CITY OF ORLAND
GLENN COUNTY, CALIFORNIA

LAND DIVISION STANDARDS

AND

IMPROVEMENT STANDARDS

ADOPTED APRIL 1988
AMENDED JUNE 1995
AMENDED OCTOBER 2003
AMENDED JUNE 2009
AMENDED MARCH 2014
AMENDED MAY 2018

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I. STANDARD SPECIFICATIONS

It is intended that the included improvement standards are to be used in conjunctions with the State of California Department of Transportation Standard Specifications, 2010 Edition.

Earthwork, grading, paving, and concrete work shall conform to the applicable section of the State Standard Specifications, unless modified by the included improvement standards.

II. GENERAL DESIGN CRITERIA

GENERAL DESIGN CRITERIA shall apply to the design of all improvements within the City of Orland which are subject to review by the City Engineer.

DRAWINGS shall be on standard size sheets (22' x 34", 24" x 36", 11" x 17", or 8-1/2" x 11") with standard title block. All lettering shall be 1/8" or larger to permit photographic reduction.

TITLE SHEETS shall have an index or key map clearly indicating the sheet numbers for all drawings.

DESIGNER shall sign each sheet. Designs for structures, and other design subjects required by law to be designed by a Registered Engineer or Architect shall be signed and stamped by the Registered Engineer or Architect.

SOILS REPORT, when required, shall be signed by a Registered Engineer or Geologist.

REVISIONS TO ORIGINAL DRAWINGS must be initialed by the Design Engineer and approved by the City Engineer.

IMPROVEMENTS are to be designed and constructed in accordance with these Land Division Standards and Improvement Standards.

SUBDIVISIONS shall have improvement drawings showing overall layout of the water, sewer, storm drainage, and streets. Public utility locations shall be shown on the as-built plans for all projects.

PROFILES shall be shown on the improvement drawings for streets and street improvements. Vertical curves shall show all curve data, i.e., length, beginning, ending, P.I., etc. Typical design data shall be shown on all sheets, i.e., elevations, stationing, etc.

SCALE for improvement plans shall normally be 1" = 40' for the horizontal and 1" = 2' for the vertical. The vertical scale should be changed to 1" = 5', or other appropriate scale where depths are great. For complex plans the scale shall be 1" = 20' or larger as necessary for clarity.

IMPROVEMENT PLANS shall be prepared in AutoCAD format and plotted on vellum, unless otherwise approved by the City Engineer.

STREET SURVEY CONTROL, horizontal and vertical, storm drainage, subdivision boundary and lot calculations, shall accompany all submittals for checking and approval by the City Engineer.

IMPROVEMENT BONDS, when required, shall include a detailed cost estimate, prepared by the Design Engineer, and approved by the City Engineer.

ORIGINAL DRAWINGS and AutoCAD electronic files shall be revised by the Design Engineer to reflect the as-built conditions, and duplicate or photographic mylar copies and electronic files shall be furnished to the City prior to final acceptance of the work by the City.

III. GENERAL

The purpose of these standards is to specifically define the minimum standards required for the subdivision and/or improvement of land within the City of Orland.

Improvement of subdivisions for which parcel maps are filed shall be limited to dedication of rights-of-way and easements and the construction of reasonable on-site and off-site improvements to serve the parcels being created. The requirement for construction of improvements shall be noted on the Parcel Map. Only those portions of these standards which are pertinent to these dedications and improvements shall be applicable to subdivision for which parcel maps are filed.

Improvement of subdivisions for which final maps are filed shall include, but is not limited to, dedication of streets, public ways and easements, grading, surfacing, curbs, gutters, sidewalks, culverts, bridges, storm drains, sanitary sewer, water and fire protection facilities, street lighting, and permanent subdivision monuments as set forth herein.

A subdivider shall improve, or agree to improve, all land dedicated or to be dedicated for streets, public ways and easements as a condition precedent to acceptance thereof and approval of the final map or parcel map.

The construction of improvements for undeveloped parcels created by a Parcel Map shall not be required until a permit is issued for development of the parcel involved. Improvements required for parcels which are developed shall be constructed prior to filing of the Parcel Map.

All improvements shall be installed to lines and grades approved by the City Engineer.

Any request for variation from these standards shall be made in writing to the City Clerk. Following an investigation of the request by City Staff as designated by the City Manager the proposed variation may be approved at the discretion of the City Council.

IV. INVESTIGATIONS, TESTS AND REPORTS

A. Soils Report

Unless waived in writing by the City Engineer, a soils report shall be prepared for all subdivisions for which a Final Map is filed.

The soils report shall be prepared by a registered civil engineer, shall be based upon a sufficient number of test borings to define the soils at the site, and shall contain definitive information regarding soil types, expansive characteristics, estimated load bearing capacity, and any other characteristics of the soil which would affect its ability to support structures.

B. Compaction Tests

The subdivider shall provide compaction testing of all sub-grades and land fills within city right-of-ways, easements, and building setback lines which have a depth of one foot or more above original grade. Full compensation for performing quality control and compaction tests and making the results available to the City Engineer shall be considered as included in the contract prices paid for the various items of work involved.

Testing shall be performed by, or under the direction of, a registered civil engineer. Testing shall be performed by ASTM Test Method D 1557 or alternate method approved by the City Engineer, and a sufficient number of tests shall be performed to insure that uniform compaction is being obtained.

To clarify City requirements for the compaction of street sub-grade, base materials and trench backfill the following criteria shall apply:

1. Maximum Density: Optimum moisture relationships (compaction tests), will be determined in accordance with ASTM D 1557, Method C, (dry density).

2. Sub-grade:

    a) Shall be compacted to a relative compaction of 92 percent for all silty or clay soil material (cohesive, clay).

    b) Shall be compacted to a relative compaction of 95 percent for all granular material (non-cohesive, granular soils).

3. Aggregate base shall be compacted to 95 percent relative compaction.

4. Asphalt concrete pavement shall be compacted to 95 percent relative compaction (ASTM D 1188 Test Method).

Compaction test results will be acceptable as meeting the 95 percent requirement if the average of all tests is 95 percent with no individual test lower than 93 percent.

Compaction tests will be acceptable as meeting the 92 percent requirement if the average of all tests is 92 percent with no individual test lower than 90 percent.

C. Other Test and Reports

The subdivider shall provide additional tests and/or reports which are requested by the Technical Advisory Committee to adequately define unique or unusual conditions in the subdivision.

V. CONSTRUCTION OF IMPROVEMENTS

A. Site Grading

Site grading shall be designed to drain storm water from all areas, to control erosion, and to prevent sedimentation or damage to off-site property.

Existing improvements and facilities, adjacent property, and trees and plants that are not to be removed, shall be protected from injury or damage resulting from the Contractor's operations. Only trees and plants that are designated or marked for removal by the Engineer shall be removed.

Where the construction is to be performed through orchard, vineyard and other cultivated areas, all orchard trees, vines and other vegetation shall be removed from the entire right of way area.

B. Streets

1. Classification: All streets required for any subdivision shall be designated by the Technical Advisory Committee as one of the following classifications: Arterial Street, Collector Street, Local Street, or Industrial Street. The criteria for designation of street classifications shall be those described in the Circulation Element of the General Plan.

2. Design: Subdivision street design shall comply with the following minimum criteria:

a) All streets shall, wherever practicable, be in alignment with existing adjacent streets by continuation of the centerlines thereof or through adjustments by curves and shall conform to the General Plan.

b) Street centerlines shall intersect at right angles or as near right angles as is practicable. Alignment at intersections shall provide a minimum sight distance of 200 feet along all streets.

c) All fill material within street sections shall be compacted to a minimum of 95% relative compaction per ASTM D-1557.

d) The structural section for Arterial, Industrial, Local, and Collector streets, shall be determined by Caltrans design procedures, based upon site soil R-values, and Traffic Indexes established by the City Engineer. In no case shall the structural section be less than those provided in Standard Detail 101.

e) Minimum gradient of any street shall be 0.15 percent unless approved by the City Engineer prior to construction.

f) One street name sign shall be provided and installed at each intersection as shown in Standard Detail 601.

g) Minimum street centerline radii shall be:

(1) 500 feet on Arterial streets and Industrial streets.
(2) 300 feet on Collector streets.
(3) 200 feet on major Local streets per the City Engineer's direction.
(4) 100 feet on Local streets.

h) Minimum tangent lengths shall be:

(1) 150 feet on Arterial streets and Industrial Streets.
(2) 100 feet on Collector streets.
(3) 50 feet on Local streets.

i) Right-of-Way widths:

(1) Streets designated as Arterial by the Circulation Element of the General Plan shall be a minimum of 84 feet wide. The width of street construction shall be determined by the Technical Advisory Committee.
(2) Streets designated as Industrial shall be a minimum of 64 feet wide. The width of street construction shall be 44 feet, face of curb to face of curb.
(3) All other streets shall be a minimum of 60 feet wide. The width of street construction shall be 40 feet, face of curb to face of curb.

j) Property lines at street intersections shall be rounded with a curve having a radius of 20 feet. A greater radius may be required for intersection angles less than 90 degrees.

k) Maximum block length shall be 600 feet.

l) Dead-end streets shall have:

(1) Turn-around radii of:
(a) 50 feet to right-of-way line.
(b) 40 feet to face of curb.
(2) Maximum street length of 400 feet, measured to the radius point of the turn-around.
(3) Dead-end streets shall not be approved when a through street is practicable.

m) Subdivision street systems shall be designed to provide at least two means of access to all areas, when feasible, to insure emergency access for police, fire, medical vehicles, and residents.

n) When necessary to give access to or permit satisfactory future development of adjoining land, streets shall extend to the boundary of the property and resulting dead-end streets may be approved without a turn-

around. Approved dead-end streets shall have a barricade as shown in Standard Detail 603.

C. **General Materials**

1. Concrete: The class of concrete used for the construction of improvements shall conform to one of the following:

a) Class A: 6 sacks of cement per cubic yard of concrete with a minimum compressive strength of 3,000 psi at 28 days.

b) Class B: 5 sacks of cement per cubic yard of concrete with a minimum compressive strength of 2,500 psi at 28 days.

c) Class C: 4.2 sacks of cement per cubic yard of concrete with a minimum compressive strength of 2,000 psi at 28 days.

The Standard Details included in the Land Division Standards and Improvement Standards specify the class of concrete to be used for the construction of improvements, however if no class is shown or specified, Class A concrete shall be used.

D. **Street Lights**

Street lights shall be designed to provide an average illumination level as specified on Standard Detail 606. Street light poles, mast arms, and all hardware shall be galvanized steel. All luminaires shall be General Electric LED Cobrahead Models ESR1, ESR2, or approved equal. Luminaires shall have a universal voltage rating and include a photocell.

E. **Alleys**

Subdivisions developed for commercial or industrial use shall include alleys, or other approved access to the rear of each parcel. Minimum alley width shall be 24 feet.

F. **Street Tree Well Location Criteria**

The only situations where tree wells for trees are specified are in commercial or industrial areas where full width commercial sidewalk (curb to property line) is to be constructed. This results in total sidewalk width of 9-1/2 feet, and there is enough room for the construction of a tree well immediately behind the curb and to allow for the passage of pedestrians around the tree. Do not attempt to place tree wells in any sidewalk narrower than 7-1/2 feet. Some of the most common obstacles to pedestrians are signs, utility poles, hydrants, parking meters, and building doors that swing out.

The general guidelines relating to the spacing of trees are that they be located not closer than 25 to 30-feet to intersections, have spacing between trees of approximately 30 to 35 feet, and no tree is to be planted closer than 10-feet to an interior property line or a driveway. The former instance is to clearly indicate to a property owner that the tree is in front of their property and not on a common lot line where adjacent property owners could have conflicting views regarding tree

maintenance or removal. Clearance to driveway locations is to insure that the tree does not create a blind spot for motorists attempting to exit the driveway into oncoming traffic.

Regarding the spacing of trees along the streets, a number of considerations are involved in addition to the above mentioned intersection, property lines, and driveways. Power poles, street light standards, fire hydrants, the location of underground utilities and services, the placement of parking meters and stalls along the street, and the architecture of a building itself often dictates when and where a tree is to be located. Do not place a tree immediately next to a parking meter where a person cannot get to the meter, nor in the middle of a parking stall so that it hinders or obstructs a person from opening a car door to enter or exit a vehicle.

Do not place a tree so close to power poles and street lights that the spread of the tree would interfere with access to the pole by utility companies or obliterates the lighting effect from the street lights, nor so close to a fire hydrant that it hinders the Fire Department's use of the hydrant.

Do not locate trees adjacent to water meters, nor over utility service lines. Consideration should be given to height clearances for traffic control signs and street sweeper operation in the selection of trees for planting.

Tree locations should be coordinated with building designs to provide shade for energy conservation without obstructing entrances or windows.

G. Sanitary Sewer Design Criteria

1. Sewer pipe shall be vitrified clay, PVC (Polyvinyl-Chloride) or ductile iron.

   a) Vitrified clay pipe shall be extra-strength unglazed vitrified clay pipe meeting the requirements for extra-strength pipe for crushing strength, barrel thickness and other measurements as set forth in the "Clay Pipe Engineering Manual," issued by the National Clay Pipe Institute. The pipe shall also comply with ASTM Specification 200.

      Vitrified clay pipe shall be furnished with interlocking, self-centering, resilient, push-type compression joints, formed or fused on the pipe at the factory, made of polyvinyl-chloride. Joints shall be "Wedge-Lock," "Speed-Seal Mainline," or approved equal.

   b) PVC (Polyvinyl-Chloride) pipe shall be integral bell and spigot pipe with elastomeric gaskets conforming to ASTM F477. Pipe 4-inches through 15-inches in diameter shall conform to ASTM D3034 with a maximum standard dimension ratio (SDR) of 35. Provision must be made for contraction and expansion at each joint with a rubber gasket.

      Fittings and accessories shall be as manufactured and furnished by the pipe supplier, or approved equal, and have bell and/or spigot configurations compatible with that of the pipe.

Minimum "pipe stiffness" at 5% deflection shall be 46 psi for all sizes when tested in accordance with ASTM Test Method D2412.

All PVC gravity sewer pipe shall have sand bedding and backfill material up to a plane one foot above the top of pipe. Native material may be used up to subgrade for the trench backfill above the pipe zone.

c) Ductile iron pipe shall be Class 50 ductile iron pipe conforming to AWWA Specification C151. Pipe shall be bell and spigot type with "push-on" rubber gasket joints conforming to AWWA Specification C111. Pipe shall be bituminous coated, inside and outside.

Fittings shall comply with AWWA Specification C110. Fittings shall be supplied with bell and/or spigot configurations compatible with that of the pipe.

d) Maximum pipe deflection shall not exceed 5% of the manufactured internal diameter of the pipe. All pipes shall be tested for excessive deflection after the trench has been backfilled, compacted and the pipeline has been flushed with water. A rigid mandrel, approved by the City Engineer, having an outside diameter of 95% of the manufactured internal diameter of the pipe shall be pulled through the pipe-line. The test would be considered a failure if the mandrel is pushed through the pipeline at any time. If the mandrel does not pass freely through the pipeline the failed section of pipeline shall be re-excavated, bedded and backfilled to adequately support the pipe and reduce the pipe deflection to 5% or less. The pipeline shall then be retested for both deflection and air-tightness.

2. Manholes

a) Precast concrete manhole sections (including riser sections, cones, grade rings, and flat slab tops) shall conform to ASTM C478 and Standard 406.

All precast components shall have tongue and groove ends, shall be watertight, and shall have dense walls with smooth surfaces similar to "wet-cast" concrete using steel forms.

b) Grade rings shall be a standard product, manufactured particularly for use in manhole construction, sized to fit the cones on which they are to be placed, and the wall thickness shall not be less than that of the cones. There shall be a minimum of two (2) grade rings equaling a minimum of six (6) inches. The individual grade ring height shall be a minimum of two (2) inches and a maximum of six (6) inches.

c) Precast and cast in place manhole bases shall have special adaptors or waterstops installed to provide a flexible, watertight connection between the sewer pipe and concrete manhole base. Waterstops shall be a Fernco Concrete Manhole Adaptor, Press-Seal Gasket Corporation WS series, or approved equal. Waterstops shall conform to ASTM C923 and be watertight. Detailed drawings and specifications of the connectors shall be submitted for

approval before shipment to the job site, and shall be subject to approval by the City Engineer.

d) Maximum manhole spacing shall be 300 feet.

3. Frames and Covers

a) Frames and covers shall conform to ASTM A48, Class 35B, and shall be of a consistently high quality, free of defects in material and manufacturing. Following cleanup and final machining, an asphaltic paint or similar protective coating shall be applied. Frames and covers shall conform to those shown in Standard No 407 and 407A.

b) The minimum weight of the frame shall be 135 pounds.

c) Covers shall be designed for H-20 wheel loading and shall not weigh less than 130 pounds. Covers shall have at least one pick hole or recessed lifting lug, and horizontal bearing surfaces shall be machined to smooth, plane surfaces providing for full contact between frame and cover. Covers for sanitary sewer manholes shall have the words "Sanitary Sewer" cast in the surface.

Load testing of covers shall be done by a recognized independent testing laboratory. The cover shall support a minimum load of 40,000 pounds applied at the center of the cover over a maximum bearing area of 50 square inches. During testing, the cover shall be supported in the same way as it would be under normal service conditions. Shop drawings and required load test data shall be submitted for approval before furnishing frames and covers.

4. Joint sealing compound shall be Kent-Seal Primer and Joint Sealant, RAM-Nek Primer and Joint Sealant, or approved equal. All manhole joints shall be primed. All precast manhole sections shall be set in joint sealing compound. Joint sealing compound components shall be applied in the field. One brush coat of primer shall be applied to the tongue and groove surfaces to be sealed; then one or more preformed strips of sealing compound shall be pressed firmly to the dry, clean, primed joint surface (groove portion). Precast sections shall be set evenly in a full bed of sealing compound. After the precast sections have been placed, the interior joint surface shall be trimmed smooth with a trowel or sharp tool to remove any excess joint compound projecting into the manhole.

5. Mortar shall be made with one part Portland cement to two parts clean, well-graded sand which will pass a 1/8-inch screen. Admixtures may be used not exceeding the following percentages of weight of cement: Hydrated lime, 10 percent; diatomaceous earth or other inert materials, 5 percent. Consistency of mortar shall be such that it will readily adhere to the surfaces. Mortar mixed for longer than 30 minutes shall not be used.

Mortar may be used for setting the frame and cover to grade, and to repair small flaws in precast concrete sections only. Grade rings may be set with mortar only if necessary for adjustment of the final cover elevation. Mortar joints shall not be more than 3/4-inch thick. Excess mortar shall be trimmed

flush. The outside of each mortar joint shall be sealed with an approved bituminous sealing compound.

6. Where topography permits, sewers shall be constructed to a grade which will maintain flow velocities of two (2) feet per second. No sewer line shall be constructed at a grade which will result in a flow velocity less than 1.5 feet per second.

7. Minimum sewer line diameter shall be eight (8) inches, except that six (6) inch diameter pipe may be used in the last run (not to exceed 300 feet) in residential areas on cul-de-sacs and in locations where no future extensions of the main are intended.

8. Service laterals of four (4) inch minimum diameter shall be installed to the property line of each lot.

9. Sewer lines shall be installed at least ten (10) feet, measured horizontally, from water lines.

10. Cleaning

a) Upon completion, all sewer lines shall be cleaned, using an inflatable rubber ball of a size that will inflate to fit snugly into the pipe. The ball shall be used with a tag line to determine its position at all times.

The ball shall be placed in the last manhole on the pipe to be cleaned, and water shall be introduced behind it. The ball shall pass through the pipe with only the force of the water propelling it. All debris flushed out ahead of the ball shall be removed at the next manhole downstream. In the event that the ball is stopped by cemented or wedged debris, or by a damaged pipe, the obstruction shall be removed and the cleaning process repeated.

11. Testing

a) After cleaning, all sections of pipe shall be tested for air -tightness. No testing for final acceptance of the pipeline will be done until the trench has been fully backfilled and acceptably compacted to finish grade or pavement sub-grade.

b) Tests shall be performed between manholes and shall be done with air except where use of water is approved by the City Engineer. Tests for air tightness shall be made in the presence of a City representative. The Contractor shall furnish all labor, materials, tools, and equipment required to make the tests.

c) Where leakage is in excess of the specified rate, the sewer shall immediately be uncovered and the amount of leakage reduced to a quantity within the specified rate before the sewer is accepted.

d) Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 4.0 pounds per square inch greater than the

average back pressure of any groundwater that may submerge the pipe. At least two (2) minutes shall be allowed for temperature stabilization.

The rate of air loss shall then be determined by measuring the time interval required for the internal pressure to decrease from 3.0 to 2.5 pounds per square inch greater than the average back pressure of any groundwater that may submerge the pipe. Pipelines shall be considered acceptable when tested at the above pressures through a pressure drop of 0.5 psi or less, and the section under test does not lose air at a rate greater than 0.0010 cubic feet per minute per square foot of internal pipe surface; Test Time (secs) = 36.3 x Pipe Diameter in inches.

e) Testing with water may be requested by the Contractor. If approved by the City Engineer, the test shall be performed between manholes by plugging the sewer pipe at the down-stream manhole and filling the pipe to a level 5-feet above the top of the pipe at the upper manhole, or 5-feet above the groundwater level, whichever is greater. The rate of leakage shall be determined by measuring the amount of water required to maintain the water level at the upper manhole. The test shall be conducted for a period of at least two hours. The City Engineer may, at his discretion, require a longer test period. Leakage shall not be in excess of the rate of 20 gallons per inch of pipe diameter per 1,000 lineal feet of pipe per day.

H. **Water System Design Criteria**

1. Water pipe shall be PVC (Polyvinyl-Chloride) or ductile iron. All pipes shall be N.S.F. approved. All pipe and fittings shall conform to the following specifications:

a) PVC (Polyvinyl-Chloride) pipe shall be SR (Schedule Rated) in accordance with ASTM D 1785 for Schedule 40 and Schedule 80 pipe, and shall have a maximum SDR of 18 for "Class 150" applications and a maximum SDR of 14 for "Class 200" applications. Pipe 4 inches and larger shall comply with AWWA Specification C 900 and shall be of cast-iron-pipe-equivalent diameters. Pipe 3 inches and smaller in diameter shall have either rubber ring or solvent welded joints. Pipe 4 inches and larger in diameter shall have solid cross-section rubber ring joints in accordance with ASTM D-1869.

Fittings shall be PVC with the same pressure rating and hydrostatic test pressure as the pipe, or cast iron fittings with rubber gaskets sized for PVC pipe.

b) Ductile Iron pipe shall be Class 50 ductile iron pipe conforming to AWWA Specification C151. Pipe shall be bell and spigot type with "push-on" rubber gasket joints conforming to AWWA Specification C111, unless otherwise specified. Pipe shall be cement-mortar lined in conformance with AWWA Specification C104 and bituminous coated.

Fittings shall comply with AWWA Specification C110, and shall be cement-mortar lined and bituminous coated as specified above. Fittings shall be supplied with bell and/or spigot configurations compatible with that of the pipe.

2. Mechanical couplings, including flexible couplings and flanged coupling adapters, shall be as manufactured by Smith-Blair, Baker, Dresser, or approved equal. All mechanical couplings shall have the longest standard sleeve length.

3. Locating wire shall be No. 14, Type TW, insulated copper wire, or approved equal. Locating wire shall be placed in the trench backfill directly above the pipe, and shall be continuous between valve boxes. A loop of wire, of adequate length to reach to ground surface, shall be left in each valve box.

4. Minimum water main diameter shall be eight (8) inches, except for main extensions which, due to street development patterns, are not expected to serve more than one fire hydrant. Such mains serving not more than one hydrant may be six (6) inches in diameter.

5. Water lines shall be installed in closed loops, whenever feasible, and sufficient valves shall be installed to permit isolation of segments not exceeding 500 feet in length.

6. Gate valves shall be resilient wedge gate valves conforming to AWWA C509 and its latest revisions. Valves shall be rated for a minimum working pressure of 150 psi, and shall have end fittings to conform to the pipe or fittings being connected. Valves shall be American Flow Control "Series 500", Mueller "2360 Series", Clow "Model 2639/2640" or approved equal. Valves shall be furnished with operating nuts when installed underground.

7. Valve boxes shall be provided for all gate valves placed underground and shall be Brooks Products 3-RT, Christy Concrete Products G5 or approved equal. The cover shall be marked "Water". Installation of valve boxes and pipe extensions shall conform to Standard No. 305.

8. Fire Hydrants

a) Fire hydrants shall be low-profile, wet barrel type with two 2-1/2-inch outlet and one 4-1/2-inch outlet. Outlets shall be threaded National Standard, and shall be equipped with protective screw-on caps, attached to the hydrant barrel with security chains. Outlets shall be individually valved, and operating valve parts shall be brass or bronze, with O-ring seals.

The hydrant bottom flange shall be 11-1/2" O.D. with six 3/4" holes on a 9-7/16" bolt circle. The hydrant bury shall be 6" diameter heavy cast-iron pipe with a machined flange top and a mechanical joint bottom connection. A 6" diameter flanged extension riser, with a break-off groove, shall be installed below the hydrant, and the hydrant shall be mounted with breakaway bolts.

Fire hydrants shall be Clow Valve Company Model 960 or approved equal. Hydrants shall have one coat of red primer over sound metal and one coat of red paint.

b) Fire hydrants shall be spaced such that no point in the street system serving the subdivision is a greater distance from a hydrant than:

(1) In development of single-family or two-family residential structures, a distance of 250 feet.

(2) In developments of multi-family (3 or more) residential structures, or of commercial or industrial structures, a distance of 150 feet.

c) All hydrant locations shall be approved by the Orland Fire Department.

9. Water lines shall be installed at least ten (10) feet, measured horizontally, from existing or proposed sewer lines.

10. Services

a) Water services 1" in diameter shall be Type K soft copper pipe with flared mechanical fittings. Water services larger than 1" shall be PVC or ductile iron conforming to the above specifications for water mains.

b) All taps for 2" and smaller service connections shall be made with service saddles. Connections for pipes larger than 2" shall be made with appropriate fittings installed in the main.

Service saddles shall be of a type recommended by the manufacturer for the type of pipe being tapped. Service saddles shall be Smith-Blair Series 313, Romac Series 101S/101N or approved equal. Service saddles shall be one size larger than service line, and shall be fitted with insulating nylon bushings.

c) Corporation stops shall be a 1" diameter minimum, bronze, ball-type with male iron pipe thread and outlet connection for flared copper pipe. Corporation stops shall be Ford Meter Box Company FB700 or approved equal.

d) Curb stops shall be a 1" diameter minimum, bronze, ball-type with female iron pipe thread outlet. Curb stops shall be Ford Meter Box Company B21 or approved equal. Use resilient wedge gate valves for services larger than a 2" diameter.

e) Meter boxes shall be reinforced concrete, as manufactured by Christy Concrete Products or approved equal. Boxes located in sidewalks or landscaped areas may have concrete lids. Boxes located in driveways or other traffic areas shall have cast iron traffic lids.

Meter boxes shall be of the minimum dimensions listed below:

Meter Size	Box Size
3/4"	10-1/2" x 17-1/4"
1"	12" x 22-1/4"
1-1/2"	13-1/4" x 24"
2"	17-1/4" x 30"

For 1-1/2-inch or larger meters, the meter box lid shall be equipped with an inset "reading lid" to permit reading the meter without removing the entire box lid.

11. All water mains shall be tested at minimum pressure of 100 psi. Tests shall be made in the presence of the City Engineer or his representative.

Before the test, the pipeline shall be anchored sufficiently to withstand the test pressure. During the filling of the line with water, precautions shall be taken to prevent air pockets at high points. Water shall be allowed to stand in the line for several hours prior to the test. During the test, which shall be conducted for the time period determined by the City Engineer, but not less than 30 minutes, the leakage shall not exceed 5 gallons per 24 hours per thousand feet of pipe per inch of diameter. If any section of pipe shows greater leakage than specified, the leak shall be located and repaired, and the affected section of line shall be re-tested.

12. All water mains shall be thoroughly flushed after installation and testing, and shall be sterilized in conformance with applicable provisions of AWWA C651-92 "Disinfecting Water Mains."

Following disinfection, the mains shall be flushed to remove all traces of chlorine from the water.

I. Storm Drainage

1. Properties shall be protected from flood hazard and inundation by storm waters originating without and within the property. The design and construction of drainage facilities shall be such that water courses traversing the property and water emanating from within the property will be carried through and off the property without injury to improvements, residential sites, buildings or residences to be installed within the site, or adjacent thereto.

2. Drainage water entering the property shall be received and discharged from the property at the locations and as nearly as possible in the manner as existed prior to the construction of the drainage facilities within the property.

3. Drainage facilities within the property shall be designed to conform to existing drainage plans or proposed land uses for area within the watershed.

4. Storm drain conduits within public right-of-way shall be reinforced concrete pipe, solid-wall polyvinyl chloride pipe, or corrugated polyethylene pipe. All pipe shall conform to the following specifications:

a) REINFORCED CONCRETE PIPE shall conform to the requirements of ASTM Designation C-76 "Reinforced Concrete Pipe" and the cement shall conform to requirements as shown in ASTM Designation C-150 "Portland Cement", Type II. Reinforced Concrete Pipe shall be Class III unless otherwise required by the City Engineer, and shall have rubber gasketed joints as specified in Section 65-1.06B of the State Standard Specifications.

b) POLYVINYL CHLORIDE PIPE shall be integral bell and spigot pipe with elastomeric gaskets conforming to ASTM F477. Pipe 12-inches through 15-inches in diameter shall conform to ASTM D3034 with a maximum standard dimension ratio of 35. Pipe 18-inches through 24-inches in diameter shall conform to ASTM F679 with a T-1 wall thickness.

c) CORRUGATED POLYETHYLENE PIPE shall be smooth interior (Type S) corrugated polyethylene pipe meeting the requirements for materials and installation of Section 64, Plastic Pipe of the State Standard Specifications for sizes 12" through 36".

5. Pipe bedding and shading material from the bottom of the trench to a plane one foot above the top of polyvinyl chloride or polyethylene pipe shall be Class 2 Aggregate Base compacted to 95% relative compaction. Alternatively, a one-sack slurry cement backfill conforming to Section 19-3.062 "Slurry Cement Backfill" of the State Standard Specification may be used. Native backfill material from a plane one foot above the top of the plastic pipe to subgrade shall be compacted to 90% relative compaction (out of streets) and 95% relative compaction (in streets) per ASTM D-1557.

6. Drainage waters originating within a property shall be conveyed into a permanent drainage facility. Such facility shall consist of either a well-defined natural channel or waterway of adequate capacity to accommodate the design discharge of the ultimate drainage of the watershed in which the subdivision is located, or a constructed facility having adequate capacity to carry the design discharge of the subdivision.

Except for development of individual lots of R-1 or R-2 use, drainage waters shall be collected on site and conveyed by underground pipeline to a waterway or storm drain, unless this requirement is waived by the City Engineer.

7. Design quantities of storm water flow shall be computed by the developer's engineer by use of the Rational Formula: Q=CIA, wherein Q = the quantity of flow in cubic feet per second; C = runoff coefficient; I = intensity of rainfall in inches per hour, and A = tributary area in acres. The determination of "C" and "I" shall be approved by the City Engineer before flow computations are made.

8. Within the development catch basins shall be placed along the streets so that the width of flow in the gutter will not exceed two feet for a one-year average recurrence interval and the depth of flow will not exceed the top of curb for a 10-year average recurrence interval. In no case shall the spacing of catch basins exceed 500 feet.

9. Drainage conduits or channels serving a tributary area of five acres or less shall be designed for a storm of five-year average recurrence interval. Conduits or

channels serving a tributary area larger than five acres shall be designed for a storm of ten-year average recurrence interval. Unless approved by the City Engineer, no design energy grade line of any closed or open waterway, or any bridges, culverts, or other appurtenances thereto, excepting curb and gutter sections, shall at any point be less than two feet below ground level. Drainage systems discharging into natural channels shall be designed to drain with the 100-year frequency storm flow in the receiving channel. Drainage conduit size shall be a minimum of twelve inches (12") in diameter when located within the City right-of-way.

10. Drainage easements for closed conduits shall be no less than 12 feet in width and sufficient to contain the conduit and appurtenances, plus two feet on either side thereof. Such easements shall not traverse a building site and shall, insofar as possible, be placed along or adjacent to lot boundary lines in a straight alignment without angle points.

11. Drainage easements for open channels shall be of sufficient width to contain the top width of the channel plus a ten-foot continuous maintenance way on one side and four feet on the other side. Fencing requirements will be determined by the Technical Advisory Committee.

12. Natural channels and waterways into which site drainage is proposed to be discharged shall also meet the design discharge requirements set forth in paragraph nine above. If, in the opinion of the City Attorney, the discharge of additional water into such channel or waterway could result in litigation, the developer shall provide such flowage rights throughout the channel as deemed necessary by the Planning Commission.

J. **Mail Boxes**

1. Neighborhood Box Units (NBU's) shall be furnished and installed for all subdivision lots.

2. The design, construction, location and method of installation of NBU's shall be subject to approval by the Postmaster.

K. **Survey Monuments**

1. Monuments shall be set at all angle and curve points on the exterior boundaries of subdivisions, and at all lot corners or angle points.

2. At least one exterior boundary line of the subdivision shall be monumented before the Subdivision or Parcel Map is filed.

3. In subdivisions for which a Final Map is required, all principal points of the exterior boundary shall be marked by concrete monuments. All other points shall be marked by either concrete or steel monuments.

4. Concrete monuments shall be no less substantial and enduring than a rich Portland cement concrete post six (6) inches in diameter by thirty (30) inches long

with a brass cap embedded in the top bearing the exact point marked thereon and otherwise conforming to law.

5. Steel monuments shall be no less substantial and enduring than a 3/4-inch diameter capped iron pipe twenty-four (24) inches long.

6. If a concrete monument is to be located in a street, the brass cap shall be set twelve inches (12") below finished street grade, and access thereto shall be provided by installing a suitable cast iron sliding sleeve with a circular cast iron frame and cover at the street surface as shown in Standard No. 602.

7. When directed by the City Engineer, one or more permanent bench marks shall be set in each subdivision. Bench mark monuments will be furnished by the City and shall be installed by the subdivider in the top of concrete curbs at approved locations.

8. All monuments shall be subject to inspection and approval by the City Engineer. Before street improvements are accepted, all monuments disturbed by the improvements shall be reset.

L. Utility Relocation

Any relocation or modification of existing City utility systems, including water lines, valves, fire hydrants, storm drains, drop inlets, sewer lines, manholes, or appurtenances to such items, which is required by the subdivision or development of any parcel of land within the City of Orland, shall be performed by the developer of such parcel at his own expense. All such relocations shall be done in conformance with these Standards, and the requirements of the Director of Public Works under these Standards.

M. Broadband Installation Criteria

1. Encroachment permits required: Wired broadband conduit owners have no property rights within the City of Orland's rights-of-way and are only allowed access to their facilities with an encroachment permit. Wired broadband conduit owners assume financial responsibility of the design, installation, maintenance, and repair of the installed broadband conduit. Fees are required for the issuance of encroachment permits related to wired broadband facilities unless exempted administratively or by statute.

2. Number and sizing of conduits: The following arterial, major collector and commercial frontage streets shall receive a minimum of two (2) 2-inch diameter conduits; a minimum one (1) 2-inch diameter conduit along each side of the street:

a) 2nd Street (south of State Route 32)
b) 3rd Street (south of State Route 32)
c) 4th Street (south of State Route 32)
d) 5th Street (south of State Route 32)
e) 6th Street
f) 9th Street (south of State Route 32)
g) Commerce Lane
h) Ide Street
i) Papst Avenue (south of State Route 32)

j) Railroad Avenue
k) South Street including East South Street.
l) Tehama Street (State Route 32 to East Street)

All other streets shall receive a minimum of two (2) 1¼-inch diameter conduits; a minimum of one (1) 1¼-inch diameter along each side of the street when the full width is being constructed or reconstructed, but only along the street side being constructed or reconstructed where half width improvements are required.

3. Installation by Trenching: Installation by trenching should be conducted as close to the right-of-way line as possible. Final determination of conduit size and count will be dependent on the broadband conduit owner's overall needs. The trench may also contain City-owned power and lighting circuit conduits used for City facilities. Such conduits may be placed at varying depths. Broadband conduit owners are responsible for any additional costs associated with providing the necessary vertical separation between the conduits within the trench.

4. Installation by Trenchless Technologies: In lieu of trenching, conduits may be installed utilizing a trenchless or boring installation method.

5. Installation on Structures: Broadband conduits may be installed in conjunction with City facilities on structures where allowed by the jurisdiction that owns the structure. Conduits crossing bridge structures that are exposed to the environment must be Type 1 galvanized steel conduits.

6. Conduits: Conduit material shall be Type 3 (rigid PVC or high-density polyethylene (HDPE) for all installations, unless otherwise specified. All conduits shall be installed at a minimum of 36 inches of cover.

Sweeping conduit bends shall be used to allow cable to be pulled without exceeding pull-tension thresholds when placing high-count fiber cables (e.g. 864-count). Unsupported conduit bends shall have a minimum bend radius of 48 inches and bends utilizing manufactured elbows shall have a minimum radius of 36 inches (45- degree maximum on elbows); however, when pre-approved by the Public Works Director or City Engineer, bends up to 90 degrees may be permissible.

When conduit is installed without any fiber optic cable, the conduit shall run the entire length of the trench, with sweeps installed to a future access point and shall have both ends of the conduit capped and buried for future use. Sufficient planning and forethought shall be used to accommodate future vaults and handholes at either end without future destruction of the adjacent improvements. Any lateral conduit installations shall be terminated, capped and buried at an anticipated future access point (contemplating a pull box or hand hole). Telecommunications conduit shall maintain 12 inches radial clearance from other utilities, unless pre-approved by the Public Works Director or City Engineer and the adjacent utility purveyor(s).

7. Pull Boxes and Access Points: Conduit terminations for power cables must not be mixed with fiber optic cables within the same pull box or splice vault due to safety concerns. The power cables and fiber optic cables must be in separate conduits and pull boxes. On the rare occasion when pull boxes or vault access points associated with conduit installation are approved by the City of Orland to be placed within the roadbed, they must be traffic load rated. Installation of vaults, pull boxes and access points will only be required at the time of fiber optic installation.

Minimum vault sizes shall be 30 inches by 48 inches on all arterial, major collector and commercial frontage streets cited in M.2.a) through l), inclusive; minimum vault sizes shall be 24 inches by 36 inches for all other streets. All vaults shall include bolted down lids and each lid shall bear the label "FIBER" on its top surface as an integral part of its casting or machined finish. Adjacent or integral electronic markers shall be incorporated into every vault installation. Vaults shall be placed deep enough to allow conduit to enter horizontally. Upward conduit sweeps are not permitted at vaults. Conduit shall protrude beyond the interior wall of the vault by a minimum of 1 inch, but no more than 3 inches. Ground rods shall be installed at each vault and shall be comprised of 13 mill copper-clad steel, 5/8-inch diameter, or greater, of at least 10 feet in length and tested to ground of 25 ohms, or less. Vault spacing intervals shall not exceed 300 feet without prior approval from the Public Works Director or City Engineer.

8. Tracer Wire: Tracer wire, 10 AWG or greater, will be installed for the purpose of detection of the conduit, even when the fiber optic cable is not yet installed. The tracer wire will provide detection between the fiber optic splice vaults and pull boxes. Tracer wires shall be electrically bonded to the ground rod in each vault using a suitable clamp. The tracer wire shall be installed the entire length of the conduit, either inside the conduit or in the trench. Pull ropes with built-in detector wire shall be utilized when fiber optic cable shall not be installed immediately after the conduit installation.

9. Warning Tape: For broadband conduit installation by trenching, warning tape shall be installed in all trenches, without exception. For conduit installations using horizontal directional drilling (trenchless installation), warning tape may be excluded.

10. Cable Markers: Cable markers will be placed where fiber optic conduit is placed at a minimum spacing of 500 feet. These non-reflective flexible markers or monuments will be used to identify locations of fiber optic conduit and provide contact information to prevent possible damage. All vaults will include an adjacent or integral electronic marker (EM) to facilitate future locating.

11. Maintenance: Wired broadband conduit owners are solely responsible for the maintenance, repair and relocation costs associated with the installed broadband conduits and fiber optic facilities. The City of Orland does not assume financial responsibility for conduits damaged as a result of third party activities within the City's rights-of-way.

VI. LOT STANDARDS

A. Size

Minimum lot sizes shall be in conformance with zoning regulations effective in the area of the proposed subdivision and shown on the zoning map. The frontage of lots on curved or cul-de-sac lots shall be measured at the setback line.

B. Design

1. Access: Every lot and parcel created by a subdivision shall be accessible by, and shall front on, a public street, unless private streets are specifically approved by the City Council.

   Lots in any area designated "Residential" in the Land Use Element of the General Plan shall not be accessed directly from Highways or Arterial Streets. Access to lots in areas designated Commercial or Industrial shall be limited to the lowest feasible number of driveways.

