CITY OF HOLLISTER

DESIGN STANDARDS
STANDARD SPECIFICATIONS
STANDARD PLANS

NOVEMBER 2019 UPDATE

City of Hollister
Development Services, Engineering Division
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DESIGN STANDARDS

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DESIGN STANDARDS

SECTION 1 GENERAL

1.01 PURPOSE

The purpose of these Design Standards is to provide certain minimum standards for the design of public works improvements within the City of Hollister or any facilities owned or to be owned, maintained, and/or operated by the City of Hollister, Hollister Redevelopment Successor Agency, or Home Owner's Association. Any items which are not included in these Standards shall be designed in accordance with the State Traffic Manual, The City of Hollister Standard Specifications and Plans, City of Hollister Subdivision Ordinance and/or Zoning Ordinance as defined below, or as directed by the City Engineer.

1.02 DEFINITIONS

In these Standards, the intent and meaning of the terms that are used shall be as defined:

A. CALTRANS DESIGN MANUAL - Shall mean the State of California Department of Transportation Highway Design Manual, latest edition, unless otherwise stated.

B. CALTRANS SPECIFICATION - Shall mean the Standard Specification of the State of California Department of Transportation, latest edition, unless otherwise stated.

C. CALTRANS STANDARD PLANS - Shall mean the Standard Plans of the State of California Department of Transportation, latest edition.

D. CITY – Shall mean the City of Hollister, a municipal corporation.

E. CITY ENGINEER – Shall mean the City Engineer of the City of Hollister, California.

F. CITY STANDARD PLANS AND SPECIFICATIONS – Shall mean the Standard Plans and Specifications of the City of Hollister.

G. DESIGN ENGINEER – Any person or persons, firm partnership, or corporation legally authorized to practice Civil Engineering in the State of California who prepares or submits improvement plans and specification to the Development Services Department – Engineering Division of the City of Hollister for approval.

H. DESIGN – Shall mean street alignment, grade, geometric section, structural section; sanitary sewer alignment, grade, size; water system alignment, size, valving, fire hydrant location; storm drain alignment, grade, size and miscellaneous improvements as required by the City Engineer.

I. DEVELOPER - Shall mean any person, firm, corporation, partnership or association engaged in the development /improvement of property in part or in whole by the placing of any improvements thereon, whether the property was previously developed in whole, in part, or at all.

J. EASEMENT - Shall mean an easement dedicated to the City, to the Public or to Public Utilities which shall be continuing and irrevocable unless formally abandoned.

K. GEOTECHNICAL REPORT - Shall mean a report prepared by any person or persons, firm, partnership, or corporation legally licensed to prepare "Geotechnical Reports" in the State of California.

L. GREENBOOK - Shall mean the Standard Specifications for Public Works Construction as published by APWA, latest edition.

M. IMPROVEMENTS - Refers to street work, sidewalks, curbs, gutters, driveways, water mains, sanitary sewers, storm drains, public utilities, landscaping, fences, and miscellaneous improvements to be installed by the developer on land to be used for public right-of-way.

N. MANUAL ON TRAFFIC CONTROL - Shall mean the "California Manual of Uniform Traffic Control Devices, (Ca MUTCD) Department of Transportation", latest edition, unless otherwise stated.

O. STATE MATERIAL MANUAL - Shall mean the California Test Methods (CTM) of the State of California, Department of Transportation (Caltrans), Transportation Laboratory (Trans Lab), latest edition, unless otherwise stated.

P. SUBDIVISION ORDINANCE - Shall mean Title 16 and amendments thereto of the Hollister Municipal Code as adopted by the City Council of the City of Hollister.

Q. SURVEYOR – Any person or persons, firm, partnership, or corporation legally authorized to practice Land Surveying in the State of California who prepares or submits Final Maps, Parcel Maps, Lot Line Adjustments, Records of Survey, and any other surveying services to the Development Services Department – Engineering Division of the City of Hollister for approval.

R. ZONING ORDINANCE - Shall mean Title 17 and amendments thereto of Hollister Municipal Code as adopted by the City Council of the City of Hollister.

1.03 REVISIONS AND AMENDMENT PROCEDURE

The City of Hollister Design Standards, Standard Specifications, and Standard Plans are intended to be a comprehensive document that can be responsive to innovations in both materials and procedures in the design and construction of public works improvements. To this end, the following procedure for revising and amending this document is provided.

1) Requests for amendments shall be submitted in writing to the office of the City Engineer. This request shall include justification and any data necessary for proper review.

2) Periodically, the City Engineer will compile and review requests submitted, and other amendments initiated by the City. A draft of all suitable amendments will then be prepared and circulated to interested parties for comment. The City Engineer will receive and consider such comments prior to rendering a determination on proposed amendments.

3) This procedure shall not limit the City Engineer's authority to implement policies, or interrupt the existing Design Standards, Standard Specifications, and Standard Plans on behalf of the City. Similarly, the City Engineer may temporarily implement an amendment when the interest of the City necessitates such action, or as a means of gathering additional information during a review and comment period.

4) All amendments approved by the City Engineer will be included as a supplement to the document. On a yearly basis, these amendments shall be compiled and incorporated, as revisions, into the document. The City Engineer is authorized by Resolution No 2013-47 to make revisions to the City’s Design Standards, Standard Specifications and Standard Plans on an ongoing basis.

SECTION 2 CONSTRUCTION PLANS

2.01 GENERAL

Complete plans and specifications for all proposed improvements including any necessary dedications and easements shall be submitted to the Development Services Department - Engineering Division for approval and must receive the required approval prior to the beginning of construction of any such improvements. This shall apply where it is the intent that maintenance responsibility for any portion of such improvement will be transferred to the City of Hollister or an Owners Association. Such plans shall be prepared under the direction of a Registered Civil Engineer in accordance with the provisions of "Professional Engineer's Act" Chapter 7 - Division 3 of the Business and professions code, relating to the practice of Civil Engineering.

Any changes or deviations from the City of Hollister Standard Plans and Specifications or from these Design Standards shall be called out in the submittals. Written prior approval from the City Engineer shall be obtained by the designer. If a set of improvement plans have been signed by the City Engineer and changes by the designer to the City of Hollister Standard Plans and Specifications and these Design Standards have not been called out and approved in writing, the developer will be responsible for meeting the requirements of the City of Hollister Standard Plans, Specifications, and Design Standards at no cost to the City of Hollister.

A) Right-of-Way Policy

The right-of-way policy requires that all public utilities including, public sewers, water facilities and storm drainage be in easements or public street rights-of-ways which are granted or dedicated for such use. In the case of public right-of-way for streets, further dedication is not necessary.
Easements for City owned or maintained utilities shall meet both of the following width criteria:

1. Minimum width of any easement shall be 15 feet for one utility, and a minimum width of 5 feet shall be added for each additional utility line; or easements shall have a minimum width in feet equal to the required trench width according to the standard plan for trench backfill plus 2 additional feet of width for every foot of depth of the pipe as measured from the bottom of the trench to finished grade, which ever yields the greater width.

2. All sewer pipe installation shall comply with all separation requirements as set forth within these standards and as required by our Standard Plans, as well as applicable State of California, Department of Health Services Regulations.

2.02 PREPARATION

Construction plans and specifications shall be prepared in accordance with the following requirements:

Development Services Department – Engineering Division recommends that a pre-design meeting be held to identify issues and deviations to these Design Standards and to have an understanding of the requirements of the City of Hollister.

A. Dimensions – Final construction plans shall be clearly and legibly drawn or plotted in ink on Mylar film (minimum 3 mil thickness) 24 by 36 inches with a 1-1/2 inch clear margin on the left edge and 1 inch margins on all other edges. All text shall be a minimum 1/8 inch if handwritten, 1/10 inch if done in type. Plans submitted for review shall be printed or plotted on bond paper with black lines and if necessary shades of grey.

B. Scale - Horizontal scale shall be a minimum of 1" = 40'; vertical scale shall be a minimum of 1" = 4'. Other scales may be used when approved in writing by the City Engineer in advance of plan preparation.

C. Form

1. Title Sheet, Note Sheet(s), and Detail Sheet(s)

a. Name and, if provided, number of Project. Subdivision Submittals shall have the name and the tract number of projects clearly stated on this sheet.

b. Vicinity Map with North Arrow

c. Index of Sheets: if sheets are skipped because of phasing or deletion of sheet prior to final approval, the phrase “NOT USED IN THIS SET OF PLANS” shall be listed with the skipped sheet number.

d. Signatures required (allowance for stamps shall be provided – 2” square area)

1. City Engineer on an approved Signature Block on title sheet with the approval statement on the cover sheet. A pre-printed seal shall not be used for the City Engineer.
2. Design Engineer on an approved Signature Block on the title sheet and each sheet in the plan set. Registration number shall be included on each sheet.
3. When in Sunnyslope Water District’s water service area, the District Engineer and the District’s signature block shall be provided.
4. When Fire Hydrants are proposed, the City of Hollister Fire Department’s Representative signature on an approved signature block approving location of the fire hydrants.
5. When the project is within the County of San Benito’s jurisdiction, the County Engineer and the County’s signature block approving construction within the County area of control.
6. When other Design Engineers are involved in the project and their plans are part of the approval set, the other Design Engineers shall sign their respective plan

sheets and at a location on the title sheet referring to the appropriate drawings. (i.e. traffic signal plans, landscape plans, structural plans, etc.)

e. Plan view showing the entire development with street right-of-way layout (Scale: 1" = 100'), lot numbers, street names, street lights, fire hydrants, sheet index, and other miscellaneous improvements to be installed. This plan may be provided on a separate sheet if the project size does not allow it to be shown on the Title Sheet as required.

f. Complete legend and abbreviations list.

g. Typical street section for each varying width street with dimensions. (If space does not allow for these sections on the title sheet, a separate sheet may be used.

h. Reference to City Datum Bench Marks and the "Basis of Bearings."

i. Permanent City horizontal and vertical control monuments used for survey control and all temporary bench marks used to establish the surface conditions.

j. General and special notes relating to construction methods and Items. See Appendix A for a list of typical notes used in subdivision construction.

k. Geotechnical engineer's address and telephone number, and a reference to the site specific geotechnical report(s).

l. Date Completed

m. Design Engineer's signature, registration number and expiration date, on all sheets.

n. Owner's/Developer's name, address and phone number.

2. Street Plan and Profile

a. Plan views of each street to be improved shall be shown on separate sheets indicating existing improvements and contours/elevations within 50' of the project boundary, proposed improvements and future improvements, if known. Any and all existing utilities shall be accurately located (potholed if necessary), prior to submittal. The drawings shall depict the full right-of-way width along the full frontage of the site, where improvements are proposed and shall include sidewalk, curb, gutter, driveways, sewer mains, water mains, water service and sewer lateral locations, storm drains, manholes, valves, fire hydrants, perimeter sound walls and perimeter fencing, street signing and pavement markings, barricades, monuments, survey stationing along centerline of streets, face of curb data for all curves and other data as required by the City Engineer The work to be done on the above items shall be clearly and fully specified on the plans. The survey centerline stationing shall increase from left to right with the north arrow pointing either towards the top or left edge of the sheet. All stationing shall be a continuation of existing improvement plans where possible and full use of existing

datum and stationing information will be utilized. Each plan line shall be identified. The scale shall be provided on each sheet with a scale bar.

b. Profile view of each street shall be shown immediately below or above its plan view. The profile shall include existing and proposed grade lines, sewer mains, storm drains, water mains, public utility mains, all utility crossings, and top of curb or centerline grades. Discrete elevations shall be shown on top of curb, ER's, at grade break points, manhole and catch basin inverts and rims, and water main crossings with other utilities. Each profile line shall be identified.

c. Subdivision Improvement Plans shall in addition to the above information contain discrete top of curb elevations at each lot line shown in the plan view.

d. Profiles of all curb returns, cul-de-sacs, and knuckles shall be provided.

3. Site Development Plan – (site development plans to be broken down to: a) Site Topography and Demolition, b) Grading and Drainage, c) Site Utility, d) Signage and Striping, e) Erosion Control (Construction Storm Water Control Plan).

a. Site development plans shall include utility structures (including fire hydrants and street lights), building pad, adjacent land drainage, driveway size and centerline station, existing and proposed contours, existing and proposed trees, existing and proposed water and sewer services, septic tanks and leach fields, wells, ditches, and other landmarks important in the construction of the improvements. In addition, adjacent land grades shall be shown for a minimum of fifty (50) feet from the project boundary.

b. Subdivision improvements shall contain the above information as well as individual lot drainage patterns, in addition, discrete elevations depicting proposed lot grading shall be shown to the project boundary or beyond (as necessary): including any unusual features such as retaining walls, slopes, and existing and proposed fences. Retaining wall calculations and details are to be provided by a licensed engineer and submitted to the Building Department for review, approval and permit issuance.

4. Landscape Development Plans

Sufficient information for defining the scope of work for each individual project must be developed and submitted in a format compatible with the improvement plans. Sheet size and material, drawing scale, clarity, and utility information must be coordinated with the Improvement Plans.

The design must be coordinated with the City of Hollister Streetscape Improvement Standards and the City Landscape Architect and shall include planting plans, irrigation plans and construction notes and details.

Where only a portion of a Block is to be developed and the project boundary ends in the interior of a Block, a conceptual plan shall be developed for the entire Block and the limits of the

project's facilities determined. Specific requirements for defining the scope of work include but are not limited to the following:

5. Delineation of the Sound wall

a. Design and Layout

Basic information is required on the Civil Design Plans showing where and how structural sound walls are proposed to be placed. This information shall show top of wall, bottom of wall, layout and if the wall will be retaining, and if retaining, how much soil will the wall retain. The information shall show proposed design with a detail showing elevation and special design elements. Sound walls requires that specific dimensioning including reference dimensions for panel lengths and articulation, including depths of indentations and height changes; pier locations, including depths, sizes, and location. Where a table is being used to identify the size of footings required, the layout shall contain references sufficient to identify the necessary depths at each pier location. Special sections such as short panels or retaining walls, partial panels, and 3-foot high walls at intersection returns shall be clearly identified and dimensioned.

Wall thicknesses shall be identified in general and where differences occur. Note: Walls shall be of a 3.5" minimum thickness, when measured at the narrowest point. Terminations at project boundaries or phase lines shall be designed to end on a full panel, whether it is an indentation panel or a panel parallel to the street centerline.

b. Structural Calculations

Calculations (as well as any manufacturers detail sheet) are required for the sound walls and shall address ordinary as well as special conditions. Calculations (and detail sheets) shall have a wet signature and shall be coordinated with the soils investigation findings for foundation requirements.

c. Shop Drawings

Shop drawings shall be submitted showing specific information to the wall with the Design Engineer’s wet signature and seal affixed to the shop drawings. These shop drawings will be reviewed and approved when ready. They shall be submitted prior to construction so that appropriate review can take place.

6. Street Light and Fire Hydrant Layout

a. Improvement plans shall include the existing and proposed location of fire hydrants and street lights for the site and shall depict all existing and future locations within 300 feet of the site boundary. The City Engineer shall determine final locations.

b. The improvement plans shall reflect the approved street light layout and include service points, pull boxes, wattage of luminaries, and pole numbers.

2.03 SUBMISSION

A. General requirements and fees

All submittals to the Engineering Division shall be accompanied by a transmittal letter clearly identifying the contents of the submittal. The initial submittal shall include the Engineering Plan Check and Inspection Fees as identified by the Department prior to submittal.

B. Submissions for Engineering Department Review – Development Projects

1. Initial submittals to the Development Services Department – Engineering Division for review shall contain a cover letter requesting review of the project and an improvement plan check list completed by the design engineer. The letter shall be accompanied by a copy of the Planning Commission Approval Notice or other document which requires the review by the Engineering Division (i.e. the approved City Resolution with conditions of approval, annexation resolution and other agency approval documents).

2. Three (3) sets of construction plans shall be submitted for checking to insure compliance with these Design Standards and the City of Hollister Ordinances. Submitted plans shall be accompanied by specifications, test data, materials list and engineers cost estimate, drainage calculations, sewer calculations, geotechnical reports, pavement (structural section) calculations, storm water management plans, easement and right-of-way descriptions, and other materials as itemized by applicable approval notices and as requested by the City Engineer. The construction plans shall conform to existing City of Hollister improvements as well as special call out section on the plan which show what has been granted exception from City Standard Specifications and Plans, and Design Standards.

C. Submissions for Engineering Department - Subdivision Projects

1. The Design Engineer shall submit a checklist (see Appendix B for typical form) with the required items for the Initial Submittal.

2. A current title report (three months or less) shall be submitted with the final map. The title report shall include a legal description of the entire property being divided.

3. Closure calculations shall be provided at the time of map check submittal. All calculated points within the map shall be based upon one common set of coordinates. All information on the map shall be directly verifiable by information shown on the closure calculation printout. The points of beginning shall be clearly defined and all lot acreages shall be shown and verifiable from information shown on the closure calculation printout. Documentation including all pertinent deeds, records and references shall be included.

4. Earthwork calculations shall be provided on the grading plans. Calculations shall be accompanied by an area map showing contours and section location or quadrant layout. Calculations shall include a listing of areas tabulated with results on the right-hand margins.

5. A reproducible map (lot sheet(s) only) or other scaled (40, 50, or 60 feet to the inch) lot schematic/street plan, illustrating all existing street lights and fire hydrants within 300 feet of the subdivision boundary, shall accompany the submittal.

6. Geotechnical reports shall be submitted in 8.5" x 11" bound folders. The report shall have a letter from the soils engineer accompanying it, with a current (within six months) date to substantiate its validity. The analysis must at a minimum include a map of the subject area showing proposed and existing streets, contours and location and type of soils samples obtained. The results of all field data and laboratory tests shall be included.

7. Design for the proposed street sections shall be part of the submittal. Street structural section design shall include recommendations for: natural subgrade, sub base, base and pavement compaction and thickness to achieve design strength.

8. Six bond copies of the tract layout, (for street name review) shall be included.

D. Subsequent Submittals for all Improvements

Should there be required alterations or revisions to the plans submitted, one copy shall be returned by the city with the requested clarifications indicated thereon and/or in an itemized checklist. At such time as the design engineer has made the necessary revisions, the plans shall again be submitted for further plan checking. Plan checking shall continue until the Designer has met all of the conditions as set forth by the Planning Commission and all other concerns of the City with regards to the project. Having met conditions and concerns of the City a Final Submittal Checklist shall be issued to the Developer, listing all the items required for final approval signatures.

Upon each resubmittal, the Design Engineer shall submit a letter that will address each comment that was made in the previous plan check. If a meeting was held with City Engineering Staff that removed or modified plan check comments, that meeting shall be documented and explained in the resubmittal letter. If an outside plan checker was used, a letter shall be drafted explaining the exceptions, accommodations, and/or modifications to the plan check. This letter shall be in a form that will be addressed to the outside plan checker and be from the City Engineer.

Additionally, the City requests a CD or Memory Stick with a USB plug containing electronic files of improvements and map information in .pdf format, be submitted prior to approval. (See Appendix C for the contents of electronic files). Plans shall not be considered approved until all signatures have been obtained with the final signature being the City Engineer in the approval blocks on the title sheet. There shall be no changes permitted to an approved set of plans unless such changes, corrections or additions are resubmitted to the City Engineer for approval as previously described for all submittals. Excepted from approval are any features of the plans that are contrary to, in conflict with, or do not conform to any California State Law, City of Hollister Ordinance or Resolution: even though such errors, omissions or conflicts may have been overlooked by the Engineering Division. After formal approval of the plans by the City Engineer, the original mylar with the signatures may be checked out to the Design Engineer only, in which they will make three (3) or four (4) bond copies as directed by the City Engineer, and return the original mylar with the copies to the Engineering Division. The original mylar becomes the property of the City of Hollister and will be filed in the Engineering Division office. As-built or record drawings shall be filed with the City Engineer's Office after completion of the project and before the City accepts the project for maintenance. The warranty period will not begin until the approved as-built or record drawings are on file with the City.

Prior to installation of all equipment and materials, they are to be inspected by the City. The City Engineer reserves the right to have the developer submit manufacturer's specifications and/or required Operation and Maintenance Manuals on any or all equipment and material to be used on the project.

SECTION 3 STREET DESIGN

3.00 GENERAL

Geometric and structural design shall conform to City of Hollister Standard Plan A-1. Streets shall be classified according to the listing supplied in Appendix D. Any deviation from the standard shall require the approval of the City Engineer.

3.01 GENERAL

If subgrade has an "R" value of 10 or less, alternate structural sections designs such as full depth asphalt or sections using geotextile fabric shall be prepared and submitted with the more traditional flexible pavement design of asphalt over aggregate base. The underground utilities shall be designed with sufficient cover to allow use of the alternate sections. Where new streets meet existing, new construction will be to the project boundaries and then continued beyond as needed for conforms which meet all standards for new streets, including cross slope and vertical curve criteria. Conforms shall have sufficient detail to identify the limits of work and the intention of the finished product. Conform paving to existing half streets shall describe the existing street as fully as the new street with elevations at edge of pavement, top of curbs, and centerlines as well as the resulting and existing cross-slopes. Cross-sections shall be provided at 50 feet intervals, showing the relationship of the existing streets to proposed streets.

3.02 GEOMETRICS

A. Street centerlines shall intersect at right angles with a variance of plus or minus 5 degrees. For special circumstances the City Engineer may approve a variance of up to 15 degrees. This approval must be secured in writing in advance of plan submittal.

B. Curb line radii shall be tabulated on the construction plans. Numbering shall not repeat from sheet to sheet. Curbs shall be minimum 30-foot radii at all intersections, except intersections with highways, major thoroughfares, and major collectors which shall be a minimum of 40 feet.

C. Gutter flow line grades shall have a minimum slope of 0.004 feet per foot (0.4%) unless otherwise permitted in writing by the City Engineer.

D. Cross slope on all streets shall be 2% unless a deviation has been previously approved by the City Engineer.

E. The minimum centerline vertical curve length allowable at the intersection of two grades of a roadway profile shall be 100 feet. Actual design of the vertical curve shall be based on the design speed of the street and stopping sight distance as determined by the Caltrans Design Manual and the City Engineer. However, in general, vertical curves may be omitted where the algebraic difference in grades does not exceed 1.0 percent. Design guidelines may be modified with the approval of the City Engineer.

F. The minimum stopping and passing sight distance over any segment of the roadway on residential, collector or thoroughfare streets shall conform to the Caltrans Design Manual.

3.03 APPURTENANCES

A. GENERAL

1. Miscellaneous Improvements

Roadway improvements are to be completed across the full frontage of each phase of a development or as determined necessary by the City Engineer.

2. Subdivision Improvements

Roadway improvements are to be completed across the full frontage of each and every lot within a subdivision or subdivision phase and beyond, as directed by the Tentative Map Conditions of Approval, and as determined by the City Engineer.

B. Driveways

1. No driveway shall be permitted within 5 feet of a fire hydrant or street light or within 10 feet of a curb return.

2. The maximum width of a commercial driveway is 42 feet, and 30 feet for a residential driveway. The above widths include curb height transitions at each side of the driveway measured at the full curb height of six (6) inches.

3. Spacing

a. Miscellaneous Improvements

The distances between driveways serving the same site shall be maintained at a minimum of 250' for highways, 250' for major thoroughfares, and 250' for major collectors. In all cases speed, stopping distances, passing lanes and visibility shall be considered and allowed for in determining spacing between driveways. Existing and proposed driveways shall be shown on the plans. Where cross jurisdictions occur, coordination between Agencies shall be requested in writing. Approvals or copies of approvals, from agencies other than the City of Hollister shall be forwarded to the Engineering Department.

b. Subdivision Improvements

The minimum distance between driveways serving the same parcel shall not be less than 18 feet as measured at the full height of the six (6) inch of the face of curb, excluding curb height transitions. (See curbside parking)

4. All driveways shall conform to the City of Hollister Standard Specifications and Plans.

C. Curbside Parking

1. Miscellaneous Improvements

Where allowed, curbside parking shall be maximized by prudent location of driveways, utilities, and structures.

2. Subdivision Improvements

Not more than 40 percent of the frontage of any parcel shall be devoted to driveways. Lots fronting on cul-de-sac bulbs are exempt from this requirement Driveways in cul-de-sacs, knuckles, and on streets serving corner lots shall be shown in full on the plans.

D. Valley Gutters

Valley gutters will be allowed within the public right-of-way or public easement only by prior approval of the City Engineer.

E. Sidewalks, Curbs and Gutters

1. Monolithic sidewalks shall be a minimum of 5.5 feet wide as measured from face of curb. Monolithic sidewalks will only be allowed when such improvements are existing and with the approval of the City Engineer.

   Separated sidewalks are required in new construction for subdivisions and developments. The Parkway shall be a minimum of 5 feet wide. Streets trees, fire hydrants, water meters, and street lights shall be designed to be placed in these parkways.

2. Where sidewalks do not extend to the full width of the right-of-way the remaining open land shall be graded at 2% positive slope from the face of curb to the property line.

3. Sidewalk, curb and gutter shall be of the design as shown on the Standard Details or as required by the City Engineer.

4. Accessible Curb ramps shall be designed and provided at all necessary pedestrian crossings and street intersections. Design shall be in accordance with latest updated Caltrans Standard Plans (A88A) and Federal, State, and local requirements.

F. Survey Monuments

1. Miscellaneous Improvements

Where required by the City Engineer, in order to preserve survey monuments, monuments shall be shown on the construction plans at locations consistent with the monument system of the City of Hollister.

2. Subdivision Improvements

All survey monuments which are shown on the Final Map as new, or replacements, shall be depicted on the construction plans as new or existing monument boxes at the same locations as they are located on the Final Map and as follows:

a. On roadway centerline at intersections.

b. At beginning and end of each horizontal curve on the centerline or points of intersection when necessary.

c. In a number and location sufficient to retrace the survey and at all locations as required by the City Engineer.

d. Lot line extensions shall be clearly and permanently marked in the concrete at the top of curb.

3. General

a. All monuments set shall be as shown on the Final Map or Parcel Map and shall clearly show the registration number of the licensed Civil Engineer if qualified to practice land surveying, or Land Surveyor who prepared the final or parcel map.

b. Rear yard corner monuments shall be a ¾ inch iron pipe tagged with the registration number of the licensed Civil Engineer if qualified to practice land surveying, or Land Surveyor who prepared the final or parcel map. The rear yard monument may be omitted with the approval of the City Engineer when buildings are constructed a part of the development of the subdivision. When rear lot corners are omitted, building placement shall be set by a land surveyor and certified that the building foundation is within building setbacks. If construction of the buildings is delayed by more than one year, rear corner monuments may be requested to be set and tagged by the City Engineer.

G. Signing, Striping and Barricades

1. General

All signing, striping, and barricade construction shall be proposed by the developer, reviewed by the City of Hollister, with final approval granted by the City Engineer. Plans shall provide for installation of signing, striping, and barricades, per the City of Hollister Standard Plans and Specifications and shall be based on the CA MUTCD latest edition.

2. Signing and Signalization

Signs and Traffic Signalization shall be installed as required in approved CEQA documents, conditions of approval or as follows:

a. Highways
As directed by the City Engineer and other Agencies having jurisdiction.

b. Major Thoroughfares
As directed by the City Engineer and the San Benito County Public Works Department if within their jurisdiction.

c. Major Collectors
As called for in the latest Traffic Circulation Element of the General Plan and as directed by the City Engineer and San Benito County Public Works Department if within their jurisdiction.

d. Collectors, Industrial Use, Interior Streets, Cul-de-sac, and Alleys:
Stop bars and Stop legends with street name signs as described in the City of Hollister Standard Plans.

3. Barricades and street ends

Barricades, temporary turn-arounds, and street terminations shall be provided in the right-of-way whenever full width improvements are not provided at street terminus, cul-de-sacs which are adjacent to a property line (within 20'), and along the line of any improvements which encroach into the Public right-of-way.

H. Easements

All public utilities which go through private property shall be provided with the minimum easements as set forth in Section 2.

Where roadway construction is required offsite and outside of the dedicated public right-of-way; additional right-of-entry and construction easements shall be provided.
Where street easements for the construction of roadways are required, the Developer shall acquire additional 20' construction easements on either or both sides of the Street easement or R.O.W. Easements shall be permanent when lying in future right-of-ways or temporary if outside, as the situation requires. Legal deeds and descriptions for the easements shall be submitted for City approval along with the initial submittal.

Where streets abut adjacent County Roads and State Highways, the Developer shall acquire encroachment permits from the appropriate Agencies to do the proposed work. The Developer shall submit the approval notices attached to the plan reviewed or copies of the same in conjunction.

All easements, existing and proposed, shall be depicted and labeled accordingly on the construction documents.

SECTION 4 STORM DRAINAGE

4.01 GENERAL

Storm drain design shall be designed to comply with the latest Permit issued by the Central Coast Regional Water Quality Board.

These Design Standards are intended to insure that watercourses and surface water laws are complied with and that runoff from storms up to the 100-year return frequency are conveyed through storm facilities and disposed of in a manner which protects public and private improvements from flood hazards.

All storm drainage facilities shall include provisions for future upstream development and no development shall discharge at a rate which exceeds or causes flows to exceed the capacity of any portion of the existing downstream system.

Calculations for storm drainage design within a development as well as calculations for runoff generated by upstream areas within the contributing watershed shall be submitted to the City Engineer for approval.

All proposed improvements 50 acres or less in size shall be designed such that, for the 10-year storm, there is no surcharging in any conduit unless written approval is granted by the City Engineer. In those special cases where surcharging is permitted, provide a minimum of 1.0 feet of freeboard as measured down from the gutter flow line, see Table 4.1 for other requirements. When in multi-jurisdictional areas, with requirements under the Federal Emergency Management Agency (FEMA) and/or the Department of Water Resources (DWR) Division of Safety of Dams, and/or other Flood Control Districts and Agencies administrating flood water control policies; the requirement which is most stringent shall hold.

Containment of flood waters within the public right-of-way is required at all times. Flood waters shall be confined to streets or other approved right-of-ways by grading, or alternative means acceptable to the City Engineer. In no instance shall an improvement be designed such that flood waters reach a depth of 0.70 feet, as measured from the gutter flow line. A 100-year storm shall be contained in the right-of-way. The design of all bridges, box culverts, levees, detention basins, spillways, and other applicable structures shall comply with the latest FEMA and DWR Division of Safety of Dams regulations.

At intersections of pipes, the downstream pipe shall have a crown elevation which is equal to the crowns of all upstream connecting pipes. Pipe diameters shall not decrease in the downstream direction. At manholes where pipes are laid through the base, the slope shall be maintained through the base. At manholes where pipes intersect at an angle of 30 degrees or more and the same pipe size of the inlet pipe is at the outlet, the flowline shall drop 0.10’ through the manhole to provide drainage at all times.

A. Drainage Pond Policy

1. All design of drainage facilities shall conform to City adopted Ordinance No. 1177 and the current permit of the Central Coast Regional Water Quality Control Board.

2. Open ponds may be allowed on a case by case basis as approved by the Planning Commission and shall conform to section 4.03, D. All requests for ponds shall be accompanied by engineering and design criteria that demonstrate adequacy and feasibility of the proposed facility. Percolation ponds shall not be authorized unless it can be determined, based upon engineering and design criteria, that the pond will not be detrimental to the public health, safety and welfare of the project area and the City; and not be detrimental because of maintenance and design criteria. Measured percolation testing data shall be submitted to the City Engineer as part of the pond design study. Every effort shall be made to design underground ponds in accordance with City Ordinance 1177.

3. All open ponds shall be fenced and landscaped, as approved by the Planning Commission, to maximize public safety and to minimize visual blight.

4. All basins/ponds shall be maintained as agreed upon during the project approval process. This may be by one of the following methods:

    a. When in a Home Owner Association (HOA) and taking association area water – financing shall be provided by the HOA and all maintenance responsibility shall be the HOA's responsibility and include maintenance of any landscaping, irrigation, weed control, maintenance of the drainage features, removing and replacement of amended soil and improving the basin to preform as designed. The developer of the subdivision shall enter into a deed restriction that will provide access to City of Hollister Forces for inspection and action if necessary.

    b. When receiving drainage waters from public areas – financing shall be provided through a Communities Facilities District (CFD) designed to provide funds for maintenance of the basin that includes landscaping, irrigation weed control, maintenance of the drainage features, removing and replacement of amended soil and improving the basin to perform as designed.

    c. When receiving drainage waters from a regional basis consisting of multiple subdivisions – financing shall be provided through a Communities Facilities District (CFD) and be included in the calculations from each subdivision and be designed to provide funds for maintenance of basin that includes landscaping, irrigation weed control, maintenance of the drainage features, removing and replacement of amended soil and improving the basin to perform as designed.

    d. When receiving drainage waters are from a single parcel of property – the property owner shall finance and maintain the basin as required in the approved plans. The maintenance shall include landscaping, irrigation weed control, maintenance of the

drainage features, removing and replacement of amended soil and improving the basin to perform as designed.

5. Ponds shall comply with the hydraulic requirements as stated in this section and as modified in Section 4.03, D.

6. All ponds having outflow shall not exceed the pre-development rates or the capacity of the natural channels that the flow will be conveyed in: whichever is less.

B. Subdivision Lot Grading

All Grading shall conform to the "Grading and Best Management Practices Control Ordinance" HMMC 15.24 Ordinance and Building Code.

1. For the purposes of providing positive drainage on and from the subdivision lots to the streets minimum slopes shall be held for these areas:

    a. Right-of-ways shall have a constant 2% slope from the center line of the street to the lip of gutter of the street. The 2% grading shall extend from the top of curb to the property line.

    b. Subdivision Lots shall have a minimum of 1% slope from the furthest rear lot corner to the front lot corner with a maximum slope of 2:1 (or as recommended by the project geotechnical engineer) in any portion of the front yard setback. Rear and side yards shall have a maximum slope of 2:1 (or as recommended by the project geotechnical engineer). The toe of slope shall be at the setback from the proposed building to provide the required usable yard. Slopes shall be overbuilt by 1 foot to allow for fence construction and prevent lot to lot drainage.

    c. Where building pads are higher than rear lot corners the slope from said `pad' to the rear property line shall not exceed the slope of the rear to front property line. In no case will drainage be allowed to drain from one private lot to another. Overland drainage shall be provided for each lot.

    d. Where sound walls and landscaping is required the allowable slopes are; 4:1 (horizontal:vertical) maximum from back of sidewalk to the sound wall.

    e. Where the sound wall is in a rear yard and the building pad is at a higher elevation than the toe of wall the sound wall the maximum rear yard slope shall be 2:1 (horizontal:vertical) for any portion of the rear yard. When this occurs, every effort shall be made to drain the rear yard to the street frontage in front of the building unless approved by the City Engineer. Where the toe of the sound wall is higher than the building pad the typical rear yard grading requirements shall apply.

    f. Soundwalls and lot fencing shall not be allowed in any public easement.

C. Easements

All public utilities which go through private property shall be provided with the minimum easements as set forth in Section 2.
Publicly maintained drainage conduits, structures and channels, water lines and appurtenances, and sanitary sewer pipes and structures will not be allowed on private property unless they lie within a dedicated public easement. Where minor improvement of a drainage channel falls on adjacent property (such as day lighting a ditch profile) written permission from the adjacent property owner(s) for such construction shall be required. A copy of the document which grants said approval shall be submitted to the City Engineer for approval in conjunction with a Subsequent Submittal.

D. Water and Storm Sewer Separation

In order to minimize the hazards to public health which may occur due to accidental contamination of water supply facilities by tainted storm waters, the location and construction of water supply facilities and storm sewer facilities in close proximity to one another is regulated by the Regional Water Quality Control Board – Division of Drinking Water.

1. The required horizontal separation between water lines and storm drainage lines shall be in accordance with the Regional Water Quality Control Board – Division of Drinking Water requirements. Variances shall be obtained when the requirements cannot be obtained.

4.02 PREPARATION

Submittals for review are to be accompanied by all calculations and area maps necessary to describe the design.

Please submit a project narrative and drainage calculations for storm conduits along with a drainage area map clearly indicating all drainage areas, pipes, channels, manholes, catch basins, outfalls and any other pertinent information. These calculations are to be based upon the ultimate watershed development and shall include:

A. Topographic map showing the relationship between the proposed development/improvements and the remainder of the watershed, including acreages of all sub-areas.

B. Map of the proposed development indicating:

1. All applicable existing and proposed improvements.

2. Tributary area calculation and calculated flow at each inlet

3. The magnitude and direction (indicated by arrows) of flow in each pipe and flow to each structure contributed by its tributary area. All flow rates shall be in cubic feet per second (cfs).

C. Tabulation sheet which includes all of the below information and summarizes the design in a clear, concise manner.

1. Runoff coefficients and calculations for all areas where runoff was calculated.

2. Time of concentration and intensity of rainfall at each hydraulic structure.

3. Hydraulic grade line at each drainage structure.

4. Elevation of pipe inverts and the top of structure elevation, at each structure.

5. Slopes of all storm water conveyance structures and conduits.

6. Total flow in each pipe segment.

D. Construction drawings shall include:

1. Water surface elevations to be called out on profile view at each structure when surcharging has been allowed.

2. Pipe lengths, slopes and size

3. Material shall be called out for each segment where a change in material occurs.

4. All applicable existing and proposed improvements.

5. Elevation of pipe inverts at structures and the top of structures elevation at each structure.

6. Hydraulic Grade Line at each structure of surcharged segments.

7.

4.03 DESIGN

A. Design Storm

Table 4.1 shall be used to determine the required design storm for drainage calculations.

Table 4.1 Design Storm

Drainage Area	**Design Method**	**Storm Frequency**	**Comments**
Under 50 Acres	Rational Method	10 year event	No Surcharge allowed without written permission of the City Engineer
50 Acres to 200 Acres	Rational Method	25 year event	Surcharge allowed with minimum 1 foot of freeboard below ground surface elevation
Greater than 200 Acres	Unit Hydrograph	100 year, 24 hour event	See Tables 4.4 & 4.5
Detention Basin and	Unit Hydrograph	100 year, 24 hour	See Tables 4.4 & 4.5.

open Channel Improvements		event	Peak discharge from detention basin shall not exceed 90% of undeveloped peak flow

B. Storm Runoff

1. Rational Method of Estimating Runoff

Q = CIA where:
Q = peal runoff in cubic feet per second
C = runoff coefficient expressing the fraction of rainfall which appears as surface flow
I = rainfall intensity in inches per hour
A = the drainage in acres tributary to the design, point or points of concentration

2. Runoff Coefficients, C

Percent impervious for the site or individual drainage areas shall be calculated for the project. Runoff coefficients shall be selected from Table 4.2 based on percent impervious and Hydraulic Soil Group (HSG). Runoff coefficients may be interpolated to more precisely describe the development.

Table 4.2 Runoff Coefficient, C

Typical Land Use		Percent Impervious	Recommended C Value by Hydraulic Soil Group			
			A	B	C	D
RR	Residential Estate	10%	0.28	0.34	0.40	0.44
LDR	Low Density Residential	30%	0.41	0.45	0.50	0.53
MDR	Medium Density Residential	50%	0.54	0.57	0.60	0.62
HDR	High Density Residential	70%	0.66	0.68	0.70	0.71
MU	Mixed-use Commercial and Residential	75%	0.69	0.71	0.73	0.74
D-MU, GC	Downtown Commercial and Mixed-Use, General Commercial	80%	0.72	0.74	0.75	0.76
I/AS	Industrial/Airport Support	85%	0.76	0.76	0.78	0.78
OS	Open Space	5%	0.25	0.31	0.38	0.41
AG	Agriculture	5%	0.37	0.39	0.41	0.46

3. Time of Concentration t_c = Inlet time, plus conduit time

a. Inlet Time

1) Undeveloped Watersheds (TR-55)

Using $T_c = L/(60V)$

10 minutes $\leq$ Initial T_c

Where T_c = Time of concentration in minutes
L = Overland flow length in feet
V = Average velocity in feet per second.

2) Urbanized Watersheds

INITIAL T_c = 10 minutes ("roof to gutter" time) plus the length of time required for the water to flow from the upper most part of the drainage basin to the initial point of concentration, ("gutter to inlet time")

b. Conduit Time

Conduit time is the length of time required water to flow from one point of concentration, or inlet, to the next. The calculated velocity must accurately reflect the hydraulic conditions, within the storm water system.

4. Rainfall Intensity, I
Based on:

a. for 10-year storm frequency:
$I_{10} = 5.78 (t_c^{-1/2})$

b. for 15-year storm frequency:
$I_{15} = 6.18 (t_c^{-1/2})$

c. for 100-year storm frequency:
$I_{100} = 8.13 (t_c^{-1/2})$

d. for other storm frequencies:
Refer to Table 4.3

Table 4.3 Rainfall Intensity

Frequency (year)	Ratio X I_{100}	Frequency (year)	Ratio X I_{100}	Frequency (year)	Ratio X I_{100}
2	0.48	15	0.76	100	1.00
3	0.54	20	0.80	120	1.02
4	0.58	25	0.83	150	1.05

5	0.62	30	0.85	200	1.08
6	0.64	40	0.88	250	1.11
8	0.68	50	0.91	300	1.14
10	0.71	60	0.94	400	1.17
12	0.73	80	0.97	500	1.20

5. Hydrograph Method

Curve Number (CN)

Typical CN for the City of Hollister are tabulated in Table 4.4. CN may be calculated using TR-55 or other acceptable method. If another method is used, the designer shall provide calculations and references used.

Table 4.4 Typical Curve Number, CN

Typical Land Use		Percent Impervious	Runoff Curve Number by Hydraulic Soil Group			
			A	B	C	D
RR	Residential Estate	10%	53	64	76	82
LDR	Low Density Residential	30%	77	81	83	85
MDR	Medium Density Residential	50%	83	86	87	89
HDR	High Density Residential	70%	89	91	91	93
MU	Mixed-use Commercial and Residential	75%	91	92	93	94
D-MU, GC	Downtown Commercial and Mixed-Use, General Commercial	80%	92	93	94	94
I/AS	Industrial/Airport Support	85%	94	94	95	95
OS	Open Space	5%	70	74	77	81
AG	Agriculture	5%	69	76	83	86

6. Rainfall Hyetograph

A rainfall hyetograph is a precipitation pattern that illustrates the depth of rainfall over time for a geographic region. For the purpose of hydrograph-based analysis, typical storm duration is 24-hours. Table 4.5 shall be used to develop a 24-hour rainfall hyetograph. Note that Table 4.5 represents 5-minute patterns, meaning that each of the rainfall fractions in the table represent repeated 5-minute increments for the listed time values.

Table 4.5 Fractional Rainfall for 24-Hour Design Storm, 5 Minute Patterns

Time Starting (Hour)	Fraction of Total Rainfall[1]	Cumulative Percent of Total Rainfall
0:00	0.1412%	1.69%
1:00	0.1294%	3.25%
2:00	0.3080%	6.94%
3:00	0.5667%	13.74%
4:00	0.5051%	19.80%

5:00	0.5272%	26.13%
6:00	4.7600%	35.65%
6:10	1.5540%	41.87%
6:30	1.0850%	48.38%
7:00	0.5177%	54.59%
8:00	0.2763%	57.91%
9:00	0.2302%	60.67%
10:00	0.3223%	64.54%
11:00	0.3799%	69.09%
12:00	0.2878%	72.55%
13:00	0.2993%	76.14%
14:00	0.2118%	78.68%
15:00	0.2353%	81.50%
16:00	0.2118%	84.05%
17:00	0.1177%	85.46%
18:00	0.1530%	87.29%
19:00	0.1647%	89.27%
20:00	0.1412%	90.97%
21:00	0.3412%	95.06%
22:00	0.2706%	98.31%
23:00	0.1412%	100.00%

1. Each rainfall fraction is repeated in 5-minute increments between the times listed in the table.

7. Rainfall Depth

Table 4.6 lists rainfall depths for 24-hour storms. These values are taken from NOAA Atlas 14, Volume 6, Version 2, for Hollister. In addition to the below rainfall depths, the designer shall consult the Post-Construction Stormwater Management Requirements by the Central Coast Regional Water Quality Control Board for additional requirements.

Table 4.6 24-Hour Design Storm Precipitation Depth

Return Period (years)	24-Hour Precipitation Depth (inches)
2	1.77
5	2.40
10	2.92
25	3.64
50	4.20
100	4.77

C. Hydraulic Capacity:

All storm water conveyance structures, unless otherwise stated herein or directed by the City Engineer, shall be designed to function without surcharging for purposes of determining hydraulic capacity. Capacity shall be determined under the following criteria.

1. Friction Losses:

The Manning equation should be used to calculate hydraulic profiles. The Manning equation is

$$Q = \frac{1.49\ AR^{2/3}\ S^{1/2}}{n}$$

where;

Q = the flow rate, or discharge in cubic feet per second (cfs)
n = the roughness coefficient of the particular channel or conduit
S = the slope, in feet per foot
A = the cross sectional area of the flow in the channel or conduit in square feet.
R = the hydraulic radius in feet

The losses due to friction may be determined by

$H_f = S \times L$

Where L is the length of conduit or channel

2. Roughness Coefficient, n:

Type of Surface	Manning's "n" Value
Polyvinyl Chloride pipe	0.011
High Density Polyethylene pipe	0.011
RCP	0.013
CMP	0.023
Earth Channels, Smooth Geometric	0.030
Concrete Lined Channels	
Smooth Troweled	0.013
Other	Refer to the "Handbook of Hydraulics" King & Brater

3. Transition Losses

At points of change in the hydraulic parameters of flow rate or section, the hydraulic grade line (HGL) should be calculated considering velocity heads and losses due to bends, entrances, exists, turbulence, etc. as well as friction losses. Many hydraulic programs calculate these losses automatically, but if not using a hydraulic program, transition losses should be calculated using energy losses expressed in terms of Kinetic energy.

$$h_L = KV^2/2g$$

K varies for different conditions including bends, elbows, joints, etc. Tables A & B below give values for determining K due to sudden expansions, sudden contractions and bend in pipes.

TABLE A

Value of K for Loss of Head due to Sudden Enlargement in pipes, from the formula $H = K (V_1^2/2g)$
d_1/d_2 = ratio of larger pipe to smaller pipe, V_1 = velocity in smaller pipe

	Velocity, V1, in feet per second												
d_1/d_2	2	3	4	5	6	7	8	10	12	15	20	30	40
1.2	.11	.10	.10	.10	.10	.10	.10	.09	.09	.09	.09	.09	.08
1.4	.26	.26	.25	.24	.24	.24	.24	.23	.23	.22	.22	.21	.20
1.6	.40	.39	.38	.37	.37	.36	.36	.35	.35	.34	.33	.32	.32
1.8	.51	.49	.48	.47	.47	.46	.46	.45	.44	.43	.42	.41	.40
2.0	.60	.58	.56	.55	.55	.54	.53	.52	.52	.51	.50	.48	.47
2.5	.74	.72	.70	.69	.68	.67	.66	.65	.64	.63	.62	.60	.58
3.0	.83	.80	.78	.77	.76	.75	.74	.73	.72	.70	.69	.67	.65
4.0	.92	.89	.87	.85	.84	.83	.82	.80	.79	.78	.76	.74	.72
5.0	.96	.93	.91	.89	.88	.87	.86	.84-	.83	.82	.80	.77	.75'
10.0	-1.00 1.00	.99 1.00	.96 .98	.95 .96	.93 .95	.92 .94	.91 .93	.89 .91	.88 .90	.86 .88	.84 .86	.82 .83	.80 .81

TABLE B

Value of K for Loss of Head due to Sudden Enlargement in pipes, from the formula $H = K (V_1^2/2g)$
d_1/d_2 = ratio of larger pipe to smaller pipe, V_2 = velocity in smaller pipe

	Velocity, V2, in feet per second												
d_1/d_2	2	3	4	5	6	7	8	10	12	15	20	30	40
1.1	.03	.04	.04	.04	.04	.04	.04	.04	.04	.04	.05	.05	.06
1.2	.07	.07	.07	.07	.07	.07	.07	.08	.08	.08	.09	.10	.11
1.4	.17	.17	.17	.17	.17	.17	.17	.18	.18	.18	.18	.19	.20
1.6	.26	.25	.26	.26	.26	.26	.26	.26	.26	.25	.25	.25	.24
1.8	.34	.34	.34	.34	.34	.34	.33	.33	.32	.32	.31	.29	.27
2.0	.38	.38	.37	.37	.37	.37	.36	.36	.35	.34	.33	.31	.29
2.2	.40	.40	.40	.39	.39	.39	.39	.38	.37	.37	.36	.33	.30
2.5	.42	.42	.42	.41	.41	.41	.40	.40	.39	.38	.37	.34	.31
3.0	.44	.44	.44	.43	.43	.43	.42	.42	.41	.40	.39	.36	.33
4.0	.47	.46	.46	.46	.45	.45	.45	.44	.43	.42	.41	.37	.34
5.0	.48	.48	.47	.47	.47	.46	.46	.45	.45	.44	.42	.38	.35

10.0	.49 .49	.48 .49	.48 .48	.48 .48	.48 .48	.47 .47	.47 .47	.46 .47	.46 .46	.45 .45	.43 .44	.40 .41	.36 .38

D. Detention Pond Hydraulics

1. General

a. Ponds shall be below ground where ever possible. Open ponds shall be excavated below natural ground with no levees.

b. Side slopes of open ponds shall not be less than 2-foot horizontal to one-foot vertical, or as recommended by the project Geotechnical Engineer. If retaining walls are constructed, the design shall be approved by the City Engineer.

c. Entire area of open ponds shall be enclosed with a 6-foot high chain link fence with redwood slats or approved alternatives such as tubular metal. The fence shall be located in conformance with setback requirements and shall provide a twelve-foot wide, aggregate base access path around the pond perimeter and between the fence and top of slope. A 16-foot access gate and twelve-foot wide, aggregate base road to the bottom of the pond shall be provided.

d. The pond shall be provided with a silting or stilling basin to remove silts and other debris from the water entering the pond. The basin design shall be approved by the City Engineer.

2. Hydrologic and Hydraulic design factors shall be as follows:

a. The design storm frequency shall be 100-year and the hydrograph method shall be used for calculations.

b. CN shall be calculated per section 4.03 B (5).

c. Infiltration rate or percolation rate shall be determined from percolation tests of the soils at the proposed pond site. The tests shall be performed by licensed, qualified, soils engineers and a report with test data, conclusions and a recommended infiltration rate shall be submitted, with the pond calculations, to the City Engineer, for approval. A factor of safety may be required by the City Engineer, if in his opinion the recommended infiltration rate is not substantially documented and or has not taken into consideration the long term effects of silts and other debris.

d. The area to be used in runoff calculations shall include all areas proposed for improvement and all existing improved and unimproved areas draining into the pond.

e. The pond shall be maintained by the City or by the Developer, under agreement with the City, depending on the circumstances.

f. Pond storage required, PS, shall be derived from hydrograph routing through the pond and outlet structure(s).

One and one-quarter foot (1.25') of freeboard shall be provided and shall not be included in the storage volume of the pond.

g. Overland outflow shall be measured at maximum head and in accordance with Pond Policy 4.01 A (7).

E. Pipe Material

The minimum allowable inside diameter of any storm drain pipe shall be 18 inches for trunk lines and 15 inches for inlet laterals. The pipe materials which may be used for storm drainage improvements within the City, City rights-of-way, and easements, shall be Reinforced Concrete pipe, Cast in Place pipe, High Density Polyethylene pipe, and Polyvinyl Chloride pipe (SDR 35.0) as specified by the City of Hollister Standard Plans and Specifications.

F. Velocities

Minimum velocities allowed in any trunk line shall be 2 feet per second when flowing 0.7 full. Inlet laterals shall maintain 2 feet per second for their ultimate flow.

G. Cover Requirements

All storm drain pipe shall be designed to allow a minimum of 2 feet of cover as measured from top of pipe to subgrade. If, for sound engineering reasons, 2 feet of cover cannot be obtained, the pipe shall either be encased in concrete or provided with a concrete cover as approved by the City Engineer.

1. No storm drain pipe which lies totally or in part within the structural section of a street will be allowed.

2. RCP - The following chart lists the minimum allowable classes of reinforced concrete pipe. For use in this chart, cover is defined as the distance from the top of pipe to the subgrade.

Cover in Feet	Minimum Class RCP
Less than 2.5	CL V (3000 D)
2.5 – 7.9	CL III (1500 D)
8.0 – 11.9	CL IV (2000 D)
12.0 – 17.0	CL V (3000 D)

3. CIPCP - Cast-in-Place concrete pipe shall have a minimum cover in conformance with the following.

a. Cast-in-place concrete pipe shall not be used if the subgrade surface is less than 24 inches above the top of pipe or a distance less than 1/2 of the outside pipe diameter, whichever is greater.

b. In each case the Design Engineer shall provide calculations substantiating the wall thickness and required cover for the specific design/construction conditions.

4. Polyvinyl Chloride Pipe (SDR 35) shall conform to the materials allowed by the Standard Specifications and Plans, but shall not be used if finished subgrade surface is less than 24" above the top of the proposed pipe.

   In each case where depth from finished subgrade to top of pipe is less than twice the diameter of the proposed pipe, whichever is greater, and where the total depth is more than 10 feet, the Design Engineer shall provide calculations substantiating the pipe class and cover to subgrade, as proposed, is adequately maintains less than 5% deflection under expected loading.

5. High Density Polyethylene Pipe shall be a profile-wall type material and shall conform to materials as specified in the Standard Specifications and Details, but shall not be used if finished subgrade surface is less than 36" or one diameter, whichever is greater, above the top of the proposed pipe.

   In each case where depth from finished subgrade to top of pipe is less than twice the diameter of the proposed pipe or deeper than 15 feet the Design Engineer shall provide calculations substantiating the pipe class and cover to subgrade adequately maintains less than 5% deflection under expected loading.

H. Horizontal Alignment

Storm drainage lines shall be parallel with the centerline of the street. Pipe curvature shall not exceed 80 percent of the manufacturer's recommendations. Pipe shall not be placed under sidewalks, curbs, or gutter pans.

I. Open Channels – Open channels will be allowed only when approved by the City Engineer.

For the purposes of these Design Standards, a ditch shall be classified as an open channel when its capacity exceeds 2.5 cfs. Drainage may not be conveyed through a development in open channels. Open channels shall be designed in accordance with the follow:

1. Velocity range shall be between 2.0 and 4.5 feet per second (fps) in unlined open channels and between 2.0 and 12.0 feet per second in lined open channels.

2. Channel linings shall be approved by the City Engineer. In all cases any lining work shall comply with the construction methods as specified in the Standard Specifications.

3. All open channels shall be designed to carry the 100-year frequency flood. The hydraulic grade line shall be calculated and plotted on all channel profiles. All computations, including a narrative of the design shall be clearly documented and submitted to the City Engineer for approval.

4. Freeboard shall be a minimum of 1.0 feet in channels with or without levees, respectively, for the 100-year event.

5. Side slopes shall be 2 feet horizontal minimum to 1-foot vertical, the minimum bottom width of the channel shall be 4 feet.

6. The profile of an existing channel shall be shown on the construction plans. Any cross sections will also show the relative existing cross section.

7. A minimum of one access road, 15 feet wide, along one side of the channel shall be provided.

8. Plans shall reflect design in graphical representation.

J. Bench Drains and Diversion Ditches

A ditch shall be considered a bench drain or diversion ditch as long as its design capacity does not exceed 2.5 cfs. Any ditch which has a capacity greater than 2.5 cfs shall be considered an open channel and designed in accordance with Section I.

Bench drains and diversion ditches shall be concrete lined and designed in accordance with the following:

1. Velocity range shall be between 2.0 and 20.0 feet per second, but shall not exceed 10 feet per second at any change in horizontal direction.

2. At changes in alignment and at inlets, adequate measures such as banking, circular curves or energy dissipaters shall be used to confine water within the channel.

3. At locations where, in the opinion of the City Engineer, the overflow of a bench drain or diversion ditch could cause flooding, erosion or other damage, the channel section shall be designed to carry the 100-year runoff.

4. Plans shall reflect design in graphical representation.

K. Drainage Structures - Any and all designs which vary from the City Standard Plans and Specifications by any dimension or any feature or is not covered by the Standard Plans shall be detailed in full on the plans.

1. Manholes and Junction Boxes - Shall conform to the City of Hollister Standard Plans and Specifications. They shall be located at changes in grade, horizontal alignment or conduit size, at junction points, on curved pipe at the EC or BC of the curve, and at 300-foot intervals along the curve. Generally, not more than 520 feet apart otherwise.

2. Catch basins - Shall conform to the City of Hollister Standard Plans and Specifications. Catch basins should be placed at all intersections which have low drainage points and positioned 7 feet minimum from the end of curb return to centerline of the catch basin to collect the flow prior to pedestrian crosswalks. Catch Basins should be placed at intervals that will not allow curb and gutter capacity to be exceeded, such that water encroaches into the travel way of streets.

Generally, catch basins should coincide with manholes and should be spaced not more than 520 feet apart unless otherwise approved by the City Engineer. Where a catch basin has incoming laterals from other catch basins, a plan and section detail shall be provided on the plans.

Care should be taken not to conflict with driveways and P.G &E facilities.

3. Box Culverts - Shall be required when specified by the City Engineer and designed on an individual basis.

4. Headwalls, Wing walls, End walls, Etc. - Shall be considered on an individual basis.

5. Drainage Pump Stations - Are not permitted.

6. Temporary Inlets and Outlets - Shall conform to engineering standard practice and shall be specifically designed and detailed on the plans.

7. Gutters - Storm water runoff in gutters shall be conveyed in underground structures when any one of the following criteria is met:

a. Gutter runoff exceeds 1.0 cubic feet per second

b. Length of gutter exceeds 520 feet

c. Water depth in gutter reaches 0.3 feet in depth or spread extends 8 feet into road way from gutter flow line, for a 10-year storm frequency.

L. Miscellaneous Items

1. Fencing - All open channels shall be enclosed by a chain link fence complying with the City Standard Details and Specifications. The fence shall be located 6 inches inside the required easement lines.

2. Service Road - One service road shall be provided within the boundary of all open channels. They shall be a minimum of 15 feet wide, each graded for vehicular traffic and clear of trees, shrubbery, and other obstructions for its full width. Thirteen feet of the road's width shall be paved or graveled (surface type to be determined by the City Engineer for each case) with a minimum unpaved shoulder width of 1 foot on each side of the roadway.

SECTION 5 SANITARY SEWERS

5.01 GENERAL

These Design Standards are intended to insure that all sewer systems contributing to the City of Hollister Wastewater Treatment Facilities are operating at equal levels of efficiency. These criteria shall hold for sewer systems served but not owned, maintained and operated by the City of Hollister as said criteria may affect the efficiency of the City's system. The City Engineer retains the right to require additional upgrading and oversizing on all plans in accordance with the requirements of municipal growth.

A. Oversizing Policy

In the event oversizing and upgrading of a system or a portion of a system is required and where it has been previously agreed that the oversizing and upgrading is for the general benefit of areas beyond the boundary of the development: it is the general policy of the City that the Developer may request reimbursement for the oversizing work. The reimbursement shall be in accordance with an agreement negotiated between Developer and the City Engineer and approved by the City Council, prior to the work being done.

1. All negotiated agreements shall be based in part on a minimum of three (3) competitive, itemized, bids.

2. Negotiated reimbursement agreements shall be for the incremental cost of the upsized line. Reimbursement shall not be allowed for installation of minimum sewer lines to service the project site.

B. Line Size and Service Policy

1. The line size and service policy requires that the minimum size of any new public sewer shall be 8 inches in diameter.

2. In residential areas where it can be shown that a line cannot be extended and is less than 300 feet from terminus to nearest manhole; the size may be reduced to 6 inches in diameter.

C. Sewer and Water Separation Policy

In order to minimize the hazards to public health which may occur due to accidental contamination of water supply facilities by sewage, the location and construction of water supply facilities and sewerage facilities in close proximity to one another must be regulated. If the regulations in this standard are insufficient to provide reasonable protection to the public health due to unusual circumstances the City Engineer shall prescribe a more effective separation and/or protection of the lines.

The provisions of this standard in conjunction with California Waterworks Standard, Title 22 of the California Administrative Code shall govern the separation of water supply facilities and sewerage

facilities located in areas including, but not limited to, public roads, rights of way, and utility easements.

1. The required separation between water lines and sewer lines, except as hereinafter provided, shall be as depicted in City of Hollister Standards Plan E-1-1.

2. In addition required separation between other water supply facilities and sewerage facilities shall meet or exceed the following minimum horizontal separations:

Water well and sewer line	50 feet
Water line and septic tank	10 feet
Water line and seepage pit or cesspool	10 feet

5.02 PREPARATION

Sanitary sewer system design within a developing area must include provisions for size and capacity to adequately convey all domestic and industrial waste that can be reasonably anticipated under conditions of full and ultimate development. Engineering calculations to support the sewer system design shall be submitted to the City Engineer for approval. The calculations shall include:

1. Map indicating service area within the sewer system including any future contributing development with projected land use, zoning, and physical features contributing to the sewer design.

2. Sanitary sewer waste volumes existing and proposed within the service area of the system.

3. Size and slope of each pipe between appurtenant structures.

4. Invert/RIM elevations of each pipe and appurtenant structure.

5. When it is anticipated that a sewer lift station will contribute to the flow of the area being studied and as directed by the City Engineer, anticipated flow shall be accounted for in the sewer calculations.

5.03 DESIGN

A. Flow

1. Equation

The design sanitary sewer flow shall be computed using the following formula:

$$Q = \text{Unit} * \text{Flow Factor} * PF$$

Where

Q = Design Flow in Gallons Per Day (GPD)
Unit is per Future Average Daily Flows table, below
Flow Factor is per Future Average Daily Flows table, below
PF = peaking factor of 2.32 for residential and 2.71 for non-residential uses unless otherwise specified by the City Engineer

The DESIGN FLOW is computed using two basic assumptions

a. Full upstream development

b. Maximum density - estimated number of units for undeveloped land shall be based on Land Use Classifications contained in the Hollister General Plan.

2. Wastewater flow generation rates

Generation rates for service type are listed in Table below

Future Average Daily Flows (GPD)				
Source of Flow	Unit	Flow Factor (gal/day/unit)	People per DU	Average Flow per DU (Q_{ave})
Low Density Residential	Persons	40	3.75	150 GPD
Medium Density Residential	Persons	40	3.5	140 GPD
High Density Residential	Persons	40	3.25	130 GPD
Hotel Rooms	Rooms	100	N/A	N/A
School	Students	20	N/A	N/A
Commercial/Public Bldgs	SF	0.06	N/A	N/A
Light Industrial	SF	0.06	N/A	N/A
Heavy Industrial	SF	0.12	N/A	N/A

Infiltration is considered to be negligible unless directed otherwise by the City Engineer.

B. Pipe Capacity

1. Manning's Formula [$Q = A\ (1.49/n)\ R^{2/3}\ S^{1/2}$] shall be used to determine pipe capacity. The "n" value shall be .011 for PVC, ABS, HDPE, composite or solid wall pipes.

2. For pipe 10" or less in diameter, design the pipe so Design flow will be carried when pipe is flowing at one-half depth.

3. For trunk sewers 12 inches and larger design pipe so Design flow will be carried when pipe is flowing at 2/3 depth.

4. Table of Minimum Slopes

Minimum and Maximum Slopes for Gravity Sewers to provide velocity within acceptable range

Pipe Inside Diameter (in.)	Minimum Slope (%)	Maximum Slope (%)
8	0.35	8
10	0.25	6
12	020	4
15	0.15	3
18	0.12	2.6
21	0.10	2.0
24	0.08	1.8
27	0.08	1.5
30	0.08	1.3
33	0.08	1.2
36	0.08	1.0
39 to 60	0.08	0.9

C. Velocity

Sewer velocity shall be equal to or greater than 2 feet per second for all sewers when flowing at design capacity. Where design velocities for main sewers exceed 10 feet per second, polyethylene lined ductile iron pipe conforming to the requirements of ANSI/AWWA C151/A2.51 and liner shall conform to SDR 32.5: class of pipe shall be as required for design loads. All ductile iron pipe shall be wrapped with an 8-mil polyethylene blanket. High Density Polyethylene pipe for direct burial as specified in the City of Hollister Details and Specifications can also be used in sewers where high velocities occur.

D. Pipe Cover and Clearances

1. Minimum pipe cover and clearances, as stated below, shall be maintained in the design of sanitary sewers. If certain conditions exist which make it impractical to meet the minimum cover and clearance requirements, the conditions and locations shall be specifically noted above the sewer profile and on the plan view. Each location not meeting the minimum cover

and clearance requirements will require special approval. Any planned condition being specially approved with less than minimum cover will require special pipe, bedding and/or backfill as directed by the City Engineer. Special construction sequences or methods to insure quality of the product shall be called out on the plans.

2. Sewers shall be installed at a depth which will provide suitable service to the properties connected and will allow subsequent installation of water lines in accordance with the Water/Sewer separation, as detailed in the City of Hollister Standard Plans and Specifications, and with a minimum of special construction of the water lines other than joint spacing.

3. Other utilities shall not, under any circumstances, be installed directly over and parallel to any sanitary sewer line installation.

4. Main and trunk sewers shall have a minimum depth of 4 feet as measured from the top of the pipe to the finish grade or a minimum of 24" from subgrade to top of pipe whichever yields the greater total depth from top of curb.

5. Laterals shall have a minimum depth of 3.5 feet from the top of the pipe to the top of curb at the face of curb or a minimum of 24" from subgrade to top of pipe whichever yields the greater total depth from top of curb. Sewer laterals shall be installed under the Joint Utilities wherever possible.

6. Pipe shall be designed with the "no joint zones "and vertical clearances from water lines and vertical clearances from all other improvements and utilities, as shown in the City of Hollister Standard Plans (E-1-1), unless otherwise approved by the City Engineer.

E. Allowable Pipe Materials

Composite Truss pipe, HDPE Ribbed profile wall pipe, PVC corrugated profile wall pipe, HDPE smooth interior corrugated pipe, or PVC Sewer Pipe-SDR 35 can be used in City. Installations for related material requirements see the City of Hollister Plans and Specifications.

F. Horizontal and Vertical Curves

1. Sanitary sewer mains shall be on a straight line between manholes. Whenever it is essential that a curved alignment be used, the manufacturer's minimum recommended radius shall be required, but shall be as large as possible. The radius and delta of all curves shall be indicated on the plans adjacent to the curve.

2. Whenever a curved alignment is to be used, #10 insulated tracer wire is to be placed within the trench at top of pipe of the main.

3. The deflection in the joint between any two successive pipe sections shall not exceed eighty (80) percent of the maximum deflection as recommended in writing by the pipe

manufacturer. Minimum 4-foot pipe lengths may be used to install short radius curves providing the requirements specified herein are met.

4. There shall not be more than 45 degrees combined horizontal and vertical deflection between structures.

G. Lateral Sewers

1. Laterals are those portions of the sewer system from the sewer main to the property line and is the portion of the sewer maintained by the property owner. The location of the line of responsibility is the sewer main. In all cases, City maintained sewer main will lie in a street right-of-way or easement. In all new subdivision work, the house lateral line from the sewer to the property line shall be installed at the time the sewer main is constructed. Whenever a sanitary sewer is installed which will serve existing houses or other buildings, whether they be connect at the time the sewer line is constructed or at a later date, a lateral line shall be constructed for each existing individual house or building. Whenever it is known or can be reasonably assumed that a future building sewer connection will be required, the lines shall be shown on the plans and installed to the property line as part of the sewer main construction, prior to paving. The improvement plans shall adequately reference each lateral location, both horizontally and vertically. Each individual on-site building shall be serviced by a separate lateral to the sewer main.

2. All laterals, from property line or edge of easement to the point of connection with the main line or a manhole shall have an alignment that provides an angle of intersection with the downstream section of the main sewer of no less than 90°.

3. The maximum deflection at any one point in a lateral, not including fittings at saddle or wye connection to main sewer or at angle points having clean outs, shall be 22-1/2° (1/16 bend) and any two consecutive deflections (bends) shall not be less than 4 feet apart.

4. Building drains (i.e. floor drains, etc.) shall not be connected directly to the sanitary sewer system; exceptions shall be approved prior to submittal by the City Engineer and the Building Official.

5. Laterals connecting houses having a finished floor elevation below the highest invert elevation of the nearest upstream structure shall require installation of a backflow prevention device next to the clean out at the house.

6. All side sewer laterals 8" and larger shall be connected to the main by or at a manhole.

7. The minimum lateral size for commercial and industrial developments as well as multifamily-residential developments shall be 6". The final size shall be based on the criteria in this section.

8. The minimum lateral size is 4 inches with the lateral's intended use to serve single family residences. Joint use of laterals will not be permitted except in multi-family residential uses.

H. Appurtenances

1. Manholes - Manholes shall be located at all abrupt changes in alignment or grade and at all junctions. Normal maximum spacing for manholes shall be 300 feet. Where the location of two manholes is determined by intersecting lines, the distances between intervening manholes shall be approximately equal. Sewers on curved alignment with a radius of less than 400 feet shall have manholes spaced at a maximum of 300 feet on the BC or EC of the curve to adjust to fit the individual case.

2. The spacing of manholes on trunk sewer lines 10 inches and larger in diameter shall be proposed for each individual case and shall be approved by the City Engineer.

3. Whenever, at manholes, a change in the size of pipe, or an angle of 45° or more in alignment occurs, the flow line of the incoming pipe shall be a minimum of 0.10 feet above the flow line of the outgoing pipe, or an amount necessary to match pipe spring line. The Design Engineer shall show all inverts of proposed manholes and include elevations of pipe inverts entering manholes when different than outlet pipe invert.

4. Drop manholes will only be permitted when circumstances make them necessary and shall have prior approval from the City Engineer.

5. Manholes shall be used at the termination of all sewer mains including cul-de- sacs. A maximum of three (3) laterals shall be connected to this manhole for services to adjacent properties within the cul-de-sac.

6. Manholes shall not be placed any closer than 6 feet to a face of curb. If manholes are placed closer than 4' to a P.G. &E. trench it shall be depicted in the profile and a dimension provided to clarify the clearance expected.

7. Depending on spacing, manholes or cleanouts shall be installed at the upstream end of mains which are proposed to be extended in the future and stubbed out as approved by the City Engineer.

I. Unusual Design

Special design of unusual features or structures require individual study and approval by the City Engineer.

J. Force Mains

Material to be used for force mains (if permitted) shall be PVC pipe, AWWA C-900, and shall be stenciled "sewer". Alternative pipe materials shall be submitted with performance data, and design calculations which include an approved safety factor.

K. Pump Stations/Lift Stations

1. Pumping of sanitary sewer flows will not be permitted unless there is no other feasible alternative in the opinion of the City Engineer and only after approval of a preliminary study by

the City Engineer and only where a station serves a significant area, and gravity service is totally prohibitive.

2. Temporary pumping stations/lift stations will only be allowed with the City Engineer's approval. Prior to approval a sewer study may be required and if so, shall be completed showing the ultimate flow direction and route of the project's sanitary sewer flows. Sewer flows shall be for the regional area that may be expected to flow into the system. If an ultimate pumping station/lift station is to be proposed, the area that the station will serve shall be shown. Other information as required by the City Engineer shall be included in the study.

SECTION 6 WATER SYSTEM

6.01 GENERAL

A. General

The City of Hollister and the Sunnyslope County Water District currently supply water within the developed area of the City. The City of Hollister system uses 5,500,000 gallons of storage in two storage tanks atop of Park Hill, elevated to 390.4 feet above sea level, with a reservoir elevation set at 425.0. The Sunnyslope County Water District uses a 2,000,000 gallon storage tank, which lies east of Fairview and south of Hillcrest Road in line with the extension of Sunnyslope Road, at an elevation of 515.0 feet and the reservoir level set at 550.0 above sea level. Both Districts use a gravity network from the reservoirs to pressurize their distribution systems. The systems are interconnected and can supply each other with an emergency supply. Both maintain supplies through a system of local wells and water treatment facilities.

Sunnyslope County Water District supplies the easterly portion of Hollister; generally from Memorial Drive, which runs north to south, to Fairview Road and some other areas outside of the City of Hollister boundary, so their district standards should be included in the plans when improvements are built in this area. Maps of the specific boundary are available for viewing at the City Engineers Office.

Water systems designed within City limits and the Residential Development Service Area shall conform to the City of Hollister or Sunnyslope County Water District Standard Plans and Specifications, depending on who provides water service. All improvements including extensions, replacements, and repairs shall conform to the requirements of the National Board of Fire Underwriters, American Water Works Association Standards, Hollister Administrative Regulations, the Code of the City of Hollister, and these Design Standards.

B. Service and Oversizing Policy

A single service connection shall not serve more than one premise except in multi-family dwellings. Separate premises under a single ownership, control or management shall be supplied water through separate service connections.

More than one property shall not be connected to a single service for the purpose of avoiding water connection charges.

Reference is also made to Title 17, Chapter VIII, and Sections 7583 - 7605 inclusive of the California Administrative Code, regulating the construction of cross connections between drinking water systems and other sources of water. All construction shall be in strict compliance with said regulations and City of Hollister Codes.

The City Engineer retains the right to require additional upgrading and sizing on all plans in accordance with the most recent studies of demand.

