



**CITY OF COLTON  
PUBLIC WORKS/ENGINEERING DEPARTMENT  
STORM DRAIN PLAN REVIEW CHECKLIST  
(PROVIDE SEPARATE ON-SITE & OFF-SITE STORM DRAIN PLAN SETS)**

PROJECT NAME: \_\_\_\_\_ TRACT,  
 PARCEL MAP OR PROJECT ID NO. \_\_\_\_\_ PLAN  
 CHECKED BY: \_\_\_\_\_

	1 <sup>ST</sup> CHECK	2 <sup>ND</sup> CHECK	3 <sup>RD</sup> CHECK	FINAL MYLAR	COMMENTS
<b>DATE CHECKED:</b>					
<b>I. SUBMITTAL REQUIREMENTS – SEE PLAN CHECK REQUIREMENT CHECK LIST</b>					
HYDROLOGY/HYDRAULIC CALCULATION REPORT - VERIFY THAT ALL PROPOSED STORM DRAIN PIPES (SAND FILTER, LEACH LINES & COMPONENTS ARE ON THE HYDROLOGY MAP – SHOW WATER SURFACE ELEVATIONS FOR RETENTION BASINS, VERIFY THAT CENTERLINE OF STREET IS HIGHER THAN WSE 100. ADDRESS OFFSITE AREA RUNOFF TRIBUTARY FLOWS. UTILIZE SB FLOOD CONTROL HYDROLOGY MANUAL PLATES.					
CONDITIONS OF APPROVAL (ENGINEER TO INDEPENDENTLY VERIFY CONDITIONS OF APPROVAL HAVE BEEN MET)					
STORM DRAIN PLAN					
ESTIMATES OF QUANTITIES					
<b>II. DESIGN CRITERIA AND GENERAL REQUIREMENTS</b>					
A. CHECK FOR COMPLIANCE WITH CITY’S MASTER PLAN OF DRAINAGE. 1200’ MAXIMUM CATCH BASIN SPACING IS ENCOURAGED.					
B. CHECK HYDROLOGY AND HYDRAULIC CALCULATIONS:					
1. USE SB COUNTY FLOOD CONTROL RATIONAL METHODS FOR DETERMINING PEAK RUN OFF RATES ON SMALL WATERSHED AREAS.					
2. USE SB COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT UNIT HYDROGRAPH METHOD FOR DETERMINING FLOOD VOLUMES WHEN COMPUTING RETENTION BASIN SIZES AND FOR PEAK RUN OFF RATES ON LARGE WATERSHEAD AREAS.					
3. CHECK DRAINAGE BOUNDARY AREAS AND ENSURE INCLUSION OF TRIBUTORY STREET AND OTHER OFFSITE AREAS. MAKE SURE HYDROLOGY MAP IS COMPLETE AND ACCURATE.					

