTH.
7. JOINT BETWEEN BASE AND BARREL TO BE SEALED W/1-1/2" (3/4" X 2-1/2") RAM-NEK SEAL (2 SEALS IN HIGH WATER TABLE AREAS), AND PLASTER 6" FILLET, 1:3 MORTAR.
8. CLASS "A" CONC. COLLAR SHALL BE 2" BELOW FINISHED GRADE.
9. STANDARD MANHOLE BARREL SECTION PER ASTM C478.
10. BARREL AND TAPER SECTIONS MAY BE CAST IN PLACE AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
11. 48" I.D. M.H. TO BE USED ONLY FOR SEWER MAINS LESS THAN 18" DIAMETER AND LESS THAN 8 FT. DEEP FROM FINISHED GRADE. 60" I.D. MANHOLES PER STD. 302 FOR ALL OTHER APPLICATIONS.
12. ALL SECTIONS OF MANHOLE MUST BE OF IDENTICAL MAKE AND MANUFACTURER.
13. MANHOLE SHALL BE DEWATERED AND DRY PRIOR TO INSPECTION.

A FLEXIBLE COUPLING, AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS, SHALL BE INSTALLED IN THE SEWER MAIN WITHIN 12" OF THE BASE OF THE MANHOLE (TYP). NOT REQUIRED WHEN PRECAST BASES ARE MANUF. W/FLEX. COUPLINGS ALREADY INSTALLED.

STANDARD 48" DIA. PRECAST CONCRETE MANHOLE SANITARY SEWER

STD. NO. 301

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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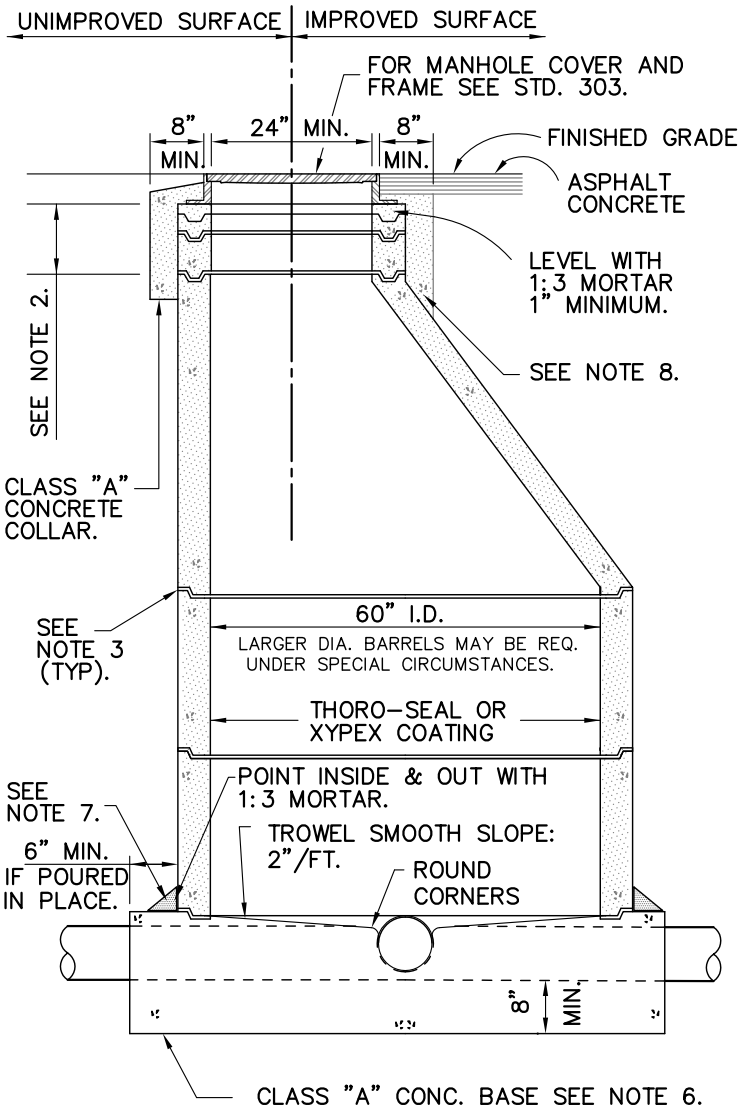

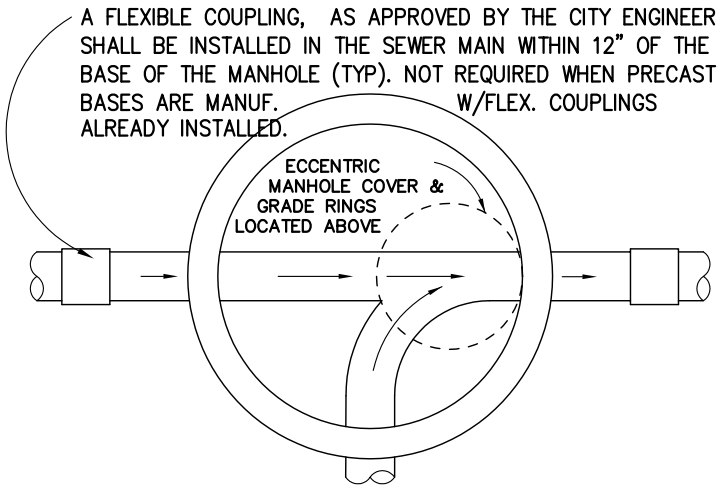

MANHOLE BASE

CHANNELIZATION PLAN AND LOCATION OF ECCENTRIC MANHOLE COVER

NOTES:

1. WHEN MANHOLES ARE INSTALLED IN UNIMPROVED AREAS, THE TOP OF THE COVER SHALL BE A MIN. OF 1 FOOT ABOVE ADJACENT FINISHED GRADE.
2. MIN. OF ONE 3" AND ONE 6" GRADE ADJUSTMENT RINGS. MAX. HEIGHT OF GRADE ADJUSTMENT RINGS = 20". ALTERNATELY, CONTRACTOR MAY CAST GRADE ADJUSTMENT RINGS IN PLACE.
3. SET ALL BARREL SECTIONS & TAPER SECTIONS IN PLASTIC GASKET, RAM-NEK OR APPROVED ALTERNATE. TYP JOINT 1-1/2" (3/4" X 2-1/2")RAM-NEK SEAL (2 SEALS IN HIGH WATER TABLE AREAS).
4. CONE SECTION (TAPER) MUST BE ECCENTRIC FOR 60" MANHOLE UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
5. CONSTRUCT ALL FLOW CHANNELS OF PIPE WHEREVER POSSIBLE. AFTER LOWER RING SECTION IS SET, BREAK OUT TOP HALF OF PIPE FLUSH WITH INSIDE FACE OF M.H. WALL AND CONSTRUCT SHELF AND U-SHAPED CHANNEL. MAKE ELEVATION CHANGES GRADUALLY AND DIRECTIONAL CHANGES WITH SMOOTH CURVES.
6. POURED-IN-PLACE BASE SHALL BE POURED FULL THICKNESS TO UNDISTURBED SIDES OF EXCAVATION OR SHALL BE FORMED. PRECAST BASE TO BE FROM DISTRICT APPROVED LIST AND PLACED ON 12" THICK 3/4" DRAIN SUB-BASE INSTALLED AGAINST UNDISTURBED EARTH.
7. JOINT BETWEEN BASE AND BARREL SHALL BE SEALED W/1-1/2" (3/4" X 2-1/2") RAM- NEK SEAL (2 SEALS IN HIGH WATER TABLE AREAS), AND PLASTER 6" FILLET, 1:3 MORTAR.
8. CLASS "A" CONC. COLLAR SHALL BE 2" BELOW FINISHED GRADE.
9. STANDARD MANHOLE BARREL SECTION PER ASTM C478.
10. BARREL AND TAPER SECTIONS MAY BE CAST IN PLACE AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
11. 60" I.D. MANHOLE TO BE USED FOR ALL TRUNK AND COLLECTOR SEWERS 18" TO 30" OR WHERE DIMENSION FROM FINISHED GRADE TO THE SEWER FLOW LINE IS GREATER THAN 8'-0", AS INDICATED ON THE DESIGN PLANS.
12. MANHOLES ON TRUNK SEWERS LARGER THAN 30"SHALL BE SIZED BY THE DIRECTOR OF PUBLIC WORKS.
13. ALL SECTIONS OF MANHOLE MUST BE OF IDENTICAL MAKE AND MANUFACTURER.
14. MANHOLE SHALL BE DEWATERED AND DRY PRIOR TO INSPECTION.

STANDARD 60" DIA. PRECAST CONCRETE MANHOLE SANITARY SEWER

STD. NO. 302

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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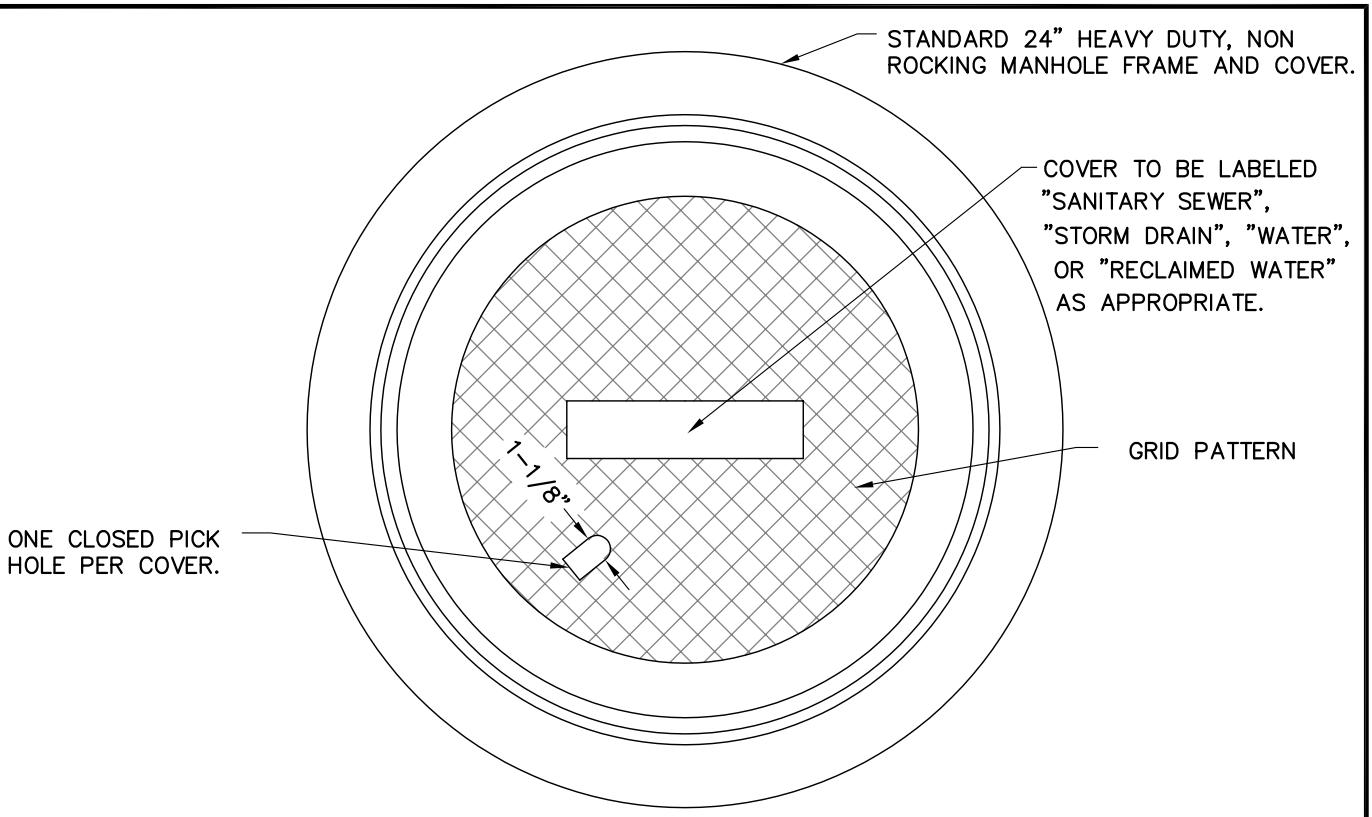

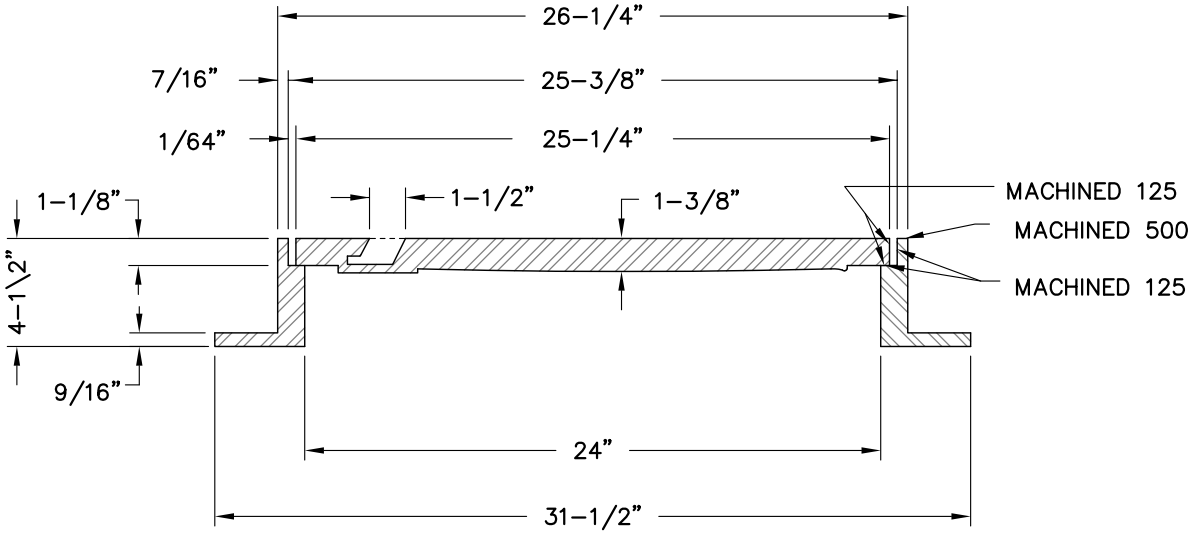

NOTES:

1. SPECIFY SANITARY SEWER WHEN ORDERING.
   ALL CASTINGS SHALL BE DIPPED IN APPROVED ASPHALT PAINT.
2. ALL MATERIAL USED IN MANUFACTURING SHALL CONFORM TO A.S.T.M. DESIGNATION 48-30, OR TO UNITED STATES GOVERNMENT SPECIFICATIONS QQI-652B.
3. MINIMUM WEIGHT COMPONENTS: COVER - 130 POUNDS
   FRAME - 135 POUNDS
4. SEE CITY'S APPROVED LIST FOR MANHOLE FRAME AND COVER.

CITY OF FORT BRAGG CALIFORNIA

STANDARD MANHOLE FRAME AND COVER

STD. NO. 303

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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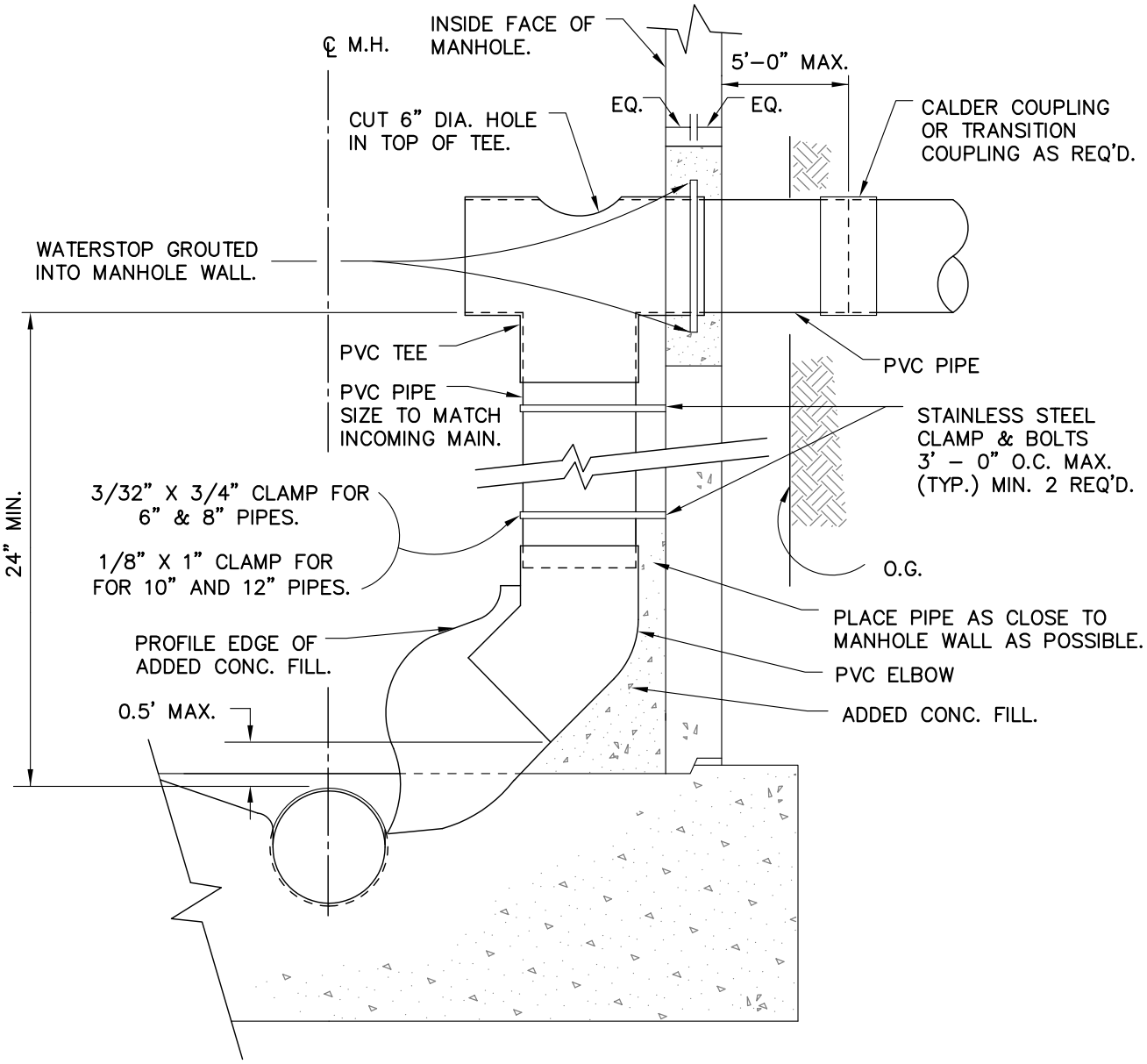

NOTES:

1. INSTALL WATERSTOP IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AS SHOWN.
2. NEW MANHOLES CONSTRUCTED USING THIS STANDARD SHALL BE 60 INCHES IN DIAMETER, & INSTALLED IN CONFORMANCE WITH STD. 302.
3. ENCLOSE ELBOW IN CONCRETE. FORM SMOOTH CHANNEL TO MANHOLE FLOWLINE.
4. PVC PIPE AND FITTINGS TO BE SDR 35 OR SCH 40.

CITY OF FORT BRAGG CALIFORNIA

INSIDE DROP INLET SANITARY SEWER MANHOLE

STD. NO. 304

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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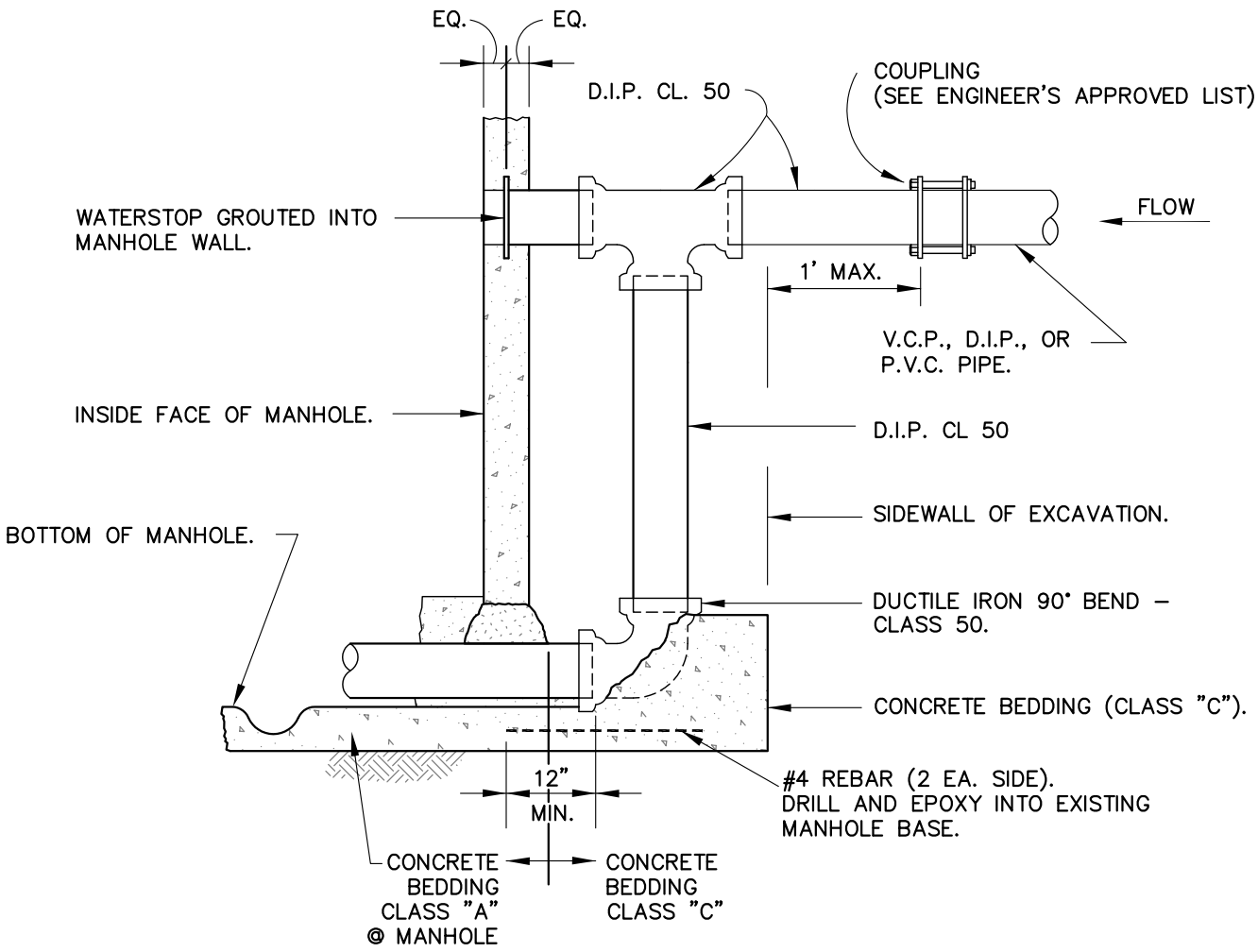

NOTES:

1. DUCTILE IRON PIPE AND FITTINGS SHALL BE CLASS 50 CONFORMING TO THE REQUIREMENTS OF ANSI A21.51.
2. PIPE AND FITTINGS SHALL BE FURNISHED WITH BELL AND SPIGOT ENDS, "TYTON JOINT" OR MECHANICAL JOINTS.
3. TO BE INSTALLED AT EXISTING 48" MANHOLES OR WHERE SPECIFICALLY APPROVED BY THE CITY ENGINEER.
4. DROP INLET PIPE AND FITTINGS SHALL BE THE SAME SIZE AS THE INCOMING SEWER MAIN.
5. SEE STANDARD 304 FOR STANDARD INSIDE DROP INSTALLATION.
6. INSTALL WATERSTOP IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AS SHOWN.

CITY OF FORT BRAGG CALIFORNIA

DUCTILE IRON FITTINGS FOR OUTSIDE DROP INLET MANHOLE

STD. NO. 305

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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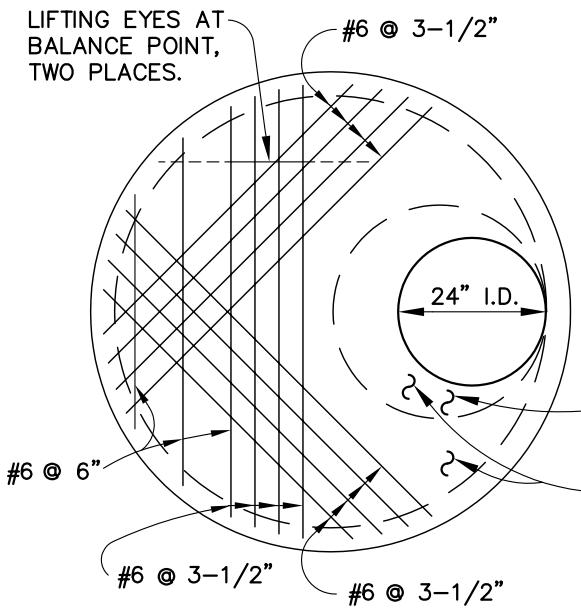
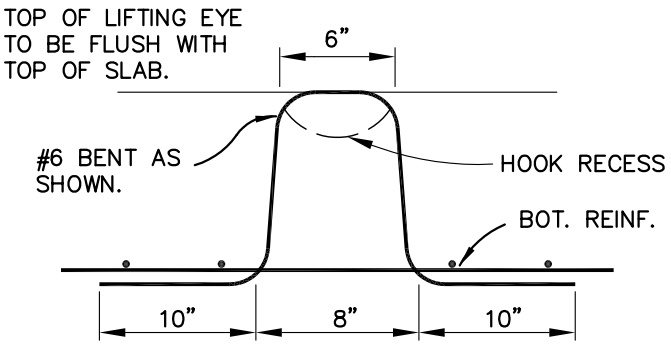
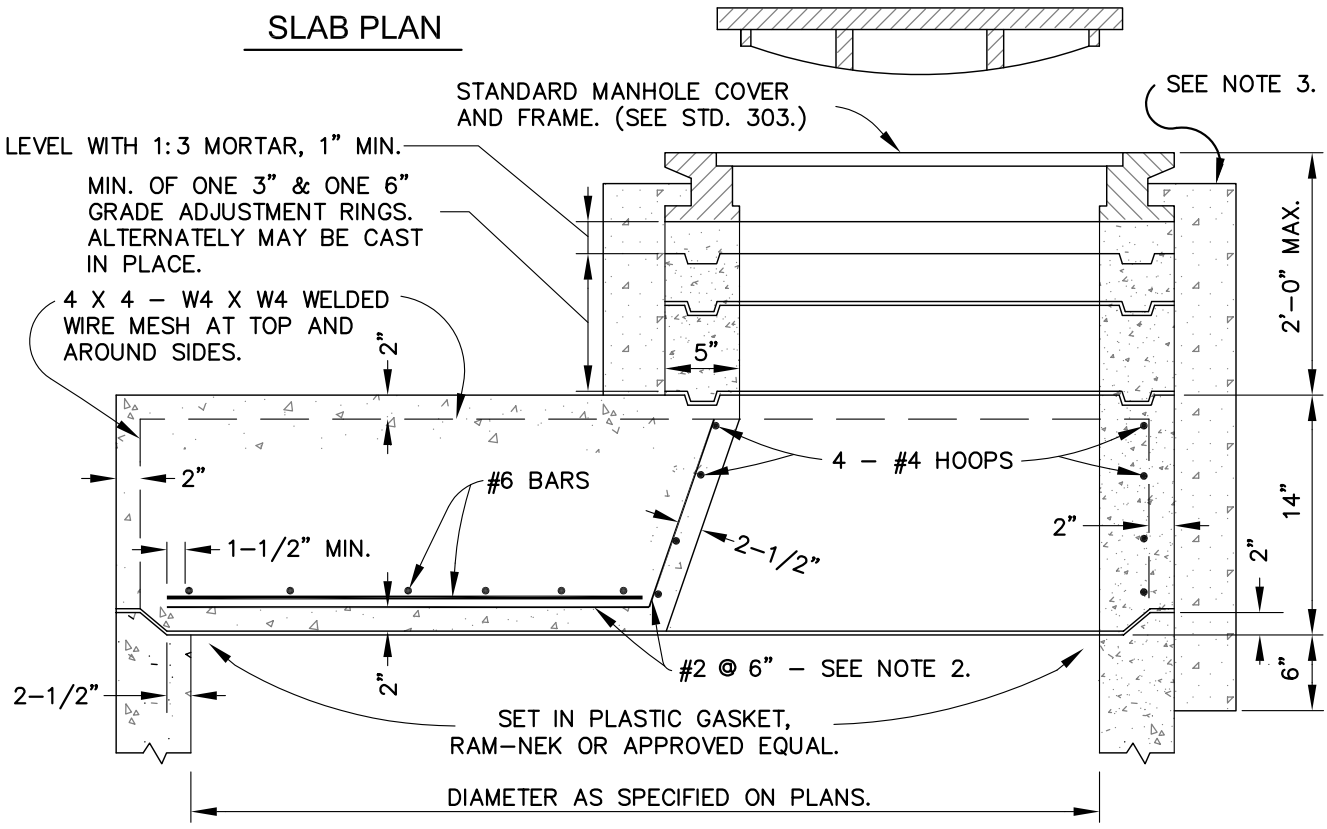


SLAB PLAN



LIFTING EYE DETAIL



NOTES:

1. FOR DETAILS AND SPECIFICATIONS OF BASE AND BARREL SECTIONS, SEE STDS. 301 & 302.
2. #2 BARS BENT UP AND SPACED 6" O.C. AROUND 24" OPENING. HORIZONTAL LEGS TO FAN OUT EQUALLY SPACED, TO 2-1/2" CLEAR AT EDGE OF SLAB.
3. CLASS "A" CONCRETE COLLAR.

STANDARD PRECAST CONCRETE MANHOLE REDUCER SLAB SANITARY SEWER

STD. NO. 306

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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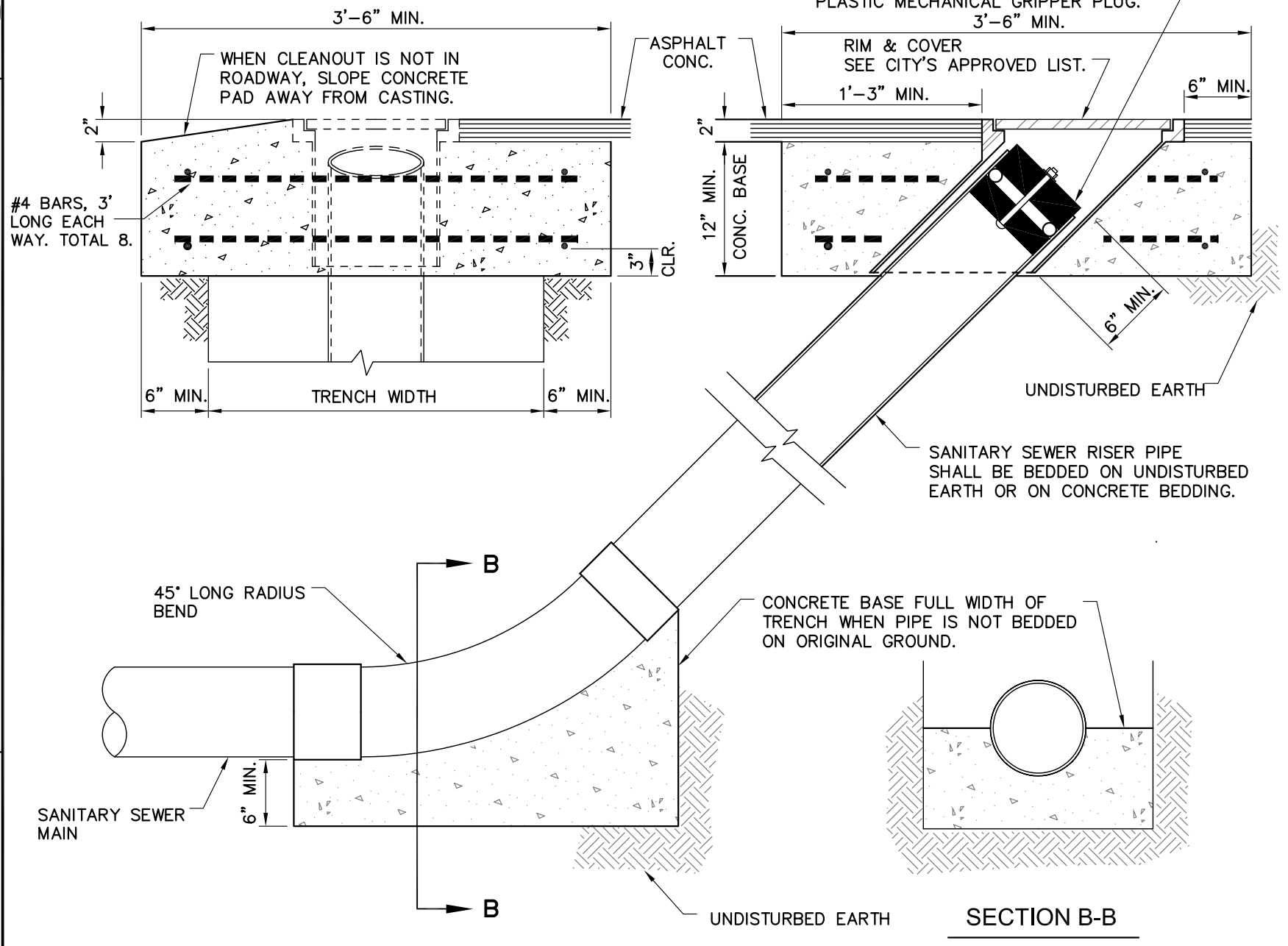
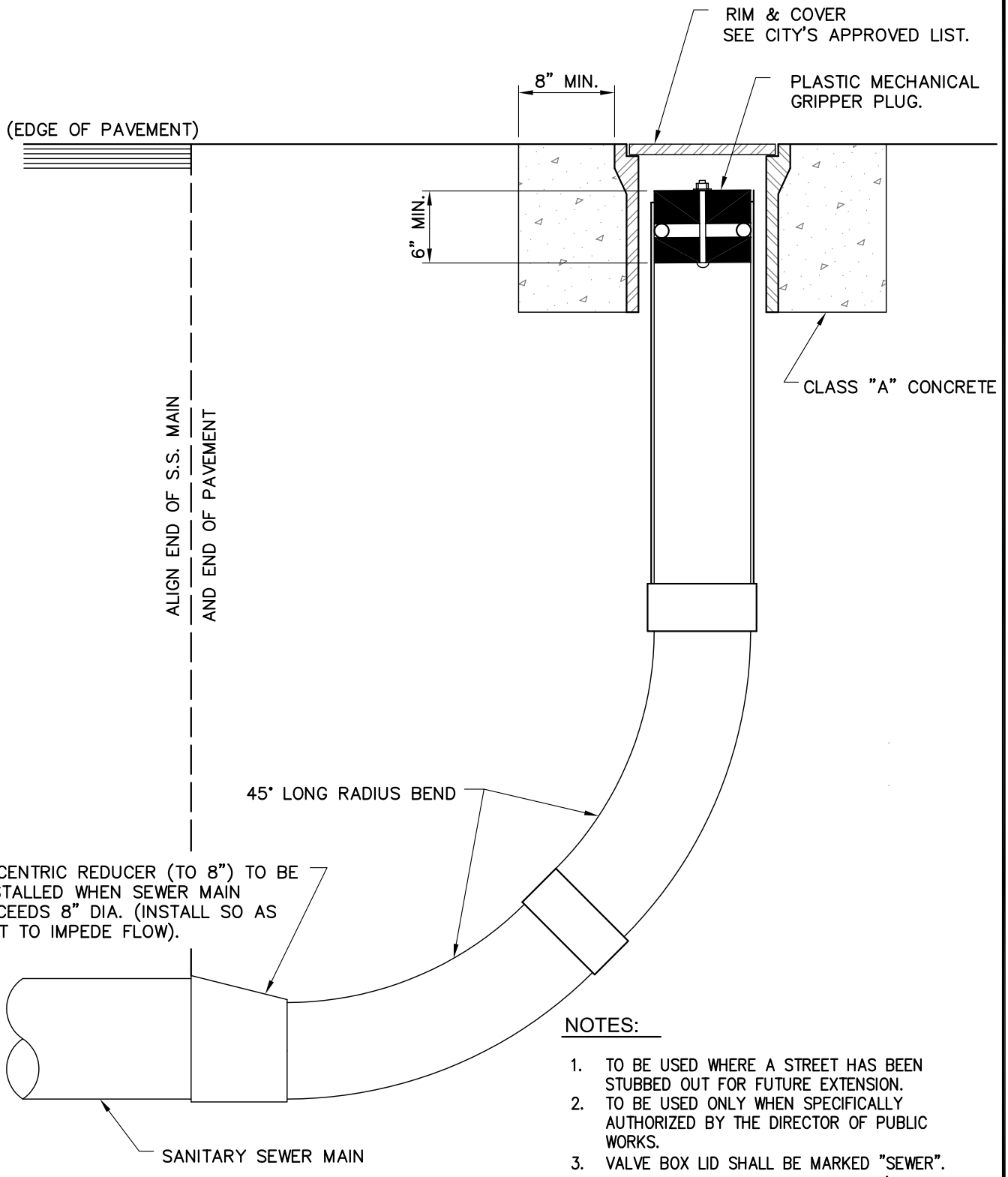
CITY OF FORT BRAGG CALIFORNIA

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

PERMANENT MAINLINE CLEANOUT

STD. NO. 307





NOTES:

1. TO BE USED WHERE A STREET HAS BEEN STUBBED OUT FOR FUTURE EXTENSION.
2. TO BE USED ONLY WHEN SPECIFICALLY AUTHORIZED BY THE DIRECTOR OF PUBLIC WORKS.
3. VALVE BOX LID SHALL BE MARKED "SEWER".
4. EASEMENT ACQUISITION MAY BE REQ'D.

SHEET 1 OF 2

TEMPORARY MAINLINE CLEANOUT

STD. NO. 308

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg300-310.dwg Layout Name: 308 (1of2) Plot Date: Feb 02, 2009 at 17:27

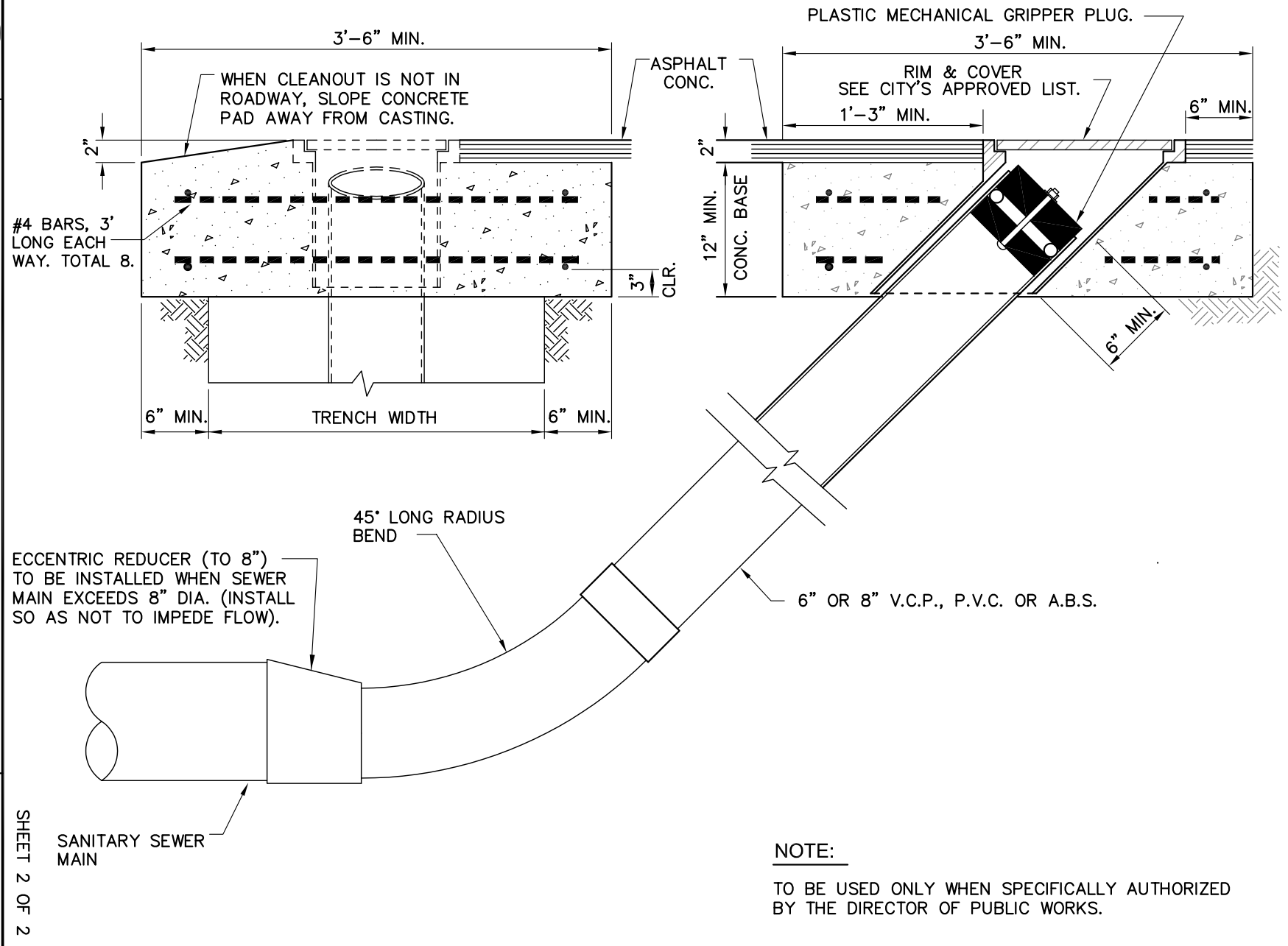
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg300-310.dwg Layout Name: 308 (2of2) Plot Date: Feb 02, 2009 at 17:27

CITY OF FORT BRAGG CALIFORNIA

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

TEMPORARY MAINLINE CLEANOUT

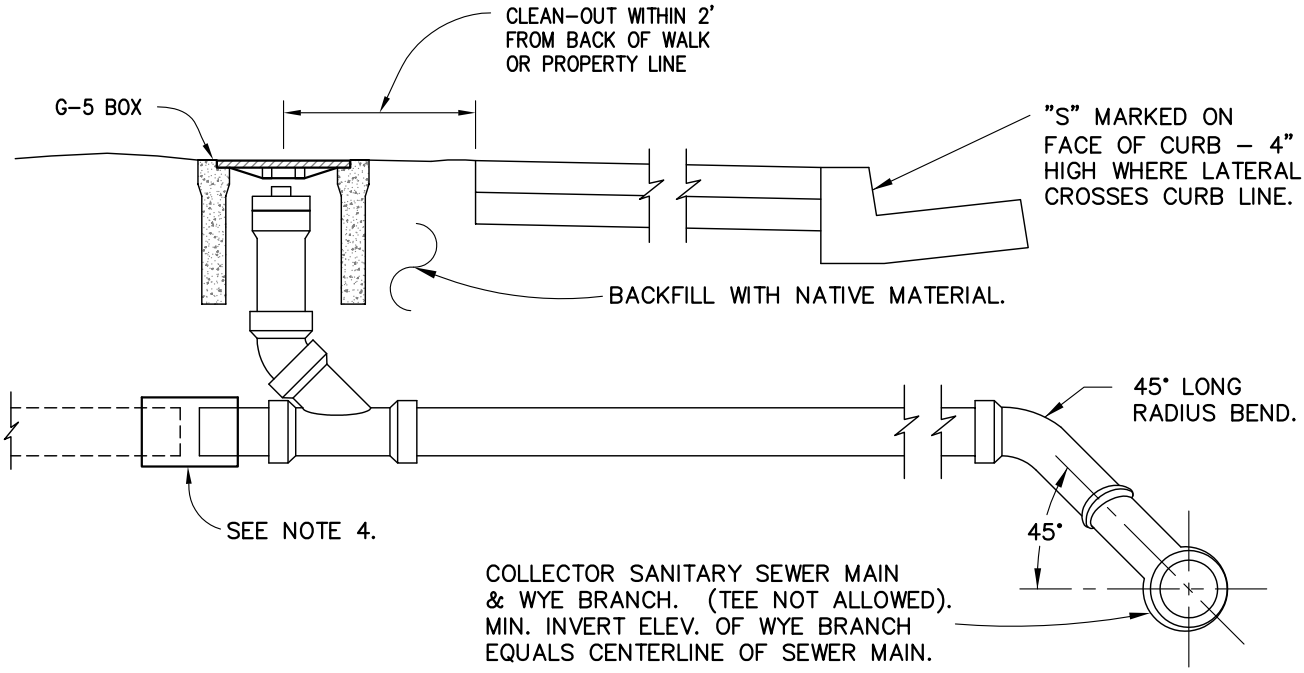
STD. NO. 308



NOTE:

TO BE USED ONLY WHEN SPECIFICALLY AUTHORIZED BY THE DIRECTOR OF PUBLIC WORKS.

SHEET 2 OF 2



LATERAL CONNECTIONS TO EXISTING MAINS:

PVC, (SDR 35):
4" – 8" : CUT IN WYE
10" & LARGER: GLUE ON SADDLE WITH STRAP TIES.
OR APPROVED BY THE CITY ENGINEER.

LATERAL PIPE MATERIAL TO BE 4" MINIMUM AND ONE OF THE FOLLOWING:

DUCTILE IRON PIPE
POLYVINYL CHLORIDE (PVC) PIPE, SDR 35 WHEN USED WITH A MANUFACTURED "Y" SPECIFICALLY DESIGNED FOR PVC LATERALS. THE "Y" SHALL BE POLYVINYL CHLORIDE (PVC), SDR 35.

NOTES:

1. THE SEWER SERVICE LATERAL SHALL BE OF SUFFICIENT DEPTH TO ADEQUATELY SERVE THE BUILDING SITE, AND IN NO CASE SHALL BE LESS THAN 3 FT. DEEP AT THE BACK OF THE P.U.E. UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR OF PUBLIC WORKS.
2. WHERE PROBLEMS ARE ANTICIPATED IN PROVIDING SEWER SERVICE TO A GIVEN BUILDING SITE, THE LATERAL INVERT AT THE BACK OF THE P.U.E. SHALL BE STAKED BY THE OWNER'S ENGINEER.
3. MINIMUM 2% SLOPE EXCEPT WHERE A VARIATION IS SPECIFICALLY APPROVED BY THE CITY ENGINEER.
4. WHEN CONNECTING TO EXISTING SEWER LATERAL EXTEND TO 1' BEHIND P.U.E.

CITY OF FORT BRAGG CALIFORNIA

SEWER SERVICE LATERAL

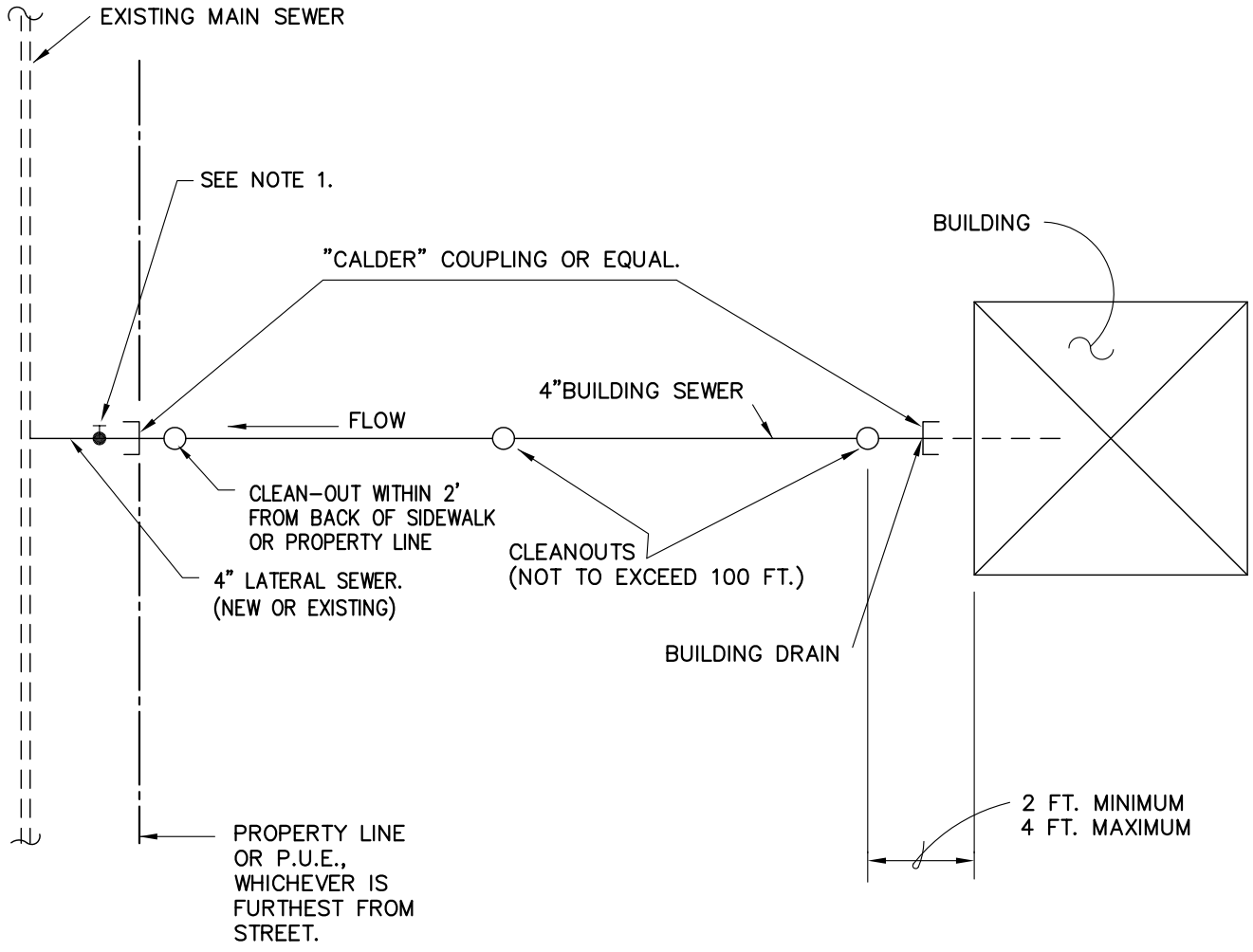
STD. NO. 309

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg300-310.dwg Layout Name: 309 Plot Date: Feb 02, 2009 at 17:27

NOTE:

WHERE BUILDING SEWERS ARE LOCATED UNDER DRIVEWAYS, CAST IRON OR DUCTILE IRON SEWER PIPE SHALL BE USED.



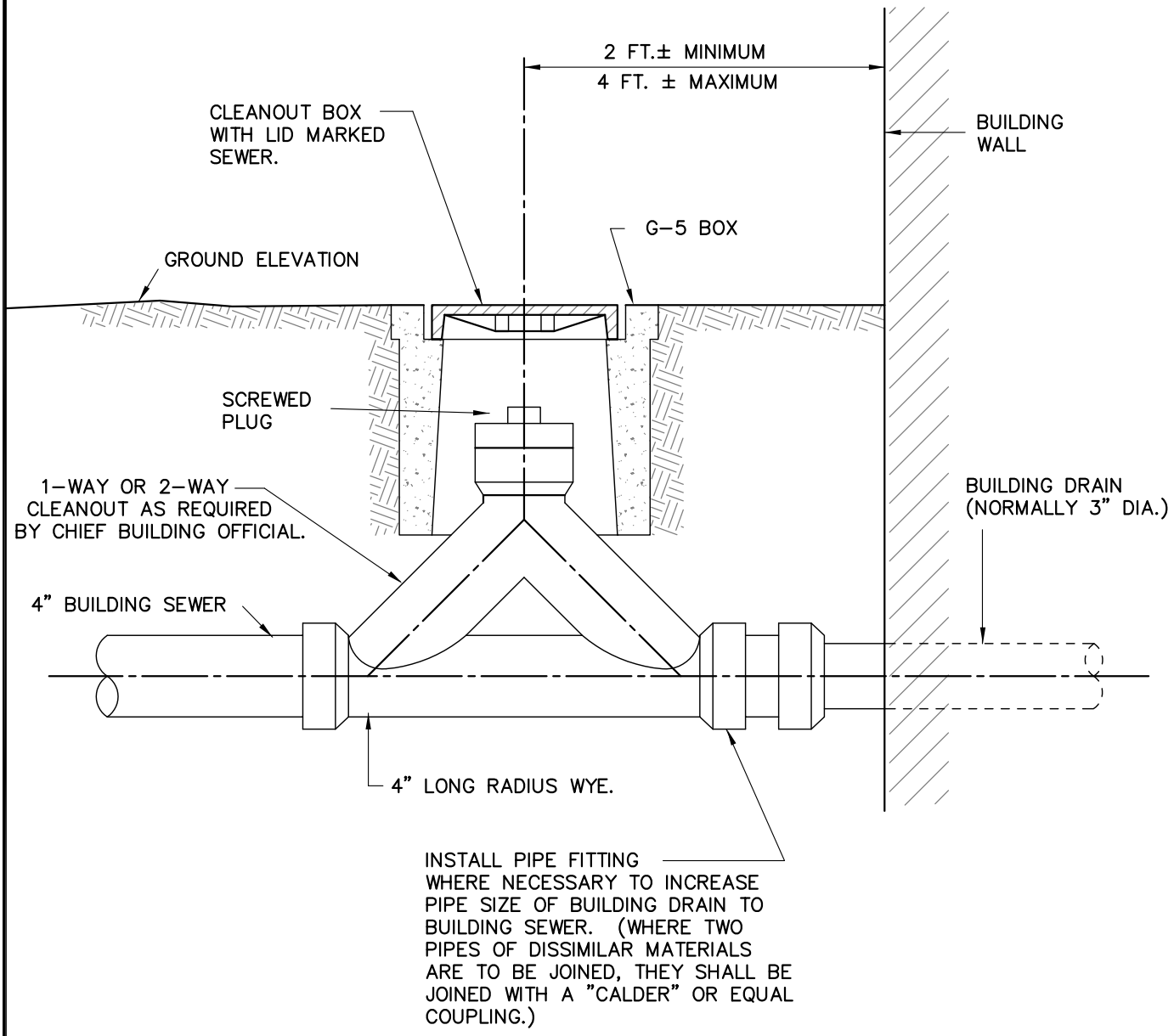
PLAN

NOTES:

1. VALVE SHALL BE INSTALLED ON NON-RESIDENTIAL DEVELOPMENTS AT THE DISCRETION OF THE DIRECTOR OF PUBLIC WORKS. VALVES TO BE PER STD 501.

