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**MAST ARM POLE LENGTH**

A common problem encountered when installing mast arm poles is the failure to maintain an appropriate vertical clearance between the top of the road surface and the bottom of the signal heads attached to the pole. This can be caused by one or more of the following circumstances:

1.) **The design engineer fails to account for the difference in grade between the top of the road and the base of the mast arm pole when specifying the pole length** - This most frequently occurs in rural areas where the pole may be installed on a downslope or in a swale, putting the base of the pole at a much lower elevation than the road surface. If this difference is not taken into account, the signal heads will end up being too low. If the difference in elevation is not too great then it may be possible to compensate for this difference in elevation by adjusting the bracket that attaches the head to the poles. However, if the elevation difference is too large the poles may need to be replaced - a costly solution.

2.) **The pole height is correctly chosen for the intended location, but unforeseen underground utility conflicts require the pole to be moved; and the new location has a different elevation than the old location** - If the difference in elevation is great enough, this problem could also require pole replacement.

3.) **The mast arm foundation is poured such that the top of the foundation is at the wrong elevation** - This usually produces only a minor variation in vertical clearance that can be compensated for by adjusting the bracket that attaches the head to the poles. However, it is possible to have a foundation protrude so far out of the ground that it causes a vertical clearance problem.

4.) **The mast arm is installed upside down, causing the amount of sag to be too large** - Most manufacturers require that the horizontal "mast arm" be attached to the vertical "pole" with a specified side up. If the arm is installed upside down (which happens periodically), then after the signal heads are attached to the arm it will sag to a much greater degree than desired, resulting in less vertical clearance.

There are many advantages to using mast arm signal supports instead of wooden poles, concrete strain poles, or pedestals. However, installation flexibility with respect to vertical clearance is not one of them. The mast arm installer must be very careful to ensure that the signal heads end up at the proper height.