	1ST CHECK	2ND CHECK	3RD CHECK	FINAL MYLAR	COMMENTS
4. CHECK STREET CAPACITY, DEPTHS AND VELOCITIES.					
a. ALLOWABLE VELOCITY WITHIN THE STREET SECTION SHALL BE DETERMINED BY THE PRODUCT OF DEPTH OF FLOW TIMES VELOCITY AND MUST BE LESS THAN OR EQUAL TO 6 FPS.					
5. CHECK CAPACITY AND HGL FOR ALL DRAINAGE STRUCTURES.					
a. CHECK CALCULATIONS FOR NON STANDARD BOX CULVERTS					
b. CHECK CAPACITIES OF CATCH BASINS IN SUMPS.					
c. CHECK CAPACITIES OF FLOW BY CATCH BASINS. MAKE SURE BYPASSED FLOWS ARE ACCOUNTED FOR DOWN STREAM.					
d. FLOW BY CATCH BASIN SIZING SHALL BE CALC'D USING THE FHWA HEC 12 EQUATION: $L_t = 0.6 \times Q^{0.42} \times S^{0.3} (1/n \times Sx)^{0.6}$ FOR TOTAL LENGTH REQUIRED.					
e. SUMP CATCH BASINS SHALL BE SIZED USING THE WEIR EQUATION IF FLOW IS BELOW TC AND THE ORIFICE EQUATION FOR DEPTHS ABOVE TC.					
d. WATER SURFACE ELEVATIONS IN CATCH BASINS ARE A MINIMUM OF 6" BELOW GUTTER FLOW LINE.					
e. 2 FOOT MINIMUM FREEBOARD FROM THE CENTERLINE PROFILE GRADE TO THE WATER SURFACE IS REQUIRED IN CULVERT DESIGN.					
6. BULKING FACTOR MAY BE REQUIRED BASED ON SITE AND RUN OFF CHARACTERISTICS.					
C. THE FOLLOWING DESIGN CRITERIA SHALL BE USED FOR STREET AND STORM DRAIN CAPACITIES:					
1. 10 YEAR FREQUENCY STORM EVENT (Q10) IS ALLOWED TO ACCUMULATE IN STREETS TO TOP OF CURB.					
2. 100 YEAR FREQUENCY STORM EVENT (Q100) WILL BE CARRIED WITHIN THE STREET RIGHT OF WAY AND THE COMBINATION OF BOTH THE STREET AND THE UNDERGROUND STORM DRAIN. PROVIDE CALCULATION OF STREET CAPACITIES IN HYDROLOGY REPORT.					
3. IF ON PRIVATE STREETS, A SEPARATE STORM DRAIN EASEMENT MAY BE CONSIDERED BEHIND CURB TO ACCOMMODATE THE 100 YEAR STORM EVENT.					
4. SECONDARY, MAJOR AND PRIMARY STREETS MUST HAVE ONE DRIVING LANE CLEAR IN EACH DIRECTION IN 10 YEAR STORM EVENTS.					
5. SUMP CATCH BASINS AND CONNECTOR DRAINS TO BE DESIGNED FOR 100 YEAR DESIGN STORM. SUMP CONDITIONS REQUIRE A SECONDARY OVERLAND FREEFLOW TO PREVENT FLOODING OF BUILDINGS SHOULD THE CATCH BASIN OR DRAIN SYSTEM BECOME PLUGGED.					

	1ST CHECK	2ND CHECK	3RD CHECK	FINAL MYLAR	COMMENTS
D. THE FOLLOWING DESIGN CRITERIA SHALL BE USED FOR RETENTION BASIN SIZING:					
1. THE RETENTION BASIN SHOULD BE SIZED FOR THE TOTAL RUN OFF PRODUCED BY THE CONTROLLING 100 YEAR STORM EVENT (3 HOUR, 6 HOUR OR 24 HOUR) OR AS REQUIRED IN THE APPROVED CONDITIONS OF APPROVAL.					
2. AN APPROVED PERCOLATION RATE MAY BE USED OVER THE SURFACE AREA OF THE RETENTION BASIN. RATES EXCEEDING 2" PER HOUR SHALL REQUIRE JUSTIFICATION FROM THE SOILS ENGINEER.					
3. DRAIN PIPES INTO THE RETENTION BASIN SHALL BE SIZED USING THE WATER SURFACE ELEVATION IN THE BASIN AT THE TIME OF CONCENTRATION FOR THE PEAK RUN OFF FOR THE TRIBUTARY AREA FOR THE SUBJECT DRAIN PIPE.					
E. $n=0.02$ ON RESIDENTIAL STREETS (STREETS WITH DRIVEWAYS, PARKED CARS, ETC.).					
F. $n=0.015$ ON MAJOR STREETS (WITH FEW DRIVEWAYS AND LITTLE OR NO PARKING).					
G. MINIMUM VELOCITY IN STORM DRAIN SYSTEMS SHALL BE 2.5 F.P.S. MINIMUM SLOPE IS 0.20%.					
H. CROSS GUTTERS SHALL NOT BE USED WHERE THERE ARE EXISTING STORM DRAINS. – USE OF CROSS GUTTERS SHOULD BE LIMITED					
I. WHEN VELOCITY IS GREATER THAN 20 FPS, NOTE (1) ON PAGE 7 SHOULD BE ADDED.					
J. REINFORCED CONCRETE, PIPE ANCHORS ARE REQUIRED ON SLOPES GREATER THAN 4:1. ANCHORS SHALL BE PLACED AT 10' VERTICAL INTERVALS.					
K. STORM DRAINS SHALL BE REINFORCED PIPE OR BOX STRUCTURES WITHIN PUBLIC RIGHT OF WAY (18" MINIMUM DIAMETER) AND CONTINUING TO FIRST JUNCTION STRUCTURE. PROVIDE "D" LOAD STRENGTH IN CONSTRUCTION NOTES AT ON PROFILE DETAIL. UTILIZE STANDARD SIZING (6 INCH INCREMENTS ABOVE 18" DIAMETER) PROVIDE HDPE PIPE DESIGN (IF SPECIFIED FOR PRIVATE STREETS) SIMILAR TO RCP WITH CURVALINEAR PIPE LAYOUT WITH EQUIVALENT FITTING IN TABLE FORMAT. MANHOLE SPACING SHOULD AVERAGE 250300 FEET MAXIMUM					
L. "D" STRENGTH SHALL BE PER CALTRANS STANDARD A62D.					
M. STORM DRAINS MAY BE PLASTIC (HDPP OR PVC) OR METAL (CMP) IN PRIVATE DEVELOPMENTS. SHOW GAUGE (14 GAUGE MINIMUM) AND TYPE OF CMP.					
N. CHECK FOR CUT OFF WALLS, ENERGY DISSIPATORS, ETC. AT OUTLETS OF STORM DRAIN SYSTEMS. CHECK FOR HEADWALLS, RIP RAP, ETC. AT INLETS.					
O. CHECK AT SUBDIVISION BOUNDARIES FOR ANY POSSIBLE PROBLEMS SUCH AS BLOCKING DRAINAGE FROM OR DISCHARGING TO ADJACENT LANDS OR CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS.					

