# CITY OF CALIPATRIA


## STANDARD DETAILS

## &

## SPECIFICATIONS

**June 13, 2006**

# INDEX

# INTRODUCTION

RESIDENTIAL, COMMERCIAL, INDUSTRIAL, GOVERNMENT AND INSTITUTIONAL DEVELOPMENTS OFTEN REQUIRE PUBLIC INFRASTRUCTURE IMPROVEMENTS. THE PUBLIC INFRASTRUCTURE ITEMS INCLUDE STREET, SANITARY SEWER, DOMESTIC WATER AND STORMWATER PUBLIC INFRASTRUCTURE IMPROVEMENTS.

THE CITY OF CALIPATRIA STANDARD DETAILS AND SPECIFICATIONS WERE PREPARED TO PROVIDE GUIDELINES FOR THE CONSTRUCTION OF STREET, SANITARY SEWER AND STORMWATER INFRASTRUCTURE WITHIN THE CITY LIMITS OF CALIPATRIA. THE STANDARD DETAILS AND SPECIFICATIONS DO NOT ADDRESS THE PROCEDURAL PROCESSING OR FEES ASSOCIATED WITH RESIDENTIAL, COMMERCIAL, INDUSTRIAL, GOVERNMENT AND INSTITUTIONAL DEVELOPMENTS WITHIN THE CITY OF CALIPATRIA. STANDARD DETAILS AND SPECIFICATIONS ARE NOT "ALL ENCOMPASSING" AND DO NOT PROVIDE DETAILS AND SPECIFICATIONS UNIQUE TO A PARTICULAR DEVELOPMENT.

THE STANDARD DETAILS AND SPECIFICATIONS ARE INTENDED TO ADDRESS THE BASIC INFRASTRUCTURE REQUIREMENTS OF DEVELOPMENTS WITHIN THE CITY. THE STANDARD DETAILS AND SPECIFICATIONS REFER TO OTHER WIDELY RECOGNIZED SPECIFICATION STANDARDS, MOST NOTABLY THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, "GREEN BOOK" AND THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF LOCAL STREETS AND ROADS, "CALTRANS STANDARDS."

THE CITY OF CALIPATRIA STANDARD DETAILS AND SPECIFICATIONS INCLUDE THE GENERAL CONDITIONS, TECHNICAL SPECIFICATIONS AND DETAILS FOR STREETS, SANITARY SEWER AND STORMWATER INFRASTRUCTURE. IN ADDITION, TENTATIVE MAP REQUIREMENTS, IMPROVEMENT PLAN REQUIREMENTS AND DESIGN GUIDELINES FOR SANITARY SEWER AND STORMWATER ARE INCLUDED WITHIN THE STANDARD DETAILS AND SPECIFICATIONS DOCUMENT. ALSO INCLUDED ARE THE SUBMITTAL DOCUMENTS AND GEOTECHNICAL TESTING REQUIREMENTS TO BE OBSERVED DURING THE CONSTRUCTION PERIOD OF DEVELOPMENT.

THE CITY OF CALIPATRIA STANDARDS DETAILS AND SPECIFICATIONS WERE PREPARED BASED UPON THE SPECIFICATIONS AND DETAILS WHICH WORK EFFECTIVELY IN THE IMPERIAL VALLEY. SOIL STABILIZATION DUE TO EXPANSIVE, COHESIVE SOILS WITH A RELATIVELY HIGH WATER TABLE AND THE CORROSIVENESS OF THE NATIVE SOIL RESULT IN STANDARD DETAILS AND SPECIFICATIONS WHICH ARE "DIFFERENT" FROM WHAT IS CONSIDERED NORMAL IN OTHER AREAS OF THE STATE OF CALIFORNIA. IN ORDER FOR INFRASTRUCTURE TO REALIZE ITS EXPECTED LIFE EXPECTANCY, SPECIAL ATTENTION IS REQUIRED FOR THE MATERIALS SELECTED AND THE SUPPORTING MATERIALS PLACED BENEATH STREETS AND ROADS AND SURROUNDING PIPELINE INFRASTRUCTURE.

CONSTANTLY CHANGING TECHNOLOGY BOTH IN TERMS OF ENGINEERING ADVANCEMENTS AND MATERIAL DEVELOPMENT REQUIRE THE CITY OF CALIPATRIA STANDARD DETAILS AND SPECIFICATIONS BE PERIODICALLY UPDATED. IT IS SUGGESTED THAT THE STANDARD DETAILS AND SPECIFICATIONS BE UPDATED AND REVISED IN JUNE OF EACH CALENDAR YEAR.

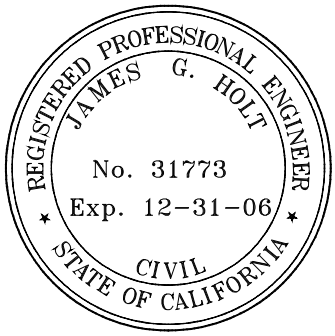
THE STANDARD DETAILS AND SPECIFICATIONS HAVE BEEN PREPARED TO ASSIST IN FACILITATING THE IMPLEMENTATION OF DEVELOPMENTS WITHIN THE CITY OF CALIPATRIA IN AN OPTIMAL MANNER. THE CITY OF CALIPATRIA LOOKS FORWARD TO WORKING WITH DEVELOPERS, RESIDENTS AND THE COMMERCIAL, INSTITUTIONAL AND INDUSTRIAL SECTORS ON PROJECTS WHICH BENEFIT THE COMMUNITY.

ADOPTED BY THE CITY OF CALIPATRIA, CITY COUNCIL, RESOLUTION NO. 06-37, DATED JUNE 27, 2006.

THE CITY OF CALIPATRIA STANDARD DETAILS AND SPECIFICATIONS WERE PREPARED UNDER THE DIRECT SUPERVISION OF JAMES G. "JACK" HOLT, P.E., CITY ENGINEER

JAMES G. "JACK" HOLT, P.E.
CITY ENGINEER

DATE: JUNE 27, 2006



## TENTATIVE MAP REQUIREMENTS

1. TENTATIVE MAPS SHALL BE PREPARED AT A SCALE OF 1 INCH = 100 FEET. TENTATIVE MAPS SHALL BE PLACED ON 18 INCH X 26 INCH OR 24 INCH X 36 INCH SHEETS, IF POSSIBLE. IF IT IS NOT POSSIBLE TO PREPARE THE TENTATIVE MAP AT A SCALE OF 1 INCH = 100 FEET ON AN 18 INCH X 26 INCH OR 24 INCH X 36 INCH SHEET, THE SCALE SHALL BE ALLOWED TO BE REDUCED TO FIT ON AN 18 INCH X 26 INCH OR 24 INCH X 36 INCH SHEET. A TOTAL OF THIRTY (30) COPIES OF 18 INCH X 26 INCH OR 24 INCH X 36 INCH TENTATIVE MAP SHEETS SHALL BE FORWARDED TO THE CITY OF CALIPATRIA. IN THE EVENT IT IS NOT POSSIBLE TO PREPARE THE TENTATIVE MAP AT A SCALE OF 1 INCH = 100 FEET ON AN 18 INCH X 26 INCH OR 24 INCH X 36 INCH PLAN SHEET, THEN FIVE (5) ADDITIONAL TENTATIVE MAPS PREPARED ON A SHEET AT A WIDTH AND LENGTH SIZE SELECTED BY THE APPLICANT'S ENGINEER SHALL BE FORWARDED TO THE CITY OF CALIPATRIA AT A SCALE OF 1 INCH = 100 FEET.

2. THE TRACT NAME AND TRACT NUMBER SHALL BE ILLUSTRATED ON A TENTATIVE TRACT MAP. THE TENTATIVE PARCEL MAP NUMBER SHALL BE ILLUSTRATED ON A TENTATIVE PARCEL MAP. THE NUMBERS SHALL BE OBTAINED FROM THE CITY CLERK.

3. SUBMIT TWO (2) COPIES OF THE TITLE REPORT FOR THE PROPERTY TO BE SUBDIVIDED. THE TITLE REPORT SHALL BE CURRENT WITHIN THIRTY (30) DAYS.

4. THE LEGAL DESCRIPTION OF THE PROPERTY TO BE SUBDIVIDED SHALL BE PLACED ON THE TENTATIVE MAP.

5. DATE, NORTH ARROW, SCALE, GROSS AND NET SITE AREA (ACREAGE AND SQUARE FOOTAGE) AND PROJECT PHASING SHALL BE ILLUSTRATED ON THE TENTATIVE MAP.

6. A LOCATION MAP INDICATING THE LOCATION OF THE PROPOSED LAND DIVISION IN RELATION TO THE SURROUNDING AREA SHALL BE ILLUSTRATED ON THE TENTATIVE MAP. THE SURROUNDING SUBDIVISIONS AND STREETS WITHIN ONE-EIGHTH (1/8) OF A MILE FROM THE BOUNDARIES OF THE PROPOSED SUBDIVISION SHALL BE ILLUSTRATED ON THE LOCATION MAP.

7. NAME, ADDRESS AND PHONE NUMBER OF THE RECORD OWNERS, SUBDIVIDER AND THE REGISTERED CIVIL ENGINEERS OR LICENSED SURVEYOR (AND THE REGISTRATION NUMBER) UNDER WHOSE DIRECTION THE MAP WAS PREPARED.

8. THE EXISTING TOPOGRAPHY OF THE LAND PROPOSED TO BE SUBDIVIDED SHALL BE ILLUSTRATED ON THE TENTATIVE MAP. THE MINIMUM CONTOUR INTERVALS SHALL BE AS FOLLOWS:

| | | |
|---|---|---|
| 1’ ON TERRAIN | | 0 – 2% |
| 2’ ON TERRAIN | | 2% - 4% |
| 4’ ON TERRAIN | | 4% - 9% |
| 10’ ON TERRAIN | | 10% PLUS |

CONTOURS COPIED OR TRACED FROM USGS QUADRANGLE MAPS ARE NOT ACCEPTABLE. CONTOURS OF ADJACENT LAND SHALL ALSO BE SHOWN WHENEVER THE SURFACE FEATURES OF SUCH LAND AFFECT THE DESIGN AND/OR IMPROVEMENTS OF THE PROPOSED SUBDIVISION. THE CONTOURS SHALL BE BASED UPON A USGS DATUM.

9. A TENTATIVE GRADING AND DRAINAGE SCHEMATIC LAYOUT SHALL BE ILLUSTRATED ON THE TENTATIVE MAP. THE CONCEPTUAL ILLUSTRATION OF RETENTION BASINS, STORMWATER PIPELINES, CATCH BASINS, FORCEMAINS, DISCHARGE POINT OF THE FORCEMAINS, PUMP STATIONS AND OTHER MAJOR STORMWATER INFRASTRUCTURE SHALL BE ILLUSTRATED ON THE TENTATIVE MAP. THE FLOW PATTERN OF UPSTREAM AND DOWNSTREAM EXISTING STORMWATER FACILITIES SHALL BE ILLUSTRATED ON THE TENTATIVE MAP. THE DIAMETER SIZE OF SANITARY SEWER GRAVITY OR FORCEMAINS SHALL BE ILLUSTRATED. THE STORMWATER MANHOLE LOCATIONS SHALL BE ILLUSTRATED. THE SURFACE FLOW PATTERN SHALL BE ILLUSTRATED ON THE TENTATIVE MAP.

10. THE APPROXIMATE LOCATION AND OUTLINE, TO SCALE, OF ALL EXISTING BUILDINGS OR MAJOR ABOVE-GRADE PHYSICAL STRUCTURES ON THE PROPERTY PROPOSED FOR SUBDIVISION SHALL BE ILLUSTRATED ON THE TENTATIVE MAP. CARPORTS, TREES, VEGETATIVE AREAS, FENCES, ABANDONED FOUNDATIONS OF BUILDINGS AND SIMILAR ABOVE-GRADE STRUCTURES SHALL BE ILLUSTRATED ON THE TENTATIVE MAP. EXISTING BUILDING OR STRUCTURES TO REMAIN ON THE PROPERTY TO BE SUBDIVIDED SHALL BE NOTED TO REMAIN. BUILDINGS, STRUCTURES, RAILROADS OR MAJOR ABOVE-GRADE PHYSICAL STRUCTURES ON ADJACENT PROPERTIES SHALL ALSO BE SHOWN IF IT AFFECTS THE DESIGN OF THE PROPOSED SUBDIVISION.

11. ALL EXISTING AND PROPOSED ABOVE OR BELOW GRADE PUBLIC UTILITIES ON AND ADJACENT TO THE SUBDIVISION, INCLUDING BUT NOT LIMITED TO SEWER, WATER, STORMWATER, ELECTRICAL, GAS, TELEVISION, AND TELEPHONE FACILITIES SHALL BE ILLUSTRATED ON THE TENTATIVE MAP. ILLUSTRATE ALL POWER POLES, ABOVE-GRADE TELEPHONE POLES, POWER LINES, TELEPHONE LINES, IRRIGATION LATERALS, IRRIGATION DRAINS, CONCRETE HEADWALL STRUCTURES AND SIMILAR ITEMS ON THE TENTATIVE MAP. ILLUSTRATE ALL KNOWN BELOW GRADE SANITARY SEWER, SEPTIC TANKS AND LEACH FIELDS, RESIDENTIAL WATER SYSTEMS AND SIMILAR ITEMS ON THE TENTATIVE MAP.

12. ILLUSTRATE ALL PAVED OR DIRT ROADWAYS OR ALLEYS WITHIN OR SURROUNDING THE LAND PROPOSED TO BE SUBDIVIDED. THE NAMES OF ALL EXISTING STREETS SHALL BE LISTED ON THE TENTATIVE MAP. ILLUSTRATE EXISTING DRIVEWAY ENTRANCES. ILLUSTRATE THE P.C.C. CURB AND GUTTER, SIDEWALK, CROSS-GUTTERS, EDGE OF PAVEMENT AND SIMILAR FEATURES. NOTE THE WIDTH OF THE EXISTING ROADWAYS AND WHETHER THE ROADS ARE PAVED OR NOT PAVED.

13. ILLUSTRATE ALL PROPOSED IMPROVEMENTS ON THE PROPERTY TO BE SUBDIVIDED.

14. ILLUSTRATE THE EXISTING OR PROPOSED RIGHT OF WAY WIDTHS FOR ALL EXISTING OR PROPOSED STREETS.

15. ILLUSTRATE THE EXISTING RIGHT OF WAY WIDTH OF ALL ALLEYS.

16. ILLUSTRATE THE EXISTING AND PROPOSED LAND USES AND ZONING FOR ADJACENT PROPERTIES.

17. ILLUSTRATE LANDS AND PARKS TO BE DEDICATED TO THE PUBLIC.

18. PROVIDE A GEOTECHNICAL REPORT FOR THE PROPERTY TO BE SUBDIVIDED. THE CITY OF CALIPATRIA PLANNING COMMISSION AND CITY COUNCIL MAY WAIVE THIS REQUIREMENT AND REQUIRE THE GEOTECHNICAL REPORT BE PREPARED DURING THE PREPARATION OF THE FINAL MAP AND IMPROVEMENT PLANS.

19. THE APPROXIMATE DIMENSION, AREA IN SQUARE FEET AND ACRES, LOT LAYOUT AND LOT NUMBER OF EACH PARCEL PROPOSED SHALL BE ILLUSTRATED.

20. EASEMENT DEDICATIONS PROPOSED FOR WATER, SANITARY SEWER, ROADWAY OR STORMWATER FACILITIES SHALL BE ILLUSTRATED ON THE TENTATIVE MAP.

21. THE PROPOSED NAMES FOR STREETS SHALL BE ILLUSTRATED ON THE TENTATIVE MAP. THE CITY RESERVES THE RIGHT TO MODIFY OR CHANGE THE STREET NAMES ILLUSTRATED ON THE TENTATIVE MAP.

22. FOR TENTATIVE TRACT MAPS AND TENTATIVE PARCEL MAPS, THE APPLICANT SHALL SUBMIT THREE (3) SETS OF TYPED SELF-ADHESIVE LABELS OF ALL PROPERTY OWNERS, LESSEES AND SUBLESSEES OF RECORD TO THE CITY OF CALIPATRIA. THESE LABELS SHALL INCLUDE THE ASSESSOR'S PARCEL NUMBER, OWNER'S NAME AND MAILING ADDRESS OF EACH PROPERTY WITHIN 300 FEET FROM THE EXTERIOR LIMITS OF THE SUBJECT PROPERTY. A CERTIFIED LETTER FROM A TITLE COMPANY LICENSED TO CONDUCT BUSINESS IN IMPERIAL COUNTY, CALIFORNIA RESPONSIBLE FOR PREPARING THE PREVIOUS DESCRIBED INFORMATION, SHALL BE SUBMITTED TO THE CITY OF CALIPATRIA VERIFYING THAT THE DOCUMENTS HAVE BEEN PREPARED BY THE TITLE COMPANY AND ARE ACCURATE.

23. ALL EXISTING EASEMENTS SHALL BE ILLUSTRATED ON THE TENTATIVE MAPS. THE RECORDED MAPS, DEED OR OFFICIAL RECORD WHICH ESTABLISHED THE EXISTING EASEMENT SHALL BE LISTED WITH BOOK, PAGE AND RECORDATION DATE ON THE TENTATIVE MAP.

24. A MINIMUM 10 FOOT PUBLIC UTILITY EASEMENT SHALL BE REQUIRED FOR TRACT MAPS. THE PUBLIC UTILITY EASEMENT SHALL BE ILLUSTRATED ON THE TENTATIVE TRACT MAPS.

25. NOTE ANY LIMITATIONS ON RIGHT OF WAY ACCESS TO OR FROM STREETS OR PUBLIC AREAS AND LOCATIONS. ILLUSTRATE THE DIMENSIONS OF ANY AREA RESTRICTING ACCESS OR A PROPOSED EASEMENT OR RIGHT OF WAY TO ADDRESS THE RESTRICTION.

26. ILLUSTRATE THE BOUNDARY LINE OF THE PROPERTY TO BE SUBDIVIDED WITH A BOLD BLACK LINE. ILLUSTRATE THE APPROXIMATE LENGTH AND BEARING OF THE PERIMETER SIDES ENCOMPASSING THE AREA TO BE SUBDIVIDED. ILLUSTRATE THE RADIUS, DELTA AND TANGENT FOR CURVED PORTIONS OF THE PROJECT BOUNDARY.

27. ILLUSTRATE THE LOCATIONS AND WIDTHS OF SIDEWALKS AND PEDESTRIAN WALKWAYS.

28. ILLUSTRATE THE LOCATION OF DOMESTIC WATER PIPELINES. ILLUSTRATE THE DIAMETER SIZE OF THE WATER PIPELINES. ILLUSTRATE VALVE LOCATIONS. ILLUSTRATE FIRE HYDRANT ASSEMBLY LOCATIONS.

29. ILLUSTRATE THE LOCATION OF SANITARY SEWER PIPELINES. ILLUSTRATE THE DIAMETER SIZE OF THE SANITARY SEWER PIPELINES. ILLUSTRATE SANITARY SEWER MANHOLE LOCATIONS. ILLUSTRATE THE FLOW DIRECTION OF THE PIPELINES.

30. ILLUSTRATE THE LOCATION OF STREET LIGHTS ON THE TENTATIVE MAP.

31. ILLUSTRATE THE CITY OF CALIPATRIA CITY LIMITS ON THE TENTATIVE MAP.

32. ILLUSTRATE THE BOUNDARY LINES OF ANY SCHOOL DISTRICT OR OTHER TAXING DISTRICT ON THE TENTATIVE MAP.

33. NOTE ALL WATER, SANITARY SEWER, STORMWATER, GAS, ELECTRICAL, TELEPHONE AND TELEVISION FACILITIES ON A LEGEND. ILLUSTRATE STREET LIGHTS, VALVES, MANHOLES AND FIRE HYDRANT ASSEMBLIES ON THE LEGEND. ILLUSTRATE PAVED ROADWAYS AND EDGE OF ROADWAYS ON THE LEGEND.

34. ILLUSTRATE LANDSCAPE IMPROVEMENTS ON THE TENTATIVE MAP.

35. ILLUSTRATE LOCATION OF PERIMETER WALLS ON THE TENTATIVE MAP.

36. SUBMIT DOMESTIC WATER NETWORK ANALYSIS TO SUBSTANTIATE WATER PIPELINE DIAMETER SIZES.

37. SUBMIT WASTEWATER HYDRAULIC CALCULATIONS TO SUBSTANTIATE GRAVITY WASTEWATER PIPELINE DIAMETER SIZES AND THE PUMP STATION AND FORCEMAIN SIZING, IF APPLICABLE.

38. SUBMIT HYDROLOGY CALCULATIONS TO SUBSTANTIATE THE GRAVITY STORMWATER PIPELINE DIAMETER AND RETENTION BASIN SIZING AND THE PUMP STATION AND FORCEMAIN SIZING IF APPLICABLE.

39. THE TENTATIVE MAP AND ACCOMPANYING DOCUMENTS SHALL BE SUBMITTED IN A HARD COPY AND ELECTRONIC FORMAT.

40. THE TENTATIVE MAP SHALL BE SUBMITTED TO THE CITY OF CALIPATRIA FIRE CHIEF. THE CITY OF CALIPATRIA FIRE CHIEF SHALL REVIEW THE LOCATION, TYPE OF FIRE HYDRANT AND NUMBER OF REQUIRED FIRE HYDRANTS. THE FIRE CHIEF SHALL DETERMINE THE ALLOWABLE STATIC PRESSURE AND FIRE FLOW FOR A GIVEN PROJECT.

END OF TENTATIVE MAP REQUIREMENTS SECTION

## IMPROVEMENT PLAN REQUIREMENTS

I. IMPROVEMENT PLANS SUBMITTED TO THE CITY OF CALIPATRIA SHALL BE ACCOMPANIED BY THE FOLLOWING DOCUMENTS OR INFORMATION PRIOR TO THE APPROVAL OF THE IMPROVEMENT PLANS:

1. APPROVED TENTATIVE MAP WITH CONDITIONS OF APPROVAL (IF APPLICABLE).

2. COPY OF GEOTECHNICAL REPORT FOR THE SITE. THE GEOTECHNICAL REPORT SHALL BE CURRENT WITHIN THIRTY (30) DAYS OF THE SUBMISSION OF THE PLAN CHECK DOCUMENTS.

3. STORM WATER POLLUTION PREVENTION PLAN (SWPPP).

4. A COST ESTIMATE FOR INFRASTRUCTURE IMPROVEMENTS SHALL BE FORWARDED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL.

5. ALL ELEVATIONS SHALL BE BASED ON THE CITY BENCHMARK SYSTEM. THE PROPOSED PROJECT BENCHMARK SHALL BE FORWARDED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE PREPARATION OF THE IMPROVEMENT PLANS.

6. IF APPLICABLE, AN ENCROACHMENT PERMIT SHALL BE OBTAINED FROM THE IMPERIAL IRRIGATION DISTRICT WATER DIVISION BY THE DEVELOPER TO DISCHARGE STORMWATER INTO IMPERIAL IRRIGATION DISTRICT DRAINS. AN APPROVED ENCROACHMENT PERMIT SHALL BE SECURED BY THE DEVELOPER PRIOR TO THE APPROVAL OF THE IMPROVEMENT PLANS BY THE CITY OF CALIPATRIA.

7. IF APPLICABLE, AN ENCROACHMENT PERMIT SHALL BE OBTAINED FROM THE COUNTY OF IMPERIAL PUBLIC WORKS DEPARTMENT FOR IMPROVEMENTS ASSOCIATED WITH A PROJECT WHICH ARE TO BE CONSTRUCTED IN THE COUNTY OF IMPERIAL. AN APPROVED ENCROACHMENT PERMIT SHALL BE SECURED BY THE DEVELOPER PRIOR TO THE APPROVAL OF THE IMPROVEMENT PLANS BY THE CITY OF CALIPATRIA.

8. IF APPLICABLE, AN ENCROACHMENT PERMIT SHALL BE OBTAINED FROM THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) FOR IMPROVEMENTS ASSOCIATED WITH A PROJECT TO BE CONSTRUCTED IN CALTRANS RIGHT OF WAY. AN APPROVED ENCROACHMENT PERMIT SHALL BE SECURED BY THE DEVELOPER PRIOR TO THE APPROVAL OF THE IMPROVEMENT PLANS BY THE CITY OF CALIPATRIA.

9. THE DOMESTIC WATER PIPELINES, WATER VALVES, FIRE HYDRANTS, BLOWOFFS AND OTHER DOMESTIC WATER ACCESSORIESS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF GOLDEN STATE WATER COMPANY. THE WATER IMPROVEMENT PLANS ARE TO BE SUBMITTED TO THE GOLDEN STATE WATER COMPANY FOR REVIEW AND APPROVAL.

## II. PREPARATION OF IMPROVEMENT PLANS

1. ALL PLAN CHECK DRAWINGS SHALL BE PREPARED AND SUBMITTED ON 24”X36” INKED BOND ORIGINALS. ONCE THE PLAN CHECK PROCESS IS COMPLETED, THREE (3) SETS OF ORIGINAL VELLUM OR MYLAR DRAWINGS SHALL BE FORWARDED TO THE CITY ENGINEER FOR SIGNATURE. ONE (1) SET OF ORIGINAL MYLAR OR VELLUM DRAWINGS SHALL BE RETURNED TO THE CITY OF CALIPATRIA. ONE (1) SET SHALL BE MAINTAINED IN THE OFFICE OF THE CITY ENGINEER. THE OTHER SET OF ORIGINAL DRAWINGS SHALL BE FORWARDED TO THE OFFICE OF THE DESIGN ENGINEER.

2. ALL WORK SHALL BE CLEAR AND LEGIBLE AFTER BEING REPRODUCED. SPECIAL CARE SHALL BE MADE TO INSURE THAT LETTERING DENSITY AND BACKGROUND DENSITY IS UNIFORM ON EACH SHEET TO INSURE EVEN CONTRAST THROUGHOUT THE SHEET.

3. MINIMUM LETTER SIZE SHALL BE 0.08 INCHES IN HEIGHT AND MINIMUM LINE WEIGHT SHALL BE "0". LETTER SPACING SHALL BE NO LESS THAN ¼ OF THE LETTER HEIGHT USED. CURSIVE WRITING SHALL NOT BE USED EXCEPT FOR SIGNATURES.

4. SELF-ADHESIVE OR ADD-ON LABELS AND CERTIFICATES THAT ARE NOT PERMANENT SHALL NOT BE PLACED ON THE IMPROVEMENT PLANS.

5. TWO (2) BLUE-LINE SETS OF PLANS SHALL BE SUBMITTED FOR THE FIRST PLAN CHECK. FOR SUBSEQUENT PLAN CHECKS, TWO (2) BLUE-LINE SETS OF PLANS AND THE PREVIOUS REDLINED CHECK PRINTS ARE REQUIRED. IF PREVIOUS REDLINED CHECK PRINTS ARE NOT RETURNED, PLAN CHECKING SHALL CEASE UNTIL THE PREVIOUS REDLINED CHECK PRINTS ARE FORWARDED TO THE CITY ENGINEER.

6. PLANS AND SURVEY DOCUMENTS SHALL BE SIGNED (WET STAMPED) BY A REGISTERED CALIFORNIA CIVIL ENGINEER OR CALIFORNIA LICENSED LAND SURVEYOR AS APPROPRIATE. SEAL AND SIGNATURE OF THE PLAN DOCUMENT SHALL BE ACCOMPLISHED IN ACCORDANCE WITH ***SECTION 411*** OF THE ***STATE OF CALIFORNIA CODE OF REGULATIONS, TITLE 16, CHAPTER 5***.

7. THE SUBDIVIDER'S NAME, ADDRESS AND TELEPHONE NUMBER SHALL BE PLACED ON THE TITLE PAGE.

8. SEPARATE CITY ENGINEER AND PUBLIC WORKS MANAGER APPROVAL STATEMENTS SHALL BE PLACED ON THE TITLE SHEET.

9. STRUCTURAL CALCULATIONS SHALL BE SUBMITTED WITH PLANS INCLUDING RETAINING WALLS, BRIDGES, LARGE STORMWATER STRUCTURES, LARGE PUMP STATIONS AND SIMILAR ITEMS, UNLESS THE STRUCTURE IS "CALLED OUT" FROM THE STATE DEPARTMENT OF TRANSPORTATION STANDARD PLANS. IF THE DETAIL IS "CALLED OUT" FROM THE STATE DEPARTMENT OF TRANSPORTATION STANDARD PLANS, THE DETAIL DESIGNATION SHALL BE IDENTIFIED ON THE IMPROVEMENT PLANS.

10. SEPARATE PLAN AND PROFILE IMPROVEMENT PLAN SHEETS FOR STREET, SANITARY SEWER, DOMESTIC WATER AND STORMWATER FACILITIES SHALL BE REQUIRED. IT SHALL BE ACCEPTABLE TO PLACE THE SANITARY SEWER AND DOMESTIC WATER FACILITIES ON AN IDENTICAL PLAN AND PROFILE SHEET. IT SHALL BE ACCEPTABLE TO PLACE STORMWATER AND STREET FACILITIES ON AN IDENTICAL PLAN AND PROFILE SHEET.

11. THE IMPROVEMENT PLANS SHALL INCLUDE A **TITLE SHEET**. THE **TITLE SHEET** SHALL INCLUDE THE FOLLOWING ITEMS AS A MINIMUM:

    A. TITLE OF PROJECT.

    B. VICINITY MAP WITH PROJECT SITE IN RELATION TO NEARBY STREETS AND HIGHWAYS. THE AREA OF PROJECT SHOULD BE SHADED OR CROSS-HATCHED.

    C. THE TITLE BLOCKS SHALL INCLUDE THE REGISTERED CIVIL ENGINEER'S SIGNATURE, NUMBER AND LICENSE EXPIRATION DATE; DEVELOPER'S NAME AND PHONE NUMBER; DATE PLANS PREPARED (RE-DATE AFTER EACH PLAN CHECK); SCALE ON PLANS; REVISION BLOCK; SEPARATE APPROVAL BLOCKS FOR THE PUBLIC WORKS MANAGER AND CITY ENGINEER AND DETAILED BENCHMARK DESCRIPTION AND LOCATION.

    D. A SHEET INDEX WITH THE PLAN SHEET NAMES AND ASSOCIATED DRAWING NUMBERS SHALL BE INCLUDED.

    E. A STANDARD ABBREVIATION BLOCK SHALL BE PLACED ON THE TITLE SHEET.

F. A PROJECT LEGEND SHALL BE PLACED ON THE TITLE SHEET.

G. AN UNDERGROUND SERVICE ALERT NOTE SHALL BE PLACED ON THE TITLE SHEET.

H. THE GENERAL NOTES WITHIN THE CITY OF CALIPATRIA STANDARD DETAILS AND SPECIFICATIONS SHALL BE PLACED ON THE TITLE SHEET.

I. ITEMS PREVIOUSLY NOTED TO BE LISTED ON THE TITLE SHEET SHALL BE ALLOWED TO BE PLACED ON FOLLOWING PLAN SHEETS AT THE DISCRETION OF THE DESIGN ENGINEER.

12. A SEPARATE **INDEX SHEET** SHALL BE INCLUDED WITH IMPROVEMENT PLANS WITH THREE (3) OR MORE PLAN AND PROFILE SHEETS FOR STREETS, DOMESTIC WATER PIPELINES AND FACILITIES, SANITARY SEWER PIPELINES AND FACILITIES AND STORMWATER PIPELINES AND FACILITIES. FOLLOWING ARE THE ITEMS TO BE PLACED ON THE **INDEX SHEET**.

A. PLAN SHEET NUMBERS SHALL BE ILLUSTRATED WITHIN DASHED RECTANGULAR BOUNDARIES. THE DASHED RECTANGULAR BOUNDARIES SHALL REPRESENT THE AREA OF THE INDEX MAP ILLUSTRATED BY THE PLAN AND PROFILE SHEET. ILLUSTRATE THE NAME OF THE STREET WITHIN THE DASHED RECTANGULAR BOUNDARY.

B. ILLUSTRATE DIRECTION OF WASTEWATER OR STORMWATER FLOW FOR SANITARY SEWER AND STORMWATER PIPELINES AND FACILITIES.

C. NORTH ARROW.

D. SCALE.

13. A BENCHMARK LIST OF TEMPORARY BENCHMARKS WITHIN OR IMMEDIATELY SURROUNDING THE PROJECT SITE SHALL BE PLACED ON THE IMPROVEMENT PLANS. THE LOCATION OF THE TEMPORARY BENCHMARKS IS TO BE ILLUSTRATED ON THE SITE PLAN. THE PREFERABLE LOCATION OF THE TEMPORARY LIST IS THE INDEX SHEET.

14. AN **EXISTING SITE PLAN** SHEET SHALL BE INCLUDED WITH THE IMPROVEMENT PLANS. THE **EXISTING SITE PLAN** SHALL CONTAIN THE FOLLOWING INFORMATION AS A MINIMUM:

    A. THE IDENTIFICATION OF EXISTING ABOVE AND BELOW GRADE FACILITIES SHALL BE ILLUSTRATED ON THE EXISTING SITE PLAN. THE EXISTING DOMESTIC WATER, SANITARY SEWER, STORMWATER, ELECTRICAL, TELEVISION, TELEPHONE AND GAS UTILITIES SHALL BE ILLUSTRATED ON THE EXISTING SITE PLAN. EXISTING ROADWAYS SHALL BE ILLUSTRATED ON THE EXISTING SITE PLAN. EXISTING ABOVE GRADE ITEMS SUCH AS ABANDONED BUILDING FOUNDATIONS, HEADWALL STRUCTURES, TREES, CARPORTS, STRUCTURES, IRRIGATION DRAINS, IRRIGATION LATERALS, FENCES, DIRT BERMS, DEBRIS PILES AND SIMILAR ITEMS SHALL BE ILLUSTRATED ON THE EXISTING SITE PLAN.

    B. THE DEMOLITION ITEMS SHALL BE PLACED ON THE EXISTING SITE PLAN. THE “CALL OUTS” FOR SAWCUTTING A.C. AND P.C.C. INFRASTRUCTURE, REMOVAL AND DEPOSITION OF A.C. AND P.C.C. INFRASTRUCTURE, REMOVAL AND DISPOSAL OF SITE DEBRIS AND REMOVAL AND DISPOSAL OF EXISTING ITEMS AT THE PROJECT SITE ARE TO BE PLACED ON THE EXISTING SITE PLAN. STATIONS AND DISTANCES TO ALLOW FOR DEMOLITION TO BE DETERMINED SHALL BE ILLUSTRATED ON THE PLAN

    C. NORTH ARROW SHALL POINT UP OR TO THE RIGHT ON THE EXISTING SITE PLAN, DEMOLITION PLAN, IMPROVEMENT PLANS AND GRADING PLANS.

    D. ILLUSTRATE THE PROJECT BOUNDARY. ILLUSTRATE THE DIMENSIONS AND BEARINGS OF THE PROJECT BOUNDARY.

E. ILLUSTRATE LIMITS OF CONSTRUCTION.

15. A NEW **SITE GRADING PLAN** SHEET SHALL BE INCLUDED WITH THE IMPROVEMENT PLANS. THE NEW **SITE GRADING PLAN** SHALL CONTAIN THE FOLLOWING INFORMATION AS A MINIMUM:

A. NORTH ARROW. POINT UP OR TO THE RIGHT.

B. CENTERLINE STATIONING SHOWN ON PLANS.

C. STATIONING AT INTERSECTIONS.

D. STATIONING OF ALL EC'S AND BC' ALONG CENTERLINE.

E. CURVE DATA OF EVERY CURVE.

F. STATIONING AT BEGINNING AND END OF IMPROVEMENTS.

G. STATIONING OF END OF CURB AND GUTTER, AND BEGINNING OF CURB AND GUTTER, P.I.G.'S (POINT OF INTERSECTING GRADES AND P.I.T.'S (POINT OF INTERSECTING TANGENTS).

H. NAMES OF ALL STREETS SHOWN ON EACH SHEET.

I. BEARINGS OF ALL STREET CENTERLINES.

J. CURB RETURN DATA TABLE (DELTA, TANGENT, RADIUS AND LENGTH).

K. T.C. (TOP OF CURB) AND FLOWLINE ELEVATIONS OF ALL BCR'S (BEGINNING CURB RADIUS), ECR'S (END OF CURB RADIUS), P.I.G.'S (POINT OF INTERSECTING GRADES) AND P.I.T.'S (POINT OF INTERSECTING TANGENTS). PLACE STATIONING AND ELEVATIONS AT ALL OTHER CRITICAL LOCATIONS.

L. T.C. (TOP OF CURB) AND FLOWLINE ELEVATIONS AND STATIONING AT TOP OF CURB AND FLOWLINE AND AT GRADE BREAKS.

M. TOP OF PAVEMENT ELEVATIONS AND STATIONS AT GRADE BREAKS.

N. ILLUSTRATION OF FLOWLINE OR TOP OF PAVEMENT ELEVATIONS AND STATIONS AT ALL CRITICAL POINTS OF THE GRADING PLAN.

O. BUILDING FOOTPRINTS. BUILDING PAD AND FINISH FLOOR ELEVATIONS.

P. SITE BOUNDARY LINE. ILLUSTRATE BOUNDARY DIMENSIONS AND BEARINGS.

Q. LIMITS OF CONSTRUCTION.

R. LOT LINES.

S. LOT NUMBERS.

T. ILLUSTRATE RIGHT OF WAY LINES AND PROPERTY LINES ON THE PLANS.

U. SHOW IMPROVEMENTS TO BE CONSTRUCTED WITH SOLID LINES. EXISTING IMPROVEMENTS TO BE SHOWN WITH DASHED LINES.

V. ILLUSTRATE EXISTING POWER POLES, TELEPHONE POLES, PIPELINES, TREES, GAS LINES, CABLE LINES AND ALL EXISTING ABOVE GRADE OBJECTS THAT ARE TO REMAIN AT THE PROJECT SITE ON THE SITE PLAN.

W. ILLUSTRATE SURVEY MONUMENT WELLS.

X. ILLUSTRATE NEW STREET INFRASTRUCTURE INCLUDING A.C. AND CONCRETE INFRASTRUCTURE, STREET LIGHTS, SIGNS, STRIPING AND SIMILAR STREET INFRASTRUCTURE. STATIONING OR DIMENSIONING AND VERTICAL ELEVATIONS SHALL BE PROVIDED FOR ALL MAJOR HORIZONTAL ITEMS.

Y. PLACE KEYNOTE “CALLOUTS” ON THE GRADING SITE PLAN SHEET.

Z. KEYNOTES SHALL REFER TO ***CITY STANDARD DETAILS*** WHERE APPLICABLE.

AA. KEYNOTES SHALL "CALL OUT" DETAILS AND SECTIONS PECULIAR TO THE PROJECT. THE DETAIL AND SECTIONS SHALL BE ILLUSTRATED ON THE GRADING DETAIL SHEETS OF THE IMPROVEMENT PLANS.

BB. THE DESIGN ENGINEER SHALL PLACE ADDITIONAL DESIGN INFORMATION ON THE DRAWING AS REQUIRED. THE REVIEW ENGINEER SHALL REQUIRE ADDITIONAL INFORMATION BE PLACED ON THE PLANS AS REQUIRED.

CC. ILLUSTRATE DRAINAGE SWALES AND CRITICAL GRADES FOR THE GRADING OF INDIVIDUAL LOTS.

DD. ILLUSTRATE PROJECT INTERFACE LINES WITH EXISTING STREET INFRASTRUCTURE.

EE. ILLUSTRATE THE BUILDING SET BACK DIMENSIONS ON THE PLANS.

FF. ILLUSTRATE THE SITE BOUNDARY WALL ON THE PLANS, IF APPLICABLE.

GG. ILLUSTRATE EASEMENTS ON THE NEW SITE PLAN.

16. A NEW **SITE UTILITY PLAN** SHEET SHALL BE INCLUDED WITH THE IMPROVEMENT PLANS. THE NEW **SITE UTILITY PLAN** SHALL CONTAIN THE FOLLOWING INFORMATION AS A MINIMUM.

A. NORTH ARROW. POINT UP OR TO THE RIGHT.

B. CENTERLINE STATIONING SHOWN ON PLANS.

C. RIGHT OF WAY AND PROPERTY LINES.

D. PLACE STREET NAMES ON PLANS.

E. ILLUSTRATE BUILDING PAD OUTLINE AND FINISH FLOOR AND PAD ELEVATIONS ON THE PLANS.

F. ILLUSTRATE WATER PIPELINES, VALVES, FIRE HYDRANTS, BLOWOFFS, WATER METERS AND ALL OTHER WATER INFRASTRUCTURE ON THE NEW SITE UTILITY PLAN. THE WATER PIPELINE INFRASTRUCTURE SHALL BE ILLUSTRATED IN MORE DETAIL ON THE PLAN AND PROFILE SHEETS. ILLUSTRATE STATIONS AT CRITICAL LOCATIONS ON THE UTILITY SITE PLAN. ILLUSTRATE THE HORIZONTAL DIMENSION FROM THE WATER PIPELINE TO THE CENTERLINE OF PAVEMENT OR CURB EDGE. PLACE MORE DETAILED HORIZONTAL INFORMATION ON THE PLAN AND PROFILE SHEET. DOMESTIC WATER SHALL COMPLY WITH GOLDEN STATE WATER COMPANY REQUIREMENTS.

G. ILLUSTRATE SANITARY SEWER GRAVITY PIPELINES, MANHOLES, LATERALS, SANITARY SEWER FORCEMAINS, WASTEWATER PUMP STATIONS AND OTHER SANITARY SEWER INFRASTRUCTURE ON THE NEW UTILITY SITE PLAN. ILLUSTRATE STATIONS AND ELEVATIONS AT CRITICAL LOCATIONS. ILLUSTRATE THE HORIZONTAL DIMENSION FROM THE CENTERLINE OF THE PAVEMENT OR CURB EDGE TO THE SANITARY SEWER PIPELINE. ILLUSTRATE THE FLOW DIRECTION OF THE SANITARY SEWER PIPELINE. PLACE MORE DETAILED HORIZONTAL AND VERTICAL INFORMATION OF THE PLAN AND PROFILE SHEETS.

H. ILLUSTRATE GRAVITY STORMWATER PIPELINES, STORMWATER FORCEMAINS, MANHOLES, CATCH BASINS, OUTLET STRUCTURES, RETENTION BASINS AND STORMWATER PUMP STATIONS ON THE SITE UTILITY PLAN. ILLUSTRATE STATIONS AND ELEVATIONS AT CRITICAL LOCATIONS. ILLUSTRATE THE HORIZONTAL DIMENSION FROM THE CENTERLINE OF PAVEMENT OR CURB EDGE TO STORM SEWER GRAVITY OR FORCEMAIN. ILLUSTRATE THE FLOW DIRECTION OF THE PIPELINES ON THE UTILITY SITE PLAN. PLACE MORE DETAILED HORIZONTAL AND VERTICAL INFORMATION ON THE PLAN AND PROFILE SHEETS.

I. ILLUSTRATE THE PROJECT BOUNDARY ON THE UTILITY SITE PLAN.

J. ILLUSTRATE THE LIMITS OF CONSTRUCTION ON THE UTILITY SITE PLAN.

K. LOT LINES.

L. LOT NUMBERS.

M. ILLUSTRATE IMPROVEMENTS TO BE CONSTRUCTED WITH SOLID LINES. ILLUSTRATE STREET IMPROVEMENTS WITH LIGHT LINES. ILLUSTRATE EXISTING IMPROVEMENTS WITH DASHED LINES.

N. ILLUSTRATE EXISTING POWER POLES, POWER LINES, TELEPHONE POLES, TELEPHONE LINES, LIGHT POLES, WATER LINES, SANITARY SEWER LINES, STORMWATER PIPELINES, GAS PIPELINES, TELEVISION LINES AND SIMILAR STREET INFRASTRUCTURE. IF EXISTING UTILITIES ARE TO BE RELOCATED, ILLUSTRATE THE PREVIOUS LOCATION ON THE EXISTING SITE PLAN AND THE NEW LOCATION ON THE UTILITY SITE PLAN AND THE PLAN AND PROFILE SHEETS.

O. PLACE KEYNOTE CALLOUTS ON THE SITE UTILITY PLAN. KEYNOTES SHALL REFER TO ***CITY STANDARD DETAILS*** WHERE APPLICABLE.

P. KEYNOTES SHALL "CALL OUT" DETAILS AND SECTIONS PECULIAR TO THE PROJECT. THE DETAIL AND SECTIONS SHALL BE ILLUSTRATED ON THE UTILITY DETAIL SHEETS OF THE IMPROVEMENT PLANS.

Q. THE DESIGN ENGINEER SHALL PLACE ADDITIONAL DESIGN INFORMATION ON THE DRAWING AS REQUIRED. THE REVIEW ENGINEER SHALL REQUIRE ADDITIONAL INFORMATION BE PLACED ON THE PLANS AS REQUIRED.

R. ILLUSTRATE PROJECT POINTS OF CONNECTION FOR WATER, SANITARY SEWER AND STORMWATER FACILITIES.

S. ILLUSTRATE EASEMENTS ON THE PLANS.

T. ILLUSTRATE IVTA (IMPERIAL VALLEY TELECOMMUNICATIONS AUTHORITY) – FIBER OPTIC NETWORK ON THE PLANS.

U. TRASH ENCLOSURES SHALL BE PROVIDED FOR ALL APARTMENT COMPLEXES AND INDUSTRIAL, COMMERCIAL AND INSTITUTIONAL DEVELOPMENTS.

17. PREPARE STREET AND STORMWATER PLAN AND PROFILE SHEETS.

A. THE ACCEPTABLE HORIZONTAL AND VERTICAL SCALES ARE (1”=40’H, 1”=4’V; 1”=30’H, 1”=3’V; 1”=20’H, 1”=2’V).

B. STATIONING SHALL BE PLACED ALONG THE HORIZONTAL PLAN AND THE BASE OF THE VERTICAL PROFILE. THE PLAN SECTION AND PROFILE SECTION STATIONING SHALL COINCIDE.

C. PROFILE OF CENTERLINE OF THE EXISTING AND NEW STREETS OR NATIVE GRADE SHALL BE ILLUSTRATED ON THE PROFILE AT 25 FOOT STATIONS.

D. ILLUSTRATE EXISTING AND NEW STREET CENTERLINE ON THE PROFILE. ILLUSTRATE THE FLOWLINE OF THE CURB AND GUTTER AND OTHER P.C.C. INFRASTRUCTURE ON THE PROFILE.

E. ILLUSTRATE STREET GRADE ELEVATIONS AND STATIONS AT GRADE BREAKS, B.C.’S, E.C.’S, P.I.T.’S, P.I.G.’S, AND ALL OTHER CRITICAL LOCATIONS.

F. LABEL ALL GRADE LINES AND PROFILES; SHOW PERCENT OF GRADE ON CENTERLINE AND CURB LINES.

G. STATIONS AND ELEVATIONS AT BEGINNING AND END OF IMPROVEMENT.

H. ELEVATIONS EVERY 25’ ON VERTICAL CURVES.

I. ILLUSTRATE HORIZONTAL STATION AT EACH STORMWATER MANHOLE, THE INVERT ELEVATION AT ALL INLET AND OUTLET PIPELINES ENTERING AND EXITING THE MANHOLE, THE HEIGHT OF THE MANHOLE AND THE TOP OF MANHOLE ELEVATION.

J. ILLUSTRATE THE STORMWATER PIPELINE DIAMETER, TYPE OF PIPE MATERIAL AND SLOPE OF PIPELINE OF THE STORMWATER PIPELINE SECTIONS BETWEEN MANHOLES AND CATCH BASINS. ILLUSTRATE THE INFORMATION ON THE PROFILE SHEET. ILLUSTRATE THE DIRECTION OF THE FLOW OF THE PIPELINE. NUMBER EACH MANHOLE.

K. ILLUSTRATE ALL STORMWATER CATCH BASINS ON THE PLAN AND PROFILE SHEET. ILLUSTRATE THE HORIZONTAL STATIONING, TOP OF CATCH BASIN, BOTTOM OF CATCH BASIN AND FLOWLINE ELEVATIONS OF PIPELINES ENTERING AND EXITING THE CATCH BASINS. ILLUSTRATE THE CURB AND GUTTER STATION AND FLOWLINE ELEVATION ON EACH SIDE OF THE CATCH BASIN. ILLUSTRATE THE GUTTER TRANSITION AREA WIDTH, LENGTH AND SLOPE.

L. ILLUSTRATE THE PIPELINE INVERT ELEVATION, PIPELINE DIAMETER SIZE AND FLOWLINE SLOPE OF PIPES ENTERING AND EXITING OUTLET AND INLET STORMWATER STRUCTURES.

M. ILLUSTRATE THE STORMWATER FORCEMAIN ON THE PLAN AND PROFILE SHEET, IF APPLICABLE. ILLUSTRATE STATIONING AT CRITICAL HORIZONTAL LOCATIONS. ILLUSTRATE THE DEPTH OF THE PIPELINE BELOW THE FINISHED PAVEMENT SURFACE. ILLUSTRATE THE DIRECTION OF FLOW ON THE PLAN AND PROFILE SECTIONS. ILLUSTRATE THE PIPE DIAMETER SIZE, PIPE LENGTH AND PIPE MATERIAL ON THE PLAN AND PROFILE SHEET. ILLUSTRATE AND “CALL OUT” FITTING LOCATIONS. THE STATIONING OF THE FITTINGS SHALL BE ILLUSTRATED.

N. THE ITEMS REQUIRED TO BE PLACED ON THE UTILITY SITE PLAN AND GRADING SITE PLAN SHEET SHALL BE REQUIRED TO BE PLACED ON THE STREET AND STORMWATER PLAN AND PROFILE SHEETS. THE ITEMS SHALL BE ILLUSTRATED IN GREATER DETAIL ON THE PLAN AND PROFILE SHEETS.

O. ILLUSTRATE NEW AND EXISTING KNOWN UTILITIES ON THE PLAN AND PROFILE SHEET. "CALL OUT" THE NEW AND EXISTING UTILITIES, STATION THE UTILITIES HORIZONTAL LOCATION, ILLUSTRATE THE VERTICAL ELEVATION, IF KNOWN, AND ILLUSTRATE THE VERTICAL CLEARANCE DISTANCE FROM THE EXISTING AND NEW UTILITIES TO THE NEW STREET OR STORMWATER INFRASTRUCTURE IMPROVEMENTS ON THE PROFILE SECTION OF THE PLAN.

18. PREPARE SANITARY SEWER AND DOMESTIC WATER PLAN AND PROFILE SHEETS.

A. THE ACCEPTABLE HORIZONTAL AND VERTICAL SCALES ARE (1"=40'H, 1"=4'V; 1"=30'H, 1"=3'V; 1"=20'H, 1"=2'V).

B. STATIONING SHALL BE PLACED ALONG THE HORIZONTAL PLAN AND THE BASE OF THE VERTICAL PROFILE. THE PLAN SECTION AND PROFILE SECTION STATIONING SHALL COINCIDE.

C. THE PROFILE OF THE CENTERLINE OF THE EXISTING AND NEW STREETS OR NATIVE GRADE SHALL BE ILLUSTRATED AT 25 FOOT STATIONS.

D. ILLUSTRATE THE HORIZONTAL STATION AT EACH WASTEWATER PIPELINE MANHOLE, THE INVERT ELEVATION AT ALL INLET AND OUTLET PIPELINES ENTERING AND EXITING THE MANHOLE, THE HEIGHT OF THE MANHOLE AND TOP OF MANHOLE ELEVATION.

E. ILLUSTRATE THE PIPELINE DIAMETER, TYPE OF PIPE MATERIAL AND SLOPE OF PIPELINE OF THE GRAVITY WASTEWATER PIPELINE SECTIONS BETWEEN MANHOLES. ILLUSTRATE THE DIRECTION OF THE FLOW OF THE PIPELINE. NUMBER EACH MANHOLE.

F. ILLUSTRATE THE STATION AND INVERT ELEVATION OF EACH SANITARY SEWER LATERAL. ILLUSTRATE THE INFORMATION ON THE PLAN SECTION AND PROFILE SECTION OF THE PLAN AND PROFILE SHEET.

G. ILLUSTRATE THE WASTEWATER FORCEMAIN ON THE PLAN AND PROFILE SHEET, IF APPLICABLE. ILLUSTRATE STATIONING AT CRITICAL HORIZONTAL LOCATIONS. ILLUSTRATE THE DEPTH OF THE PIPELINE BELOW THE FINISHED PAVEMENT SURFACE. ILLUSTRATE THE DIRECTION OF FLOW ON THE PROFILE. ILLUSTRATE THE PIPE DIAMETER SIZE, PIPE LENGTH AND PIPE MATERIAL ON THE PLAN AND PROFILE SHEET. ILLUSTRATE AND "CALL OUT" FITTING LOCATIONS. THE STATIONING OF THE FITTINGS SHALL BE ILLUSTRATED ON THE PLAN AND PROFILE SHEET.

H. ILLUSTRATE THE TOP, BOTTOM AND INFLUENT GRAVITY PIPELINE INVERT ELEVATION OF THE WASTEWATER PUMP STATION. ILLUSTRATE THE DIMENSIONS OF THE WASTEWATER PUMP STATION.

I. ILLUSTRATE THE WATER PIPELINE ON THE PLAN AND PROFILE SHEETS. ILLUSTRATE STATIONS AT ALL BENDS, TEES, FITTINGS, VALVES AND OTHER WATER PIPELINE FACILITIES. "CALLOUT" ALL BENDS, TEES, FITTINGS, VALVES AND WATER PIPELINE FACILITIES ON THE PLAN AND PROFILE SHEET. ILLUSTRATE THE STATIONS OF THE FIRE HYDRANTS, WATER SERVICES AND BLOWOFFS. "CALLOUT" THE FIRE HYDRANTS, WATER SERVICES AND BLOWOFFS. ILLUSTRATE THE VERTICAL DEPTH OF THE WATERMAIN BELOW THE FINISH OR NATIVE PAVEMENT SURFACE. ILLUSTRATE THE PIPE DIAMETER SIZE, PIPE LENGTH AND PIPE MATERIAL ON THE PLAN AND PROFILE SHEET.

J. ILLUSTRATE THE ITEMS REQUIRED TO BE PLACED ON THE UTILITY SITE PLAN SHEET ON THE SANITARY SEWER AND WATER PLAN AND PROFILE SHEETS IN GREATER DETAIL.

K. ILLUSTRATE NEW AND EXISTING KNOWN UTILITIES ON THE SANITARY SEWER AND DOMESTIC WATER PLAN AND PROFILE SHEETS. "CALL OUT" THE NEW AND EXISTING UTILITIES, STATION THE UTILITIES HORIZONTAL LOCATION, ILLUSTRATE THE VERTICAL ELEVATION, IF KNOWN, AND ILLUSTRATE THE VERTICAL CLEARANCE DISTANCE FROM THE EXISTING AND NEW UTILITIES TO THE NEW WATER OR SANITARY SEWER INFRASTRUCTURE ON THE PROFILE SECTION OF THE PLAN AND PROFILE SHEET.

19. PREPARE A DETAIL PLAN SHEET. THE COMMENTS WITH REGARD TO DETAILS AND THE DETAIL PLAN SHEET ARE AS FOLLOWS.

A. THE DESIGN ENGINEER SHALL "CALL OUT" THE ***CITY OF CALIPATRIA STANDARD DETAILS AND SPECIFICATIONS***, WHERE APPLICABLE.

B. THE DESIGN ENGINEER SHALL INCLUDE DETAILS AND SECTIONS TO THE PLANS FOR ITEMS SPECIFIC TO A PARTICULAR PROJECT.

20. STRIPING AND SIGNAGE PLANS.

A. SIGNING SHALL BE ILLUSTRATED ON THE STRIPING AND SIGNAGE PLANS IN CONFORMANCE WITH THE ***CALIPATRIA CITY STANDARD DETAILS AND SPECIFICATIONS***. CALTRANS REQUIREMENTS SHALL BE ADHERED TO FOR ITEMS NOT LISTED WITHIN THE ***CALIPATRIA CITY STANDARD DETAILS AND SPECIFICATIONS***.

B. STRIPING SHALL BE ILLUSTRATED ON THE STRIPING AND SIGNAGE PLANS IN CONFORMANCE WITH THE ***CALIPATRIA CITY STANDARD DETAILS AND SPECIFICATIONS***. CALTRANS REQUIREMENTS SHALL BE ADHERED TO FOR ITEMS NOT LISTED WITHIN THE ***CALIPATRIA CITY STANDARD DETAILS AND SPECIFICATIONS***.

C. A BLUE RAISED PAVEMENT MARKER SHALL BE PLACED 1 FOOT FROM THE CENTERLINE TOWARDS FIRE HYDRANTS INSTALLED AT THE PROJECT SITE. ILLUSTRATE THE BLUE RAISED PAVEMENT MARKERS ON THE STRIPING AND SIGNAGE PLANS.

END OF IMPROVEMENT PLAN REQUIREMENTS SECTION

## FINAL MAP REQUIREMENTS

FINAL MAPS SUBMITTED TO THE CITY OF CALIPATRIA SHALL BE ACCOMPANIED BY THE FOLLOWING DOCUMENTS OR INFORMATION:

1. APPROVED TENTATIVE MAP WITH CONDITIONS OF APPROVAL.

2. COPIES OF ASSESSOR'S MAPS WITHIN THE PROJECT AREA.

3. UPDATED TITLE REPORT. THE TITLE REPORT SHALL BE CURRENT WITHIN THIRTY (30) DAYS OF THE SUBMISSION OF THE PLAN CHECK DOCUMENTS.

4. COPY OF EACH RECORD OF SURVEY, TRACT OR PARCEL MAP, OFFICIAL MAPS, TOWNSITE MAPS AND OTHER RECORDED MAPS EFFECTING THE FINAL MAP TO BE PREPARED.

5. TIE CARDS FOR MONUMENTS IN THE VICINITY OF THE FINAL MAP OR TRACT MAP.

6. COPIES OF RECORDED DEEDS AND OFFICIAL RECORDS, DESCRIBING EASEMENTS AND ENCUMBRANCES EFFECTING THE FINAL MAP OR TRACT MAP. ALL OFFICIAL RECORDS AND DEEDS LISTED ON THE TITLE REPORT ARE TO BE FORWARDED WITH THE REVIEW DOCUMENTS.

7. CLOSURE CALCULATIONS FOR ALL LOTS.

8. COORDINATE GEOMETRY SHEETS LISTING POINT NUMBERS AND THE HORIZONTAL COORDINATES OF THE POINT NUMBERS

END OF FINAL MAP REQUIREMENTS SECTION

## SANITARY SEWER INFRASTRUCTURE
## DESIGN GUIDELINES

1. FOLLOWING ARE DESIGN GUIDELINES FOR SANITARY SEWER INFRASTRUCTURE:

   A. MANHOLES SHALL BE INSTALLED AT THE END OF EACH PIPELINE, AT ALL CHANGES OF GRADE, AT CHANGES IN PIPE DIAMETER SIZE, AT HORIZONTAL ANGLE DEFLECTIONS AND AT SEWER PIPE INTERSECTIONS. THE MAXIMUM HORIZONTAL DISTANCE BETWEEN MANHOLES SHALL BE AS FOLLOWS:

| PIPE DIAMETER (INCHES) | | MAXIMUM MANHOLE SPACING (FEET) |
|---|---|---|
| | | |
| 8" – 15" | | 300 FEET |
| 18" – 30" | | 500 FEET |
| 36" – 60" | | 800 FEET |

   B. THE MINIMUM ALLOWABLE SIZE FOR SANITARY SEWER GRAVITY PIPELINES SHALL BE 8 INCHES IN DIAMETER.

   C. THE MINIMUM ALLOWABLE SIZE FOR SANITARY SEWER LATERALS SHALL BE 4 INCHES IN DIAMETER.

   D. ALL SANITARY SEWER PIPELINES SHALL BE CONSTRUCTED WITH HYDRAULIC SLOPES SUFFICIENT TO GIVE MEAN VELOCITIES, WHEN FLOWING FULL OR HALF FULL, OF NOT LESS THAN 2.0 FEET PER SECOND, BASED ON *MANNING'S FORMULA*. FOR 8-INCH TO 30-INCH SEWERS, VELOCITIES SHALL BE DETERMINED USING A VALUE OF "N" (FRICTION COEFFICIENT) OF NOT LESS THAN 0.013. THE DESIGN OF OVERSIZED GRAVITY SEWER PIPE TO ACCOMMODATE LONGER RUNS TO AVOID DEEPER CUTS OR LIFT STATIONS IS STRICTLY PROHIBITED. THE FOLLOWING MINIMUM GRADES ARE REQUIRED FOR GIVEN PIPELINE DIAMETER SIZES.

| SEWER DIAMETER SIZE | | MINIMUM SLOPE TO MAINTAIN 2.0 FT/SEC VELOCITY – BASED ON N=0.013 |
|---|---|---|
| | | |
| 8” | | 0.35% |
| 10” | | 0.28% |
| 12” | | 0.22% |
| 15” | | 0.15% |
| 18” | | 0.12% |
| 24” | | 0.12% |
| 30” | | 0.12% |

E. THE MINIMUM INSIDE DIAMETER OF MANHOLES SHALL BE 4’-0”

F. THE MANHOLES SHALL NOT BE PROVIDED WITH STEPS.

G. SANITARY SEWER PIPELINES SHALL BE DESIGNED TO ABSORB SUPERIMPOSED LOADS AND BACKFILL OVERBURDEN WITHOUT DAMAGING THE PIPE MATERIAL AND WITHOUT ADVERSELY AFFECTING THE HYDRAULIC CHARACTERISTICS OF THE PIPE. THE MINIMUM VERTICAL DISTANCE FROM FINISHED PAVEMENT OR FINISH NATIVE SURFACE TO THE TOP OF THE PIPE SHALL BE 3 FEET.

H. INSTALLATION OF SANITARY SEWER MAINS AND LATERALS IN AREAS NOT CONTAINED WITHIN EASEMENTS OR RIGHT OF WAYS IS PROHIBITED IN THE CITY OF CALIPATRIA.

I. SANITARY SEWER CALCULATIONS BASED UPON *MANNING’S FORMULA* SHALL BE PREPARED BY THE DESIGN ENGINEER TO DETERMINE THE SANITARY SEWER PIPELINE DIAMETER SIZES FOR A PROJECT. THE CALCULATIONS AND RECOMMENDED PIPELINE DIAMETER SIZES SHALL BE FORWARDED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL.

J. WATER MAINS SHALL BE INSTALLED:

1) TEN FEET HORIZONTALLY FROM 1-FOOT HIGHER THAN THE SANITARY SEWER LOCATED PARALLEL THE MAIN.
2) ONE FOOT HIGHER THAN SANITARY SEWERS CROSSING THE MAIN
3) TEN FEET, AND PREFERABLY 25 FEET, HORIZONTALLY FROM SEWAGE LEACH FIELDS, CESSPOOLS, SEEPAGE PITS AND SEPTIC TANKS.
4) SEPARATION DISTANCES SPECIFIED SHALL BE MEASURED FROM THE NEAREST EDGE OF THE FACILITIES.
5) WHERE THE REQUIREMENT OF 1-3 CANNOT BE MET DUE TO TOPOGRAPHY, INADEQUATE RIGHT-OF-WAY OR EASEMENT OR CONFLICTS WITH OTHER PROVISIONS OF THESE REGULATIONS, LESS SEPARATION IS PERMISSIBLE IF:
    I. THE WATER MAIN AND THE SEWER ARE LOCATED AS FAR APART AS FEASIBLE WITH THE CONDITIONS LISTED ABOVE.
    II. THE WATER MAIN AND THE SEWER ARE NOT INSTALLED WITHIN THE SAME TRENCH
    III. THE WATER MAIN IS APPROPRIATELY CONSTRUCTED TO PREVENT CONTAMINATION OF THE WATER IN THE MAIN BY SEWAGE LEAKAGE.
    IV. SEWER MAIN IS TO BE INSTALLED PER THE STANDARD DETAILS WITHIN THIS DOCUMENT.

K. THE SANITARY SEWER LATERALS SHALL CONSIST OF 4-INCH DIAMETER SDR 35-PVC PIPE. FITTINGS SHALL BE COMPOSED OF PLASTIC WITH O-RINGS ADAPTED TO SDR 35 PVC PIPING. A CLEANOUT SHALL BE LOCATED AT THE RIGHT OF WAY LINE FOR EACH 4-INCH SANITARY SEWER LATERAL. A 2-INCH HIGH LETTER “L” SHALL BE STAMPED IN THE P.C.C. CURB FACE AT THE LOCATION EACH SANITARY SEWER LATERAL. THE SANITARY SEWER LATERALS SHALL BE INSTALLED IN CONFORMANCE WITH THE STANDARD DETAILS INCLUDED WITHIN THIS DOCUMENT.

L. THE MINIMUM HORIZONTAL DISTANCE BETWEEN WATER SERVICES AND SANITARY SEWER LATERALS FOR THE INDIVIDUAL RESIDENTIAL HOUSING UNITS SHALL BE 10 FEET HORIZONTALLY.

M. IT SHALL BE NECESSARY FOR THE SANITARY SEWER MANHOLES AND STORMWATER MANHOLES THAT HAVE A FLOW CHANNEL WHICH TRANSITIONS THROUGH 90 DEGREE BENDS TO TRANSITION 0.10 VERTICAL FEET BETWEEN INLET AND OUTLET PIPELINE INVERTS.

END OF SANITARY SEWER INFRASTRUCTURE DESIGN GUIDELINES SECTION

## DOMESTIC WATER INFRASTRUCTURE
## DESIGN GUIDELINES

1. THE FOLLOWING DESIGN GUIDELINES APPLY FOR DOMESTIC WATER INFRASTRUCTURE:

   A. THE MAXIMUM HORIZONTAL DISTANCE BETWEEN FIRE HYDRANTS AS MEASURED ALONG THE LENGTH OF CURB IS 300 FEET OR AS DIRECTED BY THE CITY OF CALIPATRIA FIRE CHIEF.

   B. THE MINIMUM FIRE HYDRANT FLOW IN RESIDENTIAL AREAS WITHIN THE CITY OF CALIPATRIA IS 750 GPM AT 20 PSI RESIDUAL PRESSURE.

   C. THE MINIMUM WATER PIPELINE DIAMETER SIZE IS 8 INCHES OR AS DIRECTED BY GOLDEN STATE WATER COMPANY.

   D. THE MINIMUM DEPTH FROM THE PAVEMENT OR NATIVE FINISH SURFACE TO THE TOP OF A WATER PIPELINE IS 3 FEET.

   E. WATER PIPELINES SHALL BE DESIGNED PER GOLDEN STATE WATER COMPANY DESIGN GUIDELINES.

   F. INSTALLATION OF WATER PIPELINES AND SERVICES IN AREAS NOT CONTAINED WITHIN EASEMENTS OR RIGHT OF WAYS IS PROHIBITED IN THE CITY OF CALIPATRIA.

   G. FIRE HYDRANTS SHALL BE JAMES JONES 3765.

   H. THE MINIMUM FIRE HYDRANT FLOW IN HEAVY INDUSTRIAL AREAS SHALL BE 1,500 GALLONS PER MINUTE AT 20 PSI RESIDUAL PRESSURE.

   I. THE MINIMUM FIRE HYDRANT FLOW IN COMMERCIAL AND LIGHT INDUSTRIAL AREAS SHALL BE 1,000 GALLONS PER MINUTE AT 20 PSI RESIDUAL PRESSURE.

**END OF DOMESTIC WATER INFRASTRUCTURE DESIGN GUIDELINES SECTION**

**STORMWATER INFRASTRUCTURE**
**DESIGN GUIDELINES**

1. FOLLOWING ARE DESIGN GUIDELINES FOR STORMWATER INFRASTRUCTURE:

   A. MANHOLES SHALL BE INSTALLED AT THE END OF EACH PIPELINE, AT ALL CHANGES OF GRADE, AT CHANGES IN PIPE DIAMETER SIZE, AT HORIZONTAL ANGLE DEFLECTIONS AND AT STORMWATER PIPE INTERSECTIONS. THE MAXIMUM HORIZONTAL DISTANCE BETWEEN MANHOLES SHALL BE AS FOLLOWS:

| PIPE DIAMETER (INCHES) | | MAXIMUM MANHOLE SPACING (FEET) |
|---|---|---|
| | | |
| 8" – 15" | | 300 FEET |
| 18" – 30" | | 500 FEET |
| 36" – 60" | | 800 FEET |

   B. THE MINIMUM ALLOWABLE SIZE FOR STORMWATER PIPELINES SHALL BE 8 INCHES IN DIAMETER.

   C. ALL STORMWATER PIPELINES SHALL BE CONSTRUCTED WITH HYDRAULIC SLOPES SUFFICIENT TO GIVE MEAN VELOCITIES, WHEN FLOWING FULL OR HALF FULL, OF NOT LESS THAN 2.0 FEET PER SECOND, BASED ON *MANNING'S FORMULA*. FOR 8-INCH TO 30-INCH STORMWATERS, VELOCITIES SHALL BE DETERMINED USING A VALUE OF "N" (FRICTION COEFFICIENT) OF NOT LESS THAN 0.013. THE FOLLOWING MINIMUM GRADES ARE REQUIRED FOR GIVEN PIPELINE DIAMETER SIZES.

| STORMWATER DIAMETER SIZE | | MINIMUM SLOPE TO MAINTAIN 2.0 FT/SEC VELOCITY – BASED ON N=0.013 |
|---|---|---|
| | | |
| 8” | | 0.35% |
| 10” | | 0.28% |
| 12” | | 0.22% |
| 15” | | 0.15% |
| 18” | | 0.12% |
| 24” | | 0.12% |
| 30” | | 0.12% |

D. THE MINIMUM INSIDE DIAMETER OF MANHOLES SHALL BE 4’-0”

E. THE MANHOLES SHALL BE PROVIDED WITH STEPS.

F. STORMWATER PIPELINES SHALL BE DESIGNED TO ABSORB SUPERIMPOSED LOADS AND BACKFILL OVERBURDEN WITHOUT DAMAGING THE PIPE MATERIAL AND WITHOUT ADVERSELY AFFECTING THE HYDRAULIC CHARACTERISTICS OF THE PIPE. THE MINIMUM VERTICAL DISTANCE FROM FINISHED PAVEMENT OR FINISH NATIVE SURFACE TO THE TOP OF THE PIPE SHALL BE 3 FEET.

G. STORMWATER MANHOLES AND JUNCTION BOXES THAT HAVE A FLOW CHANNEL WHICH TRANSITION THROUGH A 90-DEGREE BEND SHALL ALLOW A 0.10 VERTICAL FOOT DROP BETWEEN INLET AND OUTLET PIPELINE INVERTS.

**END OF STORMWATER INFRASTRUCTURE DESIGN GUIDELINES SECTION**

## RETENTION/DETENTION BASIN DESIGN GUIDELINES

A. RETENTION / DETENTION BASINS, IF REQUIRED SHALL HAVE VOLUMES CONSISTENT WITH THE APPROVED HYDROLOGY STUDY. THE PLAN SHALL PROVIDE SUFFICIENT GRADES, SIDE SLOPES AND OTHER INFORMATION NECESSARY TO DEMONSTRATE THAT PROPOSED RETENTION/DETENTION BASINS PROVIDE THE REQUIRED STORAGE VOLUMES.

B. RETENTION BASIN SHALL BE SIZED FOR A 25 YEAR, 24 HOUR STORM PRECIPITATION OF 2.54 INCHES IN A 24 HOUR PERIOD. RETENTION BASINS SHALL EJECT A 25 YEAR, 24 HOUR STORMWATER VOLUME WITHIN 72 HOURS. RETENTION BASIN LENGTH TO WIDTH RATIO SHALL BE NO LESS THAN 3:1. THE SIDE SLOPES OF THE RETENTION BASIN SHALL BE 3:1 OR FLATTER UNLESS STIPULATED OTHERWISE BY THE GEOTECHNICAL REPORT. THE BOTTOM ELEVATION OF RETENTION BASIN SHALL BE A MINIMUM OF 5 FEET ABOVE THE WATER TABLE ELEVATION OR GREATER UNLESS STIPULATED OTHERWISE BY OTHER AGENCIES.

C. FINISH FLOOR ELEVATION FOR BUILDINGS SHALL BE A MINIMUM OF 1'-6" ABOVE THE HIGHEST TOP OF P.C.C. CURB ELEVATION ALONG THE ADJOINING STREET. THE VOLUME OF A 100 YEAR, 24 HOUR STORM WITHIN A DEVELOPMENT AREA SHALL BE MAINTAINED WITHIN THE STREET RIGHT OF WAY.

D. STORMWATER CALCULATIONS BASED UPON *MANNING'S FORMULA* SHALL BE PREPARED BY THE DESIGN ENGINEER TO DETERMINE THE STORMWATER PIPELINE DIAMETER SIZES FOR A PROJECT. THE CALCULATIONS AND RECOMMENDED PIPELINE DIAMETER SIZES SHALL BE FORWARDED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL.