1. Oversizing Policy

In the event oversizing and upgrading of a system or a portion of a system is required and where it has been previously agreed that the oversizing and upgrading is for the general benefit of areas beyond the boundary of the development: it is the general policy of the City that the Developer may request reimbursement for the oversizing work. The reimbursement shall be in accordance with an agreement negotiated between Developer and the City Engineer and approved by the City Council, prior to the work being done.

a. All negotiated agreements shall be based in part on a minimum of three (3) competitive, itemized, bids.

If approval by other agencies such as the Bureau of Reclamation or Sunnyslope County Water District or San Benito County Water District or any other agency within whose jurisdiction facilities are to be constructed is required, a letter of approval attached to a relevant set of plans will be forwarded to this office as verification of approval by the outside agency.

C. Easements

All Sunnyslope County Water District and City owned water system facilities shall be installed only in public streets, easements or rights-of-way, in accordance with the requirements as stated in Section 2 of these Design Standards.

6.02 PREPARATION

A. Calculations

Submittals for review are to be accompanied by all necessary calculations and system maps necessary to describe the proposed design.

The calculations should include data showing compliance with Sections 64566 and 64568 of Title 22 of the California Administrative Code.

The maximum allowable design static pressure in the system is 125 p.s.i.

Calculations shall reflect minimum residual pressures as follows:

1. Domestic user average day demand - 40 p.s.i.
2. User average indoor day demand plus design fire flows - 20 p.s.i.

B. Corrosive Soil Determination

A field corrosion potential survey shall be performed for any project which is situated northeasterly of the line defined by the right-of-way of the Union Pacific Railroad Mainline, the right-of-way of Prospect Avenue and the right-of-way of Airline Highway.

1. The survey shall determine the following conditions:

a. Soil Resistivity
b. Oxidation Reduction Potential
c. pH
d. Sulfides
e. Moisture

2. This information shall be used to determine field corrosion potential utilizing the D. I.P.R. A. - C.I.P.R.A. Soil Corrosively Point Classification System as shown in Table I, Page 44.

The corrosion susceptibility increases with increasing values of this scale. For values of 10 or more the following specifications must be incorporated into the design.

a. The corrosion susceptibility increases with increasing values of this scale. For values of 10 or more the following specifications must be incorporated into the design.

b. Copper services shall be prohibited.

c. Ductile Iron or Cast Iron valves or fittings, as well as hydrant buries must be catholically protected by a galvanic magnesium anode in accordance with Subsection 207-9.2.7 Cathodic Protection against External Corrosion of the City of Hollister Standard Specifications.

TABLE I
Soil Test Evaluation

Factors	Range	Points*
Resistivity (ohms-c)	<700	10
	700-1000	8
	1000-1200	5
	1200-1500	2
	1500-2000	1
	>2000	0
pH	0-2	5
	2-2	3
	4-6.5	0
	6.5-7.5	0**
	7.5-8.5	0
	> 8.5	3
Oxidation Reduction Potential	>100mV	0
	50-100mV	3.5
	0-50mV	4
	Negative (-)	5
Sulfides	+	3.5
	Trace	2
	Negative	0
Moisture	Poor Drainage Continuously wet	2
	Fair drainage, generally moist	1
	Good drainage, generally dry	0

* A total of ten points indicates that the soil is corrosive to cast iron pipe.
** If sulfides are present and low or negative oxidation-reduction potential results are obtained, three points shall be given for this range.

C. Plans

The plans shall show the water system in plan and profile, whether existing or proposed. Fittings, valves, and hydrants shall be located by centerline stationing when specific location and clearances are of a critical nature. For the purposes of this standard, objects within a proximity of 4 feet for fittings, 3 feet for valves, and 5 feet for hydrants shall be deemed of a critical nature.

1. Construction drawings shall include:

a. Water pipe crown elevations and outside diameters are to be called out on the plan/profile to clarify clearances expected and allowed, at critical locations as defined above.

b. Pipe lengths and size, cover and changes in cover.

c. Material shall be called for each segment where a change in material occurs.

d. All applicable existing and proposed improvements.

e. Call out special fittings used for changing direction or depth.

6.03 DESIGN

A. Layout of Mains

The distribution system generally shall be looped to form a "Grid System" of water circulation so as to allow pressure equalization. All water pipelines designed for the transmission or distribution of domestic water supply shall be constructed and installed within the right-of-way of public streets or roads, unless such construction or installation is determined to be impractical by the City Engineer.

Water lines and services are generally not allowed to cross under sanitary mains or laterals.

The location of the water main in any street shall be 10 or more feet from the nearest sewer main. The location shall conform to the separation requirements of the City Standard Plan E-1-1 while maintaining minimum cover as required by these standards. Insulated #10 tracer wire shall be placed over the pipe and called out on the plans.

The Design Engineer shall show existing and new lines and clearly identify by station on the plan and profile the limits of each. The Design Engineer shall show, on the profile of improvement plans, elevations of the top of pipe at all changes in grade in all areas where conflicts with other utilities might arise. A scaled detail shall be drawn of such conflicts with sufficient dimensions, elevations, and information shown that the City Engineer can make a determination as to the adequacy of the solution shown.

All future extensions and proposed stubs shall be shown out to the 100' limit beyond the project boundary to better anticipate future conflicts. Plugs at the project limits shall be clearly identified.

Location of existing utilities shall be verified by potholing or other means as part of the design process and said information shall be shown on the plans.

All dead-end mains shall be provided with a City standard blow-off or other acceptable means of flushing, such as a fire hydrant. Dead end mains in cul-de-sacs shall utilize a fire hydrant for end of main blow off.

B. Size

The minimum size water main shall be 8 inches in diameter.

In all cases, water mains shall be sufficient size to meet fire flow requirements as outlined by the requirements of the Hollister Fire Department and stated in section F of this Standard.

C. Pipe Materials

Allowable main distribution line materials are AWWA C-900 PVC or C151 ductile iron pipe, pressure class 350.

Services lines shall be polyethylene CTS SDR 9 (ASTM 2666) tubing. See the City of Hollister Standard Plan B-1-3 for related material requirements.

D. Cover Requirements

Water mains and services shall be designed at a depth which will provide between 36-54 inches of cover from the top of the pipe to finished pavement surface.

The amount of cover which remains after excavation for compaction processing will determine the depth necessary to protect the pipe since structural sections vary in depth and will require different amounts of soil removal, the construction process should be considered when establishing design depth.
Other clearance requirements as established by these Standards and the City of Hollister Standard Plans shall not be reduced by this cover requirement.

If variance from the above specified cover limits cannot be avoided, approval shall be obtained from the City Engineer, in writing and prior to submittal.

E. Valves

The distribution system shall be equipped with a sufficient number of valves so that no single shutdown will result in shutting down a transmission main or necessitate the removal from service of a length of pipe greater than 250 feet in high density districts or greater than 600 feet in other districts. Additionally, in no case shall more than two fire hydrants be removed from service. The valves should be so located that any section of main can be shut down without going to more than three locations to close valves. All valves shall be gate valves with fully encapsulated wedge, resilient seat, and integral bronze nut and stem. All tees shall have a minimum of two (2) valves and all crosses shall have a minimum of three (3) valves. Additional valves may be required by City as each situation is evaluated. Blow-offs at ends shall be installed on pipe extended short of the lip of gutter. A valve shall be installed on each side of services to all hospitals, schools and major industrial sites as directed by the City Engineer. All valves shall conform to the City of Hollister Standard Plans and Specifications.

Air release valves shall be installed at critical high points in water lines of more than 8" in diameter.

F. Fire Hydrants

Fire hydrants shall be placed where directed by the Engineering Department and approved by the Hollister Fire Department. Fire hydrants on streets without fronting residential lots shall have a maximum spacing of 600 feet. The minimum size water main serving a fire hydrant shall be 8 inches and no more than three hydrants will be allowed on any 8-inch line between intersecting lines Connections will not be allowed to be made to fire hydrant laterals.

Fire hydrants shall be installed as specified in the City Standard Detail. Hydrants shall be shown and placed, 18" from back of walk to centerline of bury, behind the sidewalks. In the case of separate curb and sidewalks the fire hydrant shall be installed 18" from the curb face. Hydrants shall always be located at common lot lines and at street intersections unless specifically directed otherwise by the City Engineer

Hydrants which are affected by new construction as well as rehabilitation work shall be reviewed and compared to current service standards, including but not limited to location, general condition, and size and number of nozzles. When a project frontage contains a substandard fire hydrant a new fire hydrant and assembly will be required to be installed to replace the substandard unit. Where adjustment to existing fire hydrants is needed the full hydrant and bury shall be replaced with an acceptable current model.

The curb in front of the Fire Hydrants shall be painted red for a distance of 10 feet on both sides of the fire hydrant.

All design fire flows and residential pressures shall meet criteria established by Hollister Fire Department.

1. General Fire Flow Requirements

The water distribution system supplying fire protection facilities shall be designed to provide fire flows through standard fire hydrants as provided for herein The Fire Chief shall interpret the following categories in considering any proposed development and reserves the right to increase or decrease the fire flow requirements as stated herein. Required fire flow rates are to be determined with a minimum of 20 psi residual pressure within all portions of the water distribution system.

a. The water distribution system supplying fire protection facilities shall be designed to provide fire flows through standard fire hydrants as provided for herein The Fire Chief shall interpret the following categories in considering any proposed development and reserves the right to increase or decrease the fire flow requirements as stated herein. Required fire flow rates are to be determined with a minimum of 20 psi residual pressure within all portions of the water distribution system.

b. Fire flow requirements shall be as determined by the California Fire Code and the City of Hollister Fire Department.

G. Services

Service lines from the water main to the property line shall normally be installed at the time the main is constructed to avoid future cutting of the street.

In all new subdivisions, the residential service lines shall be located in pairs on the common lot line of the lots to be served. Service lines and meter box locations shall be shown for every lot with care taken to coordinate locations with P.G.&E. and other utility requirements. The service line to existing buildings shall be located to make the most direct connection to the existing structure. Water meters and service lines shall be installed per City of Hollister Standard Plan B-1-3.

Minimum service line size to single family residences shall be 1-inch and capable of supplying water for fire sprinklers as required by the California Residential Building Code.

Service lines for required landscaping shall be sized by the Landscape Designer and included in the improvement plans and its location coordinated with the engineering design as well as Public Utilities considerations.

Private fire services shall have a minimum size of 6" from the main to the detector check valve (as required by state codes) but no section shall be smaller than required by its service criteria as determined by the system designer.

H. Anchors

Concrete anchors or thrust blocks shall be provided at all bends, behind tees, fire hydrants, crosses which are valve in such a manner that they can be used as tees, and at valves, as shown in City Standard Plans B-9-1 and B-9-2 and called for in the Standard Specifications.

I. Fittings

Standard approved fittings shall be used at all bends of 11-1/4 degrees and greater. Deflections shall not exceed 80 percent of manufacturer's recommended values.

J. Backflow Prevention Devices

Backflow prevention devices shall be provided at all cross connections including but not limited to connections with irrigation systems, fire services, and commercial applications requiring protection. Double Detector Check Valve assemblies shall be installed in the P.U.E. (public utility easement) per City of Hollister Standard Details.

Reduced Pressure Principle assemblies shall be installed a minimum of 2 feet from the back of walks, in the P.U.E, and according to the Standard Plans.

Backflow Prevention Devices for Potable Water Service and Irrigation services shall be protected from freezing temperatures and installed in an approved cage or fenced in area with a cover to prevent access from unauthorized persons. Double Detector Check Valve Assemblies for fire service shall be secured in a method approved by the Fire Department.

Backflow prevention devices shall conform to current California Department of Health Services Standards and State of California. Acceptable devices are listed periodically by the University of Southern California. This list is available for review at the Office of the City Engineer.

SECTION 7 STREET LIGHTING AND UTILITY COORDINATION

7.01 GENERAL

These Design Standards shall cover the design of street lights and utility coordination with other improvements required by this Design Manual. The construction of street lights shall conform to the City of Hollister Standard Plans and Specifications.

The Developer shall make arrangements for P.G.&E. (gas and electric), AT&T (telephone), and Falcon Cable (cable TV), and any other utilities authorized to operate in the City of Hollister, referred to hereafter as Joint Utilities, for installation of facilities in part or in full. All work shall be done in accordance with Joint Utility requirements and the City of Hollister Specifications and Details.
The Developer shall pay all costs related to providing Joint Utility service. This shall include but not be limited to contractual obligations with Joint Utilities, system design by P.G.&E., Joint Utility undergrounding, and the P.G.&E. connection charges for energizing street lights.

Upon written notification by the City of Hollister, identifying the street light by number, location, and wattage, P.G.&E. will energize the street lights. Such notification shall be deemed warranted when all proposed improvements are accepted by the City.

7.02 PREPARATION

The Design Engineer shall submit a base map for the entire project to establish an overall street light layout showing all existing street lights and fire hydrants within 300 feet of all property boundaries upon which improvements are proposed. Additionally, existing joint utility surface structures and, underground structures and services are to be shown within 100 feet of any property boundary.
The Design Engineer shall coordinate service locations with Joint Utilities and resolve any conflicts without altering the City approved layout. Variations from the approved layout shall be approved by the City Engineer in writing.

1. Miscellaneous Improvements

The Design Engineer shall show the proposed street lighting system and Joint Utility structures, both surface and subsurface, on the project improvement plans.

The plans shall include the following items:

a. Location of electroliers.

b. Location of switch boxes, transformer, vaults, and other structures located within the rights-of way.

c. The street light numbers shall be specified as affixed to the pole per P.G.&E. standards.

d. Specify the mounting height and arm length.

e. Light Emitting Diodes (LED) luminaires shall be specified for all street lights. Each luminaire shall have its own solar switch and each electrolier its own regulator ballast. Each luminaire shall be equipped to operate independently of other luminaires.

f. The Joint Utility construction plans can be incorporated by reference into the project improvement plans upon written approval of the City Engineer

7.03 DESIGN

The Design Engineer shall design street light and fire hydrant layouts; as part of the initial submittal review.

Electroliers shall be specified as being installed per the City of Hollister Standard Plans and in compliance with P.G.&E. requirements.

APPENDIX A

The following notes are attached here for the convenience of the designer. These notes represent some of the most common recurring questions and answers about the City's construction requirements. These notes are not to be used for facsimile transfer to the construction plans but should be edited, and custom tailored for each individual and unique project. The Designer is responsible for the appropriate transfer and applicability of any and all information in these general notes.

1. ALL CONSTRUCTION MUST BE TO THE CITY OF HOLLISTER STANDARDS AND ACCEPTED BY THE PUBLIC WORKS INSPECTOR. STANDARD PLANS ARE AVAILABLE ON-LINE AND AT THE OFFICE OF THE PUBLIC WORKS INSPECTOR AND ON-LINE AT. http://hollister.ca.gov/government/city-departments/engineering/engineering-standards/

2. CONTRACTOR SHALL MEET WITH CITY OF HOLLISTER AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION, 24 HOURS NOTICE REQUIRED ON ALL INSPECTIONS.

3. CONTRACTOR IS RESPONSIBLE TO MAKE ALL ARRANGEMENTS FOR SITE INSPECTIONS AND INSURE THAT ALL CURRENT STANDARDS FOR THE CITY OF HOLLISTER ARE FOLLOWED PRIOR TO THE BEGINNING ANY PHASE OF CONSTRUCTION WORK.

4. CONSTRUCTION SHALL BE LIMITED TO BETWEEN THE HOURS OF 7:00 A.M. AND 6:00 P.M., MONDAY THRU FRIDAY, 8:00 AM TO 6:00 PM ON SATURDAY AND SHALL BE PROHIBITED ON SUNDAYS AND FEDERALLY RECOGNIZED HOLIDAYS. INSPECTION REQUESTS SHALL BE LIMITED TO NORMAL CITY BUSINESS HOURS: 8:00 A.M. TO 5:00 P.M., MONDAY THRU FRIDAY. ARRANGEMENTS FOR ANY OVERTIME INSPECTION SERVICES AND PAYMENT OF FEES FOR SAME SHOULD BE MADE 48 HOURS IN ADVANCE AND ARE SUBJECT TO INSPECTION AVAILABILITY AND APPROVAL BY THE CITY ENGINEER

5. THE OWNER IS RESPONSIBLE FOR ARRANGEMENTS TO PAY FOR ALL MATERIAL TESTING REQUIRED BY THE PUBLIC WORKS INSPECTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE TO IT THAT ALL TESTING REQUIRED BY THE PUBLIC WORKS INSPECTOR IS PERFORMED.

6. DUST CONTROL DURING THE GRADING PROCESS IS THE RESPONSIBILITY OF THE CONTRACTOR. IT IS ALSO THE CONTRACTORS RESPONSIBILITY TO MAINTAIN CLEANLINESS OF THE EXISTING IMPROVED STREETS IN THE CONSTRUCTION AREA.

7. WATER FOR DUST CONTROL AND USE FOR COMPACTION MAY BE PURCHASED FROM THE APPROPRIATE AGENCY PRIOR TO START OF ANY WORK, AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR FOR ANY FEES OR DEPOSITS.

8. CONSTRUCTION EQUIPMENT SHALL UTILIZE [INSERT STREET NAME] FOR ACCESS. CONSTRUCTION TRAFFIC SHALL UTILIZE THE APPROVED "STABILIZED CONSTRUCTION ENTRANCE/EXIT" PER THE PROJECTS STORM WATER CONTROL PLAN.

9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE DESIGN ENGINEER OF ANY ANTICIPATED SOILS IMBALANCE SO GRADES CAN BE ADJUSTED. ADJUSTMENTS REQUIRE THE APPROVAL OF THE CITY ENGINEER.

10. CONTRACTOR IS TO MAKE PROVISIONS FOR TRENCH SPOILS.

11. PADS SHALL BE GRADED TO WITHIN +/- 0.1 FOOT OF THE GIVEN ELEVATION.

12. SAWCUT ALL TRENCHES. IN EXISTING PAVEMENT.

13. CONTRACTOR IS RESPONSIBLE FOR COMPACTION OF ALL UTILITY TRENCHES INCLUDING P.G&E AND FOR THE SPOILS GENERATED BY THESE SAME UTILITY TRENCHES.

14. ALL ENDS, BENDS, AND TEES ON WATER LINES MUST HAVE ADEQUATE THRUST BLOCKS CALCULATED FROM CITY OF HOLLISTER STANDARDS.

15. CITY/SCWD WILL OPERATE ALL EXISTING WATER VALVES. CONTRACTOR SHALL MAKE ARRANGEMENTS IN ADVANCE WITH THE PUBLIC WORKS/SCWD INSPECTOR.

16. SEWER SERVICES FOR RESIDENTIAL LOTS TO BE MINIMUM 4" PIPE AND MUST BE MARKED WITH AN "S" ON CURB FACE.

17. CURB INLETS ARE TO BE CITY OF HOLLISTER STANDARD TYPE "A" UNLESS OTHERWISE INDICATED.

18. CONTRACTOR SHALL FURNISH CERTIFICATES OF COMPLIANCE TO THE CITY FOR CRUSHED MISCELLANEOUS BASE MATERIAL AND FOR THE SPECIFIED CLASS OF P.C.C. PRIOR TO PAVING ROADWAYS.

19. DRIVEWAY LOCATIONS WILL BE DETERMINED BY OWNER PRIOR TO CONSTRUCTION OF CURB AND GUTTER, UNLESS OTHERWISE SHOWN ON THE PLANS. MINIMUM WIDTH SHALL BE 16' AS MEASURED AT THE BOTTOM OF THE DEPRESSION.

20. IN AREAS WHICH ARE TO RECEIVE A.C., P.C.C. OR AGGREGATE BASE, THE CONTRACTOR SHALL MAINTAIN SUBGRADE AT THE AS GRADED WATER CONTENT. IF THE SUBGRADE IS ALLOWED TO DRY, THE WATER CONTENT OF SOIL SHOULD BE RAISED TO THE RECOMMENDED VALUE SPECIFIED FOR THE PROJECT.

APPENDIX B

RE:

[Applicant Name]:

Your map was conditionally approved on, [DATE OF APPROVED RESOLUTION] by the City of Hollister Planning Commission. Processing of the improvement plans and Final Map will now be done through the office of the City Engineer. We have attached a copy of our subdivision processing checklist to aid you in preparing your submittals.

It should be noted that initial submittals will not be accepted or processed unless all indicated items of the submittal checklist are received. Processing time for an initial submittal is expected to be four to six weeks and will depend a great deal upon the accuracy and completeness of the submittal and the current work load.

If you should have any questions during your submittal processing; please call our office at 408-637 - 1640.

Sincerely,
CITY OF HOLLISTER

City Engineer

cc:

APPENDIX C

SUGGESTED LAYERING SPECIFICATION

IN ADDITION TO THE LISTING PRESENTED BELOW THE ELECTRONIC FILES SHALL INCLUDE CONTENTS OF THE FINISHED SUBDIVISION MAP AS APPROVED BY THE CITY ENGINEER AND A COMPOSITE DRAWING OF THE SUBDIVISION IMPROVEMENTS, INCLUDING AT A MINIMUM, RIGHT-OF-WAY IMPROVEMENTS, STORM DRAIN IMPROVEMENTS, SANITARY SEWER IMPROVEMENTS, WATER IMPROVEMENTS, PROPERTY LINES; ALL LABELED, PER THE CITY DESIGN STANDARD REQUIREMENTS. INFORMATION SHALL BE COPIED IN AUTOCAD'S .DWG (DRAWING) FORMAT AND TRANSMITTED TO THE CITY. LABEL THE TRANSMITTAL WITH PERTINENT DATA FOR ACCESS, I.E. SOFTWARE USED, FILE NAMES, ETC.

HOLLISTER LAYERING SPECIFICATION

NEW LAYER	DESCRIPTION	COLOR	LINE TYPE
GRID	GRID TICKS	YELLOW	CONTINUOUS
GRIDTX	CA GRID COORDINATES	9	CONTINUOUS
BORDER	TITLE BLOCK	BLUE	CONTINUOUS
BORDERTX	TITLE BLOCK TEXT	BLUE	CONTINUOUS
NOTE	BASE ROAD LEGEND	MAGENTA	CONTINUOUS
CTYLMTBY	CITY LIMIT BOUNDARY	MAGENTA	DIVIDE
ROW	CURBS/STREETS/ROW	GREEN	CONTINUOUS
STTX	STREET TEXT	WHITE	CONTINUOUS
CENTER	STREET CENTERLINES	WHITE	CENTER
FEATURES	ALLEY	WHITE	CONTINUOUS
PRCL13NDY	PROPERTY LINES	RED	CONTINUOUS
ADTX	ADDRESS TEXT	WHITE	CONTINUOUS
RAILROAD	RAILROAD	WHITE	CONTINUOUS
RRTX	RAILROAD TEXT	WHITE	CONTINUOUS
HIGHWAY	HIGHWAY	YELLOW	DASHED
HWYTX	HIGHWAY TEXT	YELLOW	CONTINUOUS
SCHOOL	SCHOOL	WHITE	CONTINUOUS
SCHOOLTX	SCHOOL TEXT	WHITE	CONTINUOUS
ZONEPLAN	ZONE PLAN	CYAN	CONTINUOUS
ZONETX	ZONE TEXT	CYAN	CONTINUOUS

HOLLISTER LAYERING SPECIFICATIONS

NEW LAYER	DESCRIPTION	COLOR	LINE TYPE

GENPLAN	GENERAL	GREY	CONTINUOUS
GENTZ	GENERAL PLAN TEXT	GREY	CONTINUOUS
PARK	PARK	CYAN	CONTINUOUS
PARKTX	PARK TEXT	CYAN	CONTINUOUS
WATER	WATER COURSES	BLUE	CONTINUOUS
WTRTX	WATER TEXT	BLUE	CONTINUOUS
SD6	6” STORM PIPE	WHITE	STORM
SD6TX	6” STORM PIPE TEXT	WHITE	CONTINUOUS
SD8	8” STORM PIPE	YELLOW	STORM
SD8TX	8” STORM PIPE TEXT	YELLOW	CONTINUOUS
SD10	10” STORM PIPE	CYAN	STORM
SD10TX	10” STORM PIPE TEXT	CYAN	STORM
SD12	12” STORM PIPE	BLUE	STORM
SD12TX	12” STORM PIPE TEXT	BLUE	CONTINUOUS
SD15	15” STORM PIPE	MAGENTA	STORM
SD15TX	15” STORM PIPE TEXT	MAGENTA	CONTINUOUS
SD18	18” STORM PIPE	GREY	STORM
SD18TX	18” STORM PIPE TEXT	GREY	CONTINUOUS
SD21	21” STORM PIPE	YELLOW	STORM
SD21TX	21” STORM PIPE TEXT	YELLOW	CONTINUOUS
SD24	24” STORM PIPE	CYAN	STORM
SD24TX	24” STORM PIPE TEXT	CYAN	CONTINUOUS
SD27	27” STORM PIPE	BLUE	STORM
SD27TX	27” STORM PIPE TEXT	BLUE	CONTINUOUS
SD30	30” STORM PIPE	MAGENTA	STORM
SD30TX	30” STORM PIPE TEXT	MAGENTA	CONTINUOUS
SD33	33” STORM PIPE	GREY	STORM
SDTX	33” STORM PIPE TEXT	GREY	CONTINUOUS
SD36	36” STORM PIPE	RED	STORM
SD36TX	36” STORM PIPE TEXT	RED	CONTINUOUS
SD42	42” STORM PIPE	YELLOW	STORM
SD42TX	42” STORM PIPE TEXT	YELLOW	CONTINUOUS
SD48	48” STORM PIPE	CYAN	STORM
SD48TX	48” STORM PIPE TEXT	CYAN	CONTINUOUS
SD54	54” STORM PIPE	BLUE	STORM
SD54TX	54” STORM PIPTE TEXT	BLUE	CONTINUOUS
SD60	60” STORM PIPE	MAGENTA	STORM
SD60TX	60” STORM PIPE TEXT	MAGENTA	CONTINUOUS
SD66	66” STORM PIPE	GREY	STORM
SD66TX	66” STORM PIPE TEXT	GREY	CONTINUOUS
SD72	72” STORM PIPE	RED	STORM
SD72TX	72” STORM PIPE TEXT	RED	CONTINUOUS
SD84	84” STORM PIPE	YELLOW	STORM
SD84TX	84” STORM PIPE TEXT	YELLOW	CONTINUOUS
SDMISC	STORM MISC.	YELLOW	STORM
SD500TX	STORM 500 PLOT TEXT	WHITE	CONTINUOUS

SS4	4” SEWER PIPE	RED	SANITARY
SS4TX	4” SEWER PIPE TEXT	RED	CONTINUOUS
SS6	6” SEWER PIPE	CYAN	SANITARY
SS6TX	6” SEWER PIPE TEXT	CYAN	CONTINUOUS
SS8	8” SEWER PIPE	BLUE	SANITARY
SS8TX	8” SEWER PIPE TEXT	BLUE	CONTINUOUS
SS10	10” SEWER PIPE	MAGENTA	SANITARY
SS10TX	10” SEWER PIPE TEXT	MAGENTA	CONTINUOUS
SS12	12” SEWER PIPE	YELLOW	SANITARY
SS12TX	12” SEWER PIPE TEXT	YELLOW	CONTINUOUS
SS14	14” SEWER PIPE	RED	SANITARY
SS14TX	14” SEWER PIPE TEXT	RED	CONTINUOUS
SS15	15” SEWER PIPE	GREY	SANITARY
SS15TX	15” SEWER PIPE TEXT	GREY	CONTINUOUS
SS18	18” SEWER PIPE	RED	SANITARY
SS18TX	18” SEWER PIPE TEXT	RED	CONTINUOUS
SS21	21” SEWER PIPE	BLUE	SANITARY
SS21TX	21” SEWER PIPE TEXT	BLUE	CONTINUOUS
SS24	24” SEWER PIPE	MAGENTA	SANITARY
SS24TX	24” SEWER PIPE TEXT	MAGENTA	CONTINUOUS
SS27	27” SEWER PIPE	YELLOW	SANITARY
SS27TX	27” SEWER PIPE TEXT	YELLOW	CONTINUOUS
SS30	30” SEWER PIPE	CYAN	SANITARY
SS30TX	30” SEWER PPE TEXT	CYAN	CONTINUOUS
SS33	33” SEWER PIPE	BLUE	SANITARY
SS33	33” SEWER PIPE TEXT	BLUE	CONTINUOUS
SS36	36” SEWER PIPE	GREY	SANITARY
SS36TX	36” SEWER PIPE TEXT	GREY	CONTINUOUS
SSMISC	SEWER MISC.	RED	SANITARY
SS500TX	SEWER 500 PLOT TEST	WHITE	CONTINUOUS
WD1	1” WATER PIPE	RED	WATER
WD1TX	1” WATER PIPE TEXT	RED	CONTINUOUS
WD2	2” WATER PIPE	RED	WATER
WD2TX	2” WATER PIPE TEXT	RED	CONTINUOUS
WD3	3” WATER PIPE	BLUE	WATER
WD3TX	3” WATER PIPE TEXT	BLUE	CONTINUOUS
WD4	4” WATER PIPE	MAGENTA	WATER
WD4TX	4” WATER PIPE TEST	MAGENTA	CONTINUOUS
WD6	6” WATER PIPE	CYAN	WATER
WD6TX	6’ WATER PIPE TEXT	CYAN	CONTINUOUS
WD8	8” WATER PIPE	GREY	WATER
WD8TX	8” WATER PIPE TEXT	GREY	CONTINUOUS
WD10	10” WATER PIPE	WHITE	WATER
WD10TX	10” WATER PIPE TEXT	WHITE	CONTINUOUS
WD12	12” WATER PIPE	YELLOW	WATER
WD12TX	12” WATER PIPE TEXT	YELLOW	CONTINUOUS
WD16	16” WATER PIPE	RED	WATER

WD16TX	16” WATER PIPE TEXT	RED	CONTINUOUS
WDMISC	WATER MISC.	WHITE	WATER
WD500TX	WATER 500 PLOT TEXT	WHITE	CONTINUOUS
WELL	WELL	BLUE	CONTINUOUS

NOVEMBER 2019 UPDATE

CITY OF HOLLISTER

STANDARD SPECIFICATIONS

INDEX

STANDARD SPECIFICATIONS

CITY OF HOLLISTER STANDARD SPECIFICATIONS

The City of Hollister Standard Specifications shall be defined as the latest edition and supplement of the Standard Specifications for Public Works Construction ("Green Book" or S.S.P.W.C.) as prepared by the joint Cooperative Committee of the Southern California chapter of the American Public Works Association, and the Southern California Districts of the Associated General Contractors of California with modifications as set forth herein. The "Green Book" is available for inspection at the City Engineer's office, 375 Fifth Street, Hollister, California, or may be obtained from Building News, Inc., 3055 Overland Avenue, Los Angeles, California 90034, telephone (213) 202-7775.

PART 1
GENERAL PROVISIONS
SECTION 1-TERMS, DEFINITIONS, ABBREVIATIONS AND SYMBOLS

1-1 TERMS. Modify to read as follows:
Terms: Unless otherwise stated, the words directed, requires, permitted, ordered, instructed, designated, considered necessary, p prescribed, approved, acceptable, satisfactory, or words of like meaning, refer to actions, expressions, and prerogatives of the Engineer.

Unless otherwise stated or specifically enumerated I the Permit or Contract, the words directed, ordered, instructed, or words of like meaning and implying direction of work shall not apply to Private Contracts, except as required for public safety and convenience.

References to bids, bid items, bidders, or the distribution of cost over same shall not apply to Private Contracts.

1-2 DEFINITIONS
1-2.1 Modifications. Modify the following definitions to read:
Contractor – The individual, partnership, corporation, joint venture, or other legal entity having a Contract with the Agency to perform the Work <u>or cause the Work to be performed.</u> In the case of work being done under permit issued by the Agency, the permittee shall be construed to be the Contractor. The term "prime contractor" shall mean contractor.

Standard Specifications – City of Hollister Standards Specifications.

SECTION 2- SCOPE AND CONTROL OF THE WORK

2-1 AWARD AND EXECUTION OF CONTRACT, Modify to read as follows:
Award and execution of Contract will be as provided for in the Specifications, Instruction to Bidders or Notice Advertising for Bids.
<u>For private Contacts execution of contract shall be as provided for in the Subdivision Map Act and by ordinance</u>.

2-3 SUBCONTRACTORS Add Subsection **2-3.01 Applicability.**

2-3.01 Applicability, Add Subsection **2-3.1 General** does not apply to Private Contracts.

2-4 CONTRACT BONDS Add subsection **2-4-01 Applicability**.

2-4.01 Applicability, Subsection **2-4 CONTRACT BONDS** does not apply to Private Contracts. Security for Private Contracts shall be as provided for in the Subdivision Map and by ordinance.

2-8 RIGHT-OF-WAYS Add Subsection **2-8.1 Right-of-way for Private Contracts**.

2-8.1 Right-of-ways for Private Contracts, Rights-of-way, easements, or rights-of-entry for the Work shall be provided by the Contractor. Unless otherwise provided, The Contractor shall make arrangements, pay for, and assume all responsibility for acquiring, using, and disposing of all rights-of way, easements or rights-of-way whether required permanently of temporarily. The Contractor shall indemnify and hold the Agency harmless from all claims for damages caused by such actions.

2-9 SURVEYING, Modify Subsection 2-9.5 Line and Grade to read as follows:

2-9.5 Line and Grade All work shall conform to the lines, elevations, and grades shown on the plans.

Three consecutive points set on the same slope shall be used together so that any variation form a straight grade can be detected. This determination may also be made with laser leveling devices. Any such variation shall be reported to the Engineer. In the absence of such report, the Contractor shall be responsible for any error in the grade of this finished work.

Grades for underground conduits will be set at the surface of the ground. The Contractor shall transfer them to the bottom of the trench.

2-10 AUTHORITY OF BOARD AND ENGINEER Modify to read as follows:

2-10 AUTHORITY OF BOARD AND ENGINEER, The Board has the final authority in all matters affecting the work. Within the scope of the contract, the Engineer has the authority to enforce compliance with the Plans and Specifications. The Contractor shall promptly comply with instructions from the Engineer or an authorized representative.

On all questions relating to quantities, the acceptability of material, equipment, or work, the execution, progress or sequence of work, and the interpretation of Specifications or drawings, the

decision of the Engineer is final and binding, and shall be preceded to any payment under the Contract or disbursement from the set aside account for Private Contracts, unless otherwise ordered by the Board.

2-11 INSPECTION Modify to read as follows:

2-11 INSPECTION The work is subject to inspection and approval by the Engineer. The contractor shall notify the Engineer 24 hours prior to necessary inspection. Unless otherwise authorized, work shall be done only in the presence of the Engineer or an authorized representative. Any work done without proper inspection will be subject to rejection. The Engineer and any authorized representatives shall at all times have access to the work during its construction at shops and yards as well as the project site. The Contractor shall provide every reasonable facility for ascertaining that the materials and workmanship are in accordance with these specifications. Inspection of the work shall not relieve the contractor of the obligation to fulfill all conditions of the Contract.
For Private Contracts inspections may be limited to one per day depending on inspection availability.

SECTION 3- CHANGES IN WORK

Add Subsection 3-0 **APPLICABILITY**.

3-0 APPLICABILITY Only Subsection **3-1 CHANGE REQUESTED BY THE CONTRACTOR** shall apply to Private Contracts.

3-3 EXTRA WORK

3-3.2 Payment

3-3.2.3 Markup Modify to read as follows:

(a) **Work by Contractor**. The following percentage shall be added to the Contractor's cost s and shall constitute markup for all overhead and profits:

Labor	15
Materials	15
Equipment Rental	15
Other Items and Expenditures	15

(b) **Work by Subcontractor**. When all or any part of extra work is performed by a subcontractor, the markup established in subsection 3-3.2.3 (a) shall be applied to the Subcontractor's actual cost of such work which shall be the entire cost to the Agency.

SECTION 4- CONTROL OF MATERIAL

4-1 MATERIAL AND WORKMANSHIP

4-1.1 General, Add subsection **4-1.1.1 Private Contracts**.

4-1.1.1 Private Contracts All materials, parts, and equipment furnished by the Contractor in the Work shall be new, high grade, and free from defects. Quality of work shall be in accord with the generally accepted standards. Materials and work shall be subject to the Engineer's approval.

Material and work quality not conforming to the requirements of the Specifications shall be considered defective and will be subject to rejection. Defective work or material, when in place shall be removed from the work at the Contractor's expense and permanently marked. Defective material not yet in place, shall be permanently marked and not allowed to be incorporated into the work.

If the Contractor fails to replace any defective or damaged work or material, approval will not be given for any building permits. If the Contractor fails to replace defective or damaged work or material prior to the expiration of its contract with the City or if the defective or damaged work or material is judged to be hazard to the public, the Engineer may cause such work or materials to be replaced. The replacement expense shall be deducted from any security held by the City to ensure the completion of the work.

Used or second-hand materials, part, and equipment may be used only if permitted by the Specifications.

SECTION 5-UTILITIES

Add Subsection **5-0 APPLICABILITY.**

5-0 APPLICABILITY Any references to payment shall apply to public contracts only. For Private Contracts, the details and expenses of any relocation or protective measures shall be the responsibility of the Contractors.

5-1 LOCATION Modify to read as follows:

5-1 LOCATION The Permittee, in the case of private contract, and the Agency, in the case of a public, will search known substructure records and furnish the Contractor with copies of documents which describe the location of utility substructures, or will indicate on the plans for the project those substructures, except for service connections, which may affect the Work. Information regarding removal, relocation, abandonment, or installation of new utilities will be furnished to prospective connection for each type of utility.
Where underground main distribution conduits such as water, gas, sewer electric power, telephone or cable television are shown on the Plans, the Contractor, for the purpose of preparing a Bid shall assume that every property parcel will be served by a service connection for each type of utility.

As provided in Section 4216 of the California Government Code, at least 2 working days prior to commencing any excavation, if the excavation conducted in an area which is known, reasonably should be known, to contain subsurface installations, the Contractor shall contact the regional notification center. (Underground Service Alert – (800) 642-2444) and the City of Hollister Service Department (408) 637-8247.

The California Department of Transportation is not required by Section 4216 to become a member of the regional notification center. The Contractor shall contract it for location of its subsurface installations.

The Contractor shall determine the locations and depth of all utilities, including service connections, which have been marked by the respective owners and which may affect or be affected by its operations. If no separate pay item is provided in the contract foe this work, full compensation for such work shall be considered as included in the prices bid for other items of work.

Add subsection **5-7 CONTRACT PERSONS**.

5-7 CONTRACT PERSONS, Contract persons for the various utilities involved with or impacted by the Work shall be indicated in the special Provisions for public contracts. For private contracts securing contact persons shall be the responsibility of the Contractor.

SECTION 6- PROSECUTION, PROGRESS AND ACCEPTANCE OF THE WORK

6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK Modify to read as follows:

6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK After notification of award and prior to the start of any work, the Contractor shall submit to the Engineer for approval its proposed construction schedule. The construction schedule shall be in the form of a tabulation, chart, or graph and shall be in sufficient detail to show the chronological relationship of all activities of the project including, but not limited to, estimated starting and completion dates of various activities, submittal of shop drawings to the Engineer for approval, procurement of materials, and scheduling of equipment. The Construction schedule shall reflect completion of all work under the Contract within the specified time and in accordance with these specifications.

Unless otherwise provided, the Contract time shall commence upon the date issuance of a notice to proceed. The Work shall start within 10 days thereafter and be diligently prosecuted to completion within the time provided in the Specifications. For Private Contracts time of completion shall be as indicated in the improvement contract or permit, as specified by ordinance.

If the contractor desires to make a major change in the method of operations after commencing construction, or if the schedule fails to reflect the actual progress, the contractor shall summit to the Engineer a revised construction schedule in advance of beginning revised operations.

The Engineer may waive these requirements for work constructed under permit or Private Contract.

6-2 PROSECUTION OF WORK Modify to read as follows:

6-2 PROSECUTION OF WORK To minimize public inconvenience and possible hazard and to restore streets and other work areas to their original condition and former state of usefulness as soon as practicable, the Contractor shall diligently prosecute the Work to completion. If, as determined by the Engineer, the Contractor fails to prosecute the Work to the extent that the above purposes are not being accomplished, the contractor shall, upon orders from the Engineer, immediately take steps necessary to fully accomplish said purposes. All costs of prosecuting the work as described herein shall be included in the Contractor's Bid or for Private Contracts shall be borne by the Contractor. Should the contractor fail to take the necessary steps to fully accomplish said purposes, after orders of the Engineer to do so, the Engineer may suspend the Work in whole or in part, until the Contractor takes said steps.

As soon as possible under the provision s of these Standard Specifications, the Contractor shall backfill all excavations and restores to usefulness all improvements existing prior to the start of the Work.

If Work is suspended through no fault of the Agency, all expenses and losses incurred by the Contractor during such suspensions shall be borne by the Contractor. If the Contractor fails to properly provide for public safety, traffic, and protection of the Work during periods of suspension, the Agency may elect to do so, and deduct the cost thereof from monies due the Contractor or in the case of Private Contracts from any securities provided to ensure the completion of the Work. Such actions will not relieve the Contractor from liability.

6-4 DEFAULT BY CONTRACTOR. Add subsection **6-4.1 Applicability**.

6-4.1 Applicability Subsection **6-4 DEFAULT BY CONTRACTOR** shall apply only to public contracts.

6-5 TERMINATION OF CONTRACT Add subsection **6-5.1 Applicability**.

6-5.1 Applicability Subsection **6-5 TERMINATION OF CONTRACT,** Shall apply only to public contracts.

6-6 DELAYS AND EXTENSIONS OF TIME Add subsection **6-6.01 Applicability**.

6-6.01 Applicability Subsection **6-6 DELAYS AND EXTENSIONS OF TIME,** Shall apply only to public contracts. For Private contracts delays and extensions of time shall be as provided in the improvement contract or permit, and as provided for by ordinance.

6-7 TIME OF COMPLETION Add subsection **6-7.01 Applicability**

6-7.01 Applicability Subsection **6-7 TIME OF COMPLETION**. Shall apply only to public contracts. For Private Contracts time of completion shall be as provided for in the improvement contract or permit, and as provided for by ordinance.

6-9 LIQUIDATED DAMAGES Add subsection **6-9.1 Applicability**

6-9.1 Private Contracts. For Private Contracts Liquidated damages shall be as defined in subsection **6-9 LIQUIDATED DAMAGES,** but shall be determined as a percentage of the engineering and inspection fees, as determined by ordinance, and assessed on a monthly rather than daily basis.

SECTION 7-RESPONSIBILITIES OF THE CONTRACTOR

7-2 LABOR

Add subsection **7-2.3 Laws Specifically Applicable to Public Contracts**.

Add subsection **7-2.4 Reports, Records, and Data**.

7-2.3 Laws Specifically Applicable to Public Contracts The laws presented in this section are for the information of the Contractor and while all of these laws are applicable to public contracts, some may be applicable to Private Contracts as well. It is the responsibility of the Contractor to observe and comply with all applicable laws as specified in subsection **7-13**.

7-2.3.1 Hours of Labor The Contractor shall forfeit, as penalty to the City of Hollister twenty five dollars ($25.00) for each laborer, workman or mechanic employed in execution of the contract by him or by any subcontractor under him upon any subcontractor under him upon any of the work hereinbefore mentioned, for each calendar day duping which said laborer, workman, or mechanic is required or permitted to labor more than eight (8) hours in any one calendar day and forty (40) hours in an one calendar week in violation of the provisions of the Labor code, and in particular, Section 1810 to 1816 thereof, inclusive.

7-2.3.2 Prevailing Wage Pursuant to Section 1773 of the Labor Code of the State of California, the City has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general classification, or type of workman required to construct said improvement. A copy of said prevailing rate of per diem wages is on file in the office of the City Clerk, to which reference is hereby made for further particulars. Said prevailing rate of per diem wages shall be made available to any interested party upon request, and the successful bidder shall post a copy thereof at the job site.

It shall be incumbent upon the contractor to who the contract is awarded and upon any subcontractor under him to pay not less than the said specified rates to all laborers, workmen, and mechanics employed by them in the execution of the contract.

The City shall require that any class of laborers or mechanic, including apprentices and trainees, which is not listed in the wage determination and which is to be employed user the contract, shall be classified or reclassified conformably to the wage determination. In the event the interested parties cannot agree on the proper classification or reclassification of a particular class of laborers and mechanics, including apprentices and trainees, to be used, the question accompanied by the recommendation of the contracting officer shall be referred to the Secretary of Labor for final determination.

7-2.3.3 Labor Previsions Pursuant to the provisions in Sections 1777.5 (Chapter 1411, Statutes of 1968) and 1777.6 of the Labor Code concerning the employment of apprentices of the Contractor or any sub-contractor under him.

Section 1777.5, as amended, requires the Contractor or subcontractor employing tradesmen in any apprentice-able occupation to apply to the joint apprenticeship committee nearest the site of the public works project and which administers the apprenticeship program in that trade for a certificate of approval. The certificates will also fix the ratio of apprentices to journeymen that will be used in the performance of the contract. The ratio of apprentices to journeymen in such cases shall not be less than one to five except:

1. When unemployment in the area of coverage by the joint apprenticeship committee has exceeded and average of 15 percent in the 90 days prior to the request for certificate, or

2. When the number of apprentices in training in the area exceeds the ratio of one to five, or

3. When the trade can show that it is replacing at least 1/30 of its membership through apprenticeship training on an annual basis statewide or locally, or

4. When the Contractor provides evidence that he employs registered apprentices on all of his contracts on an annual average of no less than one apprentice to eight journeymen.

The contractor is required to make contributions to funds established for the administration of apprenticeship programs, if he employs registered apprenticeship programs, if he employs register apprentices or journeymen in any apprentice-able trade on such contracts and if other contractors on the public works site are making such contributions.

The Contractor and any subcontractor under him shall comply with the requirements of sections 1777.5 and 1777.6 in the employment of apprentices.

Information relative to apprenticeship standards, wage schedules and other requirements may be obtained from the Director of Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

7-2.3.4 EQUAL EMPLOYMENT OPPORTUNITY No person in the United States shall, on the grounds of race, color, or national origin, sex, or age be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance Reference Title VI of the Civil Rights Act of 1964 (42 USC 2000d) and Section 112 of Public Law 92.65.

During the performance of this contract, the Contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employee because of race, color, religion, sex or national origin. The Contractor will take affirmative action to ensure the applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex age, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, and demotion, or training, recruitment or recruitment advertising; layoff to termination, rates of pay or other forms of compensation; and selection for training includes apprenticeship.

2. The Contractor agrees to post in conspicuous places available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of the non-discrimination clause.

3. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

4. The Contractor will send to each labor union or representative of the workers with which he has collective bargaining agreements or other contract or understanding, a notice to be provided by the agency contacting officer, advising the labor union or worker's representative of the Contractor's commitment and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

5. The contractor will furnish all information and reports required and will permit access to his books, records, and accounts, by the City for purposes of investigation to ascertain compliance with such rules and regulations, and orders.

6. In the event of the Contractor's non-compliance with non-discrimination clauses of these Standard Specifications or the Special Provisions or with any such rules, regulations or orders, the contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further City contracts.

7. The Contractor will include the provisions of the preceding paragraphs 1 through 7 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the City of Hollister that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontractor or purchase order as the City may direct as a means of enforcing such provisions including sanctions for non-compliance.

8. Exemptions to the above Equal Opportunity Clause:

(a) Contracts and subcontracts not exceeding $10,000 (other than government bills of lading) are exempt.

(b) Except in the case of subcontractors for performance of construction work at the site of construction, the clause shall not be required to be inserted in subcontracts below the second tier.

(c) Contracts and subcontracts not exceeding $100,000 for standard commercial supplies or raw materials are exempt.

7-2.3.5 Employment of Local Labor The contractor shall give full consideration to all qualified job applicants referred by the local employment service, but it is not required to employ any job applicants referred whom the contractor does not consider qualified to perform the classification of work required.

The Payrolls maintained by the Contractor shall contain the following information: The employee's full name, address, social security number, and indication of the ethnic background of each worker.

The Contractor shall include the provision of this condition in every subcontract for which is, or reasonably may be, done as onsite work.

7.2.3.6 Registration of Contractors. The Contractor shall possess either a Class A license or a combination of licenses as specified in the special provisions at the time the contract is awarded.

7-2.3.7 Copeland "Anti-Kickback" Provisions The provisions of this Section, CFR Part 3, prescribe "Anti-Kickback" regulations under Section 2 of the Act of June 13th, 1964, as amended (40 U.S.C. 276c) , popularly known as the Copeland Act.

7-2.3.8 Other Prohibited Interests. No Official of the City who is authorized in such capacity and in behalf of the City to negotiate, make, accept, or approve, or to take part in making, accepting, or approving any architecture, engineering inspection, construction or material supply contract, or any subcontract in connection with the construction of the project shall become directly or indirectly interested personally in the any contract or any part thereof. No officer, employee, attorney, architect, engineer or inspector of or for the City who is authorized in such capacity on behalf of the City to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in the contract or any part thereof, any material supply contract, subcontract, insurance contract or any other contract pertaining to the project.

7-2.4 Reports, Records, and Data, The City of Hollister, or any of its duly authorized representatives, shall have access to any books, documents, papers, and records of the contractor which are directly pertinent to the Contract for the purpose of making audit, examination excerpts, and transcription. The cost of making these records available shall be considered to be included in the price of the carious items of work.

7-3 LIABILITY INSURANCE, Modify to rad as follow:

7-3 LIABILITY INSURANCE, The Contractor shall furnish the Agency a policy or certificate of liability insurance in which the Agency is the named insured or is named as an additional

insured with the Contractor. Notwithstanding any inconsistent statement in the policy or any subsequent endorsement attached thereto, the Agency shall be the insured or named as an additional insured covering the Work, whether liability is attributable to the Contractor or the Agency. The policy shall insure the Agency, its officers, employees and agents while acting within the scope of their duties on the Work, against all claims arising out of or in connection with the Work, except as provided for in Subsection 6-10.

The contractor may file insurance acceptable to the Agency covering more than one project. The coverage shall provide the following minimum limits:

Bodily Injury Liability	$ 500,000 each person $1,000,000 each occurrence
Property Damage	$ 250,000 each occurrence $ 500,000 Aggregate

A combined single limit policy with aggregate limits in amount $1,000,000 will be considered equal to the required minimum limits. Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve the Contractor for liability in excess of such coverage nor under other provisions of the Contract or otherwise in law.

Such insurance shall be issued by a company or companies authorized to transact in the State of California.

Except as provided for in Subsection **6-10**, the Contractor shall save, keep and hold harmless the Agency, its officers and agents from all damagers, cost or expenses in law or equity that may at any time arise or be set up because of damages to propriety, or of personal injury received by reason of or in the course of performing work, which may be caused by any willful, or negligent act or omission by the Contractor, any of the Contractor's employees, or any Subcontractor. The agency will not be liable and acceptance, except as provided for in Subsection **6-10**.

All liability insurance policies shall bear and endorsement or shall have attached a rider whereby it is provided that, in the event of expiration or proposed cancellation of such policies for any reason whatsoever, the Agency shall be notified by registered mail return receipt requested, giving a sufficient time before the date thereof to comply with any applicable law or stature, but in no event less than 30 days before expiration cancellation is effective.

If the Contractor fails to maintain such insurance, the Agency may take out such insurance and deduct and retain the amount of the premiums.

For private contracts contractual liability insurance for liability assumed by the Contractor under contract with the City of Hollister. Such insurance as is afforded by the policy to Contractor for

contractual property damage liability insurance shall include coverage for property damage caused by blasting, collapse, structural, injuries or damage to underground utilities. The policy shall not contain the so-called "x", "c" or "u" excursions. The minimum limits of liability for this insurance shall be as indicated above.

7-4 WORKERS' COMPENSATION INSURANCE Modify to read as follows:

7-4 WORKERS' COMPENSATION INSURANCE Before execution of the Contract by the Board, the Contractor shall file with the Engineer the following signed certification:

"I am aware of the provisions of Section 3700 of the Labor code which require every employer to insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

The Contractor shall also comply with Section 3800 of the Labor Code by securing, paying for, and maintaining in full force and effect for the duration of the contract, complete Workers' Compensation Insurance, and shall furnish a Certificate of Insurance or Certificate of Permission to Self-Insure signed by the Department of Industrial Relations Administration of Self-Insurance to the Engineer before execution of the Contract. The Agency, its officers, or employees, will not be responsible for any claims in law or equity occasioned by failure of the Contractor to comply with this paragraph.

If any injury occurs to any employee of the Contractor for which the employee, or his dependents in the event of his death, is entitled to compensation from the City Agency under provisions of the Workers' Compensation Act, as amended, or for which compensation is clamed from the Agency, the Agency may retain out of sums of money due the contractor or held as security under the Contract an amount sufficient to cover such compensation as fixed by said Act, until such compensation is paid or until it is determined that no compensation is die and if the Agency is compelled to pay such compensation, it will deduct and retain from sums due the Contractor or held as security the amount so paid.

If the contractor fails to maintain such insurance, the Agency may take out such compensation insurance and deduct and retain the amount of the premium,

All compensation insurance policies shall bear an endorsement or shall have attached a rider whereby it is provided that, in the event of expiration or proposed cancellation of such policies for any reason whatsoever, the Agency shall be notified by registered mail not less than 30 days before expiration or cancellation is effective.

7-5 PERMITS. Modify subsection to read as follows:

7-5 PERMITS AND LICENSES. The Agency will obtain, at no cost to the Contractor, all encroachment and building permits necessary to perform Contract work in streets, highways, railways or other rights-of-ways. The Contractor shall obtain and pay for all costs incurred for permits necessitated by its operation such as, but not limited to, these permits requires for night work, overloads, blasting and demolition. For private contracts, the contractor shall obtain all permits incidental to the Work or made necessary by its operations, and pay all cost incurred by the permit requirements.

The Contractor and all Subcontractors shall obtain a City of Hollister business license. No progress payment or security disbursement, in the case of private contracts, will be made by the Agency to the Contractor id these business licenses are not obtained.

7-10 PUBLIC CONVENIENCE AND SAFETY

7-10.2 Storage of Equipment and Materials in Public Street

Add subsection **7-10.2.1 Applicability.**

7-10.2.1 Applicability Subsection **7-10.2** shall apply only to improvements within existing Agency rights-of-way.

SECTION 9- MEASUREMENT AND PAYMENT

Add subsection **9-0.1 APPLICABILITY**.

9-0.1 APPLICABILITY Subsection **9-1 MEASUREMENT OF QUANTITIES FOR UNIT PRICE WORK**, subsection **9-2 LUMP SUM WORK**, and subsections **9-3.3 Delivered Materia**l and 9-3.4 **Mobilization** shall apply to private contracts only for the purpose of making estimates of partial disbursements as reflected in the disbursement schedule supplied prior to commencing the project.

9-3 PAYMENT

9-3.1 General Add subsection **9-3.1.1 Private Contracts**

9-3.1.1 Private Contracts For private contracts quantities listed in the disbursement schedule are for the facilitation of partial disbursements and will be release in proportion to the actual quantities constructed.

Whenever immediate action is required to prevent impending injury, death, or property damage, and precautions which are the Contractor's responsibility have not been taken and are not reasonably expected to be taken, the Agency may, after reasonable attempt to notify the Contractor, cause such precautions to be taken and shall charge the cost thereof against the Contractor, or may not issue building permits to the Contractor until such cost is reimbursed to the Agency. Agency action or inaction shall not be construed as relieving the Contractor or its Surety from Liability.

Disbursements from monies held as security by the Agency shall not relieve the Contractor from its obligations under the Contract; nor shall such disbursements be construed to be acceptance of any of the Work. Disbursement shall not be construed as the transfer of ownership of any equipment or materials to the Agency. Responsibility of ownership shall remain with the Contractor who shall be obligated to store, protect, repair, replace, rebuild or otherwise restore any fully or partially completed work or structure; or replace any materials or equipment required to be provided under the Contract which may be damaged, lost, stolen or otherwise degraded in any way prior to acceptance of the Work, except as provided in Subsection **6-10**.

Warranty periods shall not be affected by any disbursement but shall commence upon final acceptance of the improvements.

If, within the time fixed by law, a properly executed notice to stop payment is filed with the Agency, due to the Contractor's failure to pay for labor or materials used in the Work, all money due for such labor or materials will be withheld from disbursement to the Contractor in accordance with applicable laws.

Upon acceptance of the Work, all monies retained by the Agency will be disbursed to the Contractor except such amounts as are required by law to be withheld by properly executed and filed notices to stop payment, amounts to be retained for the warranty, and any additional monies authorized by the Contractor to be further retained.

9-3.2 Partial and Final Payment Modify to read as follows:

9-3.2 Partial and Final Payment The Engineer will, after award of Contract, establish a closure date for the purpose of making monthly progress payment. The Contractor may request in writing that such monthly closure date be changed. The Engineer may approve such request when it is compatible with the Agency's payment procedure.

Each month, the Engineer will make an approximate measurement of the work performed to the closure date and as a basis for making monthly payment, estimate its value based on the Contract Unit Prices or as provided for in subsection **9-2**. No such estimate or payment shall be required to be made, when in the judgment of the Engineer, the work is not proceeding in accordance with the provisions of the contract, or when in his judgment the total value of the done since the last estimate amounts to less than three hundred dollars ($300). When the work has been satisfactorily completed, the Engineer will determine the quantity of work performed and prepare the final estimate.

From each progress estimate, 10 percent will be deducted and retained by the Agency, and the remainder less the amount of all previous payments will be paid to the Contractor. After 50 percent of the Work has been completed and if progress on the Work is satisfactory, the deduction to be made from the remaining progress estimates and from the final estimate may limited to $500 or 10 percent of the first half of the total Contract amount, whichever is greater.

No progress payment made to the Contractor or its sureties will constitute a waiver of liquidated damages under subsection **6-9.**

As provided for in Section 10263 and 22300 of the California Public Contract Code, the Contractor may substitute securities for any monies withheld by the Agency to ensure performance under the Contract.

9-3.2.1 Private Contracts The Contractor may request partial disbursements of monies held as security by the Agency on no less than a monthly basis. The Engineer shall, upon request for partial disbursement, estimate the work remaining to complete the Contract. The difference between this amount and the original estimate shall be the difference between this amount and the original estimate shall be the estimate amount of work completed. 10 percent of the estimated amount completed will be retained by the Agency to ensure performance under the contract, the remainder of the estimated amount of work completed less all previous disbursements will be disbursed to the Contractor.

No partial disbursement made to the Contractor or its sureties shall constitute a waiver of the liquidated damages under subsection **6-9.1**.

PART 2
CONSTRUCTION MATERIALS

ADD **SECTION 100 APPLICABILITY**

SECTION 100 APPLICABILITY

100-1 MEASUREMENT AND PAYMENT Unless otherwise noted all reference to payment and measurement for payment shall apply only to work contracted for by the agency.

SECTION 200 ROCK MATERIALS

200-2 UNTREATED BASE MATERIALS

Add **SUBSECTION 200-2.01 Requirements**.

200-2.01 Requirements Unless otherwise specified, untreated base material shall be a minimum of crushed miscellaneous bas (see subsection **200-2.1** for order of preference) and shall be of fine gradation. (See subsections **200-2.2.2**, **200-2.3.2**, and **200-2.4.2**)

200-2.1 General Modify subsection 200-2.1 to read as follows:

200-2.1 General Materials used as untreated base or sub base shall be classified in the order of preference as follows:

Crushed Aggregate Base or Crushed Slag Base
Crushed Miscellaneous Base
Processed Miscellaneous Base
Select Sub base

When base material without further qualification is specified, the Contractor shall supply crushed miscellaneous base. When a particular classification of base material is specified, the Contractor may, following the order of preference listed above, substitute any higher classification of base material for that specified. All processing or blending of materials to meet the grading requirement will be performed at the plant or source. The materials shall compact to a hard, firm, unyielding surface and shall remain stable when saturated with water.

SECTION 203 BITUMINOUS MATERIALS

203-5 EMULSION-AGGREGATE SLURRY

203-5.3 Composition and Grading Add subsection **203-6.5.3.1 Requirements**.

203-6.5.3.1 Requirements, Unless otherwise specified all emulsion-aggregate slurry shall be type II.

203-6 ASPHALT CONCRETE

203-6.2 Materials

203-6.2.1 Modify subsection **203-6.2.1 Asphalt** to read as follows:

203-6.2.1 Asphalt The asphalt binder to be mixed with the aggregate shall be paving asphalt with a viscosity grade of AR-4000, unless otherwise specified and shall conform to subsection 203-1.

203-6.3 Asphalt Concrete Mixtures

203-6.3.2 Composition and Grading Add subsection **203-6.3.2.1 Requirements**.

203-6.3.2.1 Requirements Unless otherwise specified, a Class C1 mixture shall be used when asphalt pavement thickness is less than 3 inches. When asphalt pavement thickness exceeds 3 inches the finish course shall be a Class C2 mixture and all preceding course shall be a Class B mixture.

SECTION 207-PIPE

Delete the following subsection in their entirety:

207-1 NONREINFORCED CONCRETE PIPE
207-3 LINED REINFORCED CONCRETE PIPE
207-4 CONCRETE CYLINDER PIPE
207-5 REINFORCED CONCRETE PRESSURE PIPE
207-6 ASBESTOS CEMENT SEWER AND STORM DRAIN PIPE
207-7 ASBESTOS CEMENT PRESSURE PIPE
207-8 VITRIFIED CLAY PIPE
207-10 STEEL PIPE

207-9 CAST IRON AND DUCTILE IRON PIPE Add subsection **207-9.01 Cast Iron pipe.**

207-9.2.7 Cast iron pipe Cast iron pipe of any kind will not be allowed. Cast iron fittings may be allowed.

Add subsection **207-9.2.7 Cathodic Protection against External Corrosion**.

207-9.2.7 Cathodic Protection against External Corrosion When required, Cathodic protection shall be provided by galvanic magnesium anodes. The magnesium anodes shall meet the following specifications:

1. Composition

a. Backfill mixture consisting of 75% Hydrated gypsum, 20% Wyoming Hi-Jel Bentonite, and 5% Sodium Sulfate vibratory packed in cotton bag around anode.

b. Galvanized steel core weighing not more than 0.10 pounds per lineal foot cast into full length of anode with 10 feet of #12 TW insulated lead wire attached.

c. Magnesium alloy comprised of:

Element	Specification
Aluminum	5.0 – 7.0%
Manganese	0.15% Min.
Zinc	2.0 – 4.0%
Silicon	0.030% Max.
Copper	0.10% Max.
Nickel	0.003% Max.

Iron	0.003% Max.
Other	0.30% Max.
Magnesium	Remainder

2. Size

Nominal Dia.	Anode Weight
6" – 8"	9 lbs.
10" – 12"	17 lbs.
14" – 24"	32 lbs.

Anode installation shall conform to City of Hollister Standard Plans B-15-1 and B-15-2.

207-15 ABS SOLID WALL PIPE Modify subsection 207-15.1 General to read as follows:

207-15.1 General This subsection applies to ABA solid wall pipe for use as sanitary sewers and house connection sewers which have a nominal diameter of 6 inches or less. Pipe, fitting and joints shall comply with ASTM D 2751 except as modified herein. Minimum wall thickness shall correspond with SDR 23.5 for house connection sewers and SDR 35 for mains. All joints shall be solvent welded.
Joint solvent cement shall be ABS cement conforming to ASTM D 2235.

207-17 PVC PLASTIC PIPE Modify subsection 207-17 General to read as follows:

207-17.1 General This subsection applies to the requirements for unplasticized PVC plastic pipe for sanitary sewers, storm drains, and house connection sewers. Pipe, fittings, couplings, and joints shall conform to the requirements listed below except that PVC Schedule 40 shall be used for house connection sewers and as otherwise modified by the Plans or Specifications.

Pipe Size (Inches)	**ASTM**	**Wall Thickness Min.**
4-15	D3033	SDR 35
4-15	D3034	SDR 35
4-18	F949-90	N/A
18-30	F679	"T-1" only

All pipes, except house connection sewers, shall have integral bell and spigot rubber ring gasket joints. House connection sewer shall be joined in conformance w/ subsection **207-17.3.3 Solvent Cement Joints**. Shall be gasket joints

207-18 (BLANK) to become **207-18 PVC PIPE FOR POTABLE WATER DISTRIBUTION.**

207-18 PVC PIPE FOR POTABLE WATER DISTRIBUTION

207-18.1 General This section applies to PVC pipe for use in pressurized systems for the distribution of potable water. All PVC pipe for potable water distribution shall comply with AWWA Standard C900 and unless otherwise specified be DT 18 (pressure Class 150). Any excerpts from AWWA Standard C900 used in this subsection shall be for reference only and unless otherwise specified the actual AWWA Standard shall apple.

207-19 POLYETHYLENE SOLID WALL PIPE AND LINER Modify to read as follows:

207-19 HIGH-DENSITY POLYETHYLENE (HDPE) PROFILE PIPE AND HIGH DENSITY POLYETHYLENE TUBING

207-19.1 General Modify to read as follows:

207-19.1 General High-density polyethylene (HDPE) plastic profile pipe for use in 18-inch 36-inch gravity sanitary sewers and storm drains shall comply with ASTM F 894. All pipes shall have integral bell and spigot rubber ring joints. Pipe with 16 feet shall be Class 63. Branch connections shall be made with the use of manufactured “tees” or field fabricated tee legs. If field fabricating is done, the HDPE welder shall be certified by the manufacturer prior to any fabrication. With the approval of the Engineer, Fowler “inserta-Tees” may be used.

High density polyethylene CTS tube for the transmission of potable water shall comply with ASTM D 2737 and AWWA Standard C901 and shall meet the following description:
Plastic extrusion compound: Type III, Class C, and Category 5 Grade P34 as defined in ASTM D 1248.
High density polyethylene (HDPE) plastic smooth interior corrugated pip for sanitary sewer shall comply with ASTM F405 or ASTM F667, depending on diameter. Gasketed coupling shall comply with ASTM D-3034 and shall be affixed to the pipe joint at the factory. Fittings shall be gasketed PVC complying with ASTM D-3034.
Standard pipe dimension ratio (SDR) 9-200psi pressure rating.

207-19.4 Marking Modify to read as follows:

207-19.4 Marking Pipe and liner shall be marked at 5-foot intervals or less with marking which identify the manufacturer, pipe size, class and profile number, and production code.
At the end of the production shift, during which a production lot has been extruded, the marking code on the pipe shall be changed to indicate that said time intervals have elapsed and that a new production shift has begun.
Fittings shall be marked with the name of the manufacturer or its logo, the size, and the material from which they were molded or fabricated.

PART 3
CONSTRUCTION METHODS
SECTION 300- EARTHWORK

300-1 CLEARING AND GRUBBING

300-1.3 Removal and Disposal of Materials

300-1.3.2 Requirements
(c) Concrete Curb, Walk, Gutter, Cross Gutters, Driveways and Alley Intersections. Modify to read:
(c) Concrete Curb, Walk, Gutter, Cross Gutters, Driveways and Alley Intersections. Concrete shall be removed to neatly sawed edges with saw cuts made to a minimum depth of 1-1/2 inches. Concrete sidewalk or driveway to be removed shall be neatly sawed in straight lines either parallel to the curb or at right angles to alignment of the sidewalk. Saw cut in sidewalk or driveway shall be at construction joints, expansion joints, or wakened plan joints or at scores. Curb and gutter shall be saw cut face and at construction joints, expansion joints, or weakened plan joints.

SECTION 301-TREATED SOILS, SUBGRADE PREPARATION AND PLACEMENT OF BASE MATERIALS

Add subsection **301-0 USE OF TREATED SOILS.**

301-0 USE OF TREATED SOILS

301-0.1 General Treated soils will not be allowed except under special circumstances and must be approved in advance by the Engineer.

301-1 SUBGRADE PREPARATION

301-1.2 Preparation of Subgrade Modify to read as follows:

301-1.2 Preparation of Subgrade Unless otherwise specified and, after rough grading has been completed, the bottom six inches of subgrade shall be exposed and then shall be loosened to a depth of at least six inches. The loosened material shall then be worked to a finely divided condition and all rocks larger than 3 inches in diameter shall be removed. The moisture content shall be brought to 2% above optimum or as directed by the geotechnical engineer by the addition of water, by the addition and blending of dry suitable material or by the drying of existing material. The material shall then be compacted by approved equipment to the specified relative compaction. The top 6 inches subgrade shall then be placed, worked, moisture, conditioned, and compacted in the same manner as the bottom 6 inches of subgrade. Subgrade

beneath sidewalks shall be conditioned to a depth of 6 inches in the same manner as the bottom 6 inches of subgrade as specified above.
Nothing contained herein, shall be construed as a prohibition of the contractor removing, exposing, or processing the subgrade material to greater depth, or the placement of material in less than six (6) inch lifts at the contractor option, or as recommended by the project geotechnical engineer.

301-1.3 Relative Compaction Modify to read as follows:

301-1.3 Relative Compaction Except in areas where P.C.C. sidewalk is to be placed, the top 12 inches of subgrade material shall be compacted to 95% relative compaction, including handicap ramps. In areas where sidewalk is to be placed the top 6 inches of subgrade shall be compacted to 90% relative compaction.
After compaction and trimming, the subgrade shall be firm, hard, and unyielding.

301-1.6 Adjustment of Manhole Frame and Cover Sets to Grade. Modify to read as follows:

301-1.6 Adjustment of Valve Boxes and Manhole Frame and Cover Sets to Grade. Utility manhole and vault frames and covers within an area to be paved or graded will be set by the owners thereof to finish grade. Water valve boxes and sewer and storm drain manhole frames and covers within the area to be paved or graded shall be set to finish grade by the Contractor. Valve boxes and manholes in AC pavement shall be set to finish grade in accordance with provisions of Subsection 302-5.8. In the case of Portland cement concrete pavement, valve boxes and manhole frames shall be set to finish grade before paving. Repaving required as a result of reconstruction or adjusting all valve boxes, manhole and vault frames and covers to grade shall be the responsibility of the Contractor and the cost thereof shall be included in the bid item for pavement.
The Contractor shall remove all debris from the interior of valve boxes and manholes and shall clean all foreign material from the tops of the valve boxes and the manhole frames and covers.

301-2 UNTREATED BASE

301-2.2 Spreading Modify to read as follows:

301-2.2 Spreading Imported aggregate base shall be delivered to the roadbed as uniform mixtures and each layer shall be spread in one operation. Segregation shall be avoided and the base shall be free from pockets of coarse or fine material.

Aggregate bases shall be deposited on the roadbed at a uniform quantity per linear foot, which quantity will provide the required compacted thickness within the tolerance specified herein without resorting to spotting, picking up or otherwise shifting the aggregate base material. At the

time aggregate base is spread, it shall have moisture content sufficient to obtain the required compaction. Such moisture shall be uniformly distributed throughout the material.

Where the required thickness is 8 inches or less, the base material may be spread and compacted in one layer. Where the required thickness is more than 8 inches the base material shall be spread and compacted in two or more layers of approximately equal thickness and the maximum compacted thickness of any one layer shall not exceed 8 inches. Each layer shall be spread and compacted in a similar manner.

The use of motor graders will be permitted during deposition, spreading and compacting operations, except when self-propelled spreaders are specified.

When the subgrade for aggregated base consists of cohesionless sand and written permission is granted by the Engineer, a portion of the aggregate base may be dumped in piles upon the subgrade and spread ahead from the dumped material in sufficient quantity to stabilize the subgrade. Segregation of aggregates shall be avoided and the material as spread shall be free from pockets of coarse or fine material.

301-2.3 Compacting Modify to read as follows:

301-2.3 Compacting Rolling shall always be commenced along the edge of the area to be compacted and the roller shall gradually advance toward the center of the area to be compacted.

Roller shall be operated along lines parallel or concentric with the centerline of the road being constructed, and no material variation therefrom will be permitted. All rollers must be maintained in good mechanical condition.

The relative compaction of each layer of compacted base material shall not be less than 95 percent.

The surface of the finished aggregate base at any point shall not vary more than 0.02 foot above or below the grade established by the Engineer.

Base which does not conform to the above requirements shall be reshaped or reworked, watered and thoroughly recompacted to conform to the specified requirements.

SECTION 302-ROADWAY SURFACING

302-5 ASPHALT CONCRETE PAVEMENT

302-5.3 Prime Coat Modify to read as follows:

302-5.3 Prime Coat When specified, a prime coat consisting of Grade SC-250 liquid asphalt shall be applied at a rate of 0.25 gallon per square yard. Grade SC-70 liquid asphalt may be used when approved by the Engineer.

302-5.5 Distribution and Spreading Modify to read as follows:

302-5.5 Distribution and Spreading the Contractor shall provide and install a header upon the line of termination of asphalt pavement where shown on the Plans or required by the Specifications. Such headers shall remain in place upon completion of the improvements.

Headers shall be 2-inch (nominal size) lumber (Redwood or Pressure Treated Douglas Fir), the vertical dimension of which shall be within ½ inch of the thickness of the pavement at the header line. The headers shall have firm bearing on the header subgrade and the top edges shall be set to conform to the grade of the proposed street surface. Side stakes 2 inches by 4 inches (nominal size), 18 inches long, or longer, and spaced not over 4 feet apart, shall be driven on the outside of the headers to a depth of 1 inch below the top edge and then nailed to the header. The joints between the individual boards being used as headers shall be spliced with a 1-inch-thick (nominal size) board of the same height as the header and not less than 24 inches long.

At the time of delivery to the Work site, the temperature on mixture shall not be lower than 260 degree Fahrenheit or higher than 320 degree Fahrenheit, the lower limit to be approached in warm weather and higher in cold weather.