	1ST CHECK	2ND CHECK	3RD CHECK	FINAL MYLAR	COMMENTS
P. RIPRAP SHALL BE PROVIDED AT INLETS FOR 1' MINIMUM ABOVE THE Q100 WATER SURFACE ELEVATION IF IT IS ABOVE THE TOP OF PIPE.					
Q. SHOW ROCK RIPRAP (1/4 TON MINIMUM IF NOT GROUTED) OR OTHER EROSION CONTROL METHOD. GIVE REQUIRED THICKNESS FOR ROCK RIPRAP. MINIMUM GUNITE DITCH SIZING 18" DEEP X 3' IN WIDTH CITY PREFERS USE OF OUTLET STRUCTURES INSTEAD OF HEAD WALL/RIP RAP SYSTEMS					
R. ANY BLOCK WALLS, DITCHES, ETC. NEEDED ALONG TRACT BOUNDARIES TO PREVENT FLOODING. SHOW ON PLANS.					
S. A RECORDED DRAINAGE RELEASE LETTER NEEDED IF STREETS OR PROPERTY DRAINS ONTO ADJACENT PROPERTY.					
T. STORM DRAIN EASEMENTS SHALL BE OBTAINED PRIOR TO CONSTRUCTION WHERE UNDERGROUND DRAINS ARE NOT LOCATED IN RIGHT OF WAY. STORM DRAIN EASEMENT WIDTH SHALL BE IN ACCORDANCE WITH SB COUNTY STANDARDS.					
U. NO STORM DRAIN EASEMENTS CENTERED ON PROPERTY LINES AND NO STORM DRAINS LOCATED ON PROPERTY LINES. SUPPLEMENTAL ACCESS EASEMENTS MAY BE REQUIRED.					
V. GRATED CATCH BASINS ARE DISCOURAGED. WHEN PERMITTED, USE AN APPROVED BICYCLE PROOF GRATE.					
W. SHOW MANHOLES FOR MAINTENANCE AS REQUIRED. USE RIVERSIDE FLOOD CONTROL DISTRICT MANHOLE SPACING BASED ON PIPE SIZE.					
X. DESIGN HGL FOR 6" BELOW CATCH BASIN LIP FOR 10 YEAR STORM.					
Y. PROVIDE RETENTION BASIN DESIGN PER CITY GUIDELINE 97-03.					
Z. SHOW DISPOSITION OF NUISANCE FLOW AWAY FROM STREET AC. PROVIDE NUISANCE WATER SAND FILTER LEACH LINE DESIGN PER CITY STANDARD 370 ADDRESSING NUISANCE WATER FROM RESIDENTIAL UNITS, LANDSCAPE & SPECIALIZED USE FLOWS. DOCUMENT CALCULATION ON DETAIL SHEET. SHEETS SHOULD ALSO SHOW OUTLET STRUCTURE, SAND FILTER, LEACH LINE DETAILS. PARALLEL LEACH LINES SHOULD BE OFFSET AS POSSIBLE TO MAXIMIZE PERCOLATION WELLSITE BLOW OFF WATER (ASSUME 10,000 GALLONS PER DAY PERCOLATION REQUIREMENT) SHOULD BE ADDRESSED SEPARATELY WITH A ROCK INFILTRATION PIT WITH LANDSCAPE COVER AT RETENTION BASINS. PROVIDE NUISANCE WATER CALCULATIONS INCLUDING SAND FILTERS & LEACH LINES IN HYDROLOGY REPORT PER CITY STANDARDS					
AA. NO INDIVIDUAL LOT RETENTION UNDER 1 ACRE LOT SIZE					
AB. NO FLOW CROSSING PROPERTY LINES					
AC. CONCRETE ENCASMENT PER RCFC M807 FOR SD/SEWER OFFSETS BETWEEN 6" TO 18"					
AD. NO MANHOLES IN WALKWAYS					