E. A HYDROLOGY REPORT IS TO BE FORWARDED TO THE CITY ENGINEER FOR REVIEW. THE HYDROLOGY REPORT SHALL INCLUDE TEXT CONTAINING PROJECT LOCATION, PROJECT BACKGROUND, CALCULATIONS, METHODOLOGIES, CONCLUSIONS AND RECOMMENDATIONS; A HYDROLOGIC MAP; CALCULATIONS TO OBTAIN THE DISCHARGE RATE FOR A 25 YEAR, 24 HOUR STORM EVENT FOR PIPE SIZE DETERMINATIONS AND RETENTION BASIN SIZING ANALYSIS. THE HYDROLOGY REPORT SHALL DEMONSTRATE THAT THE STORMWATER GENERATED FROM A 100 YEAR, 24 HOUR STORM EVENT WITH A PRECIPATION OF 3.85 INCHES IN A 24 HOUR PERIOD, SHALL BE CAPABLE OF BEING STORED WITHIN THE PROJECT STREET RIGHT OF WAY AREA.

F. ALL RETENTION BASINS ARE TO ADEQUATELY CONTAIN ALL RUNOFF WITHIN THE SITE WITHOUT CAUSING FLOODING TO ADJACENT STREETS OR HOMES. ADJACENT AREAS MUST REMAIN PASSABLE FOR RESIDENTS AND EMERGENCY VEHICLES.

G. ALL RETENTION BASINS ARE TO DRAIN COMPLETELY WITHIN 72 HOURS AFTER A STORMWATER EVENT. ANY WATER LEFT IN THE BASIN AFTER 72 HOURS SHALL BE REMOVED BY VACUUM TRUCK OR OTHER SIMILAR METHOD. STANDING WATER SHALL NOT BE PUMPED ONTO THE CITY OF CALIPATRIA PUBLIC STREETS OR PRIVATE STREETS.

END OF RETENTION/DETENTION BASIN DESIGN GUIDELINES SECTION

## GENERAL CONDITIONS

### 1. UTILITIES

THE LOCATION OF UNDERGROUND UTILITIES ILLUSTRATED ON THE PLANS IS APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT UNDERGROUND SERVICE ALERT TO EXACTLY LOCATE THE UNDERGROUND UTILITIES. UNDERGROUND SERVICE ALERT SHOULD BE CONTACTED 2 FULL WORKING DAYS IN ADVANCE BEFORE ANY EXCAVATION BEGINS.

THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR DAMAGED UTILITIES. A LIST OF UTILITY COMPANIES WHICH SERVICE THE CITY OF CALIPATRIA APPEARS BELOW:

A. CABLE USA
P.O. BOX 336
2455 STIRRUP ROAD
BORREGO SPRINGS, CA 92004
PHONE: 1-800-300-6989
CONTACT: RICK HARRIS – GENERAL MANAGER

B. SOUTHERN CALIFORNIA GAS COMPANY-PLANNING DEPARTMENT
P. O. BOX 3003
1981 W. LUGONIA AVENUE
REDLANDS, CA 92373
PHONE: (909) 335-7507
CONTACT: BRUCE R. WADDELL

C. SOUTHERN CALIFORNIA GAS COMPANY
970 N. FOURTH STREET
EL CENTRO, CA 92243
PHONE: (760) 352-6100
CONTACT: JIMMIE RODRIGUEZ

D. IMPERIAL IRRIGATION DISTRICT - POWER DIVISION
BUSINESS ADDRESS
1699 WEST MAIN STREET
EL CENTRO, CA 92243

MAILING ADDRESS
P.O. BOX 937
333 E. BARIONI BLVD.
IMPERIAL, CA 92251
PHONE: (760) 482-3404
CONTACT: RICK M. TORRES – PROJECT MANAGER

E. SBC TELEPHONE
1029 S. SECOND STREET
EL CENTRO, CA 92243
PHONE: (760) 337-3325 OR (760) 337-3358
CONTACT: MIKE ORMAND

F. CITY OF CALIPATRIA
125 NORTH PARK AVE
CALIPATRIA, CA 92233
PHONE: (760) 348-4141
CONTACT: JESSIE SORIANO

G. GOLDEN STATE WATER COMPANY
13608 HITT ROAD
APPLE VALLEY, CA 92308
CONTACT: EDWARD KHONG, P.E., DISTRICT ENGINEER

H. GOLDEN STATE WATER COMPANY
631 SOUTH SORENSEN AVENUE
CALIPATRIA, CA 92233
PHONE: (760) 348-5331
CONTACT: DAVID GODSEY

I. ALLIED WASTE SERVICES
3354 DOGWOOD ROAD
IMPERIAL, CA 92251
PHONE: (760) 355-0004
CONTACT: ISAAC MUNGUIA/HECTOR ARAUJO

J. UNDERGROUND SERVICE ALERT
PHONE: 1-800-422-4133

## 2. AS-BUILT DRAWINGS

THE DEVELOPER SHALL MAINTAIN A SET OF DRAWINGS ON THE JOB ILLUSTRATING ALL "AS-BUILT" CHANGES MADE TO DATE. A MARKED-UP SET OF DRAWINGS SHALL BE DELIVERED TO THE DESIGN ENGINEER UPON COMPLETION OF THE WORK, WHICH SHALL REFLECT ALL "AS-BUILT" MODIFICATIONS. THE DEVELOPER SHALL PROVIDE "AS-BUILT" DRAWINGS TO THE CITY OF CALIPATRIA AT THE CONCLUSION OF THE PROJECT. THE AS-BUILT DRAWINGS SHALL BE REVIEWED AND APPROVED BY THE CITY ENGINEER. THREE (3) SETS OF APPROVED BLUELINE DRAWINGS AND AN ELECTRONIC FILE (COMPUTER DISK) SHALL BE FORWARDED TO THE CITY OF CALIPATRIA PUBLIC WORKS DEPARTMENT AT THE CONCLUSION OF THE PROJECT.

## 3. DUST CONTROL

THE CONTRACTOR SHALL MAKE A SPECIAL EFFORT TO CONTROL DUST DURING THE EXECUTION OF THE WORK. DUST SHALL BE MAINTAINED TO A MINIMUM BY REGULAR APPLICATIONS OF WATER AS NECESSARY AND AS DIRECTED BY THE ENGINEER.

## 4. CODES AND REGULATIONS

ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH APPLICABLE CODES, ORDINANCES AND REGULATIONS OF THE CITY OF CALIPATRIA, THE STATE OF CALIFORNIA AND ALL OTHER PUBLIC AUTHORITIES HAVING JURISDICTION. CODES GOVERNING THIS WORK INCLUDE, BUT ARE NOT LIMITED TO, THE LATEST APPROVED EDITION OF THE FOLLOWING: STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION; STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK) LATEST EDITION; OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA). REQUIREMENTS OF CODES AND REGULATIONS SHALL BE CONSIDERED AS MINIMUM. WHERE CONTRACT DOCUMENTS EXCEED WITHOUT VIOLATING CODE AND REGULATION REQUIREMENTS, CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE. WHERE CODES CONFLICT, THE MORE STRINGENT SHALL APPLY. THE CONTRACTOR SHALL FURNISH ALL MATERIALS AND LABOR REQUIRED FOR

COMPLIANCE WITH CODES AND REGULATIONS, EVEN THOUGH NOT SPECIFICALLY MENTIONED OR ILLUSTRATED, WITHIN THE CONTENTS OF THE PLANS OR SPECIFICATIONS.

**5. EXAMINATION OF SITE:**

IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTOR(S) TO EXAMINE THE PROJECT SITE PRIOR TO THE OPENING OF PROPOSALS. THE CONTRACTOR SHALL BECOME FAMILIAR AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. IT IS EXPECTED THAT QUESTIONS RELEVANT TO THE WORK TO BE PERFORMED AT THE PROJECT WILL BE PRESENTED TO THE DESIGN ENGINEER PRIOR TO THE NEGOTIATION OF A CONTRACT WITH THE DEVELOPER. IF CONFLICTS OR AMBIGUITIES EXIST BETWEEN JOB SITE CONDITIONS AND THE PLANS AND SPECIFICATIONS NO ALLOWANCE WILL BE PROVIDED TO THE CONTRACTOR AND SUBCONTRACTORS FOR NEGLECTING TO PROPERLY EXAMINE THE PROJECT SITE.

**6. PERMITS:**

THE CONTRACTORS AND SUBCONTRACTORS SHALL OBTAIN ALL NECESSARY PERMITS AND A BUSINESS LICENSE FROM THE CITY OF CALIPATRIA. THE CONTRACTOR SHALL NOTIFY THE CITY OF CALIPATRIA AND THE CITY ENGINEER AT LEAST 72 HOURS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL INCLUDE ALL EXPENSES ASSOCIATED WITH THE CALIPATRIA BUSINESS LICENSE IN THE PROPOSAL TO THE DEVELOPER.

**7. TRAFFIC CONTROL:**

THE CONTRACTOR IS REQUIRED TO SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY OF CALIPATRIA FOR REVIEW AND APPROVAL PRIOR TO COMPLETING DEMOLITION OR EXCAVATION WORK IN STREET OR ALLEY AREAS WITHIN THE CITY OF CALIPATRIA. THE CONTRACTOR SHALL ADVISE ALL BUSINESS, RESIDENTIAL, INSTITUTIONS AND GOVERNMENTAL AGENCIES NEAR THE VICINITY OF THE PROJECT OF IMPENDING CONSTRUCTION ACTIVITIES AT LEAST TWO (2) WORKING DAYS PRIOR TO THE COMMENCEMENT OF ANY WORK. THE TRAFFIC CONTROL PLAN SHALL BE PREPARED IN CONFORMANCE WITH THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, "MANUAL

OF TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE WORK ZONES", LATEST EDITION.

THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL NECESSARY TRAFFIC CONTROL TO PROTECT AND GUIDE TRAFFIC FOR ALL WORK IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXPENSES RELATIVE TO TRAFFIC CONTROL. ALL TRAFFIC CONTROLS SHALL BE CLEARLY POSTED WITH SIGNS PRIOR TO THE BEGINNING OF ANY WORK. ALL TRAFFIC RESTRICTIONS LISTED HEREIN ARE TO SUPPLEMENT OTHER TRAFFIC REGULATIONS OF THE CITY OF CALIPATRIA AND ARE NOT INTENDED TO DELETE ANY PART OF THESE REGULATIONS. THE CONTRACTOR SHALL ATTEMPT TO MAINTAIN LOCAL ACCESS TO ALL PROPERTIES ON THE PROJECT AT THE END OF EACH WORKING DAY, WHEN POSSIBLE. **ANY STREET CLOSURE SHALL BE APPROVED BY THE PUBLIC WORKS MANAGER.**

## 8. SIGNS.

STOP SIGNS AND ALL OTHER TRAFFIC SIGNS SHALL BE MOVED IF NECESSARY DURING THE CONSTRUCTION PROCESS AND BE REPOSITIONED TEMPORARILY IN A LOCATION DETERMINED BY THE ENGINEER. STOP SIGNS SHALL NOT BE REMOVED FROM SERVICE, BUT RATHER RELOCATED TO A VISIBLE LOCATION. OTHER SIGNS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE STORED BY THE CONTRACTOR DURING THE CONSTRUCTION PHASE OF THE PROJECT. AT THE CONCLUSION OF THE PROJECT, ALL SIGNS SHALL BE POSITIONED IN A PERMANENT LOCATION AS DETERMINED BY THE ENGINEER.

## 9. BARRICADES.

DURING THE INSTALLATION OF THE P.C.C. CONCRETE FACILITIES, SANITARY SEWER, STORM WATER AND WATER FACILITIES, THE CONTRACTOR SHALL MAINTAIN LIGHTED BARRICADES ALONG THE LENGTH OF THE CONCRETE FACILITIES AND PIPELINES TO PROHIBIT PEDESTRIAN TRAFFIC OR VEHICULAR TRAFFIC FROM UTILIZING THE NEW CONCRETE FACILITIES UNTIL THE CURING PROCESS IS COMPLETE OR ENTERING OPEN EXCAVATIONS. THE CONTRACTOR SHALL SUPPLY THE QUANTITY OF BARRICADES REQUIRED. IF THE LIGHTED BARRICADES BECOME DEFECTIVE OR NON-FUNCTIONAL, THE BARRICADES SHALL BE IMMEDIATELY REPLACED AS DIRECTED BY THE ENGINEER. BARRICADES SHALL BE PLACED ALONG THE EDGES OF THE

NEW CONCRETE FACILITIES OR PIPELINE EXCAVATIONS AT FOUR FEET (4') ON CENTER TO DIVERT VEHICULAR AND PEDESTRIAN TRAFFIC AROUND THE CONSTRUCTION AREAS. WARNING TAPE SHALL BE EXTENDED BETWEEN THE BARRICADES. ADDITIONAL BARRICADES SHALL BE ADDED IF REQUIRED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL INCLUDE THE COST ASSOCIATED WITH BARRICADE SUPPLY AND PLACEMENT IN THE PROPOSAL TO THE DEVELOPER.

**10. UTILITIES.**

ALL UTILITIES SERVICING THE PROPOSED SUBDIVISION SHALL BE UNDERGROUNDED. OVERHEAD POWER, TELEPHONE AND CABLE TELEVISION CABLES AND FACILITIES SHALL NOT BE ALLOWED TO BE CONSTRUCTED. THE ELECTRIC, TELEPHONE AND CABLE TELEVISION UTILITIES SHALL BE PLACED WITHIN THE PUBLIC UTILITY EASEMENT ILLUSTRATED ON THE IMPROVEMENT PLANS AND FINAL MAP. A TOTAL OF TWO (2) SPARE 3-INCH SCHEDULE 40 PVC CONDUITS SHALL BE INSTALLED WITHIN THE 10-FOOT UTILITY EASEMENT FOR FUTURE FIBER OPTIC SERVICE.

**11. MAILBOXES.**

THE DEVELOPER SHALL INSTALL MAILBOXES FOR EACH RESIDENCE. THE DEVELOPER SHALL COORDINATE LOCATING THE MAILBOXES TO A POSITION ACCEPTABLE TO THE CALIPATRIA PUBLIC WORKS MANAGER AND CITY ENGINEER AND U.S. POSTMASTER AT THE CALIPATRIA POST OFFICE BRANCH. THE MAILBOXES SHALL NOT BE PLACED WITHIN THE SIDEWALK AREA. A “GANG” MAILBOX SYSTEM WHICH PLACES THE MAILBOXES IN A CENTRALIZED LOCATION IS ACCEPTABLE. THE POSTMASTER OF CALIPATRIA SHALL APPROVE THE INSTALLATION AND LOCATION OF THE MAILBOXES WITHIN THE SUBDIVISION.

**12. RESTROOM FACILITIES.**

THE DEVELOPER SHALL LOCATE MEN'S AND WOMEN'S PORTABLE RESTROOM FACILITIES AT THE PROJECT SITE DURING THE CONSTRUCTION PERIOD. THE PORTABLE RESTROOMS SHALL BE CLEANED ON A WEEKLY BASIS.

**13. ACCESS TO PRIVATE PROPERTY.**

THE CONTRACTOR SHALL PROVIDE FOR INGRESS AND EGRESS FOR PRIVATE PROPERTY ADJACENT TO THE WORK THROUGHOUT THE PERIOD OF CONSTRUCTION.

**14. CLEAN-UP OF EXISTING STREETS.**

ANY DIRT, DUST OR MUD, EITHER TRACKED OFF-SITE BY EQUIPMENT OR BLOWN INTO ADJACENT CITY STREETS WILL BE CLEANED UP DAILY BY THE RESPONSIBLE CONTRACTOR OR SUBCONTRACTOR.

**15. GRADING OF RESIDENTIAL LOTS.**

ALL GRADING OF RESIDENTIAL LOTS SHALL COMPLY WITH CHAPTER 70 OF THE UNIFORM BUILDING CODE, LATEST EDITION, AS A MINIMUM. THE MINIMUM GRADE FOR SWALES SHALL BE 1%. SEE ***STREET IMPROVEMENT STANDARDS, DETAIL S142*** FOR GRADING PLAN REQUIREMENTS.

**16. COORDINATION OF INSPECTION SERVICES.**

THE CONTRACTOR SHALL ARRANGE FOR INSPECTIONS FOR THIS PROJECT WITH THE CITY OF CALIPATRIA ENGINEERING CONSULTANT AT (760) 337-3883 A MINIMUM OF 72 HOURS IN ADVANCE OF THE REQUESTED INSPECTION. IN THE EVENT THE CONTRACTOR OR SUBCONTRACTOR DECLINES THE INSPECTION AT THE PRE-ARRANGED TIME AND DATE OF INSPECTION, THE DEVELOPER SHALL BE CHARGED THE CURRENT HOURLY RATE OF THE CITY ENGINEER PERSONNEL FROM THE TIME THE PERSONNEL LEAVES THE CITY ENGINEER'S OFFICE UNTIL THE TIME THE PERSONNEL RETURNS TO THE CITY ENGINEER'S OFFICE.

**17. PUMPING OF NATIVE SOIL.**

DURING GRADING OPERATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING EQUIPMENT THAT WILL NOT CAUSE "PUMPING" OF THE SOIL DUE TO THE DEPTH OF GROUNDWATER PRIOR TO CONSTRUCTION.

**18. REQUIREMENTS OF CONTRACTORS AND SUBCONTRACTORS.**

ALL CONTRACTORS AND SUBCONTRACTORS PARTICIPATING ON THIS PROJECT SHALL BE LICENSED BY THE STATE OF CALIFORNIA, HAVE A CITY BUSINESS LICENSE AND SHALL FILE A CERTIFICATE OF WORKMENS' COMPENSATION WITH THE CITY OF CALIPATRIA PRIOR TO THE START OF CONSTRUCTION.

**19. LISTING OF GENERAL CONTRACTORS AND SUBCONTRACTORS.**

A LIST OF ALL SUBCONTRACTORS AND THE GENERAL CONTRACTOR SHALL BE PROVIDED BY THE DEVELOPER TO THE CITY OF CALIPATRIA PUBLIC WORKS DEPARTMENT AND CITY ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES AT THE PROJECT SITE.

**20. OPEN TRENCHES.**

NO OPEN TRENCHES WILL BE PERMITTED OVERNIGHT WITHOUT THE APPROVAL OF THE PUBLIC WORKS MANAGER.

**21. PRE-CONSTRUCTION CONFERENCE.**

A PRE-CONSTRUCTION CONFERENCE SHALL BE CONDUCTED WITH THE PUBLIC WORKS MANAGER, CITY ENGINEER, CITY MANAGER, CONTRACTOR, SUBCONTRACTORS AND DEVELOPER AT LEAST 7 DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**22. CONTRACTOR, DEVELOPER AND SUBCONTRACTOR RESPONSIBILITY.**

THE CONTRACTOR, DEVELOPER AND SUBCONTRACTORS AGREE TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR, DEVELOPER AND SUBCONTRACTORS SHALL DEFEND, INDEMNIFY AND HOLD THE CITY OF CALIPATRIA HARMLESS FROM ANY AND ALL LIABILITY, REAL OR

ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.

**23. <u>SEPARATION REQUIREMENTS OF DOMESTIC WATER AND SANITARY SEWER SERVICES</u>.**

SEPARATION REQUIREMENTS FOR WATER AND SEWER MAINS, SEWER LATERALS AND WATER SERVICES SHALL BE OBSERVED AS DIRECTED BY THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES STANDARDS AND THE CITY OF CALIPATRIA STANDARD DETAILS.

**24. <u>CUT SHEET DISTRIBUTION</u>.**

THE CONTRACTOR SHALL FURNISH TWO (2) SETS OF "CUT SHEETS" FOR SEWER, WATER AND STREET CONSTRUCTION TO THE CITY OF CALIPATRIA PUBLIC WORKS DEPARTMENT AND THE CITY ENGINEER A MINIMUM OF 24 HOURS PRIOR TO THE COMMENCEMENT OF PIPELINE OR STREET CONSTRUCTION.

**25. <u>RETENTION BASINS AND STANDING WATER FOR ALL ACTIVE JOBSITES WITHIN THE CITY:</u>**

ALL RETENTION BASINS ARE TO ADEQUATELY CONTAIN ALL RUNOFF WITHIN THE SITE WITHOUT CAUSING FLOODING TO ADJACENT STREETS OR HOMES. ADJACENT AREAS MUST REMAIN PASSABLE FOR RESIDENTS AND EMERGENCY VEHICLES.

ALL RETENTION BASINS ARE TO BE DRAINED COMPLETELY WITHIN 72 HOURS AFTER A STORMWATER EVENT. ANY WATER REMAINING IN THE BASIN AFTER 72 HOURS SHALL BE REMOVED BY VACUUM TRUCK OR OTHER SIMILAR METHOD. STANDING WATER SHALL NOT BE PUMPED INTO THE CITY OF CALIPATRIA PUBLIC STREETS OR PRIVATE STREETS. REQUIREMENTS TO COMPLY WITH THIS POLICY INCLUDE (BUT MAY NOT BE LIMITED TO):

A. ALL JOBSITES SHALL HAVE A RETENTION BASIN THAT ADEQUATELY CONTAINS ALL RUNOFF WATER AND THAT DRAINS WITHIN 72 HOURS AFTER A STORMWATER EVENT.

B. IT IS THE RESPONSIBILITY OF THE DEVELOPER / CONTRACTOR TO NOTIFY THE CITY OF CALIPATRIA PUBLIC WORKS DEPARTMENT STAFF IF THE RETENTION BASIN DOES NOT ADEQUATELY ACCEPT THE RUNOFF OR DOES NOT DRAIN COMPLETELY.

C. THE ENGINEER OF RECORD FOR THE PROJECT SHALL MAKE A SITE VISIT TO NOTE A FAILED RETENTION / FAILED PERCOLATION CONDITION AND ISSUE A REPORT TO THE CITY OF CALIPATRIA.

D. THE DEVELOPER / CONTRACTOR SHALL IMMEDIATELY AUTHORIZE THE REDESIGN OF THE RETENTION BASIN AND SHALL SUBMIT THE REDESIGN TO THE CITY OF CALIPATRIA WITHIN TWO WEEKS IF THE RETENTION BASIN DOES NOT DRAIN WITHIN THE 72 HOUR PERIOD OR IF THERE IS STANDING WATER IN THE RETENTION BASIN BOTTOM FOR EXTENDED PERIODS OF TIME.

E. THE DEVELOPER / CONTRACTOR SHALL IMMEDIATELY PROCEED WITH RECONSTRUCTION RECOMMENDATIONS WHEN THEY ARE APPROVED BY THE CITY OF CALIPATRIA.

F. IT SHALL REMAIN THE DEVELOPER'S / CONTRACTORS'S RESPONSIBILITY TO ENSURE THAT THE REDESIGNED / RECONSTRUCTED RETENTION BASIN FUNCTIONS PROPERLY.

G. ANY WATER LEAVING THE JOBSITE DURING A STORMWATER EVENT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER/ CONTRACTOR TO SATISFACTORILY ADDRESS.

26. THE FLOWLINE OF ALL CURB AND GUTTER AND CROSS GUTTERS SHALL BE WATER TESTED BEFORE ACCEPTANCE OF WORK.

**END OF GENERAL CONDITIONS SECTION**

## STREET TECHNICAL SPECIFICATIONS

### 1. SUBBASE PREPARATION

THE NATIVE MATERIAL BENEATH P.C.C. CONCRETE AND ASPHALT CONCRETE INFRASTRUCTURE INCLUDING BUT NOT LIMITED TO P.C.C. DRIVEWAY ENTRANCES, P.C.C. SIDEWALKS, P.C.C. RIBBON GUTTERS, P.C.C. VALLEY GUTTER, P.C.C. CROSS-GUTTER, P.C.C. BARRIER CURB, A.C. BARRIER CURB, P.C.C. CURB AND GUTTER, P.C.C. SIDEWALK, P.C.C. SPANDRELS, P.C.C. TRANSITION AREAS AND A.C. PAVEMENT SHALL BE EXCAVATED TO ±0.05 FEET OF DESIGN SUBBASE GRADE. THE DESIGN SUBBASE GRADE SHALL BE FIELD VERIFIED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF GRANULAR SAND FILL, CRUSHER FINES OR CLASS 2 BASE. THE CITY ENGINEER SHALL DETERMINE THE NUMBER AND LOCATION OF POINTS TO CHECK FOR THE SUBBASE GRADE ELEVATION COMPLIANCE. PRIOR TO THE CITY ENGINEER'S INSPECTION OF THE SUBBASE GRADE THE CONTRACTOR SHALL ESTABLISH BLUETOP HUBS (STAKES SET TO DESIGN SUBBASE GRADE) 25 FEET ON CENTER ALONG STREET SECTIONS. THE STAKES SHALL BE ESTABLISHED AT THE EDGE OF PAVEMENT, CENTERLINE AND QUARTER LINES ACROSS THE STREET SECTIONS. THERE SHALL BE FIVE (5) BLUETOP STAKES SET ACROSS A TYPICAL SYMMETRICAL STREET CROSS-SECTION. FOR PARKING LOT AREAS, BLUETOP STAKES SHALL BE ESTABLISHED ON A 20 FOOT X 20 FOOT GRID PATTERN. BLUETOP STAKES SHALL ALSO BE PLACED AT 20 FOOT STATIONS ALONG BARRIER CURB LINES, CURB AND GUTTER LINES AND RIBBON GUTTER LINES.

### 2. SUBGRADE PREPARATION

THE CLASS 2 BASE, SAND OR CRUSHER FINES BENEATH A.C. PAVEMENT AND CONCRETE INFRASTRUCTURE SHALL BE PLACED TO WITHIN ±0.02 FEET OF DESIGN SUBGRADE PRIOR TO THE PLACEMENT OF A.C. PAVEMENT OR P.C.C. CONCRETE. THE CITY ENGINEER SHALL FIELD VERIFY THE SUBGRADE ELEVATIONS IN THE FIELD PRIOR TO THE PLACEMENT OF CLASS 2 BASE, GRANULAR SAND MATERIAL OR

CRUSHER FINES. PLACEMENT OF P.C.C. CONCRETE OR A.C. PAVEMENT SHALL NOT BE ALLOWED UNTIL THE ENGINEER HAS APPROVED THE SUBGRADE DESIGN GRADE. PRIOR TO THE CITY ENGINEER'S INSPECTION OF THE SUBGRADE THE CONTRACTOR SHALL ESTABLISH BLUETOP HUBS (STAKES SET TO DESIGN SUBGRADE) 25 FEET ON CENTER ALONG STREET SECTIONS. THE STAKES SHALL BE ESTABLISHED AT THE EDGE OF PAVEMENT, CENTERLINE AND QUARTER LINES ACROSS THE STREET SECTIONS. THERE SHALL BE FIVE (5) BLUETOP STAKES SET ACROSS A TYPICAL SYMMETRICAL STREET SECTION. FOR PARKING LOT AREAS, BLUETOP STAKES SHALL BE ESTABLISHED ON A 20 FOOT X 20 FOOT GRID PATTERN. BLUETOP STAKES SHALL ALSO BE PLACED AT 20 FOOT STATIONS ALONG BARRIER CURB LINES, CURB AND GUTTER LINES AND RIBBON GUTTER LINES

## 3.0 **SAND**

CLEAN GRANULAR SAND FREE OF CLAY, SHALE AND DELETERIOUS MATERIAL SHALL BE DELIVERED TO THE SITE AND PLACED AS NOTED ON THE PLANS. SAND SHALL BE COMPACTED TO 90 PERCENT OF MAXIMUM DENSITY AT OPTIMUM WATER CONTENT PER ASTM D-1557 UNLESS OTHERWISE NOTED ON THE PLANS. THE MATERIAL SHALL CONFORM TO A SAND EQUIVALENT OF 30 OR GREATER. THE MAXIMUM AMOUNT OF MATERIAL PASSING THE NUMBER 200 SIEVE SHALL BE 7 PERCENT. THE SAND SHALL CONFORM TO THE FOLLOWING GRADATION PERCENTAGES:

| SIEVE SIZE | PERCENT PASSING |
|---|---|
| 3/8" | 100 |
| NO. 4 | 98-90 |
| NO. 8 | 90-75 |
| NO. 10 | 75-60 |
| NO. 16 | 60-50 |
| NO. 30 | 50-38 |
| NO. 40 | 38-29 |
| NO. 50 | 29-19 |
| NO. 100 | 19-7 |
| NO. 200 | 7-0 |

THE CONTRACTOR SHALL SUPPLY A FIVE GALLON SAMPLE OF SAND MATERIAL TO THE MATERIAL TESTING LABORATORY WITHIN FOUR (4) DAYS AFTER THE NOTICE TO PROCEED IS ISSUED. THE GRADATION, SAND EQUIVALENT AND MAXIMUM DENSITY OF THE SAND MATERIAL SHALL BE DETERMINED. THE TEST RESULTS SHALL BE FORWARDED TO THE ENGINEER. THE COST OF TESTING SHALL BE INCURRED BY THE CONTRACTOR. THE GRADATION OF THE GRANULAR SAND SHALL BE DETERMINED AND THE TEST RESULTS FORWARDED TO THE CITY ENGINEER PRIOR TO THE DELIVERY OF THE GRANULAR SAND MATERIAL TO THE CONSTRUCTION SITE. PRIOR TO THE PLACEMENT OF SAND THE NATIVE SUBBASE GRADE SHALL BE CHECKED AND APPROVED BY THE CITY ENGINEER.

CRUSHER FINES SHALL BE ALLOWED TO BE UTILIZED IN LIEU OF SAND IF APPROVED BY THE CITY ENGINEER.

## 4.0 **CRUSHER FINES**

CRUSHER FINES SHALL CONSIST OF DECOMPOSED GRANITE INDIGENOUS TO THE IMPERIAL VALLEY. CRUSHER FINES UTILIZED FOR THIS PROJECT SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS:

| SIEVE SIZE | PERCENT PASSING |
|---|---|
| 5/8” | 100 |
| NO. 4 | 80 – 100 |
| NO. 8 | 50 - 85 |
| NO. 30 | 30 - 50 |
| NO. 200 | 4 - 15 |

THE SAND EQUIVALENT SHALL BE 20 OR GREATER.

## 5.0 **CLASS 2 BASE**

THE CLASS 2 BASE MATERIAL SHALL CONFORM TO CALTRANS SECTION 26, LATEST EDITION, FOR 25MM MAXIMUM BASE MATERIAL. THE GRADATION REQUIREMENTS ARE AS FOLLOWS:

| SIZE | PERCENT PASSING |
|---|---|
| 1 IN/25.04MM | 100 |
| ¾ IN/19.00MM | 87-100 |
| #4/4.75MM | 30-65 |
| #30/600MM | 5-35 |
| #200/75.00MM | 0-12 |

THE SAND EQUIVALENT SHALL BE 25 OR GREATER. AN ANGULAR AGGREGATE IS TO BE USED. CLASS 2 BASE MATERIAL SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY ACCORDING TO ASTM D-1557, UNLESS OTHERWISE NOTED ON THE PLANS OR DETAILS. THE TOLERANCE FOR THE CLASS 2 BASE BETWEEN DESIGN SUBGRADE ELEVATION AND ACTUAL SUBGRADE ELEVATION AS CONSTRUCTED IN THE FIELD SHALL BE PLUS OR MINUS 0.02 FEET AS REFERENCED FROM THE DESIGN SUBGRADE. PRIOR TO THE PLACEMENT OF CLASS 2 BASE THE NATIVE SUBBASE GRADE SHALL BE CHECKED AND APPROVED BY THE CITY ENGINEER. THE NATIVE SUBBASE GRADE SHALL BE WITHIN PLUS OR MINUS 0.05 FEET OF NATIVE SUBBASE DESIGN GRADE PRIOR TO THE PLACEMENT OF CLASS 2 BASE.

THE CONTRACTOR SHALL SUPPLY A FIVE GALLON SAMPLE OF THE CLASS 2 BASE TO THE MATERIAL TESTING LABORATORY WITHIN FOUR (4) DAYS OF THE NOTICE TO PROCEED. THE MATERIAL SHALL BE DELIVERED TO THE TESTING LABORATORY TO DETERMINE THE MAXIMUM DENSITY, GRADATION, R-VALUE, SAND EQUIVALENT AND DURABILITY INDEX OF THE CLASS 2 BASE. A COPY OF THE TEST RESULTS SHALL BE FORWARDED TO THE CITY ENGINEER BY THE GEOTECHNICAL CONSULTANT FOR REVIEW. THE GRADATION OF THE CLASS 2 BASE SHALL BE DETERMINED AND THE TEST RESULTS FORWARDED TO THE CITY ENGINEER FOR APPROVAL PRIOR TO THE DELIVERY OF THE CLASS 2 BASE MATERIAL TO THE CONSTRUCTION SITE. CLASS 2 BASE UTILIZING RECYCLED MATERIALS SHALL NOT BE ALLOWED.

## 6.0 **P.C.C. CONCRETE**

P.C.C. CONCRETE, UTILIZED FOR BUT NOT LIMITED TO, CURB AND GUTTER, BARRIER CURB, SPANDRELS, CROSS-GUTTER, VALLEY GUTTER, RIBBON GUTTERS, RESIDENTIAL AND COMMERCIAL DRIVEWAYS, SIDEWALKS AND ALL OTHER CONCRETE INFRASTRUCTURE SHALL CONTAIN A MINIMUM OF 6 ½ SACKS OF CEMENT PER YARD AND ATTAIN 4,500 P.S.I. COMPRESSIVE STRENGTH AFTER 28 DAYS CURING UNLESS STATED OTHERWISE ON THE PLANS. A CONCRETE MIX DESIGN IS TO BE SUBMITTED TO THE ENGINEER WITHIN FIVE (5) DAYS AFTER THE ISSUANCE OF THE NOTICE TO PROCEED. NEW FORMWORK SHALL BE UTILIZED IN THE CONSTRUCTION OF EVERY CONCRETE FACILITY. THE FORMWORK SHALL BE TRUE TO LINE AND GRADE. THE VERTICAL FLOWLINE ELEVATION TOLERANCE SHALL BE +/- 0.02 FEET FOR DESIGN GRADE FOR SLOPES OF 1.0% OR GREATER, +/- 0.01 FOR DESIGN GRADE FOR SLOPES LESS THAN 1.0%. THE ENGINEER SHALL CHECK THE FORMWORK FOR LINE AND GRADE PRIOR TO THE PLACEMENT OF CONCRETE. CONCRETE "CURB MACHINES" SHALL NOT BE ALLOWED FOR CURB AND GUTTER AND RIBBON GUTTERS DESIGNED AT A SLOPE OF 1 PERCENT OR LESS. THE SUBCONTRACTOR SHALL NOTIFY THE ENGINEER 72 HOURS PRIOR TO THE REQUIRED INSPECTION. EXPOSED SURFACES OF CONCRETE AREAS SHALL RECEIVE A DOUBLE TROWEL FINISH. WEAKENED PLANE JOINTS SHALL BE PLACED EVERY 8 LINEAL FEET FOR RIBBON GUTTER, CROSS GUTTER AND VALLEY GUTTER CONSTRUCTION UNLESS OTHERWISE ILLUSTRATED ON THE STANDARD PLANS. EXPANSION JOINTS SHALL BE PLACED EVERY 64 FEET ALONG CURB AND GUTTER, BARRIER CURB, VALLEY GUTTER AND SIDEWALK CONSTRUCTION UNLESS OTHERWISE ILLUSTRATED ON THE STANDARD PLANS. INSTALLATION OF CURB AND GUTTER, VALLEY GUTTER AND CROSS-GUTTERS SHALL BEGIN AT THE LOWEST ELEVATION AND PROCEED UPHILL. A TOTAL OF ONE (1) SET OF CYLINDERS AND ONE (1) SLUMP TEST SHALL BE REQUIRED FOR EVERY 50 CUBIC YARDS OF CONCRETE, EXCEPT THAT A MINIMUM OF ONE (1) SET OF CYLINDERS AND SLUMP TEST SHALL BE REQUIRED EACH DAY TWENTY (20) OR MORE YARDS OF CONCRETE ARE PLACED AT A PROJECT SITE. THE MAXIMUM ALLOWABLE SLUMP SHALL BE 4 INCHES. A SET OF CYLINDERS SHALL BE COMPOSED OF THREE (3) CYLINDERS. THE FIRST CYLINDER OF A SET SHALL BE TESTED AFTER SEVEN (7) DAYS CURING. THE SECOND CYLINDER OF A SET SHALL BE TESTED AFTER 28 DAYS CURING. THE THIRD CYLINDER SHALL BE HELD IN RESERVE AND TESTED IF DIRECTED BY THE CITY ENGINEER. THE TEST RESULTS WILL BE FORWARDED TO

THE CITY ENGINEER FOR REVIEW. THE CITY ENGINEER SHALL RECEIVE A CONCRETE VENDOR SLIP FOR EACH TRUCK LOAD OF CONCRETE DELIVERED TO THE PROJECT SITE.

PRIOR TO THE PLACEMENT OF CONCRETE, THE SUBGRADE DEPTH SHALL BE INSPECTED TO INSURE THAT THE FULL DEPTH OF CONCRETE, AS NOTED ON THE PLANS, IS ATTAINED. EXCESS FILL MATERIAL SHALL BE REMOVED AS REQUIRED BY THE CITY ENGINEER. THE FORM BOARDS SHALL BE CHECKED FOR THE PROPER ELEVATION. COMPACTION TESTS ON THE SUBGRADE SHALL HAVE ACHIEVED THE DENSITY REQUIREMENTS SPECIFIED. THE ENGINEER SHALL THEN ALLOW THE PLACEMENT OF CONCRETE.

THE CONCRETE SHALL BE SCREEDED AND FLOATED. ALL EDGES SHALL BE STRUCK WITH A CONCRETE EDGER. WEAKENED PLANE JOINTS SHALL BE ESTABLISHED AT RIGHT ANGLES TO THE SIDEWALK EDGE AS ILLUSTRATED ON THE STANDARD DRAWINGS. THE WEAKENED PLANE JOINTS SHALL BE 3/8 INCH IN WIDTH AND 3/4 INCH IN DEPTH. EXPANSION JOINTS CONSISTING OF 1/2 INCH THICK CELOTEX MATERIAL SHALL BE PLACED ACROSS THE FULL SECTION OF THE P.C.C. SIDEWALK EVERY 64 LINEAL FEET, OR AS REQUIRED BY THE STANDARD PLANS. AFTER THE CONCRETE SURFACE HAS BEEN FLOATED AND CURED ADEQUATELY, IT SHALL RECEIVE A DOUBLE TROWEL FINISH. THE TROWELING SHALL BE ACCOMPLISHED BY HAND WITH A STEEL TROWEL. THE SURFACE OF THE CONCRETE SHALL RECEIVE A LIGHT BROOM FINISH AFTER THE SURFACE IS DOUBLE TROWELED. THE SURFACE OF THE CONCRETE SHALL BE SMOOTH AND TRUE TO GRADE. TOLERANCE FOR THE CONCRETE SURFACE SHALL BE 1/8 INCH IN 10 LINEAL FEET WITH MAXIMUM HIGH AND LOW VARIANCE NOT OCCURRING IN LESS THAN 20 FEET. THE CONTRACTOR SHALL MAINTAIN THE CONCRETE SURFACE MOIST OR WET FOR A 24-HOUR PERIOD AFTER THE CONCRETE IS PLACED AND FINISHED TROWELED. PLACEMENT OF BURLAP BAGS OR USED CARPET OVER THE CONCRETE SURFACE AND A CONTINUOUS APPLICATION OF WATER OVER THE CONCRETE SURFACE WILL BE REQUIRED FOR A 24-HOUR PERIOD. AFTER THE 24-HOUR PERIOD, A "SEAL HARD" CONCRETE SEALER AS MANUFACTURED BY L&M CONSTRUCTION CHEMICALS, INC., SHALL BE APPLIED TO ALL NEW P.C.C. CONCRETE SURFACES. THE PHONE NUMBER OF L&M CONSTRUCTION CHEMICALS, INC. IS (402) 453-6600. THE CONCRETE SURFACES SHALL BE CLEANED OF ALL DIRT AND RESIDUE PRIOR TO THE PLACEMENT OF THE CONCRETE SEALER. CONCRETE SHALL NOT BE PLACED AFTER 10:00 A.M. ON FRIDAYS.

## 7.0 **BITUMINOUS PAVEMENT**

THE BITUMINOUS ASPHALT CONCRETE SHALL CONSIST OF MINERAL AGGREGATE, UNIFORMLY MIXED WITH BITUMINOUS MATERIAL AT A CENTRAL PLANT. AGGREGATE SHALL BE 19MM/(3/4 INCH) MAXIMUM, MEDIUM. THE ASPHALT CONCRETE SHALL CONFORM TO THE FOLLOWING PERCENTAGES:

| | | LIMITS OF PROPOSED |
|---|---|---|
| SIEVE SIZE | PERCENT PASSING | GRADATION – X |
| 1 IN/25.00MM | 100 | ---- |
| 3/4 IN/19.00MM | 90 – 100 | ---- |
| 3/8 IN/9.50MM | 60 – 85 | ---- |
| #4/4.75MM | X +/- 8 | 49 – 54 |
| #8/2.36MM | X +/- 8 | 36 – 40 |
| #30/0.600MM | X +/- 8 | 18 – 21 |
| #200/0.075MM | 0 – 11 | ---- |

IN THE TABLE ABOVE, “X” IS THE GRADATION WHICH THE CONTRACTOR PROPOSES TO FURNISH FOR SPECIFIC SIEVE.

ASPHALT BINDER SHALL BE IN ACCORDANCE WITH THE APPROVED A.C. MIX DESIGN.

THE ASPHALT CONCRETE SHALL BE TYPE “A” OR “B” AS SET FORTH IN THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, SECTION 39, LATEST EDITION, UNLESS OTHERWISE SPECIFIED WITHIN THESE SPECIFICATIONS. THE ASPHALT CONCRETE SHALL BE APPLIED WITH A VIBRATORY MACHINE. THE GRADE OF ALL ASPHALT BITUMEN SHALL BE AR (AGED RESIDUE) 4,000 OR AR 8000 AS APPROVED BY THE CITY ENGINEER. THE MINIMUM BITUMEN SHALL BE IN ACCORDANCE WITH THE APPROVED MIX DESIGN. THE ASPHALT CONCRETE SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D-1559. THE TEMPERATURE OF THE ASPHALT WHEN DELIVERED TO THE APPLICATION SITE SHALL RANGE BETWEEN 285 DEGREES F AND 359 DEGREES F. THE FINISHED SURFACE SHALL BE WITHIN +/- 0.02 FEET OF FINISH DESIGN GRADE WITH MAXIMUM HIGH AND LOW VARIANCE OCCURRING IN A MAXIMUM OF 10 HORIZONTAL FEET.

ROLLERS OF THE VIBRATORY, STEEL WHEEL OR PNEUMATIC-TIRED TYPE MAY BE USED. THEY SHALL BE IN GOOD CONDITION, CAPABLE OF OPERATING AT SLOW SPEEDS TO AVOID DISPLACEMENT OF THE BITUMINOUS MIXTURE. THE NUMBER, TYPE, AND WEIGHT OF ROLLERS SHALL BE SUFFICIENT TO COMPACT THE MIXTURE TO THE REQUIRED DENSITY WHILE IT IS STILL IN A WORKABLE CONDITION. THE USE OF EQUIPMENT WHICH CAUSES EXCESSIVE CRUSHING OF THE AGGREGATE WILL NOT BE PERMITTED.

AFTER SPREADING, THE MIXTURE SHALL BE THOROUGHLY AND UNIFORMLY COMPACTED BY ROLLING. THE SURFACE SHALL BE ROLLED WHEN THE MIXTURE HAS ATTAINED SUFFICIENT STABILITY SO THAT THE ROLLING DOES NOT CAUSE UNDUE DISPLACEMENT, CRACKING OR SHOVING. THE SEQUENCE OF ROLLING OPERATIONS AND THE TYPE OF ROLLERS USED SHALL BE AT THE DISCRETION OF THE CONTRACTOR.

THE SPEED OF THE ROLLER SHALL, AT ALL TIMES, BE SUFFICIENTLY SLOW TO AVOID DISPLACEMENT OF THE HOT MIXTURE. ANY DISPLACEMENT OCCURRING AS A RESULT OF REVERSING THE DIRECTION OF THE ROLLER OR FROM ANY OTHER CAUSE SHALL BE CORRECTED AT ONCE.

ROLLING SHALL CONTINUE UNTIL THE ROLLER MARKS ARE ELIMINATED, THE SURFACE IS OF UNIFORM TEXTURE AND TRUE TO GRADE AND CROSS SECTION AND THE REQUIRED FIELD DENSITY IS OBTAINED.

TO PREVENT ADHESION OF THE MIXTURE TO THE ROLLER, THE WHEELS SHALL BE KEPT PROPERLY MOISTENED, BUT EXCESSIVE WATER WILL NOT BE PERMITTED.

IN AREAS NOT ACCESSIBLE TO THE ROLLER, THE MIXTURE SHALL BE THOROUGHLY COMPACTED WITH HOT HAND TAMPERS.

ANY MIXTURES THAT BECOME LOOSE AND BROKEN, MIXED WITH DIRT, OR IN ANYWAY DEFECTIVE, SHALL BE REMOVED AND REPLACED WITH FRESH HOT MIXTURE AND IMMEDIATELY COMPACTED TO CONFORM TO THE SURROUNDING AREA. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR SHALL PAY FOR ALL COSTS ASSOCIATED WITH THE PREPARATION OF THE MARSHALL MIX DESIGN, COMPACTION TESTS

AND EXTRACTION/GRADATION TESTS REQUIRED FOR THIS PROJECT. THE CONTRACTOR SHALL INCUR ALL COSTS RELATIVE TO THE PREPARATION OF THE MARSHALL MIX DESIGN AND GEOTECHNICAL TESTING RELATIVE TO THIS PROJECT.

A SAMPLE OF THE BITUMINOUS MIX WILL BE OBTAINED EACH MORNING PAVEMENT OPERATIONS ARE OCCURRING. THE SAMPLE SHALL BE OBTAINED BY THE GEOTECHNICAL TESTING CONSULTANT. THE MAXIMUM DENSITY OF THE SAMPLE SHALL BE DETERMINED. THE RESULTS OF THE TEST WILL BE USED TO BASE THE FIELD DENSITY TESTS AGAINST. AN EXTRACTION FROM THE SAMPLE SHALL BE TAKEN TO DETERMINE THE PERCENTAGE OF BITUMEN IN THE MIX. THE GRADATION OF THE SAMPLE SHALL ALSO BE OBTAINED. DENSITY TESTS WILL BE TAKEN DURING THE ROLLING OPERATION. THE PAVEMENT SHALL CONTINUE TO BE ROLLED UNTIL THE DESIRED DENSITY IS OBTAINED. THE COSTS ASSOCIATED WITH THE TESTING SHALL BE BORNE BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE TWO (2) SETS OF TEST REPORTS TO THE ENGINEER. A FIELD TECHNICIAN PROVIDED BY THE GEOTECHNICAL TESTING CONSULTANT SHALL BE MADE AVAILABLE DURING THE ASPHALT PLACEMENT TO CONTINUOUSLY MONITOR THE DENSITY OF THE ASPHALT.

## 8. MANHOLE AND WATER VALVE FRAMES AND COVERS

ALL MANHOLE FRAMES AND COVERS, WATER VALVE BOXES AND LIDS, GAS VALVE BOXES AND LIDS, AND OTHER SIMILAR EXISTING UTILITIES SHALL BE RAISED TO THE GRADE OF THE FINISHED PAVEMENT SURFACE BY THE CONTRACTOR. MANHOLE FRAMES AND COVERS, WATER VALVE LIDS AND SIMILAR UTILITY COVERS SHALL BE LOWERED A MINIMUM OF 3 INCHES BELOW THE DESIGN PAVEMENT SURFACE PRIOR TO THE INSTALLATION OF A.C. PAVEMENT. MANHOLE FRAMES AND COVERS AND WATER VALVE LIDS SHALL BE RAISED AFTER PAVING OPERATIONS HAVE OCCURRED. 8-INCH WIDE, 8-INCH DEEP CONCRETE COLLARS SHALL BE POURED CONCENTRIC WITH THE OUTSIDE OF WATER AND GAS VALVE EXTENSION RISERS 3/8 INCHES BELOW THE FINISH PAVEMENT SURFACE. A ONE (1) FOOT WIDE, ONE (1) FOOT DEEP CONCRETE COLLAR SHALL BE POURED CONCENTRIC WITH THE OUTSIDE OF ALL MANHOLE FRAMES AND COVERS 3/8 INCHES BELOW THE SURFACE OF THE PAVEMENT. MANHOLE FRAMES AND COVERS SHALL BE RAISED WITH CONCRETE GRADE RINGS 3/8 INCHES BELOW THE NEW STREET PAVEMENT SURFACE ELEVATION. THE MANHOLE FRAME AND COVERS AND WATER AND GAS VALVE EXTENSION RISERS AND COVERS SHALL BE RAISED

3/8 INCHES BELOW THE PAVEMENT GRADE AFTER PAVING OPERATIONS ARE COMPLETE.

## 9. STRIPING APPLICATION

### 9.1 DESCRIPTION

THIS ITEM ADDRESSES THE PAINTING OF MARKINGS AND STRIPES ON THE SURFACE OF THE A.C. PAVEMENT IN ACCORDANCE WITH THE LOCATIONS AND REQUIREMENTS ILLUSTRATED ON THE STRIPING AND SIGNAGE PLAN. ALL PAINTING OF MARKINGS AND STRIPES SHALL CONFORM TO CALTRANS STANDARD PLANS AND SPECIFICATIONS, LATEST EDITION, UNLESS NOTED OTHERWISE.

### 9.2 MATERIALS

#### 9.2.1 PAINT

PAINT SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORK CONSTRUCTION, “GREENBOOK”, SECTION 210-1.6 (RAPID DRY PAINT), LATEST EDITION.

#### 9.2.2 REFLECTIVE MEDIA

A GLASS SPHERE REFLECTIVE MEDIA SHALL BE REQUIRED PER SECTION 210-1.6.5 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, “GREENBOOK”, LATEST EDITION.

### 9.3 CONSTRUCTION METHODS

#### 9.3.1 WEATHER LIMITATIONS

THE PAINTING SHALL BE PERFORMED ONLY WHEN THE SURFACE IS DRY, WHEN THE ATMOSPHERIC TEMPERATURE IS ABOVE 60 DEGREES F., AND WHEN THE WEATHER IS NOT FOGGY OR WINDY.

9.3.2 EQUIPMENT

ALL EQUIPMENT FOR THE WORK SHALL BE APPROVED BY THE ENGINEER AND SHALL INCLUDE THE APPARATUS NECESSARY TO PROPERLY CLEAN THE EXISTING SURFACE, A MECHANICAL MARKING MACHINE, AND SUCH AUXILIARY HAND-PAINTING EQUIPMENT AS MAY BE NECESSARY TO SATISFACTORILY COMPLETE THE JOB. THE MECHANICAL MARKER SHALL BE AN ATOMIZING SPRAY-TYPE MARKING MACHINE SUITABLE FOR APPLICATION OF TRAFFIC PAINT. IT SHALL PRODUCE AN EVEN AND UNIFORM FILM THICKNESS AT THE REQUIRED COVERAGE AND SHALL BE DESIGNATED SO AS TO APPLY MARKINGS OF UNIFORM CROSS SECTIONS AND CLEAR-CUT EDGES WITHOUT RUNNING OR SPATTERING.

9.3.3. PREPARATION OF SURFACE

IMMEDIATELY BEFORE APPLICATION OF THE PAINT, THE PAVEMENT SURFACE SHALL BE DRY AND FREE FROM DIRT, GREASE, OIL OR OTHER FOREIGN MATERIAL WHICH WOULD REDUCE THE BOND BETWEEN THE PAINT AND THE PAVEMENT. THE AREA TO BE PAINTED SHALL BE CLEANED BY SWEEPING AND BLOWING OR BY OTHER METHODS AS REQUIRED TO REMOVE ALL DIRT AND LOOSE MATERIALS. THE PAVEMENT SURFACE SHALL BE CLEANED TO THE SATISFACTION OF THE CITY ENGINEER. THE PAINT APPLICATION SHALL NOT COMMENCE UNTIL THE CITY ENGINEER HAS APPROVED THE CLEANING OF THE A.C. PAVEMENT SURFACE.

9.3.4. LAYOUT OF MARKINGS

THE PROPOSED MARKINGS SHALL BE LAID OUT IN ADVANCE OF THE PAINT APPLICATION ACCORDING TO THE DIMENSIONS REQUIRED BY THE PLANS AND SPECIFICATIONS OR BY CALTRANS STANDARDS.

9.3.5. APPLICATION

MARKINGS SHALL BE APPLIED AT THE LOCATIONS AND TO THE DIMENSIONS AND SPACING SHOWN ON THE PLANS. PAINT SHALL NOT BE APPLIED UNTIL THE LAYOUT AND CONDITION OF THE SURFACE HAVE BEEN APPROVED BY THE CITY ENGINEER. THE PAINT SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND APPLIED TO THE PAVEMENT WITH A MARKING MACHINE AT A RATE SPECIFIED IN THE STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION, SECTION 210-1.6.3. A TOTAL OF TWO (2) PAINT APPLICATIONS SHALL BE APPLIED TO THE PAVEMENT SURFACE. THE ADDITION OF THINNER WILL NOT BE PERMITTED. THE EDGES OF THE MARKINGS SHALL NOT VARY FROM A STRAIGHT LINE MORE THAN ¼ INCH IN 50 FEET AND THE DIMENSIONS SHALL BE WITHIN A TOLERANCE OF PLUS OR MINUS 2 PERCENT. THE CONTRACTOR SHALL FURNISH CERTIFIED TEST REPORTS FOR THE MATERIALS SHIPPED TO THE PROJECT. THE REPORTS SHALL NOT BE INTERPRETED AS A BASIS FOR FINAL ACCEPTANCE. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER UPON ARRIVAL OF SHIPMENT OF THE PAINT TO THE JOB SITE. ALL EMPTIED CONTAINERS SHALL BE RETURNED TO THE PAINT STORAGE AREA FOR CHECKING BY THE CITY ENGINEER. THE CONTAINERS SHALL NOT BE REMOVED FROM THE PROJECT SITE OR DESTROYED UNTIL AUTHORIZED BY THE CITY ENGINEER.

9.3.6 PROTECTION

AFTER APPLICATION OF THE PAINT, ALL MARKINGS SHALL BE PROTECTED FROM DAMAGE UNTIL THE PAINT IS DRY. ALL SURFACES SHALL BE PROTECTED FROM DISFIGURATION BY SPATTER, SPLASHES, SPILLAGE OR DRIPPINGS OF PAINT.

**END OF STREET TECHNICAL CONDITIONS SECTION**

**SANITARY SEWER**
**TECHNICAL SPECIFICATIONS**

## 1. PIPE INSTALLATION

THIS SECTION COVERS FURNISHING ALL LABOR, SUPERVISION, MATERIALS AND EQUIPMENT AND PERFORMING ALL OPERATIONS NECESSARY TO FURNISH AND INSTALL THE PIPING AND FITTINGS. ALL PIPE AND FITTINGS, AND ACCESSORIES FURNISHED BY THE CONTRACTOR SHALL BE NEW MATERIAL FREE FROM RUST OR CORROSION. ALL PIPING AND FITTINGS SHALL BE CLEANED ON THE INSIDE WHEN INSTALLED AND THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO INSURE THAT THE LINES ARE KEPT FREE OF ANY FOREIGN MATTER AND DIRT UNTIL THE WORK IS COMPLETED. ALL PIPE SHALL BE CAREFULLY PLACED AND SUPPORTED AT THE PROPER LINES AND GRADES AS SHOWN ON THE DRAWINGS. PIPING RUNS SHOWN ON THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE EXCEPT FOR MINOR ADJUSTMENTS TO AVOID OTHER PIPING OR STRUCTURAL FEATURES. IF MAJOR RELOCATIONS ARE REQUIRED, THEY SHALL BE APPROVED BY THE CITY ENGINEER. THE BEDDING SHALL BE DEFINED AS THAT MATERIAL SUPPORTING, SURROUNDING AND EXTENDING TO ONE FOOT ABOVE THE TOP OF THE PIPE. IF SOFT, SPONGY, UNSTABLE OR SIMILAR OTHER MATERIAL IS ENCOUNTERED UPON WHICH THE BEDDING MATERIAL OR PIPE IS TO BE PLACED, THIS UNSUITABLE MATERIAL SHALL BE REMOVED TO A DEPTH ORDERED BY THE CITY ENGINEER AND REPLACED WITH BEDDING MATERIAL SUITABLY DENSIFIED. 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. HUNCHING OF THE PIPE SHALL NOT BE ALLOWED. PIPE WILL BE CAREFULLY 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 CITY ENGINEER. PIPE SHALL BE LAID TRUE TO LINE AND GRADE WITH UNIFORM BEARING UNDER THE FULL LENGTH OF THE BARREL OF THE PIPE. SUITABLE EXCAVATION SHALL BE MADE TO RECEIVE THE BELL 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 RELAID AT THE CONTRACTOR'S EXPENSE. PIPE SHALL BE LAID UPGRADE WITH THE SOCKET ENDS OF THE PIPE

UPGRADE UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER. PIPE SECTIONS SHALL BE LAID AND JOINED 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 HORIZONTAL OFFSET AT THE INVERT OF THE PIPE SHALL BE 1% OF THE INSIDE DIAMETER OF THE PIPE OR 0.02 FEET, WHICHEVER IS SMALLER. THE VERTICAL GRADE SHALL BE +/- 0.02 FEET OF THE DESIGN INVERT. IN JOINING SOCKET PIPE, THE SPIGOT OF EACH PIPE SHALL BE SO SEATED IN THE SOCKET OF THE ADJACENT PIPE AS TO GIVE A UNIFORM ANNULAR SPACE ALL AROUND THE PIPE IN THE SOCKET. UNAVOIDABLE OFFSETS SHALL BE DISTRIBUTED AROUND THE CIRCUMFERENCE OF THE PIPE IN SUCH A MANNER THAT THE MINIMUM OFFSET OCCURS AT THE INVERT. AT THE CLOSE OF WORK EACH DAY, OR WHENEVER THE WORK CEASES FOR ANY REASON, THE END OF THE PIPE SHALL BE SECURELY CLOSED.

## 2. SHORING AND SHEETING

THE CONTRACTOR SHALL DO SUCH TRENCH BRACING, SHEATHING, OR SHORING NECESSARY TO PERFORM AND PROTECT THE EXCAVATION AS REQUIRED FOR SAFETY AND CONFORMANCE TO GOVERNING LAWS. THE BRACING, SHEATHING, OR SHORING SHALL NOT BE REMOVED IN ONE OPERATION BUT SHALL BE DONE IN SUCCESSIVE STAGES TO PREVENT OVERLOADING OF THE PIPE DURING BACKFILLING OPERATIONS. ALL SHORING AND SHEETING DEEMED NECESSARY TO PROTECT THE EXCAVATION AND TO SAFEGUARD EMPLOYEES, SHALL BE INSTALLED.

## 3. OPEN TRENCH

EXCEPT WHERE OTHERWISE NOTED IN THE SPECIAL PROVISIONS, OR APPROVED IN WRITING BY THE CITY ENGINEER, THE MAXIMUM LENGTH OF OPEN TRENCH, WHERE THE CONSTRUCTION IS IN ANY STAGE OF COMPLETION (EXCAVATION, PIPE LAYING OR BACKFILLING), SHALL NOT EXCEED 1,320 FEET IN THE AGGREGATE AREA OF A STREET AT ANY ONE LOCATION.

ANY EXCAVATED AREA SHALL BE CONSIDERED OPEN TRENCH UNTIL THE TRENCH BACKFILL HAS BEEN PLACED TO SUBBASE LEVEL, THE LEVEL OF THE BOTTOM OF THE CLASS 2 BASE. WITH THE APPROVAL OF THE CITY ENGINEER, PIPE LAYING MAY BE CARRIED ON AT MORE THAN

ONE SEPARATE LOCATION, THE RESTRICTIONS ON OPEN TRENCH APPLYING TO EACH LOCATION. TRENCHES ACROSS STREETS SHALL BE COMPLETELY BACKFILLED AS SOON AS POSSIBLE AFTER PIPE LAYING.

SUBSTANTIAL STEEL PLATES WITH ADEQUATE TRENCH BRACING SHALL BE USED TO BRIDGE ACROSS TRENCHES AT STREET CROSSINGS WHERE TRENCH BACKFILL AND TEMPORARY PATCHES HAVE NOT BEEN COMPLETED DURING REGULAR WORK HOURS. SAFE AND CONVENIENT PASSAGE FOR PEDESTRIANS SHALL BE PROVIDED. THE CITY ENGINEER MAY DESIGNATE A PASSAGE TO BE PROVIDED AT ANY POINT HE DEEMS NECESSARY. ACCESS TO HOSPITALS, FIRE STATIONS, SCHOOLS, POST OFFICES, PUBLIC FACILITIES AND FIRE HYDRANTS MUST BE MAINTAINED AT ALL TIMES.

## 4. PROTECTION OF EXISTING UTILITIES

4.1 **UTILITIES:** UNLESS OTHERWISE ILLUSTRATED ON THE PLANS OR STATED IN THE SPECIFICATIONS, ALL UTILITIES, BOTH UNDERGROUND OR OVERHEAD, SHALL BE MAINTAINED IN CONTINUOUS SERVICE THROUGHOUT THE ENTIRE CONTRACT PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ANY DAMAGES TO OR INTERRUPTION OF SERVICE CAUSED BY THE CONSTRUCTION.

IF THE CONTRACTOR DESIRES TO SIMPLIFY HIS OPERATION BY TEMPORARILY OR PERMANENTLY RELOCATING OR SHUTTING DOWN ANY UTILITY OR APPURTENANCE, HE SHALL MAKE THE NECESSARY ARRANGEMENTS AND AGREEMENTS WITH THE UTILITY PURVEYOR AND SHALL BE COMPLETELY RESPONSIBLE FOR ALL COSTS CONCERNED WITH THE RELOCATION OR SHUTDOWN AND RECONSTRUCTION. ALL PROPERTY SHALL BE RECONSTRUCTED IN ITS ORIGINAL OR NEW LOCATION AS SOON AS POSSIBLE AND TO A CONDITION AT LEAST AS GOOD AS ITS PREVIOUS CONDITION. THIS PERIOD OF RELOCATION OR SHUTDOWN AND RECONSTRUCTION SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY BOTH THE CITY ENGINEER AND THE UTILITY PURVEYOR.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND MAINTAINING ALL CONFLICTING UTILITIES THAT ARE ILLUSTRATED ON THE PLANS. THIS INCLUDES OVERHEAD WIRES

AND CABLES AND THEIR SUPPORTING POLES WHETHER THEY ARE INSIDE OR OUTSIDE OF THE OPEN TRENCH. IF, IN THE COURSE OF WORK, A CONFLICTING UTILITY LINE THAT WAS NOT ILLUSTRATED ON THE PLANS IS DISCOVERED, THE DEVELOPER SHALL EITHER NEGOTIATE WITH THE UTILITY PURVEYOR FOR RELOCATION, RELOCATE THE UTILITY OR CHANGE THE ALIGNMENT AND GRADE OF THE TRENCH.

4.2 **BUILDING, FOUNDATIONS AND STRUCTURES:** WHERE TRENCHES ARE LOCATED ADJACENT TO BUILDINGS, FOUNDATIONS, AND STRUCTURES, THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTION AGAINST DAMAGE TO THEM. THE CONTRACTOR SHALL BE LIABLE FOR ANY DAMAGE CAUSED BY THE CONSTRUCTION. EXCEPT WHERE AUTHORIZED IN THE SPECIAL PROVISIONS OR IN WRITING BY THE CITY ENGINEER, WATER SETTLING OF BACKFILL MATERIAL IN TRENCHES ADJACENT TO STRUCTURES WILL NOT BE PERMITTED.

4.3 **ELECTRONIC, TELEPHONIC, TELEGRAPHIC, ELECTRICAL, OIL AND GAS LINES:** THESE UNDERGROUND FACILITIES SHALL BE ADEQUATELY SUPPORTED BY THE CONTRACTOR. SUPPORT FOR PLASTIC PIPE SHALL BE CONTINUOUS ALONG THE BOTTOM OF THE PIPE. SUPPORT FOR METAL PIPE AND ELECTRICAL CONDUIT MAY BE CONTINUOUS OR NYLON WEBBING MAY BE USED FOR SUSPENSION AT NO GREATER THAN TEN FOOT (10') INTERVALS. THE CONTRACTOR SHALL AVOID DAMAGING THE PLASTIC PIPE, PIPE WAYS OR CONDUITS DURING TRENCH BACKFILLING AND DURING FOUNDATION AND BEDDING PLACEMENT.

## 5. COMPACTION METHODS

BACKFILL MATERIAL SHALL BE COMPACTED WITH HAND AND/OR MECHANICAL WORK METHODS USING EQUIPMENT SUCH AS ROLLER, PNEUMATIC TAMPS, AND HYDRO-HAMMERS OR OTHER APPROVED DEVICES WHICH SECURE UNIFORM AND REQUIRED DENSITY WITHOUT INJURY TO THE PIPE OR RELATED STRUCTURES.

WATER CONSOLIDATION BY JETTING OR FLOODING IS NOT ACCEPTABLE AS A SOIL CONSOLIDATION METHOD UNLESS AUTHORIZED IN THE TECHNICAL SPECIFICATION OR APPROVED BY THE CITY ENGINEER.

## 6. RIGHTS-OF-WAY BELONGING TO OTHERS

WHERE THE PERMIT OF A GOVERNING AGENCY SETS FORTH REQUIREMENTS FOR COMPACTION MORE STRINGENT THAN THOSE STATED HEREIN, THE CONTRACTOR SHALL ADHERE TO THE MORE STRINGENT REQUIREMENTS.

## 7. SANITARY SEWER GRAVITY MAIN

THE SANITARY SEWER GRAVITY PIPE MATERIAL FOR DIAMETER SIZES 4 INCHES THROUGH 48 INCHES SHALL MEET ALL REQUIREMENTS OF ASTM D-3034 AND ASTM F-679 (ANNEX) IN ACCORDANCE WITH ASTM D1784. THE PIPE SHALL BE JOINED WITH AN INTEGRAL BELL TO UTILIZE THE GASKET FOR SEALING. ALL GASKETS SHALL MEET THE REQUIREMENTS OF ASTM F-477. THE PIPE SHALL BE MADE OF P.V.C. PLASTIC HAVING A CELL CLASSIFICATION OF 12454-B OR 12454-C OR 13364-B WITH A MINIMUM TENSILE MODULES OF 500,000 PSI AS DEFINED IN ASTM D-1784. CLEAN REWORK MATERIAL MAY BE USED AS LONG AS THE PIPE PRODUCED MEETS ALL OF THE REQUIREMENTS OF THIS SPECIFICATION. THE PVC SANITARY SEWER PIPE SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS OF ASTM D2321, UNI-BELL UNI-PUB 6 AND THE REQUIREMENTS OF THE MANUFACTURER. THE PIPELINE DIAMETER SIZE SHALL BE AS INDICATED ON THE PLANS. THE PIPE LENGTHS SHALL MEASURE 20 FEET IN HORIZONTAL LENGTH.

## 8. DEFLECTION TESTING FOR SANITARY SEWER PIPELINE

THE CONTRACTOR SHALL PERFORM DEFLECTION TESTING FOR 100% OF THE SEWER LINES TO ENSURE THAT THE INSTALLATION MEETS OR EXCEEDS THE MANUFACTURE'S RECOMMENDATIONS.

THE CONTRACTOR SHALL PERFORM DEFLECTION TESTING ON THE SYSTEM AS DIRECTED BY THE CITY ENGINEER. THE DEFLECTION TESTING SHALL BE ACCOMPLISHED BY MANDRELING THE PIPELINE. ANY PART OF THE INSTALLATION, WHICH SHOWS DEFLECTION IN EXCESS OF 5% OF THE AVERAGE INSIDE DIAMETER PER ASTM D-3034 FOR PVC PIPE, SHALL BE CORRECTED.

AFTER ACCEPTANCE BUT PRIOR TO THE TERMINATION OF THE WARRANTY PERIOD, THE CITY OF CALIPATRIA MAY TEST THE LONG-TERM DEFLECTION OF THE SEWER. IF THE CITY OF CALIPATRIA DETERMINES THAT THE DEFLECTION HAS EXCEEDED 7 ½% OF THE

AVERAGE INSIDE DIAMETER, THAT PORTION OF THE INSTALLATION SHALL BE CORRECTED BY THE CONTRACTOR AT NO COST TO THE CITY OF CALIPATRIA.

## 9. LEAK TESTING FOR SANITARY SEWER PIPELINE

THE CONTRACTOR SHALL LEAK TEST 100 % OF THE SEWER LINE INSTALLED. THE LEAK TESTING SHALL BE ACCOMPLISHED AFTER THE DEFLECTION TESTING OF THE SANITARY SEWER PIPELINE IS COMPLETED.

SEWER LINES SHALL BE SUBJECT TO ACCEPTANCE TESTING AFTER BACKFILLING HAS BEEN COMPLETED BUT PRIOR TO THE PLACEMENT OF THE FINISH SURFACE MATERIAL, (CLASS 2 BASE, A.C. PAVEMENT AND P.C.C. CONCRETE).

THE COST OF REPAIRS OR CORRECTIONS NECESSARY TO CONFORM TO THE TESTING REQUIREMENTS WILL BE BORNE BY THE CONTRACTOR AT NO COST TO THE CITY OF CALIPATRIA.

(A) LOW PRESSURE AIR TEST:

TESTING WILL BE ACCOMPLISHED BY THE MEANS OF “LOW PRESSURE AIR TESTING.” TESTS MAY BE CONDUCTED BY THE CONTRACTOR OR AN INDEPENDENT TESTING FIRM. HOWEVER, ACCEPTANCE TESTS SHALL BE MADE ONLY IN THE PRESENCE OF THE CITY ENGINEER.

TEST PROCEDURE:

1. BEFORE TESTING, THE PIPE SHALL BE THOROUGHLY CLEANED.

2. THE CONTRACTOR SHALL SEAL OFF THE SECTION OF PIPE TO BE TESTED AT EACH MANHOLE CONNECTION. TEST PLUGS MUST BE SECURELY BRACED WITHIN THE MANHOLES.

3. A MINIMUM OF TWO CONNECTION HOSES TO LINK THE AIR INLET TEST PLUG WITH AN ABOVE GROUND TEST MONITORING PANEL MUST BE PROVIDED.

A. ONE HOSE IS TO INDUCE AIR THROUGH THE TEST PLUG AND INTO THE TEST CHAMBER.

B. THE SECOND HOSE IS FOR THE PURPOSE OF MONITORING THE TEST PRESSURE FROM WITHIN THE ENCLOSED PIPE.

4. UNDER NO CIRCUMSTANCES ARE WORKERS TO BE ALLOWED IN THE CONNECTING MANHOLES WHILE A PRESSURE TEST IS BEING CONDUCTED.

5. ADD AIR SLOWLY INTO THE TEST SECTION. AFTER AN INTERNAL PRESSURE OF 4.0 PSI IS OBTAINED, ALLOW INTERNAL AIR TEMPERATURE TO STABILIZE.

6. AFTER STABILIZATION PERIOD, ADJUST THE INTERNAL AIR PRESSURE TO 3.5 PSI, DISCONNECT THE AIR SUPPLY AND BEGIN TIMING THE TEST.

7. REFER TO SANITARY SEWER AIR TEST TABLE TO DETERMINE THE LENGTH OF TIME (MINUTES) THE PIPELINE SECTION BEING TESTED MUST SUSTAIN AIR PRESSURE WHILE NOT LOSING IN EXCESS OF 1 PSI AS MONITORED BY THE TEST GAUGE. IF THE SECTION OF PIPELINE TO BE TESTED INCLUDES MORE THAN ONE PIPE SIZE, CALCULATE THE TEST TIME FOR EACH SIZE AND ADD THE TEST TIMES TO ARRIVE AT THE TOTAL TEST TIME FOR THE SECTION.

8. SECTIONS SO DETERMINED TO HAVE LOST 1 PSI OR LESS DURING THE TEST PERIOD WILL HAVE PASSED THE LEAKAGE TEST. THOSE SECTIONS LOSING IN EXCESS OF 1 PSI DURING THE TEST PERIOD WILL HAVE FAILED THE LEAKAGE TEST.

9. APPROPRIATE REPAIRS MUST THEN BE COMPLETED AND THE LINE RE-TESTED FOR ACCEPTANCE.

**SANITARY SEWER AIR TEST TABLE**

MINIMUM TEST TIME FOR VARIOUS PIPE SIZES*

| NOMINAL PIPE SIZE, IN. | T (TIME), MIN/100 FT. | NOMINAL PIPE SIZE, IN. | T (TIME), MIN/100 FT. |
|---|---|---|---|
| 3 | 0.2 | 21 | 3.0 |
| 4 | 0.3 | 24 | 3.6 |
| 6 | 0.7 | 27 | 4.2 |
| 8 | 1.2 | 30 | 4.8 |
| 10 | 1.5 | 33 | 5.4 |
| 12 | 1.8 | 36 | 6.0 |
| 15 | 2.1 | 39 | 6.6 |
| 18 | 2.4 | 42 | 7.3 |

* THE TIME HAS BEEN ESTABLISHED USING THE FORMULAS CONTAINED IN ASTM C-828, APPENDIX.