Asphalt concrete shall not be placed when the atmospheric temperature is below 40 degrees Fahrenheit or during unsuitable weather.

The asphalt concrete shall not be placed when the atmospheric temperature is below 40 degrees Fahrenheit or during unsuitable weather.

The asphalt concrete shall be evenly spread upon the subgrade or base to such a depth that, after rolling, it will be of the specified cross section and grade of the course being constructed.

The depositing, distributing, and spreading of the asphalt concrete shall be accomplished in a single, continuous operation by means of a self-propelled for that purpose. The machine shall be equipped with a screed or strike-off assembly capable of being accurately regulated adjusted to distribute a layer of the material to a definite predetermined thickness. When paving is of a size

or in a location that use of a self-propelled machine is impractical the Engineer may waive the self-propelled requirement.

Asphalt concrete of the Class indicated in the following table shall be laid in course not exceeding 6 inches in Thickness.

Specified Total Thickness of Pavement		Minimum Number of Courses	Class of Mixture
Greater Than (Inches)	But Not More than (Inches)		
0	1	1	D1 or D2
1	1 ½	1	C2
1 ½	3	1	C2
3	-	2	B or C2*

*** For pavement with more than one course the finish course shall be Class C2 and all other courses shall be Class B.**

Spreading, once commenced, must be continued without interruption. No greater amount of mixture shall be delivered in any one day than can be properly distributed and rolled during that day.

Successive course may be laid upon previously laid courses as soon as the previous course has cooled sufficiently to show no appreciable displacement under equipment load.

The asphalt concrete surface of an alley shall be warped up to meet paved driveways which are 6 inches or less above grade. Such warping paved not extend more than 18 inches into the alley and shall be accomplished by thickenings the pavement.

302-5.8 Manholes (and other structures), Modify to read as follows:

302-5.8 Manholes (and other structures) Sewer and storm drain structures and water valve boxes extending 2 inches or more above the finished grade to be paved shall be removed by the Contractor to the finished grade to be paved before paving. Other structures shall be lowered by owners. Structures projecting less than 2 inches above the finished grade to be paved may be paved over and later adjusted to grade.

All structures from which manhole frames and covers have been removed to facilitate paving shall be temporary covered with a steel plate by the Contractor. When this procedure is impractical, such as for large vaults, special structures, or where Portland cement concrete

pavement is too constructed, all remodeling or reconstruction shall be completed to finish permanent surface prior to paving operations. The Contractor shall notify utility owners, at least 2 working days in advance, of the need to commence work required prior to paving operations and again for work required after paving operations. If it is found to be impractical for the utility owner to complete the final remodeling or adjustment of structures within a reasonable time after paving operations, as evaluated by the Engineer, then the Contractor shall be absolved of further responsibility in connect on therewith, and the structure shall be adjusted to grade by the utility owner under permit or ordinance procedure established by the Agency for utility cuts in pavement.

After the pavement has been completed, the necessary portions of the subgrade, base and pavement shall be neatly removed, the structure built up, and water valve boxes and the manhole frames set to be backfilled with a 10 inch by 10 inch Portland cement concrete (conforming to Subsection 301-6.1) collar to within 1-1/2 inches of the surface by the party responsible for adjustment of the frame and cover. After a minimum 72 hours cure period, the Contractor shall fill the remaining 1-1/2 inches with an asphalt concrete wearing surface mixture to match the pavement surface. This material shall be placed and compacted in a workmanlike manner to conform to the appearance of the surrounding pavement.

SECTION 303-CONCRETE AND MASONRY CONSTRUCTION

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS.

303-5.1 Requirements

303-5.1.1 General Modify to read as follows:

303-5.1.1 General Concrete curbs, walks, gutters, cross gutters, ally intersections, access ramps, and driveways shall be constructed of Portland cement concrete of the class and other requirements prescribed in Subsection 201-1. Subgrade preparation shall conform to the requirements of Section 301-1.

Unless otherwise specified on the Plans, and except as otherwise prescribed in Subsection 303-5.1.3 under the heading of "Driveway Entrances", the minim thickness of walks shall be 4 inches. The thickness of quitters, cross gutters, alley intersections, access ramps, and driveway aprons shall be as shown on the Standard Plans or on the Plans or on the Plans.

303-5.1.3 Driveway Entrances, Modify to read as follows:

303-5.1.3 Driveway Entrances Driveway entrances shall be provided in new curb at all existing driveways along the line of the work, at locations shown on the plans, and at such other locations as may be designated by the Engineer.

The fully depressed curb opening at driveway entrances shall be 1 inch above gutter flow line at the curb face. The top of the fully depressed portion of the curb shall be finished with a transverse slope of ¼ inch toward the gutter.

Where walk is to be constructed across driveway, the thickness thereof shall be 6 inches unless otherwise specified or indicated on the Plans.

303-5.2.2 Slip-forms Modify to read as follows:

303-5.2.2 Slip-forms At the option of the Contractor and with the approval of the Engineer, slip –form equipment may be used for the construction of concrete curb and gutter or monolithic curb, gutter, and sidewalk.

Slip-form equipment shall be provided with traveling side and top forms of suitable dimensions, shapes, and strength to support the concrete for a sufficient length of time during placement to produce curb and gutter or monolithic curb, gutter, and sidewalk of the required cross section.

The equipment shall spread, consolidate and screed the freshly placed concrete in such a manner as to provide a dense and homogenous product.

The slip-form equipment shall have automatic sensor controls which operate from an offset control line. The line and grade of the slip-form equipment shall be automatically controlled.

303-5.4 Joints

303-5.4.2 Expansion Joints Modify to read as follows:

303-5.4.2 Expansion Joints Expansion joints shall be constructed in curb, gutter, and walk as shown the Plans, Standard Plans, or as specified herein. Such joints shall filled with premolded joint filler conforming with the requirements prescribed in Subsection 201-3.2.

Three-eight-inch joints shall be constructed in curb, gutter and sidewalk at the end of all returns except where cross gutter transitions extend beyond the curb return, in which case they shall be placed at the ends of the cross gutter transition, at both sides of all driveways, at both sides of all catch basin aprons, and at 60 foot maximum intervals.

All expansion joint filler strips shall be installed vertically, and shall extend to the full depth and width of the work in which they are installed, and be constructed perpendicular to straight curb or radially to the line of the curb constructed on a curve. Expansion joint filler materials shall completely fill these joints to within ¼ inch of any surface of the concrete. Excess filler material shall be trimmed off to the specified dimension in a meat and workmanlike manner. During the placing and tamping of the concrete, the filler strips shall be held rigidly and securely in proper position.

303-5.4.3 Weakened Plane Joints Modify to read as follows:

303-5.4.3 Weakened Plane Joints

(a) **General.** Weakened plane joints shall be straight and constructed in accordance with Subsections (b) or (c) below, unless otherwise shown on the Plans.

In walk, Joints shall be transverse to the line of work and at regular intervals not exceeding 10 feet. At curves, the joints shall be radial. At walk returns, the joints shall be as shown on the Standard Plans. Where walk is adjacent to curbing, the joints shall be aligned with the curb joints.

In gutter, including gutter integral with curb, joints shall be at regular intervals not exceeding 10 feet. Where integral curb and gutter is adjacent to concrete pavement, the joints shall be aligned with the pavement joints where practical.

(b) Control Joint. After preliminary troweling, the concrete shall be parted to a depth of 2 inches with a straight edge to create a division in the coarse aggregate. The concrete shall then be refloated to fill the parted joint with mortar. Headers shall be marked to locate the weakened plane for final joint finishing, which shall be accomplished with a jointer tool having a depth of ½ inch and a radius of 1/8 inch. The finished joint opening shall not be wider than ¼ inch.

(c) Plastic Control Joint. The joint material shall be a T-shaped plastic strip at least 1-inch deep, having suitable anchorage to prevent vertical movement, and having a removal stiffener with a width of at least ¾ inch. After preliminary troweling, the concrete shall be parted to a depth of 2 inches with a straightedge. The plastic strip shall be inserted in the impression so that the upper surface of the removal stiffener is flush with the concrete. After floating the concrete to fill all adjacent voids, the removal stiffener shall be stripped. During final troweling, the edges shall be finished to a radius of 1/8 inch, using a slit jointer tool.

303-5.5 Finishing

303-5.5.2 Curb Modify to read as follows:

303-5.5.2 Curb Following placement, the concrete shall be screened to the required grade, tamped to consolidate the concrete and to bring a thin layer of mortar to the surface, and floated to a smooth, flat, uniform surface. The concrete shall then be edged at all headers, given a preliminary troweling and provided with weakened plane joints. The front forms may be stripped as soon as the concrete has set sufficiently.

The face and top of the curb shall then be carefully troweled to a smooth and even finish; the top being finished to a transverse slope of ¼ inch toward the gutter, with both edges rounded to a radius of ½ inch. The troweled surface shall be finished with a fine-hair broom applied parallel with the line of the work. The edge of the concrete at all expansion joints shall be rounded to a ¼ inch radius. The surface of the work shall be finished as prescribed.

Joints shall conform to Subsection 303-5.4.

303-5.5.3 Walk Modify to read as follows:

303-5.5.3 Walk The forms shall be set to place the finished surface in a plane sloping up from the top of curb 2 percent when measured at right angles to the curb.

Following placing, the concrete shall be screened to the required grade, tamped to consolidate the concrete and to bring a thin layer of mortar to the surface, and floated to a smooth, flat, uniform surface. The concrete shall then be edged at all headers, given a preliminary troweling and provided with weakened plane joints.

Walk shall be steel trowel to a smooth and even finished. All formed edges shall be rounded to a radius of 1/8 inch. Preliminary troweling may be done with long handled trowel or "Fresno", but the finishes troweling, shall be done with a hand towel. After final troweling, walk on grades off less than 6 percent shall be given a fine hair-broom finish applied transverse to the center line. On grades exceeding 6 percent, walk shall be finished by hand with a wood float. Walk shall be remarked as necessary after final finish, to assure neat uniform edges, joints, and score lines.

Scoring lines, where required, shall have a minimum depth of ¼ inch and a radius of 1/8 inch. When longitudinal scoring lines of the work. Walk 10 feet or more in width shall have a longitudinal center weakened plane joint. Measuring the thickness. In walk returns, scoring and jointing shall be as shown on the Standard Plans or the Plans. When directed by the Engineer, longitudinal and transverse scorning lines shall match the adjacent walk. The Contractor shall have sufficient metal bars, straightedges, and joint tools on the project.

Headers shall remain in place for at least 16 hours after completion of the walk but must be removed the work is accepted.

303-5.5.5. Alley Intersections, Access Ramp, and Driveways, Modify to read as follows.

303-5.5.5 Alley Intersections and Access Ramps Alley intersection and access ramp shall be constructed as specified for concrete pavement in Subsection 303-6 except final finishing for alley intersections and access ramps shall be done by with a wood float.

Add Subsection **303-5.5.6 Driveways**.

303.5.5.6 Driveways. Driveways shall be constructed as specified on the Standard Plans or the Plans for the specified type of driveway and shall be finished s specified for walks in Subsection 202-5.5.3

303-6 STAMPED CONCRETE

303-6.1 General, Modify to read as follows:

303-6.1 General Stamped concrete shall be natural or colored and imprinted with special tools to provide the pattern specified.

The Contractor shall install a sample for each color and pattern included in the Work. The sample shall be a minimum of 10 square feet which shall be inspected and approved by the Engineer. All other areas shall be installed to match the color and texture of the approved area.

All coloring and curing compounds used in the Work shall be from the same manufacturer.

Stamped concrete will only be allowed with the prior approval of the Engineer.

SECTION 306
UNDERGROUND CONDUIT CONSTRUCTION

306-1 OPEN TRENCH OPERATIONS

306-1.1 Trench Excavations

306-1.1.2 Maximum Length of Open Trench Modify to read as follows:

306-1.1.2 Maximum Length of Open Trench Except by permission of the Engineer, the maximum length of open trench where prefabricated pipe is used shall be 500 feet or the distance necessary to accommodate the amount of pipe installed in two days, whichever is greater. The distance is the collective length at any location, including open excavation, pipe laying and appurtenant construction and backfill which have not been temporarily resurfaced or In the case of areas greater than eight (8) feet from any vehicular excavation, pipe laying and appurtenant construction and backfill which has not been brought to within 1 foot of finish subgrade elevation.

Except by permission of the Engineer, the maximum length of open trench in any one location where concrete structures are cast in place will be that which is necessary to permit uninterrupted progress. Construction shall be pursued as follows: excavation, setting of reinforcing steel, placing of floor slab, walls, and cover slab or arch. Each shall follow the other without any one operation preceding the next nearest operation by more than 200 feet.

Failure by the Contractor to comply with the limitations specified herein may result in an order to halt the work until such time as compliance has been achieved.

306-1.2 Installation of Pipe

306-1.2.1 Bedding, Modify to read as follows:

306-1.2.1 Bedding, Bedding shall be defined as that material supporting, surrounding and extending to one foot above the top of the pipe. Where it becomes necessary to remove boulders or other interfering objects at subgrade for bedding, any void below such subgrade shall be filled with the bedding material designated on the Plans or Standard Plans. Where concrete is specified to cover the pipe, the top of the concrete shall be considered as the top of the bedding.

If soft, spongy, unstable, or other similar material is encountered upon the bedding material or pipe is to be placed, this unsuitable material shall be removed to a depth ordered by the Engineer and replaced with bedding material suitably densified. Additional bedding so ordered, over the amount required by the Plans or Specifications, will be paid for as provided in the Bid. IF the necessity for such additional bedding material has been caused by an act or failure to act on the

part of the Contractor, or is required for the control of groundwater, the Contractor shall bear the expense of the additional excavation and bedding.

Bedding material shall first be placed so that the pipe is supported for the full length of the barrel with full bearing on the bottom segment of the pipe equal to a minimum of two-fifths times the outside diameter of the barrel. There shall be at least 4 inches of bedding below the pipe. Then the reminder of the bedding shall be placed. Bedding may be water Densified by jetting with the permission of the Engineer prior to backfilling. When jetting is used it shall be the Contractor's responsibility to determine extent of and be liable for any possible saturation of adjacent native soil. The size and length of jet pipe, quantities of water, and jetting locations shall be sufficient to thoroughly saturate the bedding materials around the pipe and densify it to 90% relative compaction. Unless the sheeting or shoring is to be cut off and left in place, densification of bedding for bedding for pipe shall be accomplished after the sheeting or shoring has been removed from the bedding zone.

Except as otherwise specified on the Plans or Specifications, bedding material shall be sand, crushed aggregate base material, crushed miscellaneous base material of fine gradation or native free-draining granular material meeting the specifications of the previously mentioned bedding material and shall be used in accordance with the type of pipe material used as specified in the Standard Plans.

Concrete used for bedding shall be one of the classes of concrete specified in Subsection 201-1 for the indicated time periods before backfill.

In case where native free-draining granular material is suitable for use as bedding, the trench may be excavated to a point above the invert grade and the trench bottom hand shaped so that the bottom segment of the pipe is firmly supported on undisturbed material. In all cases, whether native or imported bedding is used, the pipe shall be supported along its full length.

306-1.2.2 Pipe Laying, Modify to read as follows:

306-1.2.2 Pipe Laying, Pipe will be inspected in the field before and after laying. If any cause for rejection is discovered in a pipe after it has been laid, it shall be subject to rejection. Any corrective work shall be approved by the Engineer and shall be at no cost to the Agency.

When connections are to be made to any existing pipe, conduit, or other appurtenances, the actual elevation or position of which cannot be determined without excavation, the Contractor shall excavate foe, and expose, the existing improvement before laying any pipe of conduit. The Engineer shall be given the opportunity to inspect the existing pipe or conduit before connection is made. Any adjustments in line or grade which may be necessary to accomplish the intent of the Plans will be made, and the Contractor will be paid for any additional work resulting from such change in line or grade in the manner provided in Subsection 3-2.

Pipe shall be laid up-grade with the socket or collar ends of the pipe up-grade unless otherwise authorized by the Engineer.

Corrugated metal pipes shall be laid with external laps of the circumferential seams toward the inlet end. Corrugated pipes shall be shipped and handled in such a manner as to prevent damage to protective coatings.

Pipe shall be laid to Plan line and grade, with uniform bearing under the full length of the barrel of the pipe. Suitable excavation shall be made to receive the socket or collar, which shall not bear upon the subgrade or bedding. Any pipe which is not in true alignment or shows any undue settlement after laying shall be taken up and re-laid at the Contracture's expense.

Pipe sections shall be laid and jointed in such a manner that the offset of the inside of the pipe at any joint will be held to a minimum at the invert. The maximum offset at the invert of pipe shall be 1 percent of the inside diameter of the pipe or 3/8-inch, whichever is smaller.

In joining socket and spot pipe, the spigot of each pipe shall be so seated in the socket of the adjacent pipe as to give a minimum of 3/8-inch annular space all around the pipe in the socket. Unavailable offsets shall be distributed around the circumference of the pipe in such manner that the minimum offset occurs at the invert.

After the joints have been made, the pipe shall not be disturbed in any manner.

When pipe is laid in a sheeted trench, all sheeting against which concrete cradle is to be placed shall be faced with at least one thickness of building paper and the sheeting shall be withdrawn without displacing or damaging the cradle, except as otherwise provided in Subsection 306-1.1.6.

At the close of work each day, or whenever the work ceases for any reason, the end of the pipe shall be securely closed unless otherwise permitted by the Engineer.

306-1.2.3 Field Jointing of Clay Pipe, Delete this Subsection in its entirety.

306-1.2.4 Field Jointing of Reinforced Concrete Pipe,
(c) Collar Joints. Delete this Subsection in its entirety.

306-1.2.6 Field Jointing of Non-reinforced Concrete Pipe, Delete this Subsection in its entirety.

306-1.2.6 Field Jointing of Cast Iron Pipe, Modify to read as follow:

306-1.2.6 Field Jointing of Ductile Iron Pipe,

306-1.2.8 Field Jointing of Asbestos Cement Pipe, Delete this Subsection in its entirety.

306- 1.2.10 Field Jointing of Gasket-type PVC Pipe, Modify to read:

306-1.2.10 Field Jointing of Gasket-type PVC Pipe, Jointing of pipe shall be in the accordance with the approved manufacture's printed instruction's which shall be furnished to the Engineer. Gaskets shall be in accordance with Subsection 208-2.3.

The spigot end shall be inserted to the proper depth of the socked as indicated by the home mark.

306-1.2.11 Field Jointing of Injection Sealed PVC Pipe. Delete this Subsection in its entirety.

306-1.2.12 Field Inspection for Plastic Pipe and Fittings, Modify to read as follows:

306-1.2.12 Field Inspection for Plastic Pipe and Fittings, Installed pipe shall be tested to ensure that vertical deflections for plastic pipe do not exceed the maximum allowable deflection. Maximum allowable deflections shall be governed by the mandrel requirements stated herein and shall nominally be:

1) 5 percent of the maximum average ID for ABS or PVC Composite Pipe.

2) For all plastic pipes other than ABS or PVC Composite Pipe, the percentage listed of the maximum average ID.

Nominal Pipe Size	Percentage
Up to and including 12-0nch	5.0
Over 12-inch to and including 30-inch	4.0
Over 30-inch	3.0

The maximum average ID shall be equal to the average OD per applicable ASTM Standard minus two minimum wall thicknesses per applicable ASTM Standards. Manufacturing and other tolerance shall not be considered for determining maximum allowable deflections.

Deflection tests shall be performed after a majority of the base rock is in and compacted to 90% relative compaction or in areas which do not receive surface improvements after the trench is backfilled and compacted to final grade. The pipe shall be cleaned and inspected for offsets and obstructions prior to testing.

For all pipes less than 24-inch ID, a mandrel shall be pulled through the pipe by hand to ensure that maximum allowable deflections have been exceeded. Prior to use, the mandrel shall be certified by the Engineer or by another entity approved by the Engineer. Use of an uncertified

mandrel or a mandrel altered or modified after certification will invalidate the test. If the mandrel fails to pass, the pipe will be deemed to be over deflected.

Unless otherwise permitted by the Engineer in conformance with Subsection 3-1, any over deflected pipe shall be uncovered and, if not damaged, reinstalled. Damaged pipe shall not be reinstalled, but shall be removed from the Work site. Any pipe subjected to any method or process other than removal, which attempts, even successfully, to reduce or cure any over-deflection, shall be uncovered, removed from the work site and replaced with new pipe.

The mandrel shall:

1) Be a rigid, nonadjustable, odd-numbering-leg (9 legs minimum) mandrel having an effective length not less than its nominal diameter.

2) Have a minimum diameter at any point along the full length as follows:

(SEE TABLE)
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3) Be fabricated of steel, be fitted with pulling rings at each end, be stamped or engraved on some segment other than a runner indicating the pipe material specification, nominal size, and mandrel OD (e.g., PVC, D 3034-8”-7.524”; ABS Composite D 2680-10”-9.584); and be furnished in a suitable carrying case, labeled with the same data as stamped or engraved on the mandrel.

For pipe IDs nominally 24-inch and larger, deflections shall be determined by a method submitted to and approved by the Engineer. If a mandrel is selected, the minimum diameter, length and other requirements shall conform to the dimensions and requirements as stated above.

All costs incurred by the Contractor attributable to mandrel and defection testing, including and delays, shall be borne by the Contractor at no cost to the Agency.

306-1.2.13 Installation of Plastic pipe and Fittings, Modify to read as follows:

306-1.2.13 Installation of Plastic Pipe and Fittings, Plastic pipe and fittings, including but not limited to:

Pipe	Subsection
ABS Solid Wall Pipe	207-15
ABS or PVC Composite Pipe	207-16
PVC Solid Wall Pipe	207-17
PE Corrugated and Profile Wall Pipe	207-18

Shall, except as required by this subsection or the Plans or Specifications, be bedded in conformance with Subsection 306-1.2.1.

The bedding zone shall extend down to not less than 4 inches below the pipe or bell, whichever is lower in elevation. The bedding zone shall extend to not less than 12 inches above the pipe or bell, whichever is higher in elevation. The bedding zone shall extend on each side of the pipe barrel as follows:

Nominal Pipe Size		Side Clearance (in.)
Inches	Max.	Min.
Up to and including 15-inch	6	12
Over	8	18

For ABS or PVC Composite pipe, BS or PVC SDR 23.5 or Schedule 40 pipe, and fittings, the bedding zone shall conform to the above requirements, and the bedding material shall conform to Subsection 304-1.2.1.

For all other plastic pipe and fittings of other grade or material, the bedding material shall be composed of crushed rock conforming to Subsection200-1.2 and the following:

Nominal Pipe Size (Inches)	Maximum Rock Gradation
Up to and including 15	½ - inch
Over 15 inch	¾ - inch

Bedding materials shall be placed and densified to requirements shown on the plans, if so indicated.

Connections of plastic pipe and fittings to a manhole shall be watertight. The use of manhole water stops per manufacturer's requirements shall be approved by the Engineer prior to the installation of ay pipe or fitting. All junctions connecting any pipe or fitting to a plastic pipe shall utilize a "wye" fitting. "Tee" connections will not be permitted on any plastic pipe. Plastic pipe may be used on curves only if approved deflection fittings or couplings are used, or by bending solid wall pipe without any application of heat and subject to the following limitations:

Nominal Pipe Diameter (Inches)	**Minimum Centerline Radius (Feet)**
6	210
8	280
10	350
12	420
15	525
Greater Than 15	See Project Plans

Following the placement and densification of backfill and prior to the placing of permanent pavement, all pipes shall be cleaned and measured for obstructions (deflections, joint offsets, and lateral pipe intrusions). For pipelines less than 24 inches, a ridged, odd numbers leg (9 legs minimum) mandrel, with a circular cross section having a diameter of at least 95 percent of the specified nominal ID, shall be pulled through the pipe by hand. The minimum length of the circular portion of the mandrel shall be equal to the ID of the pipe.

For ID's 24 to 36 inches, deflections shall be checked by means which do not require an inspector to enter the pipeline. For diameters greater than 36 inches, deflections may be checked by a method which allows an inspector to enter the pipeline.

306-1.3 Backfill and Densification

306-1.3.1 General, Modify to read as follows:

306-1.3.1 General, Backfill shall be considered as starting 1 foot above the pipe or conduit, or at the top of concrete bedding over the pipe or conduit. All material below this point shall be considered as bedding.

Backfill, or fill, as the case may be, for cast-in-place structures such as, but not limited to, manholes, transition structures, junction structures, vaults, valve boxes, and reinforced concrete box conduits shall start at the subgrade for the structure.

Unless otherwise specified, all backfill, except that within State Highways, shall be placed as specified in Subsection 306-1.2.2 or 306-1.2.2, and compaction requirements shall be in accordance with Subsection 306-1.2.4.

Except where the pipe must remain exposed for force main leakage tests and subject to the provisions herein, the Contractor shall proceed as soon as possible with backfilling operations. Care shall be pipe is supported by concrete bedding placed between the trench wall and the pipe; the remainder of any bedding material shall be placed to 1 foot over the top of the conduit. The backfill above the concrete bedding shall not be placed nor sheeting pulled until at least the minimum time after the placement provided by the optional classes of concrete designated in Subsection 201-1 for such concrete bedding.

Unless otherwise specified, the periods of time set forth in the following table after which the Contractor may place fill or backfill against or over the top of any cast-in-lace structures are predicated on the use of concrete to which no admixture has been added for the purpose of obtaining a high early strength:

	Location	
	Against Sides of Structures (Days)	Over Top of Structures (Days)
Operation		
Placement of Loose Backfill	5	21
Densification of Backfill	7	28

The Engineer may permit the use of admixtures or the use of additional cement in various parts of the structure in accordance with Subsection 201-1.2.4.

Sands backfill will be required for all trenches to within 1 foot of areas which are to receive surface improvements and to within 1 foot of finished grade in areas which are not to receive surface improvements either now or in the future with the following exception:

Trenches which are greater than 5 feet in width may be backfilled with native material provided self-propelled compaction equipment is used to densify the backfill material. Rocks greater than 6 inches in diameter will not be allowed within one foot above the pipe. Material within 1 foot above the pipe shall be as specified in Subsection 306-1.2.1. Rocks greater than 3 inches in diameter will not be allowed within 1 foot below finished subgrade.

Where rocks are included in the backfill, they shall be mixed with suitable excavated materials so as to eliminate voids.

Subject to the provisions specified herein, the material obtained from project excavations may be used as backfill provided that all organic material, rubbish, debris, and other objectionable concrete and bituminous type pavement obtained from the project excavation will be permitted in the backfill subject to the same limitations as rocks.

Where it becomes necessary to excavate beyond the limits of normal excavation lines in order to remove boulders or other interfering objects, the voids remaining after the removal of the boulders shall be backfilled with suitable material and densified as approved by the Engineer.

The removal of all boulders or other interfering objects and the backfilling of voids left by such removal shall be at the expense of the Contractor and no direct payment foe the cost of such work will be made. The cost of such work shall be included in the prices bid for the various items of work.

Voids left by the removal of sheeting, piles and similar sheeting supports shall be immediately backfilled with clean sand which shall be jetted into place to ensure dense and complete filling of the voids.

After the placing of backfill has been started, the Contractor shall proceed as soon as practicable with densification.

306-1.3.2 Mechanically Compacted Backfill Materials, Modify to read as follows:

306-1.3.2 Compaction of Native Backfill Materials, Native material will only be considered for trenches with widths in excess of 5 feet. Backfill shall be mechanically compacted by means of tamping rollers, sheep foot rollers, pneumatic tire roller, vibrating rollers, or other mechanical tampers. All such equipment shall be of a size and type approved by the Engineer. Impact-type pavement breakers (stompers) will not be permitted over plastic pipe.

Permission to use specific compaction equipment shall not be construed as guaranteeing or implying that the use of such equipment will not result in damage to adjacent ground, existing improvements, or improvements installed under the contract. The Contractor shall make its own determination in this regard.

Material for mechanically compacted backfill shall be placed in lifts which, prior to compaction, shall not exceed the thickness specified below for the various types of equipment:

1) Impact, free-fall, or "stomping" equipment maximum lift thickness of 8" inches.

2) Vibratory equipment, including vibratory plates, vibratory smooth-wheel rollers, and vibratory pneumatic-tired rollers – maximum lift thickness of 8" inches.

3) Rolling equipment, including sheep foot (both vibratory and non-vibratory), grid, smooth-wheel (non---vibratory), pneumatic-tired (non-vibratory, and segmented wheels – maximum lift thickness of 1 foot.

4) Hand-directed mechanical tampers – maximum lift thickness of 4 inches.

Native compacted backfill shall be placed in horizontal layers of thickness (not exceeding those specified above) compatible to the material being placed and the type of equipment being used. Each layer shall be evenly spread, moistened (or dried, if necessary), and then tamped or rolled until the specified relative compaction has been attained.

306-1.3.3 Water Densified Backfill, Modify to read as follows:

306-1.3.3 Compaction of Sand Backfill, All trenches shall be backfilled with a granular, free draining material with a sand equivalent of greater than 30, unless the trench meets the requirements set forth in Subsection 306-1.3.1 Sand backfill shall be compacted using a combination of water densification and mechanical compaction as necessary to meet relative compaction requirements.

As used in these specifications, flooding shall mean the inundation of backfill of the backfill material for its full depth. Jetting shall be accomplished by the use of a jet pipe to which a hose is attached, carrying a continuous supply of water under pressure.

Unless flooding is specified or otherwise authorized by the Engineer, all backfill to be densified by water shall be jetted.

The backfilled shall be jetted in accordance with the following requirements:

1) The jet pipe shall consist of a minimum 1-1/2 inch diameter pipe to which a minimum 2 inch diameter hose is attached at the upper end. The jet shall be of sufficient length to project to within 2 feet of the bottom of the lift being densified.

2) The Contractor shall jet to within 2 feet of the bottom of the lift and apply water in manner, quantity and at a rate sufficient to thoroughly saturate the thickness of the lift being densified. The jet pie shall not be moved until the backfill has collapsed and the water has been forced to the surface.

3) The lift of backfill shall not exceed that which can be readily densified by jetting and mechanically compacting with hand-directed tampers, but in no case shall the un-densified lift exceed 4 feet.

4) The backfill shall be allowed to thoroughly drain until the surface of the backfill is in a firm and unyielding condition prior to commencement of any subsequent improvements. The Engineer may require the Contractor, at the Contractor's expense, to provide a sump and pump to remove any accumulated water.

5) The Contractor shall make its own determination that jetting will not result in damage and any resulting damage shall be repaired at the Contractor's expense. The Engineer shall have the right to not allow jetting, if in his opinion jetting will be detrimental to the progress of the project.

306-1.3.4 Compaction Requirements, Modify to read as follows:

306-1.3.4 Compaction Requirements, except as specified otherwise, trench backfill shall be densified to the following minimum relative compaction:

1) 90 percent Relative Compaction:

a) From top of bedding to within 1 foot of finish subgrade in areas to receive future improvements, planned or anticipated

b) From top of bedding to finish grade in areas which are not to receive future improvements.

c) Within engineered embankments.

d) Where lateral support is required for existing or proposed structures.

2) 95 percent Relative Compaction where required by Subsection 301-1.1.3.

306-1.4 Testing Pipelines

306-1.4.1 General Modify to read as follows:

306-1.4.1 General All leakage tests shall be completed and approved prior to placing of permanent resurfacing. Testing will not be allowed until a majority of the base rock has been placed in areas to receive surface improvements or until backfill has been completed in areas not to receive surface improvements.

When leakage exceeds the amount allowed by the specifications, the Contractor at its expense shall locate the leaks and make the necessary repairs or replacements in accordance with the Specifications to reduce the leakage to the specified limits. Any individually detectable leaks shall be repaired, regardless of the results of the tests. Leakage test shall be made o completed pipelines as follows:

1) Storm Drains – Not requires unless called for on the Plans and Specifications.

2) Gravity Sanitary Sewers – Air pressure test.

3) Pressure Sewers (force mains) – Water pressure test at 200 percent of maximum normal operating pressure.

4) Water Pipelines – Water pressure test at 150 psi.

306-1.4.2 Water Exfiltration Test, To be used only when specifically called for in the Plans or Specifications.

306-1.4.3 Water Infiltration Test, To be used only when specifically called for in the Plans or Specifications.

306-1.4.5 Water Pressure Test, Modify to read as follows:

306-1.4.5 Water Pressure Test. Preparatory to testing, the section of the pipeline to be tested shall be filled with water and placed under a slight pressure for a least 48 hours. The pipeline shall then be brought up to the test pressure specified and maintained on the section under test for a period of not less than 2 hours.

Accurate means shall be provided for measuring the quantity of water required to maintain full pressure on the line for the test period, which volume shall not exceed:

L = CND (P) ½ /1850
Where:
L = Maximum allowable leakage in gallons per hour for section of pipeline tested.
N = Number of joints in length tested.
D = Diameter of pipe in inches.
P = Test pressure in psi
C = 0.25 for ductile iron pipe and gasketed or solvent welded plastic pipe.

306-1.4.6 Leakage Test for Corrugated Metal Pipelines, Delete this Subsection in its entirety.

306-1.5 Trench Resurfacing

306-1.5.1 Temporary Resurfacing Modify to read as follows**:**

306-1.5.1 Temporary Resurfacing, unless permanent pavement is placed immediately, temporary bituminous resurfacing thick shall be placed and maintained at locations determined by the Engineer wherever excavation is made through pavement, sidewalk, or driveways. In sidewalk areas the temporary bituminous resurfacing shall be at least 1 inch thick; in all other areas it shall be at least 2 inches thick. At major intersections and other critical resurfacing shall be placed as soon as the condition of the backfill is suitable to receive it and shall remain in place until the condition of the backfill is suitable for permanent resurfacing.

The bituminous mixture used for temporary trench resurfacing shall conform to Class D2 asphalt concrete mixture in Subsection 203-6.32; and bitumen conforming to grade S C – 800 liquid asphalt in the Slow Curing Product table, Subsection 203-2.4.

The mixture may be furnished from stockpiles or directly from the plant and may be laid cold, at the option for the Contractor. Prior to placing temporary resurfacing, the Contractor shall level and compact the backfill on which the surfacing is to be placed. The grade of the backfill on which the resurfacing is to be placed shall be such as to provide the full thickness of temporary resurfacing specified. The temporary resurfacing shall be placed, rolled, maintained, and removed and disposed of by the Contractor.

On improvements being constructed under contract with the Agency, payment for temporary resurfacing shall be included in the price per lineal foot of pipe.

306-1.5.2 Pavement Resurfacing, Modify to read as follows:

306-1.5.2 Pavement Resurfacing, Unless otherwise shown on the Plans or in the Specification, all surface improvements damaged or removed as a result of the Contractor's operation shall be reconstructed by the Contractor to the same dimensions, except pavement thickness, and with the same materials used in the original work. Trench resurfacing shall be equal to the existing pavement thickness or 2- ½ inch minimum whichever is greater.

Subgrade for trench Resurfacing conform to Section 301 and pavement reconstruction shall comply with the applicable provisions of Section 302.

Permanent Trench Resurfacing shall be paid for at the contract unit price per lineal foot.

3**06-1.6 Basis of Payment for Open Trench Installations**, Modify to read as follows:

306-1.6 Basis of Payment for Open Trench Installations, Pipe and conduit shall be measured along the longitudinal axis between the ends as laid and shall include the actual pipe in place and shall not include the inside dimensions of structures. House connection sewers shall be paid for at the contract unit price for each. Catch basin connections shall be measured from the inside face of the catch basin to the inside face of conduit or structure to which connection is being made. Chimney pipe shall be measured vertically from the upper end of the chimney to the invert of the sewer.

The price per lineal foot for pipe and conduit in place shall be considered full compensation for all wyes, tees, bends, monolithic catch basin connections, and specials shown on the Plans; removal of interfering portions of existing sewers, abandoned conduit and structures; the excavations of the trench; placing and joining pipe; backfilling the trench; temporary resurfacing; and all other work (excluding permanent resurfacing) necessary to install the pipe or conduit, complete in place.

Payment for structures such as manholes, junction structures, lamp holes, and catch basins shall be made at the price bid for each structure and shall be full payment for each structure complete in place, including excavation, backfill, constructing inverts, furnishing and installing casting, temporary resurfacing and all other work, excluding permanent restoration of the Street surface, necessary to complete the Work.

306-4 CAST-IN-PLACE NONREINFORCED CONCRETE PIPE (CIPCP)

306-4.7 Test Requirements

306-4.7.2 Thickness, Modify to read as follows:

306-4.7.2 Thickness, the Engineer will determine the wall thickness of the pipe as follows:

1) The thickness at the invert and crown of the pipe will be measured by probing at approximately 25-foot intervals during placement of the concrete. The probe shall be forced through the concrete to make firm contact with the form at eh crown and shall be held in a position normal to the surface when the measurement is taken. The probe shall be 3/8 inch round bar, at least 2 inches longer than the wall thickness to the measured, rounded on one end with a tee handle on the other. The invert shall be inspected by removing a small portion and measuring the thickness.

2) Thickness at the invert and spring line will be measured through holes drilled by the Contractor. The holes shall be at least ¾ inch in diameter and shall be frilled after the removal of the forms and within 72 hours of concrete placement.
Three holes may drill every 50 feet at the invert and both spring lines and shall be located as determined by the Engineer. The Engineer may require additional holes on curves to determine the extent of thin sections.

After measurement, the Contractor shall fill all holes using Class C mortar per Subsection **201-5.** All costs of probing, drilling, removing, and repairing shall be borne by Contractor.

306-4.7.3 Concrete Cores, Modify to read as follows:

306-4.7.3 Concrete Cores, Cores, where requires shall be obtained from pipe and tested in accordance with ASTM C 42. The cores shall have a length-to diameter ratio of not less than one. The diameter of cores shall be at least three times the maximum size of the aggregate used in the concrete, except where the wall thickness is such that the length-to-diameter ratio will be less than one, in which case the core diameter may be reduced to two and one-half times the maximum aggregate size used.

There may be at least four cores taken for each 200 linear feet, or fraction thereof, of pipe, Cores shall be taken at the following points at stations selected by the Engineer: one through the crown, one through the invert and two in the lower half of the pipe 45 degrees from the vertical The Engineer may require additional cores at any location. The Contractor shall patch all core holes in such a manner that the patch will be permanent, will not leak, and will have a smooth finish flush with the interior surface of the conduit. All costs of corning, testing, and patching core holes shall be borne by the Contractor.

306-4.7.4 Load Bearing, Modify to read as follows:

306-7.4.4 Load Bearing, Load bearing tests may be required for every 1000 linear feet of pipe having the same size and wall thickness, with a minimum of one per size and two per project. The test locations will be specified by the Engineer. The test shall be performed in the presence of the Engineer, and the Contractor shall be responsible for all costs and risks involved. Failure of the test section will be cause for rejection of the conduit represented by the test.

The method and apparatus requirements for load bearing test are as follows:

1) The test shall be performed with only the trench form providing bottom support. If the pipe has been constructed so that more than 210 is in contract with the natural soil, the trench walls shall be re-excavated to provide 201 of trench form without altering the existing bedded condition of the trench form.

2) The test length shall be at least 4 feet and not more than 5 feet. At the option of the Contractor, the test section may be isolated from the complete pipe.

3) The test load shall be applied by use of a "sand box", consisting of a frame and bearing plate, in such a manner that sand carefully placed in the sand box forms a bearing symmetrically about the centerline and over the entire length of the test section. The width of the bedding shall be 0.7 times the specified ID of the pipe. The minimum thickness of the sand shall be 0.25 times the specified ID.

4) The frame and bearing plate shall be sufficiently ridged so that they will distribute the load uniformly and will not deform under the loaded condition. The interior surfaces of the frame shall be smooth. The lower surface of the bearing plate shall be a true plane. Cloth or plastic film shall be attached to the inside of the frame along the lower edges to prevent the loss of sand through the gap between the pipe and the frame. This type of apparatus is described in ACI Specification 346.

5) The frame shall be properly located on the pipe test section and filled with sand. The sand shall be clean and graded so that it will pass a No. 4 sieve. The sand shall be struck off level and covered with the bearing plate. During the test, the bearing plate shall not contact the frame.

6) The load shall apply symmetrically on the bearing plate until the total required has been attained. The pipe shall remain loaded until the interior of the pipe has been inspected by the Engineer and results have been observed and recorded.

7) The applied load, in pounds, shall equal the test load multiplied by the length of the test section, in feet. The test load shall be calculated as follows:

Test Load = $[(127.5\ H+1.5LL+5.56T)\ OD+34.0(ID)^2]\ K$
Where:
ID= Specified inside diameter of the pipe in feet
T = Specified wall thickness of the pipe in inches
OD= ID+2T/12=Outside diameter of pipe in feet
K = 1.0 when pipe is cut circumferentially (isolated at edges of test section.)
L = Test section length in feet
H = Depth of cover on pipe in feet

LL= Live load on pipe in pounds per square foot

Depth of Cover (Feet)	Live Load (LL) (lb. /Ft.2)
3	**489**
4	**314**
5	**234**
6	**182**
7	**145**
8	**119**
9	**120**
10	**90**
Over 10	**N/A**

8) The total test load shall be supported by the test section without the development of any additional cracking.

9) After the satisfactory completion of the test, the Contractor shall repair the pipe, resulting from isolating the test section, in a manner satisfactory to the Engineer.

In Lieu of using a "sand box" as described above, the Contractor may conduct a wheel load test on a 4-foot section of pipe when approved in writing by the Engineer. The load applied shall be determined by the equations in item 7 above applied to a section of pipe. The total test load shall be supported by the test section without the development of any additional cracking.

306-7 CURB DRAINS Modify to read as follows:

306-7 CURB DRAINS, Drains shall be constructed beneath the sidewalk to connect building drains to curb outlets and to serve low areas on adjacent property as shown on the plans or as directed by the Engineer.

The drain shall be a 3 –inch diameter pipe for a 6-inch curb face, and a 4-inch diameter pipe for an 8-inch curb face or greater. The invert of the drain shall be located ½ inch above the gutter flow line. The drain pipe shall have a minimum 2-inch clearance from top of curb and be laid on a straight grade with a minimum slope of 1/8 inch per foot and terminate 1 inch back of the curb face. There shall 6x6x10# welded wire mesh over the pipe(s). The clearance required for the welded wire mesh shall be one inch from the surface of the concrete and 1 inch from the top of pipe. The welded wire mesh shall extend 6 inches on either side of the pipe and shall be incorporated in both the curb and the sidewalk. For multiple pipes a #4 rebar shall be placed in the curb parallel with the curb and shall extend 6" on each side of the pipes.

Curb drains may be constructed using pipe materials specified in Section 207 or other pipe materials approved by the Engineer. The pipe shall be suitably joined in accordance with the manufacturer's standard jointing system.

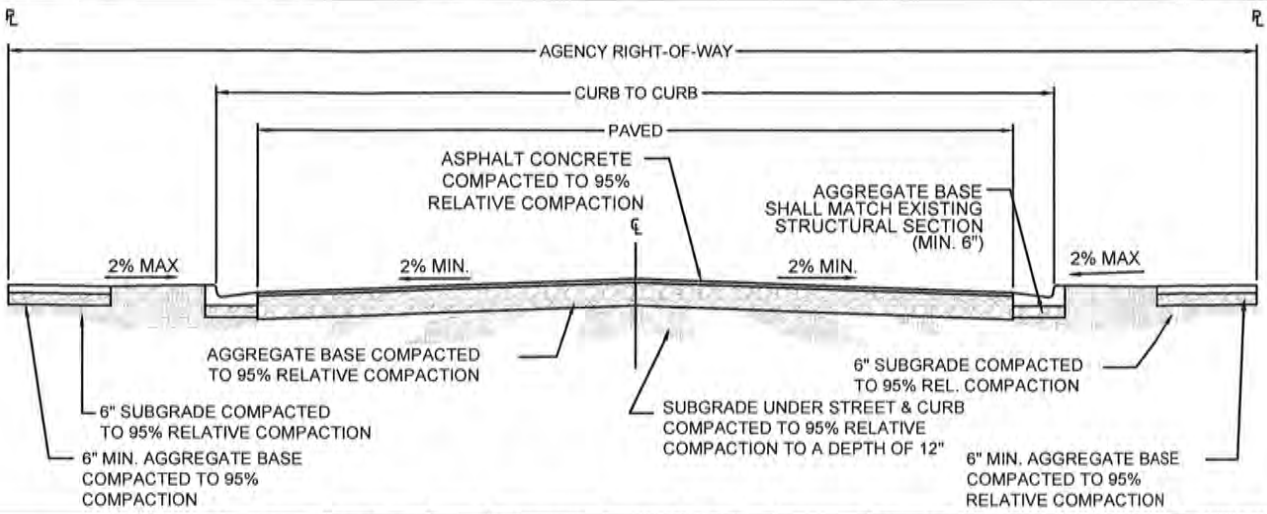
NOVEMBER 2019 UPDATE

CITY OF HOLLISTER

STANDARD PLANS

INDEX

STANDARD PLANS



CLASS	RIGHT-OF-WAY MIN. (FEET)	WIDTH BETWEEN CURBS (FEET)	BIKE LANE WIDTH (FEET)	TRAFFIC INDEX. *	MAXIMUM GRADE RATE (%)	MIN. CENTERLINE RADIUS FOR HORIZONTAL CURVE (FEET) **	MINIMUM AC	MINIMUM BASE THICKNESS	DESIGN SPEED * (MPH)	MINIMUM DISTANCE BETWEEN INTERSECTIONS (FEET)	MINIMUM CURB FACE RADIUS @ RETURN
HIGHWAYS	120	100	SEE NOTE 10	8.5-11	SEE NOTE 7	SEE NOTE 7	SEE NOTE 7	SEE NOTE 7	55	SEE NOTE 7	R=30' SEE NOTE 9
EXPRESSWAY	80	64-72	SEE NOTE 11	8.6-11	SEE NOTE 7	SEE NOTE 7	SEE NOTE 7	SEE NOTE 7	55	SEE NOTE 7	
MAJOR THOROUGHFARE /PRINCIPAL ARTERIAL	84	64-72	SEE NOTE 12	7.5-8.0	10	800	5"	12"	55	SEE NOTE 7	
MINOR ARTERIALS/ COLLECTORS	84	64	SEE NOTE 12	7.5	13	600	4"	12"	45	500	
INDUSTRIAL	60	52-49	SEE NOTE 12	6.5	12	250	4"	12"	35	SEE NOTE 7	
COLLECTORS	60	40	5' CLASS II	5.5	12	250	4"	8"	45	250'	
RESIDENTIAL	56	40	CLASS III	5.0	12	250	3"	8"	35	250'	R=25'
CUL-DE-SAC	50	40	CLASS III	5.0	12	250	3"	8"	35	250'	

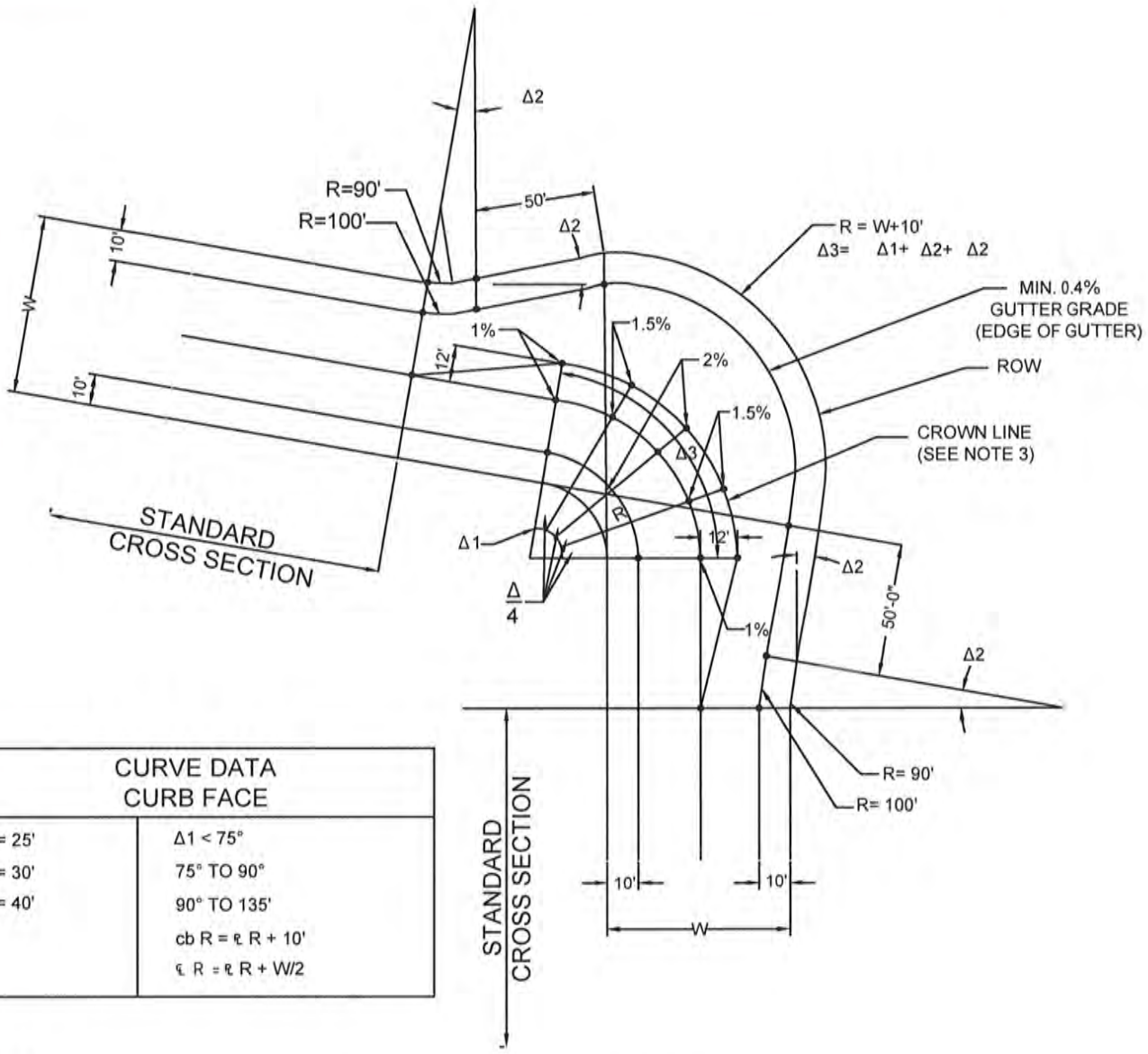
NOTES:

1. ANY DEVIATION FROM THE FOLLOWING STANDARD SHALL REQUIRE THE APPROVAL OF THE CITY ENGINEER.
2. STREET RIGHT-OF-WAY WIDTHS AND SIDEWALK SECTIONS SHALL BE BASED UPON CURRENT CITY STANDARDS.
3. PAVEMENT STRUCTURAL SECTIONS SHALL BE DETERMINED BY THE CALTRANS FLEXIBLE PAVEMENT DESIGN METHODS, AGGREGATE BASE, UPON THE R-VALUES OF SUBGRADE MATERIALS, AND THE TRAFFIC INDEX. IN NO CASE SHALL FLEXIBLE PAVEMENTS SECTIONS BE LESS THAN 3 INCHES OF ASPHALT CONCRETE OVER 8 INCHES OF AGGREGATE BASE.
4. FLEXIBLE PAVEMENT DESIGNS WITH ALTERNATIVE THICKNESS PAVEMENT DESIGNS MAY BE SUBMITTED FOR CONSIDERATION AND POSSIBLE APPROVAL OF CITY ENGINEER.
5. R-VALUE TEST ON SUBGRADE MATERIALS SHALL BE PERFORMED BY A REGISTERED ENGINEER. THE RESULTS AND STRUCTURAL SECTION SHALL BE APPROVED BY THE CITY ENGINEER BASED UPON THE CRITERIA AND PARAMETERS CONTAINED HEREIN.
6. ALL FLEXIBLE PAVEMENTS, REGARDLESS OF ROADWAY CLASSIFICATION, SHALL BE BASED UPON 20-YEAR TRAFFIC VOLUME PROJECTIONS, AT A MINIMUM, AND SHALL BE APPROVED BY THE CITY ENGINEER.
   - * MAY BE CHANGED AT THE DISCRETION OF THE CITY ENGINEER IF TRAFFIC WARRANTS A DIFFERENT VALUE.
   - ** ACTUAL DESIGN OF HORIZONTAL CURVES SHALL BE BASED ON THE DESIGN SPEED AND/OR SUPPLEMENTAL LIGHTING OF THE STREET AND APPROVED BY THE CITY ENGINEER.
7. DESIGN TO BE EVALUATED ON AN INDIVIDUAL BASIS. DESIGN PARAMETERS TO BE APPROVED IN WRITING BY CITY ENGINEER AND / OR OTHER AGENCIES HAVING MUTUAL OR EXCLUSIVE JURISDICTION, PRIOR TO SUBMITTAL FOR REVIEW.
8. NO OPEN CUTS ALLOWED IN NEWLY PAVED AND RECONSTRUCTED STREETS WITHIN 5 YEARS OF CONSTRUCTION, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
9. CURB RETURN RADIUS MUST BE ABLE TO ACCOMMODATE LARGE TRUCK TURNING MOVEMENTS
10. 8' SHARED-USE PATH OR 8' SEPARATED TWO-WAY CLASS I BICYCLE PATH.
11. 8' SHARED-USE PATH, 8' SEPARATED TWO-WAY CLASS I BICYCLE PATH, OR 5' CLASS IV BIKE LANE WITH 2' PROTECTED BUFFER.
12. 5' CLASS II BIKE LANE MINIMUM; 5' CLASS IV BIKE LANE WITH 2' PROTECTED BUFFER MINIMUM PREFERRED.
13. COMPACT AGGREGATE BASE MATERIAL TO A MINIMUM OF 95% RELATIVE COMPACTION.

TITLE:

MINIMUM STREET STRUCTURAL SECTION

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		A-1
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	SHEET 1 OF 1



CURVE DATA CURB FACE	
R= 25'	Δ1 < 75°
R= 30'	75° TO 90°
R= 40'	90° TO 135'
	cb R = ℄ R + 10'
	℄ R = ℄ R + W/2

NOTES:

1. MINIMUM CURB LONGITUDINAL SLOPE DESIGN STANDARD IS 0.4%.
2. LIMITS OF SLOPE, CROWN LINE TO OUTSIDE GUTTER, MIN. = 1%, MAX. = 4%.
3. CROWN LINE ELEVATION TO BE SHOWN ON THE PLANS.
4. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE CITY ENGINEER.
5. ALL FACILITIES, CURB, GUTTER, SIDEWALK, AC DIKE, AND EDGE OF PAVEMENT SHALL BE EQUIDISTANT TO THE RIGHT OF WAY LINE.

TITLE:

KNUCKLE

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

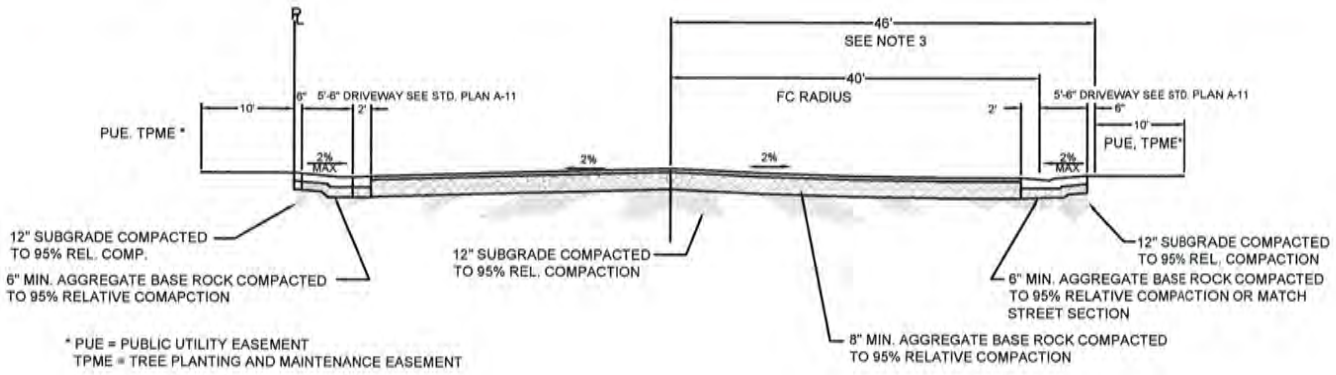
Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

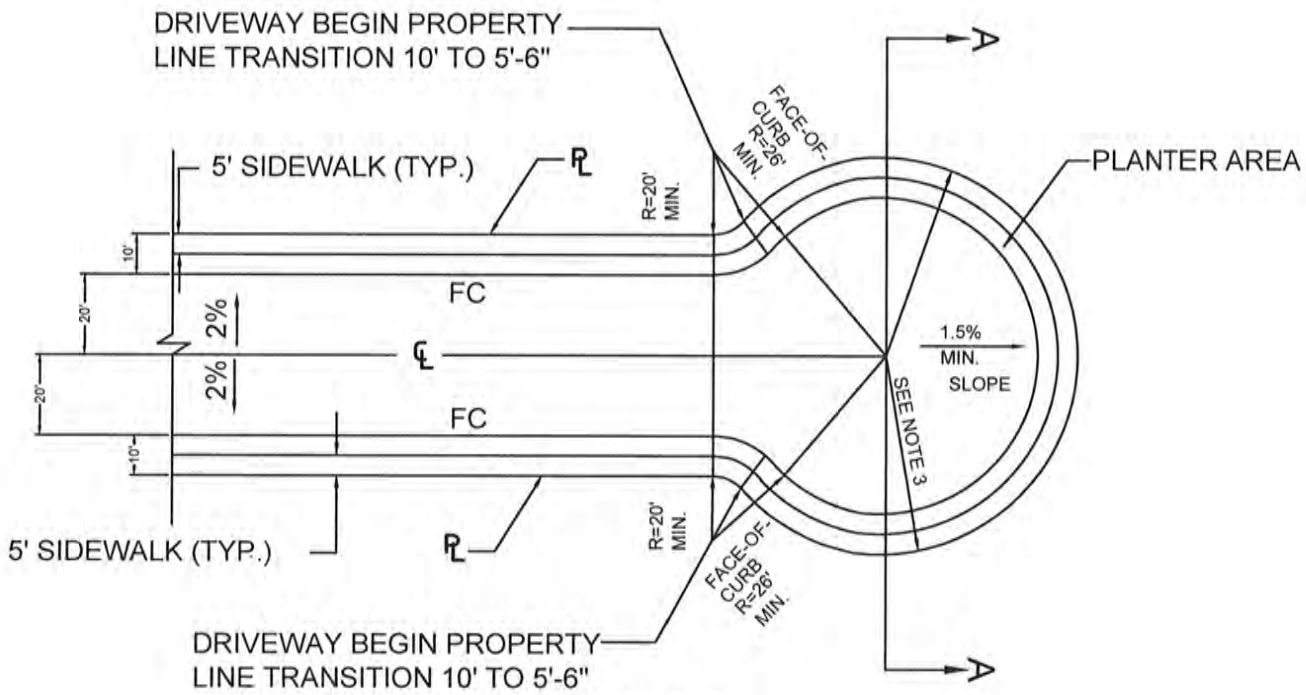
STANDARD PLAN

A-2

SHEET 1 OF 1



TYPICAL CUL-DE-SAC STREET SECTION A-A



CUL-DE-SAC

NOTES:

1. PARKING SHALL BE ON BOTH SIDES OF THE STREET.
2. MAXIMUM CUL-DE-SAC LENGTH FROM THE CENTER OF THE INTERSECTING STREET TO THE CENTER OF THE CUL-DE-SAC, SHALL NOT EXCEED 600'.
3. RADIUS FOR CUL-DE-SAC, RESIDENTIAL = 46 FT. COMMERCIAL/INDUSTRIAL = 50 FT.
4. INCREASE RADIUS AS REQUIRED FOR LOT FRONTAGE MINIMUM LOT FRONTAGE IS 35 FT., AND THE LOT WIDTH AT THE BUILDING SETBACK LINE SHALL BE NOT LESS THAN 45 FT. (PER HOLLISTER MUNI-CODE).
5. CUL-DE-SAC SERVING 6 OR FEWER LOTS SHALL BE APPROVED BY THE CITY ENGINEER.
6. INSTALL #3 REBAR 12" O.C. BOTH WAYS IN THE ENTIRE DRIVEWAY APPROACH (SEE A-10).

TITLE:

TYPICAL CUL - DE - SAC

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

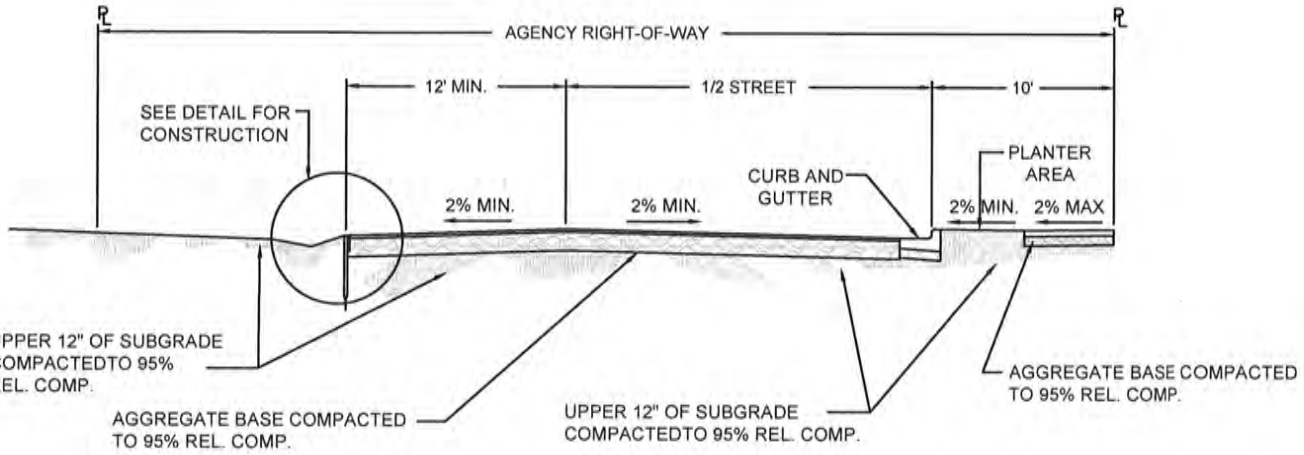
11-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

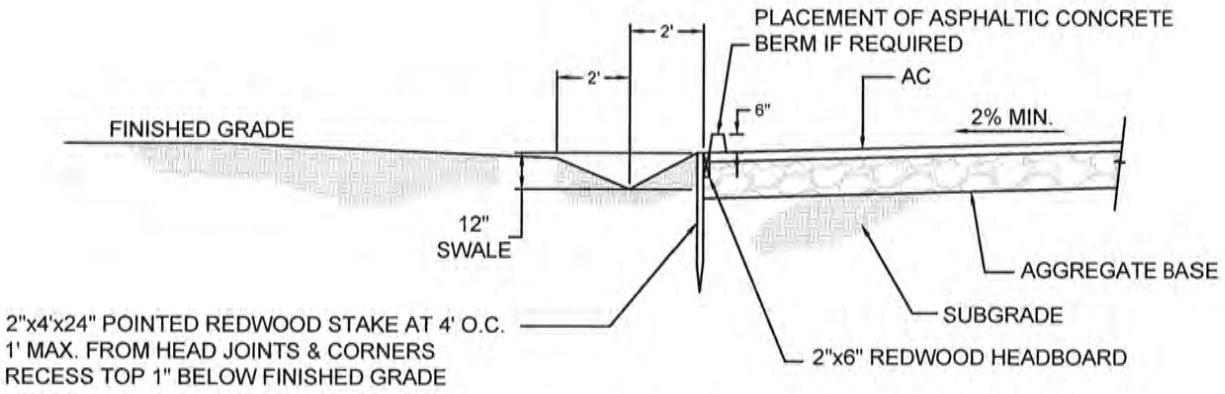
STANDARD PLAN

A-3

SHEET 1 OF 1



PHASED STREET



HEADER DETAIL

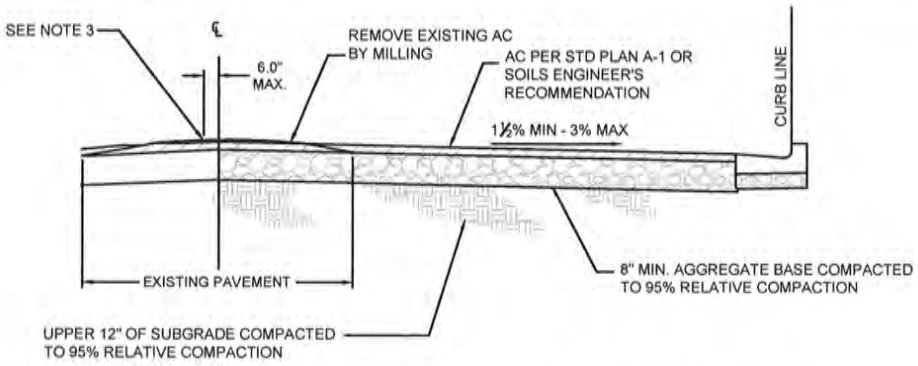
NOTES

1. DEVELOPER TO OBTAIN APPROVAL OF STRUCTURAL SECTION FROM CITY ENGINEER PRIOR TO FUTURE PAVE OUT.
2. SWALE AND/OR BERM MAY BE REQUIRED AT THE OPTION OF THE CITY ENGINEER.
3. EARTHEN SWALES EXCEEDING 1% LONGITUDINAL SLOPE SHALL USE HYDROSEED OR APPROVED NON-ERODABLE EQUAL MATERIAL.

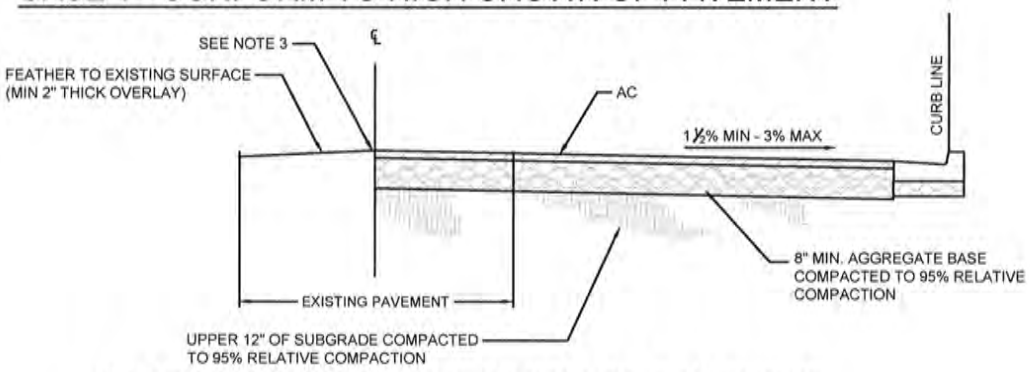
TITLE:

TYPICAL PHASED STREET CONSTRUCTION

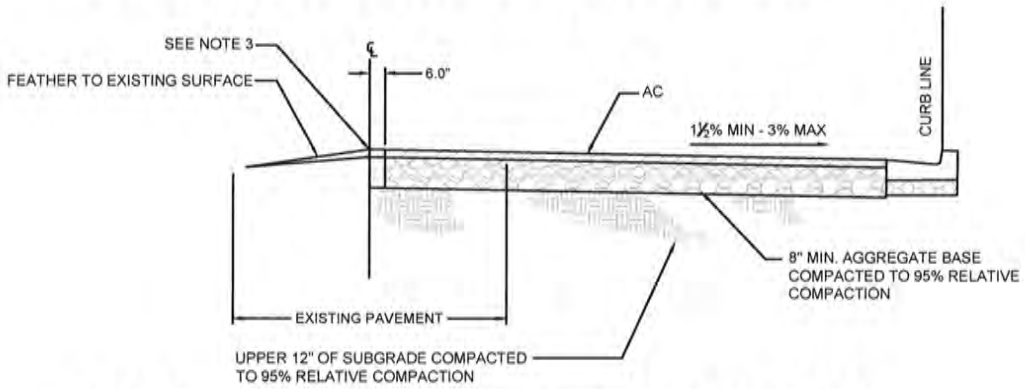
DRAWN BY: STAFF	SCALE: NONE	APPROVED: Danny Hillstock 11-5-19	STANDARD PLAN A-4
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1
CITY OF HOLLISTER ENGINEERING DEPARTMENT			



CASE 1 - CONFORM TO HIGH CROWN OF PAVEMENT



CASE 2 - CONFORM TO CROWN OF PAVEMENT



CASE 3 - CONFORM TO LOW CROWN OF PAVEMENT

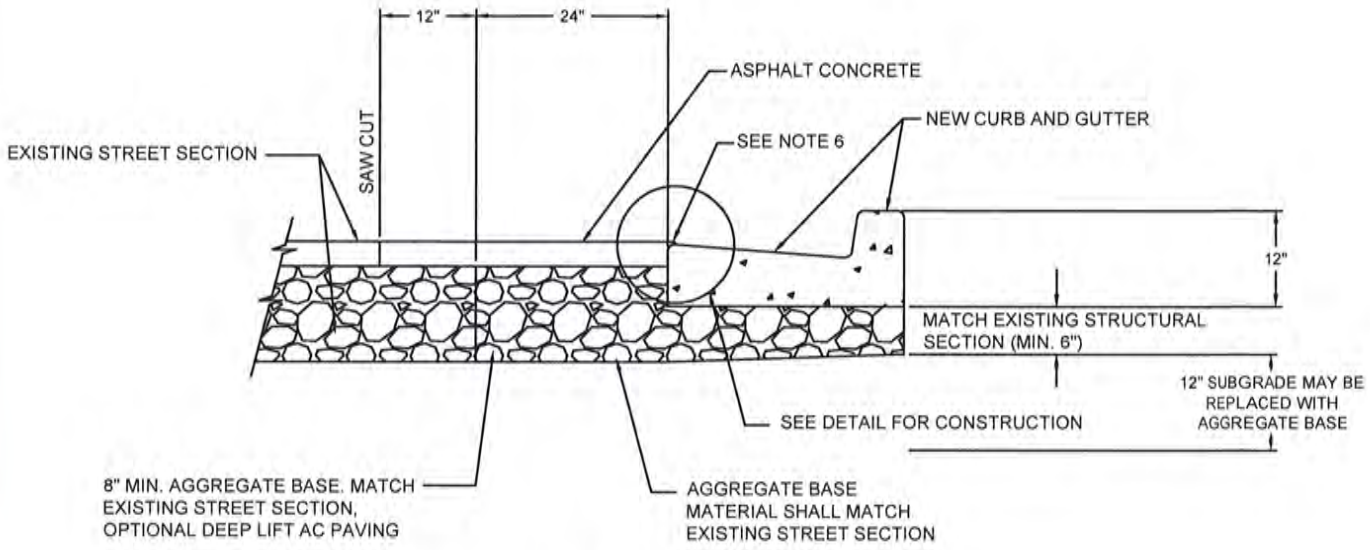
NOTES:

1. ASPHALT CONCRETE CLASS AND GRADE SHALL BE AS FOLLOWS:
   - ASPHALT PAVEMENT LESS THAN 2" IS NOT PERMITTED.
   - C2-PG 64-10 FOR ASPHALT PAVEMENT THICKNESS GREATER THAN 2" AND LESS THAN 3".
   - TWO COURSES OF PAVING IS REQUIRED FOR ALL SECTIONS 3" OR GRATER IN WHICH THE FINISH COURSE SHALL BE C2-PG 64-10 AND ALL OTHER COURSES SHALL BE CLASS B-PG 64-10.
2. IF MILLING CANNOT PRODUCE FIRM EDGE, SAW CUTTING WILL BE REQUIRED.