   Access from existing parcels to Highway 32 shall be limited to the lowest feasible number of driveways.

2. Side Lines: The side lines of all lots, wherever possible, shall be at right angles to streets or radial to curved streets or cul-de-sac turning circles.

C. Flag Lots

Flag lots shall be approved only where required by topographic conditions, or where there is no practical alternative design for the development of the interior portions of excessively deep parcels. Flag lots shall be approved only in R-1 zones.

Flag lots shall conform to all of the requirements of the Zoning Ordinance and of these Standards, except those provisions relating to lot lines and lot frontages. Flag lots shall also conform to the following requirements:

1. The access way serving the flag lot shall not be included when calculating required lot area.

2. The access way to the rear lot(s) shall conform to the following design standards:

   a) An access way serving a single lot shall have a minimum width of 15 feet, of which at least 12 feet shall be paved. An access way serving two or three lots shall have a minimum width of 25 feet, of which at least 20 feet shall be paved the entire length of the access way, with an adequate turn-around provided at the end.

   b) The number of flag lots served by one access way shall not exceed three.

c) Curbs and gutters shall be installed along the access way if the Planning Commission determines that it is necessary for adequate drainage.

d) The maximum length of the access way serving the lot shall be 200 feet. The maximum length of access way serving two or three flag lots shall be 300 feet.

3. Each dwelling unit situated on a flag lot shall provide two (2) off-street parking spaces in addition to those required by the Zoning Ordinance.

4. Prior to development of a flag lot, the site plan thereof shall be reviewed and approved by the Fire Chief for fire access and service requirements.

VII. FEE SCHEDULES

The subdivider or property owner shall pay to the City the fees prescribed below for the activities and services listed. All fees shall be paid to the City Treasurer.

A. Utility Extensions

Any owner or subdivider of a tract of land who desires the extension of water or sewer mains to serve his/her/their property, shall make written application to the Director of Public Works. The application shall set forth the official number and/or legal description of the tract or subdivision, the total number and location of actual users and prospective users, and a map of the proposed development showing pertinent information.

Upon receipt of the application, the Director of Public Works shall make a survey of the proposed extension and determine the estimated cost. Provided the application is approved by the City Council, the owner or subdivider shall pay, in advance, the amount of the estimated cost of the installation, including fire hydrants and appurtenances.

After completion of the installation and determination of the actual cost, any overpayment by the owner or subdivider will be refunded, or the unpaid balance of the cost shall be paid to the City. All facilities extended and installed under these provisions shall remain the property of the City.

B. Extensions by the City

The City may, in the interest of orderly development, install water or sewer main extensions in developing areas, to avoid later disturbance of other improvements. Such extensions may be made, at the discretion of the City Council, in instances where the party developing property upon which the mains will be installed has no ownership interest in the lands to be ultimately served by the extensions. When such extensions are made, the cost of the extensions shall be included in the extension or connection fees charged to property or properties which subsequently connect to the extended mains, which would otherwise have required the extension.

C. Water Service Connections

A schedule of connection fees for each size water service shall be maintained in the office of the City Clerk. Payment shall be made for each new water connection at the rate prescribed by said schedule for the size service requested.

D. Sewer Service Connections

A schedule of connection fees for each size sewer service shall be maintained in the office of the City Clerk. Payment shall be made for each new sewer connection at the rate prescribed by said schedule for the size service requested.

VIII. AGREEMENT AND SECURITIES

A. Improvement Agreement

If all required improvements for a subdivision have not been completed and accepted before the Final Map is filed, the owners of the subdivision and the party who signs the improvement security shall, concurrently with the approval of the Final Map, enter into an agreement with the City to have the work completed within the time specified and agreeing that, should such work not be completed to the satisfaction of the City Engineer within the time limit, the City shall complete all specified improvements as described below. The agreement may provide for extension of time under specific conditions, or for the termination of the agreement upon a reversion of the subdivision to acreage. The agreement shall be in the form shown in Appendix A.

B. Performance Security

There shall be attached to the agreement for improvements described above a performance bond, cash deposit, instrument of credit, or other security acceptable to the City Council, in the amount of the estimated cost of all required improvements. Said security shall insure to and be in favor of the City, and shall guarantee the faithful performance of the Improvement Agreement. If a performance bond is used, it shall be in the form shown in Appendix B. The security shall remain in full force and effect until released by the City Council.

C. Forfeiture of Performance Security

Should the subdivider fail to complete all improvement work in accordance with the provisions of the agreement and the plans, to the satisfaction of the City Engineer, the City shall call upon the security for completion of the work.

Should the security amount exceed all costs incurred by the City, the City shall release the remainder of the bonds or cash deposit; should the cost incurred by the City exceed the amount of the security, then the subdivider shall be liable to the City for the excess cost.

D. Other Securities

1. A labor and materials security payable to the City in the amount of 50% of the estimated cost of improvements shall be submitted with the improvement agreement. This security shall guarantee payment of all persons who furnish labor

or materials or both in conjunction with the subdivision improvement. The form of a security bond shall be as shown in Appendix C.

2. A maintenance security payable to the City in the amount of 50% of the estimated cost of improvements shall be submitted with the improvement agreement. This security shall guarantee the improvements for a period of one year after acceptance by the City Council against defects, material failure or faulty workmanship, and shall remain in full force and effect until released by the City Council.

3. In the event that all survey monuments have not been set prior to the filing of the Final Map, the subdivider shall furnish with the Improvement Agreement a security which shall guarantee completion of the monumentation in accordance with Section 66496 of the Subdivision Map Act. Release of securities or other actions of the City regarding this guarantee shall be in accordance with Section 66497 of said Act.

IX. APPENDICES

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APPENDIX "A"
FORM OF SUBDIVISION AGREEMENT

THIS AGREEMENT, made and entered on this _____ day of _____, 20_____, by and between _____, hereinafter called "Subdivider," and the City of Orland, a municipal corporation of the State of California, hereinafter called "City."

W I T N E S S E T H:

The parties hereto agree that the Subdivider shall complete the street improvements, water system, sewer system, tract drainage, utility services and all other improvements required in the approved construction plans for the _____ Subdivision as per the map being filed at this time in the office of the County Recorder of Glenn County; and Subdivider further agrees that the construction of said improvements shall be completed to the satisfaction of the City Engineer within one year from the date hereof, and shall be constructed in accordance with the approved plans on file with the City Engineer and the Land Division Standards and the applicable sections of the current edition of the State of California Department of Transportation Standard Specifications.

The Subdivider shall cause the work to be completed without undue delay except for inclement weather or other reasonable cause. Any delay in the completion of the work beyond the period stated, unless an extension thereof is approved by the City Council, shall result in forfeiture of the cash deposit and/or security, or a portion thereof, for the completion of the work.

The Subdivider further agrees to maintain these subdivision improvements for a period of one year from the date of acceptance of the work by the City Council.

The Subdivider further agrees that Subdivider will pay all the costs of improvements when due, including all labor and materials and the cost of relocating existing utilities when such relocation is necessary to permit the construction of improvements required for the subdivision.

The Subdivider further agrees to pay for the setting and establishment of all survey monuments and points as shown on the filed subdivision map.

The Subdivider further agrees that at the time of execution of this Agreement, Subdivider will deposit with the City in the form of a cash deposit or acceptable securities to guarantee the performance of work, payment for labor and materials, maintenance of the facilities for a one-year period, and payment for surveying in the amounts listed below:

1. Performance in amount of estimated cost: $_____

2. Labor and material in amount of 50% of estimated cost: $_____

3. Maintenance bond in amount of 50% of estimated cost: $_____

4. Surveying bond in amount equal to estimate of work: $_____

The City in consideration of the terms above referred to, agrees to permit the Subdivider to file and record said Subdivision Map and recognizes the Subdivision described therein as a Subdivision complying with the Ordinances and requirements of the City of Orland and the applicable laws of the State of California.

IN WITNESS WHEREOF, the parties hereto have set their hands, the day and year first above written.

CITY OF ORLAND

_____
MAYOR

Approved:

SUBDIVIDER

_____
City Engineer

_____
Name

_____
Address

Attest:

_____
Name

_____
City Clerk

_____
Address

APPENDIX "B"
FORM OF PERFORMANCE BOND

Whereas, the City Council of the City of Orland, State of California, and _____, (hereinafter designated as "Principal"), have entered into an agreement whereby Principal agrees to install and complete certain designated public improvements, which said agreement, dated _____, 20_____, and identified as project _____, is hereby referred to and made a part hereof; and

Whereas, said principal is required under the terms of said agreement to furnish a bond for the faithful performance of said agreement.

Now, therefore, we, the Principal and _____, as surety, are held and firmly bound unto the City of Orland, hereinafter called "City," in the penal sum of _____ dollars ($_____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, successors, executors and administrators, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the above bounded Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and provisions in the said Agreement and any alteration thereof made as therein provided, on his/her or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless City, its officers, agents and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including

reasonable attorney's fees, incurred by City in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Agreement or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the agreement or to the work or to the specifications.

In witness whereof, this instrument has been duly executed by the principal and surety above named, on _____, 20_____.

APPENDIX "C"
FORM OF LABOR AND MATERIALS BOND

Whereas, the City Council of the City of Orland, State of California, and _____, (hereinafter designated as "Principal"), have entered into an Agreement whereby Principal agrees to install and complete certain designated public improvements, which said Agreement, dated _____, 20_____, and identified as project _____, is hereby referred to and made a part hereof; and

Whereas, under the terms of said Agreement, Principal is required before entering upon the performance of the work, to file a good and sufficient payment bond with the City of Orland to secure the claims to which reference is made in Title 15 (commencing with Section 3082) of Part 4 of Division 3 of the Civil Code of the State of California.

Now, therefore, said Principal and the undersigned as corporate surety, are held firmly bound unto the City of Orland and all contractors, subcontractors, laborers, materials persons and other persons employed in the performance of the aforesaid agreement and referred to in the aforesaid Code of Civil Procedure in the sum of _____ dollars ($_____), for materials furnished or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, that said surety will pay the same in an amount not exceeding the amount hereinabove set forth, and also in case suit is brought upon this bond, will pay, in addition to the face amount thereof, costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by City in successfully enforcing such obligation, to be awarded and fixed by the court, and to be taxed as costs and to be included in the judgement therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies and corporations entitled to file claims under Title 15 (commencing with Section 3082) of Part 4 of Division 3 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force and effect.

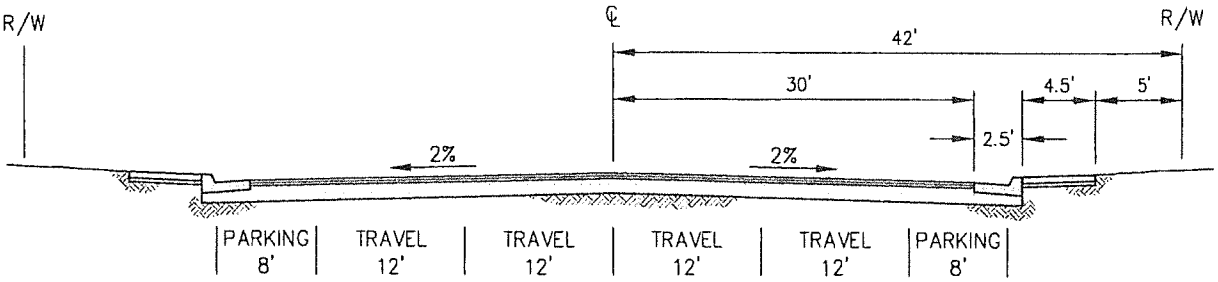
The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said agreement or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration or addition.

In witness whereof, this instrument has been duly executed by the principal and surety above named, on _____, 20_____.

X. STANDARD DETAILS

Std No.	Title
101	Typical Street Cross Sections
102	Widening of Existing Streets
103	Standard Cul-De-Sac
104	Offset Cul-De-Sac
105	Intersection Knuckle
106	Backfill and Trench Restoration
107	Joint Trench Configurations for Utility Companies
201	6" Curb and 6" Asphalt Dike
202	Curb and Gutter
203	Cross Gutter and Curb and Gutter Transition
204	Sidewalk, Curb and Gutter
205	Residential Driveway
206	Commercial Driveway
207	Curb Ramp (Contiguous Sidewalk)
208	Curb Ramp (Separated Sidewalk and Commercial Areas)
209	Alley and Valley Gutter
301	Fire Hydrant Installation
301A	Blue Reflective Pavement Markers
301B	Fire Hydrant Bollard Installation
302	Typical Fire Service Check Valve Detail
303	Thrust Blocks
304	Testing Block and Bypass
305	Valve Cover Installation
306	Location Wire for Water Mains and Services
307	Single Water Service Main Connection
308	Double Water Service Main Connection
309	Dead-End Water Main
310	Backflow Prevention Assembly
401	Drop Inlet and Details (Types 1 and 2)
402	Drop Inlet and Details (Type 3)
403	Storm Drain Outlet Headwall
404	Scupper Drain
405	Minimum Residential Lot Grades
406	Standard and Shallow Manhole
407	Storm Drain Manhole Frame and Cover
407A	Storm Drain Manhole Frame and Cover (Bolt Down)
408	Sanitary Sewer Cleanout
409	Typical Method for Setting Appurtenances
501	Sanitary Sewer Inside Drop Manhole
502	Sanitary Sewer Outside Drop Manhole
503	Sanitary Sewer Service and Connection
504	Sewer Lateral Crossing

Std No.	Title
601	Street Signs
602	Monument Well
603	Barricade
604	Design Grades for Standard Intersection
605	Off Street Parking Layout
606	Street Lighting Poles
607	Tree Well
608	Rainfall Intensity vs. Duration Design Chart
609	Typical Broadband Fiber Optic Cable Conduit Cross Sections



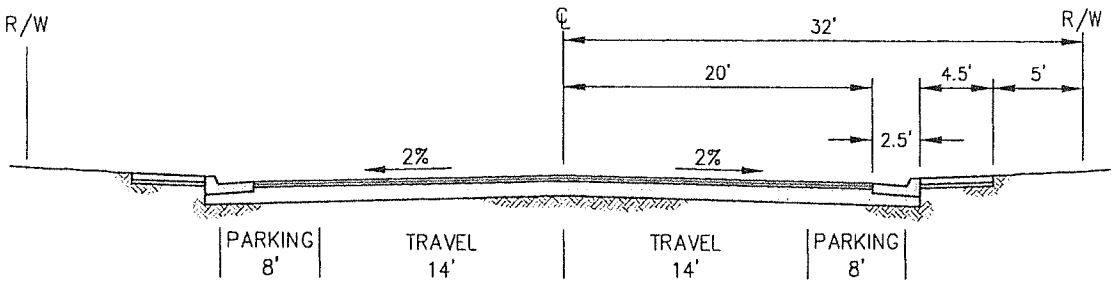
ARTERIAL STREET

84 FOOT RIGHT-OF-WAY

MINIMUM STRUCTURAL DESIGN SECTION

HMA: 0.25' ¾" TYPE A OR B

AB: 0.67' ¾" MAXIMUM CLASS 2



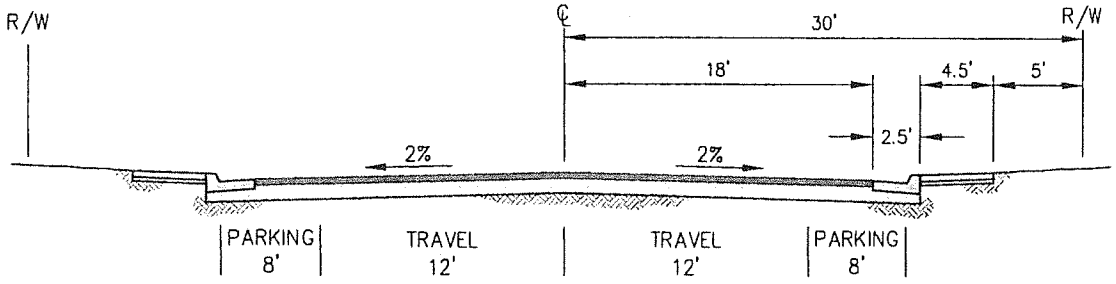
INDUSTRIAL STREET

64 FOOT RIGHT-OF-WAY

MINIMUM STRUCTURAL DESIGN SECTION

HMA: 0.25' ¾" TYPE A OR B

AB: 0.67' ¾" MAXIMUM CLASS 2



LOCAL AND COLLECTOR STREET

60 FOOT RIGHT-OF-WAY

MINIMUM STRUCTURAL DESIGN SECTION

HMA: 0.17' ½" TYPE A OR B

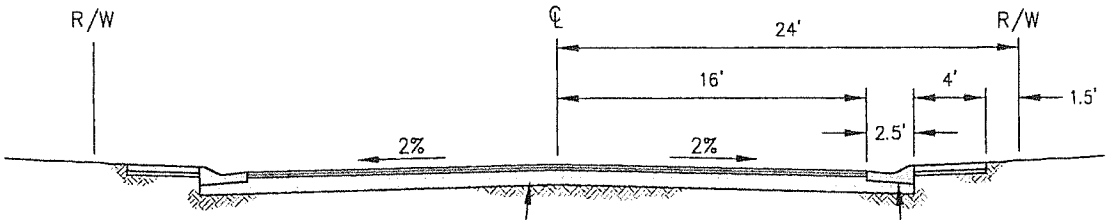
AB: 0.50' ¾" MAXIMUM CLASS 2

NOTES

1. THE STRUCTURAL SECTION FOR ALL STREETS SHALL BE BASED ON SITE R-VALUES AND TRAFFIC INDEXES, BUT IN NO EVENT SHALL THESE SECTIONS BE LESS THAN THOSE SHOWN ABOVE.
2. SUBGRADE AND AGGREGATE BASE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
3. CURB, GUTTER, AND SIDEWALK SHALL CONFORM TO STD. 204.
4. THE ARTERIAL STREET MINIMUM STRUCTURAL DESIGN SECTION SHALL APPLY TO DESIGNATED TRUCK ROUTES.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Shill III	TYPICAL STREET CROSS SECTIONS	STANDARD DETAIL 101 SHEET 1 OF 3

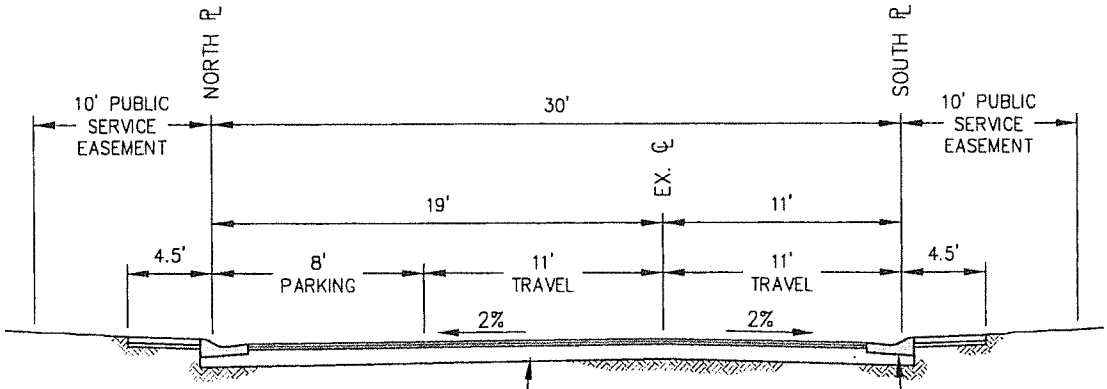


0.17' ½" TYPE A OR B HMA OVER 0.67' CLASS 2 AGGREGATE BASE COMPACTED TO 95% RELATIVE COMPACTION. COMPACT TOP 6" OF SUBGRADE TO 95% RELATIVE COMPACTION

STD. 204 ROLLED CURB, GUTTER, AND SIDEWALK

ROBBINS STREET

48 FOOT RIGHT-OF-WAY



0.17' ½" TYPE A OR B HMA OVER 0.67' CLASS 2 AGGREGATE BASE COMPACTED TO 95% RELATIVE COMPACTION. COMPACT TOP 6" OF SUBGRADE TO 95% RELATIVE COMPACTION

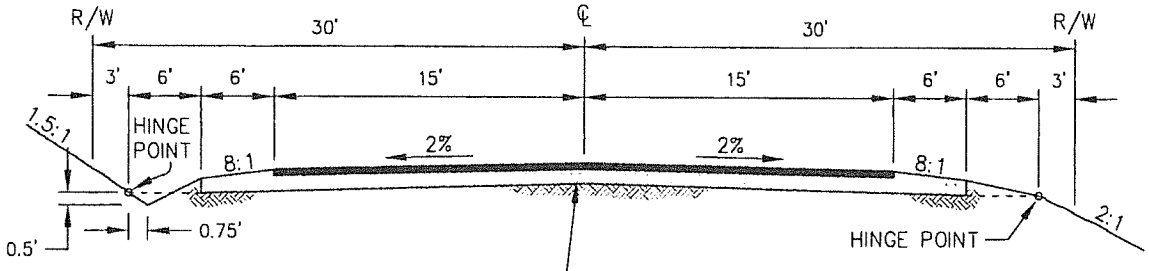
STD. 204 ROLLED CURB, GUTTER, AND SIDEWALK

BONNIE LANE

30 FOOT RIGHT-OF-WAY

CITY OF ORLAND

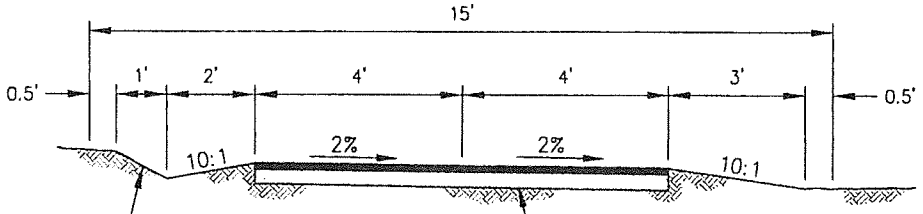
DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K.G. Stiles III	TYPICAL STREET CROSS SECTIONS	STANDARD DETAIL 101 SHEET 2 OF 3



0.17' ½" TYPE A OR B HMA OVER 0.67' CLASS 2 AGGREGATE BASE COMPACTED TO 95% RELATIVE COMPACTION. COMPACT TOP 6" OF SUBGRADE TO 95% RELATIVE COMPACTION

2 LANE STREET

LOT SIZE: 5.00 ACRES AND LARGER
(4 OR FEWER LOTS)



2:1 OR FLATTER

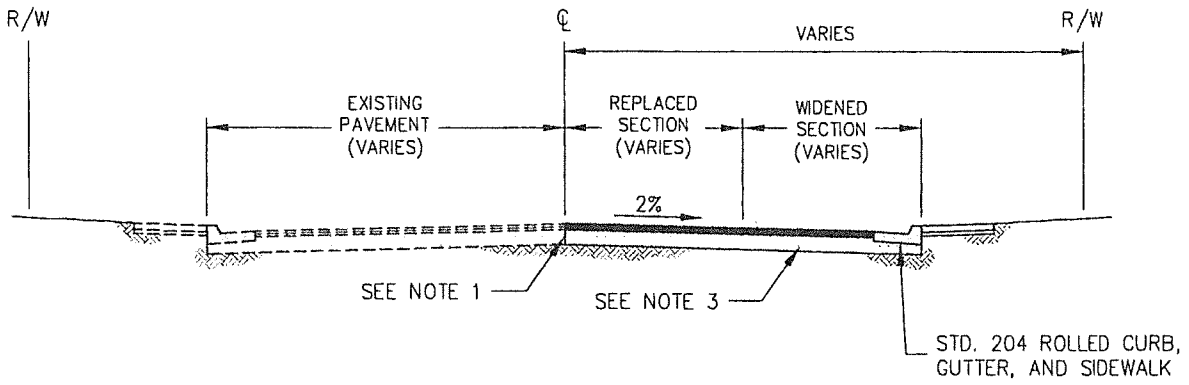
0.17' ½" TYPE A OR B HMA OVER 0.33' CLASS 2 AGGREGATE BASE COMPACTED TO 95% RELATIVE COMPACTION. COMPACT TOP 6" OF SUBGRADE TO 95% RELATIVE COMPACTION

BICYCLE PATH

15 FOOT RIGHT-OF-WAY

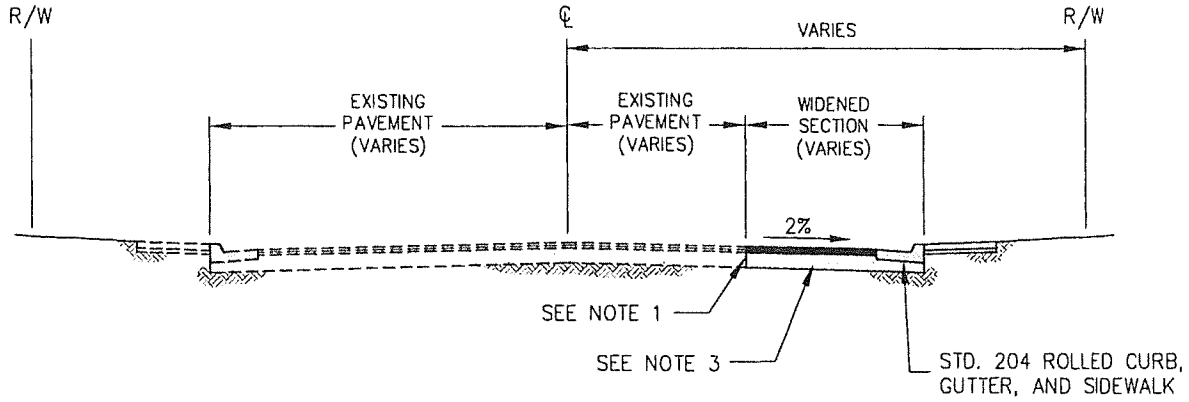
CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K.G. Shuler III	TYPICAL STREET CROSS SECTIONS	STANDARD DETAIL 101 SHEET 3 OF 3



TYPICAL SECTION "A"

(REPLACEMENT AND WIDENING)



TYPICAL SECTION "B"

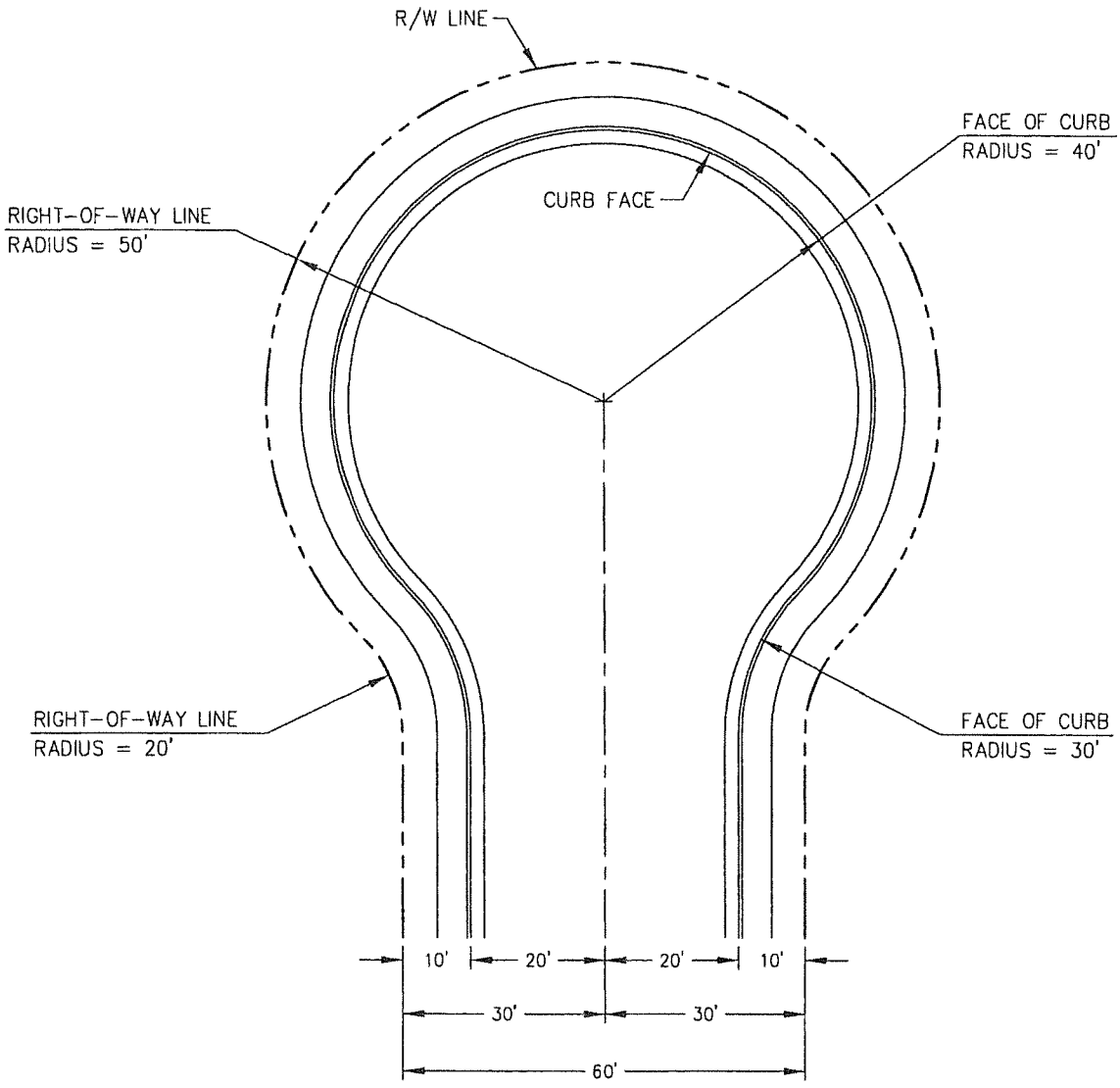
(WIDENING ONLY)

NOTES

1. SAWCUT EXISTING PAVEMENT IN A STRAIGHT LINE TO PROVIDE A NEAT EDGE. CONFORM TO EXITING PAVEMENT AT SAWCUT LINE OR AS REQUIRED FOR TRANSITION.
2. AGGREGATE BASE AND SUBGRADE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
3. STRUCTURAL SECTION FOR REPLACED OR WIDENED SECTIONS SHALL BE BASED ON SITE R-VALUES AND TRAFFIC INDEXES, BUT IN NO EVENT SHALL THE STRUCTURAL SECTION BE LESS THAN THE APPLICABLE MINIMUM STRUCTURAL DESIGN SECTION SHOWN IN STD. 101.
4. TYPICAL SECTION "A" SHALL BE USED WHEN THE CITY ENGINEER DEEMS THE EXISTING STRUCTURAL SECTION TO BE INADEQUATE.
5. TYPICAL SECTION "B" SHALL BE USED WHEN THE CITY ENGINEER DEEMS THE EXISTING STRUCTURAL SECTION TO BE ADEQUATE.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Shill III	WIDENING OF EXISTING STREETS	STANDARD DETAIL 102 SHEET 1 OF 1

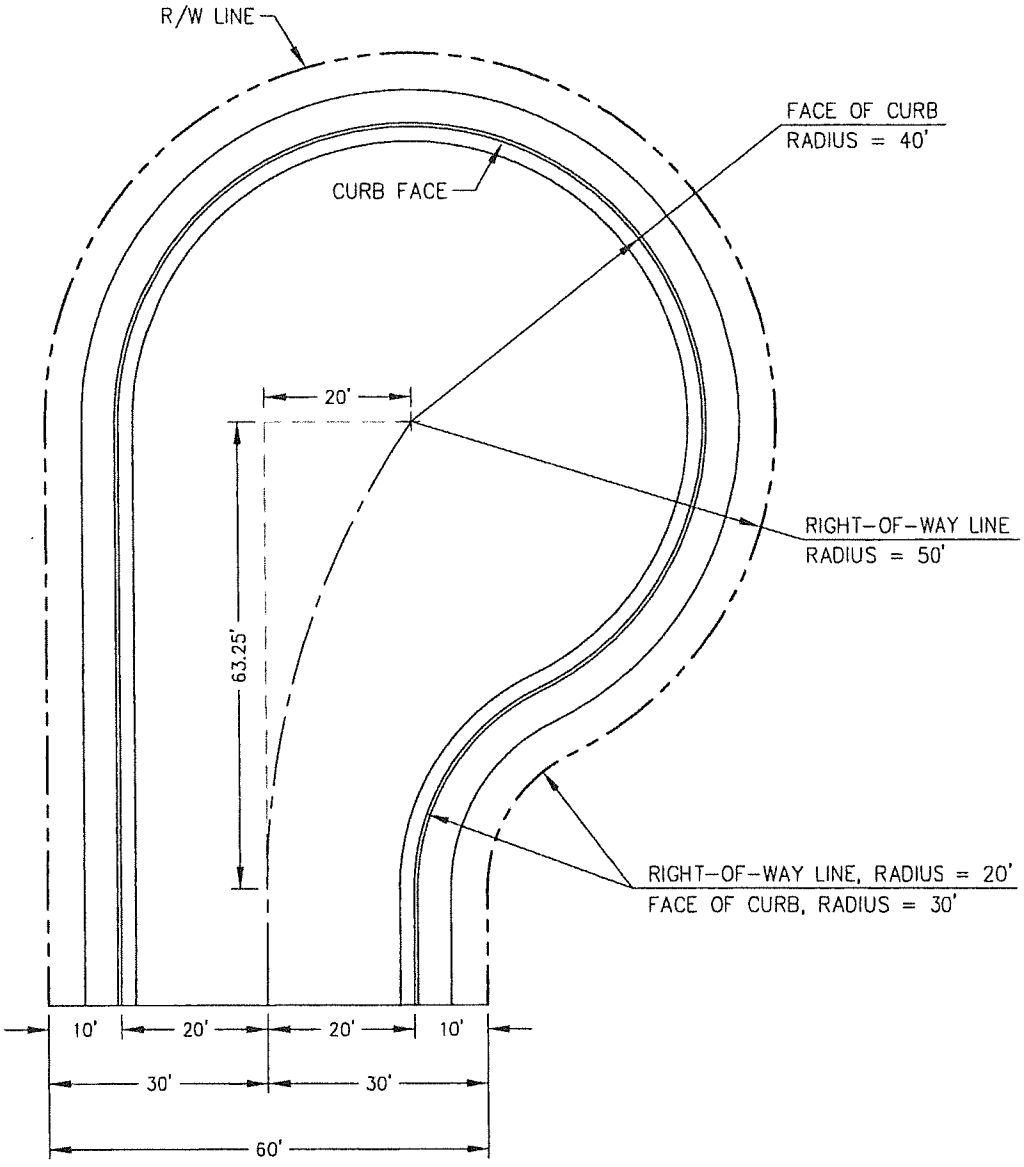


NOTES

1. THE STRUCTURAL SECTION SHALL BE BASED ON SITE R-VALUES AND TRAFFIC INDEXES, BUT IN NO EVENT SHALL THE STRUCTURAL SECTION BE LESS THAN THE APPLICABLE MINIMUM STRUCTURAL DESIGN SECTION SHOWN IN STD. 101.
2. SUBGRADE AND AGGREGATE BASE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
3. CURB, GUTTER, AND SIDEWALK SHALL CONFORM TO STD. 204.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Stoll III	STANDARD CUL-DE-SAC	STANDARD DETAIL 103 SHEET 1 OF 1

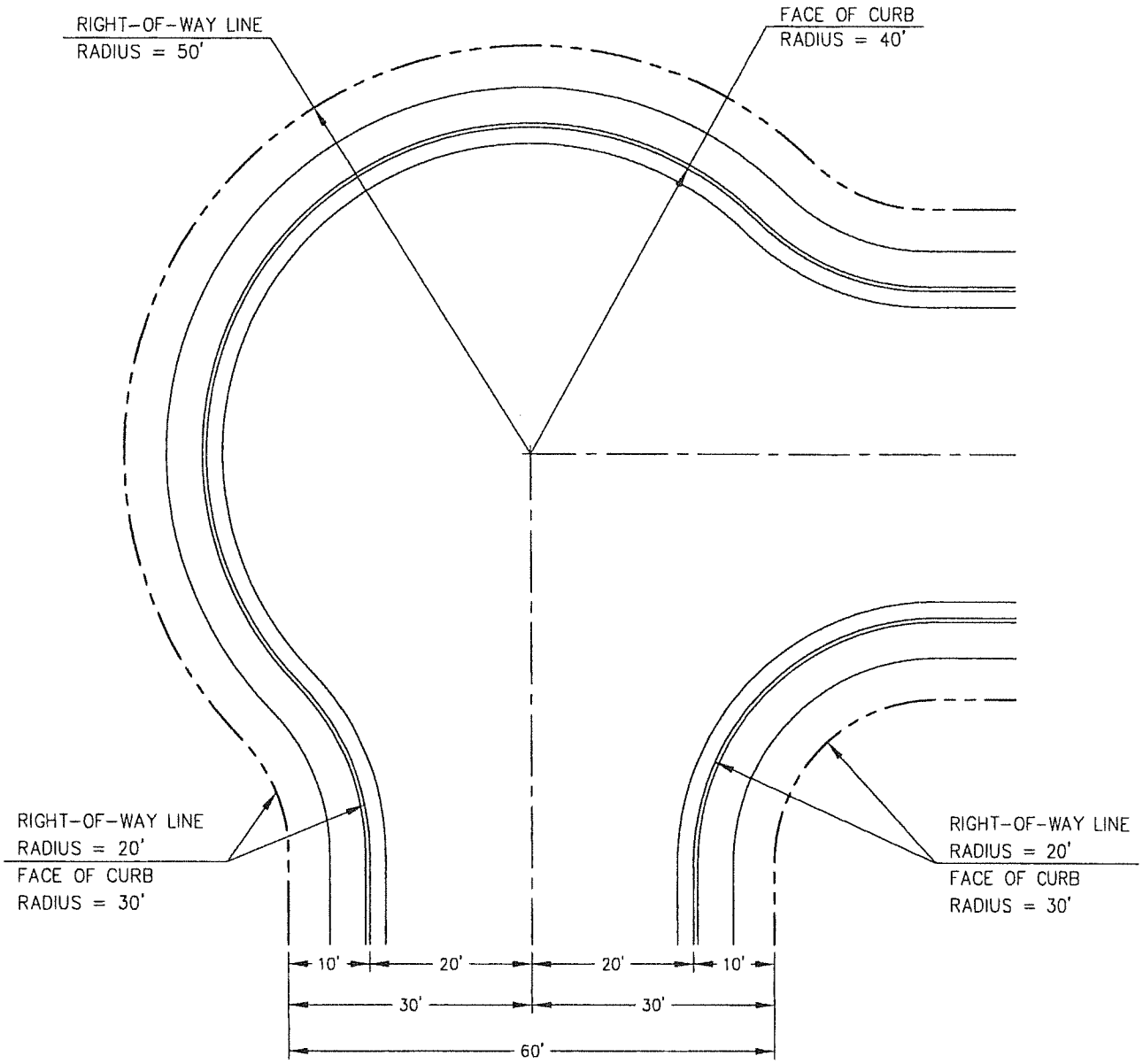


NOTES

1. THE STRUCTURAL SECTION SHALL BE BASED ON SITE R-VALUES AND TRAFFIC INDEXES, BUT IN NO EVENT SHALL THE STRUCTURAL SECTION BE LESS THAN THE APPLICABLE MINIMUM STRUCTURAL DESIGN SECTION SHOWN IN STD. 101.
2. SUBGRADE AND AGGREGATE BASE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
3. CURB, GUTTER, AND SIDEWALK SHALL CONFORM TO STD. 204.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: Ken G. Shell III	OFFSET CUL-DE-SAC	STANDARD DETAIL 104 SHEET 1 OF 1



NOTES

1. THE STRUCTURAL SECTION SHALL BE BASED ON SITE R-VALUES AND TRAFFIC INDEXES, BUT IN NO EVENT SHALL THE STRUCTURAL SECTION BE LESS THAN THE APPLICABLE MINIMUM STRUCTURAL DESIGN SECTION SHOWN IN STD. 101.
2. SUBGRADE AND AGGREGATE BASE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
3. CURB, GUTTER, AND SIDEWALK SHALL CONFORM TO STD. 204.
4. WHEELCHAIR RAMP LOCATIONS TO BE DETERMINED BY THE CITY ENGINEER.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14