(B) HYDROSTATIC TEST:

EXFILTRATION TESTING (WATER):

SANITARY SEWER TESTING BY MEANS OF EXFILTRATION SHOULD ONLY BE CONSIDERED WHEN LOW PRESSURE AIR TESTING CANNOT BE USED AND ONLY WITH THE APPROVAL OF THE CITY ENGINEER.

TESTING PROCEDURE:

1. THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT FOR TESTING.

2. SEAL OFF THE DOWNSTREAM END OF THE LINE AND FILL WITH WATER TO A MINIMUM HEAD OF FOUR FEET (4') IN A STAND PIPE AT THE HIGH END.

3. A PERIOD OF AT LEAST ONE (1) HOUR WILL BE ALLOWED FOR ABSORPTION TIME BEFORE MAKING THE TEST.

4. A SUITABLE METER OR METHOD OF MEASURING THE QUANTITY OF WATER USED IS NECESSARY.

5. THE ALLOWABLE WATER LOSS FOR SANITARY SEWERS SHALL NOT EXCEED 0.158 GALLONS PER HOUR PER 100 FEET OF PIPE PER INCH OF DIAMETER OF PIPE UNDER A MINIMUM TEST HEAD OF FOUR FEET (4') ABOVE THE TOP OF THE PIPE AT THE UPPER END.

## 10. LEAK TESTING FOR SANITARY SEWER

THE CONTRACTOR SHALL LEAK TEST THE SANITARY SEWER MANHOLES.

THE CONTRACTOR SHALL TEST ALL MANHOLES USING THE FOLLOWING TEST PROCEDURE:

THE CONTRACTOR SHALL FILL THE MANHOLE WITH WATER AND ALLOW THE INTERIOR SURFACES OF THE MANHOLE TO SOAK FOR FOUR (4) HOURS. THE LEAK TEST SHALL THEN COMMENCE. WATER TIGHTNESS TESTING SHALL CONSIST OF FILLING THE MANHOLE WITH WATER TO AN ESTABLISHED LEVEL. THE CONTRACTOR SHALL ENSURE THAT THE DROP IN WATER LEVEL DOES NOT EXCEED 0.001 OF THE TOTAL MANHOLE VOLUME IN ONE (1) HOUR.

## 11. ADDITIONAL TESTING

THE CITY OF CALIPATRIA RESERVES THE RIGHT TO VISUALLY INSPECT THE INTERIOR OF THE SEWER LINE USING A TELEVISION CAMERA. ANY DEFECTS IN THE PIPE OR CONSTRUCTION METHODS REVEALED SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY OF CALIPATRIA.

THE CONTRACTOR SHALL NOT PAY FOR T.V. INSPECTIONS COMPLETED BY THE CITY OF CALIPATRIA. ANY ADDITIONAL INSPECTION(S) OR CORRECTIVE WORK REQUIRED, DUE TO PIPE DEFICIENCIES INDENTIFIED BY THE T.V. INSPECTION, SHALL BE PAID FOR BY THE CONTRACTOR.

## 12. SEWER LATERALS

THE CONTRACTOR SHALL INSTALL 4-INCH DIAMETER SDR 35 PVC SANITARY SEWER LATERALS EXTENDING FROM THE SANITARY SEWER MAIN TO THE PROPERTY LINE AS ILLUSTRATED ON THE PLANS. ALL FITTINGS SHALL BE COMPOSED OF SDR 35 PVC MATERIAL WITH O-RING GASKETS. A 2-INCH HIGH LETTER "L" SHALL BE STAMPED IN THE P.C.C. CURB FACE AT THE LOCATION OF EACH SANITARY SEWER LATERAL. THE SANITARY SEWER LATERAL PIPE ZONE SHALL CONSIST OF 2

INCHES OF GRANULAR SAND PLACED BELOW THE SANITARY SEWER LATERAL AND 1 FOOT OF SAND PLACED ABOVE THE SANITARY SEWER LATERAL PIPELINE. THE GRANULAR SAND SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D1557.

## 13. CONCRETE

THE PORTLAND CONCRETE CEMENT FOR THE MANHOLE BASES, MANHOLE GRADE RINGS AND ALL OTHER CONCRETE INFRASTRUCTURE SHALL BE TYPE "V" AND CONTAIN A MINIMUM OF 6-1/2 SACKS OF CEMENT PER CUBIC YARD AND ATTAIN 4,500 PSI COMPRESSIVE STRENGTH AFTER 28 DAYS OF CURING. CONCRETE SLUMP SHALL NOT EXCEED 4.5 INCHES. THE CITY ENGINEER SHALL BE PROVIDED WITH A COPY OF THE CONCRETE VENDOR'S DELIVERY SLIP. ONE (1) SLIP SHALL BE PROVIDED FOR EACH CONCRETE DELIVERY TRUCK. ONE (1) SET OF CONCRETE CYLINDERS SHALL BE OBTAINED FOR EVERY SIX (6) MANHOLE BASES CONSTRUCTED AT A PROJECT SITE. IT SHALL NOT BE REQUIRED TO OBTAIN AND TEST CONCRETE CYLINDERS ON PROJECTS WITH LESS THAN SIX (6) MANHOLE BASES. A SET OF CYLINDERS SHALL BE DEFINED AS THREE (3) CYLINDERS. ONE (1) CYLINDER SHALL BE TESTED 7 DAYS AFTER CONCRETE PLACEMENT. THE SECOND CYLINDER SHALL BE TESTED 28 DAYS AFTER CONCRETE PLACEMENT. THE THIRD CYLINDER SHALL BE HELD IN RESERVE AND TESTED AT THE DIRECTION OF THE CITY ENGINEER.

## 14. SANITARY SEWER MANHOLES COATING

INSTALL A LOW TEMPERATURE 100 PERCENT SOLIDS ACRYLATED EPOXY PRIMER SYSTEM DESIGNED TO PROVIDE POSITIVE CURE DOWN TO 20 DEGREES FAHRENHEIT AND EXTREMELY RAPID ROOM TEMPERATURE CURE. THE SOLIDS ACRYLATED EPOXY IS TO BE APPLIED AS A PRIMER MATERIAL TO THE INTERIOR OF THE MANHOLE SURFACES. APPLY THE POLYURETHANE SYSTEM OVER THE PRIMER SYSTEM WITHIN SURFACE INTERIOR OF THE P.C.C. MANHOLE PER THE MANUFACTURER'S RECOMMENDATIONS. THE INTERIOR SURFACE OF THE P.C.C. MANHOLE SHALL BE PRIMED WITH A 1 TO 3 MIL. THICKNESS OF 100 PERCENT SOLIDS ACRYLATED EPOXY PRIMER SYSTEM TO THE ABRASIVE GRIT BLASTED RING AND TO ALL CONCRETE SURFACES, INCLUDING INTO THE INVERT DOWN TO THE LOW FLOW WATER LINE. ALLOW THE PRIMER TO TACK UP (STICK TO THE TOUCH). A 125 MIL THICKNESS POLYURETHANE COATING SYSTEM SHALL BE APPLIED TO

THE PRIMER AND ALL INTERIOR SURFACES OF THE P.C.C. MANHOLE AFTER THE PRIMER HAS ATTAINED THE REQUIRED CONSISTENCY.

PRIOR TO THE APPLICATION OF THE 100% SOLIDS ACRYLATED EPOXY PRIMER AND POLYURETHANE PROTECTIVE LINING, THE MANHOLE SHALL BE THOROUGHLY CLEANED BY HIGH WATER PRESSURE BLAST AT PRESSURES OF 34.5 MPA (5,000 PSI) MINIMUM TO 68.9 MPA (10,000 PSI) MAXIMUM. DEBRIS FROM CLEANING SHALL NOT BE ALLOWED TO ENTER THE SEWER SYSTEM. THE CONTRACTOR SHALL PROVIDE THE NECESSARY DEBRIS CONTAINMENT DEVICES WHILE MAINTAINING SEWER FLOW. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL DEBRIS COLLECTED FROM THE CLEANING OPERATION PER 500-1.4 OF THE GREENBOOK SPECIFICATIONS.

THE CURED POLYURETHANE LINING SHALL BE SPARK TESTED FOR PINHOLES WITH A SPARK TESTER SET AT 15,000 VOLTS MINIMUM. ALL PINHOLES SHALL BE REPAIRED AS SPECIFIED IN THE GREENBOOK SPECIFICATION 500-2.4.9.

ALL PINHOLES IN THE PROTECTIVE LINING SHALL BE MARKED OFF ON SURFACE AREAS CONTAINING PINHOLES TO A POINT 150MM (6 INCHES) BEYOND ALL PINHOLES, PRIMED WITH EPOXY, AND RE-COATED WITH POLYURETHANE TO A MINIMUM ADDITIONAL THICKNESS OF 762NM (30 MILS). BLISTERS, UNCURED LINING AND SURFACE IMPERFECTIONS SHALL BE COMPLETELY REMOVED AND THE AREAS RE-COATED WITH EPOXY PRIMER AND POLYURETHANE LINING TO A POINT 150MM (6 INCHES) BEYOND THE REPAIR AREAS AT A MINIMUM THICKNESS OF 2540NM (100 MILS).

THE EPOXY PRIMER AND POLYURETHANE LINING SHALL MEET OR EXCEED THE REQUIREMENTS SPECIFIED IN GREENBOOK SPECIFICATIONS 303-2 AND GREENBOOK TABLE 500-2.4.10(A) AS FOLLOWS:

**TABLE 500-2.4.10(A)**

| | POLYURETHANE | EPOXY |
|---|---|---|
| TENSILE STRENGTH ASTM D 638, TYPE 1V, MPA (PSI) | 13.8(2,000) | 41.4(6,000) |
| ELONGATION AT BREAK, % ASTM D 638, TYPE IV | 50 | 5 |
| WEAR RESISTANCE, MG. WT. LOSS TABER ABRASION, S-17 | 60 | 100 |
| HARDNESS, SHORE D, DUROMETER ASTM D 2240 | 55 | 75 |
| TEAR RESISTANCE, KG/MM (PPI) ASTM D 903 | 2.7(150) | N/A |
| PEEL STRENGTH, CONCRETE, G/MM (PLI) ASTM D 903 | 125 (7)1 | 125 (7)1 |
| ADHESIVE STRENGTH, KPA (PSI) ASTM C 190 (MODIFIED BRIQUET) | 2760 (400)1 | 2760 (400)1 |

TEST RESULTS SHALL BE VERIFIED ON A PER JOB BASIS OR AS REQUIRED BY THE CITY ENGINEER.

THE COATING SYSTEM SHALL BE A ZEBRON NUMBER 386, UTILITHANE 100 % SOLIDS POLYURETHANE SYSTEM OR AN APPROVED EQUAL. THE COATING SYSTEM SHALL BE APPLIED PER THE MANUFACTURER'S RECOMMENDATIONS.

## 15. SANITARY SEWER FORCEMAIN

THE SANITARY SEWER FORCEMAIN SHALL BE PVC AND CONFORM TO THE REQUIREMENTS OF AWWA C-900, CLASS 150 PVC OR AWWA C-905, DR 25 PVC.

A. BENDS IN SANITARY SEWER FORCEMAIN SHALL BE BY RESTRAINED JOINT DUCTILE IRON FITTINGS. SANITARY SEWER FORCEMAIN SHALL BE INSTALLED WITH LOCATING TRACER WIRE. TRACER WIRE SHALL BE INSULATED THHN, 12 GAUGE COPPER WIRE. ALL WIRE SHALL BE JOINED BY USE OF WIRE CLAMPS. THESE CONNECTIONS SHALL BE SEALED AND TAPED TO CREATE A WATERTIGHT CONNECTION. TRACER WIRE SHALL BE SECURED TO THE TOP OF THE MAIN BY TAPE A MINIMUM OF 3 TIMES IN EACH STANDARD LENGTH OF PIPE. TRACER WIRE SHALL BE LOOPED TO THE TOP OF VALVE BOXES FOR ACCESS AND AT ENDS FOR CONDUCTIVITY.

B. WHERE SANITARY SEWER FORCEMAINS MUST CROSS WATERMAINS, THE FORCEMAIN SHALL BE INSTALLED BELOW THE WATERMAIN WITH NOT LESS THAN AN 18 INCH SEPARATION.

C. BURIED GATE VALVES ON FORCEMAINS TWO (2") INCH THROUGH TWELVE (12") INCH INCLUSIVE SHALL BE MUELLER GATE VALVES, MECHANICAL JOINT, RESILIENT SEATED WEDGE DISK OR EQUAL. VALVE SHAFT SHALL HAVE AN "O" RING SEAL WITH A TWO (2") INCH SQUARE OPERATING NUT. VALVE SHALL OPEN IN A COUNTER-CLOCKWISE DIRECTION. BURIED GATE VALVES SHALL HAVE CAST IRON VALVE BOXES WHICH SHALL BE TWO-PIECE, TWENTY-FOUR (24") INCH, SCREW TYPE, BOTTOM SECTION AND SIXTEEN (16") INCH SCREW TYPE, TOP SECTION WITH LID MARKED "SEWER".

**ACCEPTANCE TESTS FOR PRESSURE SEWAGE FORCEMAINS:**

A. PERFORM HYDROSTATIC PRESSURE TESTS FOR THE SANITARY SEWER PIPELINE. TEST THE PIPELINE AT 150 PSI FOR FOUR (4) HOURS. A PRESSURE DROP OF 3 PSI OR LESS SHALL REQUIRE THE PRESSURE BE INCREASED TO 150 PSI DURING THE TEST. ALL OTHER PRESSURE TEST REQUIREMENTS SHALL BE IN ACCORDANCE WITH AWWA REQUIREMENTS FOR DOMESTIC WATER PIPELINES. IF IT IS NECESSARY TO RE-PRESSURE THE PIPELINE DUE TO PRESSURE DROPS GREATER THAN 3 PSI MORE THAN 6 TIMES THE PRESSURE TEST SHALL HAVE FAILED. LEAKS SHALL BE IDENTIFIED AND SATISFACTORILY ADDRESSED. THE HYDROSTATIC TEST SHALL BE RE-PREFORMED ITERATIVELY UNTIL SUCCESSFUL.

## 16. DUCTILE IRON FITTINGS

FITTINGS FOR THE SANITARY SEWER FORCEMAINS SHALL BE COMPOSED OF DUCTILE IRON. THE DUCTILE IRON MECHANICAL JOINT FITTINGS SHALL CONFORM TO AWWA C153. THE DUCTILE IRON FLANGED FITTINGS SHALL CONFORM TO AWWA C110. THE FITTINGS SHALL BE CEMENT MORTAR LINED IN ACCORDANCE WITH ANSI/AWWA C-104/A21.4, STANDARD FOR CEMENT MORTAR LINING FOR DUCTILE IRON AND GRAY IRON PIPE FITTINGS FOR WATER, LATEST REVISION. THE PRESSURE RATING FOR 3 INCH – 24 INCH DIAMETER SIZES SHALL BE 350 PSI. THE PRESSURE RATING FOR 30 INCH – 48 INCH DIAMETER SIZES SHALL BE 250 PSI. THE INTERIOR AND EXTERIOR SURFACES OF THE DUCTILE IRON FITTINGS SHALL BE FUSION BONDED EPOXY LINED AND COATED.

## 17. DUCTILE IRON PIPE FOR SANITARY SEWER FORCEMAIN OR GRAVITY SANITARY SEWER PIPELINE

DUCTILE IRON PIPE SHALL BE CLASS 350 FOR DIAMETER SIZES 4 INCHES THROUGH 12 INCHES AND CLASS 250 FOR DIAMETER SIZES 14 INCHES AND GREATER. THE DUCTILE IRON PIPE MATERIAL SHALL CONFORM TO ANSI/AWWA C110/A21.10. FLANGED PIPE SHALL CONFORM TO ANSI/AWWA C115/A21.15. MECHANICAL JOINT PIPE SHALL CONFORM TO ANSI/AWWA C111/A21.11. FASTITE JOINTS SHALL CONFORM TO ANSI/AWWA C111/A21.11. THE DUCTILE IRON PIPE SHALL BE COATED

WITH A 401 PROTECTO LINING SYSTEM OR AN APPROVED EQUAL. DUCTILE IRON PIPELINE SHALL BE WRAPPED WITH A POLYETHYLENE WRAP. DUCTILE IRON PIPELINE SHALL BE BACKFILLED WITH GRANULAR SAND PER THE PIPE TRENCH STANDARD DETAIL.

## 18. HARDWARE FOR SANITARY SEWER FORCEMAIN

ALL NUTS, BOLTS AND MISCELLANEOUS HARDWARE UTILIZED FOR THIS PROJECT SHALL BE COMPOSED OF 304 STAINLESS STEEL UNLESS OTHERWISE NOTED ON THE PLANS. AN ANTI-SEIZE MATERIAL SHALL BE APPLIED TO THE STAINLESS STEEL HARDWARE. A TRIPAC, OR AN APPROVED EQUAL, BLUE FLUOROPOLYMER COATING FOR STEEL AND DUCTILE IRON HARDWARE SHALL BE APPROVED AT THE DISCRETION OF THE CITY ENGINEER.

## 19. EXCAVATIONS FOR SANITARY SEWER PIPELINE

SHALLOW, TEMPORARY EXCAVATIONS, LESS THAN FOUR FEET DEEP, IN NATIVE CLAY SOILS SHOULD STAND NEARLY VERTICAL FOR SHORT DURATION. ALL TEMPORARY EXCAVATIONS OVER FOUR FEET IN DEPTH WILL REQUIRE SHORING OR SLOPE INCLINATIONS IN CONFORMANCE TO CAL OSHA STANDARDS FOR TYPE C SOILS. THESE TEMPORARY DEEP EXCAVATIONS WILL REQUIRE SLOPE INCLINATIONS NO STEEPER THAN 1:1 VERTICAL HEIGHT TO HORIZONTAL LENGTH UNLESS TRENCH SHORING IS USED.

STABLE EXCAVATION SLOPES ASSUMES MINIMAL EQUIPMENT VIBRATION AND ADEQUATE SETBACK OF EXCAVATED MATERIAL AND CONSTRUCTION EQUIPMENT FROM THE TOP OF THE EXCAVATION. IT IS RECOMMENDED THAT THE MINIMUM SETBACK DISTANCE BE EQUAL TO THE DEPTH OF EXCAVATION AND AT LEAST 5 FEET FROM THE CROWN OF THE SLOPE. IF EXCAVATED MATERIALS ARE STOCKPILED ADJACENT TO THE EXCAVATION, THE WEIGHT OF THE MATERIAL SHOULD BE CONSIDERED AS A SURCHARGE LOAD FOR SLOPE STABILITY.

ALL EXCAVATIONS SHALL BE CONSTRUCTED IN CONFORMANCE TO THE CAL OSHA REQUIREMENTS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBILITY FOR THE SAFETY OF HIS PERSONEL.

THE EXCAVATIONS FOR THE SEWER PIPELINE MAY ENCOUNTER GROUNDWATER. THEREFORE, SEEPAGE AND PUMPING SUBGRADE

CONDITIONS MAY BE ANTICIPATED IF THE GROUNDWATER DEPTH IS KNOWN PRIOR TO CONSTRUCTION. AN ADEQUATELY DESIGNED DEWATERING SYSTEM, SUCH AS WELL POINTS SHALL BE REQUIRED TO CONTROL GROUNDWATER SEEPAGE AND PREVENT RUNNING GROUND CONDITIONS IN THE EVENT TRENCH EXCAVATIONS OCCUR AT A DEPTH BELOW THE GROUND WATER TABLE. GROUNDWATER SHOULD BE LOWERED TO AT LEAST 2.0 FEET BELOW THE MAXIMUM DEPTH OF EXCAVATION (BOTTOM OF PIPELINE BEDDING OR MANHOLE BASE UNDER LAYMENT). A DEWATERING PLAN SHALL BE SUBMITTED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE COMMENCEMENT OF EXCAVATION ACTIVITIES. THE DEWATERING SUBMITTAL SHALL BE REVIEWED AND APPROVED AND THE DEWATERING SYSTEM SHALL BE INSTALLED AND OPERATIONAL PRIOR TO THE COMMENCEMENT OF EXCAVATION ACTIVITIES.

MANHOLES WITH FOUNDATION BASES LOCATED BELOW GROUNDWATER SHOULD BE UNDERLAIN BY A MINIMUM OF 24 INCHES OF CALTRANS CLASS II AGGREGATE BASE MATERIAL COMPACTED TO AT LEAST 90% OF ASTM D -1557 MAXIMUM DENSITY OR 2 FEET OF 1 INCH ROCK CONTAINED IN A GEOTEXTILE FABRIC.

## BEDDING AND BACKFILL OF PIPELINE BELOW GROUND WATER

IF GROUND WATER IS ENCOUNTERED THE FOLLOWING BEDDING PROVIDING LATERAL AND BEARING SUPPORT TO THE PIPE SHALL APPLY. THE BEDDING AND THE BACKFILL AND THEIR DENSIFICATION SHOULD CONFORM TO THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" SECTIONS 306-1.2.1 AND 306-1.3.1 THROUGH 306-1.3.5 OR IN ACCORDANCE TO THE GEOTECHNICAL REPORT. AT LEAST 24 INCHES OF BEDDING MATERIAL SHOULD BE PLACED BELOW THE PIPE. THE BEDDING MAY BE CRUSHER FINES, GRANULAR SAND OR CALTRANS CLASS II AGGREGATE BASE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY OR MAY BE OPEN GRADED CRUSHED ROCK CONTAINED IN A GEOTEXTILE FILTER FABRIC. CRUSHED ROCK SHOULD BE MANUALLY DENSIFIED BELOW THE PIPE HAUNCHES AND TO THE SIDES OF THE PIPE. BACKFILL AND COMPACTION REQUIREMENTS ABOVE THE GROUNDWATER TABLE SHALL COMPLY WITH THE OTHER APPLICABLE STANDARD DETAILS AND SPECIFICATIONS OF THIS DOCUMENT.

## 20. ROUND ROCK

ROUND ROCK SHALL BE PLACED BENEATH THE GRAVITY SANITARY SEWER PIPELINES AS ILLUSTRATED BY THE STANDARD DETAILS OR REQUIRED BY THE SPECIFICATIONS. ROUND ROCK SHALL BE PLACED BENEATH THE WASTEWATER PIPELINES IF THE PIPE BEDDING IS UNSTABLE. ROUND ROCK SHALL CONSIST OF 1" X NO. 4 ROUND ROCK WITH NO MORE THAN 20 PERCENT OF THE MATERIAL PASSING THE NUMBER 4 SIEVE. ROCK WITH SHARP EDGES SHALL NOT BE ALLOWED. THE ROUND ROCK SHALL BE CONTAINED IN A GEOTEXTILE FABRIC IF THE BASE OF THE PIPE TRENCH IS LESS THAN 1 FOOT HIGHER THAN THE GROUND WATER TABLE.

**END OF SANITARY SEWER TECHNICAL SPECIFICATIONS SECTION**

**STORMWATER**
**TECHNICAL SPECIFICATIONS**

## 1. PIPE INSTALLATION

THIS SECTION COVERS FURNISHING ALL LABOR, SUPERVISION, MATERIALS AND EQUIPMENT AND PERFORMING ALL OPERATIONS NECESSARY TO FURNISH AND INSTALL THE PIPING AND FITTINGS. ALL PIPE AND FITTINGS, AND ACCESSORIES FURNISHED BY THE CONTRACTOR SHALL BE NEW MATERIAL FREE FROM RUST OR CORROSION. ALL PIPING AND FITTINGS SHALL BE CLEANED ON THE INSIDE WHEN INSTALLED AND THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO INSURE THAT THE LINES ARE KEPT FREE OF ANY FOREIGN MATTER AND DIRT UNTIL THE WORK IS COMPLETED. ALL PIPES SHALL BE CAREFULLY PLACED AND SUPPORTED AT THE PROPER LINES AND GRADES AS SHOWN ON THE DRAWINGS. PIPING RUNS SHOWN ON THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE EXCEPT FOR MINOR ADJUSTMENTS TO AVOID OTHER PIPING OR STRUCTURAL FEATURES. IF MAJOR RELOCATIONS ARE REQUIRED, THEY SHALL BE APPROVED BY THE DISTRICT ENGINEER. THE BEDDING SHALL BE DEFINED AS THAT MATERIAL SUPPORTING, SURROUNDING AND EXTENDING TO ONE FOOT ABOVE THE TOP OF THE PIPE. IF SOFT, SPONGY, UNSTABLE OR SIMILAR OTHER MATERIAL IS ENCOUNTERED UPON WHICH THE BEDDING MATERIAL OR PIPE IS TO BE PLACED, THIS UNSUITABLE MATERIAL SHALL BE REMOVED TO A DEPTH ORDERED BY THE CITY ENGINEER AND REPLACED WITH BEDDING MATERIAL SUITABLY DENSIFIED. 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. HUNCHING OF THE PIPE SHALL NOT BE ALLOWED. PIPE WILL BE CAREFULLY 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 CITY ENGINEER. PIPE SHALL BE LAID TRUE TO LINE AND GRADE WITH UNIFORM BEARING UNDER THE FULL LENGTH OF THE BARREL OF THE PIPE. SUITABLE EXCAVATION SHALL BE MADE TO RECEIVE THE BELL 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 RELAID AT THE CONTRACTOR'S EXPENSE. PIPE SHALL BE LAID UPGRADE WITH THE SOCKET ENDS OF THE PIPE UPGRADE UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER. PIPE SECTIONS SHALL BE LAID AND JOINED 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 HORIZONTAL OFFSET AT THE INVERT OF THE PIPE SHALL BE 1% OF THE INSIDE DIAMETER OF THE PIPE OR 0.02 FEET, WHICHEVER IS SMALLER. THE VERTICAL GRADE SHALL BE +/- 0.02 FEET OF THE DESIGN INVERT. IN JOINING SOCKET PIPE, THE SPIGOT OF EACH PIPE SHALL BE SO SEATED IN THE SOCKET OF THE ADJACENT PIPE AS TO GIVE A UNIFORM ANNULAR SPACE ALL AROUND THE PIPE IN THE SOCKET. UNAVOIDABLE OFFSETS SHALL BE DISTRIBUTED AROUND THE CIRCUMFERENCE OF THE PIPE IN SUCH A MANNER THAT THE MINIMUM OFFSET OCCURS AT THE INVERT. AT THE CLOSE OF WORK EACH DAY, OR WHENEVER THE WORK CEASES FOR ANY REASON, THE END OF THE PIPE SHALL BE SECURELY CLOSED.

THE WIDTH OF THE TRENCH DEPENDS ON THE PIPE DIAMETER, BACKFILL MATERIAL, AND THE METHOD OF COMPACTION. TRENCHES THAT ARE TOO NARROW WILL NOT ALLOW FOR PROPER PIPE INSTALLATION, WHEREAS TRENCHES THAT ARE OVERLY WIDE ARE UNNECESSARILY COSTLY. AS A PRACTICAL MATTER, STANDARD BUCKET SIZES MAY ALSO FACTOR INTO THE DECISION.

MINIMUM TRENCH WIDTHS SHALL CONFORM TO THE BELOW TABLE.

***MINIMUM TRENCH WIDTHS***

| Pipe Diameter, in. (mm) | Minimum Trench, in. (m) |
|---|---|
| 4-8 (100-200) | * |
| 10 (250) | 24 (0.6) |
| 12 (300) | 28 (0.7) |
| 15 (375) | 35 (0.9) |
| 18 (450) | 43 (1.1) |
| 24 (600) | 56 (1.4) |
| 30 (750) | 60 (1.5) |
| 36 (900) | 65 (1.7) |
| 42 (1050) | 84 (2.1) |
| 48 (1200) | 91 (2.3) |
| 54 (1350) | 97 (2.5) |
| 60 (1500) | 103 (2.6) |
| *Usually dependant on the smallest bucket size available | |

THESE MINIMUM TRENCH WIDTHS ARE NECESSARY FOR SUITABLE IN-SITU SOILS. THESE WIDTHS GENERALLY ALLOW FOR BACKFILL MATERIAL TO FLOW ON EITHER SIDE OF THE PIPE AND PERMIT MANY TYPES OF COMPACTION EQUIPMENT. IF THE WIDTH IS NOT SUFFICIENTLY WIDE FOR THE MATERIALS AND METHODS PROPOSED, A WIDER TRENCH ALLOWING FOR PROPER INSTALLATION SHOULD BE CONSTRUCTED.

## 2. SHORING AND SHEETING

THE CONTRACTOR SHALL DO SUCH TRENCH BRACING, SHEATHING, OR SHORING NECESSARY TO PERFORM AND PROTECT THE EXCAVATION AS REQUIRED FOR SAFETY AND CONFORMANCE TO GOVERNING LAWS. THE BRACING, SHEATHING, OR SHORING SHALL NOT BE REMOVED IN ONE OPERATION BUT SHALL BE DONE IN SUCCESSIVE STAGES TO PREVENT OVERLOADING OF THE PIPE DURING BACKFILLING OPERATIONS. ALL SHORING AND SHEETING DEEMED NECESSARY TO PROTECT THE EXCAVATION AND TO SAFEGUARD EMPLOYEES, SHALL BE INSTALLED.

## 3. OPEN TRENCH

EXCEPT WHERE OTHERWISE NOTED IN THE SPECIAL PROVISIONS, OR APPROVED IN WRITING BY THE CITY ENGINEER, THE MAXIMUM LENGTH OF OPEN TRENCH, WHERE THE CONSTRUCTION IS IN ANY STAGE OF COMPLETION (EXCAVATION, PIPE LAYING OR BACKFILLING), SHALL NOT EXCEED 1,320 FEET IN THE AGGREGATE AREA OF A STREET AT ANY ONE LOCATION.

ANY EXCAVATED AREA SHALL BE CONSIDERED OPEN TRENCH UNTIL THE TRENCH BACKFILL HAS BEEN PLACED TO SUBBASE LEVEL, THE LEVEL OF THE BOTTOM OF THE CLASS 2 BASE. WITH THE APPROVAL OF THE CITY ENGINEER, PIPE LAYING MAY BE CARRIED ON AT MORE THAN ONE SEPARATE LOCATION, THE RESTRICTIONS ON OPEN TRENCH APPLYING TO EACH LOCATION. TRENCHES ACROSS STREETS SHALL BE COMPLETELY BACKFILLED AS SOON AS POSSIBLE AFTER PIPE LAYING.

SUBSTANTIAL STEEL PLATES WITH ADEQUATE TRENCH BRACING SHALL BE USED TO BRIDGE ACROSS TRENCHES AT STREET CROSSINGS WHERE TRENCH BACKFILL AND TEMPORARY PATCHES HAVE NOT BEEN COMPLETED DURING REGULAR WORK HOURS. SAFE AND CONVENIENT PASSAGE FOR PEDESTRIANS SHALL BE PROVIDED. THE CITY ENGINEER MAY DESIGNATE A PASSAGE TO BE PROVIDED AT ANY POINT DEEMED NECESSARY. ACCESS TO HOSPITALS, FIRE STATIONS, SCHOOLS, POST OFFICES, PUBLIC FACILITIES AND FIRE HYDRANTS SHALL BE MAINTAINED AT ALL TIMES.

## 4. PROTECTION OF EXISTING UTILITIES

4.1 **UTILITIES:** UNLESS OTHERWISE ILLUSTRATED ON THE PLANS OR STATED IN THE SPECIFICATIONS, ALL UTILITIES, BOTH UNDERGROUND OR OVERHEAD, SHALL BE MAINTAINED IN CONTINUOUS SERVICE THROUGHOUT THE ENTIRE CONTRACT PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ANY DAMAGES TO OR INTERRUPTION OF SERVICE CAUSED BY THE CONSTRUCTION.

IF THE CONTRACTOR DESIRES TO SIMPLIFY HIS OPERATION BY TEMPORARILY OR PERMANENTLY RELOCATING OR SHUTTING

DOWN ANY UTILITY OR APPURTENANCE, THE CONTRACTOR SHALL MAKE THE NECESSARY ARRANGEMENTS AND AGREEMENTS WITH THE UTILITY PURVEYOR AND SHALL BE COMPLETELY RESPONSIBLE FOR ALL COSTS CONCERNED WITH THE RELOCATION OR SHUTDOWN AND RECONSTRUCTION. ALL PROPERTY SHALL BE RECONSTRUCTED IN ITS ORIGINAL OR NEW LOCATION AS SOON AS POSSIBLE AND TO A CONDITION AT LEAST AS GOOD AS ITS PREVIOUS CONDITION. THIS PERIOD OF RELOCATION OR SHUTDOWN AND RECONSTRUCTION SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY BOTH THE CITY ENGINEER AND THE UTILITY PURVEYOR.

THE CONTRACTOR SHALL BE ENTIRELY RESPONSIBLE FOR SAFEGUARDING AND MAINTAINING ALL CONFLICTING UTILITIES THAT ARE ILLUSTRATED ON THE PLANS. THIS INCLUDES OVERHEAD WIRES AND CABLES AND THEIR SUPPORTING POLES WHETHER THEY ARE INSIDE OR OUTSIDE OF THE OPEN TRENCH. IF, IN THE COURSE OF WORK, A CONFLICTING UTILITY LINE THAT WAS NOT ILLUSTRATED ON THE PLANS IS DISCOVERED, THE DEVELOPER SHALL EITHER NEGOTIATE WITH THE UTILITY PURVEYOR FOR RELOCATION, RELOCATE THE UTILITY OR CHANGE THE ALIGNMENT AND GRADE OF THE TRENCH.

4.2 **BUILDING, FOUNDATIONS AND STRUCTURES:** WHERE TRENCHES ARE LOCATED ADJACENT TO BUILDINGS, FOUNDATIONS, AND STRUCTURES, THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTION AGAINST DAMAGE TO THEM. THE CONTRACTOR SHALL BE LIABLE FOR ANY DAMAGE CAUSED BY THE CONSTRUCTION. EXCEPT WHERE AUTHORIZED IN THE SPECIAL PROVISIONS OR IN WRITING BY THE CITY ENGINEER, WATER SETTLING OF BACKFILL MATERIAL IN TRENCHES ADJACENT TO STRUCTURES WILL NOT BE PERMITTED.

4.3 **ELECTRONIC, TELEPHONIC, TELEGRAPHIC, ELECTRICAL, OIL AND GAS LINES:** THESE UNDERGROUND FACILITIES SHALL BE ADEQUATELY SUPPORTED BY THE CONTRACTOR. SUPPORT FOR PLASTIC PIPE SHALL BE CONTINUOUS ALONG THE BOTTOM OF THE PIPE. SUPPORT FOR METAL PIPE AND ELECTRICAL CONDUIT MAY BE CONTINUOUS OR NYLON WEBBING MAY BE USED FOR SUSPENSION AT NO GREATER THAN TEN FOOT (10') INTERVALS.

THE CONTRACTOR SHALL AVOID DAMAGING THE PLASTIC PIPE, PIPE WAYS OR CONDUITS DURING TRENCH BACKFILLING AND DURING FOUNDATION AND BEDDING PLACEMENT.

## 5. COMPACTION METHODS

BACKFILL MATERIAL SHALL BE COMPACTED WITH HAND AND/OR MECHANICAL WORK METHODS USING EQUIPMENT SUCH AS ROLLER, PNEUMATIC TAMPS, AND HYDRO-HAMMERS OR OTHER APPROVED DEVICES WHICH SECURE UNIFORM AND REQUIRED DENSITY WITHOUT INJURY TO THE PIPE OR RELATED STRUCTURES.

WATER CONSOLIDATION BY JETTING OR FLOODING IS NOT ACCEPTABLE AS A SOIL CONSOLIDATION METHOD UNLESS AUTHORIZED IN THE TECHNICAL SPECIFICATION OR APPROVED BY THE CITY ENGINEER.

## 6. RIGHTS-OF-WAY BELONGING TO OTHERS

WHERE THE PERMIT OF A GOVERNING AGENCY SETS FORTH REQUIREMENTS FOR COMPACTION MORE STRINGENT THAN THOSE STATED HEREIN, THE CONTRACTOR SHALL ADHERE TO THE MORE STRINGENT REQUIREMENTS.

## 7. LEAK TESTING FOR STORMWATER MANHOLES

THE CONTRACTOR SHALL LEAK TEST 100% OF THE STORMWATER MANHOLES INSTALLED FOR THIS PROJECT.

THE CONTRACTOR SHALL TEST ALL MANHOLES USING THE FOLLOWING TEST PROCEDURE:

THE CONTRACTOR SHALL FILL THE MANHOLE WITH WATER AND ALLOW THE INTERIOR SURFACES OF THE MANHOLE TO SOAK FOR FOUR (4) HOURS. THE LEAK TEST SHALL THEN COMMENCE. WATER TIGHTNESS TESTING SHALL CONSIST OF FILLING THE MANHOLE WITH WATER TO AN ESTABLISHED LEVEL. THE CONTRACTOR SHALL ENSURE THAT THE DROP IN WATER LEVEL DOES NOT EXCEED 0.001 OF THE TOTAL MANHOLE VOLUME IN ONE (1) HOUR.

## 8. ADDITIONAL TESTING

CITY OF CALIPATRIA SHALL REQUIRE THE INSPECTION OF THE INTERIOR OF THE STORMWATER PIPELINE USING A TELEVISION CAMERA. ANY DEFECTS IN THE PIPE OR CONSTRUCTION METHODS REVEALED SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY OF CALIPATRIA. ALL DIRT AND DEBRIS OBSERVED WITHIN THE STORMWATER PIPELINE DURING THE CAMERA INSPECTION SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.

THE CONTRACTOR SHALL PAY FOR THE T.V. INSPECTIONS COMPLETED FOR THE INSPECTION OF THE PIPELINE. ANY ADDITIONAL INSPECTION(S) OR CORRECTIVE WORK REQUIRED, DUE TO PIPE DEFICIENCIES INDENTIFIED BY THE T.V. INSPECTION, SHALL BE PAID FOR BY THE CONTRACTOR.

THE CONTRACTOR SHALL PERFORM DEFLECTION TESTING FOR 100% OF STORM WATER LINES TO ENSURE THAT THE INSTALLATION MEETS OR EXCEEDS THE MANUFACTURE'S RECOMMENDATIONS.

THE CONTRACTOR SHALL PERFORM DEFLECTION TESTING ON THE SYSTEM AS DIRECTED BY THE CITY ENGINEER. THE DEFLECTION TESTING SHALL BE ACCOMPLISHED BY MANDRELING THE PIPELINE. ANY PART OF THE INSTALLATION, WHICH SHOWS DEFLECTION IN EXCESS OF 5% OF THE AVERAGE INSIDE DIAMETER PER ASTM D-3034 FOR PVC PIPE, SHALL BE CORRECTED.

AFTER ACCEPTANCE BUT PRIOR TO THE TERMINATION OF THE WARRANTY PERIOD, THE CITY OF CALIPATRIA MAY TEST THE LONG-TERM DEFLECTION OF THE SEWER. IF THE CITY OF CALIPATRIA DETERMINES THAT THE DEFLECTION HAS EXCEEDED 7 ½% OF THE AVERAGE INSIDE DIAMETER, THAT PORTION OF THE INSTALLATION SHALL BE CORRECTED BY THE CONTRACTOR AT NO COST TO THE CITY OF CALIPATRIA.

THE CONTRACTOR SHALL PERFORM A WATERTIGHT FIELD PERFORMANCE TEST ON 100 % OF THE STORMWATER PIPELINE INSTALLED. THE WATERTIGHT FIELD PERFORMANCE TEST SHALL BE ACCOMPLISHED AFTER THE DEFLECTION TESTING OF THE STORM WATER PIPELINE IS ACCOMPLISHED.

STORM WATER LINES SHALL BE SUBJECT TO ACCEPTANCE TESTING AFTER BACKFILLING HAS BEEN COMPLETED BUT PRIOR TO THE PLACEMENT OF THE FINISHED SURFACE MATERIAL, (CLASS 2 BASE, A.C. PAVEMENT AND P.C.C. CONCRETE).

THE COST OF REPAIRS OR CORRECTIONS NECESSARY TO CONFORM TO THE TESTING REQUIREMENTS WILL BE BORNE BY THE CONTRACTOR AT NO COST TO THE CITY OF CALIPATRIA.

A WATERTIGHT FIELD PERFORMANCE TEST SHALL BE ACCOMPLISHED ACCORDING TO ASTM F1417 OR ASTM C969 AS DETERMINED BY THE CITY ENGINEER. THE COSTS TO COMPLETE THE WATERTIGHT FIELD PERFORMANCE TEST SHALL BE BORNE BY THE CONTRACTOR

## 9. CONCRETE

THE PORTLAND CONCRETE CEMENT FOR THE MANHOLE BASES, MANHOLE GRADE RINGS AND ALL OTHER CONCRETE INFRASTRUCTURE SHALL BE TYPE "V" AND CONTAIN A MINIMUM OF 6-1/2 SACKS OF CEMENT PER CUBIC YARD AND ATTAIN 4,500 PSI COMPRESSIVE STRENGTH AFTER 28 DAYS OF CURING. CONCRETE SLUMP SHALL NOT EXCEED 4.5 INCHES. THE CITY ENGINEER SHALL BE PROVIDED WITH A COPY OF THE CONCRETE VENDOR'S DELIVERY SLIP. ONE (1) SLIP SHALL BE PROVIDED FOR EACH CONCRETE DELIVERY TRUCK. ONE (1) SET OF CONCRETE CYLINDERS SHALL BE OBTAINED FOR EVERY SIX (6) MANHOLE BASES CONSTRUCTED AT A PROJECT SITE. IT SHALL NOT BE REQUIRED TO OBTAIN AND TEST CONCRETE CYLINDERS ON PROJECTS WITH LESS THAN SIX (6) MANHOLE BASES. A SET OF CYLINDERS SHALL BE DEFINED AS THREE (3) CYLINDERS. ONE (1) CYLINDER SHALL BE TESTED 7 DAYS AFTER CONCRETE PLACEMENT. THE SECOND CYLINDER SHALL BE TESTED 28 DAYS AFTER CONCRETE PLACEMENT. THE THIRD CYLINDER SHALL BE HELD IN RESERVE AND TESTED AT THE DIRECTION OF THE CITY ENGINEER.

## 10. GRAVITY STORMWATER PIPE

GRAVITY STORMWATER PIPELINE SHALL CONSIST OF HIGH DENSITY POLYETHYLENE (HDPE). THE MINIMUM DIAMETER STORM WATER PIPELINE SHALL BE 12 INCHES IN DIAMETER. THE PIPE SHALL POSSES A SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATION. THE

STORM WATER PIPELINES SHALL RANGE FROM 12 INCHES IN DIAMETER TO 60 INCHES IN DIAMETER. THE HDPE MATERIAL COMPOSING THE STORM WATER PIPELINE SHALL CONFORM TO AASHTO M294, TYPE S. THE MANNING'S "N" VALUE FOR USE IN DESIGN SHALL BE BETWEEN 0.010 TO 0.012. PIPE JOINTS SHALL MEET THE REQUIREMENTS OF AASHTO M294.

THE 12- THROUGH 60-INCH (300 TO 1500 MM) STORMWATER PIPELINE SHALL BE WATERTIGHT ACCORDING TO THE REQUIREMENTS OF ASTM D3212. GASKETS SHALL BE MADE OF POLYISOPRENE MEETING THE REQUIREMENTS OF ASTM F477 WITH THE ADDITION THAT THE GASKETS SHALL NOT HAVE ANY VISIBLE CRACKING WHEN TESTED ACCORDING TO ASTM D1149 AFTER 72 HOUR EXPOSURE IN 50 PPHM OZONE AT 104°F (40°C). GASKETS SHALL BE INSTALLED BY THE PIPE MANUFACTURER AND COVERED WITH A REMOVABLE WRAP TO ENSURE THE GASKET IS FREE FROM DEBRIS. THE 12- THROUGH 30-INCH (300 TO 750 MM) BELLS SHALL INCLUDE A REINFORCING RIB AT THE FLARE O.D. TO ASSURE MEETING ROUNDNESS TOLERANCES AND ENHANCE PROPER JOINT ASSEMBLY. A JOINT LUBRICANT AVAILABLE FROM THE MANUFACTURER SHALL BE USED ON THE GASKET AND BELL DURING ASSEMBLY.

THE 24- THROUGH 60-INCH (600 TO 1500 MM) DIAMETER STORMWATER PIPELINE SHALL HAVE A REINFORCED BELL & SPIGOT INCLUDING A BELL TOLERANCE DEVICE. THE BELL TOLERANCE DEVICE SHALL BE INSTALLED BY THE MANUFACTURER AND COVERED WITH A PROTECTIVE WRAP. THE GASKET CORRUGATION SHALL BE REINFORCED WITH A CLOSED CELL STRUCTURAL FOAM CORE.

TO ASSURE WATERTIGHT FIELD PERFORMANCE VERIFICATION SHALL BE ACCOMPLISHED USING ASTM F 1417 OR ASTM C 969 TEST PROCEDURES. APPROPRIATE SAFETY PRECAUTIONS MUST BE USED WHEN FIELD TESTING ANY PIPE MATERIAL. THE COSTS TO COMPLETE THE WATERTIGHT FIELD PERFORMANCE SHALL BE BORNE BY THE CONTRACTOR.

FITTINGS SHALL CONFORM TO AASHTO M294. FABRICATED FITTINGS SHALL BE WELDED AT ALL ACCESSIBLE INTERIOR AND EXTERIOR JUNCTIONS.

THE PIPE AND FITTING MATERIAL SHALL BE HIGH-DENSITY POLYETHYLENE MEETING ASTM D3350 MINIMUM CELL CLASSIFICATION 335400C. THE PIPE MATERIAL SHALL BE A SLOW CRACK RESISTANT

MATERIAL EVALUATED USING THE NOTCHED CONSTANT LIGAMENT-STRESS (NCLS) TEST. AVERAGE NCLS TEST SPECIMENS MUST EXCEED 24 HOURS WITH NO TEST RESULT LESS THAN 17 HOURS. THE CLOSED CELL STRUCTURAL FOAM CORE MUST HAVE A FREE RISE DENSITY NO LESS THAN 3 LBS/FT$^3$ AND COMPRESSIVE STRENGTH NO LESS THAN 20 LBS/IN$^2$.

AS REQUESTED, ALL CORRUGATED POLYETHYLENE PIPE MEETING OR EXCEEDING AASHTO M294 SHALL ONLY BE PROVIDED BY MANUFACTURERS LISTED BY THE PLASTICS PIPE INSTITUTE (PPI) AS HAVING MET THE REQUIREMENTS OF THE PPI SPONSORED THIRD-PARTY CERTIFICATION PROGRAM. ALL AASHTO M294 PIPE SHALL BE CLEARLY MARKED WITH A CERTIFICATION PROGRAM MARK OR LOGO REPRESENTING THE SUPPLIED PIPE IS IN COMPLIANCE WITH ALL APPLICABLE STANDARDS.

INSTALLATION SHALL BE IN ACCORDANCE WITH THE CALIPATRIA STANDARD DETAILS AND ASTM D2321; WITH THE EXCEPTION THAT MINIMUM COVER IN TRAFFIC BEARING AREAS FOR 12- THROUGH 48-INCH (300 TO 1200 MM) DIAMETERS SHALL BE 3 FOOT. THE MORE STRINGENT REQUIREMENTS SHALL COMPLY IF THE DETAILS AND SPECIFICATIONS CONFLICT. BACKFILL REQUIREMENTS SHALL COMPLY WITH THE CALIPATRIA STANDARD DETAILS.

## PIPE DIMENSIONS

| | | NOMINAL DIAMETER, IN (MM) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIPE I.D. | IN (MM) | 12 (300) | 15 (375) | 18 (450) | 24 (600) | 30 (760) | 36 (900) | 42 (1050) | 48 (1200) | 60 (1500) |
| PIPE O.D. | IN (MM) | 14.2 (361) | 17.7 (450) | 21.5 (546) | 28.4 (721) | 36.0 (914) | 41.4 (1052) | 48.0 (1219) | 55.0 (1397) | 67.3 (1709) |
| FLARE O.D. | IN (MM) | 15.4 (391) | 19.6 (498) | 23.9 (607) | N/A | N/A | N/A | N/A | N/A | N/A |
| PITCH | IN (MM) | 2.0 (51) | 2.4 (61) | 3.0 (76) | 4.0 (102) | 4.0 (102) | 4.6 (117) | 5.8 (147) | 5.8 (147) | 7.8 (198) |
| APPROX. WEIGHT LB/FT. | (KG/M) | 3.5 (5.2) | 5 (7.4) | 7 (10.4) | 11 (16.4) | 17 (25.3) | 20 (29.8) | 25 (37.2) | 30 (44.6) | 43 (64) |

## 11. STORMWATER FORCEMAIN

THIS SPECIFICATION DESIGNATES GENERAL REQUIREMENTS FOR UNPLASTICIZED POLYVINYL CHLORIDE (PVC) PLASTIC CLASS WATER PIPE WITH INTEGRAL BELL AND SPIGOT JOINTS FOR THE CONVEYANCE OF WATER. PIPE SHALL MEET THE REQUIREMENTS OF AWWA C900 OR AWWA C905 “POLYVINYL CHLORIDE (PVC) WATER DISTRIBUTION”.

ALL PIPE SHALL BE SUITABLE FOR USE AS PRESSURE CONDUIT. PROVISIONS MUST BE MADE FOR EXPANSION AND CONTRACTION AT EACH JOINT WITH AN ELASTOMERIC RING. THE BELL SHALL CONSIST OF AN INTEGRAL WALL SECTION WITH A FACTORY INSTALLED, SOLID CROSS SECTION ELASTOMERIC RING WHICH MEETS THE REQUIREMENTS OF ASTM F-477. THE BELL SECTION SHALL BE DESIGNED TO BE AT LEAST AS HYDROSTATICALLY STRONG AS THE PIPE WALL AND MEET THE REQUIREMENTS OF AWWA C900 OR AWWA C905. SIZES AND DIMENSIONS SHALL BE AS SHOWN IN THIS SPECIFICATION. JOINT DESIGN MEETS QUALIFICATION REQUIREMENTS OF ASTM F3139. EACH PIPE SHALL BE TESTED TO FOUR TIMES THE PRESSURE CLASS OF THE PIPE FOR A MINIMUM OF 5 SECONDS. THE INTEGRAL BELL SHALL BE TESTED WITH THE PIPE. STANDARD LAYING LENGTHS SHALL BE 20 FEET (± 1”) FOR ALL SIZES.

THE PIPE STIFFNESS USING F/ΔY FOR PVC CLASS WATER PIPE IS CONTAINED IN THE TABLE BELOW:

| CLASS | DR | FΔy (psi) |
|---|---|---|
| 100 | 25 | 129 |
| 150 | 18 | 364 |
| 200 | 14 | 815 |

PIPE SHALL WITHSTAND, WITHOUT FAILURE AT 73°F, AN IMPACT OF A FALLING MISSILE, TUP C, AT THE FOLLOWING LEVELS. (PER ASTM D 2444.)

| PIPE SIZE (IN.) | IMPACT (FT./LBS.) |
|---|---|
| 4 | 100 |
| 6 | 100 |
| 8 | 100 |
| 10 | 120 |
| 12 | 120 |

THERE SHALL BE NO VISIBLE EVIDENCE OF SHATTERING OR SPLITTING WHEN THE ENERGY IS IMPOSED.

RANDOMLY SELECTED SAMPLES TESTED IN ACCORDANCE WITH ASTM D 1599 SHALL WITHSTAND, WITHOUT FAILURE, PRESSURES LISTED BELOW WHEN APPLIED IN 60-70 SECONDS.

| CLASS | MINIMUM BURST PRESSURE AT 73°F (PSI) |
|---|---|
| 100 | 535 |
| 150 | 755 |
| 200 | 985 |

STORMWATER FORCEMAINS SHALL CONFORM WITH THE SPECIFICATIONS FOR AWWA C-900, CLASS 150 FOR DIAMETER SIZES 4 INCHES THROUGH 12 INCHES AND AWWA C905 DR25 FOR DIAMETER SIZES 14 INCHES OR GREATER.

## 12. DUCTILE IRON FITTINGS

FITTINGS FOR THE STORM WATER FORCEMAINS SHALL BE COMPOSED OF DUCTILE IRON. THE DUCTILE IRON MECHANICAL JOINT FITTINGS SHALL CONFORM TO AWWA C153. THE DUCTILE IRON FLANGED FITTINGS SHALL CONFORM TO AWWA C110. THE FITTINGS SHALL BE CEMENT MORTAR LINED IN ACCORDANCE WITH ANSI/AWWA C-104/A21.4, STANDARD FOR CEMENT MORTAR LINING FOR DUCTILE IRON AND GRAY IRON PIPE FITTINGS FOR WATER, LATEST REVISION. THE PRESSURE RATING FOR 3 INCH – 24 INCH DIAMETER SIZES SHALL BE 350 PSI. THE PRESSURE RATING FOR 30 INCH – 48 INCH DIAMETER SIZES SHALL BE 250 PSI.

## 13. ROUND ROCK

ROUND ROCK SHALL BE PLACED BENEATH THE STORMWATER PIPELINE AS ILLUSTRATED BY THE STANDARD DETAILS. ROUND ROCK SHALL BE PLACED BENEATH THE STORMWATER PIPELINE IF THE PIPE BEDDING IS UNSTABLE. ROUND ROCK SHALL CONSIST OF 1” X NO. 4 ROUND ROCK WITH NO MORE THAN 20 PERCENT OF THE MATERIAL PASSING THE NUMBER 4 SIEVE. ROCK WITH SHARP EDGES SHALL NOT BE ALLOWED.

## 14. EXCAVATIONS FOR STORM WATER PIPELINE

SHALLOW, TEMPORARY EXCAVATIONS, LESS THAN FOUR FEET DEEP, IN NATIVE CLAY SOILS SHOULD STAND NEARLY VERTICAL FOR SHORT DURATION. ALL TEMPORARY EXCAVATIONS OVER FOUR FEET IN DEPTH WILL REQUIRE SHORING OR SLOPE INCLINATIONS IN CONFORMANCE TO CAL OSHA STANDARDS FOR TYPE C SOILS. THESE TEMPORARY DEEP EXCAVATIONS WILL REQUIRE SLOPE INCLINATIONS NO STEEPER THAN 1:1 VERTICAL HEIGHT TO HORIZONTAL LENGTH UNLESS TRENCH SHORING IS USED.

STABLE EXCAVATION SLOPES ASSUMES MINIMAL EQUIPMENT VIBRATION AND ADEQUATE SETBACK OF EXCAVATED MATERIAL AND CONSTRUCTION EQUIPMENT FROM THE TOP OF THE EXCAVATION. IT IS RECOMMENDED THAT THE MINIMUM SETBACK DISTANCE BE EQUAL TO THE DEPTH OF EXCAVATION AND AT LEAST 5 FEET FROM THE CROWN OF THE SLOPE. IF EXCAVATED MATERIALS ARE STOCKPILED ADJACENT TO THE EXCAVATION, THE WEIGHT OF THE MATERIAL SHOULD BE CONSIDERED AS A SURCHARGE LOAD FOR SLOPE STABILITY.

ALL EXCAVATIONS SHALL BE CONSTRUCTED IN CONFORMANCE TO THE CAL OSHA REQUIREMENTS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBILITY FOR THE SAFETY OF HIS PERSONEL.

**ACCEPTANCE TESTS FOR PRESSURE STORMWATER FORCEMAINS:**

**A.** PERFORM HYDROSTATIC PRESSURE TESTS FOR THE SANITARY SEWER PIPELINE. TEST THE PIPELINE AT 150 PSI FOR FOUR (4) HOURS. A PRESSURE DROP OF 3 PSI OR LESS SHALL REQUIRE THE PRESSURE BE INCREASED TO 150 PSI DURING THE TEST. ALL OTHER PRESSURE TEST REQUIREMENTS SHALL BE IN ACCORDANCE WITH AWWA REQUIREMENTS FOR DOMESTIC WATER PIPELINES. IF IT IS NECESSARY TO RE-PRESSURE THE PIPELINE DUE TO PRESSURE DROPS GREATER THAN 3 PSI MORE THAN 6 TIMES THE PRESSURE TEST SHALL HAVE FAILED. LEAKS SHALL BE IDENTIFIED AND SATISFACTORILY ADDRESSED. THE HYDROSTATIC PRESSURE TEST SHALL BE RE-PERFORMED ITERATIVELY UNTIL SUCCESSFUL.

**END OF STORMWATER TECHNICAL SPECIFICATIONS SECTION**

## SUBMITTALS

THE DEVELOPER SHALL SUBMIT THE FOLLOWING SHOP DRAWINGS OR SUBMITTAL INFORMATION TO THE CITY OF CALIPATRIA ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING CONSTRUCTION WORK AT THE PROJECT SITE. A TOTAL OF SIX (6) SETS OF SUBMITTAL DOCUMENTS SHALL BE FORWARDED TO THE CITY ENGINEER. THE CITY PUBLIC WORKS DEPARTMENT SHALL RETAIN TWO (2) SETS OF SUBMITTAL DOCUMENTS AFTER THE REVIEW PROCESS IS COMPLETE. THE CITY ENGINEER SHALL RETAIN ONE (1) SET OF SUBMITTAL DOCUMENTS. THE REMAINING THREE (3) SUBMITTAL DOCUMENTS SHALL BE FORWARDED TO THE DEVELOPER. THIS LIST IS NOT INTENDED TO BE ALL INCLUSIVE AND THE CITY RESERVES THE RIGHT TO DEMAND SHOP DRAWINGS ASSOCIATED WITH ANY OTHER ITEMS AT ITS DISCRETION.

1. **STREET IMPROVEMENTS**

   A. CLASS 2 BASE GRADATION, DURABILITY, R-VALUE AND SAND EQUIVALENT
   B. SAND BACKFILL GRADATION AND SAND EQUIVALENT
   C. A.C. MIX DESIGN. THE PERCENT BITUMEN, SIEVE ANALYSIS, DURABILITY, RESISTANCE (R-VALUE), AGGREGATE GRADATION AND ALL OTHER STANDARD PARAMETERS.
   D. P.C.C. CONCRETE MIX DESIGN
   E. CRUSHER FINES AND SAND EQUIVALENT
   F. STREET LIGHTS
   G. STOP SIGN AND STREET NAME SIGNS AND POSTS
   H. TRAFFIC PAINT AND STRIPING
   I. DUCTILE IRON SURVEY MONUMENT WELL AND COVER
   J. MASONRY WALLS. RETAINING WALL SUBMITTAL INFORMATION SHALL INCLUDE STRUCTURAL CALCULATIONS.
   K. TREATED BOARDS FOR A.C. PAVEMENT EDGES
   L. FIBERMESH FOR P.C.C. CONCRETE

## 2. WATER FACILITIES

ALL WATER SUBMMITALS ARE TO BE FORWARDED TO GOLDEN STATE WATER COMPANY FOR THEIR REVIEW AND APPROVAL. THE CITY OF CALIPATRIA SHALL NOT ALLOW THE CONSTRUCTION OF THE WATER PIPELINE FACILITIES UNLESS GOLDEN STATE WATER COMPANY HAS REVIEWED AND APPROVED THE WATER SUBMITTALS. AN APPROVED SUBMITTAL IS TO BE FORWARDED TO THE CITY OF CALIPATRIA ENGINEER PRIOR TO THE COMMENCEMENT OF WATER PIPELINE CONSTRUCTION.

## 3. SANITARY SEWER FACILITIES

A. PRECAST MANHOLE SHAFTS AND CONES
B. PRECAST MANHOLE COATING SYSTEM
C. DUCTILE IRON MANHOLE RINGS AND COVERS
D. SDR 35 PVC PIPE FOR GRAVITY MAIN PIPELINES AND SEWER LATERALS
E. ASTM F1803 PVC FOR LARGE DIAMETER PVC PIPELINES
F. DUCTILE IRON PIPE FOR GRAVITY OR FORCEMAIN
G. AWWA C-900, CLASS 150 OR AWWA C-905, DR25 PVC SANITARY SEWER FORCEMAIN. AWWA C-900, CLASS 200 OR AWWA C-905, DR14 WHEN WATER OR STORMWATER CONFLICTS OCCUR
H. DUCTILE IRON FITTINGS FOR SANITARY SEWER FORCEMAINS INCLUDING HARDWARE
I. SAND BACKFILL GRADATION AND SAND EQUIVALENT (SAME MATERIAL FOR STREET IMPROVEMENTS)
J. GRAVEL FOR PIPE BEDDING MATERIAL
K. P.C.C. CONCRETE (SAME MATERIAL FOR STREET IMPROVEMENTS)
L. CLASS 2 BASE (SAME MATERIAL FOR STREET IMPROVEMENTS)
M. WASTEWATER PUMP STATION (IF APPLICABLE)
    1) ELECTRICAL SERVICE/METER PANEL
    2) ELECTRICAL MOTOR CONTROL CENTER
    3) AUTOMATIC TRANSFER SWITCH
    4) FLOWMETER AND TRANSMITTER
    5) WASTEWATER PUMPS

6) PUMP STATION ACCESSORIES (ACCESS HATCHES, SLIDE RAILS, ETC.)
7) PUMP STATION VALVES, CHECK VALVES, TRUE WYES, FITTINGS, PIPE, PIPE SUPPORTS AND HARDWARE
8) WASTEWATER PUMP STATION WET WELL
9) PUMP STATION FENCING AND GATES
10) PUMP STATION LIGHTING
11) EMERGENCY POWER GENERATOR

N. TWO (2) SACK SAND SLURRY MIX DESIGN

4. **STORMWATER FACILITIES**

A. STORMWATER PUMP STATION (IF APPLICABLE)
1) ELECTRICAL SERVICE/METER PANEL
2) ELECTRICAL MOTOR CONTROL CENTER
3) STORMWATER PUMPS
4) PUMP STATION ACCESSORIES (ACCESS HATCHES, SLIDE RAILS, ETC.)
5) PUMP STATION VALVES, CHECK VALVES, TRUE WYES, FITTINGS, PIPE, PIPE SUPPORTS AND HARDWARE
6) STORMWATER PUMP STATION WET WELL
7) PUMP STATION FENCING AND GATES
8) PUMP STATION LIGHTING

B. STORMWATER CATCH BASINS AND GRATES

C. STORMWATER MANHOLE SHAFT AND CONE, GRADE RING, DUCTILE IRON FRAME AND COVER AND COATING SYSTEM

D. GRAVITY CORREGATED HIGH DENSITY POLYETHYLENE (HDPE) STORMWATER PIPELINE AND FITTINGS

E. GRAVITY SDR 35 PVC STORMWATER PIPELINE

F. AWWA C-900, CLASS 150 PVC OR CLASS 200 STORMWATER FORCEMAIN OR AWWA C905, DR 18 OR DR 25 PVC STORMWATER FORCEMAIN

G. DUCTILE IRON STORMWATER GRAVITY PIPELINE OR FORCEMAIN

H. SAND BACKFILL GRADATION AND SAND EQUIVALENT (SAME MATERIAL FOR STREET IMPROVEMENTS)

I. GRAVEL FOR PIPE BEDDING MATERIAL

J. P.C.C. CONCRETE (SAME MATERAL FOR STREETS)

K. CLASS 2 BASE (SAME MATERIAL FOR STREETS)

5. **CONSTRUCTION SCHEDULE**

6. **TRAFFIC CONTROL PLAN**

7. **LETTER DESIGNATING PROJECT SUPERINTENDENT**

**END OF SUBMITTAL SECTION**

## GEOTECHNICAL TESTING REQUIREMENTS

### 1. STREET GEOTECHNICAL TESTING REQUIREMENTS

A. A COMPACTION TEST FOR THE CLASS 2 BASE SHALL BE REQUIRED FOR EACH SECTION OF P.C.C. CROSS-GUTTER INSTALLED.

B. A COMPACTION TEST FOR THE CLASS 2 BASE SHALL BE REQUIRED FOR EACH P.C.C. HANDICAP CURB RETURN INSTALLED.

C. A COMPACTION TEST FOR THE CLASS 2 BASE SHALL BE REQUIRED FOR EACH RESIDENTIAL, COMMERCIAL OR ALLEY DRIVEWAY.

D. A COMPACTION TEST FOR THE CLASS 2 BASE SHALL BE REQUIRED AT EACH SPANDREL AREA AT EACH CURB RETURN.

E. A COMPACTION TEST FOR THE CLASS 2 BASE SHALL BE REQUIRED FOR EVERY 200 LINEAL FEET OF P.C.C. CURB AND GUTTER INSTALLED.

F. A COMPACTION TEST FOR THE CLASS 2 BASE SHALL BE REQUIRED FOR EVERY 200 LINEAL FEET OF P.C.C. CURB OR A.C. BARRIER INSTALLED.

G. A COMPACTION TEST FOR THE CLASS 2 BASE SHALL BE REQUIRED FOR EVERY 200 LINEAL FEET OF P.C.C. RIBBON GUTTER INSTALLED.

H. A COMPACTION TEST FOR THE CLASS 2 BASE OR GRANULAR SAND FILL SHALL BE REQUIRED FOR EVERY 150 LINEAL FEET OF SIDEWALK OR BICYCLE PATH INSTALLED.

I. AN EXTRACTION/GRADATION TEST SHALL BE COMPLETED FROM AN A.C. PAVEMENT SAMPLE OBTAINED BY THE GEOTECHNICAL CONSULTANT REPRESENTATIVE EACH MORNING PAVEMENT OPERATIONS OCCUR.

J. A COMPACTION TEST FOR THE A.C. PAVEMENT SHALL BE REQUIRED FOR EVERY 2,500 SQUARE FEET OF A.C. STREET SURFACE AREA.

K. A.C. PAVEMENT DENSITY TESTING SHALL BE CONDUCTED ON A CONTINUOUS BASIS BY THE GEOTECHNICAL REPRESENTATIVE DURING THE PLACEMENT OF A.C. PAVEMENT.

L. ONE (1) SET OF CYLINDERS AND ONE (1) SLUMP TEST SHALL BE REQUIRED FOR EVERY 50 CUBIC YARDS OF CONCRETE EXCEPT THAT A MINIMUM OF ONE (1) SET OF CYLINDERS AND SLUMP TEST SHALL BE REQUIRED EACH DAY TWENTY (20) OR MORE YARDS OF CONCRETE ARE PLACED AT A PROJECT SITE. THE MAXIMUM ALLOWABLE SLUMP SHALL BE 4 INCHES. A SET OF CYLINDERS SHALL BE COMPOSED OF THREE (3) CYLINDERS. THE FIRST CYLINDER OF A SET SHALL BE TESTED AFTER SEVEN (7) DAYS CURING. THE SECOND CYLINDER OF A SET SHALL BE TESTED AFTER 28 DAYS CURING. THE THIRD CYLINDER SHALL BE HELD IN RESERVE AND TESTED IF DIRECTED BY THE CITY ENGINEER. THE TEST RESULTS WILL BE FORWARDED TO THE CITY ENGINEER FOR REVIEW. THE CITY ENGINEER SHALL RECEIVE A CONCRETE VENDOR SLIP FOR EACH TRUCK LOAD OF CONCRETE DELIVERED TO THE PROJECT SITE.

M. AN A.C. MIX DESIGN AND CONCRETE MIX DESIGN SHALL BE SUBMITTED FOR THE REVIEW AND APPROVAL OF THE CITY ENGINEER DURING THE SUBMITTAL PROCESS.

N. GEOTECHNICAL TESTING IS REQUIRED FOR THE GRANULAR SAND DURING THE SUBMITTAL PROCESS PER THE STREET TECHNICAL CONDITIONS CONTAINED WITHIN THIS DOCUMENT.

O. GEOTECHNICAL TESTING IS REQUIRED FOR THE CLASS 2 BASE DURING THE SUBMITTAL PROCESS PER THE STREET TECHNICAL CONDITIONS CONTAINED WITHIN THIS DOCUMENT.

P. A COMPACTION TEST FOR THE CLASS 2 BASE WITHIN STREET OR PARKING LOT AREAS SHALL BE OBTAINED FOR EVERY 2,500 SQUARE FEET OF CLASS 2 BASE AREA.

## 2. SANITARY SEWER GEOTECHNICAL TESTING REQUIREMENTS

A. ONE (1) COMPACTION TEST SHALL BE REQUIRED FOR EACH 1 FOOT OF VERTICAL SAND FILL MATERIAL PLACED ALONG EACH 200 FEET OF SANITARY SEWER PIPELINE INSTALLED.

B. ONE (1) COMPACTION TEST SHALL BE OBTAINED FOR EACH 1 FOOT LIFT OF NATIVE MATERIAL ALONG EACH 200-FOOT SECTION OF SANITARY SEWER PIPELINE INSTALLED.

C. ONE (1) COMPACTION TEST SHALL BE OBTAINED FOR EACH 1 VERTICAL FOOT OF NATIVE MATERIAL PLACED AROUND SANITARY SEWER MANHOLES. A GEOTECHNICAL TESTING REPRESENTATIVE SHALL BE PRESENT AT THE TIME THE SANITARY SEWER PIPELINE AND SANITARY SEWER MANHOLES ARE BACKFILLED TO MONITOR THE PLACEMENT OF BACKFILL MATERIAL AND COMPLETE COMPACTION TESTING.

D. ONE (1) SET OF CONCRETE CYLINDERS SHALL BE OBTAINED FOR EVERY SIX (6) MANHOLE BASES INSTALLED. IF THERE ARE LESS THAN SIX (6) MANHOLE BASES ON A PROJECT, CONCRETE CYLINDERS SHALL NOT BE REQUIRED. ONE (1) SET OF CONCRETE CYLINDERS SHALL CONSIST OF THREE (3) CYLINDERS. A COPY OF THE CONCRETE VENDOR SLIPS SHALL BE DELIVERED TO THE CITY ENGINEER.

E. ONE (1) COMPACTION TEST SHALL BE OBTAINED FOR EACH 1 VERTICAL FOOT OF GRANULAR OR NATIVE BACKFILL MATERIAL INSTALLED FOR EACH SANITARY SEWER LATERAL TRENCH.

F. THE SANITARY SEWER PIPELINES AND SANITARY SEWER LATERALS SHALL BE AIR TESTED. THE PROVISIONS OF THE AIR TESTING OF THE SANITARY SEWER PIPELINES AND LATERALS ARE INCLUDED WITHIN THE SANITARY SEWER TECHNICAL SPECIFICATIONS OF THIS DOCUMENT.

G. THE SANITARY SEWER MANHOLES SHALL BE WATER TESTED PER THE REQUIREMENTS OF THE SANITARY SEWER TECHNICAL SPECIFICATIONS OF THIS DOCUMENT.

## 3. STORMWATER GEOTECHNICAL TESTING REQUIREMENTS

A. ONE (1) COMPACTION TEST SHALL BE OBTAINED FOR THE GRANULAR SAND FILL PIPE BEDDING ALONG EACH 200 LINEAL FOOT OF STORM WATER PIPE PLACED FOR EACH 1 FOOT LIFT OF MATERIAL INSTALLED.

B. ONE (1) COMPACTION TEST SHALL BE OBTAINED FOR EACH 1 FOOT LIFT OF NATIVE MATERIAL ALONG EACH 200-FOOT SECTION OF STORM WATER PIPELINE INSTALLED.

C. ONE (1) COMPACTION TEST SHALL BE OBTAINED FOR EACH 1 VERTICAL FOOT OF NATIVE MATERIAL PLACED AROUND STORMWATER MANHOLES, CATCH BASINS OR JUNCTION BOXES. A GEOTECHNICAL TESTING REPRESENTATIVE SHALL BE PRESENT AT THE TIME THE STORMWATER PIPELINE AND STORMWATER MANHOLES, STORM WATER CATCH BASINS AND STORM WATER JUNCTION BOXES ARE BACKFILLED TO MONITOR THE PLACEMENT OF BACKFILL MATERIAL AND COMPLETE COMPACTION TESTING.

D. ONE (1) SET OF CONCRETE CYLINDERS SHALL BE OBTAINED FOR EVERY SIX (6) MANHOLE BASES INSTALLED. IF THERE ARE LESS THAN SIX (6) MANHOLE BASES ON A PROJECT, CONCRETE CYLINDERS SHALL NOT BE REQUIRED. ONE (1) SET OF CONCRETE CYLINDERS SHALL CONSIST OF THREE (3) CYLINDERS. A COPY OF THE CONCRETE VENDOR SLIPS SHALL BE DELIVERED TO THE CITY ENGINEER.

E. STORMWATER PIPELINES SHALL BE TESTED FOR WATERTIGHT PERFORMANCE IN ACCORDANCE WITH ASTM F1417 OR ASTM C969 AS DETERMINED BY THE CITY ENGINEER.

F. STORMWATER MANHOLES SHALL BE WATER TESTED PER THE REQUIREMENTS OF THE STORMWATER TECHNICAL SPECIFICATIONS OF THIS DOCUMENT.