CITY OF FORT BRAGG CALIFORNIA	TYPICAL SERVICE SEWER CONNECTION DETAILS				STD. NO. 310
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg300-310.dwg Layout Name: 310 (1of4) Plot Date: Feb 02, 2009 at 17:27



SHEET 2 OF 4

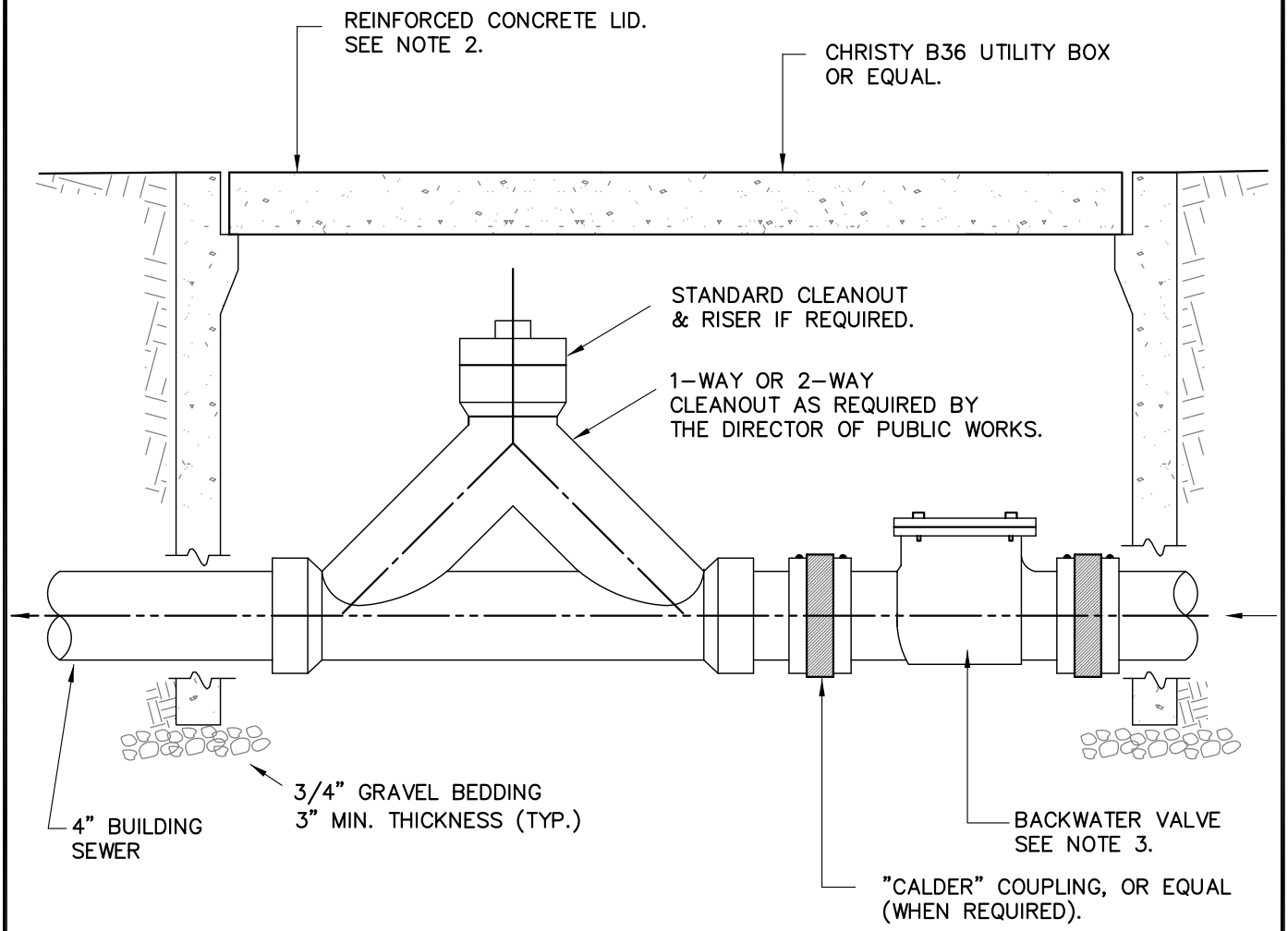
CITY OF FORT BRAGG CALIFORNIA

CLEANOUT DETAIL AT BUILDING

STD. NO. 310

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg300-310.dwg Layout Name: 310 (2of4) Plot Date: Feb 02, 2009 at 17:27



NOTES:

1. THIS INSTALLATION IS REQUIRED WHEREVER THE LOWEST FINISHED FLOOR ELEVATION IS TWELVE (12") INCHES, OR LESS ABOVE THE TOP ELEVATION OF THE NEAREST UPSTREAM MANHOLE OR CLEANOUT.
2. IF THE LID IS SUBJECT TO VEHICULAR TRAFFIC, USE LID DESIGNED FOR H–20 TRAFFIC LOADINGS.
3. BACKWATER VALVE SHALL BE CAST IRON OR CAST BRONZE. VALVE SHALL BE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

CITY OF FORT BRAGG CALIFORNIA

BACKWATER CHECK VALVE INSTALLATION

STD. NO. 310

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

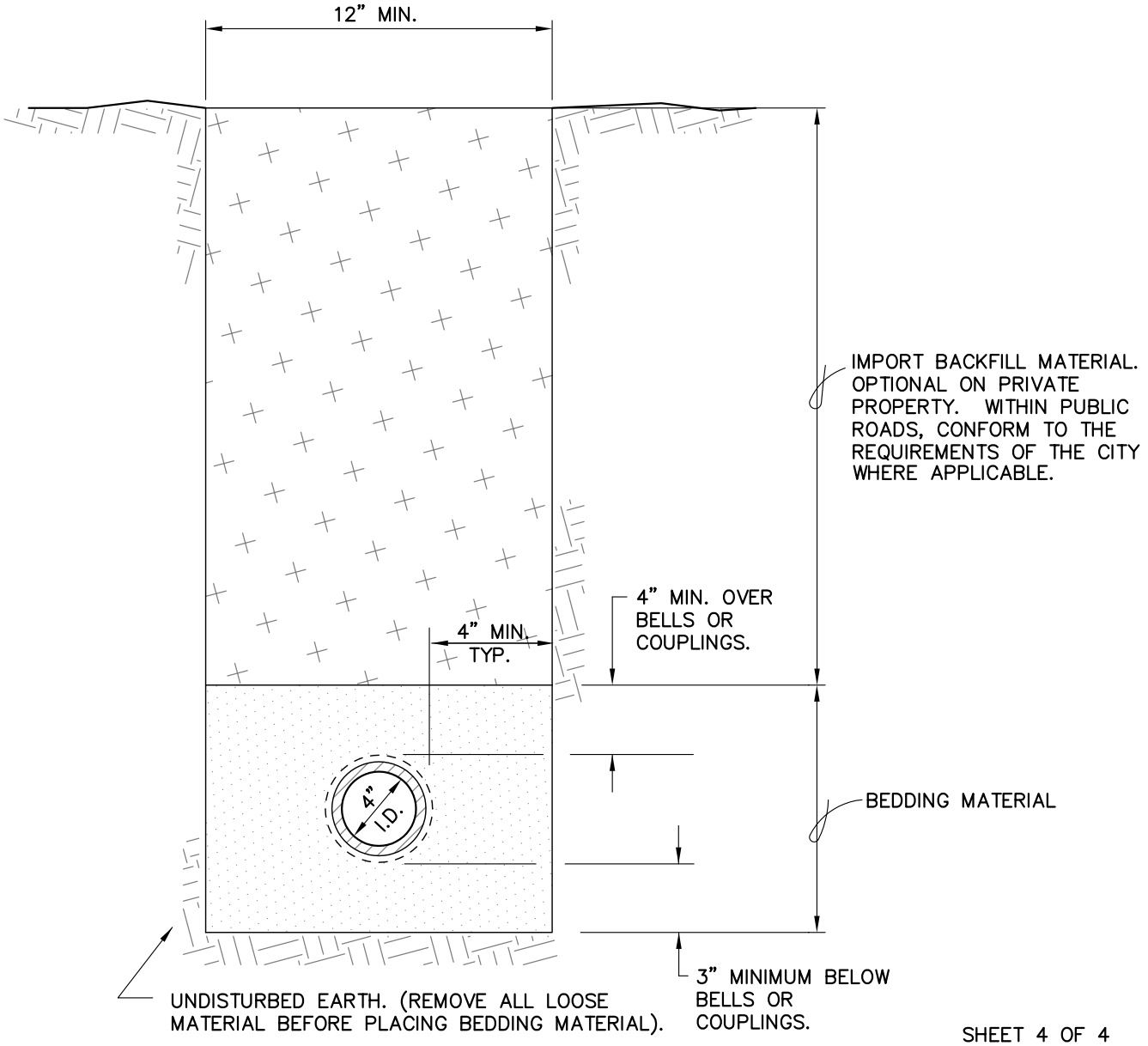
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg300-310.dwg Layout Name: 310 (3of4) Plot Date: Feb 02, 2009 at 17:27

NOTES:

PIPE BEDDING AND TRENCH BACKFILL MATERIAL SHALL BE A WELL GRADED MATERIAL AND SHALL HAVE A MINIMUM SAND EQUIVALENT VALUE OF 30 AND SHALL CONFORM TO THE FOLLOWING GRADINGS:

	PERCENT PASSING					
	3"	3/4"	3/8"	NO.4	NO.16	NO.200
PIPE BEDDING		100	80–100	10–50	5–30	0–4
TRENCH BACKFILL		NATIVE MATERIAL MAY BE USED				

IN ADDITION, WHEN TESTED WITH THE FOLLOWING SERIES OF SIEVES, NO MORE THAN 25% OF THE MATERIAL WILL BE RETAINED BETWEEN ANY ADJACENT SIEVES: 3", 2–1/2", 2", 1–1/2", 1", 3/4", 1/2", 3/8", NO. 4, NO. 8, NO. 16, NO. 30, NO. 50, NO. 100, AND NO. 200.



SHEET 4 OF 4

CITY OF FORT BRAGG CALIFORNIA	SERVICE SEWER TRENCH DETAIL				STD. NO. 310
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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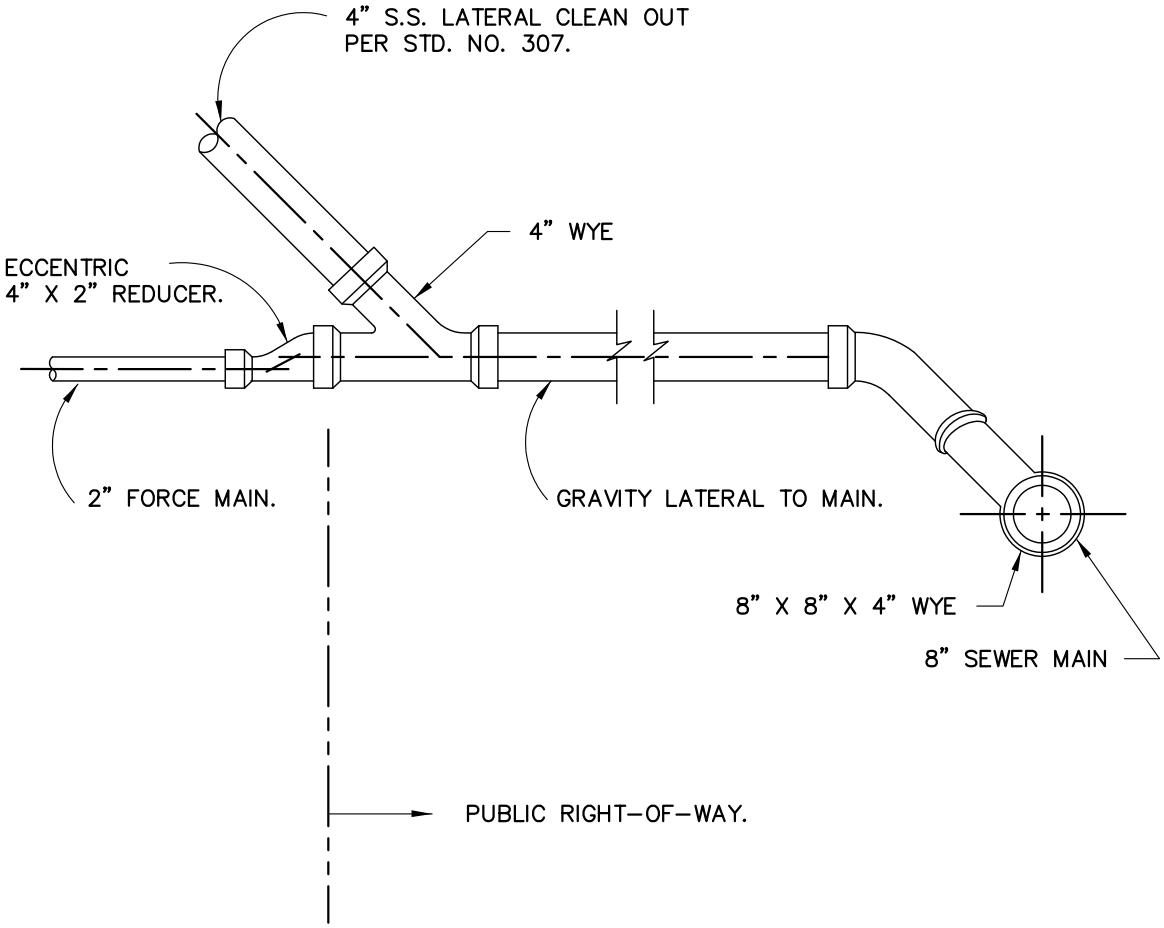
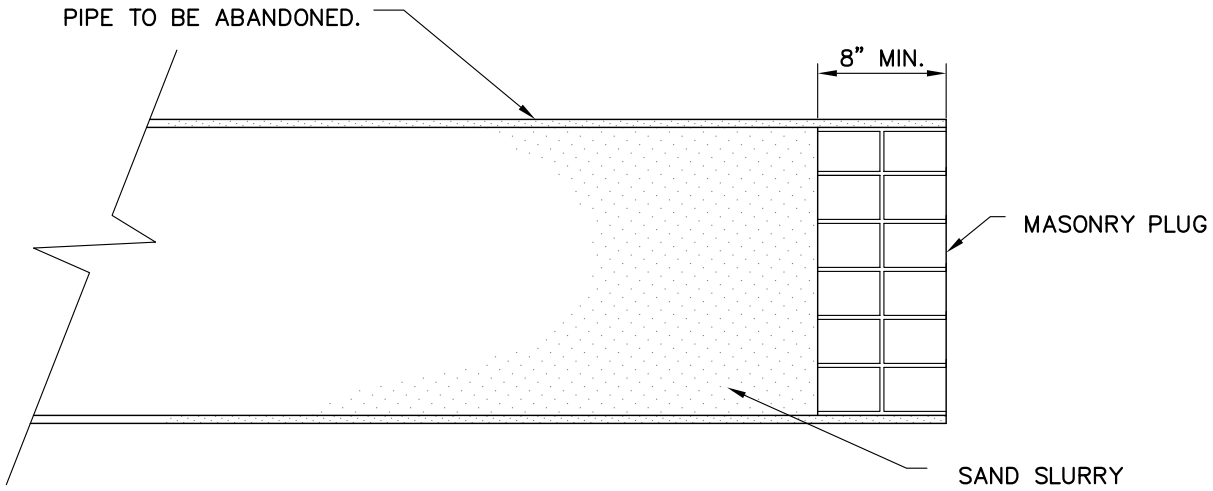


NOTES:

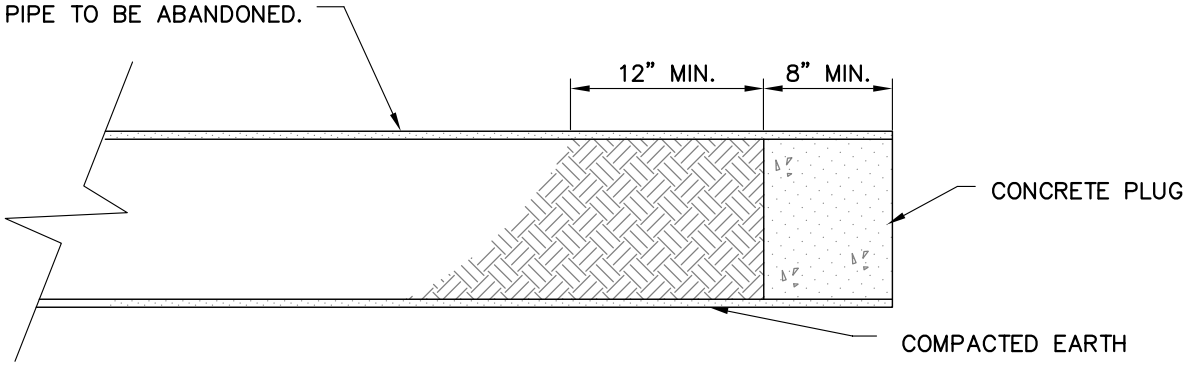
1. MUST BE USED FOR ALL PRIVATE SEWAGE LIFT STATION DISCHARGES. NO DISCHARGES MAY BE MADE DIRECTLY TO THE COLLECTOR SEWER, TRUNK SEWER, OR MANHOLE.
2. ANY ALTERNATE DESIGN MUST BE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
3. CONSTRUCTION DETAILS, SLOPE, AND MATERIALS CONFORM TO STD. NO. 309.

CITY OF FORT BRAGG CALIFORNIA	DISCHARGE FOR PRIVATE FORCE MAIN				STD. NO. 311
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 311 Plot Date: Feb 02, 2009 at 17:39



12" DIAMETER PIPE AND LARGER



10" DIAMETER PIPE AND SMALLER

NOTES:

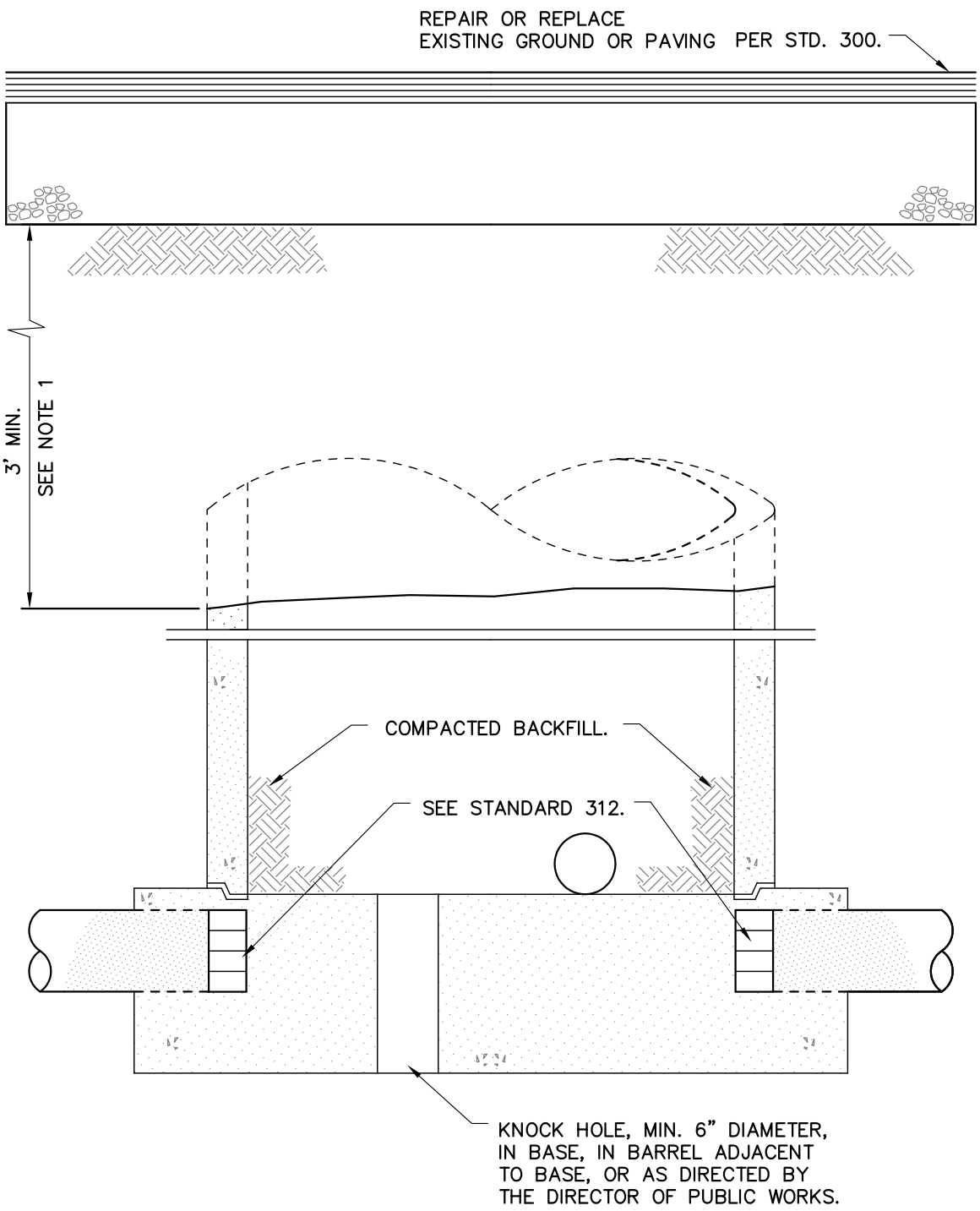
1. PIPE PLUGS SHALL BE INSTALLED TO THE SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS.
2. ABANDONED PIPES, 12" AND LARGER, SHALL BE BROKEN INTO EVERY 50' AND SHALL BE FILLED COMPLETELY WITH SAND SLURRY.

ABANDONED PIPE PLUG DETAIL

STD. NO. 312

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 312 Plot Date: Feb 02, 2009 at 17:39



NOTES:

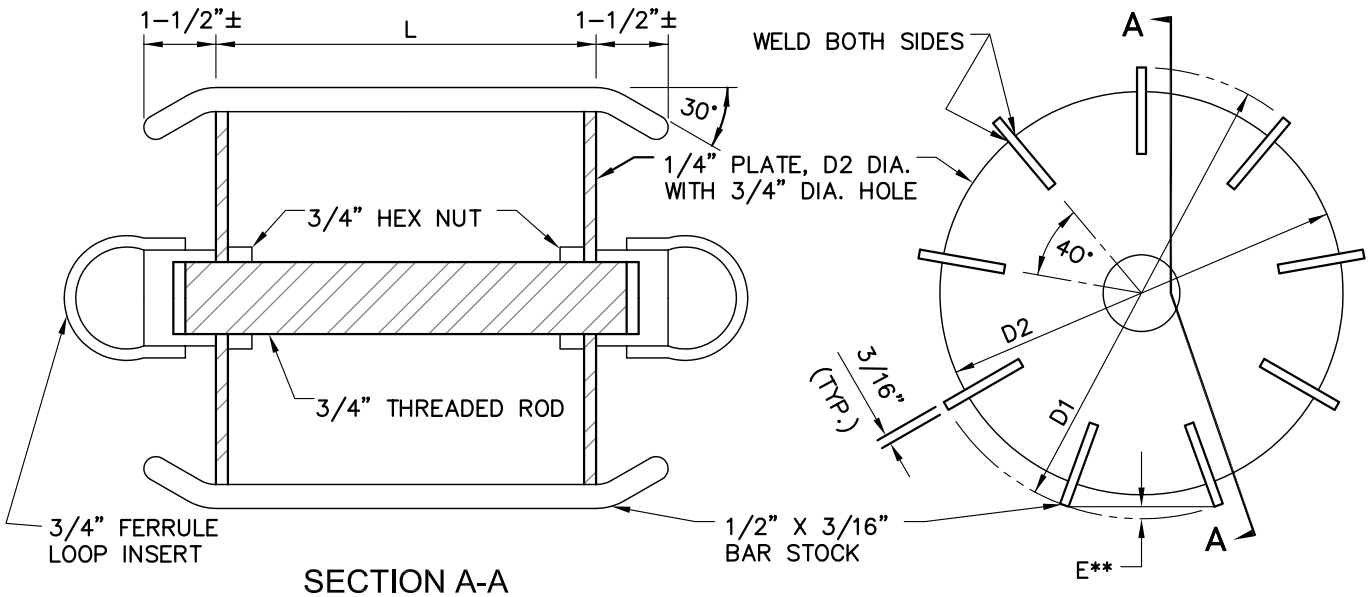
1. REMOVE FRAME, COVER, TAPER AND BARREL SECTIONS.
2. AFTER PLUGGING ALL PIPES IN MANHOLE, THE REMAINING PORTION OF THE BARREL SECTION AND ALL VOIDS CREATED BY THE REMOVAL OF THE UPPER PORTIONS OF THE MANHOLE, SHALL BE BACKFILLED AND COMPACTED TO 90% RELATIVE DENSITY. USE TRENCH BACKFILL OR PIPE BEDDING MATERIAL.

ABANDONED MANHOLE DETAIL

STD. NO. 313

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 313 Plot Date: Feb 02, 2009 at 17:39



SECTION A-A

		4% DEFLECTION		5% DEFLECTION			
		PVC ASTM D 2680		ABS ASTM D 2751 PVC ASTM D 3034		ASTM D 2680	
		COMPOSITE (I)		SDR35		COMPOSITE (I)	
NOM. DIA.	L	D(2)	R(3)	D(2)	D(3)	D(2)	R(3)
6"	6"	5.544	4.544	5.629	4.629	5.492	4.492
8"	8"	7.473	6.473	7.537	6.537	7.402	6.402
10"	10"	9.401	8.401	9.421	8.421	9.312	8.312
12"	12"	11.330	10.330	11.210	10.210	11.223	10.223
15"	15"	14.222	13.222	13.729	12.729	14.088	13.088

1. TRUSS PIPE – ABS OR PVC.
2. GAGE DIAMETER HAS BEEN CALCULATED TO CORRECT CHORD LENGTH ERROR "E".
3. MINIMUN PLATE DIAMETER.
4. A PROVING RING OF THE SPECIFIED DIAMETER (D) SHALL BE SUPPLIED WITH EACH DEFLECTION GAGE.

NOTES:

1. MARK ALL GAGES WITH ASTM SPECIFICATION NUMBER, SDR NUMBER AND DEFLECTION.
2. THE 1/2" BAR STOCK ON EDGE PROVIDES CLEARANCE TO PASS SMALL AMOUNTS OF SOIL WHICH MAY BE IN PIPE.

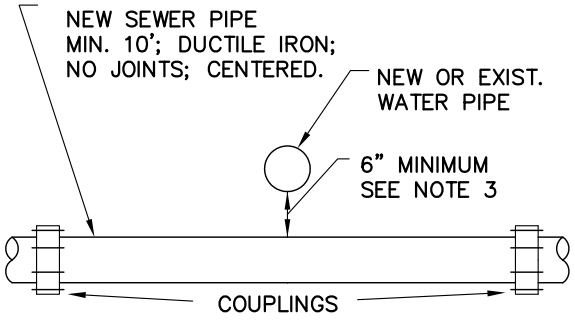
CITY OF FORT BRAGG CALIFORNIA

PLASTIC SEWER PIPE DEFLECTION GAGE

STD. NO. 314

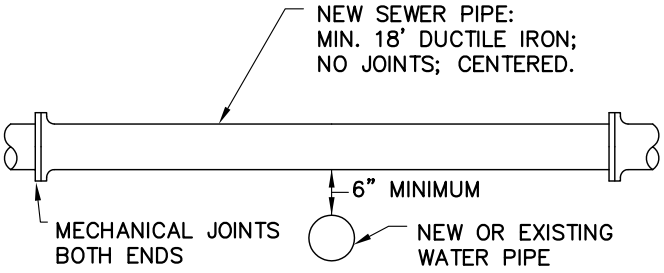
SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 314 Plot Date: Feb 02, 2009 at 17:39



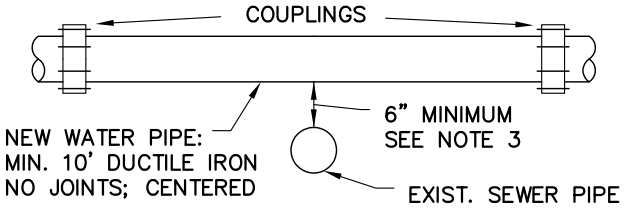
NEW SEWER UNDER NEW OR EXISTING WATER

CASE 1



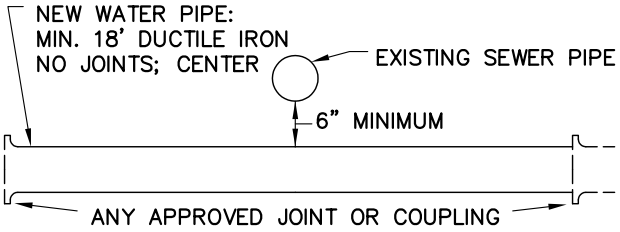
NEW SEWER OVER NEW OR EXISTING WATER

CASE 2



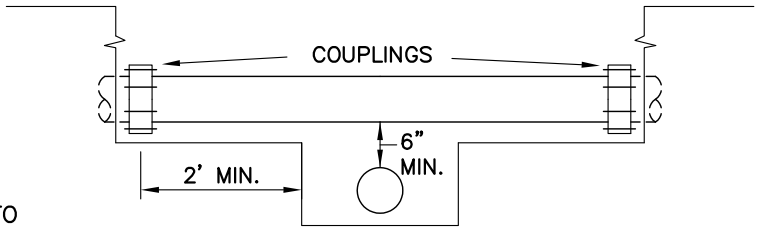
NEW WATER OVER EXISTING SEWER

CASE 3



NEW WATER UNDER EXISTING SEWER

CASE 4



NEW PIPE UNDER EXISTING

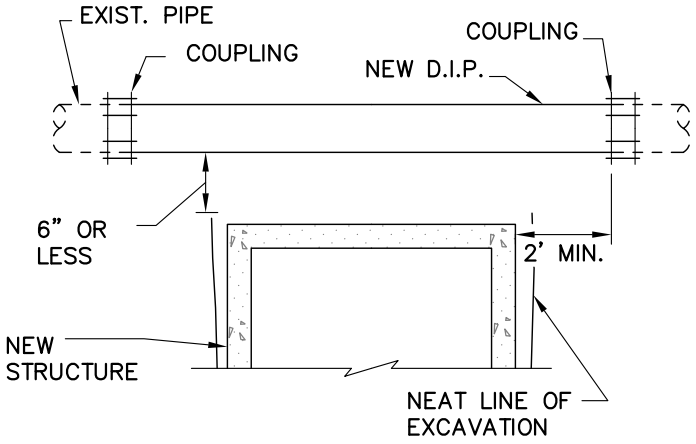
CASE 5 – SEE NOTE 4

NOTES:

1. THIS STANDARD APPLIES TO PIPES UP TO AND INCLUDING 16" DIAMETER. ALL CROSSINGS OF LARGER DIAMETER SHALL BE AS APPROVED BY THE CITY ENGINEER.
2. ALL NEW DUCTILE IRON SHALL BE WRAPPED IN POLYETHYLENE PER CITY CONSTRUCTION SPECIFICATIONS.
3. WHERE SEWER CROSSES BELOW A WATER MAIN, WITH 1' OR MORE VERTICAL CLEARANCE, NO SPECIAL INSTALLATION IS REQUIRED.
4. NEW PIPE UNDER EXISTING –'CASE 5' SHALL BE USED WHEN THE EXISTING PIPE HAS A JOINT OVER OR WITHIN 2' OF THE NEW TRENCH.
5. ANY PIPE–PIPE CROSSING WITH LESS THAN 6" VERTICAL CLEARANCE SHALL NOT BE INSTALLED WITHOUT APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
6. FOR WATER MAIN LOWERING DETAIL, SEE CITY STANDARD 528.
7. SEE CITY'S APPROVED LIST FOR APPROVED COUPLINGS.

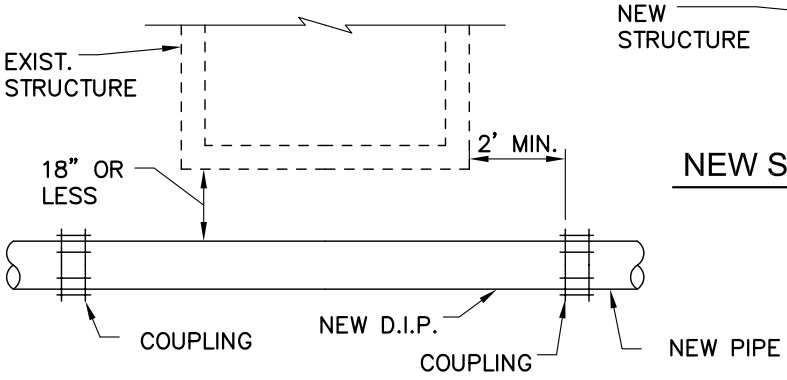
CITY OF FORT BRAGG CALIFORNIA	PIPE – PIPE CROSSING DETAILS				STD. NO. 315
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 315 Plot Date: Feb 02, 2009 at 17:39



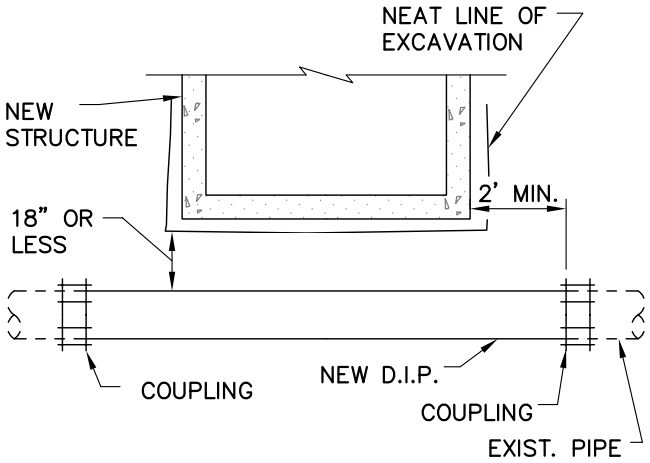
NEW STRUCTURE UNDER EXISTING

TYPE C



NEW PIPE UNDER EXISTING

TYPE A



NEW STRUCTURE OVER EXISTING

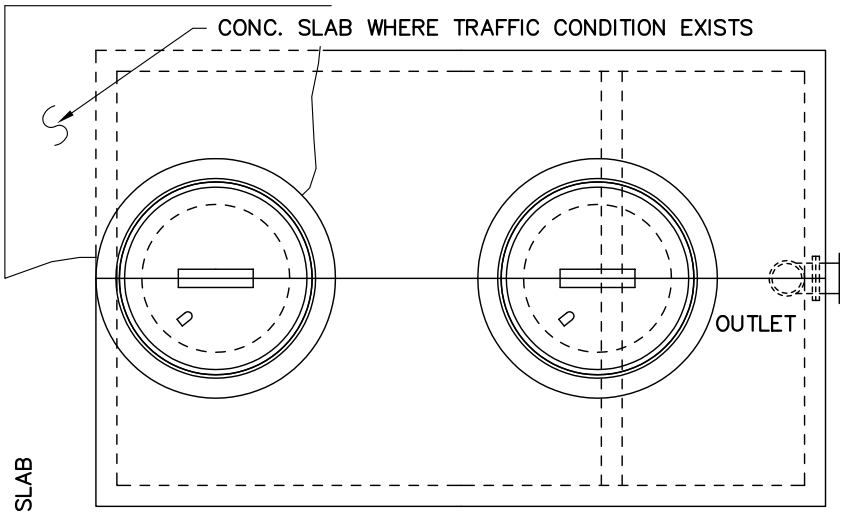
TYPE B

NOTES:

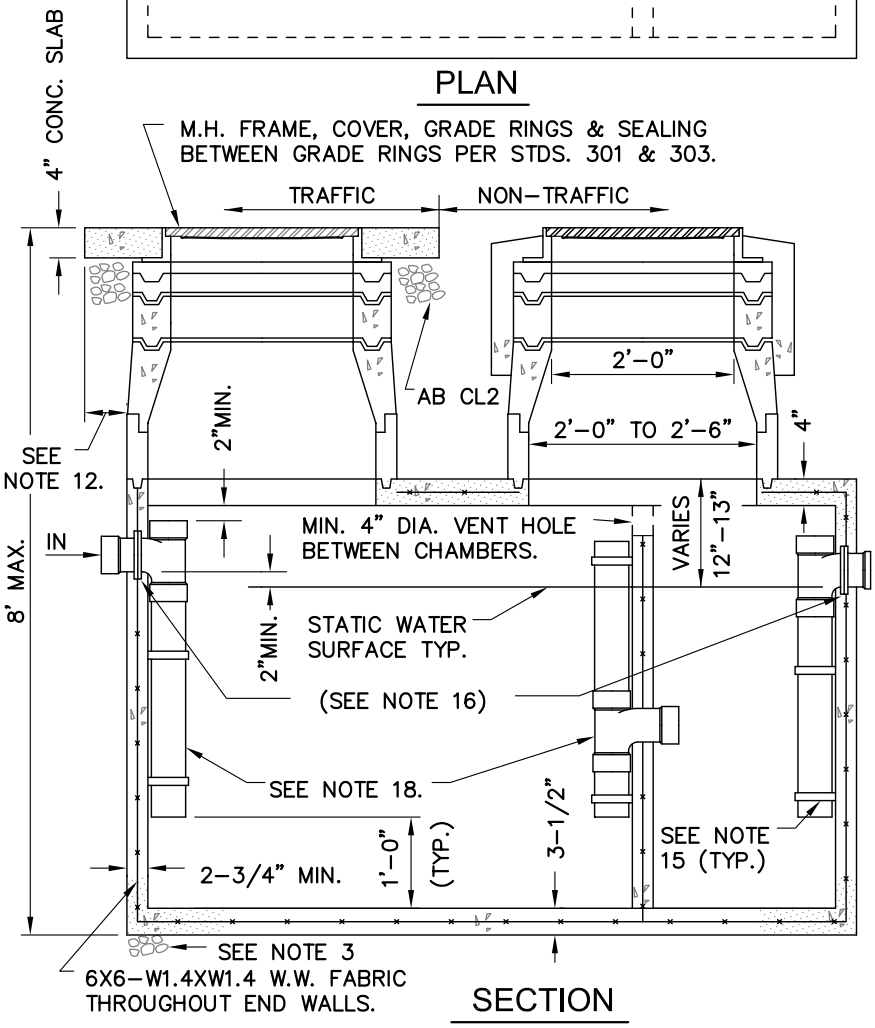
1. THIS STD. APPLIES TO PIPES UP TO AND INCLUDING 16" DIAMETER. ALL CROSSINGS INVOLVING PIPES OF LARGER DIAMETER SHALL BE AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
2. WHEN PIPES CROSS WITHIN THE DIMENSIONS SHOWN, A NEW DUCTILE IRON PIPE SECTION SHALL BE INSTALLED AS DETAILED.
3. ALL DUCTILE IRON PIPE SHALL BE ENCASED IN POLYETHYLENE FILM IN TUBE FORM.
4. ANY TYPE "A" INSTALLATION REQUIRING MORE THAN ONE LENGTH OF PIPE SHALL BE ENCASED PER STD. 527.
5. SEE CITY APPROVED LIST FOR APPROVED COUPLINGS.

CITY OF FORT BRAGG CALIFORNIA	PIPE – STRUCTURE CROSSING DETAIL				STD. NO. 316
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 316 Plot Date: Feb 02, 2009 at 17:39



PLAN



SECTION

NOTES:

1. TANK TO BE PRECAST AS MANUFACTURED BY:
   M.C. NOTTINGHAM
   PACIFIC CONC. PRODUCTS
   SELVAGE CONC. PRODUCTS
   OR CITY APPROVED EQUAL.
2. POLYETHYLENE TANKS ACCEPTABLE IN NON-TRAFFIC AREAS UPON SPECIFIC APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
3. 3" MIN. BEDDING MAT'L PER CITY STD. 300.
4. ALL SURFACE WATER MUST DRAIN AWAY FROM MANHOLES.
5. PIPE SHALL BE 6" MAX. DIAMETER PER U.P.C.
6. CONCRETE MIN. COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
7. ALL WYES SHALL BE ONE-WAY CLEANOUT WYES EXCEPT AS NOTED. TYPE PER U.P.C.
8. GREASE INTERCEPTORS SHALL BE LOCATED OUTSIDE OF BUILDINGS IN A LOCATION ACCESSIBLE TO WASTE HAULER PUMPER.
9. ALL GREASE INTERCEPTORS SHALL BE LOCATED OUTSIDE PUBLIC RIGHT-OF-WAY.
10. EXCAVATIONS SHALL BE NEAT LINE TYPICALLY ALL SIDES.
11. INTERCEPTOR TO BE USED IN CONJUNCTION WITH "SAMPLING MANHOLE" PER STD. 319.
12. SLAB TO EXTEND MIN. 24" BEYOND ALL SIDES OF TANK. (TRAFFIC AREA)
13. ALL WASTE MUST ENTER THROUGH INLET FITTING ONLY.
14. TANK TO BE STENCILED ON UPPER LEFT HAND CORNER OF INLET END IN WHITE.
15. STAINLESS STEEL CLAMP & BOLTS 3'-0" O.C. MAX. (TYP.) MIN. 2 REQ'D.
16. A WATERSTOP CONSISTING OF A STD. MANHOLE ADAPTER GASKET AS SUPPLIED BY THE PIPE MANUFACTURER SHALL BE GROUTED INTO THE INTERCEPTOR WALL NEAR THE CENTER OF THE WALL.

NOTES: (CONT.)

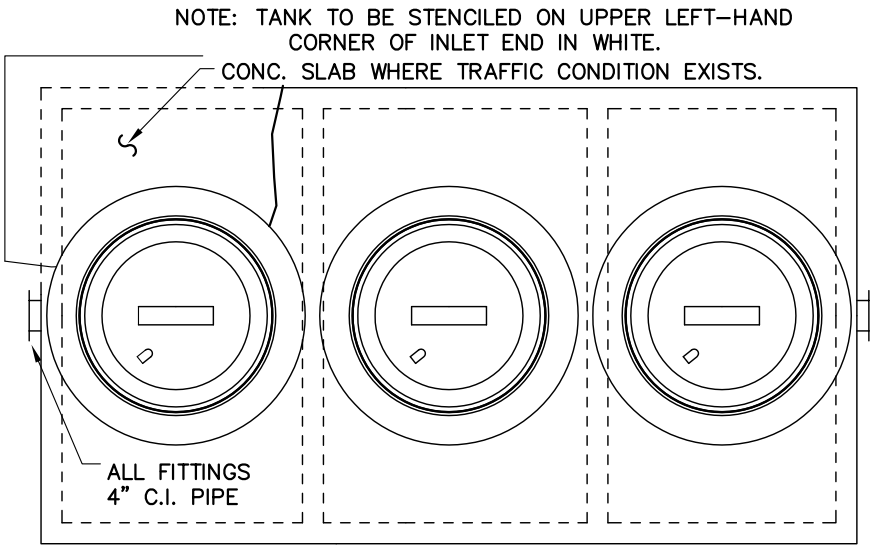
17. TANK CAPACITY TO BE DETERMINED AT THE TIME OF INDUSTRIAL WASTE PERMIT APPLICATION.
18. PIPE & FITTINGS TO BE 4" SCH. 40 PVC.
19. REINFORCING BARS INTERMEDIATE GRADE ASTM A615-62T & A305-56T. REINFORCING WIRE FABRIC - ASTM A185-61T.
20. ALTERNATE DESIGN BY A REGISTERED ENGINEER MAY BE SUBSTITUTED FOR REVIEW BY THE CITY.

PRECAST GREASE INTERCEPTOR

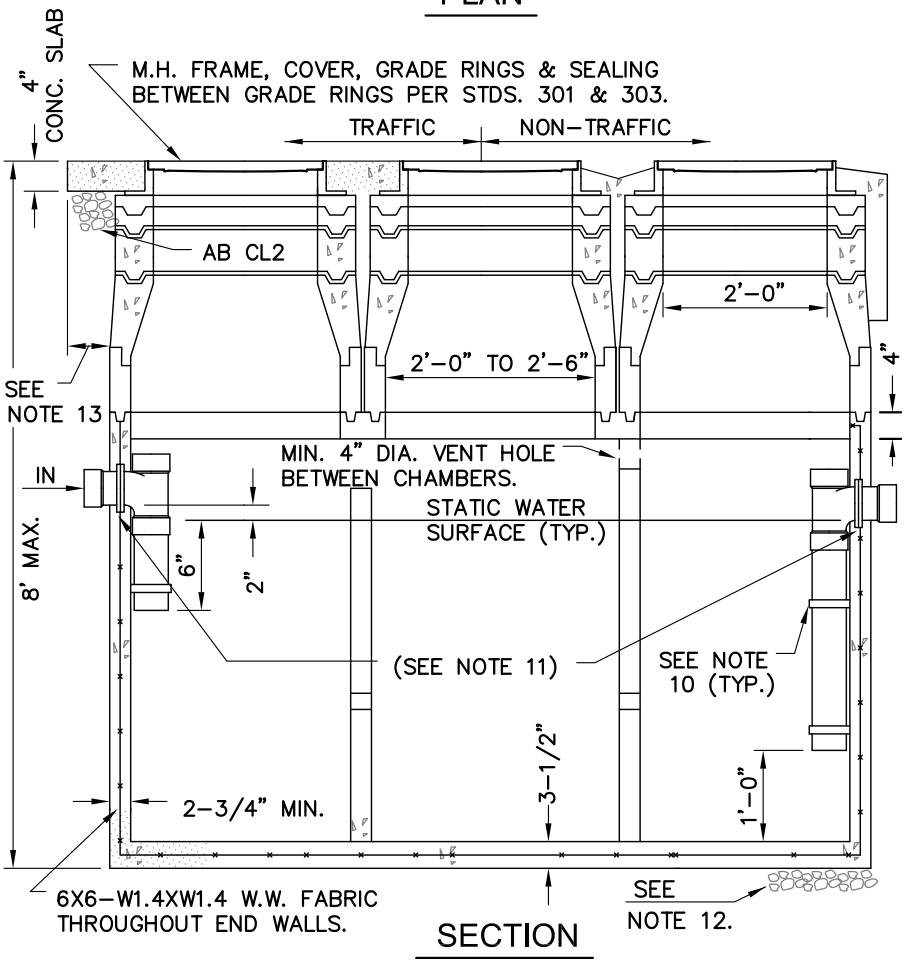
STD. NO. 317

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 317 Plot Date: Feb 02, 2009 at 17:39



PLAN



SECTION

NOTES:

1. TANK TO BE PRECAST AS MANUFACTURED BY:
   M.C. NOTTINGHAM
   PACIFIC CONC. PRODUCTS
   SELVAGE CONC. PRODUCTS
   OR CITY APPROVED EQUAL.
2. ALL GREASE INTERCEPTORS SHALL BE LOCATED OUTSIDE PUBLIC R/W
3. GREASE INTERCEPTORS SHALL BE LOCATED OUTSIDE OF BUILDINGS IN A LOCATION ACCESSIBLE TO WASTE HAULER PUMPER.
4. ALTERNATE DESIGN BY A REGISTERED ENGINEER MAY BE SUBSTITUTED FOR REVIEW BY THE CITY.
5. PIPE SHALL BE 6" MAX. DIAMETER PER U.P.C.
6. EXCAVATIONS SHALL BE NEAT LINE TYPICALLY ALL SIDES.
7. HEIGHT OF TANK ABOVE FITTINGS VARIABLE. ONE FT. SECTIONS MAY BE ADDED TO REQUIRED F.G.
8. ALL WYES SHALL BE ONE-WAY CLEANOUT WYES EXCEPT AS NOTED. TYPE PER U.P.C.
9. INTERCEPTOR TO BE USED IN CONJUNCTION WITH "SAMPLING MANHOLE" PER STD. 319.
10. STAINLESS STEEL CLAMP & BOLTS 3'-0" O.C. MAX. (TYP.) MIN. 2 REQ'D.
11. A WATERSTOP CONSISTING OF A STD. MANHOLE ADAPTER GASKET AS SUPPLIED BY THE PIPE MANUFACTURER SHALL BE GROUTED INTO THE INTERCEPTOR WALL NEAR THE CENTER OF THE WALL.
12. 3" MIN. BEDDING MAT'L PER CITY STD. 300.
13. SLAB TO EXTEND MIN. 24" BEYOND ALL SIDES OF TANK.(TRAFFIC AREA)
14. TANK CAPACITY TO BE DETERMINED AT THE TIME OF INDUSTRIAL WASTE PERMIT APPLICATION.
15. PIPE & FITTINGS TO BE 4" SCH.. 40 PVC.
16. CONCRETE MIN. COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
17. ALL WASTE MUST ENTER THROUGH INLET FITTING.

NOTES: (CONT.)

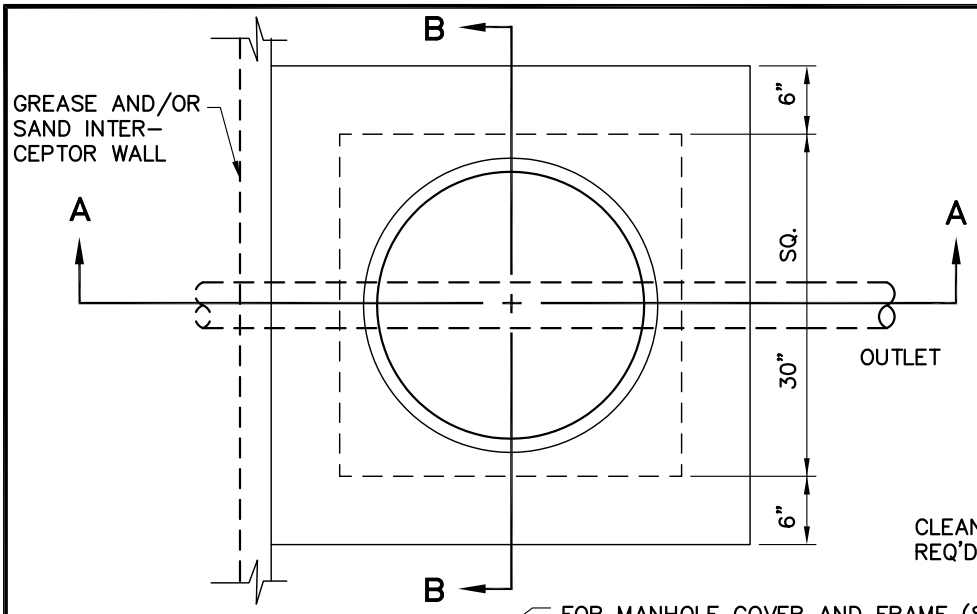
18. REINFORCING BAR INTERMEDIATE GRADE ASTM A615-62T & A305-56T.
19. REINFORCING WIRE FABRIC- ASTM A185-61T.

SAND AND GREASE INTERCEPTOR

STD. NO. 318

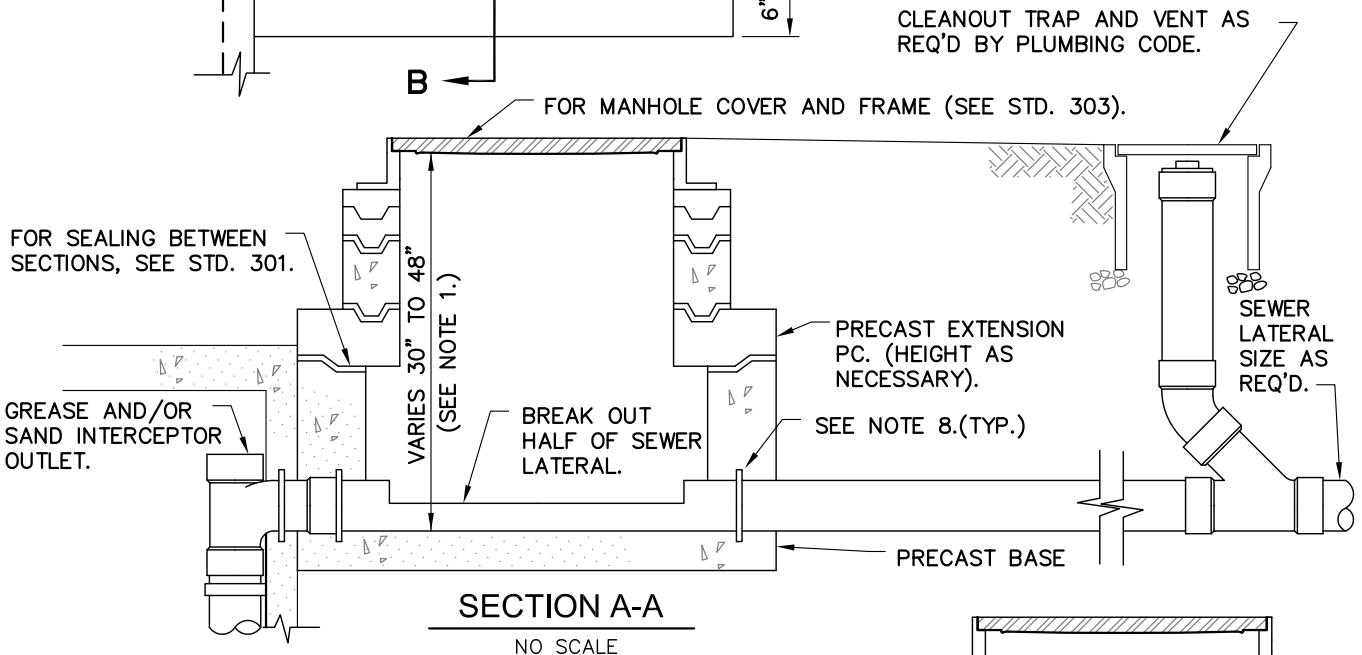
SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 318 Plot Date: Feb 02, 2009 at 17:39



PLAN

NO SCALE

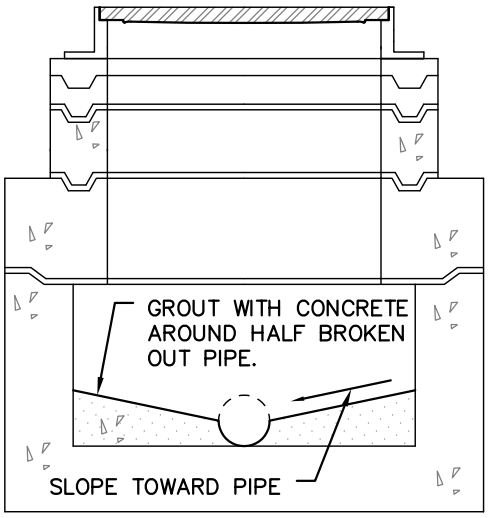


SECTION A-A

NO SCALE

NOTES:

1. IF LESS THAN 30" REVIEW WITH CITY FOR ADDITIONAL VAULT REQ'MTS. IF GREATER THAN 48" INSTALL SAMPLING M.H. SIM. TO STD. 301 WITH FLOW-THROUGH CUT-AWAY PIPE AS PER THIS STD.
2. SAMPLING M.H. TO BE LOCATED OUTSIDE OF PUBLIC RIGHT-OF-WAY EXCEPT WITH WRITTEN APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
3. AN ALTERNATE DESIGN BY A REGISTERED ENGINEER MAY BE SUBMITTED FOR REVIEW BY THE CITY.
4. LOCATION SUBJECT TO THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
5. MANHOLE SHALL BE SANTA ROSA CAST PRODUCTS PRECAST CONC. DROP INLET BOX #5K WITH #5K X 24" DIAMETER TRANSITION SLAB.
6. ALL SURFACE WATER MUST DRAIN AWAY FROM SAMPLING M.H.
7. SAMPLING M.H. TO BE USED IN CONJUNCTION WITH EITHER STDS. 317 OR 318.
8. A WATERSTOP CONSISTING OF A STD. MANHOLE ADAPTER GASKET AS SUPPLIED BY THE PIPE MFR. TO BE GROUTED INTO THE BOX WALL NEAR THE CENTER OF THE WALL.



SECTION B-B

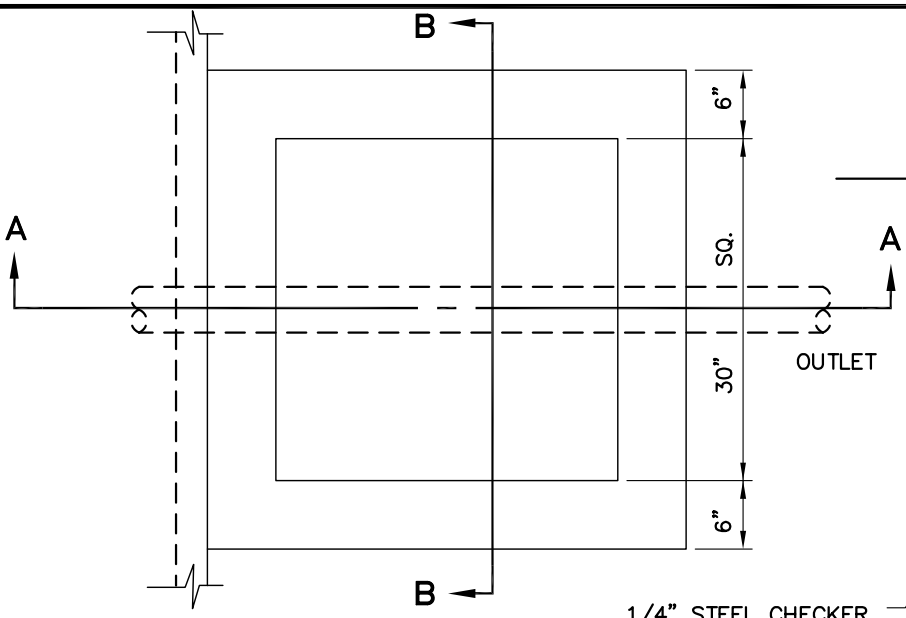
NO SCALE

SAMPLING MANHOLE EXTERIOR USE

STD. NO. 319

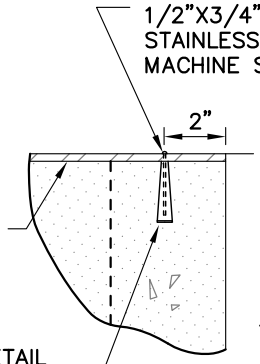
SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 319 Plot Date: Feb 02, 2009 at 17:39

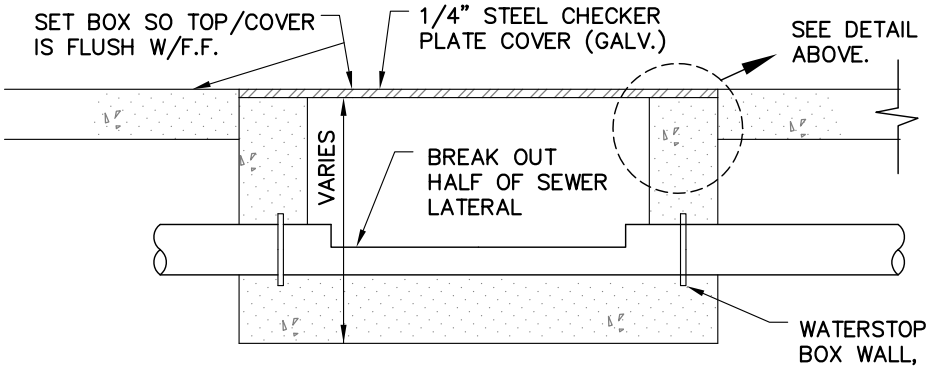


PLAN

NO SCALE

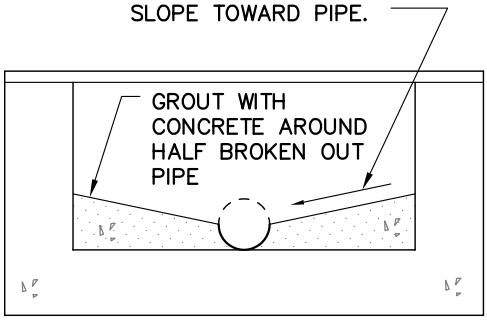


STEEL PLATE COVER FASTENER DETAIL



SECTION A - A

NO SCALE



SECTION B - B

NO SCALE

NOTES:

1. TO BE USED IN THE INTERIOR OF BUILDINGS IN CONJUNCTION W/SAMPLING MANHOLE AND TO BE UPSTREAM OF THE SAMPLING MANHOLE.
2. LOCATION SUBJECT TO THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
3. TO BE USED ONLY WITH THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
4. ALTERNATE DESIGN BY A REGISTERED ENGINEER MAY BE SUBMITTED FOR REVIEW BY THE CITY.
5. BOX SHALL BE CENTRAL PRECAST PRODUCTS MODEL 5K OR APPROVED EQUAL.
6. ALL SURFACE WATER MUST DRAIN AWAY FROM SAMPLING BOX.
7. SAMPLING BOX TO BE USED IN CONJUNCTION WITH EITHER STDS. 317 OR 318.
8. A WATERSTOP CONSISTING OF A STANDARD MANHOLE ADAPTER GASKET AS SUPPLIED BY THE PIPE MANUFACTURER SHALL BE GROUTED INTO THE BOX WALL NEAR THE CENTER OF THE WALL.