CHECKED BY: KGS III SCALE: NONE

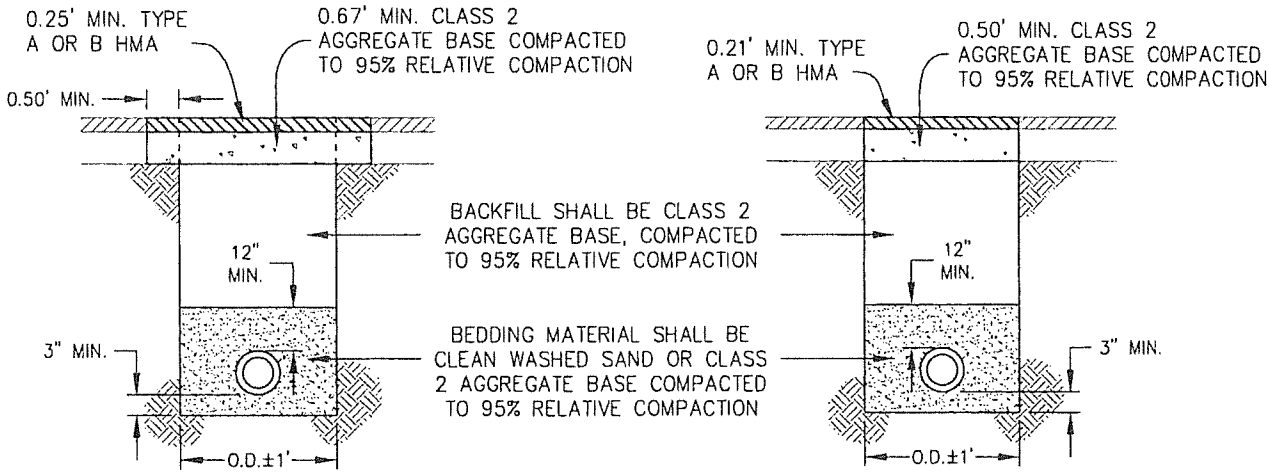
APPROVED: Kevin O. Shall III

INTERSECTION KNUCKLE

STANDARD DETAIL

105

SHEET 1 OF 1

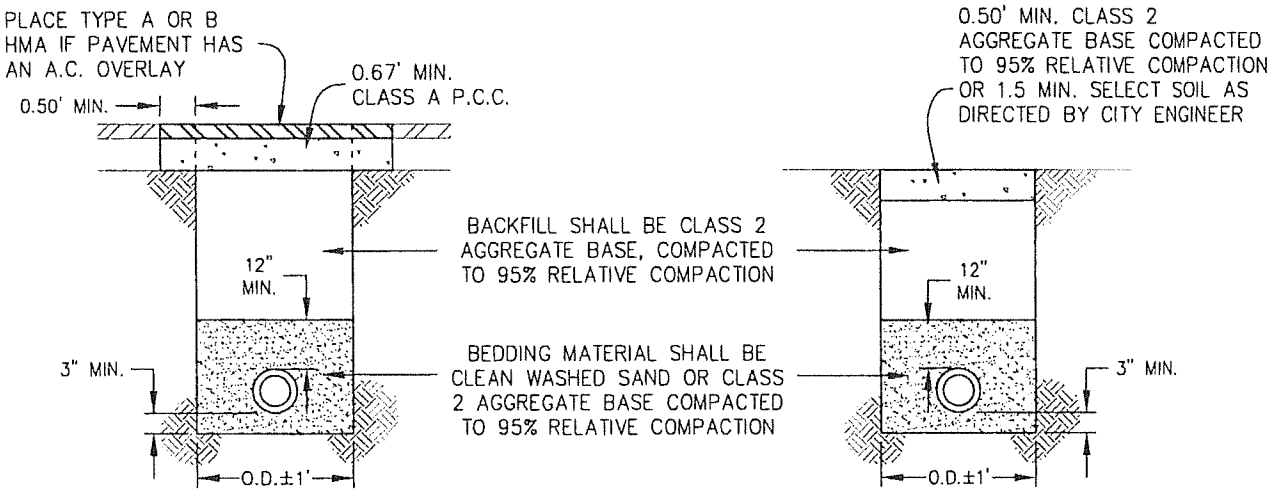


TYPE "A"

IMPROVED ASPHALTIC CONCRETE OR PLANT-MIX CONCRETE

TYPE "B"

IMPROVED ARMOR COAT OR SEAL COAT STREETS



TYPE "C"

PORTLAND CEMENT CONCRETE STREETS

TYPE "D"

UNIMPROVED STREETS ALLEYS OR EASEMENTS

NOTES

1. TYPE "A" & "C" TRENCHES REQUIRE (2) TWO CUTS; FIRST CUT INITIAL TRENCH WIDTH, THEN AFTER WORK HAS BEEN COMPLETED, SAW CUT 0.5' WIDER ON BOTH SIDES. EDGES OF ALL EXISTING ASPHALT SHALL BE TACKED WITH SS-1 EMULSION.
2. TYPE "A" & "C" TRENCHES REQUIRE PLACEMENT AND MAINTENANCE OF TEMPORARY PAVEMENT (SC-800 COLD MIX) UNTIL PLACEMENT OF PERMANENT PAVING UNLESS OTHERWISE DIRECTED BY PUBLIC WORKS.
3. STRUCTURAL SECTION THICKNESS SHOWN IS MINIMUM ALLOWABLE. GREATER THICKNESS OF STRUCTURAL SECTION MAY BE REQUIRED BY CITY ENGINEER IF EXISTING STRUCTURAL SECTION EXCEEDS THESE MINIMUMS.
4. ALL TRENCH WORK 5' AND DEEPER SHALL HAVE APPROVED SHORING IN ACCORDANCE WITH OSHA AND CALIFORNIA INDUSTRIAL SAFETY REGULATIONS.
5. PERMITTEE IS REQUIRED TO NOTIFY DEPT. OF PUBLIC WORKS, 865-1610, 24 HOURS PRIOR TO THE CLOSING OF ANY CITY STREET. ALL WORK DONE WITHIN CITY STREET RIGHT-OF-WAY SHALL REQUIRE AN ENCROACHMENT PERMIT.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14

CHECKED BY: KGS III SCALE: NONE

APPROVED: Ken G. Shull III

BACKFILL AND TRENCH RESTORATION

STANDARD DETAIL

106

SHEET 1 OF 1

FIG - 1

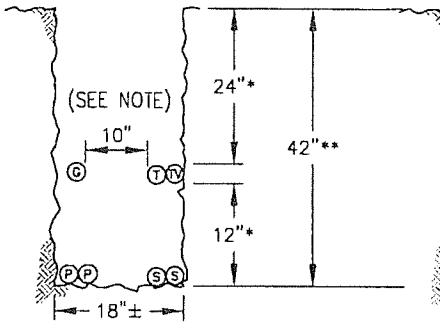


FIG - 2

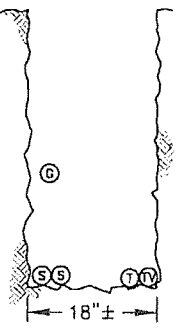


FIG - 3

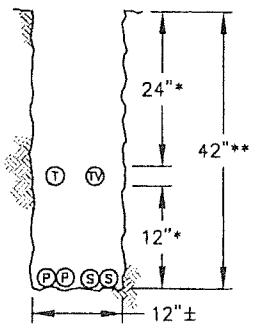
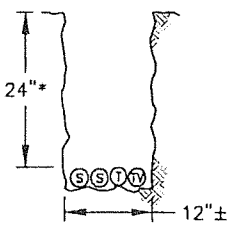


FIG - 4



LEGEND

- (G) — GAS
- (P) — ELECT. PRIMARIES
- (S) — ELECT. SECONDARIES
- (T) — TELEPHONE
- (TV) — TELEVISION

NOTE

SEPARATION MAY BE REDUCED TO NOT LESS THAN 6" WHEN NECESSARY, INSTEAD OF INCREASING TRENCH WIDTH.

* — INCREASE TO 30" IN STREET AREA
** — INCREASE TO 48" IN STREET AREA

TYPICAL SIDEWALK & STREET JOINT TRENCH CONFIGURATIONS

JOINT TRENCH OCCUPANCY GUIDE

SECT.	(G)	(P)	(S)	(T)	(TV)	FIG.
A	X	X	12" Trench Width			1
B	X	X	X	12" Trench Width		1
C	X	X	X	X		1
D	X	X		X		1
E	X		X	12" Trench Width		1
F	X		X	X		2
G	X	X			X	1
H	X		X		X	2
I	X			X		1

SECT.	(G)	(P)	(S)	(T)	(TV)	FIG.
J	X			X	X	1
K	X				X	1
L		X	X	36" Min. Cover		3
M		X	X	X		3
N		X		X		3
P		X		X	X	3
Q		X	X		X	3
R		X			X	3
S			X	X		4

SECT.	(G)	(P)	(S)	(T)	(TV)	FIG.
T			X		X	4
U				X	X	4
V	X	X	X	X	X	1
W	X		X	X	X	2
X		X	X	X	X	3
Y			X	X	X	4

CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09

CHECKED BY: KGS III SCALE: NONE

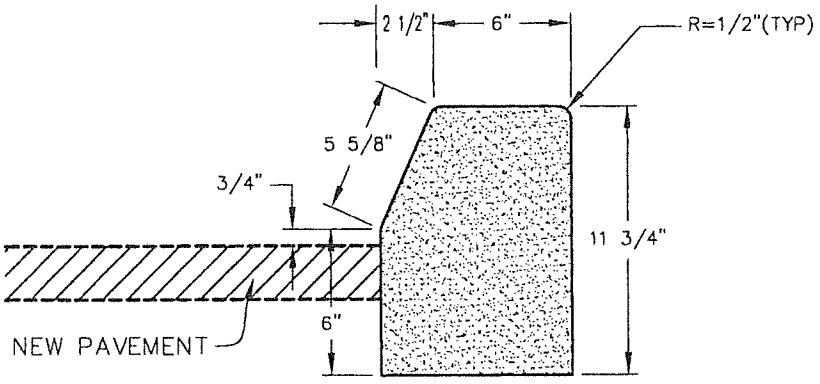
APPROVED: K. G. Shull III

JOINT TRENCH CONFIGURATIONS FOR UTILITY COMPANIES

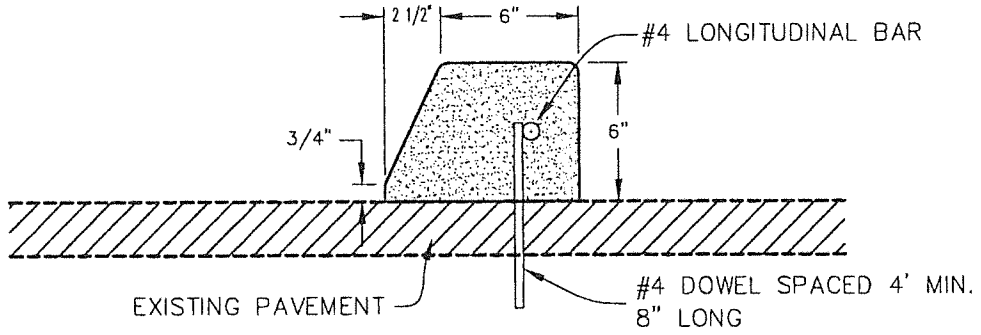
STANDARD DETAIL

107

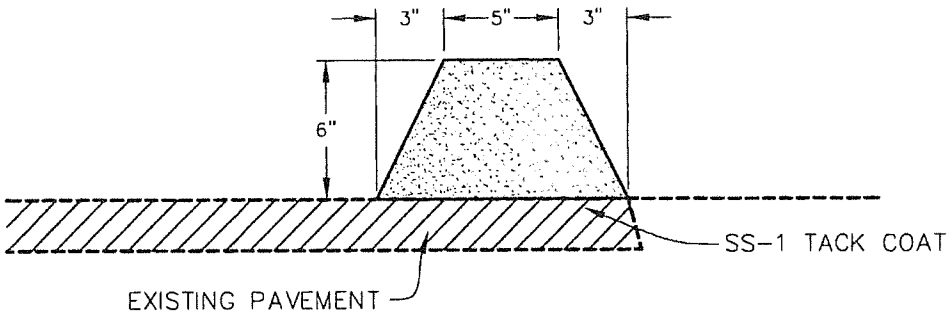
SHEET 1 OF 1



6" P.C.C. CURB (TYPE A)



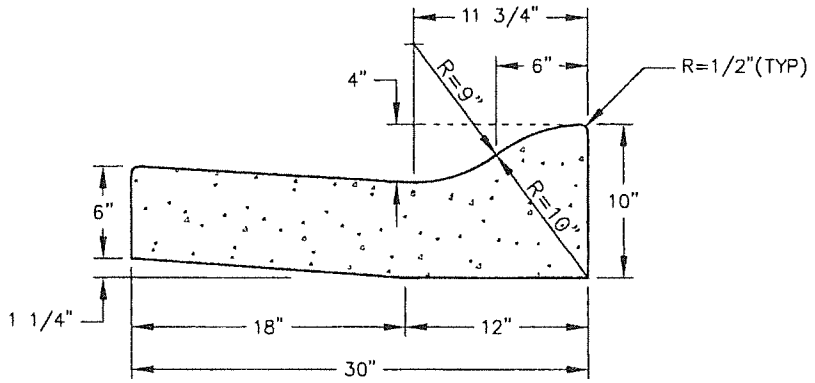
6" P.C.C. CURB (TYPE B)



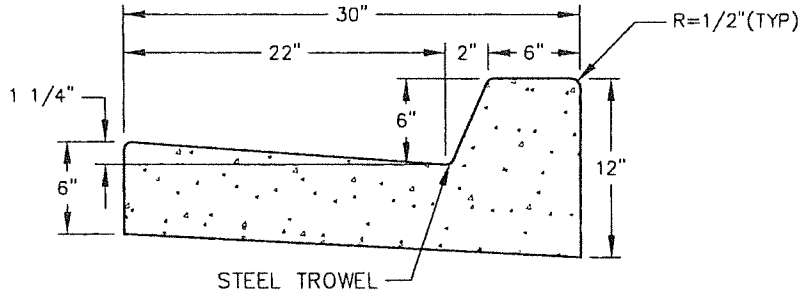
6" A.C. DIKE

CITY OF ORLAND

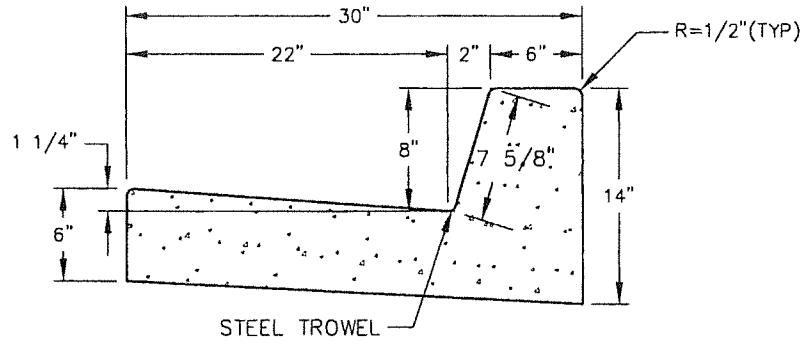
DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: Kevin G. Shull III	6" CURB AND 6" ASPHALT DIKE	STANDARD DETAIL 201 SHEET 1 OF 1



ROLL CURB



6" BARRIER CURB



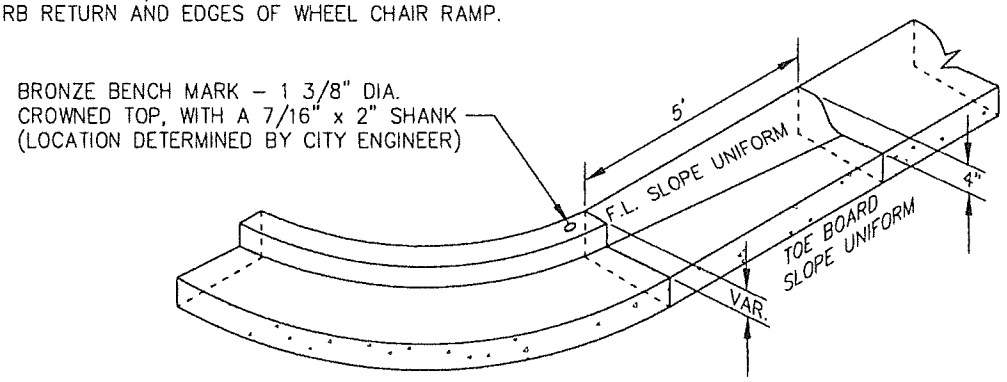
8" BARRIER CURB

CITY OF ORLAND

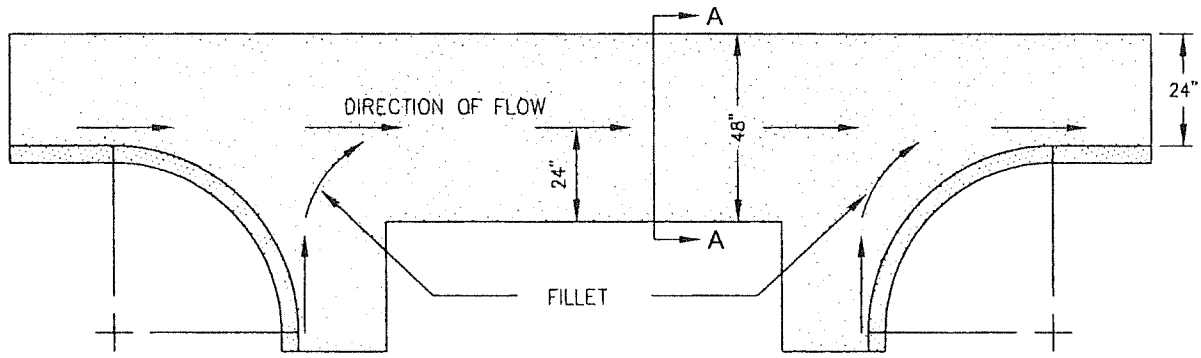
DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Stoll III	CURB AND GUTTER	STANDARD DETAIL 202 SHEET 1 OF 1

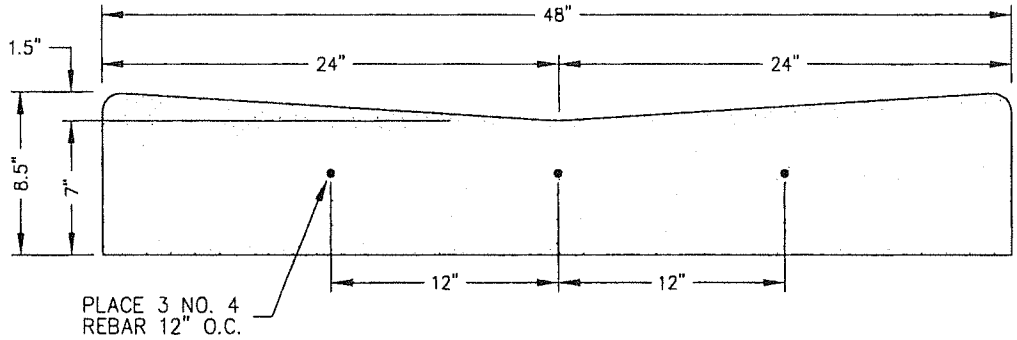
NOTE

VERTICAL CURB & GUTTER TO BE USED AT ALL CURB RETURNS WITH 1/4" EXPANSION JOINT AT BOTH ENDS OF CURB RETURN AND EDGES OF WHEEL CHAIR RAMP.



BARRIER C & G TO ROLL C & G TRANSITION



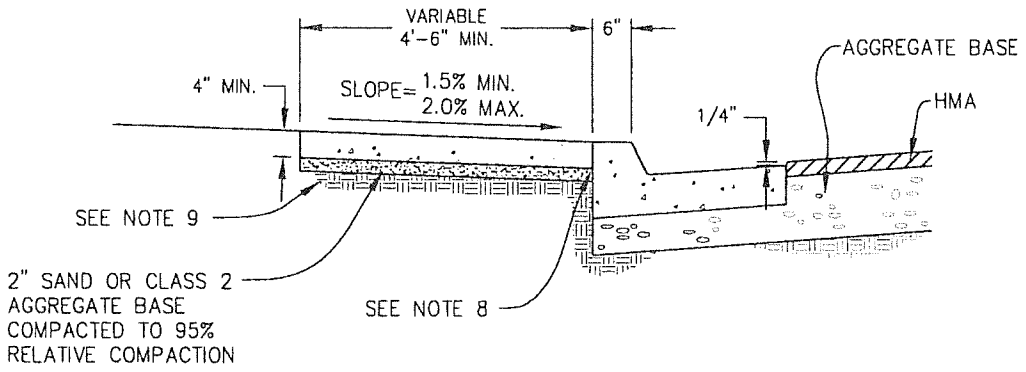


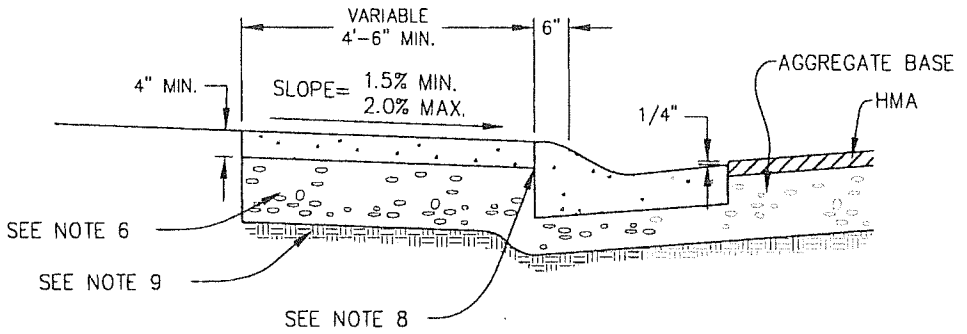
SECTION A-A

CROSS GUTTER

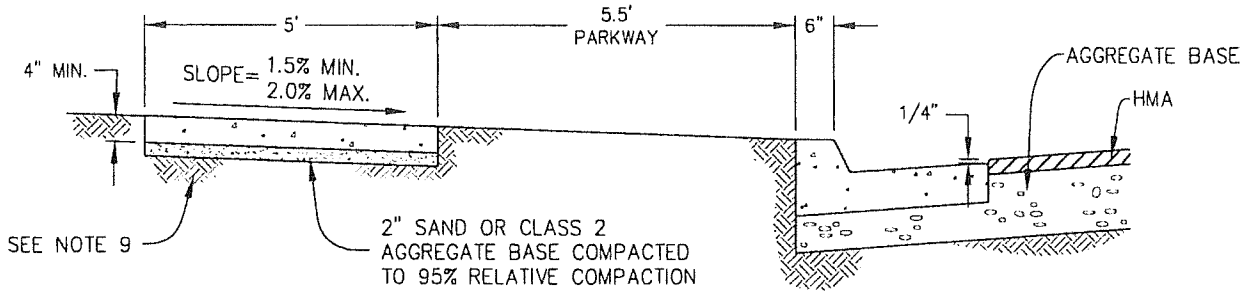
CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED:	CROSS GUTTER AND CURB AND GUTTER TRANSITION	STANDARD DETAIL 203 SHEET 1 OF 1





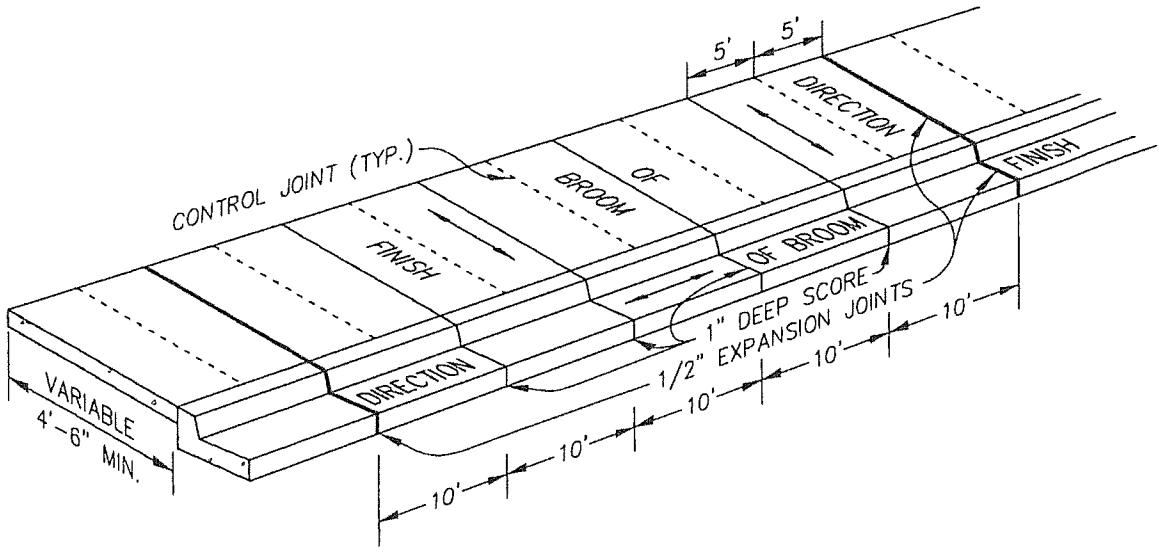
CONTIGUOUS TYPE



SEPARATED TYPE

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED:	SIDEWALK, CURB AND GUTTER	STANDARD DETAIL 204 SHEET 1 OF 2



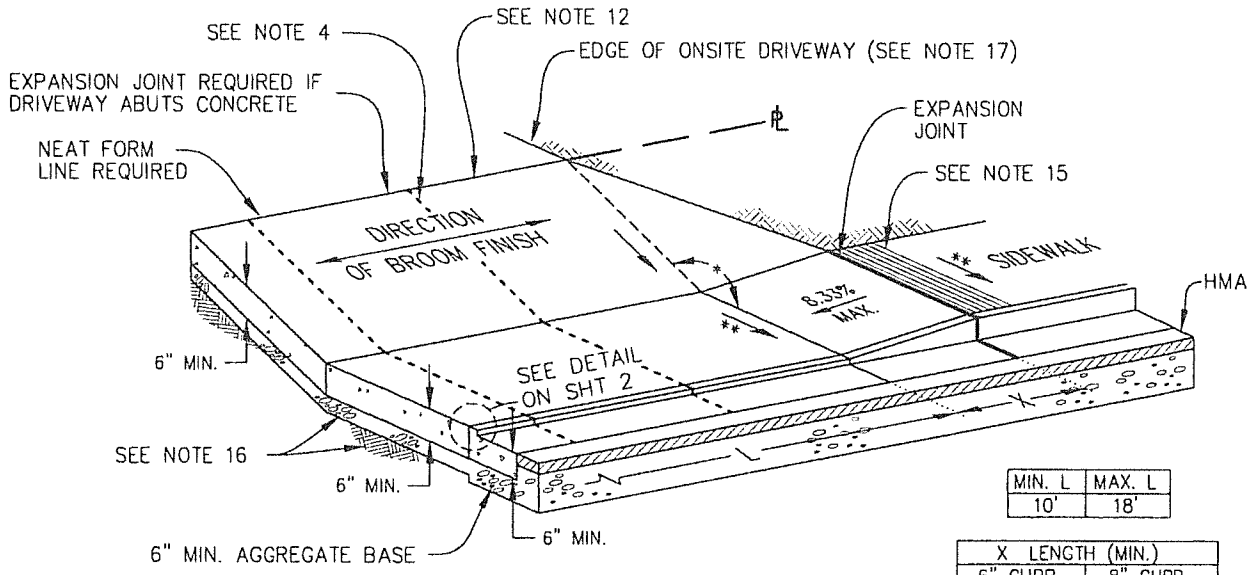
CONTROL JOINT LAYOUT

NOTES

1. ALL CONCRETE SHALL BE CLASS B P.C.C.
2. 1/2 INCH, PRE-MOLDED JOINT FILLER SHALL BE INSTALLED IN EXPANSION JOINTS AT REGULAR INTERVALS NOT EXCEEDING 50 FEET, AT THE B.C. AND E.C. OF ALL CURB RETURNS AND AT THE END OF ALL DRIVEWAYS, AND SHALL BE FULL-DEPTH AND COMPLETELY FILL THE JOINT.
3. A MINIMUM OF 2 INCHES OF SAND, OR CLASS 2 AGGREGATE BASE, TO BE PLACED UNDER THE SIDEWALK. (SEE NOTE 6 BELOW)
4. ALL WORK DONE AND ALL MATERIALS SUPPLIED SHALL CONFORM TO THE ORLAND IMPROVEMENT STANDARDS.
5. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER FOR INSPECTION AT LEAST 24 HOURS PRIOR TO PLACING CONCRETE.
6. FOR SIDEWALK ABUTTING ROLLED CURB AND GUTTER, THE THICKNESS OF AGGREGATE BASE UNDER THE SIDEWALK SHALL BE THE SAME AS THE THICKNESS PLACED UNDER THE STREET PAVEMENT.
7. EXPANSION JOINTS IN SIDEWALK SHALL BE ADJACENT TO EXPANSION JOINT IN CURB AND GUTTER.
8. PROVIDE COLD JOINT AT BACK OF CURB. IF CURB, GUTTER, AND SIDEWALK ARE POURED MONOLITHICALLY, PROVIDE 1" DEEP SCORE AT BACK OF CURB.
9. SUBGRADE UNDER SIDEWALK COMPACTED TO 92% RELATIVE COMPACTION.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: Ken G. Shill III	SIDEWALK, CURB AND GUTTER	STANDARD DETAIL 204 SHEET 2 OF 2

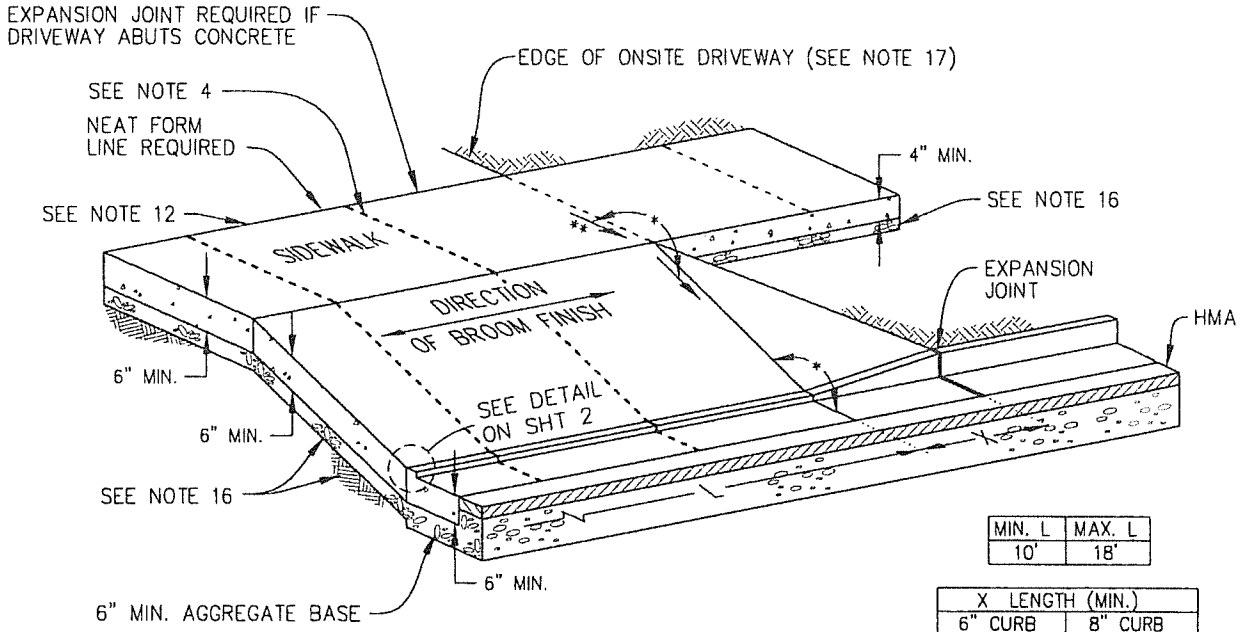


MIN. L	MAX. L
10'	18'

X LENGTH (MIN.)	
6" CURB	8" CURB
5.5'	7.5'

* MAX. ALGEBRAIC DIFFERENCE OF 17.5%
** SIDEWALK SLOPE SHALL BE A MINIMUM OF 1.5% AND SHALL NOT EXCEED 2%

CONTIGUOUS SIDEWALK



MIN. L	MAX. L
10'	18'

X LENGTH (MIN.)	
6" CURB	8" CURB
5.5'	7.5'

* MAX. ALGEBRAIC DIFFERENCE OF 17.5%
** SIDEWALK SLOPE SHALL BE A MINIMUM OF 1.5% AND SHALL NOT EXCEED 2%

SEPARATED SIDEWALK

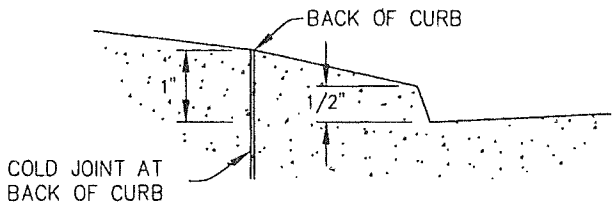
CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14
CHECKED BY: KGS III SCALE: NONE
APPROVED: Ke G. Sledd III

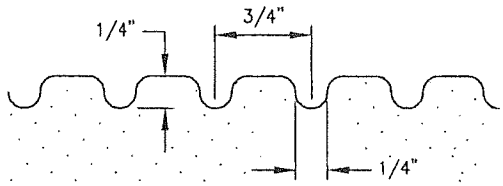
RESIDENTIAL DRIVEWAY

STANDARD DETAIL

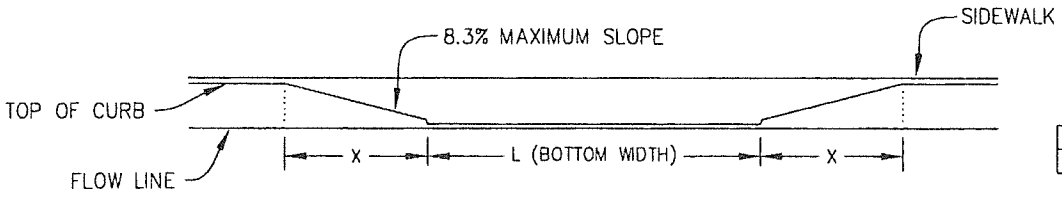
205



DETAIL



GROOVE DETAIL



MIN. L	MAX. L
10'	18'

X LENGTH (MIN.)	
6" CURB	8" CURB
5.5'	7.5'

ELEVATION

NOTES

1. ALL WORK TO BE DONE AND ALL MATERIALS TO BE SUPPLIED SHALL CONFORM TO THE ORLAND PUBLIC WORKS CONSTRUCTION STANDARDS.
2. ALL CONCRETE SHALL BE CLASS B P.C.C.
3. THE AREA INCLUDED WITHIN THE SLOPES OF THE DRIVEWAY SHALL BE GIVEN A HEAVY BROOM FINISH AFTER BEING TROWELED.
4. CONTROL JOINTS SHALL EXTEND FROM LIP OF GUTTER TO THE BACK OF SIDEWALK UNLESS OTHERWISE SPECIFIED. CONTROL JOINTS SHALL BE EVENLY SPACED AT A MAXIMUM INTERVAL OF 8 FEET.
5. TOP OF LIP AT THE FLOWLINE TO BE TROWELED STRAIGHT AND TRUE.
6. WHERE CURB IS EXISTING AND NO DEPRESSION HAS BEEN PROVIDED, THE EXISTING CURB SHALL BE REMOVED TO THE FIRST EXPANSION JOINT BEYOND EITHER SIDE.
7. WHERE AN EXISTING SIDEWALK IS IN PLACE, IT SHALL BE REMOVED TO THE FIRST EXPANSION JOINT BEYOND EITHER SIDE.
8. ALLEY CURB RETURNS MAY BE DEPRESSED AS PART OF THE DRIVEWAY ONLY WHEN APPROVED BY THE CITY ENGINEER.
9. DRIVEWAYS SHALL NOT BE CONSTRUCTED CLOSER THAN 20 FEET TO THE END OF STREET CURB RETURNS UNLESS APPROVED BY THE CITY ENGINEER.
10. THE MINIMUM LENGTH OF FULL HEIGHT CURB BETWEEN DRIVEWAYS ON THE SAME LOT SHALL BE 24 FEET.
11. THE MINIMUM LENGTH OF FULL HEIGHT CURB BETWEEN DRIVEWAYS ON ADJACENT LOTS SHALL BE 6 FEET.
12. ONSITE GRADING MAY BE REQUIRED TO ELIMINATE EXCESSIVE GRADE CHANGE AND TO MAINTAIN SUITABLE DRAINAGE.
13. MAXIMUM CURB OPENING MAY BE INCREASED DUE TO SPECIAL CONDITIONS WITH APPROVAL OF THE CITY ENGINEER.
14. DRIVEWAY APPROACH SHALL BE POURED SEPARATELY FROM CURB UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
15. SIDEWALK ADJACENT TO THE TOP OF RAMPS SHALL HAVE A 12" WIDE GROOVED BORDER STRIP WITH 1/4" GROOVES AT 3/4" ON CENTER, SEE GROOVE DETAIL.
16. 2" SAND OR CLASS 2 AGGREGATE BASE COMPACTED TO 95% RELATIVE COMPACTION OVER SUBGRADE COMPACTED TO 92% RELATIVE COMPACTION.
17. BOTTOM WIDTH OF PROPOSED DRIVEWAY SHALL BE THE SAME AS THE ONSITE DRIVEWAY.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14

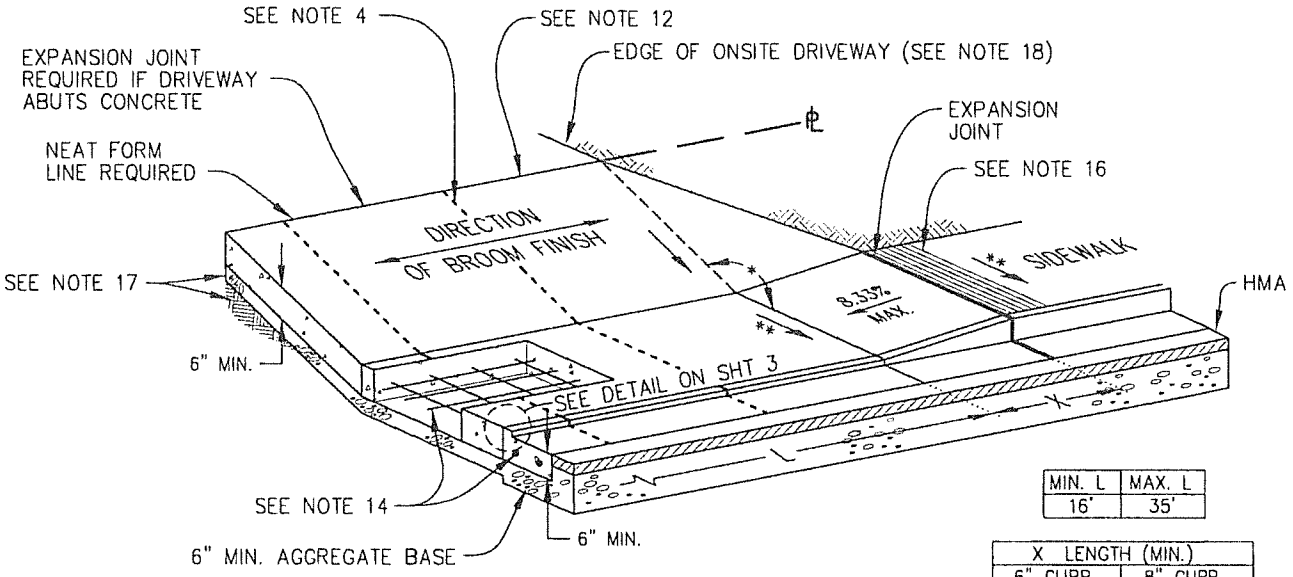
CHECKED BY: KGS III SCALE: NONE

APPROVED: Ken G. Shell III

RESIDENTIAL DRIVEWAY

STANDARD DETAIL

205

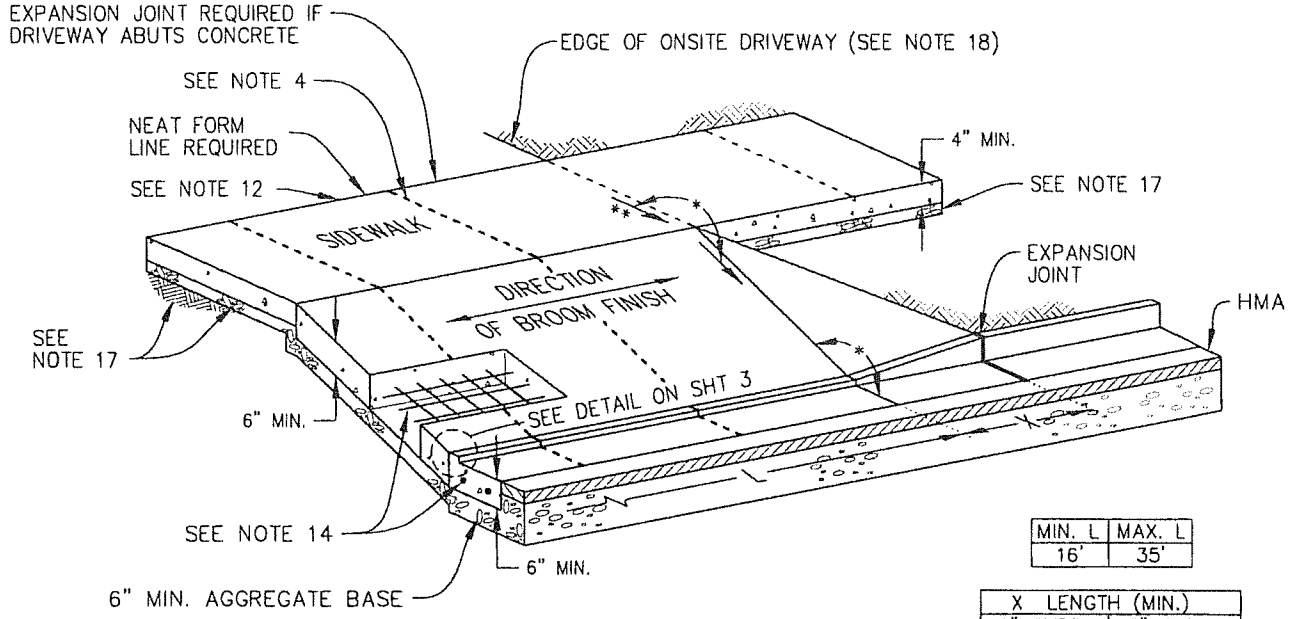


MIN. L	MAX. L
16'	35'