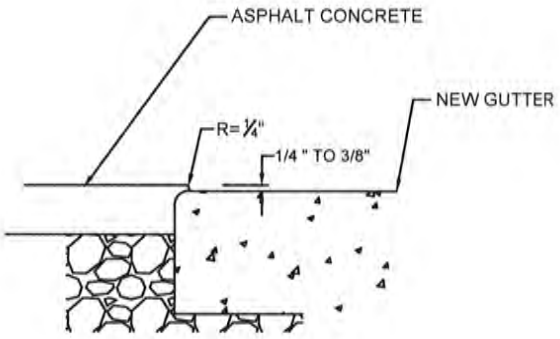
TITLE:

PAVEMENT CONFORMANCE (TYPICAL)

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		A-5
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	SHEET 1 OF 1



CURB TRANSITION



TRANSITION DETAIL

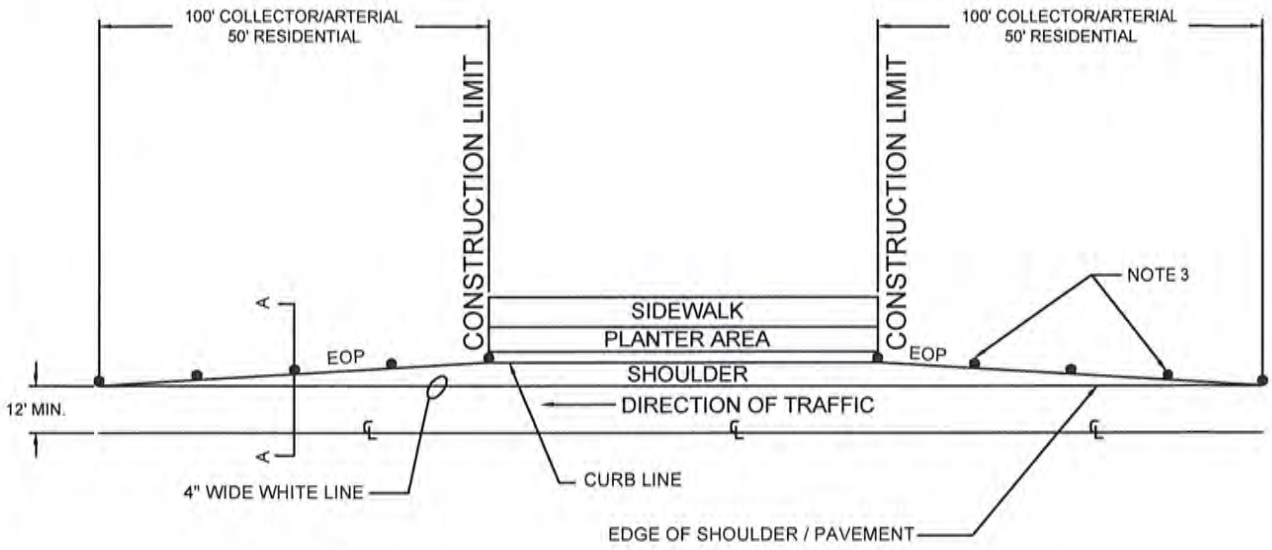
NOTES:

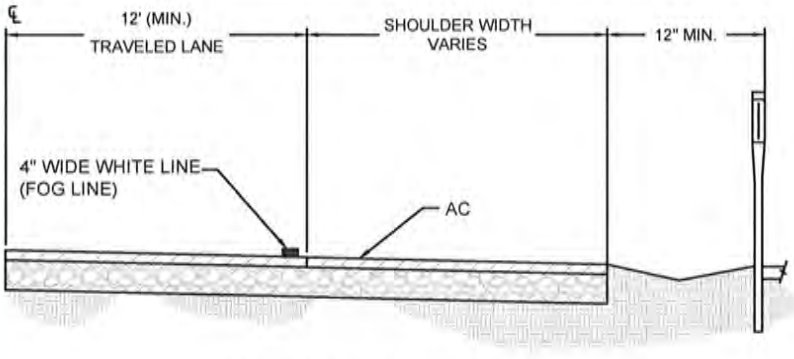
1. USE WHERE EXISTING ASPHALT CONCRETE IS CUT TO INSTALL NEW CURB AND THE NEW CURB AND GUTTER LOCATION IS 3' OR LESS FROM THE EDGE OF EXISTING ASPHALT CONCRETE.
2. COMPACT SUBGRADE MATERIAL TO MINIMUM 95% RELATIVE COMPACTION FOR A DEPTH OF 12", UNLESS OTHERWISE SPECIFIED.
3. COMPACT AGGREGATE BASE MATERIAL TO A MINIMUM OF 95% RELATIVE COMPACTION.
4. ALL CONCRETE CURB AND GUTTER TO BE CLASS 520-C-2500 PCC.
5. SAW CUT ALONG LIP OF GUTTER MAY BE APPROVED BY AGENCY INSPECTOR.
6. TACK COAT ALL SURFACES TO BE PAVED ON OR AGAINST.
7. MATCH EXISTING ASPHALT PAVEMENT WITH MINIMUM OF 3" THICK ASPHALT PAVEMENT.

TITLE:

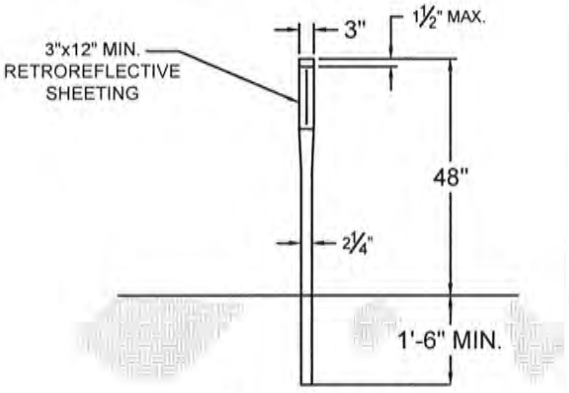
PAVEMENT TO CURB TRANSITION

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	A-6
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE	SHEET 1 OF 1





DELINEATOR POSITION



FLEXIBLE POST

SECTION A-A CLASS 1 DELINEATOR DETAIL

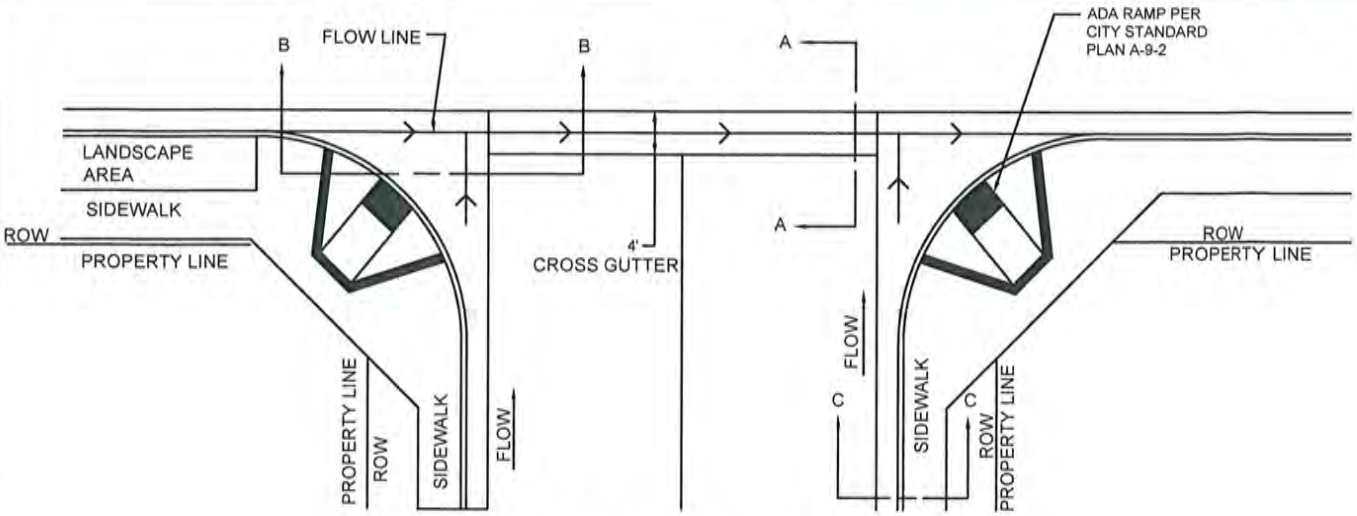
NOTES:

1. 50 FEET PAVE OUT ON RESIDENTIAL STREETS.
2. 100 FEET PAVE OUT ON COLLECTOR/ARTERIAL STREETS.
3. INSTALL CALTRANS REFLECTIVE TYPE "E" FLEXIBLE POST DELINEATORS12 INCHES FROM EDGE OF PAVEMENT AT 10 FEET SPACING.
4. STREET TRANSITION WITHIN THE PROJECT LIMIT ONLY, UNLESS OTHERWISE DIRECTED BY CITY ENGINEER.
5. STRIPING AND MARKING SHALL COMPLY WITH CALTRANS AND MUTCD, LATEST EDITION.

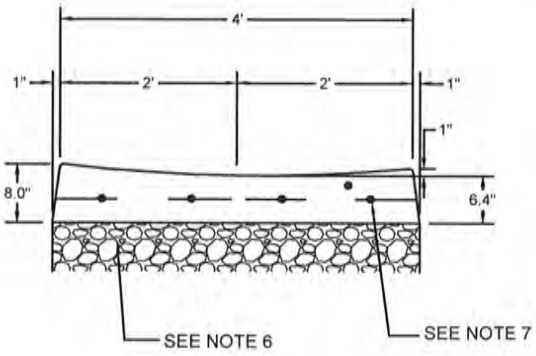
TITLE:

TYPICAL STREET TRANSITION

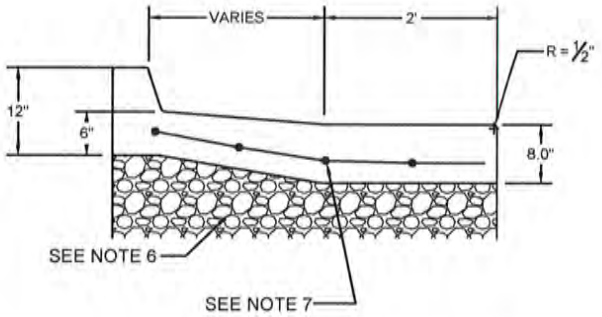
DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		
REVIEWED BY:	REVISED:		A-7
DANNY HILLSTOCK	OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	SHEET 1 OF 1



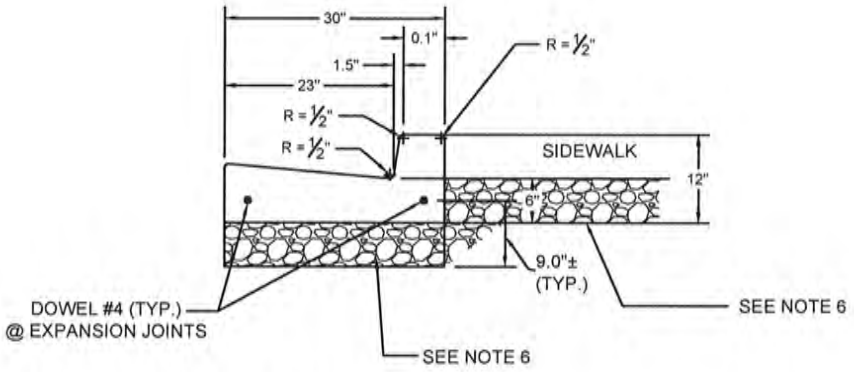
TYPICAL CROSS GUTTER DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

TITLE:

CURBS AND CROSS GUTTERS

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		A-8-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK, LIC. NO. 70647 — DATE: 11-5-19	SHEET 1 OF 2

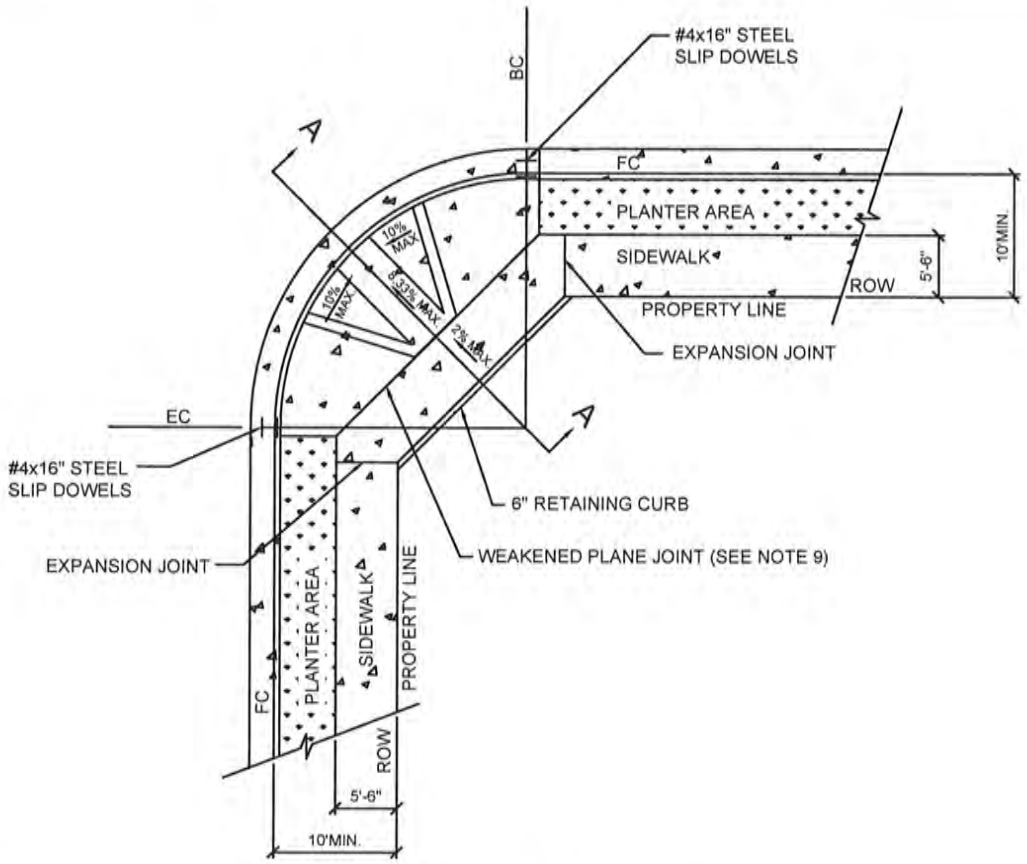
NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE GREENBOOK, 2018 EDITION.
2. EXPANSION JOINTS SHALL BE SLIP DOWELED AT CURB RETURNS.
3. TOP AND FRONT OF ALL CURBS SHALL BE FINE BROOM FINISHED.
4. INSTALL EXPANSION BOARD AT BC, EC, AND 60 FOOT INTERVALS MAX. ON CURBS AND GUTTERS, PROVIDE WEAKENED PLANE JOINTS AT 10-FOOT INTERVALS AND FOR FULL DEPTH OF CONCRETE.
5. CLASS "520-C-2500" CONCRETE SHALL BE USED.
6. MATCH EXISTING STRUCTURAL SECTION BELOW THE CURB AND GUTTER (6" MINIMUM CLASS II AGGREGATE BASE).
7. CROSS GUTTERS SHALL HAVE NO. #4 REBAR @ 12" O.C. BOTH WAY CENTERED AT MID DEPTH.
8. CONTRACTOR SHALL STAMP CURB FACE WITH THE LETTERS, "S" (SEWER), AND "W" (WATER) WHERE LATERALS CROSS UNDER THE CURB. LETTER SIZE ON FACE OF CURB SHALL NOT BE LESS THAN 3".
9. CURB RAMP SHALL BE CONSTRUCTED TO THE LATEST VERSION OF CALTRANS STANDARD PLAN A88A (CURB RAMP DETAILS).
10. SUBGRADE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION TO A DEPTH OF 12".

TITLE:

CURB AND GUTTER NOTES

AUTOCAD BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE	Danny Hillstock 11-5-19	A-8-2
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 2 OF 2
CITY OF HOLLISTER ENGINEERING DIVISION			



INDUSTRIAL-COMMERCIAL-RESIDENTIAL STANDARDS

NOTES:

1. CURB RAMP SHALL BE CONSTRUCTED TO THE LATEST VERSION OF CALTRANS STANDARD PLAN A88A (CURB RAMP DETAILS).
2. CONCRETE SIDEWALK SHALL BE 5' MINIMUM IN COMMERCIAL AREA; WIDER THAN A 5' SIDEWALK CAN BE USED. COMMERCIAL OR INDUSTRIAL DRIVEWAY TO MEET ADA REQUIREMENTS.
3. CONCRETE SHALL BE CLASS 520-C-2500 PCC.
4. EXPANSION JOINTS SHALL BE PLACED WITH MAXIMUM SPACING OF 60 FEET AND WHERE NEW SIDEWALK JOINS EXISTING BUILDING OR SIDEWALK.
5. COMPACT SUBGRADE MATERIAL UNDER SIDEWALK TO MINIMUM 95% RELATIVE COMPACTION FOR A MINIMUM DEPTH OF 12".
6. COMPACT AGGREGATE BASE MATERIAL UNDER SIDEWALK TO MINIMUM 95% RELATIVE COMPACTION.
7. PLACE MINIMUM 16" LONG #4 REBAR AT 4' O.C. UNLESS CURB AND SIDEWALK ARE PLACED MONOLITHICALLY, DRILL AND EPOXY REBAR HOLES INTO CURB TO 3" MINIMUM DEPTH.
8. EXPANSION JOINTS SHALL BE ¾" X FULL PCC DEPTH, PLACED AT EACH SIDE OF DRIVEWAYS AND CATCH BASINS, AT BC AND EC, AND AT A MAXIMUM SPACING OF 60 FEET.
9. WEAKENED PLANE JOINTS SHALL BE ⅛" X 2" DEEP MINIMUM PLACED EVERY 10 FEET. SIDEWALKS WIDER THAN 5 FEET SHALL HAVE A LONGITUDINAL WEAKENED PLANE JOINT AT CENTERLINE.
10. SCORE MARKS SHALL BE MINIMUM ⅛" DEEP AND PLACED EVERY 5 FEET AND MEET WEAKENED PLANE JOINT.
11. ALL CONCRETE SURFACE SHALL HAVE A LIGHT BROOM FINISH PERPENDICULAR TO STREET AND BE TREATED WITH 2 COATS OF TYPE 1-DC CLEAR OR TRANSLUCENT CURING WITH FUGITIVE DYE; AVERAGE APPLICATION RATE OF 25 SF PER GALLON.
12. MAXIMUM SLOPE OF ADJOINING GUTTER, THE ROAD SURFACE IMMEDIATELY ADJACENT TO CURB RAMP, OR ACCESSIBLE ROUTE SHALL NOT EXCEED 5 PERCENT WITHIN 4'-0" OF THE TOP AND BOTTOM OF THE CURB RAMP.

TITLE:

CURB RETURN AND SIDEWALK TRANSITION

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

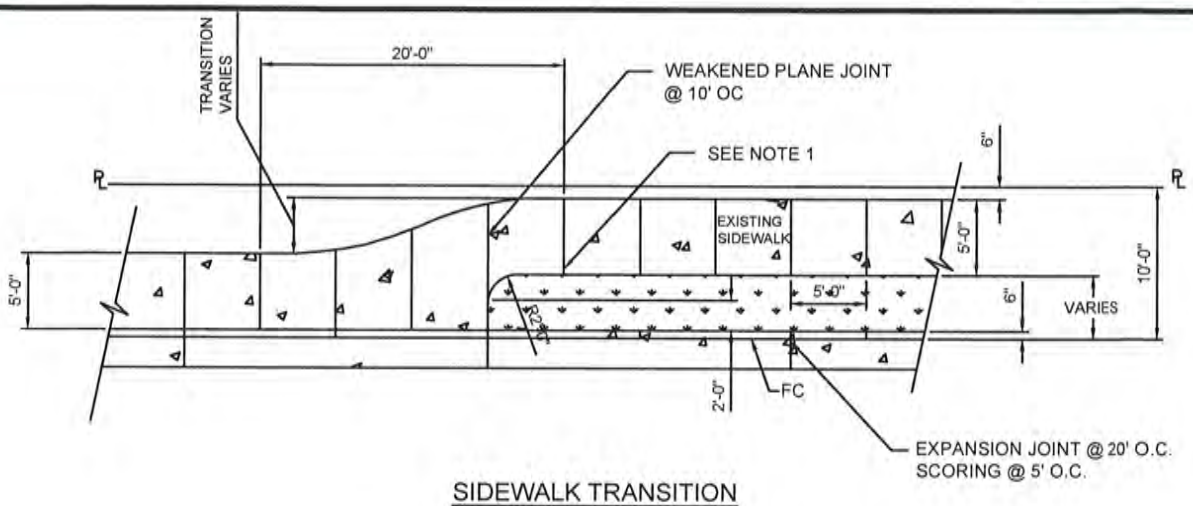
Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

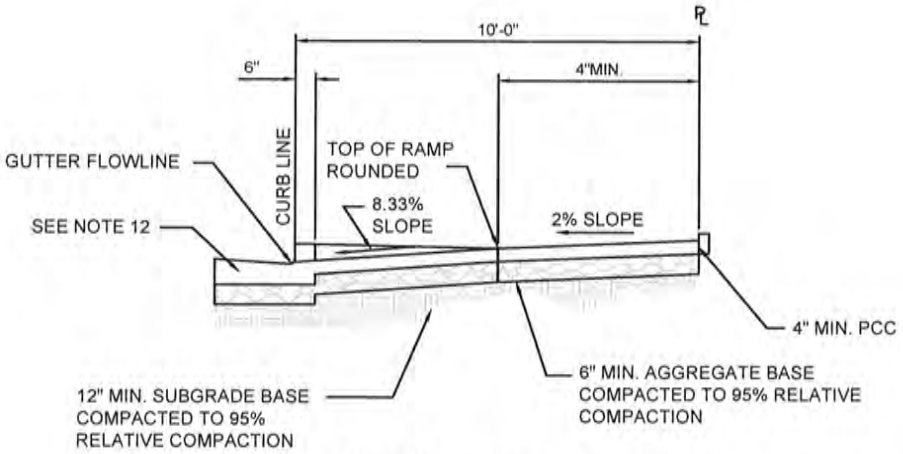
STANDARD PLAN

A-9-1

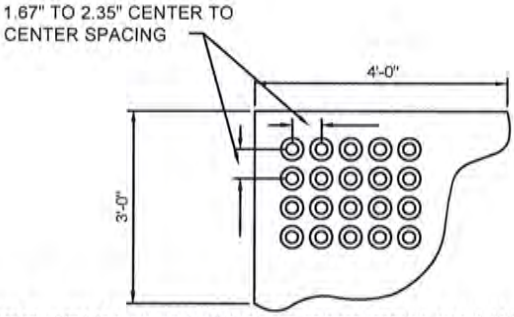
SHEET 1 OF 2



SIDEWALK TRANSITION



SECTION A-A



RAISED TRUNCATED DOME PATTERN (IN-LINE)
DETECTABLE WARNING SURFACE

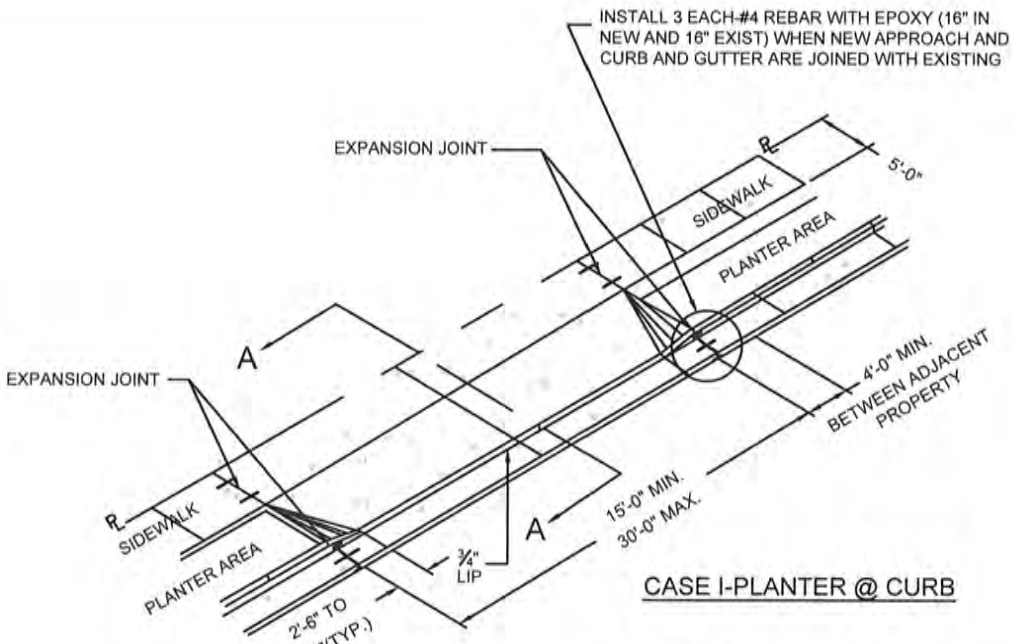
NOTE:

1. EXPANSION JOINT SHALL HAVE #4 X 16" SLIP DOWEL AT 12" OC WITH MINIMUM 3" CLEARANCE FROM EACH EDGE, MINIMUM DOWEL HOLE DEPTH OF 3 INCHES AT FIXED END WHEN EMBEDDED WITH SIMPSON SET XP EPOXY OR EQUIVALENT.

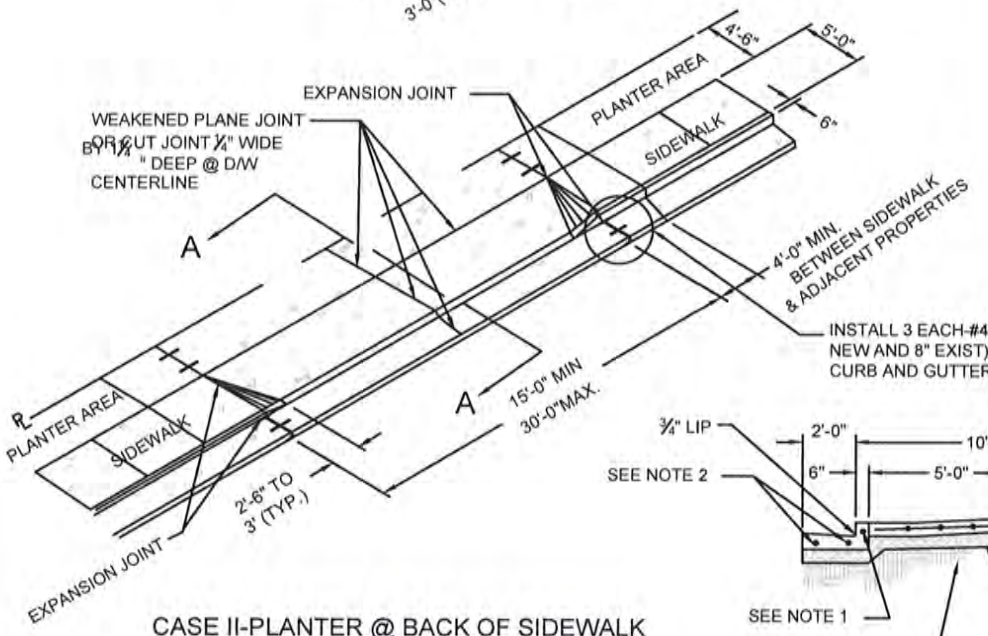
TITLE:

CURB RETURNS DETAILS AND SIDEWALK TRANSITION

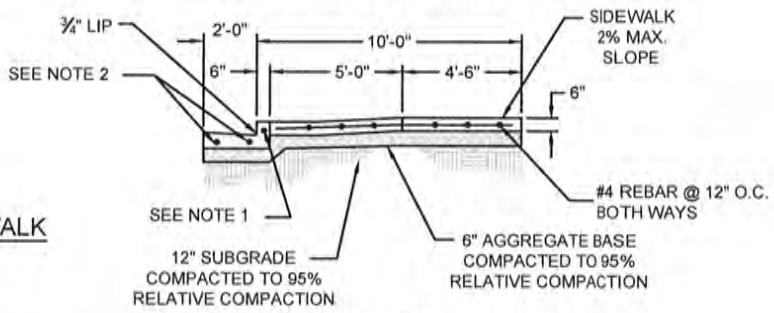
DRAWN BY: STAFF	SCALE: NONE	APPROVED: Danny Hillstock 11-5-19	STANDARD PLAN A-9-2
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK, LIC. NO. 70647 — DATE	SHEET 2 OF 2
CITY OF HOLLISTER ENGINEERING DEPARTMENT			



CASE I-PLANTER @ CURB



CASE II-PLANTER @ BACK OF SIDEWALK



SECTION A-A

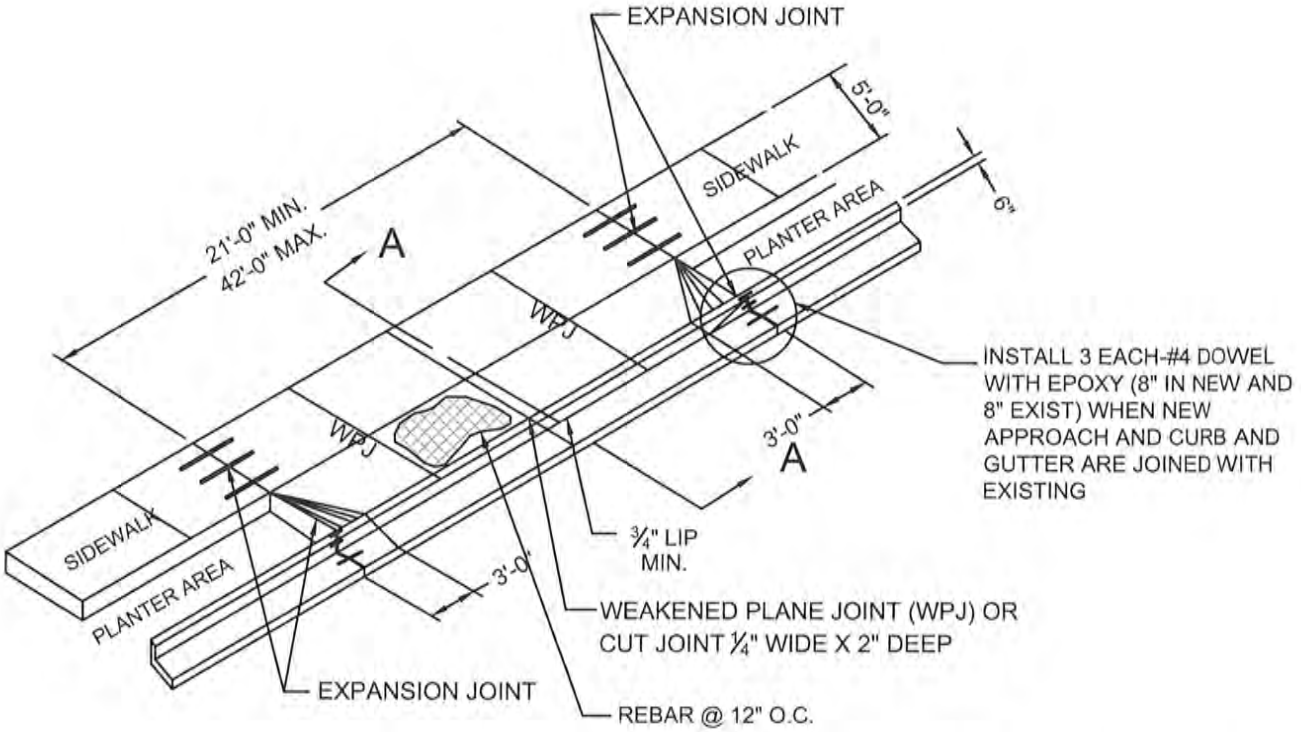
NOTES:

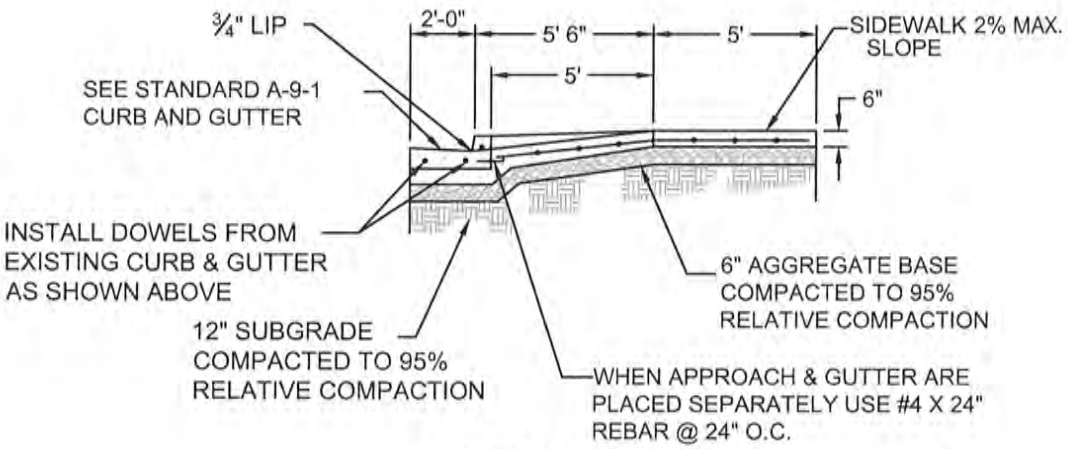
1. WHEN APPROACH AND GUTTER ARE PLACED SEPARATELY, USE #4 x 32" REBAR AT 24" OC.
2. INSTALL REBAR DOWELS FROM EXISTING CURB AND GUTTER TO NEW CURB AND GUTTER AS SHOWN ABOVE.
3. CONCRETE TO HAVE LIGHT BROOM FINISH PERPENDICULAR TO STREET AND TREATED WITH CURING COMPOUND.
4. MAXIMUM FRONTAGE OCCUPIED BY DRIVEWAY OR COMBINATION OF DRIVEWAYS IS 40%, EXCLUDING CUL-DE-SAC.
5. MINIMUM 18' DISTANCE BETWEEN DRIVEWAYS ON FRONTAGE OF PROPERTY.
6. FIRE HYDRANTS SHALL BE 10' MINIMUM FROM DRIVEWAYS. SEE B-1-2.

TITLE:

RESIDENTIAL DRIVEWAY APPROACH AND SIDEWALK

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		A-10
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK, RCE NO. 70647 — DATE 11-5-19	SHEET 1 OF 1





SECTION A-A

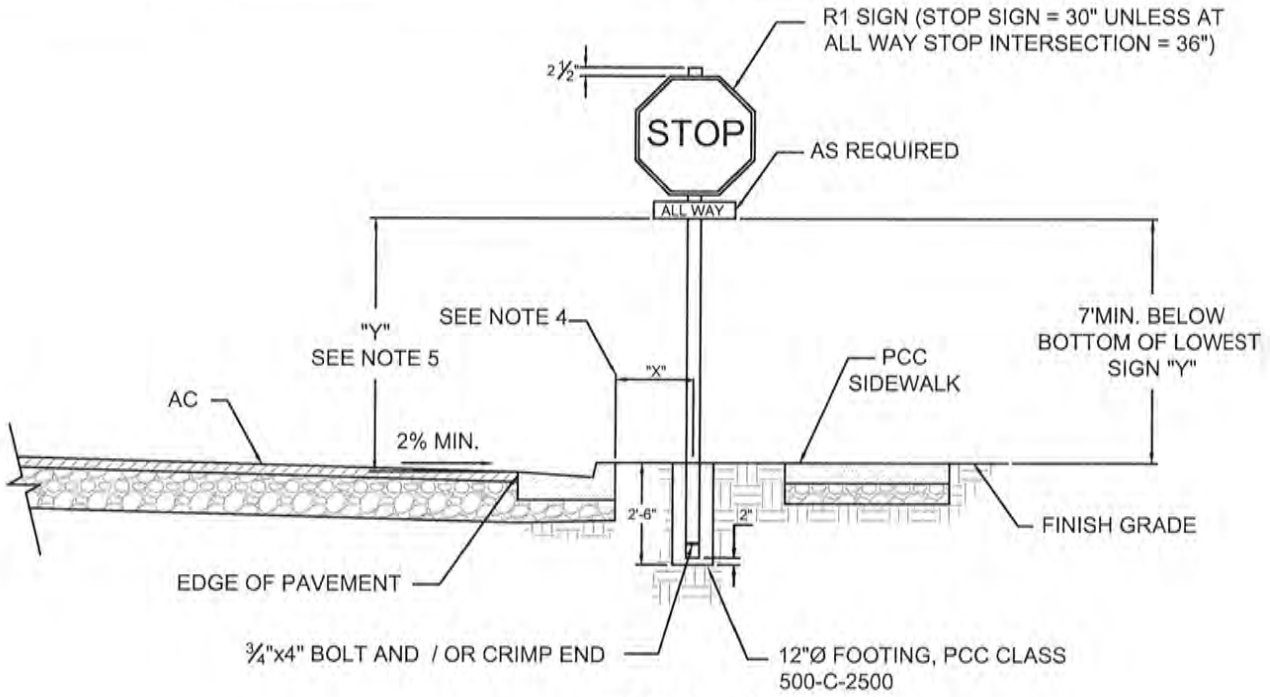
NOTES:

1. INSTALL #4 REBAR @ 12" OC EACH WAY, MAINTAIN 3" CLEARANCE (WITH DOBIE) FROM THE BOTTOM SURFACE, INCLUDING CURB AND GUTTER.
2. COMPACT SUBGRADE MATERIAL UNDER ALL CURB, GUTTER AND APPROACH TO MINIMUM 95% RELATIVE COMPACTION FOR A DEPTH OF 12" EXCEPT AS OTHERWISE SPECIFIED.
3. PLACE MINIMUM 16" LONG #4 DOWELS AT 4' OC UNLESS CURB AND GUTTER AND APPROACH ARE PLACED MONOLITHICALLY.
4. EXPANSION JOINTS SHALL BE ¼" X FULL PCC DEPTH PLACED AT EACH SIDE OF DRIVEWAYS.
5. WEAKENED PLANE JOINTS SHALL BE ⅛"x2" DEEP WHEN FINISHED, PLACED AT APPROXIMATELY 10' INTERVALS.
6. WEAKENED PLANE JOINT AT BACK OF CURB, GUTTER AND APPROACH WHEN PLACED MONOLITHICALLY.
7. ALL CONCRETE SURFACES SHALL HAVE A LIGHT BROOM FINISH, EXCEPT AS OTHERWISE SPECIFIED, PERPENDICULAR TO STREET, AND TREATED WITH CURING COMPOUND.

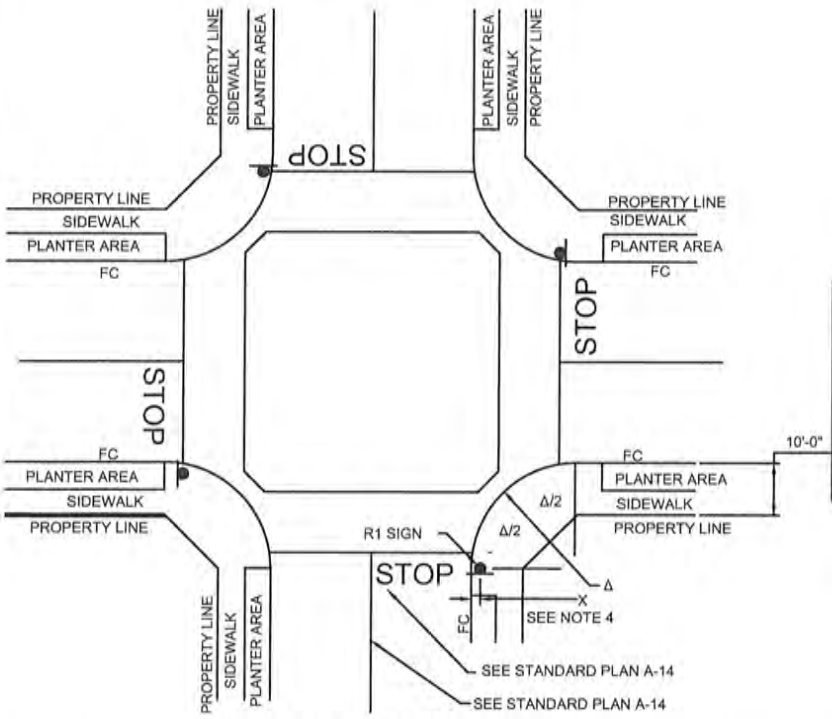
TITLE:

COMMERCIAL AND INDUSTRIAL DRIVEWAY APPROACH

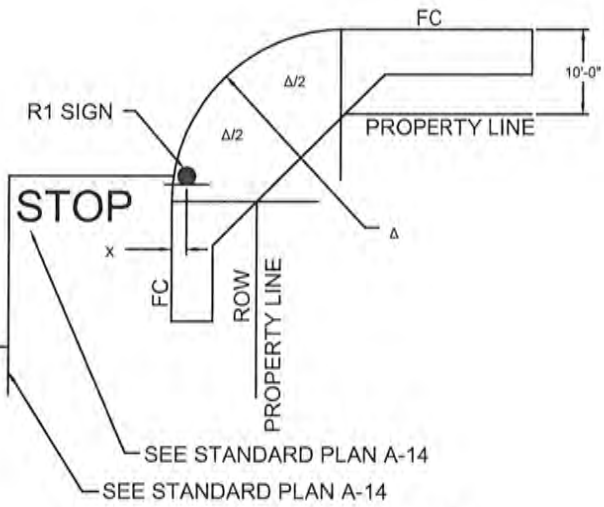
DRAWN BY: STAFF	SCALE: NONE	APPROVED: Danny Hillstock 11-5-19	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	A-11
CITY OF HOLLISTER ENGINEERING DIVISION			SHEET 1 OF 1



SIGN INSTALLATION



URBAN INTERSECTION



URBAN INTERSECTION

TITLE:

TRAFFIC SIGN

DRAWN BY: STAFF	SCALE: NONE
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

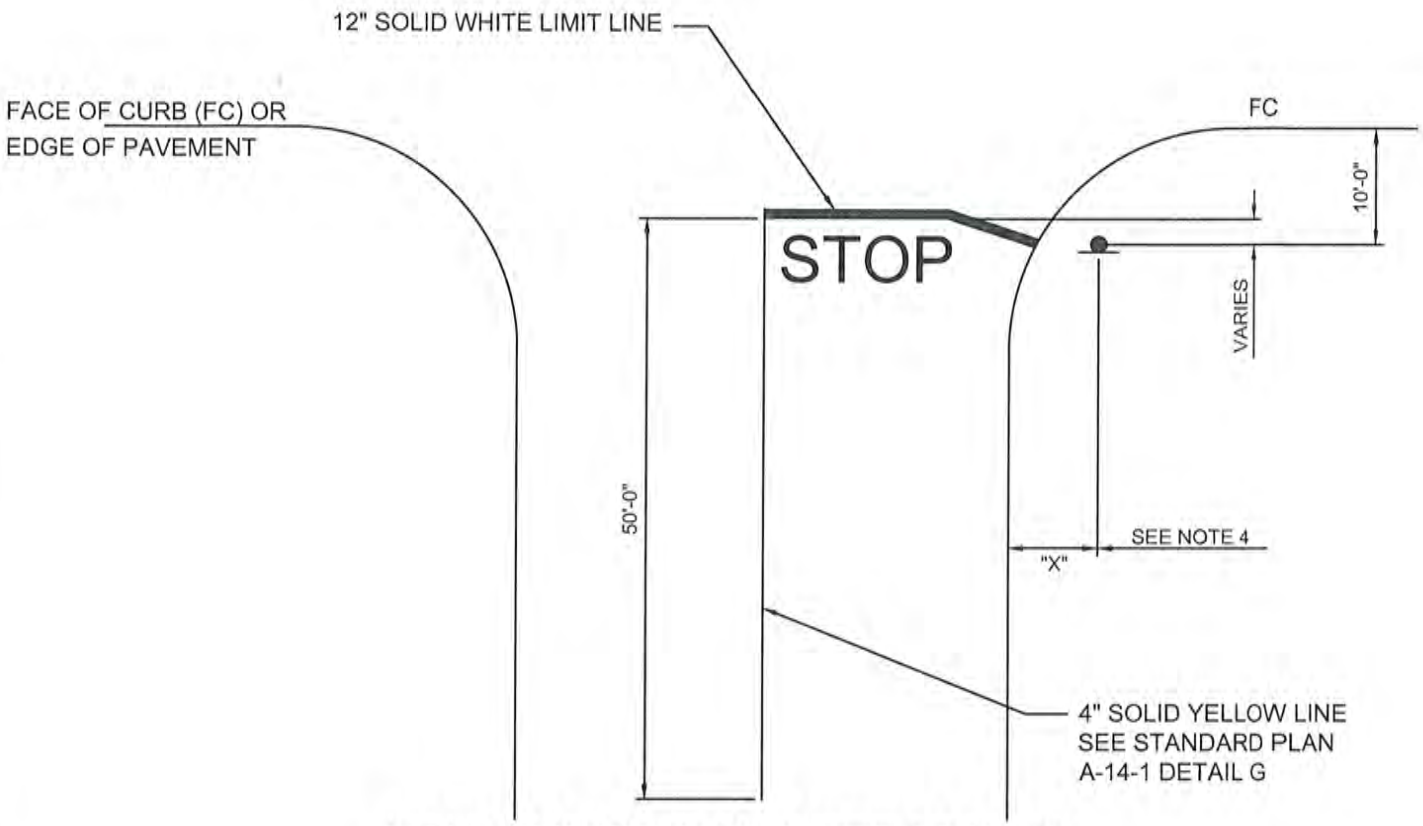
APPROVED:

Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK, LIC. NO. 70647 — DATE

STANDARD PLAN

A-12-1



NONSYMMETRICAL INTERSECTION

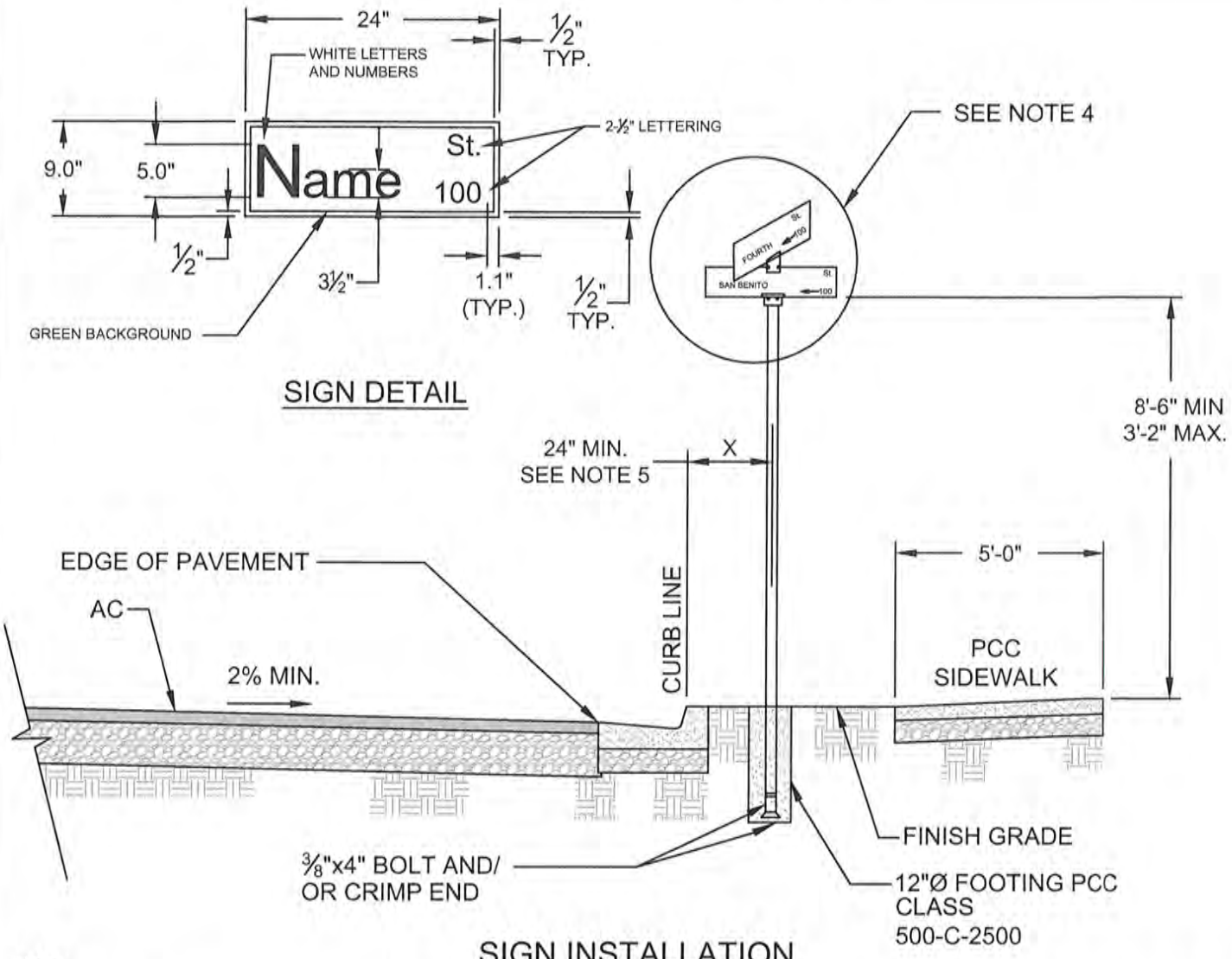
NOTE:

1. STOP SIGN SHALL BE MINIMUM 30", 36" FOR ALL-WAY STOP WITH R1-4S. THE SIGN SHALL HAVE DIAMOND GRADE 3-M REFLECTIVE SHEETING OR APPROVED EQUAL. THE REFLECTIVE SHEETING SHALL CONFORM WITH FEDERAL SPECIFICATION L-S300A. THE BACKGROUND OF THE SIGN SHALL BE RED WITH BORDER AND THE LEGEND ALL REFLECTIVE.
2. YIELD SIGN SHALL BE 36". THE SIGN SHALL HAVE DIAMOND GRADE 3-M REFLECTIVE SHEETING OR APPROVED EQUAL. THE REFLECTIVE SHEETING SHALL CONFORM WITH FEDERAL SPECIFICATIONS L-S300-A. THE BACKGROUND OF THE SIGN SHALL BE RED, RED, AND WHITE TEXT, WITHIN A WHITE TANGLE.
3. SIGN SHALL BE PLACED AT THE POINT WHERE THE VEHICLE IS TO STOP OR AS NEAR THERETO AS POSSIBLE.
4. DIMENSION "X" SHALL HAVE 24" MINIMUM CLEARANCE FROM MAXIMUM SIGN PROTRUSION FOR URBAN APPLICATIONS, DIMENSION "X" SHALL HAVE 6" MINIMUM AND 12" MAXIMUM CLEARANCE FOR RURAL APPLICATIONS.
5. FOR UNIMPROVED AREAS, "Y" SHALL BE A MINIMUM 7'-0" HEIGHT FROM THE PAVEMENT SURFACE/SHOULDER.
6. ADA REQUIREMENTS SHALL HAVE A MIN. 4' CLEARANCE FROM POLE TO EDGE OF SIDEWALK.

TITLE:

TRAFFIC SIGN

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	A-12-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK RCE NO. 70647 — DATE	SHEET 2 OF 2



SIGN INSTALLATION

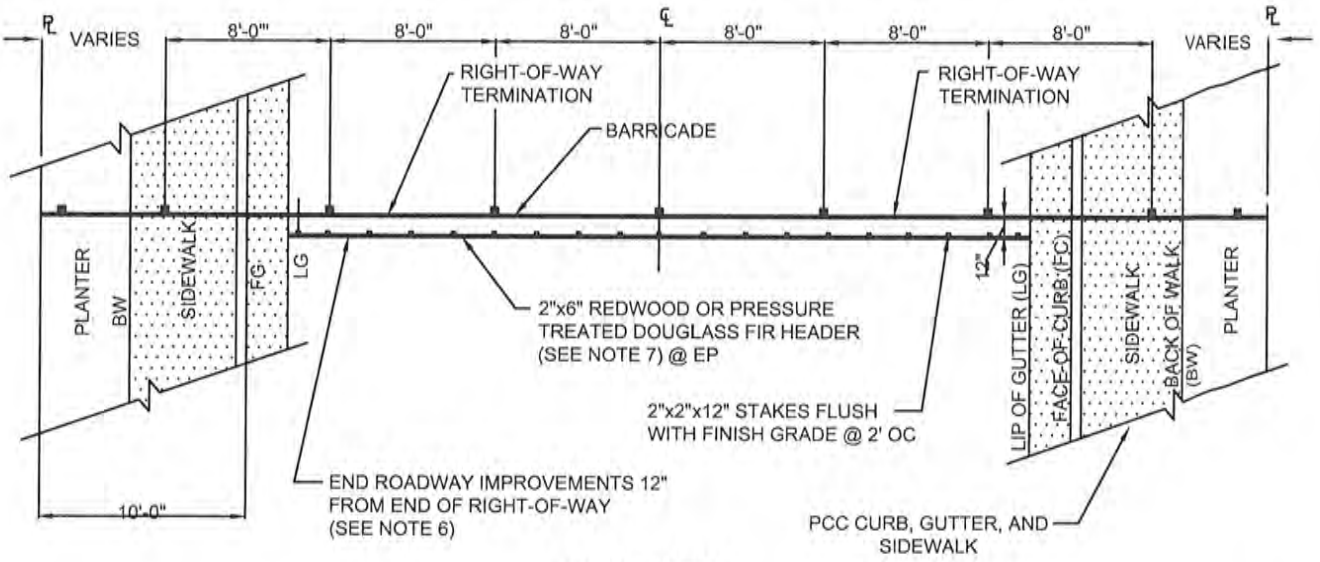
NOTE:

1. STREET NAME SIGN LETTERS SHALL BE WHITE DIAMOND GRADE VISUAL IMPACT PERFORMANCE (V.I.P.) REFLECTIVE SHEETING SERIES 3990 TYPE IX, WITH GREEN ELECTROCUT FILM 1170 WITH MATCHED COMPONENTS, 3M OR APPROVED EQUAL.
2. STREET NAME SIGN LETTERS SHALL BE HIGHWAY GOTHIC "C", 5" UPPER CASE 3-1/2" LOWER CASE, SUPPLEMENTARY. TO ABBREVIATE THE TYPE OF STREET (SUCH AS ST., AVE. OR RD.) AND NUMBERS WITH DIRECTIONAL ARROW SHALL BE 2-1/2" HIGH.
3. STREET NAME SIGN SHALL BE 9"x24"x.06 MIN. GAUGE FLAT PLATE, DOUBLE-SIDED, WITH ROUNDED 1- 1/2" CORNERS (HAWKINS CO. F.B. 108 OR APPROVED EQUAL).
4. STREET NAME SIGN BRACKETS SHALL BE LYLE'S AL-SERIES BRACKET WITH ROUND CAP, AND 90-DEGREE CROSSPIECE, OR APPROVED EQUAL.
5. DIMENSION "X" SHALL BE SUCH THAT THE MINIMUM CLEARANCE BETWEEN CURB LINE AND POLE IS 24-INCHES.
6. THE ARROW SHALL POINT IN THE DIRECTION OF INCREASING NUMBERS.
7. ABBREVIATIONS SHALL BE CENTERED OVER ARROW AND INCREASING NUMBER.
8. STREET NAME SHALL BE DOUBLE-SIDED.
9. POLE SIZE IS 2" I.D. STANDARD GALVANIZED PIPE (ASA SCHEDULE 40).

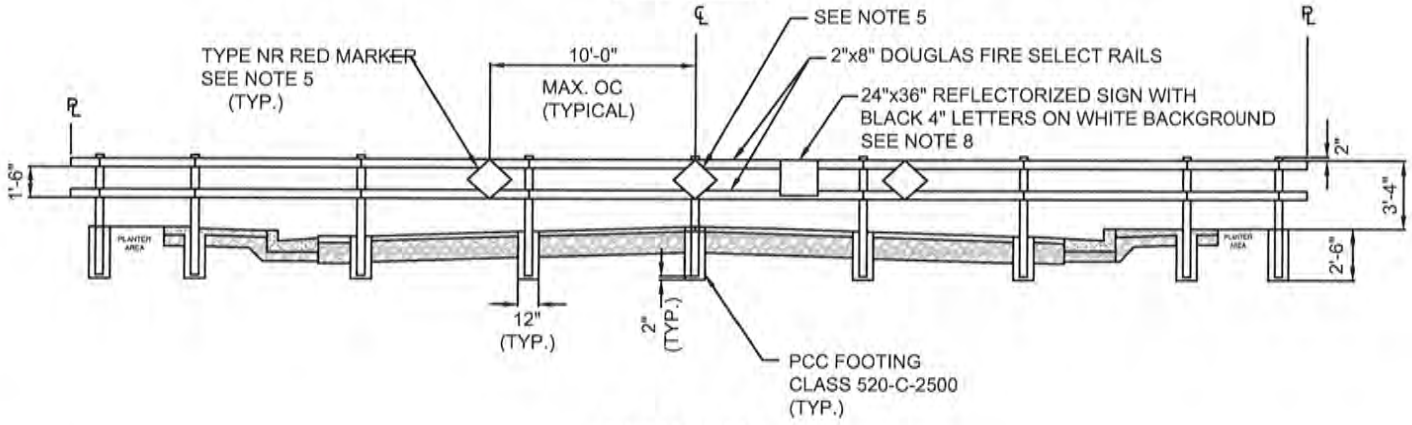
TITLE:

STREET NAME SIGN

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		A-13
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	SHEET 1 OF 1



PLAN VIEW



ELEVATION

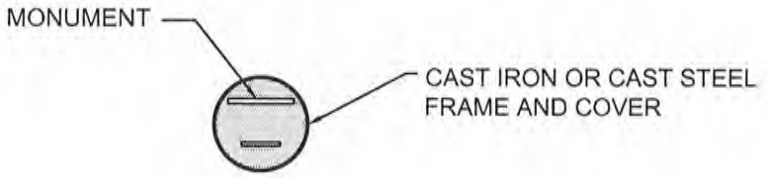
NOTES:

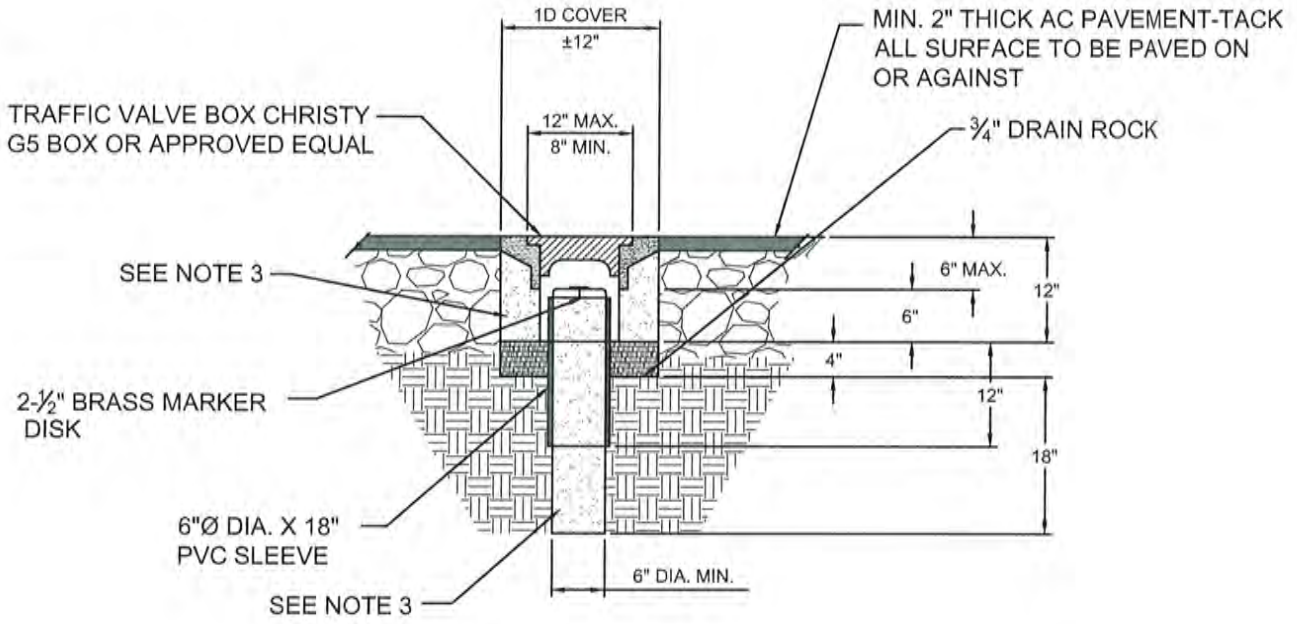
1. INSTALL 4"x4" REDWOOD OR PRESSURE TREATED DOUGLAS FIR POSTS AT NO MORE THAN 8' O.C. IN 12" DIAMETER PCC FOOTING. CUT POST TOPS WITH ½" BEVELED SLOPE TO THE REAR OF THE BARRICADE.
2. RAILS SHALL BE 2"x8"x16' LONG DOUGLAS FIR SELECT GRADE.
3. ATTACH RAILS WITH ½"x6" GALVANIZED CARRIAGE BOLTS, WITH FLAT WASHERS & LOCK WASHER. USE 2 PER RAIL AT EACH POST.
4. PAINT ALL EXPOSED WOOD WITH ONE COAT OF EXTERIOR WOOD PRIMER AND TWO COATS OF EXTERIOR WHITE HI-GLOSS ENAMEL.
5. INSTALL 18"x18" TYPE NR (RED REFLECTIVE BACKGROUND) MARKERS ACROSS THE FULL WIDTH OF DEAD END STREETS. INSTALL 18"x18" TYPE NY (YELLOW REFLECTIVE BACKGROUND) AS REQUIRED BY THE CITY ENGINEER.
6. ALL IMPROVEMENTS SHALL EXTEND TO THE PHASE LINE ON PHASED PROJECTS AND THE RIGHT-OF-WAY ON NON-PHASED PROJECTS.
7. WITH THE APPROVAL OF THE CITY ENGINEER, HEADER BOARD MAY BE ELIMINATED ON PHASED DEVELOPMENTS PROVIDED SUBGRADE PREPARATION, AGGREGATE BASE AND PAVEMENT ARE EXTENDED 12" BEYOND THE CURB AND GUTTER LIMITS.
8. SIGN TO READ, "FUTURE THROUGH STREET SUBJECT TO INCREASED TRAFFIC".

TITLE:

DEAD END STREET BARRICADE

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		A-15
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 1





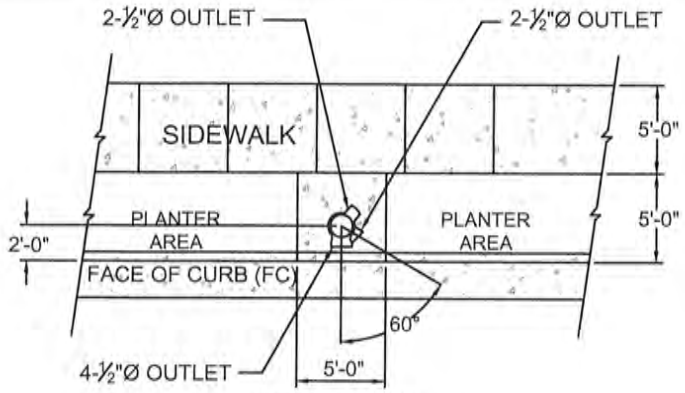
NOTES:

1. THE CONFIGURATION OF THE CAST IRON OR CAST STEEL FRAME AND COVER MAY VARY FROM THAT SHOWN.
2. FRAME SHALL BE EMBEDDED IN CONCRETE A MINIMUM OF 3".
3. CONCRETE COLLAR SHALL BE CLASS 520-C-2500.
4. COVER TO BE CAST WITH WORDS "MONUMENT".
5. SURVEYOR SHALL SUPPLY DISC WITH REGISTRATION OF CIVIL ENGINEER OR LAND SURVEYOR NUMBER TO CONTRACTOR PRIOR TO INSTALLATION.

TITLE:

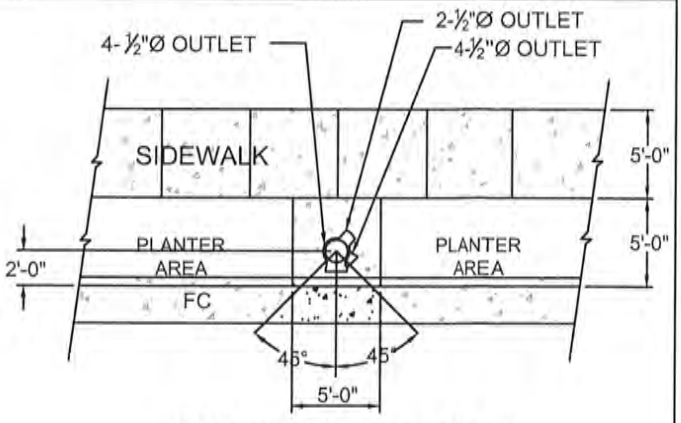
SURVEY MONUMENT

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	A-16
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1



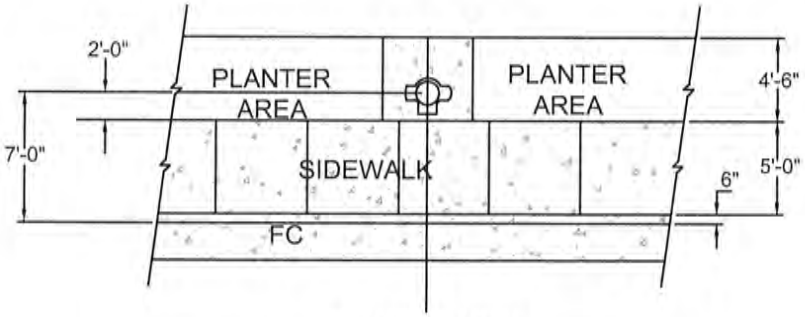
RESIDENTIAL

CLOW 860 CAST IRON / DUCTILE IRON
(1-4½", 2-2½" OUTLETS)



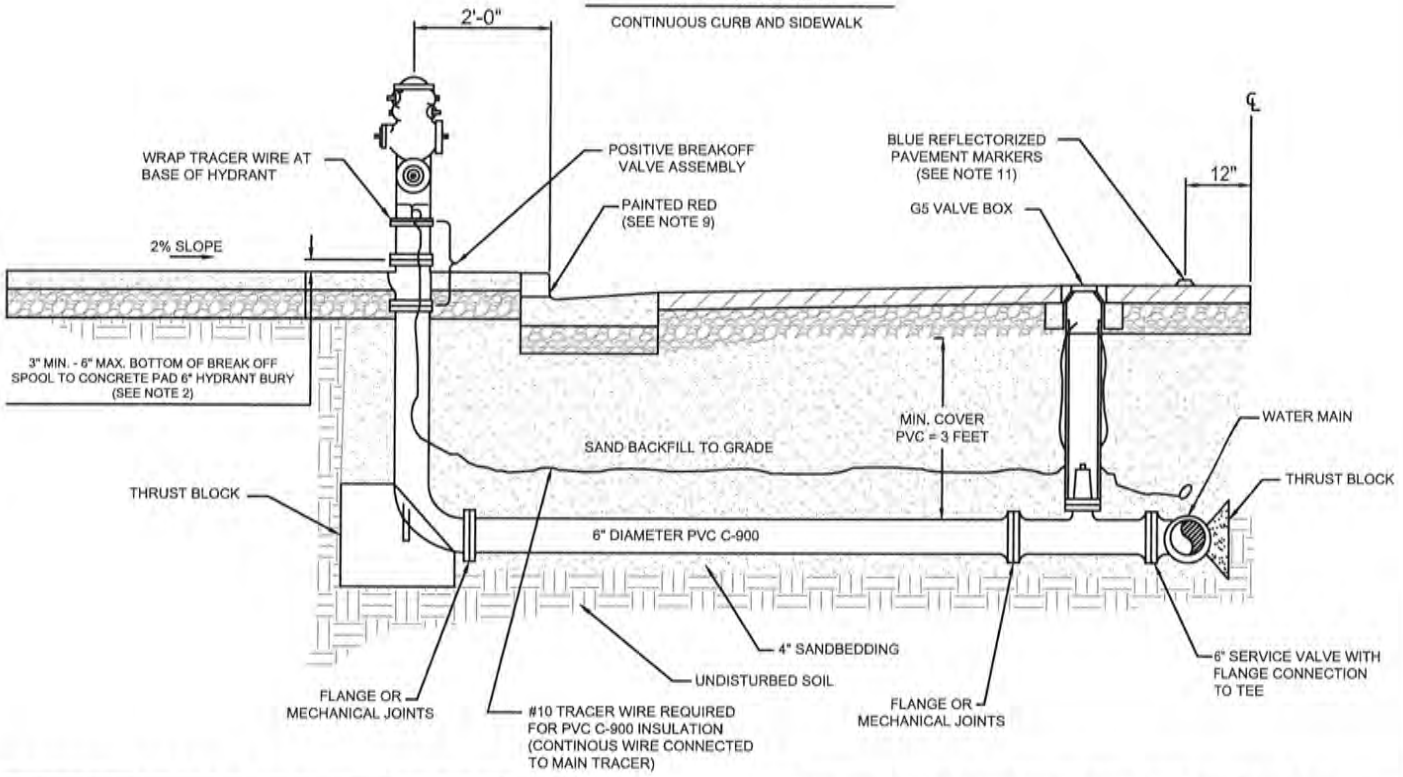
COMMERCIAL / INDUSTRIAL

CLOW 865 CAST IRON / DUCTILE IRON
(2-4½", 1-2½" OUTLET)



PLANTER AREA

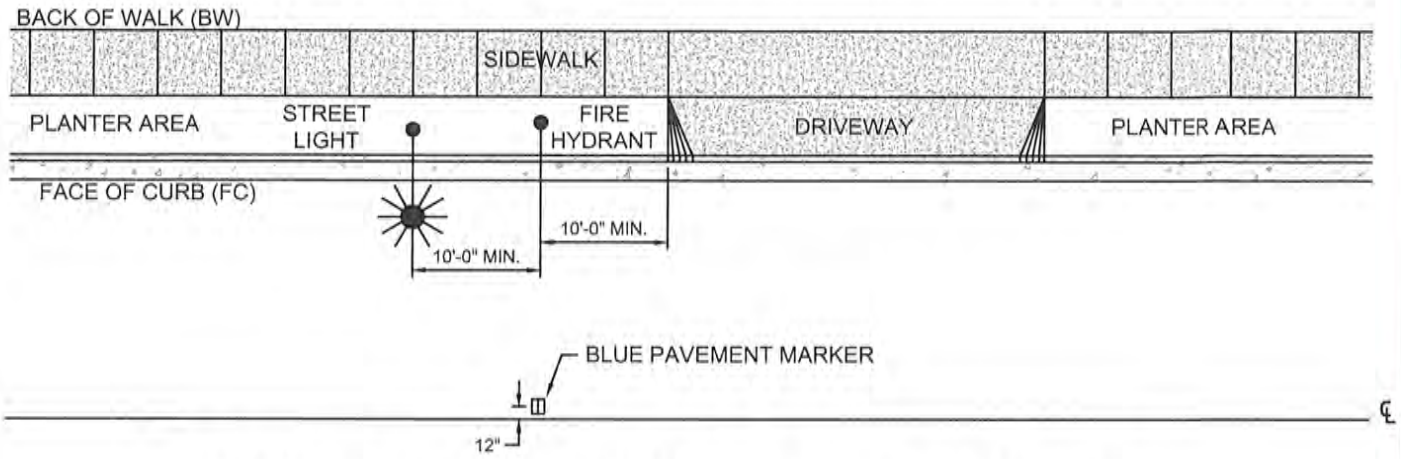
CONTINUOUS CURB AND SIDEWALK



TITLE:

RESIDENTIAL - COMMERCIAL - INDUSTRIAL FIRE HYDRANT

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		B-1-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	SHEET 1 OF 2



STANDARD LOCATION OF FIRE HYDRANT

NOTES:

1. ALL FIRE HYDRANT LOCATIONS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION. MINIMUM DISTANCE OF FIRE HYDRANT FROM DRIVEWAY IS 10 FEET. FIRE HYDRANT INSTALLATION IS NOT TO EXCEED 250' SPACING.
2. INSTALL FIRE HYDRANT MEETING THE FOLLOWING REQUIREMENTS, OR APPROVED EQUAL:

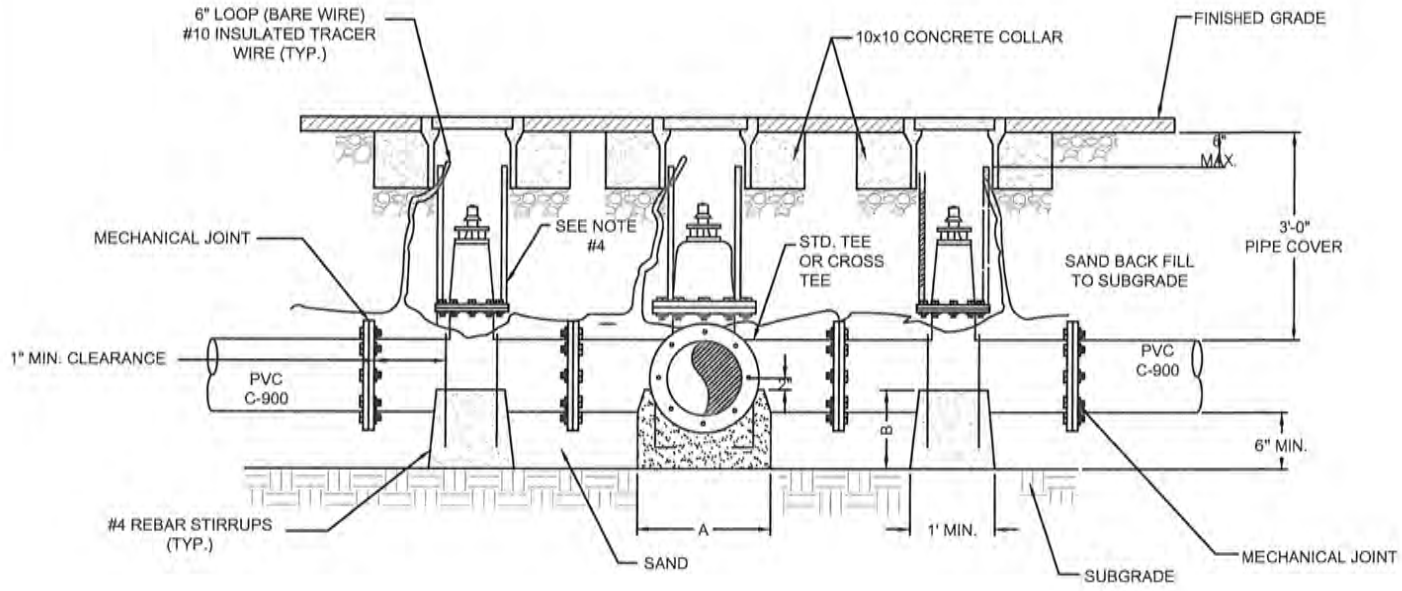
RESIDENTIAL	CLOW VALVE CO. 860	2-2 $\frac{1}{2}$ INCH OUTLET	1-4 $\frac{1}{2}$ INCH OUTLET
COMMERICAL/INDUSTRIAL	CLOW VALVE CO. 865	1-2 $\frac{1}{2}$ INCH OUTLET	2-4 $\frac{1}{2}$ INCH OUTLET

3. POSITIVE BREAK OFF VALVE ASSEMBLY SHALL BE CLOW LBIW LB400A DUCTILE IRON OR APPROVED EQUAL.
4. DUCTILE IRON FITTINGS AND COATING SHALL CONFORM WITH THE LATEST AWWA SPECIFICATIONS C153 AND SHALL BE CEMENT LINED PER AWWA STANDARD C104.
5. FIRE HYDRANT VALVE SHALL BE INSTALLED PER STANDARD PLAN NO. B-2.
6. FIRE HYDRANT VALVE SHALL HAVE A MINIMUM BEARING SURFACE OF 6 SQUARE FEET PER THRUST BLOCK TABLE.
7. THE ENTIRE FIRE HYDRANT ASSEMBLY SHALL PASS HYDROSTATIC PRESSURE TESTING, LEAKAGE TEST, AND BACTERIOLOGICAL TEST PER GREENBOOK PRIOR TO ACCEPTANCE BY CITY ENGINEER.
8. ALL HYDRANTS SHALL BE PAINTED WITH SAFETY YELLOW USING KELLY MOORE KEL-GUARD ENAMEL, OR APPROVED EQUAL, IN STRICT CONFORMANCE WITH MANUFACTURER'S REQUIREMENTS.
9. PAINT CURB WITH RED PAINT 10 FT. ON BOTH SIDES OF HYDRANT.
10. CONCRETE PAD CLASS 520-C-2500 ON EXISTING SIDEWALK, THE PAD ELEVATION SHALL BE SAME ELEVATION AS THE EXISTING ADJACENT SIDEWALK.
11. FIRE HYDRANT BLUE PAVEMENT MARKER SHALL BE LOCATED 12 INCHES FROM CENTERLINE TOWARDS THE FIRE HYDRANT. HYDRANTS NEAR INTERSECTIONS REQUIRE MARKERS ON EACH STREET.
12. WRAP THE BURIED PORTION OF THE FIRE HYDRANT WITH 10 MIL POLYETHYLENE SHEET.