CITY OF FORT BRAGG CALIFORNIA

SAMPLING BOX BUILDING INTERIOR

STD. NO. 320

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

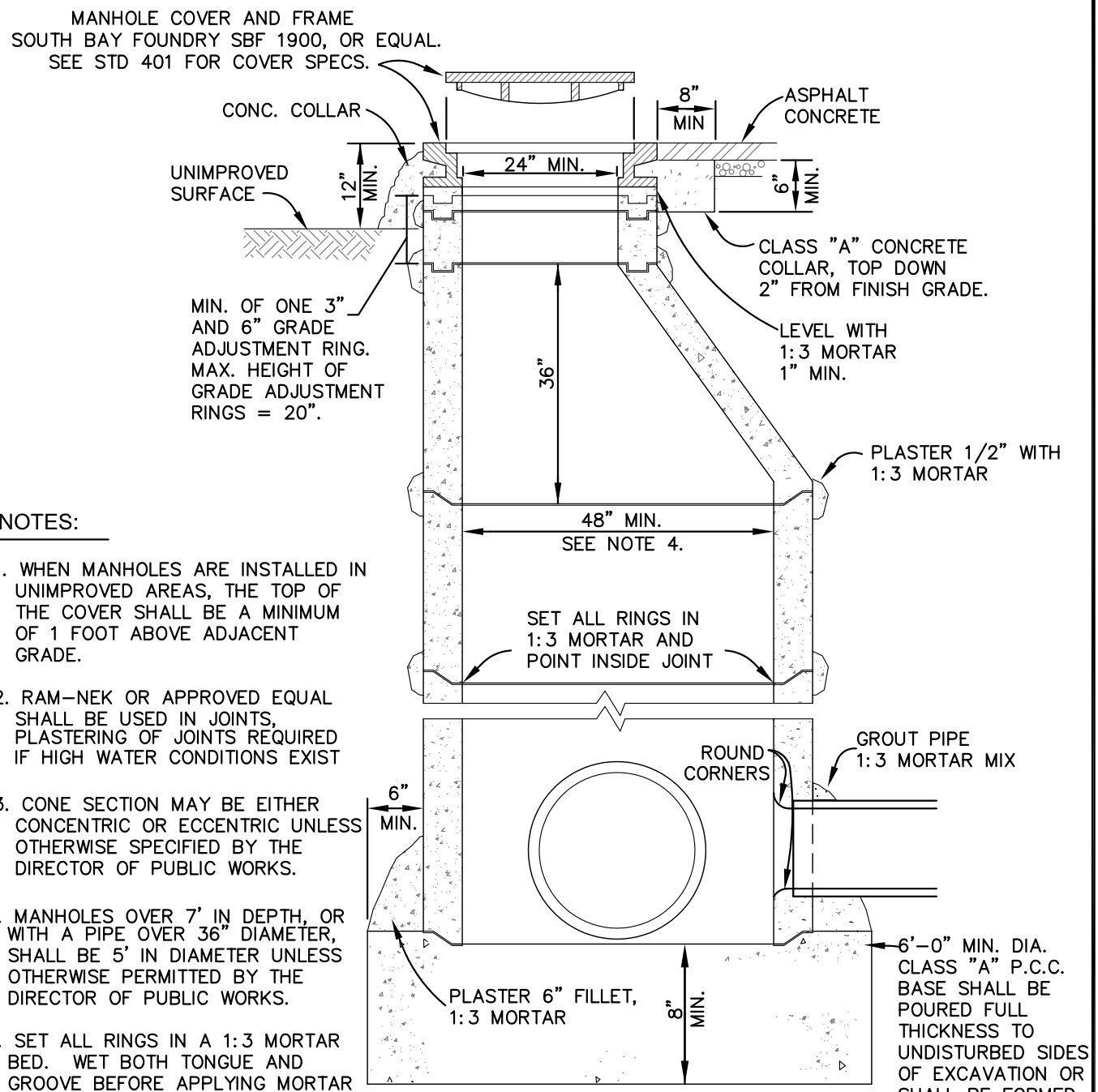
Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBragg311-320.dwg Layout Name: 320 Plot Date: Feb 02, 2009 at 17:39

STORM DRAIN STANDARD PLANS

DESCRIPTION

400 SERIES – STORM DRAIN

400	Storm Drain Manhole
401	Standard Manhole Frame and Cover
402	Standard Pre-cast Concrete Storm Drain Manhole Reducer Slab
403	Pre-cast Catch Basin Hood
404	Curb Opening Catch Basin
405	Catch Basin for Pipes Larger Than 24"
406	Storm Drain Gallery
407	Temporary Redwood Box Field Inlet
408	Typical Storm Drain Outfall Detail
409	Sidewalk Drain
410	Sidewalk Cross Drain
411	Typical Lot Drainage
412	H.D.P.E. Trench Installation Detail



NOTES:

1. WHEN MANHOLES ARE INSTALLED IN UNIMPROVED AREAS, THE TOP OF THE COVER SHALL BE A MINIMUM OF 1 FOOT ABOVE ADJACENT GRADE.
2. RAM-NEK OR APPROVED EQUAL SHALL BE USED IN JOINTS, PLASTERING OF JOINTS REQUIRED IF HIGH WATER CONDITIONS EXIST
3. CONE SECTION MAY BE EITHER CONCENTRIC OR ECCENTRIC UNLESS OTHERWISE SPECIFIED BY THE DIRECTOR OF PUBLIC WORKS.
4. MANHOLES OVER 7' IN DEPTH, OR WITH A PIPE OVER 36" DIAMETER, SHALL BE 5' IN DIAMETER UNLESS OTHERWISE PERMITTED BY THE DIRECTOR OF PUBLIC WORKS.
5. SET ALL RINGS IN A 1:3 MORTAR BED. WET BOTH TONGUE AND GROOVE BEFORE APPLYING MORTAR AND SETTING RING. WIPE INSIDE OF JOINTS SMOOTH AND PLASTER OUTSIDE OF JOINT WITH 1/2" LAYER OF MORTAR.
6. CONSTRUCT ALL FLOW CHANNELS OF PIPE WHEREVER POSSIBLE. AFTER BASE IS POURED, BREAK OUT TOP HALF OF PIPE FLUSH WITH INSIDE FACE OF M.H. WALL AND CONSTRUCT U-SHAPED CHANNEL. MAKE ELEVATION CHANGES GRADUALLY AND DIRECTIONAL CHANGES WITH SMOOTH CURVES. SET RING BASE IN MORTAR.
7. ALL SECTIONS OF MANHOLE MUST BE OF IDENTICAL MAKE AND MANUFACTURER.

STORM DRAIN MANHOLE

STD. NO. 400

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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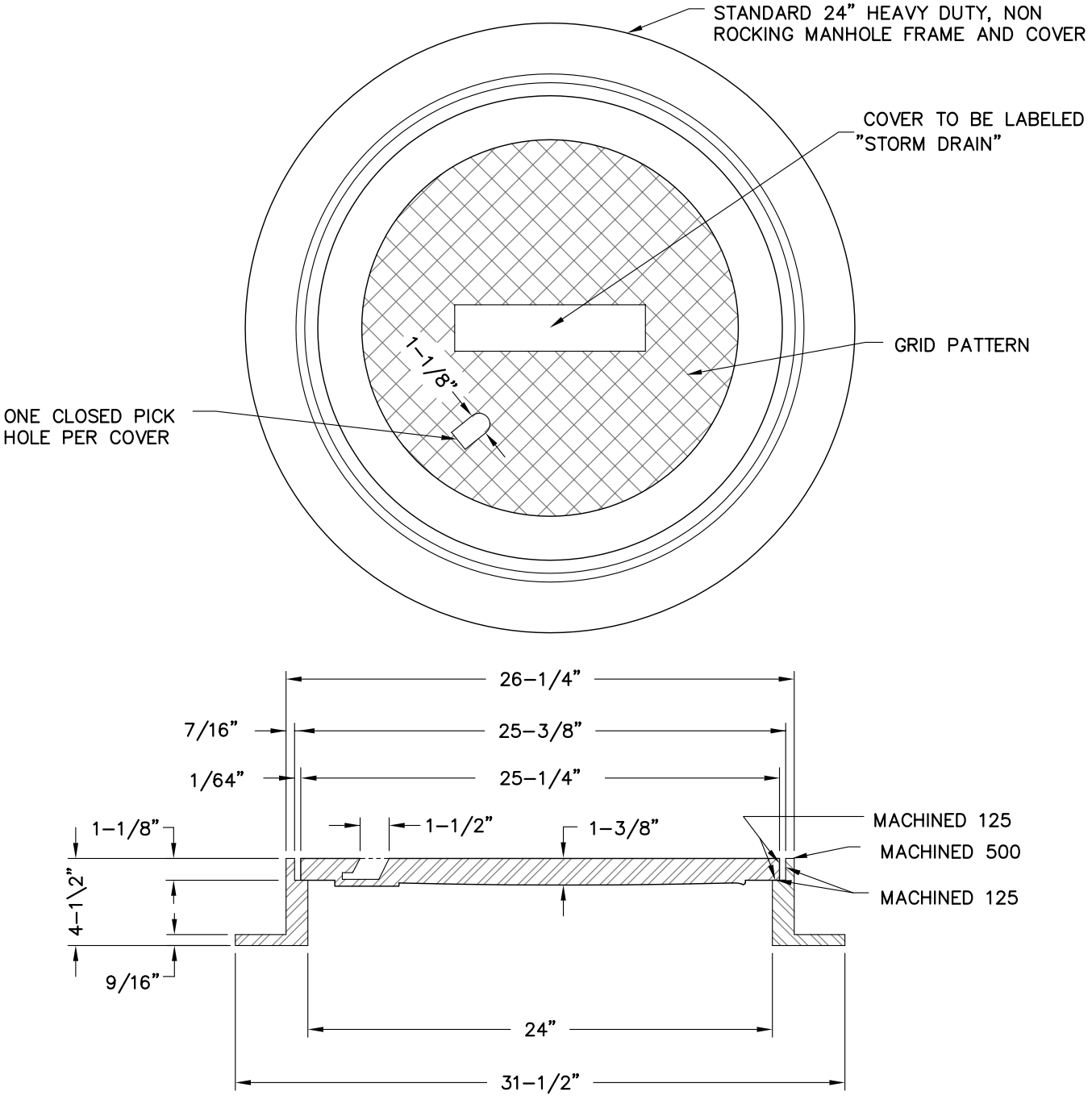

NOTES:

1. ALL CASTINGS SHALL BE DIPPED IN APPROVED ASPHALT PAINT.
2. ALL MATERIAL USED IN MANUFACTURING SHALL CONFORM TO A.S.T.M. DESIGNATION 48-30, OR TO UNITED STATES GOVERNMENT SPECIFICATIONS QQI-652B.
3. MINIMUM WEIGHT COMPONENTS: COVER – 130 POUNDS
   FRAME – 135 POUNDS

CITY OF FORT BRAGG CALIFORNIA	STANDARD MANHOLE FRAME AND COVER				STD. NO. 401
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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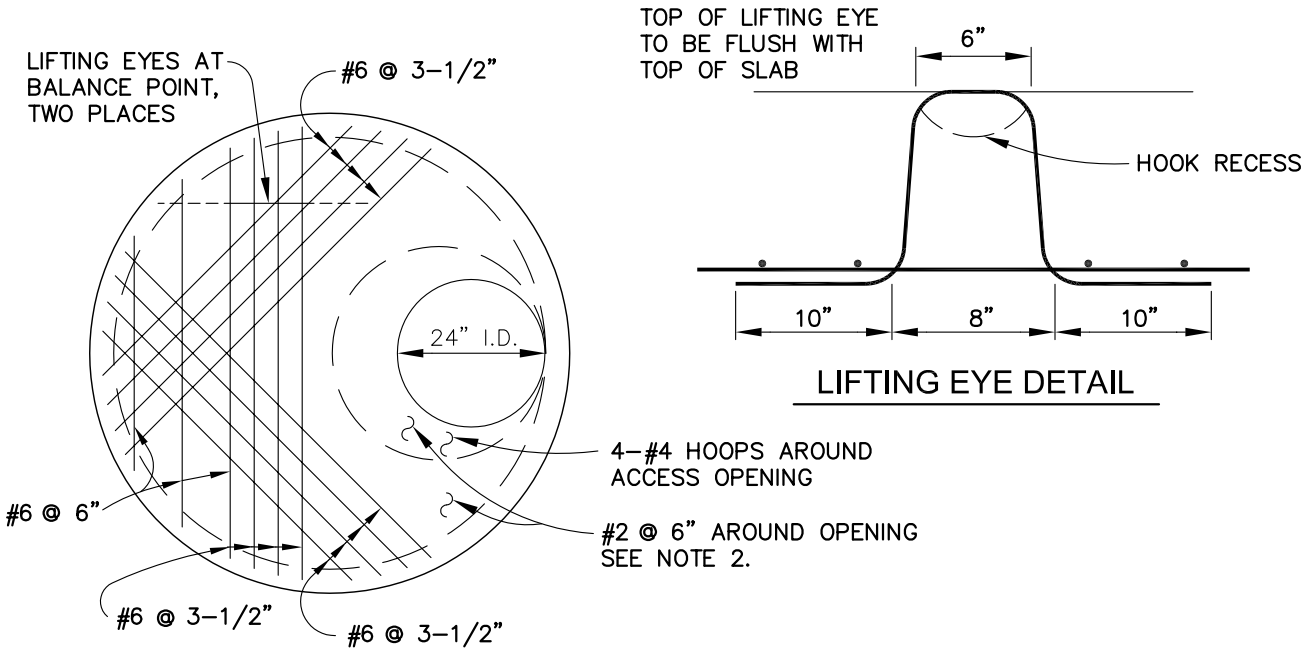

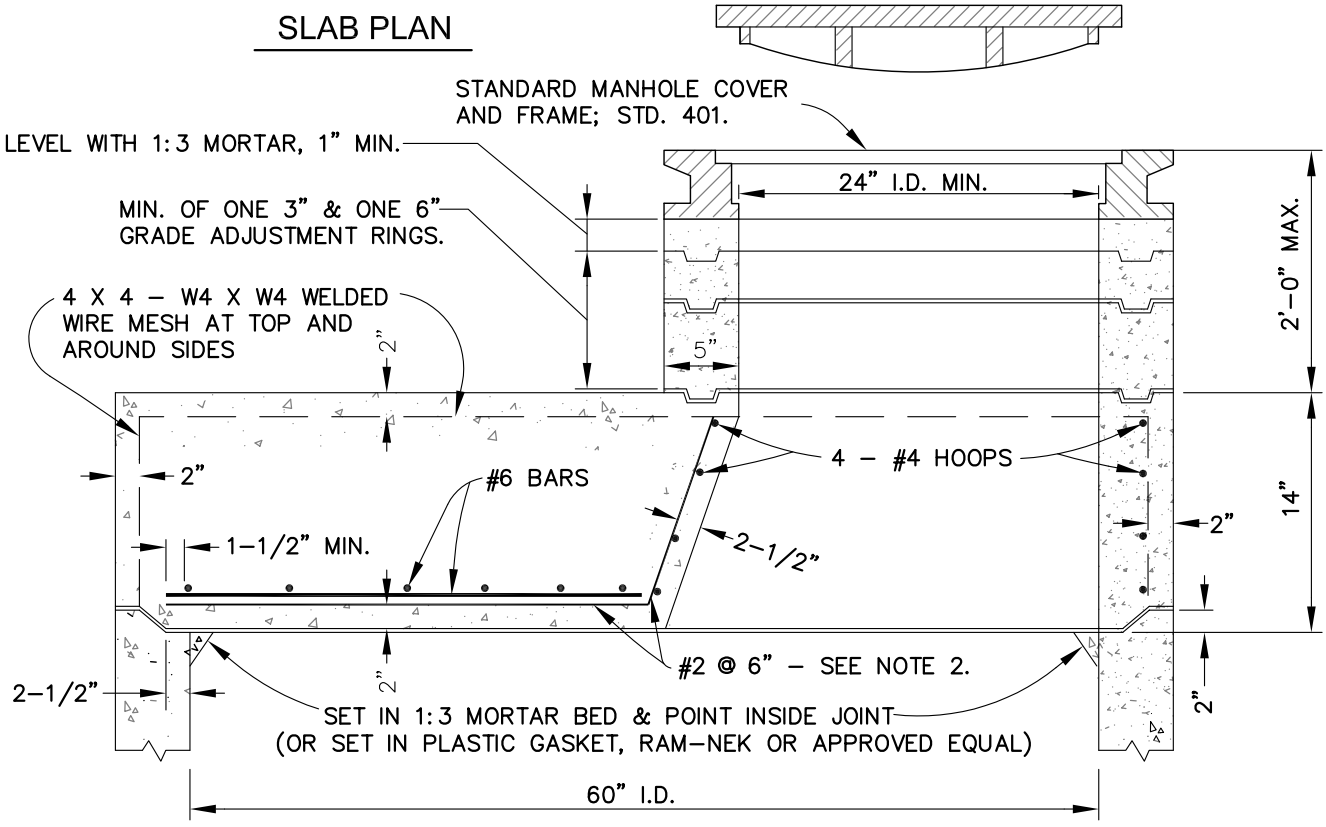

NOTES:

1. FOR DETAILS OF BASE AND BARREL SECTIONS, SEE CITY STD 400
2. #2 BARS BENT UP AND SPACED 6" O.C. AROUND 24" OPENING. HORIZONTAL LEGS TO FAN OUT EQUALLY SPACED, TO 2–1/2" CLEAR AT EDGE OF SLAB.

STANDARD PRECAST CONCRETE STORM DRAIN MANHOLE REDUCER SLAB

STD. NO. 402

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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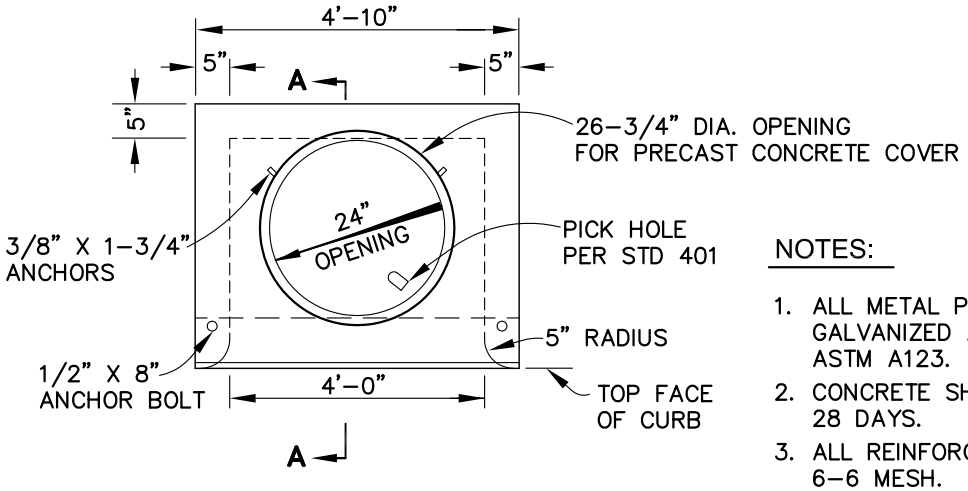
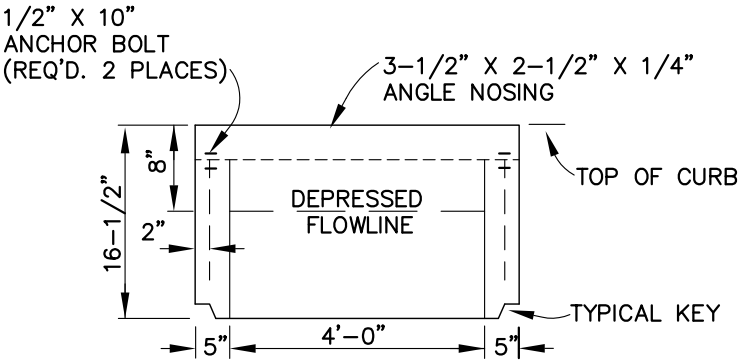


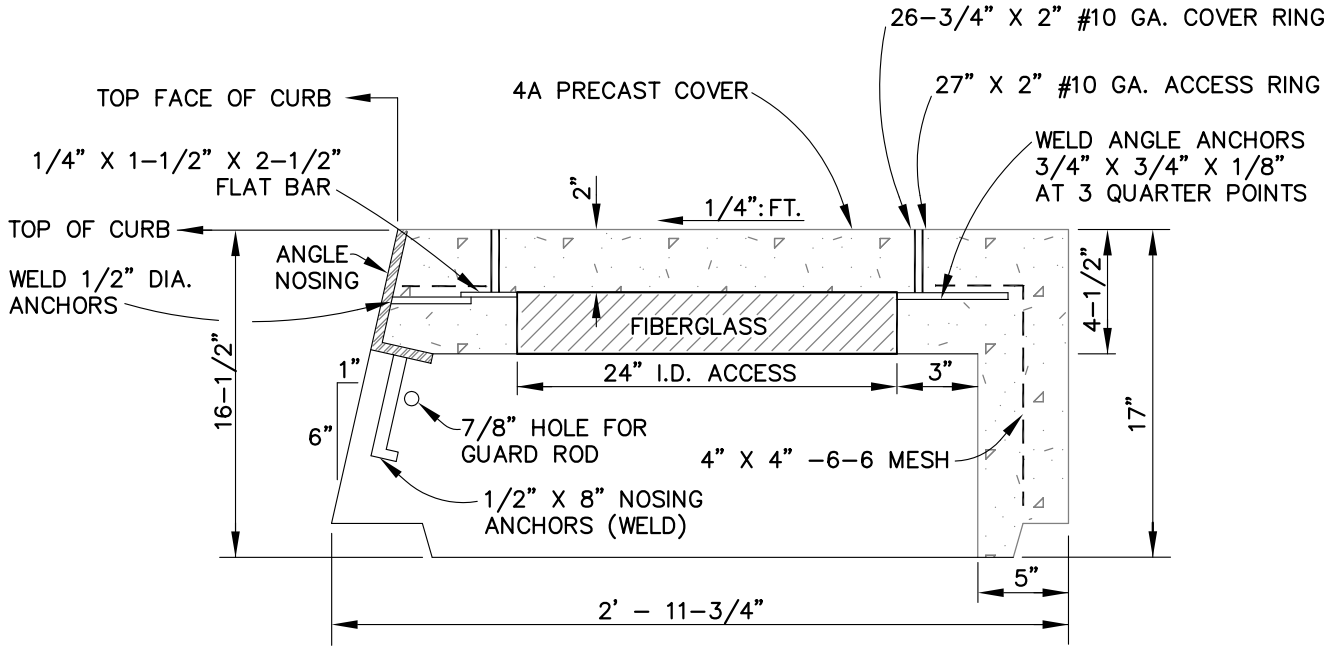
PLAN



ELEVATION

NOTES:

1. ALL METAL PARTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123.
2. CONCRETE SHALL TEST 3000 PSI AT 28 DAYS.
3. ALL REINFORCING SHALL BE 4" X 4" - 6-6 MESH.
4. WEIGHT OF UNIT COMPLETE = 1500± LBS. COVER ONLY = 100± LBS.
5. 3/4" GALVANIZED STEEL GUARD ROD FOR OPENINGS IN EXCESS OF 9".
6. BASE MAY BE PRECAST OR CAST IN PLACE TO SUIT.



SECTION A-A

APPROVED ALTERNATES:
CENTRAL PRE-CAST PRODUCTS MODEL 4AC
PHEONIX PRECAST CONC. PRODUCTS MODEL P-2448-C

PRECAST CATCH BASIN HOOD

STD. NO. 403

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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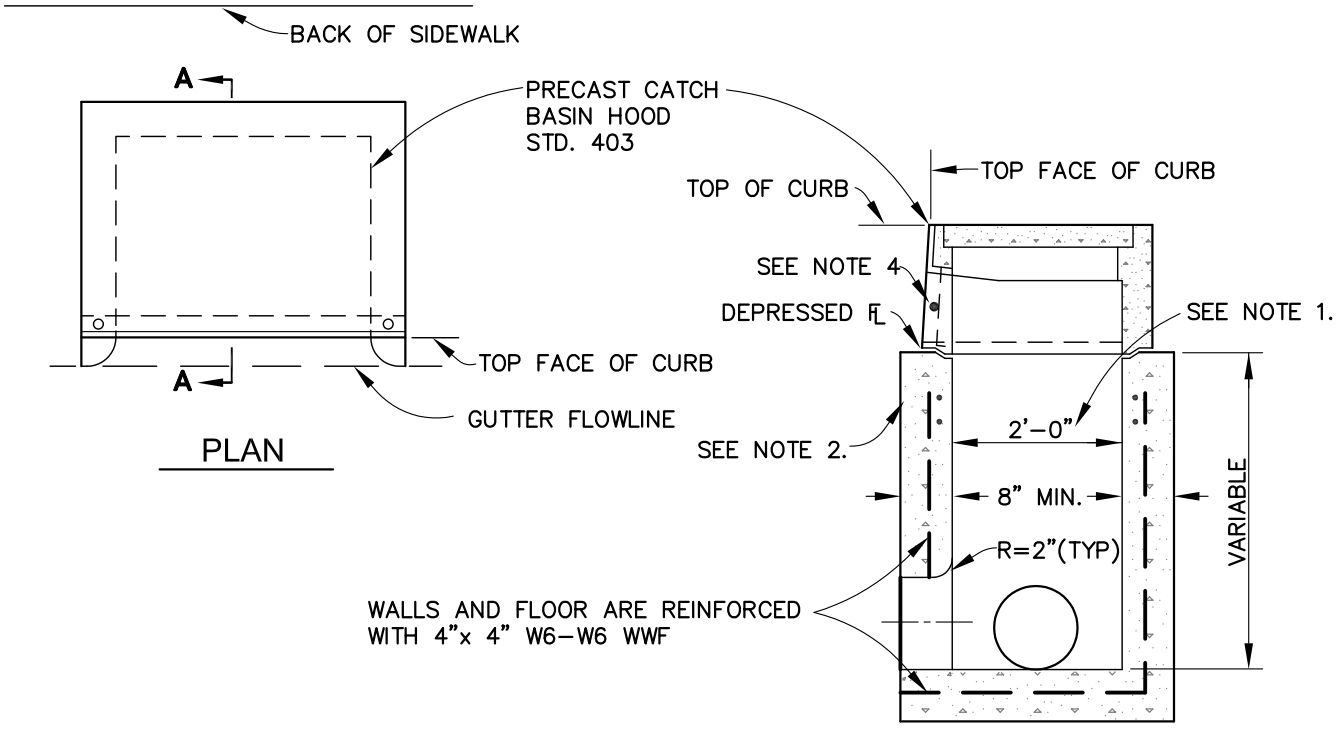

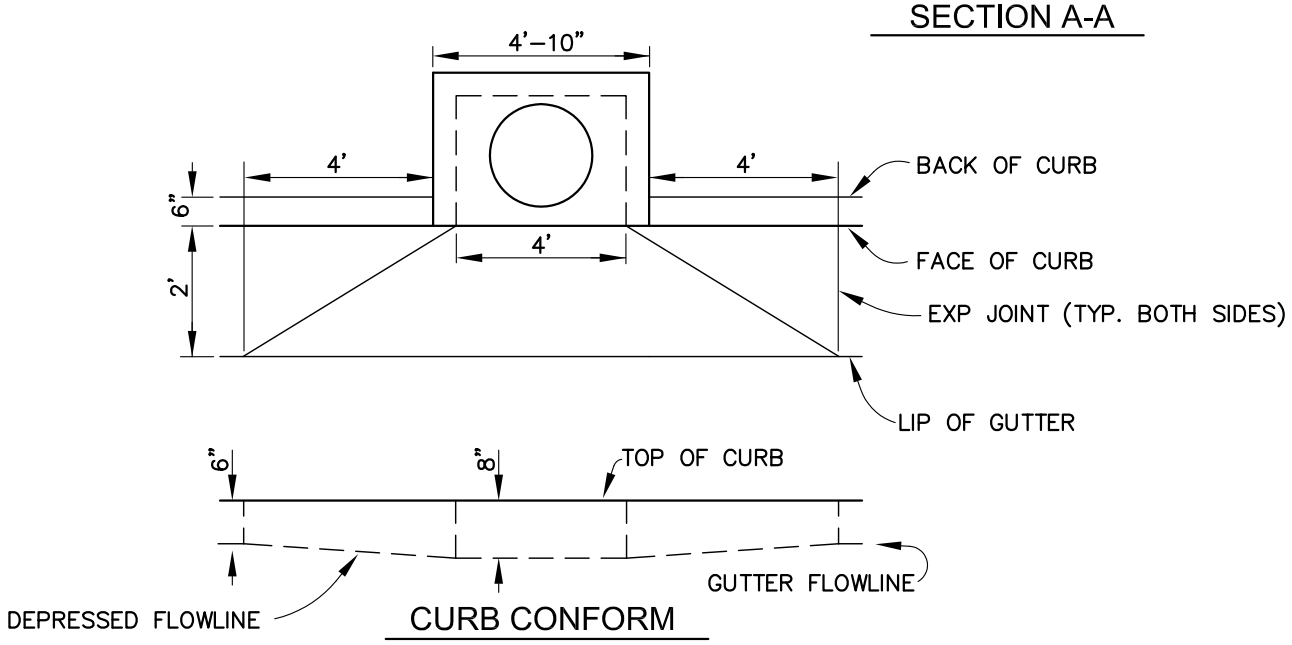

NOTES:

1. IF PIPE INTO OR OUT OF THE CATCH BASIN IS LARGER THAN 24", UNIT SHALL BE TAILOR MADE BY SUPPLIER, OR FIELD FABRICATED PER CITY STD. 405.
2. APPROVED ALTERNATES FOR CURB INLET BASE SECTIONS: CENTRAL PRE-CAST PRODUCTS BASE SECTION MODEL 4A; PHOENIX PRECAST CONC. PRODUCTS BASE SECTION MODEL D14,2
3. ALL HOOD, BASE, AND PIPE CONNECTIONS SHALL BE GROUTED.
4. 3/4" GALVANIZED STEEL GUARD ROD MUST BE INSTALLED AT CENTER OF OPENINGS IN EXCESS OF 9" INCHES IN LENGTH.

CURB OPENING CATCH BASINS

STD. NO. 404

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

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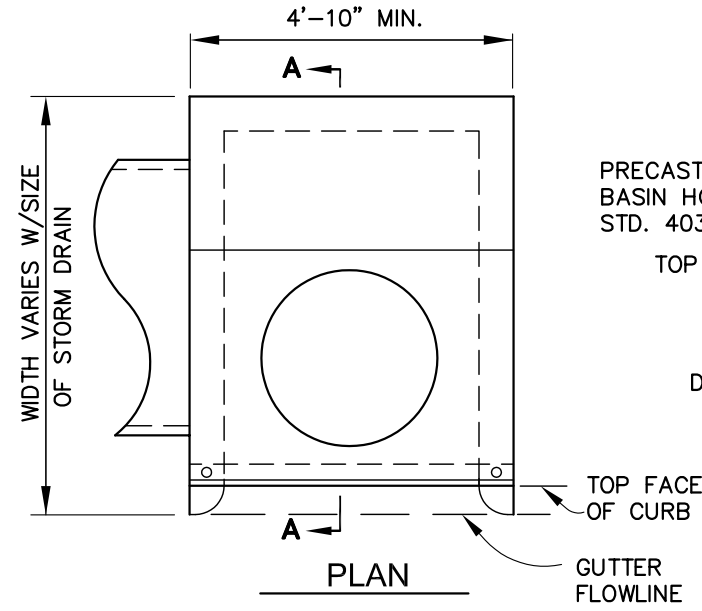
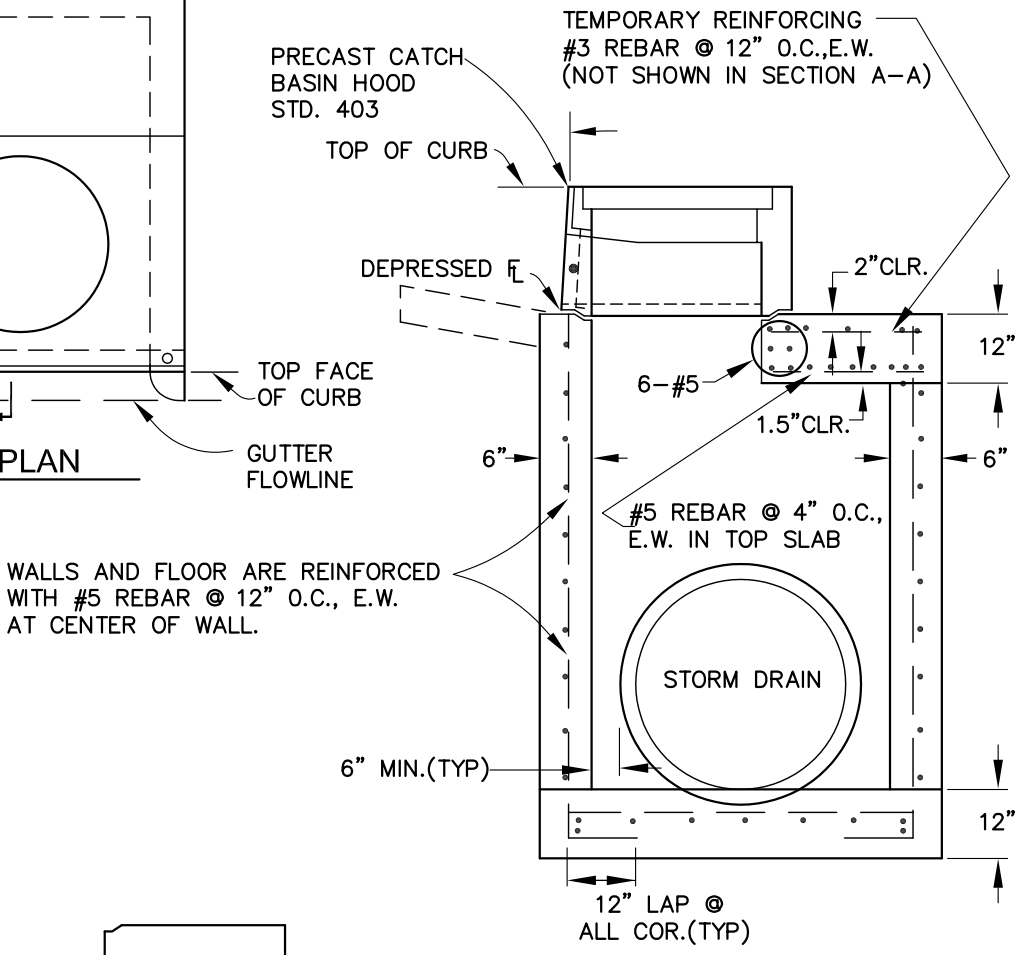
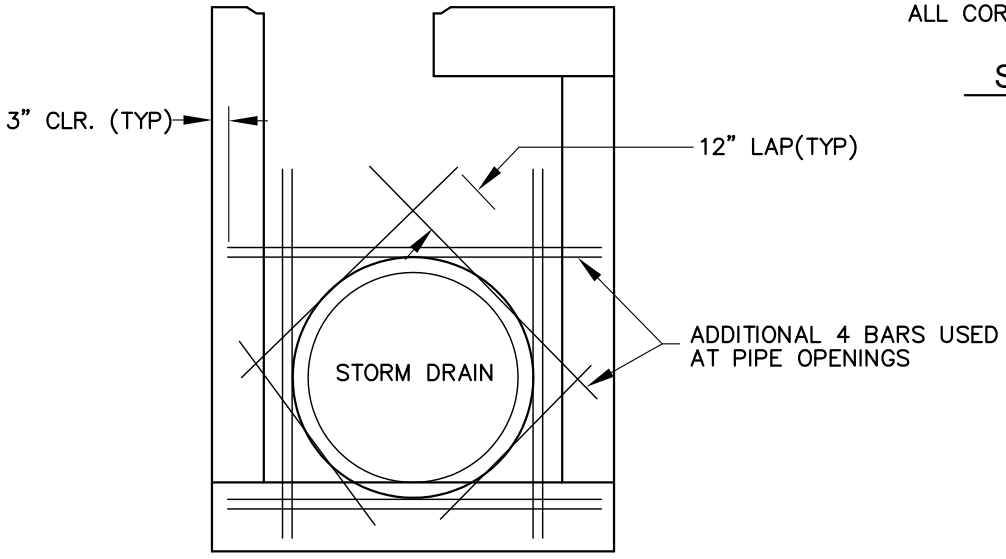


PLAN



SECTION A-A



REINFORCING USED @ OPENINGS

CATCH BASIN FOR PIPES LARGER THAN 24"

STD. NO. 405

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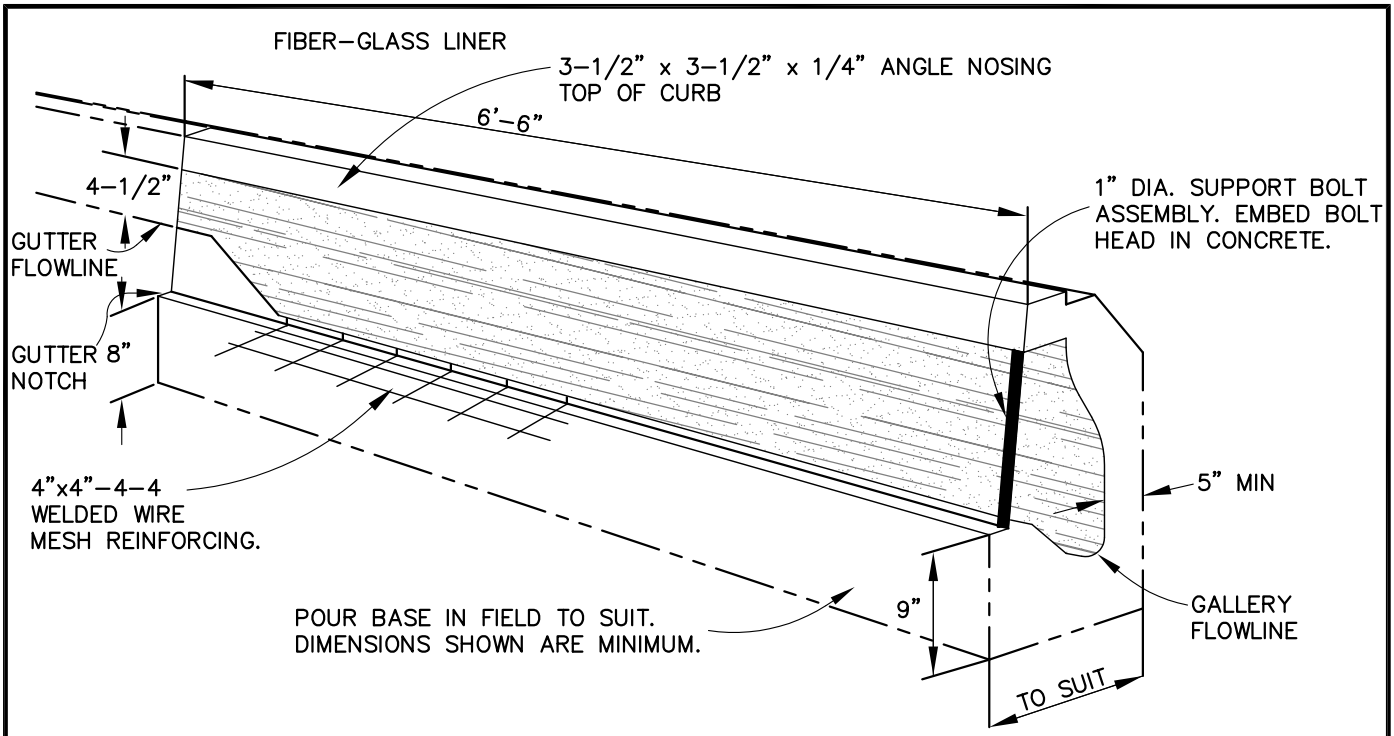
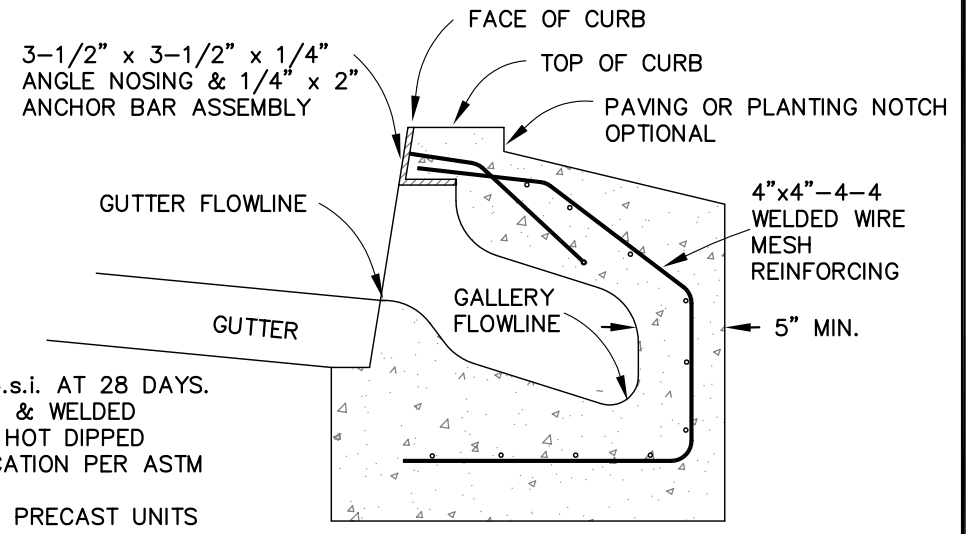
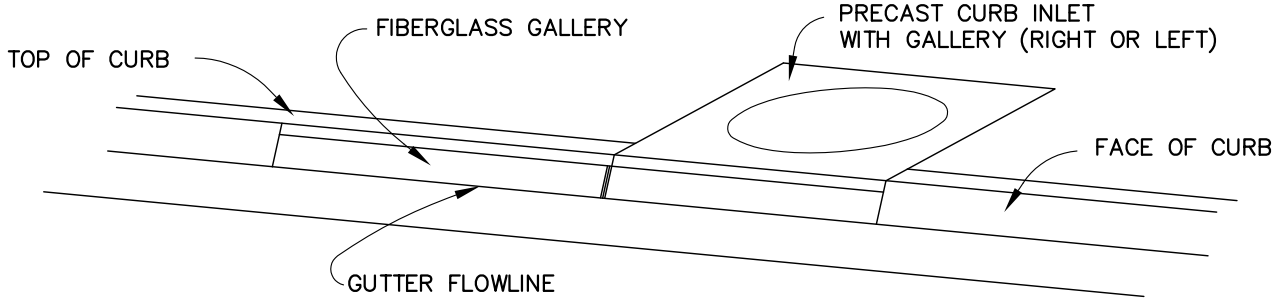




NOTES:

1. CONCRETE SHALL BE 3000p.s.i. AT 28 DAYS.
2. NOSING ASSEMBLY (ANGLED & WELDED ANCHOR BARS) SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER ASTM SPEC. A123-59.
3. EITHER CAST-IN-PLACE OR PRECAST UNITS ARE ACCEPTABLE.



STORM DRAIN GALLERY

STD. NO. 406

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Images: Xrefs:
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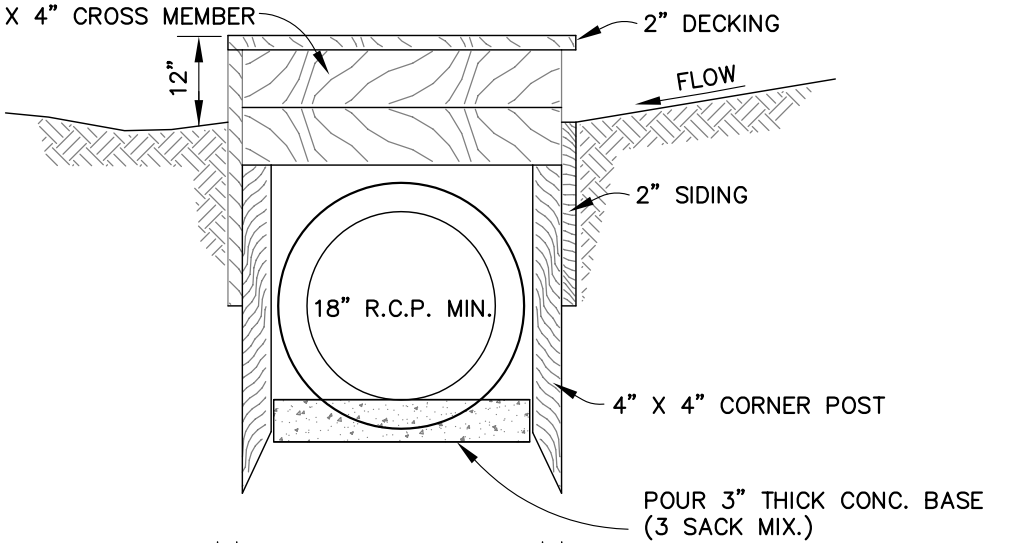

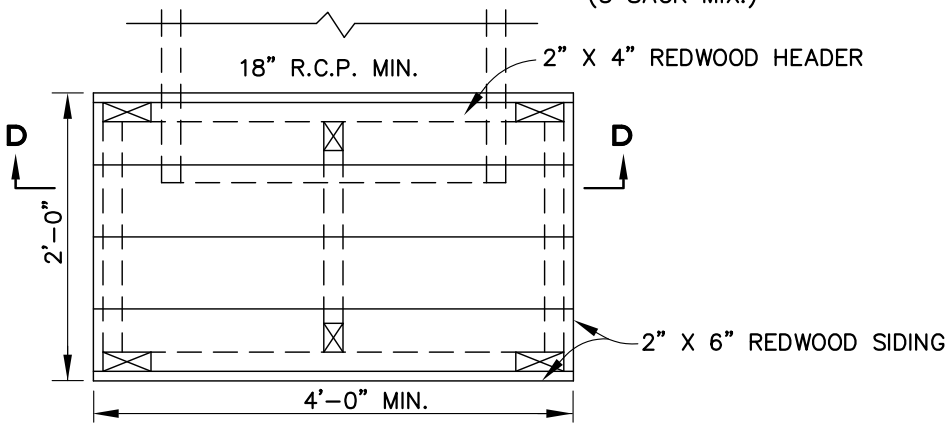

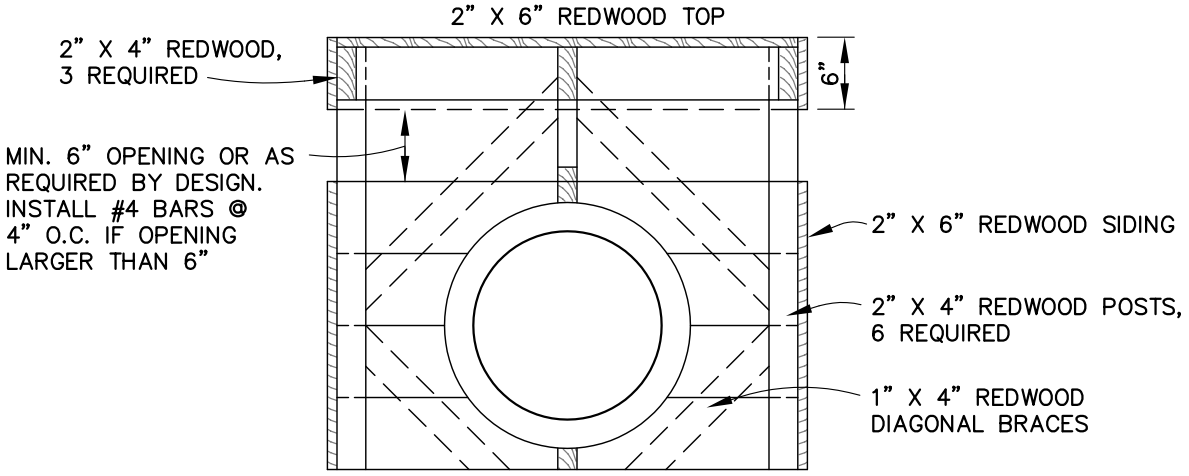

SECTION D-D

NOTES:

1. ALL WOOD SHALL BE CONSTRUCTION HEART REDWOOD OR BETTER.
2. HOT DIPPED GALVANIZED NAILS SHALL BE USED THROUGHOUT.
3. THIS DETAIL IS TO BE USED IF THE DURATION OF USE IS LESS THAN 2 YEARS. USE A CONCRETE STRUCTURE IF LONGER DURATION.

TEMPORARY REDWOOD BOX FIELD INLET

STD. NO. 407

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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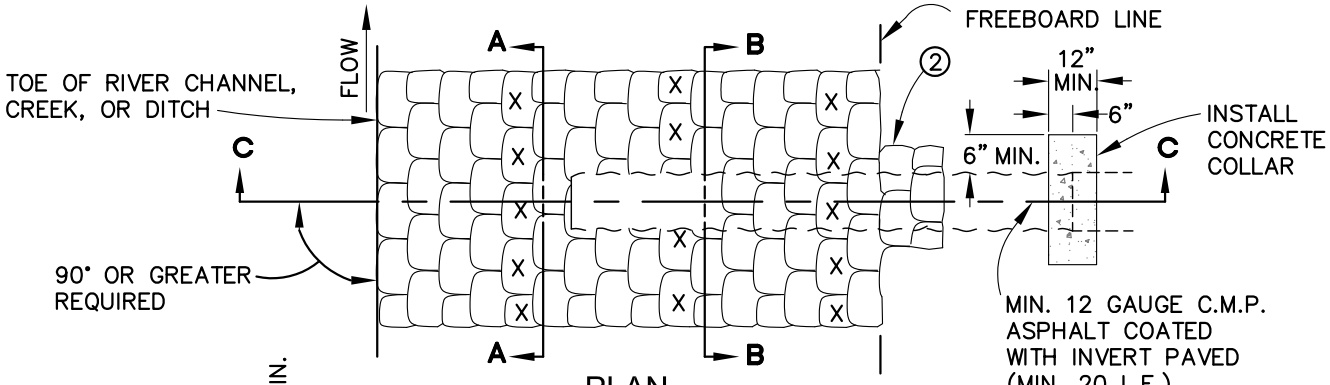
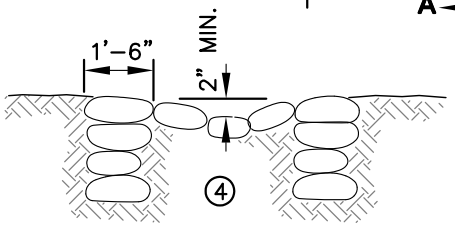
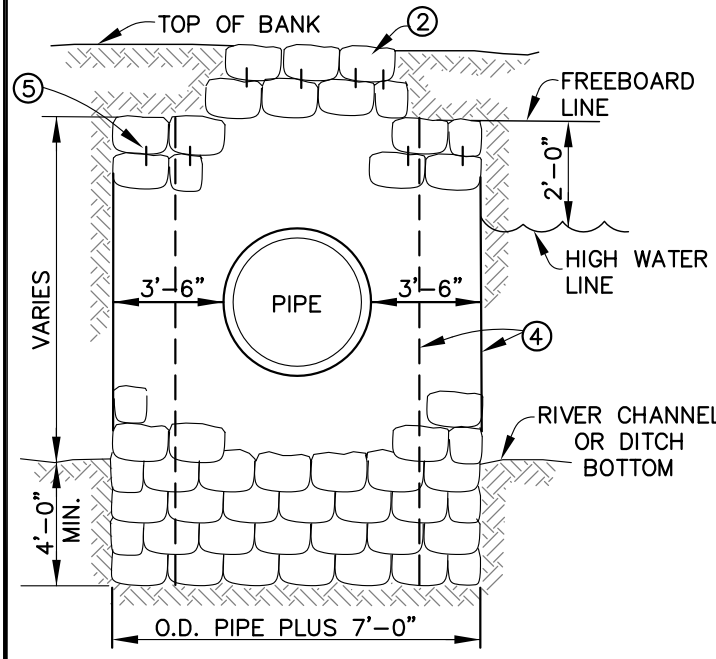


PLAN



SECTION A-A

SECTION C-C



SECTION B-B

NOTES:

1. FACE OF RIP-RAP TO BE COINCIDENT WITH EXISTING (OR FUTURE DESIGN) SIDE SLOPE OF CHANNEL.
2. CARRY RIP-RAP TO TOP OF BANK IN TRENCH EXCAVATION ABOVE FREEBOARD.
3. SACK CONCRETE RIP-RAP PLACED ON UNDISTURBED SOIL. ANY OVER EXCAVATION MUST BE FILLED WITH SACKS, NO EARTH BACKFILL WILL BE PERMITTED. (EVERY FIFTH COURSE TO BE A HEADER COURSE. ⓧ)
4. INSTALL CUT-OFF WALL UPSTREAM & DOWNSTREAM TO AN ELEVATION WHICH IS EQUAL TO THE FREEBOARD ELEVATION OR TOP OF PIPE, WHICH EVER IS HIGHER, & ACROSS THE BOTTOM WITH 4.0 MINIMUM DEPTH.
5. IN ALL TOP COURSES AND THROUGHOUT, IF SIDE SLOPE IS STEEPER THAN 1:1 AND/OR HIGHER THAN 10 FEET, DRIVE ONE #4 REINFORCING BAR 18" LONG THROUGH EACH SACK. DO NOT LEAVE ENDS OF BARS EXPOSED, NOR DRIVE INTO DIRT.
6. OUTFALLS TO BE APPROVED BY FISH AND GAME AND FLOOD CONTROL AS APPROPRIATE.

CITY OF FORT BRAGG CALIFORNIA

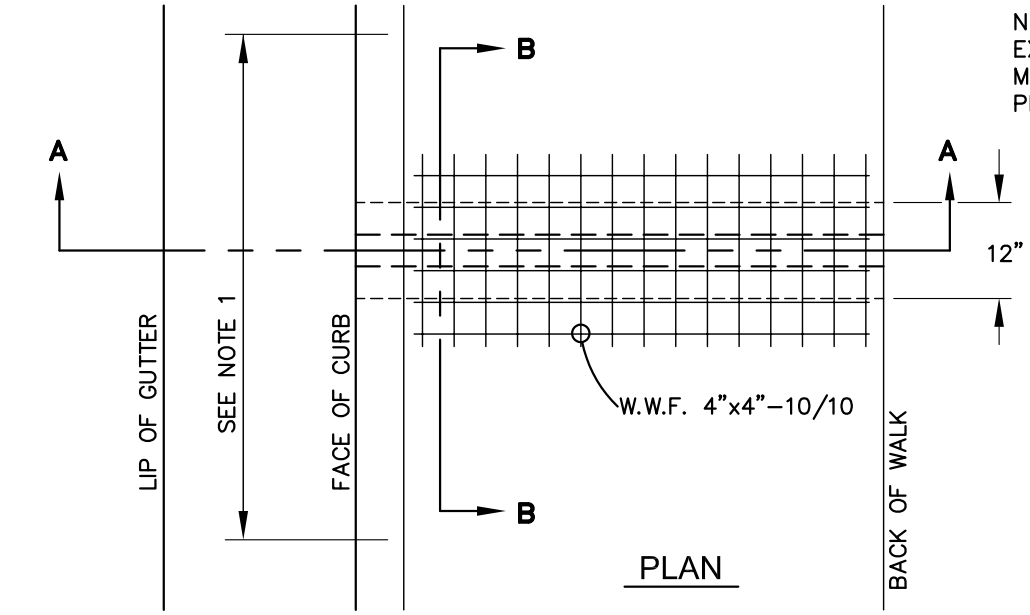
TYPICAL STORM DRAIN OUTFALL DETAIL

STD. NO. 408

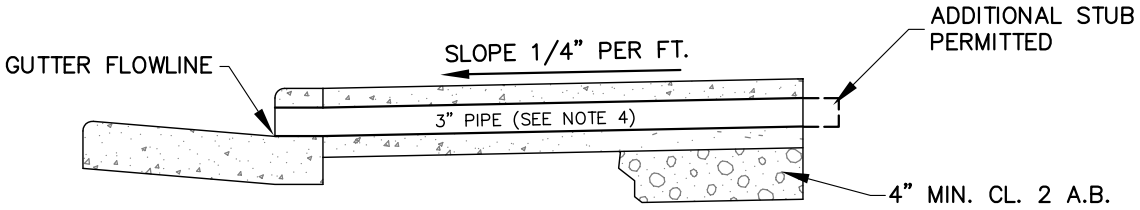
SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg400-412.dwg Layout Name: 408 Plot Date: Feb 02, 2009 at 17:42

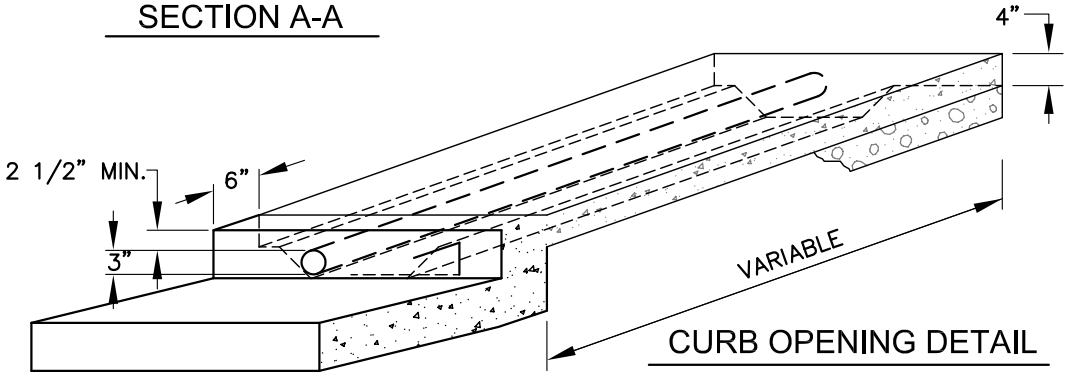
NOTE: IF SIDEWALK IS EXISTING, A 12" SECTION MAY BE SAWCUT TO PLACE 3" P.V.C. & W.W.F.



PLAN



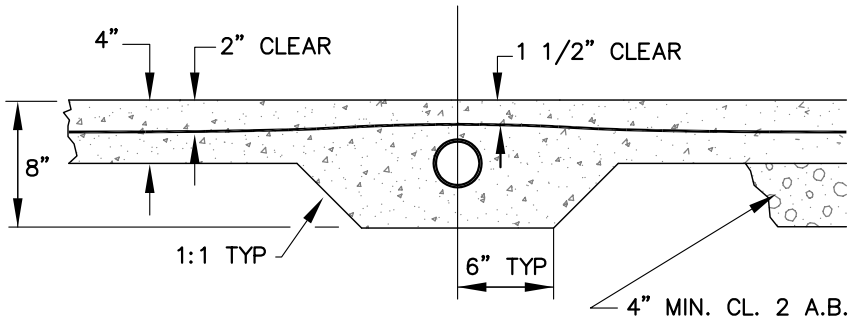
SECTION A-A



CURB OPENING DETAIL

NOTES:

1. WIRE MESH SHALL BE 2' WIDE. LENGTH SHALL EQUAL SIDEWALK WIDTH MINUS 4". IF SIDEWALK IS EXISTING, SEE NOTE ABOVE.
2. ON–SITE DRAINAGE AND LOCATION OF CURB OUTLETS SHALL BE BY THE OWNER TO THE SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS.
3. DRAIN PIPE SHALL BE INSTALLED SO THAT TOP OF PIPE IS 2–1/2" MIN. BELOW FINISH GRADE AT BACK OF SIDEWALK.
4. SIDEWALK DRAIN TO BE 3" SCH. 40, HEAVY WALL, RIDGID POLYVINYL CHLORIDE PIPE OR APPROVED SUBSTITUTE.