X LENGTH (MIN.)	
6" CURB	8" CURB
5.5'	7.5'

* MAX. ALGEBRAIC DIFFERENCE OF 17.5%
** SIDEWALK SLOPE SHALL BE A MINIMUM OF 1.5% AND SHALL NOT EXCEED 2%

CONTIGUOUS SIDEWALK



MIN. L	MAX. L
16'	35'

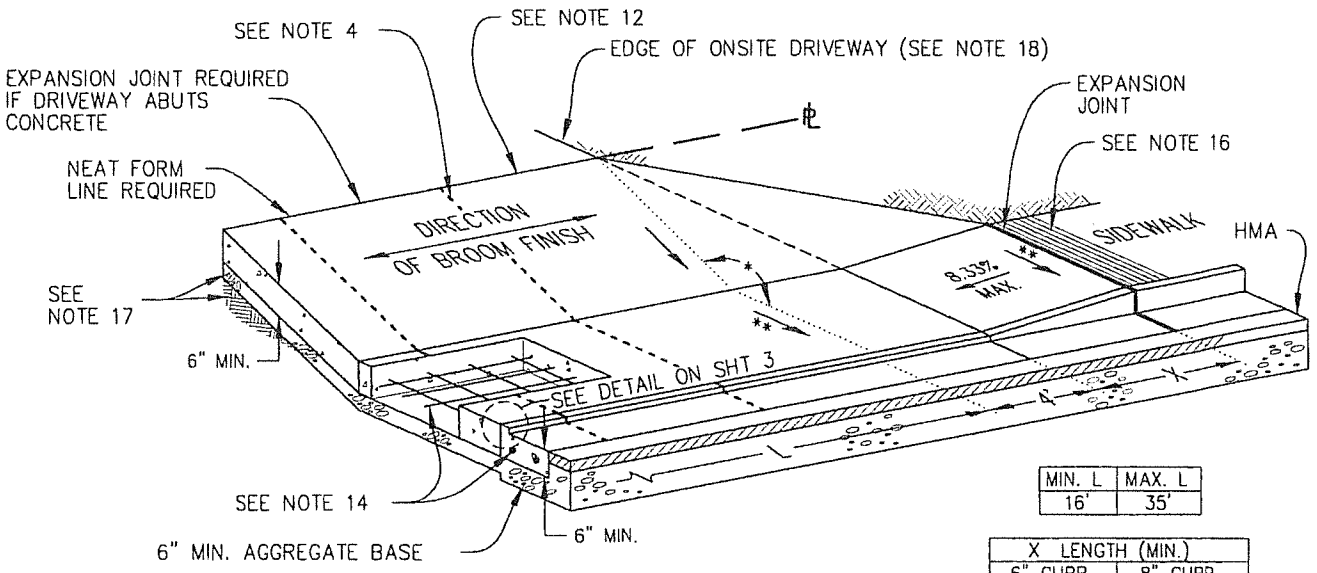
X LENGTH (MIN.)	
6" CURB	8" CURB
5.5'	7.5'

* MAX. ALGEBRAIC DIFFERENCE OF 17.5%
** SIDEWALK SLOPE SHALL BE A MINIMUM OF 1.5% AND SHALL NOT EXCEED 2%

SEPARATED SIDEWALK

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K.G. Stiles III	STANDARD COMMERCIAL DRIVEWAY	STANDARD DETAIL 206 SHEET 1 OF 3

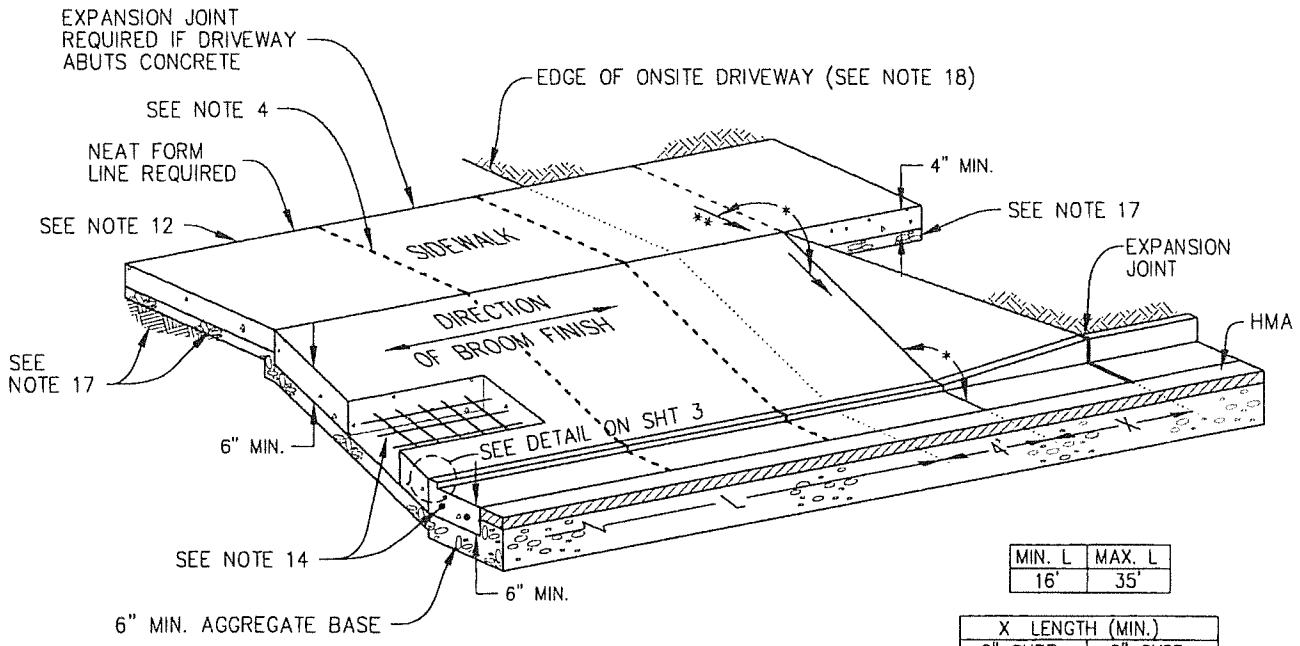


MIN. L	MAX. L
16'	35'

X LENGTH (MIN.)	
6" CURB	8" CURB
5.5'	7.5'

* MAX. ALGEBRAIC DIFFERENCE OF 17.5%
** SIDEWALK SLOPE SHALL BE A MINIMUM OF 1.5% AND SHALL NOT EXCEED 2%

CONTIGUOUS SIDEWALK



MIN. L	MAX. L
16'	35'

X LENGTH (MIN.)	
6" CURB	8" CURB
5.5'	7.5'

* MAX. ALGEBRAIC DIFFERENCE OF 17.5%
** SIDEWALK SLOPE SHALL BE A MINIMUM OF 1.5% AND SHALL NOT EXCEED 2%

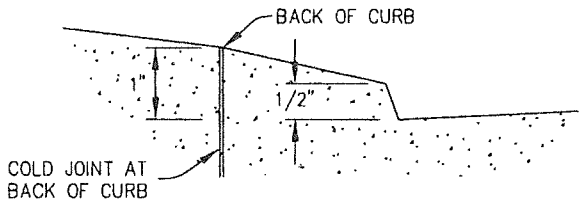
SEPARATED SIDEWALK

CITY OF ORLAND

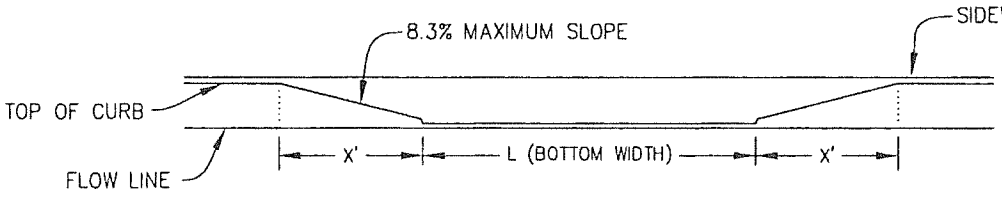
DRAWN BY: CAD DATE: MAR,14
CHECKED BY: KGS III SCALE: NONE
APPROVED: K. G. Skill III

MODIFIED COMMERCIAL DRIVEWAY

STANDARD DETAIL
206



DETAIL



MIN. L	MAX. L
16'	35'

X LENGTH (MIN.)	
6" CURB	8" CURB
5.5'	7.5'

ELEVATION

NOTES

1. ALL WORK TO BE DONE AND ALL MATERIALS TO BE SUPPLIED SHALL CONFORM TO THE ORLAND PUBLIC WORKS CONSTRUCTION STANDARDS.
2. ALL CONCRETE SHALL BE CLASS B P.C.C.
3. THE AREA INCLUDED WITHIN THE SLOPES OF THE DRIVEWAY SHALL BE GIVEN A HEAVY BROOM FINISH AFTER BEING TROWELED.
4. CONTROL JOINTS SHALL EXTEND FROM LIP OF GUTTER TO THE BACK OF SIDEWALK UNLESS OTHERWISE SPECIFIED. CONTROL JOINTS SHALL BE EVENLY SPACED AT A MAXIMUM INTERVAL OF 8 FEET.
5. TOP OF LIP AT THE FLOWLINE TO BE TROWELED STRAIGHT AND TRUE.
6. WHERE CURB IS EXISTING AND NO DEPRESSION HAS BEEN PROVIDED, THE EXISTING CURB SHALL BE REMOVED TO THE FIRST EXPANSION JOINT BEYOND EITHER SIDE.
7. WHERE AN EXISTING SIDEWALK IS IN PLACE, IT SHALL BE REMOVED TO THE FIRST EXPANSION JOINT BEYOND EITHER SIDE.
8. ALLEY CURB RETURNS MAY BE DEPRESSED AS PART OF THE DRIVEWAY ONLY WHEN APPROVED BY THE CITY ENGINEER.
9. DRIVEWAYS SHALL NOT BE CONSTRUCTED CLOSER THAN 20 FEET TO THE END OF STREET CURB RETURNS UNLESS APPROVED BY THE CITY ENGINEER.
10. THE MINIMUM LENGTH OF FULL HEIGHT CURB BETWEEN DRIVEWAYS ON THE SAME LOT SHALL BE 24 FEET.
11. THE MINIMUM LENGTH OF FULL HEIGHT CURB BETWEEN DRIVEWAYS ON ADJACENT LOTS SHALL BE 6 FEET.
12. ONSITE GRADING MAY BE REQUIRED TO ELIMINATE EXCESSIVE GRADE CHANGE AND TO MAINTAIN SUITABLE DRAINAGE.
13. MAXIMUM CURB OPENING MAY BE INCREASED DUE TO SPECIAL CONDITIONS WITH APPROVAL OF THE CITY ENGINEER.
14. ALL DRIVEWAYS SHALL HAVE 2 NO. 4 REBAR 12" O.C. IN THE GUTTER AND 6" x 6" 10 GA. WIRE MESH THROUGHOUT THE APPROACH.
15. DRIVEWAY APPROACH SHALL BE POURED SEPARATELY FROM CURB UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
16. SIDEWALK ADJACENT TO THE TOP OF RAMPS SHALL HAVE A 12" WIDE GROOVED BORDER STRIP WITH 1/4" GROOVES AT 3/4" ON CENTER, SEE GROOVE DETAIL ON STD. 205.
17. 2" SAND OR CLASS 2 AGGREGATE BASE COMPACTED TO 95% RELATIVE COMPACTION OVER SUBGRADE COMPACTED TO 92% RELATIVE COMPACTION.
18. BOTTOM WIDTH OF PROPOSED DRIVEWAY SHALL BE THE SAME AS THE ONSITE DRIVEWAY.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR. 2014

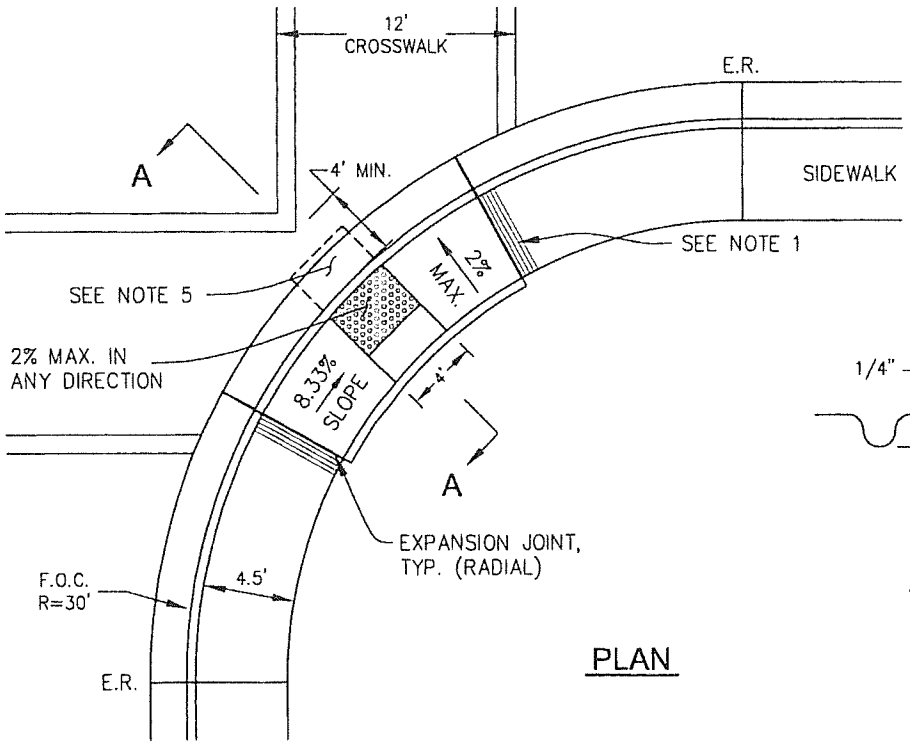
CHECKED BY: KGS III SCALE: NONE

APPROVED: K. G. Shill III

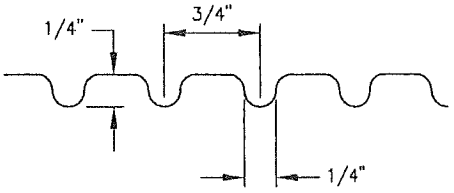
COMMERCIAL DRIVEWAY

STANDARD DETAIL

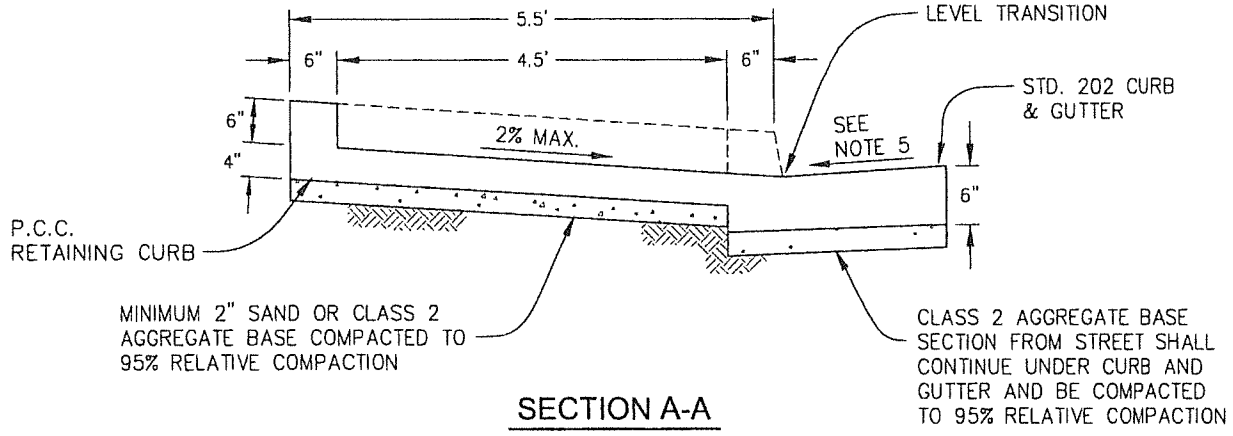
206



PLAN



GROOVE DETAIL



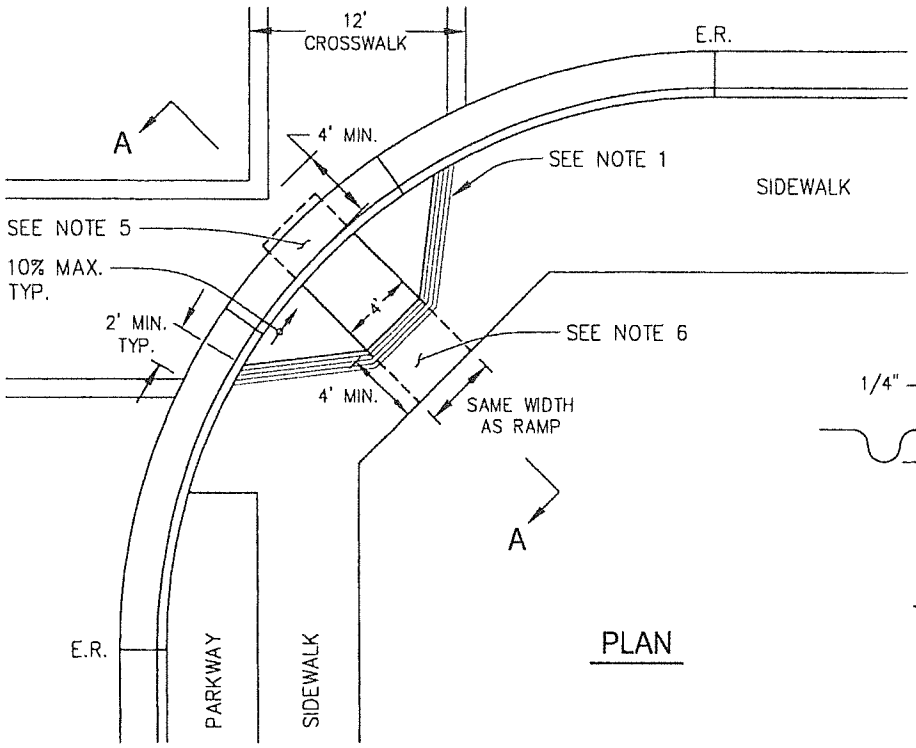
SECTION A-A

NOTES

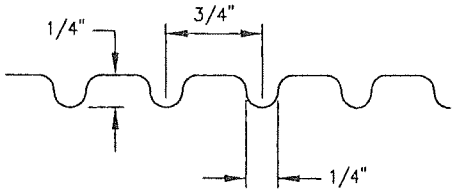
1. THE RAMP SHALL HAVE A 12" WIDE GROOVED BORDER WITH 1/4" GROOVES AT 3/4" O.C. (SEE GROOVE DETAIL). THE GROOVED BORDER MUST BE ON THE LEVEL SURFACE AT THE TOP OF THE RAMP.
2. CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS 36" IN THE DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH OF THE RAMP RUN. DETECTABLE WARNING SURFACES SHALL BE WET SET.
3. DETECTABLE WARNINGS SHALL BE LOCATED SO THE EDGE NEAREST THE CURB IS 6" MINIMUM AND 8" MAXIMUM FROM THE LINE AT THE FACE OF THE CURB MARKING THE TRANSITION BETWEEN THE CURB AND GUTTER, STREET OR HIGHWAY.
4. ALL CURB RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE CALIFORNIA BUILDING CODE.
5. SLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO AND WITHIN 2 FEET OF THE CURB RAMP SHALL NOT BE STEEPER THAN 5%.

CITY OF ORLAND

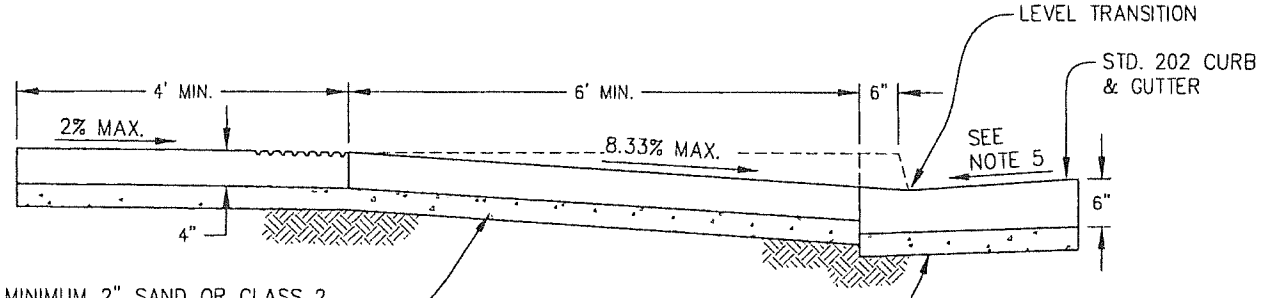
DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: Ke G. Shell III	CURB RAMP (CONTIGUOUS SIDEWALK)	STANDARD DETAIL 207 SHEET 1 OF 1



PLAN



GROOVE DETAIL



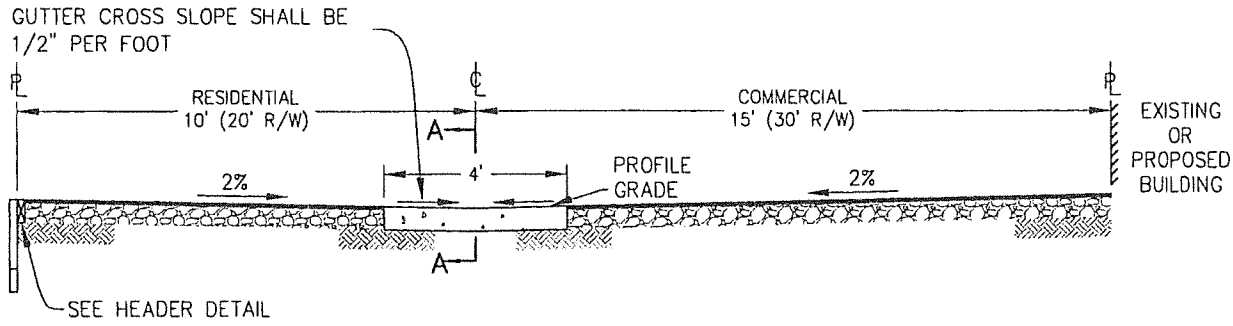
SECTION A-A

NOTES

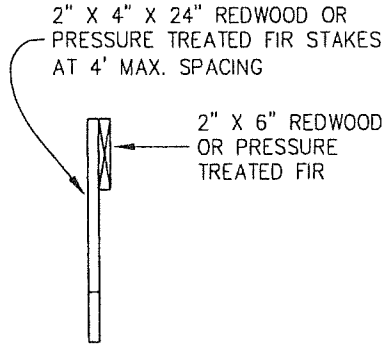
1. THE RAMP SHALL HAVE A 12" WIDE GROOVED BORDER WITH 1/4" GROOVES AT 3/4" O.C. (SEE GROOVE DETAIL). THE GROOVED BORDER MUST BE ON THE LEVEL SURFACE AT THE TOP OF THE RAMP.
2. CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS 36" IN THE DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH OF THE RAMP RUN. DETECTABLE WARNING SURFACES SHALL BE WET SET.
3. DETECTABLE WARNINGS SHALL BE LOCATED SO THE EDGE NEAREST THE CURB IS 6" MINIMUM AND 8" MAXIMUM FROM THE LINE AT THE FACE OF THE CURB MARKING THE TRANSITION BETWEEN THE CURB AND GUTTER, STREET OR HIGHWAY.
4. ALL CURB RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE CALIFORNIA BUILDING CODE.
5. SLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO AND WITHIN 2 FEET OF THE CURB RAMP SHALL NOT BE STEEPER THAN 5%.
6. THE SLOPE OF LANDING AT TOP OF RAMP SHALL NOT EXCEED 2% IN ANY DIRECTION.
7. RAMP CROSS SLOPE SHALL NOT EXCEED 2%.

CITY OF ORLAND

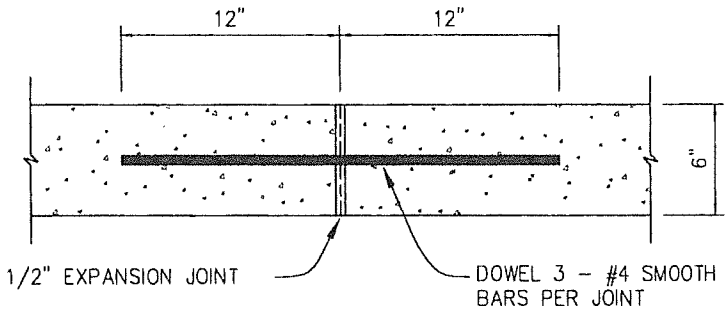
DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: Ken O. Skill III	CURB RAMP (SEPARATED SIDEWALK AND COMMERCIAL AREAS)	STANDARD DETAIL 208 SHEET 1 OF 1



TYPICAL SECTION



HEADER DETAIL



SECTION A-A

NOTES

1. THE STRUCTURAL SECTION SHALL BE BASED ON SITE R-VALUES AND TRAFFIC INDEXES OR AS DIRECTED BY THE CITY ENGINEER. IN NO CASE SHALL THE STRUCTURAL SECTION BE LESS THAN OUTLINED BELOW.
2. HEADERS SHALL BE USED EXCEPT WHEN BUILDINGS OR OTHER PERMANENT IMPROVEMENTS ABUT THE ALLEY, AND SHALL BE LEFT IN PLACE AFTER CONSTRUCTION.
3. INSTALL FULL DEPTH EXPANSION JOINTS EVERY 50 FEET WITH CONTROL JOINTS EVERY 10 FEET IN VALLEY GUTTER.
4. EXPANSION JOINTS TO BE DOWELED AS SHOWN ABOVE.
5. REDWOOD HEADERS TO BE FOUNDATION GRADE OR BETTER.
6. WORK PERFORMED AND MATERIALS SUPPLIED SHALL CONFORM TO THESE LAND DIVISION STANDARDS AND IMPROVEMENT STANDARDS.
7. ALL CONCRETE SHALL BE CLASS B P.C.C.

MINIMUM STRUCTURAL DESIGN SECTION

HMA: 0.17' 3/4" TYPE A OR B
AB: 0.33' 3/4" MAXIMUM CLASS 2

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Skill III	ALLEY AND VALLEY GUTTER	STANDARD DETAIL 209 SHEET 1 OF 1

NOTES

1. IF SIDEWALK IS SEPARATED FROM CURB THEN THE FIRE HYDRANT SHALL BE PLACE 30" FROM FACE OF CURB.
2. BLUE REFLECTIVE PAVEMENT MARKERS SHALL CONFORM TO CITY STD. 301A.

CONSTRUCTION MATERIALS AND NOTES

(A) WET BARREL FIRE HYDRANT (CLOW VALVE COMPANY MODEL 960 OR APPROVED EQUAL) WITH (1) 4½" AND (2) 2½" OUTLETS. FIRE HYDRANTS SHALL HAVE ONE COAT OF RED PRIMER OVER SOUND METAL AND ONE COAT OF RED PAINT. ALL FIRE HYDRANT LOCATIONS SHALL BE APPROVED BY THE ORLAND FIRE DEPARTMENT

(B) 6" DIA. BREAK OFF RISER

(C) 6" DIA. BREAK OFF CHECK VALVE (CLOW VALVE COMPANY MODEL LBI 400A OR APPROVED EQUAL)

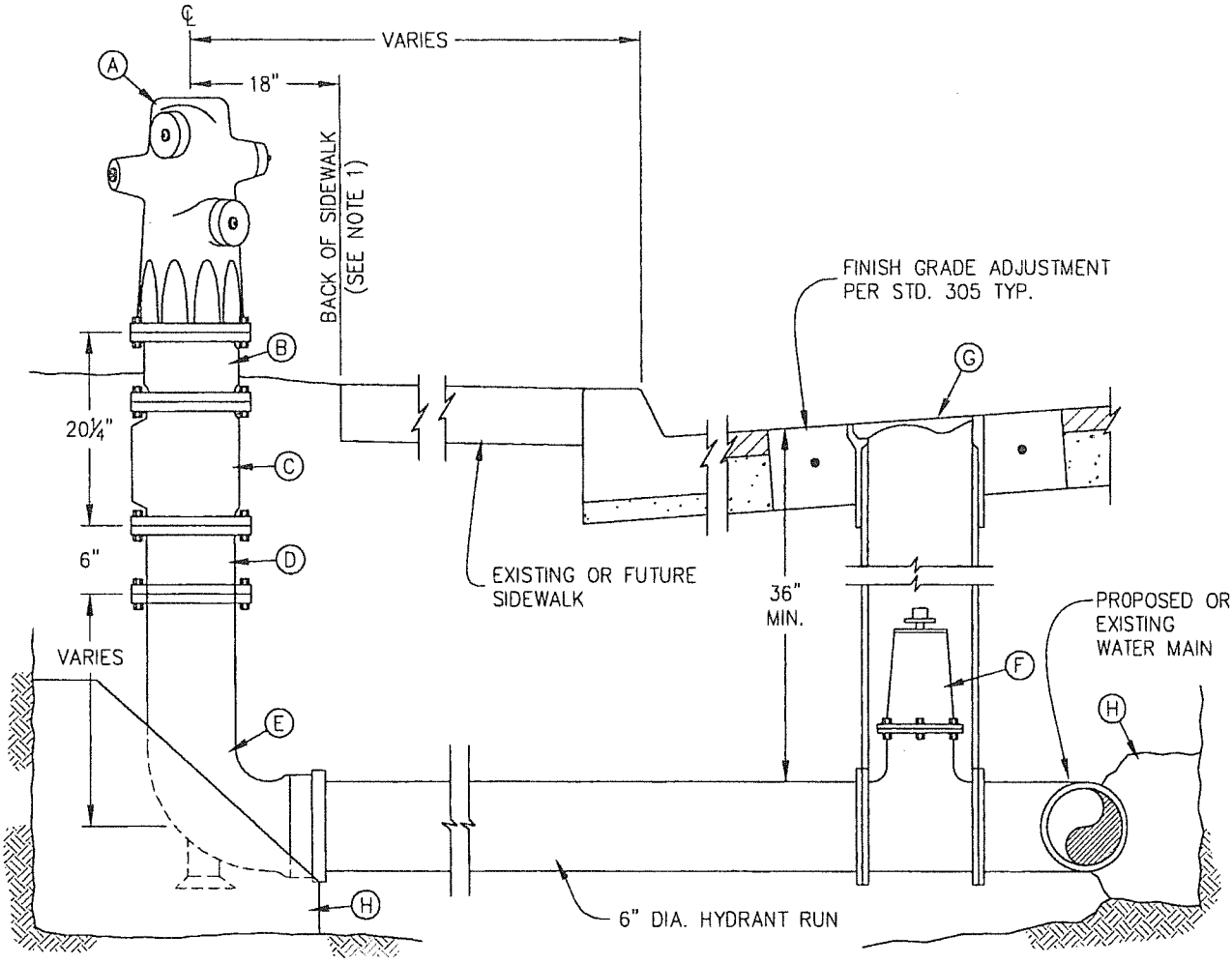
(D) 6" DIA. SPOOL (REQUIRED)

(E) 6" DIA. FIRE HYDRANT BURY (HEIGHT VARIES)

(F) 6" DIA. GATE VALVE (MUELLER A-2360 OR APPROVED EQUAL)

(G) TRAFFIC VALVE BOX (BROOKS PRODUCTS NO. 3-RT SERIES)

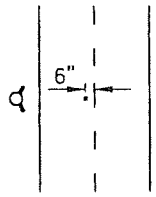
(H) THRUST BLOCKS SHALL CONFORM TO STD. 303



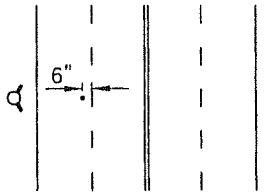
CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Stiles III	FIRE HYDRANT INSTALLATION	STANDARD DETAIL 301 SHEET 1 OF 1

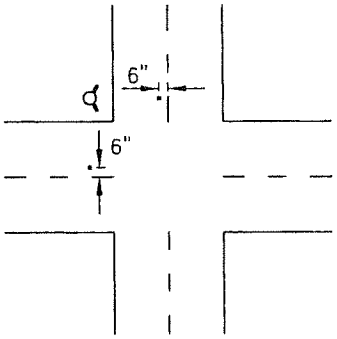
TWO LANE STREET



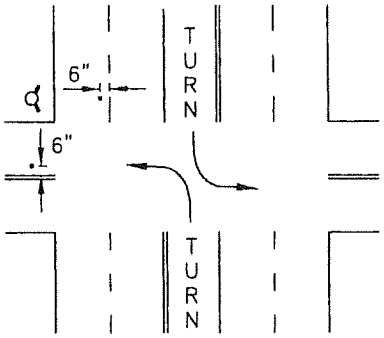
MULTI-LANE STREET



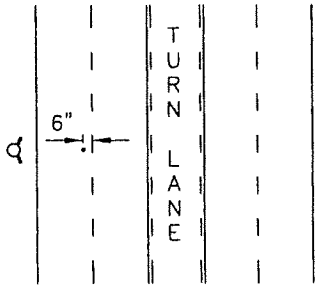
AN INTERSECTION



FOUR LANE STREET WITH TURN LANE AT INTERSECTION



MULTI-LANE STREET WITH TURN LANE



FIRE HYDRANT

BLUE PAVEMENT MARKER

NOTES

1. INSTALL TWO-WAY BLUE REFLECTIVE MARKERS. MARKERS SHALL BE AS SPECIFIED IN CALTRANS STANDARD SPECIFICATIONS AND APPROVED BY FIRE CHIEF.
2. INSTALL MARKERS WITH EPOXY APPROVED BY THE CITY ENGINEER.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14

CHECKED BY: KGS III SCALE: NONE

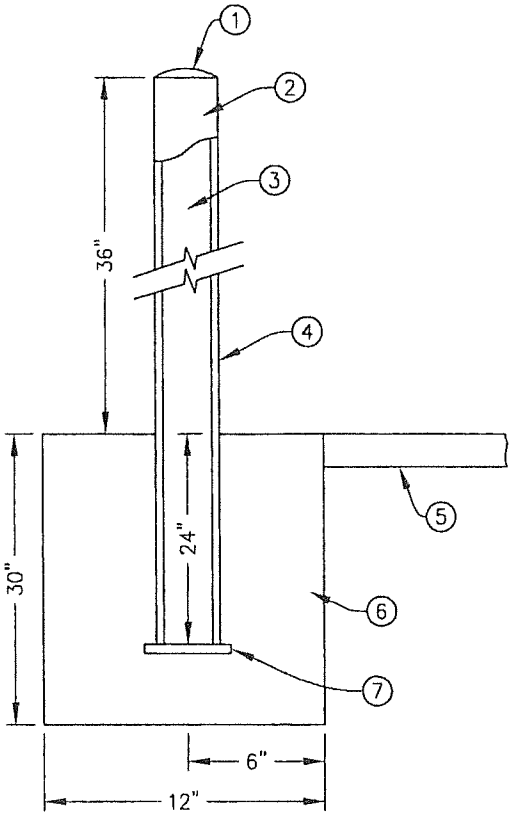
APPROVED: Ke O. Sheller III

BLUE REFLECTIVE PAVEMENT MARKERS

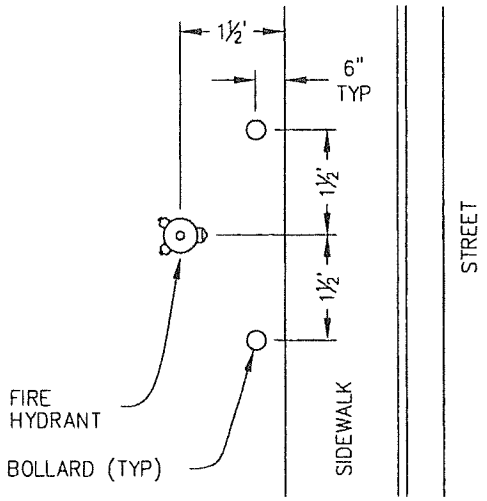
STANDARD DETAIL

301A

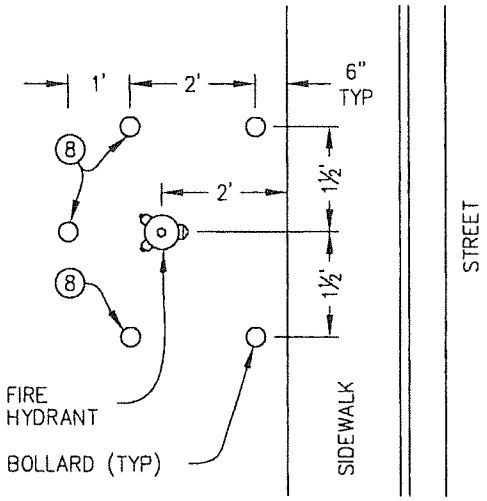
SHEET 1 OF 1



BOLLARD SECTION



TYPE I LAYOUT



TYPE II LAYOUT

CONSTRUCTION MATERIALS AND NOTES

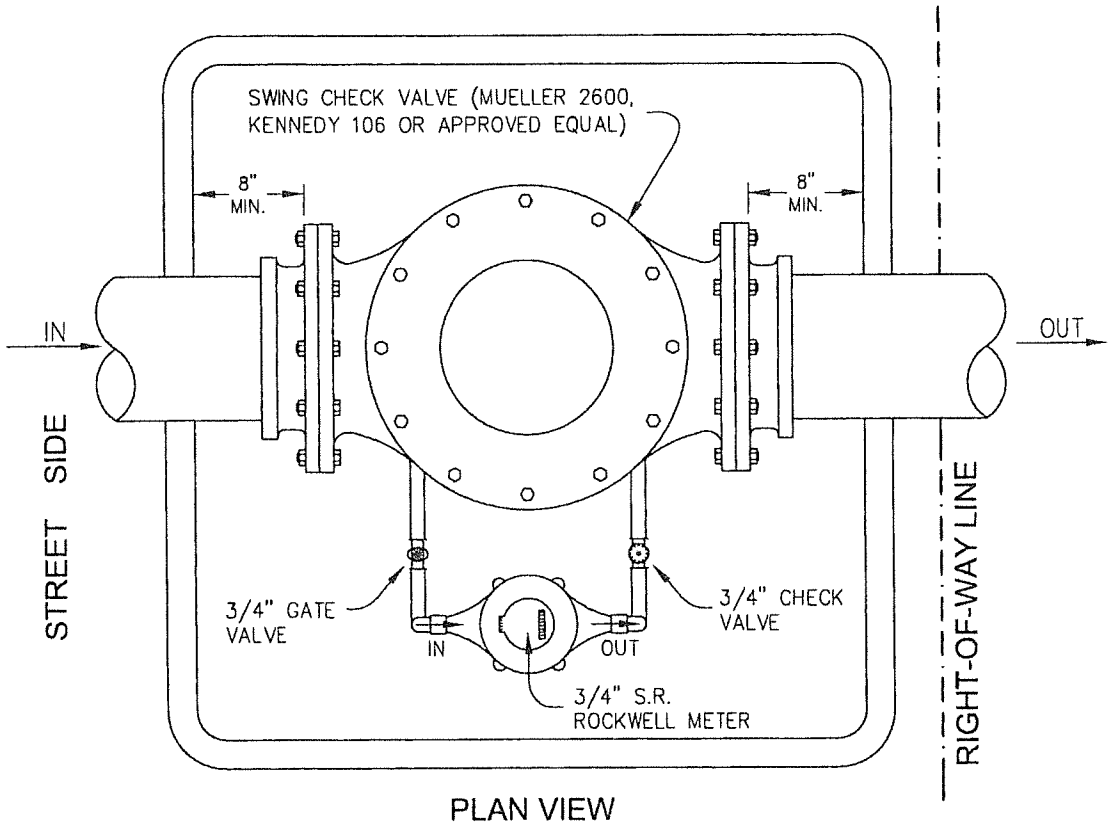
1. CONCRETE DOME FINISH
2. USE SAME PAINTING METHODS AND COLOR AS FIRE HYDRANT
3. FILL PIPE WITH CONCRETE
4. 4"ø x 60" LONG SCHEDULE 40 GALVANIZED PIPE, 2 FEET EMBEDDED IN CONCRETE
5. ADJACENT CONCRETE SIDEWALK
6. 12"ø x 30" DEEP CLASS A CONCRETE FOUNDATION CENTERED ON BOLLARD
7. ¼" WELDED CIRCULAR STEEL PLATE WITH ¼" LIP
8. ADDITIONAL BOLLARDS AS REQUIRED