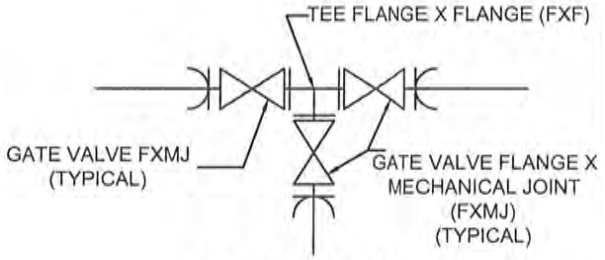
TITLE:

FIRE HYDRANT LOCATION AND NOTES

DRAWN BY: STAFF	SCALE:	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		B-1-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 2 OF 2



GATE VALVE SIZE	ANCHOR BLOCK DIMENSIONS	
	A (FT)	B (FT)
6	18"	14"
8	18"	16"
10	24"	18"
12	24"	20"



PLAN VIEW

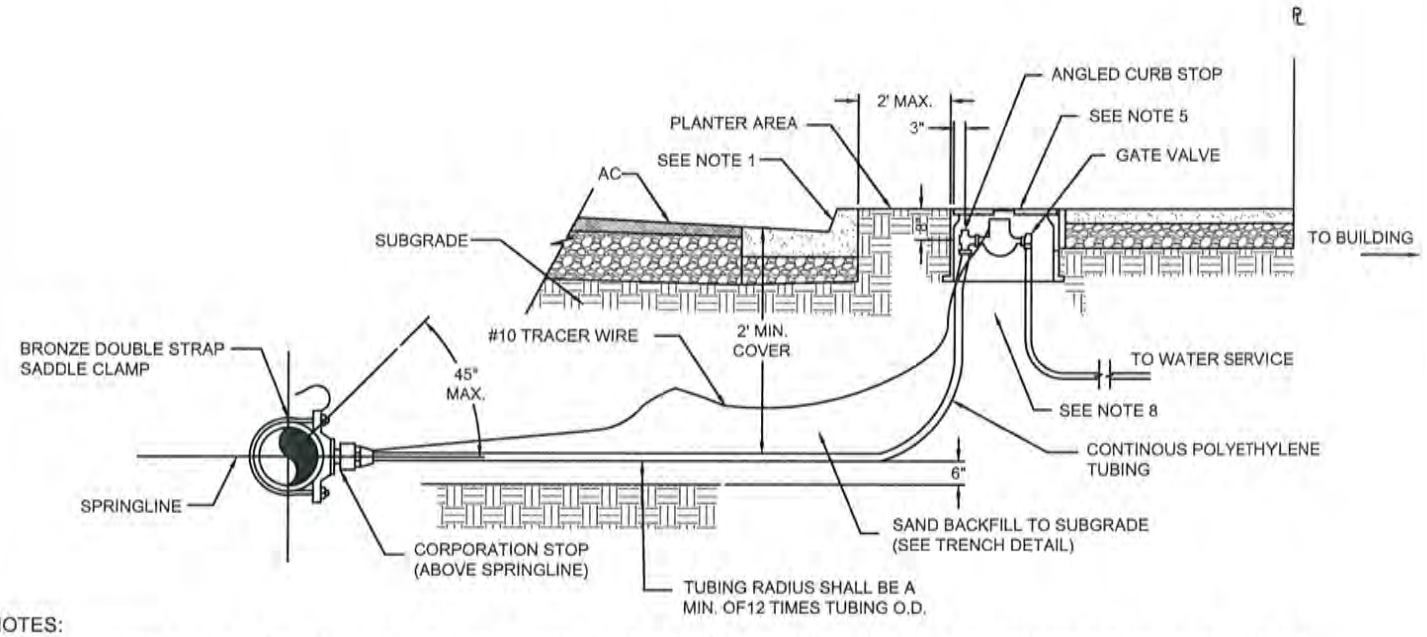
NOTES:

1. ALL GATE VALVES SHALL BE NON RISING STEM (NRS) DOUBLE O-RING SEAL. VALVES SHALL BE PER AWWA STANDARD EQUAL SIZED TO LINE PIPING. VALVES SHALL BE EPOXY COATED RESILIENT WEDGE GATE VALVES COMPLYING WITH AWWA C-509 SPECIFICATIONS. NO LEFT HANDED VALVES ALLOWED IN THE CITY.
2. CONCRETE COLLAR AND THRUST BLOCK SHALL BE CLASS 520-C-2500 PCC.
3. VALVE BOX SHALL BE CHRISTY G5 BOX WITH G5C TRAFFIC LID.
4. VALVE BOX RISER SHALL BE 8"Ø PVC SLEEVE.
5. ALL VALVES, FITTINGS AND ANCHOR BARS SHALL BE WRAPPED WITH 10 MIL. THICK POLYETHYLENE SHEET.
6. FOURTEEN (14") AND LARGER VALVES SHALL BE BUTTERFLY VALVE MANUFACTURED PER AWWA STANDARDS.

TITLE:

WATER VALVE

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	B-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1



NOTES:

1. ALL WATER SERVICE INSTALLATIONS INCLUDE METER BOX AND MUST BE MARKED WITH A 3" STAMPED "W" ON FACE OF CURB.
2. MINIMUM 1" WATER SERVICE WITH 1" CORPORATION STOP, FORD, MUELLER, OR JONES WITH STANDARD IP THREADS X PACK JOINT CORP STOP (MUELLER P15008 OR FORD F1001-4). ALL BRASS FITTING AND COUNTER-CLOCKWISE CORPORATION STOP SHALL BE LEAD FREE.
3. ALL WATER SERVICES SHALL HAVE A HAND TAMPED SAND BEDDING 6" BENEATH THE TUBING AND SHALL HAVE 12" MINIMUM CLEARANCE ON EACH SIDE AND 12" MIN. SAND COVER.
4. ALL WATER SERVICES SHALL BE POLYETHYLENE CTS SDR 9 (ASTM 2666) TUBING. ALL TUBING CONNECTIONS SHALL BE COMPRESSION TYPE: FORD, "PACK JOINT" OR APPROVED EQUAL.
5. WATER METER BOX SHALL BE PRE-CORED CHRISTY B-16 WITH FIBERLYTE LID AND WITH METER READING DOOR AND PREDRILLED HOLE FOR METER READING ERT (ENCODER RECEIVER TRANSMITTER).
6. A MINIMUM SEPARATION OF 1'-0" BETWEEN WATER SERVICES REQUIRED ON COMMON TRENCH WITH MULTIPLE SERVICES AND TO BE INSTALLED. MINIMUM 6" CLEARANCE BETWEEN TRENCH WALL & WATER SERVICE.
7. ALL TUBING TO FITTING CONNECTIONS SHALL INCLUDE STAINLESS STEEL INSERTS.
8. MINIMUM 9 INCH SAND BACKFILL MATERIAL SHALL HAVE A MINIMUM SE=30 AND COMPACTED TO 90% RELATIVE COMPACTION, WITH 6" MINIMUM CLEAR TO BOTTOM OF METER.
9. WATER METER SIZES APPROVED BY CITY OF HOLLISTER ARE:
   1", 2", 4", 6", 8" AND 10"
10. GATE VALVE SHALL BE FORD, MULLER, AND JONES, OR APPROVED EQUAL.
11. INSTALL INSULATED STRANDED WIRE GAUGE #10 TO ALL WATER SERVICES.
12. WATER METER RADIO READ LID SHALL COMPLY WITH CITY OF HOLLISTER STANDARDS.
13. NO WATER SERVICE IN FIRE HYDRANT TRENCH ALLOWED.
14. NO WATER METER BOX INSTALLED IN DRAINAGE SWALE.

TITLE:

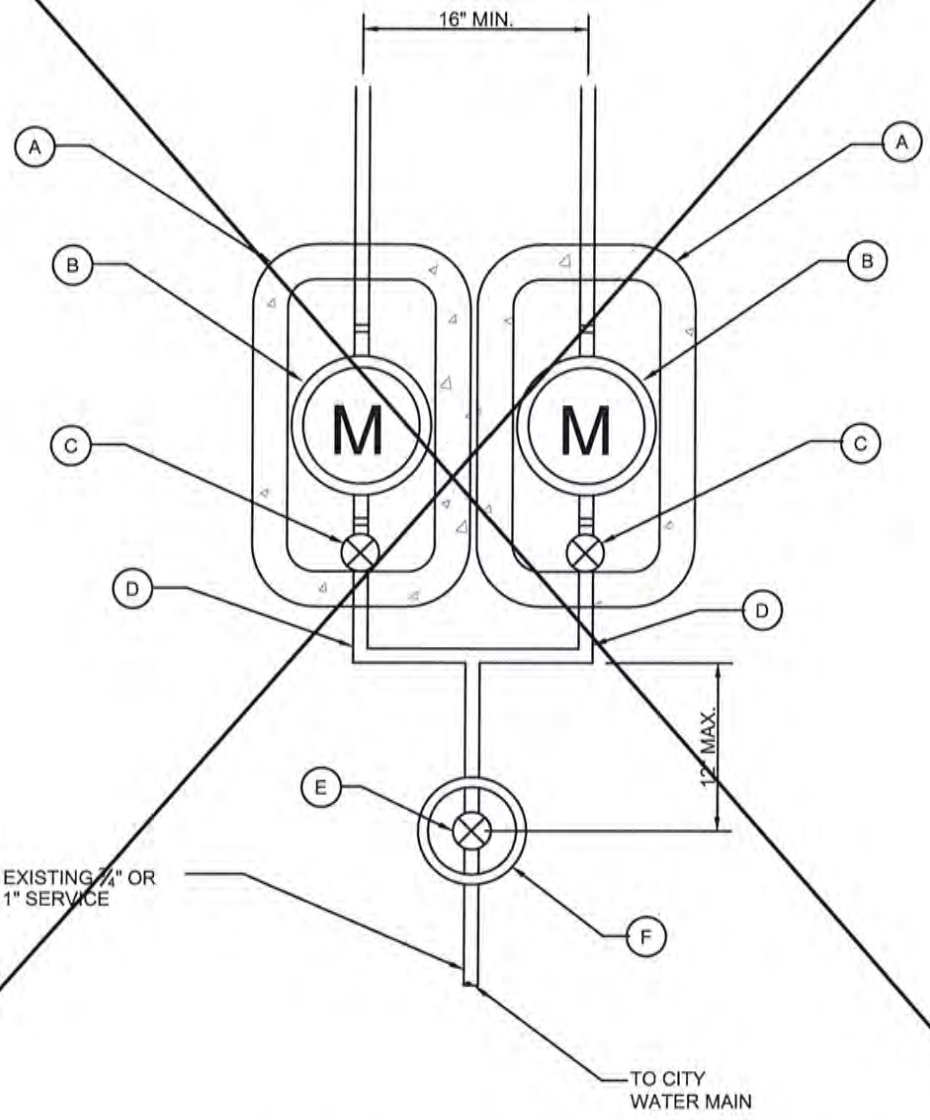
WATER SERVICE

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		B-3-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 3

LEGEND

(A.) CHRISTY METER BOX B16.
(B.) 1" RESIDENTIAL METER.
(C.) BRASS CURB STOP.
(D.) BRASS PIPE AND BRASS FITTING.
(E.) BRASS CURB STOP OR ANGLE STOP.
(F.) CHRISTY G5 VALVE BOX AND LID MARK "WATER".

VOID DETAIL



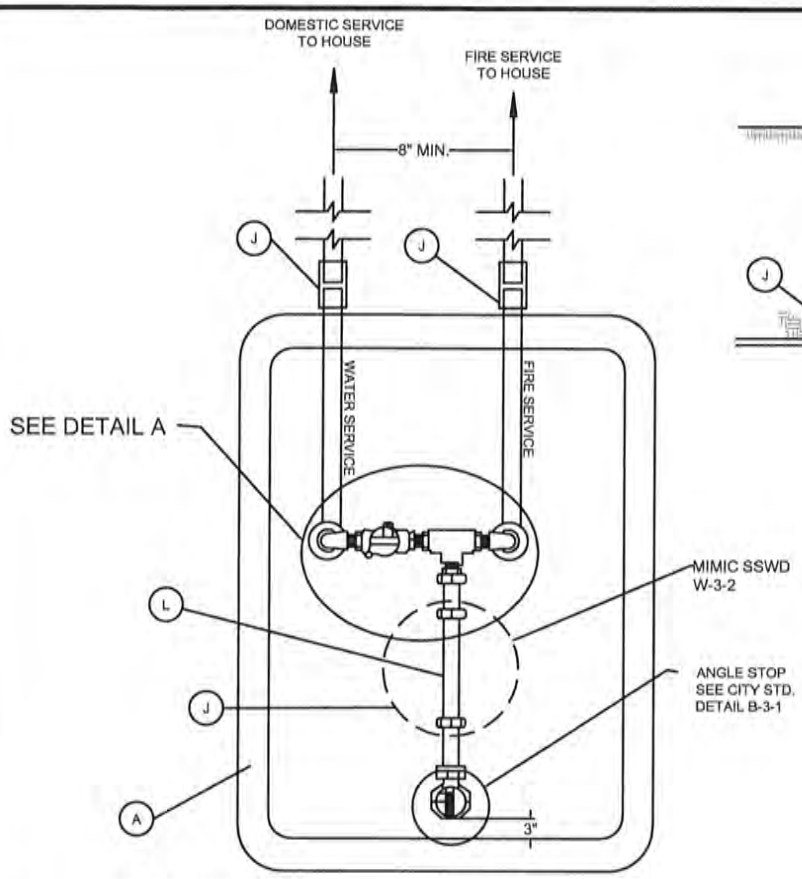
NOTE:

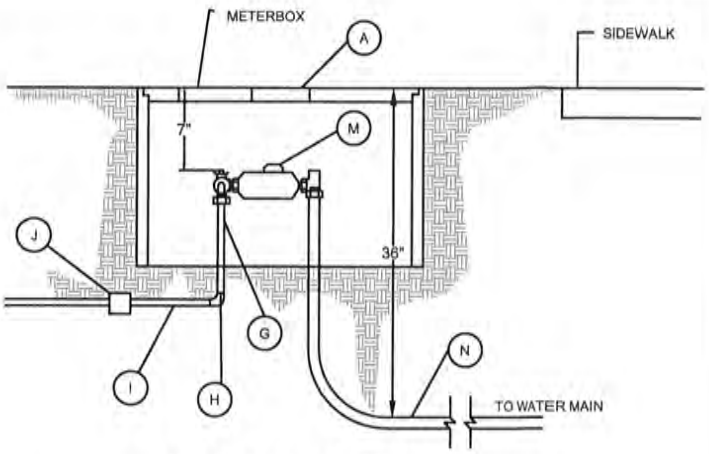
A MANIFOLD WILL BE CONSIDERED FOR USE WITH AN EXISTING WATER SERVICE ONLY, AND NOT FOR USE WITH NEW CONSTRUCTION. FURTHERMORE, THE USE OF A MANIFOLD WILL BE CONSIDERED ON A CASE BY CASE BASIS, AND SUBJECT TO CITY ENGINEER REVIEW AND APPROVAL.

TITLE:

RESIDENTIAL MULTIPLE METER SET

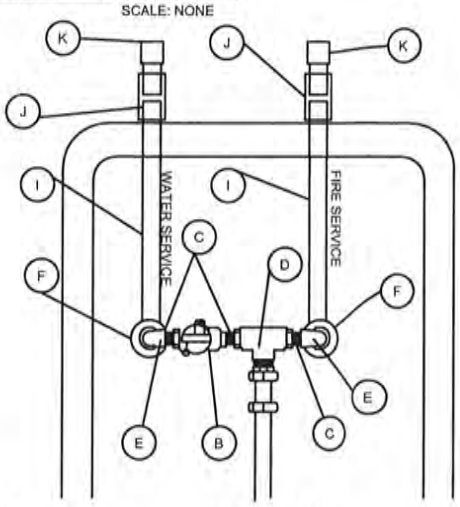
DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		B-3-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	VOID
			SHEET 2 OF 3





WATER CONNECTION

SCALE: NONE



DETAIL A

SCALE: NONE

DETAIL KEY

- (A.) CHRISTY B-16 METERBOX WITH FIBERLYTE LID (SEE NOTE NO. 3)
- (B.) BALL VALVE WITH PADWING-1"- FORD B11-444W-NL
- (C.) 3-CLOSEx1"-BRASS NIPPLE
- (D.) 1-1" BRASS TEE
- (E.) 2-1" ST 90° BRASS
- (F.) 2-1" BRASS UNION
- (G.) 2-1"x8" BRASS NIPPLE
- (H.) 2-1" 90° BRASS ELBOW
- (I.) 2-1"x12" BRASS NIPPLE
- (J.) 2-1" BRASS COUPLER IRON PIPE THREAD
- (K.) 2-1" PVC MIP PLUG (REMOVE WHEN CONTINUED TO STRUCTURE)
- (L.) 1-11" PERFORATED SPACER (LENGTH SHALL BE DETERMINED BY METER SIZE).
- (M.) 1-1" METER SWIVEL X FIP (INSTALLED BY CITY /S.S.W.D.)
- (N.) 1" POLYETHYLENE TUBING (CTS) (SDR9)

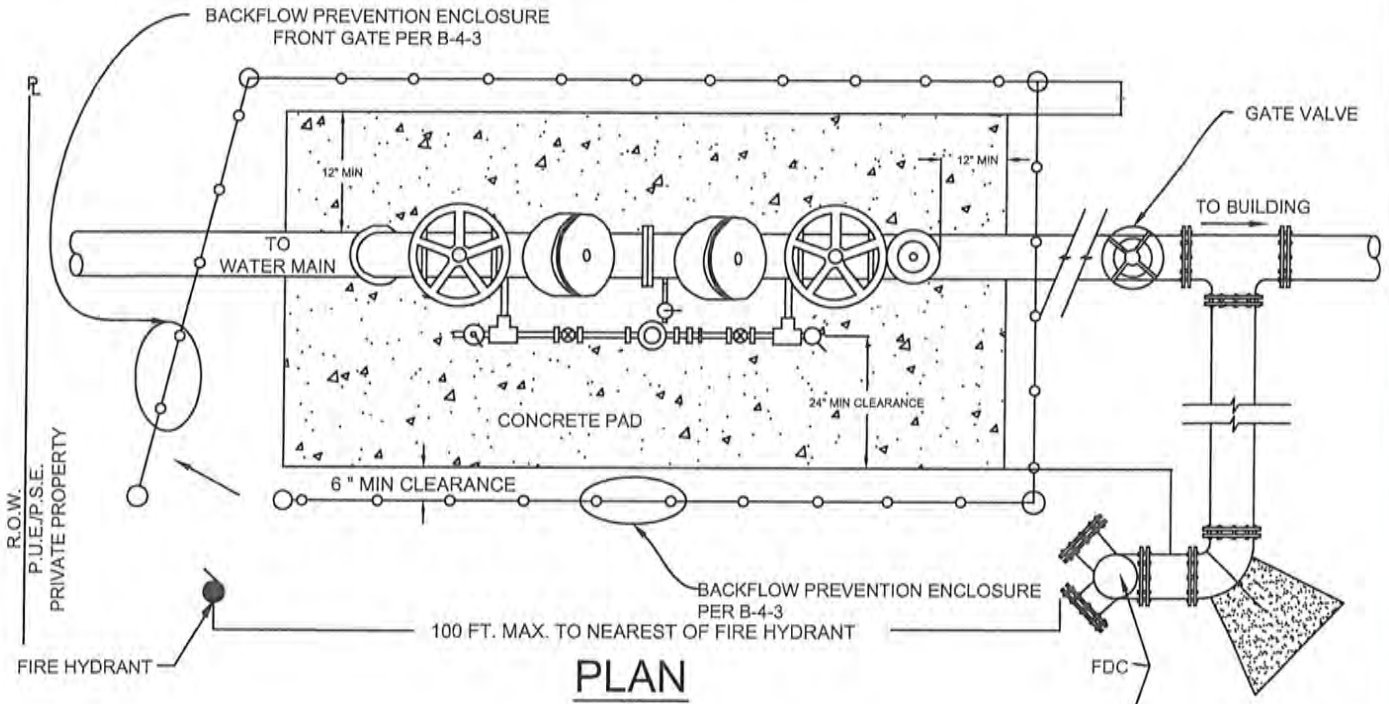
NOTES:

1. METER SIZE NO LESS THAN 1" METER SUPPLIED BY CITY OF HOLLISTER/SUNNYSLOPE COUNTY WATER DISTRICT (S.S.W.D.).
2. SEPARATE PRIVATE SERVICE LINES ARE REQUIRED FOR DOMESTIC WATER AND FIRE. SERVICE LINES SHALL BE INSTALLED BY THE CUSTOMER AND SHALL BE PER UNIFORM PLUMBING CODE.
3. WATER METER BOX SHALL BE CHRISTY B-16 WITH FIBERLYTE LID. THE LID SHALL BE CORE DRILLED TO ACCEPT REMOTE METER READING SENSOR AND METER READING LID.
4. CUSTOMER SHALL INSTALL SUITABLE CONTROL VALVES ON EACH PRIVATE SERVICE LINE ON THE RISER TO EACH BUILDING.
5. THE MAXIMUM NUMBER OF DWELLING UNITS CONNECTED TO A COMBINATION RESIDENTIAL DOMESTIC AND FIRE SPRINKLER SERVICE SHALL NOT EXCEED ONE (1) DWELLING UNIT PER SERVICE. PROJECTS WHICH PROPOSE TO EXCEED THIS LIMITATION MUST INCLUDE A SEPARATE, DEDICATED FIRE SERVICE AND WATER SERVICE LINE FOR EACH RESIDENTIAL UNIT.
6. CONNECTIONS TO COPPER SERVICE LINES SHALL BE FLARED FITTINGS WITH POLYETHYLENE TUBING (CTS) (SDR9) INSTALL #10 INSULATED TRACER WIRE.
7. THE CITY ENGINEER/SUNNYSLOPE COUNTY WATER DISTRICT HAVE THE AUTHORITY TO MODIFY THE REQUIREMENTS OF THIS STANDARD DETAIL AS NECESSARY TO ACCOMMODATE NON-TYPICAL SITUATIONS.

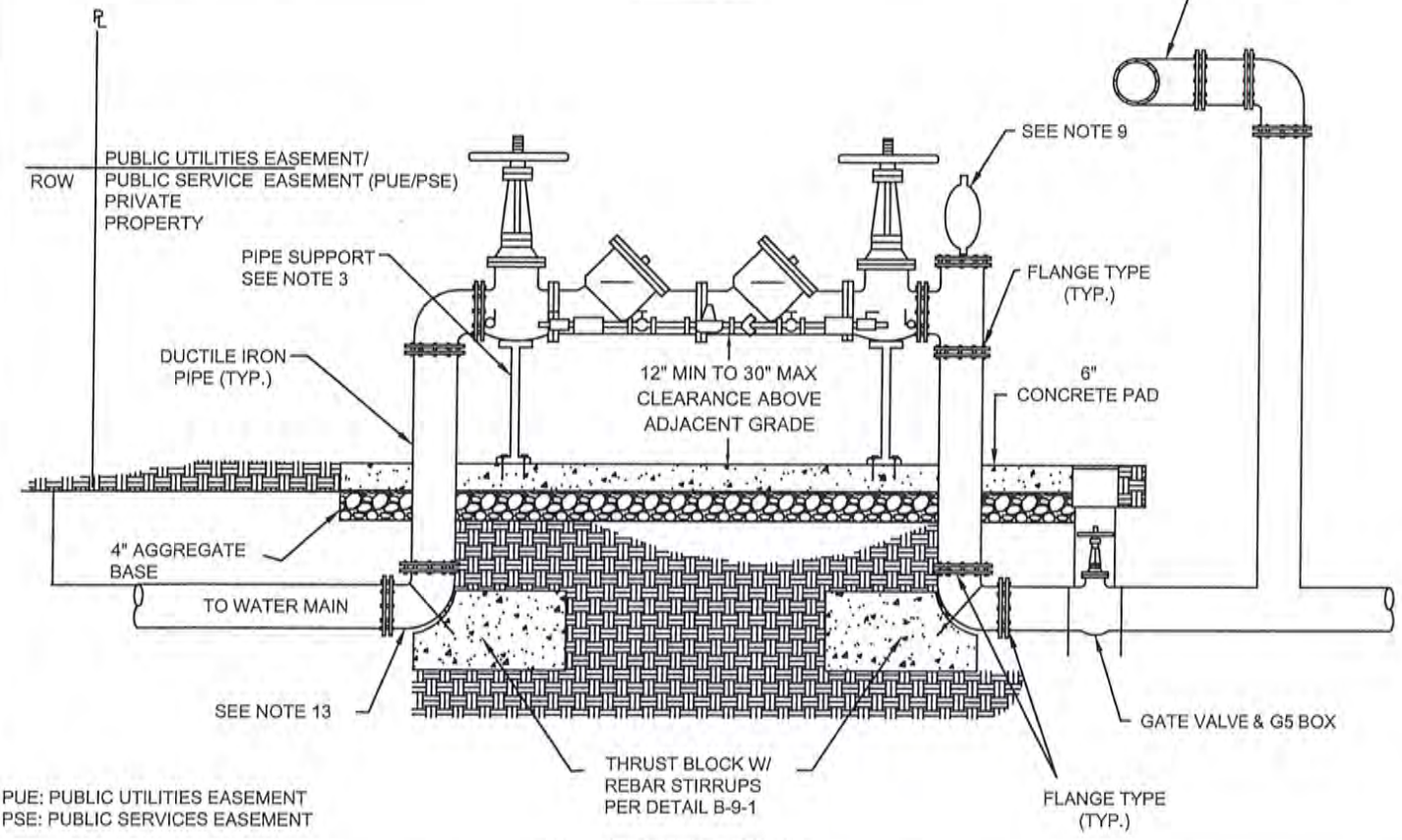
TITLE:

COMBINATION DOMESTIC & FIRE SERVICE

AUTOCAD BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		B-3-3
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DIVISION		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 3 OF 3



PLAN



PUE: PUBLIC UTILITIES EASEMENT
PSE: PUBLIC SERVICES EASEMENT

ELEVATION

TITLE:

BACKFLOW PREVENTION DEVICE FOR FIRE PROTECTION SYSTEM

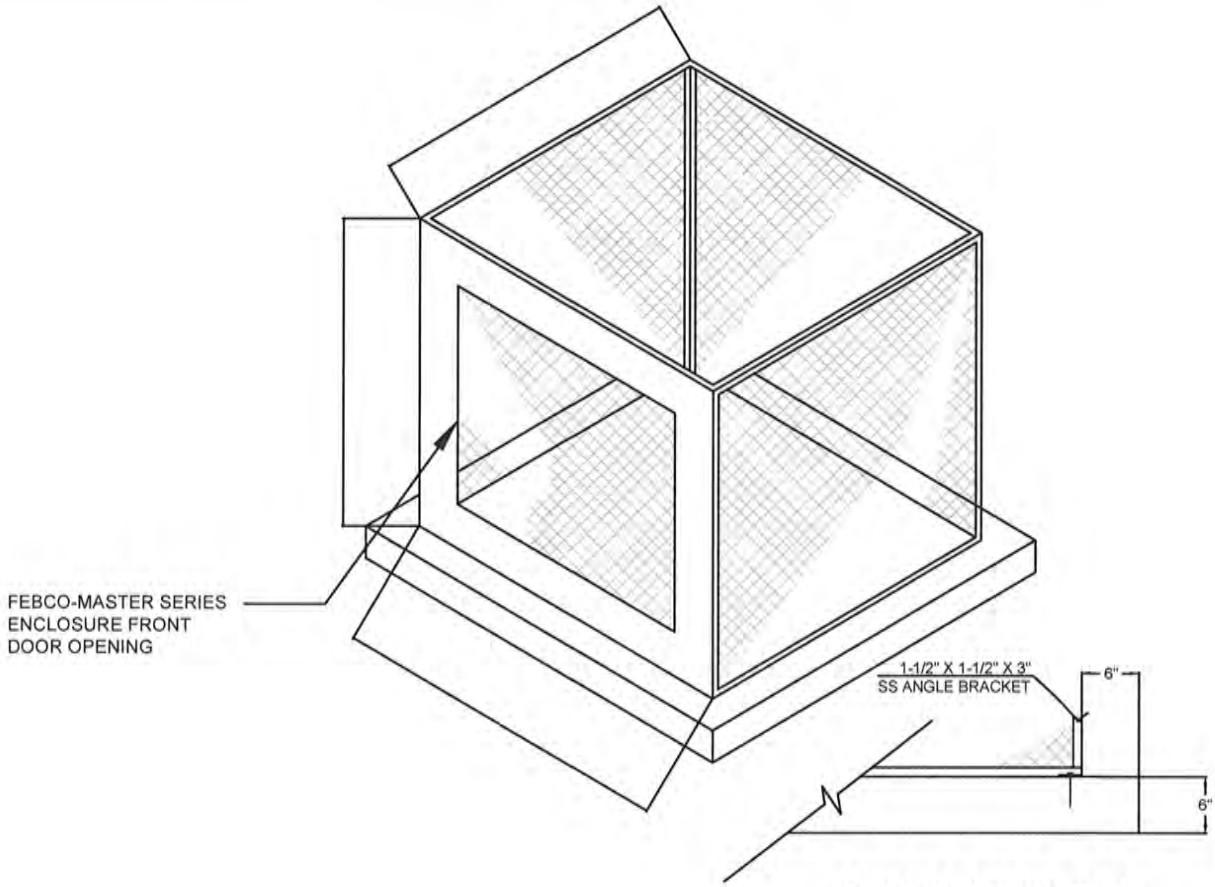
DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		B-4-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 3

NOTES:

1. ALL (BPD) BACKFLOW PREVENTION DEVICES SHALL BE LEAD-FREE, REDUCED PRESSURE PRINCIPLE(RPP). ALL BPD'S SHALL BE APPROVED BY THE (AWWA) AMERICAN WATER WORKS ASSOCIATION AND INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO) AND BE ON THE MOST CURRENT LIST OF BPD'S AT TIME OF INSTALLATION. ENTIRE ASSEMBLIES, GATE VALVES. TEST COCKS, AND BYPASS METER SHALL BE PROVIDED AS A COMPLETE UNIT.
2. TEST COCKS FOR BACKFLOW PREVENTERS SHALL BE PROVIDED WITH ⅜" MALE FLARE AND CAP.
3. BACKFLOW PREVENTERS SHALL BE SUPPORTED BY 2" DIAMETER GALVANIZED STEEL PIPE SADDLE SUPPORTS WITH FLANGE ADAPTERS BOLTED TO CONCRETE PAD. PRIME AND PAINT THE ASSEMBLY WITH COLOR MATCHING THE BACKFLOW PREVENTER. BEFORE PRIMING, TREAT PIPE SURFACE FOR OILS AND OXIDES OF ZINC.
4. ALL RPP BPDs SHALL CONFORM TO THOSE DEVICES INCLUDED ON THE MOST CURRENT AND UPDATE AWWA AND IAPMO LIST OF SUCH APPROVED BY THE CALIFORNIA DHS (DEPARTMENT OF HEALTH SERVICES) APPROVED LIST FOR BPD'S.
5. NO TEES OR OTHER CONNECTIONS SHALL BE PERMITTED BETWEEN THE PUBLIC WATER SUPPLY LINE AND APPROVED BPD. ALL BPD'S SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE WATER MAIN.
6. OUTSIDE STEM AND YOKE (O. S & Y.) GATE VALVES REQUIRED ON FIRE SERVICE (U. L. LISTED) RATED TO BE AT 175 P. S. I. WORKING PRESSURE AND 350 P. S. I. HYDROSTATIC TEST PRESSURE HAND WHEELS ON O. S. & Y. VALVES SHALL BE CHAINED AND LOCKED. USE ⅜" GALVANIZED CHAIN AND LOCK BETWEEN VALVES. CHAIN SHALL BE DOUBLE LOCKED, ONE LOCK WILL BE SUPPLIED BY THE CITY OF HOLLISTER.
7. THRUST BLOCK SHALL BE CLASS 520-C-2500 PCC.
8. ASSEMBLY SHALL BE PROTECTED BY 4"Ø BALLARDS WHEN LOCATED NEAR TRAFFIC OR AS DIRECTED BY THE CITY ENGINEER.
9. AIR RELEASE VALVE SHALL BE APCO NO. 50, ½" FOR 4" TO 6" SERVICE AND ¾" FOR 8" TO 12" SERVICES.
10. DEVICE MUST BE ACCESSIBLE FOR TESTING AND MAINTENANCE.
11. ALL ASSEMBLIES SHALL BE PROTECTED BY AN ENCLOSURE. SEE STANDARD PLAN B-4-3.
12. ALL PIPE SHALL BE DUCTILE IRON PIPE (DIP) AND ALL FITTINGS SHALL BE FLANGE TYPE.
13. A CERTIFIED BACKFLOW PREVENTION ASSEMBLY GENERAL TESTER ACCREDITED BY CALIFORNIA - NEVADA AWWA SHALL INSPECT BPD. LIST OF CERTIFIED TESTERS WILL BE PROVIDED BY THE CITY OF HOLLISTER UTILITY DIVISION. THE BPD'S SHALL BE INSPECTED AND APPROVED BY THE TESTER PRIOR THE UTILITY DIVISION PROVIDING POTABLE WATER BEYOND THE METER PROVIDE TEST REPORT EVERY YEAR AND FORWARD TO FIRE DEPARTMENT AND UTILITY DEPARTMENT.
14. TEST BACKFLOW PREVENTION DEVICE AND PROVIDE CERTIFICATE PRIOR TO ACCEPTANCE BY THE CITY.
15. ALL FITTINGS BELOW GRADE SHALL BE WRAPPED WITH 10 MIL. MINIMUM POLYETHYLENE SHEET.
16. ALL BOLTS SHALL BE TORQUED PER MANUFACTURER'S RECOMMENDATIONS. TORQUE TESTING SHALL BE VERIFIED BY SPECIAL INSPECTION.

TITLE: # BACKFLOW PREVENTION DEVICE FOR FIRE PROTECTION SYSTEM

DRAWN BY: STAFF	SCALE: NONE	APPROVED: Danny Hillstock 11-5-19	STANDARD PLAN B-4-2
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE	
CITY OF HOLLISTER ENGINEERING DEPARTMENT			SHEET 2 OF 3



BOLT DOWN DETAIL

NOTES:

1. GATE TO BE AT END OF ENCLOSURE.
2. WHERE TWO BACKFLOW PREVENTION DEVICES (BPD'S) ARE INSTALLED IN PARALLEL, ENCLOSURE SHALL PROVIDE FOR MIN. CLEARANCES SHOWN ON B-4-1, AND PROVIDE DOUBLE GATE WITH DOUBLE DROP ROD FOR LATCHING.
3. ALL ENCLOSURES SHALL BE MILD STEEL BFE-62M, AND SHALL BE SECURED IN SUCH A MANNER AS TO PREVENT TAMPERING OR UNAUTHORIZED ENTRY.
4. CONCRETE PAD TO BE 520-C-2500 PCC. TOP OF PAD SHALL SLOPE TO EDGE AND BE SET 2" MINIMUM ABOVE EXISTING SOIL LEVEL.
5. MEDIUM BROOM FINISH ON CONCRETE PAD.
6. ALTERNATIVE ENCLOSURE MAY BE INSTALLED WITH APPROVAL OF THE CITY ENGINEER.
7. ENCLOSURES REQUIRED ON ALL BACKFLOW PREVENTION DEVICE (BPD'S) GREATER THAN 2"Ø.
8. ANCHOR SHORT PORTION OF BRACKET TO CONCRETE PAD WITH 3/8" X 3" SS WEDGEANCHOR AND 3/8" X 2" SS BOLT WITH LOCK WASHER IN EACH OF FOUR(4) CORNERS. ANCHOR TO BE MIN. 6" FROM EDGE OF CONCENTRATED PAD.
9. CONNECT ANCHOR ENCLOSURE TO ANGLE BRACKET WITH TWO 3/8" X 1-1/2" TAMPER-RESISTANT BOLTS WITH NUTS AND LOCK WASHERS.

TITLE:

BACKFLOW PREVENTION DEVICE ENCLOSURE FOR FIRE PROTECTION SYSTEM

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

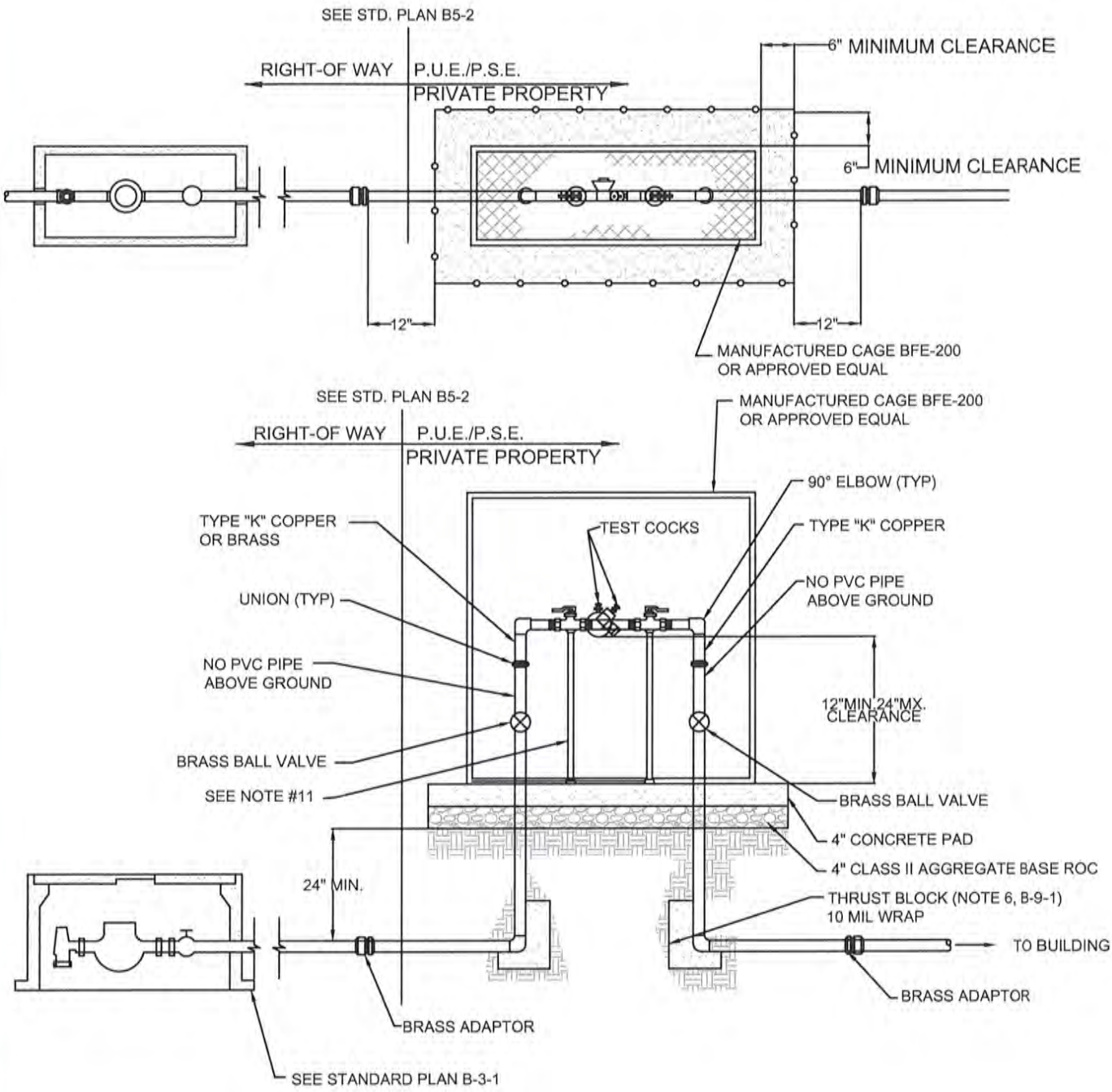
Danny K Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

STANDARD PLAN

B-4-3

SHEET 3 OF 3



PUE: PUBLIC UTILITIES EASEMENT
PSE: PUBLIC SERVICES EASEMENT

TITLE:

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER (2"Ø AND SMALLER)

DRAWN BY: STAFF	SCALE: NONE
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

STANDARD PLAN

B-5-1

SHEET 1 OF 2

ITEMS	¾" TO 2"Ø RPPBP	4" Ø RPPBP AND LARGER
BACKFLOW PREVENTER TYPE	(LEAD FREE) FEBCO WILKINS, AMES, WATTS	(LEAD FREE) FEBCO WILKINS, AMES, WATTS)
PIPES	BRASS OR TYPE "K" COPPER	DUCTILE IRON PIPE (DIP)
FITTINGS	THREADED	FLANGE TYPE
BACK FLOW ENCLOSURES	BFE - 200 L = 42", W=18", HT. = 30" OR APPROVED EQUAL	BFE - 62M L = 62", W=57", HT. =56" OR APPROVED EQUAL

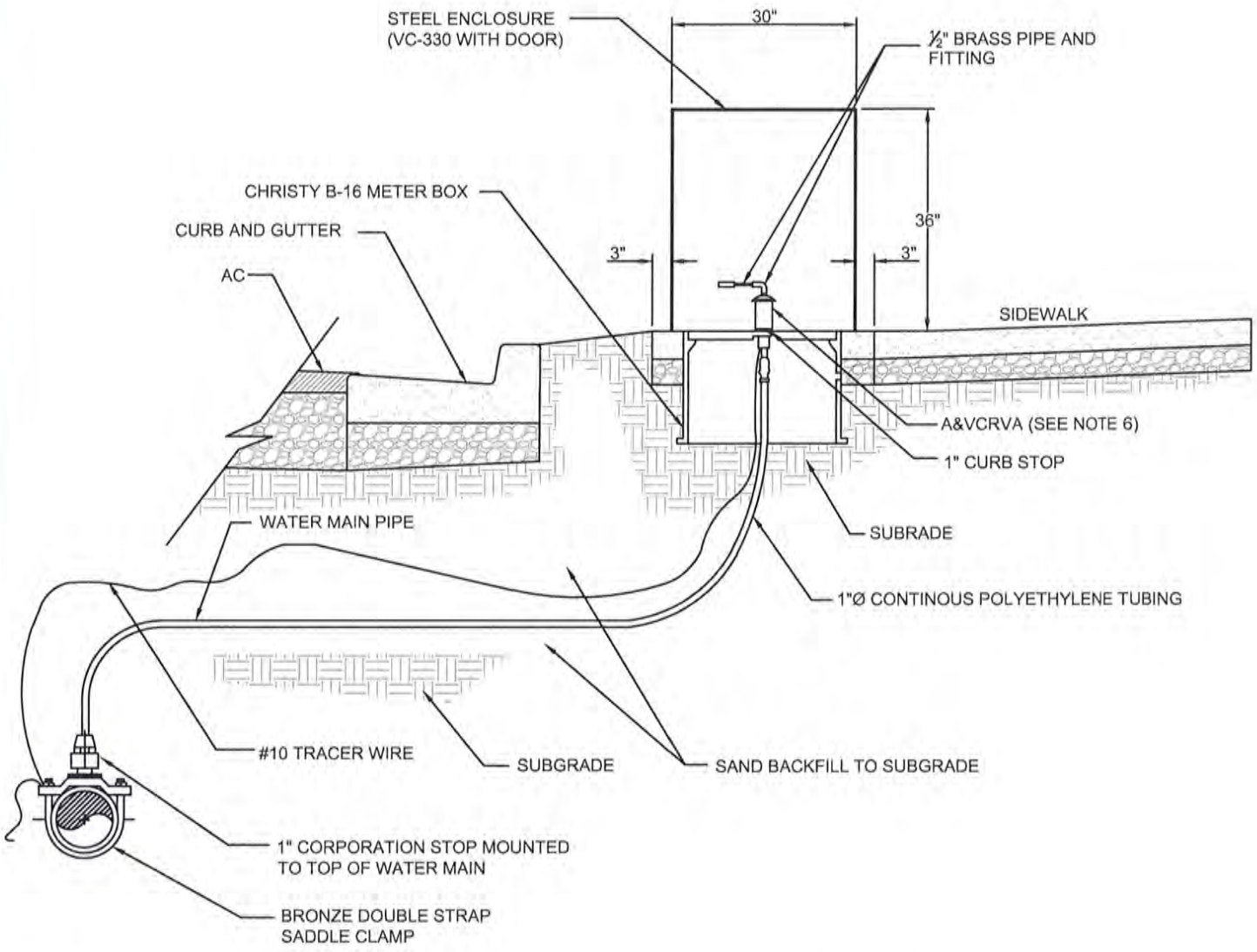
NOTES:

1. ALL BPD'S (BACKFLOW PREVENTION DEVICES) SHALL BE LEAD FREE (RPP) REDUCED PRESSURE PRINCIPLE ONLY. ENTIRE ASSEMBLIES INCLUDING BALL VALVES, TEST COCKS, AND BYPASS METERS SHALL BE PROVIDED AS A COMPLETE UNIT.
2. NO CONNECTIONS OR TEES WILL BE ALLOWED BETWEEN WATER METER & REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER.
3. ALL RPP'S SHALL CONFORM TO LATEST REVISIONS OF AWWA .
4. DEVICE MUST BE ACCESSIBLE FOR TESTING & MAINTENANCE
5. A CERTIFIED BACKFLOW PREVENTION ASSEMBLY GENERAL TESTER ACCREDITED BY CALIFORNIA - NEVADA AWWA SHALL INSPECT ALL BPD'S; A LIST OF CERTIFIED TESTERS WILL BE PROVIDED BY THE CITY OF HOLLISTER UTILITY DIVISIONS. THE BPD SHALL BE INSPECTED AND APPROVED BY THE TESTER PRIOR THE UTILITY DIVISIONS PROVIDING POTABLE WATER BEYOND THE METER. PROVIDE TEST REPORT EVERY YEAR AND FORWARD TO FIRE DEPARTMENT AND UTILITY DEPARTMENT.
6. THRUST BLOCK SHALL BE CLASS 520-C-2500 PCC.
7. CONCRETE PAD TO BE 520-C-2500 P.C.C. TOP OF PAD TO BE LEVEL AND SET 1" MINIMUM ABOVE EXISTING SOIL LEVEL.
8. PAINT CAGE WITH 2 COATS OF RUSTOLEUM, MED. GREEN OR EQUAL.
9. APPROVED MANUFACTURED CAGE DIMENSIONS 24" WIDEx36" HIGHx42" LONG. PROVIDE HINGE AS SHOWN WITH LATCH FOR PAD LOCK, (¾" Ø-2"Ø RPPBP).
10. THE CAGE SHALL BE ¾" - #9 HEAVY EXPANDED FLAT METAL WELDED ANGLE FRAME TO 1 ½"x1 ½"x3/16" ANGLE BAR.
11. INSTALL ADJUSTABLE PIPE SADDLE SUPPORT FOR PIPE SIZE 3" Ø AND LARGER.
12. A TEST OF THE REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER BY A CERTIFIED INDIVIDUAL APPROVED BY CITY OF HOLLISTER IS REQUIRED ANNUALLY. FORWARD THE CERTIFIED TEST REPORT TO UTILITY DEPARTMENT.
13. PROVIDE FREEZE PROTECTION TO RPP.

TITLE:

REDUCE PRESSURE PRINCIPLE BACKFLOW PREVENTER NOTES

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny H. Hillstock 11-5-19	B-5-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE	SHEET 2 OF 2



NOTES:

1. STEEL ENCLOSURE TO BE "PIPELINE PRODUCTS ZINC & COLOR VC-330 #10 GAUGE STEEL, 30" DIA. X 36" TALL. COLOR SHALL BE GREEN.
2. PROVIDE HINGE WITH LATCH FOR PAD LOCK, SUPPLY (2) TWO KEYS TO UTILITY DEPARTMENT.
3. PAINT CAGE AND DOOR, BOTH INSIDE AND OUTSIDE, WITH (2) TWO COATS OF RUSTOLEUM MEDIUM GREEN OR EQUAL, GREEN ENAMEL.
4. INSTALL INSULATED STRANDED WIRE GAGE #10 ON TOP OF THE POLYEHYLENE TUBING.
5. AIR VAC TO BE LOCATED AT THE HIGHEST POINT IN THE LINE AND, WHERE FEASIBLE, AT THE PROPERTY LINE OR LOCATIONS APPROVED BY CITY PUBLIC WORKS INSPECTOR.
6. AIR & VACUUM RELIEF VALVE SHALL BE (APCO NO. 50 OR APPROVED EQUAL) ½" FOR 3" TO 6" SERVICES AND ¾" FOR 8" TO 12" SERVICES.

TITLE:

AIR AND VACUUM COMBINATION RELEASE VALVE ASSEMBLY (ABOVE GRADE)

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

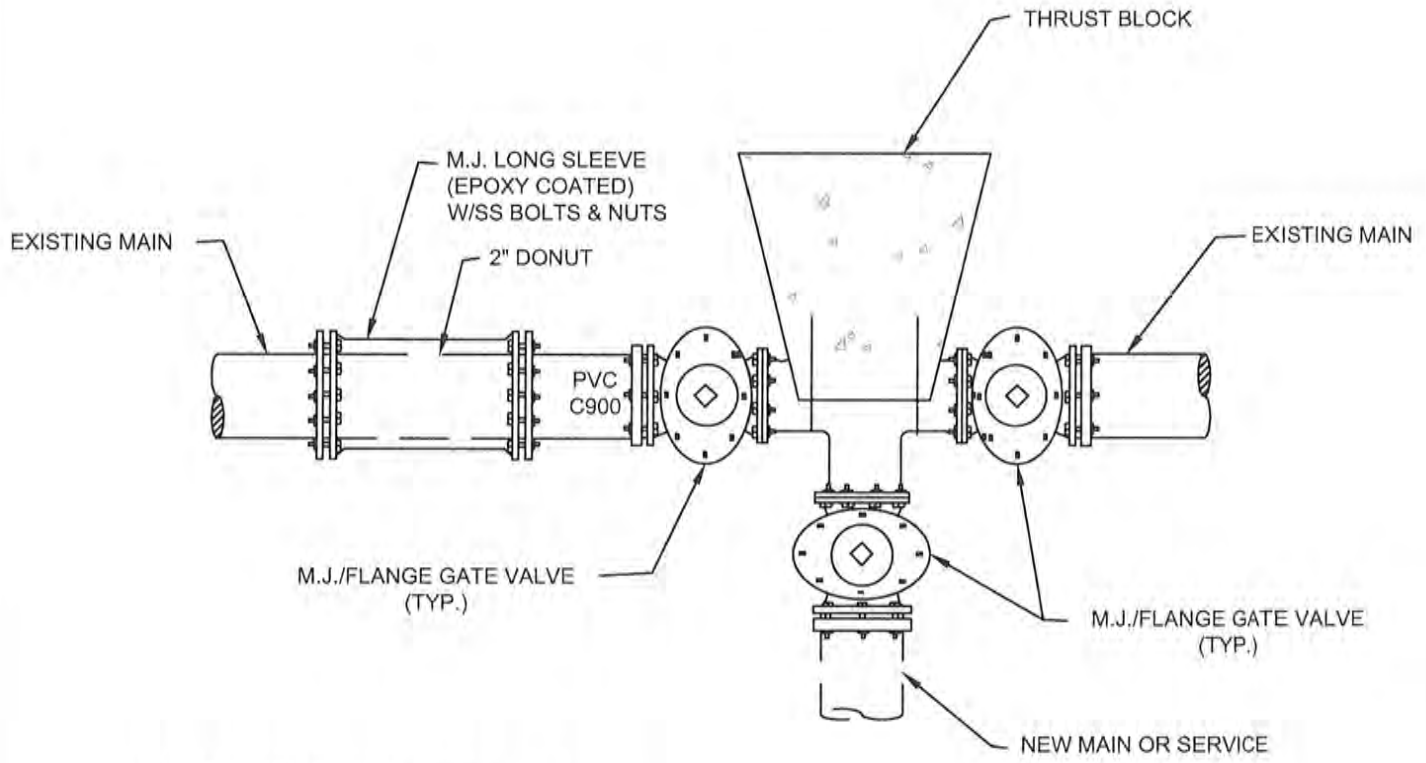
Danny Hillstock 11-5-19

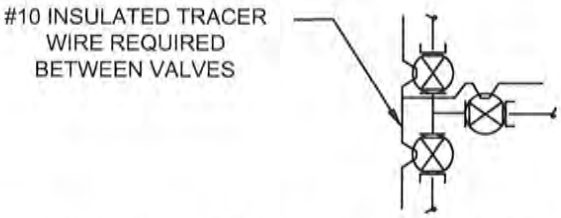
CITY ENGINEER: DANNY HILLSTOCK, LIC. NO. 70647 — DATE

STANDARD PLAN

B-6

SHEET 1 OF 1





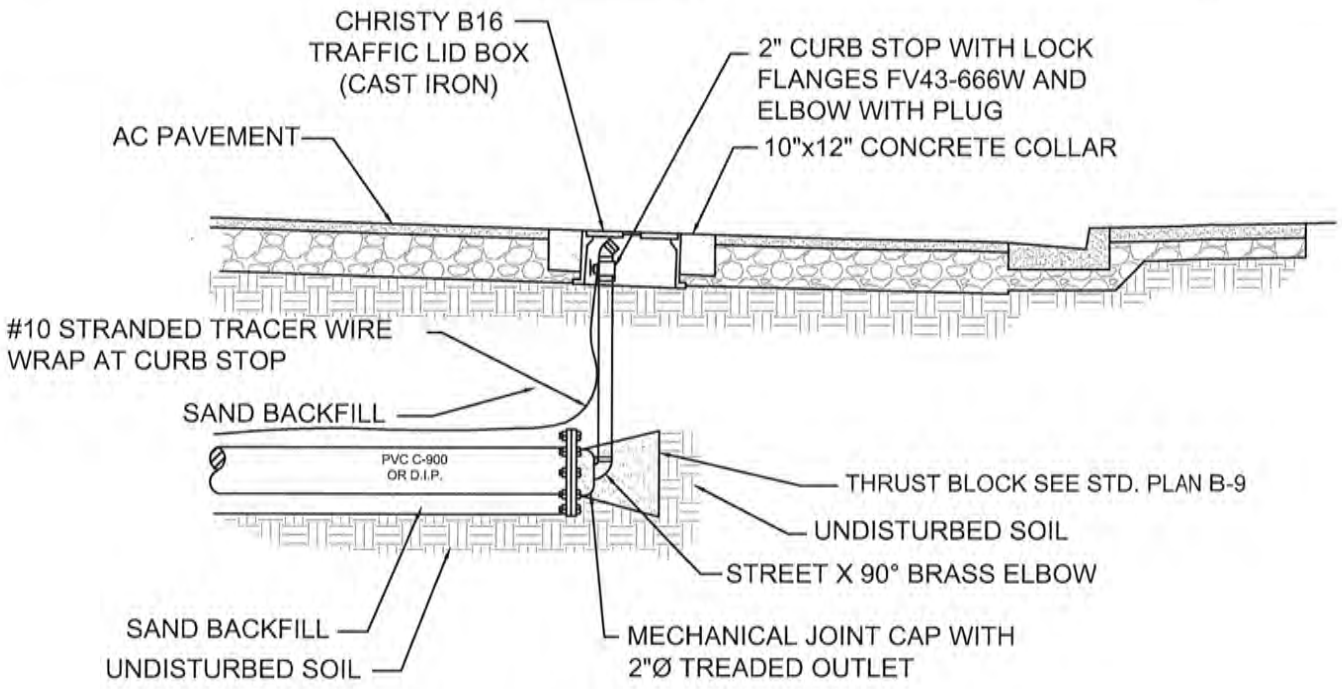
NOTES:

1. NOTIFY ENGINEERING DEPARTMENT AT LEAST 72 HOURS PRIOR TO ANY WATER TIE-IN OR SHUTDOWN TO ALL EXISTING WATER MAINS. NO SHUTDOWNS SHALL BE ALLOWED ON FRIDAYS OR TWO DAYS PRIOR TO A CITY-RECOGNIZED HOLIDAY.
2. ALL EXISTING VALVES TO BE OPERATED BY CITY UTILITY DIVISION ONLY AND SCHEDULED THROUGH ENGINEERING DEPARTMENT.
3. ALL FITTINGS SHALL BE DUCTILE IRON.
4. PLACE THRUST BLOCKS PER STANDARD PLAN B-9.
5. ALL NEW PIPES AND FITTINGS SHALL BE SWABBED WITH SODIUM HYPOCHLORITE SOLUTION PER AWWA STANDARDS.
6. ALL FITTINGS MUST BE ON SITE AND ALL FITTINGS EXCEPT M.J. LONG SLEEVE ARE TO BE ASSEMBLED PRIOR TO WATER SYSTEM SHUT-DOWN.
7. VALVES 6" THRU 12" SHALL BE GATE TYPE, RESILIENT WEDGE, EPOXY COATED AND SHALL COMPLY WITH AWWA C-509 SPECIFICATIONS.
8. PERFORM CHLORINE RESIDUAL TEST, AND COLIFORM TEST (PRESENT/ABSENT). RESIDUAL SHALL BE 0.2 PPM MINIMUM FREE CHLORINE. THE DEVELOPER/OWNER SHALL CONDUCT CHLORINE RESIDUAL AND COLIFORM TESTS (PRESENT/ABSENT) WHENEVER A TIE-IN TO THE WATER MAIN HAS OCCURRED AS PART OF THE FLUSHING PROCESS & CERTIFIED BY A CALIFORNIA LABORATORY.
9. CONTRACTOR TO HAVE DEWATERING PUMP PLUS ONE STANDBY PUMP DURING WATER TIE-IN AND CAPABLE OF DEWATERING THE BELL HOLE IN LESS THAN ONE HOUR.
10. CONTRACTOR TO NOTIFY ENGINEERING DEPARTMENT IN WRITING OF ALL AFFECTED BUSINESS AND RESIDENTIAL ESTABLISHMENTS ONE WEEK PRIOR TO WATER SHUT DOWN.
11. MECHANICAL JOINT (M.J.) RESTRAINT IS ALLOWED WITH THE APPROVAL OF THE CITY ENGINEER.
12. CONTRACTOR SHALL COMPLY WITH STORM WATER BEST MANAGEMENT PRACTICES.

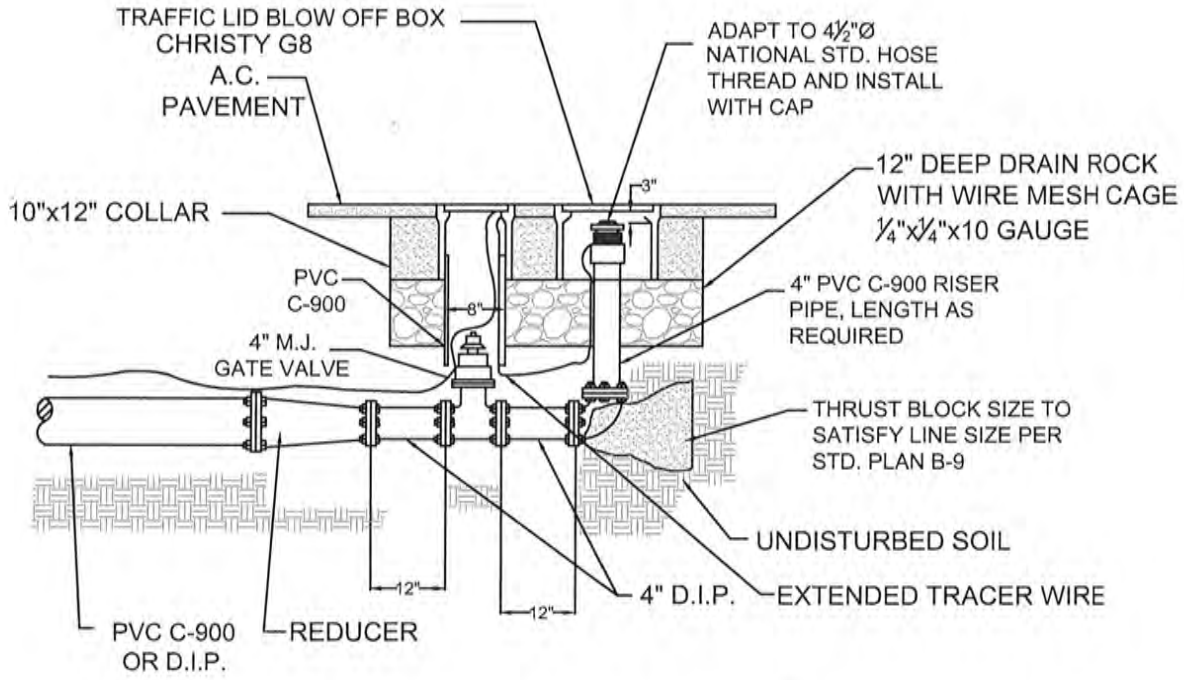
TITLE:

WATER MAIN TIE-IN DETAIL

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		B-7
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER; DANNY HILLSTOCK, LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 1



FOR 8" DIA. AND SMALLER WATER MAIN



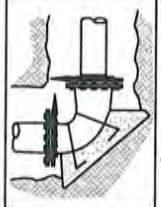
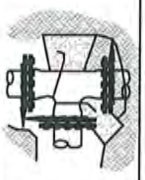
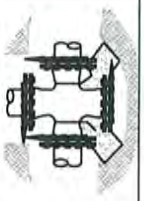
FOR 10" DIA. AND LARGER WATER MAIN

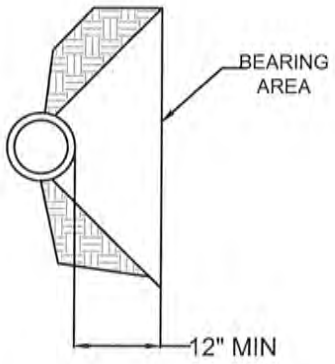
TITLE:

BLOW OFF ASSEMBLY

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	B-8
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1

THRUST BLOCK BEARING AREA REQUIRED-SQUARE FEET

TYPE OF FITTING		90° BEND	45° BEND	22.5° BEND	11.25° BEND	TEE	TEE W/PLUG	CROSS W/PLUG	CROSS W/PLUGS
TYPICAL INSTALLATION									
SIZE OF PIPE	6"	6	4	2	1	6	6	6	6
	8"	10	6	3	2	10	10	10	10
	10"	15	8	4	2	16	15	16	15
	12"	21	11	6	3	22	21	22	21



SECTION

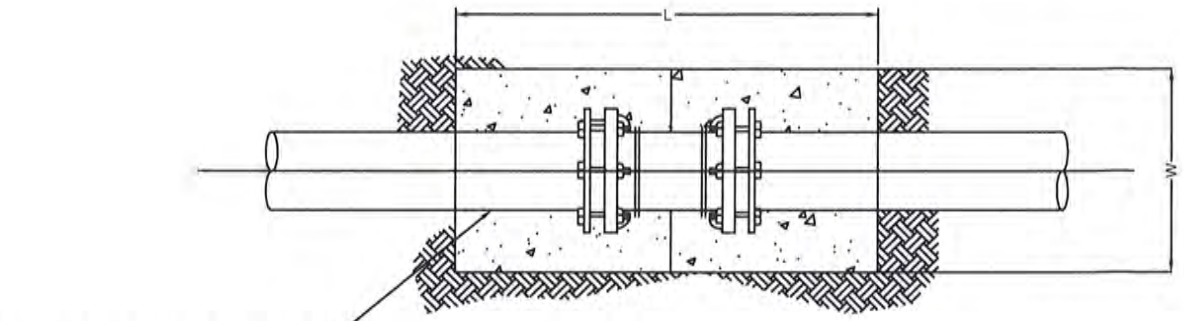
NOTES

1. JOINTS, FITTINGS AND FACES OF PLUGS TO BE KEPT CLEAR OF CONCRETE USING 10 MIL. VISQUINE.
2. BLOCKS MUST BE PLACED AGAINST UNDISTURBED SOIL.
3. THRUST BLOCKS SHALL BE CONSTRUCTED OF CLASS 520-C-2500 PCC.
4. STIRRUPS TO BE #4 REBAR EMBEDDED IN THRUST BLOCK TO A DEPTH EQUAL TO ¾ OF PIPE OUTSIDE DIAMETER. STIRRUP HOOKS TO BE SHAPED 90° BEND WITH LENGTH EQUIVALENT TO ½ PIPE O.D.
5. THRUST BLOCK AREA IS BASED ON TEST PRESSURE OF 150 PSI AND A HORIZONTAL SOIL BEARING STRENGTH OF 1500 PSI.
6. EXPOSED STIRRUPS SHALL BE WRAPPED PVC TAPE 10 MIL.
7. MECHANICAL JOINT RESTRAINTS ARE ALLOWED WITH THE APPROVAL OF THE CITY ENGINEER.

TITLE:

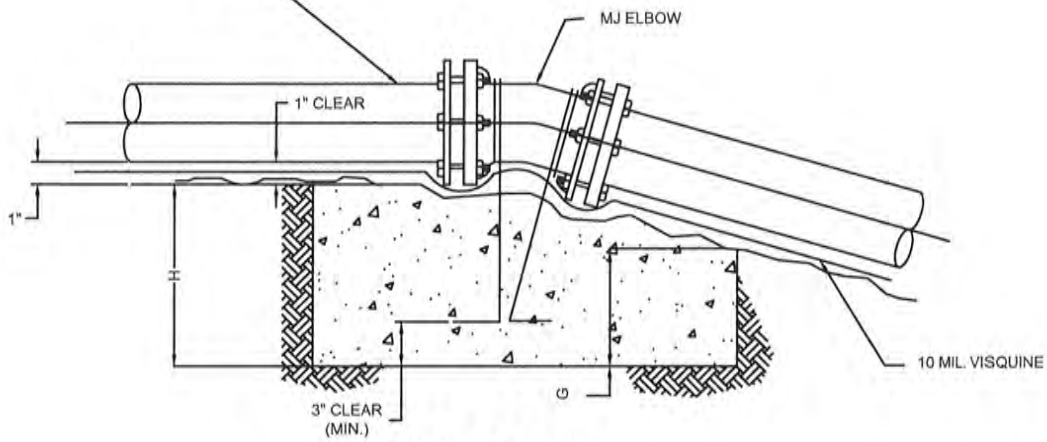
THRUST BLOCK SCHEDULE

AUTOCAD BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	B-9-1
CITY OF HOLLISTER ENGINEERING DIVISION		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 2



WRAPPED WITH VISQUINE

PLAN



ELEVATION

THRUST BLOCK DIMENSION-UPWARD THRUST

PIPE SIZE	11¼° BEND					22½° BEND					45° BEND				
	L	W	H	G	BAR	L	W	H	G	BAR	L	W	H	G	BAR
6"	3.0	2.0	2.0	1.0	5	4.0	2.0	3.0	1.0	5	5.0	3.0	3.0	1.0	5
8"	3.5	2.5	2.0	1.0	5	4.5	3.0	3.0	1.0	5	6.0	3.0	4.0	1.5	5
10"	4.0	3.0	2.5	1.0	5	5.0	4.0	3.5	1.5	5	6.0	4.0	4.5	1.5	5
12"	4.0	3.5	3.0	1.5	5	5.0	4.0	3.5	2.0	5	7.0	4.0	5.0	2.5	5

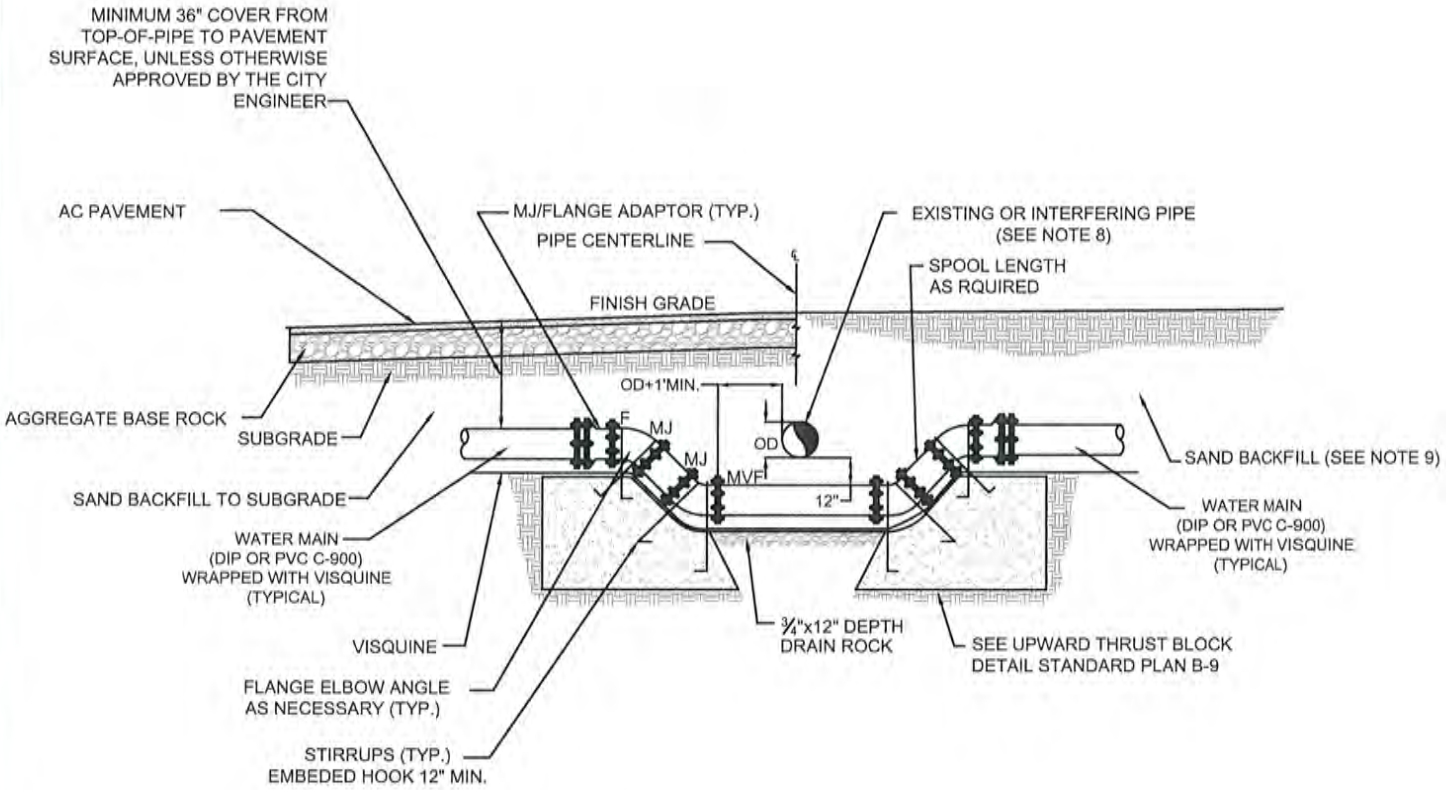
NOTES:

1. DIMENSIONS L,W,H, AND G ARE IN FEET.
2. THRUST BLOCK DIMENSIONS BASED ON 150 PSI TEST PRESSURE AND CONCRETE OF 150 PCF.
3. EXPOSED STIRRUPS SHALL BE WRAPPED WITH 10 MIL VISQUINE.
4. THRUST BLOCKS SHALL BE CLASS 520-C-2500 PCC.
5. FLANGES, NUTS & BOLTS SHALL BE CLEAR OF CONCRETE.
6. MECHANICAL JOINT RESTRAINTS ARE ALLOWED WITH THE APPROVAL OF THE CITY ENGINEER.
7. STIRRUPS TO BE AS SHOWN IN TABLE ABOVE.