SECTION B-B

SIDEWALK DRAIN

STD. NO. 409

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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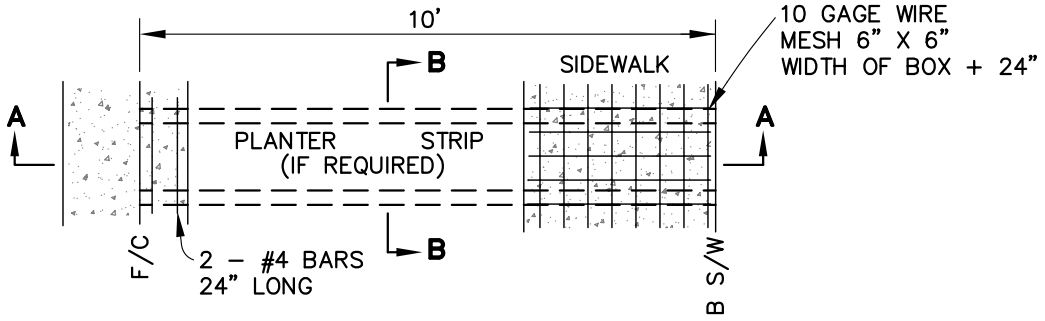
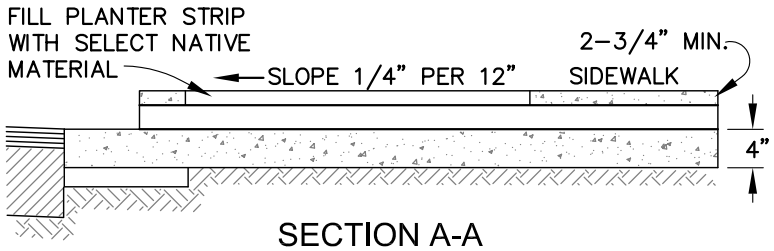
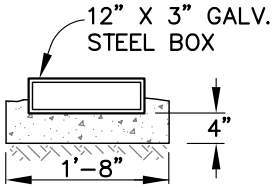


PLAN



SECTION A-A



SECTION B-B

NOTES:

1. WITH APPROVAL OF THE CITY ENGINEER, WIDTH OF BOX MAY VARY FROM 6" TO 12".
2. GALVANIZED STEEL TO BE 1/4" THICK.
3. ALL CONCRETE SHALL BE CLASS "A" (6 SACKS PER CUBIC YARD).

CITY OF FORT BRAGG CALIFORNIA	SIDEWALK CROSS DRAIN				STD. NO. 410
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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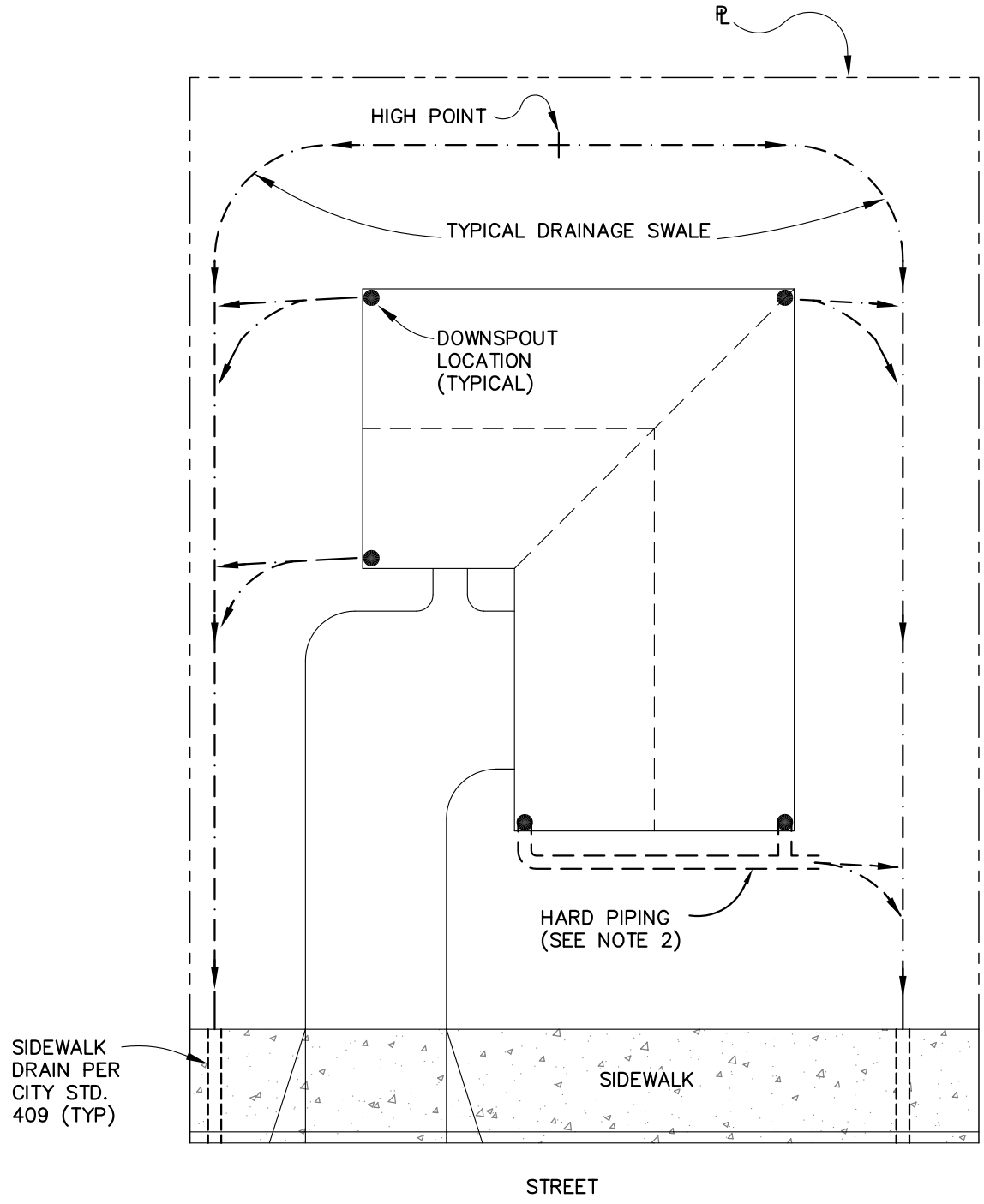

NOTES:

1. ALL ROOF DRAINAGE MUST BE ROUTED FROM EACH DOWNSPOUT THROUGH SURFACE SWALES TO SIDEWALK DRAIN OR OTHER APPROVED DRAINAGE STUCTURE.
2. HARD PIPING SHALL BE FLEXIBLE A.D.S. PIPE WITH POSITIVE DRAINAGE TO SWALES, AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR BUILDING OFFICIAL.
3. ALL CONCENTRATED DRAINAGE FROM A PARCEL MUST BE INTERCEPTED INTO AN UNDERGROUND SYSTEM PRIOR TO CROSSING SIDEWALKS.
4. ALL HARD PIPING SHALL BE BURIED.

CITY OF FORT BRAGG CALIFORNIA

TYPICAL LOT DRAINAGE

STD. NO. 411

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

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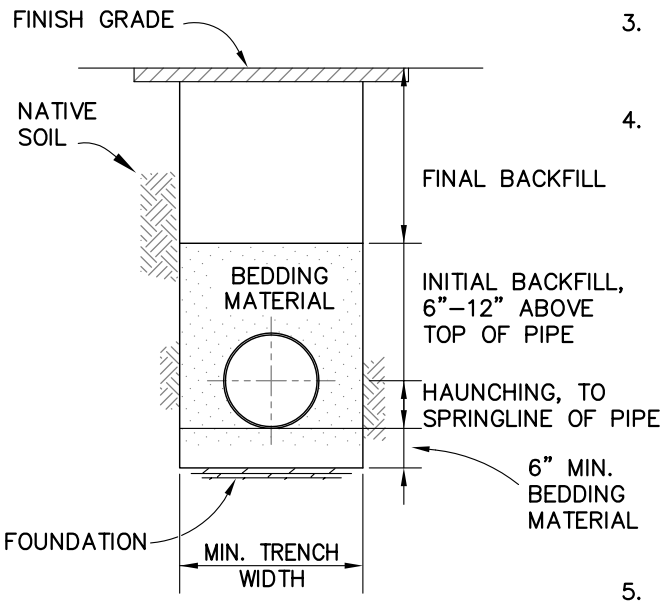

TYPICAL TRENCH CROSS-SECTION

(N.T.S.)

NOTES:

1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY–FLOW APPLICATIONS," LATEST EDITION; AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.

2. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, OR III, AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

3. HAULING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II, OR III, AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

4. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

NOMINAL ø IN INCHES	MIN. RECOMMENDED TRENCH WIDTH
4"	21"
6"	23"
8"	25"
10"	28"
12"	31"
15"	34"
18"	39"
24"	48"
30"	66"
36"	78"
42"	83"
48"	89"
60"	102"

5. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.

SURFACE LIVE LOADING CONDITION	MINIMUM RECOMMENDED COVER IN INCHES
H25 (FLEXIBLE PAVEMENT)	24"
H25 (RIGID PAVEMENT)	24"
E80 RAILWAY	24"
HEAVY CONSTRUCTION	48"

*TOP OF PIPE TO BOTTOM OF BITUMINUS PAVEMENT SECTION.

HDPE TRENCH INSTALLATION DETAIL

STD. NO. 412

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

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WATER SYSTEM STANDARD PLANS

DESCRIPTION

500 SERIES - WATER SYSTEM

500	Water Main Construction Notes
501	Gate Valve and Valve Box With Riser
503	Single 1" Domestic Water Service for 1" Meters
504	Not Used
505	2" Domestic Water Service Lateral
506	4" Water Service Lateral Installation for 3" Meter
507	4" Water Service Lateral Installation for 4" Meter
508	6" Water Service Lateral Installation for 6" Meter
509	Not used
510	Reduced-Pressure Backflow Preventer
511	Double Detector Check Valve Single Service
512	Not used
513	Single Combination Water Service
514	Not Used
515	Temporary Blowoff with Main Line Valve
516	Blowoff with Harness
517	Harness Installation for Flange Fittings
518	Harness Installation
519	Concrete Anchor Blocks for Vertical Bends

1. ALL MATERIAL, WORKMANSHIP, AND CONSTRUCTION DETAILS SHALL CONFORM TO THE CITY OF FORT BRAGG, "STANDARD SPECIFICATIONS," INCLUDING ALL ADDENDA, STANDARD PLAN REVISIONS AND SPECIAL PROVISIONS.

2. START EXCAVATION BY EXPOSING END OF EXISTING MAIN TO DETERMINE ITS LINE AND GRADE. START NEW MAIN 8 – 10 FEET FROM, AND ON SAME LINE AND GRADE AS EXISTING MAIN. PIPE LAYING SHALL THEN BE ADJUSTED SO THE DEPTH OF NEW MAIN CONFORMS TO NOTE #3.

3. MINIMUM DEPTH OF COVER FROM FINISHED GRADE SHALL BE: 32" FOR 6" MAINS; 36" FOR 8" MAINS, 44" FOR 12" MAINS; AND 48" FOR 14" AND LARGER MAINS. 4" AND 10" MAINS MUST BE SPECIFICALLY APPROVED BY THE DIRECTOR OF PUBLIC WORKS. 4" THROUGH 16" MAIN LINE VALVES SHALL BE RESILIENT SEAT GATE. 18" AND LARGER MAINLINE VALVES SHALL BE BUTTERFLY VALVES. BLOW OFF VALVES SHALL BE 2" OR 3" BALL VALVES WITH ROTATION STOPS.

4. NO. 10 INSULATED COPPER WIRE SHALL BE LAID ON TOP OF AND ALONG ENTIRE LENGTH OF ALL NON–METALLIC MAINS AND SHALL BE EXTENDED TO THE SURFACE AT ALL VALVE LOCATIONS, BLOWOFFS AND METER BOXES SUFFICIENT FOR LOCATOR EQUIPMENT TO BE ATTACHED. FASTEN THE WIRE TO THE TOP OF THE PIPE SO AS NOT TO BE DISPLACED BY BACKFILLING PROCEDURE (ONE METHOD OF ACCOMPLISHING THIS IS TO AFFIX THE WIRE TO THE TOP OF THE PIPE WITH DUCT TAPE AT APPROXIMATELY 10 FEET INTERVALS).

5. MAINS TO BE CONSTRUCTED WITHIN 10' OF SEWER PIPE REQUIRE SPECIAL INSTALLATION AND DESIGN MUST BE SPECIFICALLY APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

6. ALL TRENCHING, BACKFILL AND RESURFACING REQUIRED FOR INSTALLATION OF WATER SYSTEM FACILITIES SHALL BE PER CITY STANDARD 300.

7. ONLY CITY PERSONNEL SHALL OPERATE VALVES ON EXISTING WATER MAINS OR WATER SERVICES.

8. SERVICE LATERALS OTHER THAN THOSE SHOWN OR NOTED ON THE PLANS SHALL NOT BE INSTALLED PRIOR TO OBTAINING CITY APPROVAL.

9. UNLESS OTHERWISE SHOWN ON THE PLANS, 1" WATER SERVICE LATERALS FOR 1" METER INSTALLATIONS AND SHALL BE INSTALLED IN RESIDENTIAL DEVELOPMENTS AND 2" OR LARGER WATER SERVICE LATERALS SHALL BE INSTALLED IN COMMERCIAL DEVELOPMENTS. WHERE SERVICE LENGTHS ARE OVER 40 FEET FROM METER TO MAIN LINE, 1 1/4" SERVICE LATERALS SHALL BE USED. FOR SERVICE LENGTHS OVER 60 FEET, SERVICE LATERAL SIZE SHALL BE APPROVED BY THE CITY ENGINEER.

10. NO MORE THAN ONE WATER SERVICE SHALL BE PLACED WITHIN A TRENCH.

11. WATER AND SEWER SERVICE LATERALS SHALL BE SEPARATED HORIZONTALLY BY A MINIMUM OF 5 FEET.

12. AT THE LOCATION OF EACH WATER SERVICE LATERAL, THE LETTER "W" SHALL BE INSCRIBED INTO THE FACE OF THE CURB. THE LETTER "W" SHALL BE 4" HIGH AND COMPLETELY LEGIBLE.

13. ALL COPPER WATER SERVICE TUBING SHALL BE IN CONFORMANCE WITH THE LATEST AWWA STANDARDS AS DESCRIBED IN ANSI/AWWA C800 OR THE LATEST REVISION, AND WITH ASTM B88, AND SHALL BE TYPE "K" SOFT TEMPER TUBING FOR 1" TUBING AND TYPE "K" HARD TEMPER FOR 1–1/2" AND 2" TUBING.

CITY OF FORT BRAGG CALIFORNIA	WATER MAIN CONSTRUCTION NOTES				STD. NO. 500
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

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14. ALL METER BOXES, VAULTS AND PITS SHALL BE BEDDED ON 3" MINIMUM THICK, 3/4" DRAIN ROCK, AB-2, OR OTHER CLEAN MATERIAL WITH TYPICAL SAND EQUIVALENT OF 20 MINIMUM, UNCONTAMINATED BY NATIVE SOIL, AGAINST COMPACTED OR UNDISTURBED BASE. THE GRAVEL BED SHALL EXTEND TO A 4" MINIMUM BEYOND ALL SIDES OF THE METER BOX. BOX SHALL BE SET FLUSH WITH TOP OF CURB, SIDEWALK OR GROUND, WHICHEVER IS APPLICABLE. LOT NUMBERS MUST BE NOTED ON TOP SIDE OF METER BOX WITH A PERMANENT MARKING PEN.

15. METER BOXES SHALL BE LOCATED OUT OF TRAFFIC LOADING AREAS WHENEVER POSSIBLE.

16. METER BOXES AND VAULTS SHALL BE SET SO THAT THE READING LIDS ARE ALIGNED OVER THE METER REGISTERS AS CLOSELY AS POSSIBLE.

17. UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS, THE ON-SITE WATER LINE SHALL BE THE SAME SIZE AS THE WATER METER.

18. FOR SERVICES LARGER THAN 1", IF EITHER THE WATER SERVICE LATERAL OR THE ON-SITE BUILDING LINE IS ALREADY EXISTING WITHIN THE TOLERANCES SPECIFIED ON THE STANDARD PLAN, THE LAST ONE INSTALLED SHALL BE ON THE SAME LINE AND GRADE AS THE EXISTING ONE.

19. ITEMS SPECIFIED ON THE STANDARD PLANS, OR THE ENGINEER'S APPROVED LIST, ARE APPROVED FOR USE BY THE DIRECTOR OF PUBLIC WORKS. ALL OTHERS SHALL BE SUBMITTED TO THE DIRECTOR OF PUBLIC WORKS FOR APPROVAL.

20. METER MANIFOLDS MUST BE DETAILED AND APPROVED BY DIRECTOR OF PUBLIC WORKSING. IN GENERAL, MANIFOLDS WHERE ALL FITTINGS ARE 2" OR LESS, SHALL BE CONSTRUCTED FROM THREADED BRASS PIPES AND FITTINGS FROM THE END OF THE SERVICE LATERAL TO THE METER CONNECTION. NO PLASTIC PIPE SHALL BE USED IN CONSTRUCTING MANIFOLDS OF ANY SIZE. NO MORE THAN SIX METERS MAY BE MANIFOLDED OFF A SINGLE WATER SERVICE LATERAL, WITH NO MORE THAN 3 ON EITHER SIDE OF THE SERVICE.

21. GASKETS FOR FLANGE FITTINGS SHALL CONFORM TO AWWA STD. C115.

22. TO ABANDON A WATER SERVICE, EXPOSE AND TURN OFF CORPORATION STOP, THEN SEVER THE LATERAL CONNECTION.

23. THERE SHALL BE NO UNMETERED CONNECTIONS TO THE CITY OF FORT BRAGG WATER SYSTEM, INCLUDING CONNECTIONS BYPASSING METER FOR TESTING ON-SITE PLUMBING OR FOR OBTAINING CONSTRUCTION WATER. PRESSURE TESTING AGAINST VALVES WILL NOT BE ALLOWED. WHEN A SUBDIVISION WATER MAIN HAS BEEN ACCEPTED AND TIED-IN, THE INDIVIDUAL CURB STOPS WILL BE LOCKED OFF WITH CABLE TIES. CUTTING OFF OR TAMPERING WITH THE CABLE TIES WILL CONSTITUTE A STRAIGHT TIE-IN CONNECTION. SUCH CONNECTIONS WILL BE SEVERED BY THE CITY AND WILL RESULT IN PENALTIES INCLUDING PAYMENT OF FINES AND ESTIMATED WATER USAGE FEES.

24. UPON APPLICATION, THE CONTRACTOR SHALL INSTALL A 2" TEMPORARY CHECK VALVE ON THE END OF THE EXISTING MAIN FOR CONSTRUCTION WATER (SEE STANDARD), OR AT THE OPTION OF THE DIRECTOR OF PUBLIC WORKS, THE CONTRACTOR MAY HAVE A FIRE HYDRANT METER INSTALLED BY CITY PERSONNEL.

CITY OF FORT BRAGG CALIFORNIA	WATER MAIN CONSTRUCTION NOTES				STD. NO. 500
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

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25. BEFORE COMBUSTIBLE MATERIALS MAY BE STORED OR CONSTRUCTED ON SITE, THE FIRE DEPARTMENT MUST APPROVE FIRE FLOW AND ACCESS. BEFORE A FIRE HYDRANT MAY BE PLACED IN SERVICE, A HIGH VELOCITY FLUSHING OF THE HYDRANT LATERAL SHALL BE WITNESSED AND APPROVED BY CITY PERSONNEL. HIGH VELOCITY FLUSHING SHALL CONSIST OF REMOVING THE HYDRANT AND REPLACING IT WITH A SUITABLE ELBOW AND DIFFUSER. UNDER CITY SUPERVISION, THE HYDRANT LATERAL IS FLUSHED UNTIL CITY PERSONNEL ARE SATISFIED THAT THE LINES ARE CLEAR OF DEBRIS. PRIOR TO ACCEPTANCE OF THE ON-SITE WATER MAIN BY THE CITY, 6" METER AND DOUBLE-CHECK VALVE ASSEMBLY, CERTIFIED BY THE CITY, MAY BE INSTALLED PER STANDARD 526.

26. UPON COMPLETION OF CONSTRUCTION, FINAL CONNECTION WILL BE MADE BY THE CONTRACTOR AT THE DEVELOPER'S EXPENSE UNDER INSPECTION BY A CITY REPRESENTATIVE, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

27. WHEN A CONNECTION IS REQUIRED TO AN EXISTING WATER MAIN, THE CONTRACTOR SHALL PROVIDE ALL EXCAVATION, SHORING, BACKFILL AND TRENCH RESURFACING PER CITY STANDARD 300. WHERE THE CONNECTION IS TO BE A "HOT TAP," THE CONTRACTOR SHALL PROVIDE AND INSTALL THE TAPPING VALVE AND SLEEVE, AND ANY OTHER HARDWARE REQUIRED AND WILL MAKE THE TAP AT THE DEVELOPER'S EXPENSE. NO HOT TAP SHALL BE MADE WITHIN 4 FEET OF A JOINT (MEASURED FROM JOINT TO CENTERLINE OF INTERSECTING PIPE). THE JOINT SHALL BE REMOVED, AND THE PROPOSED HOT TAP SHALL BE REPLACED WITH A "CUT-IN" TEE. WHEN A "CUT-IN" TEE AND VALVE(S) ASSEMBLY IS REQUIRED ON THE PLANS, THE CONTRACTOR SHALL PROVIDE AND INSTALL THE ENTIRE ASSEMBLY (INCLUDING VALVES), AND ANY OTHER HARDWARE NECESSARY UNDER CITY INSPECTION, AND SHALL PROVIDE ALL OTHER WORK AND MATERIALS NECESSARY TO COMPLETE THE INSTALLATION TO CITY STANDARDS.

28. THE CONTRACTOR SHALL COORDINATE ALL WATER MAIN CONNECTION WORK WITH THE DIRECTOR OF PUBLIC WORKS AT (707) 961-2823 A MINIMUM OF 72 HOURS PRIOR TO COMMENCING WORK IN ACCORDANCE WITH CITY POLICY.

29. AFTER A STREET HAS BEEN OVERLAID, ALL WATER VALVE BOXES WILL BE MARKED IN WHITE PAINT BEFORE THE CLOSE OF THAT WORK DAY.

30. WITHIN 48 HOURS OF PAVING, ALL WATER VALVE BOXES WILL BE BROUGHT TO GRADE AND INSPECTED.

31. ALL FIRE HYDRANT FLOW TESTING PERFORMED ON CITY FIRE HYDRANTS SHALL BE PERFORMED BY THE CITY OF FORT BRAGG PUBLIC WORKS DEPARTMENT. THOSE DESIRING FLOW TESTS SHALL NOTIFY THE CITY ENGINEER. PRIOR TO TESTING AND ACCEPTANCE OF HYDRANTS, BURLAP SACKS SHALL BE PLACED OVER HYDRANTS.

CITY OF FORT BRAGG CALIFORNIA	WATER MAIN CONSTRUCTION NOTES				STD. NO. 500
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

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SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

GATE VALVE AND VALVE BOX WITH RISER

STD. NO. 501

STEM EXTENSION FABRICATION NOTES:

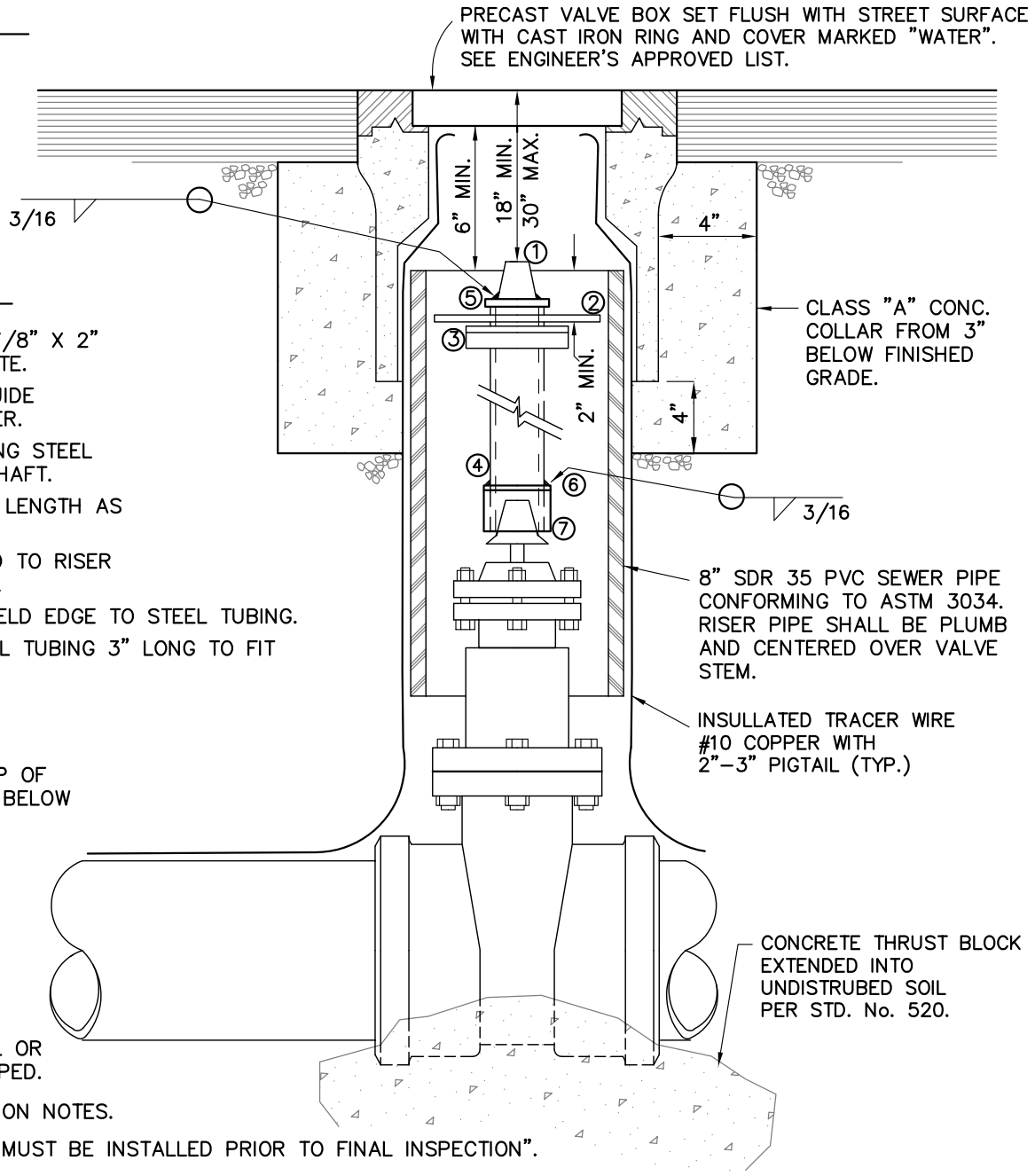
1. ALL WELDS TO RISER SHAFT SHALL BE FILLET WELD ALL AROUND.
2. ALL STEEL REQUIRED FOR RISER FABRICATION SHALL BE STRUCTURAL STEEL PER ASTM A36.

VALVE STEM EXTENSION PARTS LIST:

1. VALVE OPERATING NUT OR 1 7/8" X 1 7/8" X 2" HIGH, SOLID STEEL WELDED TO TOP PLATE.
2. 3/16" THK. X 7" DIA. FREE SPINNING GUIDE PLATE WITH 3 5/8" DIA. HOLE IN CENTER.
3. TWO 3/16" X 1 1/2" X 1 1/2" X 5" LONG STEEL ANGLE WELD TO TWO SIDES OF RISER SHAFT.
4. 2 1/2" X 3/16" SQUARE STEEL TUBING, LENGTH AS REQUIRED. EDGE WELD TO TOP PLATE.
5. 3" X 3" X 1/4" STEEL TOP PLATE. WELD TO RISER SHAFT AFTER GUIDE PLATE IS IN PLACE.
6. 2" X 2" X 1/4" STEEL BASE PLATE. WELD EDGE TO STEEL TUBING.
7. 2" X 2" X 3/16" SQ. STRUCTURAL STEEL TUBING 3" LONG TO FIT OPERATING NUT.

NOTES:

1. IF VALVE IS INSTALLED SO THAT THE TOP OF THE OPERATING NUT IS LESS THAN 30" BELOW FINISHED GRADE, THE VALVE STEM RISER IS NOT REQUIRED.
2. VALVES 2" THROUGH 16" SHALL BE RESILIENT WEDGE GATE VALVES AND VALVES 18" AND LARGER SHALL BE BUTTERFLY VALVES (SEE STD 522) UNLESS OTHERWISE APPROVED BY THE CITY.
3. ALL EXTERNAL BOLTS AND NUTS ON VALVES SHALL BE 304 STAINLESS STEEL OR VALVE ASSEMBLY SHALL BE POLY WRAPPED.
4. SEE STD. 500 FOR GENERAL CONSTRUCTION NOTES.
5. NOTE ON DRAWING: "VALVE EXTENSIONS MUST BE INSTALLED PRIOR TO FINAL INSPECTION".
6. GATE VALVE ILLUSTRATED. SIMILAR INSTALLATION REQUIRED FOR BALL VALVES & BUTTERFLY VALVES.



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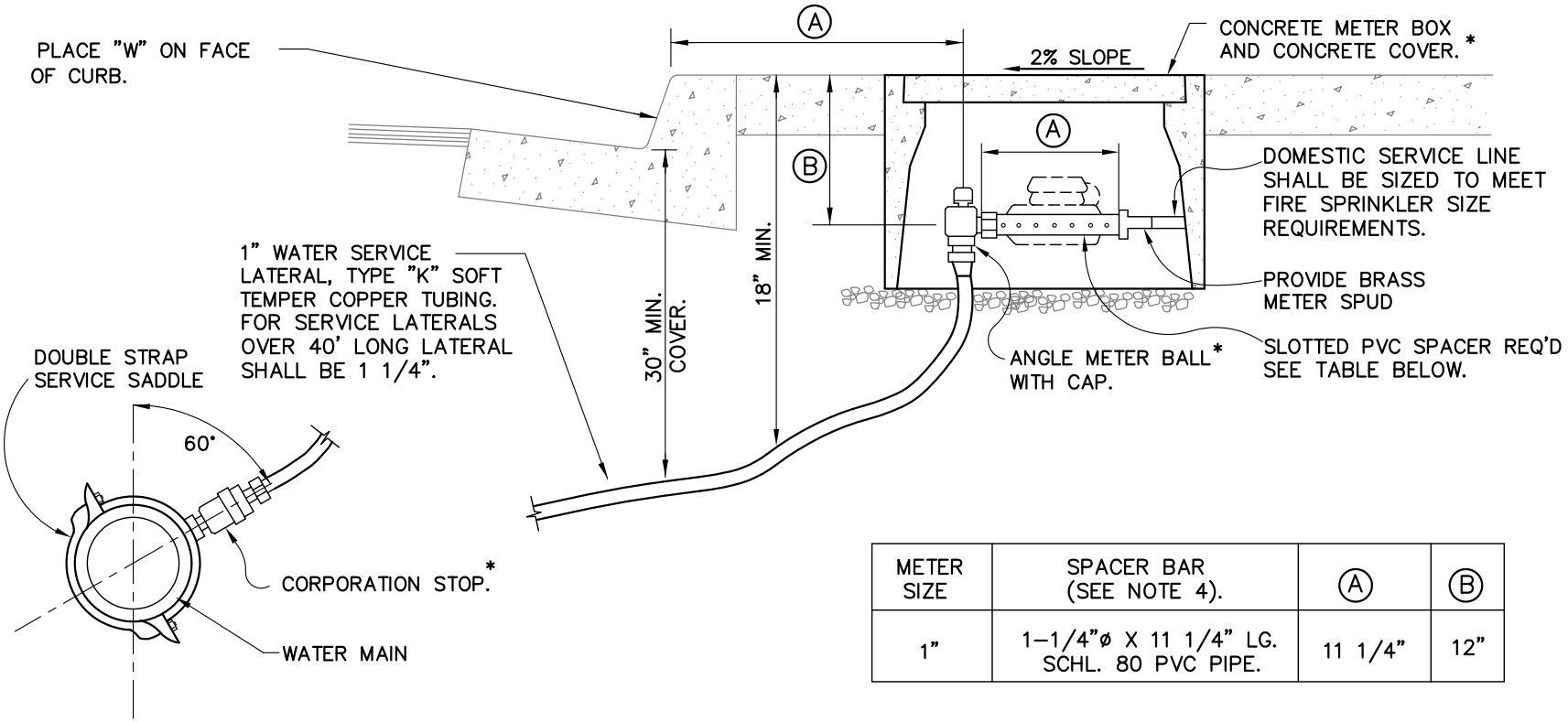
SINGLE 1" DOMESTIC WATER SERVICE FOR 1" METERS

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 503



METER SIZE	SPACER BAR (SEE NOTE 4).	Ⓐ	Ⓑ
1"	1–1/4"ø X 11 1/4" LG. SCHL. 80 PVC PIPE.	11 1/4"	12"

NOTES:

1. SERVICE LATERAL BEDDING MATERIAL TO BE COMPACTED TO MINIMUM 90% R.C. PRIOR TO INSTALLATION OF COPPER SERVICE TUBING.
2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, PROVIDE FOR 1" METER INSTALLATION FOR RESIDENTIAL USES AND 1" METER INSTALLATION FOR COMMERCIAL USES WITH SEPARATE FIRE SPRINKLER SYSTEM.
3. UNLESS OTHERWISE SPECIFIED ON THE PLANS, INSTALL 1" SERVICE TUBING FOR RESIDENTIAL USES AND 2" SERVICE TUBING FOR COMMERCIAL USES. FOR UNKNOWN COMM. USES, INSTALL 2" SERVICE PER STANDARD 505.
4. CONTRACTOR TO INSTALL SCHL. 80 PVC SPACER WITH 1/2"ø HOLES @ 2" O.C. (VERTICALLY DRILLED THROUGH PIPE, THREAD BOTH ENDS).
5. SEE STANDARD 500 FOR CONSTRUCTION NOTES.
6. METER BOX MUST BE SET FLUSH WITH TOP OF CURB OR SIDEWALK.
7. PRIOR TO METER SET, ADDRESS TO BE CLEARLY MARKED ON TOPSIDE LID OF METER BOX WITH PERMANENT FELT MARKER BY BY CONTRACTOR.
8. SEE ENGINEER'S APPROVED LIST FOR TAPPING SERVICE SADDLES.
9. SEE STD. 500, NOTE 9, FOR SERVICE SIZE REQUIREMENTS.

* – SEE ENGINEER'S APPROVED LIST.

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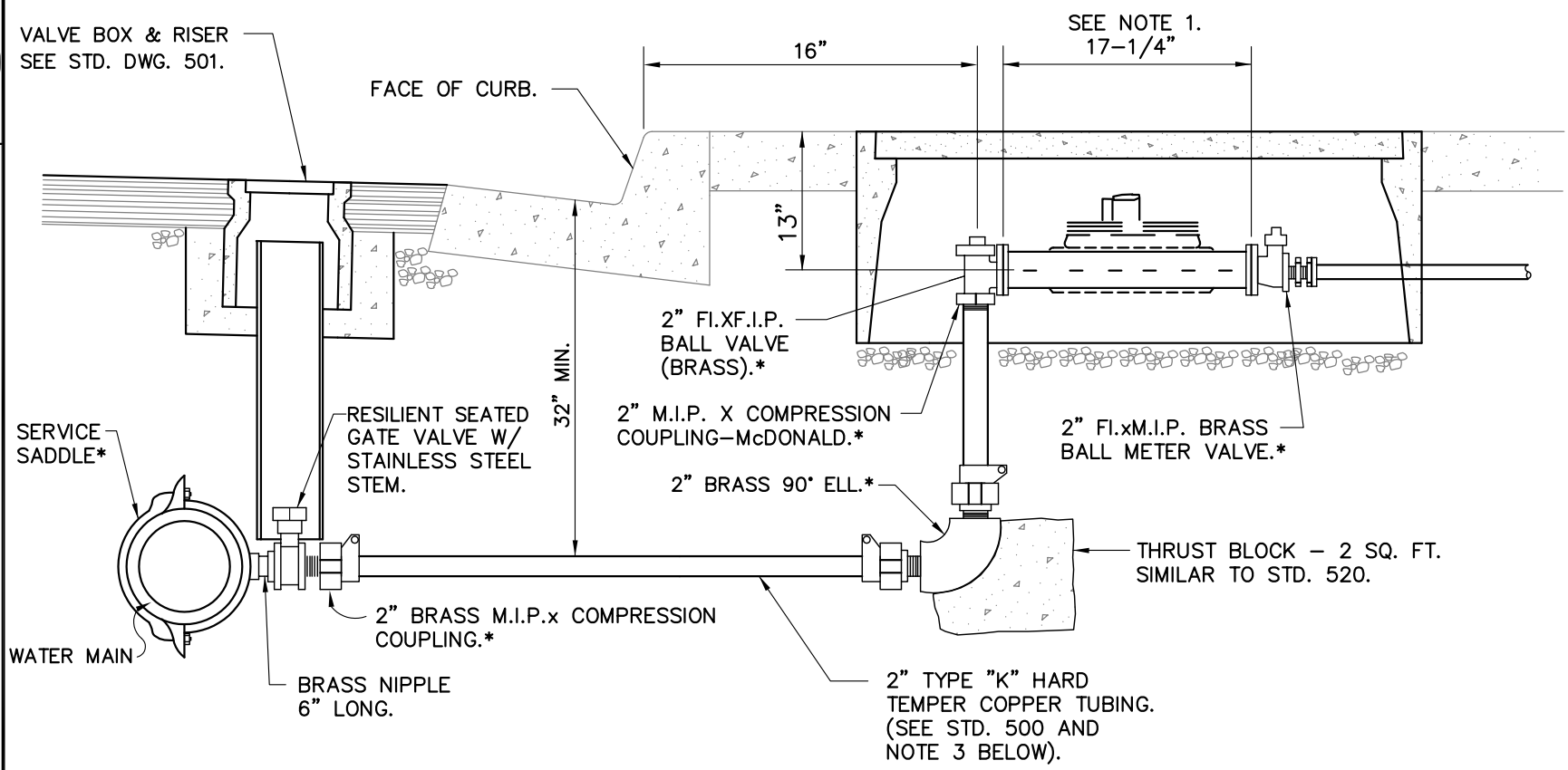
CITY OF FORT BRAGG CALIFORNIA

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

2" DOMESTIC WATER SERVICE LATERAL

STD. NO. 505



NOTES:

1. SPACER SHALL BE SCHL. 80 PVC PIPE WITH 1/2" ø HOLES @ 2" O.C. (VERTICALLY DRILLED THROUGH PIPES, THREAD BOTH ENDS). CITY FORCES TO REMOVE SPACER BAR & INSTALL WATER METER.
2. FOR CRITICAL FACILITIES, TWO WATER SERVICES SHALL BE INSTALLED. SERVICES SHALL BE SEPARATED BY A MAIN LINE VALVE.
3. IF MORE THAN ONE LENGTH OF TUBING IS REQUIRED, COMPRESSION COUPLINGS SHALL BE USED. JONES J-2609 OR McDONALD 4758-22.
4. SEE STD. 500 FOR CONSTRUCTION NOTES.
5. PRIOR TO METER SET, ADDRESS SHALL BE CLEARLY MARKED ON TOP OF METER BOX WITH PERMANENT MARKER.
6. BOX PIPE KNOCKOUTS TO BE GROUTED SUFFICIENTLY TO PREVENT INTRUSION OF DIRT.
7. METERS PROVIDED AND SET BY CITY AT DEVELOPERS EXPENSE.
8. ALL METER BOX LIDS SHALL INCLUDE A READING LID. SEE LID SPECIFICATIONS.

* - SEE ENGINEER'S APPROVED LIST

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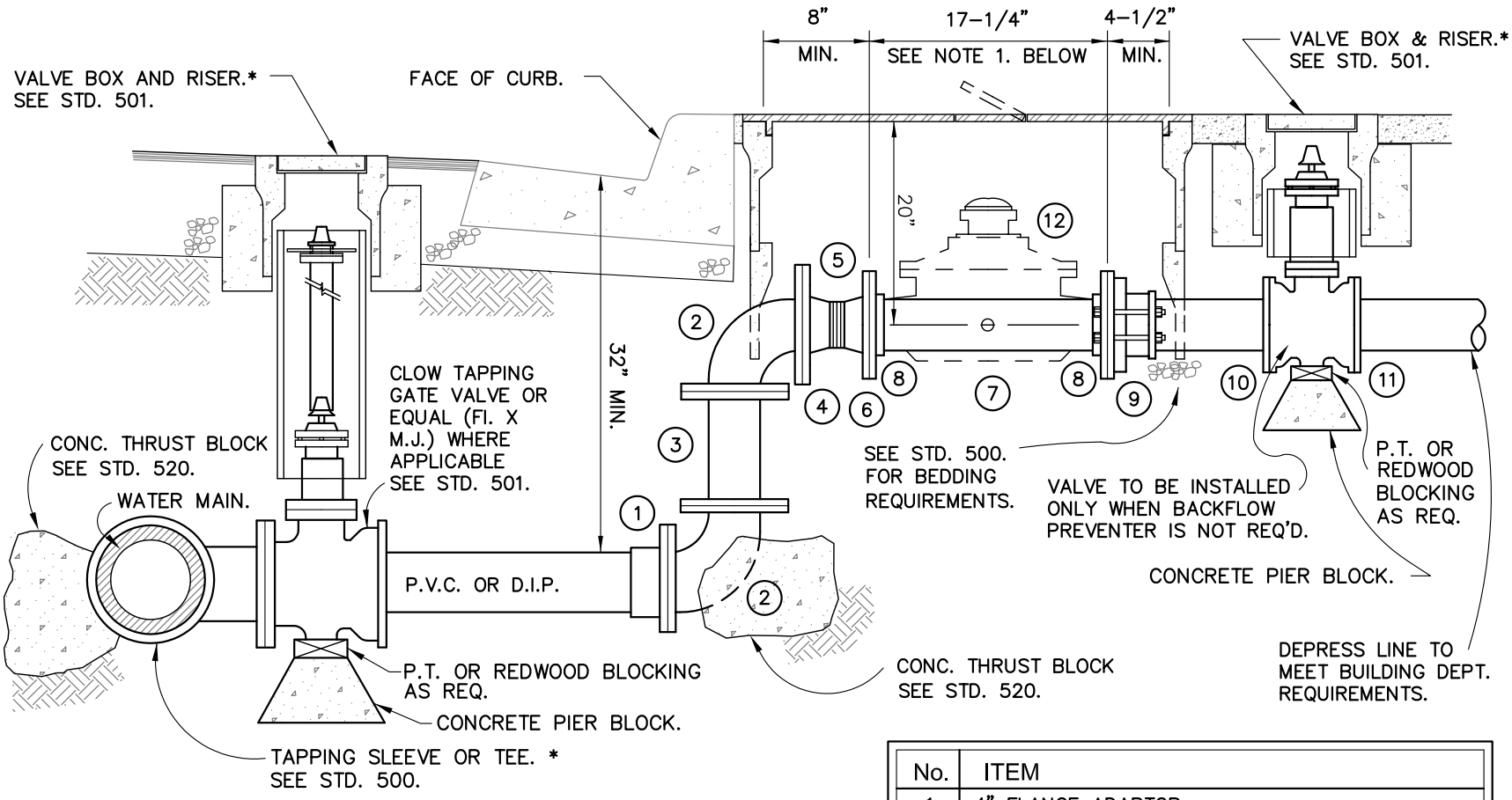
CITY OF FORT BRAGG CALIFORNIA

4" WATER SERVICE LATERAL INSTALLATION FOR 3" METER

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 506



No.	ITEM
1	4" FLANGE ADAPTOR
2	4" X 90° FLANGED ELL – SEE STD. 519.
3	4" FLANGED SPOOL – LENGTH AS REQUIRED
4	4" X 3" COMPANION FLANGE
5	3" BRASS CLOSE NIPPLE
6	3" x COMPANION FLANGE
7	3" x 17-1/4" SCHL 40 PVC PIPE (SEE NOTE 1)
8	3" SCHEDULE 80 PVC FLANGE
9	3" FLANGED COUPLING ADAPTER
10	3" P.E. x P.E. PIECE–LENGTH AS REQUIRED
11	3" AWWA RESILIENT WEDGE GATE VALVE (M.J.)
12	3" METER

NOTES:

1. SPACER SHALL BE SCHL. 40 PVC PIPE WITH 1/2" ø HOLES @ 2" O.C. (VERTICALLY DRILLED THROUGH PIPE). CITY FORCES TO REMOVE SPACER BAR & INSTALL 3" METER.
2. B40 METER BOX MUST BE SET SO THE STEEL COVER IS FLUSH WITH FINISHED SURFACE.
3. SEE STANDARD 500 FOR CONSTRUCTION NOTES.
4. PRIOR TO METER SET, ADDRESS SHALL BE CLEARLY MARKED ON TOP OF METER BOX WITH PERMANENT MARKER.
5. BOX PIPE KNOCKOUTS TO BE GROUTED SUFFICIENTLY TO PREVENT INTRUSION OF DIRT.

* – SEE ENGINEER'S APPROVED LIST

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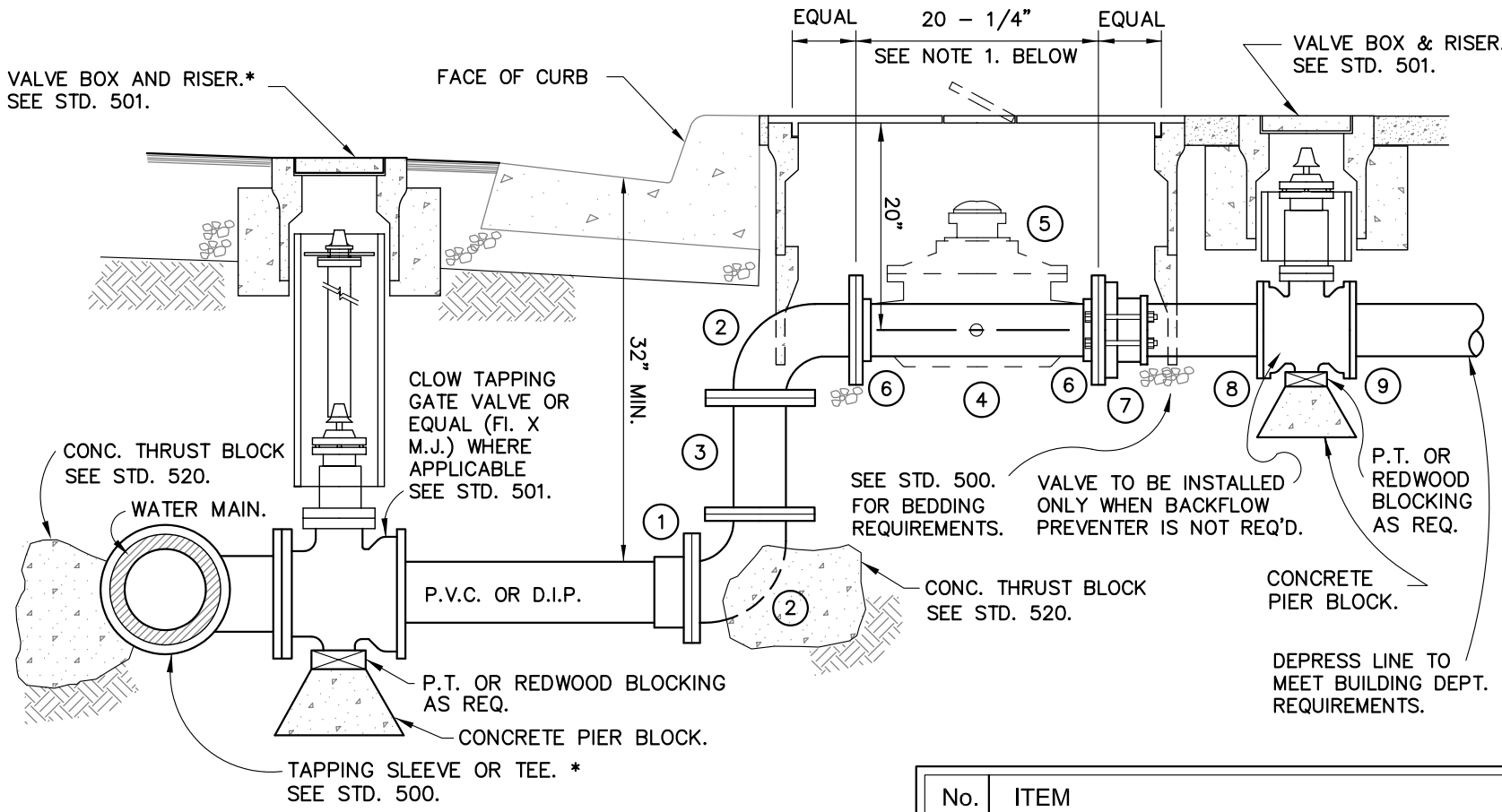
CITY OF FORT BRAGG CALIFORNIA

4" WATER SERVICE LATERAL INSTALLATION FOR 4" METER

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 507



No.	ITEM
1	4" FLANGE ADAPTOR
2	4" X 90° FLANGED ELL – SEE STD. 519.
3	4" FLANGED SPOOL – LENGTH AS REQUIRED
4	4" x 20–1/4" SCHL. 40 PVC PIPE (SEE NOTE 1)
5	4" METER
6	4" SCHEDULE 80 PVC FLANGE
7	4" UNI–FLANGE OR FI. CPLG. ADAPTER
8	4" FLANGED COUPLING ADAPTER
9	4" AWWA GATE VALVE (SEE NOTE 4)

NOTES:

1. CONTRACTOR TO INSTALL SCHL. 40 PVC PIPE SPACER WITH 1/2" ø HOLES @ 2" O.C. (VERTICALLY DRILLED THROUGH PIPE). CITY FORCES TO REMOVE SPACER BAR & INSTALL 4" WATER METER.
2. B40 METER BOX MUST BE SET SO THE STEEL COVER IS FLUSH WITH FINISHED SURFACE.
3. SEE STANDARD 500 FOR CONSTRUCTION NOTES.
4. GATE VALVES TO BE RESILIENT SEAT TYPE PER AWWA SPECIFICATION C509 – SEE STANDARD 501.
5. PRIOR TO METER SET, ADDRESS TO BE CLEARLY MARKED ON TOP OF METER BOX WITH PERMANENT MARKER.

* – SEE ENGINEER'S APPROVED LIST

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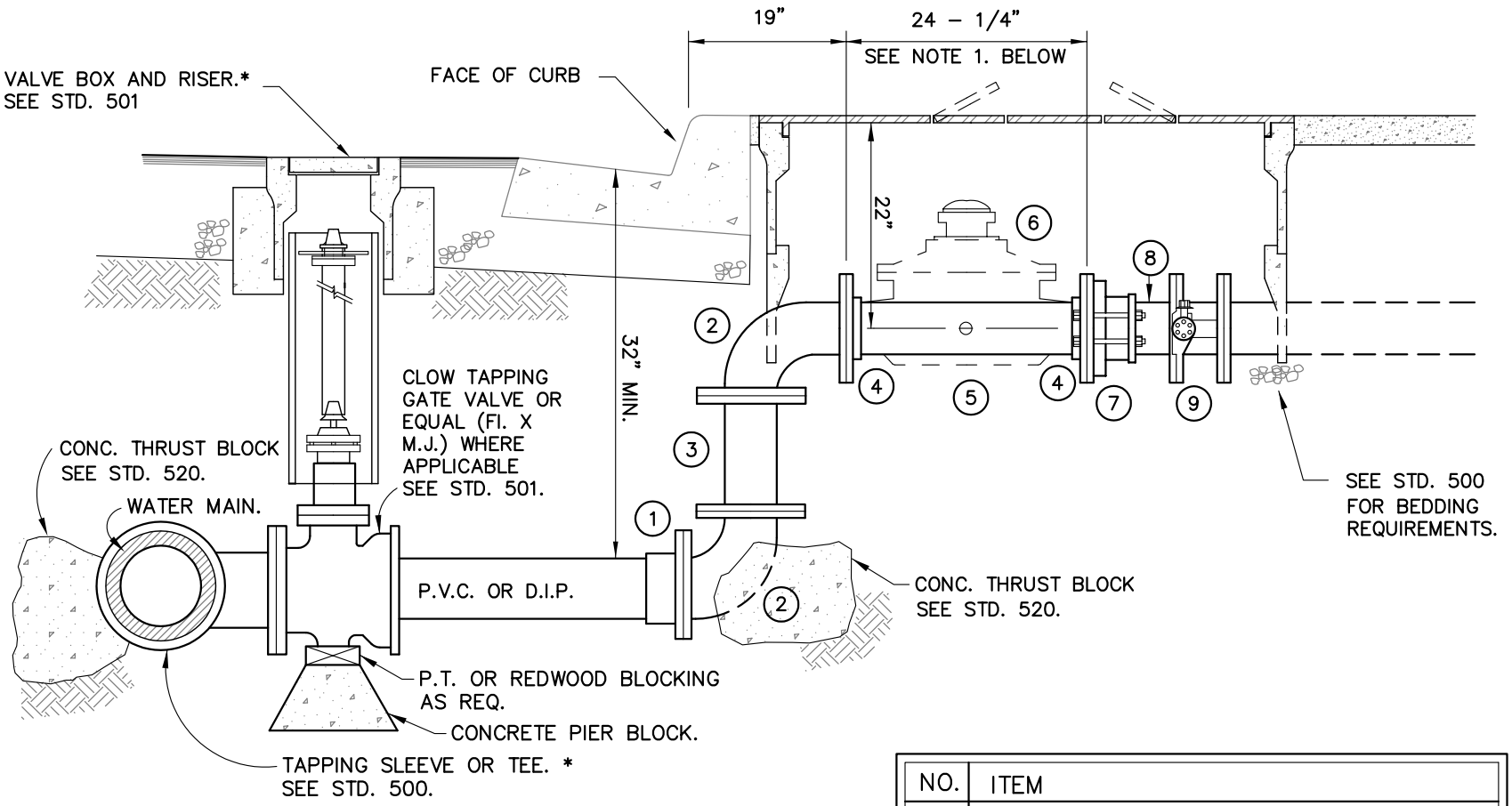
CITY OF FORT BRAGG CALIFORNIA

6" WATER SERVICE LATERAL INSTALLATION FOR 6" METER

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 508



NO.	ITEM
1	6" FLANGE ADAPTOR AS REQUIRED
2	6" X 90° FLANGED ELL
3	6" FLANGED SPOOL – LENGTH AS REQUIRED
4	6" SCHEDULE 80 PVC FLANGE
5	6" x 24–1/4" SCHL. 40 PVC PIPE (SEE NOTE 1)
6	6" TURBINE METER
7	6" FLANGED COUPLING ADAPTER
8	6" FI. x P.E. PIECE – LENGTH AS REQUIRED
9	6" BUTTERFLY VALVE

NOTES:

1. CONTRACTOR TO INSTALL SCHL. 40 PVC PIPE SPACER WITH 1/2" ø HOLES @ 2" O.C. (VERTICALLY DRILLED THROUGH PIPE). CITY FORCES TO REMOVE SPACER BAR & INSTALL 6" WATER METER.
2. METER BOX MUST BE SET SO THE STEEL COVER IS FLUSH WITH FINISHED SURFACE.
3. SEE STANDARD 500 FOR CONSTRUCTION NOTES.
4. PRIOR TO METER SET, ADDRESS TO BE CLEARLY MARKED ON TOP OF METER BOX WITH PERMANENT MARKER.