NOTES

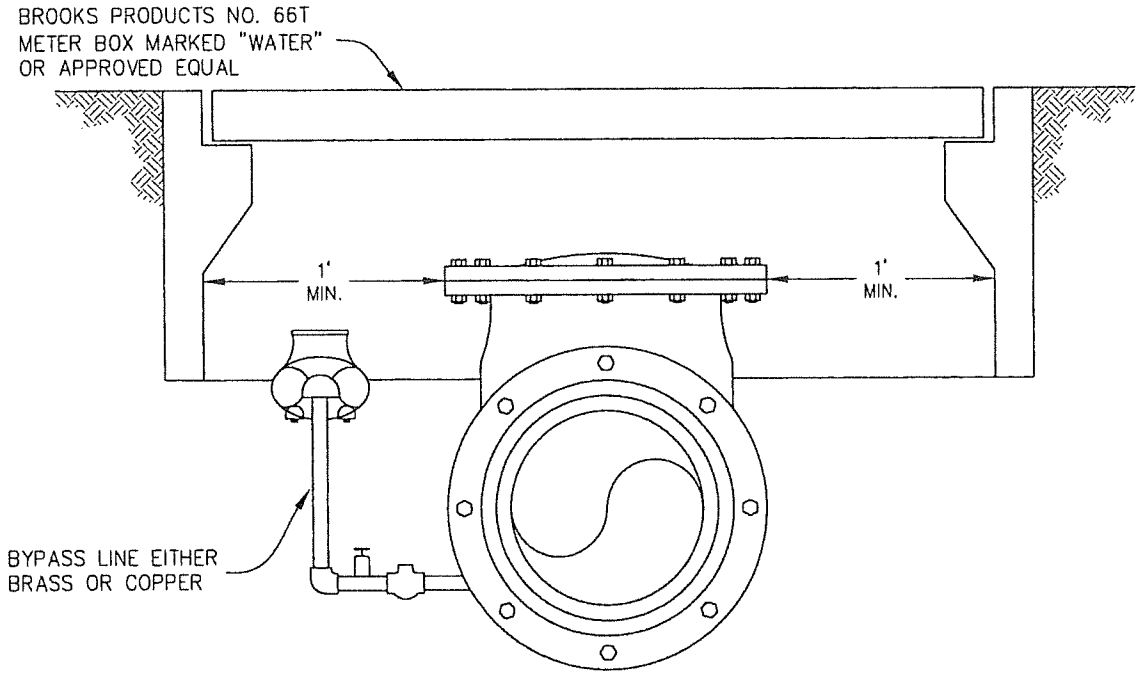
1. INSTALL BOLLARDS WHEN THE CITY ENGINEER HAS DETERMINED THEY ARE NECESSARY.
2. IN NO WAY SHALL ANY BOLLARD BE INSTALLED IN DIRECT LINE WITH ANY HYDRANT OUTLET.
3. FOR INSTALLATION OF TWO BOLLARDS, USE TYPE I LAYOUT. FOR INSTALLATION OF MORE THAN TWO BOLLARDS, USE TYPE II LAYOUT.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Stiell III	FIRE HYDRANT BOLLARD INSTALLATION	STANDARD DETAIL 301B SHEET 1 OF 1



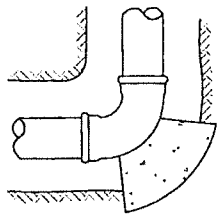
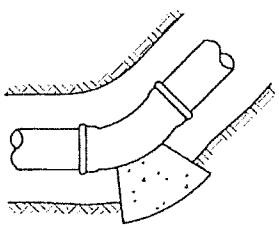
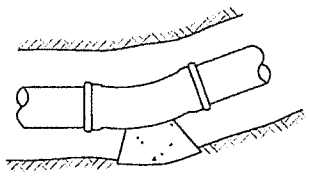
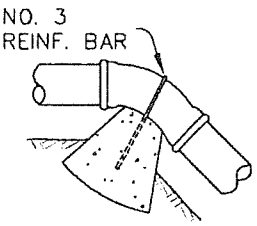
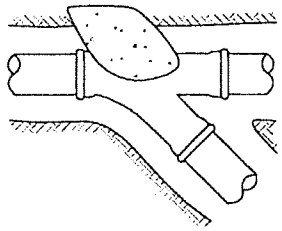
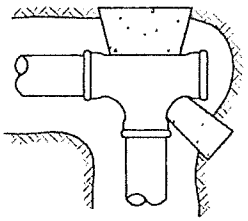
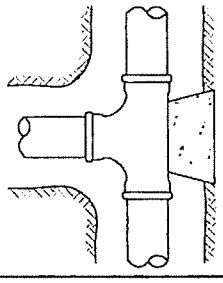
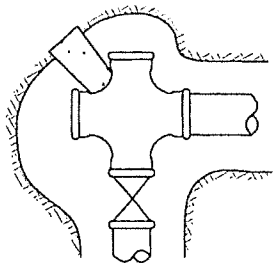
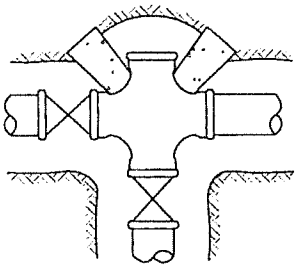
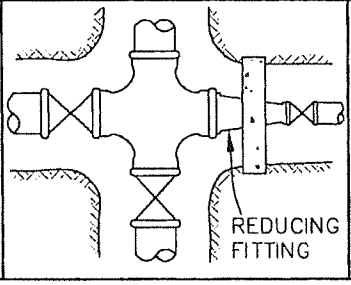
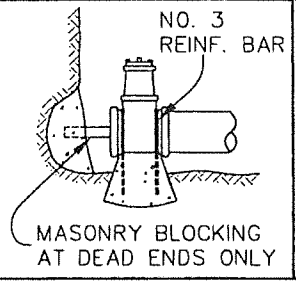
PLAN VIEW



END VIEW

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR. 2014 CHECKED BY: KGS III SCALE: NONE APPROVED:	TYPICAL FIRE SERVICE CHECK VALVE DETAIL	STANDARD DETAIL 302 SHEET 1 OF 1

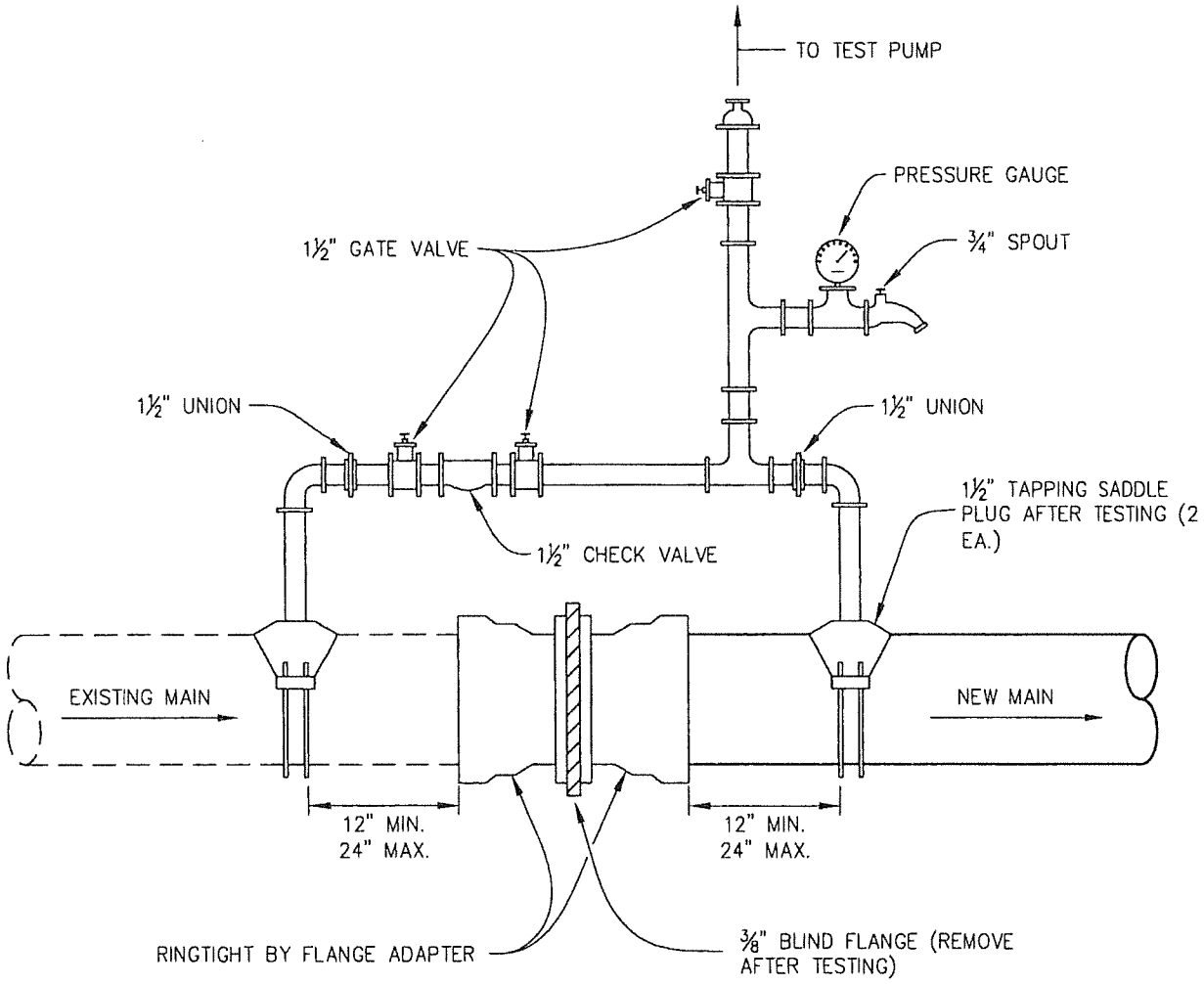
90° BEND	45° BEND	11 1/2° OR 22 1/2° BEND	VERTICAL SECTION
			
45° TEE	TEE WITH PLUG	90° TEE	FLANGED CROSS WITH PLUGS
			
FLANGED CROSS WITH PLUG	FLANGED REDUCER	GATE VALVE	
			

NOTES

1. THRUST BLOCKS SHALL BE CONSTRUCTED SO THAT THE BEARING SURFACE IS IN DIRECT LINE WITH THE MAJOR FORCE CREATED BY THE PIPE OR FITTING.
2. ALL CONCRETE SHALL BE CLASS C P.C.C.
3. CONCRETE SHALL BE FLUID ENOUGH SO THAT IT MAY BE WORKED AROUND THE FITTING.
4. CONCRETE SHALL BE KEPT BEHIND THE BELL OF THE FITTING AND AWAY FROM BOLTS AND FITTINGS.
5. THRUST BLOCK BEARING SURFACE SHALL BE PLACED AGAINST UNDISTURBED EARTH AND SHALL HAVE A MINIMUM VOLUME OF 6 CU. FT. AND A MINIMUM BEARING AREA OF 1 SF PER INCH OF DIAMETER. PIPES LARGER THAN 10" REQUIRE SPECIAL DESIGN.
6. A CONCRETE PAD SHALL BE POURED UNDER ALL VALVES 12" OR LARGER, OR AS DIRECTED BY THE ENGINEER.
7. ALL ANCHOR BLOCKS SHALL BE CONSTRUCTED AS SPECIFIED. SIZE OF BLOCK AND NUMBER OF STRAPS TO BE DESIGNED IN EACH SITUATION.

CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: Ke G. Shall III	THRUST BLOCKS	STANDARD DETAIL 303 SHEET 1 OF 1



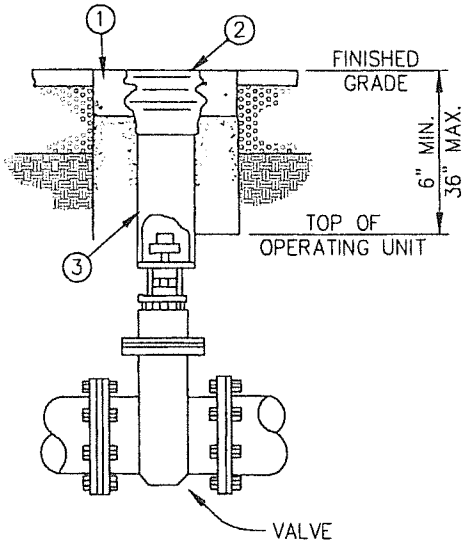
FOR NEW WATER MAIN CONSTRUCTION

NOTE

CONTRACTOR SHALL FURNISH AND INSTALL MATERIALS SHOWN FOR TESTING. WHEN TESTING IS COMPLETE AND RESULTS HAVE BEEN APPROVED THE CONTRACTOR SHALL FURNISH AND INSTALL REQUIRED MATERIALS TO COMPLETE THE CONNECTION BETWEEN EXISTING AND PROPOSED WATER MAINS.

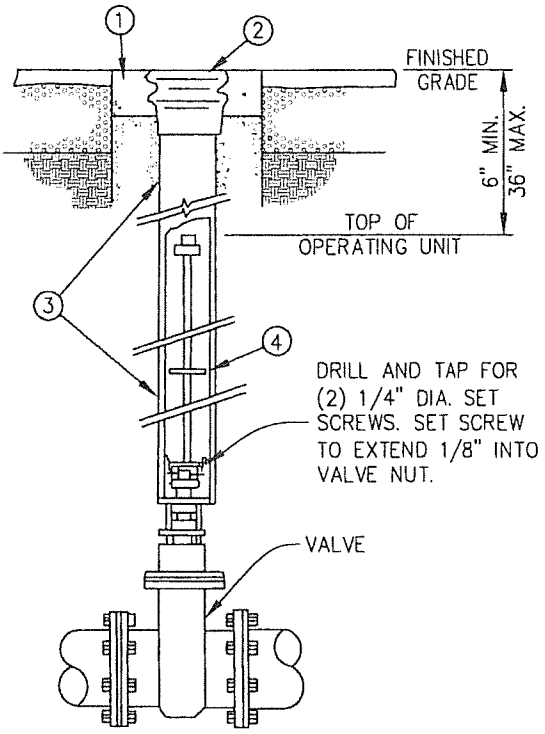
CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Shell III	TESTING BLOCK AND BYPASS	STANDARD DETAIL 304 SHEET 1 OF 1



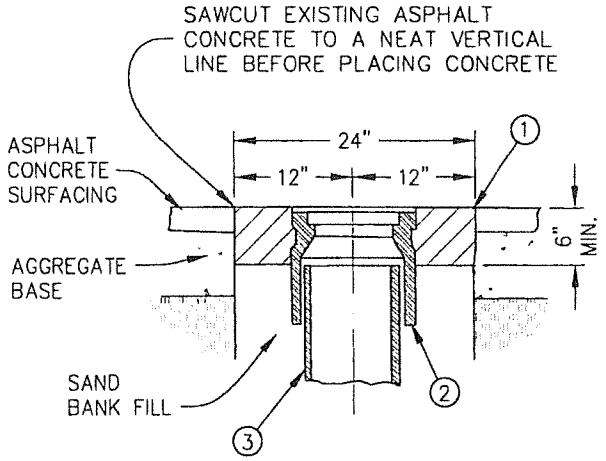
VALVE COVER DETAIL

WHERE DISTANCE BETWEEN FINISHED GRADE AND TOP OF OPERATING NUT IS 36" OR LESS



OPERATING NUT EXTENSION DETAIL

REQUIRED WHERE DISTANCE BETWEEN FINISHED GRADE AND TOP OF OPERATING NUT EXCEEDS 36"



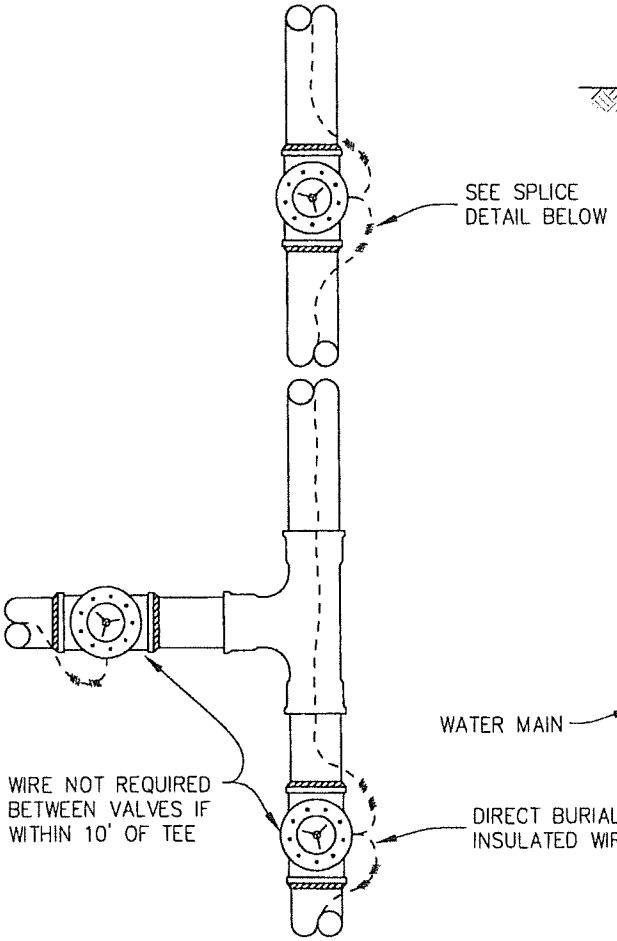
VALVE COVER ADJUSTMENT

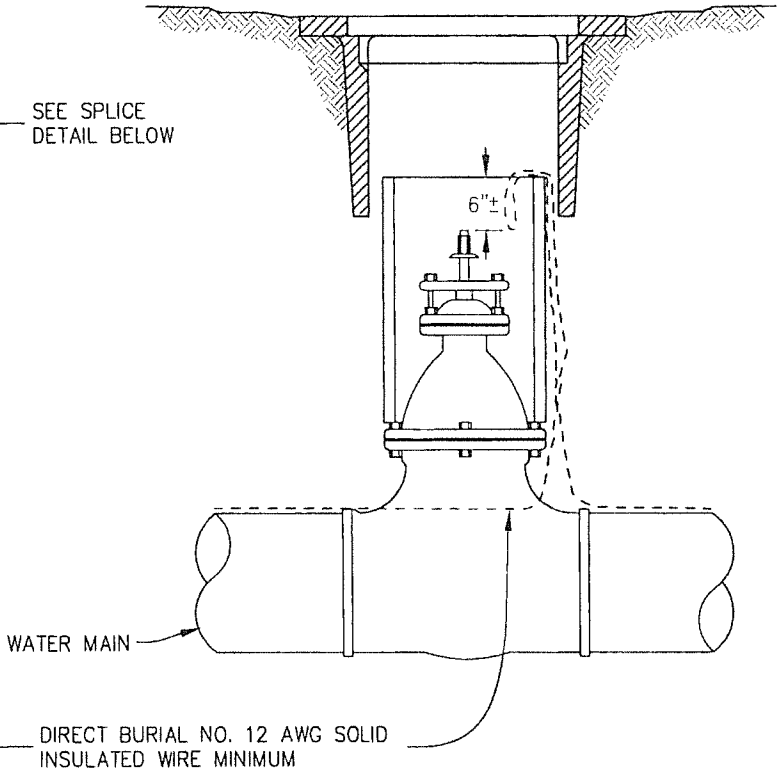
NOTES

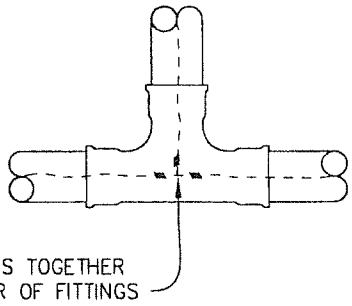
1. 24" DIA. x 6" THICK CONCRETE COLLAR
2. VALVE BOX COVER (BROOKS PRODUCTS 3-RT, CHRISTY G5 OR APPROVED EQUAL)
3. 8" I.D. PVC PIPE EXTENSION SHALL BE VERTICAL
4. OPERATING NUT EXTENSION WITH 7" DIA. PLATE WASHER WELDED TO EXTENSION AT MIDPOINT OF ROD. (MIN.LENGTH OF EXTENSION ROD SHALL BE 24")

CITY OF ORLAND

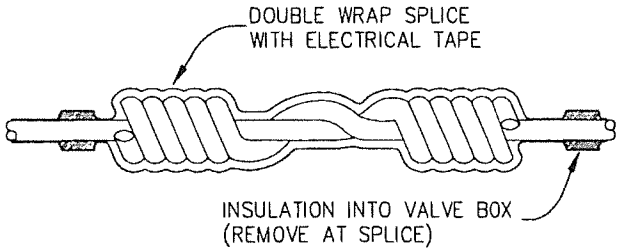
DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Sheller III	VALVE COVER INSTALLATION	STANDARD DETAIL 305 SHEET 1 OF 1







TYPICAL LAYOUT



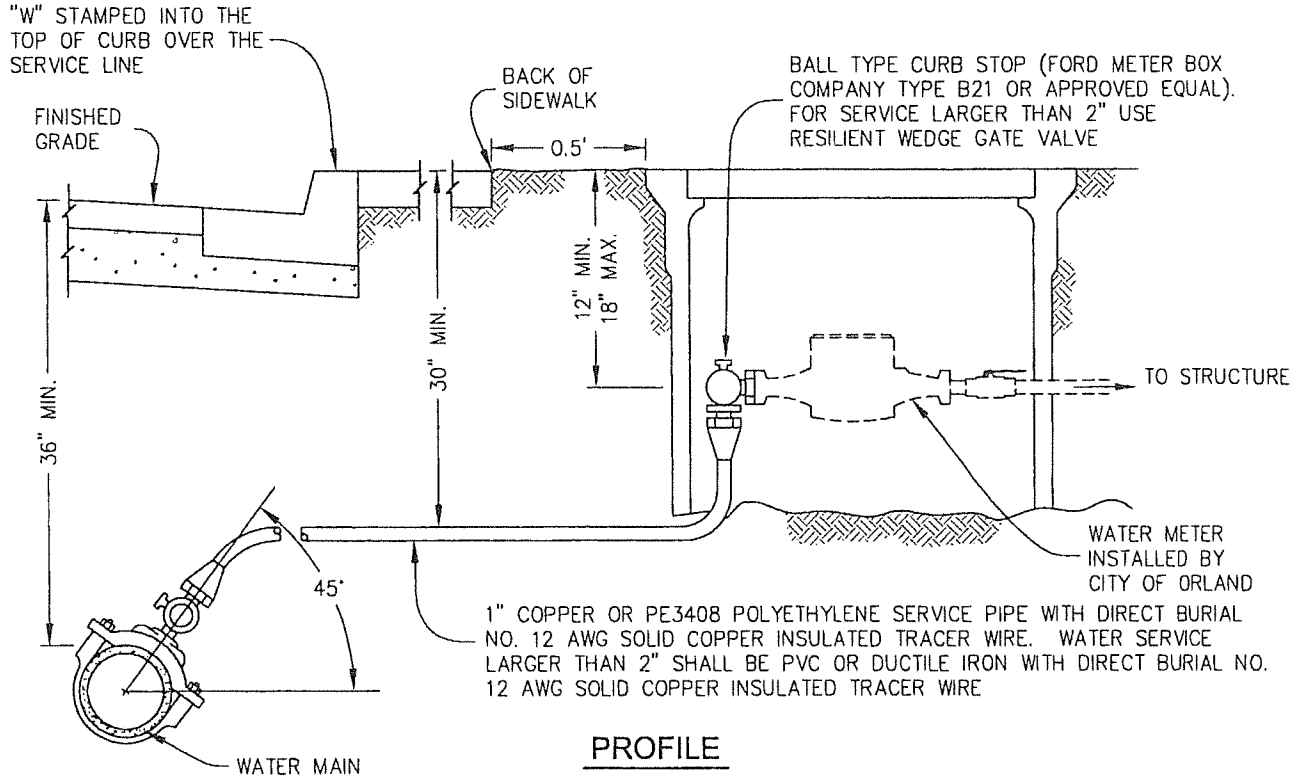
SPLICE DETAIL

NOTES

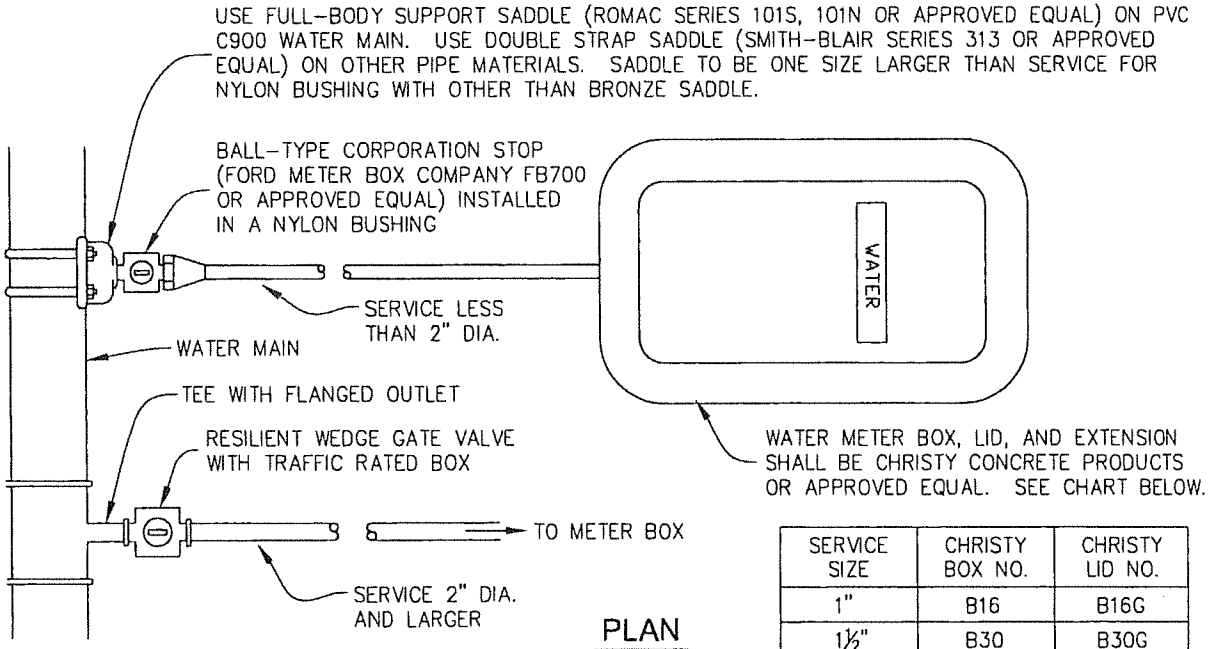
1. WIRE TO BE CONTINUOUS BETWEEN VALVE BOXES, EXCEPT WHERE VALVE BOXES ARE WITHIN 10' OF PIPE INTERSECTIONS.
2. DETECTOR RISERS SHALL BE INSTALLED AT 500' INTERVALS MAXIMUM.
3. LOCATOR WIRE TO BE TAPED TO TOP OF WATER MAIN.
4. LOCATOR WIRE MUST BE TESTED AND BE IN WORKING ORDER AFTER ALL UNDERGROUND WORK IS DONE, AND PRIOR TO STREET PAVING.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: Ke G. Shill III	LOCATION WIRE FOR WATER MAINS AND SERVICES	STANDARD DETAIL 306 SHEET 1 OF 1



PROFILE



PLAN

SERVICE SIZE	CHRISTY BOX NO.	CHRISTY LID NO.
1"	B16	B16G
1½"	B30	B30G
2"	B36	B36G

NOTE

1. LOCATE WATER SERVICE NEAR THE CENTER OF LOT.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14

CHECKED BY: KGS III SCALE: NONE

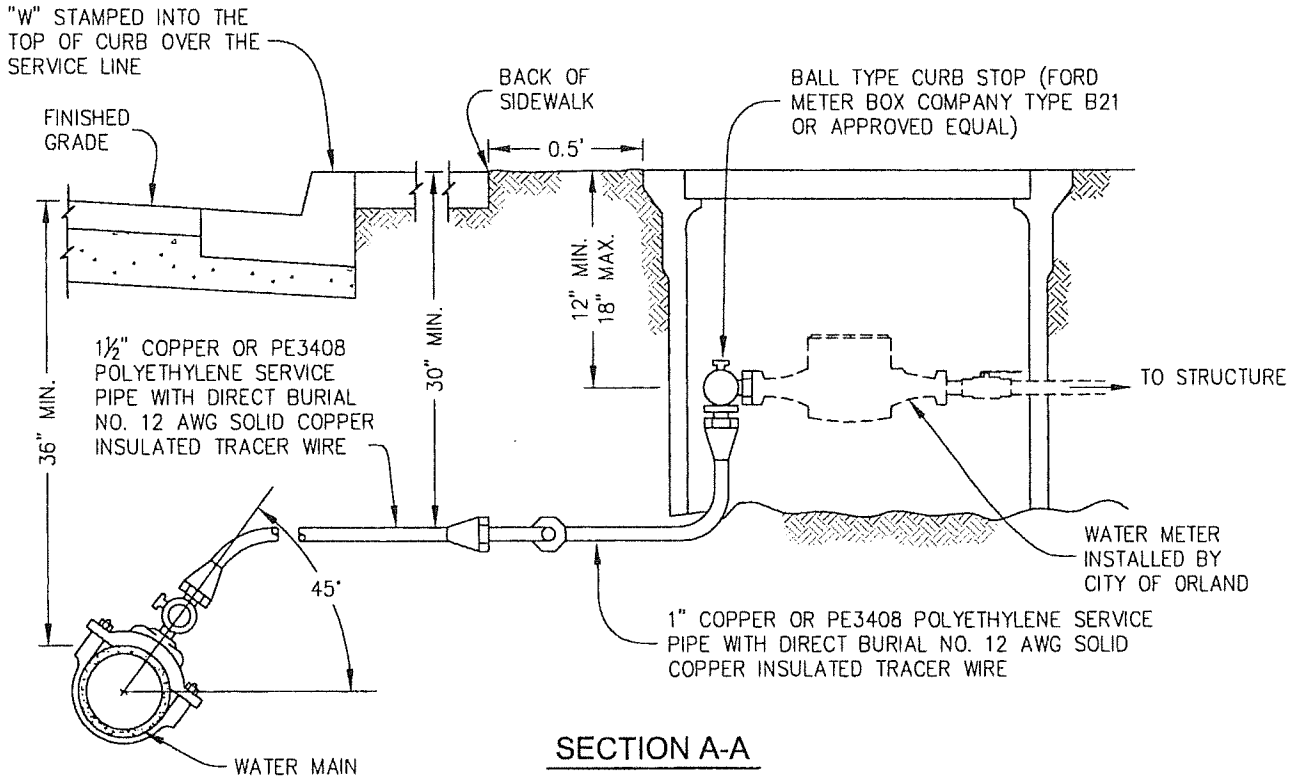
APPROVED: Ken G. Shilling

SINGLE WATER SERVICE MAIN CONNECTION

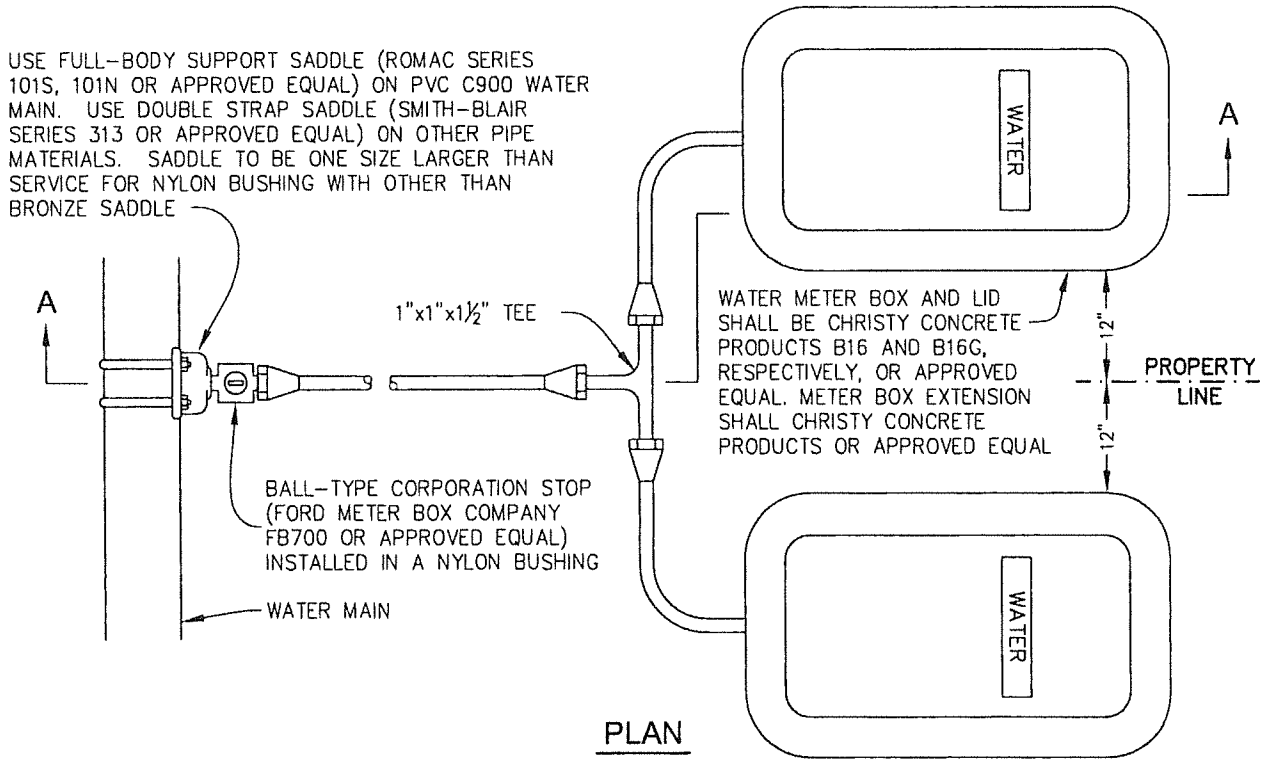
STANDARD DETAIL

307

SHEET 1 OF 1



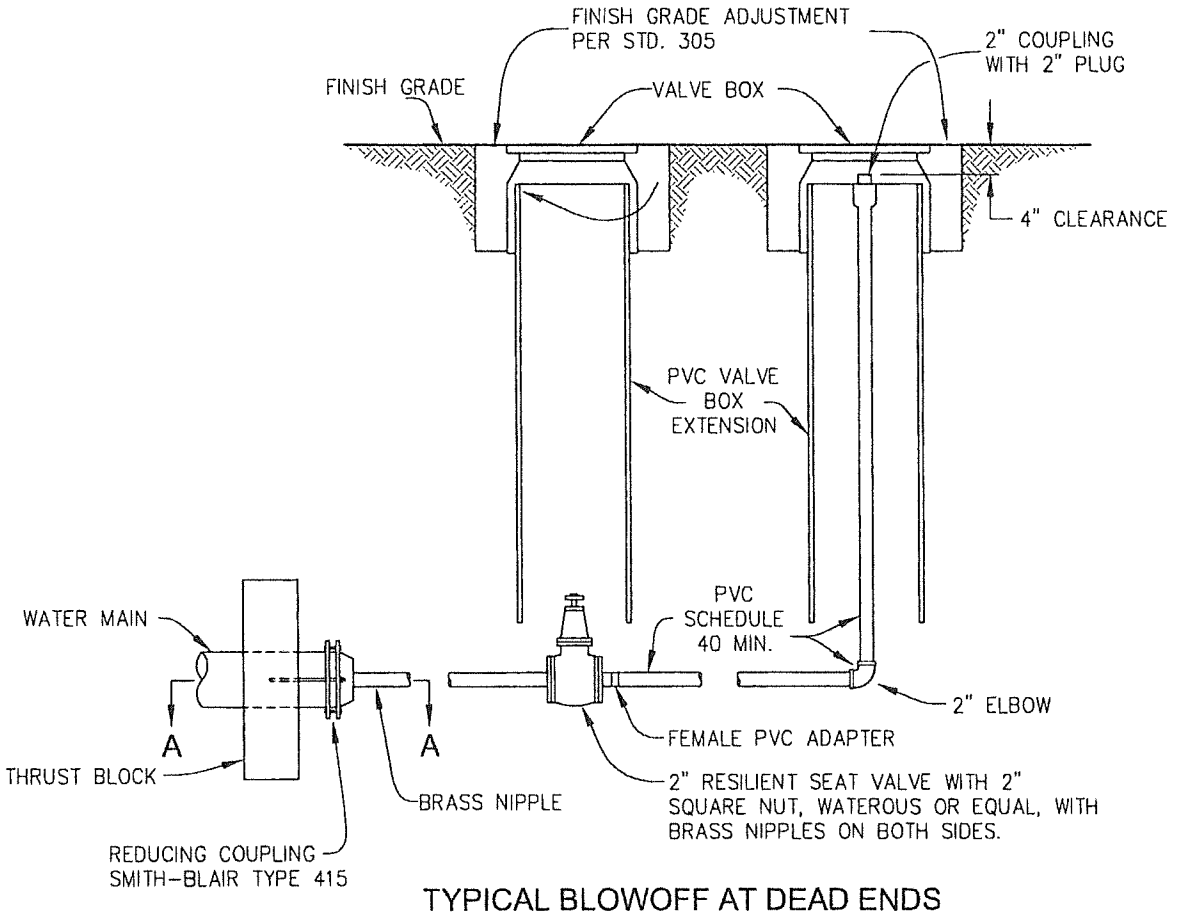
SECTION A-A



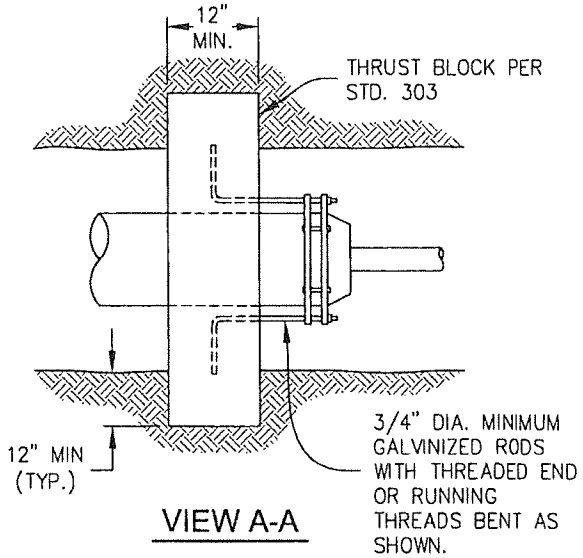
PLAN

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: Kevin G. Shields III	DOUBLE WATER SERVICE MAIN CONNECTION	STANDARD DETAIL 308 SHEET 1 OF 1



TYPICAL BLOWOFF AT DEAD ENDS



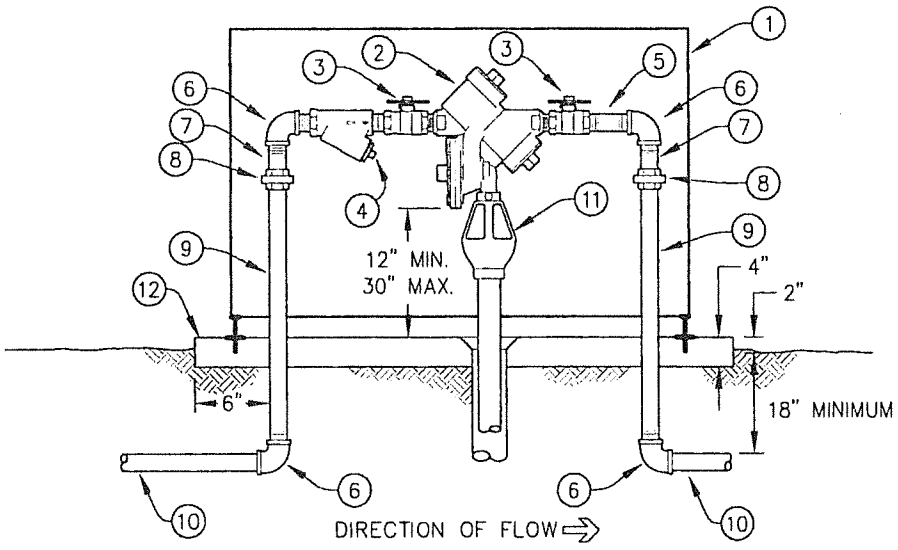
VIEW A-A

NOTES

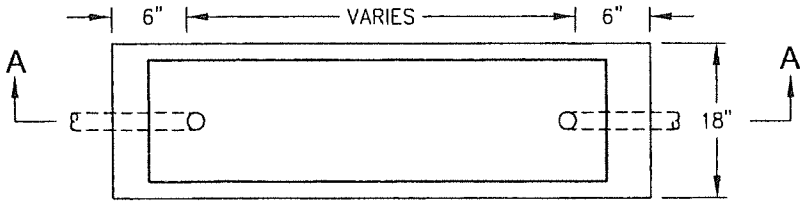
1. IN THE CASE OF A PRESSURE TAP, A CORPORATION STOP (FORD METER BOX COMPANY OR APPROVED EQUAL) SHALL BE USED AT THE MAIN.
2. VALVE BOX COVERS SHALL BE CHRISTY CONCRETE PRODUCTS G5, BROOKS PRODUCTS 4-TT OR APPROVED EQUAL.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Sheldon III	DEAD-END WATER MAIN	STANDARD DETAIL 309 SHEET 1 OF 1



SECTION A-A



PLAN VIEW

NOTES

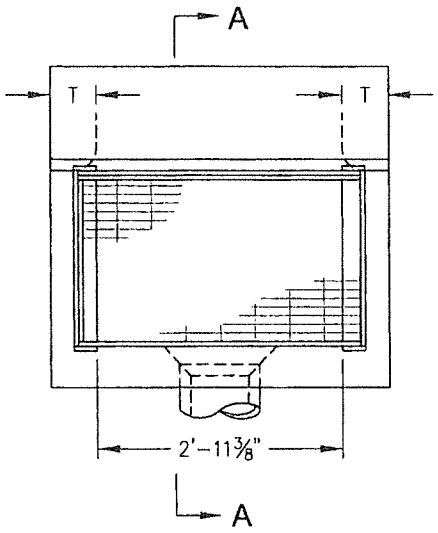
1. BACKFLOW PREVENTORS SHELL NOT BE LOCATED IN AN AREA CONTAINING FUMES THAT ARE TOXIC, POISIONOUS OR CORROSIVE.
2. MATERIALS USED IN POTABLE WATER SYSTEMS INTENDED TO SUPPLY DRINKING WATER SHALL BE IN ACCORDANCE WITH THE REQUIRENMENTS OF NSF 61.