	1ST CHECK	2ND CHECK	3RD CHECK	FINAL MYLAR	COMMENTS
<b>III. GENERAL SHEET REQUIREMENTS – ALL SHEETS</b>					
A. MEDIUM					
1. 24"X36" SIZE. FINAL SUBMITTAL ON 3 MIL. MYLAR FILM					
2. NO "STICKY BACK" FILM, GLUED OR TAPED ON SECTIONS					
3. BOLD NEW CONSTRUCTION AREAS AND GREYSKALE EXISTING					
B. DRAFING/LAYOUT REQUIREMENTS					
1. PLAN NAME WITH TRACT, PM OR SDP NUMBER					
2. STREET NAME AND STORM DRAIN LIMITS – I.E. JEFFERSON STEET, LINE "A" - STA 10+00 TO STA 21+00					
3. TYPE OF PLAN, ON-SITE STORM DRAIN PLAN OR OFF-SITE STORM DRAIN PLAN					
4. SECTION, TOWNSHIP AND RANGE					
5. REVISION BLOCK					
6. PREPARER'S NAME, ADDRESS, PHONE NUMBER					
7. BASIS OF BEARING AND APPROVED BENCH MARK					
8. SIGNATURE BLOCKS PROVIDED					
a. CITY SIGN OFF BLOCK – APPROVED BY: CITY ENGR., RCE #__,__, EXP. DATE – __/__/__					
b. RESPONSIBLE ENGINEER'S SIGNATURE BLOCK AND SEAL – CHECK EXP. DATE					
c. OTHER AGENCY SIGNATURE BLOCK(S) IF REQUIRED					
9. USA DIG ALERT NOTE WITH PHONE NUMBER 1-800-227-2600					
10. SHEETS NUMBERED NUMERICALLY IN INCREASING ORDER – SHEET ____ OF ____					
11. 0.08" MINIMUM TEXT HEIGHT – CAD DRAFTED, 0.10" IF HAND DRAFTED – ALL TEXT LEGIBLE					
<b>IV. TITLE SHEET</b>					
A. GENERAL NOTES PROVIDED					
B. INDEX MAP					
1. SCALE IS 1"=500' OR SMALLER - USE STANDARD SCALE					
2. SHEET COVERAGE IS SHOWN					
3. STREET NAMES AND LOT #S SHOWN					
4. LOCATIONS OF STORM DRAIN SYSTEMS (CATCH BASINS, RETENTION BASINS, SAND FILTERS, LEACH LINES, CULVERTS, CROSS GUTTERS, INLETS, RETAINING WALL DRAINS, ETC.) ARE SHOWN. DIRECTION OF DRAINAGE FLOW IN STREET WITH Q10 AND Q100 SHOWN AT DRAINAGE INLET LOCATIONS. RETENTION BASIN NOMENCLATURE CORRESPONDS TO HYDROLOGY REPORT					
D. VICINITY MAP					
1. ARTERIAL STREETS SHOWN					
2. PROJECT LOCATION INDICATED ON MAP					