* – SEE ENGINEER'S APPROVED LIST

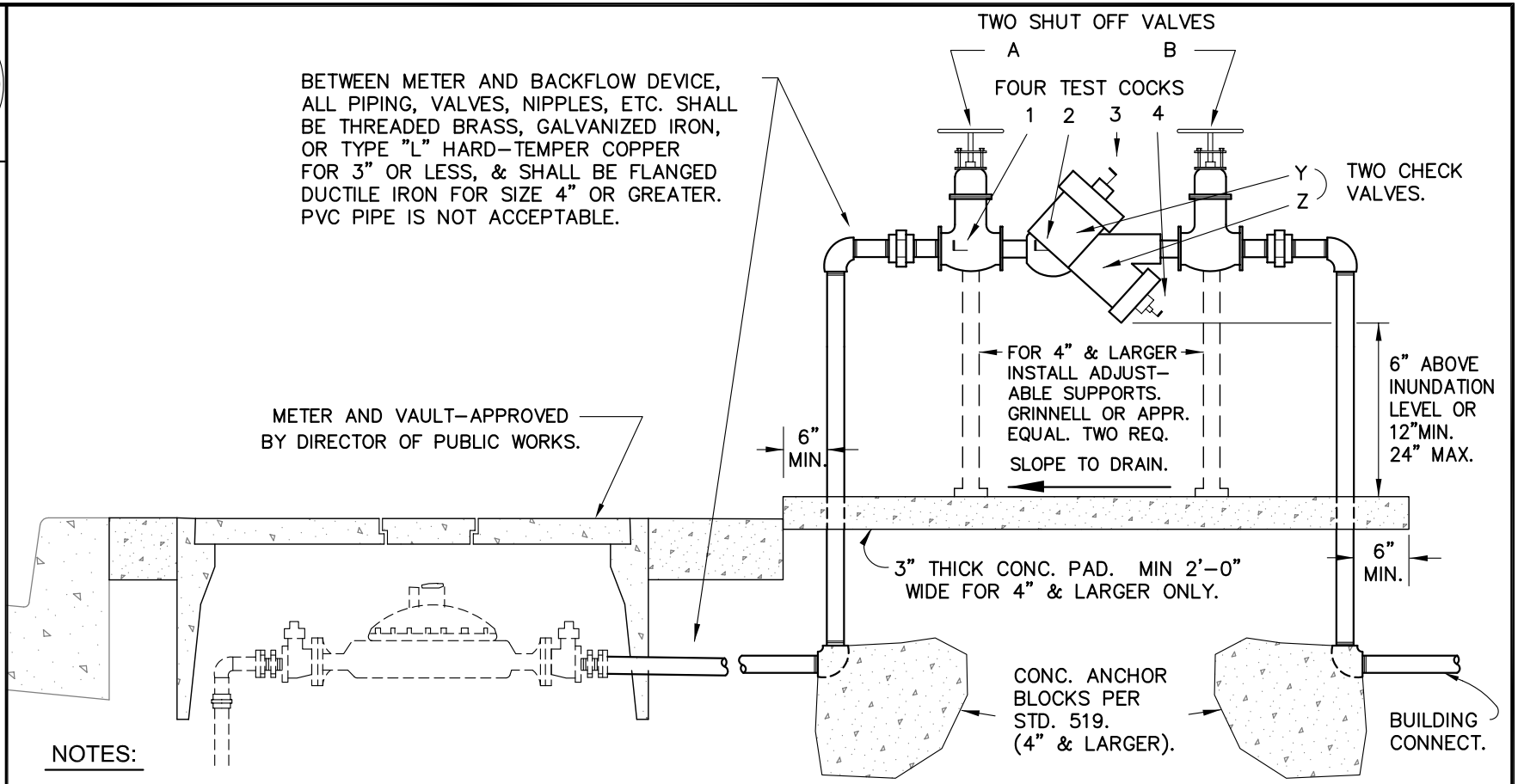
Images: windsor logo.tif; Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_4352\FortBragg500-515draft.dwg Layout Name: 510 Plot Date: Feb 02, 2009 at 16:50

CITY OF FORT BRAGG CALIFORNIA

REDUCED-PRESSURE BACKFLOW PREVENTER

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 510



NOTES:

1. REDUCED PRESSURE TYPE BACKFLOW DEVICES SHALL BE REQUIRED FOR ANY USE WHERE TOXIC MATERIALS ARE USED OR STORED ON SITE OR WHERE POSITIVE PROTECTION FOR THE PUBLIC WATER SUPPLY IS REQUIRED. TYPICAL APPLICATIONS INCLUDE: ALL IRRIGATION SERVICES & PARKS, HOSPITALS, MEDICAL & DENTAL LABORATORIES, MORTUARIES, INDUSTRIAL PLANTS, DRY CLEANERS, OR AS DETERMINED BY THE DIRECTOR OF PUBLIC WORKS.
2. APPROVED REDUCED PRESSURE BACKFLOW DEVICE SHALL BE AS SHOWN ON "LIST OF APPROVED BACKFLOW PROTECTION DEVICES" (LATEST REVISION) BY THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS-CONNECTION CONTROL & HYDRAULIC RESEARCH.
3. BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED ADJACENT TO AND ON PROPERTY SIDE OF SIDEWALK WHERE APPLICABLE. WHERE NO SIDEWALK EXISTS THE ASSEMBLY SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE WATER METER LOCATION..
4. A VALVE OF THE SAME SIZE AS THE BACKFLOW PREVENTER SHALL BE INSTALLED ON EACH SIDE OF THE BACKFLOW PREVENTION ASSEMBLY. VALVES 2" & LESS SHALL BE THREADED FORD BALL VALVES. VALVES 3" SHALL BE WATTS BALL VALVES, AND 4" & LARGER SHALL BE RESILIENT SEATED GATE VALVES.
5. ANY COVER OR SCREENING FOR THE BACKFLOW PREVENTION ASSEMBLY MUST BE APPROVED BY THE DIRECTOR OF PUBLIC WORKS PRIOR TO INSTALLATION.
6. SEE STANDARD 500 FOR CONSTRUCTION NOTES.
7. IN LIMITED SPACE APPLICATIONS VALVES MAY BE INSTALLED ON RISERS, MIN. 4" ABOVE GRADE.
8. THE ADDITION OF SPOOLS MUST BE APPROVED BY THE CITY INSPECTOR PRIOR TO INSTALLATION.
9. THE PIPING FROM THE REDUCED PRESSURE BACKFLOW PREVENTER & THE REDUCED PRESSURE BACKFLOW PREVENTER VALVE ASSEMBLY ITSELF MUST BE THE SAME SIZE AS THE SERVICE LINE UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

Images: windsor logo.tif; Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_4352\FortBragg500-515draft.dwg Layout Name: 511 Plot Date: Feb 02, 2009 at 16:50

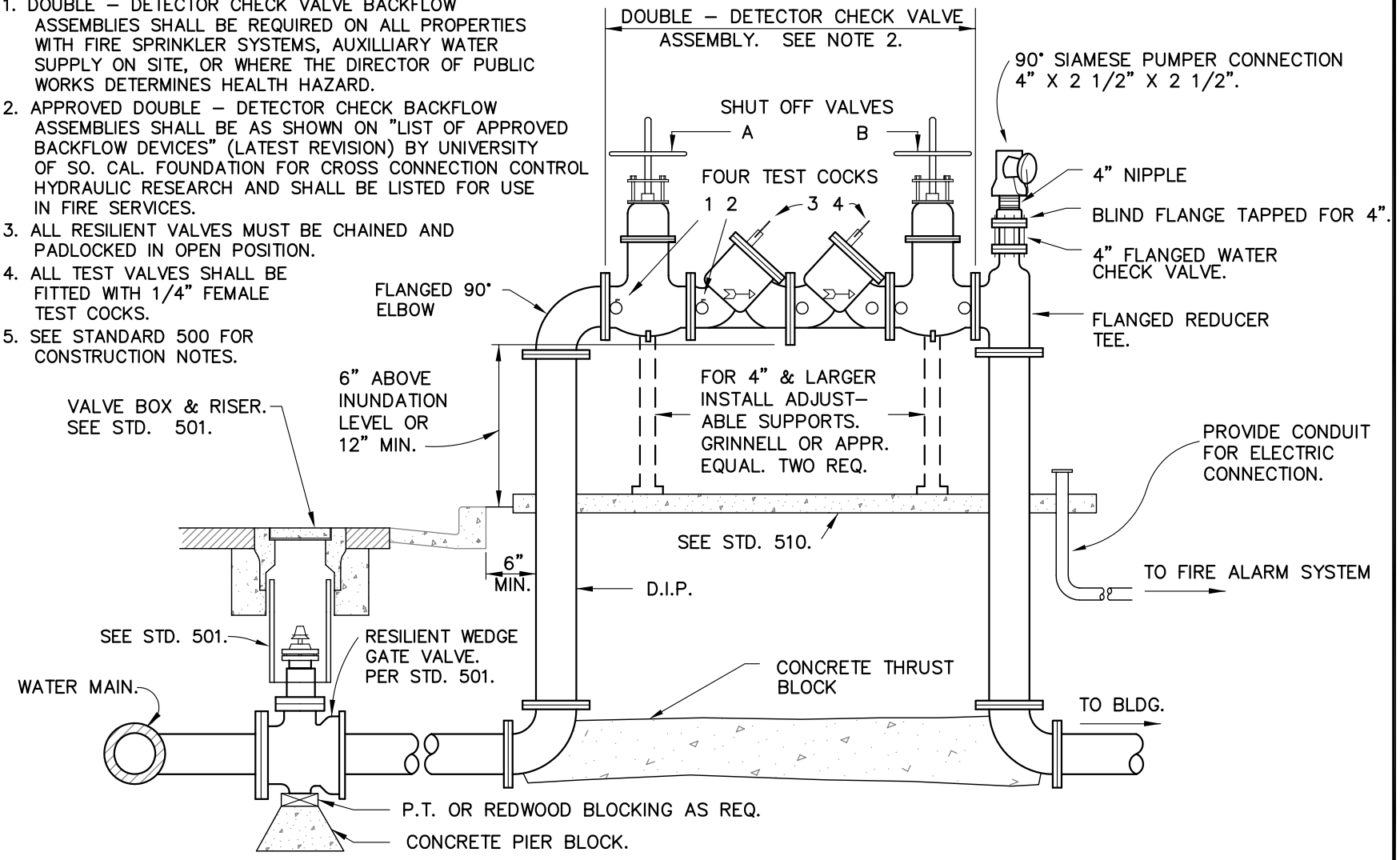
FIRE SERVICE CHECK VALVE
SINGLE SERVICE

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 511

NOTES:

1. DOUBLE – DETECTOR CHECK VALVE BACKFLOW ASSEMBLIES SHALL BE REQUIRED ON ALL PROPERTIES WITH FIRE SPRINKLER SYSTEMS, AUXILLIARY WATER SUPPLY ON SITE, OR WHERE THE DIRECTOR OF PUBLIC WORKS DETERMINES HEALTH HAZARD.
2. APPROVED DOUBLE – DETECTOR CHECK BACKFLOW ASSEMBLIES SHALL BE AS SHOWN ON "LIST OF APPROVED BACKFLOW DEVICES" (LATEST REVISION) BY UNIVERSITY OF SO. CAL. FOUNDATION FOR CROSS CONNECTION CONTROL HYDRAULIC RESEARCH AND SHALL BE LISTED FOR USE IN FIRE SERVICES.
3. ALL RESILIENT VALVES MUST BE CHAINED AND PADLOCKED IN OPEN POSITION.
4. ALL TEST VALVES SHALL BE FITTED WITH 1/4" FEMALE TEST COCKS.
5. SEE STANDARD 500 FOR CONSTRUCTION NOTES.



NOTES (CONT):

6. DOUBLE DETECTOR CHECK ASSEMBLY SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE SIDEWALK OR PUBLIC RIGHT-OF-WAY.
7. ANY COVER OR SCREENING FOR THIS ASSEMBLY MUST HAVE BOTH FIRE DEPARTMENT & ENGINEER'S APPROVAL PRIOR TO INSTALLATION.
8. SHUT-OFF VALVES TO BE RESILIENT WEDGE TYPE O.S. & Y.
9. MUST ALSO MEET THE REQUIREMENTS OF THE FIRE DEPARTMENT.
10. TO BE USED ONLY ON SPECIFIC APPROVAL OF THE FIRE DEPARTMENT.

Images: windsor logo.tif; Xrefs:
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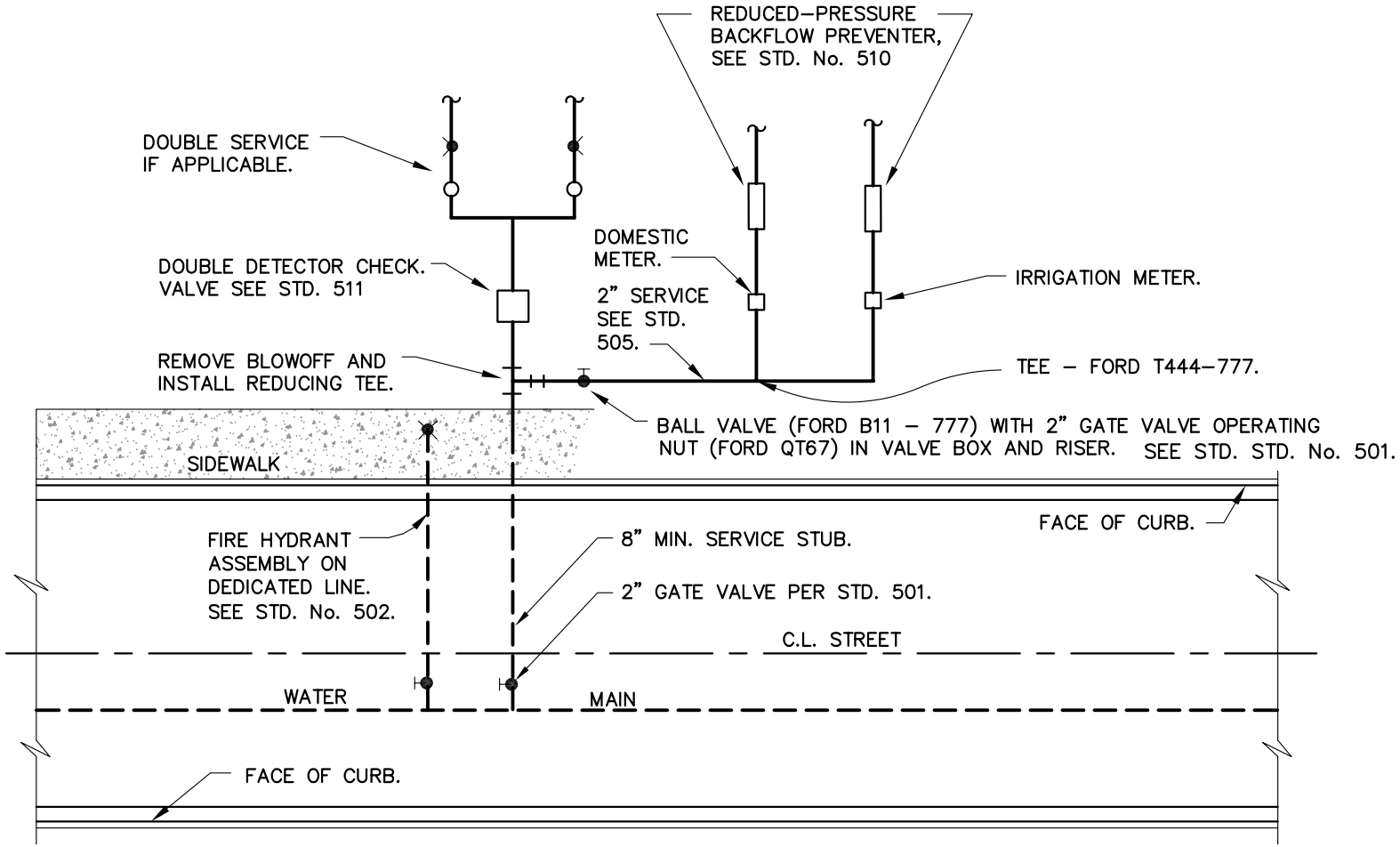
NOTES:

1. INSTALL FIRE HYDRANT WITHIN 50 FEET OF SIAMESE PUMPER CONNECTION, AS SHOWN ON APPROVED PLANS.
2. LOCATION TO BE APPROVED BY THE CITY AND FIRE DISTRICT.
3. HYDRANT, METER, DOUBLE DETECTOR CHECK & REDUCED PRESSURE BACKFLOW PREVENTER SHALL BE LOCATED PER CORRESPONDING STANDARD Nos., 502, 503, 505, 510, 511.



SINGLE COMBINATION WATER SERVICE

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

SINGLE COMBINATION WATER SERVICE

STD. NO. 513

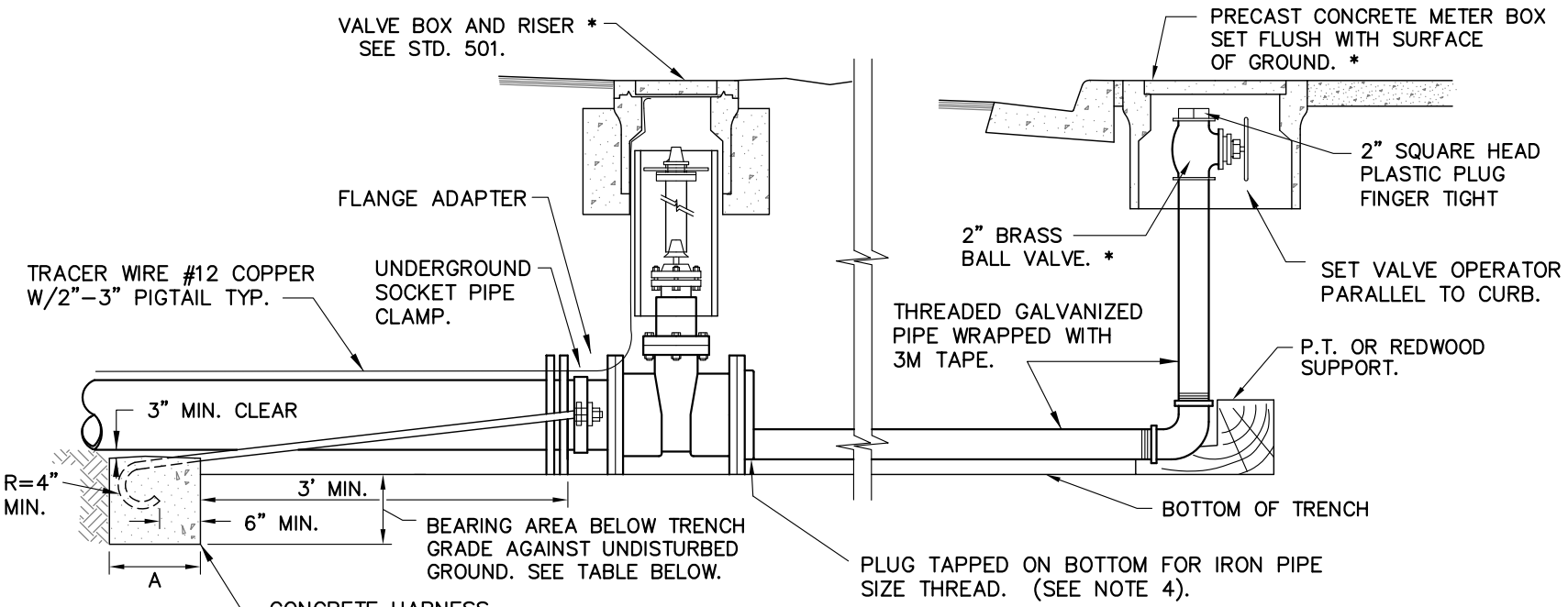
Images: windsor logo.tif; Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_4352\FortBragg500-515draft.dwg Layout Name: 515 Plot Date: Feb 02, 2009 at 16:50

CITY OF FORT BRAGG CALIFORNIA

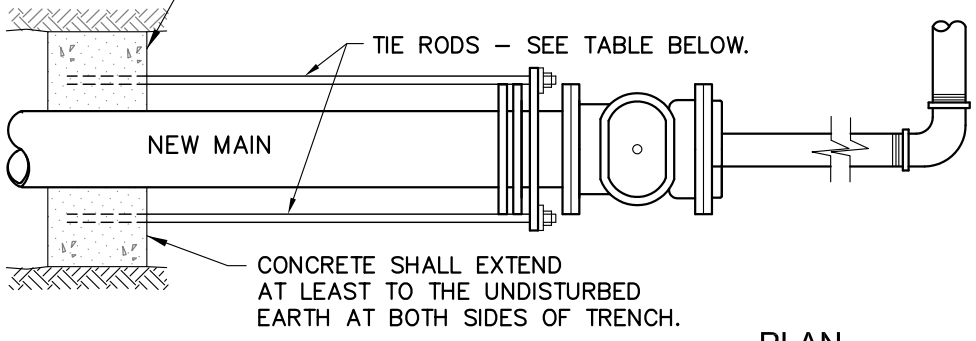
SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

TEMPORARY BLOWOFF WITH MAIN LINE VALVE

STD. NO. 515



ELEVATION



PLAN

MINIMUM DIMENSIONS				
PIPE SIZE	TIE RODS	BEARING AREA	A	SIZE B.O.
6"	5/8"	4 SQ. FT.	2'	2"
8"	3/4"	7 " "	3'	2"
12"	1 1/8"	15 " "	3'	3"
OVER 12"	BY THE DESIGN ENGINEER			

NOTES:

1. TO BE INSTALLED IN CASES WHERE MAIN MAY BE EXTENDED IN FUTURE AND NO VALVE EXISTS WITHIN 250 FEET.
2. BLOW-OFF SHALL NOT BE INSTALLED WITHIN THE TRAVELED WAY. IF THE MAIN ENDS WITHIN STREET AREA, BLOW-OFF TO BE EXTENDED TO AN AREA OUTSIDE OF THE TRAVELED WAY. LID TO BE HIGHWAY GRADE WITH LOCKDOWN CAPABILITY.
3. FOR 12" PIPE SIZE OR LARGER USE FLxFL MAIN LINE VALVE, PER STD. 502, & FLxMJ ADAPTER & MJ PLUG TAPPED AT BOTTOM FOR B.O.
4. ALL EXPOSED THREADS SHALL BE PAINTED WITH BITUMASTIC PAINT OR APPROVED SUBSTITUTE, AFTER NUTS ARE TIGHTENED.
5. IF MJxMJ GATE VALVE IS USED, RESTRAINING RODS SHALL BE RUN TO UPSTREAM GLAND AND ATTACHED WITH "DILLIE LUG" - (AKA STAR BOLT).

* - SEE ENGINEER'S APPROVED LIST

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 516 Plot Date: Feb 02, 2009 at 17:44

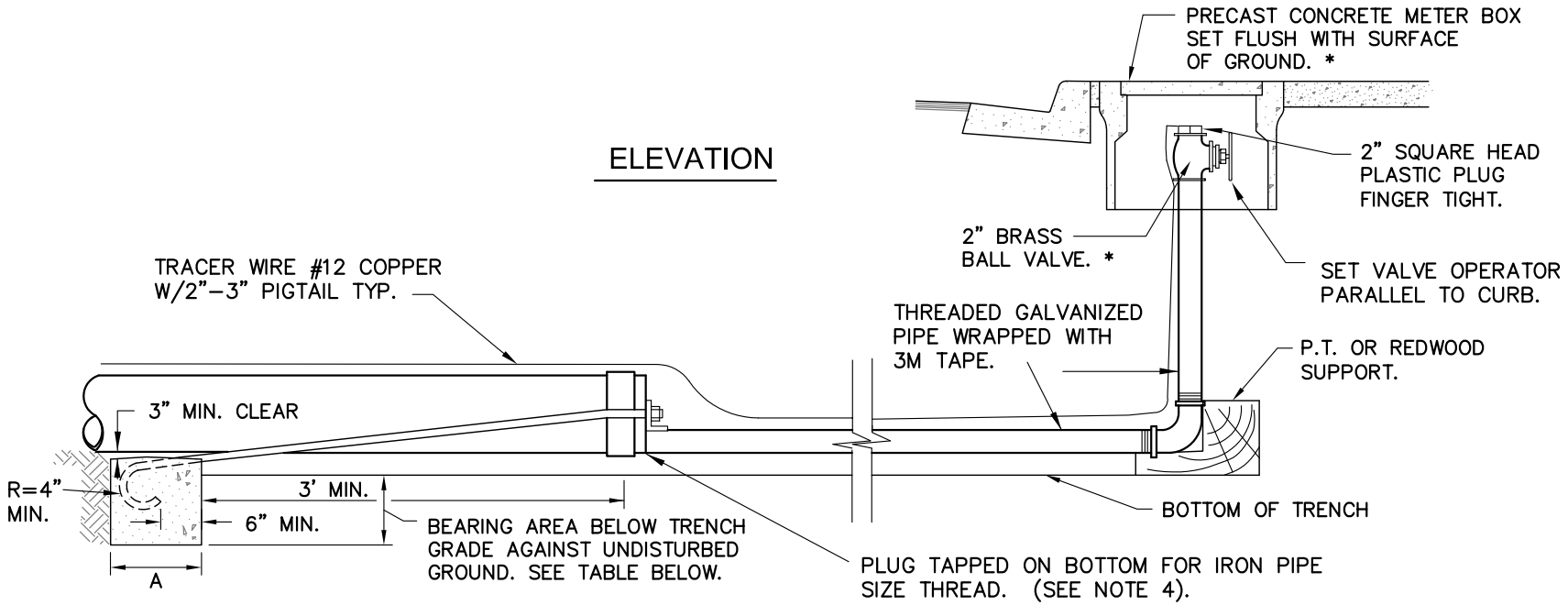
CITY OF FORT BRAGG CALIFORNIA

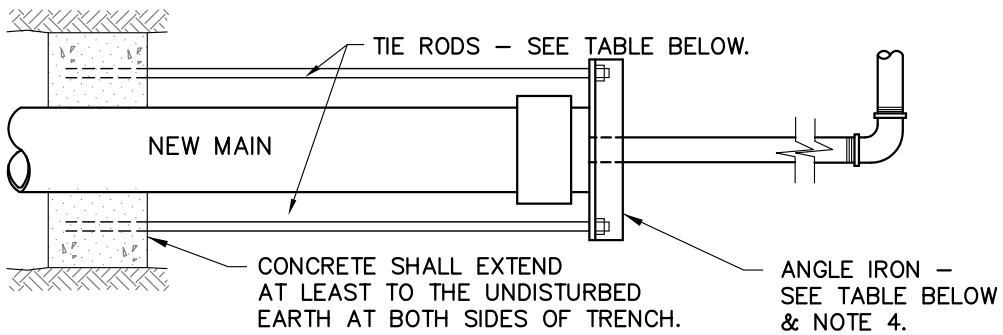
SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

BLOWOFF WITH HARNESS

STD. NO. 516

ELEVATION





PLAN

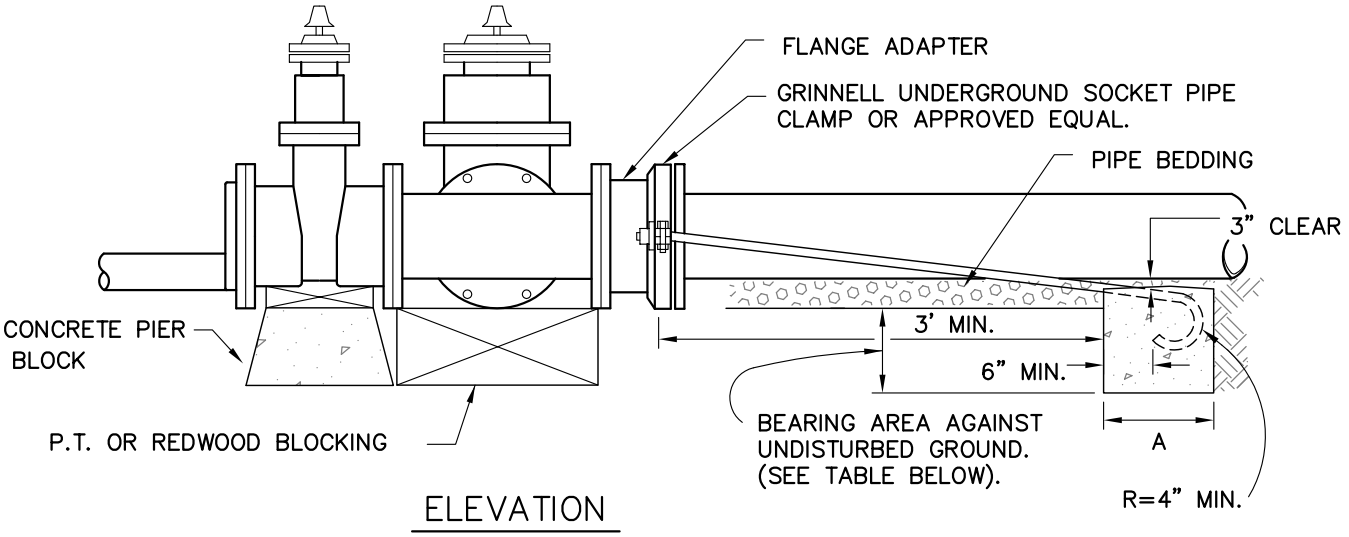
MINIMUM DIMENSIONS					
PIPE SIZE	TIE RODS	ANGLE IRON	BEARING AREA	A	SIZE B.O.
6"	5/8"	3"x3"x1/4"**	4 SQ. FT.	2'	2"
8"	3/4"	3–1/2"x3"x1/4"**	7 " "	3'	2"
12"	1 1/8"	4"x3"x1/2"	15 " "	3'	3"
OVER 12"	BY THE DESIGN ENGINEER				

** SEE NOTE 4.

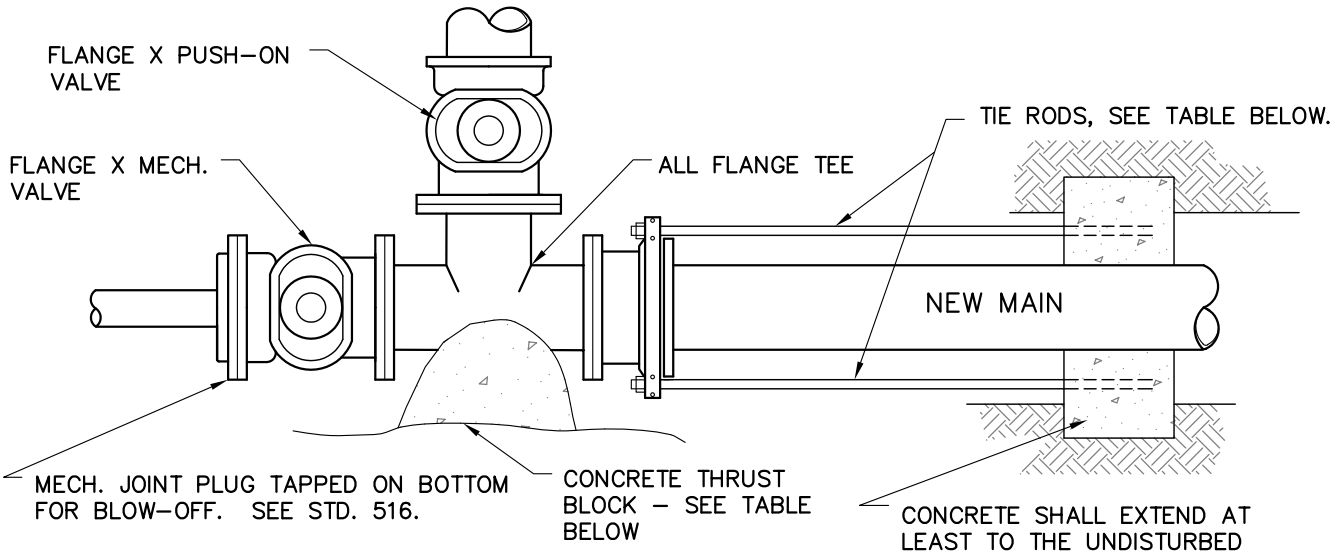
NOTES:

1. SEE STD. 500 FOR CONSTRUCTION NOTES.
2. ALL EXPOSED THREADS SHALL BE PAINTED WITH BITUMASTIC PAINT OR APPROVED SUBSTITUTE AFTER NUTS ARE TIGHTENED.
3. MAINS 8" & SMALLER SHALL HAVE 2" BLOW–OFFS. MAINS 12" & LARGER SHALL HAVE 3" BLOW–OFFS. SEE TABLE BELOW.
4. FOR 6" & 8" MAINS, M.J. PLUGS WITH DILLY LUGS AND 2" CENTER TAP MAY BE USED IN LIEU OF ANGLE IRON.
5. BLOW–OFF SHALL NOT BE INSTALLED WITHIN THE TRAVELED WAY. IF MAIN ENDS WITHIN STREET AREA, BLOW–OFF TO BE EXTENDED TO AREA OUTSIDE OF TRAVELED WAY AND INSTALLED AS SHOWN ABOVE.

* – SEE ENGINEER'S APPROVED LIST



ELEVATION



PLAN

MINIMUM DIMENSIONS				
PIPE SIZE	TIE RODS	HARNESS BLOCK *	A	THRUST BLOCK **
6"	5/8"	4 SQ. FT.	2'	4 SQ. FT.
8"	3/4"	7 " "	3'	7 " "
12"	1 1/8"	15 " "	3'	15 " "
OVER 12" BY THE DESIGN ENGINEER				

NOTE:

ALL EXPOSED THREADS SHALL BE PAINTED WITH BITUMASTIC PAINT OR APPROVED SUBSTITUTE, AFTER NUTS ARE TIGHTENED.

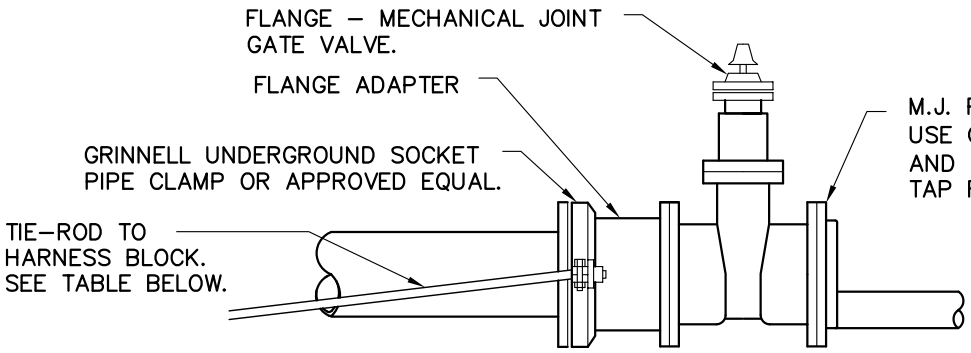
* BEARING AREA BELOW GRADE OF PIPE AGAINST UNDISTURBED GROUND.
** BEARING AREA AGAINST UNDISTURBED GROUND.

HARNESS INSTALLATION FOR FLANGE FITTINGS

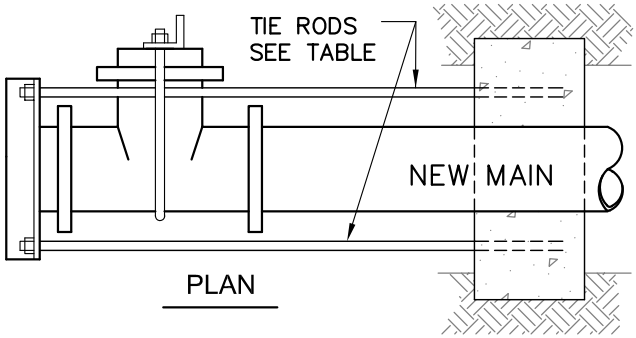
STD. NO. 517

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 517 Plot Date: Feb 02, 2009 at 17:44

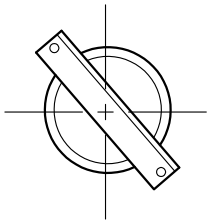


HARNESS FOR VALVE WITH PLUG

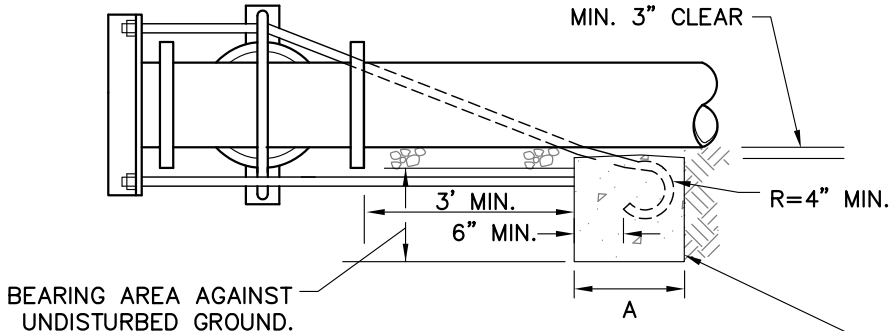


PLAN

PLUGS FOR MAINS 12" AND LARGER SHALL BE TAPPED OFF CENTER AND HELD WITH ANGLE IRON, AS SHOWN. PLUGS WITH EARS AND CENTER TAP MAY BE USED FOR 6" & 8" MAINS.



CONCRETE SHALL EXTEND AT LEAST TO THE UNDISTURBED EARTH AT BOTH SIDES OF THE TRENCH.



ELEVATION

MINIMUM DIMENSIONS				
PIPE SIZE	TIE RODS	ANGLE IRON	* HARNESS BLOCK	A
6"	5/8"	3"X3"X1/4"	4 SQ. FT.	2'
8"	3/4"	3–1/2"X3"X1/4"	7 " "	3'
12"	1–1/8"	4"X3"X1/2"	15 " "	3'
OVER 12"	BY THE DESIGN ENGINEER			

* BEARING AREA BELOW GRADE OF PIPE AGAINST UNDISTURBED GROUND.

TYPICAL FITTING HARNESS

NOTE:

ALL EXPOSED THREADS SHALL BE PAINTED WITH BITUMASTIC PAINT OR OR APPROVED SUBSTITUTE, AFTER NUTS ARE TIGHTENED.

HARNESS INSTALLATION

STD. NO. 518

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 518 Plot Date: Feb 02, 2009 at 17:44

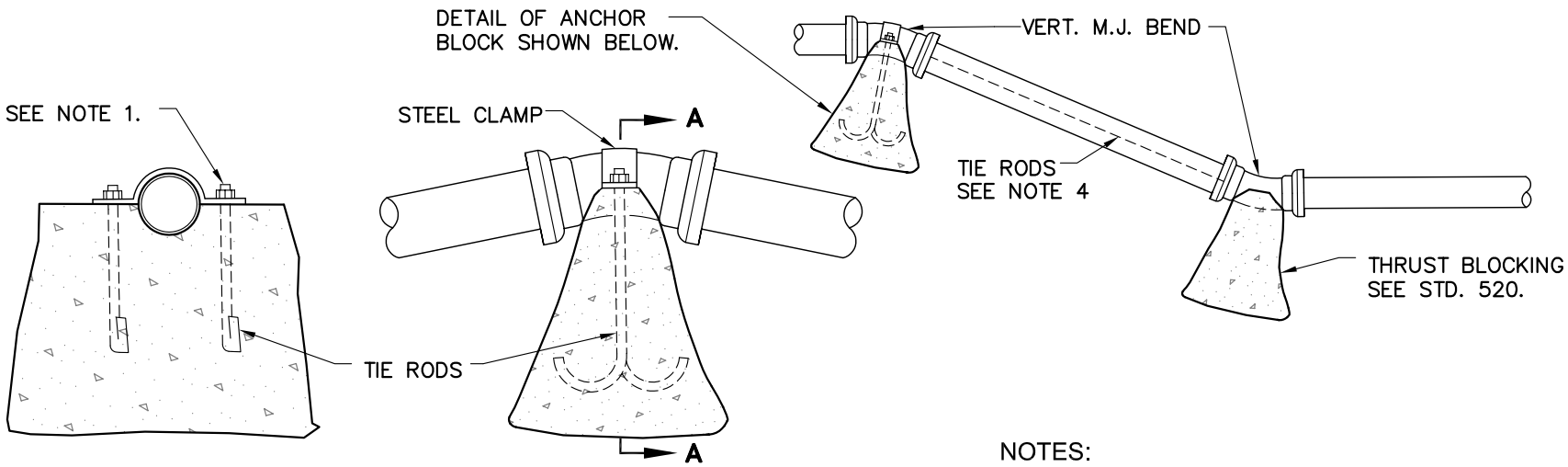
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 519 Plot Date: Feb 02, 2009 at 17:44

CITY OF FORT BRAGG CALIFORNIA

CONCRETE ANCHOR BLOCKS FOR VERTICAL BENDS

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 519



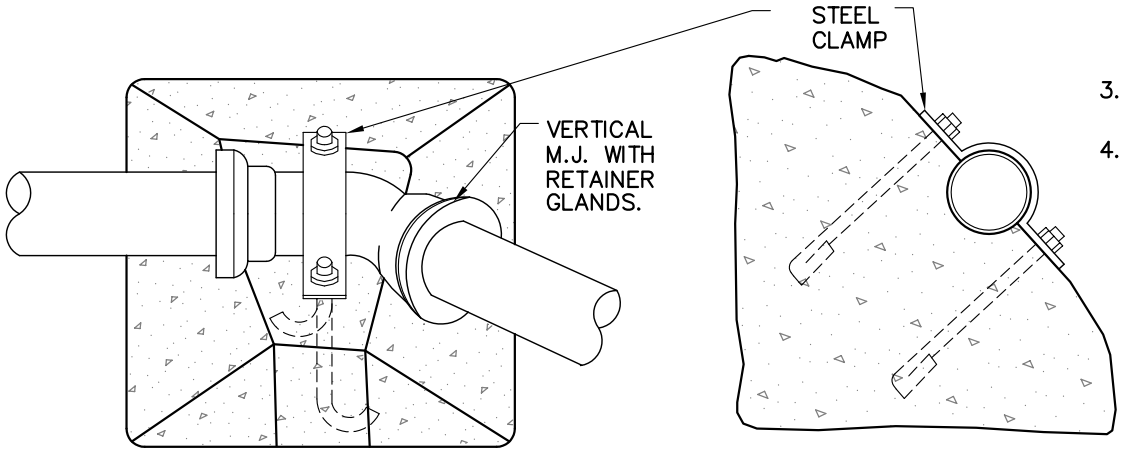
SECTION "A-A"

ELEVATION

TYPICAL CONCRETE ANCHOR BLOCK FOR VERTICAL BEND

NOTES:

1. ALL EXPOSED THREADS SHALL BE PAINTED WITH BITUMASTIC OR APPROVED EQUAL, AFTER NUTS ARE TIGHTENED.
2. CONCRETE ANCHOR BLOCKS SHALL BE INSTALLED BY THE CONTRACTOR TO WITHSTAND A THRUST PRODUCED BY THE TEST PRESSURE PLUS 50 P.S.I. MINIMUM DIMENSIONS FOR TIE RODS AND CLAMPS ARE LISTED IN THE TABLE BELOW.
3. USE MECHANICAL JOINT RETAINER GLANDS AT ALL FITTINGS.
4. FOR PVC PIPE, TIE RODS (THREADED FULL LENGTH) BETWEEN FITTINGS (MIN. 2 REQD.) MAY BE USED IN LIEU OF RETAINING GLANDS.



TYPICAL CONCRETE ANCHOR BLOCK FOR COMBINATION HORIZONTAL-VERTICAL BEND

PIPE SIZE	TIE RODS	STEEL CLAMPS
6"	5/8"	3" X 1/4"
8"	3/4"	3-1/4" X 1/4"
12"	1-1/4"	4" X 1/2"

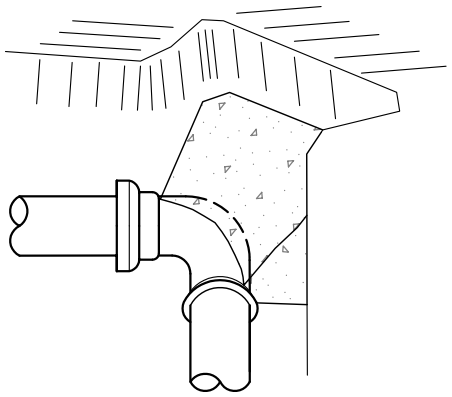
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 520 Plot Date: Feb 02, 2009 at 17:44

CITY OF FORT BRAGG CALIFORNIA

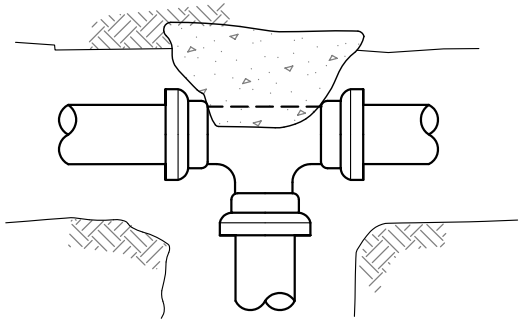
SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

CONCRETE THRUST BLOCK

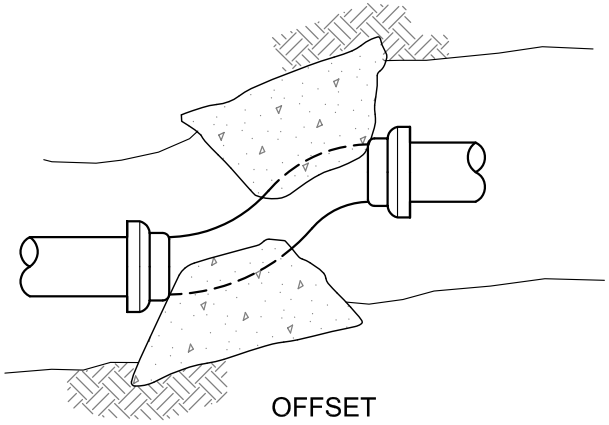
STD. NO. 520



BEND

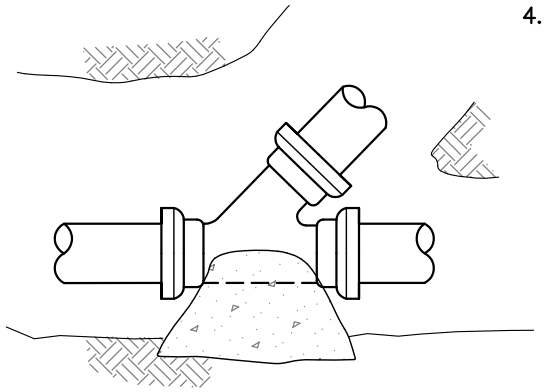


TEE



OFFSET

TYPICAL CONC. BLOCKING SHOWN IN PERSPECTIVE



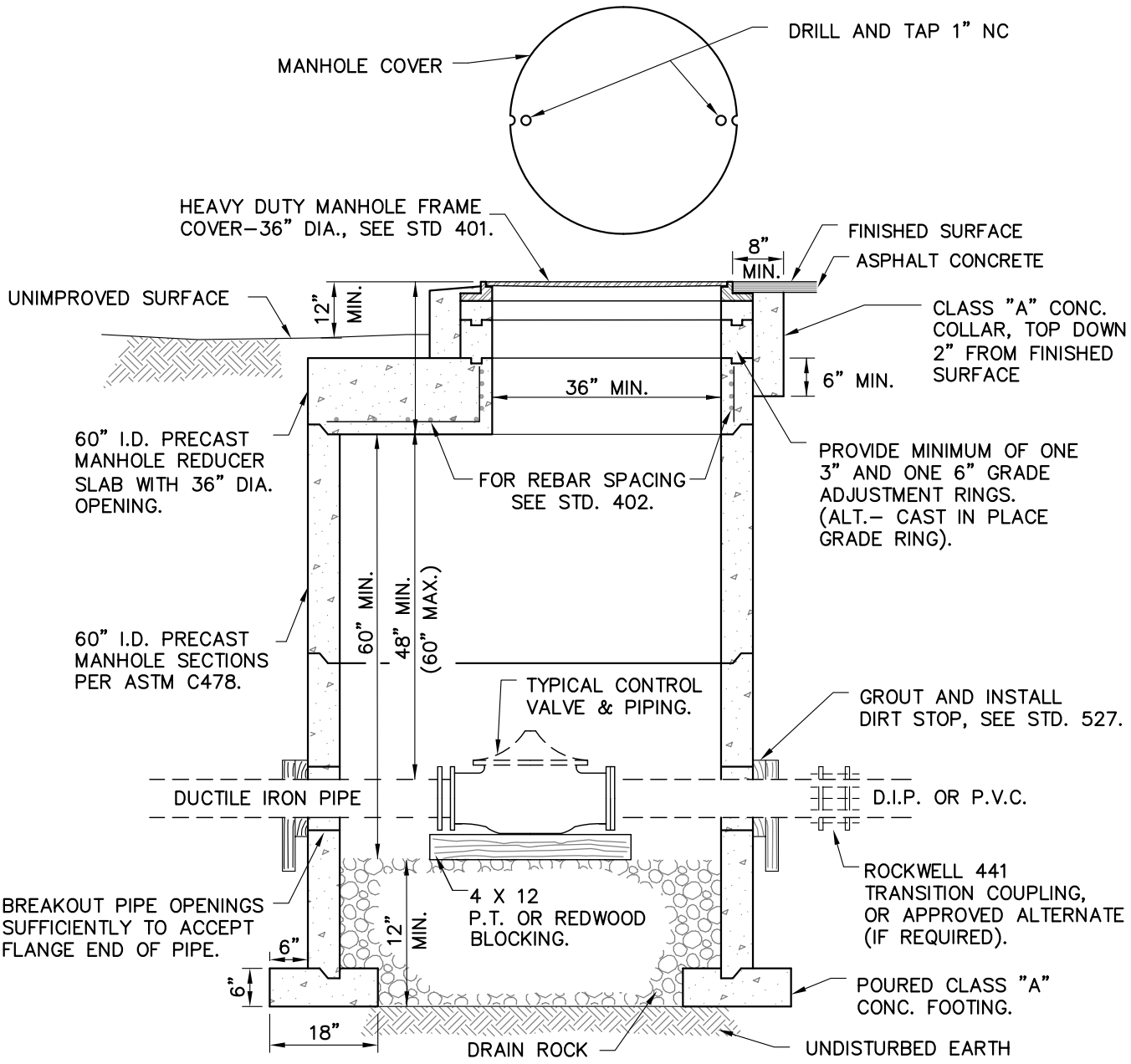
WYE

NOTES:

1. SAFE BEARING LOAD OF SOIL FOR HORIZONTAL THRUST SHALL NOT BE EXCEEDED.
2. CONCRETE BLOCKING, CAST–IN–PLACE, TO EXTEND FROM BELLS OF FITTINGS TO UNDISTURBED SOIL AND ENTIRE BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
3. IN USING THE THRUST BLOCKING TABLE BELOW, ASSUME 2000 P.S.F. BEARING CAPACITY UNLESS OTHERWISE SHOWN ON THE PLANS. THE DESIGN ENGINEER SHALL SPECIFY THRUST BLOCKING REQUIREMENTS FOR ALL OTHER SOIL BEARING CONDITIONS.
4. FOR PLUGGED LEG(S) OF TEE OR CROSS, USE HARNESS TYPE BLOCKING AS SHOWN ON STD. 516 AND CONCRETE BLOCKING INDICATED IN TABLE BELOW.

MIN. REQ'D BEARING AREA IN SQ. FT. PER 100 P.S.I. TEST PRESSURE *						
PIPE SIZE	SOIL BEARING CAPACITY	HARNESS BLOCKS	TEES & DEAD ENDS	90° BENDS	45° BENDS	22–1/2° BENDS
6"	1000 2000	4 2	4 2	6 3	3 2	2 1
8"	1000 2000	7 4	7 4	10 5	5 3	3 2
12"	1000 2000	16 8	16 8	22 11	12 6	6 3

* MULTIPLY NO. IN TABLE BY TEST PRESSURE & DIVIDE BY 100.



NOTES:

1. PRIOR APPROVAL OF THE USE OF THE MANHOLE–STYLE VAULT MUST BE OBTAINED FROM THE CITY FOR THE SPECIFIC SIZE AND MODEL VALVE OR APPURTENANCE TO BE INSTALLED.
2. THE MINIMUM MANHOLE I.D. SHALL BE 60".
3. ALL REDUCERS SHALL BE SLAB–STYLE. CONE–TYPE REDUCERS ARE NOT ACCEPTABLE.
4. ALL GATE VALVES SHALL BE INSTALLED ON EXTERIOR OF THE MANHOLE PER STD. 501.
5. SET ALL MANHOLE SECTIONS AND GRADE RINGS IN PLASTIC GASKET, RAM–NEK OR APPROVED ALTERNATES.
6. WHERE POSSIBLE, INSTALL P.V.C. DRAIN PIPE FROM BASE OF MANHOLE TO DAYLIGHT OR TO STORM DRAIN.
7. SEE GENERAL CONSTRUCTION NOTES.
8. IN DESIGNATED FLOOD PLAIN AREAS, A WATERTIGHT MANHOLE SHALL BE INSTALLED WITH CONC. BASE.

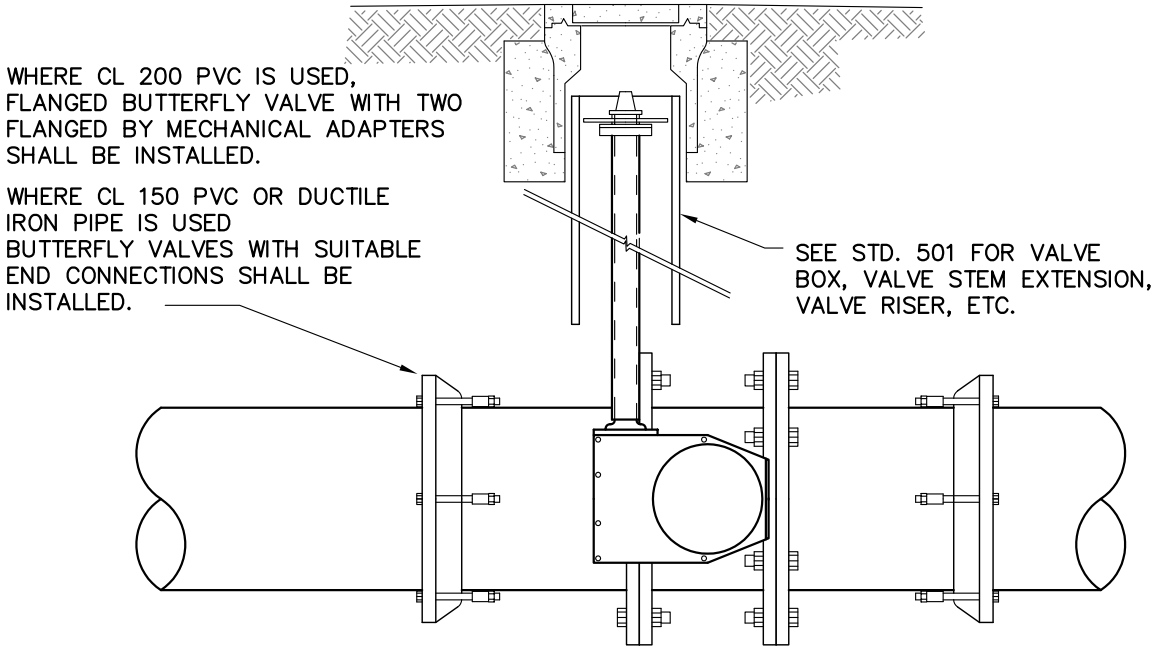
CITY OF FORT BRAGG CALIFORNIA

TRAFFIC – TYPE PRECAST WATER UTILITY MANHOLE

STD. NO. 521

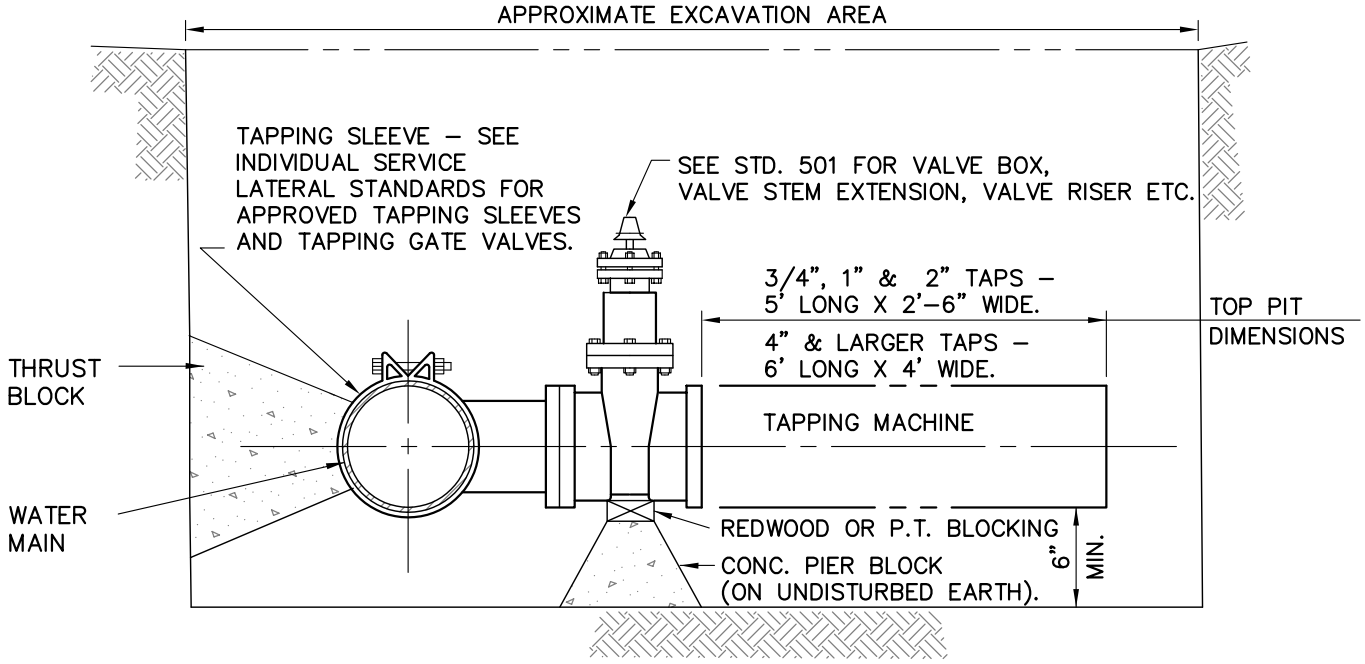
SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 521 Plot Date: Feb 02, 2009 at 17:44



BUTTERFLY VALVE INSTALLATION

TO BE USED ON PIPE 18" AND LARGER



TAPPING SLEEVE & VALVE INSTALLATION

NOTES:

1. ALL EXTERNAL BOLTS AND NUTS ON VALVES SHALL BE 304 STAINLESS STEEL OR VALVE ASSEMBLY SHALL BE POLY–WRAPPED.
2. TAPS SHALL BE MADE BY CONTRACTOR UNDER CITY INSPECTION.
3. ALL BUTTERFLY VALVES SHALL CONFORM TO CITY SPECIFICATIONS.