CONSTRUCTION MATERIALS AND NOTES

(1) STAINLESS STEEL OR ALUMINUM CLOSURE SHALL BE A STRONG BOX SBBC AL SERIES OR APPROVED EQUAL
(2) REDUCED PRESSURE PRINCIPLE ASSEMBLY SHALL BE A WILKINS MODEL 975XL OR APPROVED EQUAL
(3) FULL PORT BALL VALVE
(4) "Y" TYPE STRAINER
(5) GALVANIZED NIPPLE
(6) 90 DEGREE GALVANIZED ELBOW
(7) 6" GALVANIZED NIPPLE
(8) GALVANIZED UNION
(9) GALVANIZED PIPE (LENGTH VARIES)
(10) GALVANIZED PIPE TO EXTEND A MINIMUM OF 12" BEYOND EDGE OF CONCRETE BASE
(11) INSTALL AIR GAP AND DRAINPIPE IF REQUIRED BY CITY ENGINEER
(12) 6" THICK CLASS B CONCRETE PAD WITH BOLT ANCHORS EMBEDDED AS REQUIRED FOR ENCLOSURE. EXTEND CONCRETE BASE 4" BEYOND OUTSIDE DIMEMSIONS OF ENCLOSURE

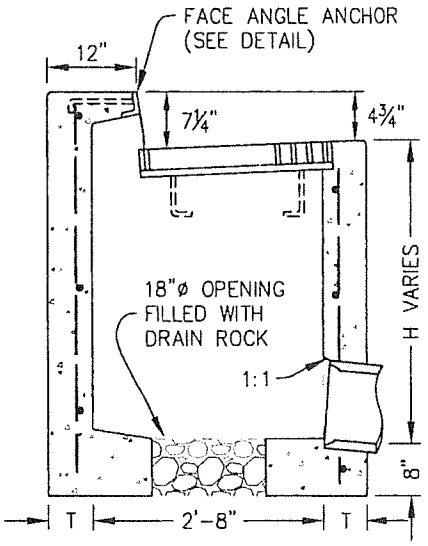
CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: Ken G. Shell III	BACKFLOW PREVENTION ASSEMBLY 3/4" - 2" DIA.	STANDARD DETAIL 310 SHEET 1 OF 1



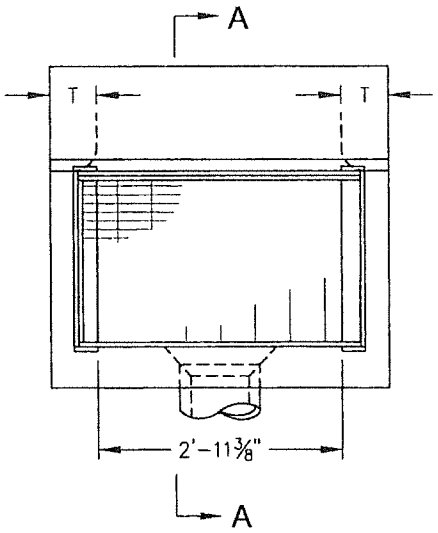
PLAN

H	T
8'-0" OR LESS	6"
8'-1" TO 20'-0"	8"



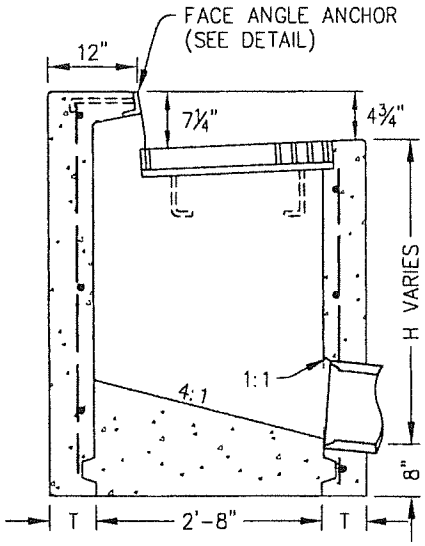
SECTION A-A

TYPE 1



PLAN

H	T
8'-0" OR LESS	6"
8'-1" TO 20'-0"	8"



SECTION A-A

TYPE 2

(CALTRANS TYPE GO)

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14

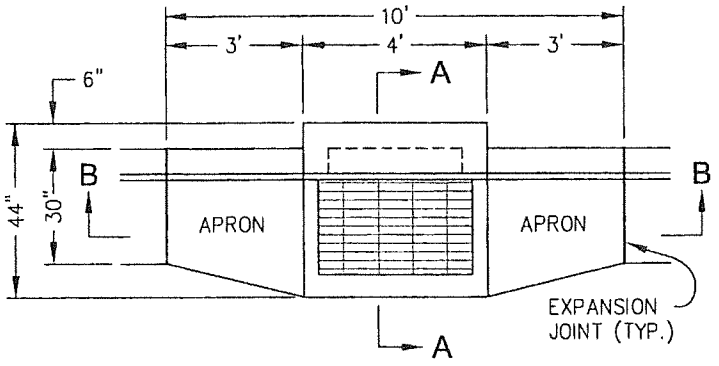
CHECKED BY: KGS III SCALE: NONE

APPROVED: K. G. Shill III

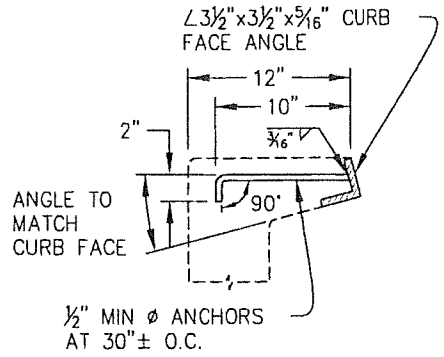
DROP INLET AND DETAILS (TYPES 1 AND 2)

STANDARD DETAIL

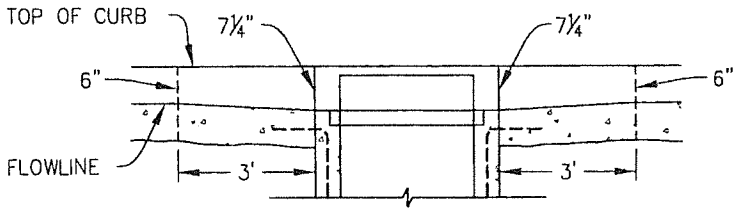
401



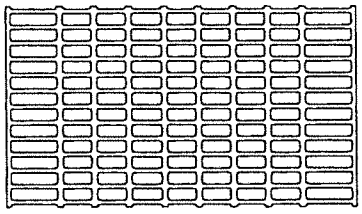
PLAN



FACE ANGLE ANCHOR DETAIL

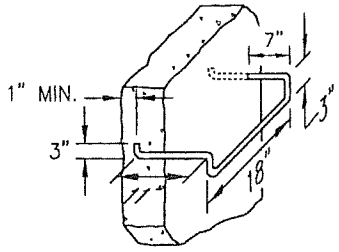


SECTION B-B



NOTE: FRAME AND GRATE SHALL CONFORM TO CALTRANS STD. PLAN D-77B OR EQUAL

24-13 GRATE



NOTE: STEP SHALL BE ¾" MIN. ø GALVANIZED STEEL

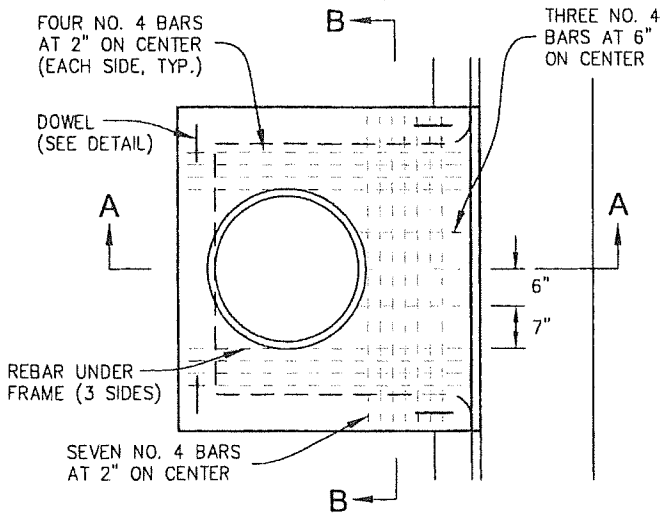
BAR STEP

NOTES

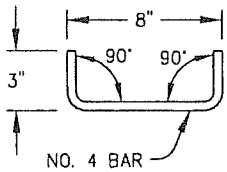
1. "H" IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTLET PIPE FLOW LINE AND THE NORMAL GUTTER GRADE LINE UNDEPRESSED.
2. REINFORCING STEEL IN WALLS SHALL BE NO. 4 BARS AT 18"± CENTERS PLACED 1½" CLEAR TO INSIDE OF BOX UNLESS OTHERWISE SHOWN.
3. STEPS ARE NOT REQUIRED WHERE "H" IS 3'-6" OR LESS. INSTALL ONE STEP 16"± ABOVE FLOOR WHEN "H" IS MORE THAN 3'-6" AND LESS THAN 5'-0". WHERE "H" IS MORE THAN 5'-0", STEPS SHALL BE EVENLY SPACED AT 12" INTERVALS FROM 16"± ABOVE FLOOR TO WITHIN 12"± OF THE TOP OF THE BOX. PLACE STEPS IN WALL WITHOUT PIPE OPENINGS.
4. PIPE(S) CAN BE PLACED IN ANY WALL.
5. BASIN FLOORS SHALL HAVE WOOD TROWEL FINISH AND A MINIMUM SLOPE OF 2% TOWARD CENTER OPENING AND OUTLET PIPE.
6. ALL HARDWARE SHALL BE GALVANIZED.
7. A PRE-CAST ROLLED CURB TOP MAY BE USED WITH ROLLED CURB AND GUTTER UPON APPROVAL BY THE CITY ENGINEER.
8. WHEN APRON IS CONSTRUCTED WITH DROP INLET EXTEND NO. 4 SIDEWALL REBAR 12" INTO TAPERED GUTTER PAN.
9. DELETE APRON IN NON CURB AND GUTTER AREAS.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Shidler III	DROP INLET AND DETAILS (TYPES 1 AND 2)	STANDARD DETAIL 401 SHEET 2 OF 2

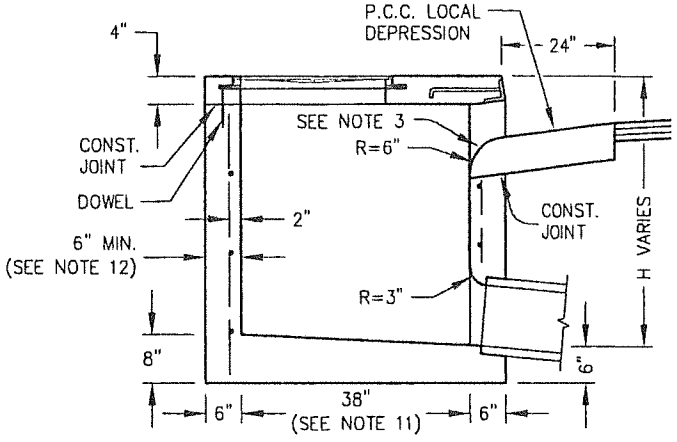


PLAN

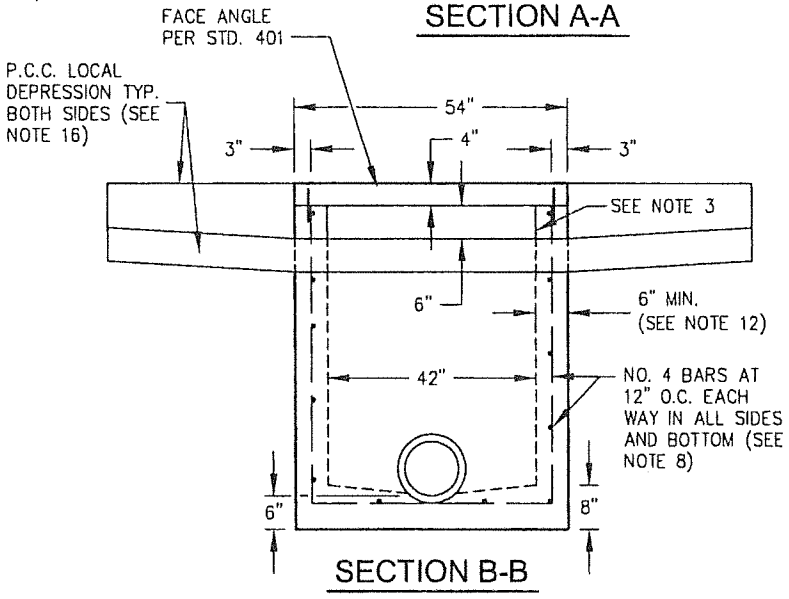


DOWEL DETAIL

STEEL LIST FOR TOP	
DESCRIPTION	REQUIRED
#4 BAR 52" LONG	7
#4 BAR 47" LONG	8
#4 BAR 19" LONG	3
FACE ANGLE 54"	1
DOWELS	4
FRAME AND COVER	1



SECTION A-A



SECTION B-B

NOTES

1. ALL CONCRETE SHALL BE CLASS B P.C.C.
2. CONNECTION PIPES AND OUTLET PIPES MAY BE PLACED IN ANY POSITION AROUND THE WALLS.
3. CURVATURE OF THE LIP AND INSIDE WALL AT GUTTER OPENING SHALL BE FORMED BY CURVED FORMS.
4. BASIN FLOORS SHALL HAVE A WOOD TROWEL FINISH AND SLOPE FROM ALL DIRECTIONS TO THE OUTLET PIPE.
5. MANHOLE LID SHALL BE PLACED ALONG BACK WALL.
6. OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH PRIOR TO POURING CONCRETE.
7. CURB FACE HEIGHT OF DROP INLET SHALL BE THAT OF THE EXISTING CURB PLUS 2"–4" OR AS SHOWN.
8. STEEL REINFORCING BARS SHALL BE REQUIRED IN WALLS AND BOTTOM OF BASIN ONLY WHEN H = 4'–0" OR GREATER. STEEL REINFORCEMENT IS REQUIRED IN TOP SLAB AT ALL TIMES.
9. MINIMUM CLEAR SPACING BETWEEN FACE OF CONCRETE AND REINFORCING STEEL TO BE 1½", 3" WHERE CONCRETE IS POURED AGAINST EARTH.
10. FACE ANGLE SHALL BE GALVANIZED AFTER FABRICATION.
11. WHEN CONSTRUCTED IN AN AREA REQUIRING A 4 FOOT WIDE SIDEWALK ADJACENT TO THE CURB, BOX SHALL BE EXTENDED TO MEET BACK EDGE OF SIDEWALK.
12. WHEN PRECAST CONCRETE BOXES ARE FURNISHED, THE WALL THICKNESS MAY BE 4" WITH REINFORCEMENT AND THE FACE ANGLE MAY BE ⅜" STOCK.
13. FRAME AND COVER SHALL BE SOUTH BAY FOUNDRY SBF1934 OR EQUAL. COVER SHALL BE MARKED "STORM DRAIN".
14. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN GRADE, COLOR, FINISH, AND SCORING TO CURB, GUTTER, AND SIDEWALK ADJACENT TO BASIN.
15. NO CONSTRUCTION JOINTS TO BE PLACED OTHER THAN WHERE SHOWN ON PLANS OR AS DIRECTED BY THE CITY ENGINEER.
16. P.C.C. LOCAL DEPRESSION (CURB AND GUTTER SECTION) SHALL EXTEND 5 FT EACH SIDE OF BASIN OPEING. COST OF LOCAL DEPRESSION SHALL BE INCLUDED IN PRICE OF DROP INLET.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14

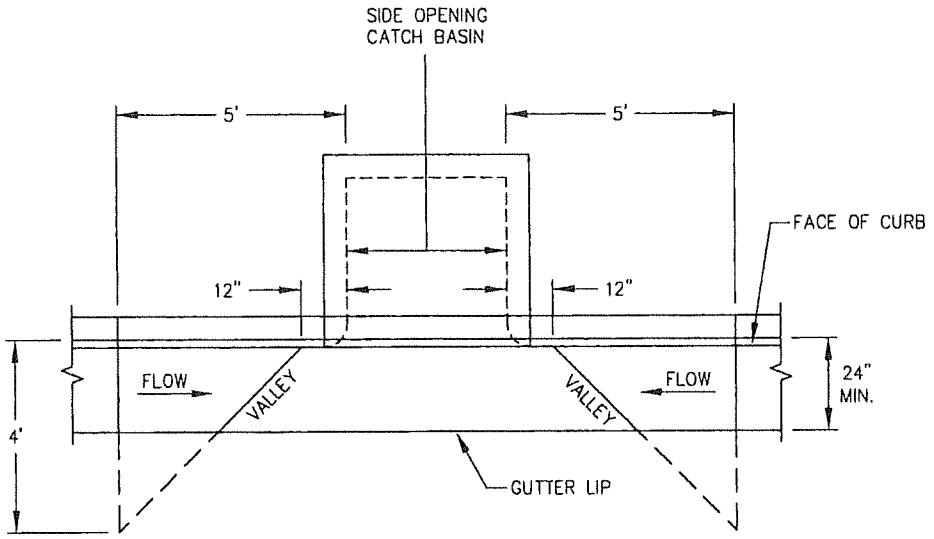
CHECKED BY: KGS III SCALE: NONE

APPROVED: K. G. Skill III

DROP INLET AND DETAILS (TYPE 3)

STANDARD DETAIL

402



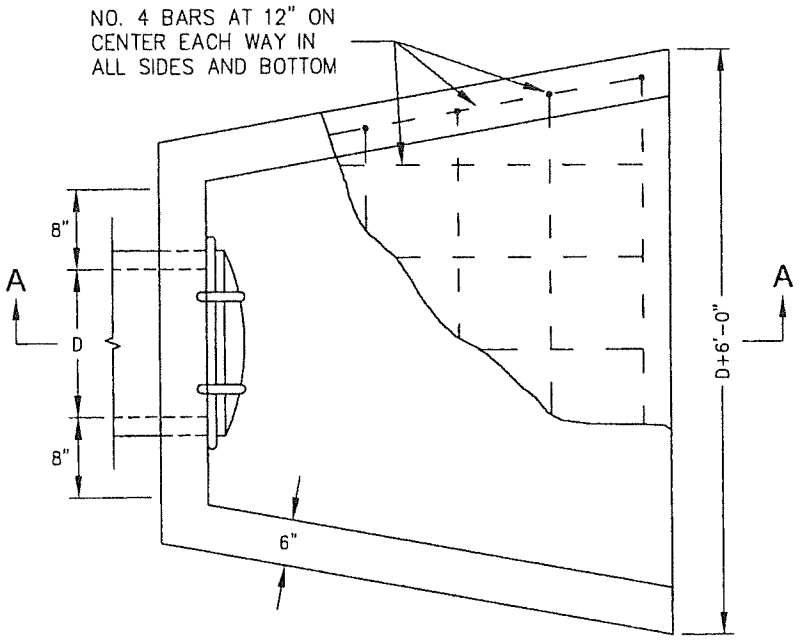
LOCAL DEPRESSION

NOTES

1. ALL CONCRETE SHALL BE CLASS B P.C.C.
2. LOCAL DEPRESSION SHALL BE AS SHOWN ON THIS DETAIL UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3. LOCAL DEPRESSION COST TO BE INCLUDED IN THE CATCH BASIN PRICE.
4. ELEVATION AT OUTER CORNERS TO BE SHOWN ON PLANS. IF NO ELEVATIONS ARE SHOWN, THE OUTER EDGE OF THE LOCAL DEPRESSION SHALL CONFORM TO THE FINISHED STREET SURFACE.
5. INDICATED CURB FACE TO BE SHOWN ON PLANS WHERE NO CURB EXISTS.
6. WHERE NO CURB EXISTS, CURB SHALL BE CONSTRUCTED BETWEEN ENDS OF LOCAL DEPRESSION.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K G. Sheldon III	DROP INLET LOCAL DEPRESSION (TYPE 3)	STANDARD DETAIL 402 SHEET 2 OF 2



PLAN

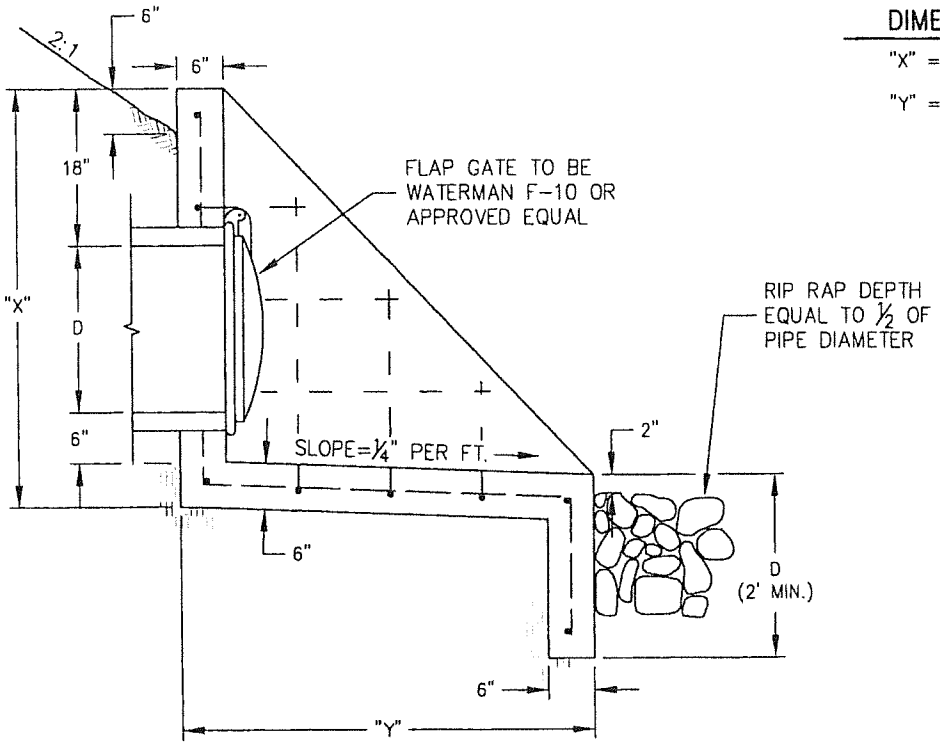
NOTES

1. "D" EQUALS PIPE DIAMETER.
2. PLACEMENT OF RIP RAP DOWNSTREAM OF THE HEADWALL IS REQUIRED TO A LENGTH NECESSARY TO ATTENUATE VELOCITY AND PREVENT EROSION.
3. PROVIDE GUARDRAILS/PEDESTRIAN BARRIER PER THE CALIFORNIA BUILDING CODE WHEN NECESSARY.

DIMENSIONS

"X" = D + 2'-6"

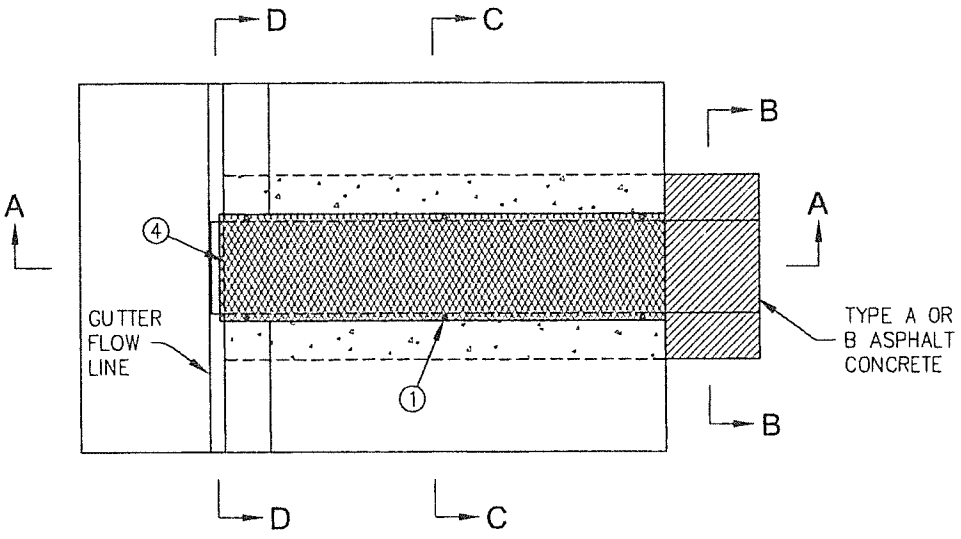
"Y" = (SLOPE RATIO)(D + 2'-6")



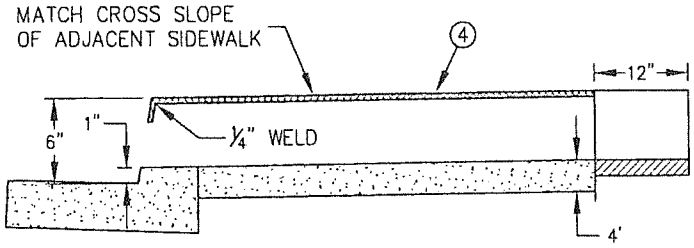
SECTION A-A

CITY OF ORLAND

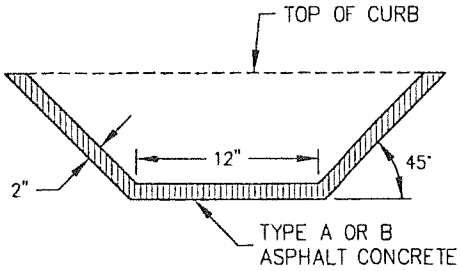
DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Skill III	STORM DRAIN OUTLET HEADWALL	STANDARD DETAIL 403 SHEET 1 OF 1



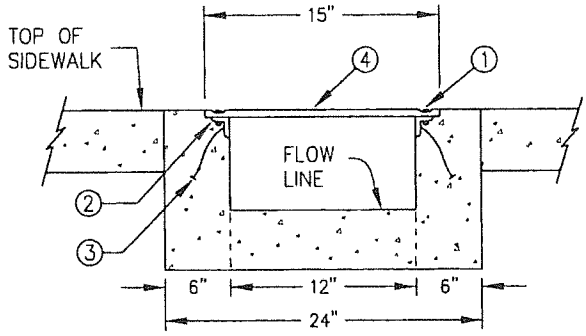
PLAN VIEW



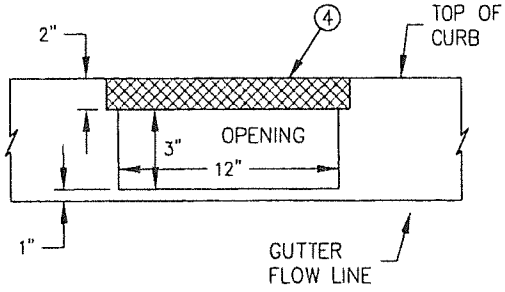
SECTION A-A



SECTION B-B



SECTION C-C



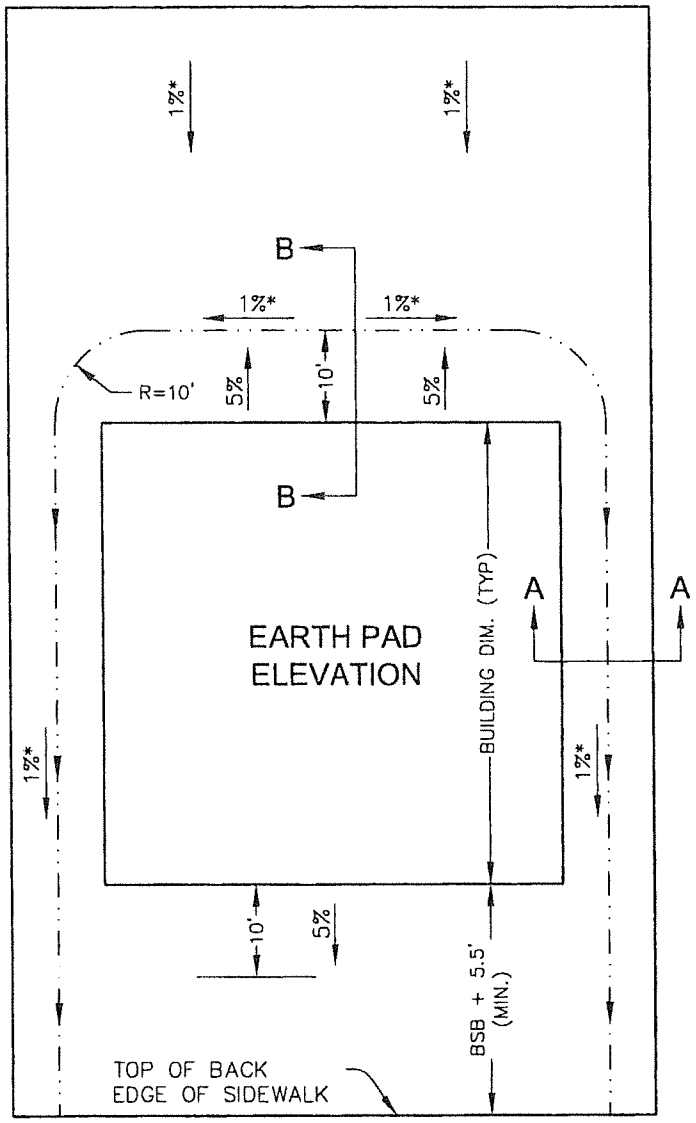
SECTION D-D

NOTES

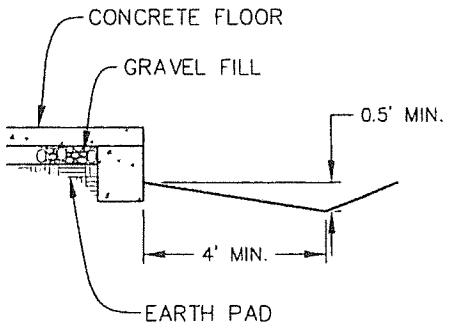
1. 3 (EA) ¼" ø BOLTS COUNTER SUNK IN DIAMOND PLATE AT EQUAL SPACING.
2. 1½" x 1½" x ¼" GALVANIZED ANGLE IRON.
3. 3 (EA) ⅜"x 6" BOLTS WELDED TO ANGLE IRON AND EMBEDDED IN CONCRETE.
4. ¼" GALVANIZED DIAMOND PLATE, FACE SHALL BE FLUSH WITH CURB AND TOP FLUSH WITH SIDEWALK.

CITY OF ORLAND

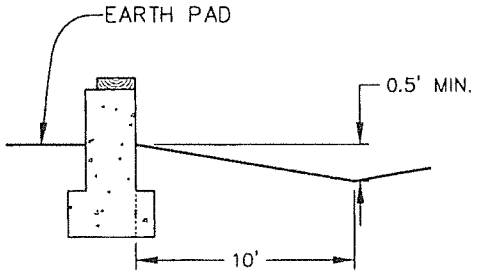
DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K.G. Sheldon III	SCUPPER DRAIN	STANDARD DETAIL 404 SHEET 1 OF 1



* SEE NOTE 2



SECTION A-A



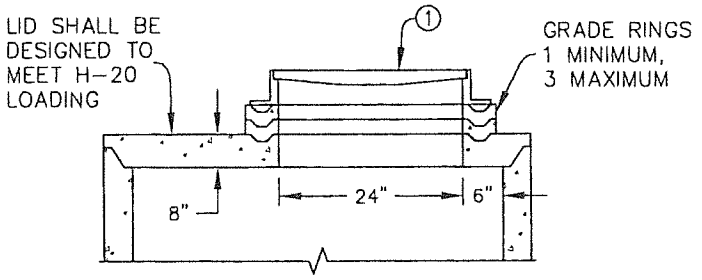
SECTION B-B

NOTES

1. MINIMUM EARTH PAD ELEVATION = MAXIMUM SWALE ELEVATION +0.5'
2. MINIMUM LOT GRADE MAY BE REDUCED TO NOT LESS THAN 0.5%, PROVIDED:
   a. PROPERTY ABUTTING THE SUBDIVISION DRAINS ONTO THE SUBDIVISION PROPERTY, AND A 1% LOT GRADE WOULD OBSTRUCT THE NATURAL DRAINAGE.
   b. THE DRAINAGE FROM THE ABUTTING PROPERTY WILL BE COLLECTED AND ROUTED THROUGH THE SUBDIVISION DRAINAGE FACILITIES.
   c. THE CITY ENGINEER CONFIRMS THAT LOT GRADES OF NOT LESS THAN 0.5% WILL ACCOMMODATE THE COLLECTION AND ROUTING OF THE SURFACE DRAINAGE.
   d. BUILDING PADS SHALL NOT BE INUNDATED DURING A 100 YEAR FREQUENCY DESIGN STORM.

CITY OF ORLAND

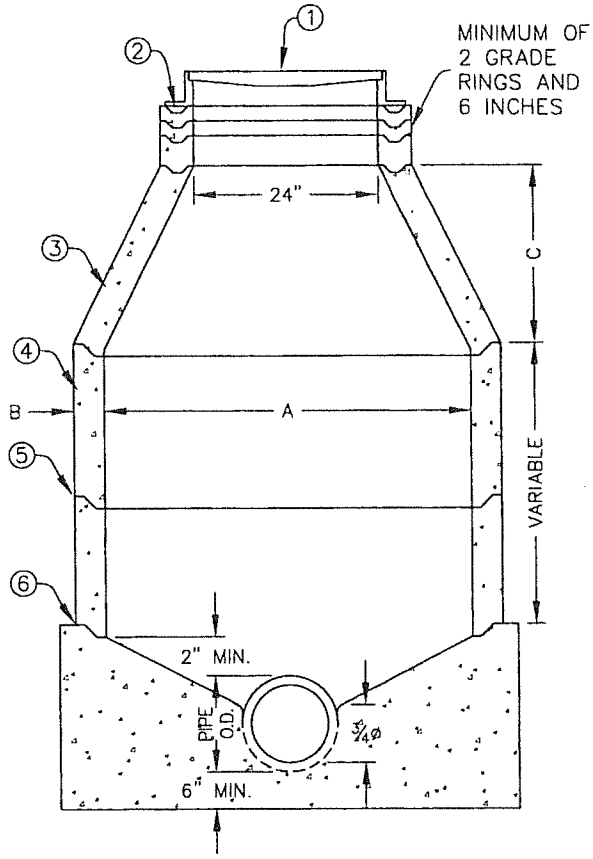
DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: Ke G. Stall III	MINIMUM RESIDENTIAL LOT GRADES	STANDARD DETAIL 405 SHEET 1 OF 1



SHALLOW MANHOLE DETAIL

(FOR PIPES WITH LESS THAN 4' COVER)

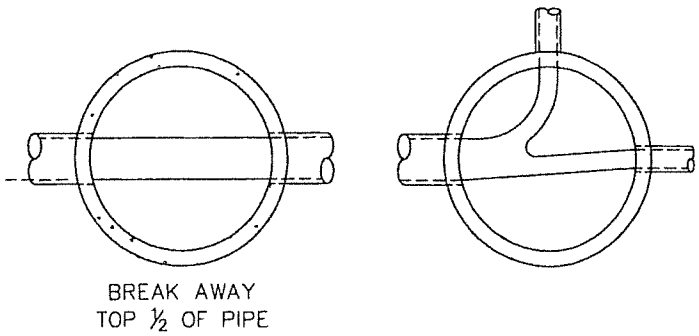
A	B	C
M.H. DIA. 36"	3½"	12"
M.H. DIA. 48"	4"	30"
M.H. DIA. 60"	5"	SEE NOTE 3



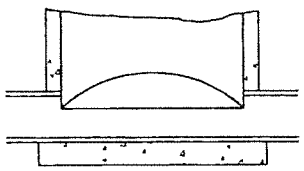
STANDARD MANHOLE DETAIL

CONSTRUCTION MATERIALS AND NOTES

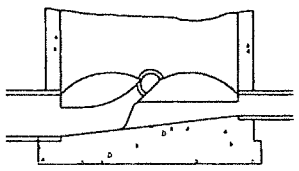
① SEE STANDARD NO. 407 AND 407A FOR FRAME AND COVER DETAILS. SEE STANDARD NO. 409 FOR METHOD OF SETTING FRAME.
② FILL GROOVE FLUSH WITH MORTAR.
③ ONE PIECE REINFORCED CONCRETE TAPER SECTION.
④ REINFORCED CONCRETE PIPE SECTION.
⑤ PRIME AND INSTALL "KENT SEAL", "RAM NECK" OR APPROVED EQUAL ON ALL JOINTS.
⑥ FORM JOINT IN POURED BASE. SETTING OF R.C.P. IN WET CONCRETE NOT AUTHORIZED.



BREAK AWAY TOP ½ OF PIPE



SECTION OF PIPE CONTINUOUS THROUGH MANHOLE



JUNCTION MANHOLE BETWEEN DIFFERENT PIPE SIZES

NOTES

1. THE MANHOLE BASE SHALL BE CLASS B CONCRETE POURED AGAINST UNDISTURBED EARTH, OR A PRECAST BASE PLACED ON 6" MINIMUM AGGREGATE BASE, COMPACTED TO 95% RELATIVE DENSITY.
2. PRECAST MANHOLE BASES SHALL HAVE PVC SEWER PIPE WITH WATER STOPS ATTACHED BY MEANS OF STAINLESS STEEL BANDS, OR THE BELL PORTION OF A SEWER PIPE CAST INTO THE BASE. WHEN NEOPRENE "BOOTS" ARE USED THE SEWER PIPE MUST BE INSTALLED FLUSH WITH THE INTERIOR WALL OF THE MANHOLE.
3. THE MANHOLE DIMENSIONS SHALL BE IN ACCORDANCE WITH A.S.T.M. C-748-70 AS AMENDED.
4. 36" DIA. MANHOLE SHALL ONLY BE USED WHEN APPROVED BY THE CITY ENGINEER.
5. ALL GRADE RINGS AND AROUND PIPE INVERTS MUST BE GROUTED.