**END OF TECHNICAL TESTING REQUIREMENTS SECTION**

# CITY OF CALIPATRIA STREET IMPROVEMENT STANDARD DETAILS




The Holt Group

ENGINEERING ■ PLANNING ■ SURVEYING

1561 S. 4th Street

El Centro, CA 92243


REGISTERED PROFESSIONAL ENGINEER
JAMES G. HOLT
No. 31773
Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

CITY OF CALIPATRIA

STREET INDEX

PREPARED BY:

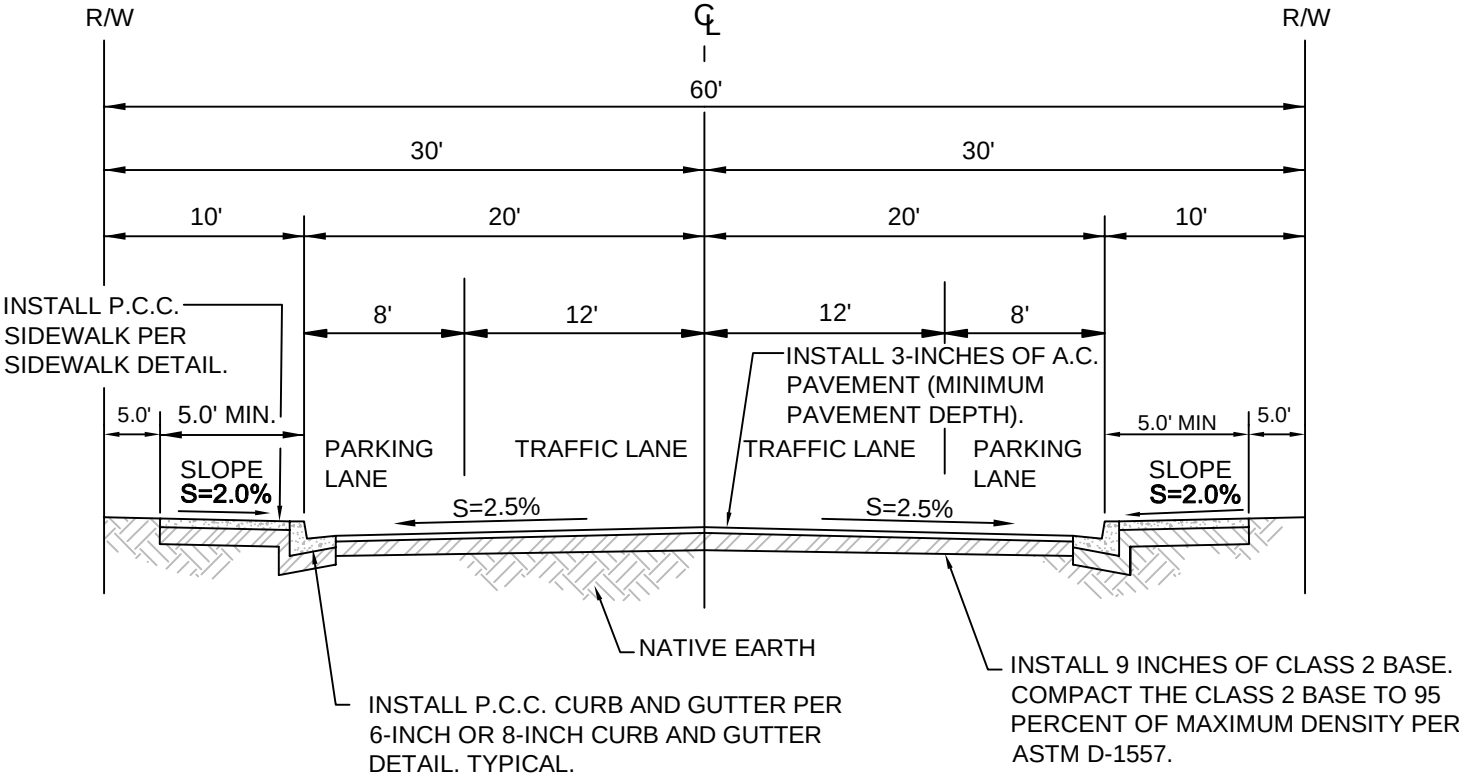
JAMES G. "JACK" HOLT

R.C.E. NO. 31773

EXP. DATE: 12-31-06

SHEET NO.

S 100




# TYPICAL SECTION

**NOTES:**

1. THIS TYPICAL SECTION SHALL BE USED ON LOCAL STREETS WHICH PROVIDE DIRECT ACCESS TO INDIVIDUAL PROPERTIES BY LOCAL TRAFFIC. IT IS RECOMMENDED LOCAL STREETS CARRY LESS THAN 500 ADT UPON ULTIMATE DEVELOPMENT OF THE AREA.

2. THE MINIMUM A.C. PAVEMENT AND CLASS 2 BASE DEPTHS ARE NOTED BY THIS DETAIL. THE GEOTECHNICAL REPORT FOR SPECIFIC DEVELOPMENTS MAY REQUIRE GREATER A.C. PAVEMENT AND CLASS 2 BASE DEPTHS. THE GEOTECHNICAL REPORT SHALL ADDRESS THE NATIVE SUBBASE PREPARATION REQUIREMENTS BENEATH THE STREET SECTION.

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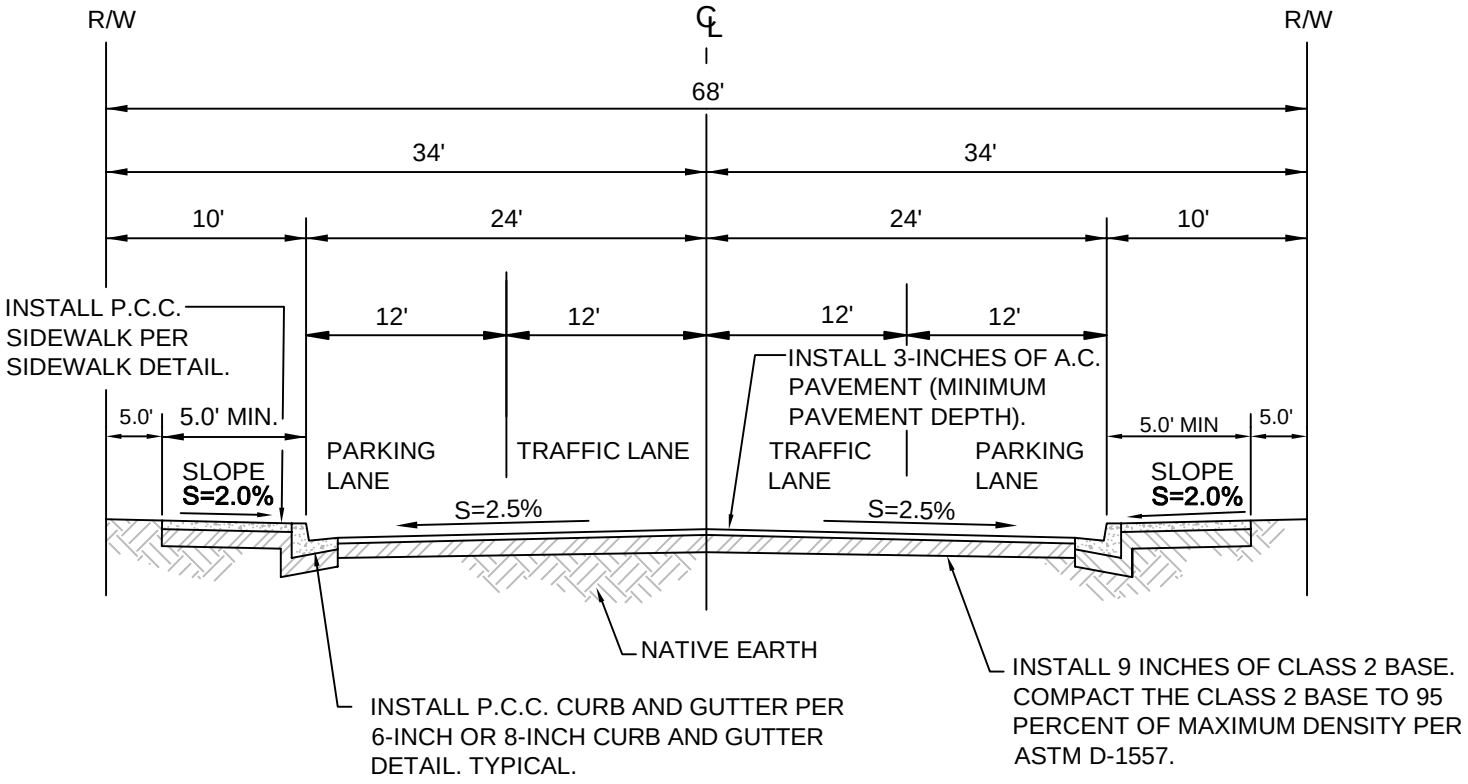
Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

CITY OF CALIPATRIA
LOCAL STREET WITH PARKING LANES

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 101




# TYPICAL SECTION

**NOTES:**

1. THIS TYPICAL SECTION SHALL BE USED ON LOCAL STREETS WHICH PROVIDE DIRECT ACCESS TO INDIVIDUAL PROPERTIES BY LOCAL TRAFFIC. IT IS RECOMMENDED LOCAL STREETS CARRY LESS THAN 500 ADT UPON ULTIMATE DEVELOPMENT OF THE AREA.

2. THE MINIMUM A.C. PAVEMENT AND CLASS 2 BASE DEPTHS ARE NOTED BY THIS DETAIL. THE GEOTECHNICAL REPORT FOR SPECIFIC DEVELOPMENTS MAY REQUIRE GREATER A.C. PAVEMENT AND CLASS 2 BASE DEPTHS. THE GEOTECHNICAL REPORT SHALL ADDRESS THE NATIVE SUBBASE PREPARATION REQUIREMENTS BENEATH THE STREET SECTION.

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1561 S. 4th Street
El Centro, CA 92243

REGISTERED PROFESSIONAL ENGINEER
JAMES G. HOLT
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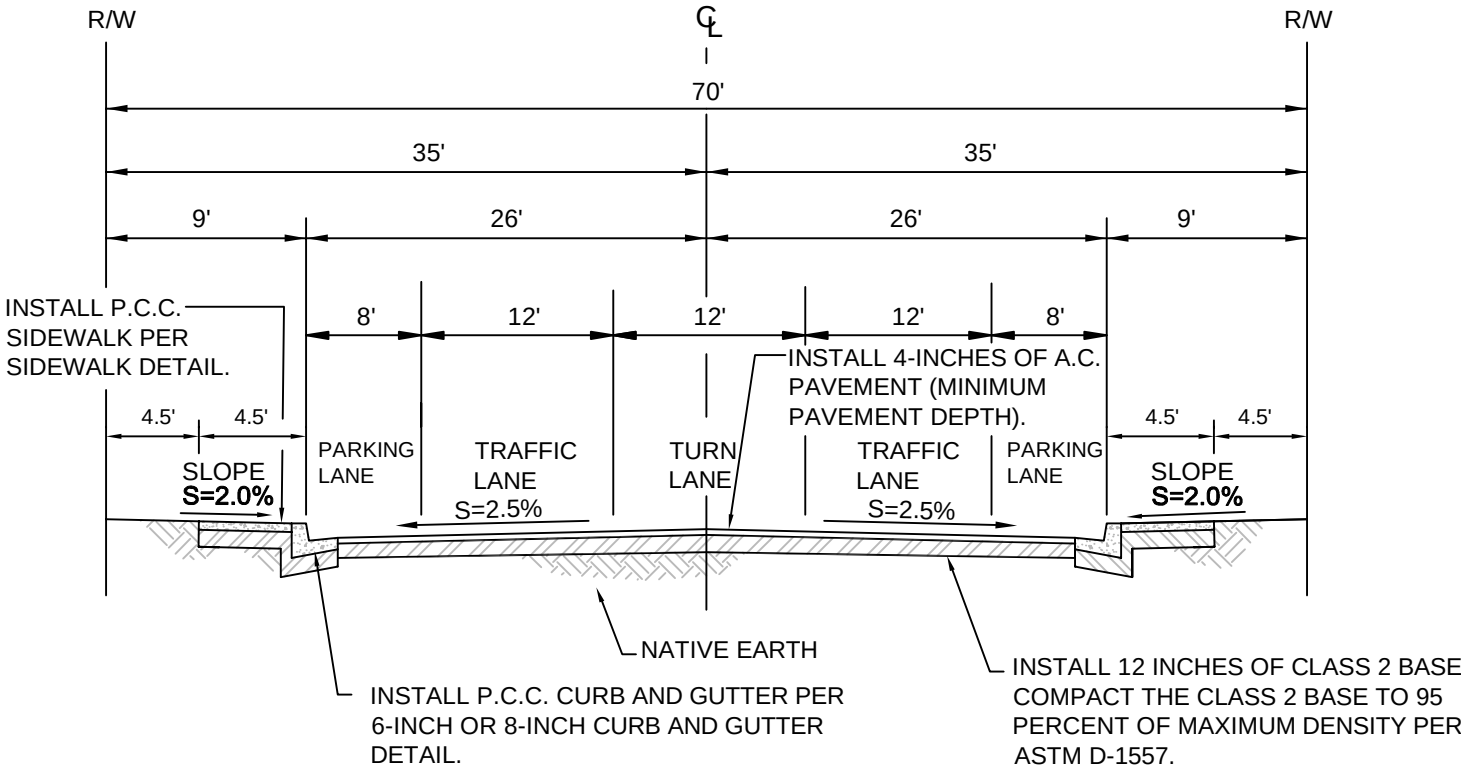
Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

CITY OF CALIPATRIA
LOCAL STREET WITH PARKING LANES

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 102




# TYPICAL SECTION

**NOTES:**

1. THIS TYPICAL SECTION SHALL BE USED ON COLLECTOR STREETS WHICH COLLECT AND DISTRIBUTE TRAFFIC BETWEEN ARTERIAL STREETS AND LOCAL STREETS.

2. THE MINIMUM A.C. PAVEMENT AND CLASS 2 BASE DEPTHS ARE NOTED BY THIS DETAIL. THE GEOTECHNICAL REPORT FOR SPECIFIC DEVELOPMENTS MAY REQUIRE GREATER A.C. PAVEMENT AND CLASS 2 BASE DEPTHS. THE GEOTECHNICAL REPORT SHALL ADDRESS THE NATIVE SUBBASE PREPARATION REQUIREMENTS BENEATH THE STREET SECTION.

The Holt Group
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1561 S. 4th Street
El Centro, CA 92243

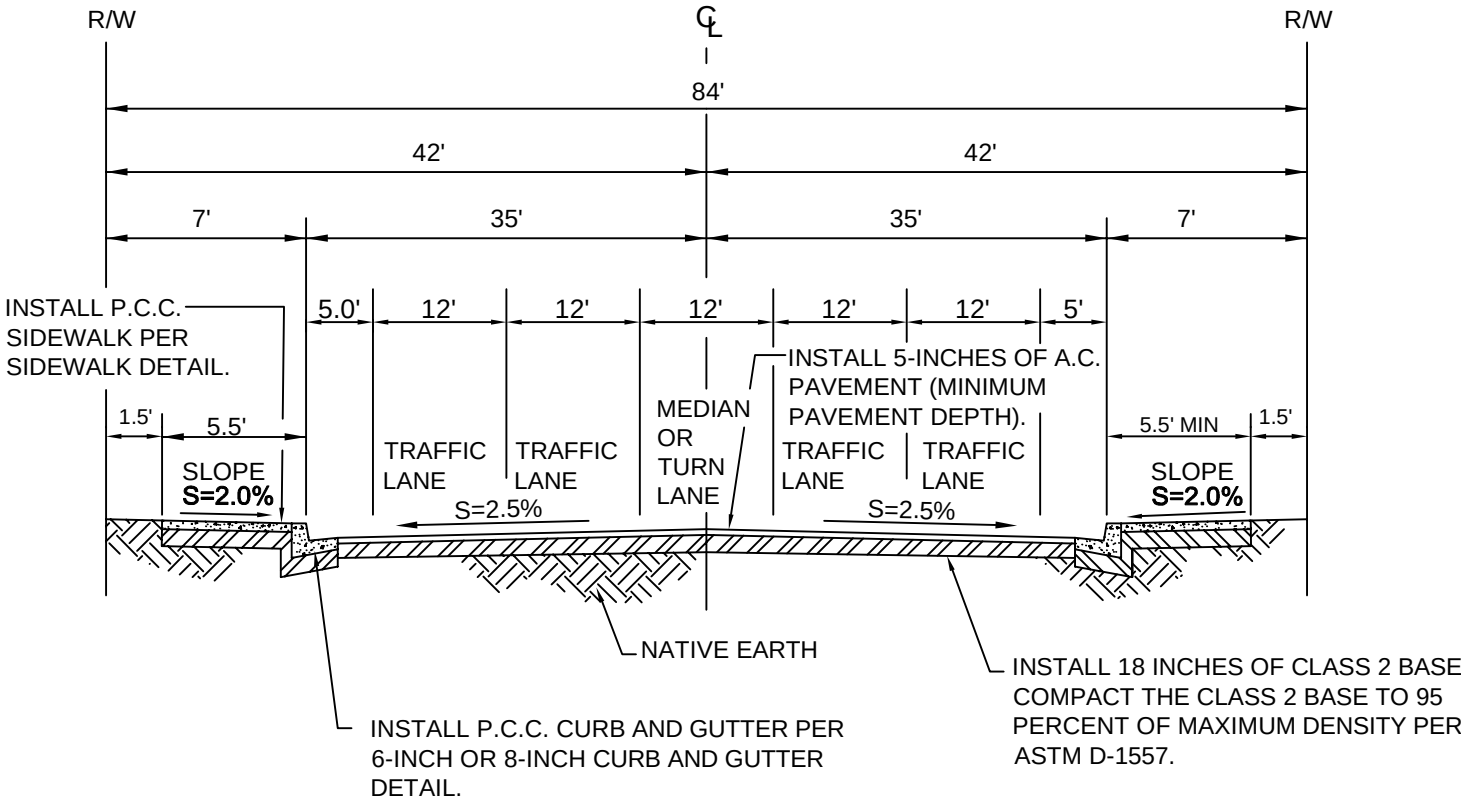
REGISTERED PROFESSIONAL ENGINEER
JAMES G. HOLT
No. 31773
Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

CITY OF CALIPATRIA
COLLECTOR STREET

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 103




# TYPICAL SECTION

**NOTES:**

1. THIS TYPICAL SECTION SHALL BE USED ON ARTERIAL STREETS INTENDED TO MOVE THROUGH TRAFFIC BETWEEN MAJOR TRAFFIC GENERATORS.

2. THE MINIMUM A.C. PAVEMENT AND CLASS 2 BASE DEPTHS ARE NOTED BY THIS DETAIL. THE GEOTECHNICAL REPORT FOR SPECIFIC DEVELOPMENTS MAY REQUIRE GREATER A.C. PAVEMENT AND CLASS 2 BASE DEPTHS. THE GEOTECHNICAL REPORT SHALL ADDRESS THE NATIVE SUBBASE PREPARATION REQUIREMENTS BENEATH THE STREET SECTION.

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Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

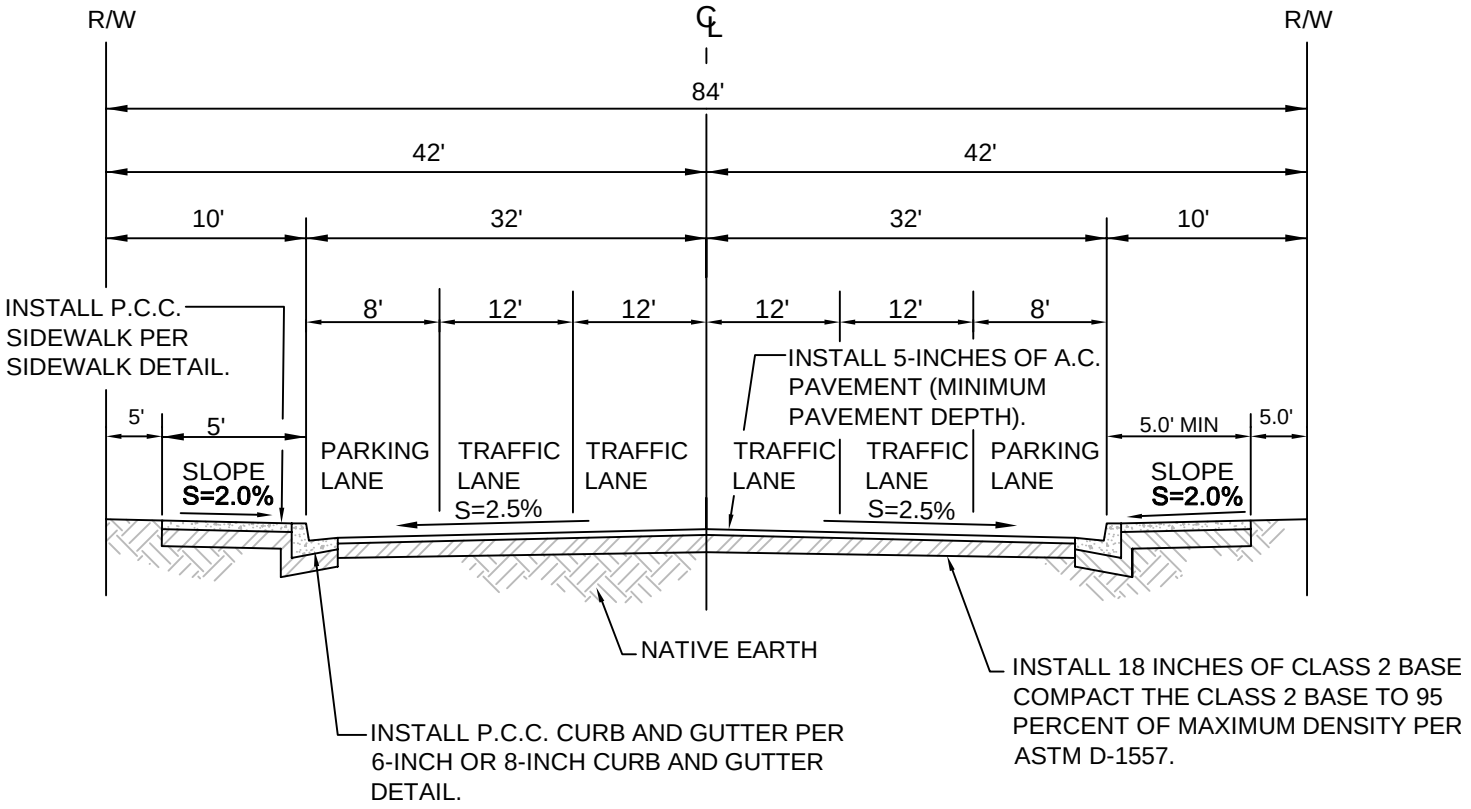
CITY OF CALIPATRIA
CALIFORNIA

CITY OF CALIPATRIA

ARTERIAL STREET (4 LANES, DIVID OR TURN LANE, NO PARKING)

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 104




# TYPICAL SECTION

**NOTES:**

1. THIS TYPICAL SECTION SHALL BE USED ON ARTERIAL STREETS INTENDED TO MOVE THROUGH TRAFFIC BETWEEN MAJOR TRAFFIC GENERATORS.

2. THE MINIMUM A.C. PAVEMENT AND CLASS 2 BASE DEPTHS ARE NOTED BY THIS DETAIL. THE GEOTECHNICAL REPORT FOR SPECIFIC DEVELOPMENTS MAY REQUIRE GREATER A.C. PAVEMENT AND CLASS 2 BASE DEPTHS. THE GEOTECHNICAL REPORT SHALL ADDRESS THE NATIVE SUBBASE PREPARATION REQUIREMENTS BENEATH THE STREET SECTION.

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JAMES G. HOLT
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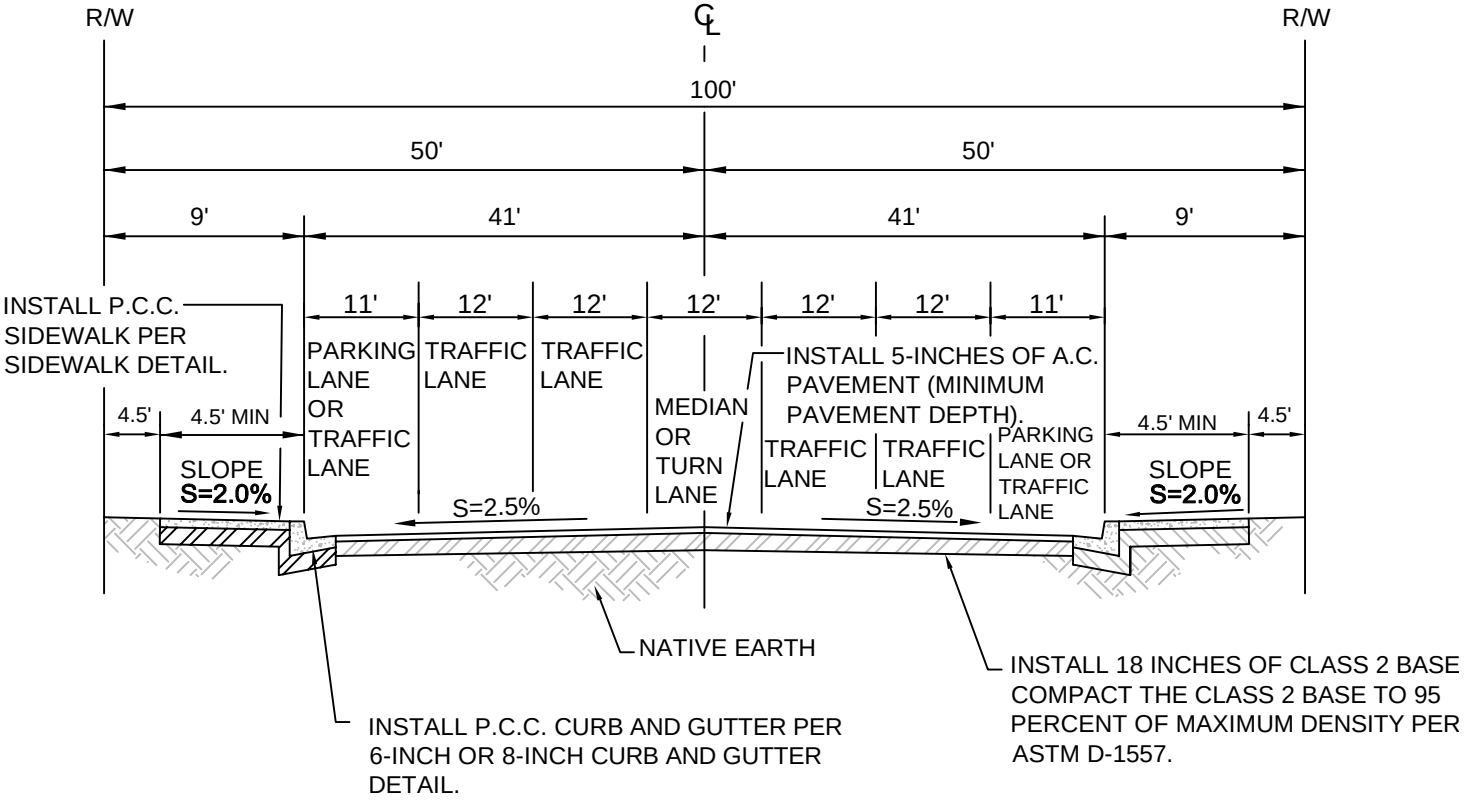
Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

CITY OF CALIPATRIA
ARTERIAL STREET (4 LANES, WITH PARKING)

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 105




# TYPICAL SECTION

**NOTES:**

1. THIS TYPICAL SECTION SHALL BE USED ON ARTERIAL STREETS INTENDED TO MOVE THROUGH TRAFFIC BETWEEN MAJOR TRAFFIC GENERATORS.

2. THE MINIMUM A.C. PAVEMENT AND CLASS 2 BASE DEPTHS ARE NOTED BY THIS DETAIL. THE GEOTECHNICAL REPORT FOR SPECIFIC DEVELOPMENTS MAY REQUIRE GREATER A.C. PAVEMENT AND CLASS 2 BASE DEPTHS. THE GEOTECHNICAL REPORT SHALL ADDRESS THE NATIVE SUBBASE PREPARATION REQUIREMENTS BENEATH THE STREET SECTION.

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Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

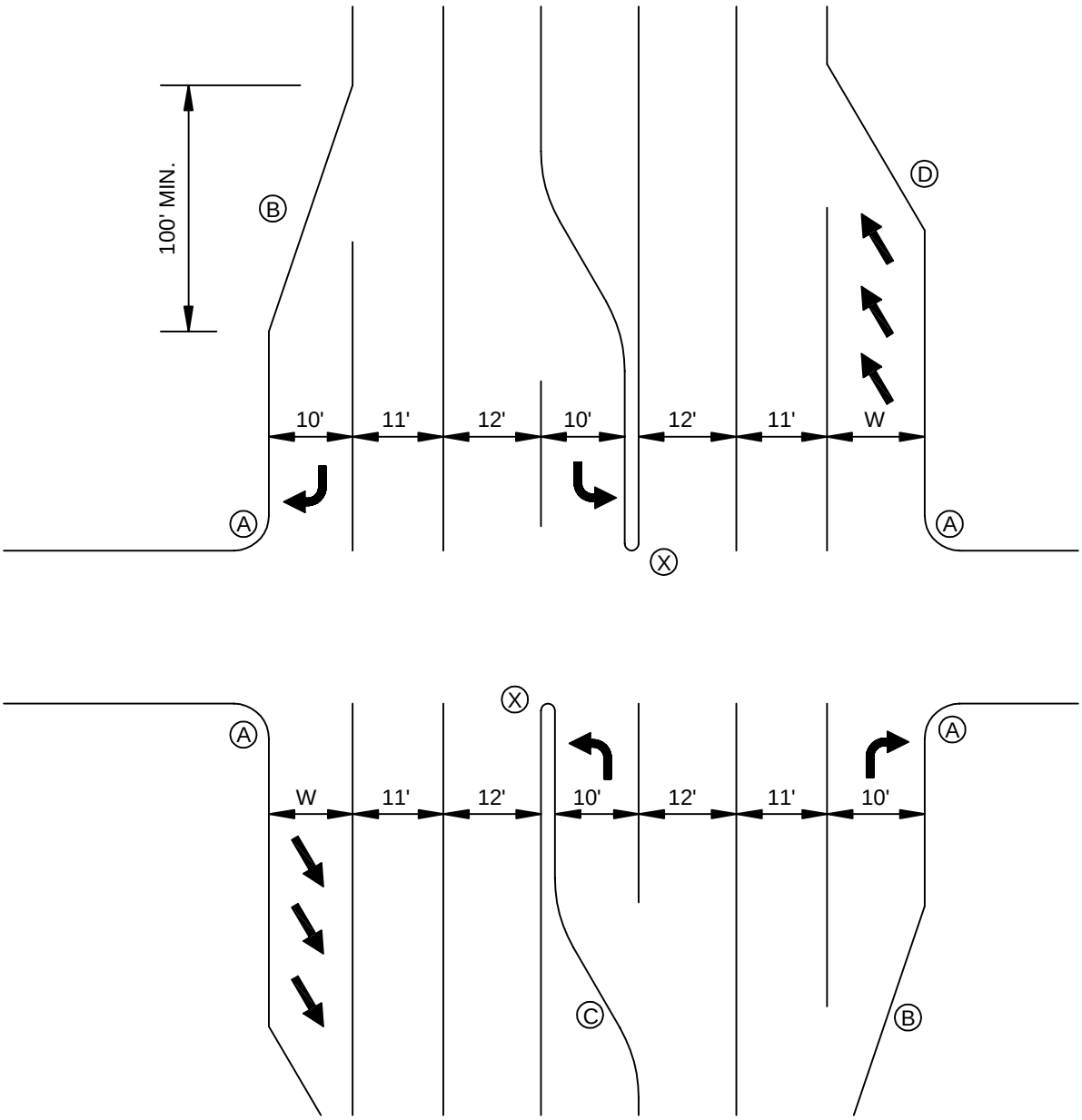
CITY OF CALIPATRIA
CALIFORNIA

CITY OF CALIPATRIA

MAJOR ARTERIAL STREET (4 LANES, MEDIAN OR TURNING LAI WITH PARKING)

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 106




Ⓐ 35' CURB RETURN RADIUS

Ⓑ 20:1 DIVERGENCE TAPER

Ⓒ 60'-90' MEDIAN CURB TRANSITION WITH SIGNAGE LT.; 150' WITH DUAL LEFT TURNS

Ⓓ WIDTH (W) x DESIGN SPEED (V) CONVERGENCE TAPER

Ⓧ NO MEDIAN POLE MOUNTED SIGNAL INDICATORS; MOUNT ON OVERHEAD MAST ARMS AND DESIGN FOR FULL TRAFFIC-ACTUATED OPERATION

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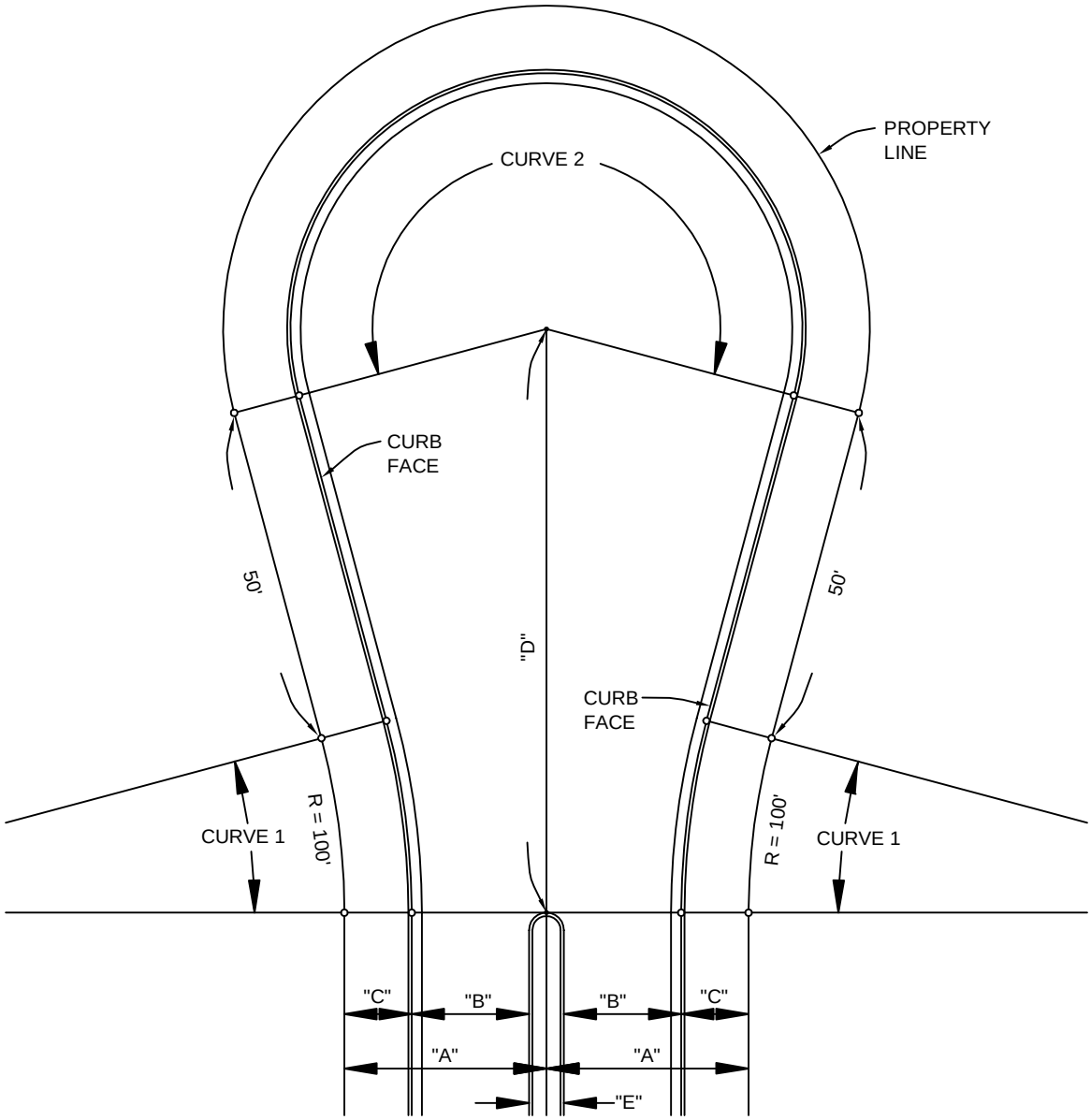
STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

# CITY OF CALIPATRIA
# LANE TRANSITION STANDARD

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 107




| | | | | | | CURVE 1 | | | | | CURVE 2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | CURB | | PROP. | | | CURB | | PROP. | |
| R/W | A | B | C | D | E | DELTA | R | L | R | L | DELTA | R | L | R | L |
| 50' | 25' | 16' | 9' | 92.11' | - | 17°36'02" | 109' | 33.48' | 100' | 30.72' | 215°12'02" | 38' | 142.73' | 47' | 176.53' |
| 60' | 30' | 18' | 12' | 90.00' | - | 16°15'37" | 112' | 31.79' | 100' | 28.38' | 212°31'13" | 38' | 140.95' | 50' | 185.46' |
| 60' | 30' | 20' | 10' | 86.63' | - | 15°00'38" | 110' | 28.82' | 100' | 26.20' | 210°01'17" | 38' | 139.29' | 48' | 175.95' |
| 74' | 37' | 27' | 10' | 89.82' | - | 15°28'38" | 110' | 29.71' | 100' | 27.01' | 210°57'17" | 46' | 169.37' | 56' | 206.18' |
| 80' | 40' | 33' | 7' | 95.62' | - | 17°10'55" | 107' | 32.09' | 100' | 29.99' | 214°21'49" | 55' | 205.77' | 62' | 231.96' |
| 84' | 42' | 29' | 7' | 96.08' | 12' | 17°07'43" | 107' | 31.99' | 100' | 29.90' | 214°15'26" | 57' | 213.15' | 64' | 239.33' |
| 96' | 48' | 35' | 7' | 97.48' | 12' | 16°56'21" | 107' | 31.70' | 100' | 29.62' | 213°56'42" | 63' | 235.24' | 70' | 261.38' |

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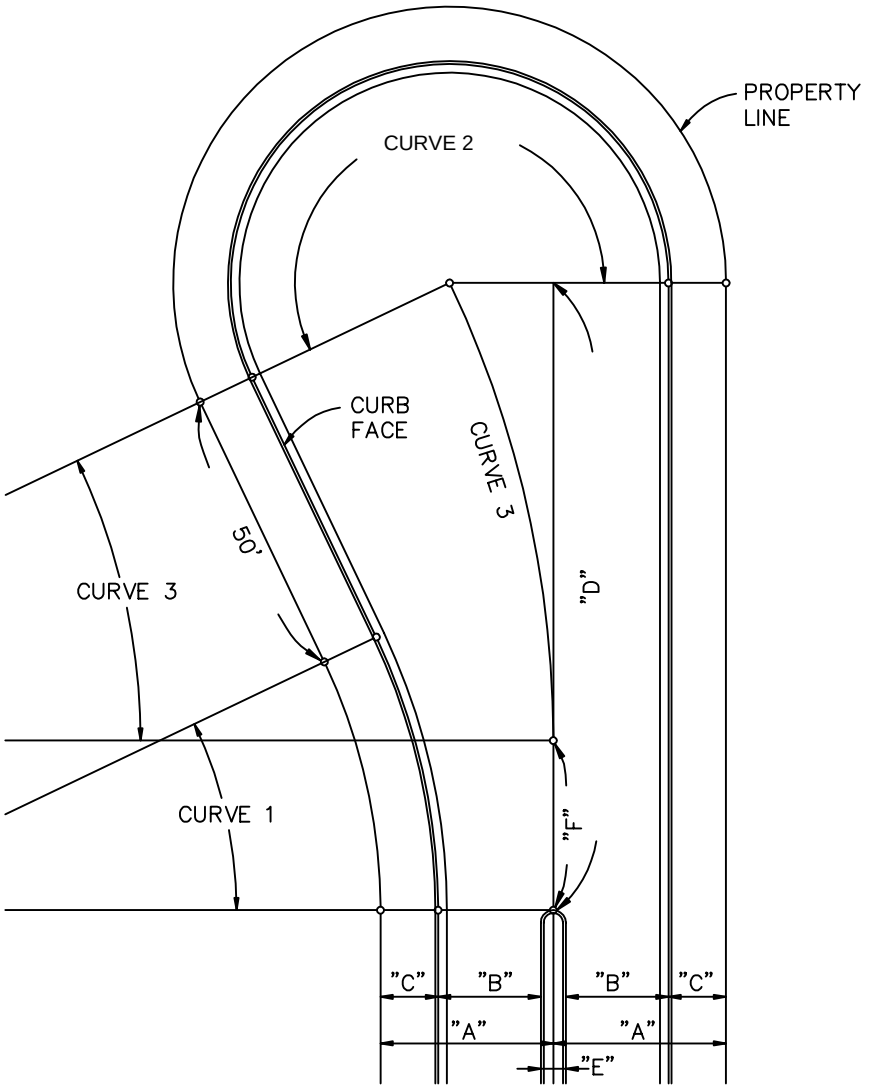
Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

# CITY OF CALIPATRIA
## STANDARD CUL-DE-SAC

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 108




| R/W | A | B | C | D | E | CURVE 1 | | | | | CURVE 2 | | | | | CURVE 3 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | DELTA | CURB R | CURB L | PROP. R | PROP. L | DELTA | CURB R | CURB L | PROP. R | PROP. L | DELTA | F | R | L |
| 50' | 25' | 16' | 9' | 116.19' | - | 29°39'30" | 109' | 56.42' | 100' | 51.76' | 209°39'30" | 38' | 139.05' | 47' | 171.98' | 29°39'30" | 33.10' | 167.93' | 86.93 |
| 60' | 30' | 18' | 12' | 113.58' | - | 27°28'54" | 112' | 53.72' | 100' | 47.96' | 207°28'54" | 38' | 137.61' | 50' | 181.06' | 27°28'54" | 31.79' | 177.24' | 85.01' |
| 60' | 30' | 20' | 10' | 108.90' | - | 25°31'48" | 110' | 49.01' | 100' | 44.56' | 205°31'48" | 38' | 136.31' | 48' | 172.18' | 25°31'48" | 29.45' | 184.35' | 82.14' |
| 74' | 37' | 27' | 10' | 113.63' | - | 26°08'53" | 110' | 50.20' | 100' | 45.64' | 206°08'53" | 46 | 165.51' | 56' | 201.82' | 26°08'53" | 31.82' | 185.65' | 84.73' |
| 80' | 40' | 33' | 7' | 121.74' | - | 28°44'27" | 107' | 53.67' | 100' | 50.16' | 208°44'27" | 55' | 200.38' | 62' | 225.88' | 28°44'27" | 35.87' | 178.58' | 89.58' |
| 84' | 42' | 29' | 7' | 122.46' | 12' | 28°37'32" | 107' | 53.46' | 100' | 49.96' | 208°37'32" | 57' | 207.55' | 64' | 233.04' | 28°37'32" | 36.23' | 179.98' | 89.92' |
| 96' | 48' | 35' | 7' | 124.60' | 12' | 28°17'21" | 107' | 52.83' | 100' | 49.37' | 208°17'21" | 63' | 229.02' | 70' | 254.47' | 28°17'21" | 37.30' | 184.20' | 90.95' |

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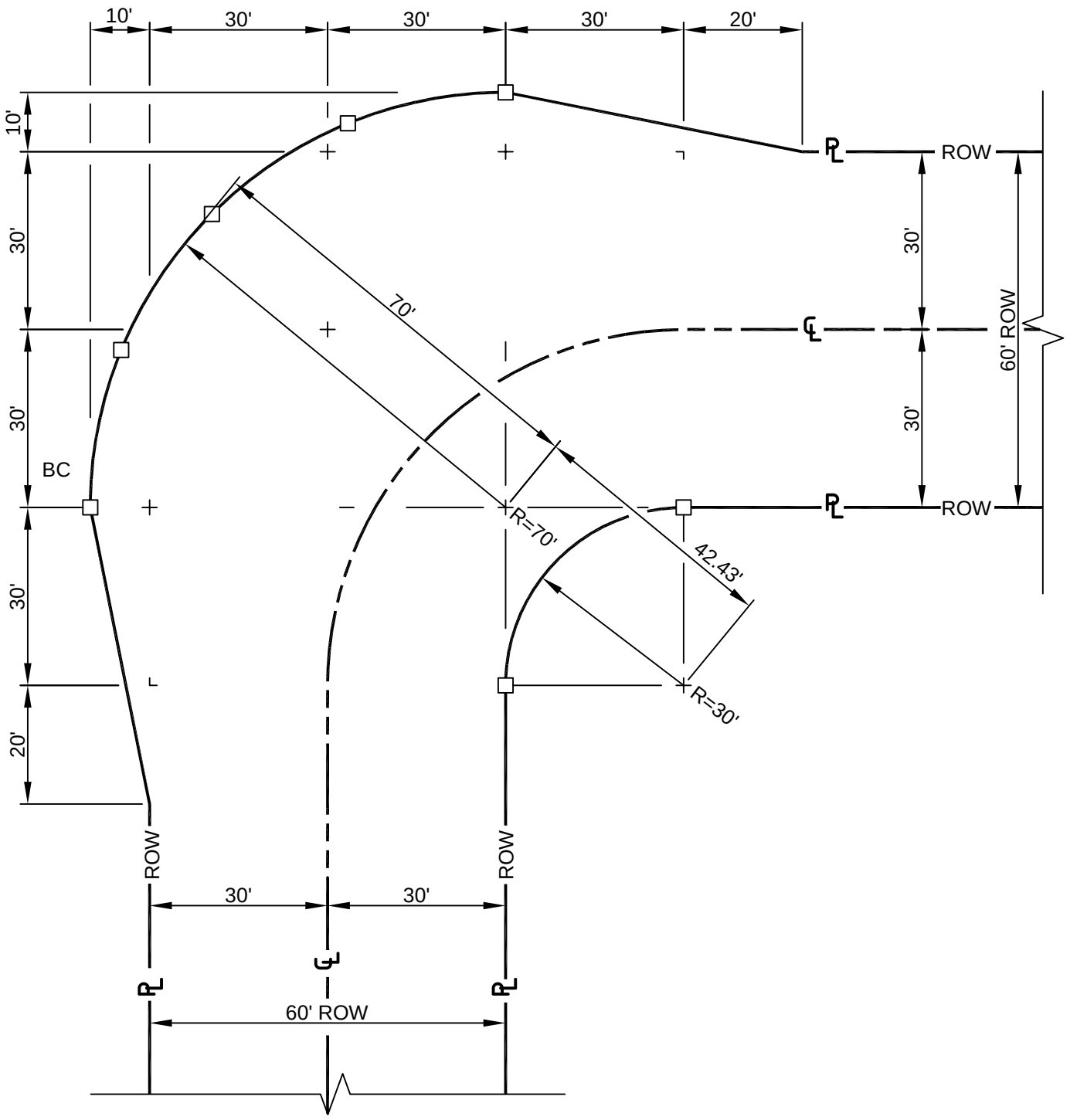
REGISTERED PROFESSIONAL ENGINEER
JAMES G. HOLT
No. 31773
Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

# CITY OF CALIPATRIA
## OFFSET CUL-DE-SAC

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 109

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REGISTERED PROFESSIONAL ENGINEER
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CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA
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# CITY OF CALIPATRIA

## STANDARD KNUCKLE INTERSECTION

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 110

The Holt Group
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# CITY OF CALIPATRIA
## TYPICAL A.C. PAVEMENT ALLEY SECTION

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EXP. DATE: 12-31-06

SHEET NO.
S 111 A

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# CITY OF CALIPATRIA

## TYPICAL CLASS 2 BASE ALLEY SECTION

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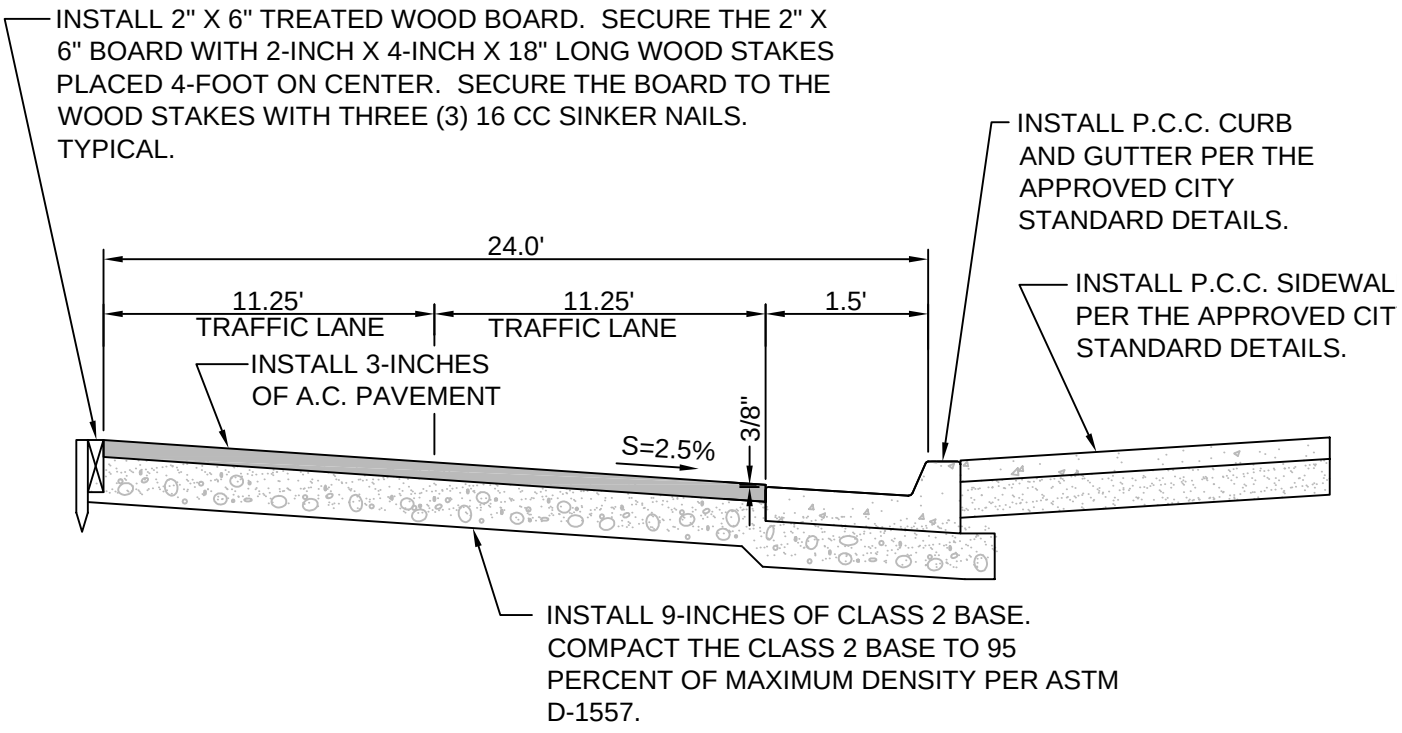
EXP. DATE: 12-31-06

SHEET NO.
S 111 B

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# CITY OF CALIPATRIA

## HALF WIDTH STREET SECTIO FOR LOCAL STREETS

PREPARED BY:
JAMES G. "JACK" HOLT
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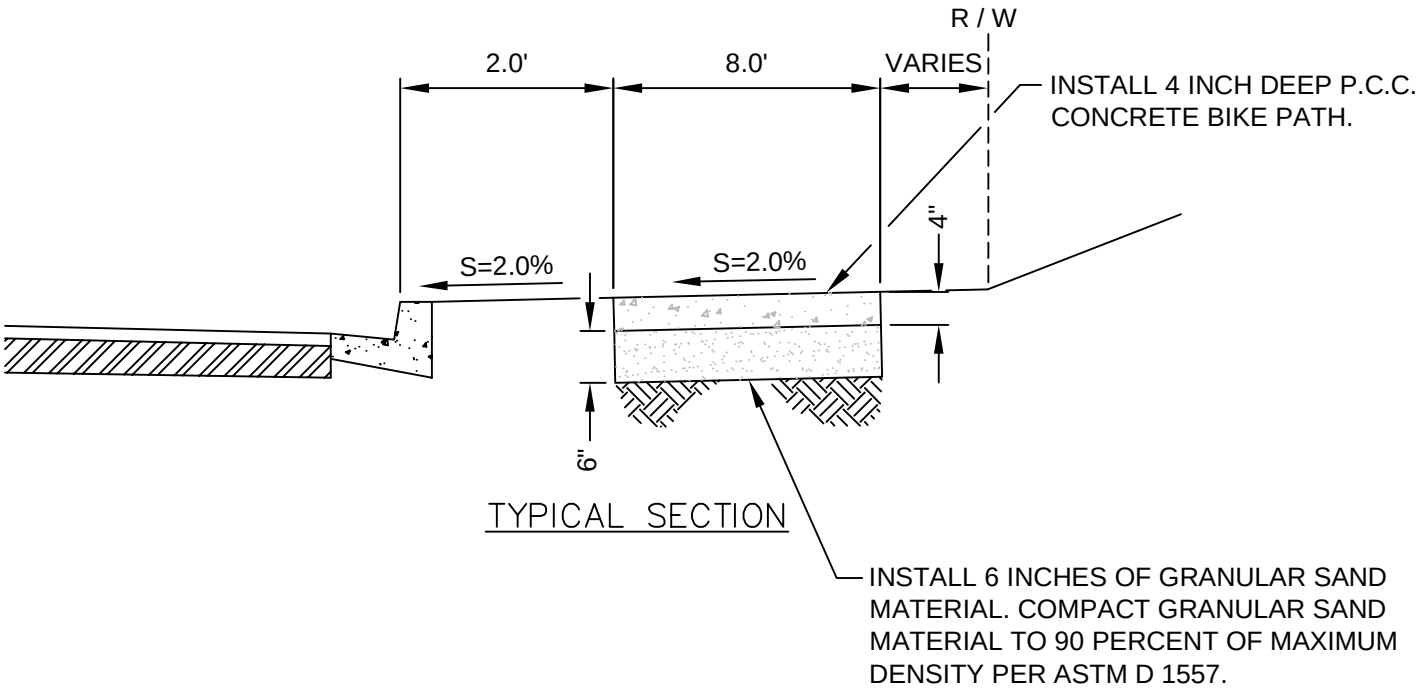
EXP. DATE: 12-31-06

SHEET NO.
S 112




## NOTES FOR P.C.C. BIKE PATH

1. PLACE WEAKENED PLANE JOINT EVERY 8 LINEAL FEET ALONG THE BICYCLE PATH.

2. PLACE EXPANSION JOINT MATERIAL ALONG THE BICYCLE PATH EVERY 64 FEET. EXPANSION JOINT MATERIAL TO BE COMPOSED OF 1/2" FIBER BOARD INSTALLED ACROSS THE FULL SECTION OF THE BICYCLE PATH.

3. THE BICYCLE PATH SURFACE SHALL RECEIVE A DOUBLE TROWEL FINISH.

4. THE P.C.C. SHALL CONTAIN 6 1/2 SACKS OF CEMENT PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS OF CURING. THE P.C.C. SHALL CONTAIN CONTAIN 1 1/2 LBS. OF POLYPROPYLENE FIBER PER CUBIC YARD. THE POLYPROPYLENE FIBER SHALL BE MANUFACTURED BY FIBER MESH.

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CITY OF CALIPATRIA
BICYCLE PATH
OFF-ROADWAY

PREPARED BY:
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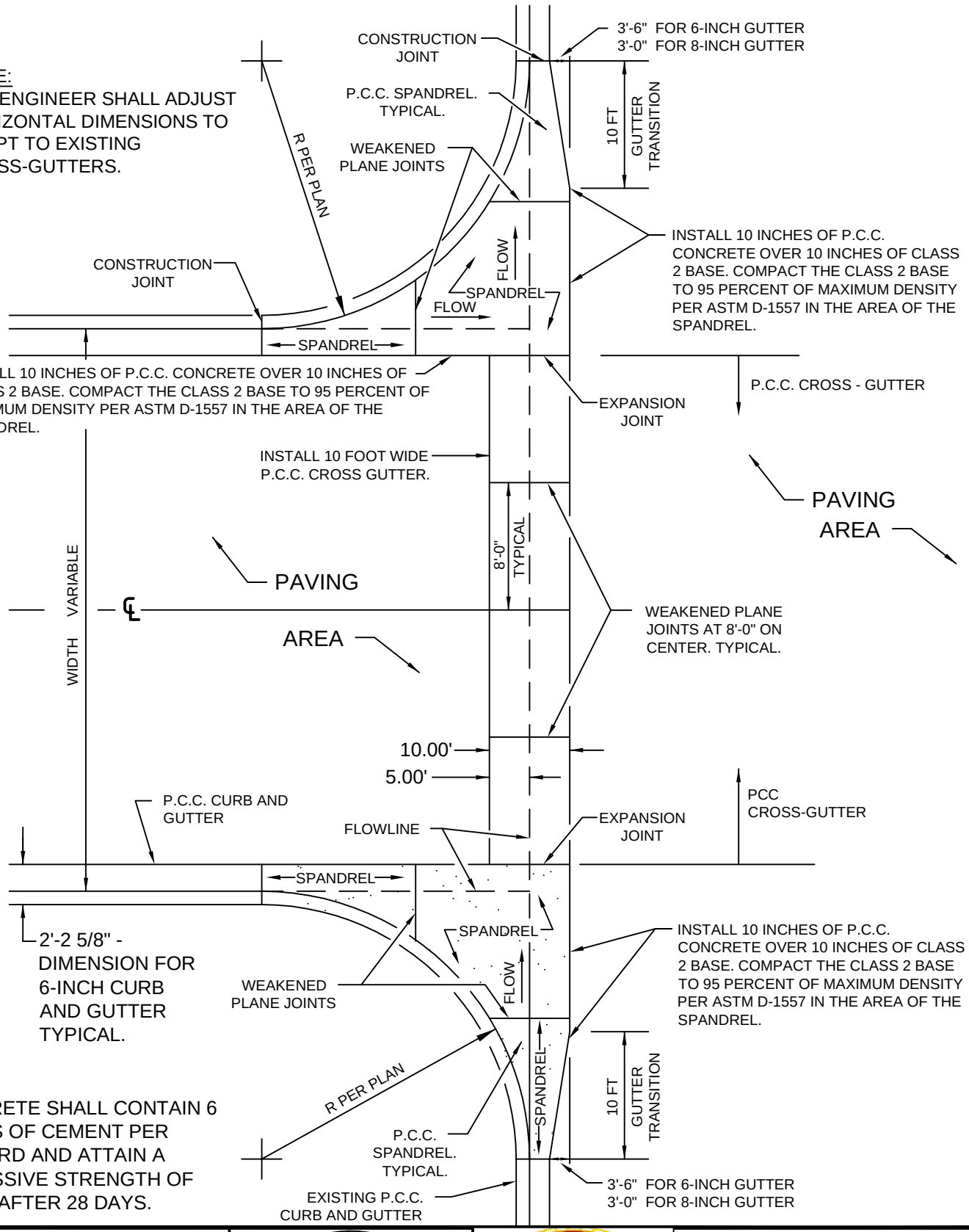
EXP. DATE: 12-31-06

SHEET NO.
S 113

NOTE:
THE ENGINEER SHALL ADJUST HORIZONTAL DIMENSIONS TO ADAPT TO EXISTING CROSS-GUTTERS.




NOTES:
1. CONCRETE SHALL CONTAIN 6 1/2 SACKS OF CEMENT PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS.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# CITY OF CALIPATRIA
# P.C.C. SPANDREL DETAIL

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 114

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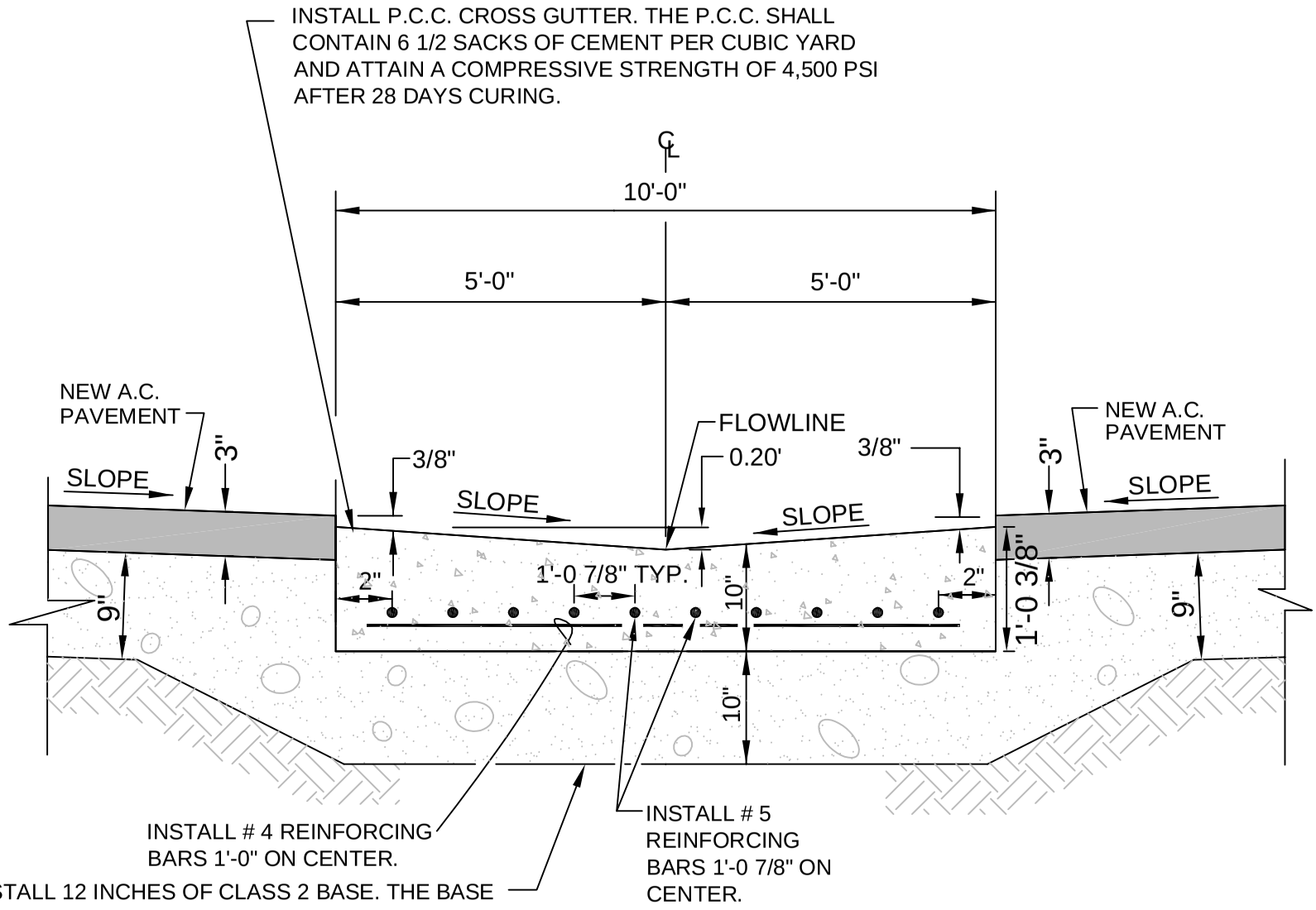
P.C.C. CROSS GUTTER SECTION

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

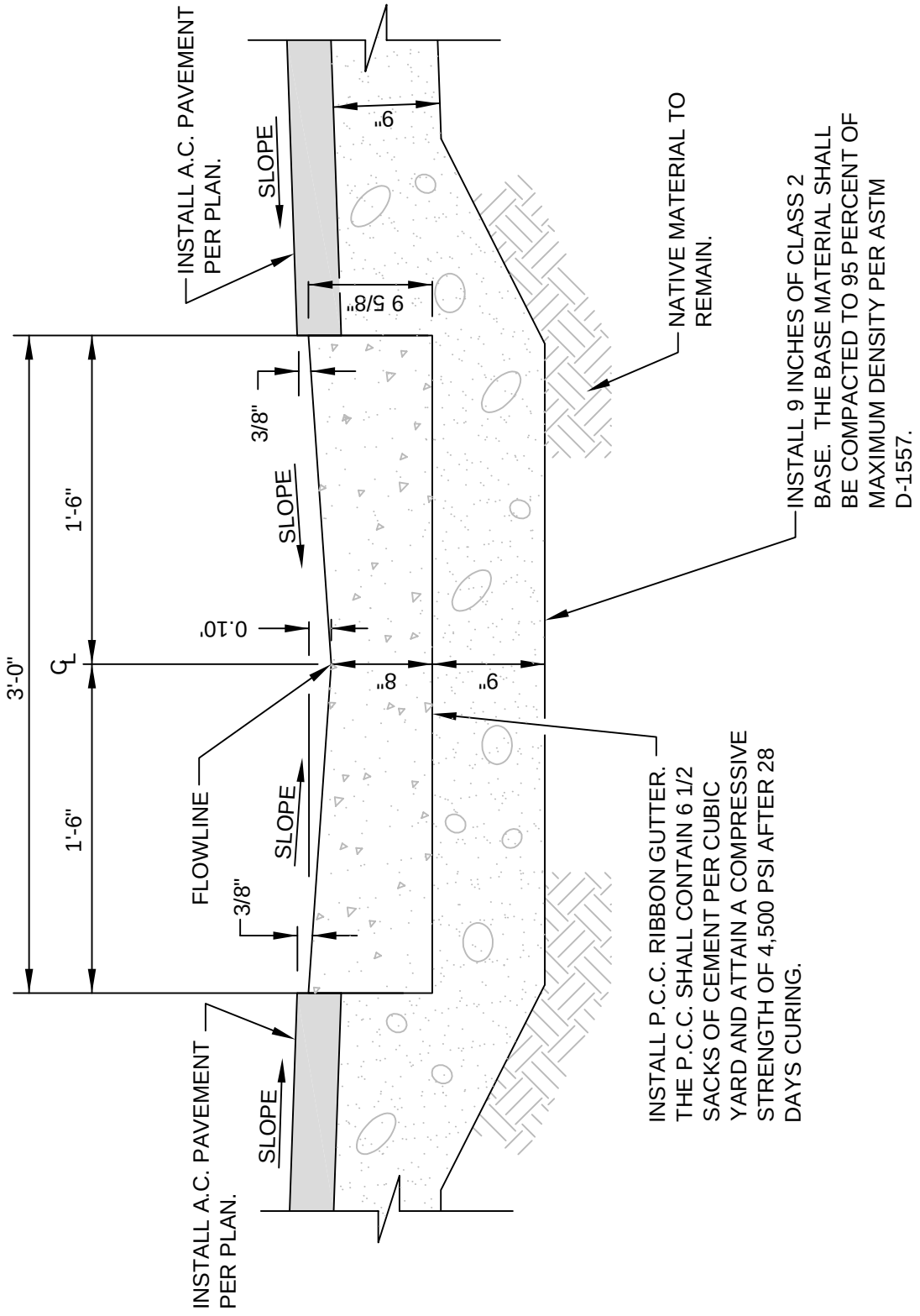
SHEET NO.
S 115




## NOTES:

1 PLACE WEAKENED PLANE JOINTS EVERY 8 FEET ON CENTER ALONG THE CROSS GUTTER.

2 THE CROSS GUTTER EDGES SHALL BE PLACED TRUE TO LINE AND GRADE. VERTICAL ELEVATIONS SHALL NOT VARY MORE THAN ±0.01' WITH A MAXIMUM VARIANCE OF 0.02' FROM DESIGN GRADE OCCURRING IN ANY GIVEN 10 FOOT SECTION.

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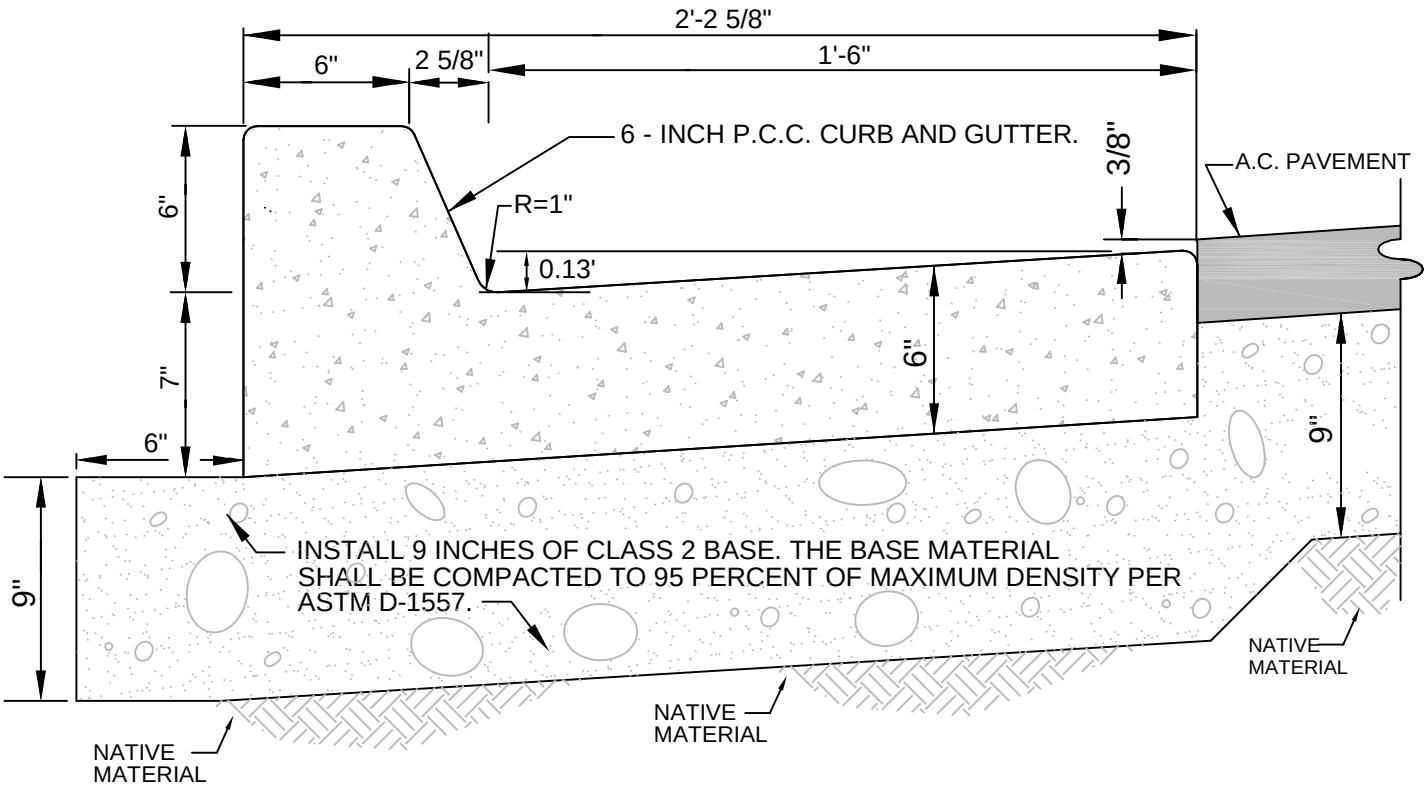
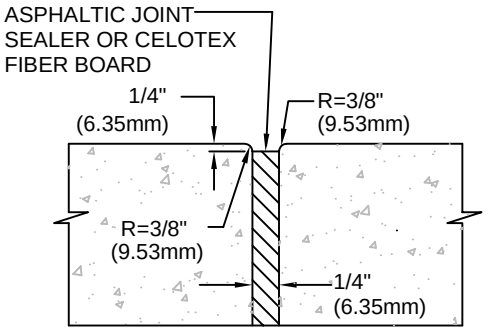
## P.C.C. RIBBON GUTTER

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

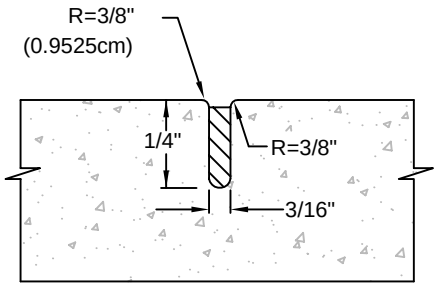
SHEET NO.
S 116




EXPANSION JOINT

N.T.S.




WEAKENED PLANE JOINT

N.T.S.

| TABLE A | | |
|---|---|---|
| SIDEWALK WIDTH | CURB AND GUTTER WEAKENED PLANE SPACING | CURB AND GUTTER EXPANSION JOINT SPACING |
| 4.5 *FEET* | 9 *FEET* | 72.0 *FEET* |
| 5.0 *FEET* | 10 *FEET* | 70.0 *FEET* |
| 5.5 *FEET* | 11 *FEET* | 66.0 *FEET* |
| 6.0 *FEET* | 12 *FEET* | 72.0 *FEET* |

## NOTES FOR CURB AND GUTTER AND SIDEWALK

1 PLACE WEAKENED PLANE JOINT PER TABLE "A" ON THIS SHEET. IF THERE IS NO SIDEWALK ADJOINING THE CURB AND GUTTER PLACE WEAKENED PLANE JOINTS 8 LINEAL FEET ON CENTER.