CITY OF FORT BRAGG CALIFORNIA

INSTALLATION OF BUTTERFLY VALVE AND TAPPING VALVE

STD. NO. 522

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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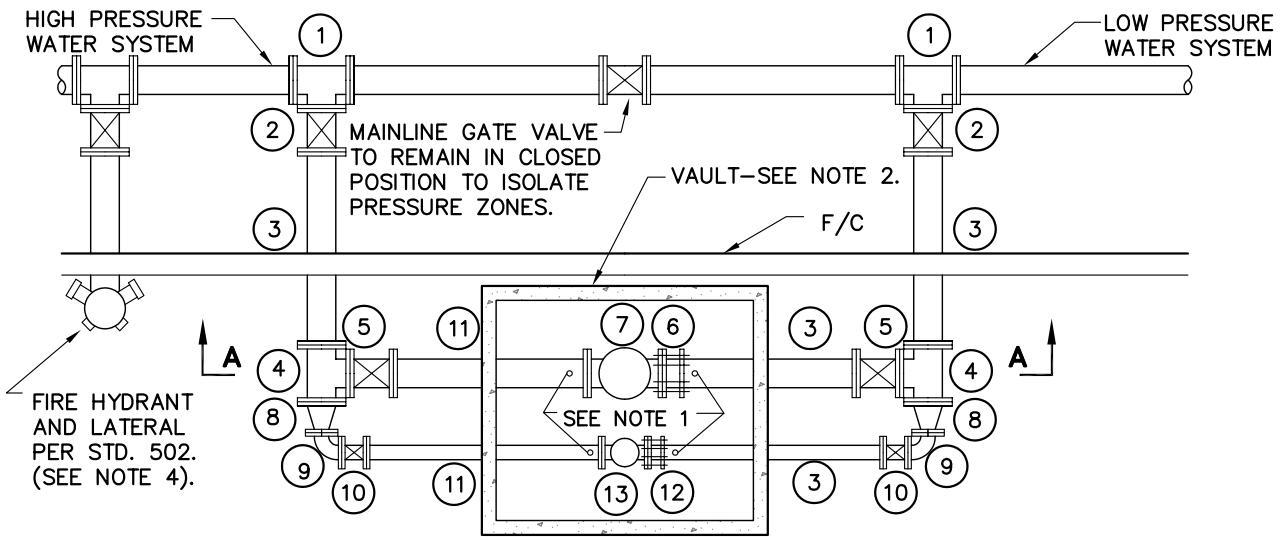
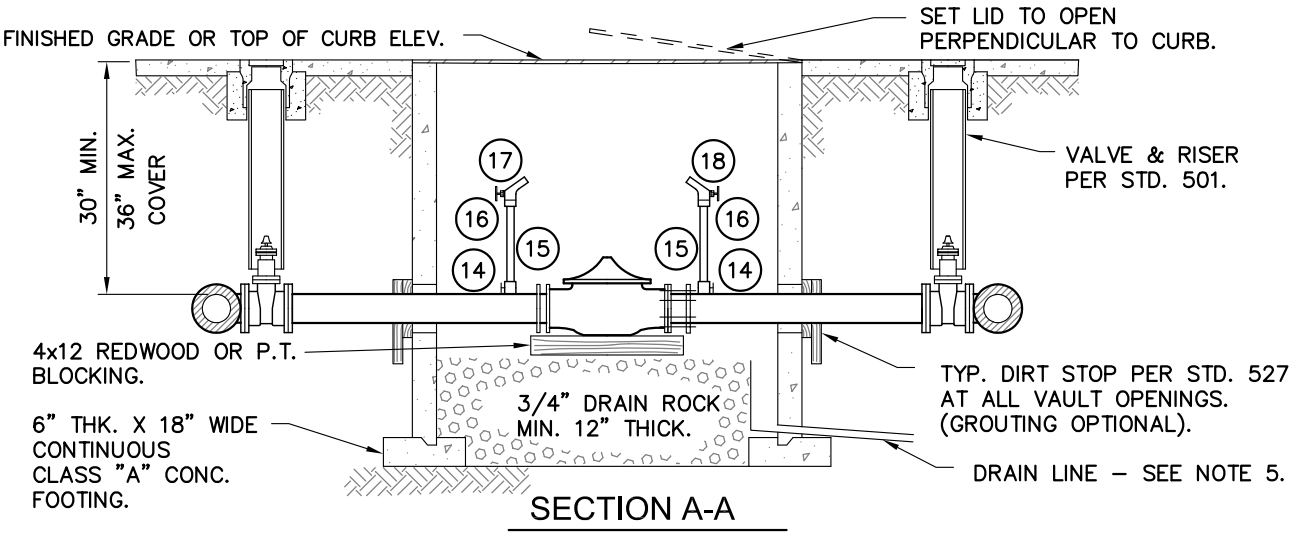


PLAN VIEW



SECTION A-A

NOTES:

1. MAKE 3/4" TOP TAP – INSTALL RISER AS SHOWN FOR PRESSURE CHECKING.
2. THE PRECAST VAULT & PRESSURE REDUCING VALVES SHALL BE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
3. THE LOW FLOW BY–PASS (PART NUMBERS 8–13) SHALL BE INSTALLED UNLESS OTHERWISE APPROVED BY THE CITY. IF A SINGLE P.R.V. IS INSTALLED, CENTER IN VAULT AND CHANGE NUMBER 4 PARTS TO 90° FLANGED ELLS.
4. INSTALL FIRE HYDRANT ONLY WHEN REQUIRED BY THE CITY.
5. RUN 2" SCHEDULE 40 P.V.C. DRAIN PIPE FROM A PERFORATED SUMP CANISTER TO AN EXISTING DRAINAGE SYSTEM OR TO DAYLIGHT.
6. VALVES 18" AND LARGER SHALL BE BUTTERFLY VALVES. VALVES 16" AND SMALLER SHALL BE RESILIENT WEDGE GATE VALVES.
7. SEE GENERAL CONSTRUCTION NOTES.
8. ALL PRESSURE REDUCING VALVES TO BE EPOXY FUSED, INSIDE AND OUTSIDE.

PARTS LIST	
NO	ITEM
1	MECHANICAL JOINT TEE
2	MECHANICAL JOINT GATE VALVE
3	DUCTILE IRON PIPE – FL. X P.E.
4	FLANGED TEE
5	FLANGED GATE VALVE
6	FLANGED COUPLING ADAPTER
7	FLANGED P.R.V. – HIGH FLOW
8	FLANGED REDUCER
9	FLANGED 90° ELL
10	FLANGED GATE VALVE
11	DUCTILE IRON PIPE – FL. X FL.
12	FLANGED COUPLING ADAPTER
13	FLANGED P.R.V. – LOW FLOW
14	3/4" BALLCORP (FORD F8 1000)
15	3/4" TYPE "K" COPPER TUBING
16	3/4" COMP. X F.I.P. ADAPTER (FORD C14 – 33)
17	3/4" M.L.P. X HOSE BIBB – BRASS
18	3/4" M.L.P. TEE WITH TWO (2) 3/4" F.I.P. X H.B.

CITY OF FORT BRAGG CALIFORNIA

INSTALLATION OF PRESSURE REDUCING VALVES

STD. NO. **523**

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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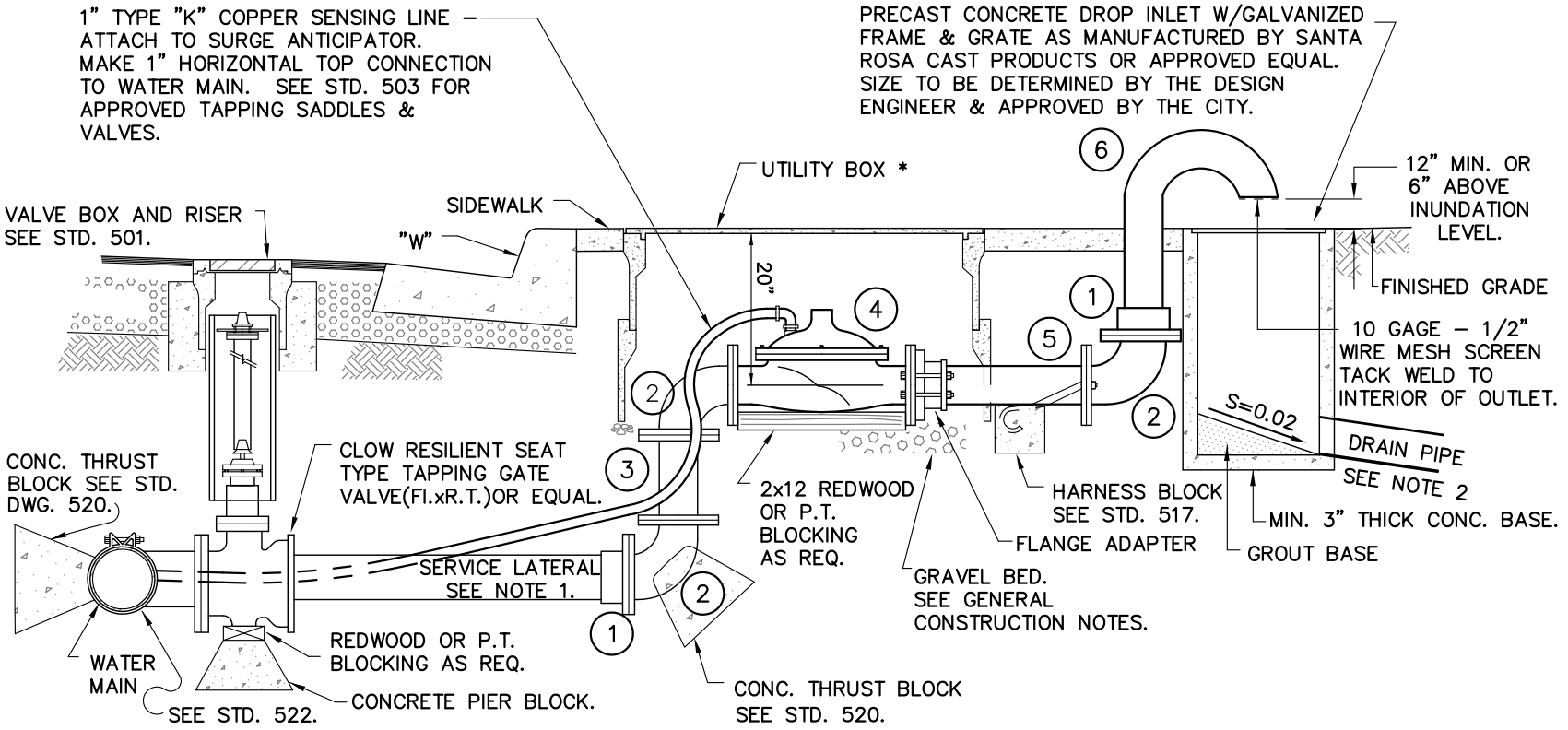
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 524 Plot Date: Feb 02, 2009 at 17:44

INSTALLATION OF SURGE ANTICIPATOR VALVE OR PRESSURE RELIEF VALVE

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 524



NOTES:

1. SERVICE LATERAL PIPE SHALL BE EITHER 4" DIAM. OR EQUAL IN SIZE TO THE SURGE ANTICIPATOR VALVE, WHICHEVER IS GREATER. THE PIPE MATERIAL SHALL BE CI. 150 DUCTILE IRON, UNLESS OTHERWISE SHOWN ON THE PLANS. SHOULD THE SURGE ANTICIPATOR VALVE BE SMALLER THAN 4", INSTALL A FLANGED REDUCER AS REQUIRED ON THE INLET SIDE OF THE VALVE.
2. DISCHARGE WATER SHALL DRAIN EITHER TO AN EXISTING DRAINAGE SYSTEM OR TO DAYLIGHT. THE PROJECT ENGINEER SHALL SUBMIT HIS/HER DESIGN TO THE APPROPRIATE AGENCIES FOR APPROVAL.
3. ALL PIPING & FITTINGS ON THE DISCHARGE SIDE OF THE SURGE ANTICIPATOR VALVE SHALL BE EQUIVALENT IN SIZE TO THE VALVE.
4. DISCHARGE RISER SHALL BE FABRICATED FROM STANDARD WELDED STEEL PIPE. WELDING SHALL CONFORM TO AWWA STANDARD C206. THE RISER ASSEMBLY SHALL BE TAPE COATED PER AWWA STANDARD C209.
5. CONTACT THE CITY FOR SPECIFIC TELEMETRY REQUIREMENTS WHICH MUST BE MET.
6. SEE GENERAL CONSTRUCTION NOTES.
7. SURGE ANTICIPATOR VALVE INSTALLATION IS SHOWN. PRESSURE RELIEF VALVE INSTALLATION IS SIMILAR EXCEPT NO SENSING LINE IS REQUIRED.

PARTS LIST	
NO.	ITEM DESCRIPTION
1	FL. ADAPTER – SIZE AS REQUIRED
2	C.I. FL. 90° ELL – SIZE AS REQUIRED
3	D.I. FL. SPOOL – LENGTH AS REQUIRED
4	SURGE ANTICIPATOR VALVE–CLA MODEL 52–03 PRESSURE RELIEF VALVE–CLA MODEL 50G–01
5	FL. DIP – LENGTH AS REQUIRED
6	FABRICATED WELDED STEEL DISCHARGE PIPE SEE NOTE 4.

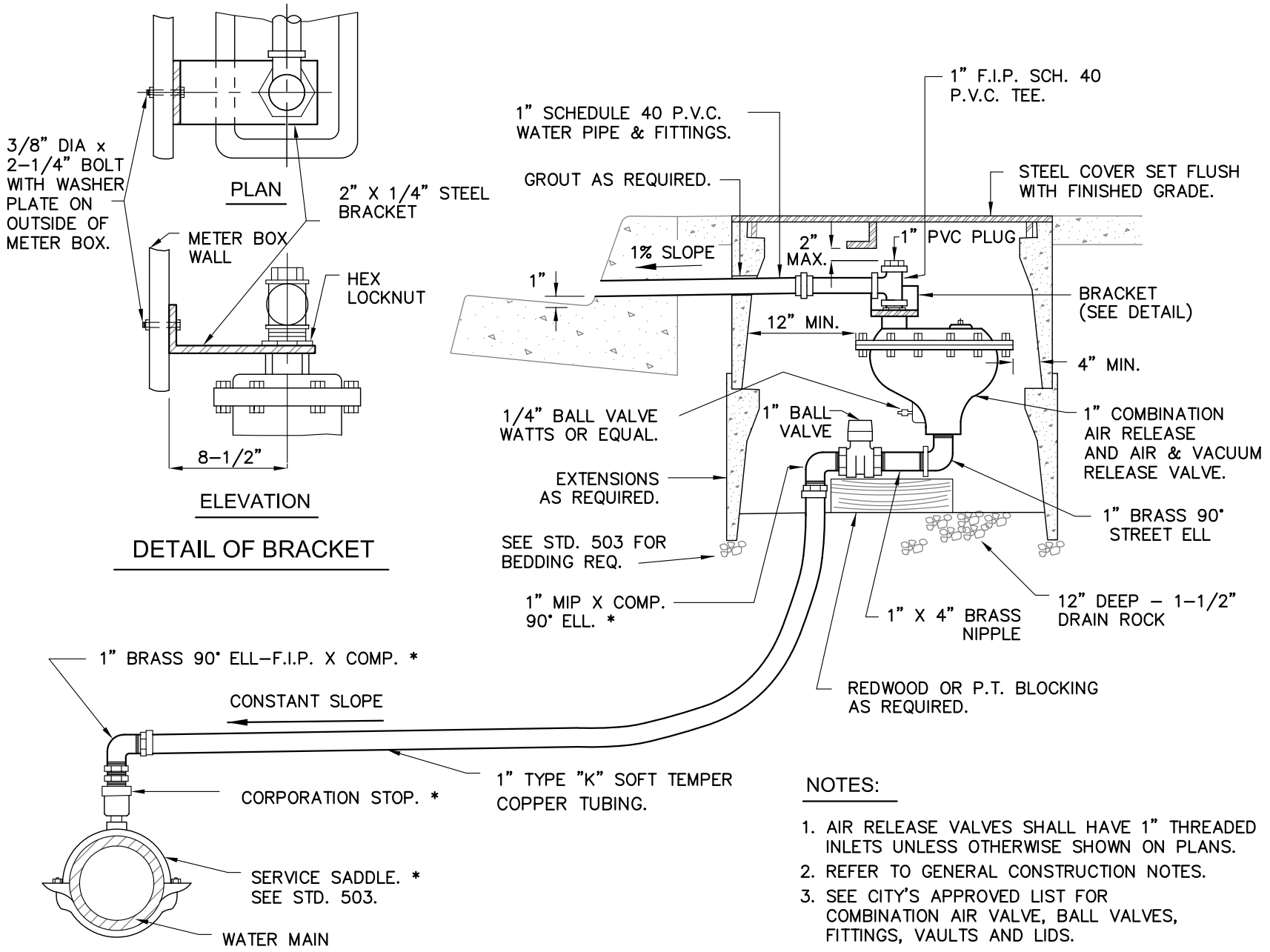
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 525 Plot Date: Feb 02, 2009 at 17:44

CITY OF FORT BRAGG CALIFORNIA

INSTALLATION OF AIR AND VACUUM & AIR RELEASE VALVE

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 525



NOTES:

1. AIR RELEASE VALVES SHALL HAVE 1" THREADED INLETS UNLESS OTHERWISE SHOWN ON PLANS.
2. REFER TO GENERAL CONSTRUCTION NOTES.
3. SEE CITY'S APPROVED LIST FOR COMBINATION AIR VALVE, BALL VALVES, FITTINGS, VAULTS AND LIDS.

* - SEE ENGINEER'S APPROVED LIST.

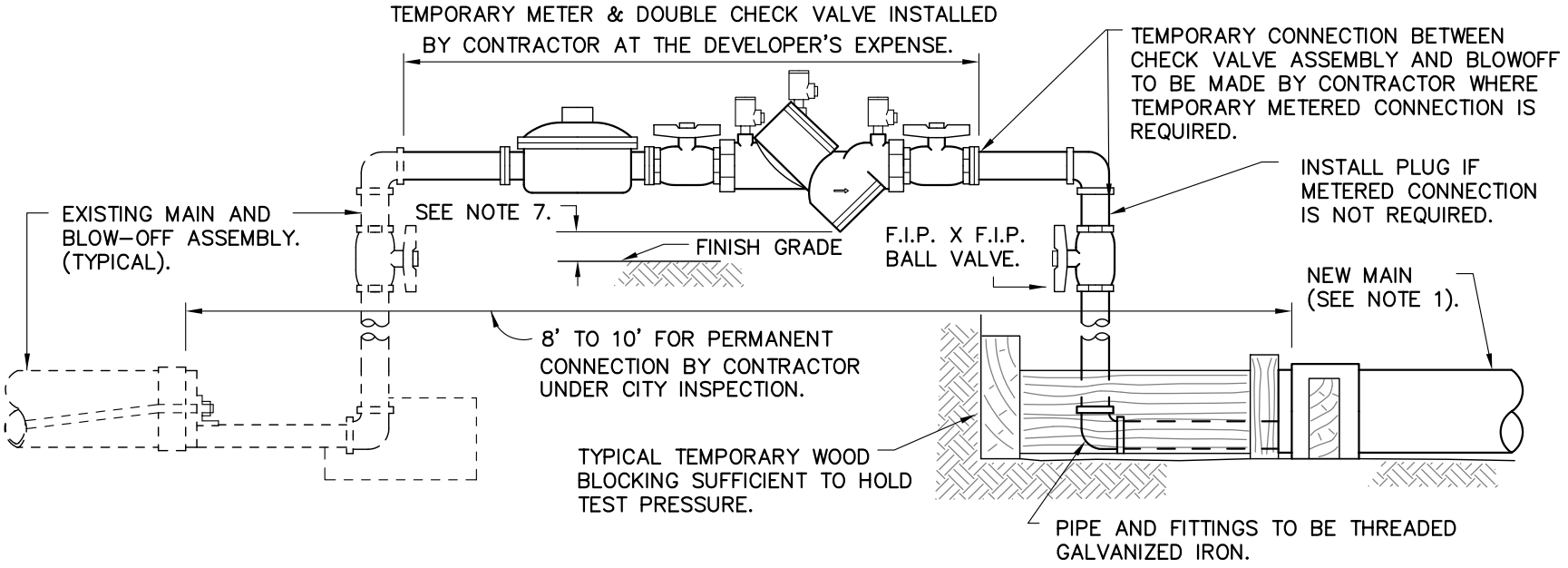
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 526 Plot Date: Feb 02, 2009 at 17:44

TEMPORARY BLOWOFF AND/OR METERED CONNECTION – MAINS UNDER CONSTRUCTION

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD:

STD. NO. 526

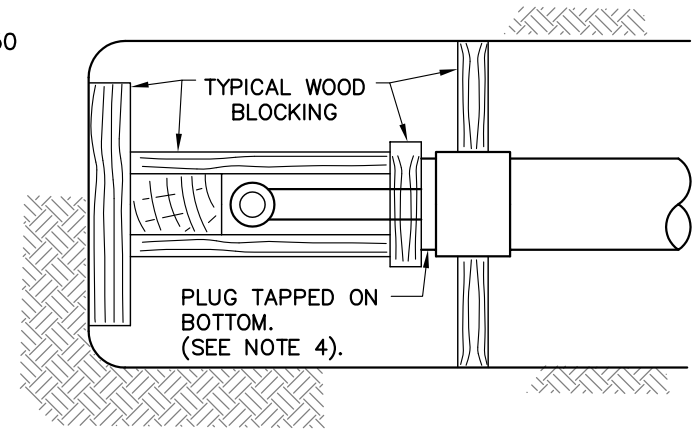
DATE: APR 2008



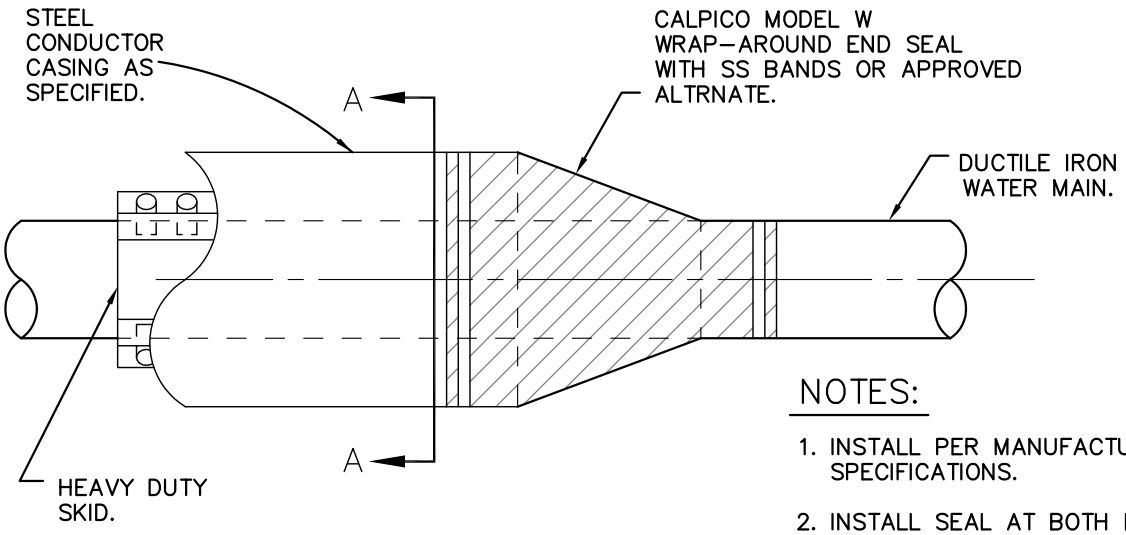
ELEVATION

NOTES:

1. END OF NEW MAIN TO BE ON SAME LINE AND GRADE AS EXISTING WHERE FEASIBLE.
2. WOOD BLOCKING TO BE FOR THRUST PRODUCED BY TEST PRESSURE PLUS 50 P.S.I.
3. SAFE BEARING LOAD OF SOIL FOR HORIZONTAL THRUST SHALL NOT BE EXCEEDED.
4. SEE STD. 516 FOR BLOWOFF SIZE CHART. ("BLOWOFF" IS PIPE AND FITTINGS, UP TO AND INCLUDING VALVE.)
5. THE CONTRACTOR SHALL MAKE FINAL TIE-INS AT THE DEVELOPERS EXPENSE UNDER THE INSPECTION OF A CITY REPRESENTATIVE.
6. SHOULD THE BLOWOFF ON THE EXISTING MAIN BE LOCATED OUT OF THE TRAVELED WAY AS INDICATED ON STD. 516, THE TEMPORARY BLOWOFF PIPING SHALL BE EXTENDED OUT OF THE TRAVELED WAY AND THE RISERS, METER, AND CHECK VALVE WILL BE INSTALLED OUT OF TRAVELED WAY.
7. CLEARANCE TO BE 6" ABOVE INUNDATION LEVEL OR 12" MIN. ABOVE FIN. GRADE.
8. TWO INCH TEMPORARY CONSTRUCTION METER ACCEPTABLE UNTIL COMBUSTIBLE MATERIALS STORED ON SITE OR CONSTRUCTION ABOVE GRADE BEGINS



PLAN

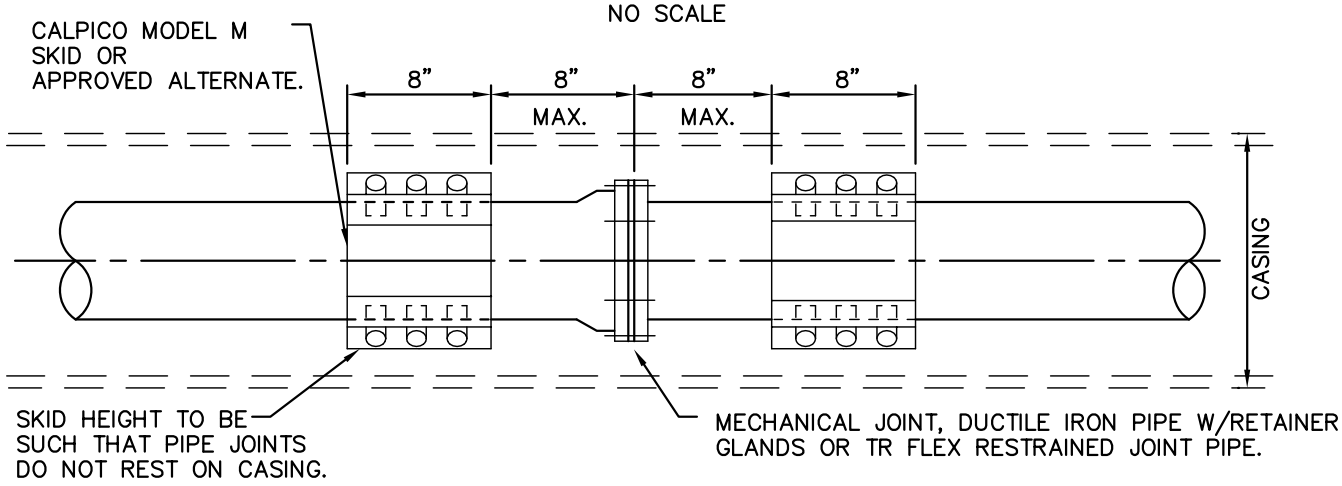


NOTES:

1. INSTALL PER MANUFACTURERS SPECIFICATIONS.
2. INSTALL SEAL AT BOTH ENDS.

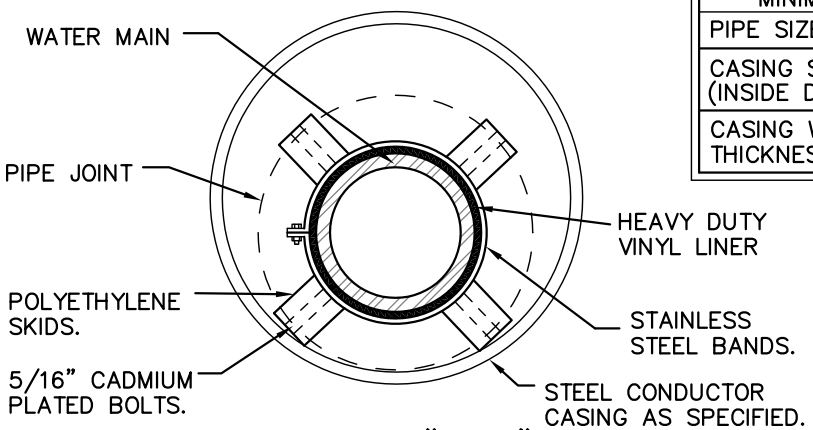
DIRT STOP DETAIL

NO SCALE



PIPE JOINT AND INSULATOR

NO SCALE



SECTION "A-A"

NO SCALE

MINIMUM SIZE CASING REQUIRED							
PIPE SIZE	6"	8"	12"	14"	16"	18"	20"
CASING SIZE (INSIDE DIA.)	16"	16"	20"	24"	30"	36"	36"
CASING WALL THICKNESS	.375	.375	.375	.375	.500	.560	.560

NOTES:

1. INSTALL PER MANUFACTURERS SPECIFICATIONS.
2. SEE GENERAL CONST. NOTES.
3. WHERE CONDUCTOR CASING IS EXISTING R.C.P., REDWOOD SKIDS MAY BE INSTALLED IN LIEU OF POLYETHYLENE SKIDS WITH CITY APPROVAL.

DIRT STOP AND WATER MAIN ENCASEMENT

STD. NO. 527

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 527 Plot Date: Feb 02, 2009 at 17:44

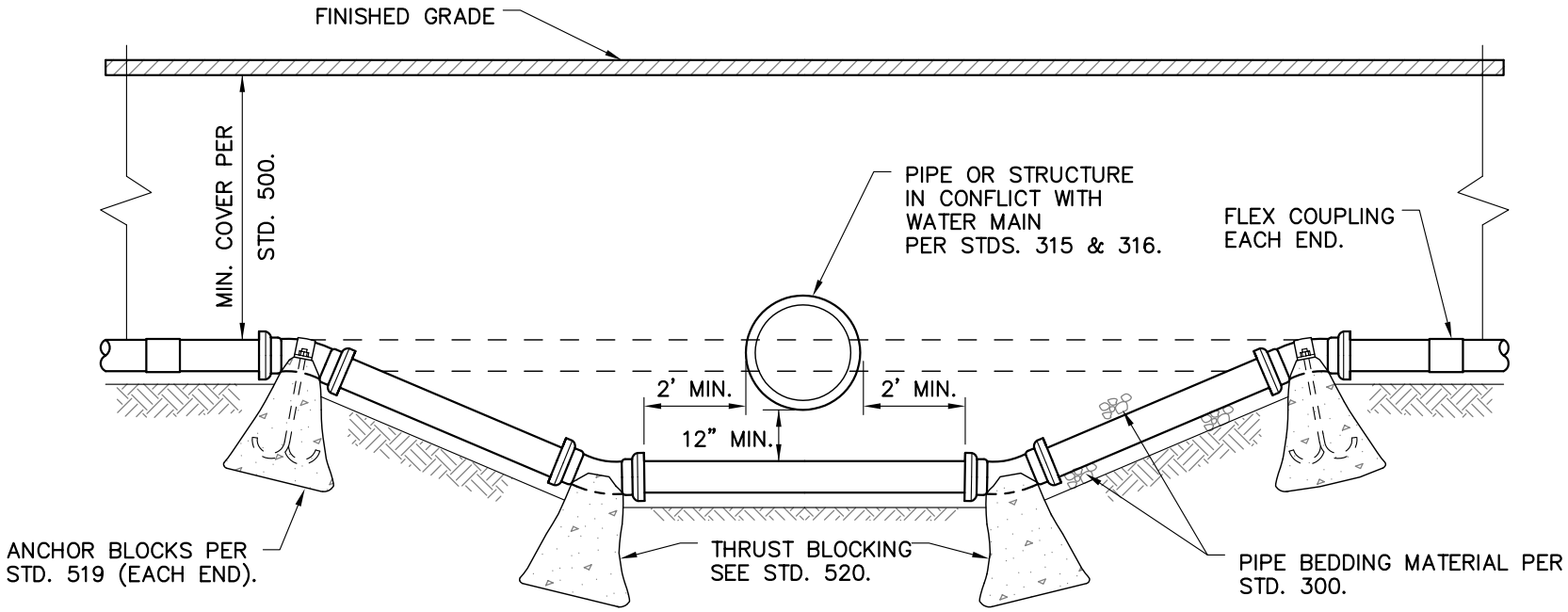
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 528 Plot Date: Feb 02, 2009 at 17:44

CITY OF FORT BRAGG CALIFORNIA

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

WATER MAIN LOWERING DETAIL

STD. NO. 528



NOTES:

1. ALL PIPE & FITTINGS SHALL BE DUCTILE IRON & SHALL BE WRAPPED IN POLYETHELENE PER CITY STD. CONSTRUCTION SPECIFICATIONS.
2. ONLY MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS MAY BE USED.
3. ALL BENDS SHALL BE 45° OR 22-1/2° FITTINGS.

WATER MAIN LOWERING DETAIL

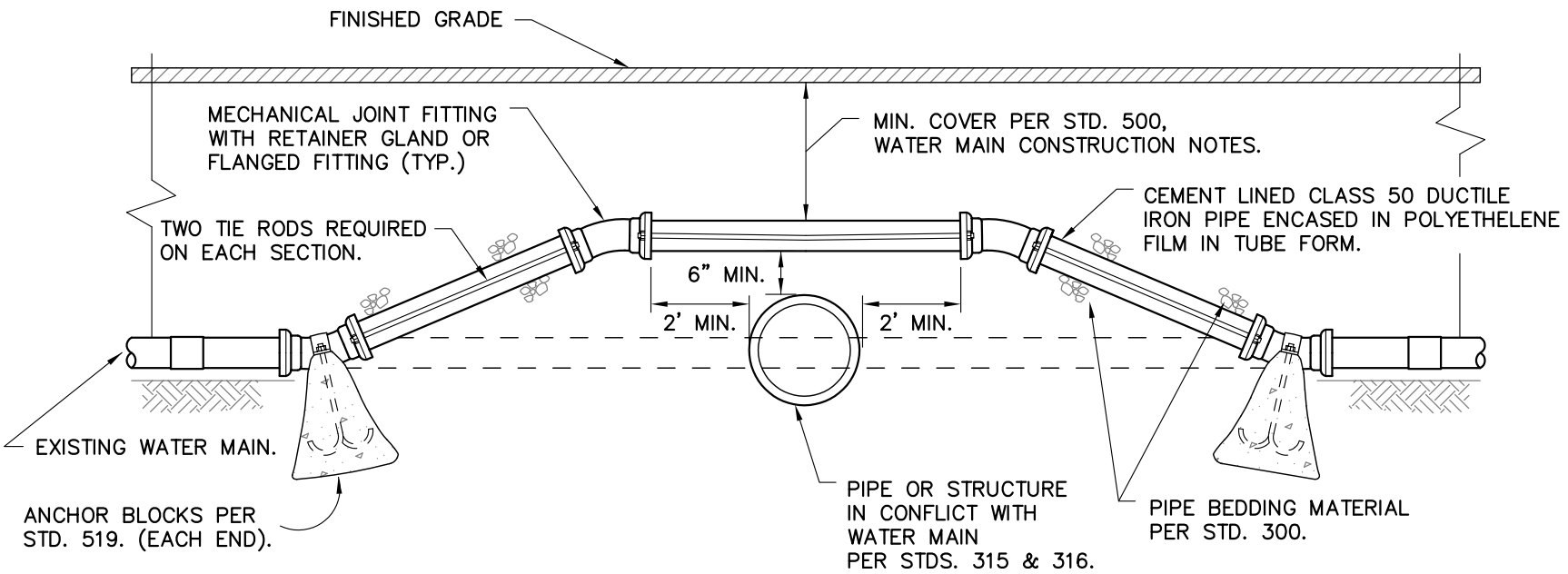
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 529 Plot Date: Feb 02, 2009 at 17:44

CITY OF FORT BRAGG CALIFORNIA

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

WATER MAIN INSTALLATION OVER STRUCTURE

STD. NO. 529



NOTES:

1. ALL PIPE & FITTINGS SHALL BE DUCTILE IRON & SHALL BE WRAPPED IN POLYETHELENE PER THE CITY STD. CONSTRUCTION SPECIFICATIONS.
2. ONLY MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS MAY BE USED.
3. ALL BENDS SHALL BE 45° OR 22–1/2° FITTINGS – NO 90° BENDS ALLOWED.
4. TO BE USED ONLY WITH THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
5. CL. 52 DUCTILE IRON REQUIRED WHERE COVER IS LESS THAN THAT REQUIRED BY STD. 500. MINIMUM COVER, IN ANY CASE, IS 30".

PIPE SIZE	TIE RODS
6"	5/8"
8"	3/4"
12"	1–1/8"

WATER MAIN INSTALLATION OVER STRUCTURE

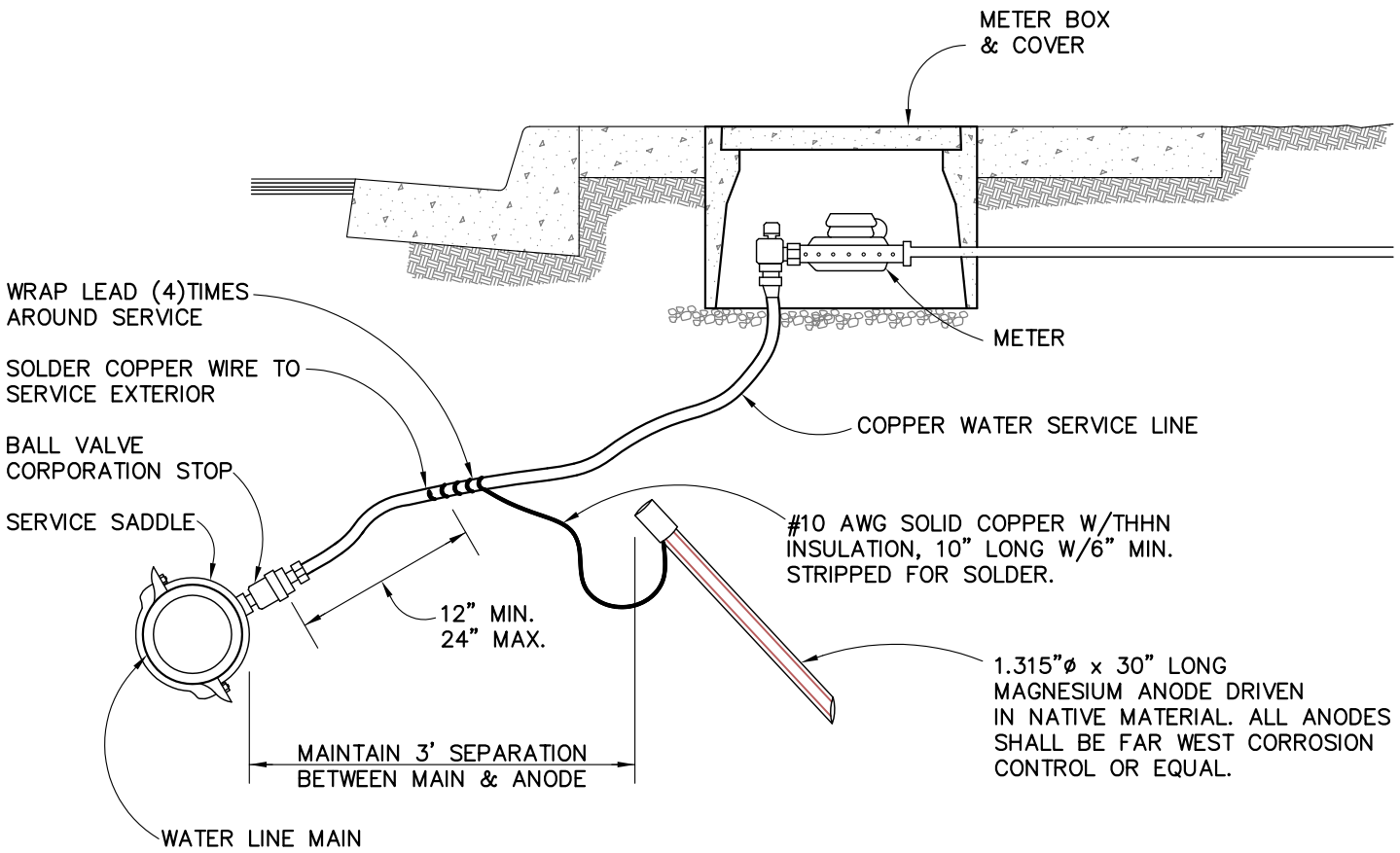
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 530 Plot Date: Feb 02, 2009 at 17:44

CITY OF FORT BRAGG CALIFORNIA

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

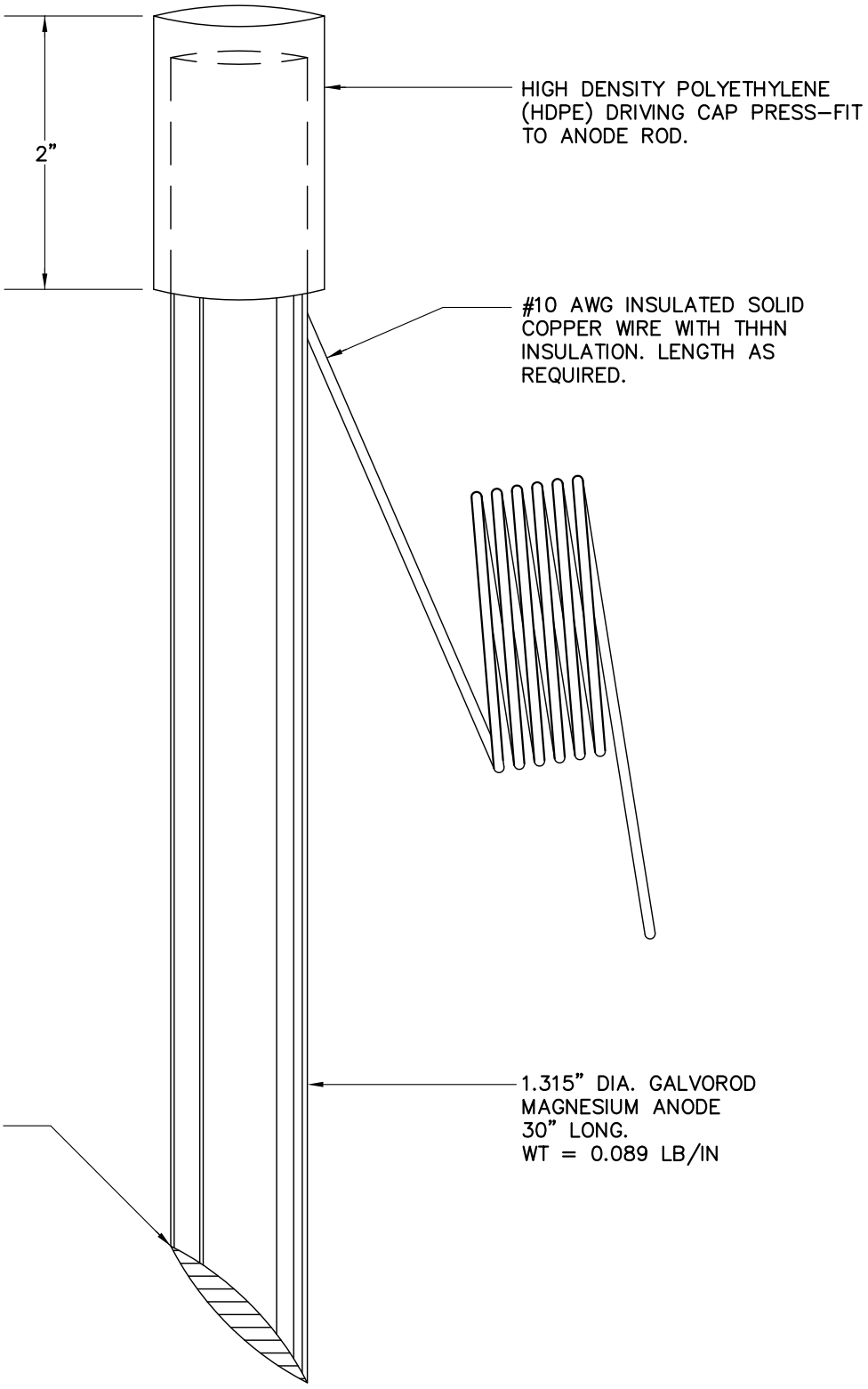
WATER SERVICE
CATHODE PROTECTION

STD. NO. **530**



NOTE:

1. MAGNESIUM ANODE SHALL BE DRIVEN COMPLETELY INTO NATIVE SOIL.
2. CONTRACTOR SHALL CONFIRM CLEARANCE BETWEEN PROPOSED ANODE LOCATION AND OTHER UTILITIES IN CLOSE PROXIMITY PRIOR TO DRIVING ANODE.



WATER SERVICE LINE CATHODE PROTECTION MAGNESIUM ANODE

STD. NO. 531

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg516-531.dwg Layout Name: 531 Plot Date: Feb 02, 2009 at 17:44

STREET LIGHT STANDARD PLANS

DESCRIPTION

600 SERIES – STREET LIGHT STANDARDS

GENERAL NOTES:

1. ALL WIRING METHODS AND EQUIPMENT CONSTRUCTION SHALL CONFORM TO THE CURRENT NATIONAL ELECTRICAL CODE.

2. ALL WIRING SHALL BE IN APPROVED CONDUIT. ALL CONDUIT SHALL BE A MINIMUM OF 2" DIAMETER, SCHEDULE 40 P.V.C. (POLYVINYL CHLORIDE), EXCEPT FROM EACH STREET LIGHT TO THE ADJACENT PULL BOX WHICH MAY BE 1" DIAMETER PVC OR METAL, AND SHALL HAVE THE FOLLOWING COVER FROM TOP OF CONDUIT.

   A. WITHIN SIDEWALK OF PARKWAY AREAS: 2' – 0" MIN.
   B. WITHIN ROADWAY AREAS: 4' – 0" MIN.

3. ALL METAL CONDUIT AND OTHER METAL PARTS SHALL BE CONTINUOUSLY BONDED AND GROUNDED.

4. ALL BENDS AND/OR OFFSETS SHALL BE MADE WITH FACTORY SECTIONS.

5. UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS, A NO. 5 PULL BOX (STATE STD. ES–8) SHALL BE USED AT ALL STREET LIGHT STANDARDS.

6. ALL PULL BOXES SHALL BE PER STD. 602.

7. JUNCTION BOXES SHALL BE NOT MORE THAN 250' APART ON LONG RUNS.

8. WHEN PULL BOXES ARE SUBJECT TO VEHICULAR TRAFFIC, THEY SHALL BE SET ON CONCRETE FOOTINGS AND CAST IRON TRAFFIC COVERS SHALL BE INSTALLED.

9. ALL SPLICES SHALL BE MADE WITH APPROVED SOLDERLESS WATERPROOF CONNECTORS OF THE PROPER SIZE PER NEC 300–15. (EXAMPLE: WIRENUT OR SPLIT BOLT PLUS TAPE PLUS COATING.) ALL SPLICES SHALL BE LOCATED IN AN APPROVED BOX.

10. ALL EMPTY CONDUITS SHALL HAVE A 1/4" NYLON PULL ROPE PROVIDED INSIDE.

11. ALL CONDUITS SHALL BE SEALED WITH AN APPROVED DUCT SEAL. CONDUITS STUBBED FOR FUTURE EXTENSION SHALL BE CAPPED.

12. ALL STREET LIGHTING PROJECTS ARE SUBJECT TO APPROVAL BY THE DIRECTOR OF PUBLIC WORKS.

13. ALL PULL BOX COVERS SHALL BE SECURED WITH BRASS HOLD DOWN BOLTS AND INSCRIBED, "STREET LIGHTING".

14. STREET LIGHT SPACING SHALL BE A MAXIMUM OF 200' FOR MINOR/COLLECTOR STREETS AND 100' FOR MAJOR STREETS. STREET LIGHT SPACING SHALL BE STAGGERED AND LOCATED AT PROPERTY LINES WHEN POSSIBLE.

15. THE MINIMUM–AVERAGE MAINTAINED FOOT CANDELLAS AND UNIFORMITY RATIO OF ALL STREET LIGHTING SHALL COMPLY WITH STD. 606.

16. ALL STREET LIGHTS EQUIPPED WITH A PHOTOCELL CONTROL SHALL HAVE THE PHOTOCELL ORIENTED TO THE NORTH.

17. ALL WIRE SHALL BE THHN A.W.G. THE MINIMUM SIZE SHALL BE #8.

18. SHIELDS SHALL BE PROVIDED ON ALL STREETLIGHTS TO PREVENT UNECESSARY LIGHT POLLUTION, AND ARE SUBJECT TO APPROVAL BY THE DIRECTOR OF PUBLIC WORKS.

CITY OF FORT BRAGG CALIFORNIA	STREET LIGHTING GENERAL NOTES				STD. NO. 600
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg600-610.dwg Layout Name: 600 (1of2) Plot Date: Feb 02, 2009 at 17:46

GENERAL NOTES (CONTINUED):

THE FOLLOWING NOTES DO NOT APPLY TO CITY–FUNDED PROJECTS:

19. LIGHT POLES ON ALL STREETS OTHER THAN MINOR STREETS OR CUL–DE–SACS SHALL BE GALVANIZED STEEL STANDARDS IN ACCORDANCE WITH CITY STANDARD PLANS. THE POLE HEIGHTS SHALL BE AS DELINEATED ON THE CITY STANDARDS.

20. THE DEVELOPER/ENGINEER SHALL MAKE ARRANGEMENTS FOR SERVICE POINTS WITH P.G.&E. THE DEVELOPER SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED THEREWITH WHICH SHALL BE PAID DIRECTLY TO P.G.& E. THE CONTRACTOR SHALL VERIFY THE STREET LIGHT SERVICE POINT LOCATION(S) WITH P.G.&E. PRIOR TO INSTALLATION.

21. DEVELOPMENTS LOCATED OUTSIDE CITY LIMITS SHALL INSTALL ALL CONDUITS, PULL BOXES, AND WIRING FOR THE PROPOSED STREET LIGHT SYSTEM. A FEE PER LIGHT POLE SHALL BE COLLECTED FROM THE DEVELOPER AT THE TIME OF IMPROVEMENT PLAN APPROVAL TO PAY FOR FUTURE INSTALLATION OF FOUNDATIONS, POLES, MAST ARMS, AND LUMINAIRES BY CITY REPRESENTATIVES.

22. ALL STREET LIGHT SYSTEMS SHALL BE DESIGNED FOR 120 VOLT SERVICE UNLESS CONNECTING TO AN EXISTING SYSTEM. IN THE LATTER CASE, THE DESIGN SHALL CONFORM TO THE SYSTEM BEING CONNECTED TO AND MUST BE SPECIFICALLY APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

23. THE CURRENT TO BE USED TO DETERMINE CONDUCTOR SIZES SHALL BE DETERMINED AS FOLLOWS:

$$\frac{\text{Total Wattage of Fixtures Served}}{\text{Service Voltage}} \times 3.5$$

CITY OF FORT BRAGG CALIFORNIA	STREET LIGHTING GENERAL NOTES				STD. NO. 600
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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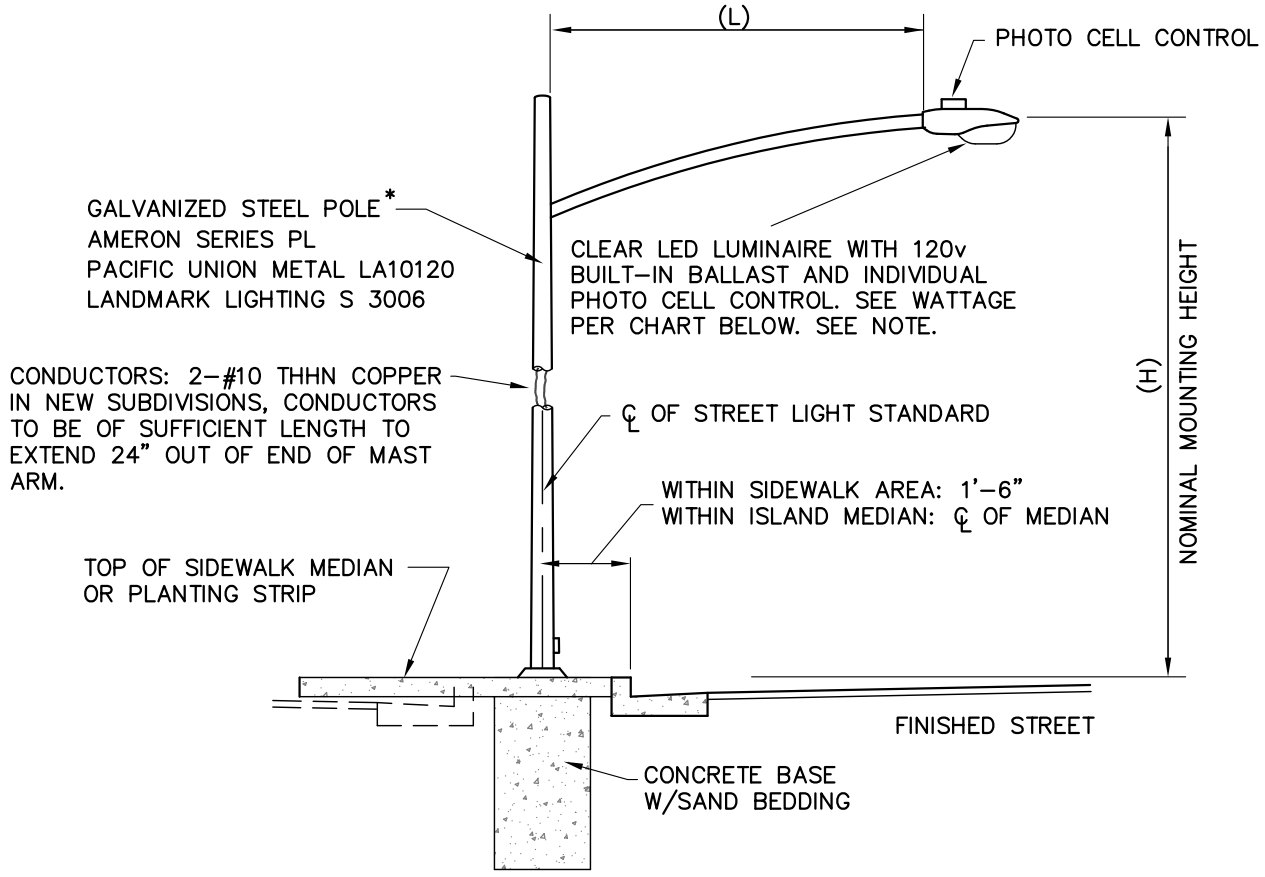

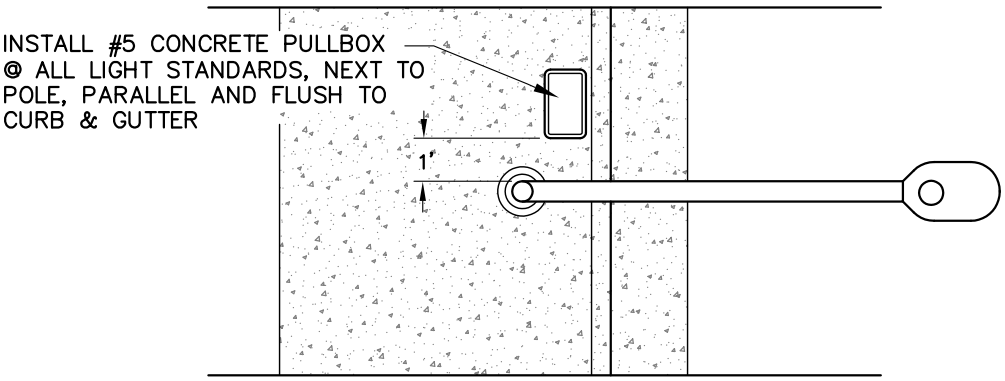

NOTE: AT THE DIRECTOR OF PUBLIC WORKS DISCRETION, EACH LUMINARES SHALL BE FITTED WITH A HOUSE-SIDE SHIELD OR SHALL HAVE AN OPTICAL SYSTEM PRODUCING "FORWARD THROW" OR "ASYMETRICAL" DISTRIBUTION.

* ALTERNATES TO BE SPECIFICALLY APPROVED BY DIRECTOR OF PUBLIC WORKSING.

STREET CLASSIFICATION	POLE HEIGHT(H)	ARM LENGTH(L)	MAXIMUM SPACING	WATTAGE
ARTERIAL	32'-6"	8'-0"	100'	150
COLLECTOR & INDUSTRIAL	28'-0"	6'-0"	200'	100
RESIDENTIAL	27'-6"	4'-0"	200'	70

CITY OF FORT BRAGG CALIFORNIA

STANDARD STREET LIGHT

STD. NO. 601

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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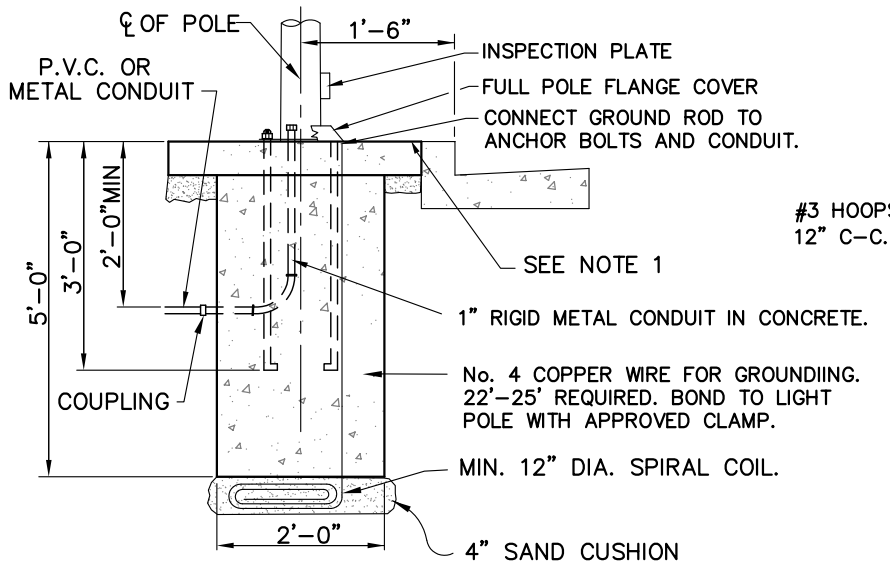
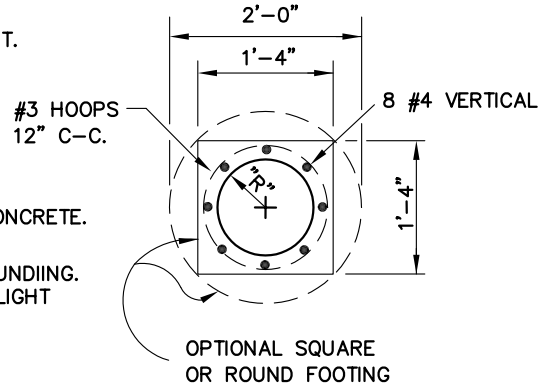
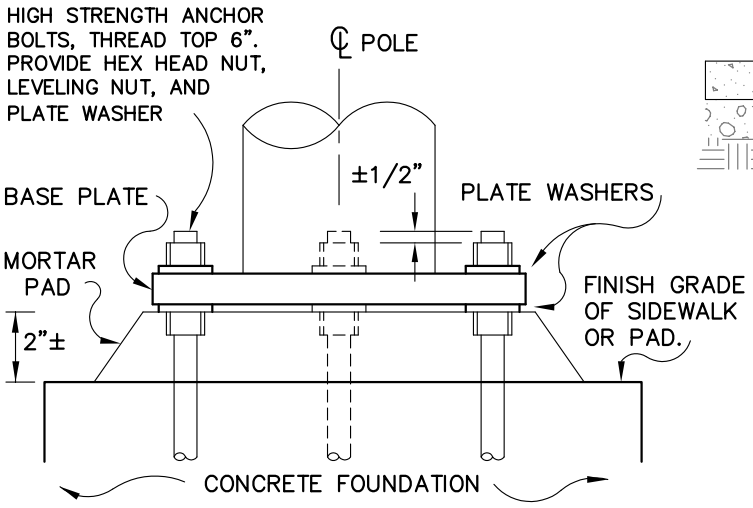
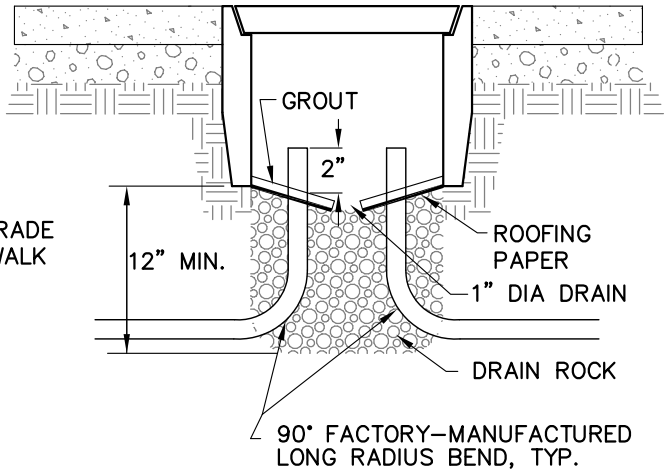




CONCRETE FOOTING & BASE DETAIL



BASE LEVELING DETAIL



NO. 5 CONCRETE PULL BOX

NOTE: PULL BOX COVERS SHALL BE BOLTED AND INSCRIBED "STREET LIGHTING".