TITLE:

UPWARD THRUST BLOCK SCHEDULES

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	11-5-19	B-9-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 2 OF 2



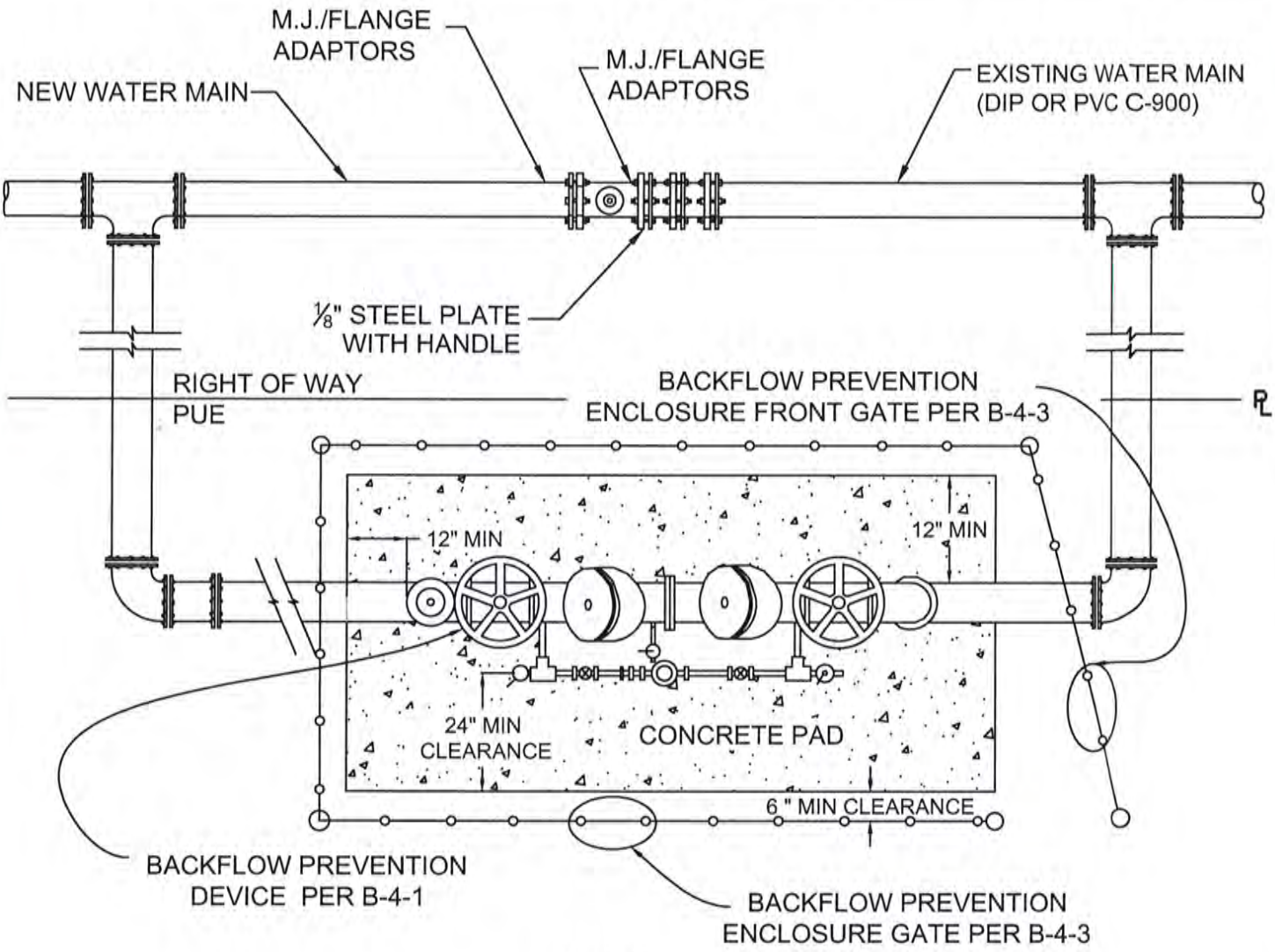
NOTES:

1. FLANGES, NUTS & BOLTS TO BE CLEAR OF CONCRETE.
2. ALL ELBOWS SHALL BE DUCTILE IRON.
3. ALL FITTINGS SHALL BE WRAPPED WITH POLYWRAP 10 MIL. VISQUINE.
4. STIRRUPS TO BE #4 REBAR AND ALL EXPOSED STIRRUPS SHALL BE PAINTED WITH TWO COATS OF KOPPERS 505, TENMEC 46-450, AMERON OR 15 MIL. VISQUINE.
5. THRUST BLOCKS SHALL BE CLASS 520-C-2500 FCC.
6. CONCRETE SHALL NOT COME IN CONTACT WITH FITTINGS OR PIPE.
7. ANY ALTERNATIVE MECHANICAL JOINT RESTRAINTS TO THE REQUIRED MJ FITTING OFFSET SHALL REQUIRE ENGINEERING DEPARTMENT REVIEW AND APPROVAL PRIOR TO INSTALLATION. ANY ALTERNATIVES TO THE REQUIRED FLANGE FITTING OFFSET SHALL REQUIRE ENGINEERING DEPARTMENT APPROVAL.
8. SANITARY OR STORM DRAIN SEPARATION AND JOINT LOCATION SHALL BE COMPLY WITH STANDARD PLAN E-1.
9. SEE CITY STANDARD PLAN E-3-1.

TITLE:

WATER MAIN VERTICAL OFFSET

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		B-10
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 1



PLAN

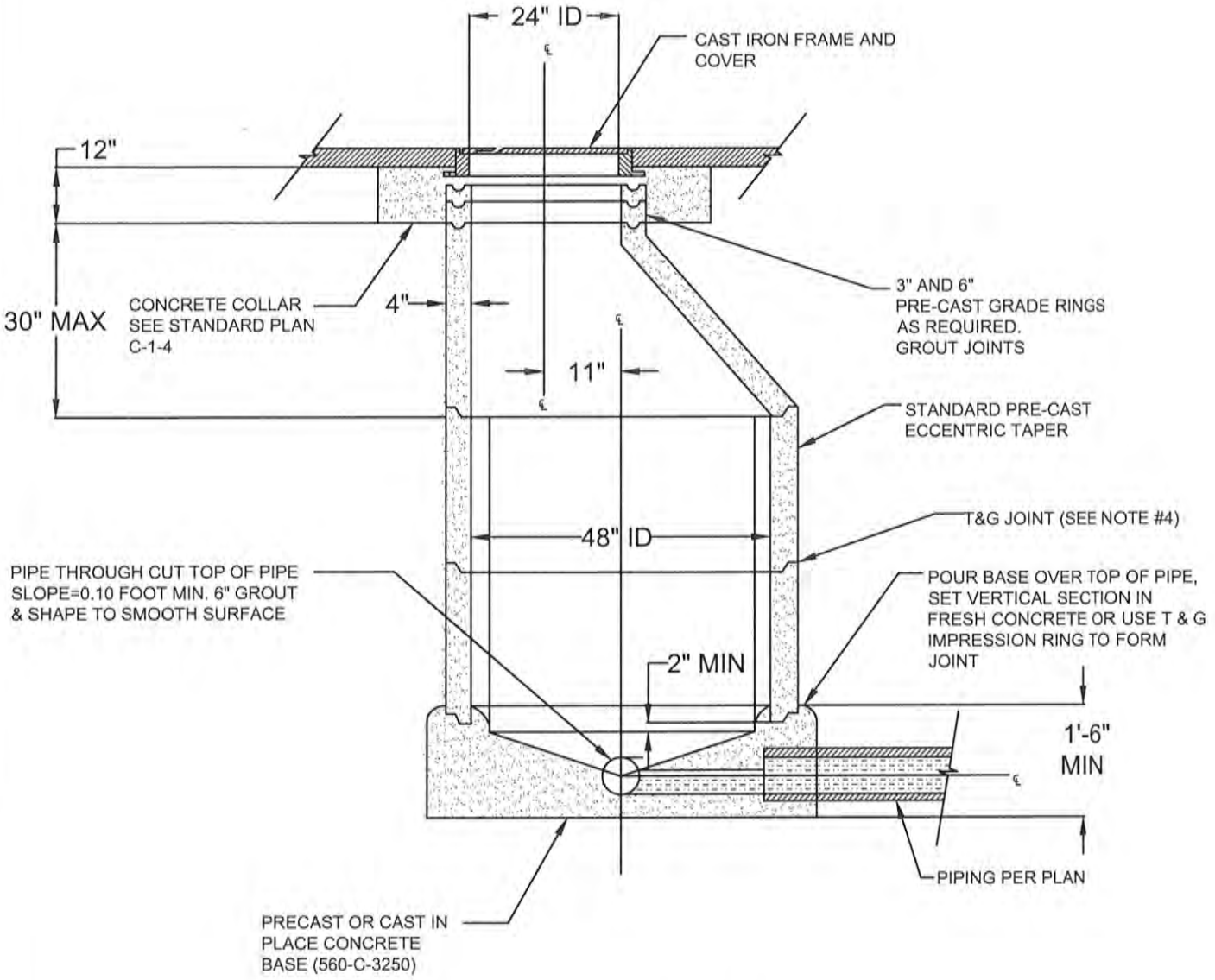
NOTES:

1. THE CONTRACTOR SHALL NOT OPERATE ANY VALVES OR METERS OWNED BY THE CITY OF HOLLISTER. 72 HOURS NOTICE SHALL BE GIVEN TO THE UTILITY DIVISION FOR THE OPERATION OF THE VALVES.
2. UPON APPROVAL OF THE PUBLIC WORKS INSPECTOR OF THE NEW WATER SYSTEM, THE CONTRACTOR SHALL REMOVE THE BYPASS LINE AND STEEL PLATE, THEN SHUT-OFF VALVES AND INSTALL STEEL PLATES IN THE PRESENCE OF PUBLIC WORKS INSPECTOR.
3. THE DOUBLE CHECK VALVE ASSEMBLY SHALL BE PER STANDARD PLAN B-4-1.
4. SHUT-OFF BOTH VALVES ON THE DOUBLE CHECK VALVE ASSEMBLY DURING PRESSURE TESTING AND DISINFECTION OF THE NEW WATER MAIN.
5. SIZE OF BYPASS MAY BE INCREASED AS DIRECTED BY CITY ENGINEER.
6. BACKFLOW PREVENTION DEVICE SHALL BE LOCATED OUT OF THE RIGHT OF WAY.
7. PERFORM PRESSURE TEST AND BACTERIOLOGICAL TEST PRIOR TO REMOVAL OF BYPASS CONNECTION ACCESSORIES.
8. REMOVE CORPORATION STOP AFTER TESTING AND PLUG WITH STEEL PLATES.

TITLE:

BYPASS CONNECTIONS TO NEW WATER MAINS

DRAWN BY: STAFF	SCALE: NONE	APPROVED: Danny Hillstock 11-5-19	STANDARD PLAN B-11
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE	SHEET 1 OF 1
CITY OF HOLLISTER ENGINEERING DEPARTMENT			



TYPICAL SECTION A-A

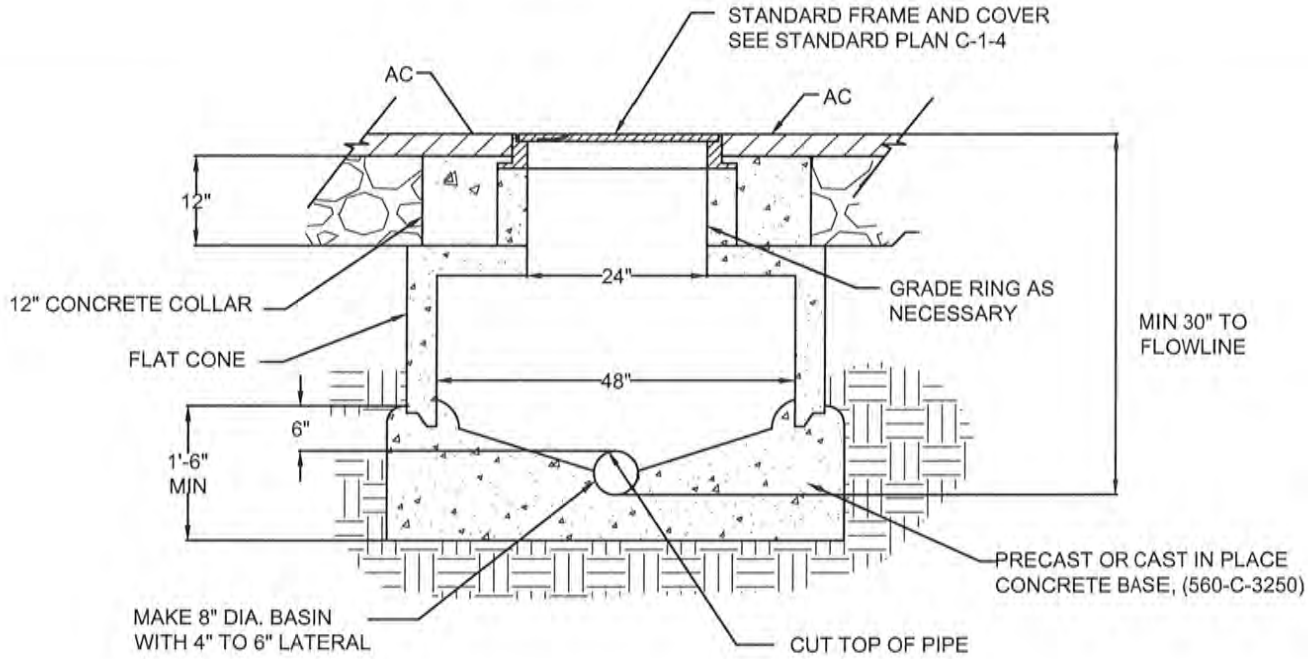
NOTES:

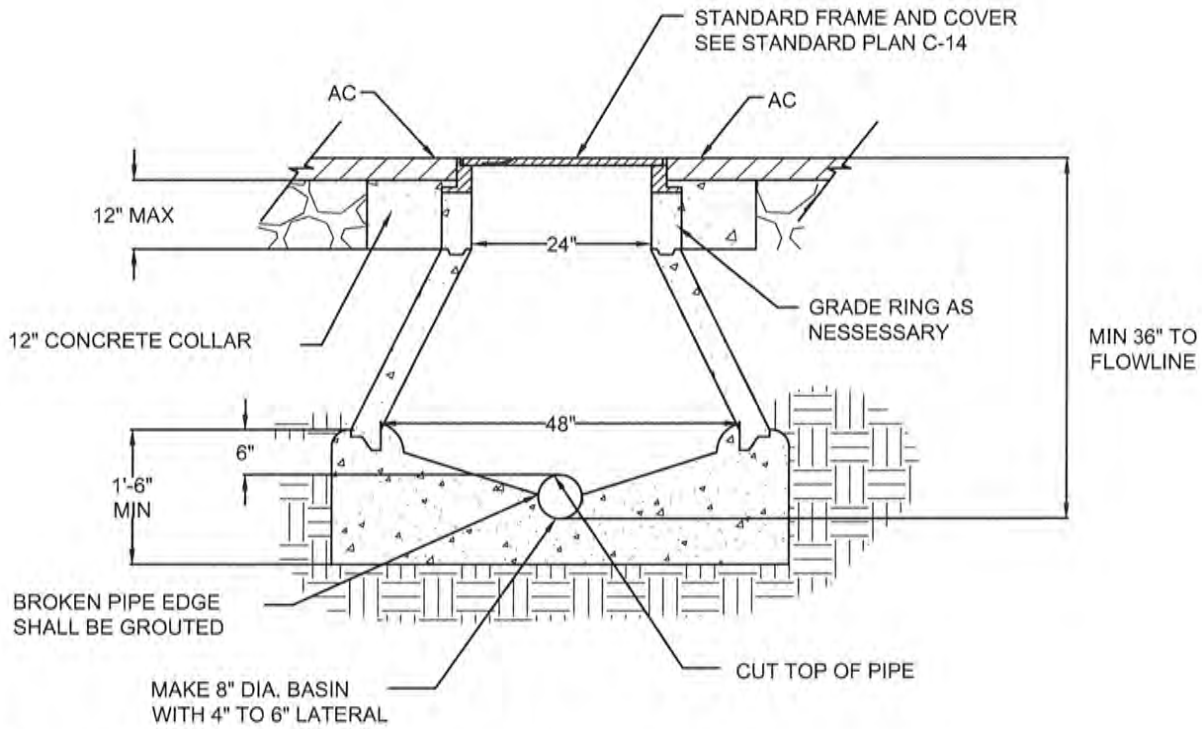
1. SHALLOW FLAT TOP COVER MAYBE USED WITH AGENCY ENGINEER APPROVAL.
2. DROP MANHOLE DETAIL SEE STANDARD PLAN C-1-3.
3. CONCENTRIC CONE MAY BE USED WITH AGENCY ENGINEER APPROVAL.
4. AN IMPRESSION RING SHALL BE USED PRIOR TO INSTALLING THE FIRST RISER SECTION PRECUT UNIT SHALL BE ASSEMBLED USING PERFORMED JOINT SEALING COMPOUND OR CLASS "B" MORTAR AND ALL JOINTS SHALL BE FINISHED.
5. MANHOLES IN UNPAVED AREA SHALL REQUIRE A 5' X 5' CONCRETE PAD.
6. CAST IN PLACE MANHOLES SHALL BE 2500 PSI CONCRETE MINIMUM.
7. PRECAST MANHOLES SHALL BE 3250 PSI CONCRETE MINIMUM.

TITLE:

TYPE 1 STANDARD MANHOLE PIPE 6" TO 18"

DRAWN BY: STAFF	SCALE: NONE	APPROVED: Danny Hillstock 11-5-19	STANDARD PLAN C-1-1
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 4
CITY OF HOLLISTER ENGINEERING DEPARTMENT			





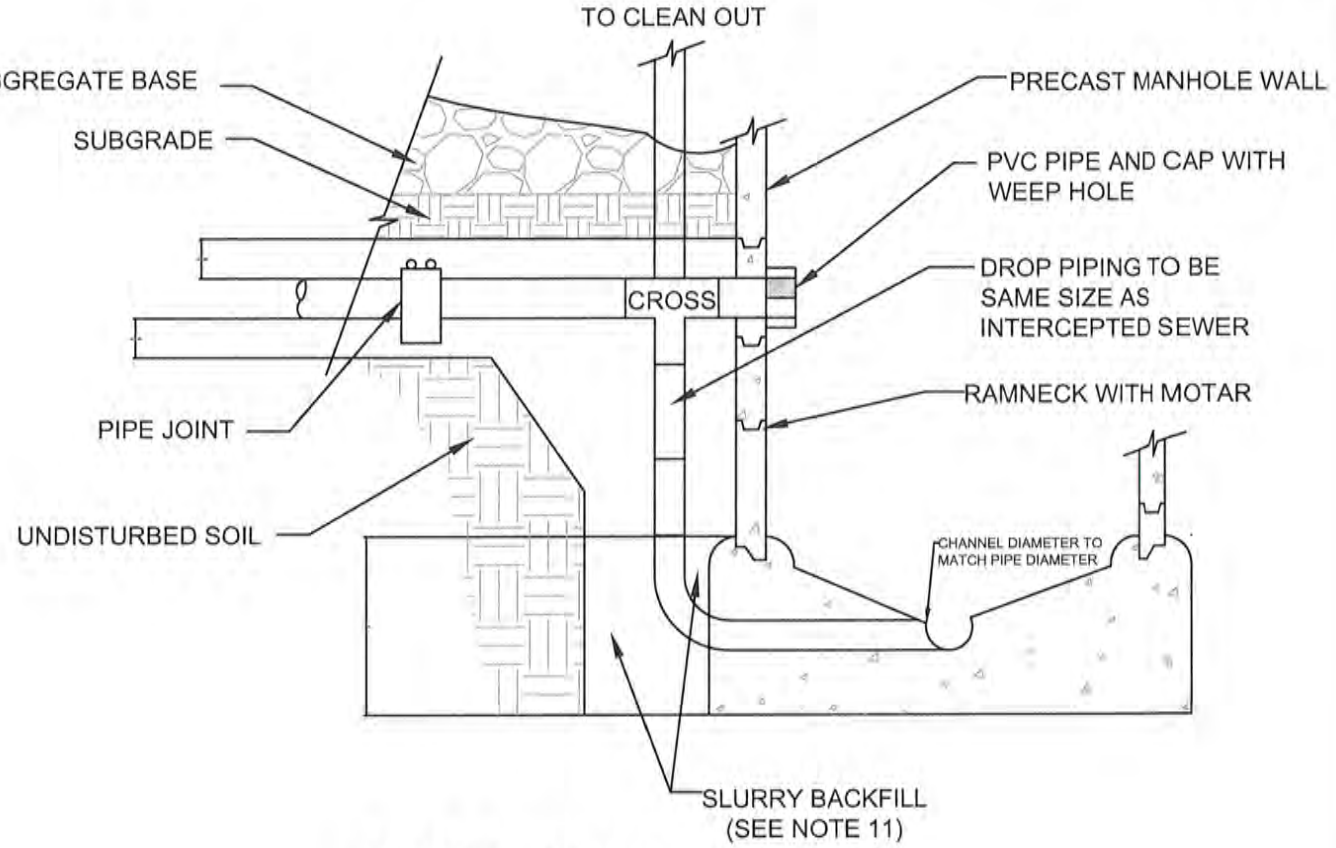
NOTES:

1. PROVIDE STRUCTURAL CALCULATION FOR USING FLAT TOP MANHOLE.
2. CAST IN PLACE MANHOLES SHALL BE 2500 PSI CONCRETE MINIMUM.
3. PRECAST MANHOLES SHALL BE 3250 PSI CONCRETE MINIMUM.
4. USE OF THIS STANDARD REQUIRES THE APPROVAL OF THE CITY ENGINEER.

TITLE:

STANDARD MANHOLE FOR PIPE COVER LESS THAN 36" COVER

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	C-1-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 2 OF 4



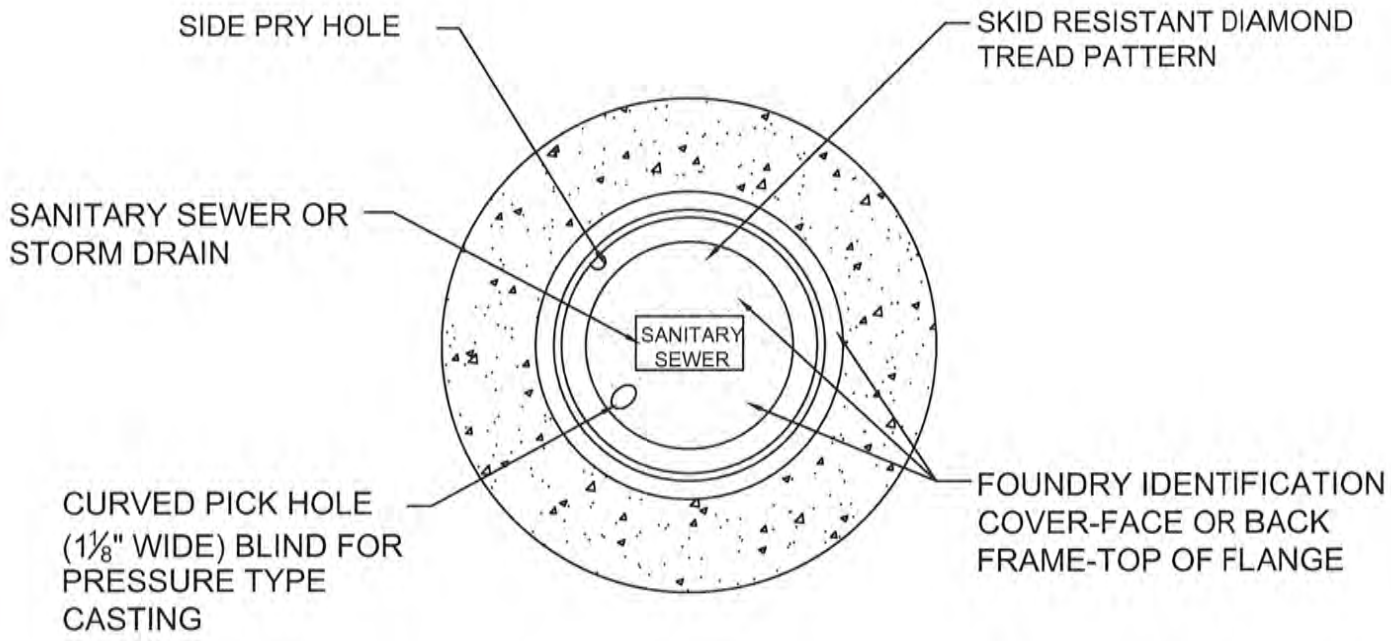
DROP MANHOLE 6'

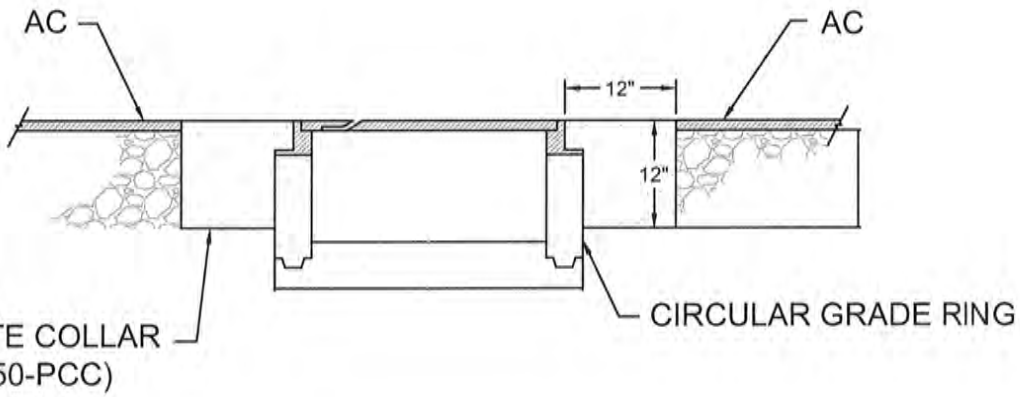
NOTES:

1. SANITARY SEWER MANHOLE PRE-CAST UNITS SHALL MANUFACTURED AND TESTED IN ACCORDANCE WITH ASTM C 478.
2. SANITARY SEWER MANHOLE RISER SECTIONS AND CONES MAY BE REINFORCED. REINFORCED SECTIONS AND CONES SHALL BE IN ACCORDANCE WITH ASTM C 478 AND SHALL HAVE A MINIMUM WALL THICKNESS OF 4". UNREINFORCED RISER SECTIONS AND CONES SHALL HAVE A MINIMUM WALL THICKNESS OF 6".
3. JOINTS SHALL BE TONGUE AND GROOVE AND SHALL CONFORM TO ASTM C 478 SECTION 14.
4. AN IMPRESSION RING SHALL BE USED PRIOR TO INSTALLING THE FIRST RISER SECTION. PRECUT UNITS SHALL BE ASSEMBLED USING PREFORMED JOINT SEALING COMPOUND OR CLASS "B" MORTAR AND ALL JOINTS SHALL BE FINISHED.
5. INSTALL MANHOLE WATER STOP GASKET AND CLAMP ASSEMBLY ON ALL SANITARY SEWER PIPES.
6. INSTALL RAMNECK OR EQUAL ON ALL MANHOLE PRE CAST JOINTS. ALL RAMNECK JOINTS SHALL BE SMOOTHLY FINISHED WITH MORTAR.
7. REINFORCED CIRCULAR GRADE RINGS SHALL NOT BE INSTALLED MORE THAN 12 INCHES HIGH FROM TOP OF CONE TO BOTTOM OF CAST IRON FRAME.
8. LADDER STEPS SHALL NOT BE PLACED IN MANHOLE.
9. CONCRETE MANHOLE BASE AND COLLAR SHALL BE CLASS 520-C-2500.
10. FOR CHANNELIZATION OF INTERCEPTING LINES, PROVIDE SMOOTH TRANSITIONS (APPROX. 1'-8" INSIDE RADIUS) TOWARD DOWNSTREAM FLOW OF MAIN.
11. SAND BACKFILL OR SLURRY BACKFILL CLASS 100-E-100 AROUND THE MANHOLE TO TOP OF SUBGRADE.
12. DROP MANHOLES MAY BE CONSIDERED BY THE CITY ENGINEER ON A CASE BY CASE BASIS.

TITLE: STANDARD MANHOLE SECTIONS AND NOTES

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	C-1-3
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 3 OF 4

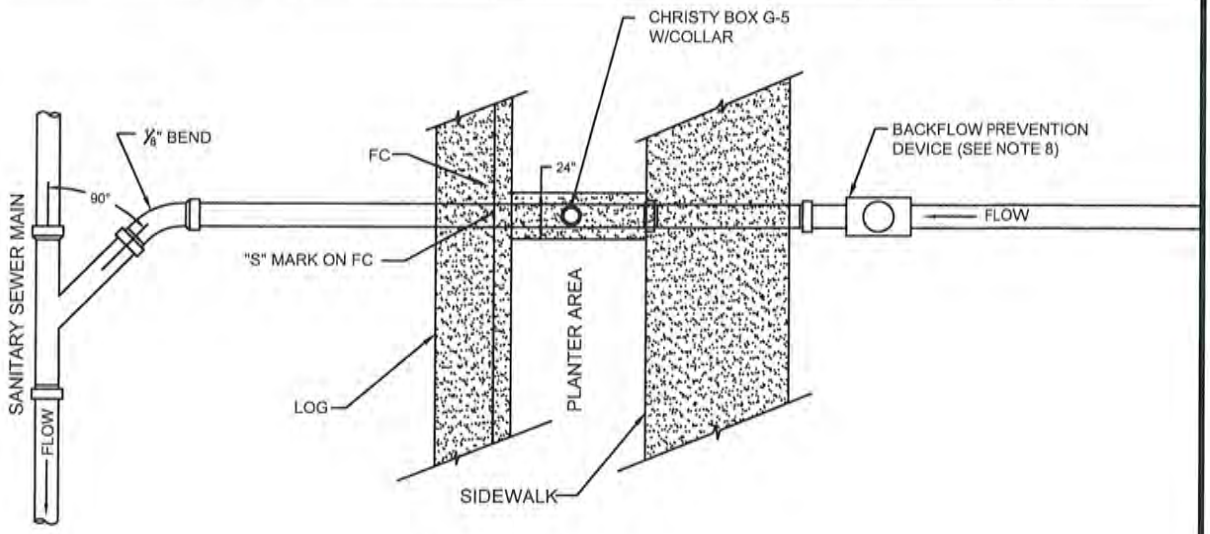




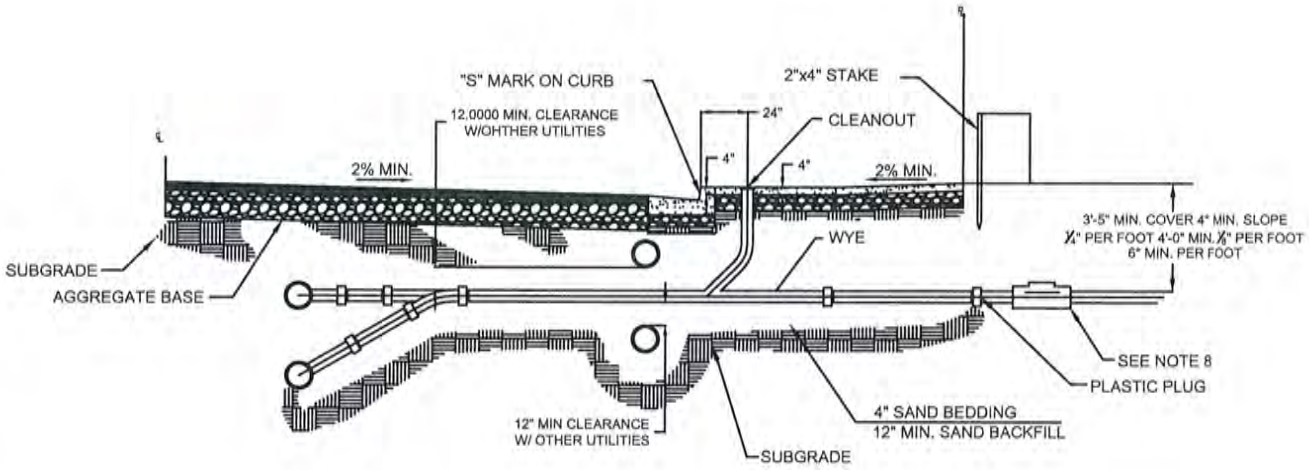
NOTES:
1. MANHOLE FRAME AND COVER SHALL BE PHOENIX IRON WORKS P-1090 OR EQUAL.
2. CASTING SHALL RECEIVE AN ASPHALTIC COATING AFTER FABRICATION.
3. CAST IRON SHALL CONFORM TO ASTM A 48 CLASS 35B.
4. STREET SECTION MUST COMPLY WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS OR CITY STANDARDS

TITLE:
STANDARD MANHOLE FRAME AND CONCRETE COLLAR

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE	Danny Hillstock 11-5-19	C-1-4
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 4 OF 4
CITY OF HOLLISTER ENGINEERING DEPARTMENT			



PLAN



ELEVATION

NOTES:

1. SEWER LATERALS SHALL BE ABS (SCH. 40) OR PVC (SDR 26) ASTM D3035 PIPE.
2. STAMP OR CHISEL AN "S" ON THE FACE OF CURB AT LATERAL LOCATION.
3. A PRESSURE TREATED DOUGLAS FIRE STAKE SHALL BE INSTALLED AT EACH LATERAL TERMINUS. ALL STAKES SHALL BE PAINTED WHITE.
4. ALL SAND BACKFILL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION.
5. ALL SEWER LATERALS SHALL PASS A LOW PRESSURE AIR AND MANDREL TEST PERFORMED AFTER COMPACTION & MAJORITY OF AGGREGATE BASE ROCK.
6. ALL SANITARY SEWER MAINS SHALL BE VIDEOED BY AND INDEPENDENT CONTRACTOR APPROVED BY CITY ENGINEER.
7. BEDDING & TRENCH BACKFILL REQUIREMENTS PER STANDARD PLAN E-3-1.
8. BACKFLOW PREVENTION DEVICE IS REQUIRED ON SEWER LATERALS WITH FULL CAPACITY SEWER MAINS AND SEWER LATERAL BELOW THE DOWNSTREAM INVERT ELEVATION OF SEWER MAINS. BACKFLOW PREVENTION DEVICE TO BE INSTALLED ON PRIVATE PROPERTY ONLY.

TITLE:

SEWER LATERAL & CLEANOUT

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

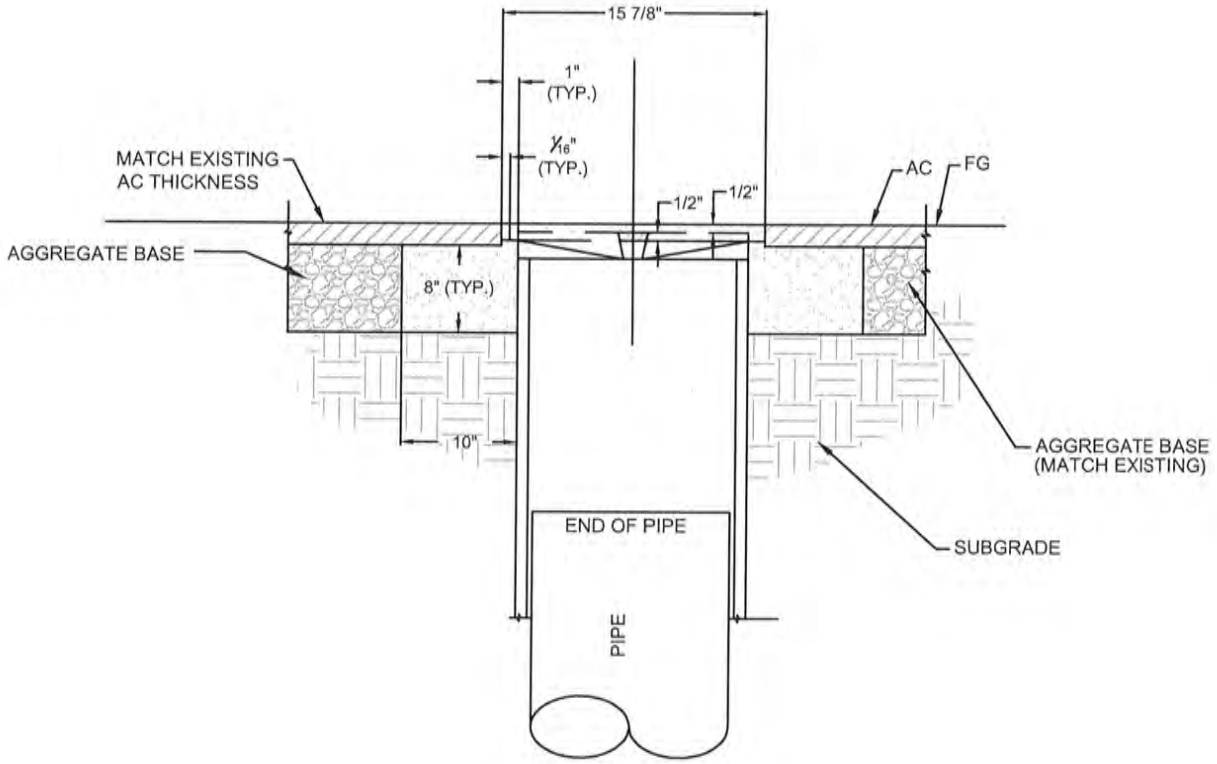
Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

STANDARD PLAN

C-2-1

COVER AND FRAME

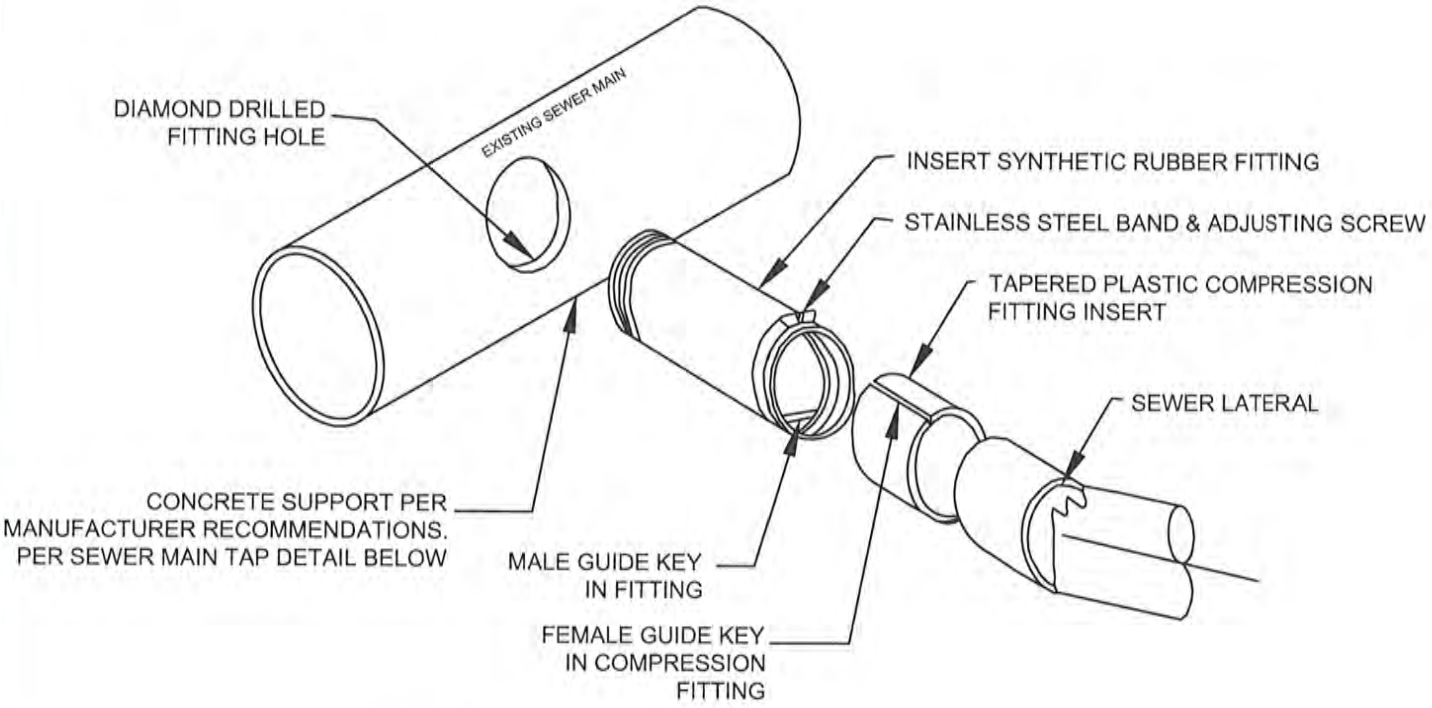


SECTION A-A

RISER FRAME COVER & COLLAR

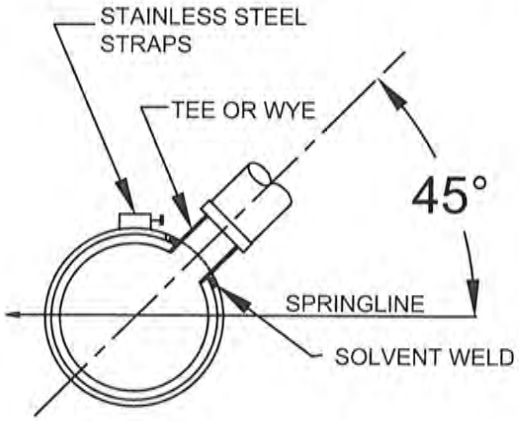
TITLE: SEWER CLEANOUT FRAME/COVER & CONCRETE COLLAR

DRAWN BY: STAFF	SCALE: NONE	APPROVED: Danny Hillstock 11-5-19	STANDARD PLAN C-2-2
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 2 OF 2
CITY OF HOLLISTER ENGINEERING DEPARTMENT			



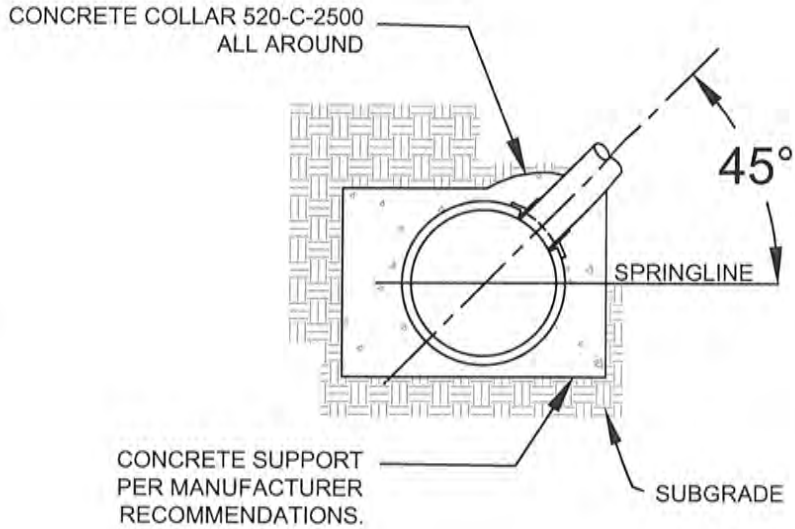
SYNTHETIC RUBBER WEDGED INSERT TEE TAP TITE (VCP)

(MIN. DIFFERENTIAL OF TWO SIZES REQUIRED)



TEE OR WYE (PVC OR ABS)

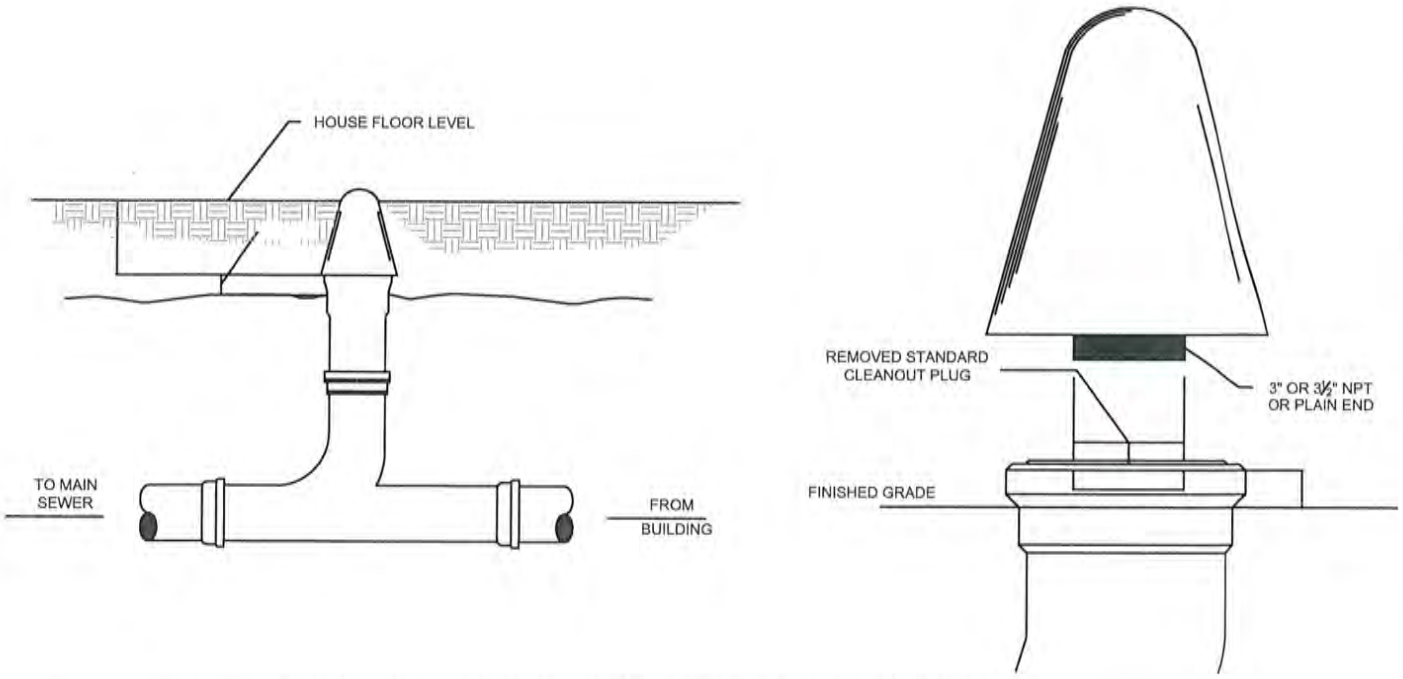
(SOLVENT WELDED FITTINGS)



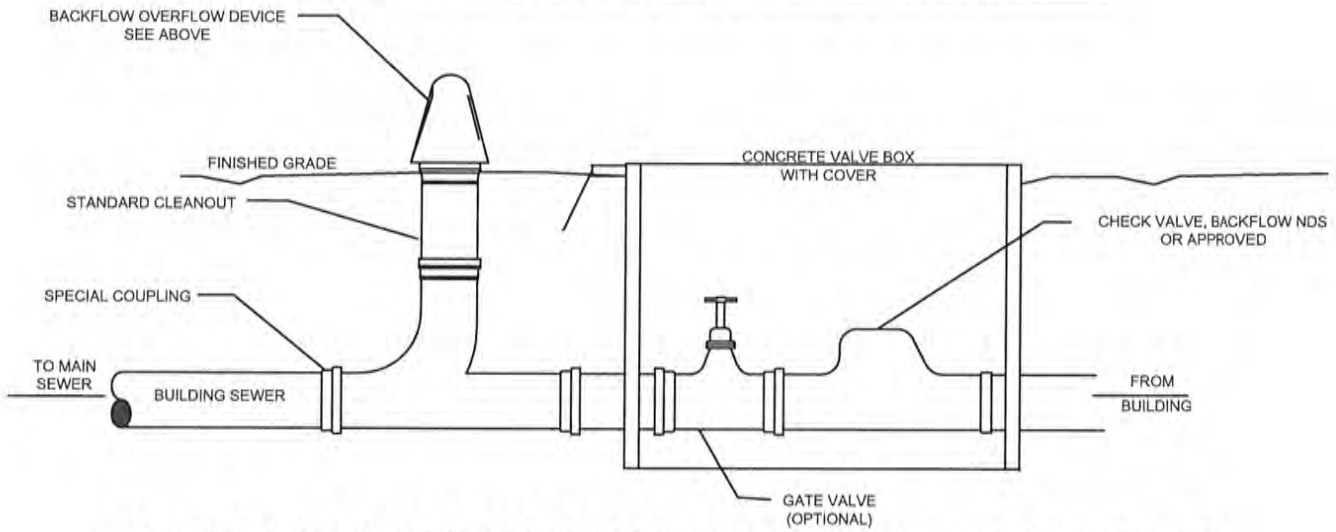
SEWER MAIN TAP

SEWER LATERAL TAPPING TO EXISTING VCP SEWER MAINS

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		C-3
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 1



BACKFLOW OVERFLOW DEVICE



BACKFLOW CHECK VALVE & SHUTOFF SYSTEM

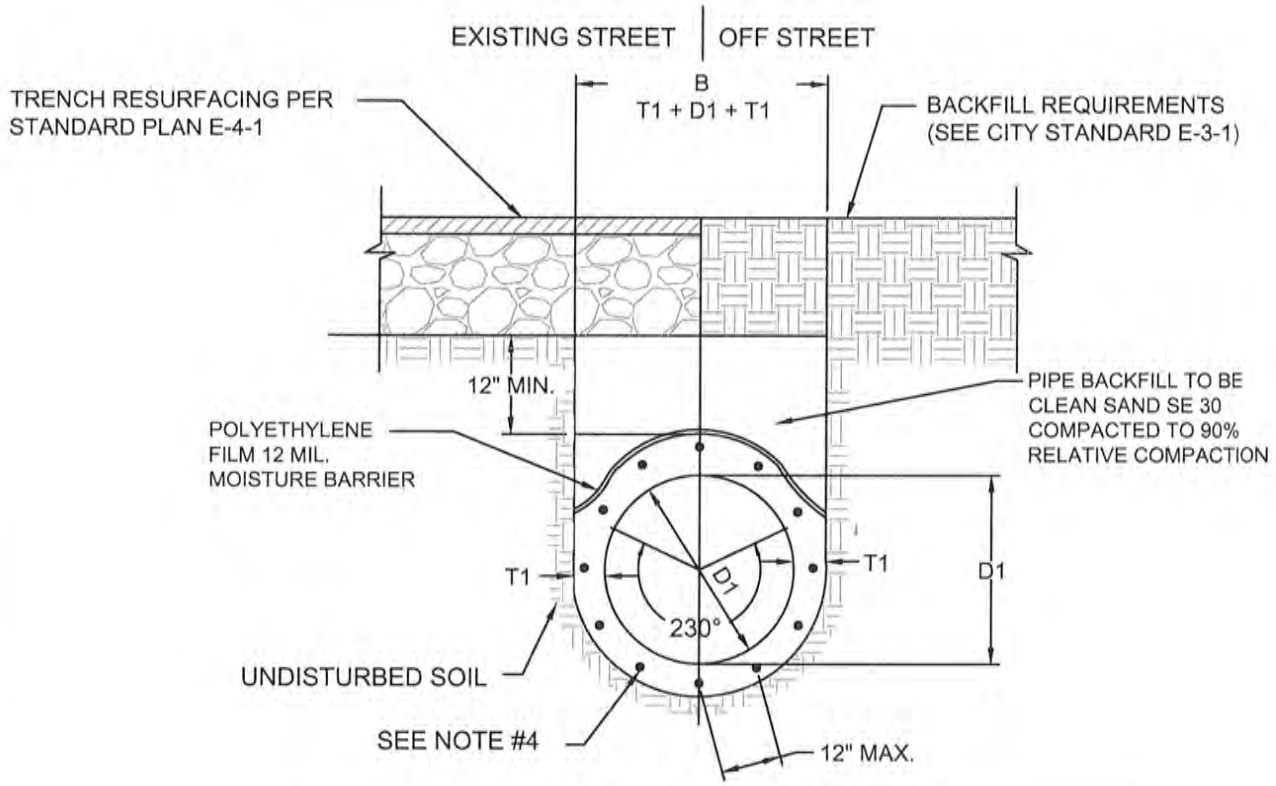
NOTES:

1. AN OVERFLOW SYSTEM IS REQUIRED AND SHALL BE INSTALLED WHERE THE FINISH FLOOR ELEVATION OF THE BUILDING TO BE CONNECTED IS LESS THAN (1) ONE FOOT ABOVE THE RIM OF THE NEAREST UPSTREAM MANHOLE.
2. THE INSTALLATION OF THE BACKWATER OVERFLOW DEVICE SHALL BE MADE AFTER THE FINAL GRADING AROUND THE BUILDING IS COMPLETE. THE BACKWATER OVERFLOW DEVICE SHALL BE AS DETAILED, OR AN APPROVED EQUAL.
3. CONSIDERATION MUST BE GIVEN TO THE DAMAGE POTENTIAL TO ADJACENT PROPERTY OR WATER BODY BY SEWAGE RELEASED THROUGH THE BACKWATER OVERFLOW DEVICE.

TITLE:

BACKFLOW PREVENTION DEVICES

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	C-4
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1



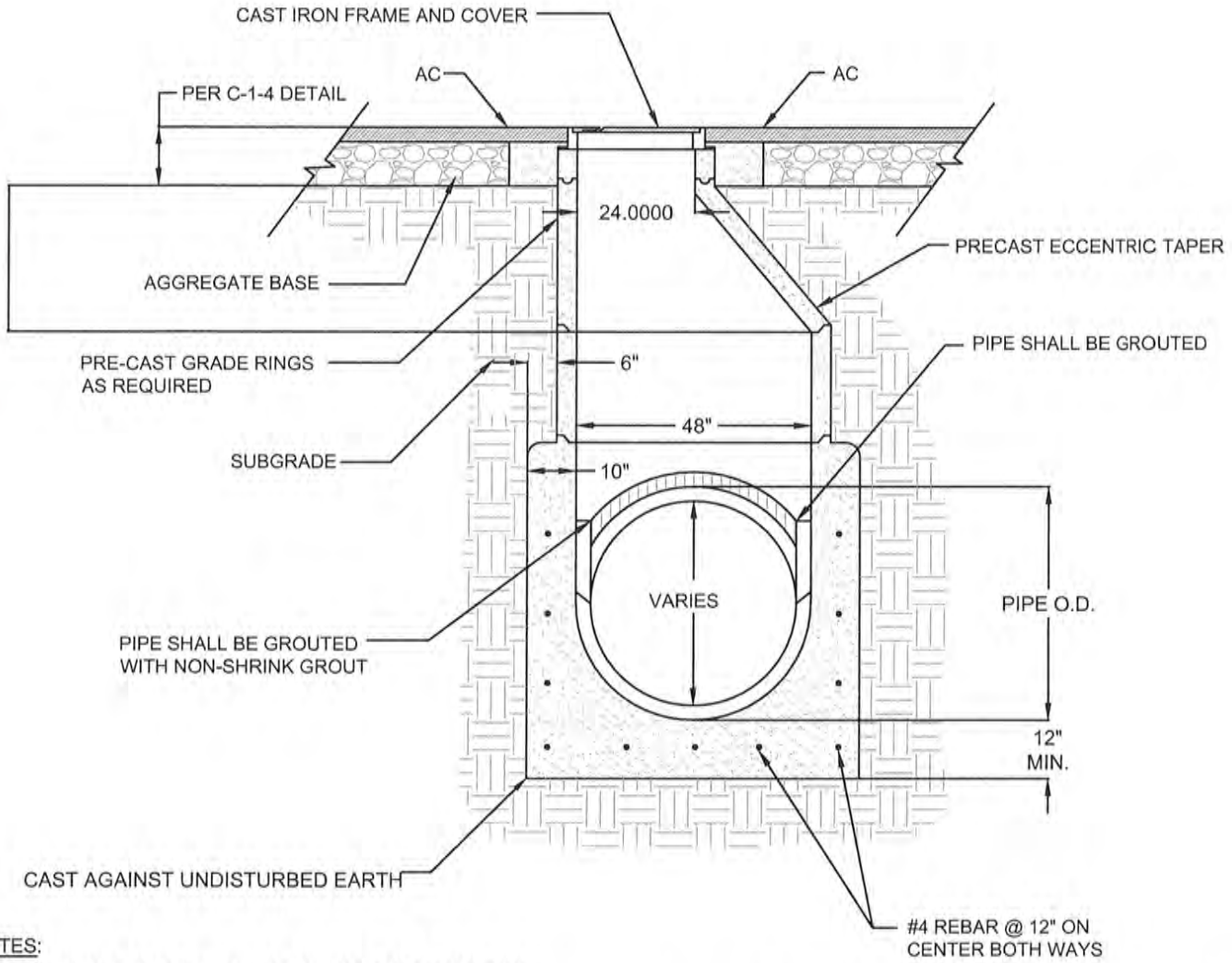
DIMENSIONS OF CIP CONCRETE PIPE		
NOMINAL DIAMETER (INTERIOR)	NOMINAL THICKNESS (MINIMUM)	TRENCH WIDTH OF
DI	T1	B (INCHES)
36"	3½"	43
42"	4"	50
48"	5"	58
54"	5½"	65
60"	6"	72
66"	6½"	79
72"	7"	86
84"	8"	100
96"	9"	114

NOTES:

1. CAST-IN-PLACE CONCRETE PIPE SHALL COMPLY WITH SECTION 306-4 THE GREEN BOOK.
2. TYPICAL PIPE CROSS SECTION 36" THRU 96" CAST-IN PLACE PIPE SHALL BE CLASS 660-C-4000 P.C.C. MACHINE EXTRUDED AND MECHANICALLY COMPACTED.
3. BACKFILLING OF TRENCH SHALL BE DONE AFTER (7) SEVEN DAYS OF CONCRETE PLACEMENT AND MEET 80% OF DESIGN COMPRESSIVE STRENGTH OR WITH THE APPROVAL OF CITY ENGINEER.
4. FOR COLD JOINT SPLICING, INSTALL 24" LONG #4 DOWEL @ 18" O.C. AT END OF FRESHLY PLACED CONCRETE (NOT TO EXCEED 30 MINUTES). EMBED TO 12" DEPTH.

TITLE: # CAST IN PLACE CONCRETE PIPE(36" TO 96")

DRAWN BY: STAFF	SCALE: NONE	APPROVED: Danny Hillstock 11-5-19	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	D-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT			SHEET 1 OF 1

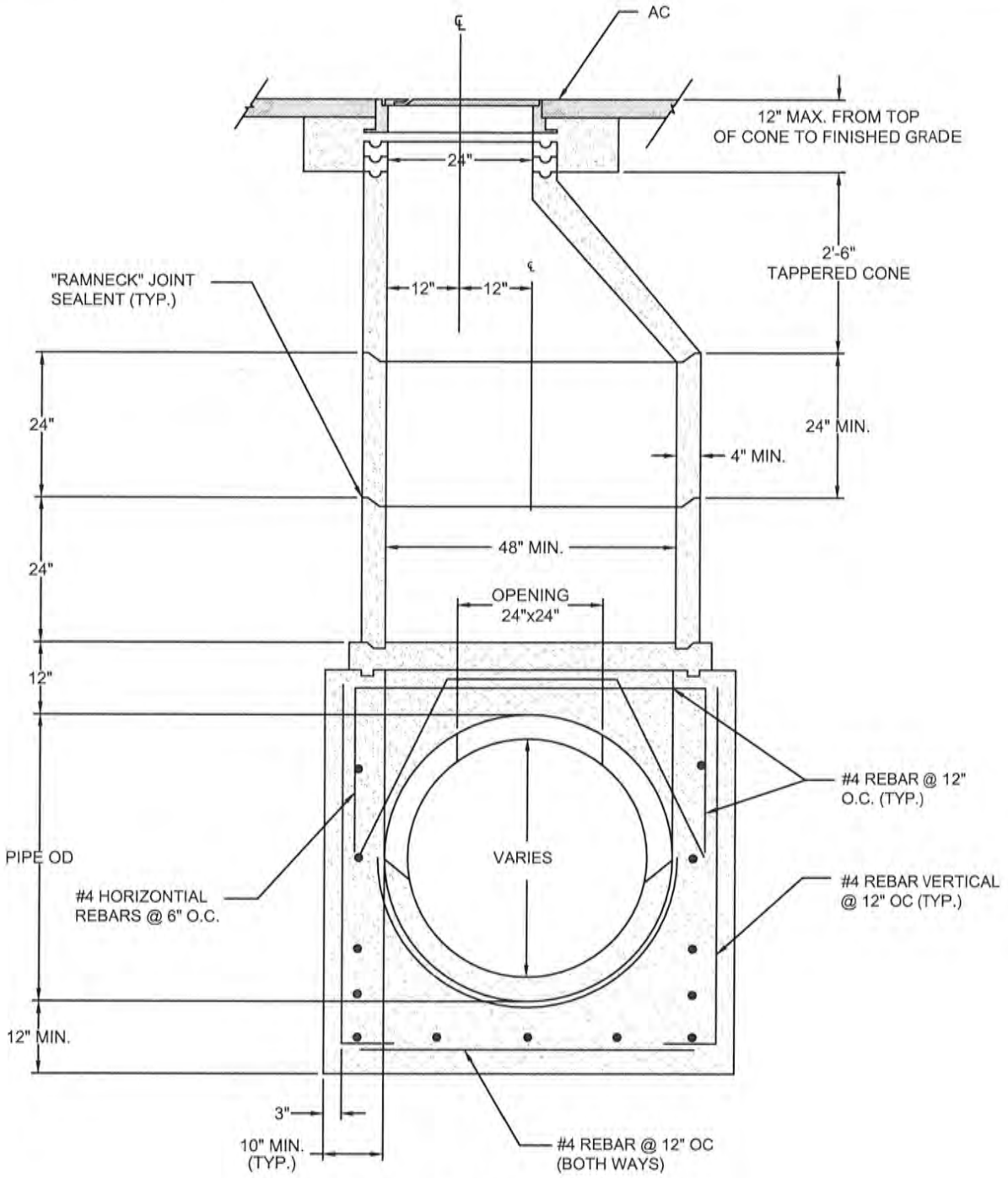


NOTES:

1. MANHOLE BASE SHALL BE CLASS 560-B-3250 PCC.
2. PRECAST CONCRETE BARREL, ADJUSTMENT RING & TAPERED SECTIONS SHALL CONFORM TO CLASS III R.C.P. (ASTM C76).
3. CUT ALL EXCESS RAMNECK JOINT SEALANT. INTERIOR JOINTS SHALL BE SMOOTHLY FINISHED WITH MORTAR.
4. USE STANDARD PLAN C-1-4 FOR STANDARD MANHOLE FRAME/COVER AND CONCRETE COLLAR.
5. BARREL SECTION CAN BE PLACED AFTER THREE (3) DAYS OF CONCRETE BASE PLACEMENT, OR AS APPROVED BY CITY ENGINEER.
6. CONCRETE SAMPLING REQUIRED AS DETERMINED BY THE CITY ENGINEER OR PUBLIC WORKS INSPECTOR.

TITLE: # TYPE II STANDARD MANHOLE (PIPE 18" TO 42 INCHES)

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	D-2-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 2



TYPICAL SECTION A-A

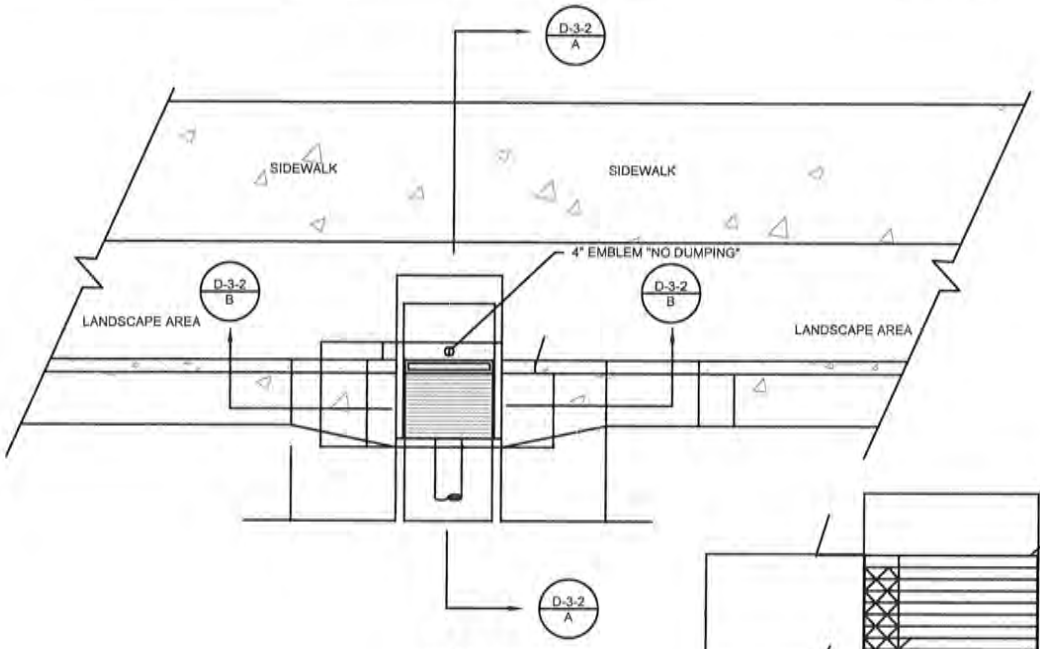
NOTES:

1. SHALLOW PIPE COVER CAN USE FLAT TOP WITH CITY ENGINEER APPROVAL.
2. "RAMNECK" OR EQUAL JOINT SEALANT SHALL BE USED AT BARRIER AND CONE SECTIONS.

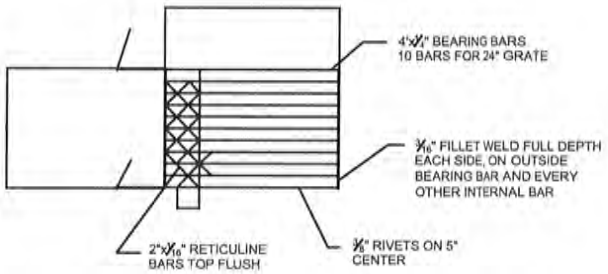
TITLE:

TYPE III STANDARD MANHOLE (48 INCH AND LARGER)

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		D-2-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK L.S. NO. 70647 — DATE: 11-5-19	SHEET 2 OF 2



PLAN VIEW



WELDED STEEL
RETICULATE GRATE
(REF: CALTRANS STD. PLANS D77A & RSP D77B)

WT. OF 24" GRATE=182 LBS
WT. OF 18" GRATE=145 LBS

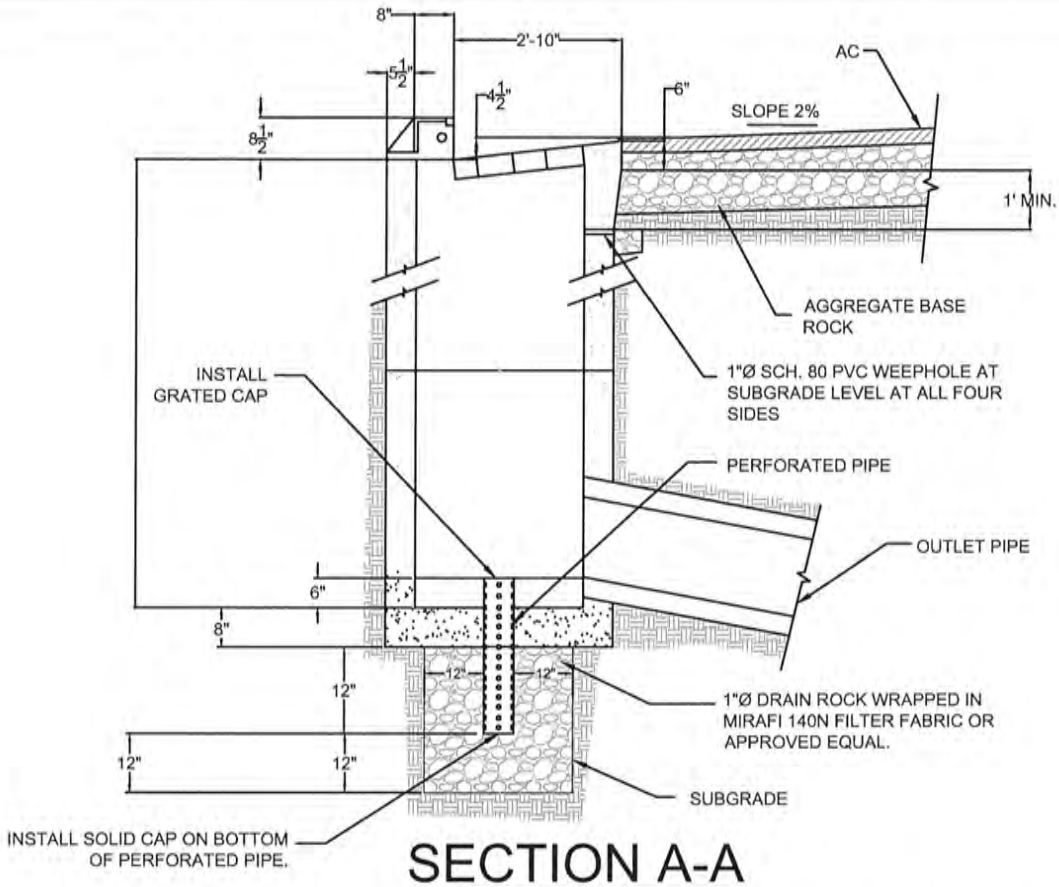
NOTES:

1. ALL CONCRETE SHALL BE 560-B-3250 PCC. PRECAST INLETS ARE SUBJECT TO WRITTEN APPROVAL OF THE CITY ENGINEER. EXCAVATION TO BE MIN. 4" LARGER THAN PRECAST BOX ON ALL SIDES. BACKFILL WITH CLASS 100-E-100 PCC.
2. INLET WALLS MAY BE PLACED TO SUBGRADE. #4 REBAR DOWELS SHALL BE PROVIDED AT EACH CORNER OF BOX. THE UPPER 1'-0" OF THE INLET BOX SHALL BE FRAMED AND PLACED MONOLITHICALLY WITH THE CURB AND GUTTER.
3. CONCRETE SHALL NOT BE PLACED PRIOR TO APPROVAL BY CITY ENGINEER.
4. WHEN CURB, GUTTER, AND SIDEWALK ARE NOT PLACED MONOLITHICALLY, THE CONCRETE CURB SHALL ALSO ENCASE SIDES AND BACK OF INLET HOOD A MINIMUM OF 8" WIDE AND 8" DEEP. THE ENCASEMENT SHALL BE PLACED WITHIN FORMS TO PROVIDE STRAIGHT EDGES.
5. REINFORCING BARS SHALL BE REQUIRED IN WALLS WHICH ARE MORE THAN 6' DEEP. FROM TOP OF CURB HORIZONTAL AND VERTICAL BARS SHALL BE #4 SPACED 12" O.C. AND PLACED 2" CLEAR OF INSIDE WALL SURFACE.
6. SEE STANDARD DETAIL SHEET D3-3 AND D3-4 FOR HOOD, FRAME AND GRATE.
7. CATCH BASIN GRATE SIZE SHALL BE 24"x36".
8. PRECAST INLETS MAY BE USED SUBJECT TO WRITTEN APPROVAL OF THE CITY ENGINEER. EXCAVATION TO BE MIN. 4" LARGER THAN PRECAST BOX ON ALL SIDES. BACKFILL WITH CLASS 100-E-100 PCC.
9. HOOD SHALL BE CAST IRON AND SHALL RECEIVE AND ASPHALTIC COATING AFTER FABRICATION.
10. FRAME AND GRATES TO BE HOT DIP GALVANIZED AFTER FABRICATION.
11. HOOD SHALL BE PHOENIX IRON WORKS OR APPROVED EQUAL:
12. FRAME AND P-6002 CAST IRON HOOD (HOOD ONLY) GRATE TO CONFORM WITH TYPE 18-83 AND 24-IOS GRATE PER CALTRANS STANDARD PLAN RSP D77B "BICYCLE TRAVERSABLE GRATE" DIMENSIONS WITH RECTANGULAR FRAME PER CALTRANS STANDARD DETAIL D77A.
13. ALL CURB INLETS SHALL HAVE AN EMBLEM "NO DUMPING".