2 PLACE EXPANSION JOINT ALONG SIDEWALK AND CURB AND GUTTER PER TABLE "A". EXPANSION JOINT MATERIAL TO BE COMPOSED OF 1/2" (1.27cm) FIBER BOARD INSTALLED ACROSS FULL SECTION OF CURB AND GUTTER AND SIDEWALK. IF THERE IS NO SIDEWALK ADJOINING CURB AND GUTTER PLACE EXPANSION JOINT MATERIAL EVERY 64 LINEAL FEET.

3 THE GUTTER SURFACE, CURB FACE, TOP OF CURB, AND SIDEWALK SURFACE SHALL RECEIVE A DOUBLE TROWEL FINISH.

4 THE CURB AND GUTTER EDGES SHALL BE PLACED TRUE TO LINE AND GRADE. VERTICAL ELEVATIONS SHALL NOT VARY MORE THAN ±0.01' WITH A MAXIMUM VARIANCE OF 0.02' FROM DESIGN GRADE OCCURRING IN ANY GIVEN 100 FOOT SECTION. THE HORIZONTAL CURB AND GUTTER EDGES SHALL NOT VARY MORE THAN 1/4" IN ANY GIVEN 100 FOOT SECTION.

5 SIDEWALK WILL BE INSTALLED AND ADJOINED TO THE CURB AND GUTTER AS ILLUSTRATED ON THE PLANS.

6 THE P.C.C. SHALL CONTAIN 6 1/2 SACK OF CEMENT PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH O 4,500 PSI AFTER 28 DAYS CURING.

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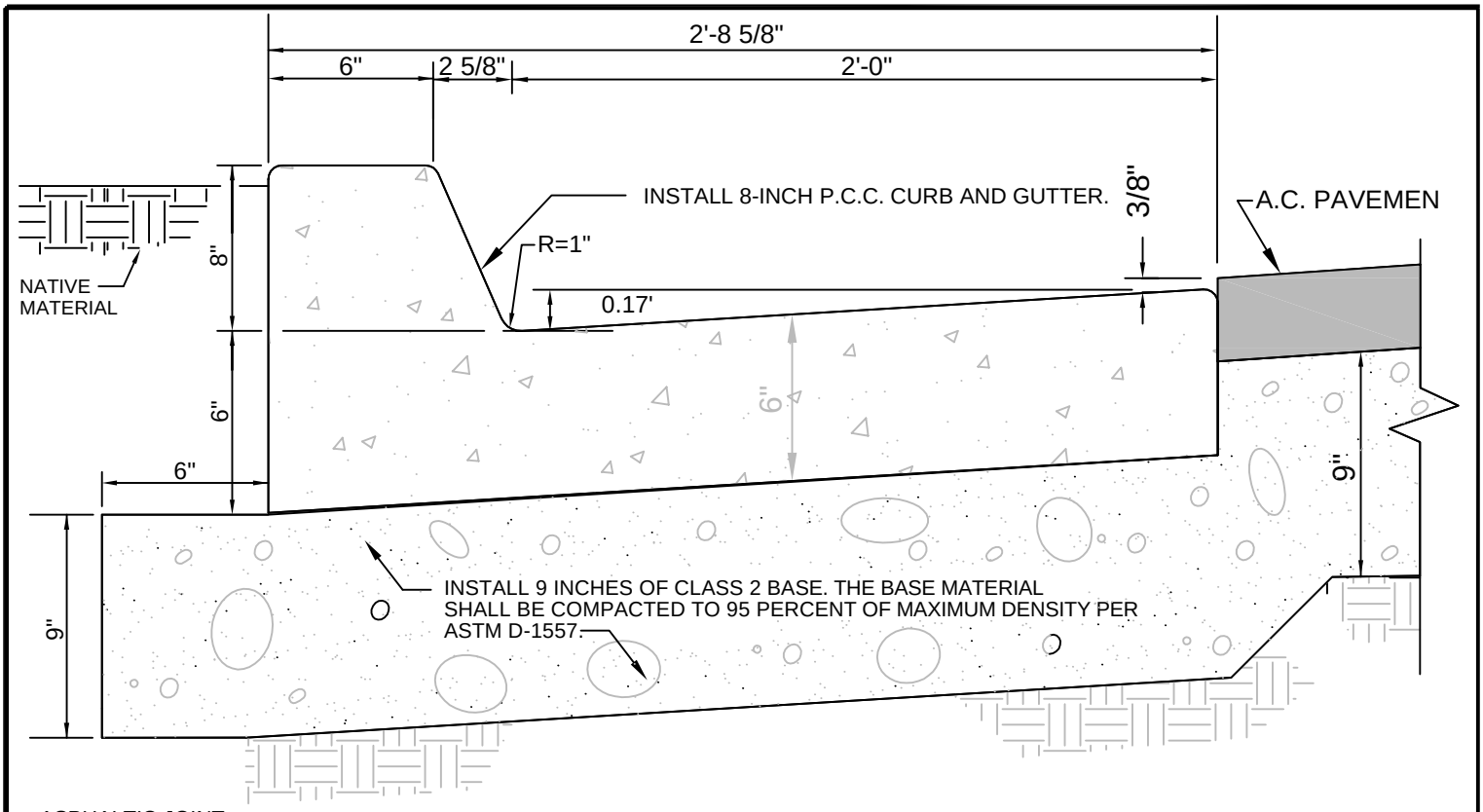
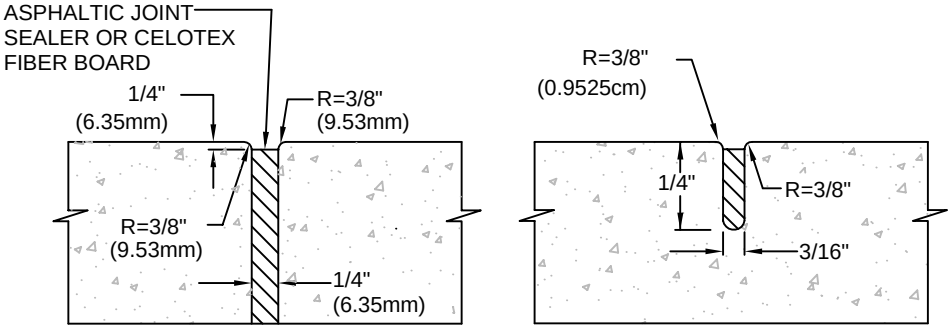
# 6-INCH P.C.C. CURB AND GUTTER

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 117




EXPANSION JOINT N.T.S.

WEAKENED PLANE JOINT N.T.S.

| TABLE A | | |
|---|---|---|
| SIDEWALK WIDTH | CURB AND GUTTER WEAKENED PLANE SPACING | CURB AND GUTTER EXPANSIO JOINT SPACING |
| 4.5 *FEET* | 9 *FEET* | 72.0 *FEET* |
| 5.0 *FEET* | 10 *FEET* | 70.0 *FEET* |
| 5.5 *FEET* | 11 *FEET* | 66.0 *FEET* |
| 6.0 *FEET* | 12 *FEET* | 72.0 *FEET* |

## NOTES FOR CURB AND GUTTER AND SIDEWALK

1 PLACE WEAKENED PLANE JOINT PER TABLE "A" ON THIS SHEET. IF THERE IS NO SIDEWALK ADJOINING THE CURB AND GUTTER PLACE WEAKENED PLANE JOINTS 8 LINEAL FEET ON CENTER.

2 PLACE EXPANSION JOINTS ALONG SIDEWALK AND CURB AND GUTTER PER TABLE "A". EXPANSION JOINT MATERIAL TO BE COMPOSED OF 1/2" (1.27cm) FIBER BOARD INSTALLED ACROSS FULL SECTION OF CURB AND GUTTER AND SIDEWALK. IF THERE IS NO SIDEWALK ADJOINING CURB AND GUTTER PLACE EXPANSION JOINT MATERIAL EVERY 64 LINEAL FEET ON CENTER.

3 THE GUTTER SURFACE, CURB FACE, TOP OF CURB, AND SIDEWALK SURFACE SHALL RECEIVE A DOUBLE TROWEL FINISH.

4 THE CURB AND GUTTER EDGES SHALL BE PLACED TRUE TO LINE AND GRADE. VERTICAL ELEVATIONS SHALL NOT VARY MORE THAN ±0.01' WITH A MAXIMUM VARIANCE OF 0.02' FROM DESIGN GRADE OCCURRING IN ANY GIVEN 100 FOOT SECTION. THE HORIZONTAL CURB AND GUTTER EDGES SHALL NOT VARY MORE THAN 1/4" IN ANY GIVEN 100 FOOT SECTION.

5 SIDEWALK WILL BE INSTALLED AND ADJOINED TO THE CURB AND GUTTER AS ILLUSTRATED ON THE PLANS.

6 THE P.C.C. SHALL CONTAIN 6 1/2 SACK OF CEMENT PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS CURING.

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# 8-INCH P.C.C. CURB AND GUTTER

PREPARED BY:
JAMES G. "JACK" HOLT
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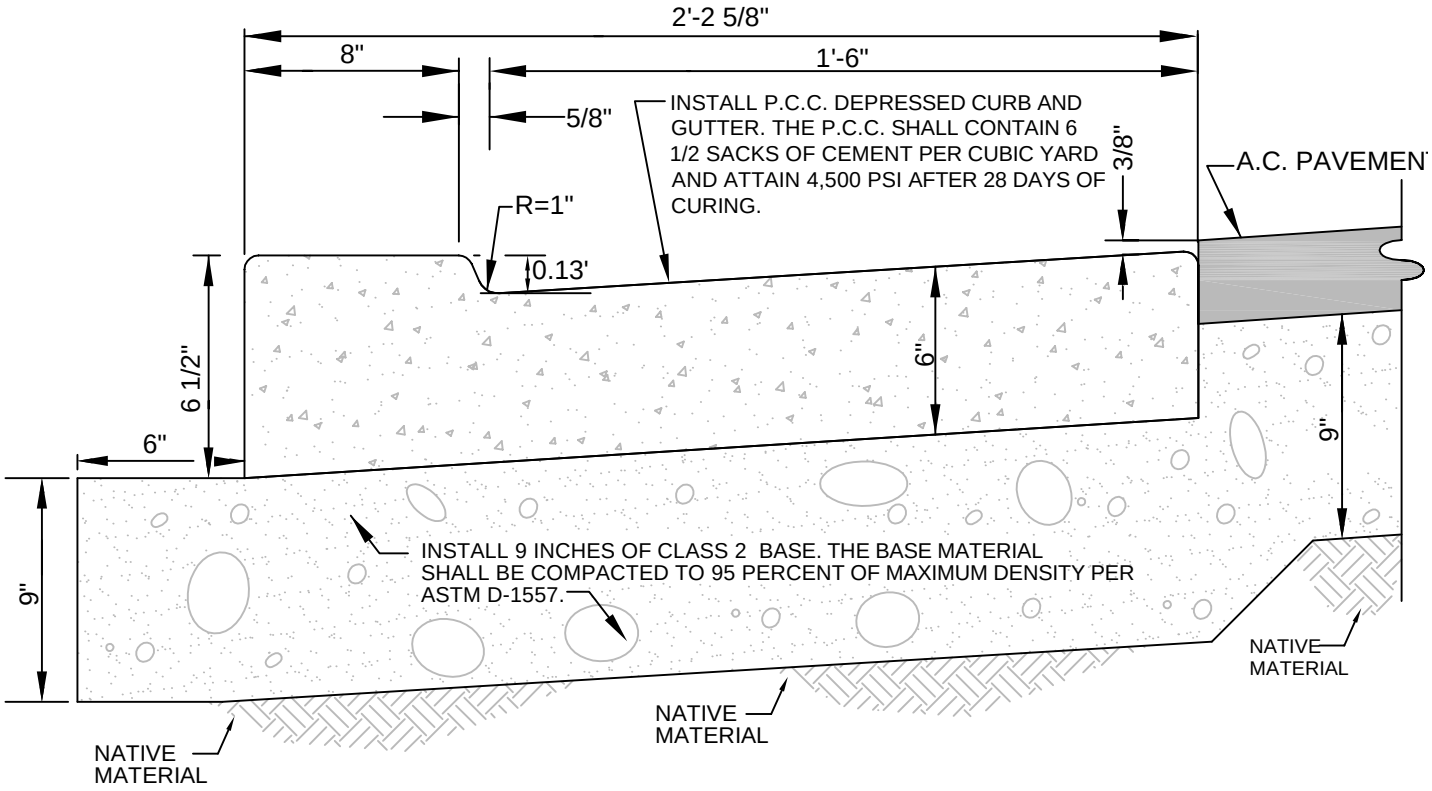
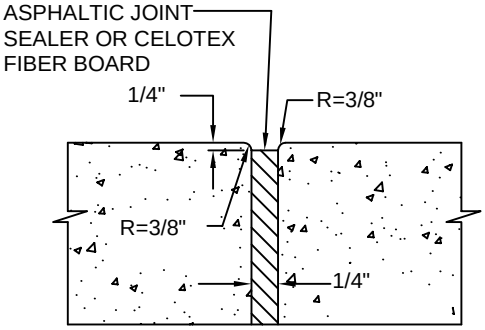
EXP. DATE: 12-31-06

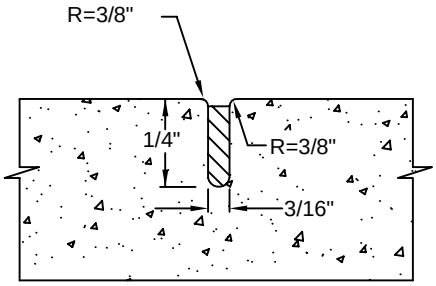
SHEET NO.
S 118




EXPANSION JOINT

N.T.S.




WEAKENED PLANE JOINT

N.T.S.

## NOTES FOR CURB AND GUTTER AND SIDEWALK

1. PLACE WEAKENED PLANE JOINTS A MINIMUM OF 12-FEET ALONG THE DEPRESSED P.C.C. CURB AND GUTTER. MATCH WEAK-END PLANE JOINTS OF ADJOINING P.C.C. INFRASTRUCTURE.
2. THE GUTTER SURFACE CURB FACE AND TOP OF CURB SHALL RECEIVE A DOUBLE TROWEL FINISH.
3. THE CURB AND GUTTER EDGES SHALL BE PLACED TRUE TO LINE AND GRADE. VERTICAL ELEVATIONS SHALL NOT VARY MORE THAN ± .01 FEET WITH A MAXIMUM VARIANCE OF 0.02 FEET FROM DESIGN GRADE OCCURRING IN ANY GIVEN 100 FOOT SECTION. THE HORIZONTAL CURB AND GUTTER EDGES SHALL NOT VARY MORE THAN 1/4 INCH IN ANY GIVEN 100 FOOT SECTION.
4. THE P.C.C. SHALL CONTAIN 6 1/2 SACK OF CEMENT PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OI 4,500 PSI AFTER 28 DAYS CURING.

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CITY OF CALIPATRIA
CALIFORNIA

CITY OF CALIPATRIA

# 6-INCH P.C.C. DEPRESSED CURB

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
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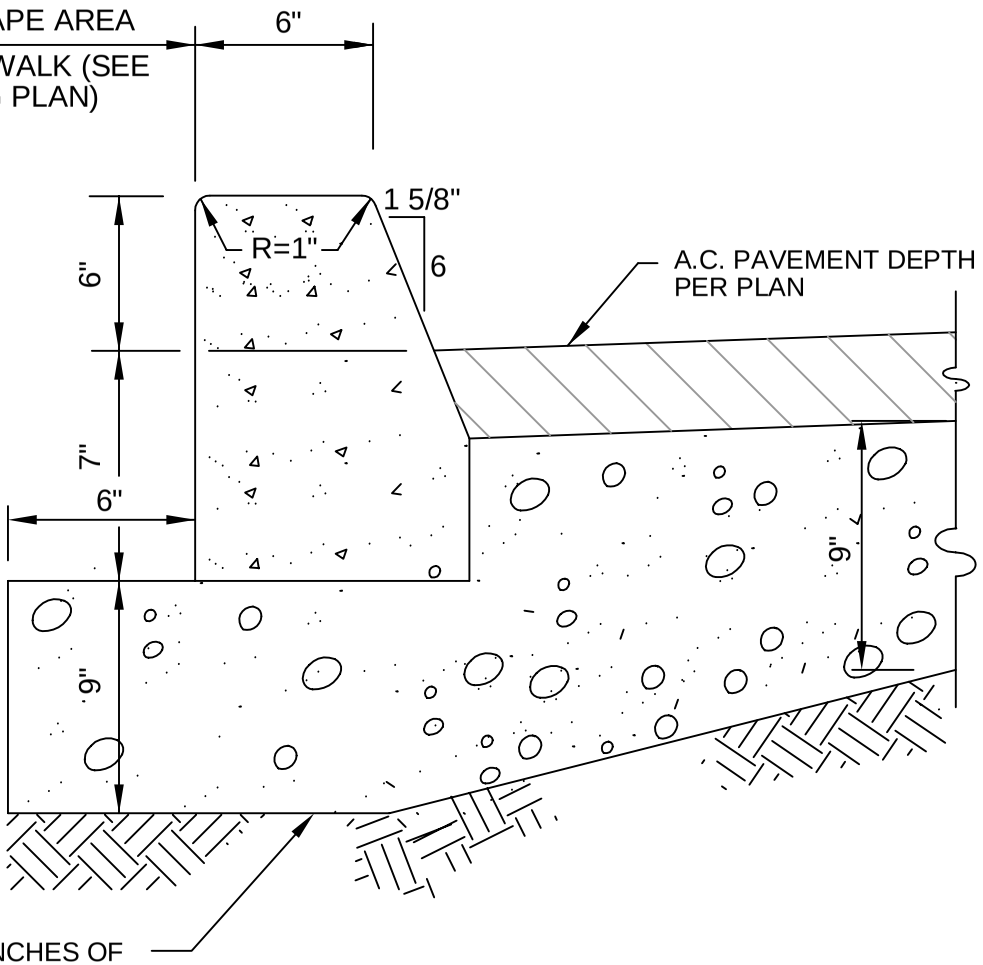
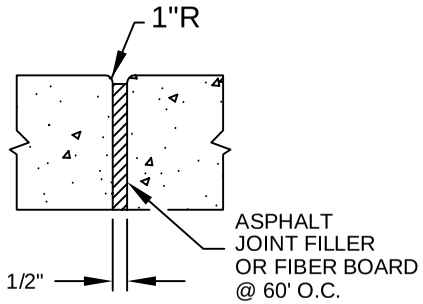



INSTALL 9 INCHES OF CLASS 2 BASE. COMPACT CLASS 2 BASE TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D1557.




EXPANSION JOINT

NOTES:

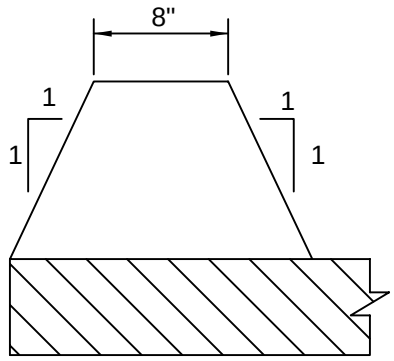
1. BARRIER CURB SHALL BE TYPE 5 CONCRETE AND ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4,500 PSI.
2. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT A MINIMUM OF 12-FOOT INTERVALS, EXCEPT THAT THE INTERVAL SHALL BE VARIED TO ALLOW MATCHING OF JOINTS OF ADJACENT NEW OR EXISTING IMPROVEMENTS.
3. THE CURB EDGES SHALL BE PLACED TRUE TO LINE AND GRADE. VERTICAL ELEVATIONS SHALL NOT VARY MORE THAN ±0.01' WITH A MAXIMUM VARIANCE OF 0.02' FROM DESIGN GRADE OCCURRING IN ANY GIVEN 100 FEET SECTION. THE HORIZONTAL CURB EDGES SHALL NOT VARY MORE THAN 1/4" INCH IN ANY GIVEN 100 FOOT SECTION.

CITY OF CALIPATRIA

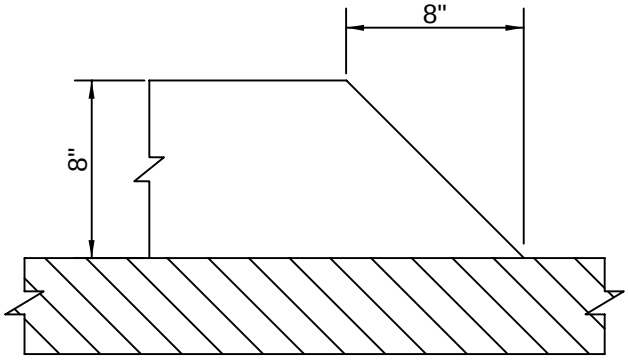
# 6-INCH P.C.C. BARRIER CURB

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 120

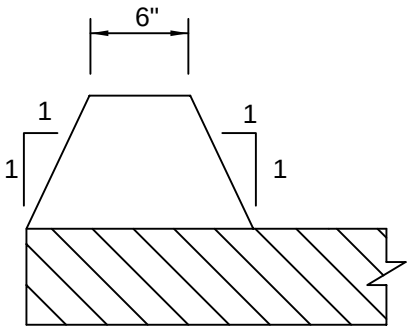



SECTION




END CUTOFF

## 8" DIKE

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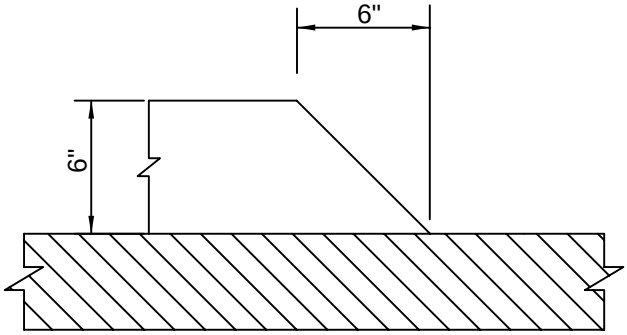


END CUTOFF

## 6" DIKE

**NOTES:**

1. DIKE SHALL BE CONSTRUCTED OF TYPE "B" ASPHALT CONCRETE AR 8000.
2. SS-1H BINDER SHALL BE PLACED ON EXISTING ASPHALT CONCRETE PAVEMENT PRIOR TO THE INSTALLATION OF THE A.C. DIKE.

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CITY OF CALIPATRIA
ASPHALT CONCRETE DIKE

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
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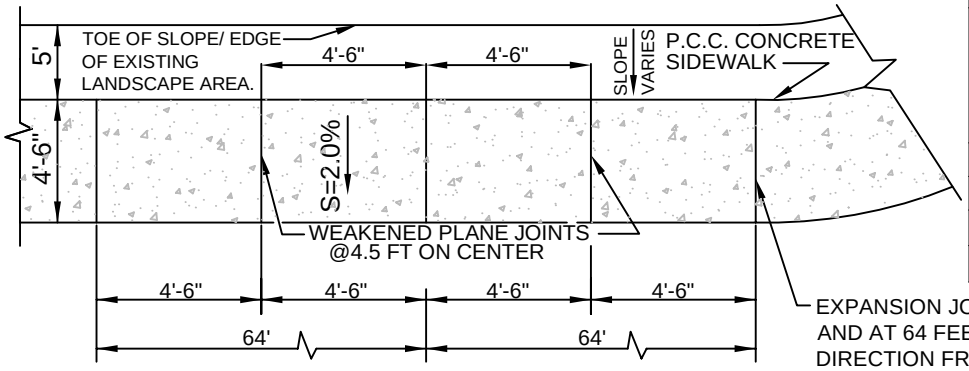
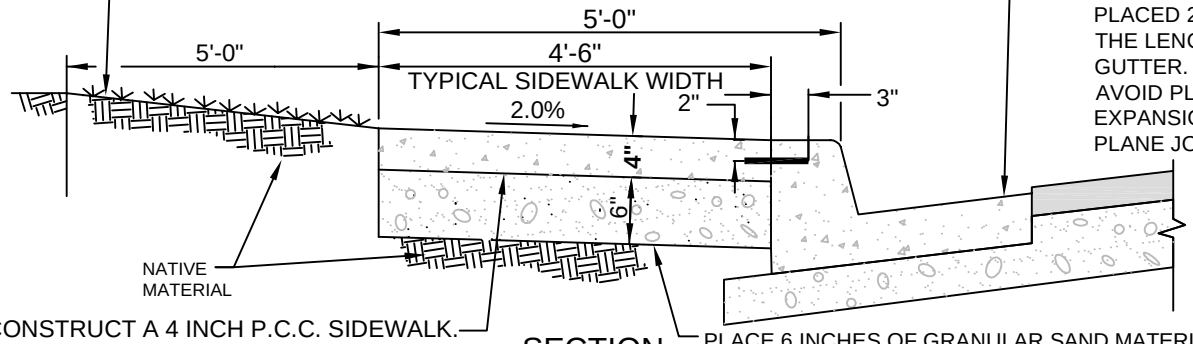



| TABLE A | | | |
|---|---|---|---|
| SIDEWALK WIDTH | SIDEWALK WEAKENED PLANE JOINT SPACING | CURB AND GUTTER WEAKENED PLANE SPACING | CURB AND GUTTER A SIDEWALK EXPANSIO JOINT SPACING |
| 4.5 *FEET* | 4.5 *FEET* | 9 *FEET* | 72.0 *FEI* |
| 5.0 *FEET* | 5.0 *FEET* | 10 *FEET* | 70.0 *FEI* |
| 5.5 *FEET* | 5.5 *FEET* | 11 *FEET* | 66.0 *FEI* |
| 6.0 *FEET* | 6.0 *FEET* | 12 *FEET* | 72.0 *FEI* |

## SIDEWALK PLAN

AFTER THE FORMWORK FOR THE INSTALLATION OF THE SIDEWALK, DRIVEWAYS AND SIDEWALKS IS REMOVED PLACE NATIVE MATERIAL FLUSH WITH THE EDGE OF THE CONCRETE FINISH SURFACES FOR A HORIZONTAL DISTANCE OF 5 FEET TO DAYLIGHT (EXISTING GRADE). APPLY A LIGHT MIST OF WATER TO THE SURFACE OF THE NATIVE MATERIAL AFTER THE FINAL GRADING IS SATISFACTORILY COMPLETED.

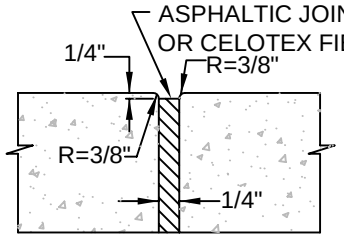



CONSTRUCT 6 INCH OR 8 INCH P.C.C. CURB AND GUTTER SECTI WHERE THE NEW SIDEWALK ADJOINS THE NEW CURB AND GUTTER, NUMBER 4 REINFORCIN BARS 6 INCHES IN LENGTH SHALI BE DOWELED FOR A HORIZONTAI DISTANCE OF 3 INCHES INTO THE CURB. THE DOWELS SHALL BE PLACED 2 FEET ON CENTER ALOI THE LENGTH OF THE CURB AND GUTTER. DOWEL SPACING SHAL AVOID PLACING DOWELS AT EXPANSION JOINT OR WEAKENEI PLANE JOINT LOCATIONS.

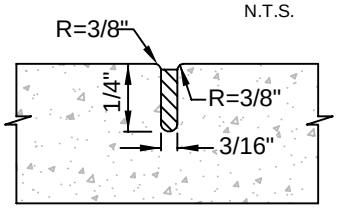
CONSTRUCT A 4 INCH P.C.C. SIDEWALK. THE P.C.C. SHALL CONTAIN 6 1/2 SACKS OF CEMENT PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS CURING.

SECTION

PLACE 6 INCHES OF GRANULAR SAND MATERIAL UNDER THE SIDEWALK. THE GRANULAR MATERIAL SHALL BE COMPACTED TO 90 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557.




EXPANSION JOINT
N.T.S.




WEAKENED PLANE JOINT
N.T.S.

## NOTES FOR CURB AND GUTTER AND SIDEWALK

1. PLACE WEAKENED PLANE JOINT EVERY 9 LINEAL FEET ALONG THE CURB AND GUTTEI
2. PLACE EXPANSION JOINT ALONG SIDEWALK AND CURB AND GUTTER EVERY 72 FEET . EXPANSION JOINT MATERIAL TO BE COMPOSED OF 1/2" FIBER BOARD INSTALLED ACROSS FULL SECTION OF CURB AND GUTTER AND SIDEWALK.
3. THE GUTTER SURFACE, CURB FACE, TOP OF CURB, AND SIDEWALK SURFACE SHALL RECEIVE A DOUBLE TROWEL FINISH.
4. THE CURB AND GUTTER EDGES SHALL BE PLACED TRUE TO LINE AND GRADE. VERTICAL ELEVATIONS SHALL NOT VARY MORE THAN ±0.01' WITH A MAXIMUM VARIANCE OF 0.02' FROM DESIGN GRADE OCCURRING IN ANY GIVEN 100 FOOT SECTION. THE HORIZONTAL CURB AND GUTTER EDGES SHALL NOT VARY MORE THAN 1/4" IN ANY GIVEN 100 FOOT SECTION.
5. SIDEWALK SHALL BE INSTALLED AND ADJOINED TO THE CURB AND GUTTER AS ILLUSTRATED ON THE PLANS.
6. THE P.C.C. SHALL CONTAIN 6 1/2 SACKS OF CEMENT PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS CURING.
7. FOR SIDEWALK WIDTHS GREATER THAN 4.5 FEET WIDE WEAKENED PLANE JOINT AND EXPANSION JOINT SHALL CONFORM TO TABLE "A" ABOVE.
8. THE P.C.C. SHALL CONTAIN 1 1/2 LBS OF POLYPROPYLENE FIBER PER CUBIC YARD. TI POLYPROPYLENE FIBER SHALL BE MANUFACTURED BY FIBER-MESH

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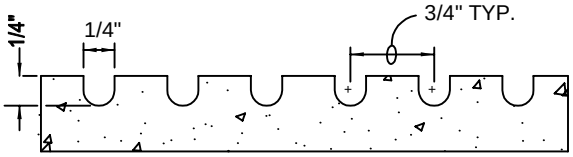
CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA

# P.C.C. SIDEWALK

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 122




## GROOVING DETAIL

INSTALL VARIABLE P.C.C. HEIGHT RETAINING CURB, AT EDGE OF P.C.C. HANDICAP RAMP IF THE VERTICAL DISTANCE BETWEEN THE TOP OF THE P.C.C. CONCRETE RAMP AND THE NATIVE MATERIAL EXCEEDS 4-INCHES.




## HANDICAP RAMP SECTION B-B

## KEYNOTES

1. INSTALL CLASS 2 BASE MATERIAL. COMPACT THE BASE MATERIAL TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557.
2. INSTALL 4" THICK 4,500 PSI P.C.C. CONCRETE CURB RETURN.
3. NATIVE MATERIAL TO REMAIN.
4. FACE OF CURB.
5. P.C.C. DEPRESSED CURB FOR A 6'-0" DISTANCE.
6. INSTALL NATIVE MATERIAL FLUSH WITH THE SURFACE OF THE P.C.C. CONCRETE. SLOPE THE NATIVE MATERIAL AWAY FROM THE TOP OF THE P.C.C. CONCRETE FOR A HORIZONTAL LENGTH OF 5 FEET.
7. THE CURB RETURN SHALL BE CONSTRUCTED WITH 4" OF P.C.C. CONCRETE PLACED OVER 6" OF CLASS 2 BASE MATERIAL. THE CONCRETE SHALL ATTAIN 4,500 P.S.I. COMPRESSIVE STRENGTH AFTER 28 DAYS CURING. THE CONCRETE SURFACE SHALL RECEIVE A DOUBLE TROWEL FINISH. THE FINAL SURFACE OF THE RAMP SHALL CONSIST OF A LIGHT TRANSVERSE BROOMED SURFACE EXCEPT FOR GROOVED AREAS. A 12 INCH BORDER SHALL BE PLACED ON THE RAMP. THE BORDER SHALL CONSIST OF 1/4 INCH GROOVES PLACED 3/4 INCHES ON CENTER. SEE GROOVING DETAIL ABOVE.
8. TOP OF RAMP.
9. ROUNDED.
10. P.C.C. CURB TRANSITION.
11. INSTALL TRUNCATED DOMES C SLOPES FROM 0 PERCENT TO 6.67 PERCENT. DOMES MAY BE OMITTED WHEN RAMP SLOPE EXCEEDS 6.67 PERCENT. SEE TYPICAL TRUNCATED DOME DETAIL S125.

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# CITY OF CALIPATRIA
# HANDICAP RAMP

PREPARED BY:
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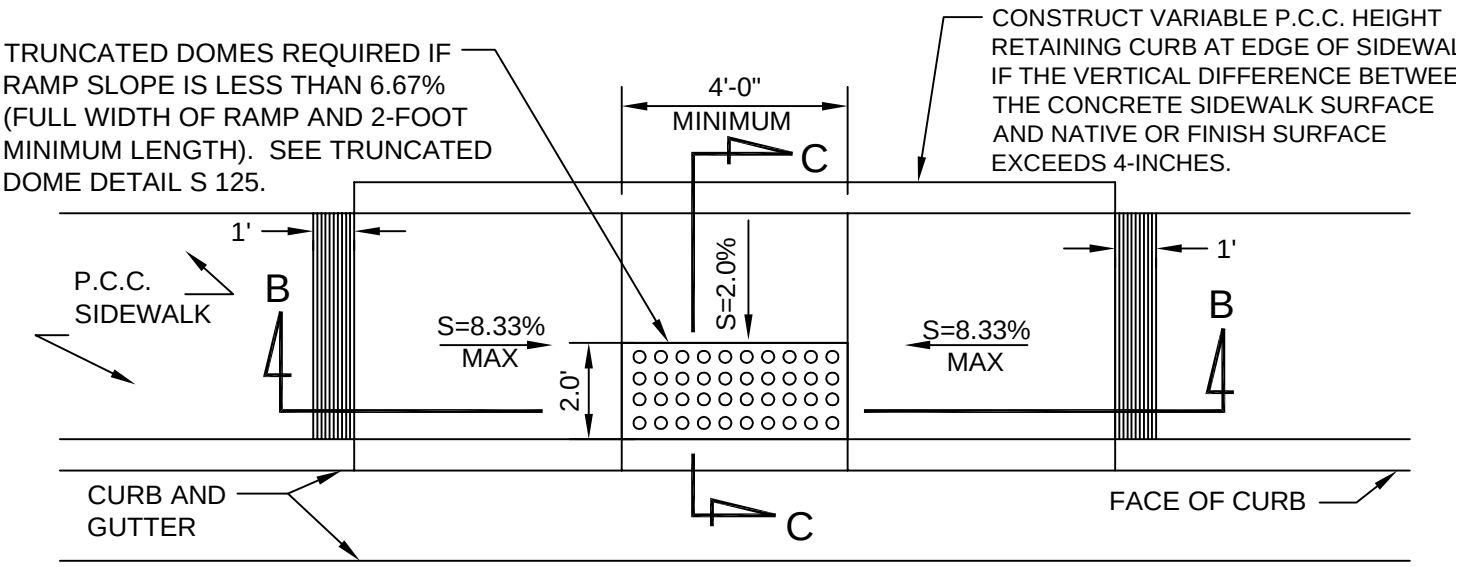
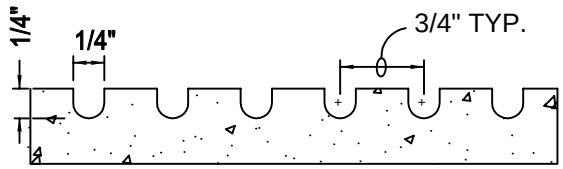
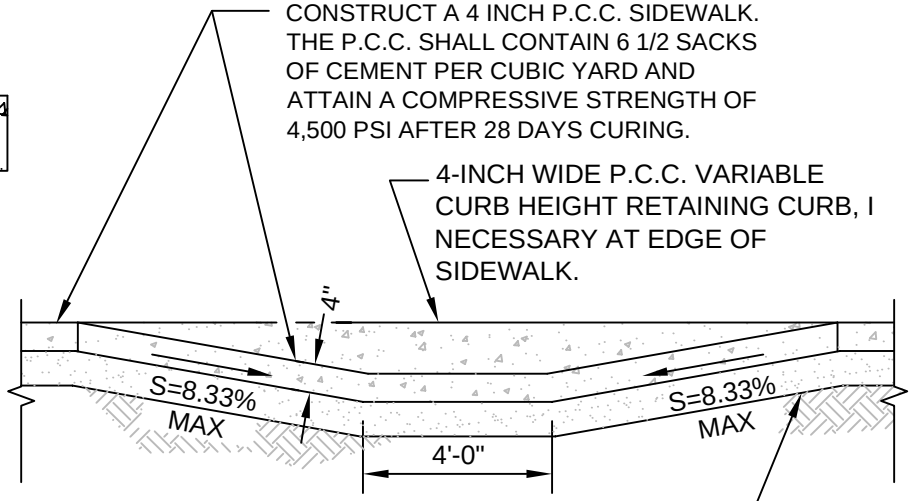
EXP. DATE: 12-31-06

SHEET NO.
S 123

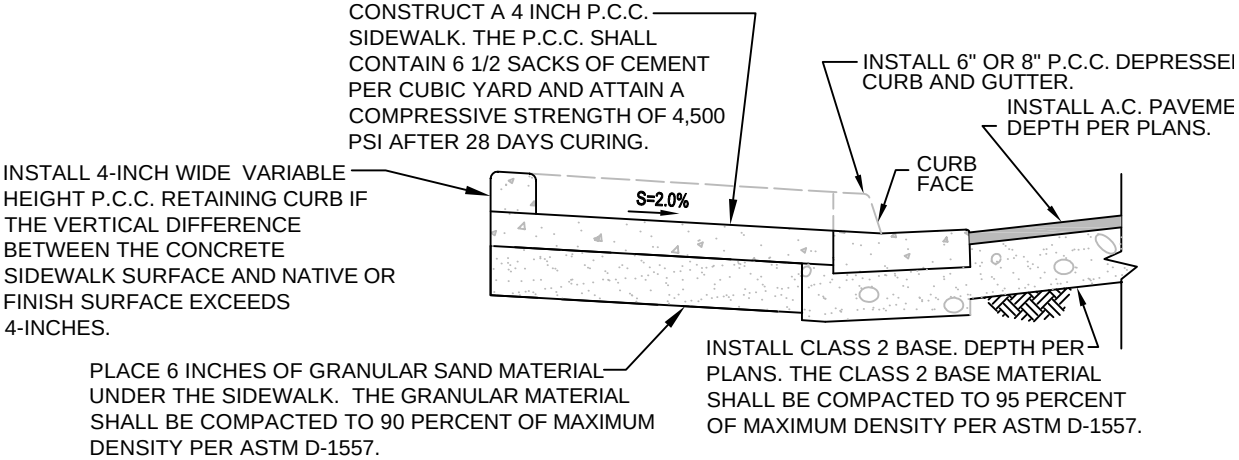



GROOVING DETAIL




## SECTION B-B

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# CITY OF CALIPATRIA

## DEPRESSED CURB ACCESS OPENING FOR SIDEWALK EGRESS

PREPARED BY:
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EXP. DATE: 12-31-06

SHEET NO.
S 124

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CITY OF CALIPATRIA
CAST-IN-PLACE TRUNCATED DOME WARNING SURFACE TILE

PREPARED BY:
JAMES G. "JACK" HOLT
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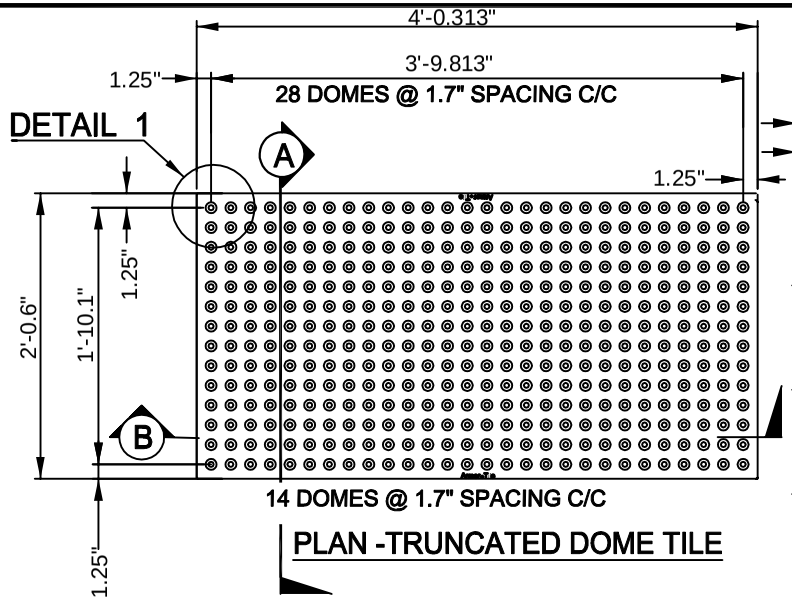
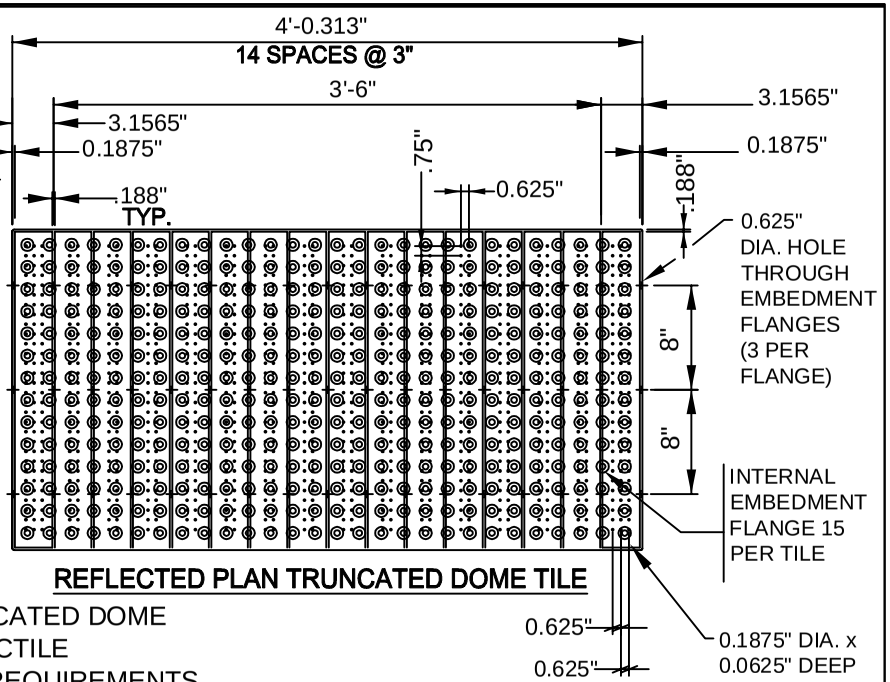
EXP. DATE: 12-31-06

SHEET NO.
S 125

DETAIL 1

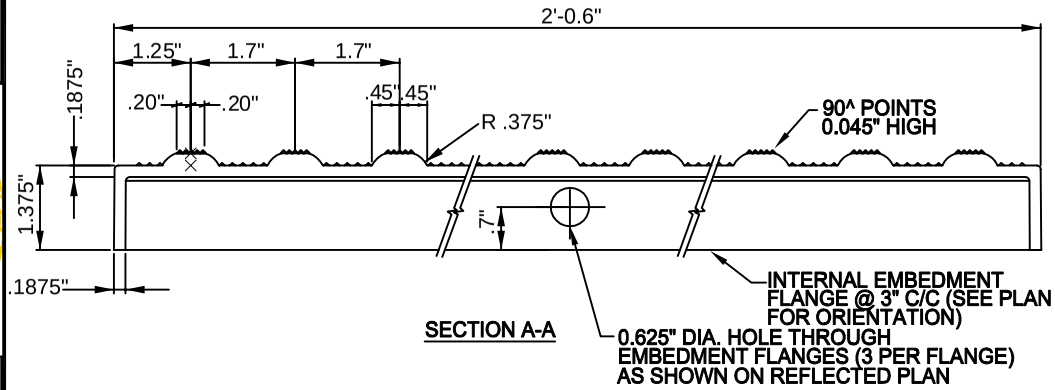



PLAN -TRUNCATED DOME TILE

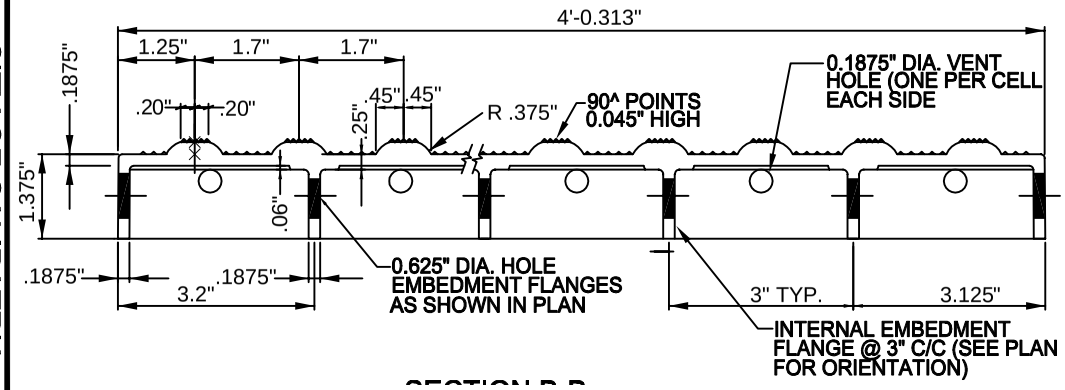


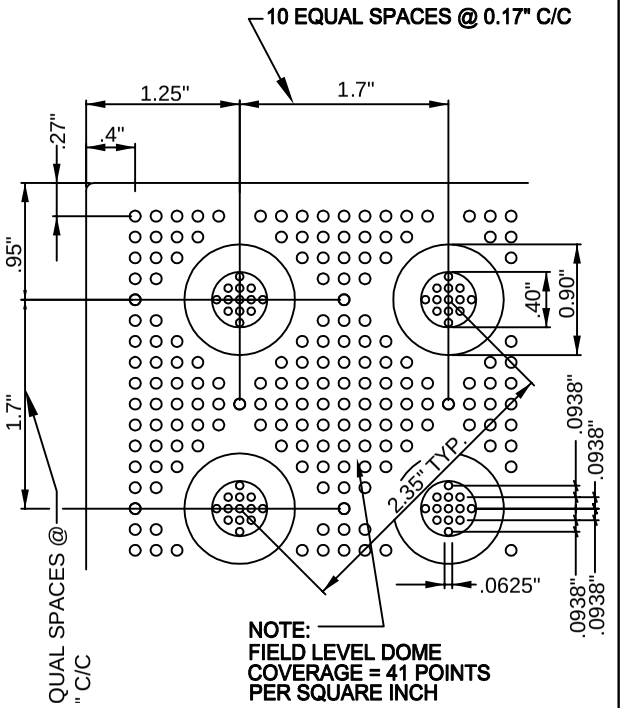

REFLECTED PLAN TRUNCATED DOME TILE

NOTE: INSTALL A LIGHT GRAY COLOR TRUNCATED DOME TILE AS MANUFACTURED BY ARMOR TILE TACTILE SYSTEMS. INSTALL PER MANUFACTURERS REQUIREMENTS.




SECTION A-A



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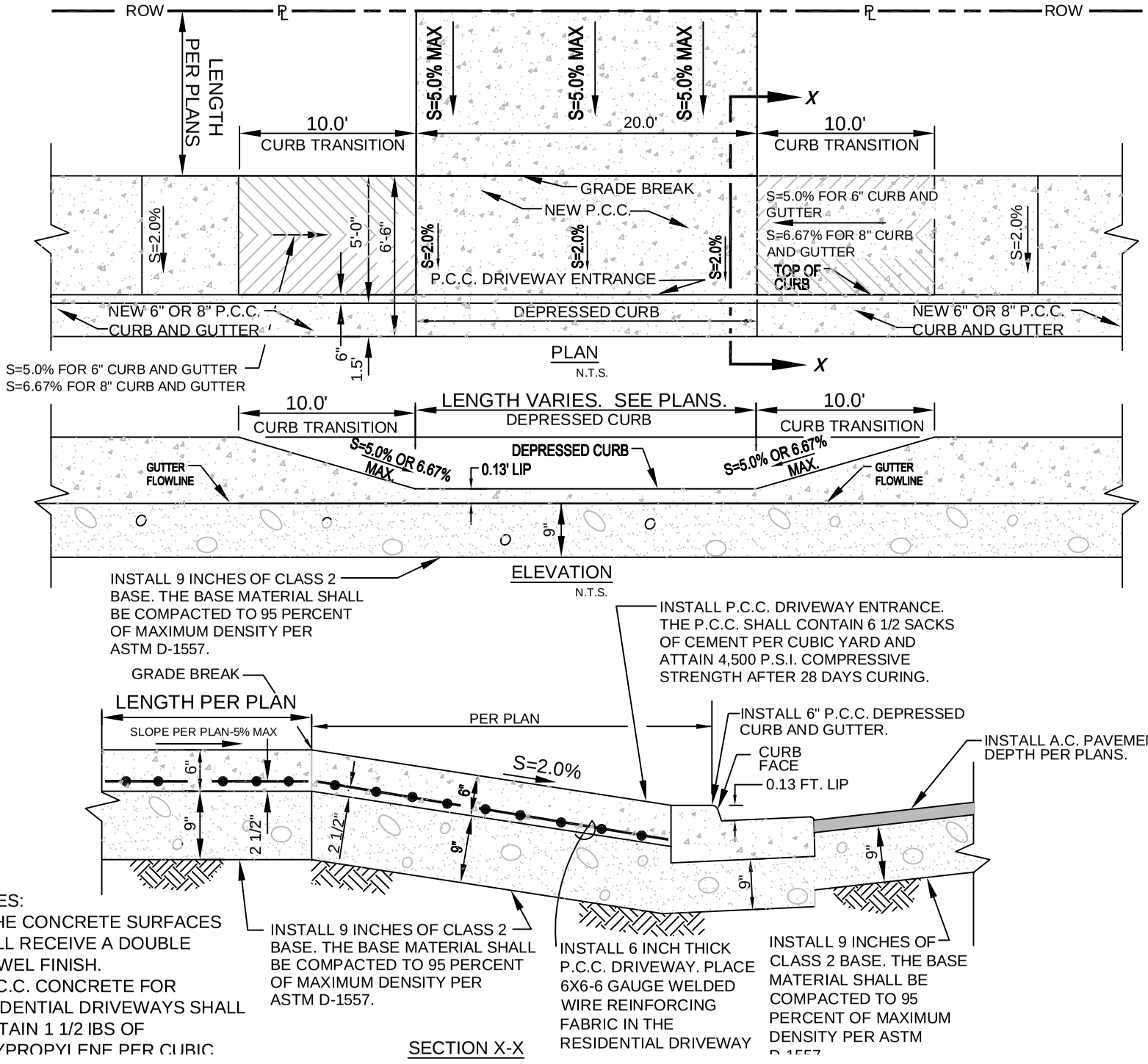
# CITY OF CALIPATRIA
## RESIDENTIAL P.C.C. DRIVEWAY ENTRANCE DETAIL

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 126




NOTES:
1. THE CONCRETE SURFACES SHALL RECEIVE A DOUBLE TROWEL FINISH.
2. P.C.C. CONCRETE FOR RESIDENTIAL DRIVEWAYS SHALL CONTAIN 1 1/2 IBS OF POLYPROPYLENE PER CUBIC

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# CITY OF CALIPATRIA

## COMMERCIAL, INDUSTRIAL AND ALL DRIVEWAY ENTRANCE DETAIL

PREPARED BY:
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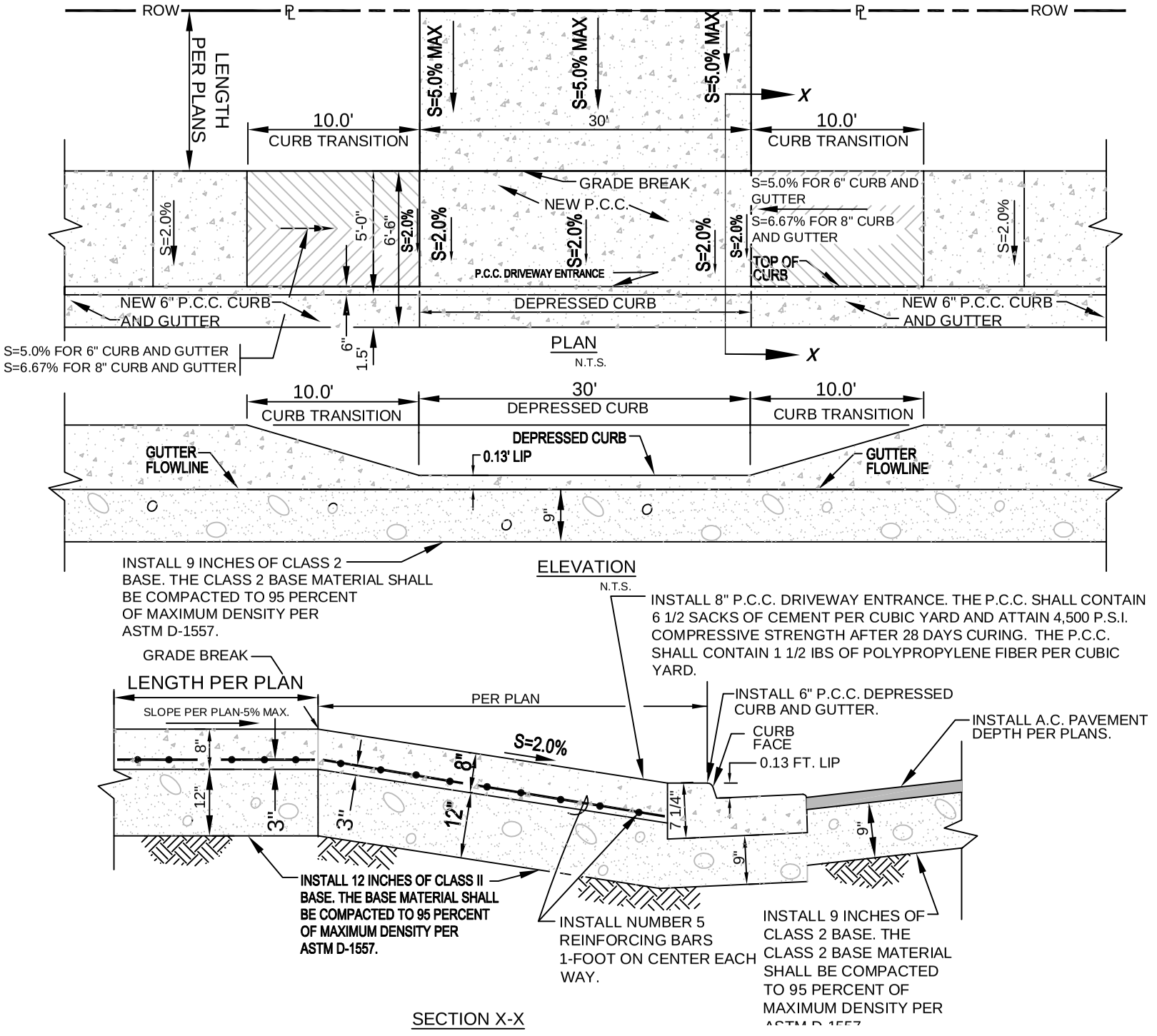
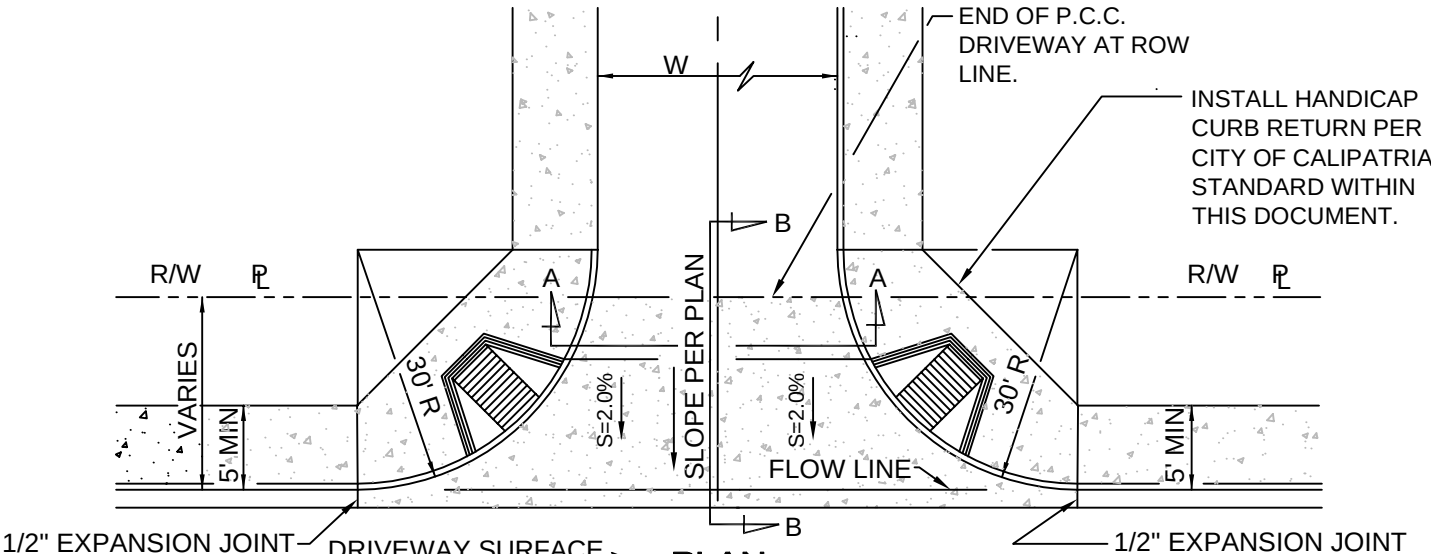
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 127

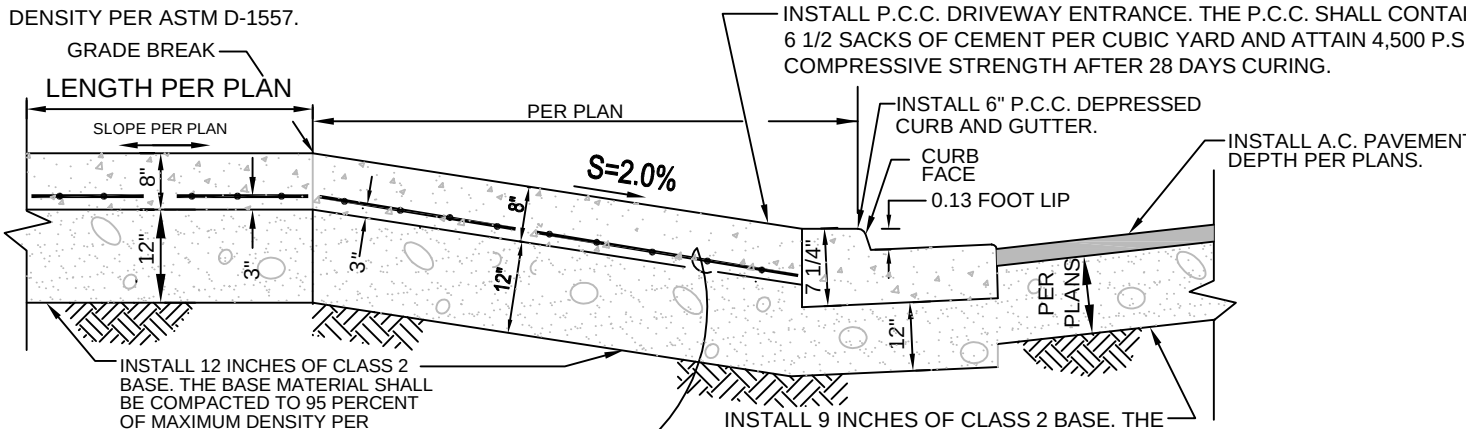





INSTALL 8-INCH P.C.C. DRIVEWAY ENTRANCE. THE P.C.C. SHALL CONTAIN 6 1/2 SACKS OF CEMENT PER CU YARD AND ATTAIN 4,500 P.S COMPRESSIVE STRENGTH AFTER 28 DAYS CURING. TH P.C.C. CONCRETE SHALL CONTAIN 1 1/2 POUNDS OF POLYPROPYLENE FIBER PE CUBIC YARD.

INSTALL 12 INCHES OF CLASS 2 BASE. THE CLASS 2 BASE MATERIAL SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557.

## TYPICAL SECTION A-A




INSTALL 8 INCH THICK P.C.C. DRIVEWAY. INSTALL NUMBER 5 REINFORCING BARS 1-FOOT ON CENTER EACH WAY.

## ℄ SECTION B-B
N.T.S.

NOTES:

1. "W" EQUALS 24 FEET MINIMUM UNLESS SHOWN OTHERWISE ON THE PLAN.
2. THE 12-INCHES OF CLASS 2 BASE SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY PER ASTM D-1557.
3. P.C.C. CONCRETE DRIVEWAY SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 4,500 PSI AND SHALL CONTAIN 1-1/2 LBS. POLYPROPYLENE FIBER PER CUBIC YARD.
4. THE CONCRETE SURFACE SHALL BE DOUBLE TROWELED SMOOTH.
5. ALL STREET AND ALLEY DRAINAGE SLOPES SHALL BE NOT LESS THAN 0.10%.
6. ALL METAL FORM STAKES MUST HAVE PROTECTIVE DEVICES SUCH AS "MUSHROOMS" INSTALLED AT ALL TIMES DURING USE, TO ADEQUATELY INSURE THE PUBLIC SAFETY.

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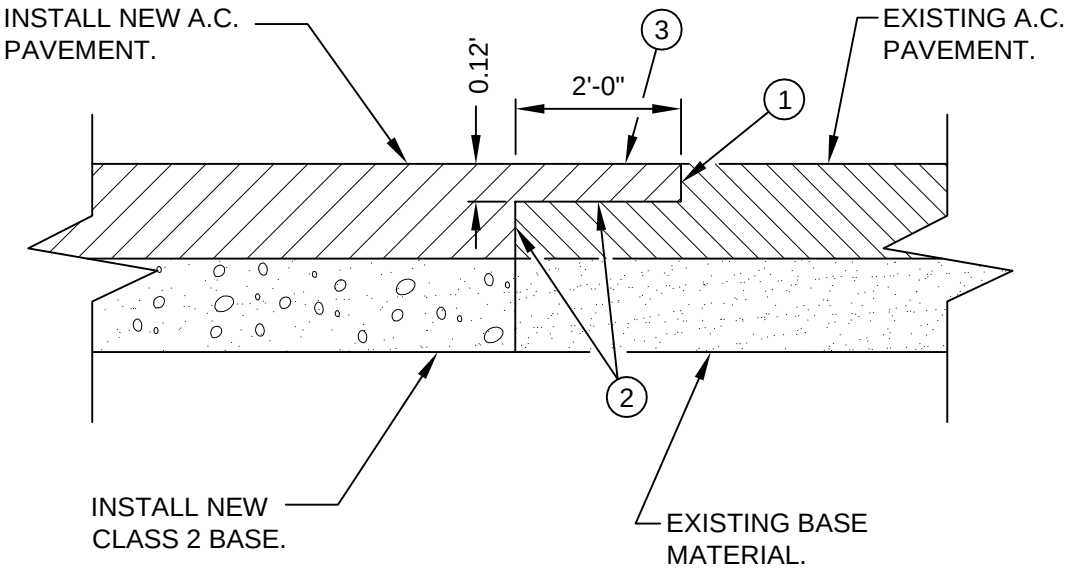
# CITY OF CALIPATRIA

COMMERCIAL, INDUSTRIAL AND ALLE DRIVEWAY APPROACH FOR SIDEWAI CONTINUING INTO THE SITE

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 128




NOTES:

1. COLD PLANE 2 FOOT WIDE X 0.12 FOOT DEEP AREA FOR THE FULL WIDTH OF THE A.C. PAVEMENT.

2. TACK COAT THE SAW-CUT A.C. PAVEMENT EDGE AND COLD PLANED AREA WITH A GRADE SS-1H EMULSIFIED ASPHALT AT AN APPROXIMATE RATE OF 0.05 TO 0.10 GALLON PER SQUARE YARD. THE SS-1H EMULSIFIED ASPHALT SHALL BE UNIFORMLY APPLIED PRECEDING THE PLACEMENT OF THE NEW ASPHALT CONCRETE. THE SURFACE SHALL BE FREE OF WATER, FOREIGN MATERIAL OR DUST WHEN THE TACK COAT IS APPLIED.

3. OVERLAY HEADER AREA TO MATCH NEW AND EXISTING A.C. SURFACES.

4. WHERE PAVEMENT IS INSTALLED ON A PROJECT ON MORE THAN ONE DAY, A HEADER (AS HERE IN DESCRIBED) MUST BE PROVIDED AT THE CONSTRUCTION JOINT.

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CALIFORNIA

CITY OF CALIPATRIA
NEW CONSTRUCTION
PAVEMENT EXTENSION JOII

PREPARED BY:
JAMES G. "JACK" HOLT
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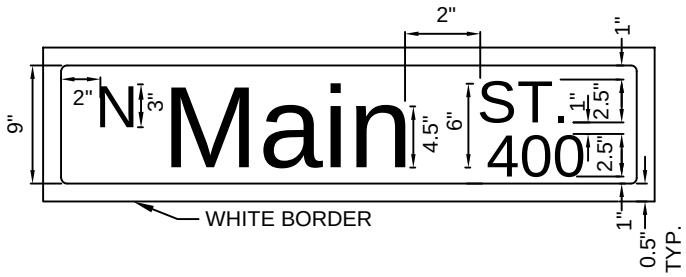
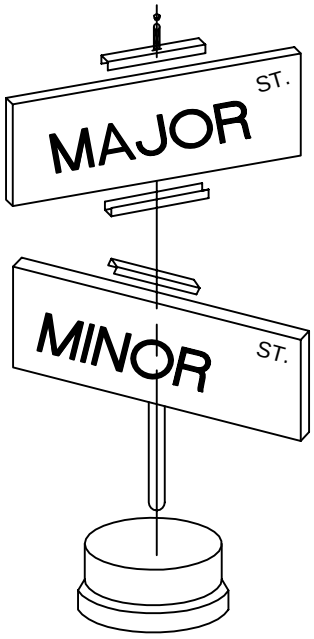
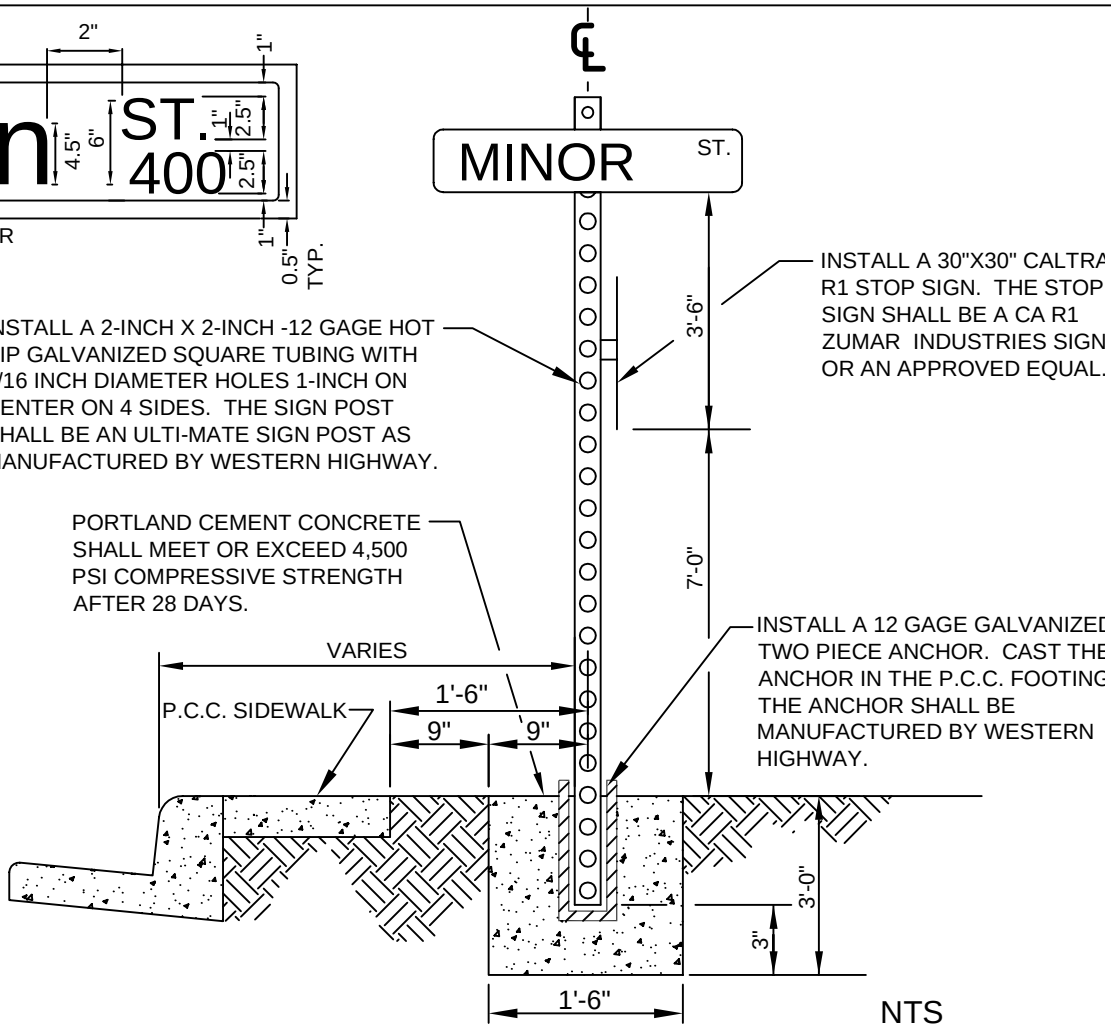
EXP. DATE: 12-31-06

SHEET NO.
S 129




NTS

## NOTES:

1. THE STREET NAME POST SHALL CONSIST OF THE SPECIFIED POST, BASE, STREET NAME SIGN AND MOUNTINGS COMPLETELY INSTALLED AND PAINTED.
2. STREET NAME SIGN BLANKS SHALL BE FABRICATED TO RECEIVE PIPE MOUNTING ATTACHMENTS.
3. SIGN PANELS SHALL BE HEAT-TREATED, HIGH TENSILE ALUMINUM ALLOY 5052H38 WITH 0.125 INCH THICKNESS AND 9 INCHES IN HEIGH
4. NO RECYCLE MATERIAL SHALL BE USED.
5. DEPENDING ON THE STREET NAME SIGN MESSAGES, THE LENGTH OF SIGNS SHALL RANGE FROM A MINIMUM OF 30 INCHES TO 42 INCHES IN 6" INCREMENTS.
6. SIGN LEGEND SHALL INCLUDE THE NAME OF THE STREET WITH PROPER SUFFIX, ORDINAL AND BLOCK NUMBER.
7. THE LEGEND SHALL BE PAINTED WITH WHITE REFLECTIVE LETTERS.
8. REFLECTIVE SHEETING MATERIAL FOR SIGN FACE SHALL BE BLUE COLOR WITH 3M COMPANY DIAMOND GRADE VIP, TYPE B SHEETING REFLECTIVE SHEETING SHALL BE COVERED WITH 3M COMPANY 1160 PROTECTIVE FILM.
9. BACKGROUND MATERIAL & LETTERS SHALL BE APPLIED BY MECHANICAL APPLICATION.
10. SUPPLIER SHALL FURNISH THE CITY WITH A WRITTEN GUARANTEE OF SIGN REFLECTIVE SHEETING WORKMANSHIP AND AN EFFECTIVI REFLECTIVE LIFE OF 10 YEARS.
11. EACH SIGN PANEL SHALL BE DOUBLE-FACED AND WRAPPED IN INDIVIDUAL PLASTIC BAG.
12. SUPPLIER SHALL FIELD VERIFY AND SUBMIT A LIST OF STREET BLOCK NUMBERS AND A SET OF SHOP DRAWINGS AND COLOR SAMPLE TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO FABRICATING THE SIGNS.
13. POST SHALL BE 2" (5.08CM) SQUARE UNISTRUT, GALV., 10-1/2 FEET (3.20M) LONG WITH ONE END FINISHED TO RECEIVE MOUNTING CAP AND FITTINGS. PC-2 APPLICATION.
14. GALVANIZED METAL UNISTRUT AND CAP SHALL BE CLEANED AND PAINTED WITH ALUMINUM PAINT. THE SECTION ABOVE GROUND LEVEL SHALL BE PAINTED WITH ALUMINUM PAINT.

