“ELECTRICAL SYSTEM AMPACITY”

The ampacity of the electrical system is not determined by adding the ampacity ratings of all of the breakers. In determining the system ampacity, it has been “gospel” for a long time to use the lowest of the three following factors:

- The ampacity of the service conductors (the conductors between the meter and the main panel)
- The indicated rating of the main disconnect device
- The indicated manufacturer's panel rating

In a split bus panel there is no single main service disconnect device so, according to the gospel, an inspector is left with two factors to use in determining the system ampacity. Say that you are fortunate enough to have a split bus panel with the manufacturer's panel rating data sheet still present and legible and the panel is rated for 150 amps, then the gospel is that you would rate this particular system based on whichever is lower, the panel manufacturer's listed rating of 150 amps or the ampacity of the service conductors. If the service conductors are 4/0 (four aught) copper, they are rated for a maximum of 250 amperes. If the service conductors are 4/0 aluminum, they are rated for a maximum of 200 amperes. Since, in either case, the panel is rated for a lower ampacity (150 amps) than the service conductors (250 or 200 amps) then, according to the gospel, this system would be rated at 150 amps.

Now, having said all this, we need to talk reality. Inspection standards don’t prescribe the methods an inspector is to use in determining the service ampacity and voltage of the electrical system. Some inspectors document the indicated ampacity of the single main service disconnection device if one is present. If they find that the main panel is a split bus type and the manufacturer's data sheet is still intact and legible, their report will state that there is no single main service disconnection device and that the panel (not the system) is rated at whatever ampacity the data sheet indicates. If none of this information is available, their report will state that there is no indicated ampacity for the panel and no single main service disconnect device.

If they observe a main panel with a single main service disconnection device and an intact and legible manufacturer’s data sheet, and if the manufacturer’s rating for the panel is less than the indicated amperage rating on the main service disconnection device, their report will so indicate and will recommend...
If they observe the service conductors to be clearly rated at a significantly lower ampacity than the indicated ampacity of the single main service disconnect device or than the manufacturer’s panel ampacity rating, it will be documented in the report and the report will recommend IMMEDIATE ACTION.

Some manufacturers of one-piece combination meter housings and main panel assemblies will factory-install short pieces of insulated #4 copper (100 amperes rated) service conductors between the load side connections at the meter socket and the line side connections at a factory-installed 150 amp rated main disconnect device/breaker in the main panel. The manufacturer will rate the panel on their panel data sheet at 150 amps. Why? Because the lengths of the #4 copper service conductors are short enough that any line voltage-drop due to resistance is negligible; therefore, the service conductors can be rated for a higher ampacity. Out the window goes the "gospel" about rating a system according to the lowest of the three possibly available ampacities - the service conductors, the rating of the main service disconnection device, and the manufacturer's panel rating.

In addition, some manufacturers of one-piece combination meter housing and main panel assemblies use rectangular metal bars as service conductors to carry current between the meter and the main panel. These bars have no indicated ampacity rating. What it finally comes down to with regard to one-piece combination meter housing and main panel assemblies is that you rate the panel according to the manufacturer's panel rating which is typically identical to the rating of the main service disconnect device since these disconnect devices are permanently installed at the factory rather than installed in the field by an electrician.

In the end, inspectors have to go by what they see in the field coupled with their own knowledge and ability to make meaningful evaluations. It is possible to come across a situation where a newer main panel has been installed with a significantly higher ampacity rating for the main service disconnection device than the rating of the original and still in place service conductors - say, #6 copper service conductors on old 60 amp system and a newer 100 or 125 amp main service disconnection device. A lot of oddball conditions like this can exist.

Use your knowledge and don't let yourself become trapped into "mindless" thinking. We expect to see something and, therefore, "we see what we expect instead of seeing what's actually there in front of us. We think we know what we see when, in fact, just the opposite is usually the case - we see what we know or what we expect to see.