CITY OF ORLAND

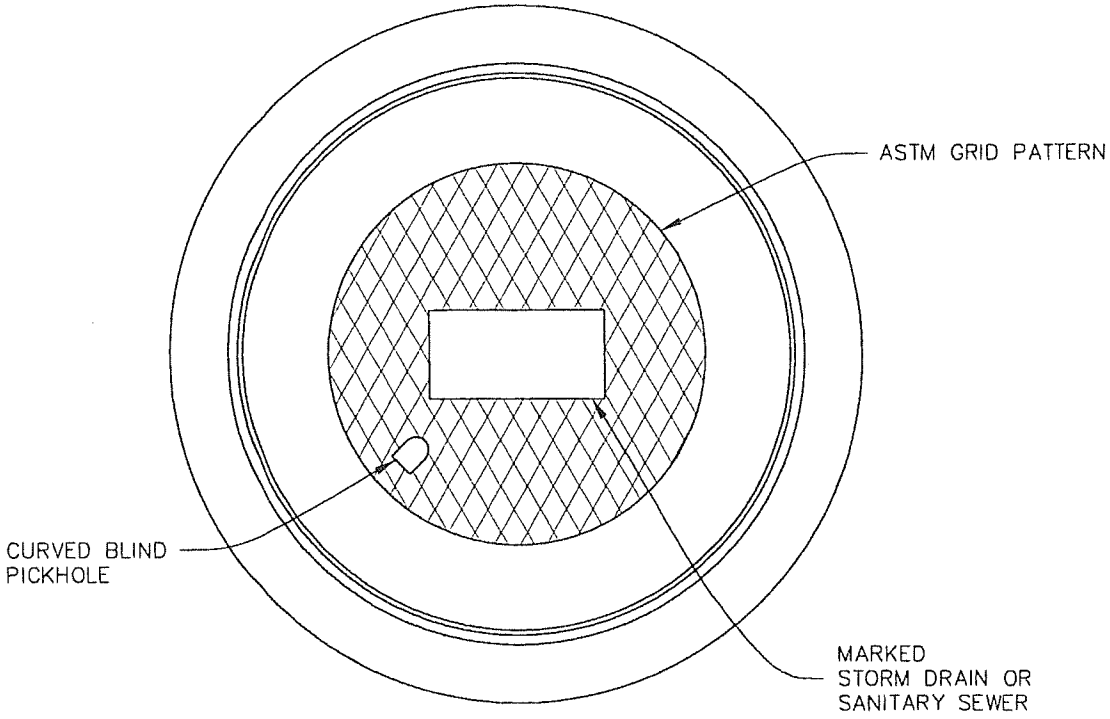
DRAWN BY: CAD DATE: JAN,09
CHECKED BY: KGS III SCALE: NONE
APPROVED: K. G. Skillman III

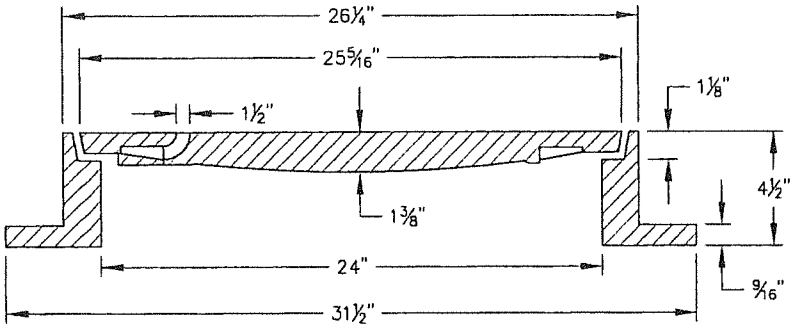
STANDARD AND SHALLOW MANHOLE

STANDARD DETAIL
406
SHEET 1 OF 1

NOTE

MANHOLE FRAME & COVER SHALL BE SOUTH BAY FOUNDRY SBF 1900 BPH, PHOENIX IRON WORKS P-1090 OR APPROVED EQUAL.



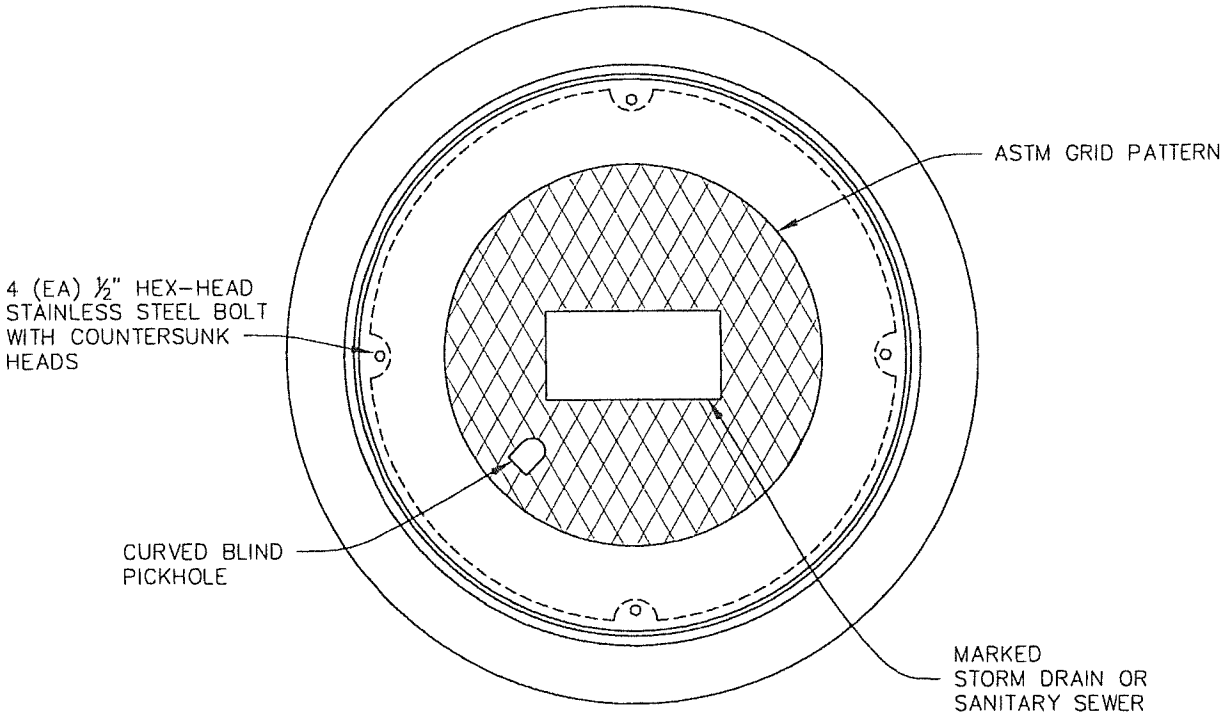


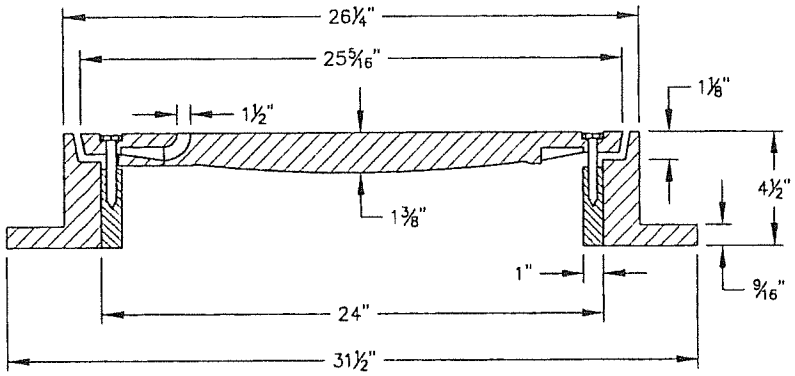
CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Stiell III	STORM DRAIN MANHOLE FRAME AND COVER	STANDARD DETAIL 407 SHEET 1 OF 1

NOTE

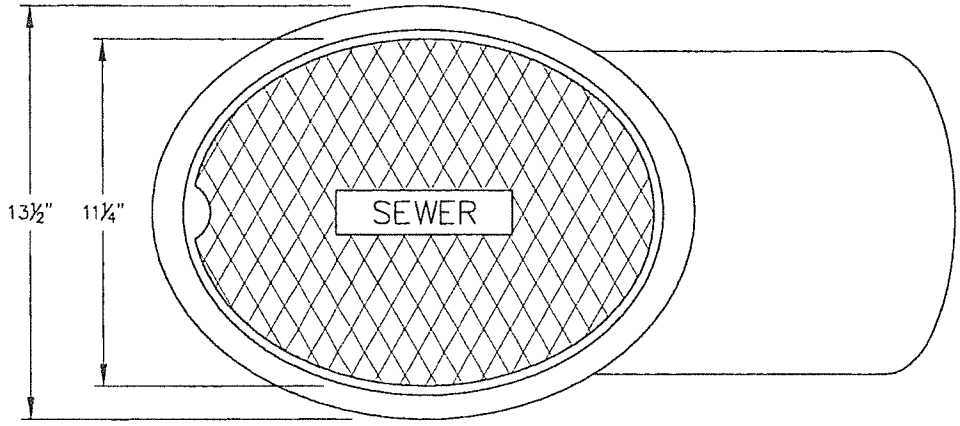
MANHOLE FRAME & COVER SHALL BE SOUTH BAY FOUNDRY SBF 1900 BS, PHOENIX IRON WORKS P-1002 OR APPROVED EQUAL.

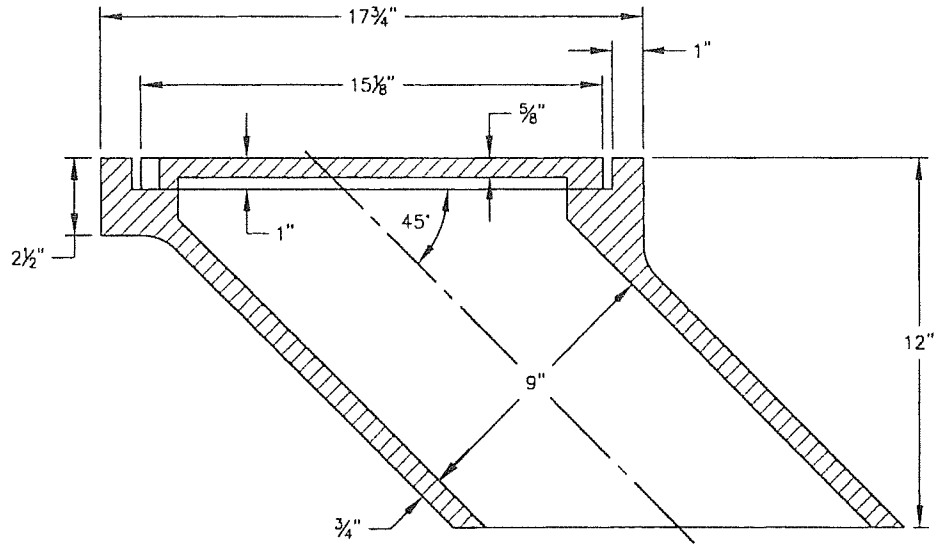




CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Shidler III	STORM DRAIN MANHOLE FRAME AND COVER (BOLT DOWN)	STANDARD DETAIL 407A SHEET 1 OF 1



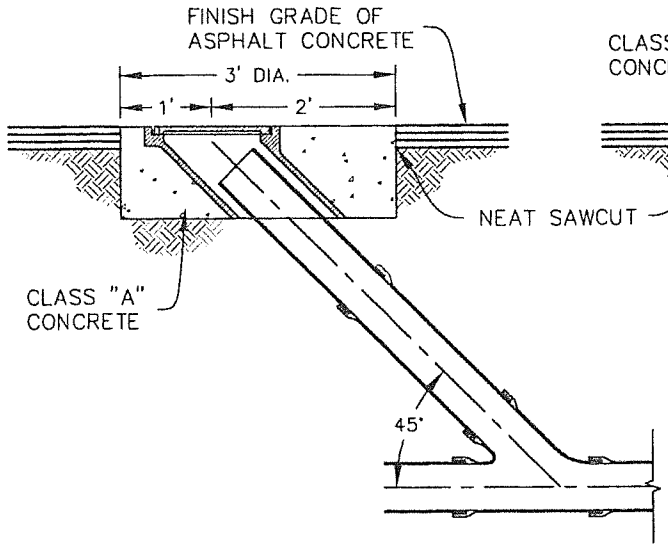


NOTES

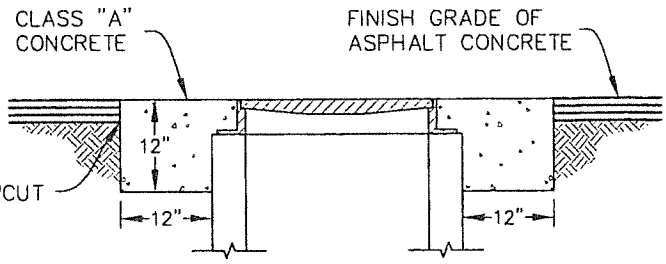
1. SEE STD. 409 FOR METHOD OF INSTALLATION.
2. FRAME AND COVER SHALL BE SOUTH BAY FOUNDRY SBF 1249, PHOENIX IRON WORKS P-7004 OR APPROVED EQUAL.

CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: Kevin G. Shill III	SANITARY SEWER CLEANOUT	STANDARD DETAIL 408 SHEET 1 OF 1



SEWER CLEANOUT
(IN LINE)

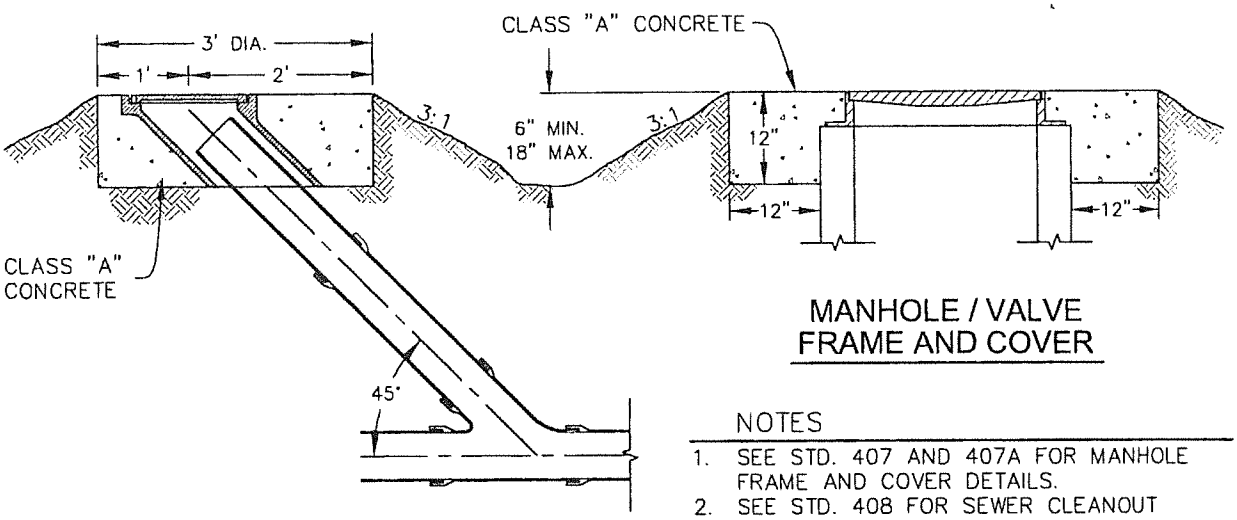


MANHOLE / VALVE FRAME AND COVER

NOTES

1. SEE STD. 407 AND 407A FOR MANHOLE FRAME AND COVER DETAILS.
2. SEE STD. 408 FOR SEWER CLEANOUT FRAME AND COVER DETAILS.
3. WHEN A CLEANOUT IS TO BE USED AT THE END OF A SEWER MAIN, USE A 45° LONG RADIUS BEND.
4. CONCRETE SHALL HAVE A BROOMED FINISH.
5. CONCRETE SHALL BE CONSTRUCTED ⅛" TO ¼" BELOW PROPOSED ASPHALT GRADE.

LOCATED IN STREET OR ALLEY



SEWER CLEANOUT
(IN LINE)

MANHOLE / VALVE FRAME AND COVER

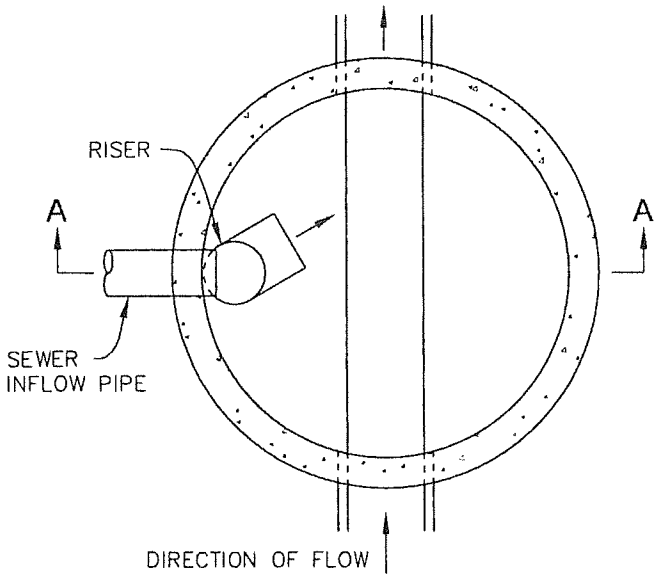
NOTES

1. SEE STD. 407 AND 407A FOR MANHOLE FRAME AND COVER DETAILS.
2. SEE STD. 408 FOR SEWER CLEANOUT FRAME AND COVER DETAILS.
3. WHEN A CLEANOUT IS TO BE USED AT THE END OF A SEWER MAIN, USE A 45° LONG RADIUS BEND.
4. CONCRETE SHALL HAVE A BROOMED FINISH.

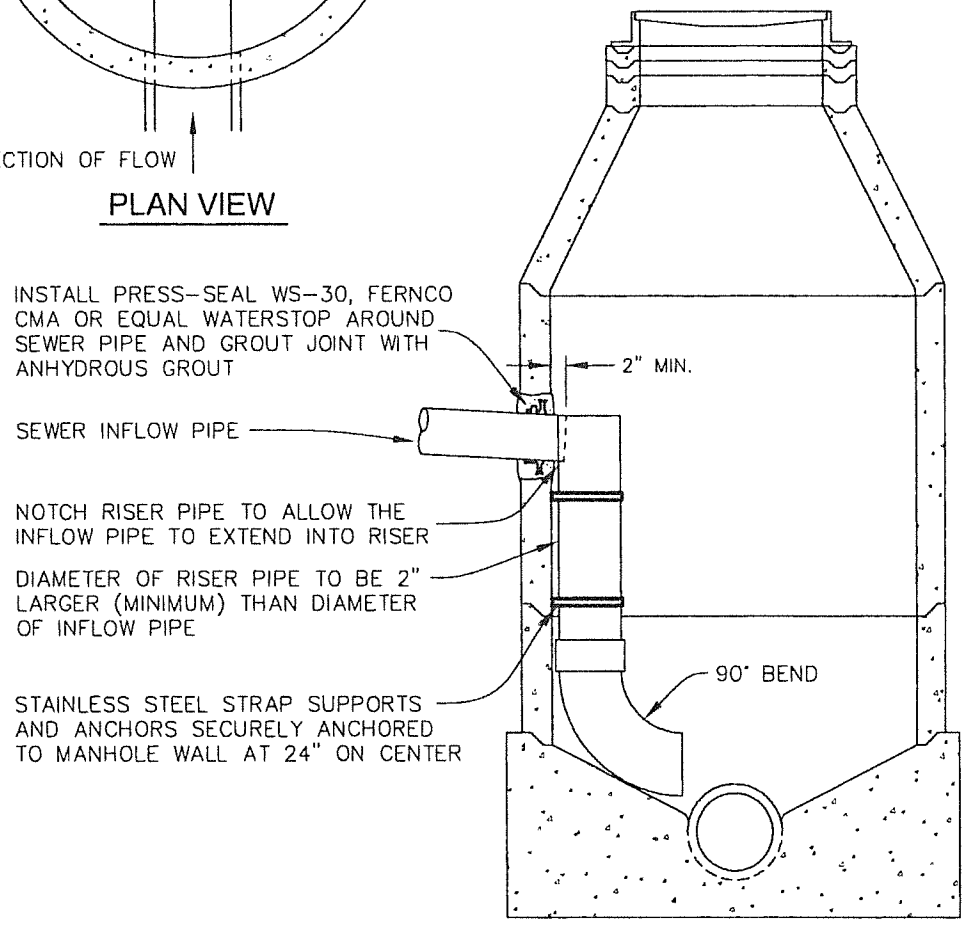
LOCATED IN EASEMENT

CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: Kevin G. Shall III	TYPICAL METHOD FOR SETTING APPURTENANCES	STANDARD DETAIL 409 SHEET 1 OF 1



PLAN VIEW



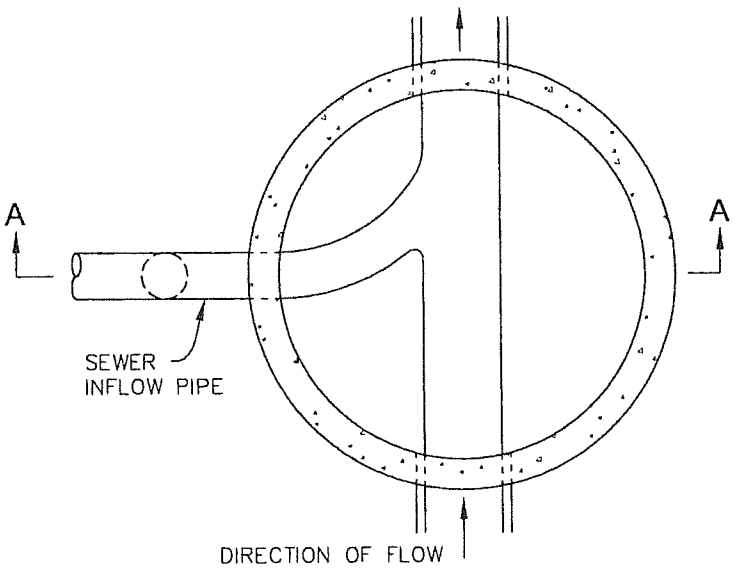
SECTION A-A

NOTES

1. INSIDE DROP TO APPLY IN EXISTING SEWER MANHOLES ONLY AND REQUIRES APPROVAL BY THE CITY ENGINEER. OUTSIDE DROP IS REQUIRED FOR ALL NEW SEWER MANHOLE CONSTRUCTION.
2. DROP MANHOLE SHALL BE USED WHEN THE DIFFERENCE BETWEEN PROPOSED AND EXISTING INVERTS IS 24" OR GREATER.
3. SEE STANDARD NO. 406 FOR STANDARD MANHOLE DIMENSIONS AND MATERIALS.
4. SEE STANDARD NO. 407 AND 407A FOR FRAME AND COVER DETAILS. SEE STANDARD NO. 409 FOR METHOD OF SETTING FRAME.

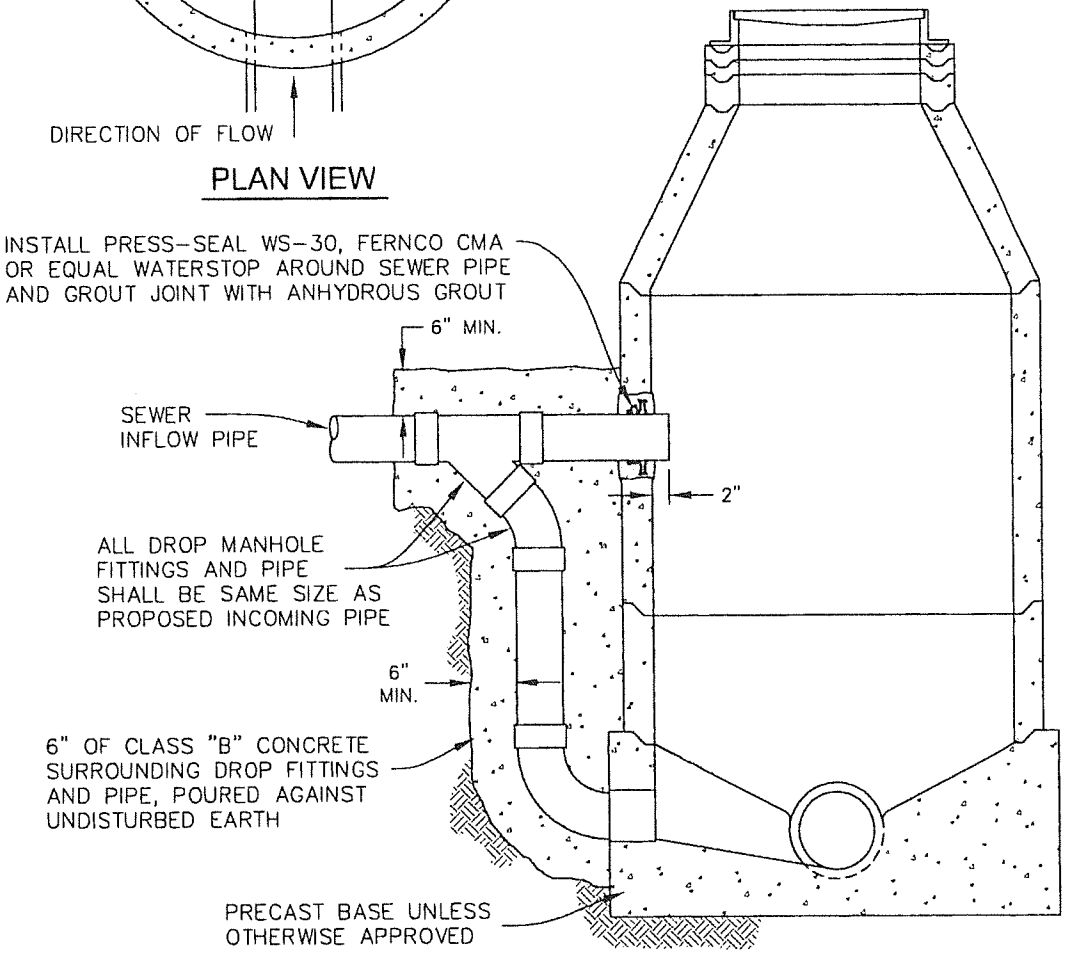
CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: K G. Sluiter III	SANITARY SEWER INSIDE DROP MANHOLE	STANDARD DETAIL 501 SHEET 1 OF 1



PLAN VIEW

SECTION A-A

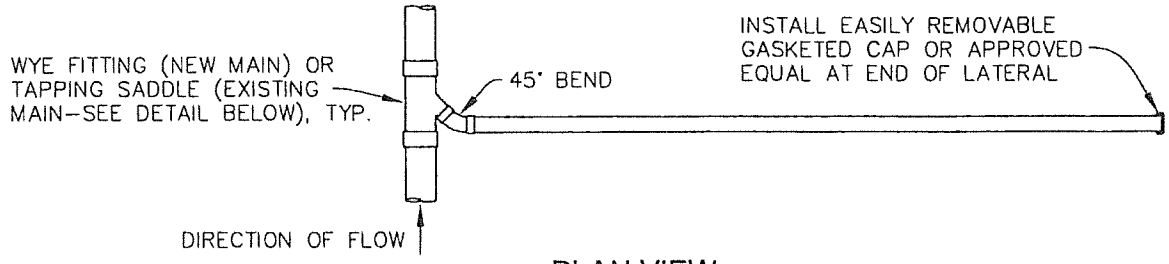


NOTES

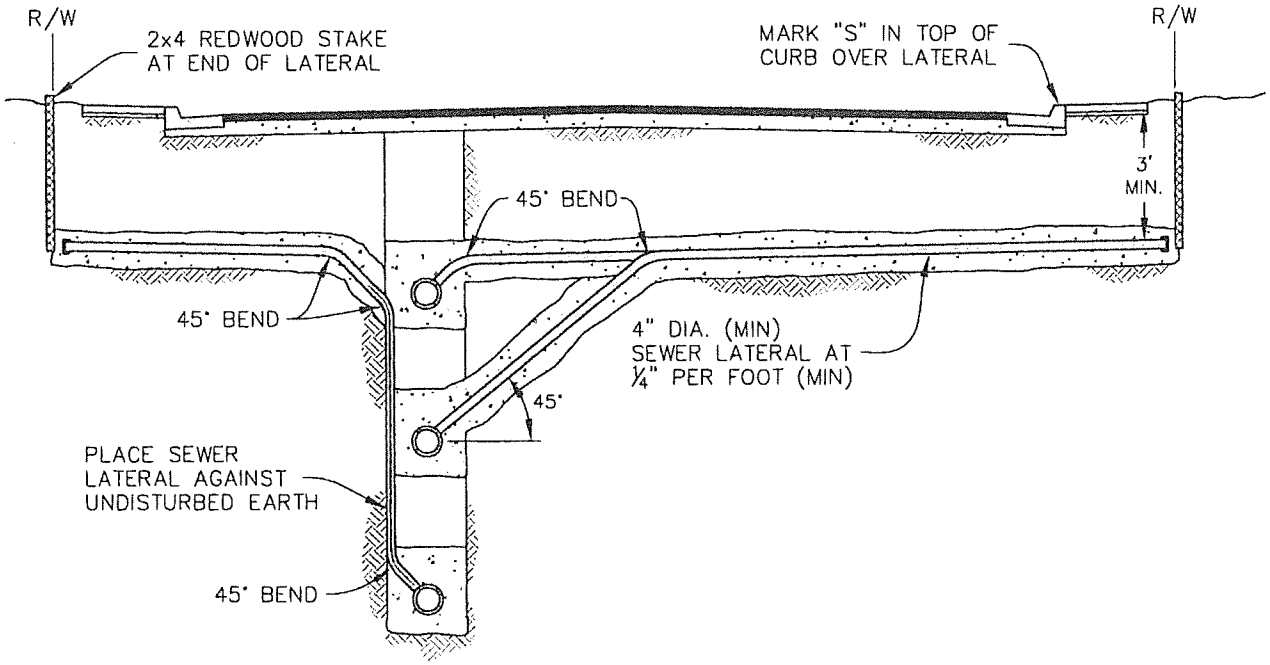
1. INSIDE DROP TO APPLY IN EXISTING SEWER MANHOLES ONLY AND REQUIRES APPROVAL BY THE CITY ENGINEER. OUTSIDE DROP IS REQUIRED FOR ALL NEW SEWER MANHOLE CONSTRUCTION.
2. DROP MANHOLE SHALL BE USED WHEN THE DIFFERENCE BETWEEN PROPOSED AND EXISTING INVERTS IS 24" OR GREATER.
3. SEE STANDARD NO. 406 FOR STANDARD MANHOLE DIMENSIONS AND MATERIALS.
4. SEE STANDARD NO. 407 AND 407A FOR FRAME AND COVER DETAILS. SEE STANDARD NO. 409 FOR METHOD OF SETTING FRAME.

CITY OF ORLAND

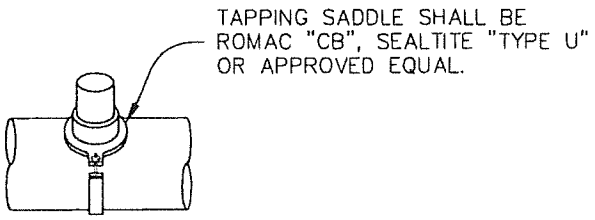
DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Skillman	SANITARY SEWER OUTSIDE DROP MANHOLE	STANDARD DETAIL 502 SHEET 1 OF 1



PLAN VIEW



ELEVATION



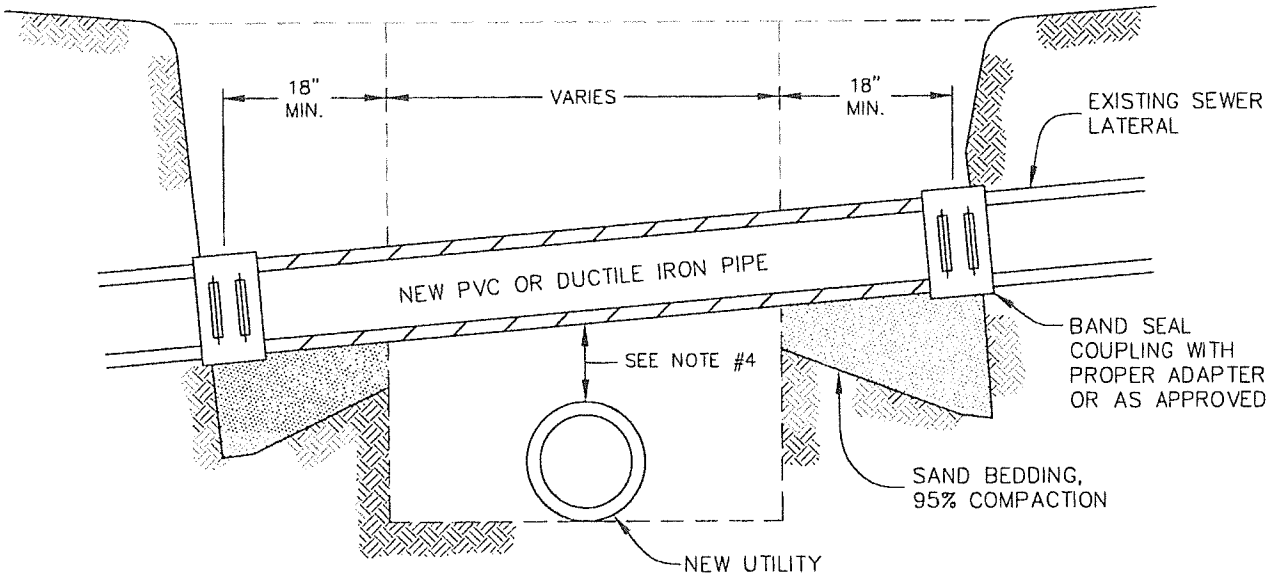
TAPPING SADDLE

NOTES

1. SERVICES SHALL HAVE SAME BEDDING AND BACKFILL MATERIAL AS SEWER MAIN (SEE STANDARD DETAIL 101).
2. ANY REPAIRS DONE TO SERVICES SHALL HAVE COMPRESSION COUPLINGS WITH STAINLESS STEEL SHEAR RINGS.
3. THE SEWER LATERAL INVERT ELEVATION, AT THE POINT OF CONNECTION TO THE SEWER MAIN, SHALL BE AT OR ABOVE THE CROWN OF THE SEWER MAIN.

CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: K. G. Skill III	SANITARY SEWER SERVICE AND CONNECTION	STANDARD DETAIL 503 SHEET 1 OF 1

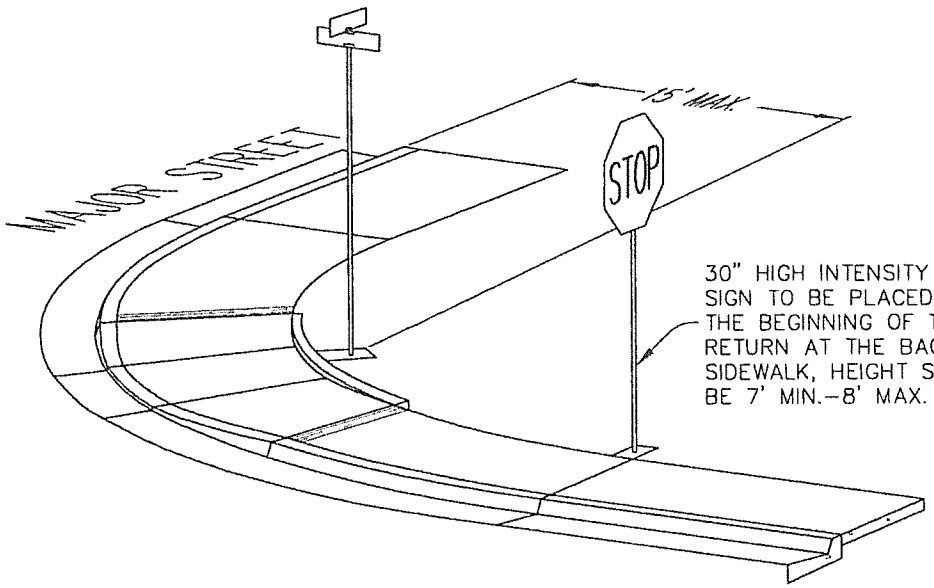


NOTES

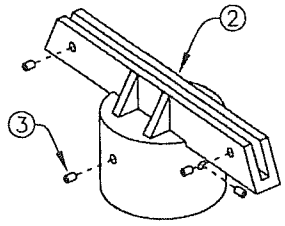
1. THIS STANDARD DETAIL SHALL BE USED IF THE EXISTING SEWER LATERAL IS DAMAGED DURING INSTALLATION OF A NEW UTILITY.
2. INSIDE DIAMETER OF PIPE TO BE THE SAME AS THE PIPE TO WHICH IT CONNECTS.
3. ALTERATIONS OF SEWER GRADES WILL BE PERMITTED ONLY AFTER PERMISSION HAS BEEN RECEIVED FROM THE CITY ENGINEER.
4. MINIMUM CLEARANCE BETWEEN AN EXISTING SEWER LATERAL AND A NEW WATER PIPE SHALL BE 12". MINIMUM CLEARANCE BETWEEN AN EXISTING SEWER LATERAL AND ALL OTHER NEW UTILITIES SHALL BE 3".
5. IF THE NEW UTILITY IS A WATER PIPE, CENTER AN 18 FOOT LENGTH OF PIPE WITH NO JOINTS UNDER THE EXISTING SEWER LATERAL.
6. TRIM THE END OF THE SEWER LATERAL TO A CLEAN CUT UNDAMAGED END WITH MECHANICAL PIPE CUTTER.
7. BAND SEAL COUPLING SHALL HAVE STAINLESS STEEL SHEAR RING. ROMAC LSS SEWER CLAMP OR APPROVED EQUAL.

CITY OF ORLAND

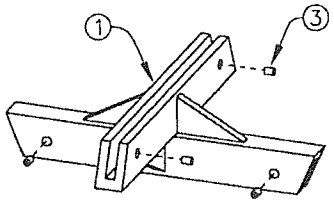
DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED:	SEWER LATERAL CROSSING	STANDARD DETAIL 504 SHEET 1 OF 1



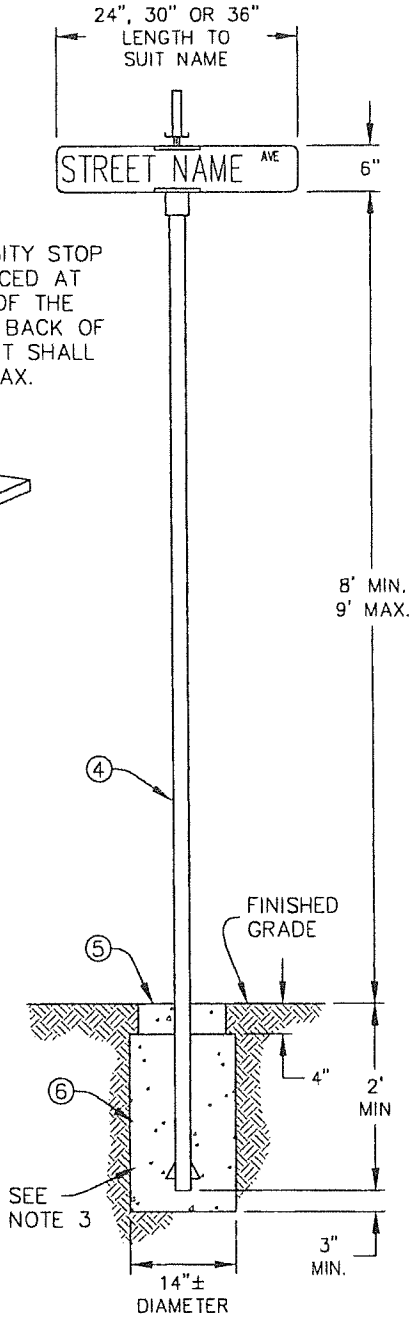
30" HIGH INTENSITY STOP SIGN TO BE PLACED AT THE BEGINNING OF THE RETURN AT THE BACK OF SIDEWALK, HEIGHT SHALL BE 7' MIN.–8' MAX.



2" CAP



90° CROSS PIECE



CONSTRUCTION MATERIALS AND NOTES

① 90° CROSSPIECE SHALL BE HAWKINS NO. V14SL-105-90, ZUMAR 808F90 OR APPROVED EQUAL.
② 2" DIA. CAP SHALL BE HAWKINS NO. V14SL-107.2C, ZUMAR 808F2 OR APPROVED EQUAL.
③ CAP AND CROSSPIECE SET SCREWS SHALL BE HAWKINS NO. V141105 OR APPROVED EQUAL.
④ 2" DIA. STANDARD GALVANIZED PIPE.
⑤ 12" SQUARE SHALL BE FORMED AND FINISHED TO MATCH SIDEWALK. FORM THREE SIDES WHEN ADJACENT TO SIDEWALK AND FOUR SIDES WHEN IN PLANTER AREA.
⑥ CLASS B P.C.C.

NOTES

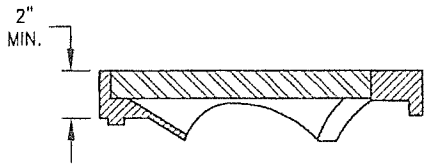
1. SIGN LOCATION TO BE DETERMINED BY THE CITY ENGINEER.
2. NAME PLATES AND MOUNTING ASSEMBLIES TO MEET THE REQUIREMENTS OF THE CITY ENGINEER.
3. FLARE THE BOTTOM OF PIPE TO PREVENT TURNING.
4. PLATE COLOR SHALL BE WHITE ON GREEN AND SHALL BE REFLECTIVE.
5. REFLECTIVE LETTERS TO BE 4" FOR NAME, AND 2" FOR ST., CT., AVE., ETC.
6. .080" ALUMINUM PLATE.
7. USE HEAVY DUTY SLOTTED HIGH TENSION ALUMINUM ALLOY DIE CASTINGS FOR CAPS AND CROSS PIECES. MATERIALS SHALL BE HAWKINS, ZUMAR OR APPROVED EQUAL.