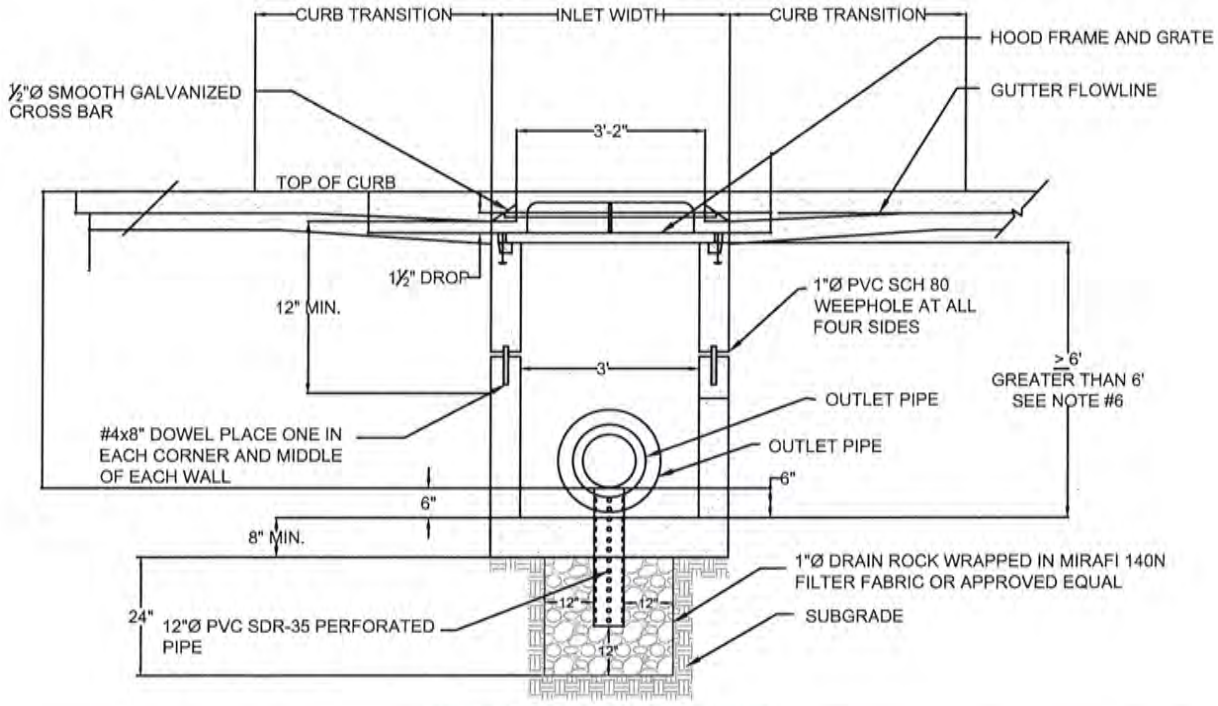
TITLE:

CAST-IN-PLACE CURB INLET AND FRAME GRATES (24"x36")

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		D-3-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 4



SECTION A-A

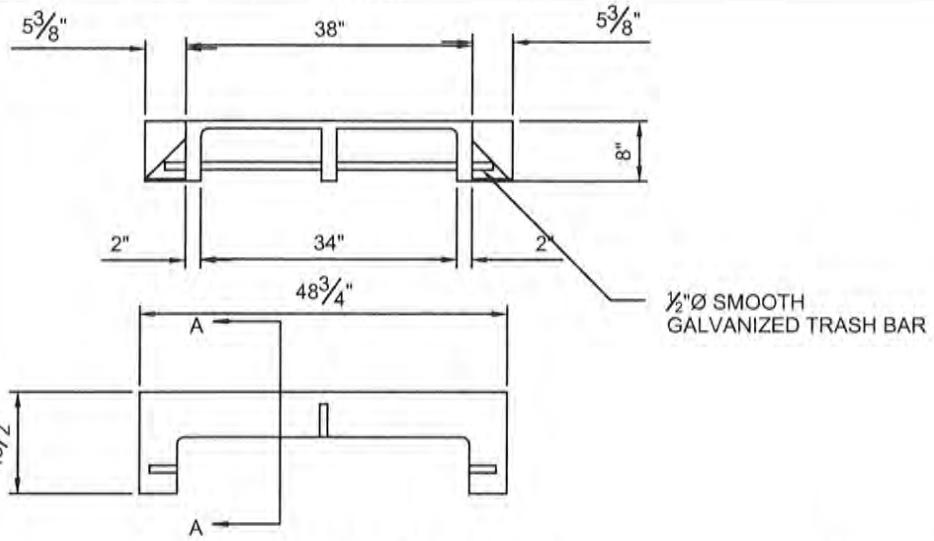


SECTION B-B

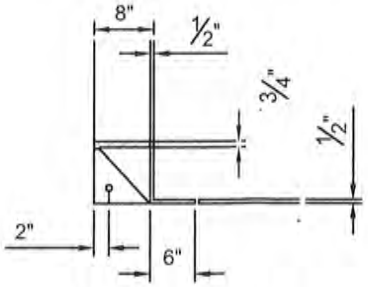
TITLE:

CAST-IN-PLACE CURB INLET-SECTIONS

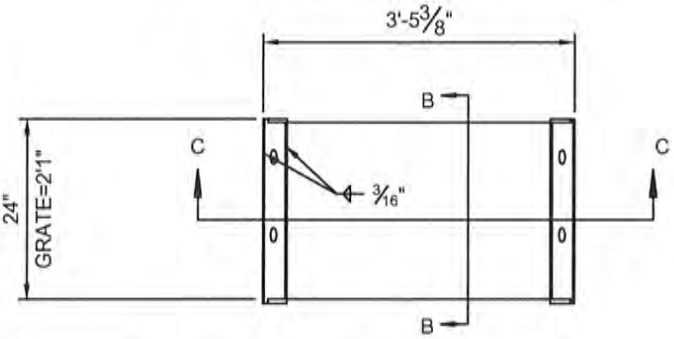
DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		D-3-2
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	SHEET 2 OF 4



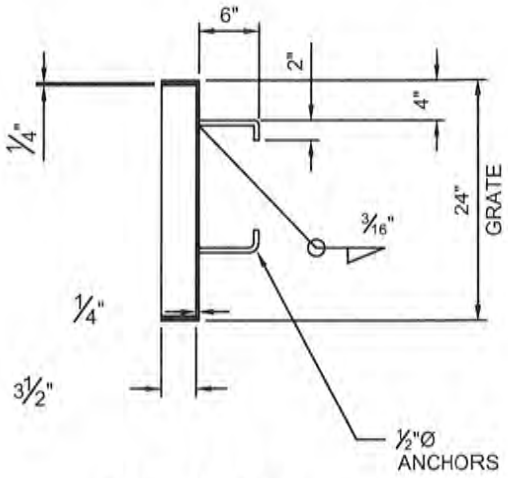
CAST IRON HOOD PLAN VIEW



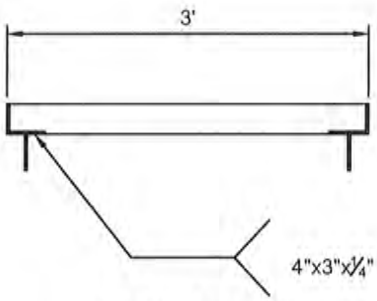
SECTION A-A



WELDED STEEL FRAME



SECTION B-B



SECTION C-C

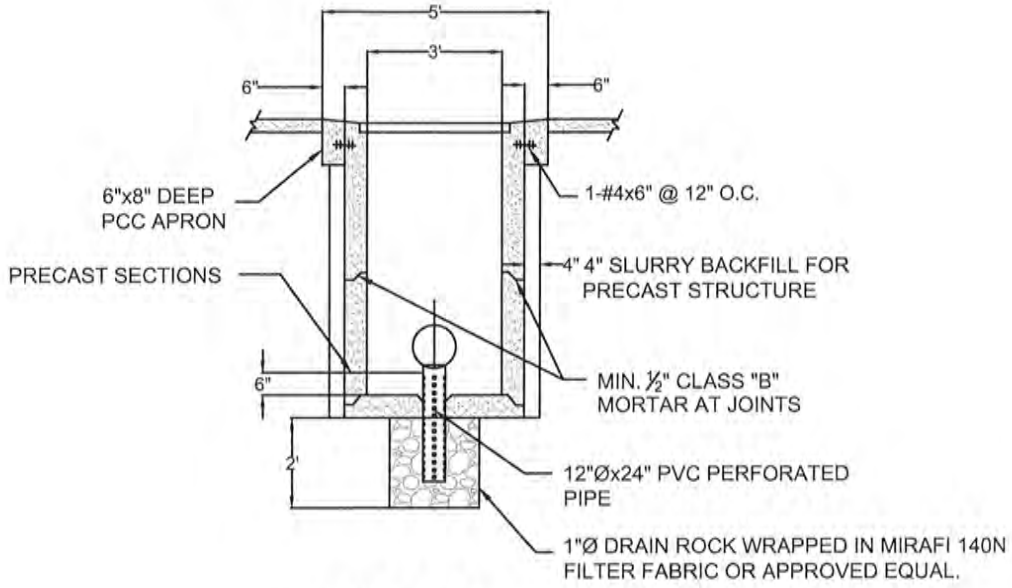
NOTES:

1. HOOD SHALL BE CAST IRON AND SHALL RECEIVE AN ASPHALTIC COATING AFTER FABRICATION.
2. FRAME AND GRATES TO BE HOT DIP GALVANIZED AFTER FABRICATION.
3. HOOD SHALL BE PHOENIX IRON WORKS OR APPROVED EQUAL: P-6002 CAST IRON FRAME GRATE & HOOD
4. FRAME AND P-6002 CAST IRON HOOD (HOOD ONLY) GRATE TO CONFORM WITH TYPE 18-83 AND 24 IOS GRATE PER CALTRANS STANDARD PLAN RSP D77B " BICYCLE TRAVERSABLE GRATE" DIMENSIONS WITH RECTANGULAR FRAME PER CALTRANS STANDARD DETAIL D77A. P-6302 24"x36" GALVANIZED STEEL DRAINAGE INLET FRAME AND GRATE
5. SPECIFIED MATERIALS MAY BE SUBSTITUTED WHEN APPROVED BY CITY ENGINEER.

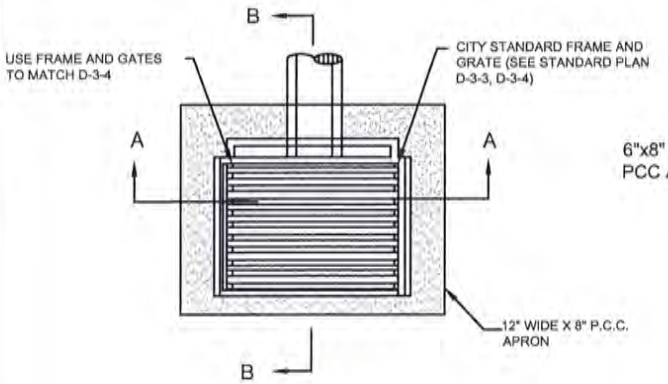
TITLE:

INLET HOOD, FRAME AND GRATES

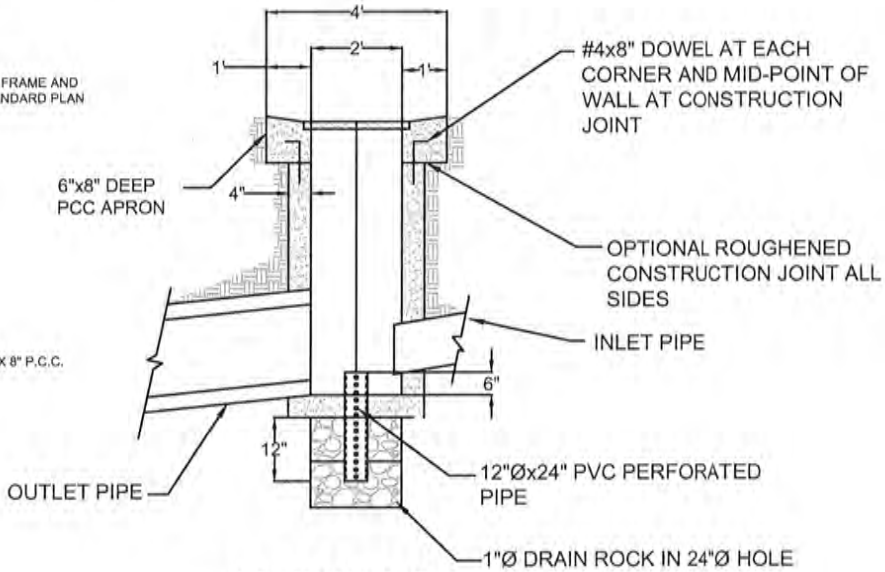
DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		D-3-3
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 3 OF 4



SECTION B-B
(WITH PRECAST SECTION)



PLAN VIEW



SECTION B-B
(WITH CAST-N-PLACE P.C.C.)

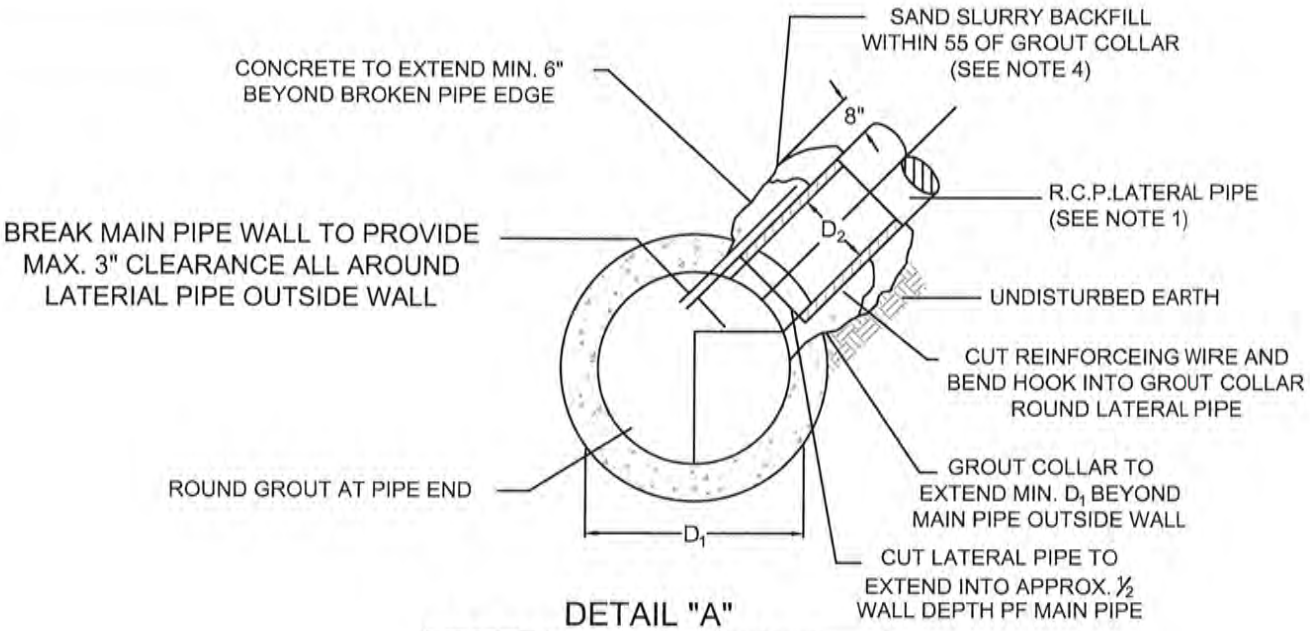
NOTES:

1. ALL CONCRETE SHALL BE 560-B-3250 PCC PRECAST INLETS.
2. CAST-IN-PLACE INLET BASE SHALL BE PLACED AGAINST UNDISTURBED EARTH.
3. NO CONCRETE SHALL BE PLACED PRIOR TO APPROVAL BY THE CITY ENGINEER, OR PUBLIC WORKS INSPECTOR.
4. PIPES MAY BE PLACED IN ANY WALL AND GROUTED IN-PLACE.
5. REINFORCING BARS SHALL BE REQUIRED IN WALLS WHICH ARE MORE THAN 6' DEEP. FROM TOP OF CURB HORIZONTAL AND VERTICAL BARS SHALL BE #4, SPACE 12" O.C. AND PLACED AT 2" CLEAR OF INSIDE WALL SURFACE.
6. PRECAST INLETS ARE SUBJECT TO WRITTEN APPROVAL OF THE CITY ENGINEER, EXCAVATION TO BE MIN. 4" LARGER THAN PRECAST BOX ON ALL SIDES. BACKFILL WITH CLASS 100-E-100 PCC.

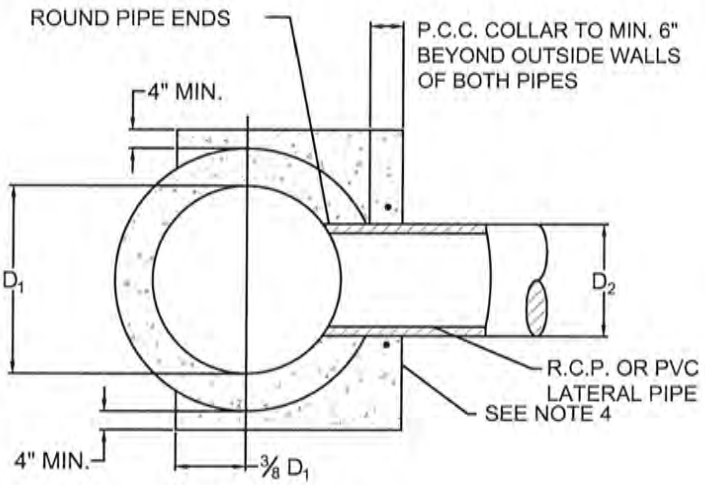
TITLE:

DROP INLET (24"x36")

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	D-3-4
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 4 OF 4



DETAIL "A"
(30" AND LARGER MAIN)



DETAIL "A"
(24" AND 27" MAIN)

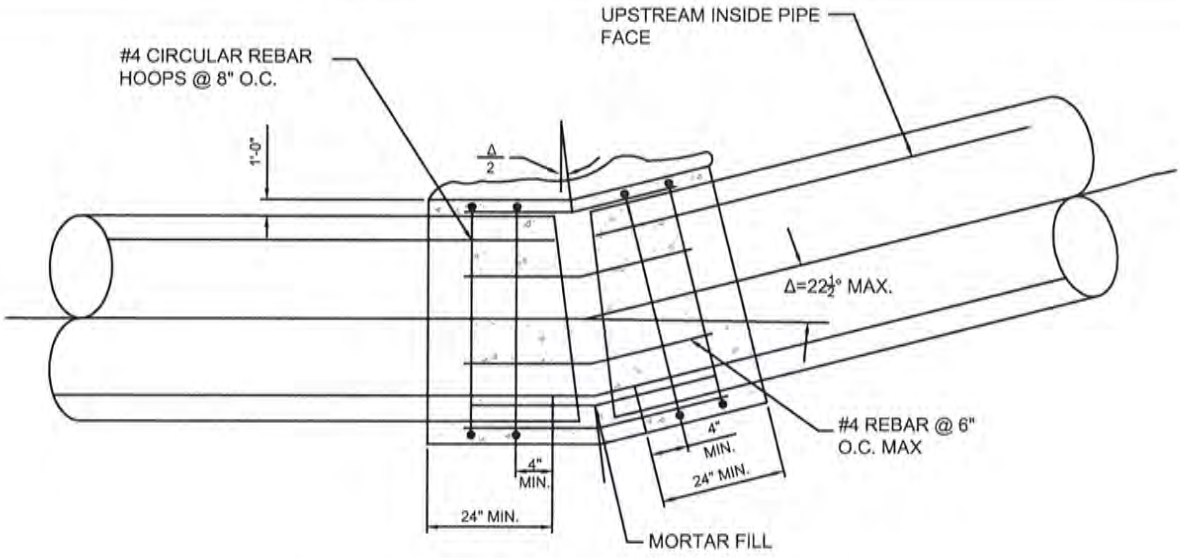
NOTES:

1. ALL STORM DRAIN LATERALS SHALL BE HDPE, PVC SDR 26 OR MIN. CLASS III R.C.P.
2. DETAIL SHALL ONLY BE ALLOWED WHEN LATERAL PIPE DIAMETER IS LESS THAN ½ THE MAIN DIAMETER.
3. CONCRETE SLURRY BACKFILL SHALL BE CLASS 100-E-100 PCC.
4. CONCRETE COLLAR SHALL BE CLASS 470-C-2000 PCC.
5. NO EDGES OF THE PIPE SHALL PROJECT BEYOND THE INSIDE PIPE FACE.
6. LATERAL CONNECTION MAY BE ALLOWED WITH THE APPROVAL OF THE CITY ENGINEER.

TITLE:

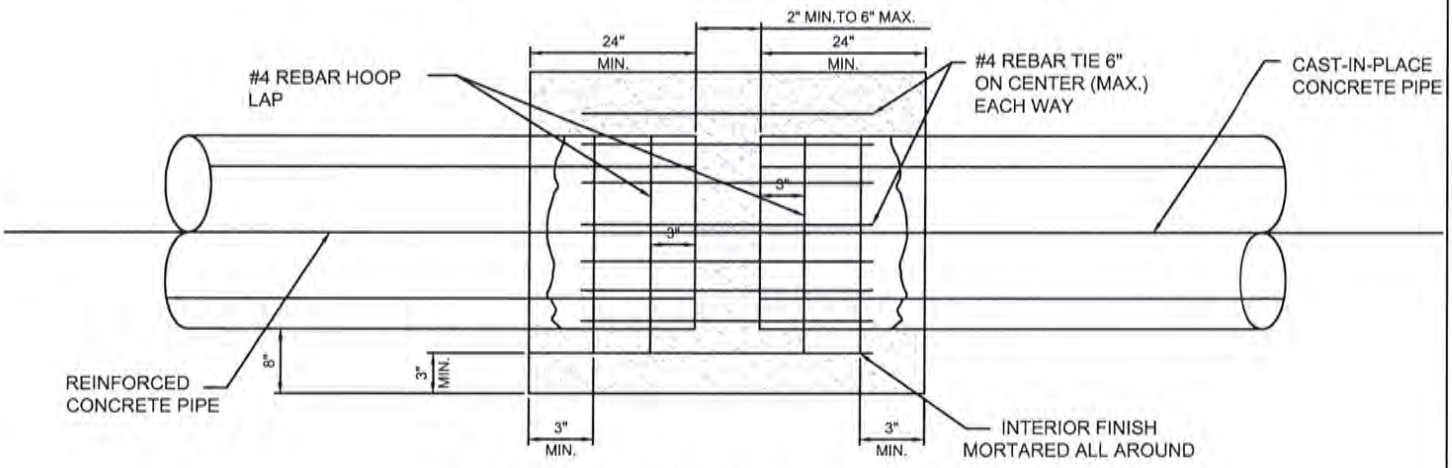
LATERAL CONNECTION TO STORM MAIN PIPE

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE	Danny Hillstock 11-5-19	D-4
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1
CITY OF HOLLISTER ENGINEERING DEPARTMENT			



REINFORCED CONCRETE PIPE MITER BEND

PIPE DIA. (INCHES)	R.C.P. PIPE (MAX DEFLECTION PER JOINT)	MINIMUM BAND THICKNESS ("A" IN)
24" & SMALLER	1° 30'	1½"
30" TO 48"	1° 0'	2"
54" TO 60"	0° 45'	2½"
66" & LARGER	0° 30'	3"



STORM DRAIN TRANSITION CONNECTION

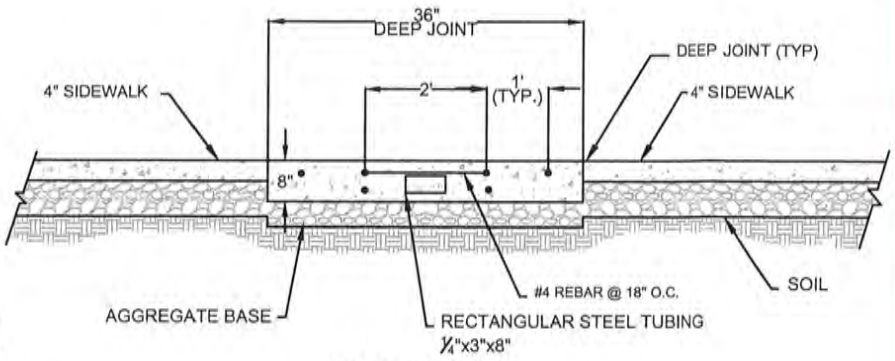
NOTES:

1. REINFORCED CONCRETE PIPE (R.C.P.) SHALL HAVE A MINIMUM OF CLASS III RATING.
2. MITER END SHALL BE PRECAST IN PIPE (CUTTING OF PIPE SHALL BE ALLOWED WITH AGENCY ENGINEER APPROVAL).
3. SEE MANUFACTURER'S SPECIFICATION FOR MAXIMUM DEFLECTION PER JOINT, AND MINIMUM RADIUS OF CAST-IN-PLACE PIPE.
4. MORTAR SHALL BE CLASS "C" PCC.
5. CONCRETE SHALL BE CLASS 470-C-2000.
6. A STORM DRAIN MANHOLE IS REQUIRED IF MORE THAN 22½° DEFLECTION.
7. THE USE OF THIS STANDARD PLAN SHALL REQUIRE APPROVAL OF THE CITY ENGINEER.

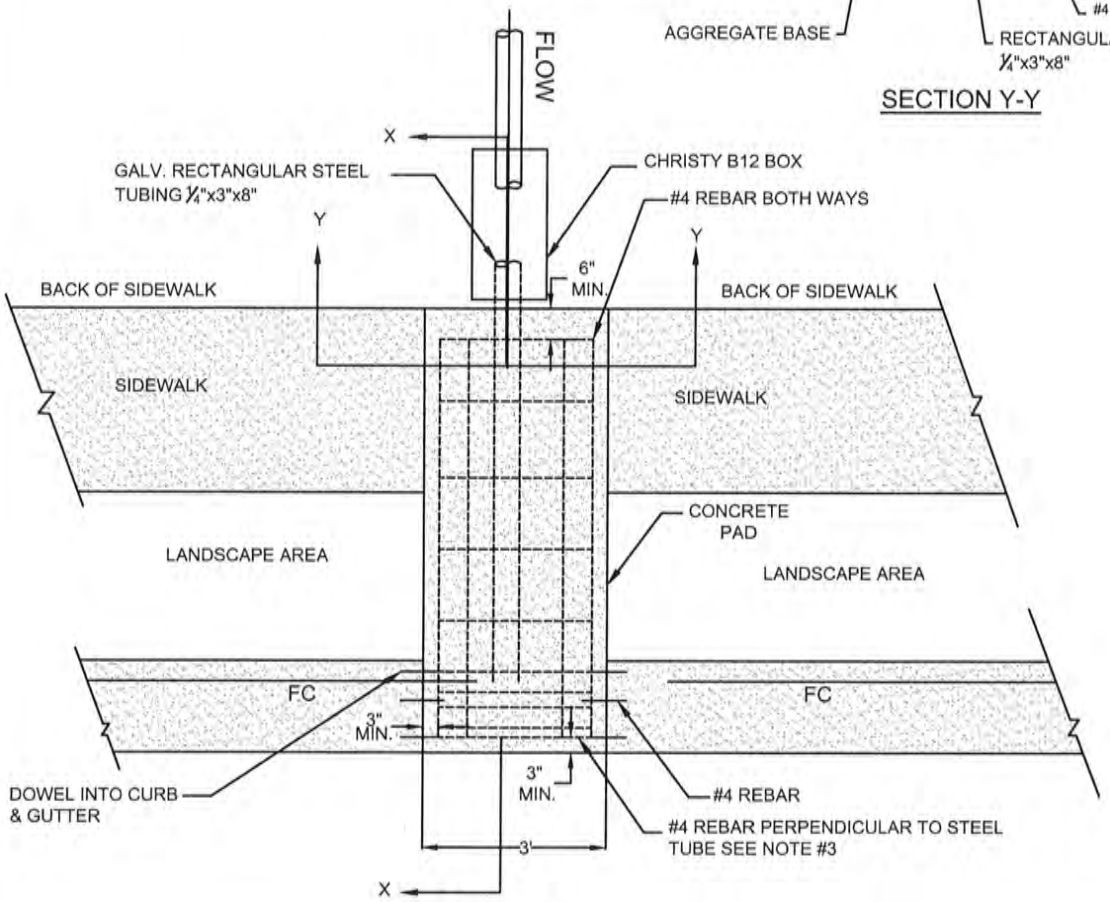
TITLE:

STORM DRAIN COLLAR

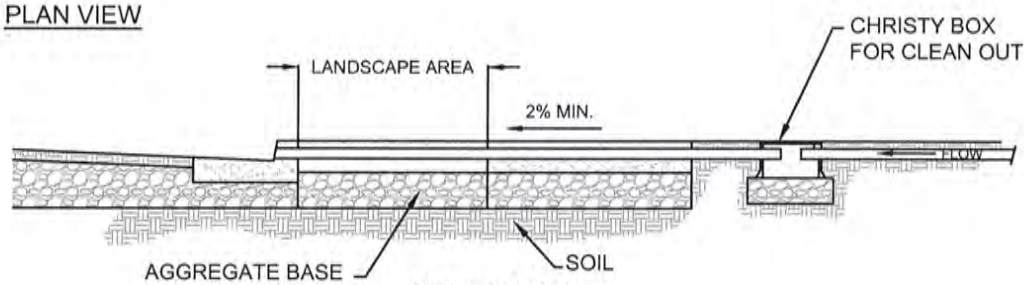
DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		D-5
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 1



SECTION Y-Y



PLAN VIEW



SECTION X-X

NOTES:

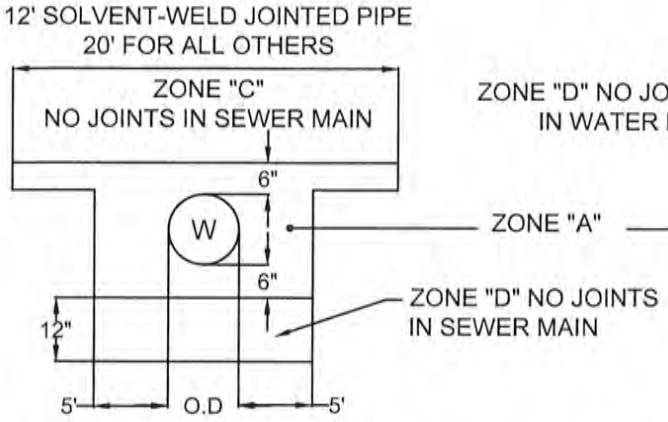
1. CURB GUTTER AND SIDEWALK TO BE CONSTRUCTION PER CITY STANDARD PLAN.
2. REBAR SPACING PERPENDICULAR TO PIPE OR TUBING SHALL BE PER SECTION Y-Y.
3. ¼"x3"x8" RECTANGULAR STEEL TUBING SHALL BE GALVANIZED STEEL.
4. DRAIN SHALL NOT BE PERMITED IN DRIVEWAY APPROACH AREAS.

TITLE:

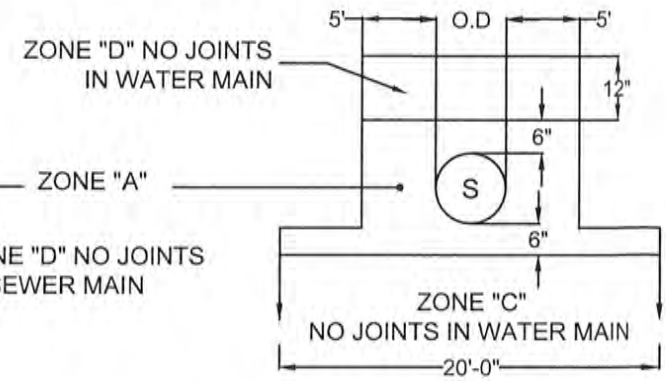
SIDEWALK UNDERDRAIN PIPE

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		D-6
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1

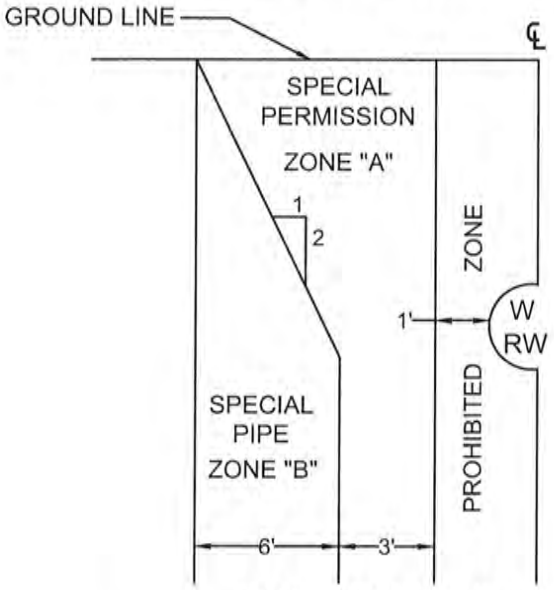
NEW SEWER MAIN



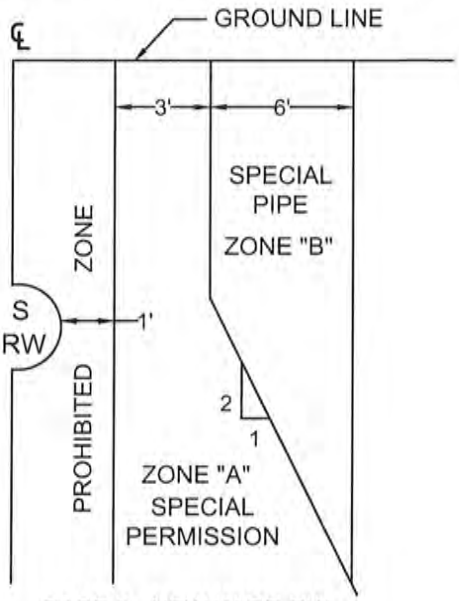
NEW WATER MAIN



TRENCH SECTION FOR PERPENDICULAR CONSTRUCTION



CASE 1 - NEW RW OR S



CASE 2 - NEW W OR RW

TRENCH SECTION FOR PARALLEL CONSTRUCTION

NOTES:

1. PARALLEL CONSTRUCTION WILL BE ALLOWED ONLY WHEN 10' HORIZONTAL SEPARATION BETWEEN SEWER AND WATER LINES CANNOT BE MAINTAINED, AND ONLY AS APPROVED BY THE CITY ENGINEER.
2. ZONE "A"-CONSTRUCTION WITH SPECIAL PERMISSION ONLY.
3. ZONE "B"-SEWER MUST BE SOLVENT WELD JOINT COMPOSITE PIPE, OR WATER MUST BE AWWA C-900, CLASS 200, OR D.I.P. CLASS 50.
4. ZONE "C" & "D"-SEWER & WATER PIPE TO MEET CITY STANDARD REQUIREMENTS.
5. ALL DIMENSIONS ARE MINIMUM AND APPLY ONLY TO GRAVITY SEWER MAINS. THE ZONES ILLUSTRATED ARE NOT APPLICABLE WITH SEWER PRESSURE MAINS.
6. REQUIREMENTS APPLY TO BOTH SANITARY SEWER AND STORM SEWER.

TITLE:

WATER/SEWER SEPARATION REQUIREMENTS

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		E-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK, LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 1

MINIMUM PUBLIC SAFETY REQUIREMENTS
FOR UNATTENDED EXCAVATIONS

TRANSVERSE OR LONGITUDINAL CUTS WITHIN THE RIGHT-OF-WAY THAT CANNOT BE PROPERLY COMPLETED WITHIN A WORKDAY SHALL BE PROTECTED BY STEEL PLACE COVERS IN SUCH A WAY AS TO PRESERVE UNOBSTRUCTED TRAFFIC OR PEDESTRIAN FLOW. THE CONTRACTOR SHALL SECURE WRITTEN APPROVAL, IN ADVANCE, FOR USE OF ANY TEMPORARY BRIDGE PROPOSED BY IT FOR PUBLIC USE AND SHALL NOT BE INSTALLED UNTIL SAID APPROVAL HAS BEEN OBTAINED FROM THE LOCAL GOVERNING AGENCY. SIGNS AND POSTINGS CONFORMING TO THE CURRENT REQUIREMENTS COVERING "SIGNS" AS SET FORTH IN THE CALIFORNIA MUTCD PUBLISHED BY THE CALIFORNIA DEPARTMENT OF TRANSPORTATION, INCLUDING ADVANCE WARNING SIGNS (E.G. A ROUGH ROAD, W8-8, WITH BLACK LETTERING ON AN ORANGE BACKGROUND) INDICATING THAT STEEL PLATE COVERS ARE IN USE SHALL BE CLEARLY POSTED. ADDITIONAL SIGNAGE AND POSTINGS WITH A TWO INCH (2") MINIMUM LETTER HEIGHT SHALL INDICATE THE STEEL PLATE COVER LOAD LIMIT, THE CONTRACTOR'S NAME AND A TWENTY-FOUR (24) HOUR EMERGENCY CONTACT PHONE NUMBER. THESE SPECIFICATIONS SHALL ALSO APPLY TO THE STREET CLOSURES, BARRICADES, DETOURS, LIGHTS, AND OTHER SAFETY DEVICES REQUIRED.

TEMPORARY STEEL PLATE COVERS SHALL BE IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

A) STEEL PLACE COVERS SHALL BE A36 GRADE STEEL DESIGNED FOR HS20-44 TRUCK LOADING PER THE CALTRANS BRIDGE DESIGN SPECIFICATIONS MANUAL AND SHALL EXTEND A MINIMUM OF TWELVE INCHES (12") BEYOND THE EDGES OF THE TRENCH; ENGINEER MAY REQUIRE MORE THAN TWELVE INCHES, BASED UPON DEPTH OF PLATED TRENCH AND SOIL CONDITIONS. REFER TO TABLE 7-10.5.3 (A) BELOW FOR THE ADVISORY MINIMAL THICKNESS OF STEEL PLATE COVER BRIDGING REQUIRED FOR A GIVEN TRENCH WIDTH:

TABLE 7-10.5.3 (A) - TRENCH WIDTH / MINIMUM PLATE THICKNESS

TRENCH WIDTH	MINIMUM PLATE THICKNESS
0'-10"	ONE-HALF INCH ($\frac{1}{2}$")
1'-11"	THREE-QUARTERS INCH ($\frac{3}{4}$")
2'-7"	SEVEN-EIGHTHS INCH ($\frac{7}{8}$")
3'-5"	ONE INCH (1")
5'-3"	ONE & THREE-QUARTERS INCH (1-3/4")

B) THE CONTRACTOR SHALL SUBMIT TO THE AGENCY FOR APPROVAL, WORKING DRAWINGS PREPARED ON 24" X 36" 'D' SIZE SHEETS PER SUBSECTION 2-5.3 "SUBMITTALS." OF THE GREENBOOK. NOTE: FOR TEMPORARY STEEL PLATE COVER SPANS GREATER THAN 5'-3" (63"), A STRUCTURAL DESIGN INCLUDING A SHORING SYSTEM SHALL BE PREPARED BY A CALIFORNIA REGISTERED CIVIL OR STRUCTURAL ENGINEER AND APPROVED BY THE AGENCY. CALCULATIONS NEED NOT ACCOMPANY WORKING DRAWINGS PREVIOUSLY APPROVED FOR THE SAME PROJECT EXCEPT AS REQUIRED BY THE AGENCY.

C) STEEL PLATE COVERS USED IN THE TRAVELED WAY SHALL HAVE A SKID-RESISTANT SURFACE THAT WAS MANUFACTURED WITH A NOMINAL COEFFICIENT OF FRICTION (COF) OF 0.35 AS DETERMINED BY CALIFORNIA TEST METHOD 342 (ALSO SEE APPENDIX H OF THE MOST CURRENT CALTRANS ENCROACHMENT MANUAL).

D) THE DIMENSIONS OF THE STEEL PLATE COVERS; SIZE AND LOCATIONS OF THE CONNECTIONS; AND SIZE AND SPACING OF THE MEMBERS SHALL BE DETAILED ON THE WORKING DRAWINGS.

E) THE BEARING PAD SHALL BE ON FIRM GROUND OR PAVEMENT FOR SUPPORT OF THE STEEL PLATE COVERS.

STEEL PLATE COVERS AND APPURTENANT SHORING SYSTEM SHALL BE INSTALLED USING EITHER METHOD 1) OR 2) LISTED BELOW.

METHOD 1): [FOR SPEEDS EQUAL TO OR GREATER THAN 36 MPH]

THE PAVEMENT SHALL BE MILLED / COLD-PLANED TO PROVIDE A DEPTH, WIDTH AND LENGTH EQUAL TO THAT OF THE STEEL PLATE COVER SUCH THAT IT IS RECESSED AND FLUSH WITH THE SURROUNDING PAVEMENT SURFACE.

TITLE:

UNATTENDED EXCAVATION SAFETY

AUTOCAD BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	11-5-19	E-2-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 2

MINIMUM PUBLIC SAFETY REQUIREMENTS
FOR UNATTENDED EXCAVATIONS

METHOD 2): [FOR SPEEDS 35 MPH AND LESS]

APPROACH AND ENDING STEEL PLATE COVERS (IF LONGITUDINAL PLACEMENT) SHALL BE ATTACHED TO THE ROADWAY BY A MINIMUM OF TWO (2) DOWELS INSTALLED IN PRE-DRILLED HOLES INTO THE CORNERS OF THE PLATES AND DRILLED A MINIMUM FOUR INCHES (4") INTO THE PAVEMENT. IN ADDITION TO DOWELS, ADJUSTABLE CLEATS, SHIMS, WELDING, OR OTHER DEVICES, SHALL BE INSTALLED TO SECURE STEEL PLATE COVERS AGAINST MOVEMENT OR DISPLACEMENT AND IN SUCH A MANNER THAT WILL MINIMIZE NOISE AS TRAFFIC DRIVES OVER THE STEEL PLATE COVERS.

SUBSEQUENT PLATES ARE BUTTED TO EACH OTHER AND TACK WELDED AS DIRECTED BY THE LOCAL GOVERNING AGENCY. FINE GRADED ASPHALT CONCRETE SHALL BE PLACED AND COMPACTED TO FORM A MINIMUM TWELVE INCH (12") TAPERED TRANSITION RAMP WITH A MAXIMUM SLOPE OF 8.5% TO COVER ALL EDGES OF THE STEEL PLATE COVERS. ALTERNATIVELY, CONTRACTOR MAY USE PRE-FABRICATED NEOPRENE RUBBER MATS MANUFACTURED BY AMERICAN HIGHWAY PRODUCTS, OR EQUIVALENT (IF APPROVED BY LOCAL GOVERNING AGENCY).

WHEN THE STEEL PLATE COVERS ARE REMOVED THE PAVEMENT SHALL BE RESTORED AND DOWEL HOLES IN THE PAVEMENT SHALL BE BACKFILLED WITH EITHER GRADED FINES OF ASPHALT CONCRETE MIX, CONCRETE SLURRY, EPOXY OR AN EQUIVALENT THAT IS SATISFACTORY AND AS REQUIRED BY THE LOCAL GOVERNING AGENCY.

THE TYPE OF STEEL PLATE COVER INSTALLATION SHALL BE EVALUATED ON A CASE-BY-CASE BASIS SINCE, IN SOME CASES, A PARTICULAR TYPE OF STEEL PLATE COVER INSTALLATION MAY BE REQUIRED (E.G. NEAR A SCHOOL, WEATHER CONDITIONS, TRAFFIC SPEED, VOLUME AND COMPOSITION, DURATION AND DIMENSIONS OF PLATES, ETC.).

ALL STEEL PLATE COVERS SHALL PROVIDE COMPLETE COVERAGE TO PREVENT ANY PERSON, BICYCLE, MOTORCYCLE OR MOTOR VEHICLE FROM BEING ENDANGERED DUE TO STEEL PLATE COVER MOVEMENT CAUSING SEPARATIONS OR GAPS.

UNLESS SPECIFICALLY NOTES OR GRANTED IN THE AGENCY'S SPECIAL PROVISION OR APPROVED BY THE AGENCY'S INSPECTOR:

A) THE INSTALLATION OF STEEL PLATE COVERS SHALL NOT EXCEED FOUR (4) CONSECUTIVE WORKING DAYS IN ANY GIVEN WEEK.

B) THE INSTALLATION OF STEEL PLATE COVERS SHALL NOT EXCEED FIFTY LINEAL FEET (50') IN LENGTH.

THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE STEEL PLATE COVERS, SHORING SYSTEM, ASPHALT CONCRETE TAPERED TRANSITION RAMPS AND ENSURING THEY MEET MINIMUM SPECIFICATIONS. ALL STEEL PLATE COVERS WITHIN THE RIGHT-OF-WAY WHETHER USED IN OR OUT OF THE TRAVELED WAY SHALL BE WITHOUT DEFORMATION. THE TRUENEESS OF A STEEL PLATE COVER CAN BE DETERMINED BY USING A STRAIGHT EDGE. ANY STEEL PLATE COVER FOUND TO BE PERMANENTLY DEFORMED SHALL BE REJECTED AND REMOVED FROM THE RIGHT-OF-WAY.

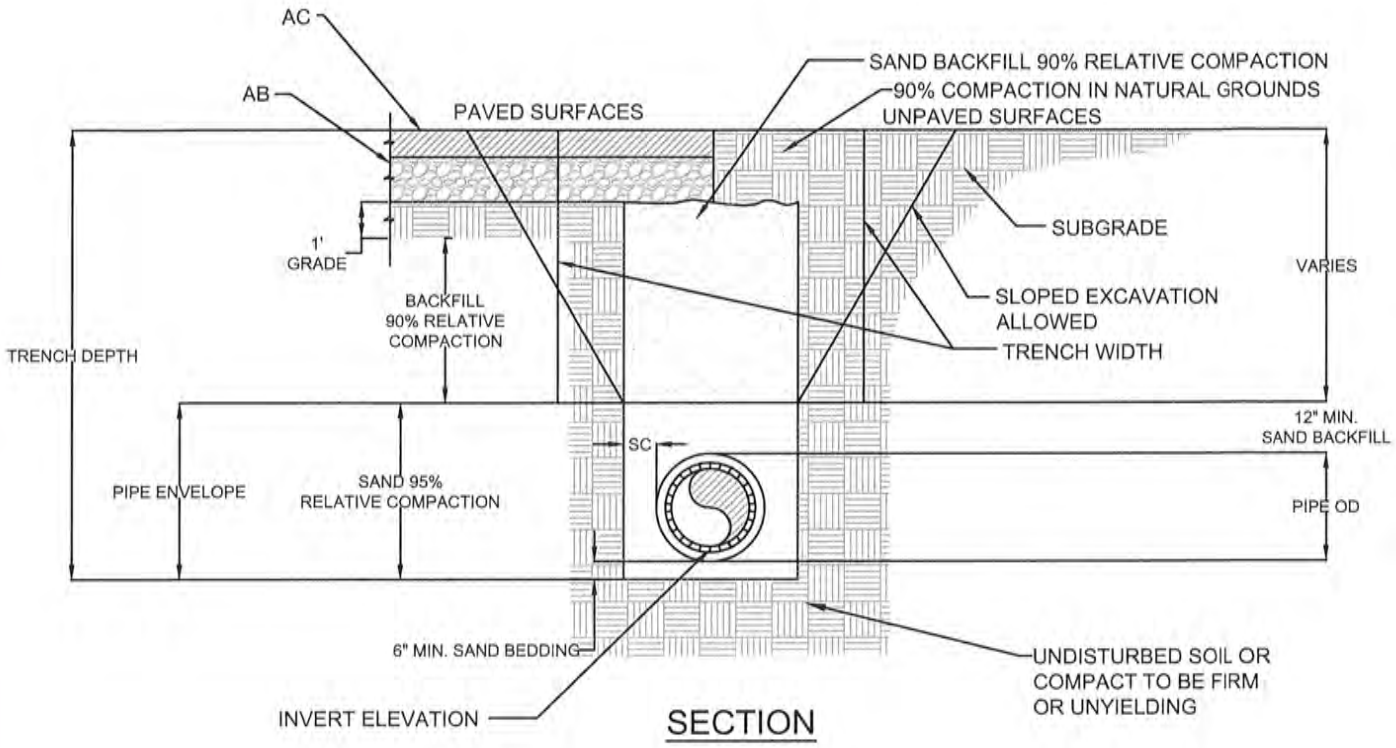
THE CONTRACTOR SHALL IMMEDIATELY MOBILIZE NECESSARY PERSONNEL AND EQUIPMENT AFTER BEING NOTIFIED BY THE INSPECTOR, THE AGENCY'S EMERGENCY SERVICE SECTION, OR A MEMBER OF THE PUBLIC OF A REPAIR NEED. THIS INCLUDES, BUT IS NOT LIMITED TO, PLATE MOVEMENT, NOISE, PLATE ANCHORS, COLD-MIX, ASPHALT CONCRETE TRANSITION RAMP BETWEEN THE STEEL PLATE COVER SURFACE AND THE EXISTING ROADWAY OR SIDEWALK.

FAILURE TO RESPONSD TO THE EMERGENCY REQUIRES WITHIN TWO (2) HOURS OF AGENCY'S INIITAIL ATTEMPT TO CONTACT THE CONTRACTOR SHALL BE GROUNDS FOR THE AGENCY TO PERFORM NECESSARY REPARIS THAT WILL BE INVOICED AT ACTUAL COST INCLUDING OVERHEAD OR $500 PER INCIDENT, WHICHEVER IS GREATER. ALL TRAFFIC CONTROL PLANS CURRENTLY REQUIRE PROMPT REPAIRS OF STEEL PLATE COVERS BY THE CONTRACTOR.

TITLE:

UNATTENDED EXCAVATION SAFETY

AUTOCAD BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		
REVIEWED BY:	REVISED:		E-2-2
DANNY HILLSTOCK	OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	SHEET 2 OF 2



SECTION

S.C. = SIDE CLEARANCE	
NOMINAL PIPE SIZE	SIDE CLEARANCE
UP TO AND INCLUDING 15"	6" MIN.-10" MAX.
OVER 15"	8" MIN.-12" MAX.

NOTES:

1. SEE STANDARD PLAN E-4 FOR TRENCH RESTORATION ON IMPROVED / UNIMPROVED STREETS.
2. SAND BEDDING & BACKFILL MINIMUM SAND EQUIVALENT OF 30.
3. SIDE CLEARANCE EXCEEDING MAXIMUM SHALL USE CEMENT-SAND SLURRY OR CLASS II AGGREGATE BASE.
4. EXCAVATIONS TO COMPLY WITH CAL-OSHA REQUIREMENTS/REGULATIONS

TITLE:

PIPE BEDDING AND TRENCH / BACKFILL

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		
REVIEWED BY:	REVISED:		E-3-1
DANNY HILLSTOCK	OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 2

GENERAL BACKFILL REQUIREMENTS

1. ALL EXISTING, NEW AND FUTURE ROADWAY AREAS WITH TRENCH WIDTH GREATER THAN 2' AND LESS THAN 5'- IMPORTED SANDY MATERIAL WITH S.E. > 30 OR CLASS II AB.
2. ALL EXISTING NEW AND FUTURE ROADWAY AREAS WHERE TRENCH WIDTH EXCEEDS 5' AND OPEN FIELDS OUTSIDE PLANNED AND PRESENT RIGHT-OF-WAYS-NATIVE MATERIAL WITH 2" MAXIMUM GRADATION IS ALLOWED WITH APPROVAL BY THE CITY ENGINEER.
3. EXISTING ROADWAYS WITH TRENCH WIDTHS OF 2' OR LESS OR HAVING LESS THAN 25 SQ. FEET OR WHEN DIRECTED IN ANY EXISTING ROADWAY TRENCH - BACKFILL BE CLASS 100-E-100 P.C.C.

BEDDING REQUIREMENTS : - (SEE BEDDING TYPES BELOW)

WATER PIPES

D.I. PIPE - TYPE 1 OR 2
P.V.C. PIPE - TYPE 1
POLYETHYLENE TUBING - TYPE 1

SANITARY SEWER PIPE

P.V.C. OR A.B.S. - TYPE 1 OR 3
P.V.C. SCH. 40 OR A.B.S. SOLID WALL S.D.R. 26- TYPE 1 OR 3
H.D.P.E. PROFILED WALL PIPE - TYPE 3

MINIMUM DEPTH OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR ALL SANITARY SEWER INSTALLATIONS SHALL BE 3 FEET, UNLESS PRIOR APPROVAL HAS BEEN OBTAINED FROM THE CITY ENGINEER.
FOR COVER LESS THAN 3 FEET, SOILD WALL SDR 23.5 PIPE SHALL BE USED.
TYPE 3 BEDDING SHALL BE USED IN ALL CASES WHEN DEPTH TO INVERT IS LESS THAN 3 FEET.

STORM DRAIN PIPE

REINFORCED CONCRETE PIPE - TYPES 1, 2, OR 3.
H.D.P.E. PROFILE PIPE AND P.V.C. SOLID WALL SDR 26 PIPE - TYPE 1 OR 3

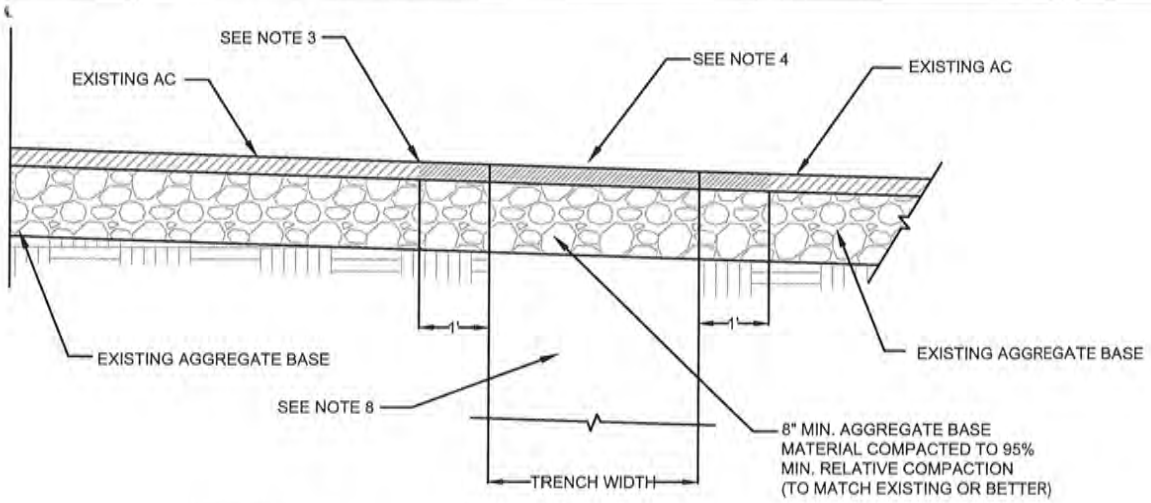
BEDDING TYPES

TYPE 1 - SANDY MATERIAL WITH S.E.> 30. HAND TAMP BOTTOM SEGMENT PRIOR TO PLACING PIPES.
TYPE 2 - IN FREE DRAINING GRANULAR NATIVE MATERIAL.

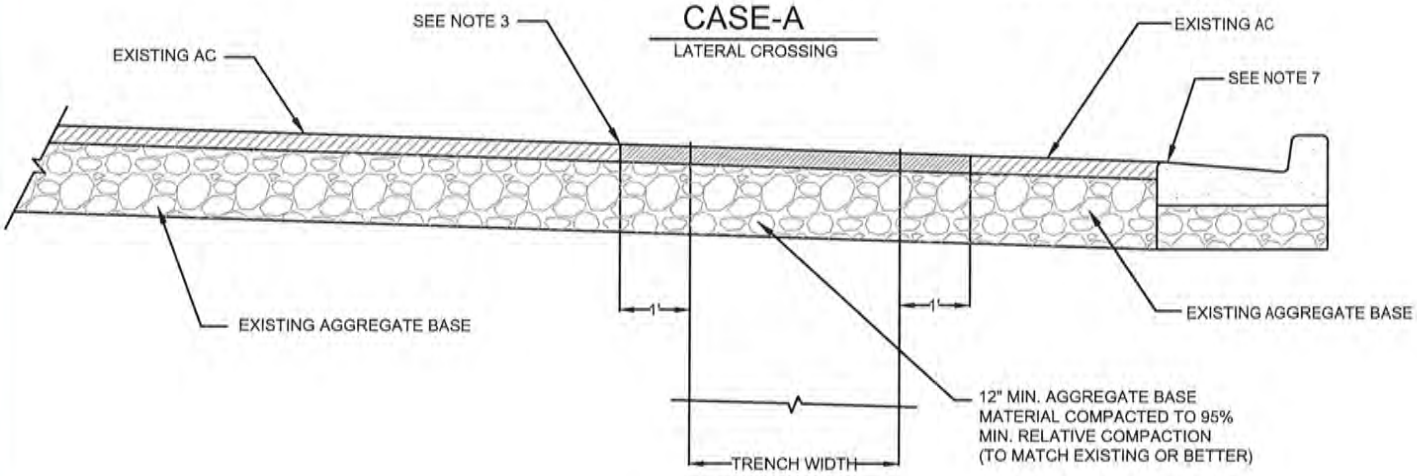
TITLE:

PIPE BEDDING AND TRENCH BACKFILL-NOTES

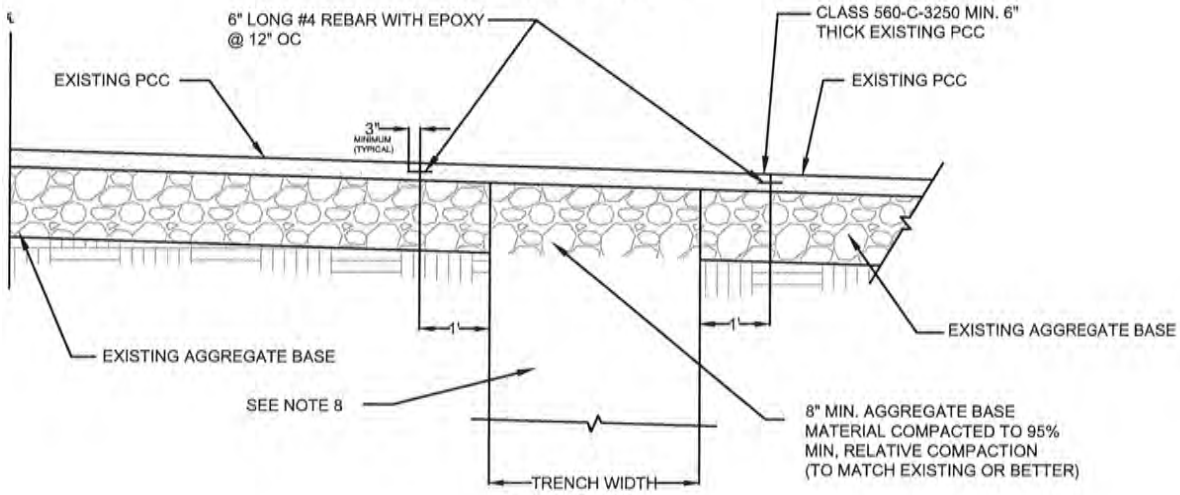
AUTOCAD BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		E-3-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	SHEET 2 OF 2



CASE-A
LATERAL CROSSING



CASE-B
LONGITUDINAL TRENCHES &
TRENCH WIDTH > 4 FEET



CASE-C

EXISTING PORTLAND CEMENT CONCRETE PAVEMENT

TITLE:

TRENCH SURFACE RESTORATION

DRAWN BY: STAFF	SCALE: NONE
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

Danny Hillstock 5-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

STANDARD PLAN

E-4-1

NOTES:

1. EXISTING AC SHALL BE SAW CUT AND REMOVED IN SUCH A MANNER SO NOT TO TEAR, BULGE OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET CENTERLINE WHEN PRACTICAL.

2. AGGREGATE BASE TO BE REPLACED TO THE THICKNESS OF EXISTING BASE OR 8" MINIMUM AND COMPACTED TO MINIMUM 95% RELATIVE COMPACTION. CLASS 100-E-100 PCC MAYBE SUBSTITUTED FOR AGGREGATE BASE UPON APPROVAL OF CITY ENGINEER.

3. A TACK COAT OF ASPHALTIC EMULSION OR PAVING ASPHALT SHALL BE APPLIED TO EXISTING AC AT ALL CONTACT SURFACES, PRIOR TO RESURFACING.

4. ASPHALTIC CONCRETE RESURFACING:

   A) MINIMUM TOTAL THICKNESS SHALL MATCH EXISTING AC
   B) AC SHALL BE HOT PLANT ASPHALT MIX
   C) FINISH COURSE FOR TYPE "B" RESURFACING SHALL BE PLACED USING A PAVING MACHINE BOX WHERE POSSIBLE.

5. AC RESURFACING WITHIN PROJECT LIMIT SHALL BE COATED WITH SLURRY SEAL IF LESS THAN 5 PATCHES ON EXISTING STREET. FIVE OR MORE PATCHES REQUIRES RE-PAVING THE ENTIRE STREET WITHIN THE PROJECT LIMIT.

6. AC SHALL BE HOT PLANT ASPHALT MIX, AC SHALL BE PLACED USING A PAVING MACHINE WHEN TRENCH WIDTH EXCEEDS 10 FEET.

7. NO ASPHALT LESS THAN 2 - FEET IN WIDTH BETWEEN TRENCH EDGE AND LIP OF GUTTER SHALL REMAIN. THIS SHALL BE REMOVED AND RE-PAVED WITH TRENCH PAVING.

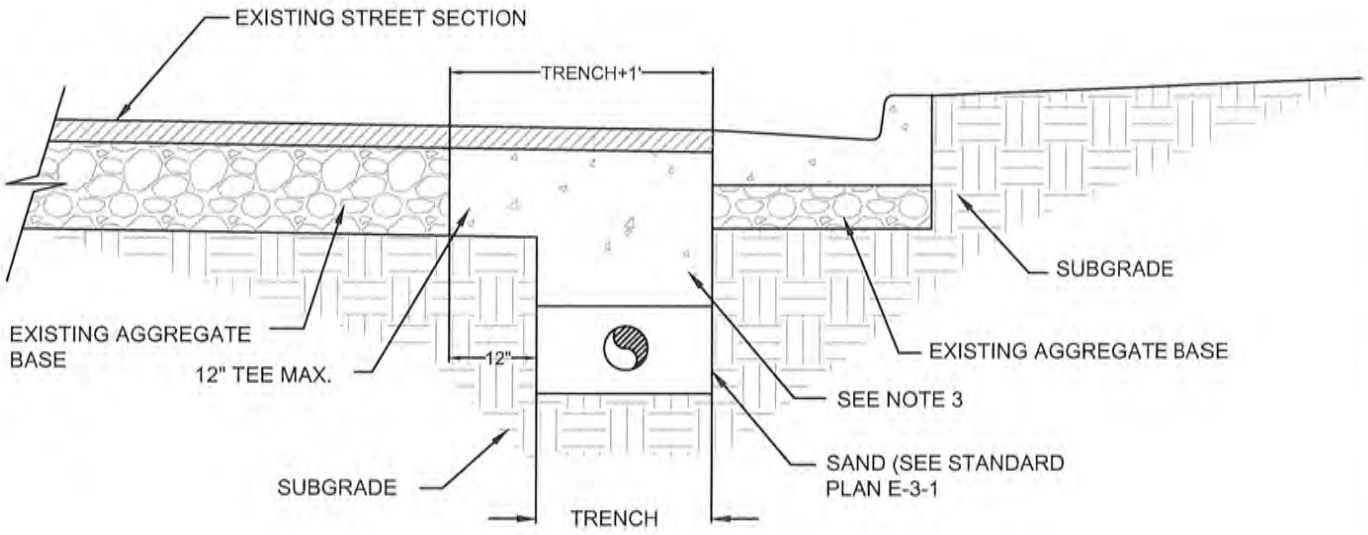
8. NARROW TRENCHES LESS THAN 24" SHALL BE BACKFILLED WITH CEMENT-SAND SLURRY (CLASS 100-E-100 PCC) UNTIL 6" BELOW FINISHED GRADE & CAP WITH PAVEMENT P.C.C.

9. SLURRY BACKFILL CAN BE USED WITH THE APPROVAL OF THE CITY ENGINEER.

TITLE:

TRENCH SURFACE RESTORATION NOTES

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	E-4-2
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 2 OF 2



NOTES:

1. USE FOR NARROW TRENCH RESTORATION EXISTING ROADWAYS.
2. IF TRENCH IS LOCATED MORE THAN A FOOT OFF OF GUTTER LIP ASPHALT CONCRETE RESTORATION SHALL BE FOR A MINIMUM OF 12" PAST THE TRENCH LIMITS ON EACH SIDE.
3. CONCRETE SLURRY BACKFILL SHALL BE CLASS 100-E-100 P.C.C.

TITLE:

NARROW TRENCH BACKFILL AND RESTORATION

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

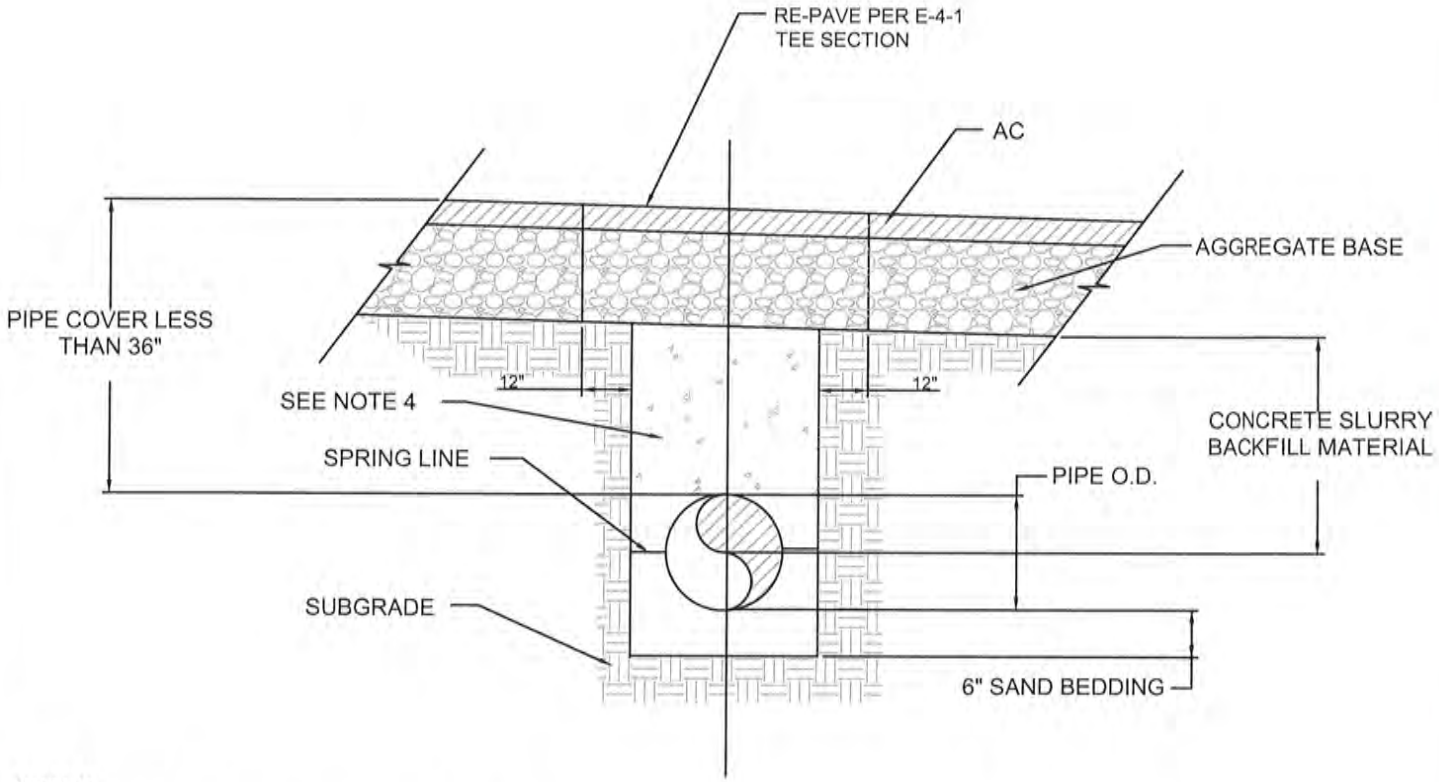
Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

STANDARD PLAN

E-5

SHEET 1 OF 1



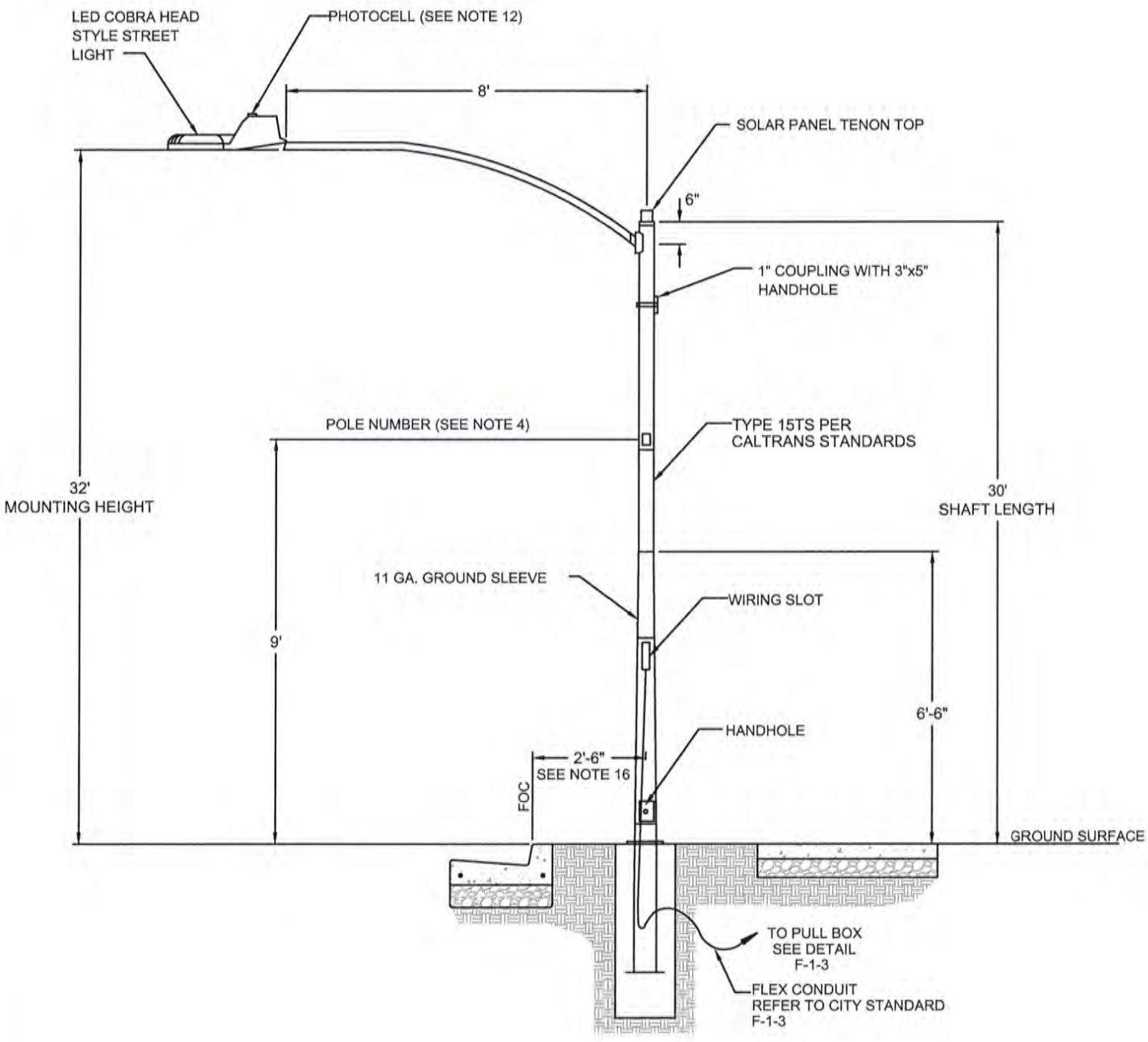
NOTES:

1. USE R.C.P. CLASS V FOR STORM DRAIN PIPE.
2. USE P.V.C. PIPE C-900 CLASS 200 FOR WATER PIPE.
3. USE P.V.C. PIPE SDR 23.5 FOR SEWER PIPE.
4. CONCRETE SLURRY BACKFILL IS CLASS 100-E-100 PCC AND CURED AT LEAST 24 HOURS PRIOR TO PAVING.