NOTES:

1. IN UNDEVELOPED AREAS, CONSTRUCT A 2'x2' CONC. PAD (4" THICK). IF ROUND FOOTING IS POURED, STOP AT THE ELEVATION OF BOTTOM OF THE SIDEWALK.
2. ANCHOR BOLT DIMENSION "R" AND BOLT PATTERN TO SUIT POLE BASE FURNISHED.
3. CONCRETE SHALL BE CLASS "A" P.C.C. AGAINST UNDISTURBED SOIL.
4. ALTERNATE FOUNDATIONS: QUICKSET MODEL NO. L.F.–54
   BROOKS PRODUCTS INC. MODEL NO. 85C–109
5. A MINIMUM OF TWO FULL THREADS TO BE EXPOSED ABOVE ANCHOR BOLT NUTS.
6. FOUNDATION BOLTS SHALL NOT BE CUT OFF FOR ANY REASON. EXTENSION BOLTS WILL NOT BE PERMITTED.

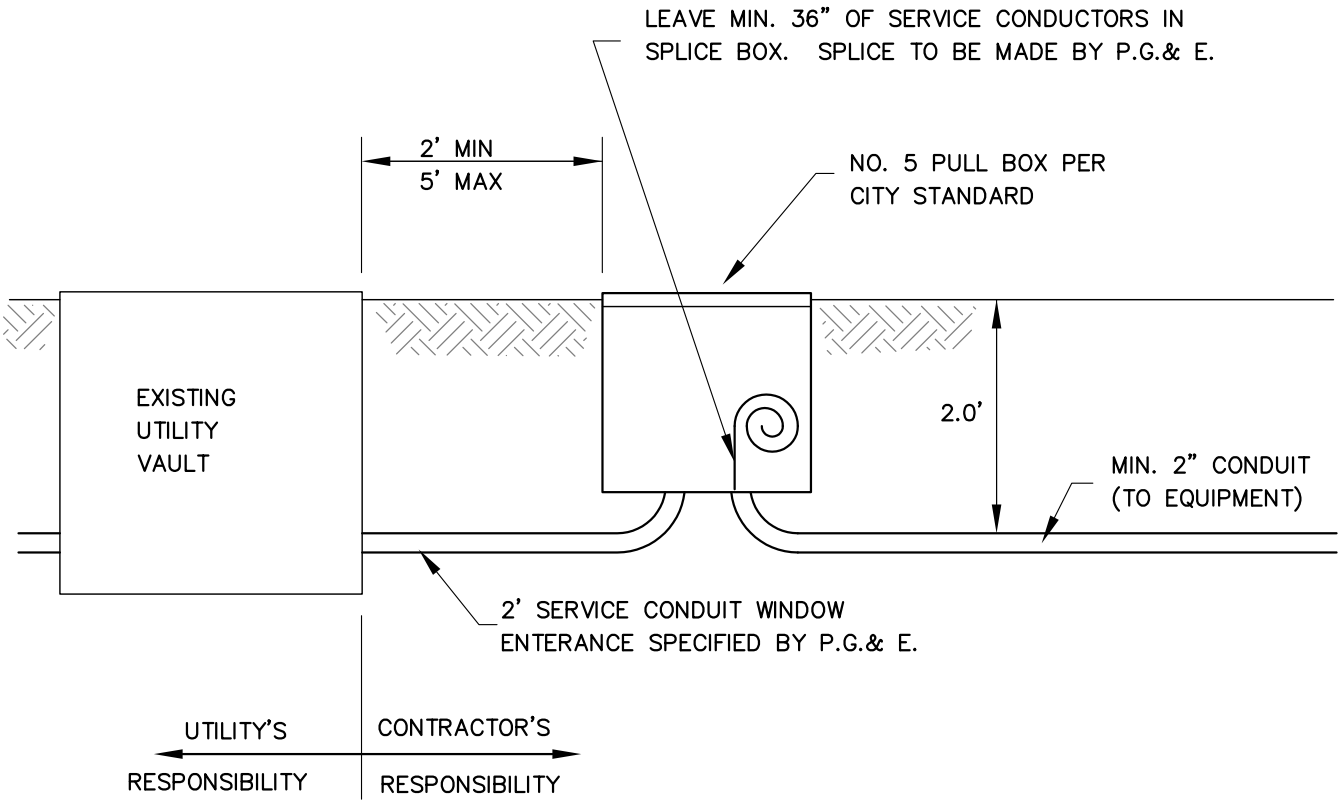
CITY OF FORT BRAGG CALIFORNIA

STREET LIGHT DETAILS

STD. NO. 602

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg600-610.dwg Layout Name: 602 Plot Date: Feb 02, 2009 at 17:46



NOTES:

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
2. CONTRACTOR TO INSTALL CONDUIT INTO UTILITY CO. VAULT WITH UTILITY CO. REPRESENTATIVE IN ATTENDANCE.
3. CONTRACTOR TO INSTALL NO. 5 PULL BOX AND 2" SERVICE CONDUIT (WHEN NONEXISTENT) AND 2" CONDUIT AND CONDUCTORS FROM EQUIPMENT TO PULL BOX.

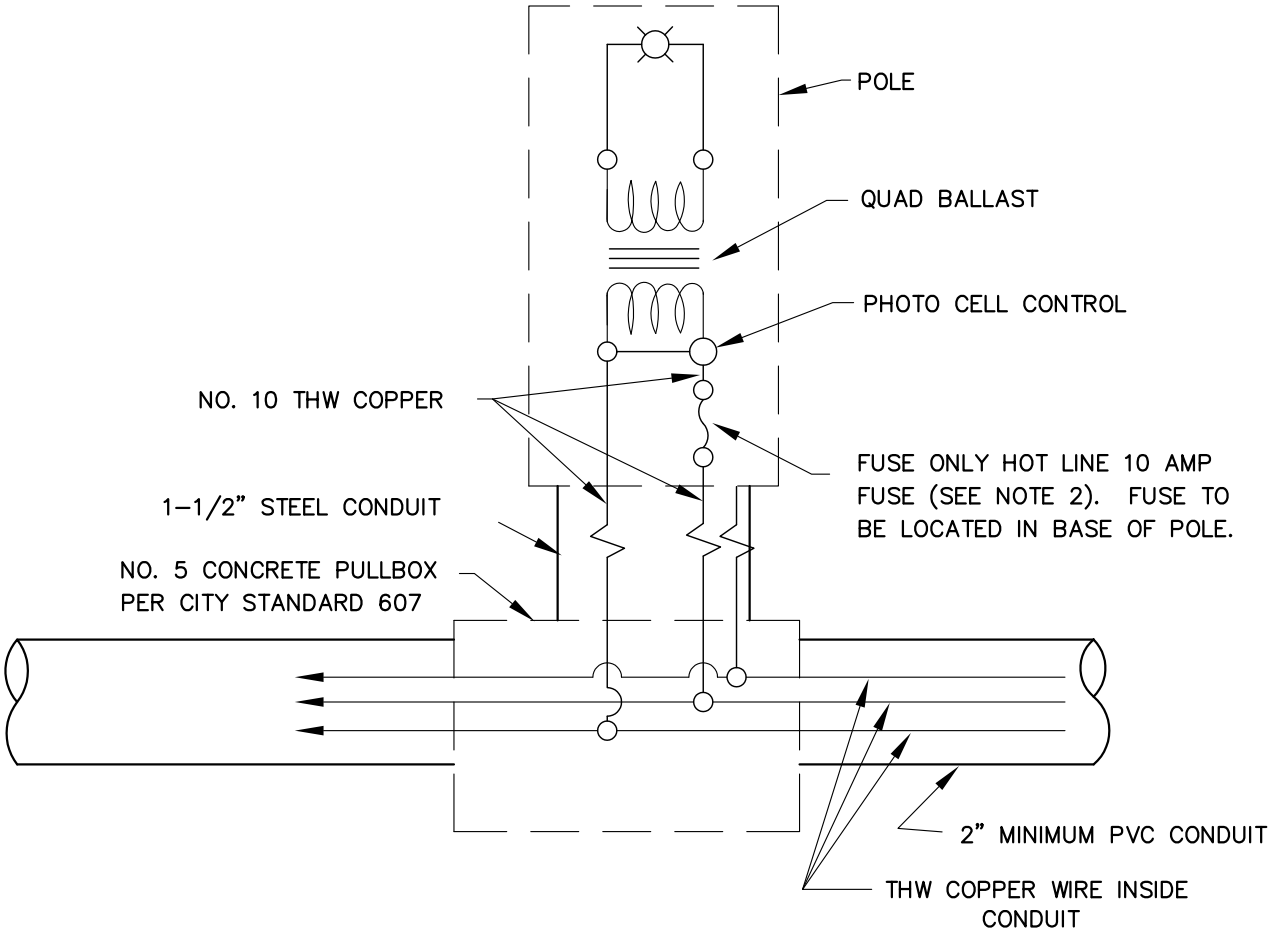
CITY OF FORT BRAGG CALIFORNIA

ELECTRIC SERVICE DETAIL

STD. NO. 603

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg600-610.dwg Layout Name: 603 Plot Date: Feb 02, 2009 at 17:46



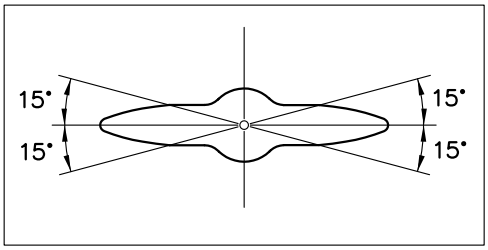
SCHEMATIC STREET LIGHT WIRING DIAGRAM

NOTES:

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
2. 600V 30A IN–LINE WATERPROOF FUSE HOLDER SHALL BE USED.

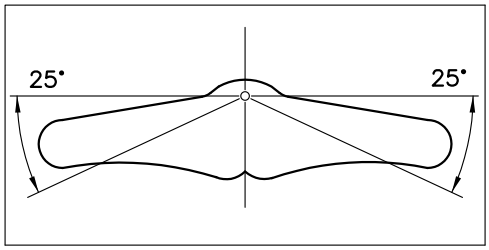
CITY OF FORT BRAGG CALIFORNIA	STREET LIGHT WIRING DIAGRAM				STD. NO. 604
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg600-610.dwg Layout Name: 604 Plot Date: Feb 02, 2009 at 17:46



TYPE 1

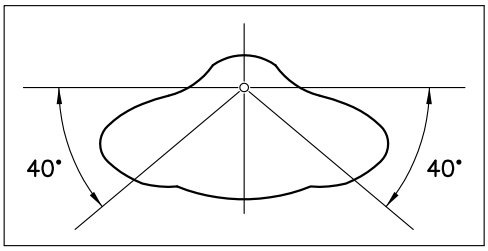
CENTER OF STREET



TYPE 2

SIDE MOUNTING

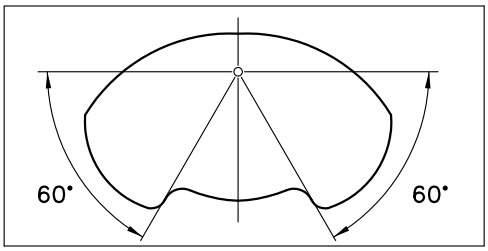
STANDARD FOR MINOR STREET
UNLESS NOTED OTHERWISE.



TYPE 3

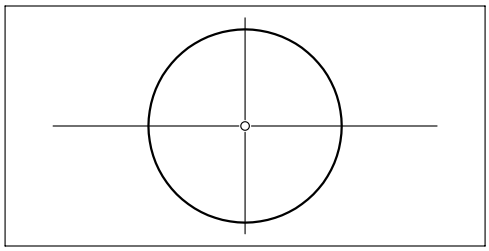
SIDE MOUNTING

STANDARD FOR COLLECTOR AND MAJOR STREETS
UNLESS NOTED OTHERWISE.



TYPE 4

SIDE MOUNTING



TYPE 5

I.E.S. LIGHT PATTERNS

STD. NO.
605

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg600-610.dwg Layout Name: 605 Plot Date: Feb 02, 2009 at 17:46

AREA CLASS.	ROADWAY CLASS.	MIN. AVG. MAINTAINED F.C.	UNIFORMITY RATIO AVG.F.C./MIN.F.C.
RESIDENTIAL	LOCAL	0.20	4:1
	COLLECTOR	0.30	5:1
	MAJOR	0.75	3:1
URBAN	LOCAL	0.20	4:1
	COLLECTOR	0.30	5:1
	MAJOR	0.75	3:1
COMMERCIAL	COLLECTOR	0.30	5:1
	MAJOR	0.75	3:1

AVERAGE MAINTAINED F.C. IS: $F.C. = \frac{(LL)(MF)(CU)}{(W)(S)}$

FC = ILLUMINATION IN FOOTCANDLES
LL = RATED INITIAL LAMP LUMENS
MF = MAINTENANCE FACTOR
CU = COEFFICIENT OF UTILIZATION
W = STREET WIDTH, CURB TO CURB
S = SPACING OF LUMINARES

MINIMUM F.C. IS: $FCmin. = (fc)(LF)(MF)(CF)$

FCmin = MINIMUM POINT FOOTCANDLES
fc = RAW TOTAL FOOTCANDLES (AT DARKEST POINT)
LF = LAMP FACTOR
MF = MAINTENANCE FACTOR
CF = MOUNTING HEIGHT CORRECTION FACTOR

$$\text{UNIFORMITY RATIO} = \frac{\text{AVERAGE FOOTCANDLES}}{\text{MINIMUM FOOTCANDLES}}$$

ROADWAY ILLUMINATION

STD. NO. 606

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg600-610.dwg Layout Name: 606 Plot Date: Feb 02, 2009 at 17:46

CONDUIT AND PULL BOXES

SERVICE RUN – 2" MINIMUM.
UNDER ANY STREET – 2" MINIMUM, 48" DEEP (MINIMUM).
UNDER SIDEWALK OR PLANTER AREA – 24" DEEP (MINIMUM).

ALL PULL BOXES SHALL BE #5 (STATE STD ES–8) EXCEPT THE MAIN PULL BOX WHICH SHALL BE 30" X 48" MINIMUM. COVERS SHALL BE MARKED "TRAFFIC SIGNAL".

PULL BOXES SUBJECTED TO VEHICULAR TRAFFIC SHALL BE INSTALLED WITH "TRAFFIC COVERS".

ALL CONDUITS SHALL BE SCH. 40 PVC.

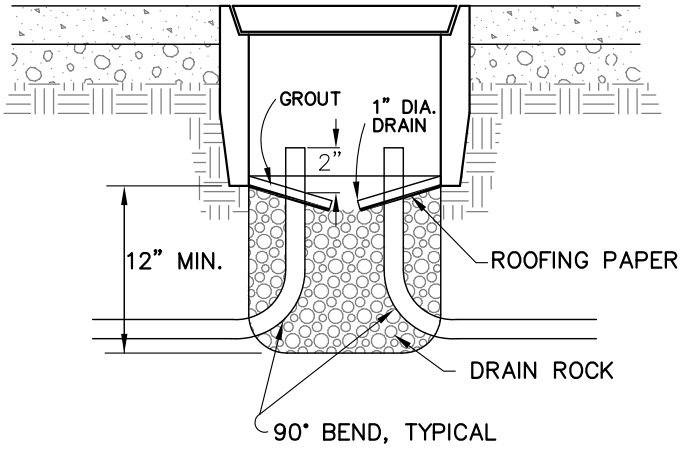
ALL UNDERGROUND CONDUITS AND METAL PARTS SHALL BE CONTINUOUSLY BONDED AND GROUNDED.

ALL BENDS AND/OR OFFSETS SHALL BE MADE WITH FACTORY SECTIONS.

ALL EMPTY CONDUITS SHALL HAVE A 1/4" NYLON ROPE PROVIDED INSIDE.

ALL PULL BOX COVERS SHALL BE SECURED WITH BRASS HOLD DOWN BOLTS.

ALL CONDUITS SHALL BE SEALED WITH AN APPROVED DUCT SEAL. CONDUITS STUBBED FOR FUTURE EXTENSION SHALL BE CAPPED.



CITY OF FORT BRAGG CALIFORNIA	STREET LIGHT CONDUIT AND PULL BOXES				STD. NO. 607
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

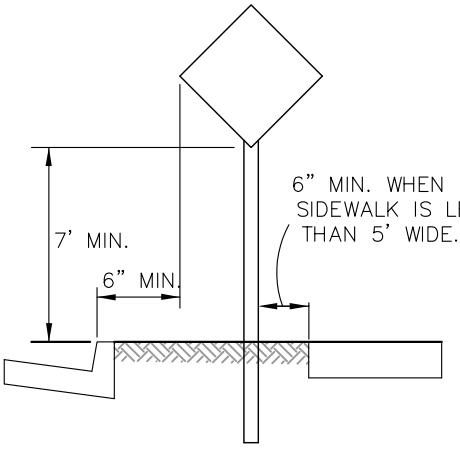
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg600-610.dwg Layout Name: 607 Plot Date: Feb 02, 2009 at 17:46

TRAFFIC STANDARD PLANS

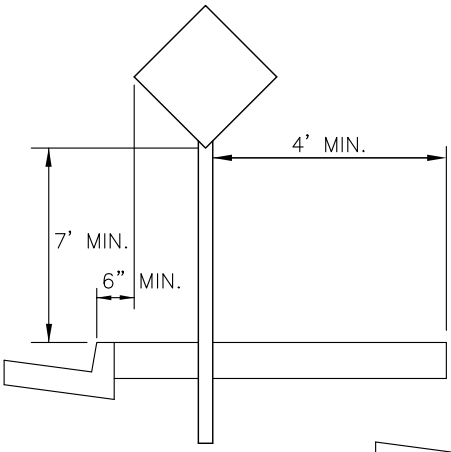
DESCRIPTION

700 SERIES - TRAFFIC

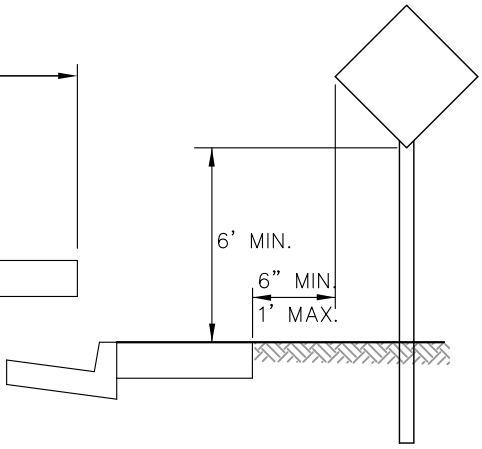
701	Traffic Signs Urban Installation
702	Traffic Signs Rural Installation
703	Street Name Sign Non-Signalized Intersection
704	Street Sign Standard
705	Pavement Markings
706	Cross Walk Markings
707	Bike Lanes - Signs and Markings
708	Traffic Control Requirements – 2 Way Traffic & Detour
709	Traffic Control Requirements – Flagman, Excavation & Night Requirements
710	Traffic Control Requirements - Signing
711	Traffic Signal Service Wiring Diagram
712	Traffic Signal Loop Detector Wiring
713	Electric Service Detail Underground Service
714	Electric Service Detail Overhead Service



PLANTER STRIP

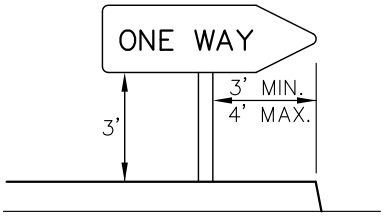


ON SIDEWALK

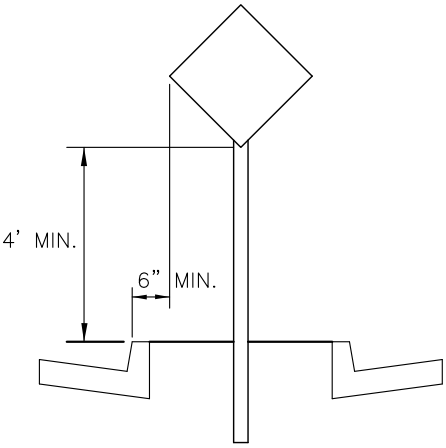


BEHIND SIDEWALK

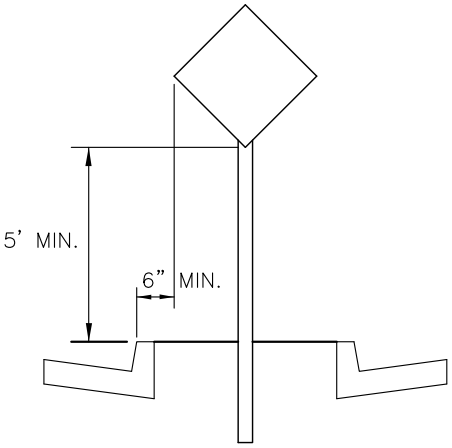
SIDEWALK AREA



R-10 ONE-WAY SIGN



REGULARTORY & WARNING SIGNS



OTHER SIGNS IN MEDIAN

MEDIAN AREA

NOTES:

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

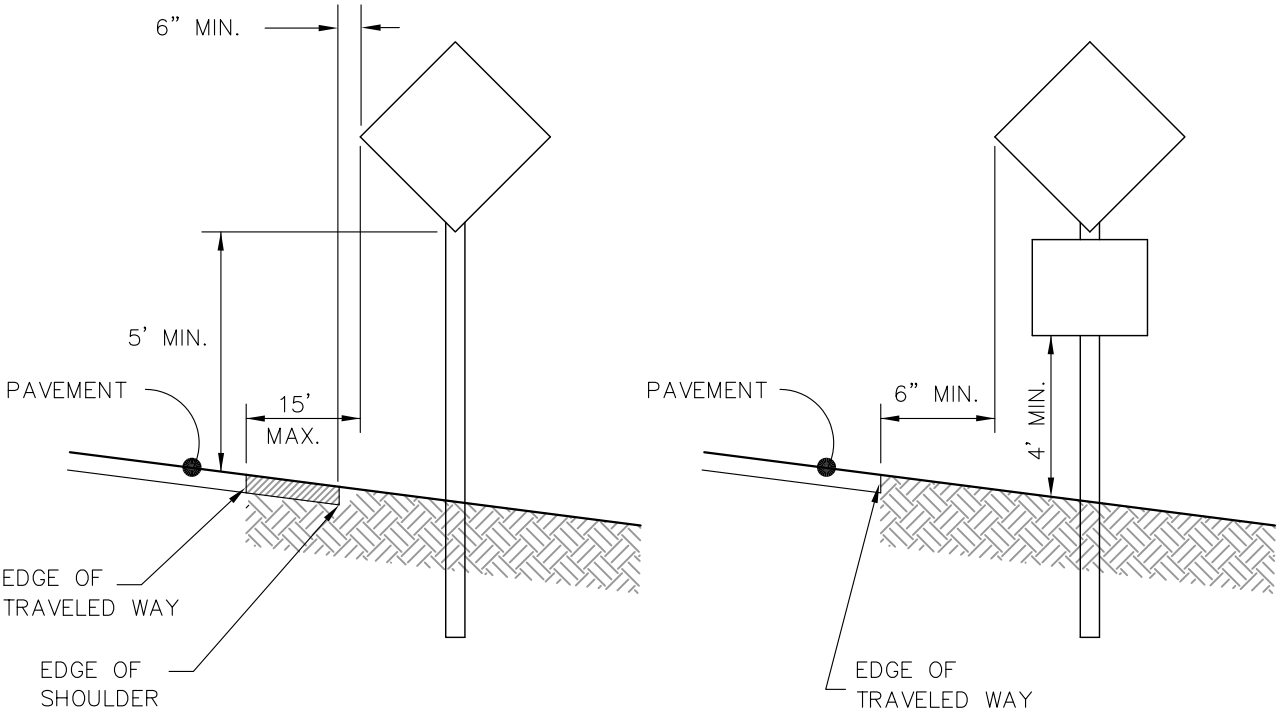
CITY OF FORT BRAGG CALIFORNIA

TRAFFIC SIGNS URBAN INSTALLATIONS

STD. NO. 701

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg701-714.dwg Layout Name: 701 Plot Date: Feb 02, 2009 at 17:48



RURAL AREA

NOTES:

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

TRAFFIC SIGNS
RURAL INSTALLATIONS

STD. NO.
702

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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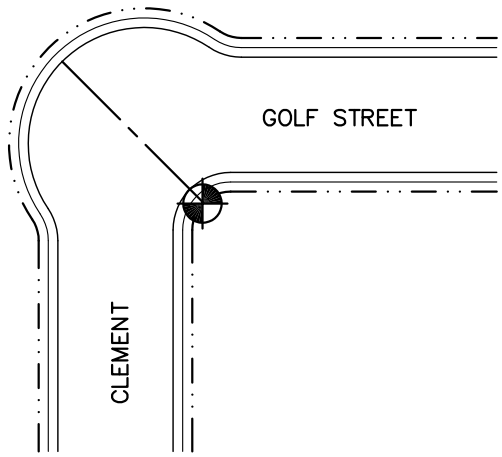
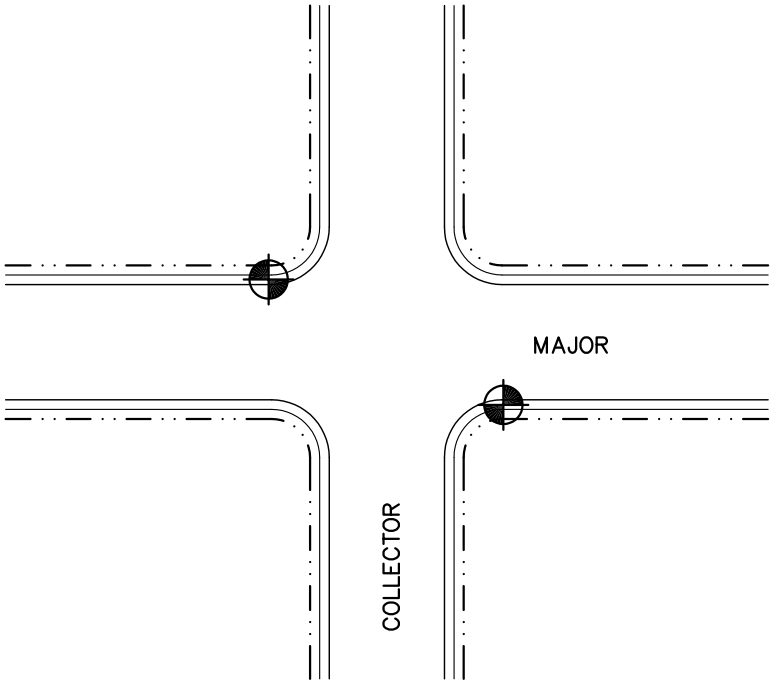
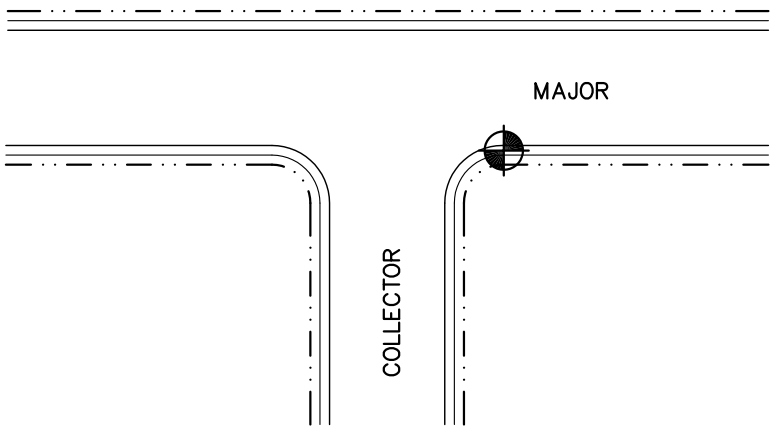


"L" INTERSECTION



"FOUR WAY" INTERSECTION



"T" INTERSECTION

LEGEND:

STREET NAME SIGN

NOTES:

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

STREET NAME SIGN
NON-SIGNALIZED INTERSECTION

STD. NO.
703

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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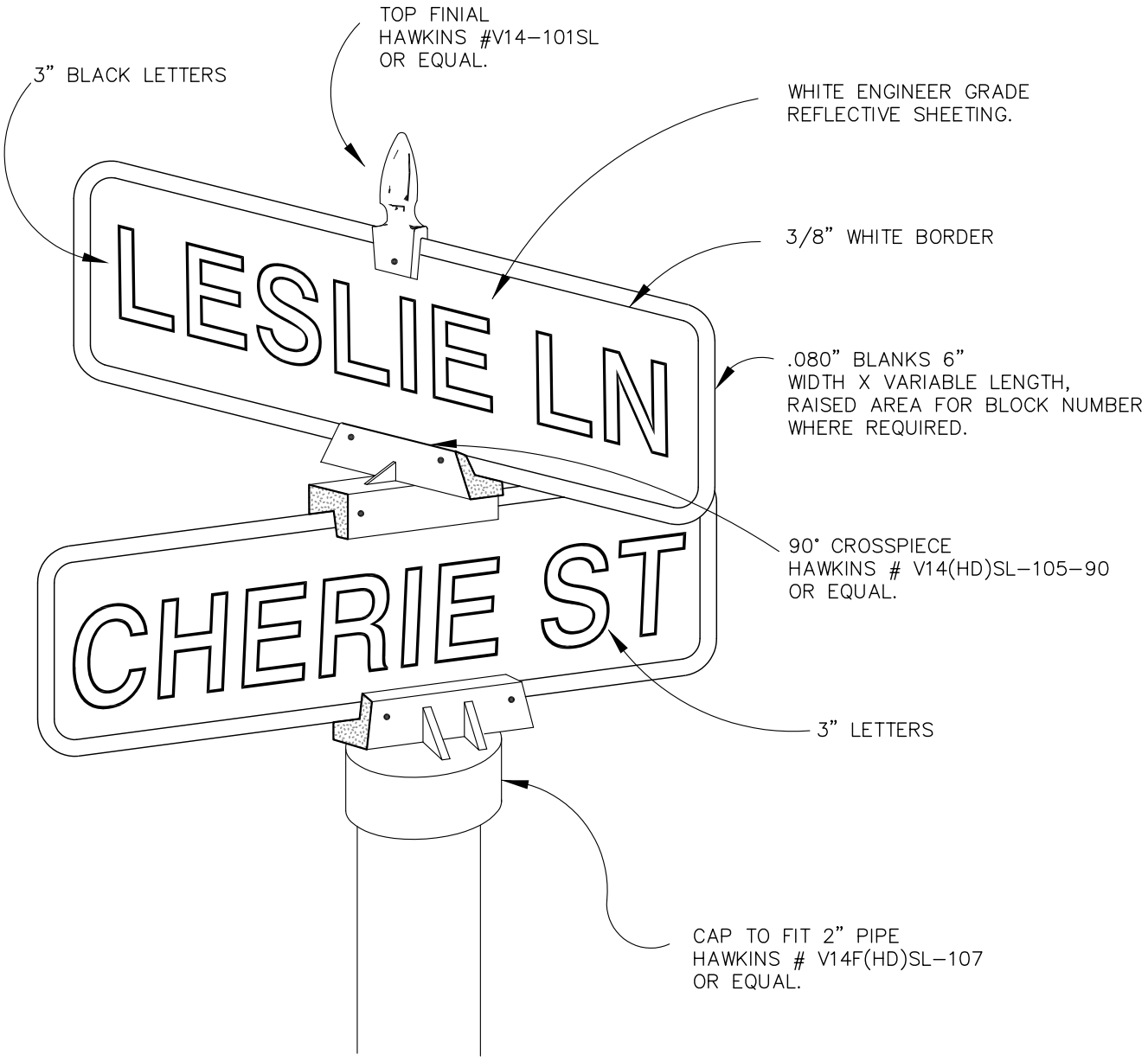

STREET SIGN STANDARD

STD. NO. 704

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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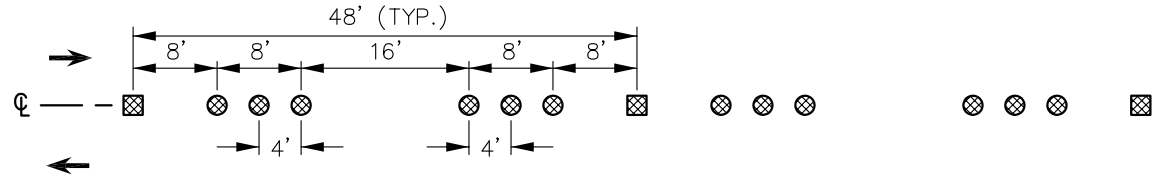
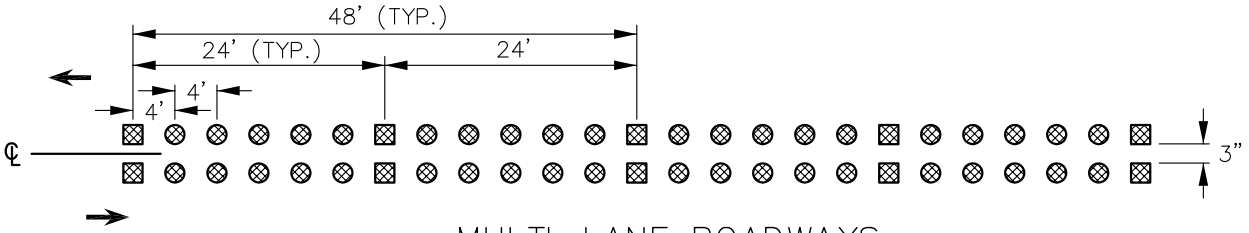
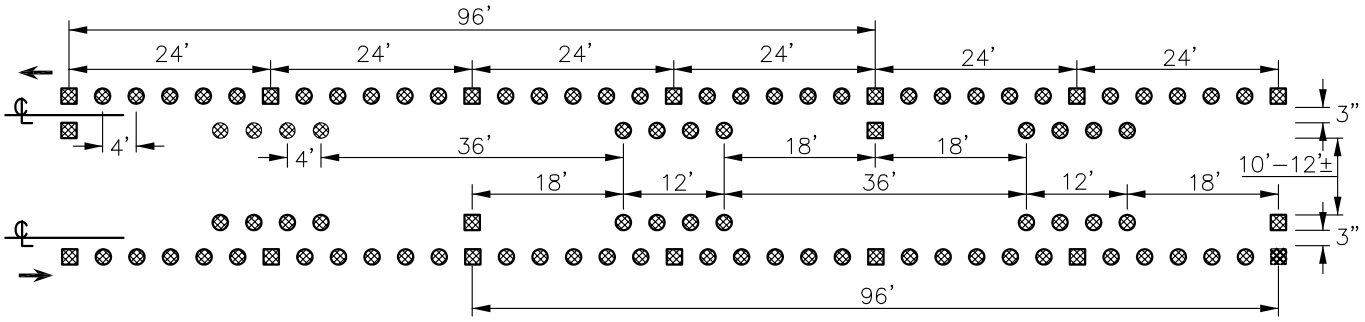


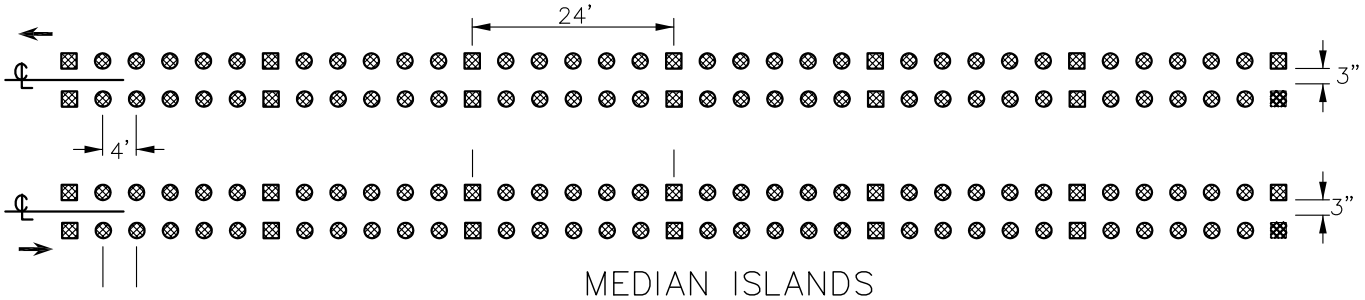
2–LANE ROADWAYS



MULTI–LANE ROADWAYS



TWO–WAY LEFT TURN LANE



MEDIAN ISLANDS

LEGEND

- ⊠ TWO–WAY YELLOW REFLECTIVE MARKER
- ⊗ NON–REFLECTIVE YELLOW MARKER
- → DIRECTION OF TRAVEL

NOTES:

1. FOR TWO LANE ROADWAYS, PLACE ADDITIONAL REFLECTORS AT 24 FT. O.C. ON CURVES WITH A RADIUS OF 750 FT. OR LESS.
2. THE FIRST AND LAST MARKER AT EACH INTERSECTION SHALL BE A REFLECTOR.
3. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

CITY OF FORT BRAGG CALIFORNIA

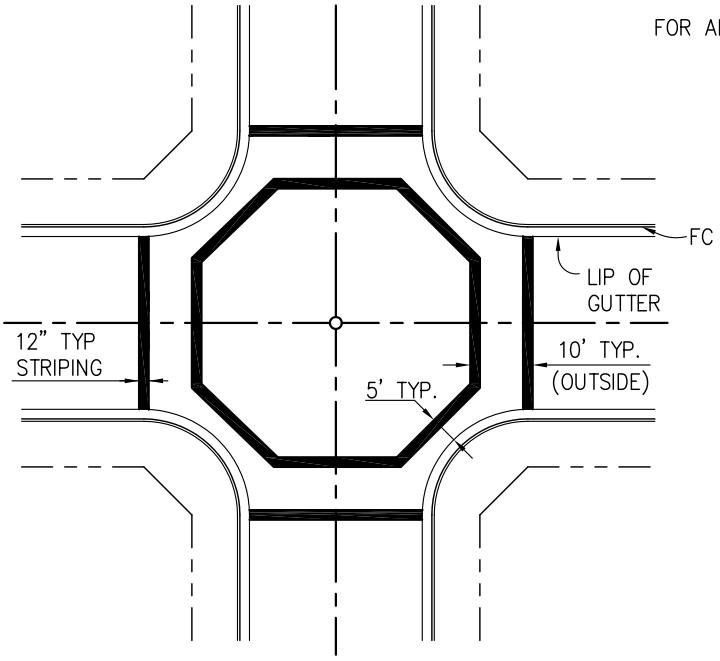
PAVEMENT MARKINGS: CENTER LINES, TWO–WAY LEFT TURN LANES, AND MEDIAN ISLANDS

STD. NO. 705

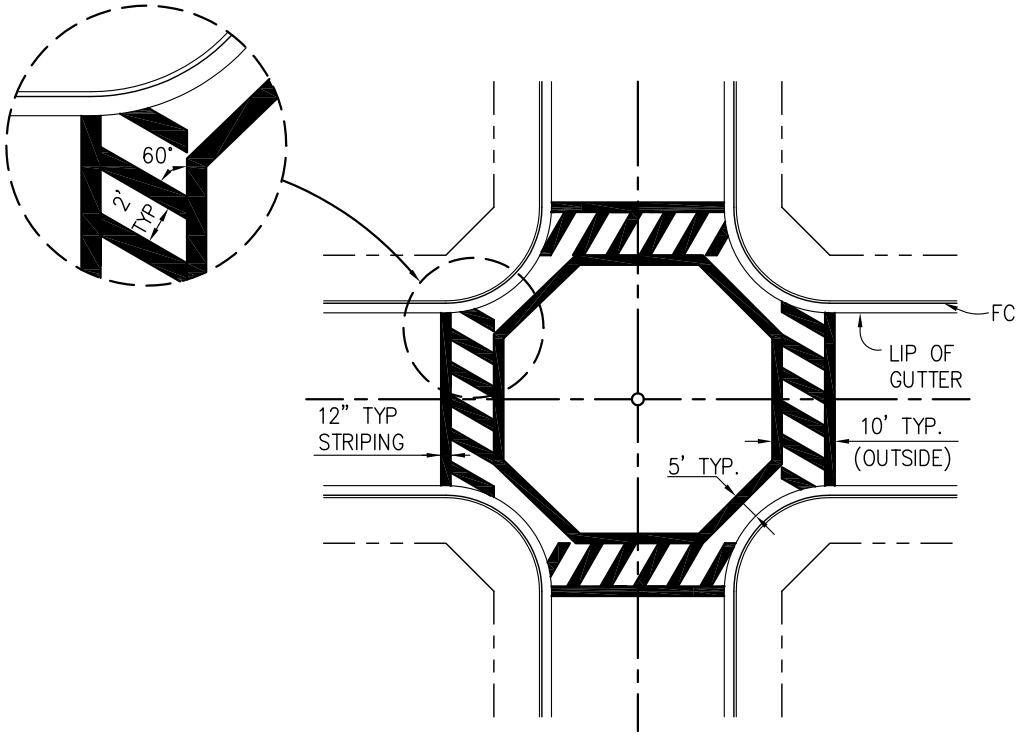
SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg701-714.dwg Layout Name: 705 Plot Date: Feb 02, 2009 at 17:48

FOR ADDITIONAL INFORMATION
SEE STD. 206



CONTROLLED INTERSECTIONS



UNCONTROLLED INTERSECTIONS

NOTES:

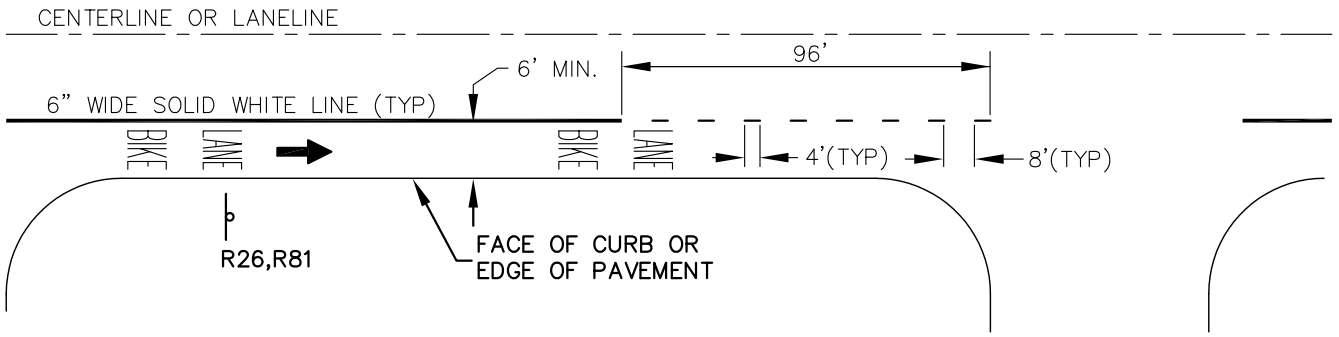
1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

CROSS WALK MARKINGS

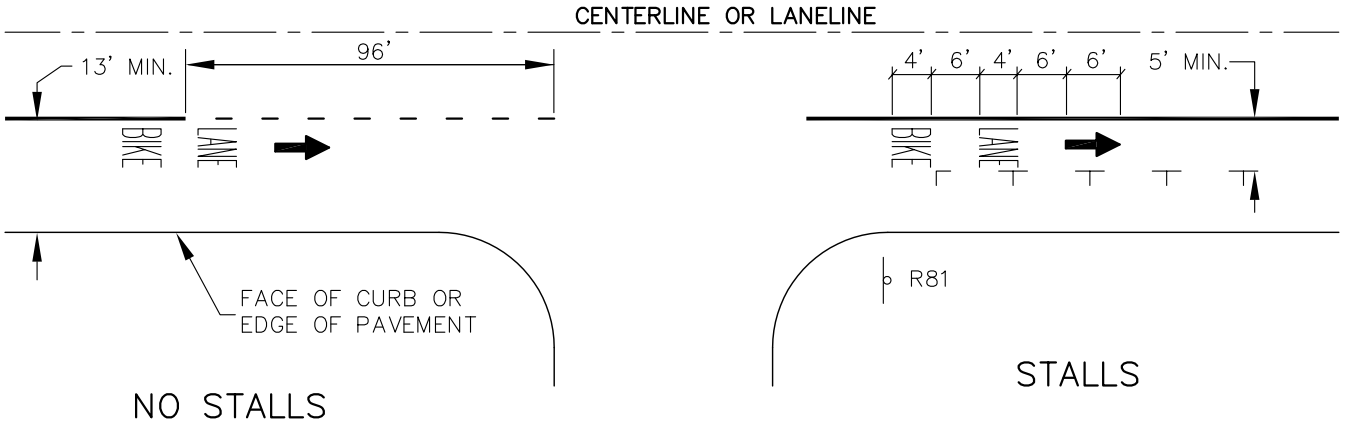
STD. NO. 706

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg701-714.dwg Layout Name: 706 Plot Date: Feb 02, 2009 at 17:48



PARKING PROHIBITED



PARKING PERMITTED

NOTES:

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

CITY OF FORT BRAGG CALIFORNIA	BIKE LANES SIGNS AND MARKINGS				STD. NO. 707
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg701-714.dwg Layout Name: 707 Plot Date: Feb 02, 2009 at 17:48

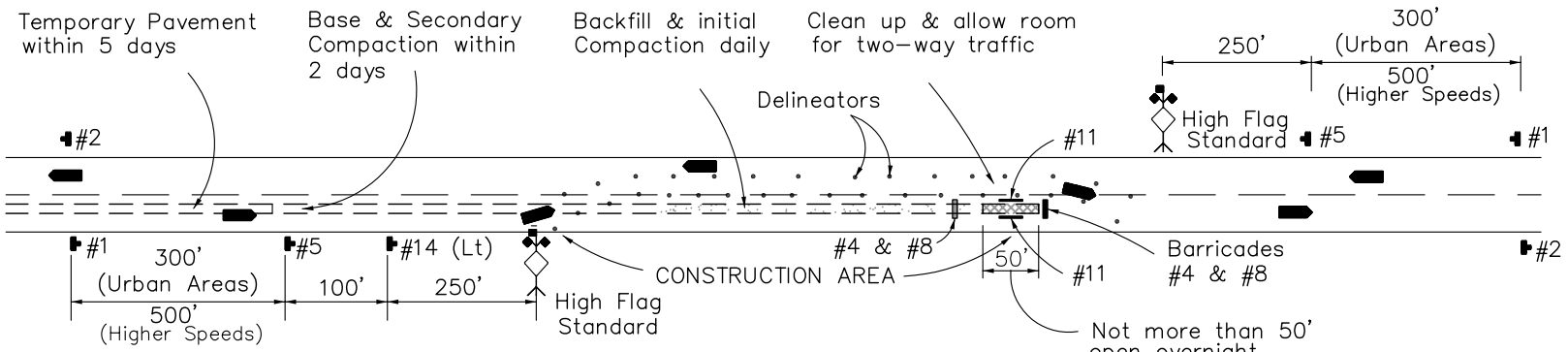
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg701-714.dwg Layout Name: 708 Plot Date: Feb 02, 2009 at 17:48

CITY OF FORT BRAGG CALIFORNIA

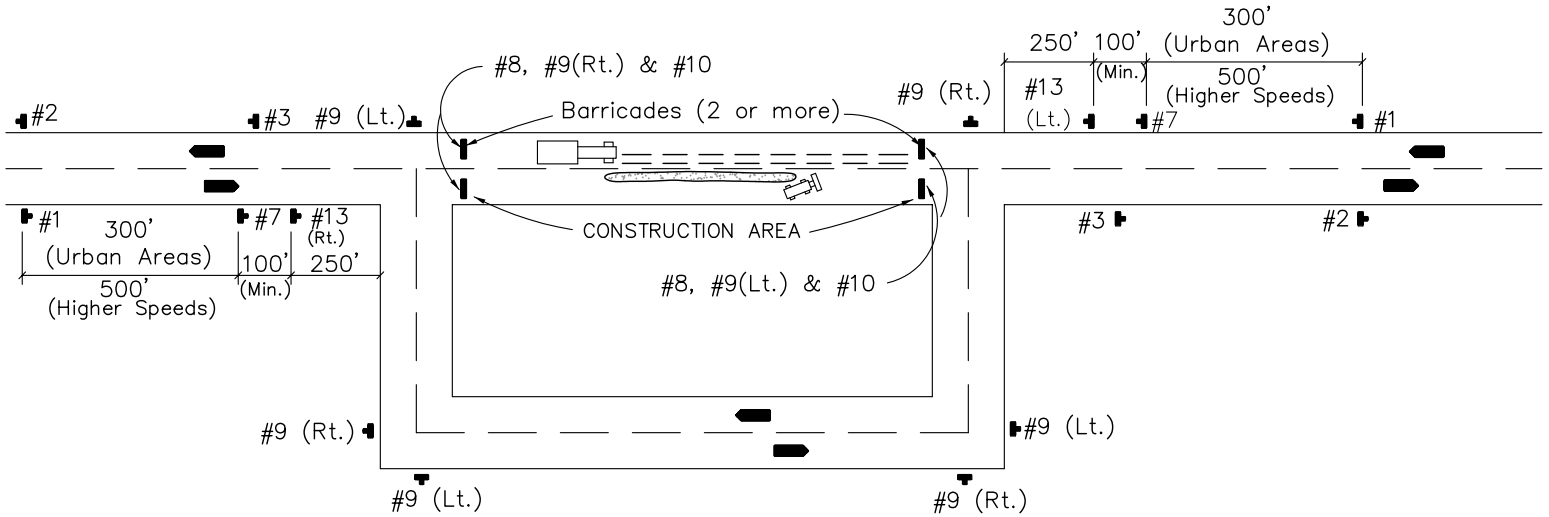
TRAFFIC CONTROL REQUIREMENTS
TWO WAY TRAFFIC & DETOUR

SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 708



TWO – WAY TRAFFIC
(DAYTIME OPERATION)



DETOUR
(SECURE PERMISSION FROM GOVERNING AGENCY)

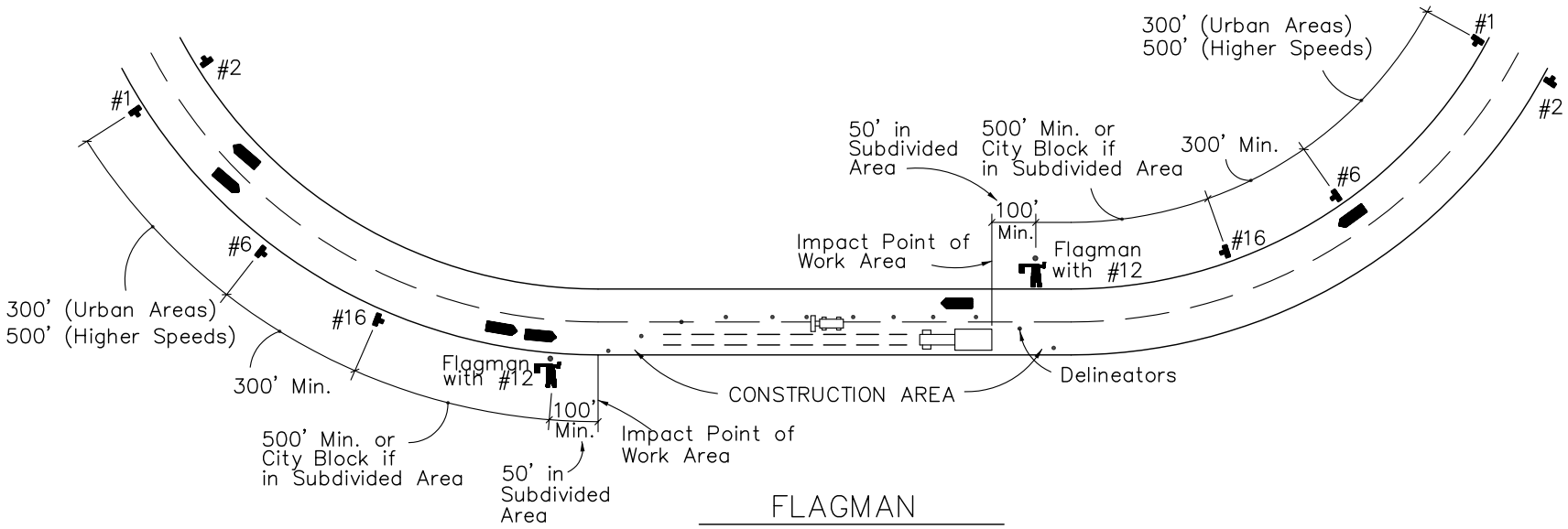
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg701-714.dwg Layout Name: 709 Plot Date: Feb 02, 2009 at 17:48

CITY OF FORT BRAGG CALIFORNIA

TRAFFIC CONTROL REQUIREMENTS FLAGMAN, EXCAVATION, AND NIGHT REQUIREMENTS

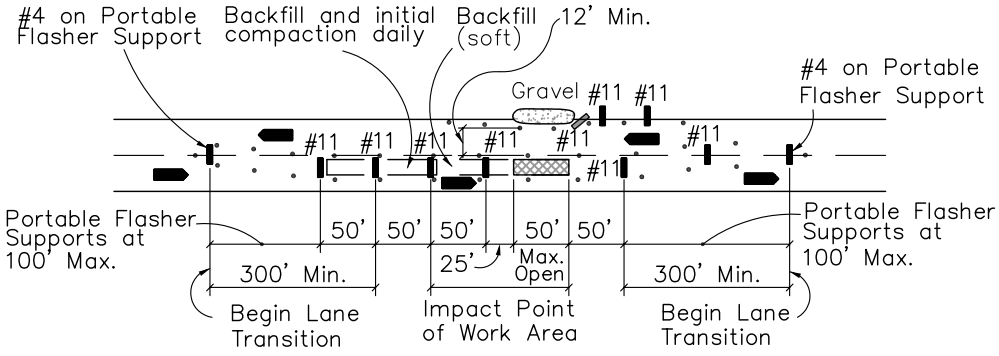
SCALE: NONE | DRAWN: LMM | CHK: OAB | APPVD: | DATE: APR 2008

STD. NO. 709



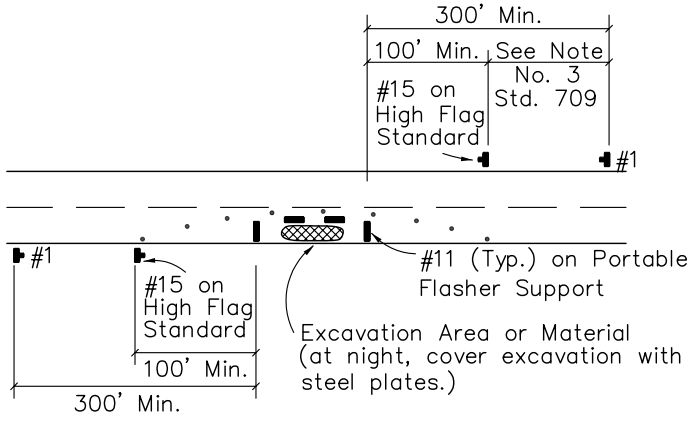
FLAGMAN

(ONE WAY TRAFFIC CONTROLLED BY FLAGMAN)



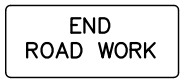
TYPICAL MINIMUM NIGHT REQUIREMENTS

(CONTRACTOR TO INSPECT REGULARLY, ESPECIALLY FLASHERS)

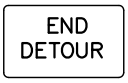


EXCAVATION

1 (W20-1)
Black on Orange
30" X 30"
5" Lettering (C Series)



2 (G20-2)
Black on Orange
42" X 18"
5" Lettering (C Series)



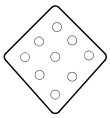
3 (M4-8a)
Black on Orange
30" X 18"
5" Lettering (C Series)

4 (C27 CA)
Black on Orange
24" X 24"
(or 36" x 36" Optional)
4" Lettering (D Series)

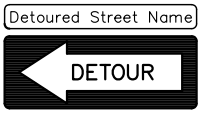
5 (W20-4)
Black on Orange
48" X 48"
7" Lettering (C Series)

6 (C9A CA)
Black on Orange
48" X 48"

7 (W20-2)
Black on Orange
48" X 48"
8" Lettering (D Series)

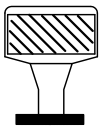


8 (TYPE N-3 CA) MARKER
Orange
18" X 18"

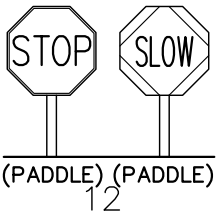


9 (M4-10)
Black on Orange on Black
48" x 18"
6" Lettering (D Series)
Left & Right

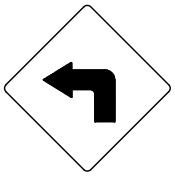
10 (R11-2)
Black on White
48" x 30"
8" Lettering (D Series)



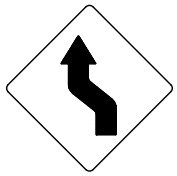
11 (TYPE K-1 CA MARKER)
Flexible post with Yellow
retroflective sheeting



12
White on Red and
Black on Orange on Black



13 (W1-1)
Black on Orange
36" x 36"
Left & Right



14 (W1-4)
Black on Orange
36" x 36"
Left & Right

15 (W21-1a)
Black on Orange
30" x 30"

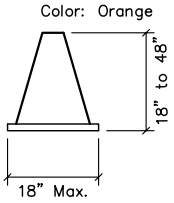
NOTES:

1. Since it is not possible to prescribe detailed standards of application for all situations which may arise, typical standards are presented here for the most common situations. These are desirable standards for normal open street situations, and additional protection should be provided for complicated situations, particularly on high speed or high volume streets. This sheet shall be used in conjunction with the "Manual of Traffic Controls for Construction and Maintenance Work Zones" issued by the State of California, Business, Transportation and Housing Agency, Department of Transportation, latest edition, which shall prevail.
2. Delineators shall be placed at 50 foot intervals along lane transitional areas and at 50 foot intervals along construction areas.
3. Distance between signs and/or work area may be varied depending on terrain and traffic speed.
4. All warning signs or delineators used shall be reflectorized or illuminated.
5. During the hours when no work is in progress, Men Working signs (No. 15) and Flagman Ahead signs (No. 6) shall be covered or removed.
6. On Portable Flasher Support, the entire area of orange and white shall be reflectorized. Reflectorization shall conform to specifications listed in Section 5-04 "Barricades", of the manual listed in Note 1. The predominant color of the barricade components shall be white.