CITY OF ORLAND

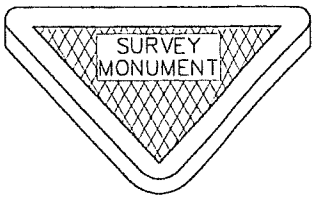
DRAWN BY: CAD DATE: JAN,09
CHECKED BY: KGS III SCALE: NONE
APPROVED: K G. Skill III

STREET SIGNS

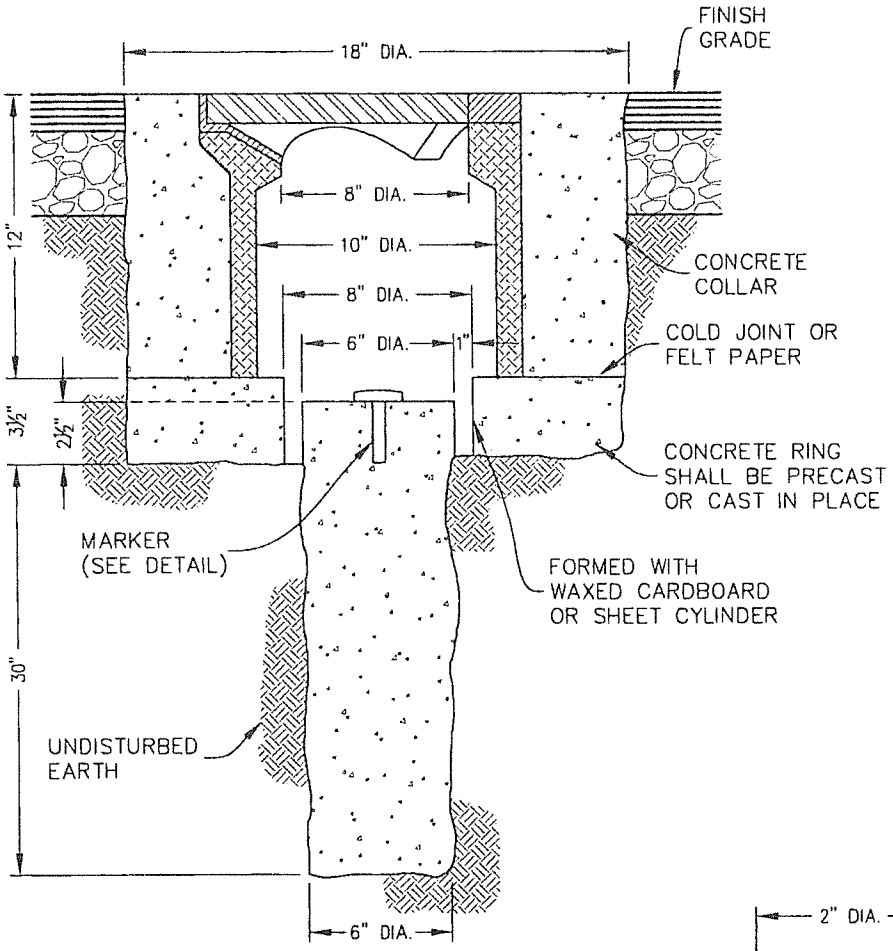
STANDARD DETAIL
601
SHEET 1 OF 1



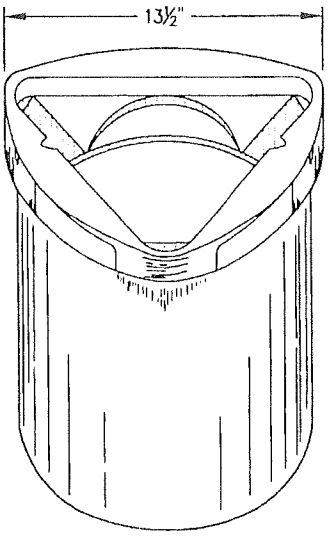
RISER RING



C.I. COVER



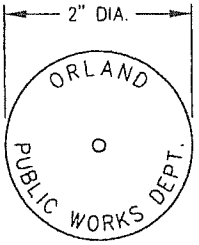
MONUMENT SECTION

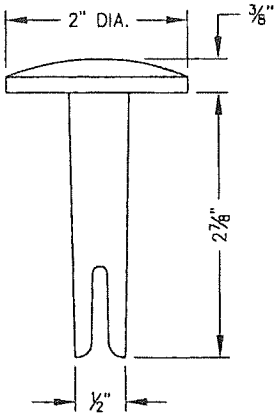


VALVE BOX

NOTES

1. WHEN RESURFACING AN EXISTING ROAD ADD RISER RING BETWEEN EXISTING BOX AND COVER TO MEET NEW ROAD GRADE.
2. MONUMENT VALVE BOX SHALL BE BROOKS NO. 4-TT, CHRISTY CONCRETE PRODUCTS G04 OR APPROVED EQUAL.
3. ALL CONCRETE SHALL BE CLASS B.

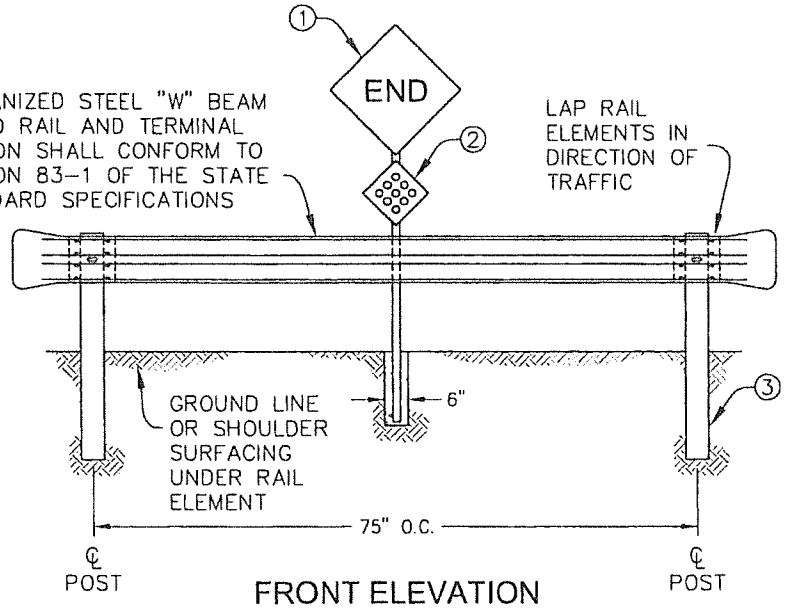




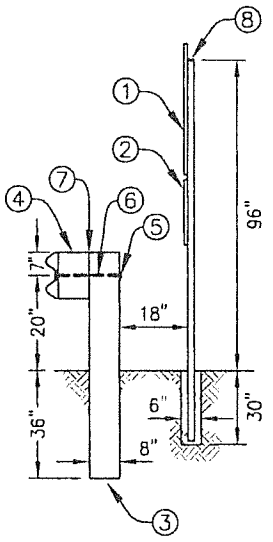
MARKER

CITY OF ORLAND

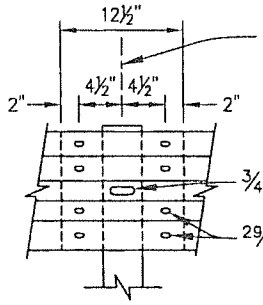
DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED:	MONUMENT WELL	STANDARD DETAIL 602 SHEET 1 OF 1



FRONT ELEVATION



SIDE ELEVATION

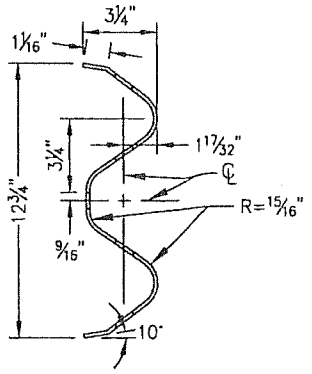


℄ RAIL SPLICE AND SLOT FOR ⅝"ø BUTTON HEAD BOLT WITH HEX NUT. ATTACH RAIL ELEMENT TO WOOD BLOCK AND POST WITH BOLT ON TRAFFIC APPROACH SIDE OF POST WEB. NO WASHER ON RAIL FACE FOR BOLTED CONNECTION TO POST.

¾"x2½" SLOT

29/32"x1⅛" SLOTS, TYP.

RAIL SPLICE DETAIL



SECTION THRU "W" BEAM RAIL ELEMENT

CONSTRUCTION MATERIALS AND NOTES

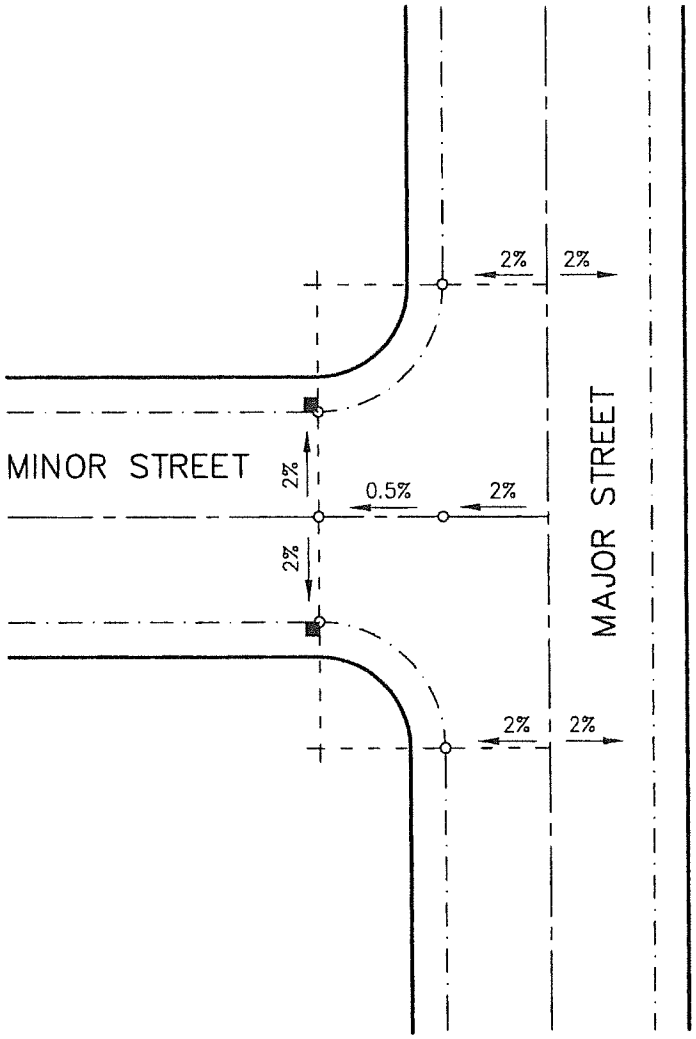
① M.U.T.C.D. 30"x30" W-31 WARNING SIGN.
② M.U.T.C.D. OM4-1 OR OM4-2 END-OF-ROADWAY OBJECT MARKER.
③ 6"x8"x64" DOUGLAS FIR OR PRESSURE TREATED POST, TYP.
④ 6"x8"x14" DOUGLAS FIR OR PRESSURE TREATED BLOCK.
⑤ GALVANIZED CUT STEEL WASHER.
⑥ ⅝" GALVANIZED CARRIAGE BOLT WITH HEX NUT.
⑦ TOENAIL WITH 1-16D NAIL ON EACH SIDE OF BLOCK.
⑧ 2" DIA. GALVANIZED STEEL POST AND CAP.

NOTES

1. CONNECT THE OVER LAPPED END OF THE RAIL ELEMENTS WITH ⅝"ø x 1⅛" BUTTON HEAD OVAL SHOULDER SPLICE BOLTS INSERTED INTO THE 29/32"x1⅛" SLOTS AND BOLTED TOGETHER WITH ⅝"ø RECESSED HEX NUTS. RECESS OF HEX NUT POINTS TOWARD RAIL ELEMENT. A TOTAL OF 8 BOLTS AND NUTS ARE TO BE USED AT EACH RAIL SPLICE CONNECTION.
2. THE ENDS OF THE RAIL ELEMENTS ARE TO BE OVERLAPPED IN THE DIRECTION OF TRAFFIC.
3. WHERE END CAP IS TO BE ATTACHED TO THE END OF A RAIL ELEMENT, A TOTAL OF 4 OF THE ABOVE DESCRIBED SPLICE BOLTS AND NUTS ARE TO BE USED.
4. SIGNS AND MARKERS SHALL BE MOUNTED TO THE STEEL POSTS USING A HAWKINS M2G-S2S "SIGN SADDLE" OR APPROVED EQUAL.
5. END SIGN AND MARKERS SHALL CONFORM TO THE CURRENT EDITION OF THE CALIFORNIA M.U.T.C.D.

CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: Ke G. Shillam	BARRICADE	STANDARD DETAIL 603 SHEET 1 OF 1



NOTE

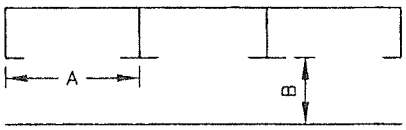
1. MINIMUM SLOPE ON ALL GUTTER GRADES TO BE 0.15% UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

LEGEND

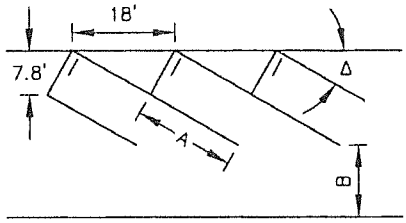
- EXISTING RIGHT OF WAY
- LIP OF GUTTER
- DROP INLET
- GRADE BREAK

CITY OF ORLAND

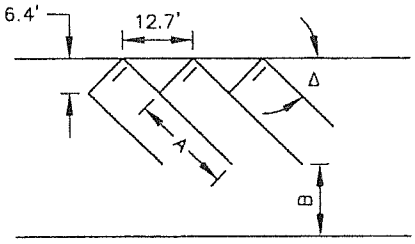
DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: Ke G. Sluss III	DESIGN GRADES FOR STANDARD INTERSECTION	STANDARD DETAIL 604 SHEET 1 OF 1



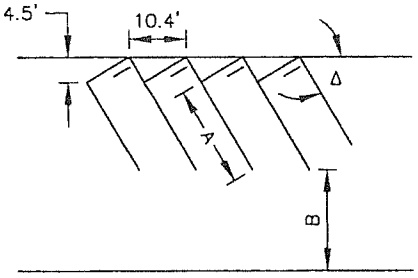
0° PARKING



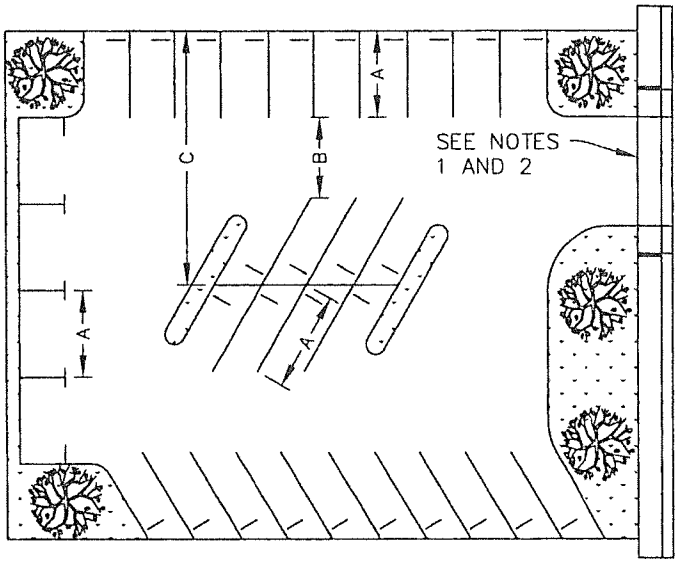
30° PARKING

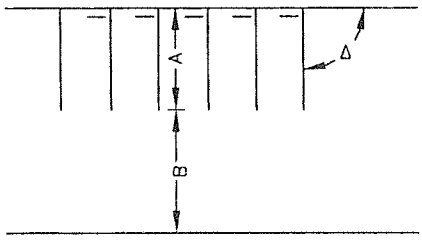


45° PARKING



60° PARKING





90° PARKING

NOTES

1. SEE ZONING CODE FOR DRIVEWAY WIDTHS WITHIN DEVELOPMENT.
2. SEE STANDARD NO. 205 AND 206 FOR DRIVEWAY REQUIREMENT AT STREET.
3. FOR RESIDENTIAL USES 90° STALLS SHOULD BE 10' WIDE.
4. NOT MORE THAN 10% OF ALL REQUIRED PARKING SPACES MAY BE REDUCED TO 8.5 FEET IN WIDTH AND 16 FEET IN LENGTH, AND SUCH SPACES SHALL BE DISPERSED THROUGHOUT THE PARKING LOT AND MARKED AS "COMPACT" CAR PARKING ONLY.

PARKING DIMENSION TABLE (ALL DIMENSIONS IN FEET)									
STANDARD STALL LENGTH = 20' (18' WITH WHEEL STOP)				COMPACT STALL LENGTH = 16' (14' WITH WHEEL STOP)					
STANDARD STALL WIDTH = 9'				COMPACT STALL LENGTH = 8'					
PARKING ANGLE (Δ)	1-WAY SINGLE-LOADED			1-WAY DOUBLE-LOADED			2-WAY DOUBLE-LOADED		
	STALL DEPTH (A)[1]	AISLE WIDTH (B)	TOTAL BAY DEPTH (C)	STALL DEPTH (A)[1]	AISLE WIDTH (B)	TOTAL BAY DEPTH (C)	STALL DEPTH (A)[1]	AISLE WIDTH (B)	TOTAL BAY DEPTH (C)
0°	23	12	21	23	12	30	23	24	42
30°	18	13	29.8	18	13	46.6	18	24	57.6
45°	18	14	33.1	18	14	52.2	18	24	62.2
60°	18	18	38.1	18	18	58.2	18	24	64.2
90°	18	24	42	18	24	60	18	24	60

1. STALL DEPTH WITH WHEEL STOP.

CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09

CHECKED BY: KGS III SCALE: NONE

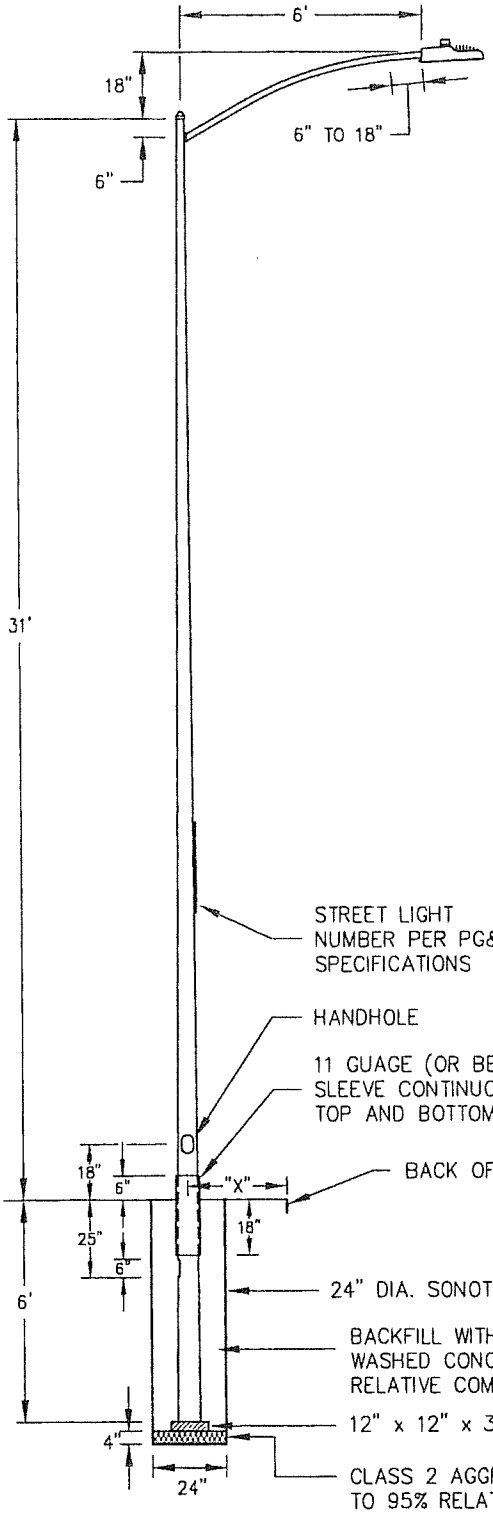
APPROVED: Ke G. Shill III

OFF STREET PARKING LAYOUT

STANDARD DETAIL

605

SHEET 1 OF 1



NOTES

1. STREET LIGHTING FOR SUBDIVISION AND INDUSTRIAL OR COMMERCIAL DEVELOPMENT IS TO BE DESIGNED AND PROVIDED BY THE DEVELOPER. THE STREET LIGHT PLAN SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.
2. TAPERED STEEL POLE SHALL BE DESIGNED TO WITHSTAND 85 M.P.H. WIND SPEED, AND EXPOSURE CATEGORY C IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNS.
3. POLE AND MAST ARM SHALL BE MADE OF 11 GAUGE (OR BETTER) STEEL WITH A YIELD STRENGTH OF 33,000 PSI AND A UNIFORM TAPER OF 0.14 INCH PER FOOT. "OVALIZE" THE LARGE END OF THE MAST ARM SO THE CROSS-SECTION BECOMES ABOUT 2½" IN THE HORIZONTAL DIMENSION.
4. EACH LIGHT STANDARD SHALL INCLUDE: TAPERED STEEL POLE, REMOVABLE POLE CAP AND SET SCREWS, MAST ARM, UNDERGROUND WIRING ACCESS HOLE (180° FROM MAST ARM), A COVERED HANDHOLE WITH GROUNDING PROVISION (90° FROM MAST ARM), AND ALL NECESSARY HARDWARE FOR A COMPLETE INSTALLATION.
5. THE HANDHOLE SHALL BE 4" x 6½" WITH A REINFORCING FRAME, COVER AND MOUNTING HARDWARE. WELD A ½" SQUARE GROUNDING NUT OR NUT HOLDER INSIDE THE POLE, DIRECTLY OPPOSITE THE HANDHOLE.
6. POLE SHALL BE SET PLUMB IN TWO DIRECTIONS, 90° APART.
7. ALL MATERIALS SHALL BE GALVANIZED IN CONFORMANCE WITH ASTM A123.
8. ALL LUMINAIRES SHALL BE GENERAL ELECTRIC LED COBRAHEAD MODELS ESR1, ESR2, OR APPROVED EQUAL. LUMINAIRES SHALL HAVE A UNIVERSAL VOLTAGE RATING AND INCLUDE A PHOTOCELL.
9. THE CONTRACTOR SHALL ASSURE THAT THE LUMINAIRES ARE FREE OF DUST, DIRT OR ANYTHING THAT WOULD IMPAIR THE OPERATION OF THE LAMP.
10. VARIATIONS TO THIS STANDARD CAN BE MADE WITH APPROVAL FROM THE CITY ENGINEER.

STREET CLASSIFICATION	REQUIRED AVERAGE MAINTAINED ILLUMINATION IN FOOT-CANDLES		UNIFORMITY RATIO
	COMMERCIAL	RESIDENTIAL	
ARTERIAL	2.0	1.0	3:1
INDUSTRIAL	1.2	0.6	3:1
LOCAL/COLLECTOR	0.9	0.4	6:1

STREET CLASSIFICATION	LED LUMINAIRE WATTAGE
ARTERIAL	94 TO 130
INDUSTRIAL	94 TO 130
LOCAL/COLLECTOR	67 TO 94

DISTANCE "X"

"X"	18" FROM BACK OF CONTIGUOUS CURB, GUTTER, AND SIDEWALK
"X"	24" FROM BACK OF CURB WHEN SIDEWALK IS SEPARATED FROM CURB AND GUTTER

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14

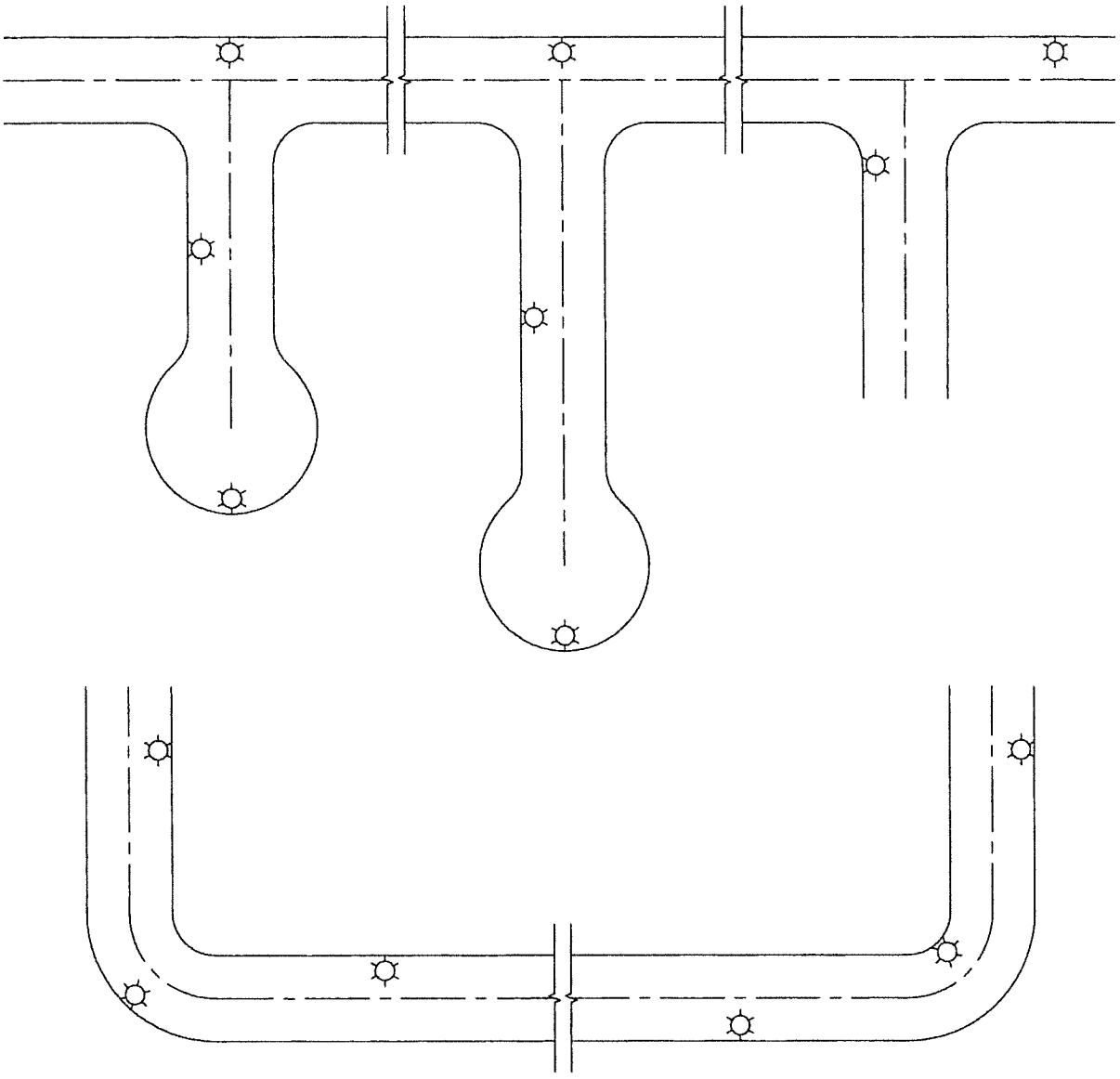
CHECKED BY: KGS III SCALE: NONE

APPROVED: K. G. Skillen III

STREET LIGHTING POLES

STANDARD DETAIL

606

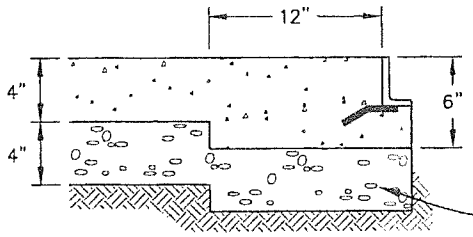


NOTES

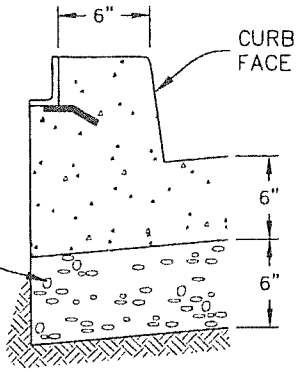
1. STREET LIGHTS SHALL BE INSTALLED, AT A MINIMUM, AT THE LOCATIONS SHOWN ABOVE.
2. STREET LIGHT SPACING SHALL BE PROVIDED BY THE DEVELOPER BASED ON THE REQUIRED AVERAGE MAINTAINED ILLUMINATION PROVIDED ON SHEET 1.

CITY OF ORLAND

DRAWN BY: CAD DATE: MAR,14 CHECKED BY: KGS III SCALE: NONE APPROVED: K G. Shill III	STREET LIGHTING LOCATIONS	STANDARD DETAIL 606 SHEET 2 OF 2



SECTION A-A

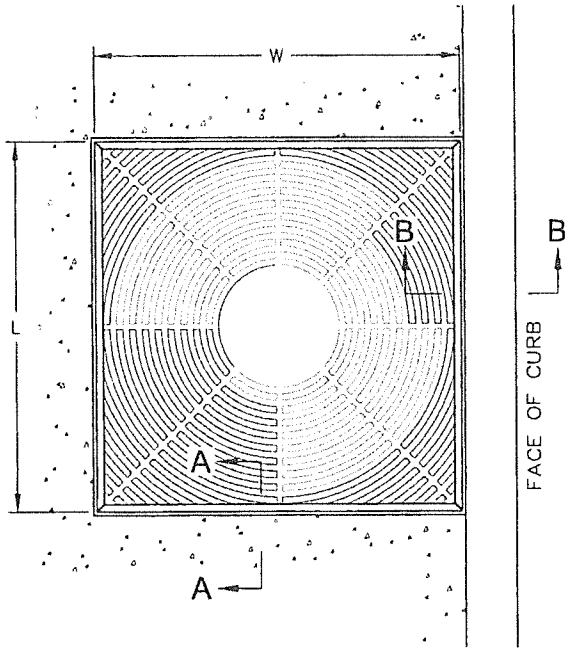


CLASS 2 AGGREGATE BASE

SECTION B-B

NOTES

A. CONCRETE SHALL BE CLASS 2 AND SHALL BE MONOLITHIC WITH CURB, GUTTER AND SIDEWALK.
B. TREE WELL SHALL HAVE THE SAME SLOPE AS THE SURROUNDING SIDEWALK.
C. FRAME SHALL BE PREMANUFACTURED AND FURNISHED WITH THE COVER BY THE SAME MANUFACTURER.
D. INSPECTION OF TREE WELLS IS REQUIRED. PRIOR NOTICE OF 48 HOURS SHALL BE GIVEN TO THE CITY ENGINEER WHEN REQUESTING INSPECTION.
E. WHEN CONSTRUCTING TREE WELL AROUND EXISTING TREE, TREE SHALL BE CENTERED WITH RESPECT TO THE "L" DIMENSION.
F. TREE WELL SHALL BE SQUARE (SIDES PARALLEL AND CORNERS 90 DEGREES)
G. TREE GRATE SHALL HAVE A RADIAL PATTERN WITH OPENINGS EXPANDABLE TO ACCOMMODATE INCREASING TRUNK DIAMETER.
H. TREE GRATE SHALL BE DUCTILE CAST IRON AND TWO PIECES.
I. OPENINGS IN THE TREE GRATE SHALL BE AD COMPLIANT.



PLAN VIEW

TREE GRATE AND FRAME SIZE CHART			
SIDEWALK WIDTH	FRAME SIZE (W x L)	FRAME TYPE	COVER TYPE
10' OR WIDER	5' x 5'	OLYMPIC FOUNDRY 82-3040 OR EQUIVALENT	OLYMPIC FOUNDRY 80-3190 OR EQUIVALENT
LESS THAN 10'	4' x 4'	OLYMPIC FOUNDRY 82-2000 OR EQUIVALENT	OLYMPIC FOUNDRY 80-2180 OR EQUIVALENT

CITY OF ORLAND

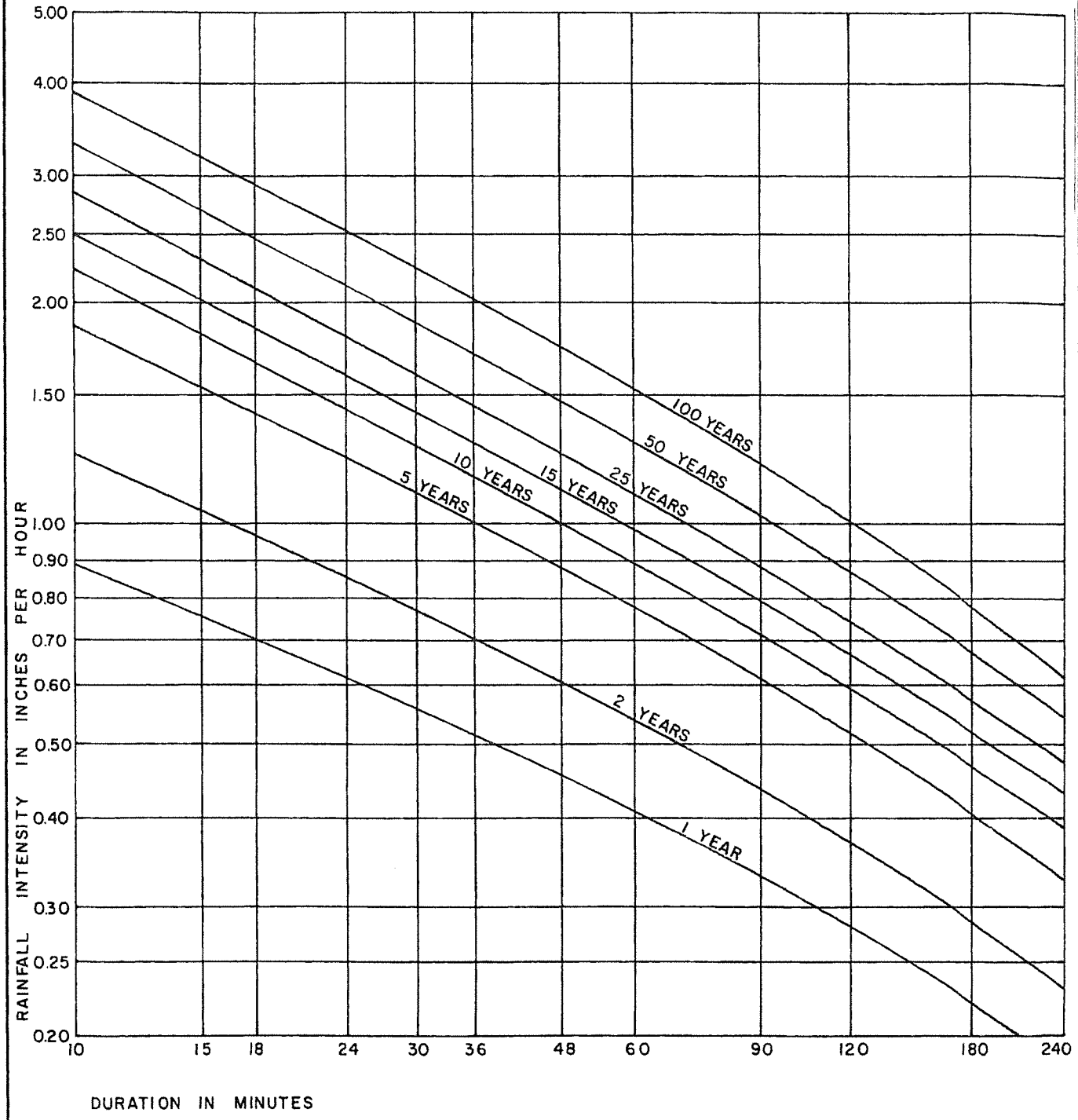
DRAWN BY: CAD DATE: JAN,09
CHECKED BY: KGS III SCALE: NONE
APPROVED: Ke G. Shill III

TREE WELL

STANDARD DETAIL

607

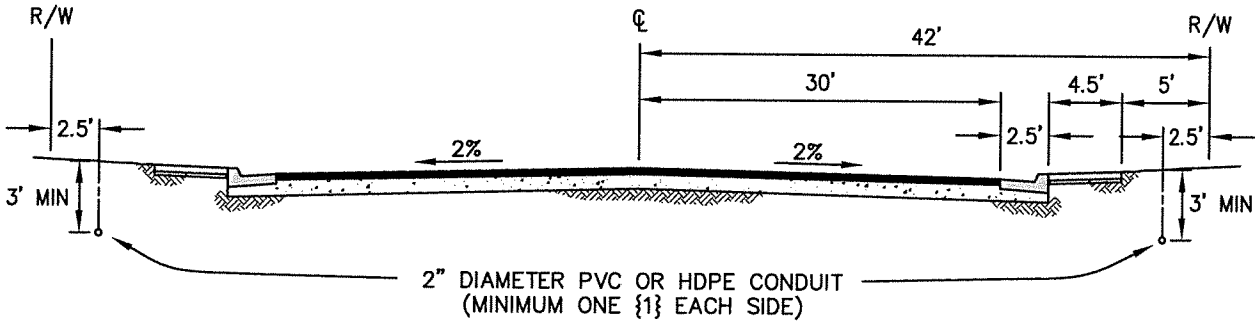
SHEET 1 OF 1



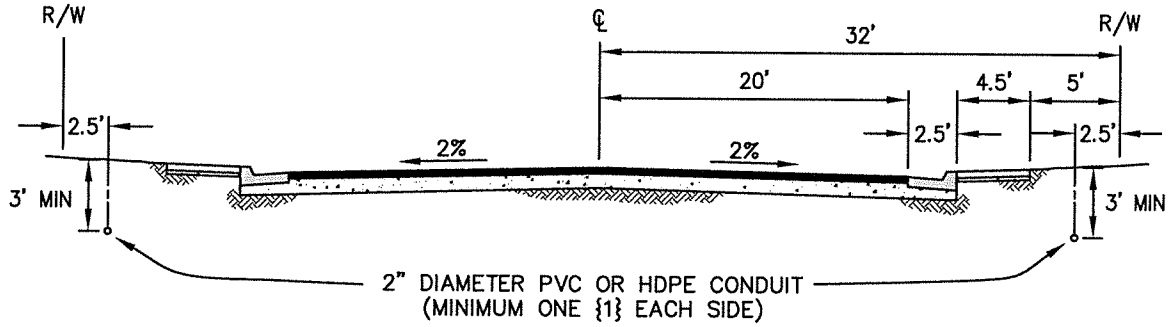
CITY OF ORLAND

DRAWN BY: CAD DATE: JAN,09 CHECKED BY: KGS III SCALE: NONE APPROVED: Ke G. Shall III	RAINFALL INTENSITY VS. DURATION DESIGN CHART	STANDARD DETAIL 608 SHEET 1 OF 1

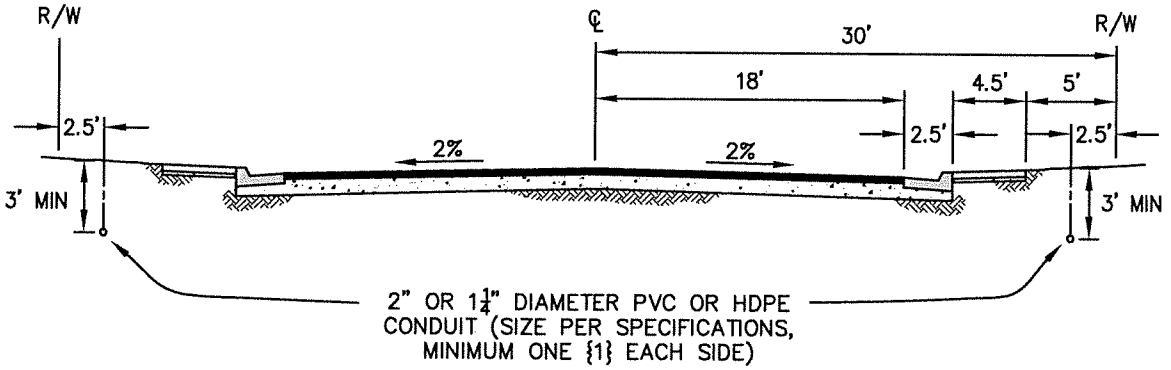
ARTERIAL STREET
84 FOOT RIGHT-OF-WAY



INDUSTRIAL STREET
64 FOOT RIGHT-OF-WAY



LOCAL AND COLLECTOR STREET
60 FOOT RIGHT-OF-WAY



CITY OF ORLAND

DRAWN BY: CAD DATE: APR, 18 CHECKED BY: KGS III SCALE: NONE APPROVED:	TYPICAL BROADBAND FIBEROPTIC CABLE CONDUIT CROSS SECTIONS	STANDARD DETAIL 609 SHEET 1 of 1