TITLE:

PIPE PROTECTION FOR SHALLOW PIPES FOR STORM, SEWER & WATER

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	E-6
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1



TITLE:

STREET LIGHTING POLE

DRAWN BY: STAFF	SCALE: NONE
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

STANDARD PLAN

F-1-1

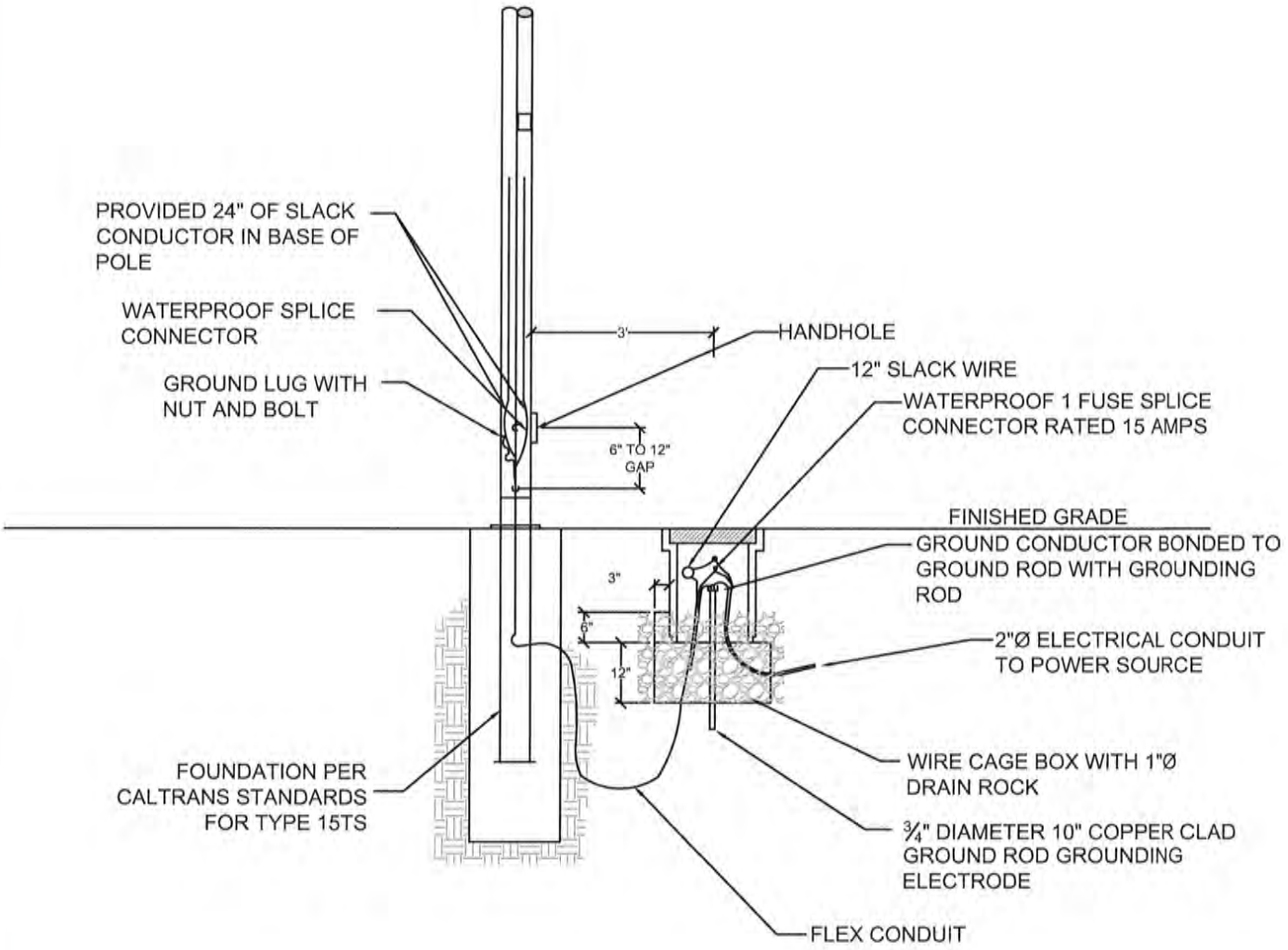
NOTES:

1. THE CONTRACTOR SHALL PROVIDE 2"Ø CONDUIT & WIRING FROM P.G.&E. POWER SOURCE OR METER BOX TO EACH ELECTROLIER
2. THE MINIMUM CLEARANCE BETWEEN STREET LIGHTS AND WATER SERVICES OR SANITARY SEWER SERVICES SHALL BE 5 FEET. SEE B-1-2 AND H-1-3 FOR MINIMUM CLEARANCES TO FIRE HYDRANT, DRIVEWAYS AND STREET TREES.
3. THE CONTRACTOR SHALL INSTALL INTERNAL WIRING FROM THE HANDHOLE TO THE POLE ARM USING (2) TWO 10 GA. SOLID COPPER CONDUCTORS WITH THHN/THW 600V RATED INSULATION. PROVIDE A 12 INCH LOOP AT EACH THE HANDHOLE AND THE POLE ARM.
4. THE CONTRACTOR SHALL AFFIX THE STREET LIGHT POLE NUMBERS (2-¼"x3-¼"). THE NUMBERS SHALL BE SCOTCHLITE REFLECTIVE NUMERALS AND SHALL FACE THE STREET.
5. STREET LIGHT STANDARD AND FOUNDATION SHALL BE TYPE 15TS, PER CALTRANS STANDARD PLAN ES-7A, ILLUMINATION SHALL BE VERIFIED BY PHOTOMETRIC CALCULATIONS.
6. INSTALL PULL BOX WITH FUSE AT EACH ELECTROLIER, SEE STANDARD PLAN F-1-3.
7. THE DEVELOPER WILL INSTALL THE LUMINAIRES AND PHOTOCELLS AS PER PACIFIC GAS ELECTRIC COMPANY SPECIFICATIONS.
8. THE DEVELOPER SHALL BEAR ALL COSTS IN INSTALLING WIRING AND CONDUIT AS REQUIRED BY THE PACIFIC GAS AND ELECTRIC COMPANY IN ACCORDANCE WITH THE LS-2 RATE SCHEDULE.
9. THE DEVELOPER WILL REIMBURSE THE PACIFIC GAS AND ELECTRIC COMPANY FOR "CONNECTING" THE STREET LIGHTS IN ACCORDANCE WITH THE LS-2 RATE SCHEDULE.
10. THE PACIFIC GAS AND ELECTRIC COMPANY WILL ENERGIZE THE STREET LIGHTS UPON NOTIFICATION FROM THE CITY OF HOLLISTER ENGINEERING DEPARTMENT.
11. ALL LUMINAIRES AND ACTIVE REACTORS ARE TO BE 120 VOLTS UNLESS OTHERWISE SPECIFIED.
12. ALL PHOTO ELECTRIC CELLS SHALL BE THE TWIST LOCK TYPE (35-0869).
13. BURN TEST; DRY BURN FOR 24 HOURS FOR 5 CONSECUTIVE DAYS PRIOR TO PUBLIC WORKS APPROVAL.
14. LEOTEK LED GREEN COBRA HEAD STREET LIGHT STYLE OR AN APPROVED EQUAL PER DESIGN LIGHTING CONSORTIUM.
15. THE CITY RATE SCHEDULE WITH PG&E IS LS-2A.
16 STREET LIGHT SHALL BE PLACED 2 FEET BEHIND WALK IF MONOLITHIC SIDEWALK IS PRESENT, AS MEASURED TO CENTERLINE.

TITLE:

STREET LIGHTING NOTES

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		
REVIEWED BY:	REVISED:		F-1-2
DANNY HILLSTOCK	OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		Danny Hillstock 11-5-19 CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 2 OF 3



NOTES:

1. PULL BOX MODEL IS CHRISTY N16 ELECTRICAL BOX WITH N16J LID WITH THE WORDS "STREET LIGHT".

TITLE:

STREET LIGHTING POWER CONNCTION

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE	Danny Hillstock 11-5-19	F-1-3
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 3 OF 3
CITY OF HOLLISTER ENGINEERING DEPARTMENT			

LEGEND & SYMBOLS

ANGLE VALVE

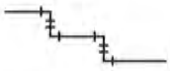
GATE VALVE

QUICK COUPLER VALVE

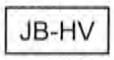
REMOTE CONTROL VALVE

POWER SOURCE

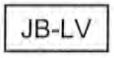
HOSE BIBBS



SWING JOINT ASSEMBLY



JUNCTION BOX - HIGH VOLTAGE



JUNCTION BOX - LOW VOLTAGE

BACKFLOW PREVENTER ASSEMBLY

PRESSURE REGULATOR ASSEMBLY

IRRIGATION SPRINKLER CONTROLLER

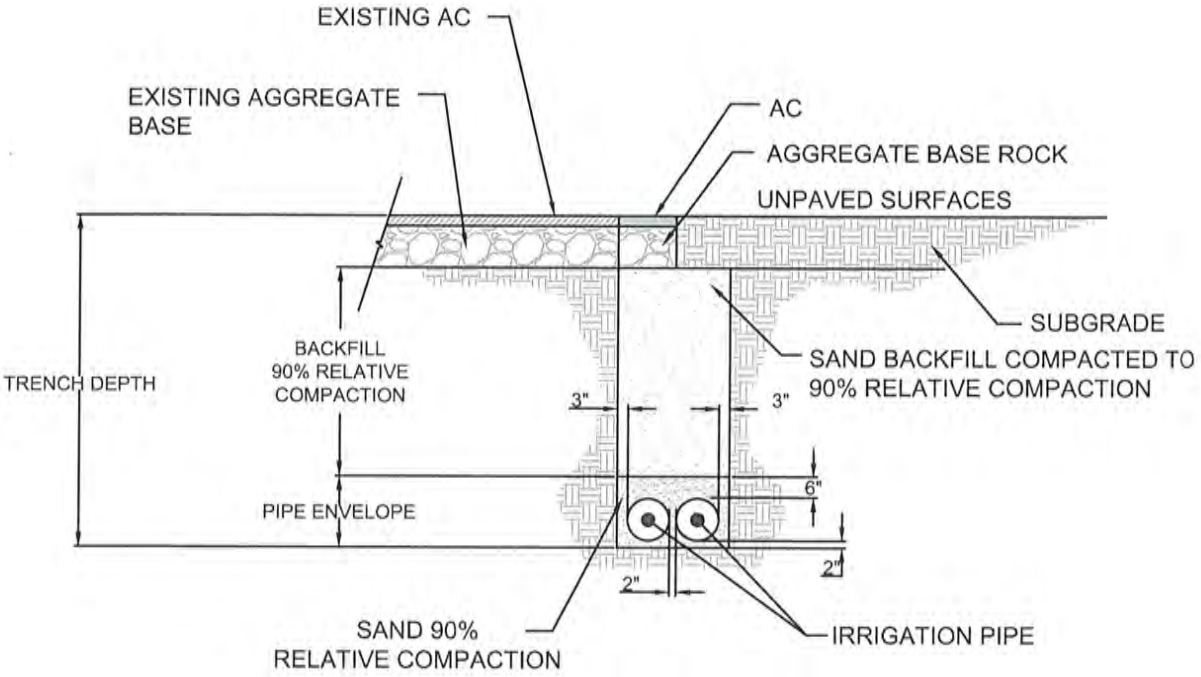
NOTE:

1. DESIGNER TO SHOW ALL SYMBOLS USED FOR IRRIGATION ON FIRST SHEET OF IRRIGATION PLANS.
2. DESIGNER SHALL PROVIDE CONNECTOR SCHEDULE WHEN IRRIGATION VALVES WIRING IS IN CONDUIT.

TITLE:

IRRIGATION LEGEND AND SYMBOLS

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	G-0
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1



SECTION

SCALE: NONE

IRRIGATION TRENCH DEPTH		
NORMINAL PIPE SIZE	ROADWAY	NON ROADWAY
MAIN LINE	36"	24"
LATERALS	24"	12"
ELECTRICAL CONDUIT/ DIRECT BURIED WIRING	36"	24"

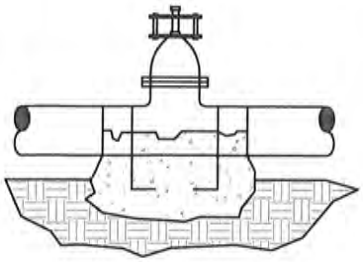
NOTES:

1. SAND BEDDING & BACKFILL MINIMUM SAND EQUIVALENT OF 30.

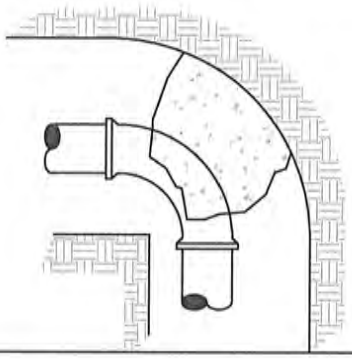
TITLE:

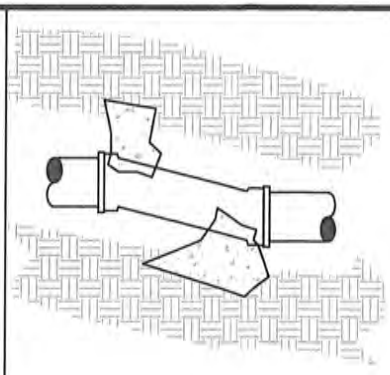
IRRIGATION PIPE BEDDING AND TRENCH / BACKFILL

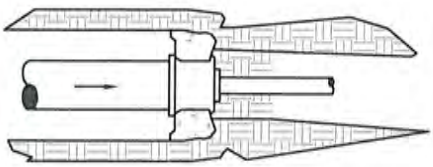
DRAWN BY: STAFF	SCALE:	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019		G-1
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE: 11-5-19	SHEET 1 OF 1

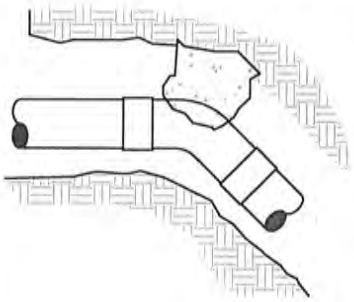


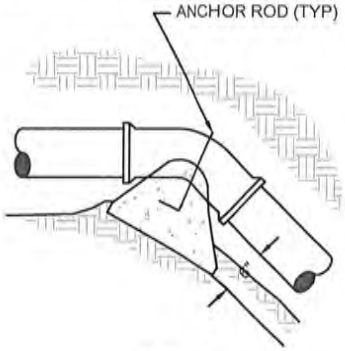
1 CUBIC FOOT OF CONCRETE



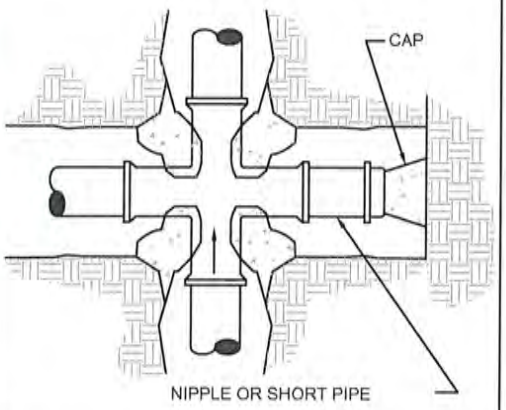


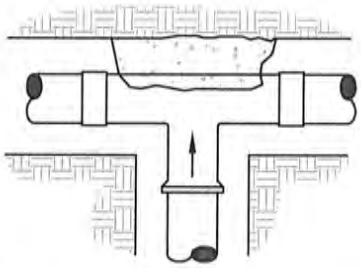


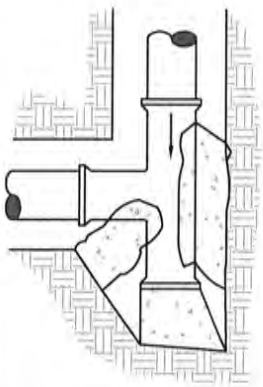




1 CUBIC FOOT OF CONCRETE







NOTES:

1. ALL THRUST BLOCKS TO BE INSTALLED ACCORDING TO THESE DETAILS UNLESS OTHERWISE NOTED OR DETAILED.
2. THE PORTLAND CEMENT CONCRETE USED FOR THRUST BLOCKS SHALL BE 450-C-2000 PCC.
3. ALL ANCHOR RODS SHALL BE GALVANIZED STEEL, MINIMUM ½" DIAMETER, WRAPPED AROUND PIPE.
4. FLOW DIRECTION INDICATED BY ——→
5. ALL VIEWS ARE PLAN VIEW UNLESS OTHERWISE SHOWN.
6. WRAP ALL PVC TEES AND ELBOWS WITH 10 MIL PVC TAPE PRIOR TO PLACEMENT OF CONCRETE THRUST BLOCK.
7. MIN. 1-SQUARE FOOT BEARING AREA FOR ALL THRUST BLOCKS.

TITLE:

IRRIGATION - 3"Ø PVC PIPE THRUST BLOCK SCHEDULE

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

Danny J. Hillstock 11-5-19

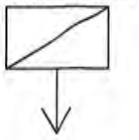
CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

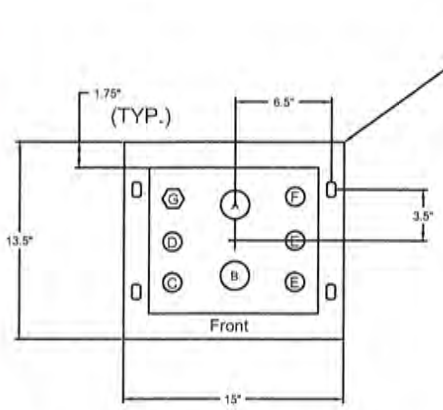
STANDARD PLAN

G-2

SHEET 1 OF 1

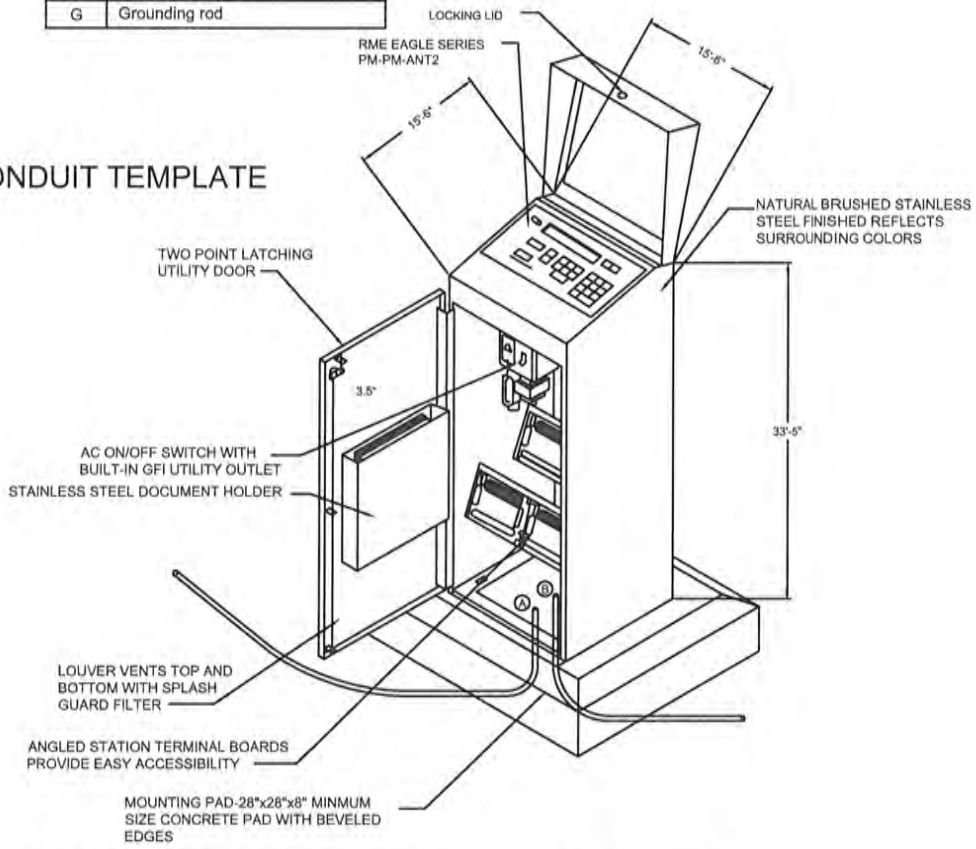
SYMBOL ON PLAN





Item	Description
A,B	2" conduit-station wiring
C	1" conduit-communication
D	AC power conduit
E	1" conduit-sensor wiring
F	External antenna
G	Grounding rod

MOUNTING BOLT AND CONDUIT TEMPLATE



NOTES:

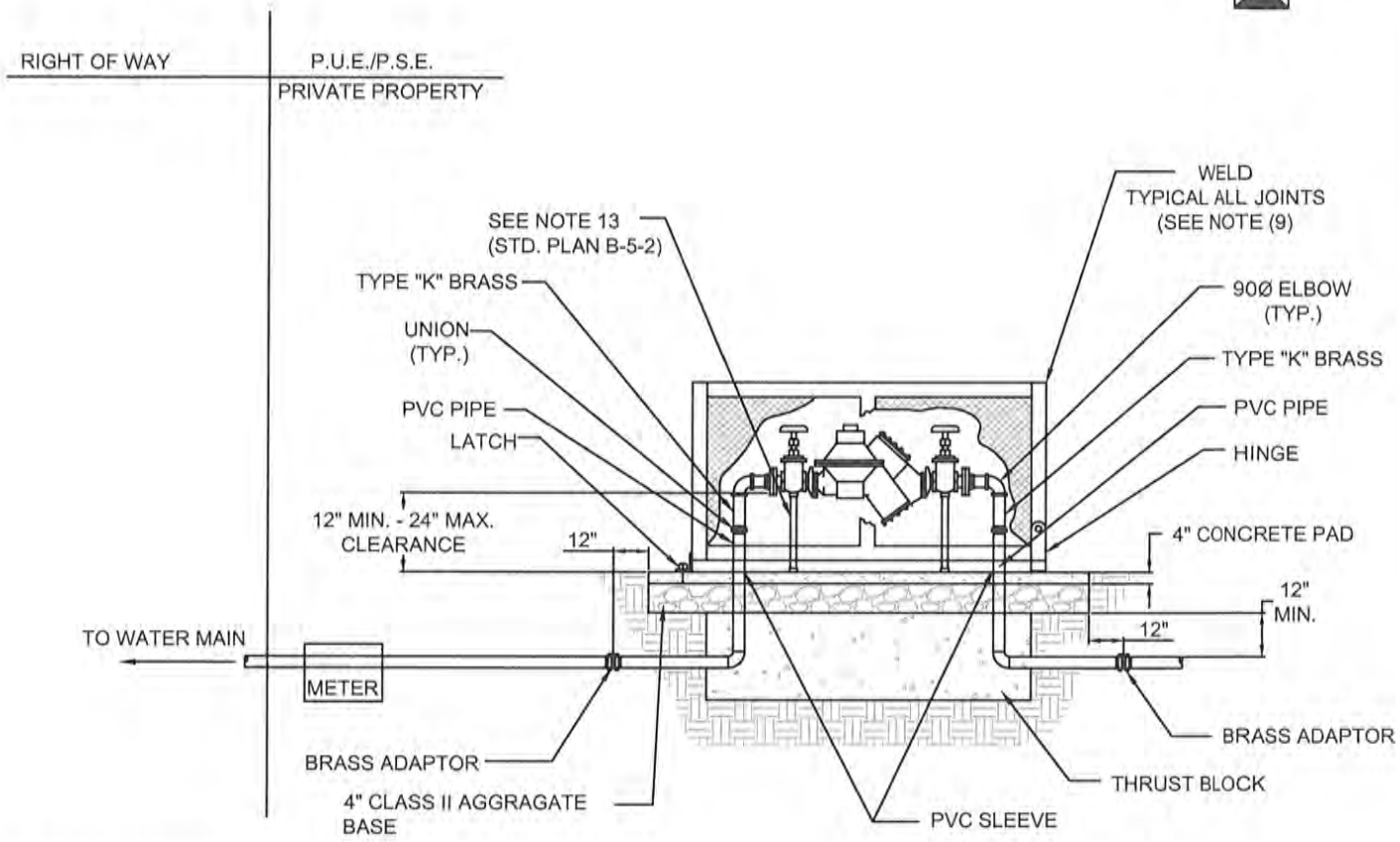
1. IRRIGATION CONTROLLER SHALL BE "TORO IRRIGATION CONTROLLER 96-STATION SENTINEL SATELLITE" IN A "FLIP TOP", NATURAL BRUSHED STAINLESS STEEL ENCLOSURE.
2. CONTROLLER SHALL HAVE WEATHER SATIATION AND SOFTWARE DAVIS INSTRUMENTS VANTAGE PRO2 PLUS, MODEL 6162. WEATHER STATION SHALL TRANSMIT DATA VIA INTEGRAL SOLAR POWERED RADIO TRANSMITTER TO THE WEATHER STATION CONSOLE INCLUDED WITH MODEL 6162. WEATHER STATION CONSOLE DATA LOGGER WITH SERIAL CONNECTION SHALL BE PART NO. 6510SER. SERIAL CABLE SHALL CONNECT TO CONSOLE AND RAVEN WIRELESS DATA MODEM. RAVEN WIRELESS DATA MODEM SHALL BE PART NO. ESB-WDM IRRIGATION CENTRAL CONTROL COMPUTER AND SOFTWARE SHALL BE TORO SENTINEL CENTRAL CONTROL, PART NO. SGIS-0-1, TO BE INSTALLED BY REPRESENTATIVE.
3. AREA AROUND BASE MAY BE PLANTED, HARD SURFACE OR COMBINATION
4. TOP OF CONCRETE FOUNDATION
   ½" ABOVE GRADE FOR LAWN
   1" ABOVE GRADE FOR GROUND COVER OR SHRUBS.
5. CONCRETE MOUNTING PAD SHALL BE 450-C-2000 PCC.

TITLE:

IRRIGATION ELECTRICAL CONTROLLER

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		
REVIEWED BY:	REVISED:		G-3
DANNY HILLSTOCK	OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK, LIC. NO. 70647 — DATE: 11-5-19	SHEET 1 OF 1

SYMBOL ON PLAN



P.U.E: PUBLIC UTILITY EASEMENT
P.S.E: PUBLIC SERVICES EASEMENT

NOTES:

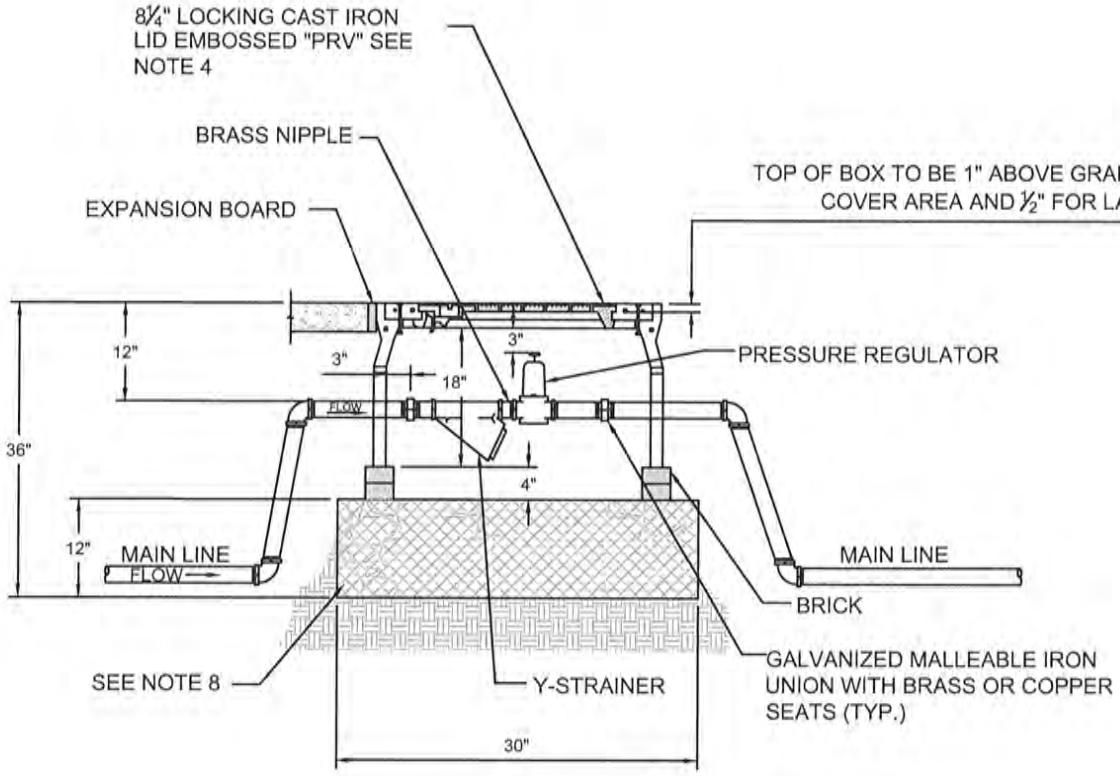
1. ALL PIPE FITTINGS SHALL BE SCHEDULE 40, GALVANIZED STEEL UNLESS OTHERWISE SPECIFIED.
2. CONCRETE SHALL BE 450-C-2000 PCC.
3. THE BACK FLOW PREVENTER DEVICES AND INSTALLATIONS SHALL BE APPROVED BY THE LOCAL DEPARTMENT OF HEALTH SERVICES AND WATER AGENCY. (FFBCO 825Y REDUCED PRESSURE PRINCIPLE-TYPE BACKFLOW ASSEMBLY) PROVIDE INSULATION JACKET TO THE BACKFLOW DEVICE.
4. VALVE ASSEMBLIES MAY HAVE THREADED FITTINGS OR FLANGED FITTINGS.
5. COAT ALL EXPOSED THREADS WITH AN APPROVED RUST INHIBITING SEALANT.
6. APPROVED PLASTIC TAPE ½" WIDE SHALL BE USED ON ALL THREADED CONNECTIONS.
7. DISSIMILAR METALS SHALL BE SEPARATED BY AN APPROVED DIELECTRIC COUPLING.
8. PLASTIC PIPE SHALL NOT BE USED ABOVE FINISHED GRADE.
9. BACKFLOW ENCLOSURE COLD ROLLED STEEL BC-75CR 75" LENGTH X 42" HEIGHT X 30" WIDTH WITH GREEN PLASTICOTE POWDER COAT FINISH (SEE WWW.VITPRODUCTS.COM)

TITLE:

IRRIGATION BACKFLOW PREVENTER ASSEMBLY (REDUCED PRESSURE TYPE)

AUTOCAD BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE		
REVIEWED BY:	REVISED:		G-4
DANNY HILLSTOCK	OCTOBER, 2019		
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	SHEET 1 OF 1

SYMBOL ON PLAN



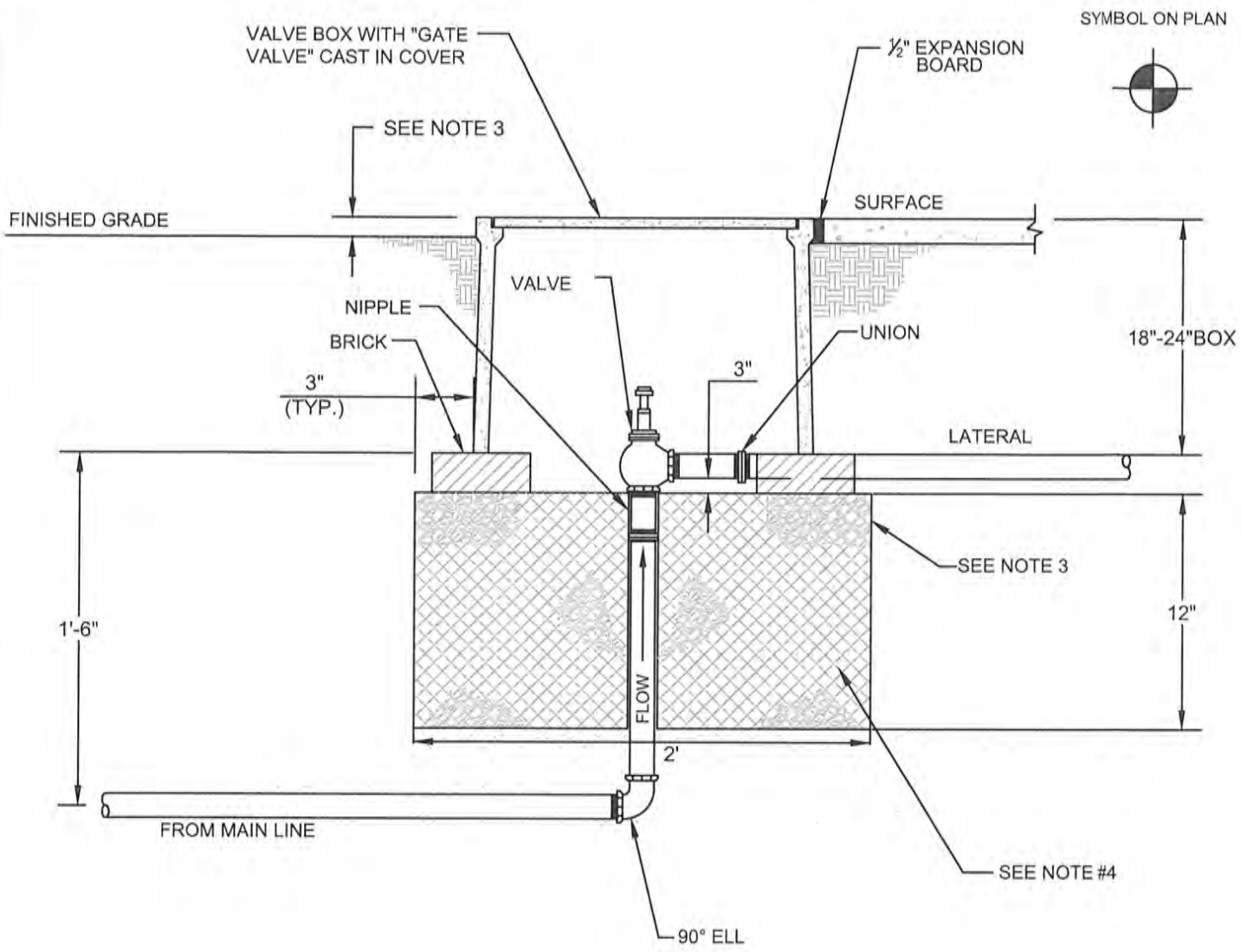
NOTES:

1. PRESSURE REGULATOR AND Y-STRAINER SHALL BE OF BRONZE AND/OR BRASS CONSTRUCTION.
2. PRESSURE SETTING SHALL BE AS SPECIFIED.
3. Y-STRAINER SHALL BE FITTED WITH A 30 MESH SCREEN OF STAINLESS STEEL, UNLESS OTHERWISE SPECIFIED AND SHALL BE FITTED WITH A BLOW-OFF COCK.
4. VALVE BOX C5 1324B SUPER JUMBO (GREEN COLOR) SHALL BE OF SUFFICIENT SIZE TO ACCOMMODATE ENTIRE Y-STRAINER AND PRESSURE REGULATOR ASSEMBLY.
5. Y-STRAINER AND PRESSURE REGULATOR SHALL BE INSTALLED APPROXIMATELY HORIZONTAL SO THAT Y-STRAINER BLOW-OFF VALVE, ADJUSTMENT NUT, AND MAIN CAP ON PRESSURE REGULATOR ARE ACCESSIBLE.
6. ALL FITTINGS, EXCEPT AS NOTED, SHALL BE THREADED, SCHEDULE 80 PVC.
7. AREA AROUND BOX CAN EITHER BE PLANTED, HARD-SURFACE OR COMBINATION.
8. ¼" x ¼" x 10 GA. WIRE MESH, WITH 1"Ø DRAIN ROCK.

TITLE:

IRRIGATION PRESSURE REGULATOR ASSEMBLY

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	G-5
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1



NOTES:

1. VALVE BOX SUPER JUMBO (GREEN COLOR)
2. AREA AROUND BOX MAY EITHER BE PLANTED, HARD SURFACE OR A COMBINATION.
3. TOP OF BOX:

   ½" ABOVE GRADE FOR LAWN

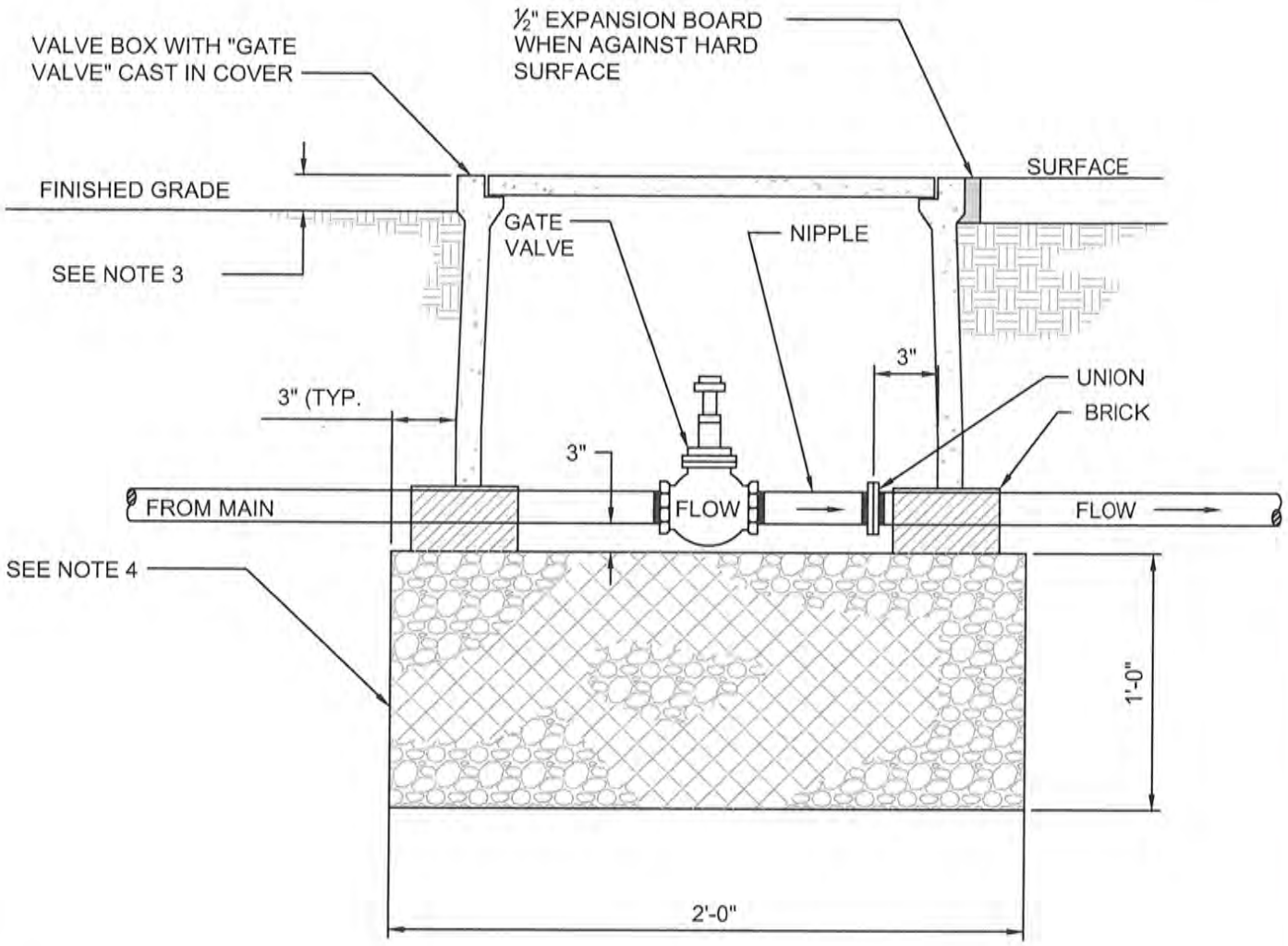
   1" ABOVE GRADE FOR GROUND COVER OR SHRUBS.
4. CAGE WIRE MESH IS ¼"x ¼" x 10 GA. WITH 1"Ø DRAIN ROCK

TITLE:

IRRIGATION ANGLE VALVE

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	G-6
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 1 OF 1

SYMBOL ON PLAN



NOTES:

1. VALVE BOX IS CARSON BROOKS SUPER JUMBO (GREEN COLOR).
2. AREA AROUND BOX MAY EITHER BE PLANTED, HARD SURFACE OR A COMBINATION.
3. TOP OF BOX:

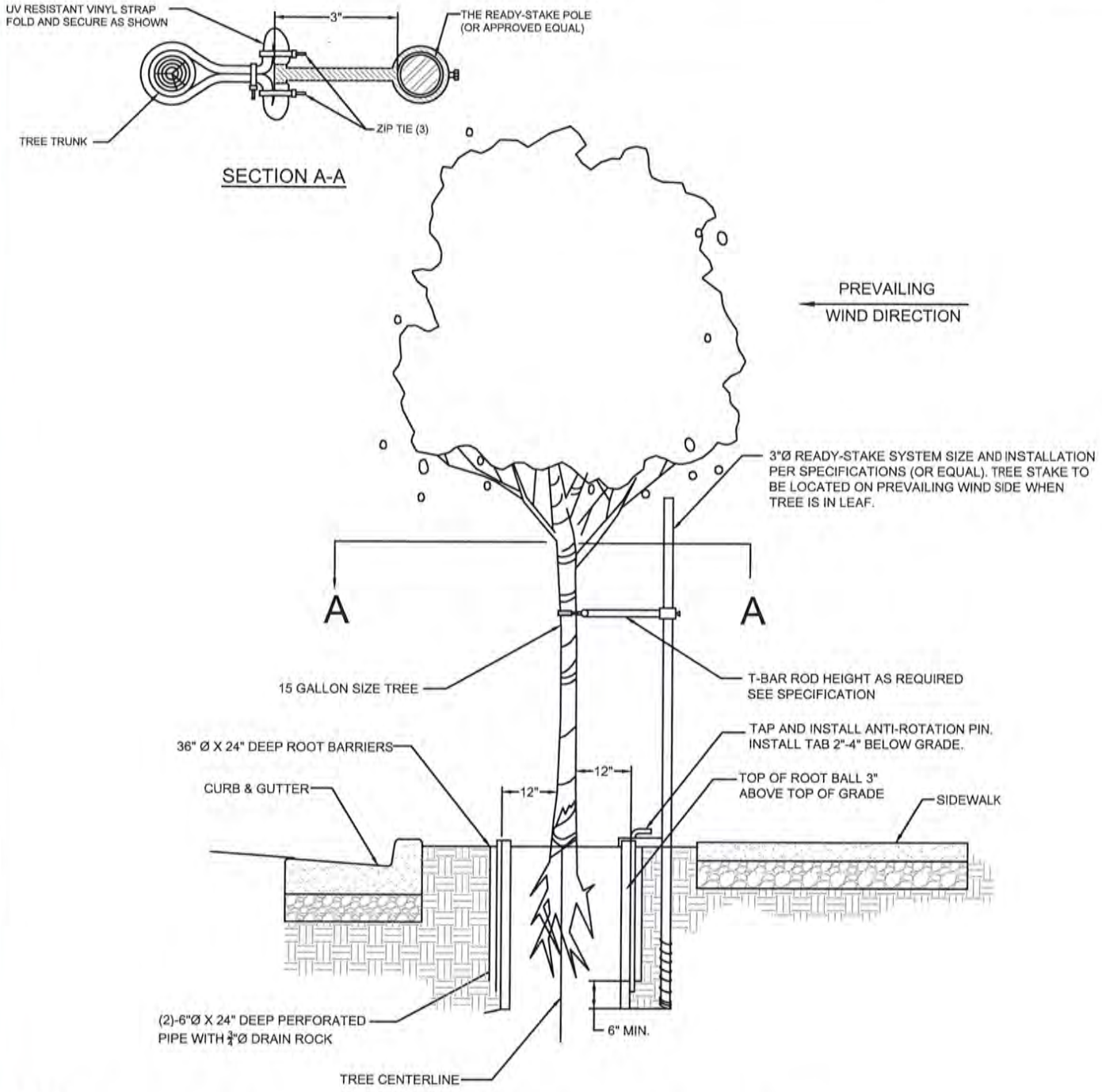
   ½" ABOVE GRADE FOR LAWN

   1" ABOVE GRADE FOR GROUND COVER OR SHRUBS.
4. CAGE WIRE MESH IS ¼"x¼"x10 GA. WITH 1"Ø DRAIN ROCK.

TITLE:

IRRIGATION GATE VALVE

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	Danny Hillstock 11-5-19	G-7
CITY OF HOLLISTER ENGINEERING DEPARTMENT		CITY ENGINEER, DANNY HILLSTOCK, LIC. NO. 70647 — DATE	SHEET 1 OF 1



NOTES:

1. STAKE SHALL BE "READY-STAKE" SIZE B ¾"x9' FOR 15 GAL. ROOTBALL OR UNDER WOODEN STAKE 3" DIA. X 8' FOR OVER 15 GAL ROOTBALL.
2. HEIGHT OF STAKE SHALL BE 10'. HOWEVER, SHALL NOT BE HIGHER THAN THE TOP OF TREE.
3 TREE SUPPORTS PER SUBSECTION 308-4.6.1 OR THE GREENBOOK.

TITLE:

TREE STAKING - SINGLE STAKING

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

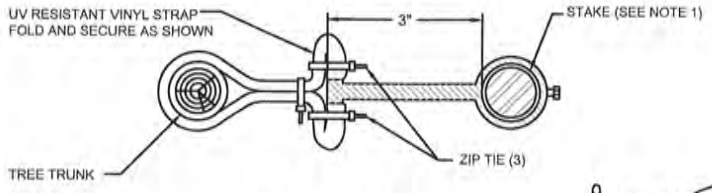
Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK R.C.E. NO. 70647 — DATE

STANDARD PLAN

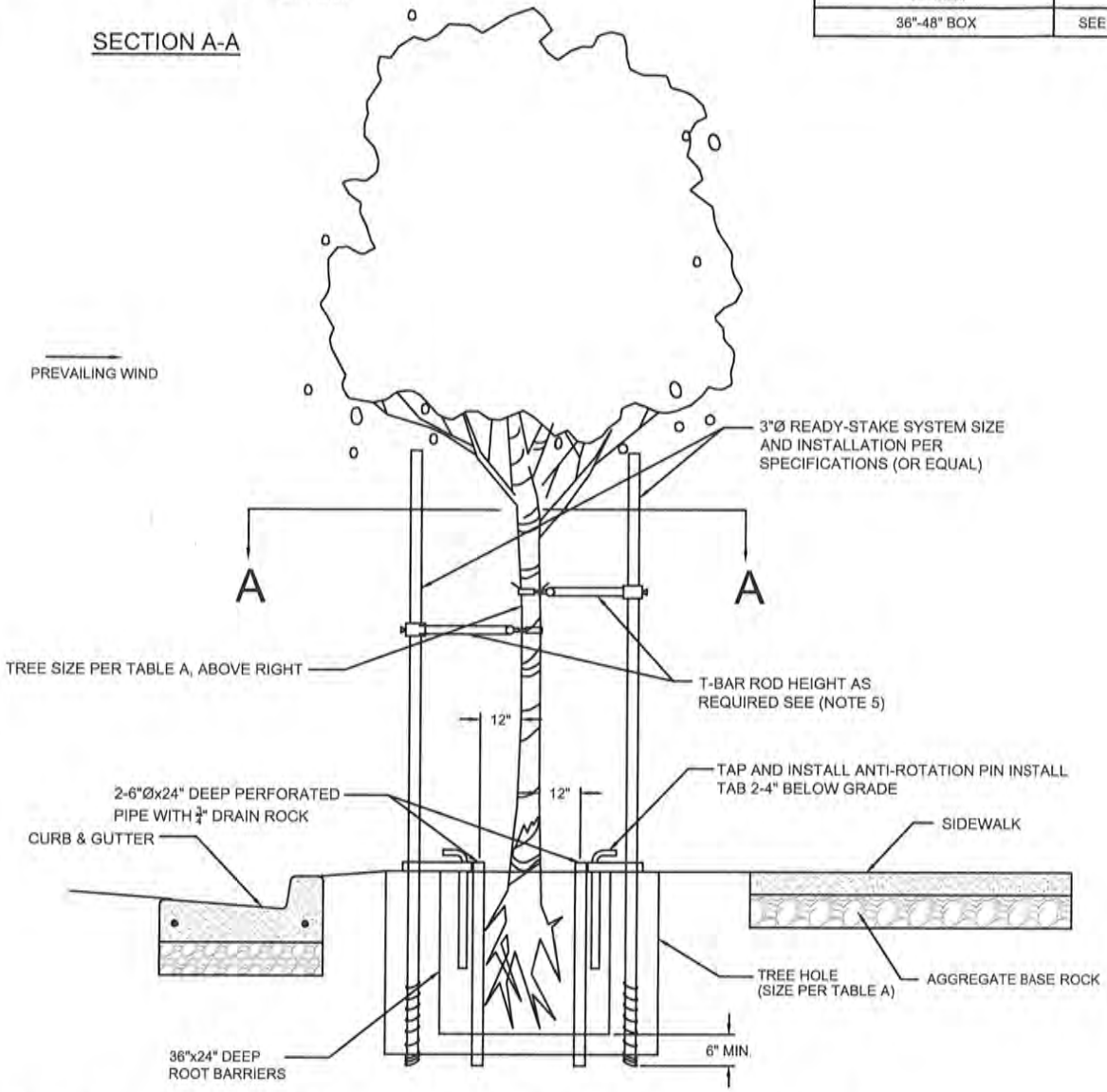
H-1-1

SHEET 1 OF 3



SECTION A-A

TABLE A. TREE PLANTING DATA	
TREE SIZE	STAKE LENGTH
15 GAL.	10"
24" BOX	12'
30" BOX	12'
36"-48" BOX	SEE NOTE 4



NOTES:

1. STAKE SHALL BE EITHER 3" DIAMETER LODGE POLE PINE, TREATED WITH COPPER NAPHTHENATE OR PRESSURE TREATED WITH CHROMATED COPPER ARSENATE, OR GALVANIZED STEEL PIPE PER SUBSECTION 308-4.6.1 (METHOD A) OF THE GREENBOOK.
2. PLACE STAKES 18" APART FOR 15 GAL. TREE, PLACE STAKE AT OUTER EDGE ROOT BALL FOR LARGER SIZE BOX TREE.
3. HEIGHT OF STAKES SHALL NOT BE HIGHER THAN THE TOP OF THE TREE.
4. FOR 36" OR LARGER BOX TREES, STAKE OR GUY AT THE DIRECTION OF CITY ENGINEER.
5. TREE SUPPORTS PER SUBSECTION 308-4.6.1 OR THE GREENBOOK.
6. READY STAKE SIZE B, ¾" DIA. X 9' SHALL BE USED FOR 15 GAL. ROOT BALL OR LESS. USE WOODEN STAKE FOR ROOT BALL LARGER THAN 15 GAL. USE WOODEN STAKE 3" DIA. X 8' OR AS STATED IN NOTE NO. 1.

TITLE:

LANDSCAPING TREE STAKING DOUBLE STAKING

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK, RCE NO. 70647 — DATE

STANDARD PLAN

H-1-2

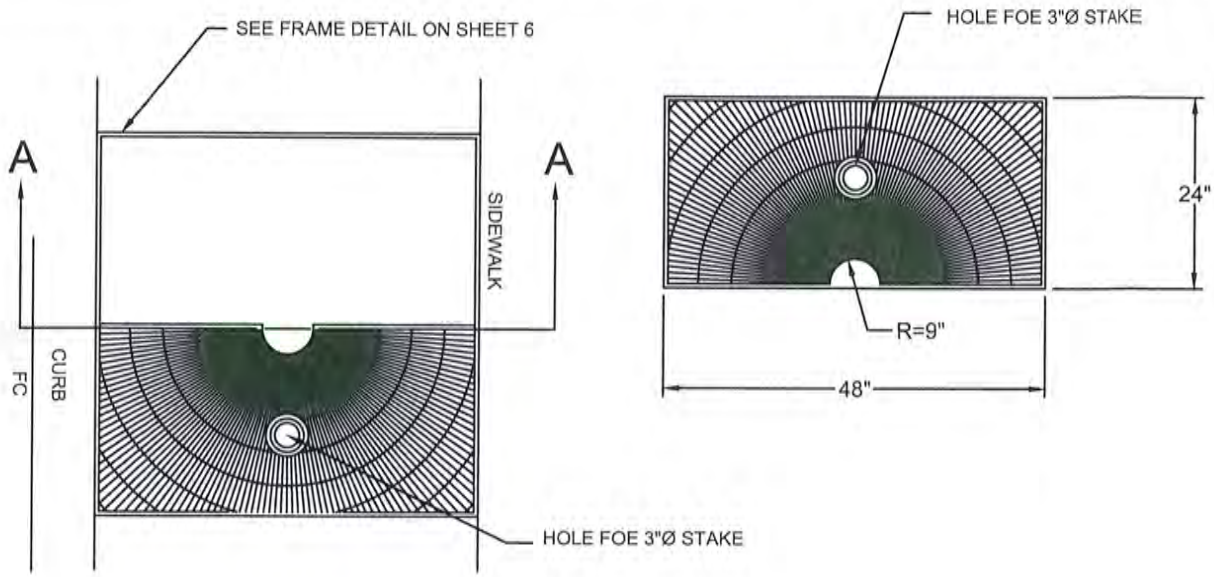
NOTES:

1. ROOT BARRIERS SHALL BE FABRICATED FROM A HIGH IMPACT PLASTIC SUCH AS POLYVINYL CHLORIDE, ABS OR POLYETHYLENE AND HAVE A MINIMUM THICKNESS OF 0.06". THE PLASTIC SHALL HAVE ½" TO ¾" HIGH RAISED VERTICAL RIBS THE INNER SURFACE SPACED AT LEAST 6" BUT NOT MORE THAN 8" APART.
2. PLANTING SHALL CONFORM TO SUBSECTION 308-4 OF THE GREEN BOOK. EXCEPT THAT PREPARED SOIL MIX SHALL BE BE COMPACTED, AND 1-½" OR NO. 2 GRAVEL PLACED TO BOTTOM OF ROOT BALL AND LEVELED PRIOR TO PLANTING TREE.
3. PREPARED SOIL MIX: (LOCALLY APPROVED OR EQUAL)
   A. INITIAL PLANTING (NEW OR REPLACEMENT)
      (1.) CLASS A TOPSOIL _____ 50%
      NITRO HUMUS, TOPPER, OR EQUAL _____ 20%
      PINE BARK (2% NITROGEN FORTIFIED) _____ 30%
      UP TO 50% - 0 mm (0") TO ⅛" AND UP 50%-¼"
      (2.) DRY TYPE WETTING AGENT _____ 2 LB./CY
      (3.) UREA FORMALDEHYDE _____ 2 LB./CY
      (4.) MIN. 21-GRAM 21-10-5 FERTILIZER TABLETS OR 12-8-8 CONTROLLED RELEASE TABLETS IN QUANTITIES RECOMMENDED BY MANUFACTURE, PLACED IN THE TOP ⅓ OF THE SOIL MIX AROUND THE ROOT BALL.
      (5.) FERRIC CHELATE _____ 1 LB./CY
      (6.) SYNTHETIC POLYACRYLAMIDE, A GRANULAR POLYMER ABSORBENT: TO BE PRE-SOAKED (HYDRATED) AND INCORPORATED INTO THE SOIL MIX DIRECTLY BENEATH THE ROOT BALL IN QUANTITIES RECOMMENDED BY THE MANUFACTURER.
   B. REPLANTING ONLY
      (1.) PREVIOUSLY AMENDED SOIL _____ 90%
      (2.) NITRO HUMUS, TOPPER OR EQUAL _____ 10%
      (3.) DRY TYPE WETTING AGENT _____ 2 LB./CY
4. PARKWAY TREE PLANTING
   A. CENTER TREE BETWEEN SIDEWALK AND CURB
   B. WHERE THERE IS NO SIDEWALK, PLANT TREE 2'-6" BEHIND CURB
   C. WHERE PUBLIC RIGHT OF WAY IS AVAILABLE AND SIDEWALK IS ADJACENT TO CURB, PLANT TREE 3' BEHIND BACK OF SIDEWALK.
   D. PLANTING OF TREE SUBJECT TO THE FOLLOWING MINIMUM CLEARANCES:
      a. 50' FROM BCR ON THE APPROACH TO AN INTERSECTION AND 15' FROM THE ECR ON THE EXIT SIDE.
      b. 20' FROM LIGHT STANDARDS.
      c. 10' FROM FIRE HYDRANTS AND DRIVEWAYS.
      d. 5' FROM HOUSE WALKS AND UTILITY METERS.
      e. 5' FROM SEWER LATERIAL
   E. LOCATION OF TREE SUBJECT TO CHANGE AT THE DIRECTION OF THE CITY ENGINEER.
5. COMPACT SOILS AROUND THE TREE WELL.
6. AFTER ALL OTHER WORK PERTINENT TO PLANTING HAS BEEN COMPLETED, EACH TREE SHALL BE WATERED IMMEDIATELY WITH A MINIMUM OF 20 GALLONS OF WATER. WATERING WILL BE REPEATED 2 TIMES OVER THE COURSE OF THE NEXT 3 DAYS. AFTER THE WATER HAS SETTLED AND THE SOIL IS SUFFICIENTLY DRY, THE SOIL SHALL BE GRADED AND TAMPED AND 3" TYPE II AGGREGATE SHALL BE PLACED AND GRADED.
7. MAINTAIN ALL TREES ONE YEAR FROM DATE OF PROJECT ACCEPTANCE. ANY DEAD OR DISEASED TREES SHALL BE REPLACED PRIOR TO WARRANTY ACCEPTANCE.

TITLE:

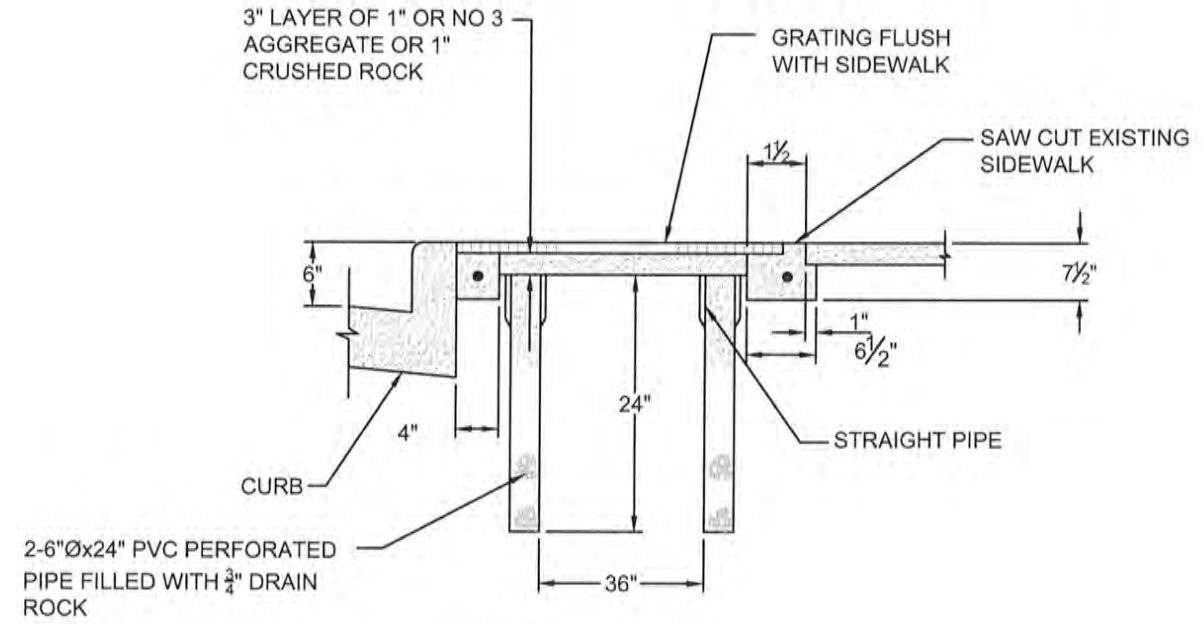
LANDSCAPING TREE PLANTING NOTES

DRAWN BY: STAFF	SCALE: NONE	APPROVED:	STANDARD PLAN
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE 11-5-19	H-1-3
CITY OF HOLLISTER ENGINEERING DEPARTMENT			SHEET 3 OF 3



GRATE PLAN

SCALE: NONE



SECTION A-A

SCALE: NONE

NOTES:

1. GRATE MATERIAL TO BE CAST IRON, NEENAH FOUNDRY CO. R-8706-1A 1800 SQUARE.
2. GRADE PATTERN AS SPECIFIED ON PROJECT PLANS AND OR IN SPECIFICATIONS.
3. EXISTING SIDEWALK SHALL BE CAREFULLY SAWCUT PREPARATORY TO LAYING OF FRAME. SAWCUT OVER-RUNS SHALL BE CLEANED AND FILLED WITH EPOXY APPROVED BY THE CITY ENGINEER AND FINISHED TO SIDEWALK GRADE.

TITLE:

LANDSCAPING TREE WELL - CAST IRON

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

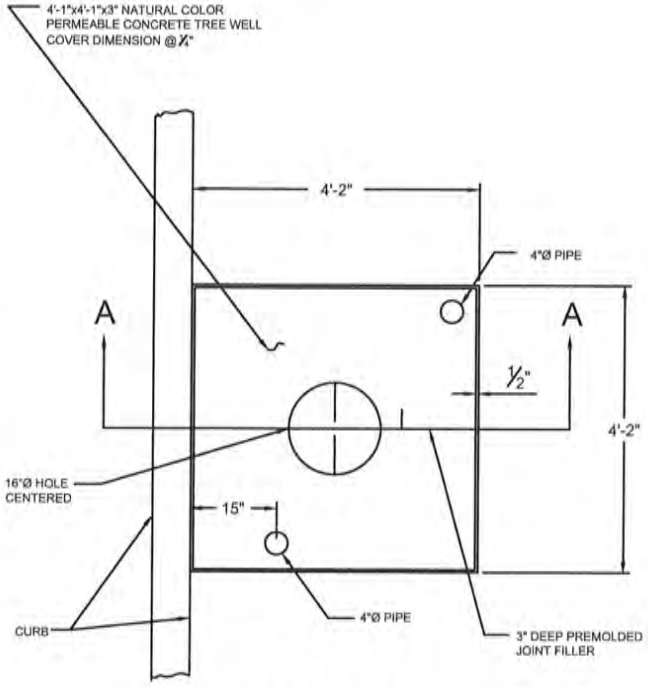
Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK, LIC. NO. 70647 — DATE

STANDARD PLAN

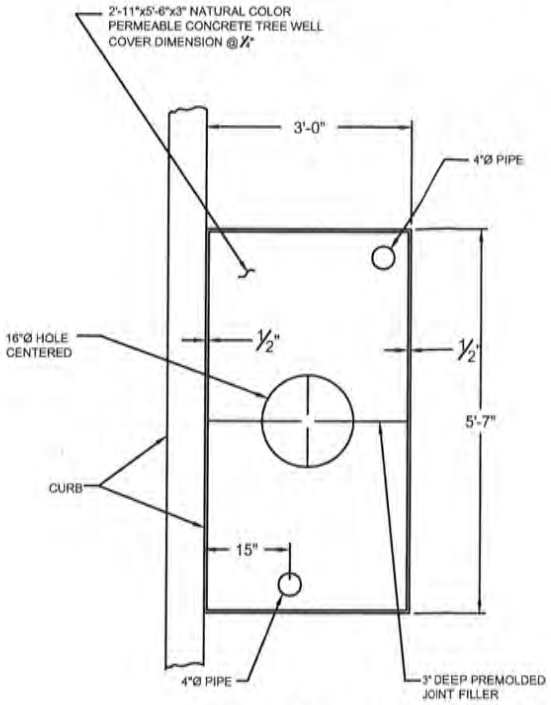
H-2-1

SHEET 1 OF 3



CASE 1 - PLAN

50"x50"



CASE 2 - PLAN

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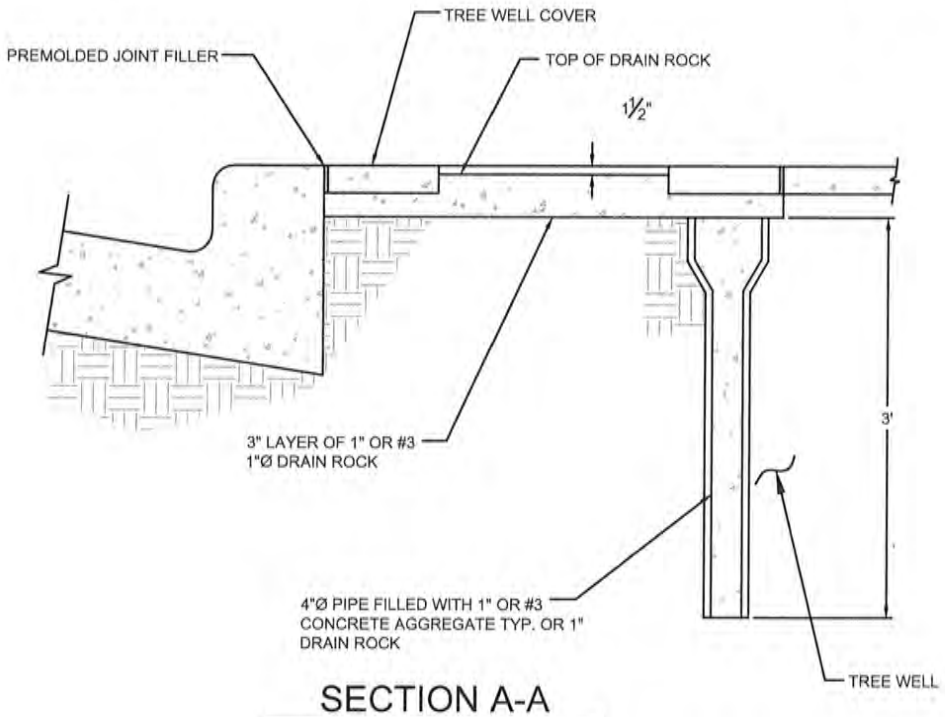


SECTION A-A

NOTES:

1. SEE SHEET 3 FOR NOTES PERTAINING TO THIS SHEET.

TITLE:

LANDSCAPING TREE WELL - CASE 1 & 2 - CONCRETE

DRAWN BY: STAFF	SCALE: NONE
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

CITY ENGINEER: DANNY HILLSTOCK RCE NO. 70647

11-5-19
DATE

STANDARD PLAN

H-2-2

GENERAL NOTES FOR ALL OF TREE WELL

1. ONE TREE WELL SHALL BE INSTALLED PER LOT, 2 TREE WELLS ARE REQUIRED ON CORNER LOTS (ONE ON EACH STREET).
2. TREE WELLS SHALL BE USED WHEN SIDEWALK IS 10' MIN. WIDTH.
3. LOCATION OF TREE WELLS IS @ CENTERLINE OF LOT, SUBJECT TO THE FOLLOWING MINIMUM CLEARANCE:

   A. 50' FROM BCR ON THE APPROACH TO AN INTERSECTION AND 15' FROM THE ECR ON THE EXIT SIDE.

   B. 20' FROM LIGHT STANDARDS.

   C. 10' FROM FIRE HYDRANTS AND DRIVEWAYS.

   D. 10' FROM HOUSE WALKS AND UTILITY METERS.

   E. 10' CLEARANCE FROM WATER METERS.

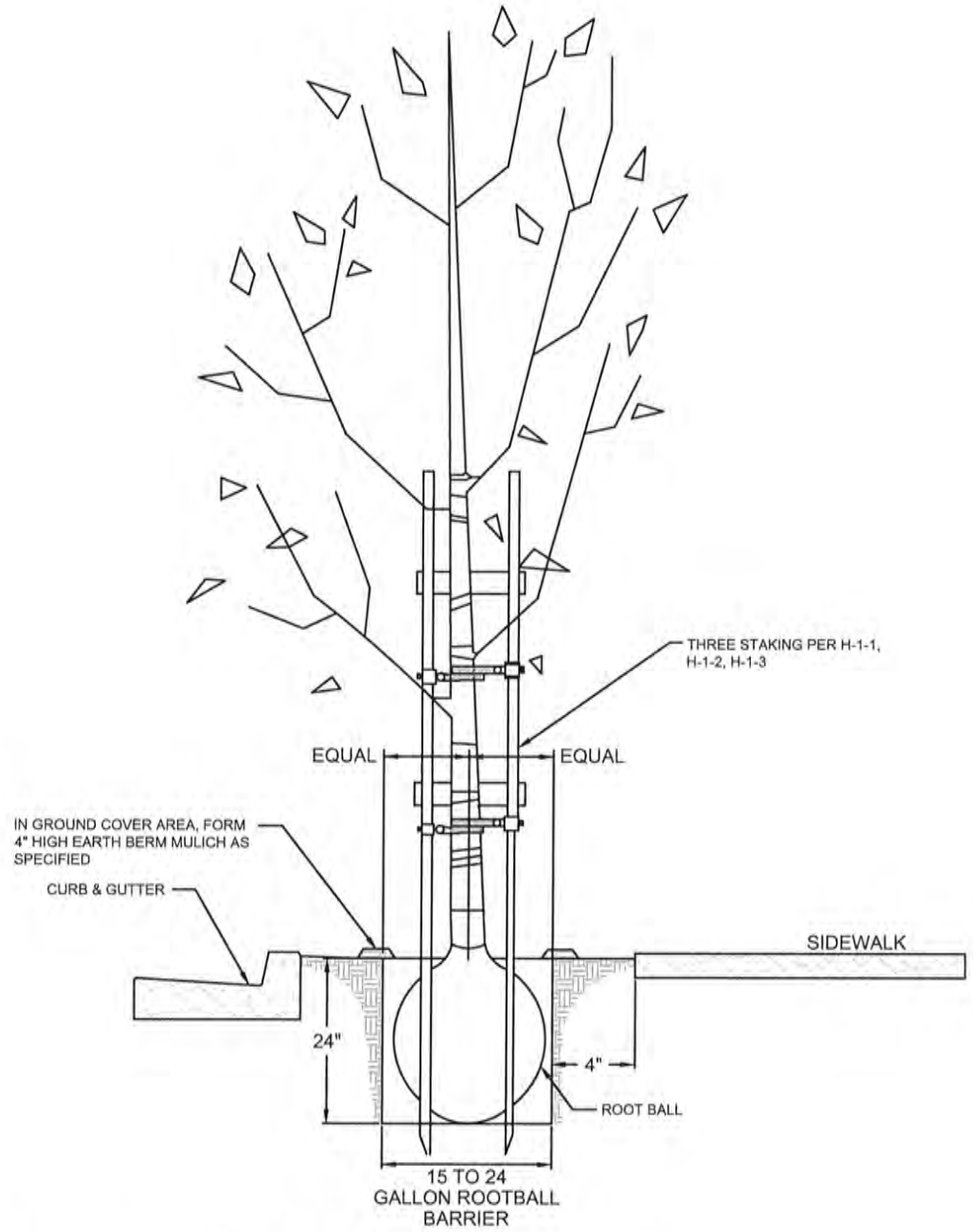
   F. 5' CLEARANCE FROM SEWER LATERIALS

3. COVERS ARE TO BE BUFF COLORED USING AN ACCEPTABLE COLORING AGENT.
4. TOP OF TREE WELL COVER TO BE FLUSH WITH ADJACENT SIDEWALK.
5. LOCATION OF TREE SUBJECT TO CHANGE AT THE DIRECTION OF THE CITY ENGINEER.

TITLE:

TREE WELL GENERAL NOTES

DRAWN BY:	SCALE:	APPROVED:	STANDARD PLAN
STAFF	NONE	Danny Hillstock 11-5-19	H-2-3
REVIEWED BY: DANNY HILLSTOCK	REVISED: OCTOBER, 2019	CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 DATE	SHEET 3 OF 3
CITY OF HOLLISTER ENGINEERING DEPARTMENT			



NOTES:

1. CONTRACTOR SHALL PERFORM PRUNING DURING ONE-YEAR WARRANTY PERIOD.
2. WHERE EXISTING PARKWAY TREES HAVE BEEN ROOT PRUNED, INSTALL CONTINUOUS, LINEAL ROOT BARRIER ADJACENT TO THE CURB AND/OR SIDEWALK.
3. LENGTH AND LOCATION OF ROOT BARRIER TO BE DETERMINED BY CITY ENGINEER.
4. ROOT SEALER SHALL BE APPROVED BY THE CITY ENGINEER AT LEAST 48 HOURS IN ADVANCE OF THE PRUNING OPERATION, AND SHALL BE APPLIED TO ALL CUT ROOT AREAS WHICH ARE LARGER THAN 2" IN DIAMETER. THE SEALER SHALL BE APPLIED AS SOON AS PRACTICAL AFTER THE CUTS HAVE BEEN MADE.
5. ROOT BARRIERS SHALL BE FABRICATED FROM A HIGH DENSITY, HIGH IMPACT PLASTIC AND BE EXPRESSLY DESIGNED FOR THE PURPOSE OF ROOT DEFLECTION.

TITLE:

LANDSCAPING-PRUNING

DRAWN BY:	SCALE:
STAFF	NONE
REVIEWED BY:	REVISED:
DANNY HILLSTOCK	OCTOBER, 2019

CITY OF HOLLISTER
ENGINEERING DEPARTMENT

APPROVED:

Danny Hillstock 11-5-19

CITY ENGINEER: DANNY HILLSTOCK LIC. NO. 70647 — DATE

STANDARD PLAN

H-3

SHEET 1 OF 1