	1ST CHECK	2ND CHECK	3RD CHECK	FINAL MYLAR	COMMENTS
3. SCALE NOTATION PROVIDED ("NTS" IS OK)					
E. LEGEND OF SYMBOLS USED, INCLUDES CONSTRUCTION NOTE SYMBOLS, TYPICAL ABBREVIATIONS, SPECIAL LINETYPES, HATCHING LEGEND, ETC.					
G. OWNER'S INFORMATION - NAME/ADDRESS AND TELEPHONE NUMBER					
H. UTILITY AGENCY INFORMATION FOR:					
1. COLTON WASTEWATER (909) 370-6131					
2. COLTON WATER (909) 370-6131					
3. THE GAS COMPANY 800-427-2200					
4. VERIZON (FORMALY GTE) 800-483-5000					
5. TIME WARNER CABLEVISION					
I. CONSTRUCTION NOTES AND ESTIMATE OF QUANTITIES. SPECIFY MANUFACTURER/MODEL NUMBER OF DRAIN INLETS/CATCH BASINS					
J. PROVIDE SHEET INDEX ON TITLE SHEET					
<b>V. PLAN-PROFILE SHEETS</b>					
A. PLAN VIEW SHOWS:					
1. NORTH ARROW (PREFERRED TO POINT UP OR TO THE RIGHT OR LEFT)					
2. 4" BAR SCALE - SCALE TO BE A TYPICALLY USED SCALE, I.E. 1"=20' OR 1"=40'. NOT SMALLER THAN 1"=40'.					
3. STORM DRAIN STATIONING TO BE SHOWN ON BOTH PLAN AND PROFILE.					
4. STATIONING AT ALL CATCH BASINS, JUNCTION STRUCTURES, MANHOLES, COLLARS, ETC. AND AT 100' INTERVALS. SHOW CATCH BASIN FLOW LINE ELEVATIONS.					
5. STATIONS OF ALL B.C.'s, E.C.'s, P.R.C.'s, AND P.C.C.'s OF CURVES.					
6. SHOW CENTERLINE STATION OF CATCH BASINS WITH "W", "V", TC, AND FL CLEARLY LABELED.					
7. SHOW STORM DRAIN EASEMENTS. WIDTH OF EASEMENTS IN ACCORDANCE WITH RIVERSIDE COUNTY STANDARDS					
8. SHOW MATCH LINES ON CONSECUTIVE SHEETS AT EVEN 50' STATIONS.					
9. DIMENSION STORM DRAINS FROM STREET CENTERLINE AND ADJACENT MEDIAN CURB, CURB AND GUTTER, AND/OR EDGE OF PAVEMENT.					
10. SHOW EASEMENTS, RIGHT OF WAY, PARKWAY AND CURB LINES DIMENSIONED FROM CENTERLINE - CONSISTENT WITH TYPICAL SECTIONS.					
11. P.U.E. AND OTHER EASEMENTS DIMENSIONED AND LABELED.					
12. STREET NAMES SHOWN ON PLAN					
13. CITY LIMIT LINES LABELED AT ADJOINING CITIES.					

	1ST CHECK	2ND CHECK	3RD CHECK	FINAL MYLAR	COMMENTS
14. LOT NUMBERS AND LOT LINES SHOWN.					
15. SHOW PROPOSED IMPROVEMENTS WITH SOLID LINES AND EXISTING IMPROVEMENTS WITH DASHED LINES.					
16. INCLUDE DISPOSITION NOTES FOR EXISTING FACILITIES. THE TERM "BY OTHERS" SHALL NOT BE USED BUT SHALL BE DEFINED.					
17. INCLUDE CONSTRUCTION NOTES ON EACH SHEET W/O QUANTITIES. DO NOT REFER BACK TO CONSTRUCTION NOTES ON THE TITLE SHEET. INCLUDE SUMMARY QUANTITIES ON CONSTRUCTION NOTES ON TITLE SHEET. PLEASE ENSURE NOTES MATCH PLAN-PROFILE DETAILS.					
18. NOTE SIZE, LENGTH AND "D" STRENGTH FOR PIPE.					
19. REFER TO CITY STANDARD DRAWING NO. IF APPLICABLE TO WORK. PROVIDE SPECIFICATIONS, NOTES, DETAILS OR OTHER APPROVED STANDARD DRAWING NO. IF DIFFERENT FROM CITY STANDARD.					
20. CENTERLINE BEARING TEXT SHOWN ON CENTERLINE.					
21. CURVE AND LINE DATA TABLE FOR ALL STORM DRAIN SEGMENTS TO INCLUDE LENGTH AND BEARING, DELTA, LENGTH OF ARC, RADIUS, TANGENT.					
22. SHOW PROPOSED WATERLINES, VALVES, FIRE HYDRANTS, AND SERVICES WITH DIMENSIONS TO PROPOSED & EXISTING STORM DRAIN. CALL OUT STATIONS FOR DESIGN COMPONENTS					
23. SHOW PROPOSED SEWERLINES, MANHOLES, CLEANOUTS AND LATERALS WITH DIMENSIONS TO PROPOSED STORM DRAIN.					
24. SHOW EXISTING UTILITIES WITH DIMENSIONS TO PROPOSED STORM DRAIN.					
25. ELIMINATE UNUSED CONSTRUCTION NOTES PER SHEET.					
26. CROSS CHECK PROFILE DETAIL WITH PLAN VIEW DETAIL.					
27. ADD INVERT ELEVATIONS TO STORM DRAIN INLET LOCATIONS (ALL INLETS INCLUDING SMALL 4" AREA DRAINS).					
28. SHOW 100 YEAR STORM ELEVATIONS ON ALL RETENTION BASINS					
29. CITY PREFERS USE OF CONCRETE/STEEL INLET STRUCTURES AT CURBSIDE, METAL GRATE PRIMARY INLET STRUCTURES ON TRAFFIC AREAS. CATCH BASINS ARE TO BE SPECIFIED TO COLLECT SOLIDS ON AREA DRAINS					
30. INCLUDE LOCAL DEPRESSIONS ON STREET PLANS NOT STORM DRAIN PLANS IF PLANS PROVIDED SEPARATELY					
31. STORM DRAIN IS NOT SHOWN IN P.U.E.					
B. PROFILE SHOWS:					
1. PROFILE SCALE SHALL MATCH PLAN VIEW SCALE. TYPICALLY, 1"=40' HORIZONTAL AND 1"=4' VERTICAL OR 1"=20' HORIZONTAL AND 1"=2' VERTICAL.					