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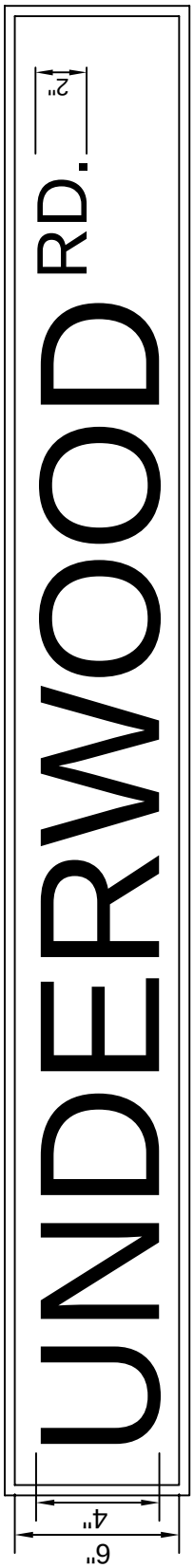
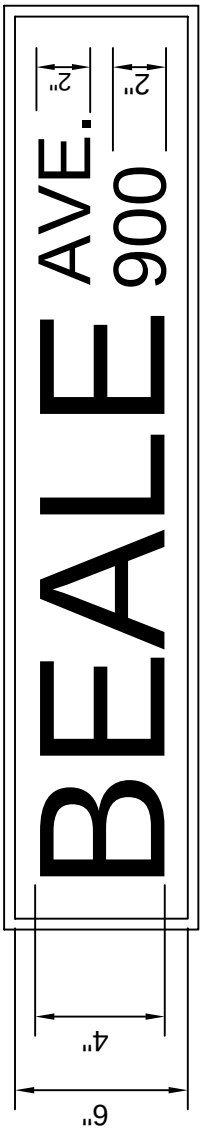
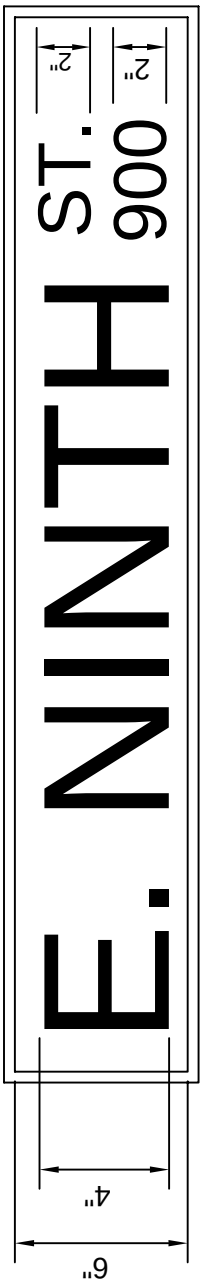
# CITY OF CALIPATRIA
# TYPICAL STOP AND STREET NAME SIGN

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 130

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CITY OF CALIPATRIA
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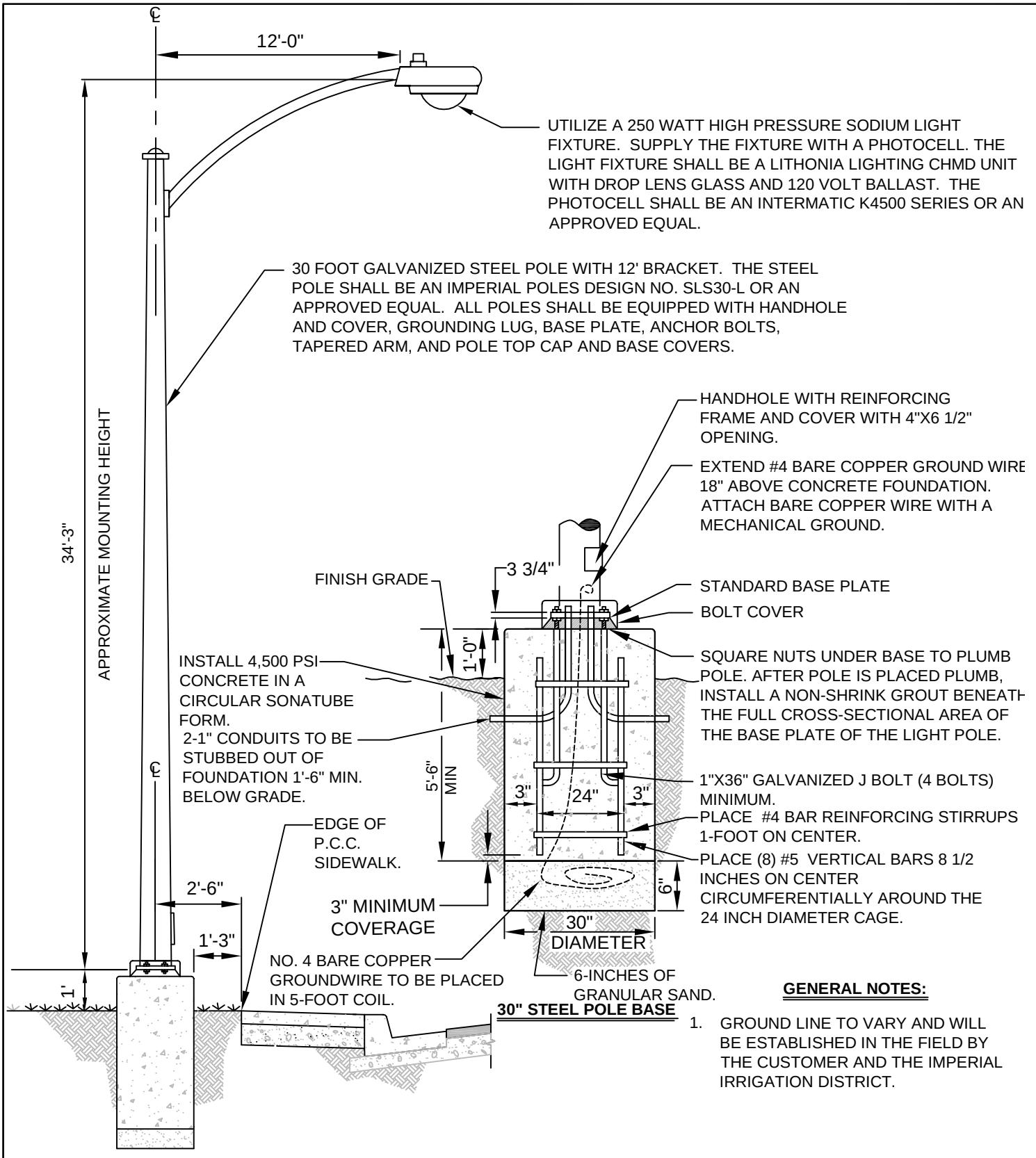
# CITY OF CALIPATRIA
## TYPICAL STREET NAME SIGN SUBMITTAL DOCUMENT

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 131




**GENERAL NOTES:**

1. GROUND LINE TO VARY AND WILL BE ESTABLISHED IN THE FIELD BY THE CUSTOMER AND THE IMPERIAL IRRIGATION DISTRICT.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# CITY OF CALIPATRIA
# TYPICAL STREET LIGHT DETAIL

PREPARED BY:
JAMES G. "JACK" HOLT
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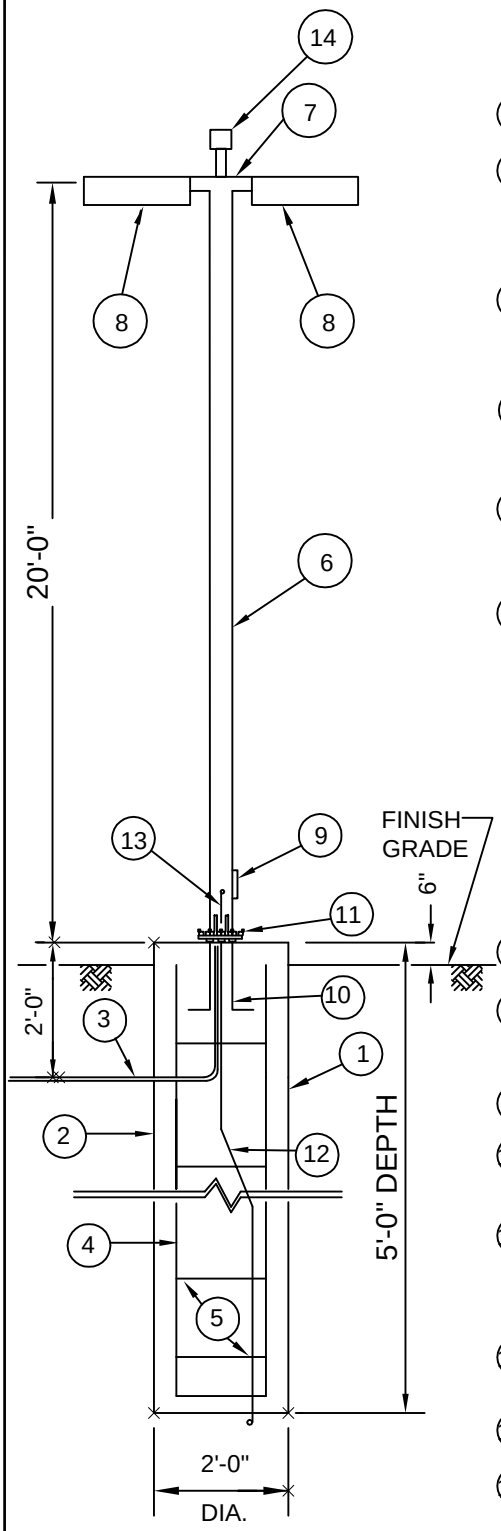
EXP. DATE: 12-31-06

SHEET NO.
S 132




NOTES:

1. SEE PLANS FOR THE LOCATION OF THE LIGHT POLE.
2. INSTALL 2 FOOT DIAMETER CONCRETE PEDESTAL FOR THE LIGHT POLE. CONCRETE SHALL ATTAIN A COMPRESSIVE STRENGTH OF 4,500 P.S.I. AFTER 28 DAYS CURING. THE CONTRACTOR SHALL UTILIZE A 2 FOOT DIAMETER SONATUBE TO FORM THE PEDESTAL.
3. PLACE 1 INCH P.V.C. SCHEDULE 40 CONDUIT WITHIN THE PEDESTAL FORMWORK PRIOR TO THE INSTALLATION OF CONCRETE. EXTEND CONDUIT TO THE POWER SOURCE PER THE PLANS.
4. INSTALL NUMBER 5 VERTICAL BARS SUCH THAT THE CIRCUMFERENCE IS BASED ON A DIAMETER OF 1'-6" ON CENTER AS MEASURED ALONG THE CIRCUMFERENCE.
5. BEND NUMBER 4 REINFORCING BARS SUCH THAT THE CIRCUMFERENCE IS BASED ON A DIAMETER OF 1'-6". TIE THESE BARS TO THE VERTICAL REINFORCING BARS.
6. INSTALL 20 SQUARE BRONZE POLE. THE POLE SHALL BE SUPPLIED WITH 4" X 6" HAND HOLES PLACED AT THE POLE BASE. THE POLE SHALL BE PROVIDED WITH STEEL BASES CONTINUOUSLY WELDED TO THE SHAFT. THE POLE SHALL BE FURNISHED WITH HIGH STRENGTH ANCHOR BOLTS AS RECOMMENDED BY THE MANUFACTURER. THE BOLT CIRCLE DIAMETER, SH SIZE, BOLT SIZE AND BOLT PROJECTION SHALL BE DESIGNED TO WITHSTAND A MOMENT AT THE BASE CREATED BY THE SHAFT AND FIXTURE OF THE POLE GIVEN A 100 MILE PER HOUR WIND WITH GUSTS OF 130 MILES PER HOUR. THE MANUFACTURER OF THE POLE SHALL DETERMINE TH ABOVE MENTIONED ITEMS BASED ON THE GIVEN CRITERIA. THE ABOVE MENTIONED ITEMS SHALL BE CLEANED INSIDE AND OUT PRIOR TO SHIPMENT. THE POLE SHALL BE A CUSTOM LIGHTING LAGUNA #SQ-11-420 B OR AN APPROVED EQUAL.
7. INSTALL APPROVED SUPPORT BRACKET.
8. INSTALL TWO (2) 250 WATT HIGH PRESSURE SODIUM LIGHTING LA-250-HB FIXTURES WITH A PHOTOCELL AND A LEXAN LENS. THE ELECTRICAL VOLTAG UTILIZED SHALL BE 120 VOLTS AC, SINGLE PHASE.
9. THE STEEL POLE SHALL BE EQUIPPED WITH A 4 INCH X 6 INCH HAND HOLE.
10. CAST HIGH STRENGTH ANCHOR BOLTS INTO THE CONCRETE PEDESTAL UTILIZING A TEMPLATE SUPPLIED BY THE LIGHT POLE MANUFACTURER.
11. PLUMB THE LIGHT POLE BY ADJUSTING THE ANCHOR BASE PLATE LEVELING BOLTS. PLACE A NON-SHRINK GROUT BETWEEN THE BOTTOM OF THE ANCHOR BASE PLATE AND THE TOP OF THE CONCRETE PEDESTAL.
12. NUMBER 4 BARE COPPER GROUND. THE GROUND WIRE SIZE SHALL COMPLY WITH MINIMUM NEC CODE REQUIREMENTS.
13. EXTEND THE GROUND WIRE 18 INCHES ABOVE THE CONCRETE SLAB.
14. THE LIGHT FIXTURE SHALL BE EQUIPPED WITH A PHOTOCELL FOR AUTOMATIC OPERATION.

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JAMES G. HOLT
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Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

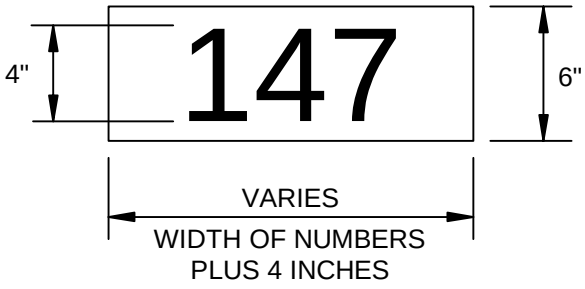
CITY OF CALIPATRIA
CALIFORNIA

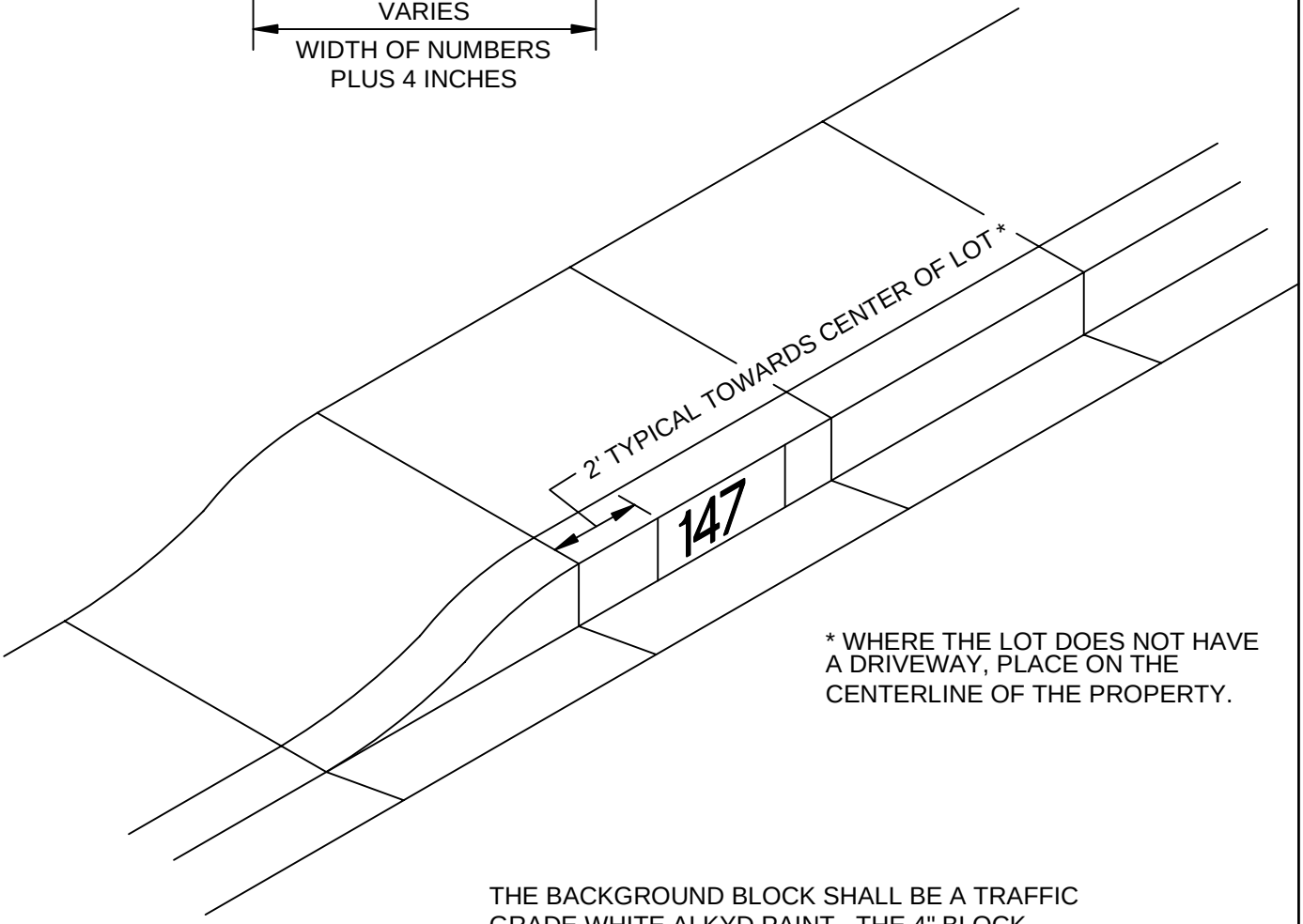
# CITY OF CALIPATRIA

## TYPICAL DOUBLE STREET LIGHT FOR PARKS AND RETENTION BASINS DETAIL

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 133




* WHERE THE LOT DOES NOT HAVE A DRIVEWAY, PLACE ON THE CENTERLINE OF THE PROPERTY.

THE BACKGROUND BLOCK SHALL BE A TRAFFIC GRADE WHITE ALKYD PAINT. THE 4" BLOCK NUMBERS WILL BE BLACK IN COLOR, USING A 1" STROKE, OF THE STYLE SHOWN. THE BLACK PAINT WILL ALSO BE OF TRAFFIC GRADE ALKYD. CHARACTERS WILL NOT BE HAND DRAWN BUT CUT FROM STENCILS AND SHALL BE OF A CONSISTENT PATTERN.

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## CURB IDENTIFICATION OF BUILDING ADDRESS NUMBEF

PREPARED BY:
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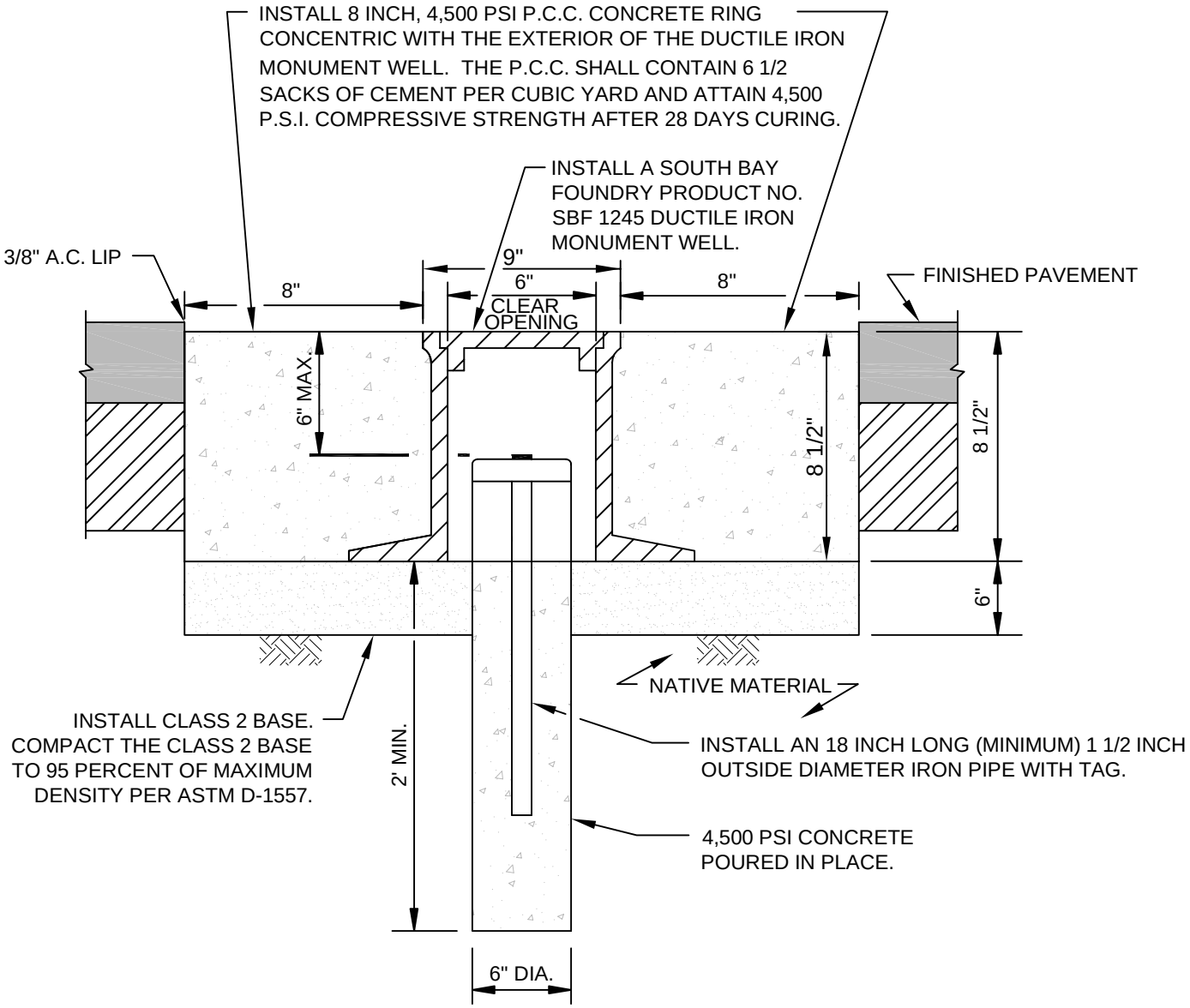
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 134




NOTES:

1. THE PERMANENT STREET MONUMENT SHOWN HEREON IS TO BE INSTALLED AT STREET INTERSECTIONS OR OTHER LOCATIONS AS REQUIRED.
2. ALL MATERIALS USED IN MANUFACTURING OF MONUMENT WELL SHALL CONFORM TO ASTM 48, CLASS 35B.
3. CASTINGS SHALL BE DIPPED IN BLACK, BITUMINOUS PAINT.
4. FRAME AND COVER SHALL MEET H-20 WHEEL LOADING.

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# CITY OF CALIPATRIA
## STANDARD SURVEY MONUMENT INSTALLATION

PREPARED BY:
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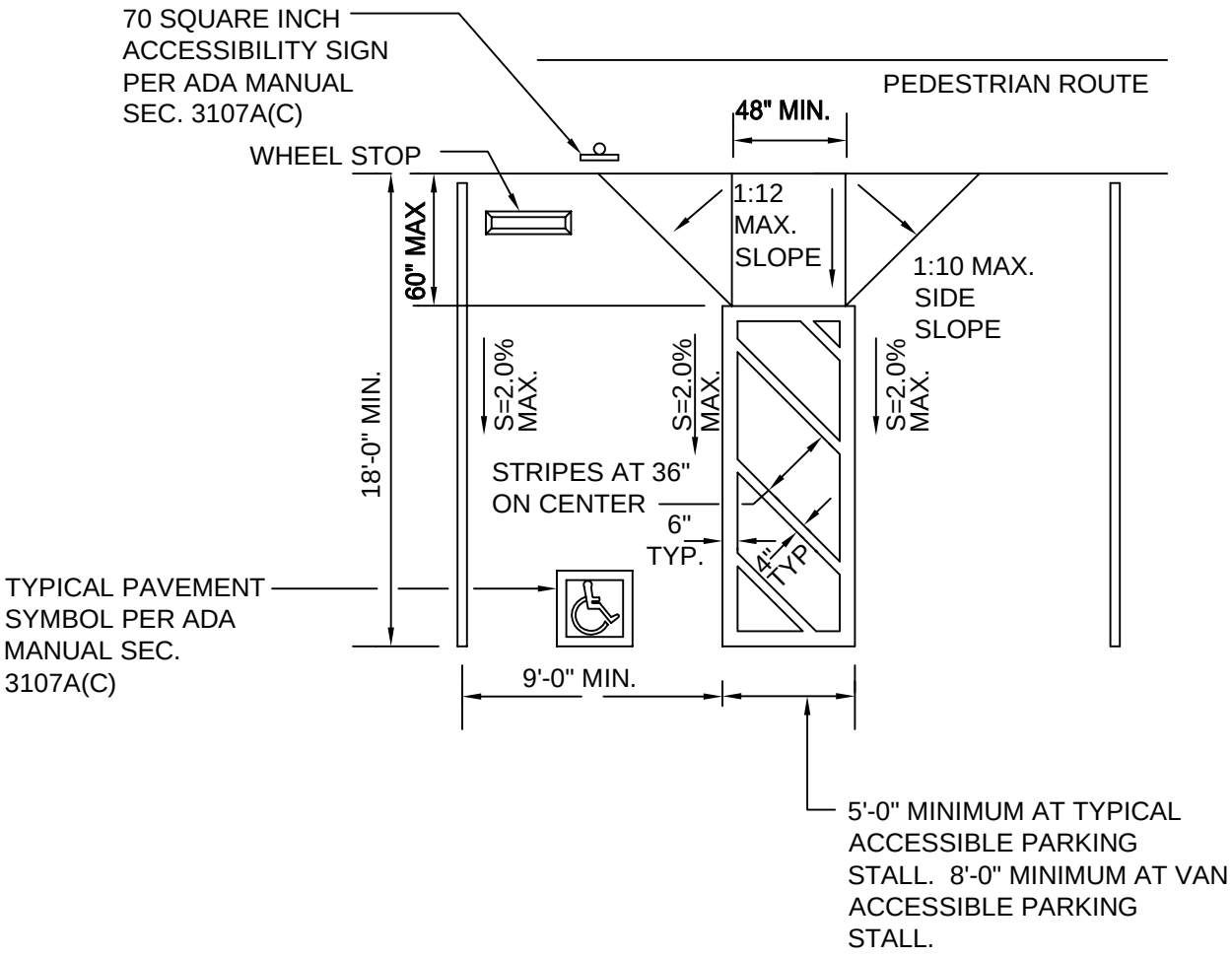
EXP. DATE: 12-31-06

SHEET NO.
S 135

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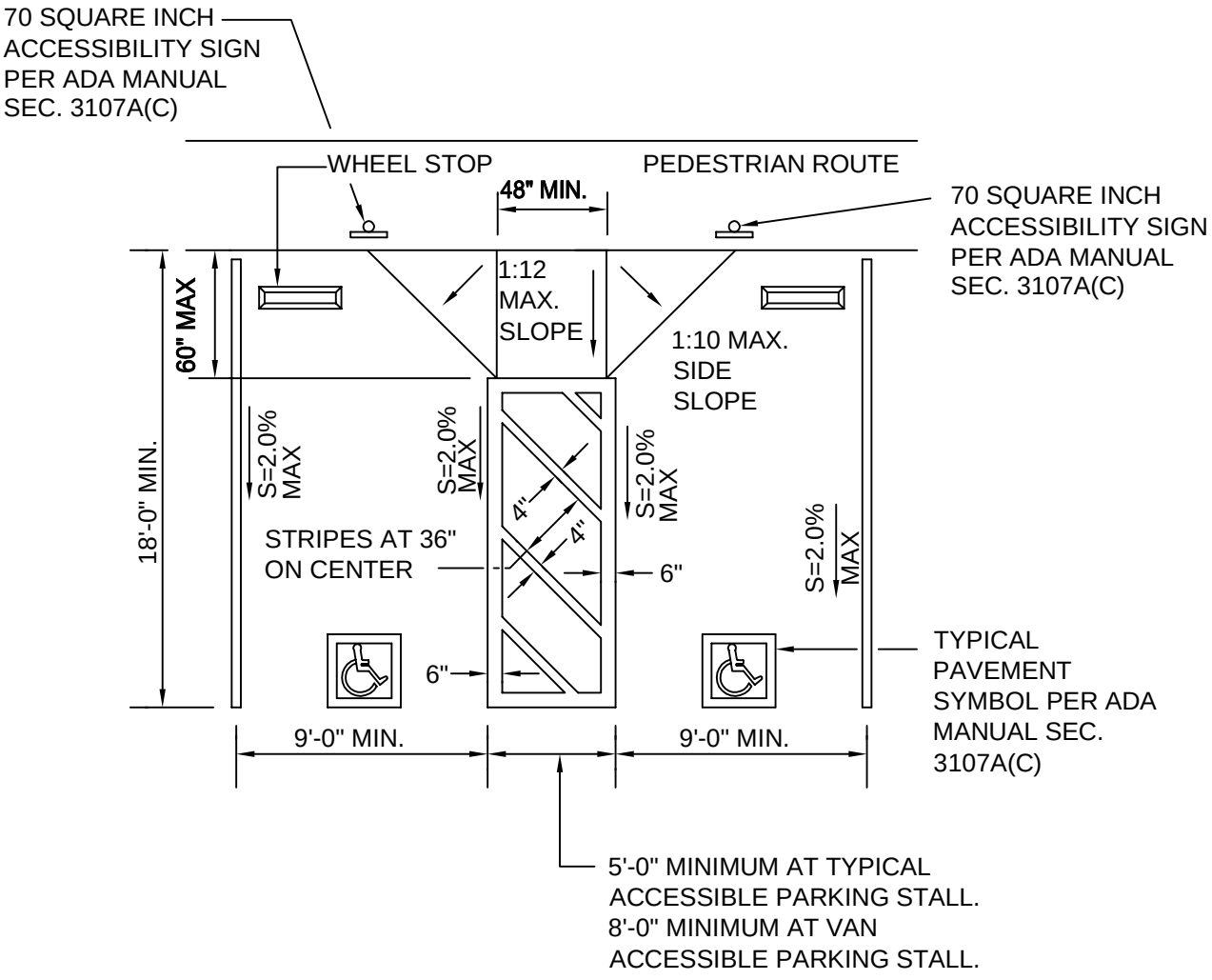
# CITY OF CALIPATRIA

## SINGLE HANDICAP ADA PARKING STALLS

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 136

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CALIFORNIA

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## DOUBLE HANDICAP ADA PARKING STALLS

PREPARED BY:
JAMES G. "JACK" HOLT
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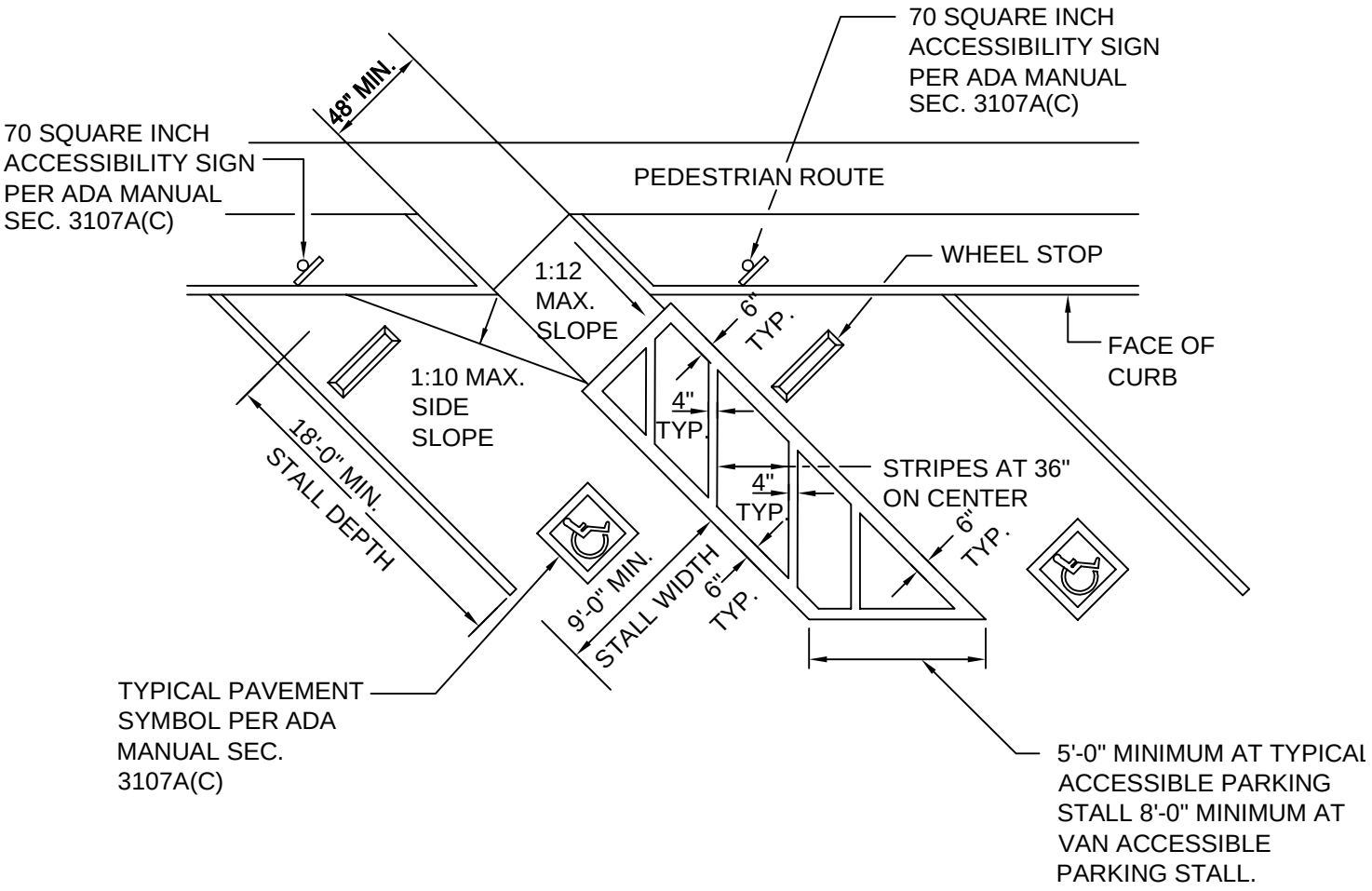
EXP. DATE: 12-31-06

SHEET NO.
S 137

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## DIAGONAL HANDICAP ADA PARKING STALLS

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JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

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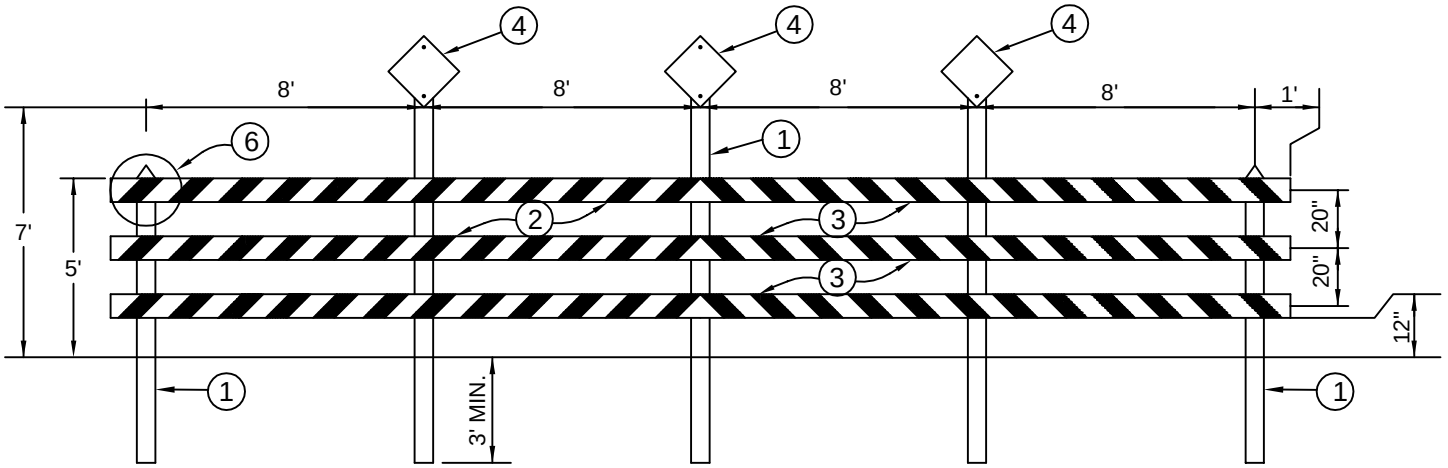
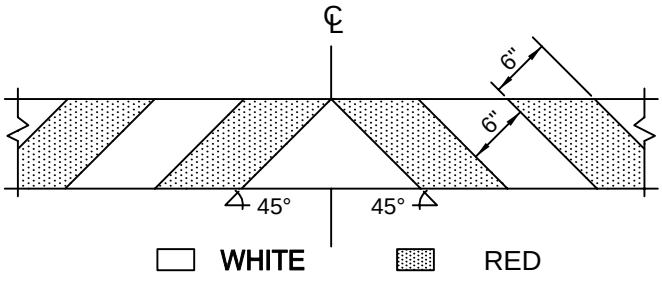
S 138




| WIDTH OF ROADWAY | NUMBER OF PANELS | NO. OF N2 | TOTAL LENGTH OF RAILS |
|---|---|---|---|
| 20' ALLEY | 2 | 1 | 18' |
| 28' | 3 | 2 | 26' |
| 40' | 4 | 3 | 38' |
| 46' | 4 | 3 | 44' |
| 54' | 5 | 4 | 52' |
| 60' | 7 | 4 | 58' |

## 3 REFLECTIVE TAPE DETAIL

NOTE: WHEN RAILS ARE FACING IN TWO DIRECTIONS, THE SAME NUMBER OF REFLECTORIZED RAILS SHALL BE ON EACH SIDE.

NOTES:

1. POST IS TO BE 6" x 6" x VARIES, TIMBER S.4S.
2. THREE (3) CROSS PANELS TO BE 2" x 8" x VARIES, TIMBER S.4S.
3. REFLECTIVE TAPE CONSISTS OF REFLECTIVE DIAMOND GRADE SHEETING WITH HIGH TACK PRESSURE SENSITIVE ADHESIVE, WHITE AND RED TAPE WITH 6" WIDTH (SEE DETAIL ABOVE).
4. OBJECT MARKER RED TYPE N2 SIGN REFLECTOR SHALL CONFORM TO STATE OF CALIFORNIA STANDARD SPECIFICATION AND TO FHWA TYPE IIIA OR VISUAL IMPACT PERFORMANCE (VIP) REFLECTIVE SHEETING.
5. USE 3/8" DIAMETER, 4 1/4" LONG LAG BOLTS (GALVANIZED) FOR FASTENING ITEM 2 TO ITEM 1 (MINIMUM 4 BOLTS PER CONNECTION).
6. RAILS FACING TRAFFIC TO BE REFLECTORIZED.
7. ALL TIMBER TO BE S.4S. WEATHER RESISTANT.

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CITY OF CALIPATRIA
TEMPORARY BARRICADE DETAIL

PREPARED BY:
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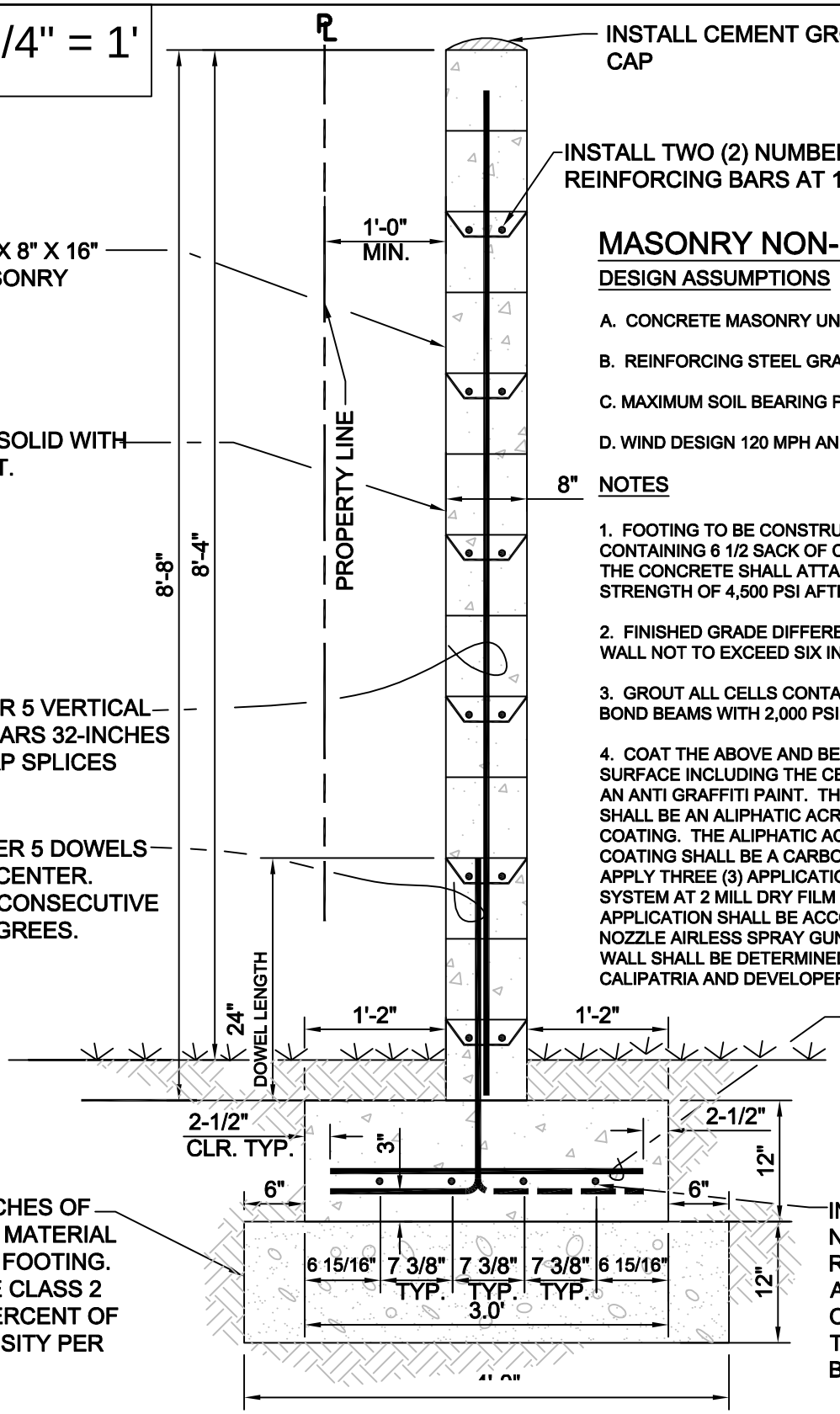
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 139

SCALE 3/4" = 1'




## MASONRY NON-BEARING WAL

### DESIGN ASSUMPTIONS

A. CONCRETE MASONRY UNIT PER ASTM C90.

B. REINFORCING STEEL GRADE 40.

C. MAXIMUM SOIL BEARING PRESSURE = 1000 PSF.

D. WIND DESIGN 120 MPH AND SEISMIC ZONE 4.

### NOTES

1. FOOTING TO BE CONSTRUCTED OF CONCRETE CONTAINING 6 1/2 SACK OF CEMENT PER CUBIC YARD THE CONCRETE SHALL ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS.

2. FINISHED GRADE DIFFERENCE ON EACH SIDE OF WALL NOT TO EXCEED SIX INCHES.

3. GROUT ALL CELLS CONTAINING REBAR. INCLUDIN BOND BEAMS WITH 2,000 PSI GROUT.

4. COAT THE ABOVE AND BELOW GRADE WALL SURFACE INCLUDING THE CEMENT GROUT CAP WITH AN ANTI GRAFFITI PAINT. THE COATING APPLIED SHALL BE AN ALIPHATIC ACRYLIC POLYURETHANE COATING. THE ALIPHATIC ACRYLIC POLYURETHANE COATING SHALL BE A CARBOLINE CARBOTHANE. APPLY THREE (3) APPLICATIONS OF THE COATING SYSTEM AT 2 MILL DRY FILM THICKNESS PER COAT. APPLICATION SHALL BE ACCOMPLISHED WITH A WIDE NOZZLE AIRLESS SPRAY GUN. THE COLOR OF THE WALL SHALL BE DETERMINED BY THE CITY OF CALIPATRIA AND DEVELOPER/OWNER.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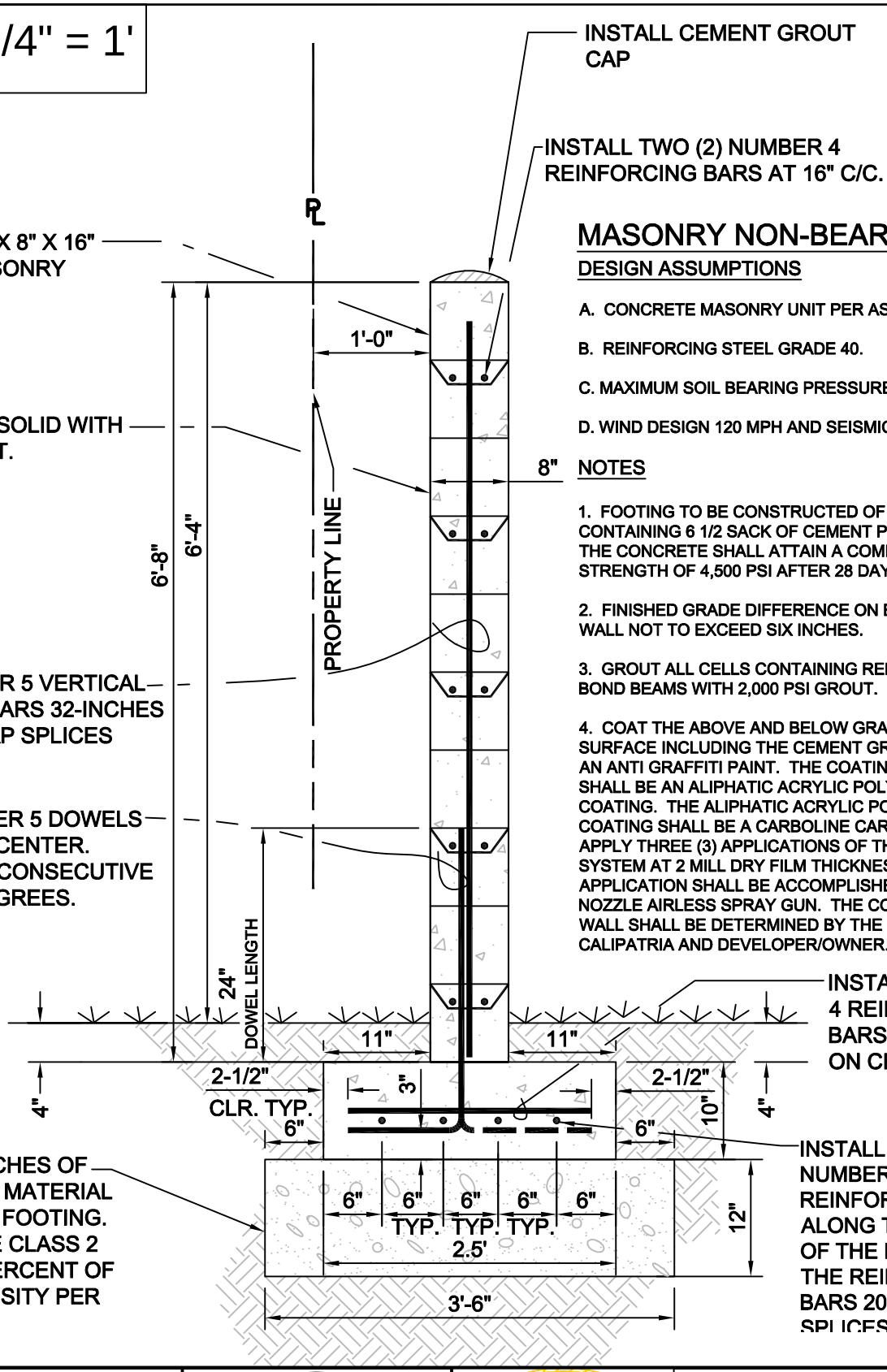
MASONRY NON-BEARING 8'-0 HIGH WALL

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 140

SCALE 3/4" = 1'




## MASONRY NON-BEARING WAL

### DESIGN ASSUMPTIONS

A. CONCRETE MASONRY UNIT PER ASTM C90.

B. REINFORCING STEEL GRADE 40.

C. MAXIMUM SOIL BEARING PRESSURE = 1000 PSF.

D. WIND DESIGN 120 MPH AND SEISMIC ZONE 4.

### NOTES

1. FOOTING TO BE CONSTRUCTED OF CONCRETE CONTAINING 6 1/2 SACK OF CEMENT PER CUBIC YARD THE CONCRETE SHALL ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS.

2. FINISHED GRADE DIFFERENCE ON EACH SIDE OF WALL NOT TO EXCEED SIX INCHES.

3. GROUT ALL CELLS CONTAINING REBAR. INCLUDIN BOND BEAMS WITH 2,000 PSI GROUT.

4. COAT THE ABOVE AND BELOW GRADE WALL SURFACE INCLUDING THE CEMENT GROUT CAP WITH AN ANTI GRAFFITI PAINT. THE COATING APPLIED SHALL BE AN ALIPHATIC ACRYLIC POLYURETHANE COATING. THE ALIPHATIC ACRYLIC POLYURETHANE COATING SHALL BE A CARBOLINE CARBOTHANE. APPLY THREE (3) APPLICATIONS OF THE COATING SYSTEM AT 2 MILL DRY FILM THICKNESS PER COAT. APPLICATION SHALL BE ACCOMPLISHED WITH A WIDE NOZZLE AIRLESS SPRAY GUN. THE COLOR OF THE WALL SHALL BE DETERMINED BY THE CITY OF CALIPATRIA AND DEVELOPER/OWNER.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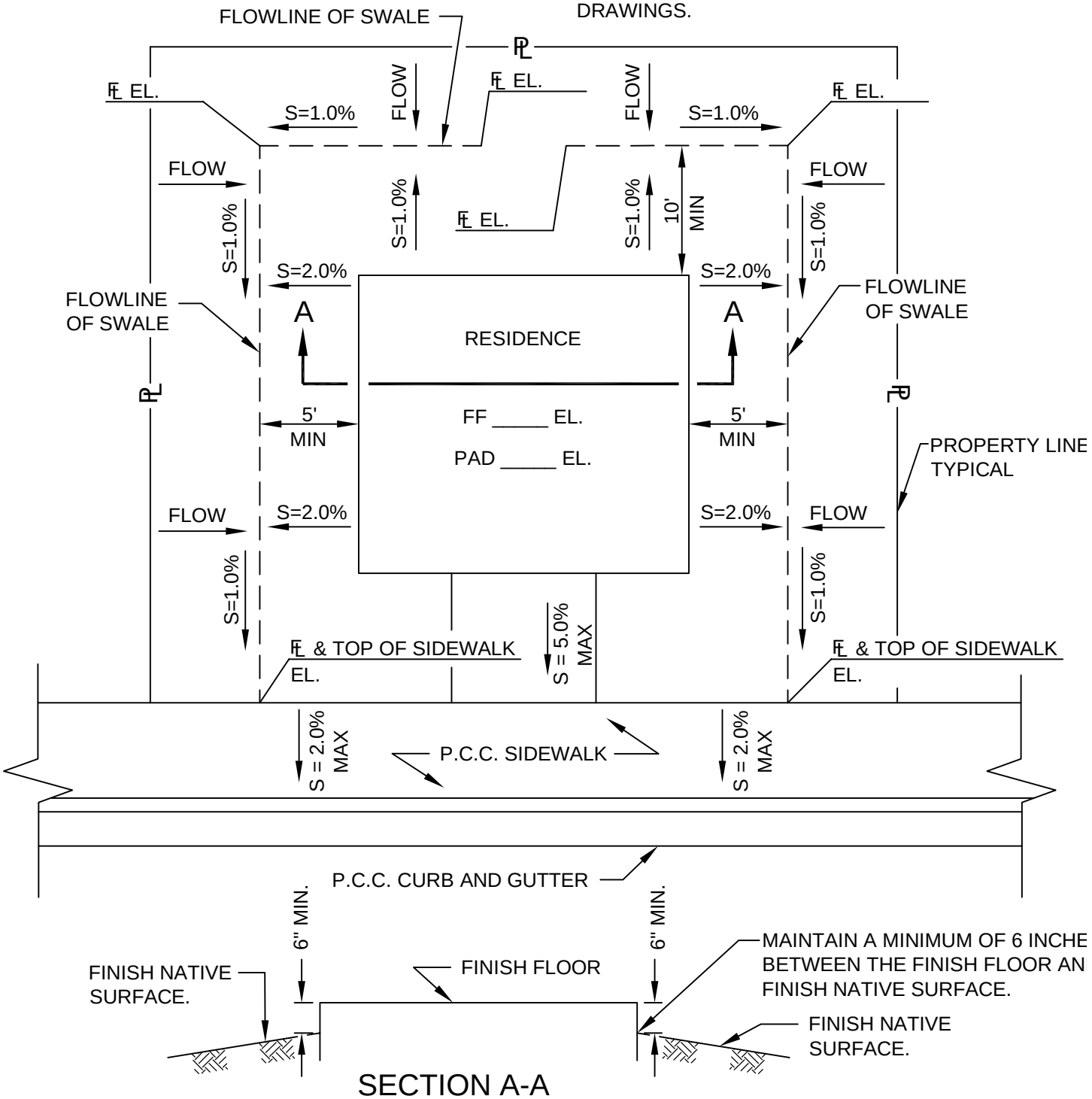
MASONRY NON-BEARING 6'-0 HIGH WALL

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 141

NOTE: THE DRIVEWAYS, SIDEWALKS AND CURB AND GUTTER FLOWLINE ELEVATIONS SHALL BE ILLUSTRATED ON THE GRADING SITE PLAN AND PLAN AND PROFILE DRAWINGS.




## SECTION A-A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# CITY OF CALIPATRIA
## TYPICAL RESIDENTIAL LC SITE GRADING

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
S 142

# CITY OF CALIPATRIA
# SANITARY SEWER IMPROVEMENT STANDARD DETAILS




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CITY OF CALIPATRIA

SANITARY SEWER INDEX

*PREPARED BY:*

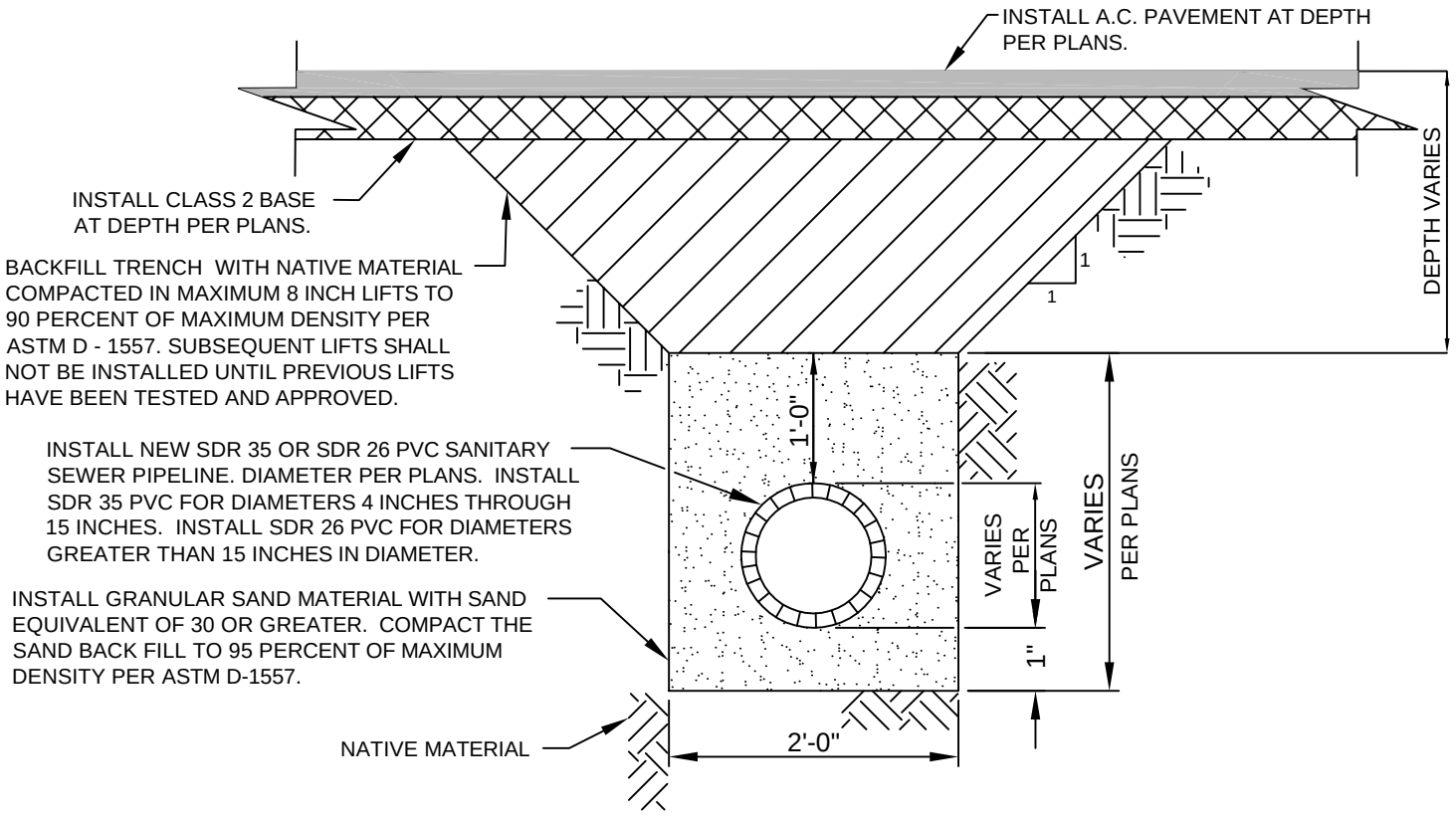
*JAMES G. "JACK" HOLT*

*R.C.E. NO. 31773*

*EXP. DATE: 12-31-06*

SHEET NO.

*SS 100*




# NOTES:

1. WHERE THE TRENCH DEPTH EXCEEDS 3', THE PIPELINE SUBCONTRACTOR SHALL UTILIZE ANY OF THE FOLLOWING METHODS FOR EXCAVATION AND TRENCH STABILIZATION. THE METHOD OF EXCAVATION AND TRENCH STABILIZATION SHALL BE APPROVED BY CAL OSHA.

   A) SHORING AS APPROVED BY THE ENGINEER.
   B) SLOPING BOTH TRENCH SIDES AT A 1:1 MAXIMUM ABOVE THE BOTTOM 3 FEET.
   C) "STEPPING OR BENCHING" BOTH TRENCH SIDES AT 3 FOOT VERTICAL INCREMENTS, THE WIDTH OF EACH BENCH SHALL BE THE SAME AS THE BOTTOM 3 FEET.
   D) USE OF A STEEL SHIELD.
   E) USE OF TRENCH JACKS.

2. WHEN THE PIPE TRENCH IS UNSTABLE DUE TO GROUND WATER INFILTRATION PLACE 1 FOOT OF 3/4-INCH DIAMETER ROUND ROCK BENEATH THE SANITARY SEWER PIPELINE.

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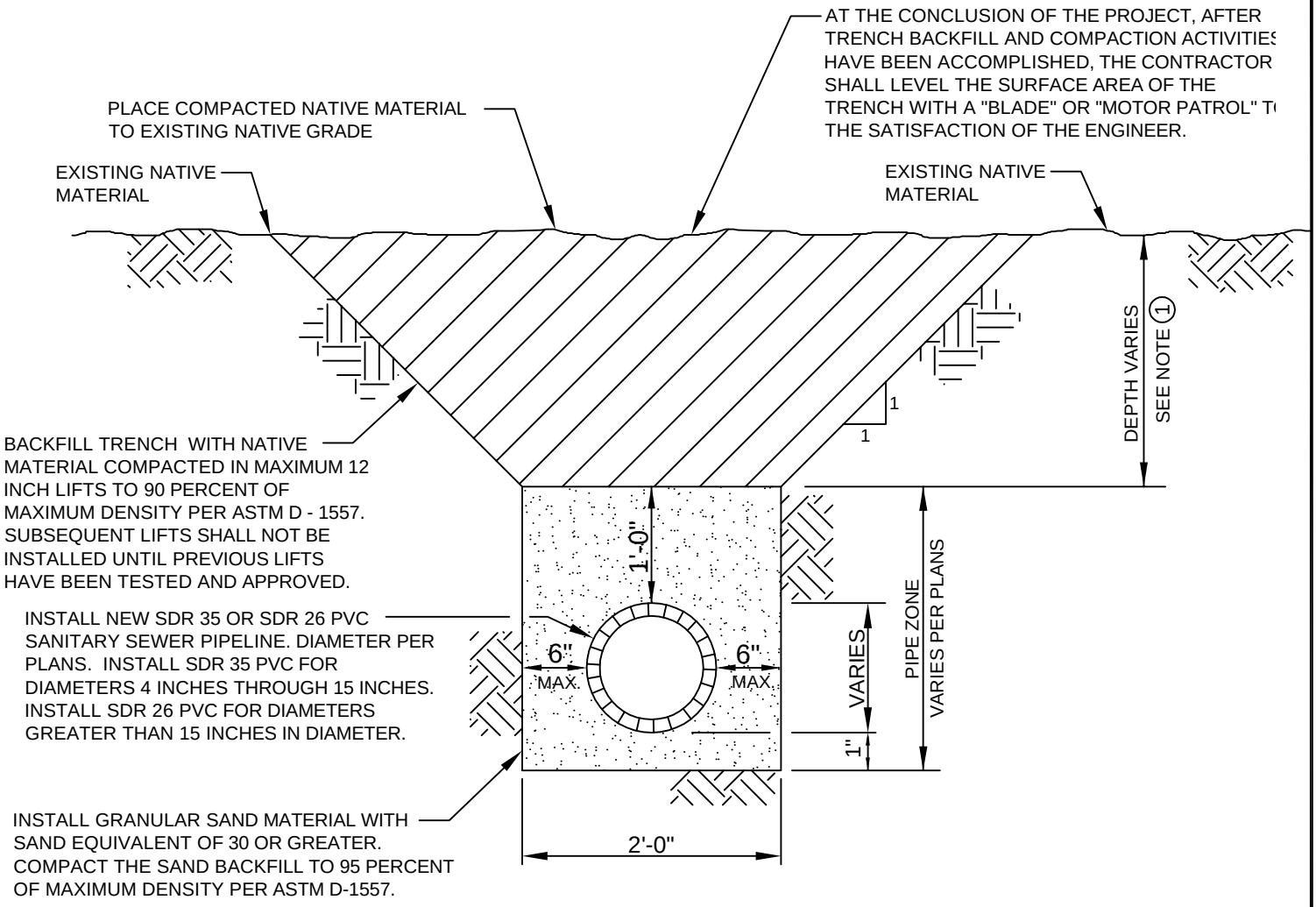
CITY OF CALIPATRIA
TYPICAL SANITARY SEWER MA
TRENCH IN PAVED AREAS

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SS 101




## NOTES:

1. TRENCH DEPTH SHALL HAVE A MINIMUM OF 3'-6".

2. WHERE THE PERMIT OF A GOVERNING AGENCY SETS FORTH REQUIREMENTS MORE STRINGENT THAN THOSE STATED HEREIN, THE CONTRACTOR SHALL ADHERE TO THE AGENCY REQUIREMENTS.

3. WHERE THE TRENCH DEPTH EXCEEDS 3', THE PIPELINE CONTRACTOR SHALL UTILIZE ANY OF THE FOLLOWING METHODS FOR EXCAVATION AND TRENCH STABILIZATION. THE METHOD OF EXCAVATION AND TRENCH STABILIZATION SHALL BE APPROVED BY CAL OSHA

   A) SHORING AS APPROVED BY THE ENGINEER.
   B) SLOPING BOTH TRENCH SIDES AT A 1:1 MAXIMUM ABOVE THE BOTTOM 3 FEET.
   C) "STEPPING OR BENCHING" BOTH TRENCH SIDES AT 3 FOOT VERTICAL INCREMENTS, THE WIDTH OF EACH BENCH SHALL BE THE SAME AS THE BOTTOM 3 FEET.
   D) USE OF A STEEL SHIELD.
   E) USE OF TRENCH JACKS.

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CALIFORNIA

# CITY OF CALIPATRIA

## TYPICAL SANITARY SEWER MA TRENCH IN UNPAVED AREAS

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SS 102

SAWCUT EXISTING A.C. PAVEMENT FOR THE FULL DEPTH OF THE A.C. PAVEMENT WHERE APPLICABLE. REMOVE AND DISPOSE OF A.C. PAVEMENT AND UNDERLYING SUBBASE AND NATIVE MATERIAL.

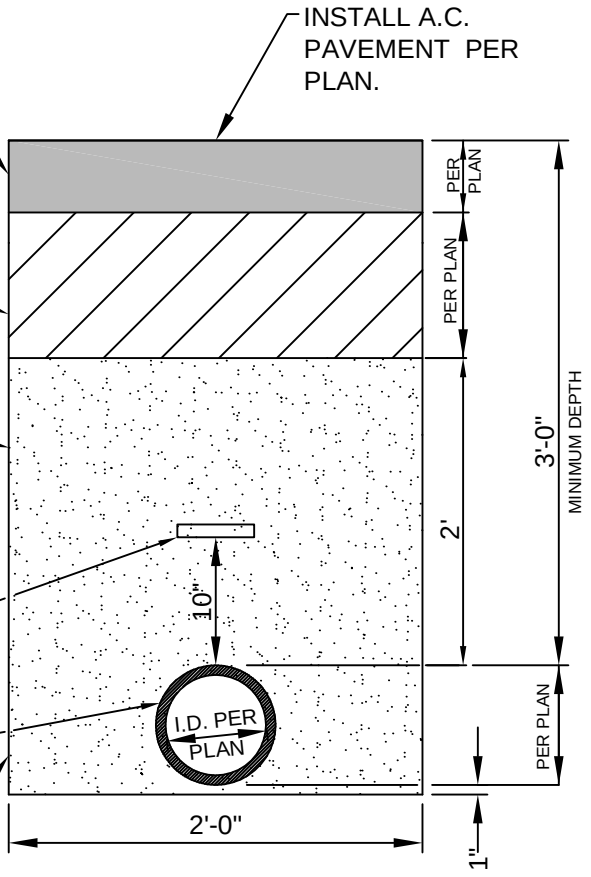
INSTALL 3/4" MAXIMUM CLASS 2 BASE. COMPACT TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D- 1557 PER PLAN.

INSTALL GRANULAR SAND FILL WITH A SAND EQUIVALENT OF 30 OR GREATER. COMPACT TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557.

INSTALL 6-INCH WIDE MAGNETIC DETECTOR TAPE.

INSTALL AWWA C-900, CLASS 150 OR AWWA C-905, DR 25, PVC PIPELINE. SEE PLAN FOR DIAMETER SIZE OF PIPELINE.

REMOVE AND DISPOSE OF EXISTING NATIVE MATERIAL WITHIN THE PIPE TRENCH FOR THE PIPELINE INSTALLATION.




The Holt Group

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CALIFORNIA

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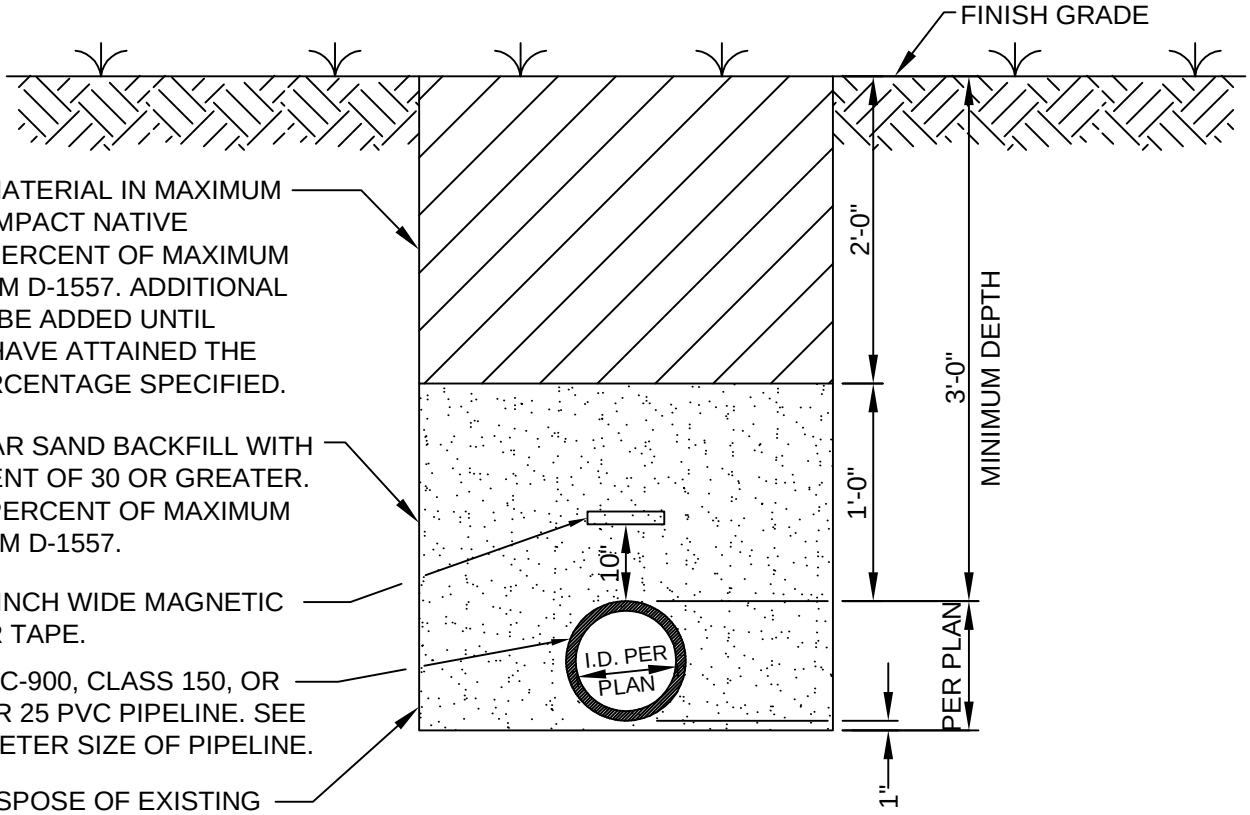
TYPICAL SANITARY SEWER FORCEM
TRENCH IN PAVED AREAS

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SS 103




INSTALL NATIVE MATERIAL IN MAXIMUM 1-FOOT LIFTS. COMPACT NATIVE MATERIAL TO 85 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557. ADDITIONAL LIFTS SHALL NOT BE ADDED UNTIL PREVIOUS LIFTS HAVE ATTAINED THE COMPACTION PERCENTAGE SPECIFIED.

INSTALL GRANULAR SAND BACKFILL WITH A SAND EQUIVALENT OF 30 OR GREATER. COMPACT TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557.

INSTALL 6-INCH WIDE MAGNETIC DETECTOR TAPE.

INSTALL AWWA C-900, CLASS 150, OR AWWA C-905, DR 25 PVC PIPELINE. SEE PLAN FOR DIAMETER SIZE OF PIPELINE.

REMOVE AND DISPOSE OF EXISTING NATIVE MATERIAL WITHIN THE PIPE TRENCH FOR THE PIPELINE INSTALLATION.