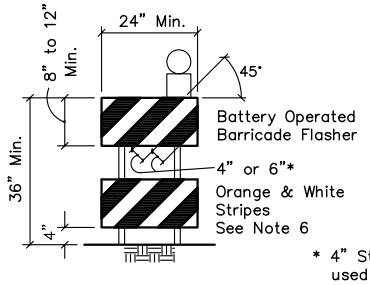
LEGEND

- Sign (Smooth side faces traffic)
- Delineator
- Portable Flasher Support
- Direction of traffic

16 (W3-4)
Black on Orange
48" X 48"

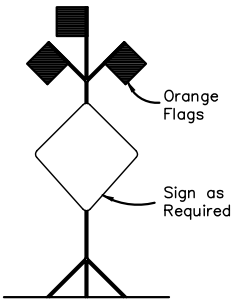


CONE DELINEATOR



* 4" Stripes may be used if length of rail is 3 feet or less.

PORTABLE FLASHER SUPPORT BARRICADE



HIGH FLAG STANDARD FOR WORKING SIGNS

CITY OF FORT BRAGG CALIFORNIA

TRAFFIC CONTROL REQUIREMENTS - SIGNING

STD. NO. 710

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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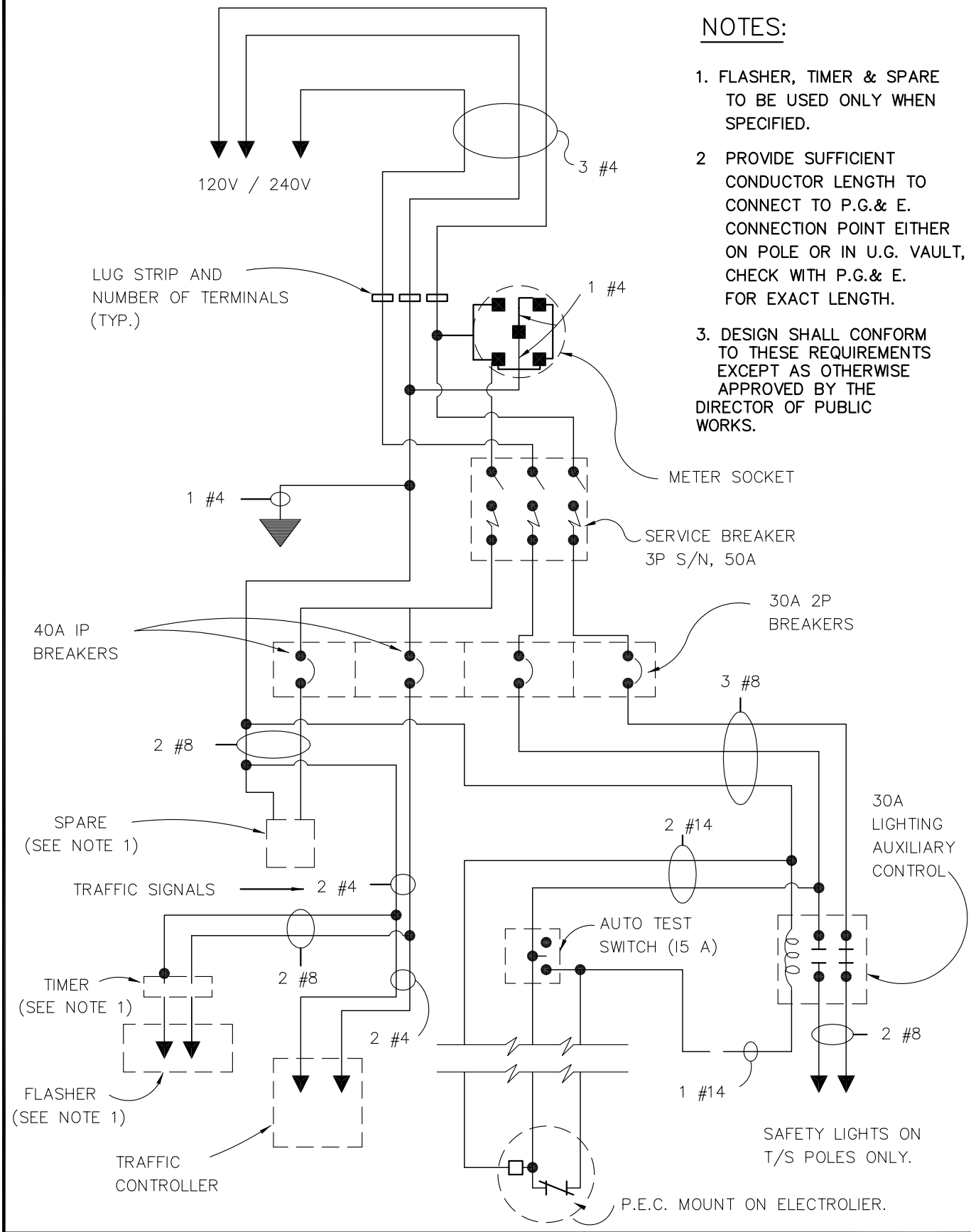


NOTES:

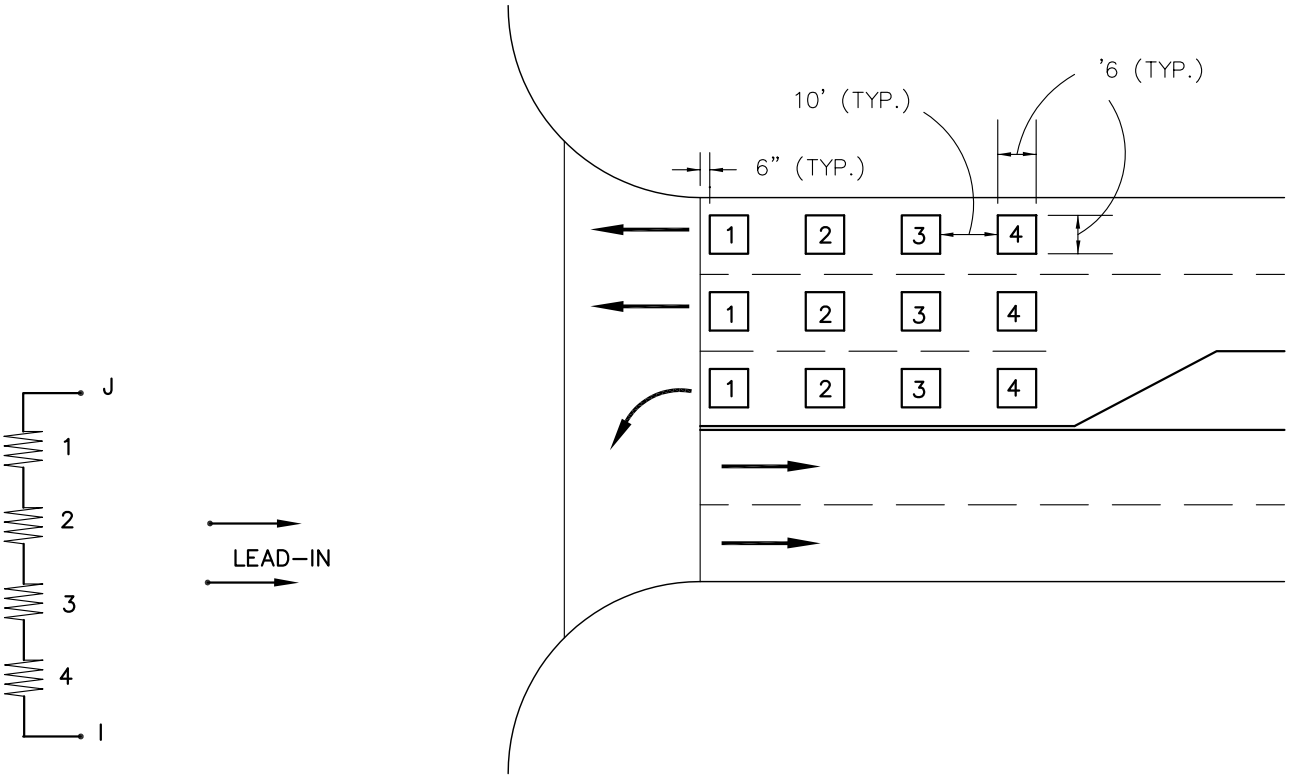
1. FLASHER, TIMER & SPARE TO BE USED ONLY WHEN SPECIFIED.
2. PROVIDE SUFFICIENT CONDUCTOR LENGTH TO CONNECT TO P.G.& E. CONNECTION POINT EITHER ON POLE OR IN U.G. VAULT, CHECK WITH P.G.& E. FOR EXACT LENGTH.
3. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

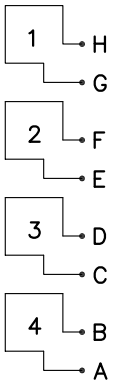
TRAFFIC SIGNAL SERVICE WIRING DIAGRAM

STD. NO. 711

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg701-714.dwg Layout Name: 711 Plot Date: Feb 02, 2009 at 17:48





PULL BOX CONNECTIONS

1. CONNECT J TO H
2. CONNECT G TO E
3. CONNECT F TO D
4. CONNECT C TO A
5. CONNECT B TO I

NOTES:

1. LOOPS SHALL BE CENTERED IN LANES.
2. ADJACENT LOOPS ON THE SAME SENSOR UNIT CHANNEL SHALL BE WOUND IN OPPOSITE DIRECTIONS.
3. LOOPS IN ADJACENT LANES SHALL BE WOUND IN OPPOSITE CONFIGURATION.
4. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

CITY OF FORT BRAGG CALIFORNIA

TRAFFIC SIGNAL LOOP DETECTOR WIRING

STD. NO. 712

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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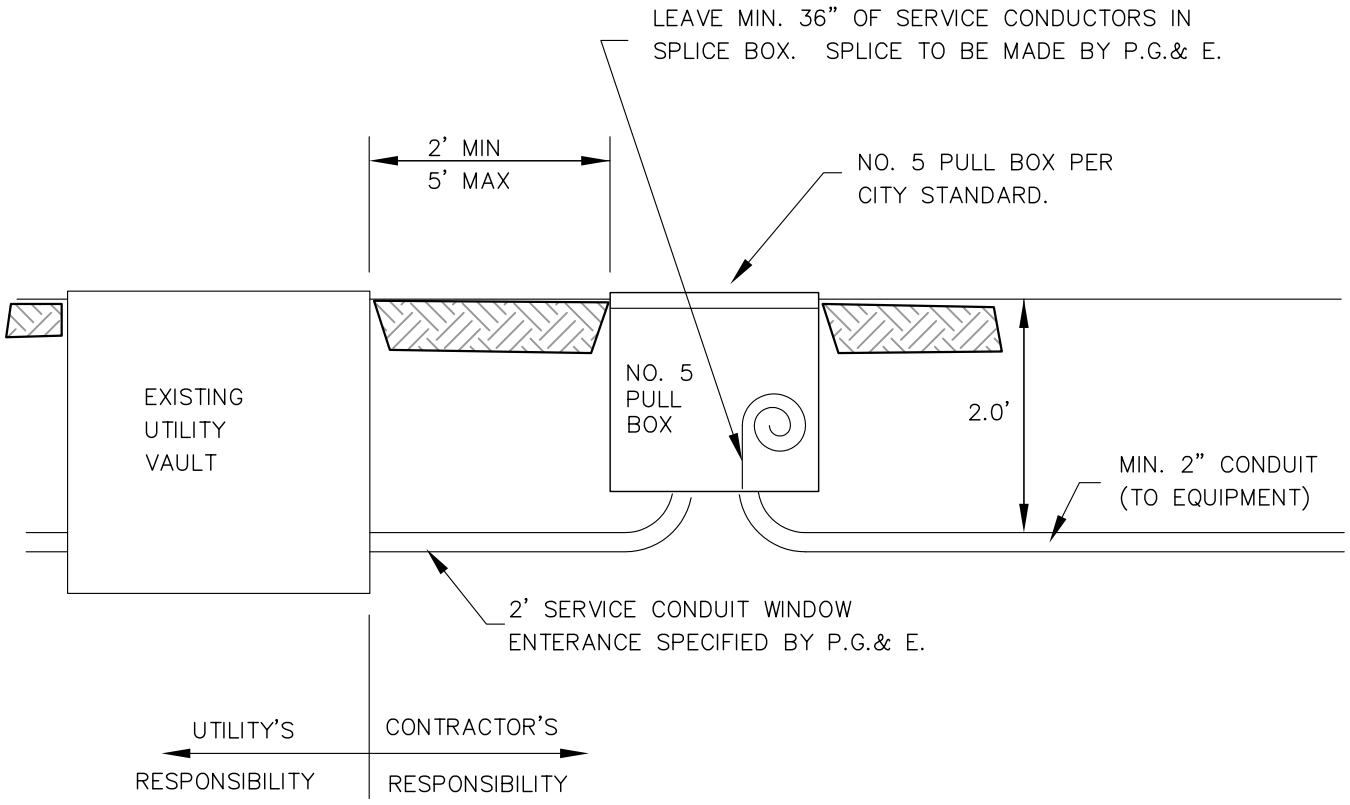

UNDERGROUND SERVICE

NOTES:

1. CONTRACTOR TO INSTALL CONDUIT INTO UTILITY CO. VAULT WITH UTILITY CO. REPRESENTATIVE IN ATTENDANCE.

2. CONTRACTOR TO INSTALL NO. 5 PULL BOX AND 2" SERVICE CONDUIT (WHEN NON-EXISTENT) AND 2" CONDUIT AND CONDUCTORS FROM EQUIPMENT TO PULL BOX.

3. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

CITY OF FORT BRAGG CALIFORNIA	**ELECTRIC SERVICE DETAIL UNDERGROUND SERVICE**	**STD. NO. 713**
SCALE: NONE	DRAWN: LMM / CHK: OAB / APPVD:	DATE: APR 2008

Images: Xrefs:
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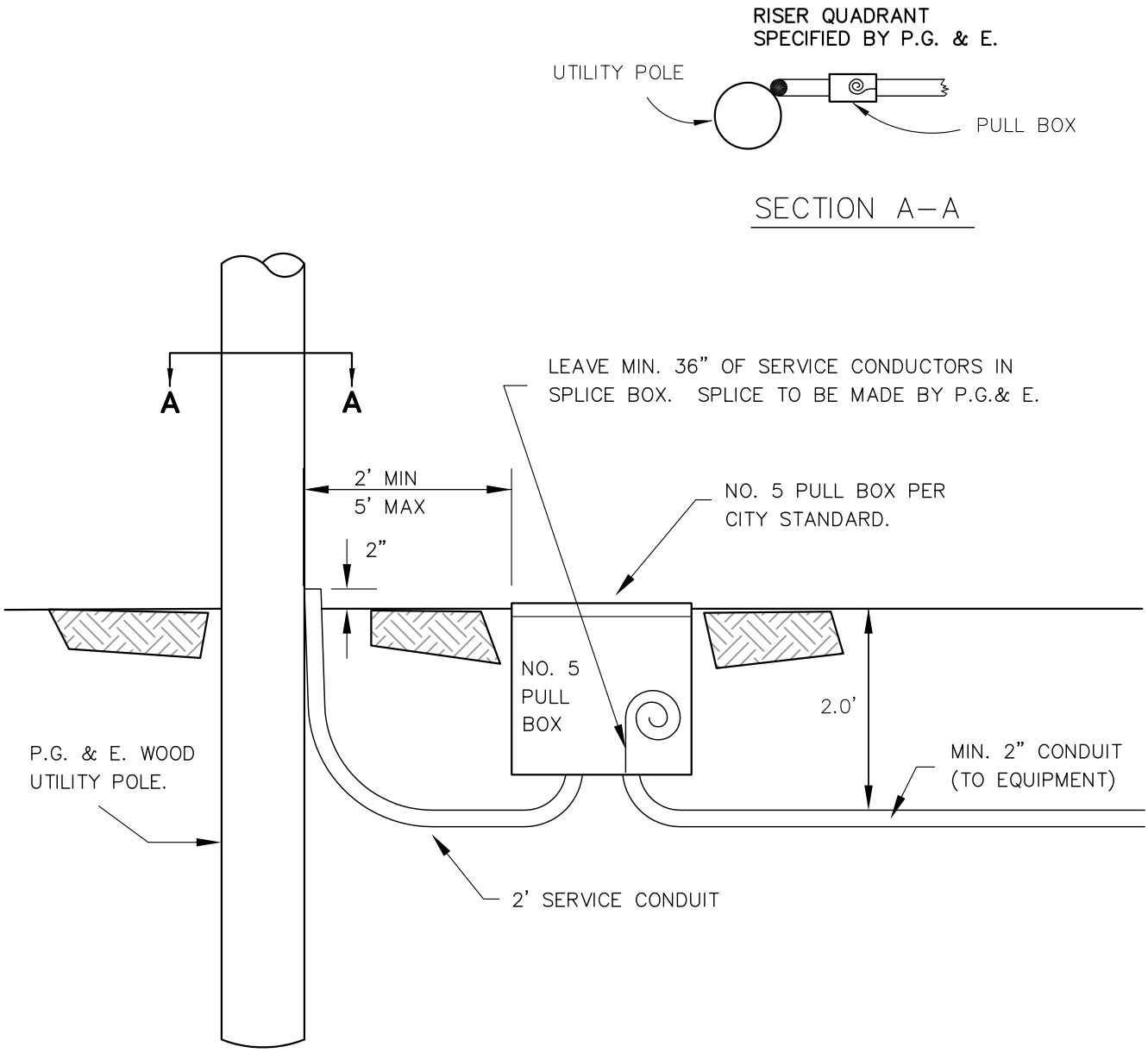


OVERHEAD SERVICE

NOTES:

1. CONTRACTOR TO INSTALL NO. 5 PULL BOX AND 2" SERVICE CONDUIT (WHEN NONEXISTENT) AND 2" CONDUIT AND CONDUCTORS FROM EQUIPMENT TO PULL BOX.

2. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

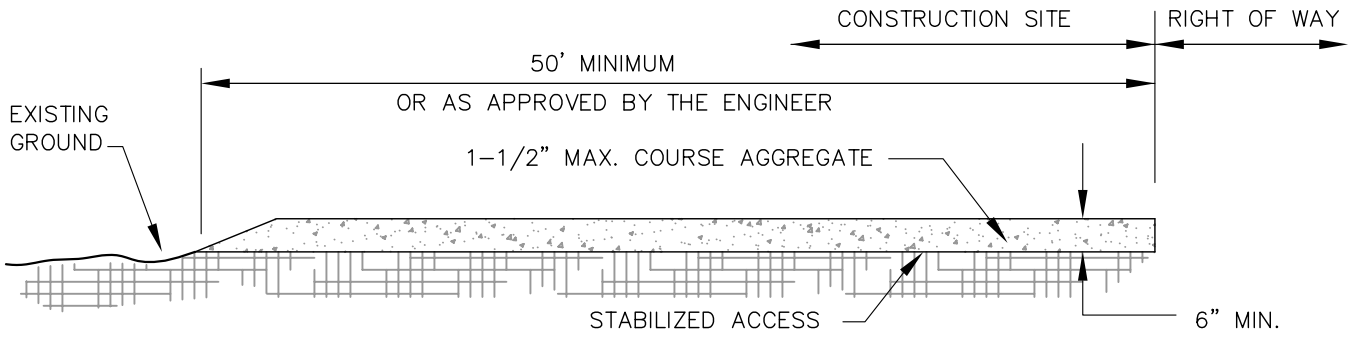
CITY OF FORT BRAGG CALIFORNIA	**ELECTRIC SERVICE DETAIL OVERHEAD SERVICE**	**STD. NO. 714**
SCALE: NONE	DRAWN: LMM / CHK: OAB / APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg701-714.dwg Layout Name: 714 Plot Date: Feb 02, 2009 at 17:48

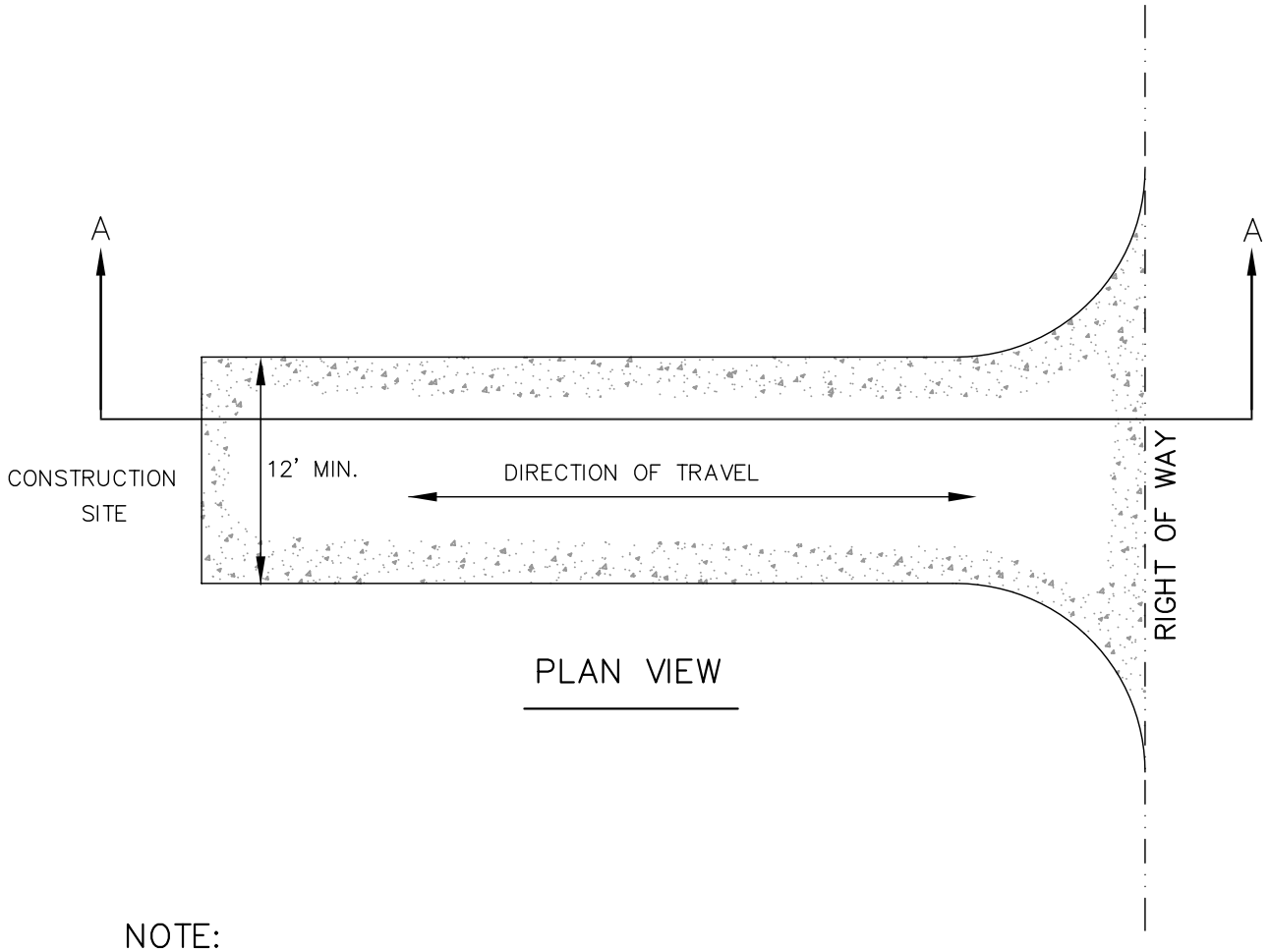
EROSION CONTROL STANDARD PLANS

DESCRIPTION

800 SERIES - EROSION CONTROL



SECTION A–A



PLAN VIEW

NOTE:

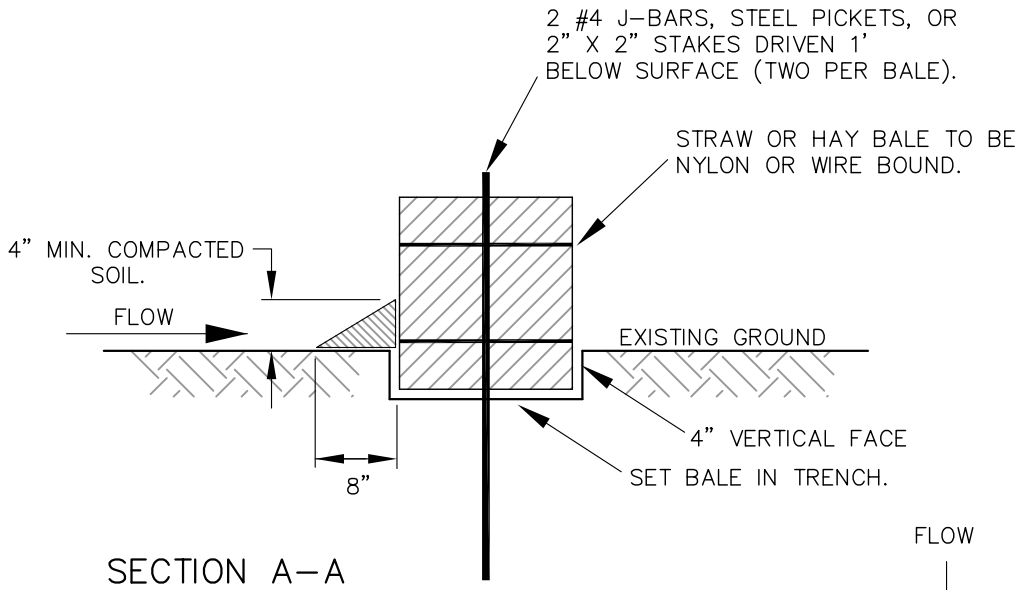
PROVIDE APPROPRIATE TRANSITION BETWEEN STABALIZED CONSTRUCTION ENTRANCE AND CITY RIGHT–OF–WAY.

STABILIZED CONSTRUCTION SITE ACCESS

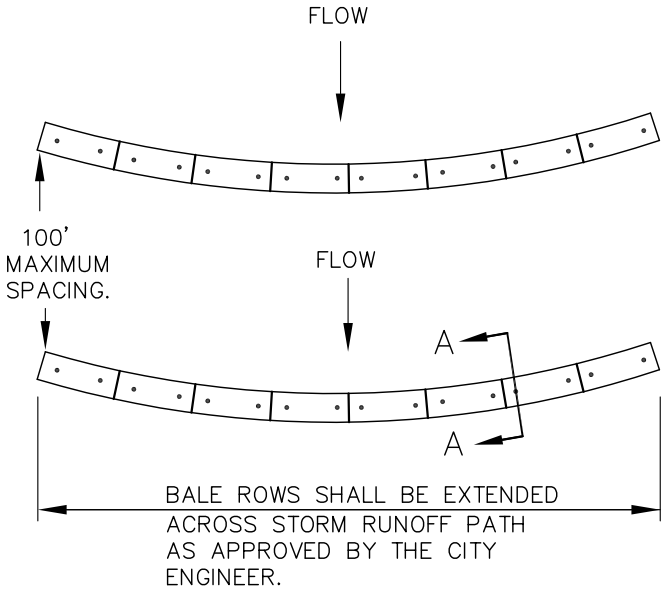
STD. NO. 801

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

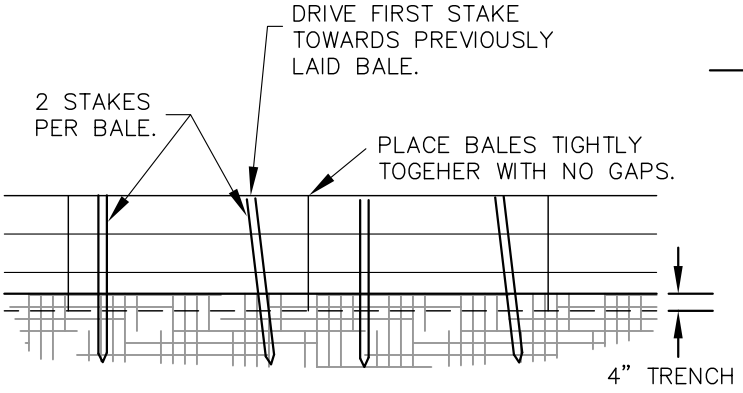
Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg800-805.dwg Layout Name: 801 Plot Date: Feb 02, 2009 at 17:50



SECTION A–A



BALE DIKE ALIGNMENT



FRONT VIEW

CITY OF FORT BRAGG CALIFORNIA	STRAW BALE INSTALLATION				STD. NO. 802
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
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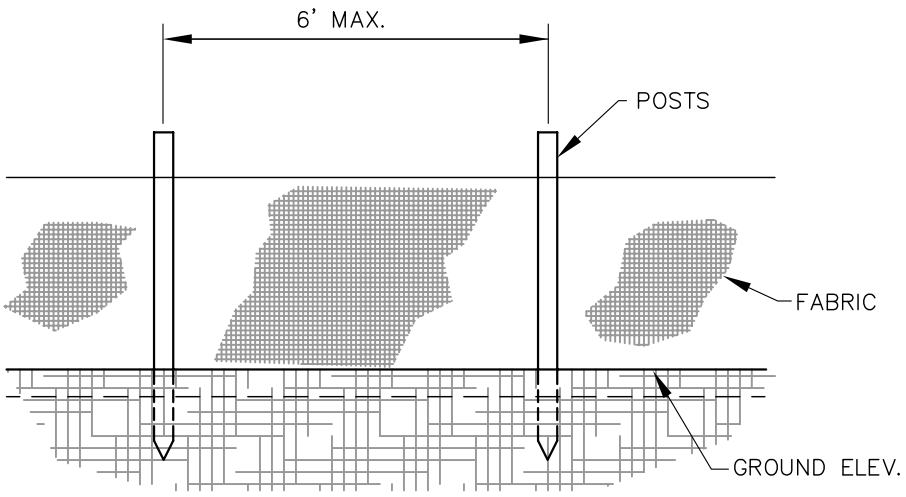
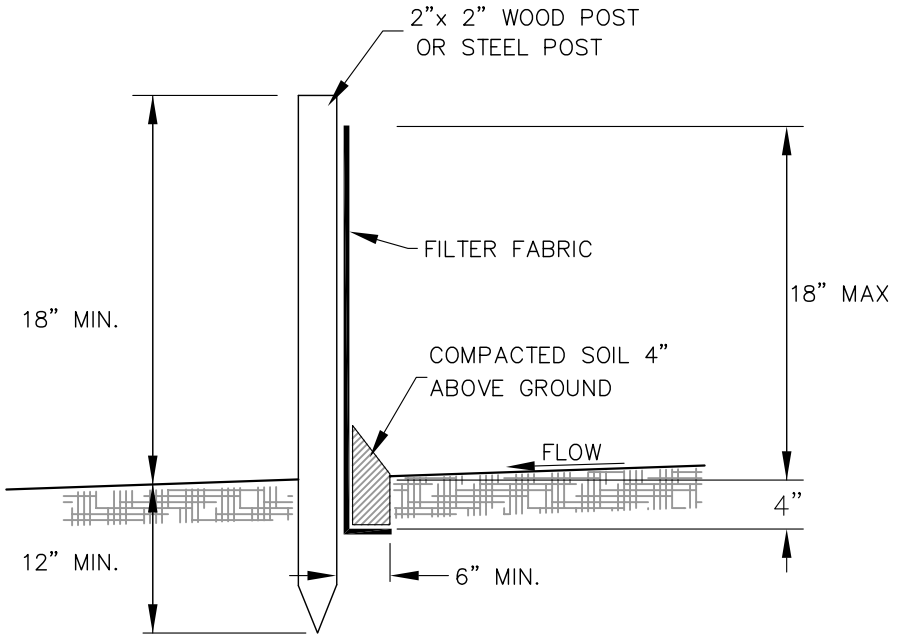


FRONT VIEW



CROSS SECTION

FABRIC SILT BARRIER

STD. NO. 803

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

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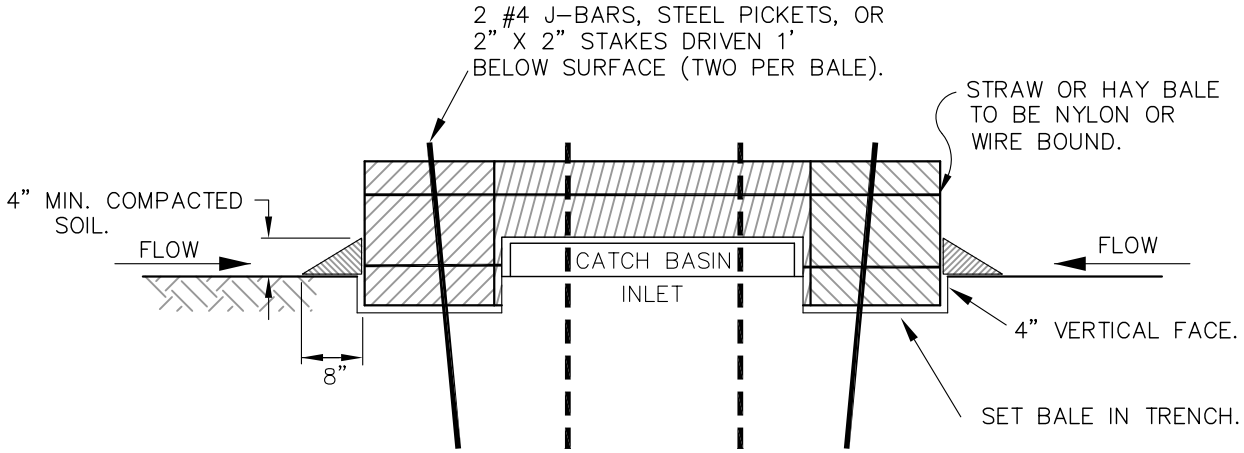
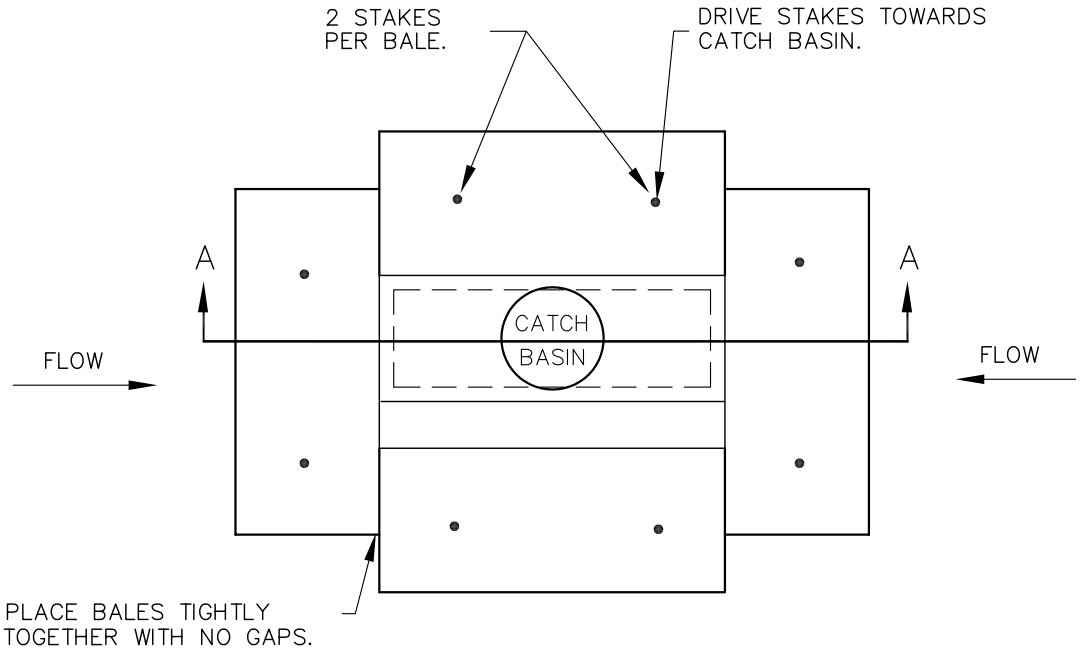
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg800-805.dwg Layout Name: 803 Plot Date: Feb 02, 2009 at 17:50



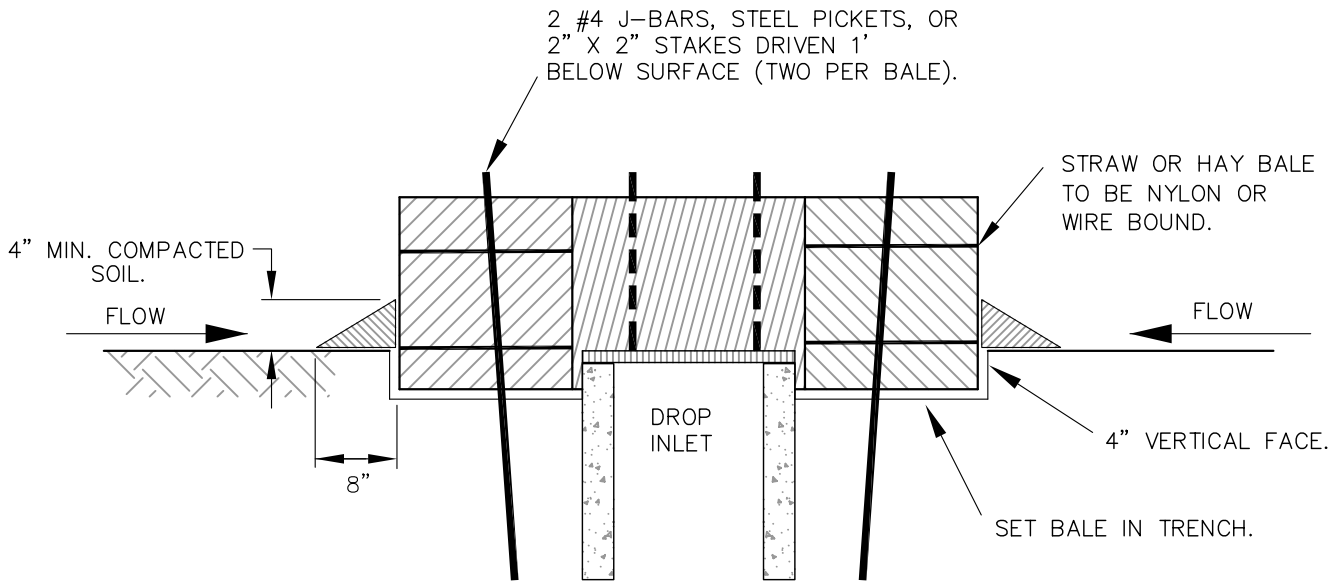
SECTION A–A



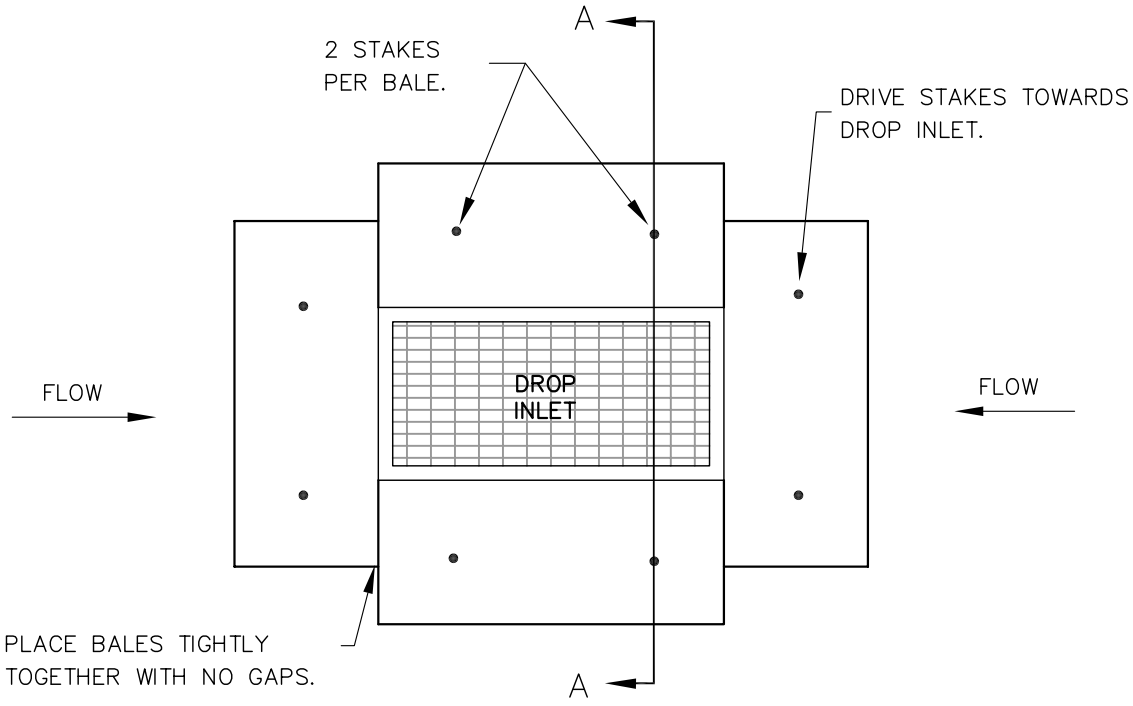
PLAN VIEW

CITY OF FORT BRAGG CALIFORNIA	STRAW BALE CATCH BASIN SEDIMENT BARRIER				STD. NO. 804
	SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg800-805.dwg Layout Name: 804 Plot Date: Feb 02, 2009 at 17:50



SECTION A–A



PLAN VIEW

STRAW BALE DROP INLET SEDIMENT BARRIER

STD. NO. 805

SCALE: NONE	DRAWN: LMM	CHK: OAB	APPVD:	DATE: APR 2008

Images: Xrefs:
Path: C:\DOCUME~1\krautner\LOCALS~1\Temp\AcPublish_6624\FortBragg800-805.dwg Layout Name: 805 Plot Date: Feb 02, 2009 at 17:50

APPENDIX

STANDARD DEED FORMS
& PARCEL/FINAL MAP CERTIFICATES

GRANT DEED

EASEMENT DEED

PUBLIC UTILITY EASEMENT DEED

TEMPORARY CONSTRUCTION EASEMENT DEED

PARCEL/FINAL MAP CERTIFICATES

R SHEET

WHEN RECORDED RETURN TO:

CITY OF FORT BRAGG
CITY CLERK
416 N. FRANKLIN STREET
FORT BRAGG, CA 95437

EASEMENT DEED

(Insert names of entity or person(s) granting easement)

GRANT (S) TO

THE CITY OF FORT BRAGG, A MUNICIPAL CORPORATION

An easement with a right of immediate entry and continued possession for construction, improvement, maintenance, repairs, operation and replacement of (***describe facility***) more particularly described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
AND BY REFERENCE MADE A PART HEREOF.

By: _____ Date: _____

By: _____ Date: _____

A notary certificate is required.

CERTIFICATE OF ACCEPTANCE	
This is to certify that the interest in real property conveyed above is hereby accepted by order of the Council of the City of Fort Bragg pursuant to Council Resolution/Ordinance No. _____ , dated _____ , 20 ___, and Grantee consents to recordation thereof by its duly authorized officer. Recording of this document is requested for and on behalf of the City of Fort Bragg pursuant to Section 6103 of the Government Code.	**CITY OF FORT BRAGG,** **A Municipal Corporation** By: _____ Title: _____ Date: _____

NOTARY CERTIFICATE

STATE OF_____

COUNTY OF_____

On _____, before me, _____, a Notary Public, personally appeared _____, (personally known to me) or (proved to me on the basis of satisfactory evidence), to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument, the person(s), or entity upon behalf of which the person(s) acted, executed the instrument(s).

WITNESS my hand and official seal.

_____ _____

Notary Public Date

WHEN RECORDED RETURN TO:

CITY OF FORT BRAGG
CITY CLERK
416 N. FRANKLIN STREET
FORT BRAGG, CA 95437

GRANT DEED

(Insert names of entity or person(s) granting easement)

GRANT (S) TO

THE CITY OF FORT BRAGG, A MUNICIPAL CORPORATION

All that Real Property situated in the County of Mendocino, State of CALIFORNIA, and described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
AND BY REFERENCE MADE A PART HEREOF.

By: _____ Date: _____

By: _____ Date: _____

A notary certificate is required.

CERTIFICATE OF ACCEPTANCE	
This is to certify that the interest in real property conveyed above is hereby accepted by order of the Council of the City of Fort Bragg pursuant to Council Resolution/Ordinance No. _____ , dated _____ , 20 ___, and Grantee consents to recordation thereof by its duly authorized officer. Recording of this document is requested for and on behalf of the City of Fort Bragg pursuant to Section 6103 of the Government Code.	**CITY OF FORT BRAGG,** **A Municipal Corporation** By: _____ Title: _____ Date: _____

NOTARY CERTIFICATE

STATE OF_____

COUNTY OF_____

On _____, before me, _____, a Notary Public, personally appeared _____, (personally known to me) or (proved to me on the basis of satisfactory evidence), to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument, the person(s), or entity upon behalf of which the person(s) acted, executed the instrument(s).

WITNESS my hand and official seal.

_____ _____

Notary Public Date

WHEN RECORDED RETURN TO:

CITY OF FORT BRAGG
CITY CLERK
416 N. FRANKLIN STREET
FORT BRAGG, CA 95437

EASEMENT DEED

(Insert names of entity or person(s) granting easement)

GRANT (S) TO

THE CITY OF FORT BRAGG, A MUNICIPAL CORPORATION

An easement with a right of immediate entry and continued possession for construction, improvement, maintenance, repairs, operation and replacement, for public utility purposes, including but not limited to electricity, gas, sewer and water facilities, storm drains, sidewalks, telephone, cable television, and for such other public or public utility purposes as the City of Cloverdale may choose to make and over, upon, across, through and beneath that certain real property situated in the County of Sonoma, State of California, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
AND BY REFERENCE MADE A PART HEREOF.

By: _____ Date: _____

By: _____ Date: _____

A notary certificate is required.

CERTIFICATE OF ACCEPTANCE	
This is to certify that the interest in real property conveyed above is hereby accepted by order of the Council of the City of Fort Bragg pursuant to Council Resolution/Ordinance No. _____ , dated _____ , 20 ___, and Grantee consents to recordation thereof by its duly authorized officer. Recording of this document is requested for and on behalf of the City of Fort Bragg pursuant to Section 6103 of the Government Code.	**CITY OF FORT BRAGG,** **A Municipal Corporation** By: _____ Title: _____ Date: _____

NOTARY CERTIFICATE

STATE OF_____

COUNTY OF_____

On _____, before me, _____, a Notary Public, personally appeared _____, (personally known to me) or (proved to me on the basis of satisfactory evidence), to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument, the person(s), or entity upon behalf of which the person(s) acted, executed the instrument(s).

WITNESS my hand and official seal.

_____ _____

Notary Public Date

WHEN RECORDED RETURN TO:

CITY OF FORT BRAGG
CITY CLERK
416 N. FRANKLIN STREET
FORT BRAGG, CA 95437

EASEMENT DEED

(Insert names of entity or person(s) granting easement)

GRANT (S) TO

THE CITY OF FORT BRAGG, A MUNICIPAL CORPORATION

A temporary construction easement with a right of immediate entry for construction, improvement, and repairs, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
AND BY REFERENCE MADE A PART HEREOF.

Said Temporary Construction shall terminate on **(*Insert Timeframe*)**

By: _____ Date: _____

By: _____ Date: _____

A notary certificate is required.

CERTIFICATE OF ACCEPTANCE	
This is to certify that the interest in real property conveyed above is hereby accepted by order of the Council of the City of Fort Bragg pursuant to Council Resolution/Ordinance No. _____ , dated _____ , 20 ___, and Grantee consents to recordation thereof by its duly authorized officer. Recording of this document is requested for and on behalf of the City of Fort Bragg pursuant to Section 6103 of the Government Code.	**CITY OF FORT BRAGG,** **A Municipal Corporation** By: _____ Title: _____ Date: _____

NOTARY CERTIFICATE

STATE OF_____

COUNTY OF_____

On _____, before me, _____, a Notary Public, personally appeared _____, (personally known to me) or (proved to me on the basis of satisfactory evidence), to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument, the person(s), or entity upon behalf of which the person(s) acted, executed the instrument(s).

WITNESS my hand and official seal.

_____ _____

Notary Public Date

City of Fort Bragg

PARCEL & FINAL MAP CERTIFICATES

OWNER'S STATEMENT
(Final Map/Parcel Map)

(I / We) hereby state that (I / we) (am / are) the owner(s) of and have the right, title, and interest in and to the real property included within the subdivision shown upon this map, and (I / we) (am / are) the only person(s) whose consent is necessary to pass clear title to said property, and (I / we) consent to the making and filing of said map of the subdivision shown within the border lines, and hereby dedicate for public use the *(Avenues, Courts, Drives, Roads, Streets, Easements and Public Utility Easements)* as shown hereon.

No building or other structure shall be erected nearer to the street lines than the distances indicated by the building setback lines shown hereon.

_____ _____
(Owner's Name) Date

The information shown within the parentheses will vary with each map.

Requires Notary Public Certificate.

TRUSTEE'S CERTIFICATE

_____, a _____ corporation, Trustee under a Deed of Trust recorded as Document No. _____, Official Records of Mendocino County, against the land herein shown, consents to the making and filing of this Map.

In witness whereof, said corporation has caused its name to be affixed this _____ day of _____ _____, 20___.

By: _____ By: _____

Title _____ Title _____

Requires Notary Public Certificate

PARCEL & FINAL MAP CERTIFICATES

OWNERS OF INTEREST
(Final and Parcel Maps)

Signatures of owners of the following easements have been omitted under the provisions of Section 66436 of the Subdivision Map Act; their interest is such that it cannot ripen into a fee title and such signatures are not required by the governing body:

NAME	RECORDED	NATURE OF EASEMENT
_____	Bk.____ Pg.___	_____
_____	Doc._____	_____

SURVEYOR'S OR ENGINEER'S STATEMENT
(Final Map/Parcel Map)

This map was prepared by me or under my direction and is based on a field survey in conformance with the requirements of the Subdivision Map Act and local ordinance at the request of _____ in the month of _____, 20___, and that the monuments shown hereon are sufficient to enable the survey to be retraced and that said monuments will be placed within one year of the filing of this map. I hereby state that this map substantially conforms to the conditionally approved tentative map, if any.

Security in the amount of $ _____ has been filed to assure such placing.

Date:_____, 20___

_____
Surveyor's or Engineer's Name & L.S. or R.C.E. No.

SURVEYOR'S OR ENGINEER'S STATEMENT
(Parcel Map Based on Record Data)

This map was prepared by me or under my direction and was compiled from record data in conformance with the requirements of the Subdivision Map Act and local ordinance at the request of _____ in the month of _____ , 20___. I hereby state that this map substantially conforms to the conditionally approved tentative map, if any.

Date: _____, 20___

_____

PARCEL & FINAL MAP CERTIFICATES

Surveyor's or Engineer's Name & L.S. or R.C.E. No.

PUBLIC UTILITY EASEMENT STATEMENT

(For Use on All Subdivision Maps When a PUE is Dedicated)

A public utility easement is an easement to construct, install, inspect, maintain, replace, remove and use facilities of the type hereinafter specified, including but not necessarily be limited to the following:

Construct curb, gutter and sidewalk, installation of transmission and distribution facilities such as electrical, gas, water, telephone, cable television, sewer, street lighting, drainage, roadway, landscaping; also uses for pedestrian, equestrian, and non-powered vehicle purposes.

Said easement shall also include the right to excavate or fill the easement for the full width and to a reasonable depth thereof.

IMPROVEMENT CERTIFICATE

(For Use on Parcel Maps)

The following improvements shall be constructed prior to the issuance of a permit or other grant of approval for the development of any parcel shown on this map in accordance with Section 66411.1 of the Subdivision Map Act: *(List Improvements)* _____. All improvements shall be constructed in accordance with the approved plans on file in the office of City Engineering.

The information shown within the parentheses will vary with each map.

CITY SURVEYOR'S STATEMENT

(For Use on All Subdivision Maps)

I do hereby state that this Subdivision Map, consisting of _____ sheets, this statement being on sheet one thereof, has been examined by me and that the subdivision, as shown upon said map, is substantially the same as said subdivision appeared on the approved or conditionally approved tentative map and any approved amendments thereof, and that all provisions of the Subdivision Map Act of the State of California and amendments thereto and of any local ordinances applicable at the time of approval of the tentative map have been complied with.

_____ _____

David W. Goble P.L.S. 6493 Date

I do hereby state that I have examined this Subdivision Map on behalf of the City of Fort Bragg, and I am satisfied that this map is technically correct.

_____ _____

PARCEL & FINAL MAP CERTIFICATES

David W. Goble P.L.S. 6493 Date

PLANNING COMMISSION CERTIFICATE

I hereby certify that this map has been examined by me and was found to substantially conform to the tentative map approved by the Planning Commission of the City of Fort Bragg on _____ 20___.

_____ _____

Planning Commission, City of Fort Bragg Date
County of Mendocino, State of California

CITY TREASURER'S CERTIFICATE

I the City Treasurer, in and for the City of Fort Bragg, State of California, do hereby certify that there are no liens for unpaid City taxes against the tract of land hereon shown, or any part thereof, except those not payable, and I further certify that there are no special assessments against said tract of land that are unpaid, except those estimated to total $_____, which constitute a lien against the property, but which are not yet due and payable and can or may be paid in full.

_____ _____

City Treasurer, City of Fort Bragg Date
County of Mendocino, State of California

CITY CLERK'S CERTIFICATE

I hereby certify that the City Council of the City of Fort Bragg, State of California, on the _____ day of _____, 20___, by Minute Order regularly passed and entered in the Minutes of said Council, did approve this map and accept, subject to improvement for public use, *(Avenues, Courts, Drives, Roads, Streets, etc., and public easements)* as shown hereon.
*

_____ _____

Clerk of the City of Fort Bragg Date
County of Mendocino, State of California

* Should there a vacation of right-of-way or easement to be approved with the map, insert the following:

Pursuant to Government Code Section 66499.20 1/2 the following public right-of-way and easements located within this subdivision are hereby vacated:

(DESCRIPTION) *(DOCUMENT NO. OR MAP)*

The information shown within the parentheses will vary with each map.

PARCEL & FINAL MAP CERTIFICATES

COUNTY CLERK'S CERTIFICATE

I certify that all bonds, money or negotiable bonds required under the provisions of the Subdivision Map Act to secure payment of taxes and assessments have been filed with and approved by the Board of Supervisors of the County of Mendocino, namely bond(s) under Government Code Sections 66493(a) and 66493(c) in the sum of $_____ and $_____ respectively.

_____ _____

Clerk of the Board of Supervisors Date
County of Mendocino, State of California

COUNTY TAX COLLECTOR'S CERTIFICATE

According to the records in the office of the undersigned, there are no liens against this subdivision, or any part thereof, for unpaid state, county, municipal or local taxes, or special assessments collected as taxes and not yet payable. My estimate of taxes and special assessments collected as taxes and not yet payable is $_____. The land in said subdivision is not subject to a special assessment or bond, which may be paid in full. Security required pursuant to Government Code Sections 66493(a) and 66493(c) are hereby accepted and approved.

_____ _____

Tax Collector Date
County of Mendocino, State of California

COUNTY RECORDER'S CERTIFICATE

Filed this _____ day of _____, 20___, at _____.m. in Book _____ of Maps at Page(s) _____, at the request of the City of Fort Bragg.

Fee of $_____ Document No. _____

Signed: _____ _____

County Recorder Deputy
Mendocino County, California

ACKNOWLEDGEMENT

STATE OF _____

COUNTY OF _____

On _____ before me, _____, a Notary Public, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument, the persons, of the entity upon behalf of which the person(s) acted, executed the instruments.

Witness my hand and official seal.

_____ _____

Notary Public Date

OWNER AND MAILING ADDRESS	PROPERTY AREAS	CITY OF FORT BRAGG		
	TAKE _____			
	REMAINDER _____			
A.P. No. _____	TOTAL _____	SCALE:	DATE:	
DOC. No. _____	CITY ACQUISITION DEED	DWN: CHK:	APPROVED	FILE NO.
DOC. No. _____	DOC. _____			

Images: Xrefs:
Path: F:\BMAP-STD\FORT BRAGG\Standards\Std Plans Rev 04-08\FortBraggRsht.dwg Layout Name: Model Plot Date: Feb 02, 2009 at 12:56