	1 <sup>ST</sup> CHECK	2 <sup>ND</sup> CHECK	3 <sup>RD</sup> CHECK	FINAL MYLAR	COMMENTS
2. SHOW PROFILE FOR ALL PIPES & CULVERTS, DITCHES, AND CHANNELS WITH STATIONS, LENGTHS, INVERT ELEVATIONS, V AND Q10/100 FLOW RATES AND DESIGN HGL. SHOW HGL AT TIME OF CONCENTRATION.					
3. SHOW EXISTING/PROPOSED GROUND OR PAVEMENT PROFILE OVER STORM DRAIN.					
4. SHOW RIGHT OF WAY, ROADWAY SECTIONS AND EXISTING GROUND PROFILE GRADE FOR THE ENTIRE LENGTH OF CULVERT AND BEYOND AND UTILITY CROSSINGS ON THE CULVERT PROFILE. ADDRESS ANY CLEARANCE PROBLEMS.					
5. SHOW AND LABEL ALL UTILITY CROSSINGS (EXISTING OR PROPOSED) BY TYPE. SHOW UTILITY CROSSINGS TO SCALE AND DIMENSION CLEARANCE BETWEEN THE PROPOSED STORM DRAIN AND EXISTING UTILITY.					
6. STATIONS AND ELEVATIONS SHOWN AT:					
a. CATCH BASINS, JUNCTION STRUCTURES, MANHOLES, COLLARS, HEADWALLS, AND OUTLET STRUCTURES					
b. B.C.'s, E.C.'s, AND GRADE BREAKS					
c. AT 100' INTERVALS ON LONG PIPE SEGMENTS – AT EVEN STATIONS.					
d. CALLOUT SIZE, LENGTH OF SD PIPE, HGL100, V100 AND Q100					
7. DIMENSION PIPE SEGMENTS BETWEEN MANHOLE AND JUNCTION STRUCTURES.					
8. SHOW FREEBOARD IN CATCH BASIN. A SUMP MAY BE USED FOR SECONDARY FREEBOARD OVERFLOW.					
9. 30 INCH MINIMUM COVER IS REQUIRED AT HINGE POINT FROM TOP OF PAVEMENT (KEEP OUT OF BASE MATERIAL OR LOCAL DEPRESSIONS).					
10. DRAW LOCAL DEPRESSION DETAILS AS REQUIRED					
11. PROVIDE COMPREHENSIVE LINE DETAIL IN PROFILE					

NOTE (1): THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2" OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FPS. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE  $f_c=5,000$  psi FOR VELOCITIES EXCEEDING 20 FPS AND  $f_c=6,000$  psi FOR VELOCITIES EXCEEDING 30 FPS. FOR VELOCITIES EXCEEDING 40 FPS, VELOCITY REDUCING RINGS SHALL BE PROVIDED.

**COMMENTS:**