

sanitary sewers regardless of size: These stakeouts are deemed critical and require certified plats. The Contractor's surveyor shall stake all such installations. Certified Plats for these stakeouts shall be furnished in accordance with the requirements of Sample Figure 1 as shown in the Department's Survey Manual and shall be submitted to the Engineer prior to the Contractor beginning installation work on these culvert structures. The notes, coordinates, or computations used to support the platted information shall be provided to the Engineer with the certified plat. For the purposes of identifying those pipe culvert installations please refer to the areas (hydraulic openings) shown in the PB-1 Standards for the respective sizes of pipes specified on the plans. Where multiple lines of pipes are shown, the areas of the pipe sizes shall apply to the total areas of the number of lines specified in the plans. For box culverts refer to the sizes shown in the BC-1 Standards to determine areas of total hydraulic opening.

- (f) **Horizontal and vertical control for pipe culvert installations (including single and multiple line installations) having a total hydraulic openings equivalent to 3.1 square feet and up to 12.5 square feet:** The Contractor shall be responsible for staking horizontal and vertical controls for pipe culvert installations having a total hydraulic opening equivalent to 3.1 square feet and up to 12.5 square feet. These stakeouts require sketches, but not certified plats and shall be furnished to the Engineer prior to the Contractor beginning work on these culvert structures. For the purposes of identifying those pipe culvert installations please refer to the areas (hydraulic openings) shown in the PB-1 Standards for the respective sizes of pipes specified on the plans. Where multiple lines of pipes are shown, the areas of the pipe sizes shall apply to the total areas of the number of lines specified in the plans. For box culverts refer to the sizes shown in the BC-1 Standards to determine areas of total hydraulic opening.
- (g) **Horizontal and vertical control for additional centerlines or baselines for roadways, ramps, loops and connections:** The Contractor shall provide horizontal and vertical controls for additional centerlines or baselines for roadways, ramps, loops and connections.
- (h) **Grading and paving construction:** The Contractor shall provide fine grade or other grade stakes required for the construction of the project as the work progresses except as otherwise stated herein.

Fine grade stakes shall be set on all projects on which the plans show a definite grade line. Fine grade hubs shall be set on at least one side with distances and grades referenced to the finished centerline grade. Typically, on curves, the Contractor shall provide the distances and elevations to each edge of pavement and centerline through the transitions and the distances and elevations to the edge of pavement only (straight-line super) through full super portions of the curve.

On projects where grading and paving is performed under the same contract, only one set of fine grade stakes will be required by the Engineer. Fine grade stakes may be used for fine grade and paving grade.

On Secondary Road projects, fine grade stakes shall be provided by the Contractor only on those projects having curb and gutter or as directed by the Engineer.

Special design ditches shall be staked with an offset and cut to the centerline of the ditch. Radius points for pavement flares at connections shall be staked by the Contractor.