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STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

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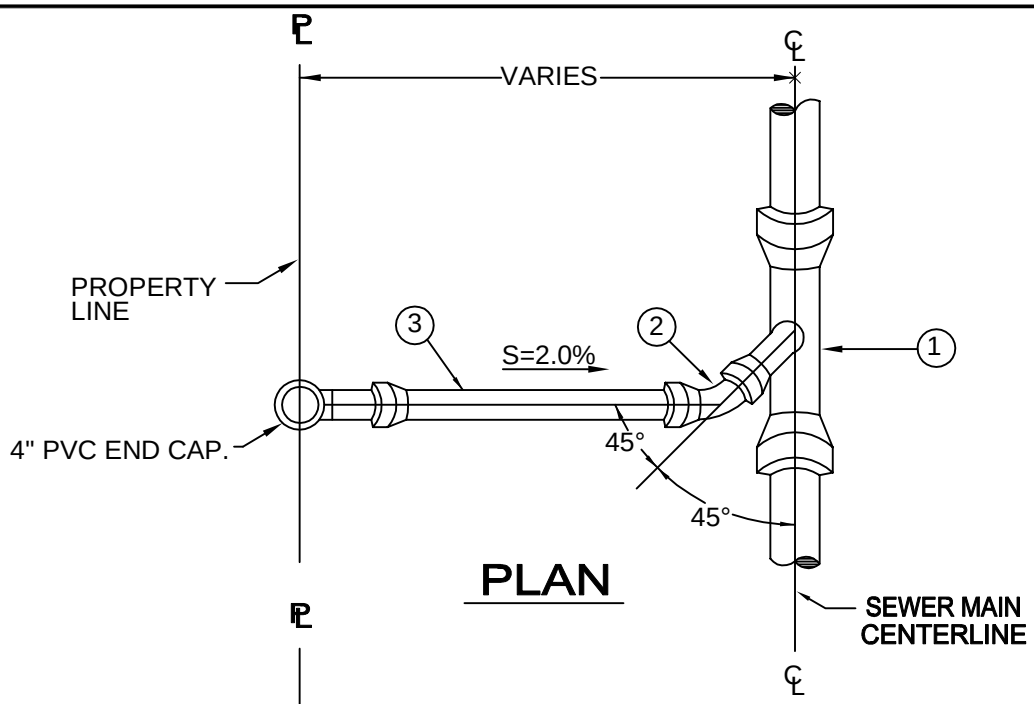
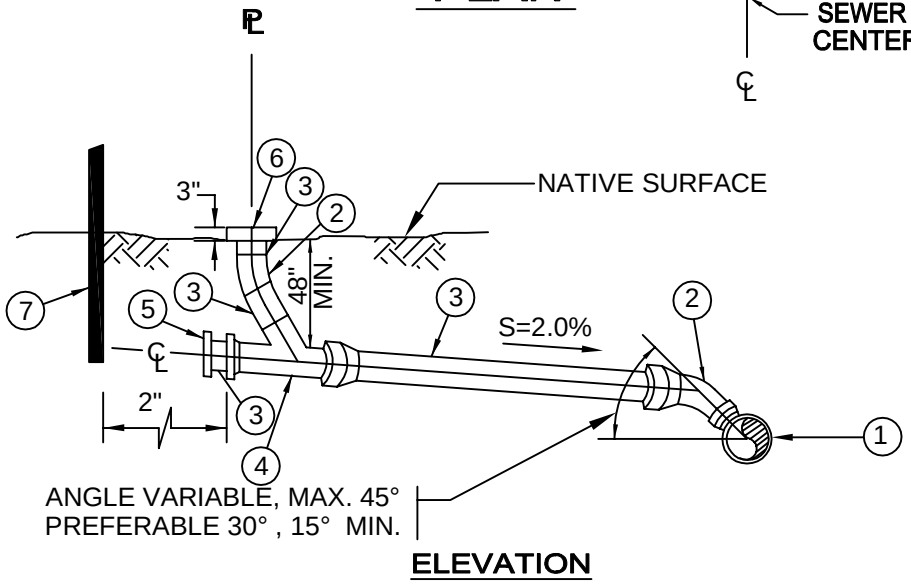
TYPICAL SANITARY SEWER FORCEM. TRENCH IN AREAS OUTSIDE OF TH PAVEMENT

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SS 104




## KEYNOTES

1. PIPE MAIN SIZE x 4-INCH SDR 35 PVC WYE FITTING.
2. INSTALL 4 INCH 45 DEGREE SDR 35 PVC FITTING.
3. INSTALL 4" SDR 35 PVC SANITARY SEWER PIPE SECTION.
4. INSTALL 4 INCH SDR 35 PVC WYE FITTING.
5. INSTALL 4 INCH SDR 35 PVC END CAP.
6. PLACE A CLEAN-OUT AT THE PROPERTY LINE. PLACE A 4 INCH SDR 35 PVC END CAP AT THE CLEAN-OUT TERMINATION POINT.
7. INSTALL A 2X4 AT THE END OF EACH LATERAL EXTENDING FROM THE INVERT OF THE LATERAL TERMINATION TO A POINT 2-FEET ABOVE THE EXISTING NATIVE SURFACE.

## NOTES:

A. SEWER LATERALS SHALL HAVE A MINIMUM SLOPE OF 2 PERCENT SLOPE EXCEPT AS OTHERWISE SPECIFICALLY NOTED ON THE PLANS.

B. END CAPS SHALL BE COMPOSED OF SDR 35 PVC WITH O-RING GASKETS.

C. IN NO CASE SHALL A LATERAL CONNECT TO THE SEWER MAIN DIRECTLY ON TOP OF THE PIPE.

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# CITY OF CALIPATRIA

## TYPICAL SANITARY SEWER LATERAL

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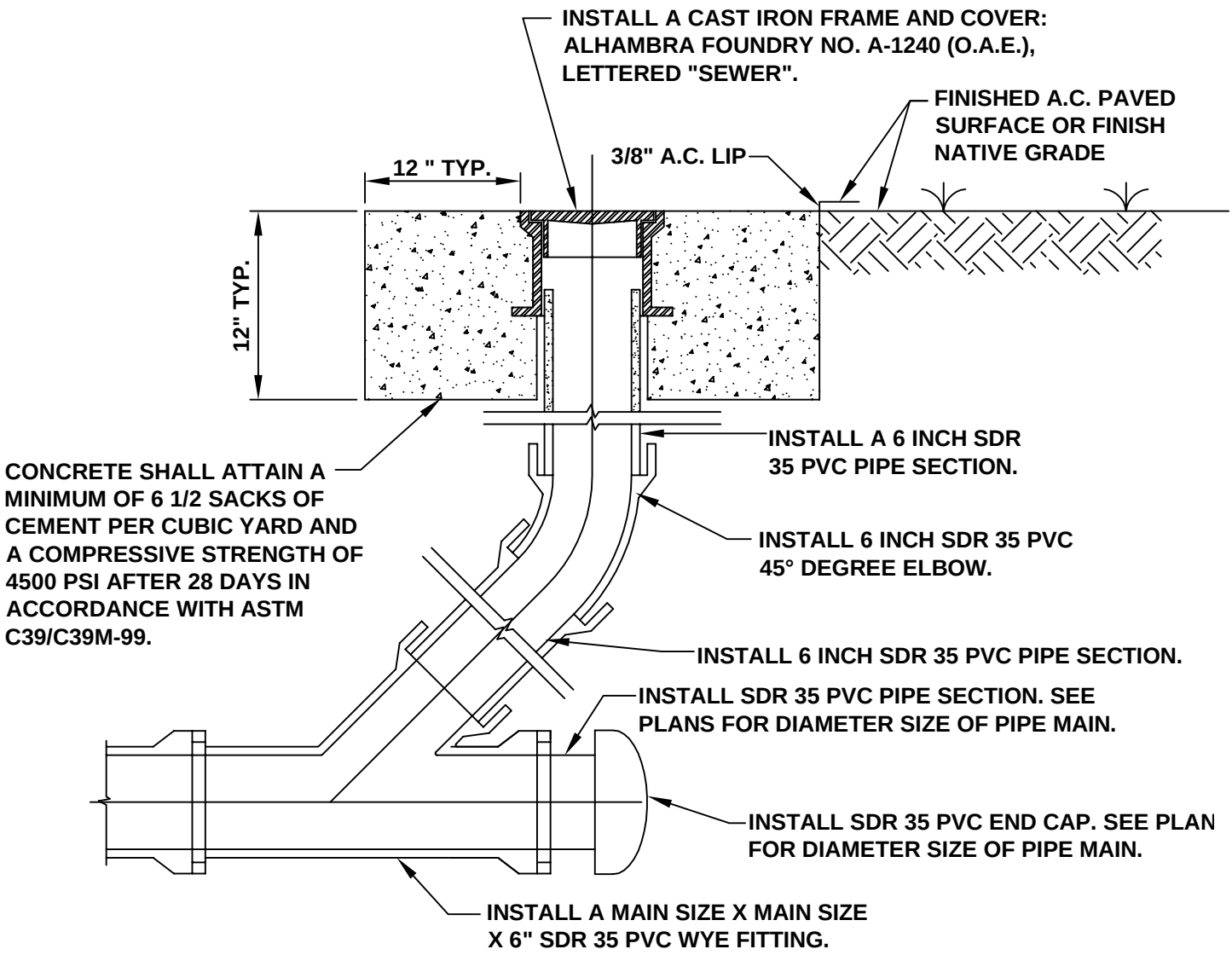


NOTE: CLEANOUT RING AND COVER SHALL BE RAISED TO FINISHED GRADE AND SUPPORT COLLAR INSTALLED AFTER PAVING OR FINISH GRADING IS COMPLETED.

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**TYPICAL SANITARY SEWER CLEANC IN PAVED OR NATIVE AREAS FOR GRAVITY SEWER PIPELINES**

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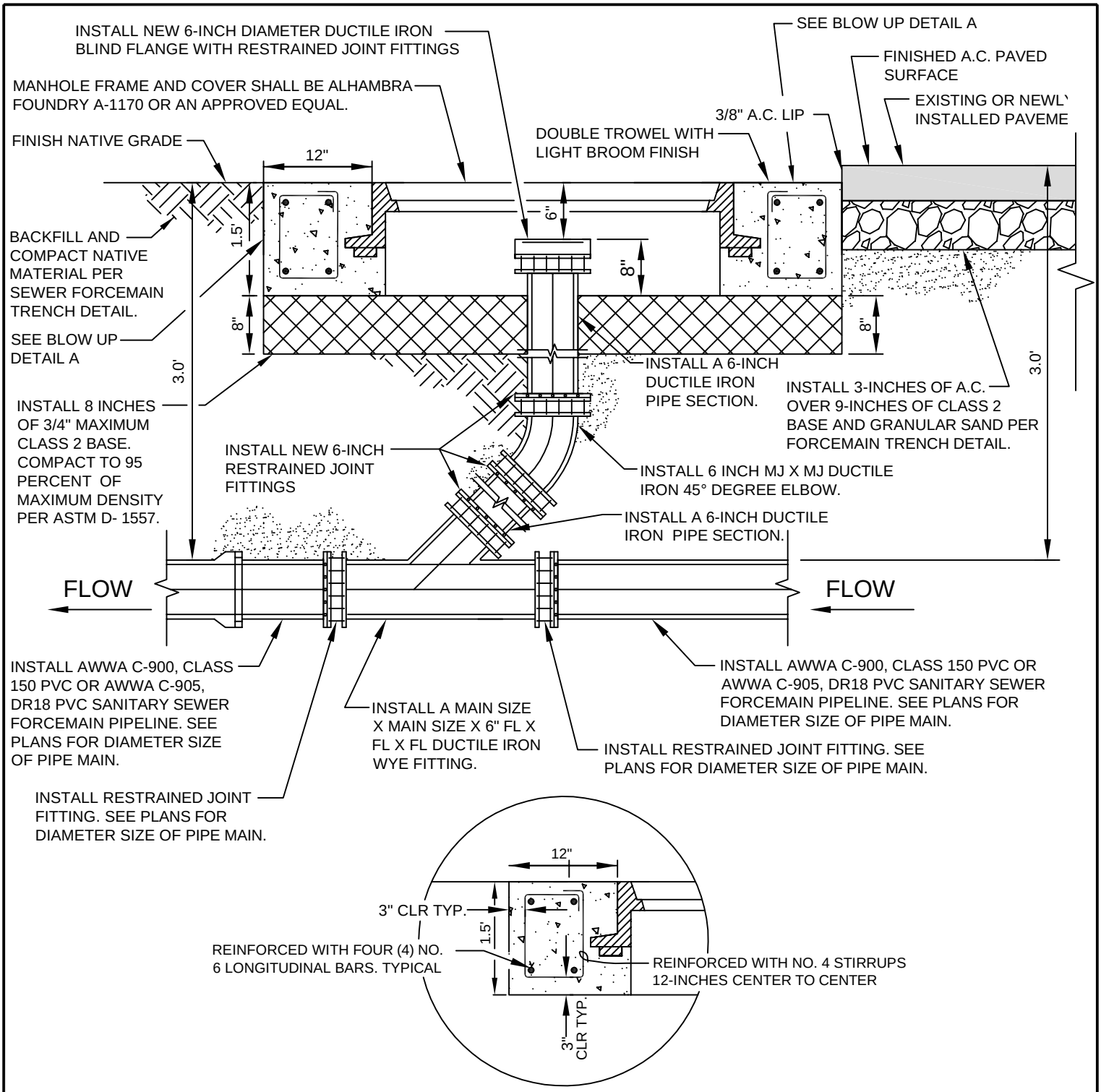
SHEET NO.
SS 106







DETAIL A

NOTE: MANHOLE FRAME AND COVER AND P.C.C. SUPPORT COLLAR SHALL BE RAISED TO FINISHED GRADE AFTER NEW A.C. PAVEMENT IS INSTALLED.

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TYPICAL SANITARY SEWER CLEANO IN PAVED OR NATIVE AREAS FOR SANITARY SEWER FORCEMAIN PIPELINES

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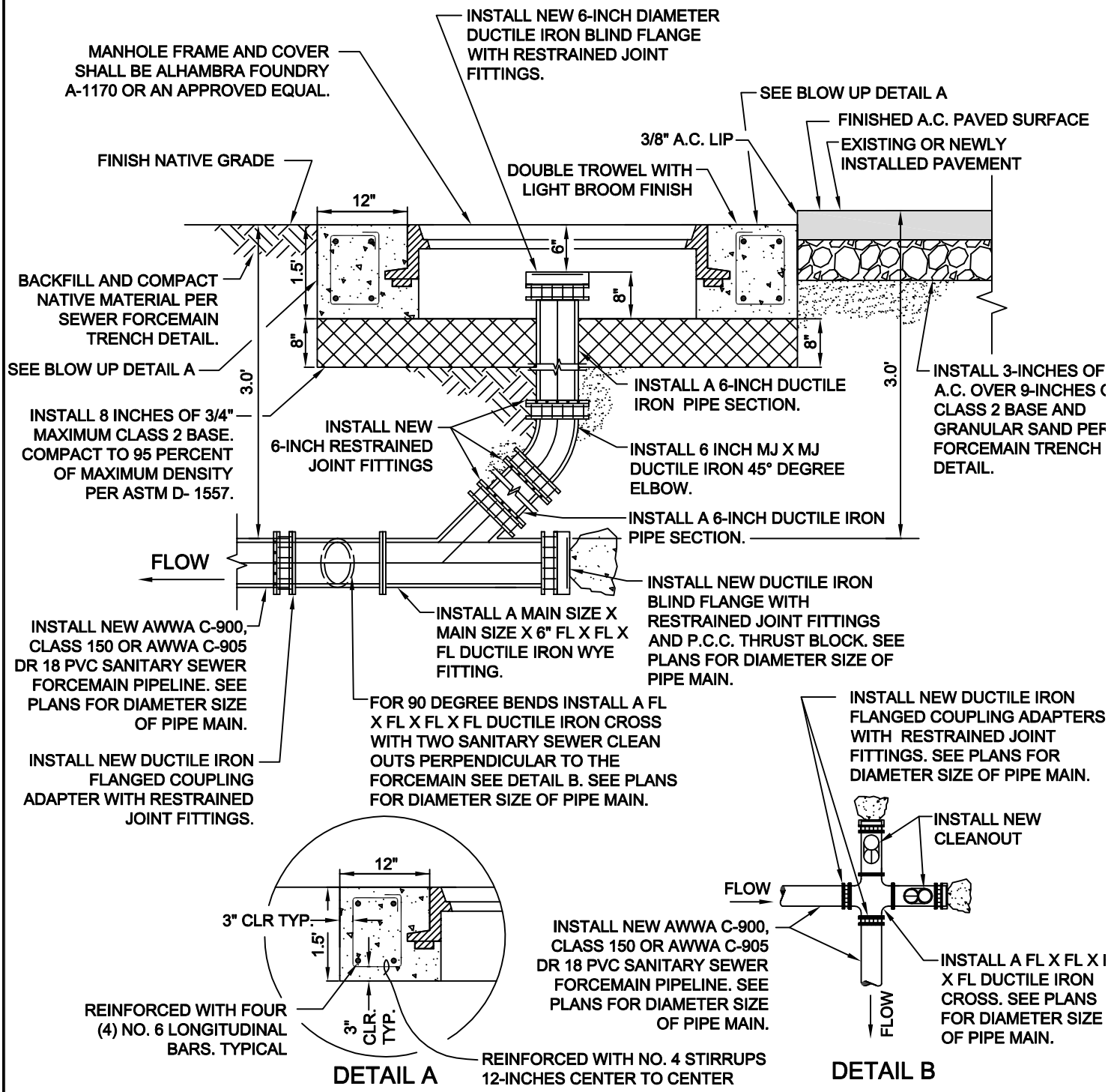
EXP. DATE: 12-31-06

SHEET NO.
SS 107




NOTE: MANHOLE FRAME AND COVER SHALL BE RAISED TO FINISHED GRADE AND SUPPORT COLLAR INSTALLED AFTER PAVING OR

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TYPICAL SANITARY SEWER CLEANOUT IN PAVED OR NATIVE AREAS FOR SANITARY SEWER FORCEMAIN PIPELINES FOR 90° BEN

PREPARED BY:
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EXP. DATE: 12-31-06

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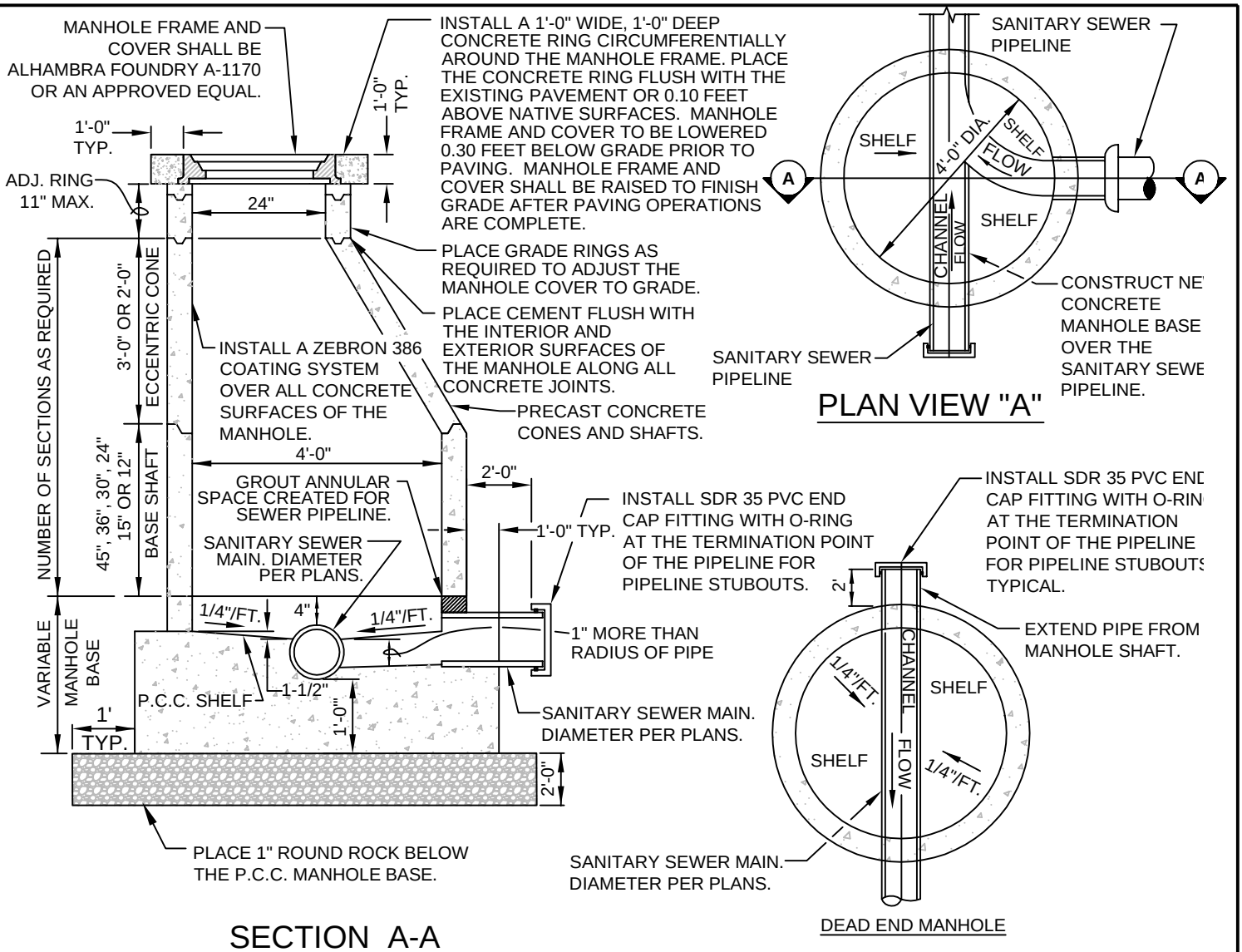


## NOTES:

1. EXCEPT AS NOTED HEREON, THE PRECAST UNITS SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH ASTM C-478. THE CURING OF THE PRECAST UNITS SHALL CONFORM TO SECTION 207-2.7 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. THE MINIMUM WALL THICKNESS SHALL BE 6 INCHES.
2. THE CONCRETE SHELF OF THE MANHOLE SHALL BE SLOPED AT 1/4 INCH PER FOOT. THE SHELF SHALL RECEIVE A DOUBLE TROWEL FINISH . THE CONCRETE UTILIZED FOR THE CONCRETE BASE AND MANHOLE COLLAR SHALL CONTAIN 6 1/2 SACKS OF CONCRETE PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 P.S.I. AFTER 28 DAYS CURING.
3. WHENEVER PRACTICABLE, THE FRAME AND COVER SHALL BE PLACED DIRECTLY OVER THE INLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON THE PLANS.
4. MANHOLE SHAFTS, CONES AND GRADE RINGS SHALL BE SET PLUMB.
5. PLACE CEMENT GROUT IN THE OPENINGS BETWEEN PRECAST MANHOLE UNITS AND GRADE RINGS FLUSH WITH THE INTERIOR AND EXTERIOR SURFACES PRIOR TO APPLYING THE ZEBRON COATING OR COMPLETING BACKFILL WORK AROUND THE EXTERIOR OF THE MANHOLE.
6. THE PIPELINE INVERTS SHALL DROP 0.10 FEET BETWEEN INLET AND OUTLET PIPELINES AT 90 DEGREE ANGLES.
7. VERTICAL WALL OF CONE SHALL BE OPPOSITE OUTLET SIDE OF MANHOLE.

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## 4 FOOT DIAMETER P.C.C. MANHOLE

PREPARED BY:
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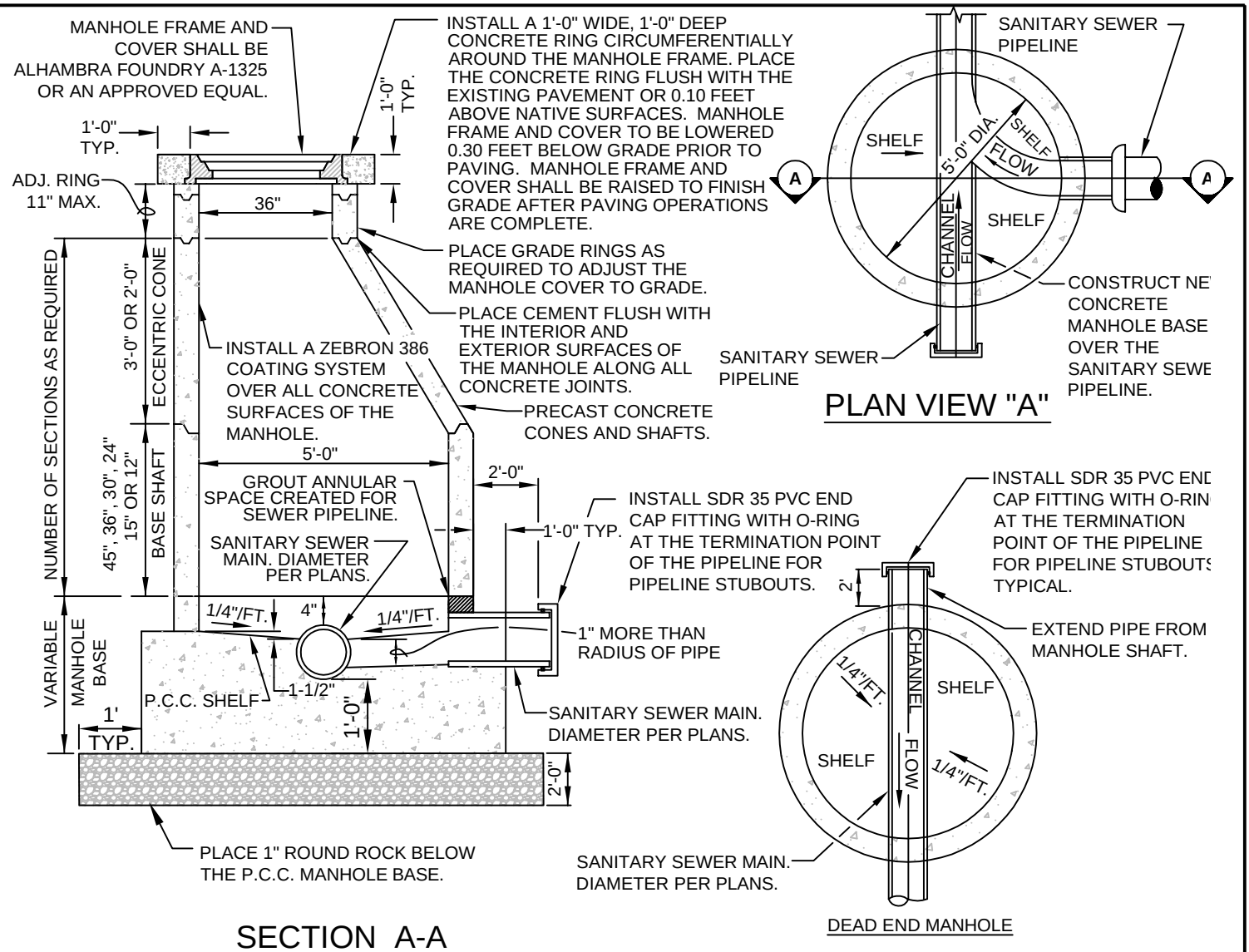


## NOTES:

1. EXCEPT AS NOTED HEREON, THE PRECAST UNITS SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH ASTM C-478. THE CURING OF THE PRECAST UNITS SHALL CONFORM TO SECTION 207-2.7 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. THE MINIMUM WALL THICKNESS SHALL BE 6 INCHES.
2. THE CONCRETE SHELF OF THE MANHOLE SHALL BE SLOPED AT 1/4 INCH PER FOOT. THE SHELF SHALL RECEIVE A DOUBLE TROWEL FINISH . THE CONCRETE UTILIZED FOR THE CONCRETE BASE AND MANHOLE COLLAR SHALL CONTAIN 6 1/2 SACKS OF CONCRETE PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 P.S.I. AFTER 28 DAYS CURING.
3. WHENEVER PRACTICABLE, THE FRAME AND COVER SHALL BE PLACED DIRECTLY OVER THE INLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON THE PLANS.
4. MANHOLE SHAFTS, CONES AND GRADE RINGS SHALL BE SET PLUMB.
5. PLACE CEMENT GROUT IN THE OPENINGS BETWEEN PRECAST MANHOLE UNITS AND GRADE RINGS FLUSH WITH THE INTERIOR AND EXTERIOR SURFACES PRIOR TO APPLYING THE ZEBRON COATING OR COMPLETING BACKFILL WORK AROUND THE EXTERIOR OF THE MANHOLE.
6. THE PIPELINE INVERTS SHALL DROP 0.10 FEET BETWEEN INLET AND OUTLET PIPELINES AT 90 DEGREE ANGLES.
7. VERTICAL WALL OF CONE SHALL BE OPPOSITE OUTLET OF MANHOLE.

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## 5 FOOT DIAMETER P.C.C. MANHOLE

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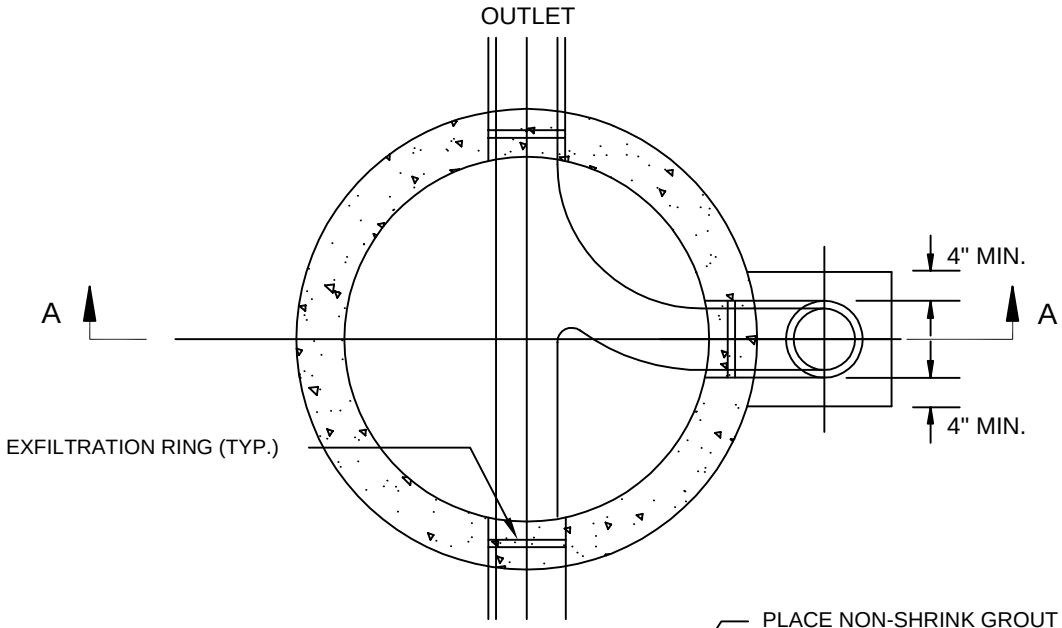


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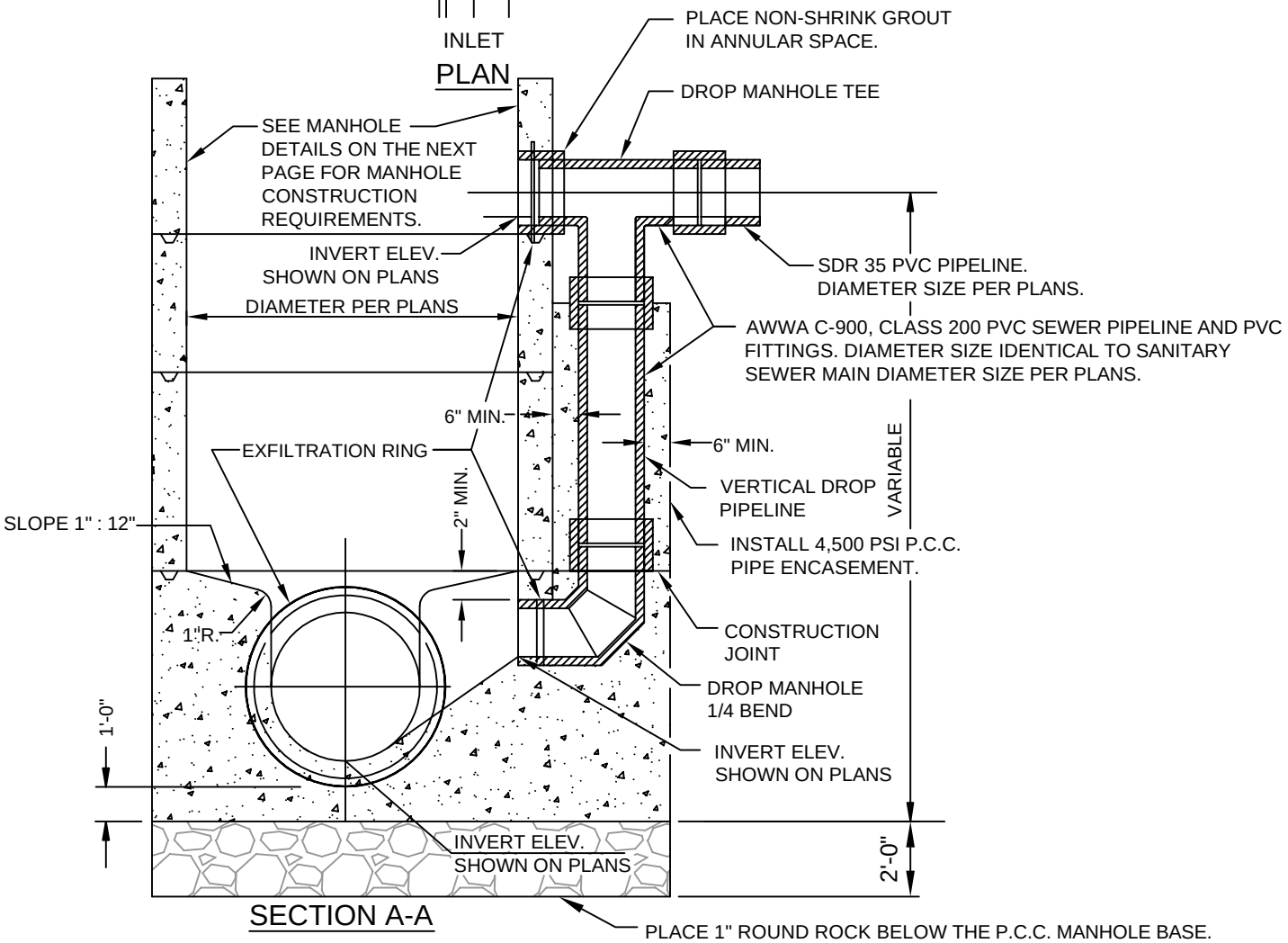


SECTION A-A

PLACE 1" ROUND ROCK BELOW THE P.C.C. MANHOLE BASE.

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## SANITARY SEWER DROP MANHOLE

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EXP. DATE: 12-31-06

SHEET NO.
SS 111A

## GENERAL NOTES:

1. FOUNDATION FOR DROP PIPELINE SECTION SHALL BE POURED MONOLITHIC WITH MANHOLE BASE.
2. P.C.C. CONCRETE SHALL CONTAIN 6 1/2 SACKS PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS.
3. MANHOLE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE HAVING A MINIMUM THICKNESS OF SIX INCHES AND CONFORMING TO ASTM C-478 REQUIREMENTS FOR MATERIALS AND MANUFACTURE AND ASTM REQUIREMENTS FOR REINFORCEMENT.
4. VERTICAL WALL OF CONE SHALL BE OPPOSITE OUTLET SIDE OF MANHOLE.
5. CONE SHALL BE RAISED WHEN GRADE RINGS EXCEED 11".
6. SUPPORT COLLAR SHALL CONSIST OF CLASS "3" CONCRETE.
7. JOINTS SHALL CONSIST OF 1-2 CEMENT MORTAR, NEATLY STRUCK AND POINTED, 3/8" MIN. THICKNESS, OR RAM-NECK, EXCEPT FOR GRADE ADJUSTING RINGS WHICH SHALL BE 1-2 CEMENT MORTAR ONLY.
8. CONCRETE FOR SUPPORT COLLAR SHALL BE TYPE V CEMENT WHICH SHALL ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS CURING.
9. SHELF SHALL HAVE A STEEL TROWEL FINISH.
10. THIS MANHOLE IS FOR DEPTHS GREATER THAN 3 FOOT AND LESS THAN 25 FOOT. MAXIMUM PIPE INTERNAL DIAMETER IS 36 INCHES.
11. ALL PIPE AND FITTINGS IN DROP CONNECTION SHALL BE AWWA C-900, CLASS 200 OR AWWA C-905, DR 14 AND OF THE SAME SIZE AS THE SEWER MAIN, UNLESS SHOWN OTHERWISE ON THE PLANS.
12. TROUGH:
    A. SHALL NOT HAVE A FLAT BOTTOM.
    B. SHALL HAVE A STEEL TROWELED FINISH.
    C. DIAMETER OF FEEDLINE SHALL NOT "FLARE OUT" WHERE IT JOINS THE MAINLINE TROUGH.
13. "JIFFY RINGS" SHALL NOT BE ALLOWED.
14. FOR STRAIGHT THROUGH FLOW THE "Y" SHALL NOT BE CONSTRUCTED UNLESS A STUB OR LATERAL IS SHOWN ON THE PLANS AS BEING REQUIRED.
15. ZEBRON 386 SHALL BE REQUIRED TO BE APPLIED TO ALL INTERIOR CONCRETE SURFACES OF THE MANHOLE.
16. MANHOLE RING AND COVER SHALL BE RAISED TO FINISH GRADE AND SUPPORT COLLAR INSTALLED AFTER PAVING OR FINE GRADING.
17. EXFILTRATION RINGS SHALL BE CONSISTENT WITH PIPE MANUFACTURER'S RECOMMENDATIONS.

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SANITARY SEWER DROP MANHOI
GENERAL NOTES

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EXP. DATE: 12-31-06

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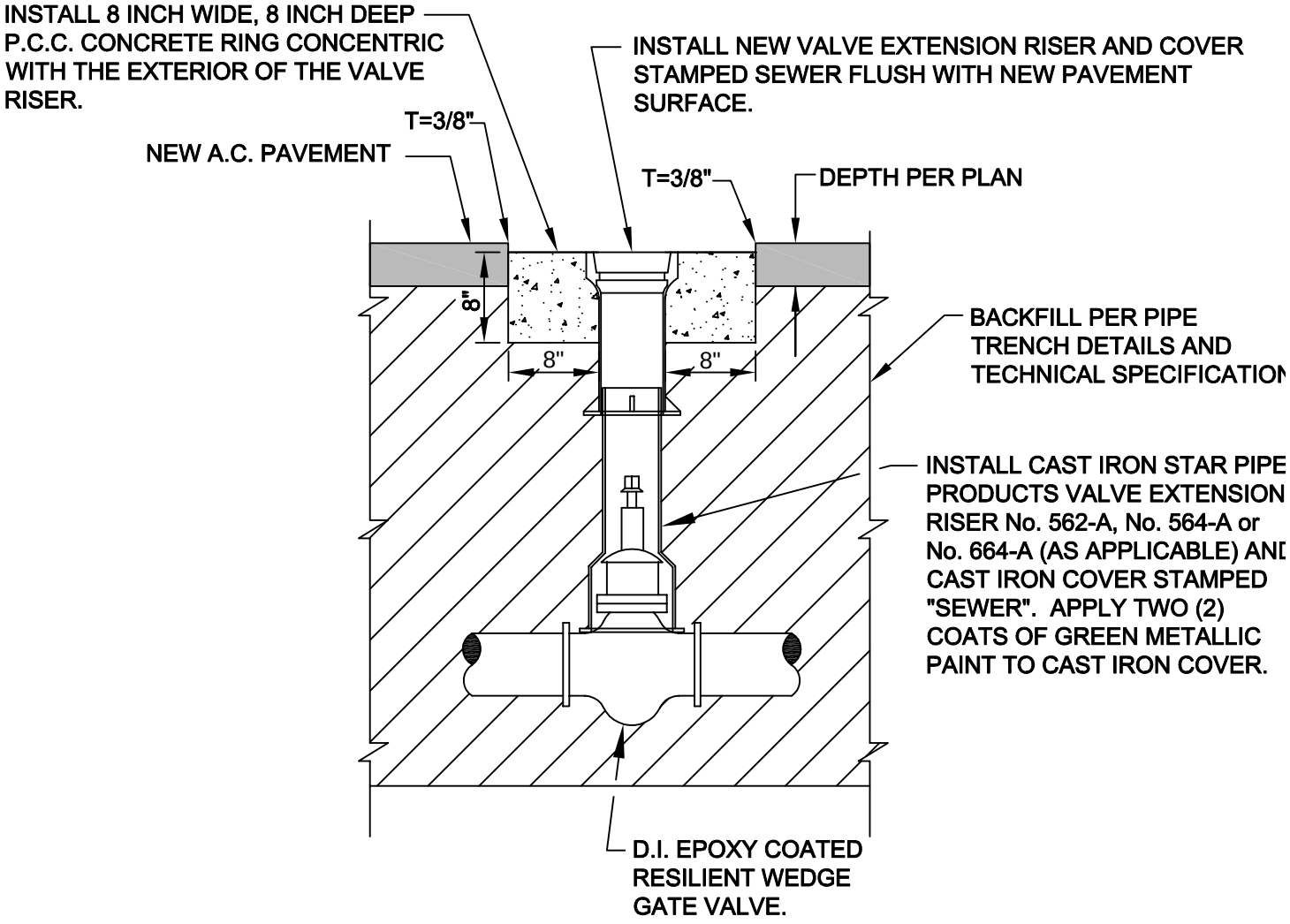
SS 111E

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## TYPICAL SANITARY SEWER FORCEMAIN GATE VALVE AND RIS

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EXP. DATE: 12-31-06

SHEET NO.
SS 112

# CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS

## A. PUBLIC HEALTH CONSIDERATIONS

WATERBORNE DISEASE OUTBREAKS ATTRIBUTED TO THE ENTRY OF SEWAGE-CONTAMINATED GROUNDWATER INTO THE DISTRIBUTION SYSTEMS OF PUBLIC WATER SUPPLIES CONTINUE TO BE A PROBLEM IN THE UNITED STATES. A COMMUNITY WITH ITS BURIED WATER MAINS IN CLOSE PROXIMITY TO SANITARY SEWERS IS VULNERABLE TO WATERBORNE DISEASE OUTBREAKS.

SANITARY SEWERS FREQUENTLY LEAK AND SATURATE THE SURROUNDING SOIL WITH SEWAGE. THIS IS CAUSED PRIMARILY BY STRUCTURAL FAILURE OF THE SEWER LINE, IMPROPERLY CONSTRUCTED JOINTS, AND SUBSIDENCE OR UPHEAVAL OF THE SOIL ENCASING THE CONDUIT. A SERIOUS PUBLIC HEALTH HAZARD EXISTS WHEN THE WATER MAINS ARE DEPRESSURIZED AND NO PRESSURE OR NEGATIVE PRESSURES OCCUR. THE HAZARD IS FURTHER COMPOUNDED WHEN, IN THE COURSE OF INSTALLING OR REPAIRING A WATER MAIN, EXISTING SEWER LINES ARE BROKEN. SEWAGE SPILLS INTO THE EXCAVATION AND, HENCE, ENTERS INTO THE WATER MAIN ITSELF. ADDITIONALLY, IF A WATER MAIN FAILS IN CLOSE PROXIMITY TO A SEWER LINE, THE RESULTANT FAILURE MAY DISTURB THE BEDDING OF THE SEWER LINE AND CAUSE IT TO FAIL. IN THE EVENT
OF AN EARTHQUAKE OR MAN-MADE DISASTER, SIMULTANEOUS FAILURE OF BOTH CONDUITS OFTEN OCCUR.

THE WATER SUPPLIER IS RESPONSIBLE FOR THE QUALITY OF THE WATER DELIVERED TO CONSUMERS AND MUST TAKE ALL PRACTICAL STEPS TO MINIMIZE THE HAZARD OF SEWAGE CONTAMINATION TO THE PUBLIC WATER SUPPLY. PROTECTION OF THE QUALITY OF THE WATER IN THE PUBLIC WATER SYSTEM IS BEST ACHIEVED BY THE BARRIER PROVIDED BY THE PHYSICAL SEPARATION OF THE WATER MAINS AND SEWER LINES.

THIS DOCUMENT SETS FORTH THE CONSTRUCTION CRITERIA FOR THE INSTALLATION OF WATER MAINS AND SEWER LINES TO PREVENT CONTAMINATION OF THE PUBLIC WATER SUPPLIES FROM NEARBY SANITARY SEWERS.

## B. BASIC SEPARATION STANDARDS

THE "CALIFORNIA WATERWORKS STANDARDS" SETS FORTH THE MINIMUM SEPARATION REQUIREMENTS FOR WATER MAINS AND SEWER LINES. THESE STANDARDS, CONTAINED IN SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE, SPECIFY:

(C) WATER MAINS SHALL BE INSTALLED AT LEAST:

(1) TEN FEET (3 METERS) HORIZONTALLY FROM AND 1 FOOT (0.3 METERS) HIGHER THAN SANITARY SEWER LOCATED PARALLEL TO THE MAIN.

(2) ONE FOOT (0.3 METERS) HIGHER THAN SANITARY SEWERS CROSSING THE MAIN.

(D) SEPARATION DISTANCES SPECIFIED IN (C) SHALL BE MEASURED FROM THE NEAREST EDGES OF THE FACILITIES.

(E) (2) COMMON TRENCH: WATER MAINS AND SEWER LINES MUST NOT BE INSTALLED IN THE SAME TRENCH.

WHEN WATER MAINS AND SANITARY SEWERS ARE NOT ADEQUATELY SEPARATED, THE POTENTIAL FOR CONTAMINATION OF THE WATER SUPPLY INCREASES. THEREFORE, WHEN ADEQUATE PHYSICAL SEPARATION CANNOT BE ATTAINED, AN INCREASE IN THE FACTOR OF SAFETY SHOULD BE PROVIDED BY INCREASING THE STRUCTURAL INTEGRITY OF BOTH THE PIPE MATERIALS AND JOINTS.

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SEPARATION AND CONSTRUCTION REQUIREMENTS FOR SEWER AND WATER CROSSINGS

PREPARED BY:
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EXP. DATE: 12-31-06

SHEET NO.
SS 113

## CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS

C. EXCEPTIONS TO BASIC SEPARATION STANDARDS

LOCAL CONDITIONS, SUCH AS AVAILABLE SPACE, LIMITED SLOPE, EXISTING STRUCTURES, ETC., MAY CREATE A SITUATIO WHERE THERE IS NO ALTERNATIVE BUT TO INSTALL WATER MAINS OR SEWER LINES AT A DISTANCE LESS THAN THAT REQUIRED BY THE BASIC SEPARATION STANDARDS. IN SUCH CASES, ALTERNATIVE CONSTRUCTION CRITERIA AS SPECIFIED IN SECTION E SHOULD BE FOLLOWED, SUBJECT TO THE SPECIAL PROVISIONS IN SECTION D.

WATER MAINS AND SEWERS OF 600 MM DIAMETER OR GREATER MAY CREATE SPECIAL HAZARDS BECAUSE OF THE LARG VOLUMES OF FLOW. THEREFORE, INSTALLATIONS OF WATER MAINS AND SEWER LINES 600 MM DIAMETER OR LARGER SHOULD BE REVIEWED AND APPROVED BY THE HEALTH AGENCY PRIOR TO CONSTRUCTION.

D. SPECIAL PROVISIONS

1. THE BASIC SEPARATION STANDARDS ARE APPLICABLE UNDER NORMAL CONDITIONS FOR SEWAGE COLLECTION LINES AND WATER DISTRIBUTION MAINS. MORE STRINGENT REQUIREMENTS MAY BE NECESSARY IF CONDITIONS SUCH AS HIGH GROUNDWATER EXIST.

2. SEWER LINES SHALL NOT BE INSTALLED WITHIN 25 FEET HORIZONTALLY OF A LOW HEAD (5PSI OR LESS PRESSURE) WATER MAIN.

3. NEW WATER MAINS AND SEWERS SHALL BE PRESSURE TESTED WHERE THE CONDUITS ARE LOCATED 10-FEET APART LESS.

4. IN THE INSTALLATION OF WATER MAINS OR SEWER LINES, MEASURES SHOULD BE TAKEN TO PREVENT OR MINIMIZE DISTURBANCES OF THE EXISTING LINE. DISTURBANCE OF THE SUPPORTING BASE OF THIS LINE COULD EVENTUALLY RESULT IN FAILURE OF THIS EXISTING PIPELINE.

5. SPECIAL CONSIDERATION SHALL BE GIVEN TO THE SELECTION OF PIPE MATERIALS IF CORROSIVE CONDITIONS ARE LIKELY TO EXIST. THESE CONDITIONS MAY BE DUE TO SOIL TYPE AND/OR THE NATURE OF THE FLUID CONVEYED IN THE CONDUIT, SUCH AS A SEPTIC SEWAGE WHICH PRODUCES CORROSIVE HYDROGEN SULFIDE.

6. SEWER FORCE MAINS

A. SEWER FORCE MAINS SHALL NOT BE INSTALLED WITHIN 10-FEET (HORIZONTALLY) OF A WATER MAIN.

B. WHEN A SEWER FORCE MAIN MUST CROSS A WATER LINE, THE CROSSING SHOULD BE AS CLOSE AS PRACTICAL TO TH PERPENDICULAR. THE SEWER FORCE MAIN SHOULD BE AT LEAST 1-FOOT BELOW THE WATER LINE.

C. WHEN A NEW SEWER FORCE MAIN CROSSES UNDER AN EXISTING WATER MAIN, ALL PORTIONS OF THE SEWER FORCE MAIN WITHIN 10-FEET (HORIZONTALLY) OF THE WATER MAIN SHALL BE ENCLOSED IN A CONTINUOUS SLEEVE.

D. WHEN A NEW WATER MAIN CROSSES OVER AN EXISTING SEWER FORCE MAIN, THE WATER MAIN SHALL BE CONSTRUCTED OF PIPE MATERIALS WITH A MINIMUM RATED WORKING PRESSURE OF 200 PSI OR EQUIVALENT PRESSURE RATING.

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SEPARATION AND CONSTRUCTION REQUIREMENTS FOR SEWER AND WATER CROSSINGS

PREPARED BY:
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EXP. DATE: 12-31-06

SHEET NO.
SS 114

## CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS

E. ALTERNATIVE CRITERIA FOR CONSTRUCTION

THE CONSTRUCTION CRITERIA FOR SEWER LINES OR WATER MAINS WHERE THE BASIC SEPARATION STANDARDS CANNOT BE ATTAINED ARE SHOWN IN FIGURES 1 AND 2, ENGINEERING STANDARDS. THERE ARE TWO SITUATIONS ENCOUNTERED:

CASE 1 -- NEW SEWER LINE - NEW OR EXISTING WATER MAIN.

CASE 2 -- NEW WATER MAIN -- EXISTING SEWER LINE.

FOR CASE 1, THE ALTERNATE CONSTRUCTION CRITERIA APPLY TO THE SEWER LINE.

FOR CASE 2, THE ALTERNATE CONSTRUCTION CRITERIA MAY APPLY TO EITHER OR BOTH THE WATER MAIN AND SEWER LINE.

THE CONSTRUCTION CRITERIA SHOULD APPLY TO THE HOUSE LATERALS THAT CROSS ABOVE A PRESSURE WATER MAIN BUT NOT TO THOSE HOUSE LATERALS THAT CROSS BELOW A PRESSURE WATER MAIN.

**CASE 1**
**NEW SEWER MAIN BEING INSTALLED**
(SEE FIGURE 1)

| ZONE | SPECIAL CONSTRUCTION REQUIRED FOR SEWER |
|---|---|
| A | SEWER LINES PARALLEL TO WATER MAINS SHALL NOT BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FROM THE RESPONSIBLE HEALTH AGENCY AND WATER SUPPLIER. |
| B | A SEWER LINE PLACED PARALLEL TO A WATER LINE SHALL BE CONSTRUCTED OF:<br>1. CLASS 4000, TYPE LL, ASBESTOS-CEMENT PIPE WITH RUBBER GASKET JOINTS.<br>2. PLASTIC SEWER PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR EQUIVALENT.<br>3. CAST OR DUCTILE IRON PIPE WITH COMPRESSION JOINTS.<br>4. REINFORCED CONCRETE PRESSURE PIPE WITH COMPRESSION JOINTS (PER AWWA C302-74). |
| C | A SEWER LINE CROSSING A WATER MAIN SHALL BE CONSTRUCTED OF:<br>1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS.<br>2. A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE, OR EQUIVALENT, CENTERED OVER THE PIPE BEING CROSSED.<br>3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302-74) CENTERED OVER THE PIPE BEING CROSSED.<br>4. ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE. |
| D | A SEWER LINE CROSSING A WATER MAIN SHALL BE CONSTRUCTED OF:<br>1. A CONTINUOUS SECTION OF DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING.<br>2. A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE OR EQUIVALENT, CENTERED OVER THE PIPE BEING CROSSED.<br>3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302-74) CENTERED OVERTHE PIPE BEING CROSSED.<br>4. ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE.<br>5. ANY SEWER PIPE SEPARATED BY A 10-FEET BY 10-FEET, 4-INCHES THICK REINFORCED CONCRETE SLAB. |

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Exp. 12-31-06
CIVIL
STATE OF CALIFORNIA

CITY OF CALIPATRIA
CALIFORNIA

CITY OF CALIPATRIA

SEPARATION AND CONSTRUCTION REQUIREMENTS FOR SEWER AND WATER CROSSINGS

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SS 115

## CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS

### CASE 2
### NEW WATER MAIN BEING INSTALLED
(SEE FIGURE 2)

| ZONE | SPECIAL CONSTRUCTION REQUIRED FOR WATER |
|---|---|
| A | NO WATER MAINS PARALLEL TO SEWERS SHALL BE CONSTRUCTED WITHOUT APPROVAL FROM THE HEALTH AGENCY. |
| B | IF THE SEWER PARALLELING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE B REQUIREMENTS THE WATER MAIN SHALL BE CONSTRUCTED OF:<br>1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING.<br>2. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT. |
| C | IF THE SEWER CROSSING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE C REQUIREMENTS, THE WATER MAIN SHALL HAVE NO JOINTS IN ZONE C AND BE CONSTRUCTED OF:<br>1. OR 2. AS IN ZONE B, ABOVE |
| D | IF THE SEWER CROSSING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE D REQUIREMENTS, THE WATER MAIN SHALL HAVE NO JOINTS WITHIN 1.2 M FROM EITHER SIDE OF THE SEWER AND SHALI BE CONSTRUCTED OF:<br>1. OR 2. AS IN ZONE B, ABOVE |

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SEPARATION AND CONSTRUCTION REQUIREMENTS FOR SEWER AND WATER CROSSINGS

PREPARED BY:
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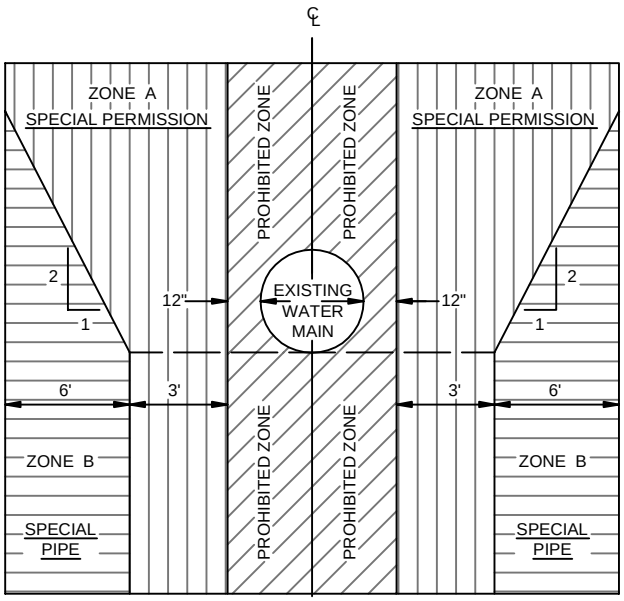
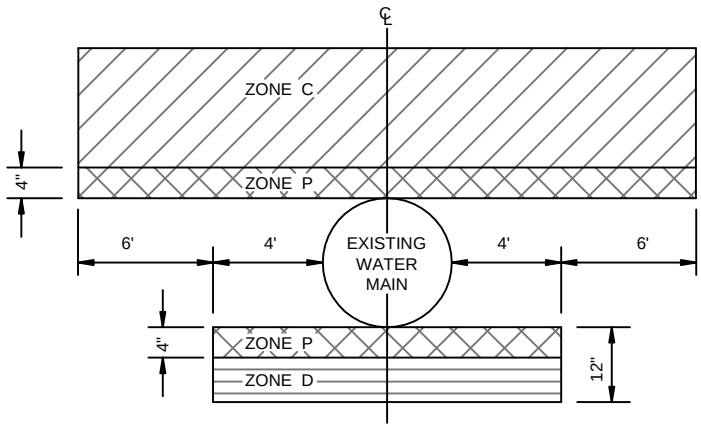
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SS 116

# CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS



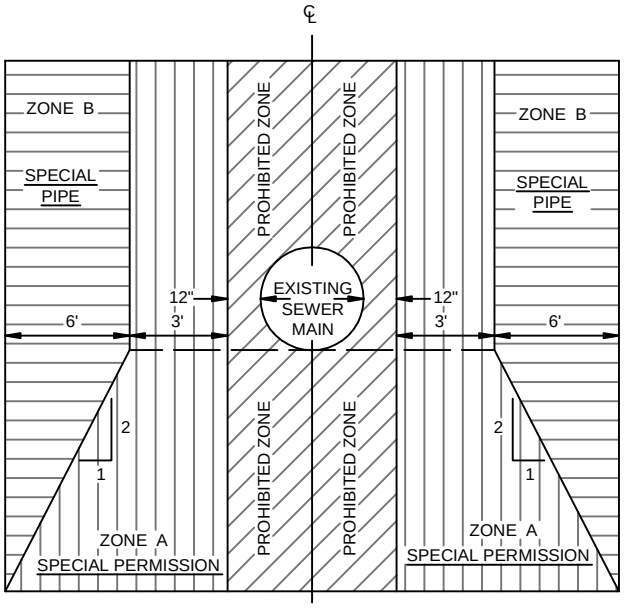

**PARALLEL**




**CROSSING**

**CASE 1**
**NEW SEWER MAIN BEING INSTALLED**
(FIGURE 1)

ZONE P IS A PROHIBITED ZONE, SECTION 64630(e)(2) CALIFORNIA ADMINISTRATIVE CODE, TITLE 22.

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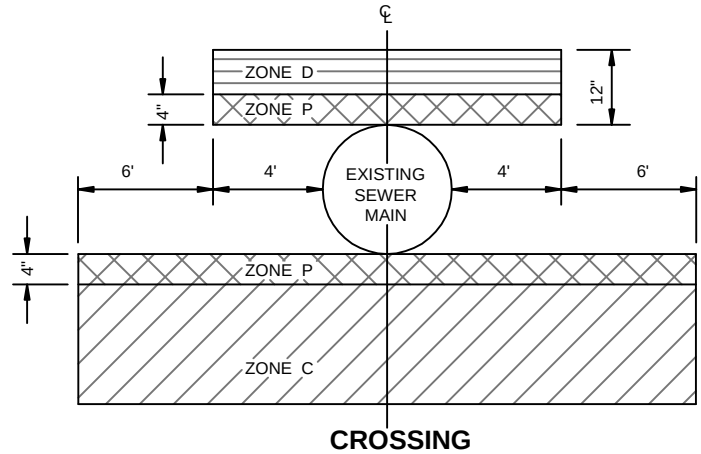


**CROSSING**

**CASE 2**
**NEW WATER MAIN BEING INSTALLED**
(FIGURE 2)

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SEPARATION AND CONSTRUCTION REQUIREMENTS FOR SEWER AND WATER CROSSINGS

PREPARED BY:
JAMES G. "JACK" HOLT
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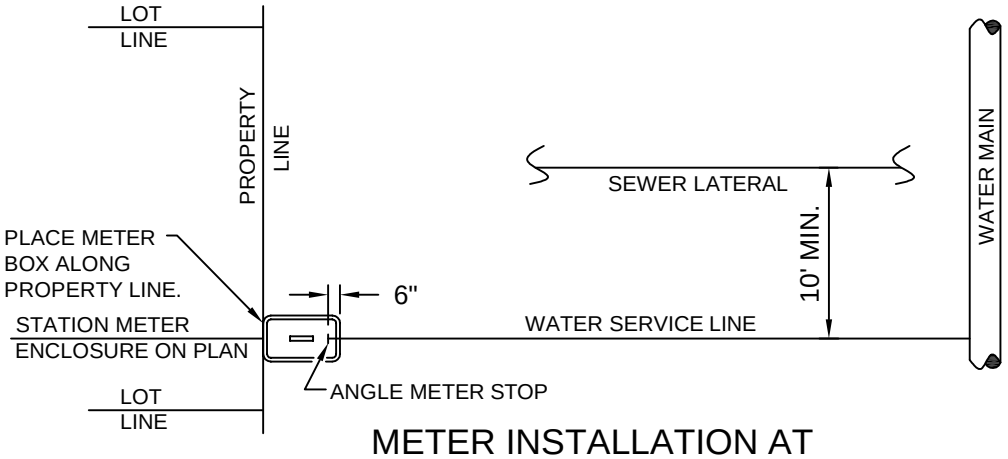
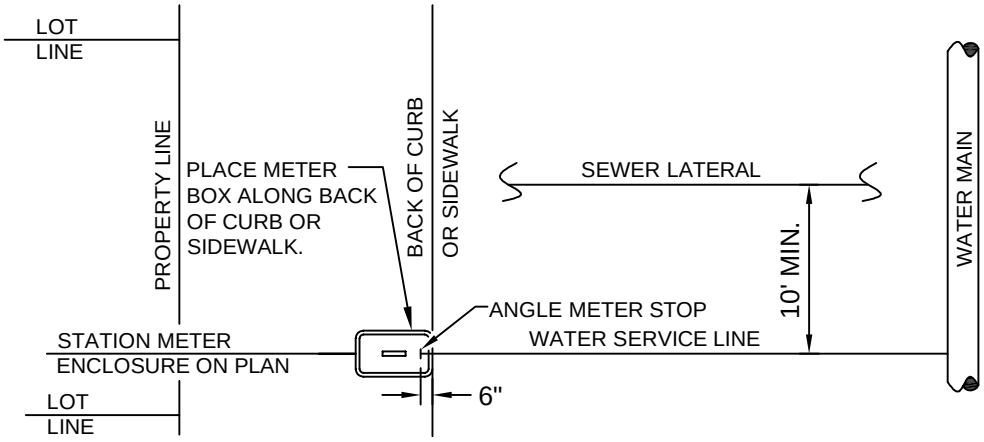
EXP. DATE: 12-31-06

SHEET NO.
SS 117

# CRITERIA FOR THE SEPARATION OF WATER SERVICES AND SANITARY SEWER LATERALS




## METER INSTALLATION AT PROPERTY LINE




## METER INSTALLATION ALONG CURB OR SIDEWALK

NOTES:

1. IF SIDEWALK IS ADJACENT TO CURB, THE METER BOX IS LOCATED OUTSIDE OF AND ADJACENT TO THE SIDEWALK.

2. FOR SERVICE INSTALLATION DETAILS SEE STANDARD DETAILS W-107 & W-108.

3. TWO SIMILAR SERVICES SUCH AS 2 WATER SERVICES OR 2 SEWER LATERALS MAY BE INSTALLED IN THE SAME TRENCH TO A COMMON LOT LINE; HOWEVER TWO (2) DISSIMILAR UTILITIES (A WATER SERVICE AND A SANITARY SEWER LATERAL) SHALL NOT BE ALLOWED IN THE SAME TRENCH.

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SEPARATION AND CONSTRUCTION REQUIREMENTS FOR SEWER AND WATER CROSSINGS

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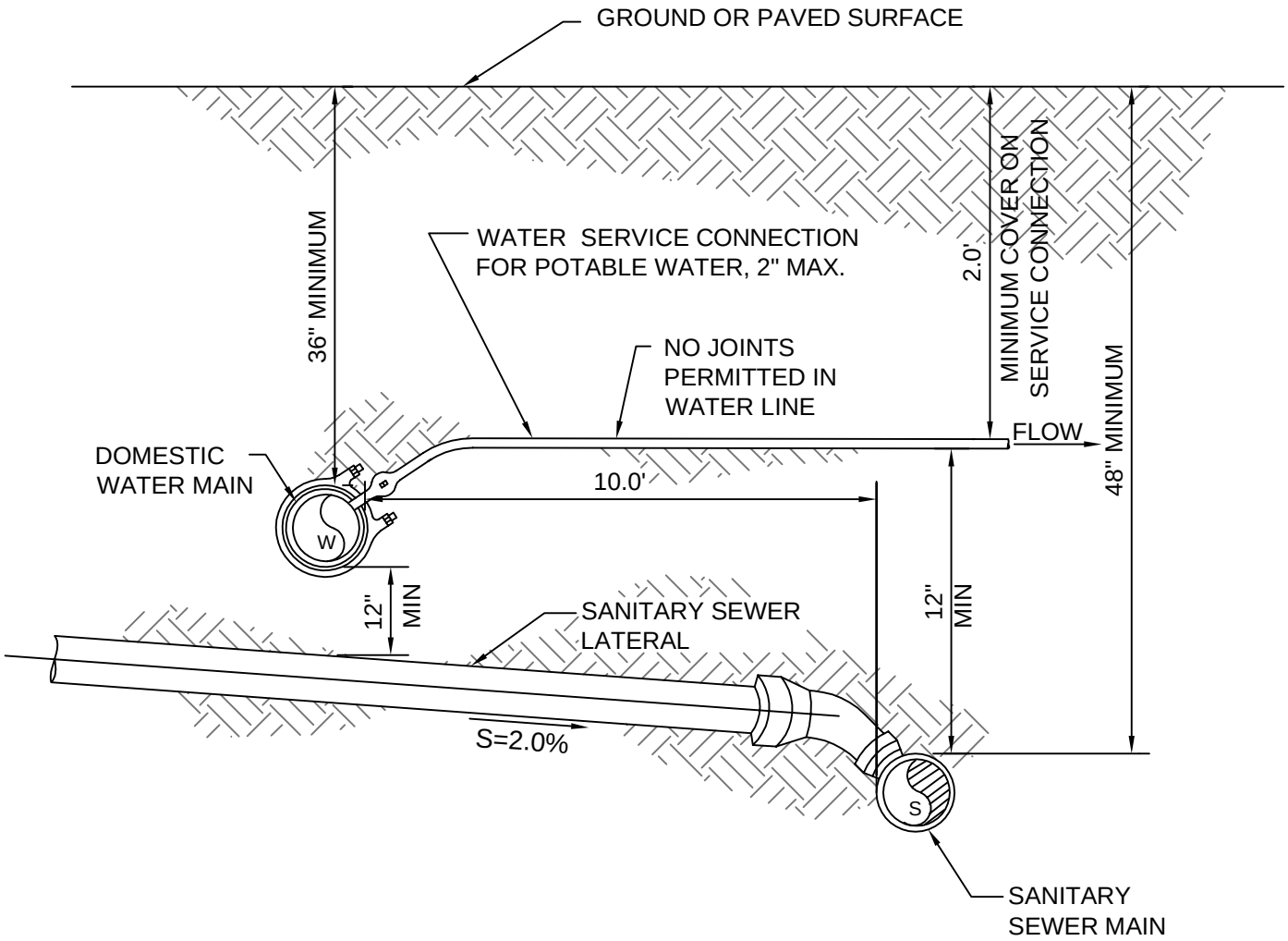
EXP. DATE: 12-31-06

SHEET NO.
SS 118

# CRITERIA FOR THE SEPARATION OF WATER SERVICES AND SANITARY SEWER LATERALS




NOTE:
SEPARATION DIMENSIONS ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.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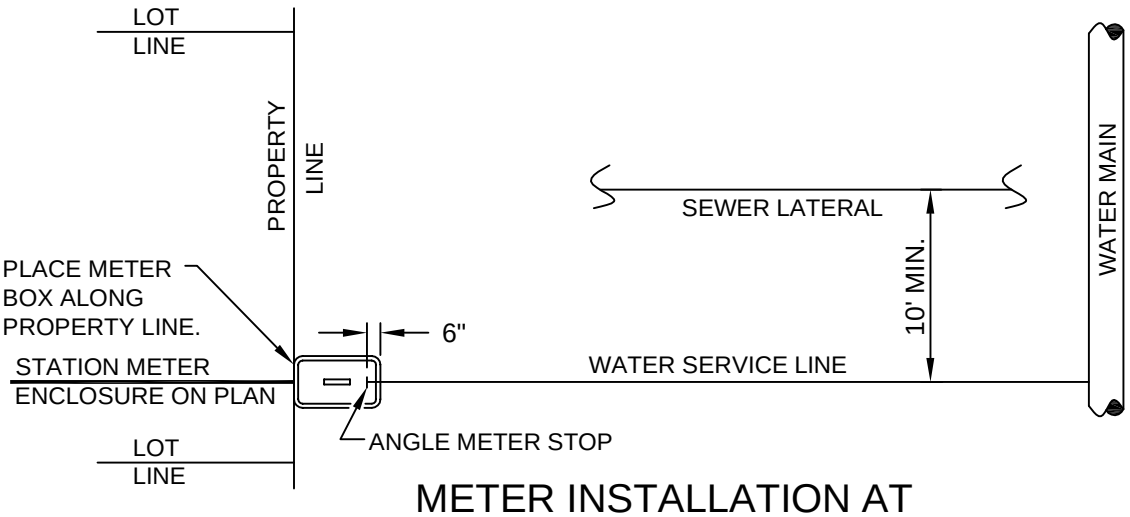
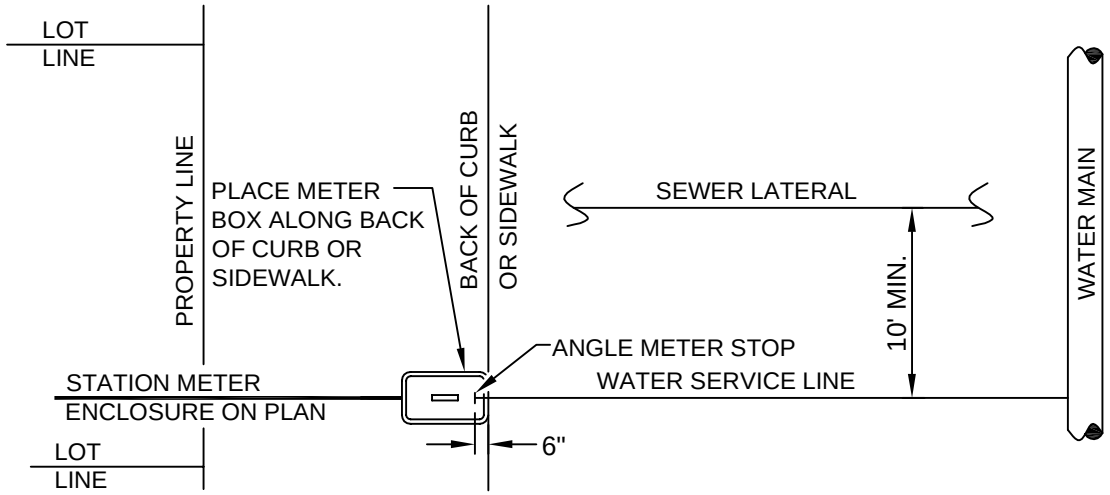
SEPARATION AND CONSTRUCTION REQUIREMENTS FOR SEWER AND WATER CROSSINGS

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SS 119




## METER INSTALLATION AT PROPERTY LINE




## METER INSTALLATION ALONG CURB OR SIDEWALK

NOTES:

1. IF SIDEWALK IS ADJACENT TO CURB, THE METER BOX IS LOCATED OUTSIDE OF AND ADJACENT TO THE SIDEWALK.

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3. TWO SIMILAR SERVICES SUCH AS 2 WATER OR 2 SEWER LATERALS MAY BE INSTALLED IN THE SAME TRENCH TO A COMMON LOT LINE, BUT NOT TWO DISSIMILAR UTILITIES.

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CITY OF CALIPATRIA

GENERAL LOCATION OF SANITARY SEWER LATERALS AND WATER SERVICES

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SS 120

# CITY OF CALIPATRIA STORMWATER IMPROVEMENT STANDARD DETAILS




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CALIFORNIA

CITY OF CALIPATRIA

STORMWATER INDEX

*PREPARED BY:*

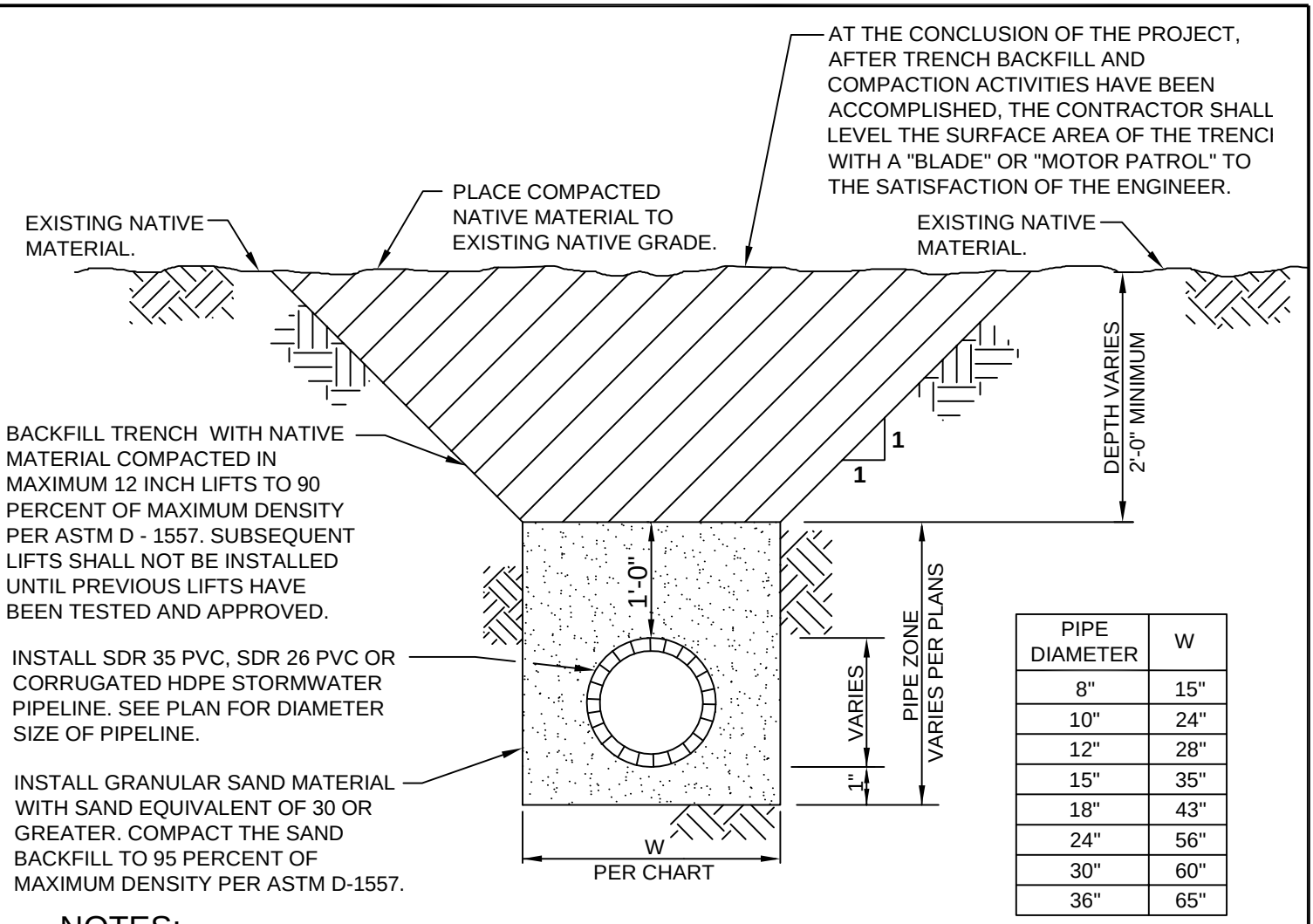
*JAMES G. "JACK" HOLT*

*R.C.E. NO. 31773*

*EXP. DATE: 12-31-06*

SHEET NO.

*SW 100*




| PIPE DIAMETER | W |
|---|---|
| 8" | 15" |
| 10" | 24" |
| 12" | 28" |
| 15" | 35" |
| 18" | 43" |
| 24" | 56" |
| 30" | 60" |
| 36" | 65" |

## NOTES:

1. WHERE THE PERMIT OF A GOVERNING AGENCY SETS FORTH REQUIREMENTS MORE STRINGENT THAN THOSE STATED HEREIN, THE CONTRACTOR SHALL ADHERE TO THE AGENCY REQUIREMENTS.

2. WHERE THE TRENCH DEPTH EXCEEDS 3', THE PIPELINE CONTRACTOR SHALL UTILIZE ANY OF THE FOLLOWING METHODS FOR EXCAVATION AND TRENCH STABILIZATION. THE METHOD OF EXCAVATION AND TRENCH STABILIZATION SHALL BE APPROVED BY CAL OSHA

   A) SHORING AS APPROVED BY THE ENGINEER.
   B) SLOPING BOTH TRENCH SIDES AT A 1:1 MAXIMUM ABOVE THE BOTTOM 3 FEET.
   C) "STEPPING OR BENCHING" BOTH TRENCH SIDES AT 3 FOOT VERTICAL INCREMENTS, THE WIDTH OF EACH BENCH SHALL BE THE SAME AS THE BOTTOM 3 FEET.
   D) USE OF A STEEL SHIELD.
   E) USE OF TRENCH JACKS.

3. WHEN THE PIPE TRENCH IS UNSTABLE DUE TO GROUND WATER INFILTRATION, PLACE 9 INCHES OF 1 INCH DIAMETER ROUND ROCK BENEATH THE STORMWATER PIPELINE.

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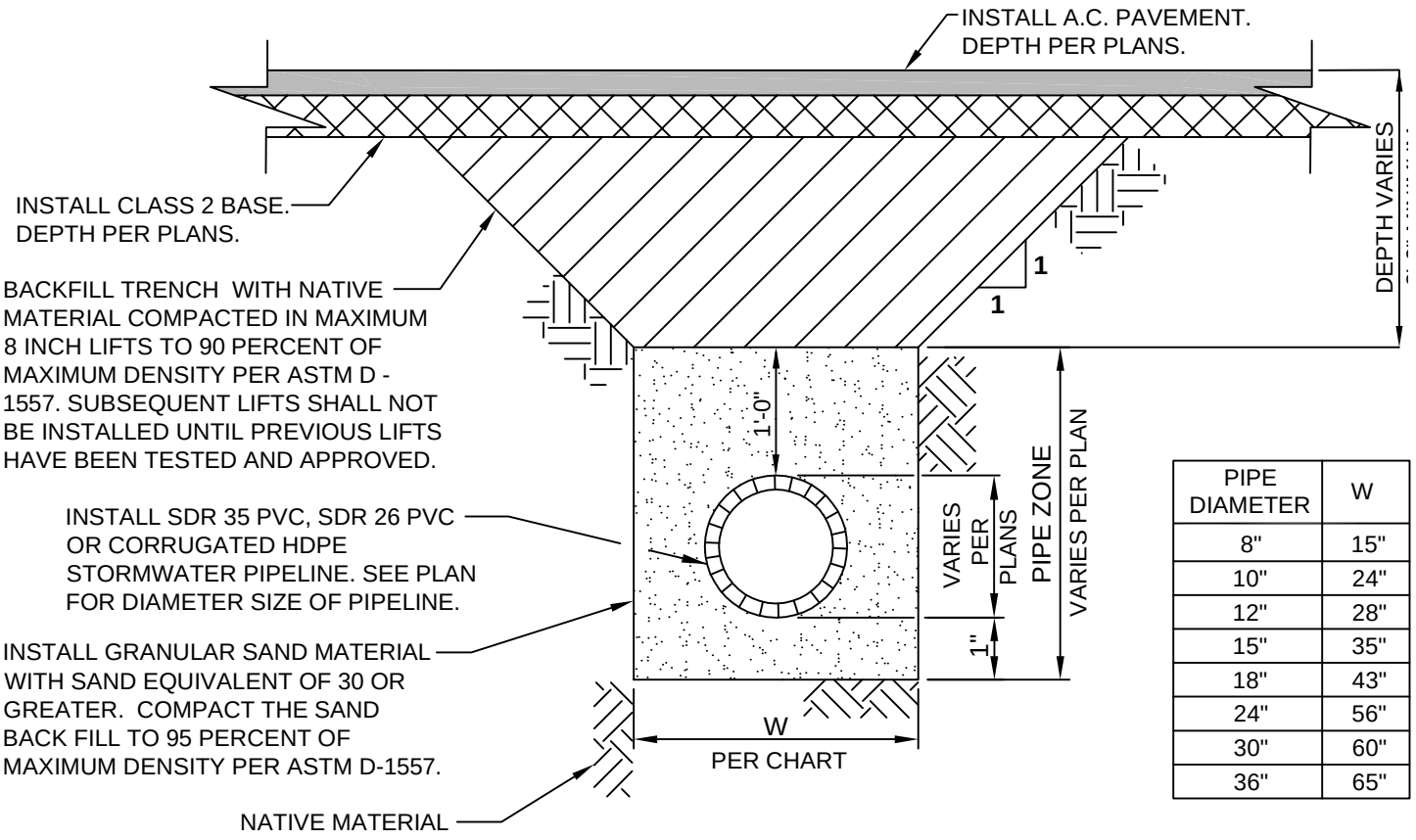
## STORMWATER PIPELINE TRENCH IN UNPAVED AREAS

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 101




| PIPE DIAMETER | W |
|---|---|
| 8" | 15" |
| 10" | 24" |
| 12" | 28" |
| 15" | 35" |
| 18" | 43" |
| 24" | 56" |
| 30" | 60" |
| 36" | 65" |

## NOTES:

1. WHERE THE PERMIT OF A GOVERNING AGENCY SETS FORTH REQUIREMENTS MORE STRINGENT THAN THOSE STATED HEREIN, THE CONTRACTOR SHALL ADHERE TO THE AGENCY REQUIREMENTS.

2. WHERE THE TRENCH DEPTH EXCEEDS 3', THE PIPELINE SUBCONTRACTOR SHALL UTILIZE ANY OF THE FOLLOWING METHODS FOR EXCAVATION AND TRENCH STABILIZATION. THE METHOD OF EXCAVATION AND TRENCH STABILIZATION SHALL BE APPROVED BY CAL OSHA.

   A) SHORING AS APPROVED BY THE ENGINEER.
   B) SLOPING BOTH TRENCH SIDES AT A 1:1 MAXIMUM ABOVE THE BOTTOM 3 FEET.
   C) "STEPPING OR BENCHING" BOTH TRENCH SIDES AT 3 FOOT VERTICAL INCREMENTS, THE WIDTH OF EACH BENCH SHALL BE THE SAME AS THE BOTTOM 3 FEET.
   D) USE OF A STEEL SHIELD.
   E) USE OF TRENCH JACKS.

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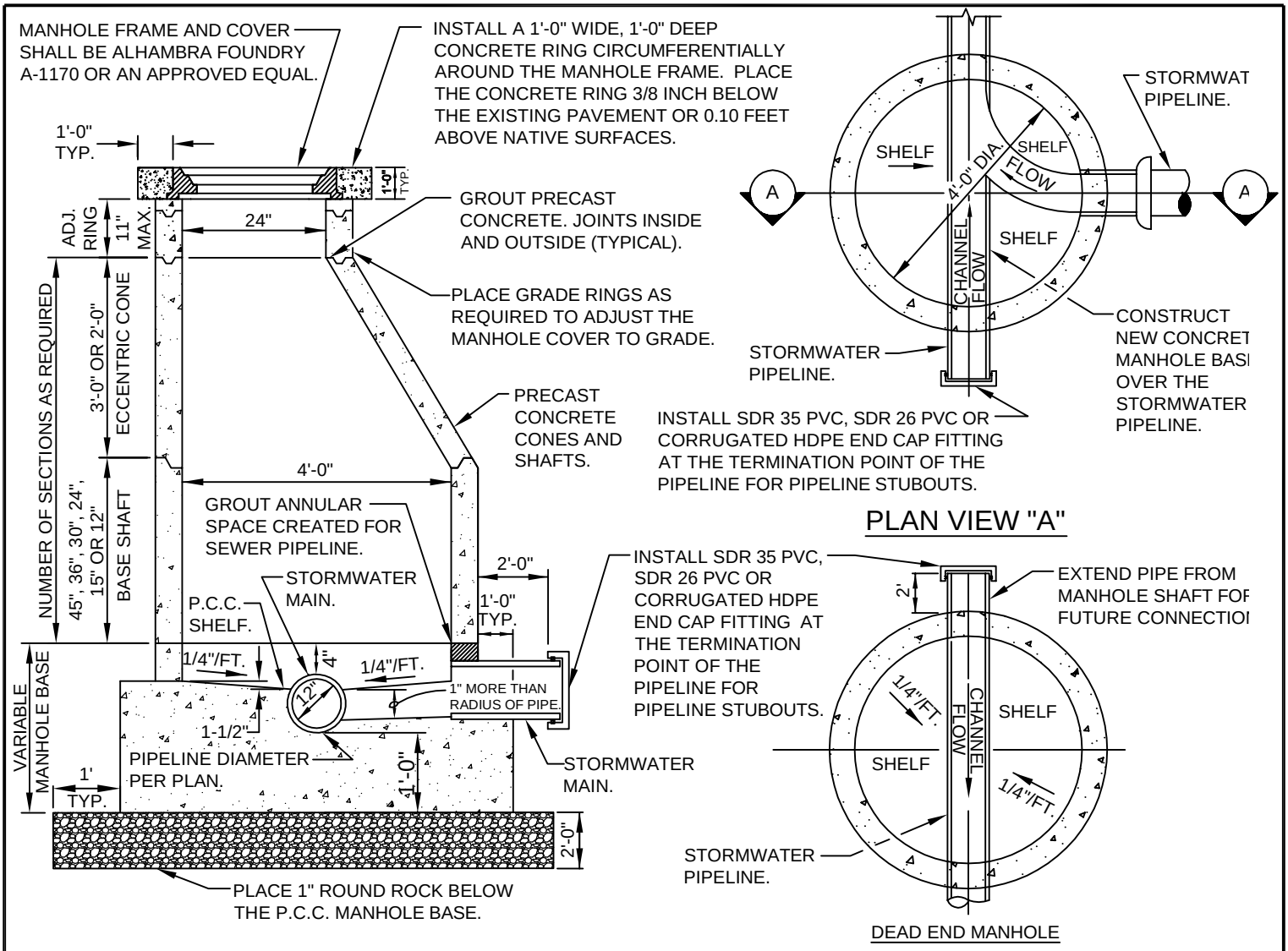
STORMWATER PIPELINE
TRENCH IN PAVED AREAS

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 102




## NOTES:

1. EXCEPT AS NOTED HEREON, THE PRECAST UNITS SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH ASTM C-478. THE CURING OF THE PRECAST UNITS SHALL CONFORM TO SECTION 207-2.7 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. THE MINIMUM WALL THICKNESS SHALL BE 6 INCHES
2. THE CONCRETE SHELF OF THE MANHOLE SHALL BE SLOPED AT 1/4 INCH PER FOOT. THE SHELF SHALL RECEIVE A DOUBLE TROWEL FINISH . THE CONCRETE UTILIZED FOR THE CONCRETE BASE SHALL CONTAIN 6 1/2 SACKS OF CONCRETE PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 P.S.I. AFTER 28 DAYS CURING.
3. WHENEVER PRACTICAL, THE FRAME AND COVER SHALL BE PLACED DIRECTLY OVER THE INLET OF THE MANHOLE.
4. MANHOLE SHAFTS, CONES AND GRADE RINGS SHALL BE SET PLUMB.
5. PLACE CEMENT GROUT IN THE OPENINGS BETWEEN PRECAST MANHOLE UNITS AND GRADE RINGS FLUSH WITH THE INTERIOR AND EXTERIOR SURFACES PRIOR TO APPLYING THE BITUMASTIC COATING OR COMPLETING BACKFILL WORK AROUND THE EXTERIOR OF THE MANHOLE. CEMENT GROUT SHALL COMPLY TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SECTION 202.2.2.2, LATEST EDITION.
6. THE PIPELINE INVERTS SHALL DROP 0.10 FEET BETWEEN INLET AND OUTLET PIPELINES AT 90 DEGREE ANGLES.
7. VERTICAL WALL OF CONE SHALL BE OPPOSITE OUTLET OF MANHOLE.
8. APPLY TWO (2) 10 MIL DRY FILM MILS OF AMERON AMERCOAT 78-HB EPOXY BITUMASTIC TO THE INTERIOR WALLS AND P.C.C. SHELF OF THE MANHOLE.

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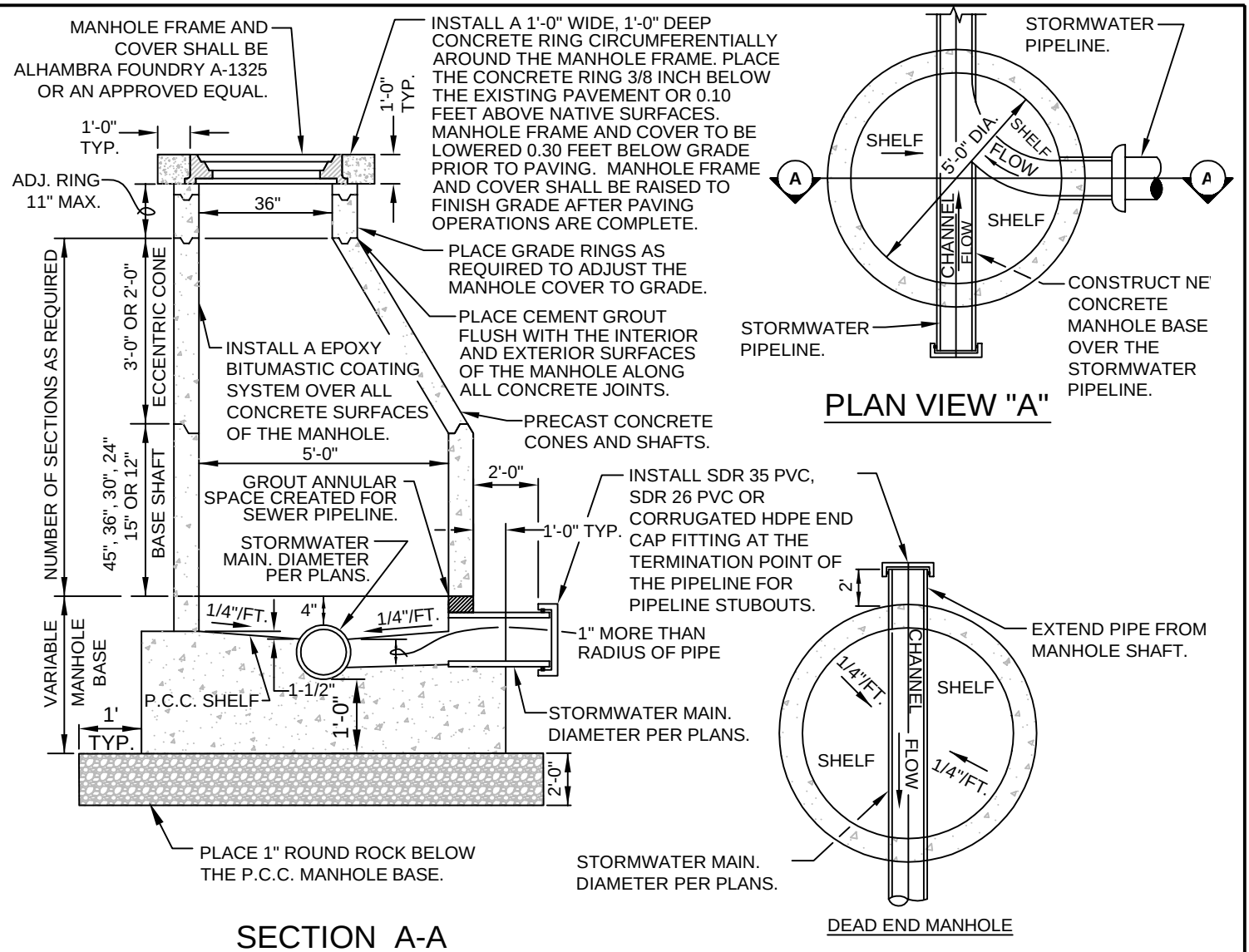
## 4 FOOT DIAMETER P.C.C. STORMWATER MANHOLE

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 103




## NOTES:

1. EXCEPT AS NOTED HEREON, THE PRECAST UNITS SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH ASTM C-478. THE CURING OF THE PRECAST UNITS SHALL CONFORM TO SECTION 207-2.7 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. THE MINIMUM WALL THICKNESS SHALL BE 6 INCHES.
2. THE CONCRETE SHELF OF THE MANHOLE SHALL BE SLOPED AT 1/4 INCH PER FOOT. THE SHELF SHALL RECEIVE A DOUBLE TROWEL FINISH . THE CONCRETE UTILIZED FOR THE CONCRETE BASE AND MANHOLE COLLAR SHALL CONTAIN 6 1/2 SACKS OF CONCRETE PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 P.S.I. AFTER 28 DAYS CURING.
3. WHENEVER PRACTICABLE, THE FRAME AND COVER SHALL BE PLACED DIRECTLY OVER THE INLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON THE PLANS.
4. MANHOLE SHAFTS, CONES AND GRADE RINGS SHALL BE SET PLUMB.
5. PLACE CEMENT GROUT IN THE OPENINGS BETWEEN PRECAST MANHOLE UNITS AND GRADE RINGS FLUSH WITH THE INTERIOR AND EXTERIOR SURFACES PRIOR TO APPLYING THE BITUMASTIC COATING OR COMPLETING BACKFILL WORK AROUND THE EXTERIOR OF THE MANHOLE. CEMENT GROUT SHALL COMPLY TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SECTION 202.2.2.2, LATEST EDITION.
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8. APPLY TWO (2) 10 MIL DRY FILM MILS OF AMERON AMERCOAT 78-HB EPOXY BITUMASTIC TO THE INTERIOR WALLS AND SHELF OF THE MANHOLE.

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CALIFORNIA

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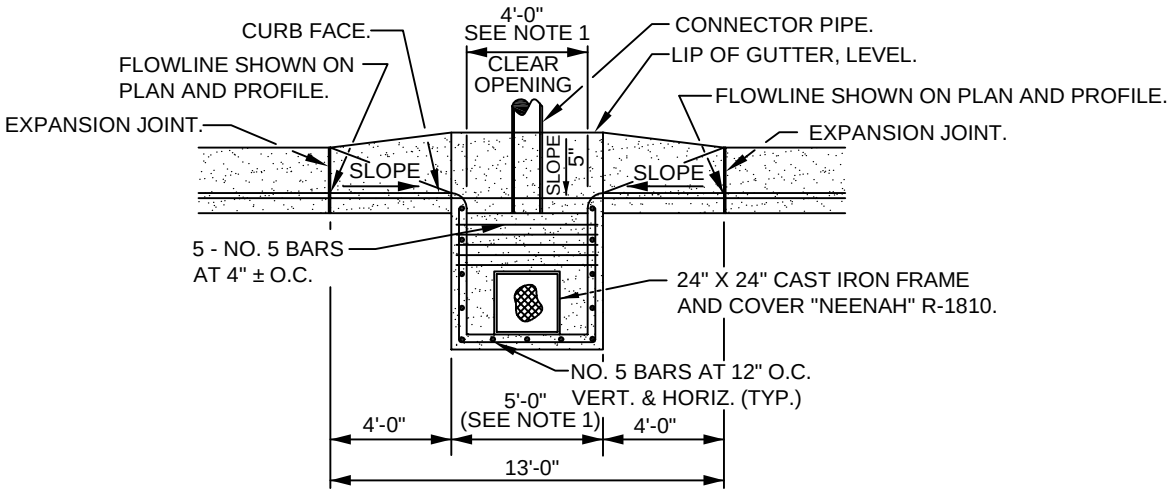
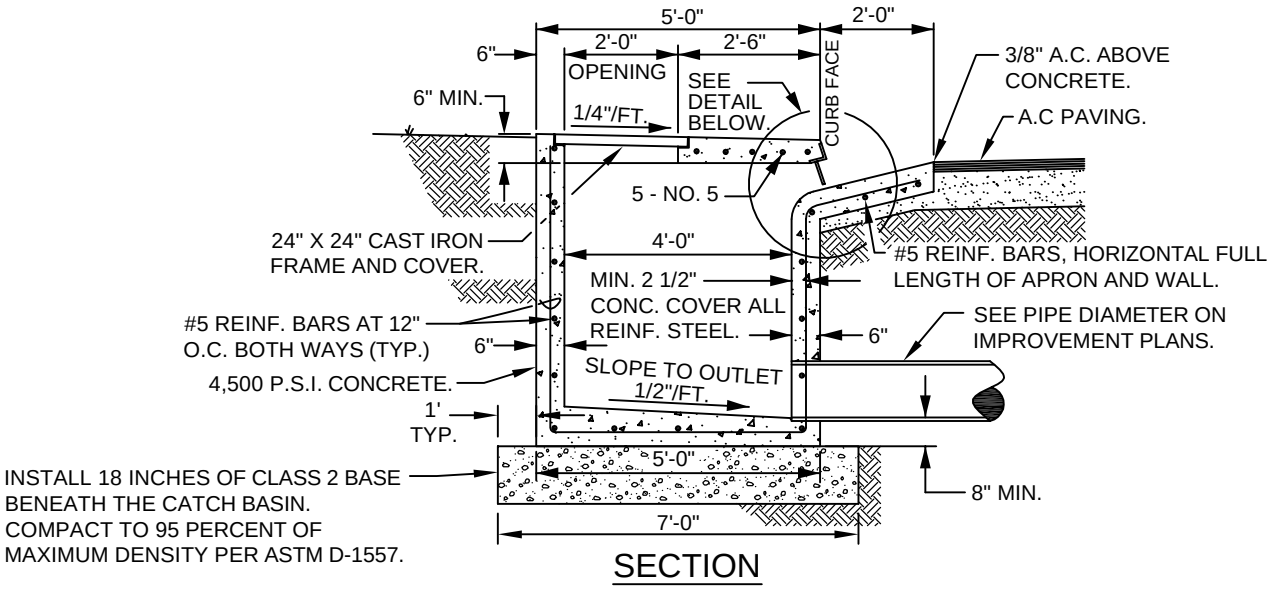
## 5 FOOT DIAMETER PCC STORMWATER MANHOLE

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

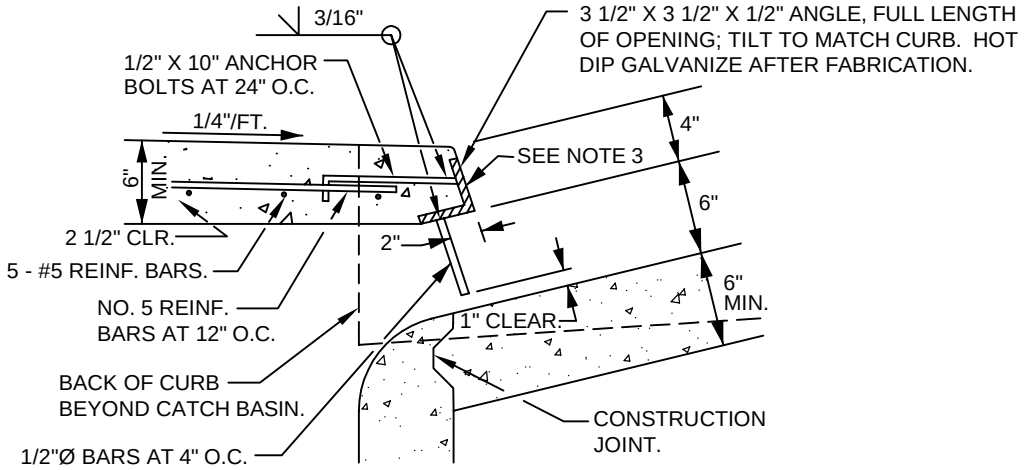
SHEET NO.
SW 104




PLAN




SECTION




DETAIL

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# P.C.C. STORMWATER CATCH BASIN

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 105

## KEYNOTE LEGEND FOR POND HEADWALL

1. INSTALL GRANULAR SAND MATERIAL BENEATH THE CONCRETE HEADWALL STRUCTURE. COMPACT THE GRANULAR SAND MATERIAL TO 95% OF MAX. DENSITY PER ASTM D-1557. THE SAND SHALL POSSESS A SAND EQUIVALENT OF 30 OR GREATER.

2. INSTALL A ROCK MATERIAL AT THE END OF THE HEADWALL SLAB TO THE DIMENSIONS INDICATED. THE ROCK MATERIAL SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS:

| *SIEVE SIZE* | *PERCENT PASSING* |
|---|---|
| *3 INCH* | *100* |
| *2 INCH* | *75* |
| *1 INCH* | *30* |
| *1/2 INCH* | *0* |

PLACE TWO (2) 8 MIL POLYETHYLENE LAYERS BENEATH THE ROCK FOR WEED CONTROL.

3. INSTALL CONCRETE SPLASH WALL TO THE DIMENSIONS INDICATED. THE TOP OF THE SPLASH WALL SHALL RECEIVE A 3/4 CHAMFER.

4. INSTALL SDR 35 PVC, SDR 26 PVC, OR CORRUGATED HDPE PIPELINE. CONNECT PIPELINE TO SDR 35 OR SDR 26 RING TIGHT COUPLING OR CORRUGATED HDPE FITTING CAST IN CONCRETE WALL.

5. INSTALL SDR 35 PVC RING TIGHT COUPLING OR CORRUGATED HDPE FITTING IN THE FORMWORK OF THE WALL PRIOR TO THE INSTALLATION OF CONCRETE. PLACE THE COUPLING FLUSH WITH THE WALL SURFACE. THE INVERT OF THE COUPLING SHALL BE LEVEL WITH THE HEADWALL SLAB.

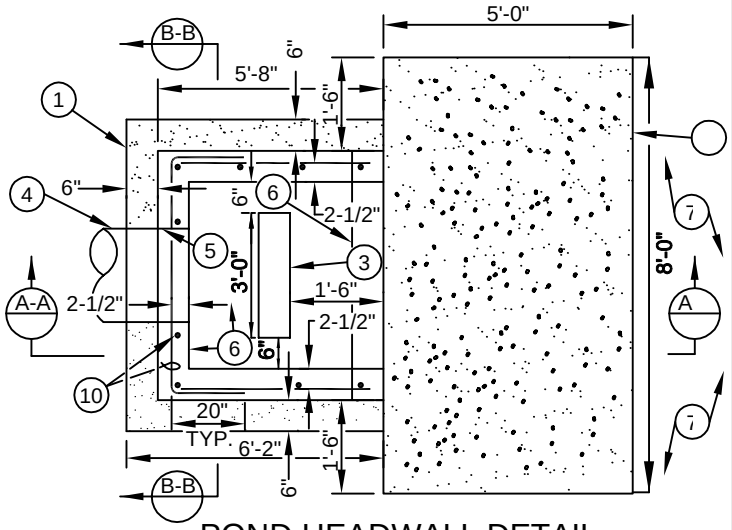
6. CONSTRUCT THE CONCRETE WALLS, CUTOFF WALL AND SLAB OF THE HEADWALL STRUCTURE. THE PORTLAND CEMENT CONCRETE SHALL CONTAIN (6 1/2) SACKS OF CONCRETE PER CUBIC YARD AND ATTAIN A COMPRESSIVE STRENGTH OF 4,500 PSI AFTER 28 DAYS CURING. THE SLUMP SHALL NOT EXCEED 4 INCHES. FORM MATERIAL SHALL CONSIST OF PLYWOOD. THE PLYWOOD MATERIAL SHALL BE NEW AND WITHOUT DEFECT. FORMS SHALL BE SUBSTANTIAL, UNYIELDING, TRUE TO LINE, PLUMB, LEVEL AND SUFFICIENTLY TIGHT TO PREVENT LEAKAGE OF MORTAR. CONSTRUCT FORMS TO THE EXACT CONCRETE DIMENSIONS. THE CONTRACTOR SHALL ENSURE THAT FORMS ARE STRONG, SAFE AND MAINTAINED IN AN ACCURATE POSITION UNTIL THE CONCRETE IS PLACED AND SET. INNER AND OUTER FORMS FOR WALLS SHALL BE HELD TOGETHER WITH COMBINATION STEEL TIES AND SPREADERS APPROVED BY THE ENGINEER. TIES SHALL BE SPACED SYMMETRICALLY IN TIERS AND ROWS, EACH TIER PLUMB FROM THE TOP TO THE BOTTOM OF THE WALL, AND EACH ROW LEVEL AT HORIZONTAL POUR LINES. THE TIES SHALL BE LOCATED NOT MORE THAN 6" BELOW THE POUR LINES AND SHALL BE TIGHTENED AFTER THE CONCRETE HAS INITIALLY SET UP. IMPRESSIONS IN THE CONCRETE WALLS RESULTING FROM THE REMOVED WALL TIES SHALL BE GROUTED WITH A SAND CEMENT MATERIAL CONSISTING OF 3 PARTS SAND AND 1 PART CEMENT. THE CONCRETE PLACED IN FORMED WALLS SHALL BE RUBBED SMOOTH AFTER THE REMOVAL OF FORMS. ALL CONCRETE PLACED IN FORMED WALLS AND FOOTINGS SHALL BE MECHANICALLY VIBRATED TO PREVENT THE FORMATION OF "HONEYCOMBED" AREAS. THE TOPS OF ALL CONCRETE WALLS SHALL BE CHAMFERED ON BOTH SIDES. THE TOPS OF ALL CONCRETE WALLS SHALL BE GIVEN A SMOOTH TROWELED SURFACE. THE CONCRETE SLAB SHALL RECEIVE A DOUBLE TROWEL FINISH.

7. BOTTOM OF POND.

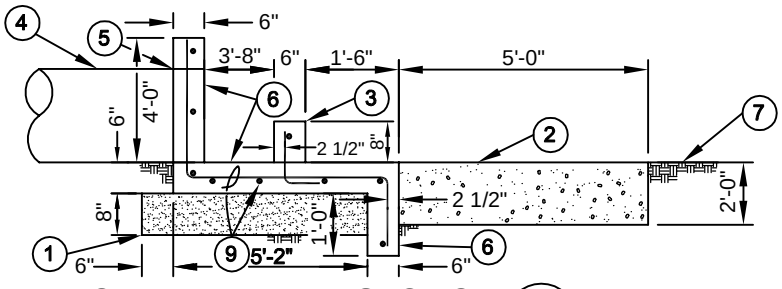
8. PLACE NUMBER 5 REINFORCING BARS 12 INCHES ON CENTER BOTH WAYS. THE VERTICAL DOWELS ARE TO BE CAST IN THE CONCRETE SL PRIOR TO THE INSTALLATION OF THE WALLS. ALL REINFORCING BARS SHALL BE IN CONFORMANCE WITH ASTM A615, GRADE 40. PLACING O ALL REINFORCING STEEL SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE, ACI 318. AT THE TIME CONCRETE IS PLACED ALL REINFORCING SHALL BE FREE OF LOOSE FLAKY RUST OR SCALE, MUD OIL OR OTHER COATINGS THAT DESTRO OR REDUCE BOND. SPLICES IN THE REINFORCING BARS SHALL CONFORM TO THE GENERAL REQUIREMENTS OF ACI 318-71; HOWEVE ALL SPLICES MUST BE A MINIMUM OF 40 BAR DIAMETERS AND THE LOCATIONS OF SPLICES SHALL BE STAGGERED. BENDING OF REINFORCING BARS SHALL NOT BE ACCOMPLISHED BY HEATING THE AREA TO BE BENT. THESE SPECIFICATIONS APPLY TO ALL REINFORCI BARS TO BE PLACED IN THE HEADWALL STRUCTURES

9. PLACE NUMBER 5 REINFORCING BARS 12 INCHES ON CENTER BOTH WAYS.

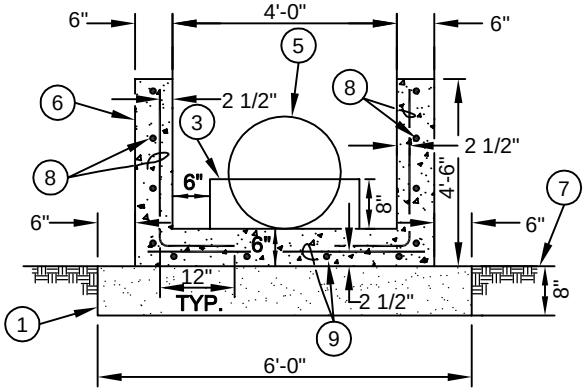
10. PLACE NUMBER 5 REINFORCING BARS 12 INCHES ON CENTER BOTH WAYS WRAP HORIZONTAL BAR INTO PERPENDICULAR WALLS AS ILLUSTRATED. THE VERTICAL DOWELS ARE TO BE CAST IN THE CONCRETE SLAB PRIOR TO THE INSTALLATION OF THE WALLS.




POND HEADWALL DETAIL




POND HEADWALL SECTION A-A




POND HEADWALL SECTION B-B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CALIFORNIA

# CITY OF CALIPATRIA

## P.C.C. STORMWATER HEADWA OUTLET STRUCTURE

PREPARED BY:

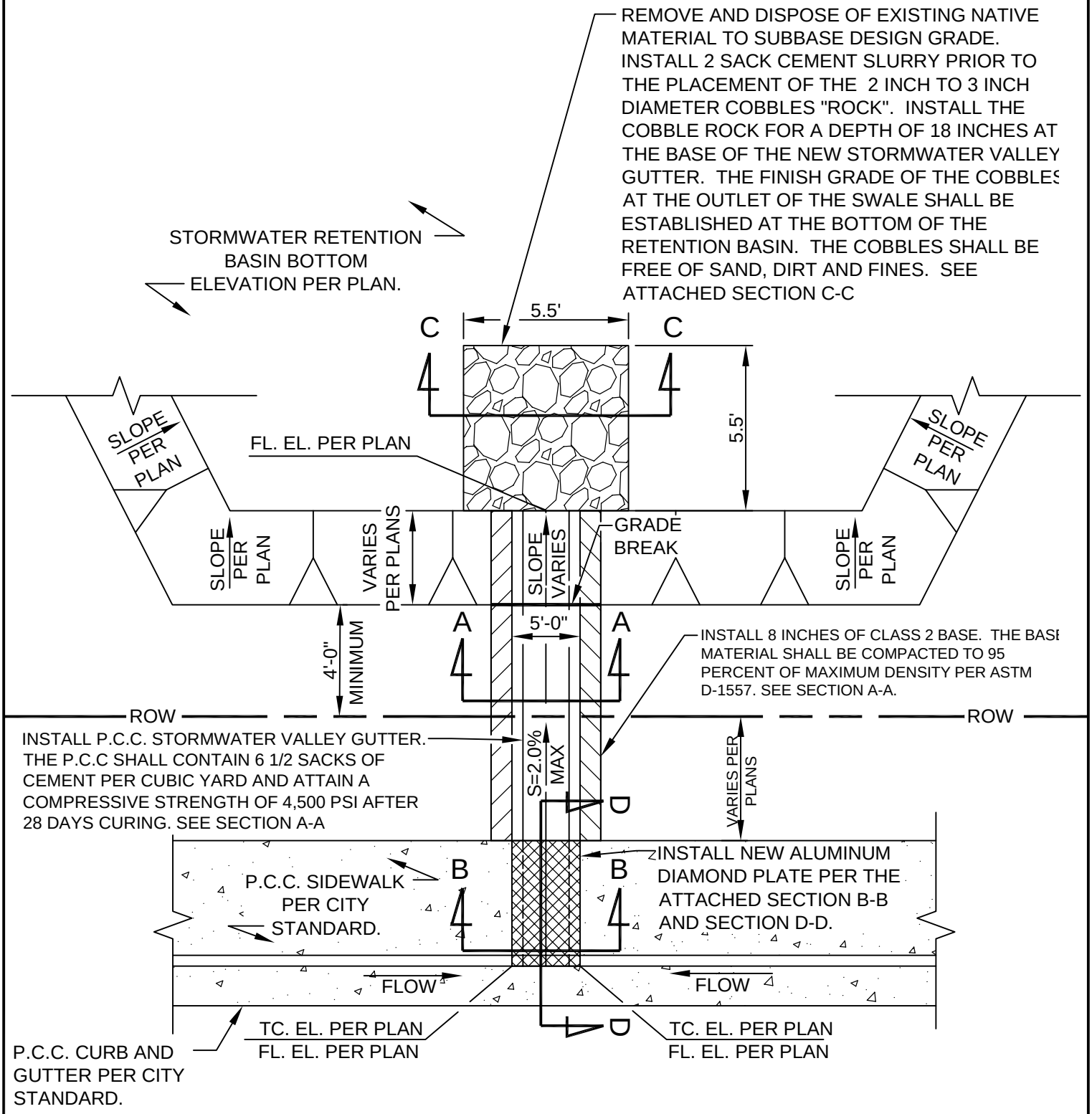
JAMES G. "JACK" HOLT

R.C.E. NO. 31773

EXP. DATE: 12-31-06

SHEET NO.

SW 106

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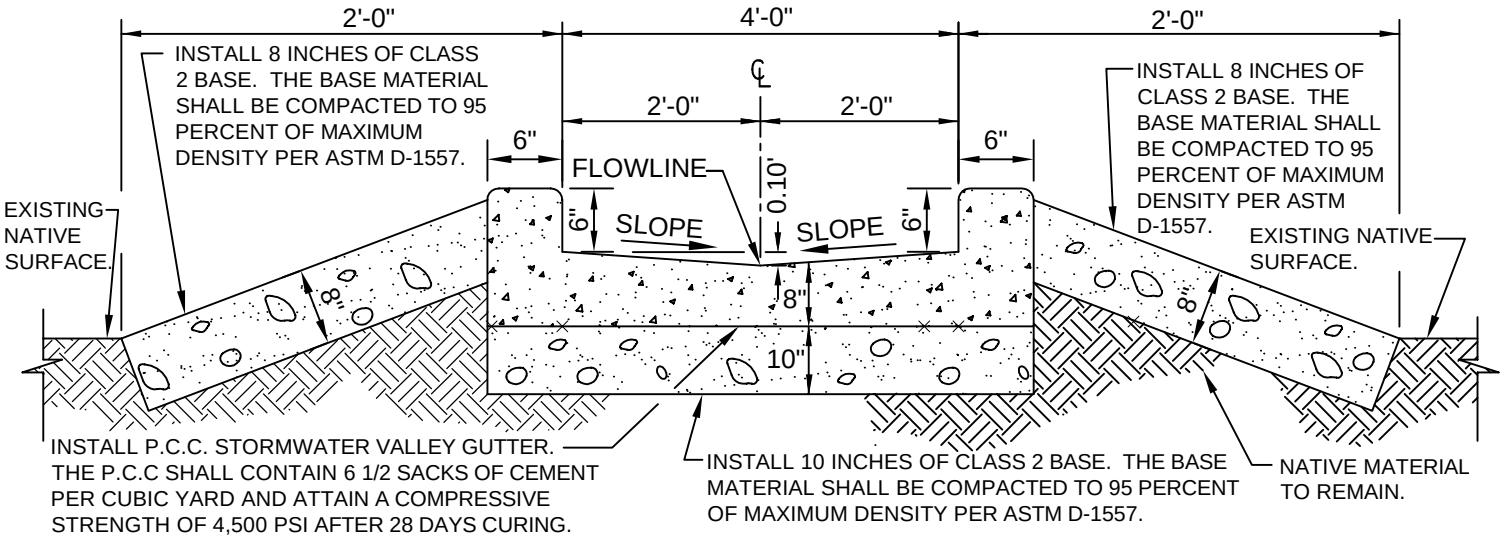
## PLAN VIEW OF STORMWATER INLET STRUCTURE BENEATH P.C.C. SIDEWALK

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 107




# SECTION A-A

NOT TO SCALE

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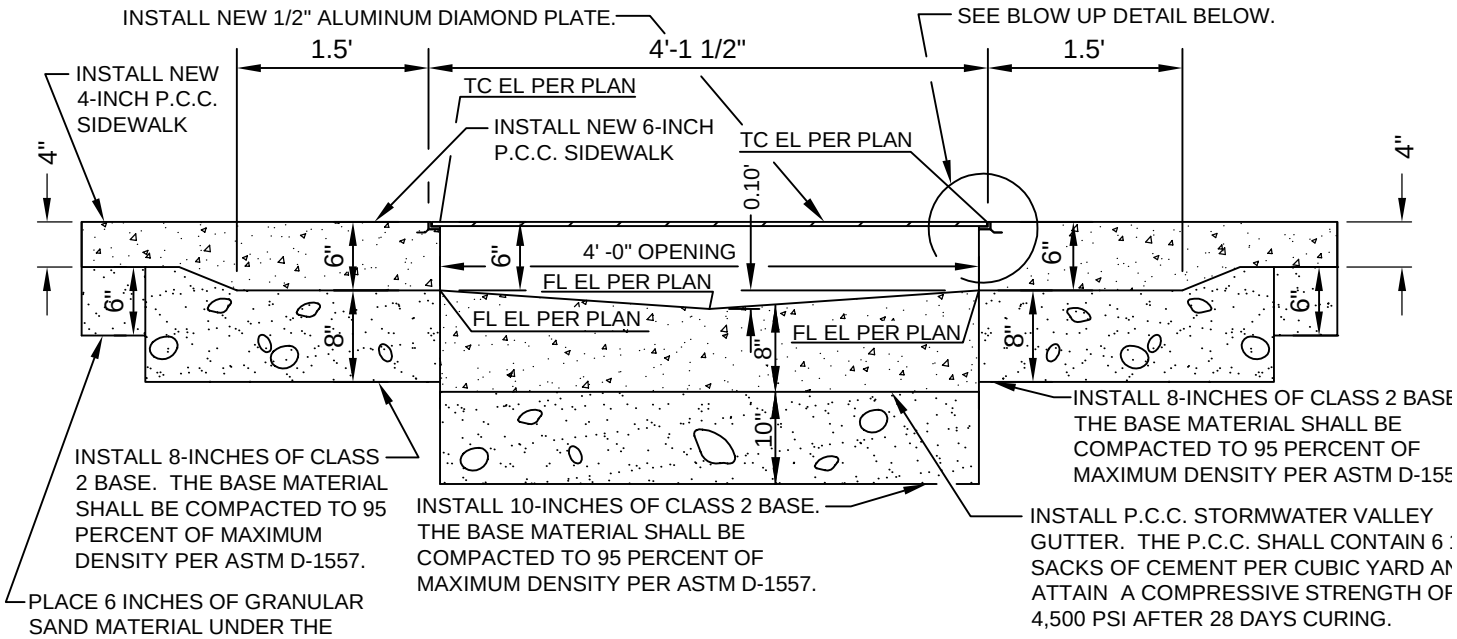
CALIFORNIA

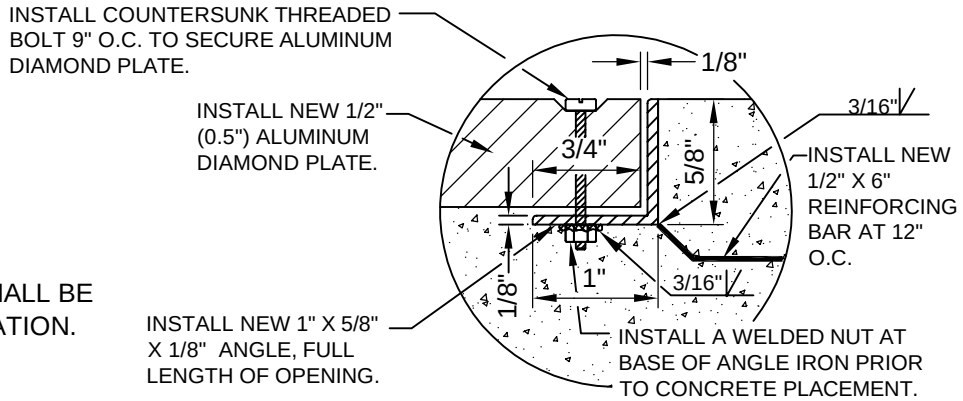
**CITY OF CALIPATRIA**

**STORMWATER INLET STRUCTURE P.C.C. VALLEY GUTTER - SECTION A-A**

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 107




BLOWUP DETAIL

NOTE: ALL STEEL COMPONENTS SHALL BE GALVANIZED AFTER FABRICATION.

# SECTION B-B

NOT TO SCALE

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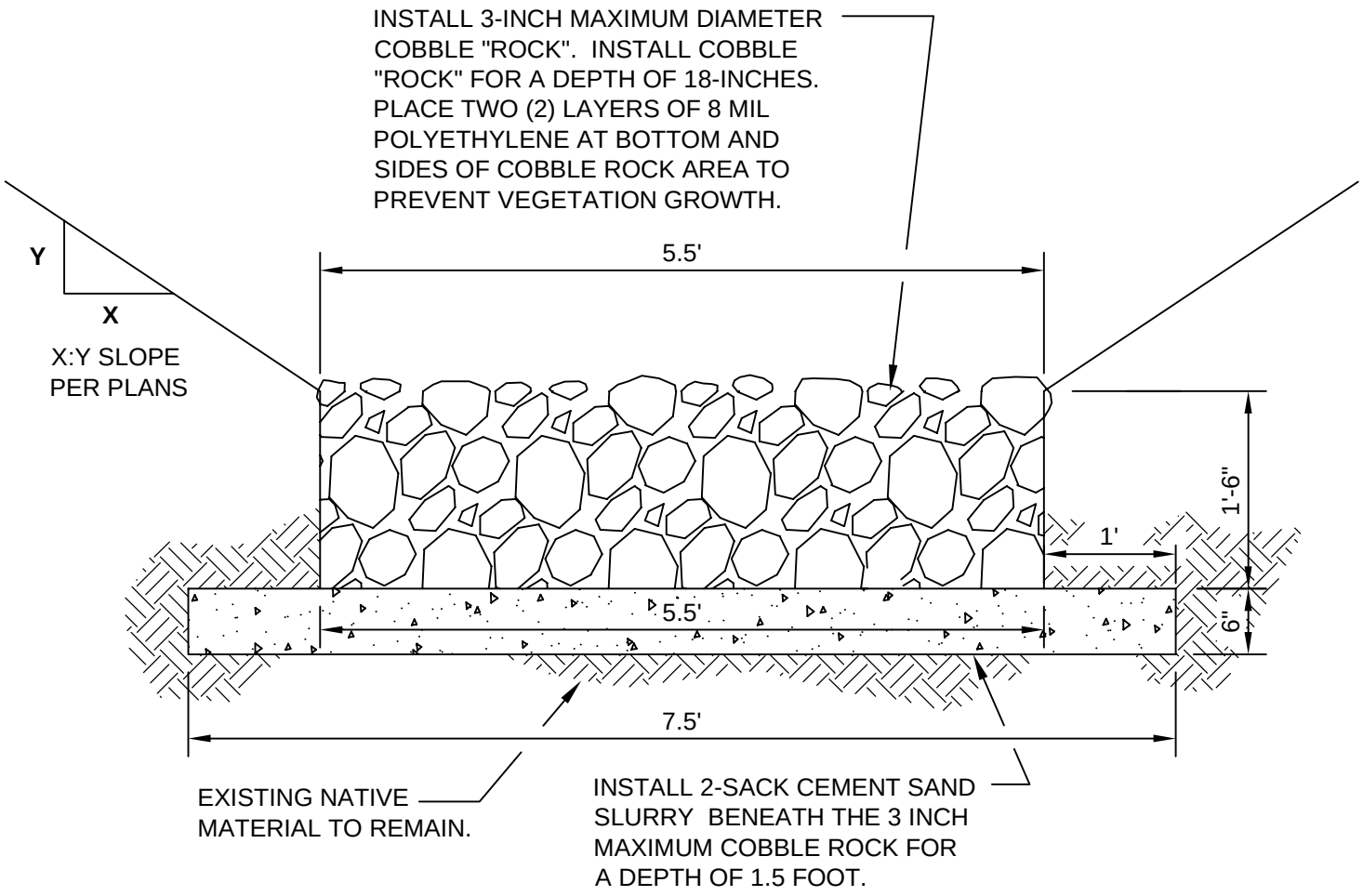
STORMWATER INLET STRUCTURE BENEATH P.C.C SIDEWALK - SECTION B-B

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 107(




## COBBLE ROCK GRADATION

| SIEVE SIZE | PERCENT PASSING |
|---|---|
| 3 INCH | 100 |
| 2 INCH | 75 |
| 1 INCH | 30 |
| 1/2 INCH | 0 |

# SECTION C-C

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COBBLE "ROCK" STORMWATER DISSIPATION AREA - SECTION C-

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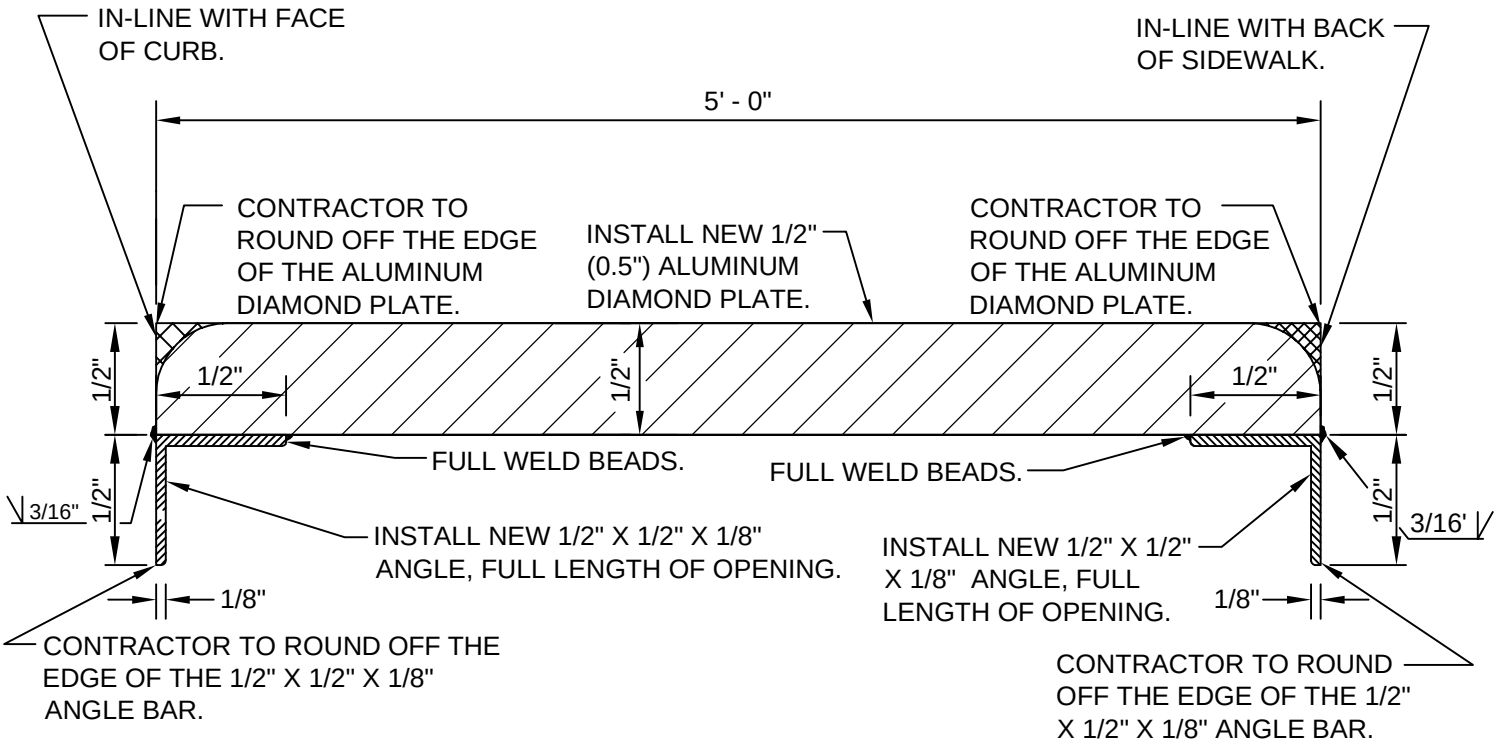
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 107L




NOTE: ALL STEEL COMPONENTS SHALL BE GALVANIZED AFTER FABRICATION.

# SECTION D-D

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STORMWATER INLET STRUCTURE BENEATH P.C.C SIDEWALK - SECTION D-D

PREPARED BY:
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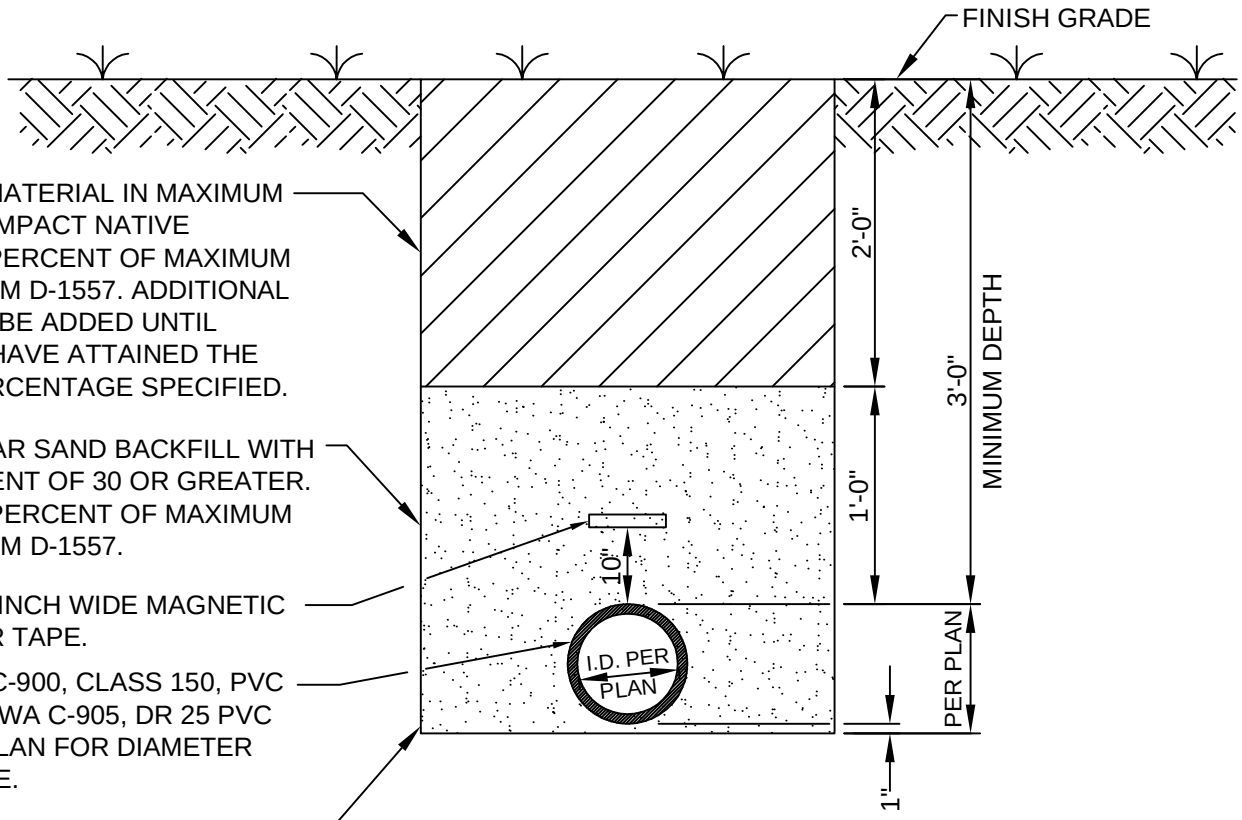
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 107




INSTALL NATIVE MATERIAL IN MAXIMUM 1-FOOT LIFTS. COMPACT NATIVE MATERIAL TO 85 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557. ADDITIONAL LIFTS SHALL NOT BE ADDED UNTIL PREVIOUS LIFTS HAVE ATTAINED THE COMPACTION PERCENTAGE SPECIFIED.

INSTALL GRANULAR SAND BACKFILL WITH A SAND EQUIVALENT OF 30 OR GREATER. COMPACT TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557.

INSTALL 6-INCH WIDE MAGNETIC DETECTOR TAPE.

INSTALL AWWA C-900, CLASS 150, PVC PIPELINE OR AWWA C-905, DR 25 PVC PIPELINE. SEE PLAN FOR DIAMETER SIZE OF PIPELINE.

REMOVE AND DISPOSE OF EXISTING NATIVE MATERIAL WITHIN THE PIPE TRENCH FOR THE PIPELINE INSTALLATION.

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STORMWATER FORCEMAIN TRENC
IN AREAS OUTSIDE OF THE PAVEMEI

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
SW 108

SAWCUT EXISTING A.C. PAVEMENT FOR THE FULL DEPTH OF THE A.C. PAVEMENT WHERE APPLICABLE. REMOVE AND DISPOSE OF A.C. PAVEMENT AND UNDERLYING SUBBASE AND NATIVE MATERIAL.

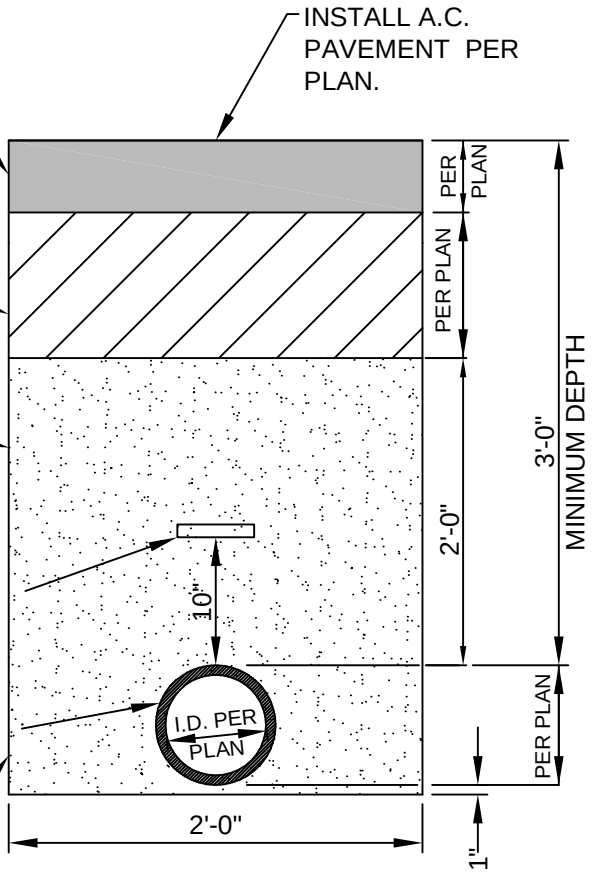
INSTALL 3/4" MAXIMUM CLASS 2 BASE. COMPACT TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D- 1557 PER PLAN.

INSTALL GRANULAR SAND FILL WITH A SAND EQUIVALENT OF 30 OR GREATER. COMPACT TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557.

INSTALL 6-INCH WIDE MAGNETIC DETECTOR TAPE.

INSTALL AWWA C-900, CLASS 150 OR AWWA C-905, DR 25, PVC PIPELINE. SEE PLAN FOR DIAMETER SIZE OF PIPELINE.

REMOVE AND DISPOSE OF EXISTING NATIVE MATERIAL WITHIN THE PIPE TRENCH FOR THE PIPELINE INSTALLATION.

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STORMWATER FORCEMAIN TRENCH IN PAVED AREAS

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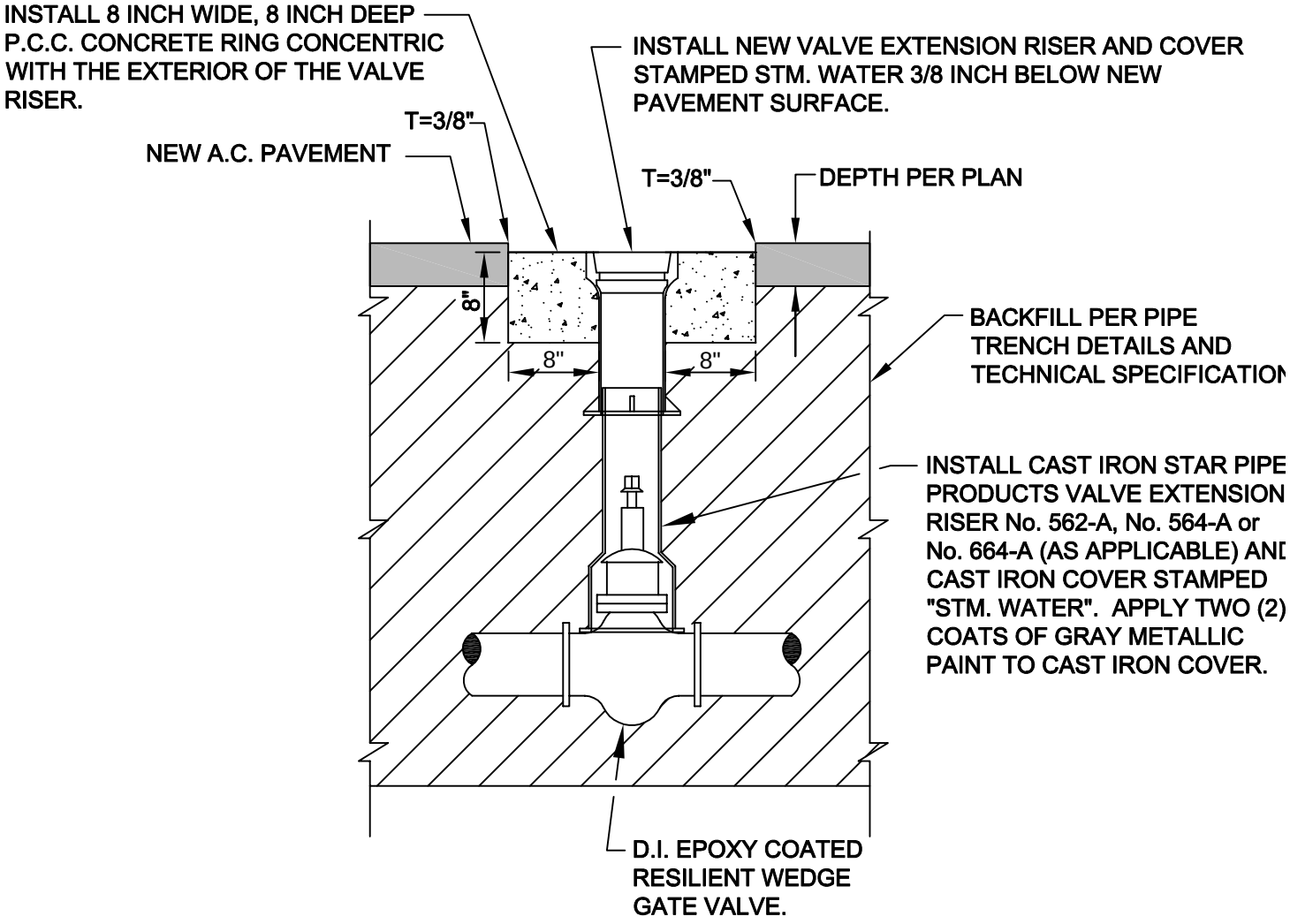
SHEET NO.
SW 109

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STORMWATER FORCEMAIN GATE VALVE AND RISER

PREPARED BY:
JAMES G. "JACK" HOLT
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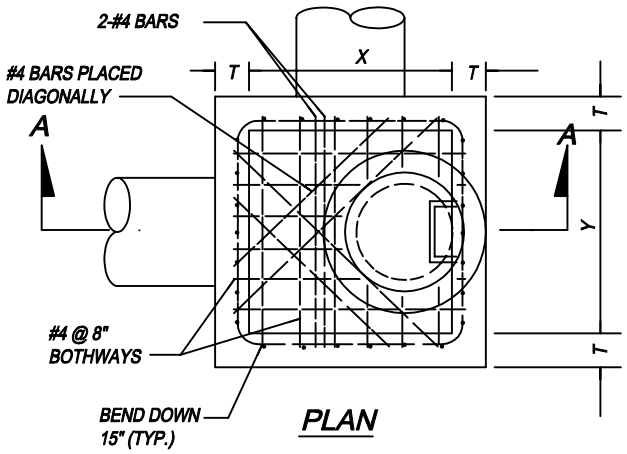
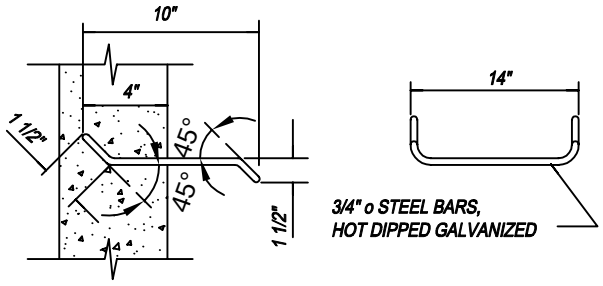
EXP. DATE: 12-31-06

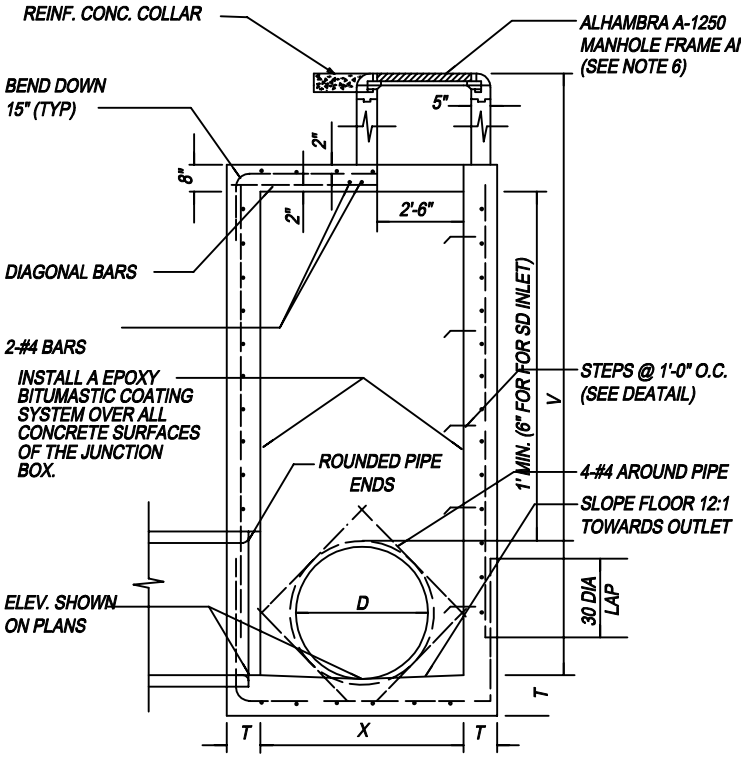
SHEET NO.
SW 110




PLAN




STEP DETAIL




SECTION A-A

| SECTION A-A | | | |
|---|---|---|---|
| MAXIMUM SPAN X OR Y | DEPTH V | THICK-NESS T | HOR. & FLR. REINF. |
| 3'-0" TO 4'-0" | 4'-0" | 6" | #4 @ 18" |
| 4'-1" TO 7'-0" | | 6" | #4 @ 12" |
| 7'-1" TO 8'-0" | | 6" | #4 @ 8" |
| 3'-0" TO 4'-0" | 4'-1" TO 8'-0" | 6" | #4 @ 18" |
| 4'-1" TO 5'-0" | | 6" | #4 @ 12" |
| 5'-1" TO 6'-0" | | 6" | #4 @ 8" |
| 6'-1" TO 8'-0" | | 6" | #4 @ 6" |
| 8'-1" TO 10'-0" | | 6" | #5 @ 8" |
| 3'-1" TO 4'-0" | 8'-1" TO 12'-0" | 6" | #4 @ 15" |
| 4'-1" TO 5'-0" | | 8" | #4 @ 12" |
| 5'-1" TO 6'-0" | | 8" | #4 @ 8" |
| 6'-1" TO 8'-0" | | 8" | #4 @ 6" |
| 3'-0" TO 4'-0" | 12'-1" TO 16'-0" | 6" | #4 @ 12" |
| 4'-1" TO 5'-0" | | 8" | #4 @ 12" |
| 5'-1" TO 6'-0" | | 8" | #4 @ 8" |
| 6'-1" TO 7'-0" | | 8" | #4 @ 6" |
| 7'-1" TO 8'-0" | | 8" | #4 @ 8" |
| 3'-0" TO 4'-0" | 16'-1" TO 20'-0" | 8" | #4 @ 12" |
| 4'-1" TO 5'-0" | | 10" | #4 @ 12" |
| 5'-1" TO 6'-0" | | 10" | #4 @ 8" |
| 6'-1" TO 7'-0" | | 10" | #4 @ 6" |
| 7'-1" TO 8'-0" | | 10" | #4 @ 8" |
| 3'-0" TO 4'-0" | 20'-1" TO 24'-0" | 8" | #4 @ 12" |
| 4'-1" TO 5'-0" | | 10" | #4 @ 12" |
| 5'-1" TO 6'-0" | | 10" | #4 @ 8" |
| 6'-1" TO 7'-0" | | 10" | #4 @ 6" |
| 7'-1" TO 8'-0" | | 12" | #4 @ 8" |

## NOTES

1. CONCRETE SHALL BE 4,500 PSI.
2. ALL PRECAST COMPONENTS SHALL BE REINFORCED WITH 1/4" DIAMETER STEEL, WOULD SPIRALLY ON 4" CENTERS.
3. ALL JOINTS SHALL BE SET IN CLASS C MORTAR.
4. MAINTAIN 3" MIN. CLEAR SPACING BETWEEN REINFORCING AND SURFACE UNLESS OTHERWISE NOTED.
5. EXPOSED EDGES OF CONCRETE SHALL BE ROUNDED WITH A RADIUS OF 1/2".
6. ALHAMBRA A-1252 OPEN GRATING SHALL BE USED IN LIEU OF SOLID COVER IN THE RETENTION BASIN INLET AND THE TEMPORARY CATCH BASIN ON MENVIELLE COURT.

| PIPE DIA. | X | Y |
|---|---|---|
| UP TO 39" | 4' | 4' |
| 42" TO 48" | 5' | 4' |
| 59" TO 60" | 6' | 4' |
| 63" TO 72" | 7' | 4' |
| 75" TO 84" | 8' | 4' |

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# CITY OF CALIPATRIA
## STORMWATER JUNCTION BOX

PREPARED BY:
JAMES G. "JACK" HOLT
R.C.E. NO. 31773
EXP. DATE: 12-31-06

SHEET NO.
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