As-built Review: Standards Checklist

Project Name:

Name of CAD Technician: ***Date of review:***

Document Sheet Number: ***Review Number:***

As-built Number to be applied:

A check in the box confirms that the item has been reviewed and is compliant with the CCUA As-built Specifications Standards. Put a line through any checks that do not apply to this As-built.

CAD REVIEW

Drawing Preliminaries:

- ☐ The As-built is referenced to the State Plane Coordinate System, GEOID12A or GEOID12B, Florida East Zone, NAD 83 (horizontal) and NAVD 88 (vertical).
- ☐ Sheet size is 22”x 34”.
- ☐ Each utility has a separate layout tab.
- ☐ All utilities are combined into a single drawing.
- ☐ There are no missing X-refs.
- ☐ There are no duplicate or overlapping objects (OVERKILL).
- ☐ There are no extra or unnecessary/unapproved layers or blocks (PURGE).
- ☐ All maps and reports of surveys with digital coordinate files contain a statement to the effect of: ***Map is intended to be displayed at a scale of 1” = XX’***.
- ☐ As-built includes certification blocks for engineer and contractor.
- ☐ Scale is 1”=10’, 1”=20’, 1”=30’, 1”=40’, 1”=50’, or 1”=60’. (Unless a different scale has been approved by CCUA)
- ☐ Lot numbers and/or ownership data is shown (not adjoining lots—only subject property).
- ☐ Street numbers/Road names are included (shown) and correct.
- ☐ Scale and North arrow are included and correct.
- ☐ Location, elevation, datum, and benchmark used are included and correct.
- ☐ All related As-builts contain continuations/match lines (as needed).

Drawing proper:

- ☐ Tie-down dimension styles and measurement format are correct.
- ☐ Drawing includes text call-outs for all fittings.
- ☐ All polylines have been flattened (0 elevation in properties dialog).
- ☐ All pipe materials, sizes and, pipe rating (e.g., 8” DR21 PVC, etc.) are identified with callouts.
- ☐ All polyline mains are continuous through all bend, sleeves, and meter block fittings.
- ☐ There are no dangling and/or overshooting services at the connection point to the mains.
  - Water
  - Sewer
  - Reclaim
- ☐ Polylines are broken at each of the following:
  - Valves (not including Air Release Valves)
  - Reducers
  - Tees, Taps and Crosses (including Fire Hydrant Tees)

- Caps (Tapped Caps)
- Manholes
- Clean-outs
- R.P.Z., B.F.P. (Back-flow Preventer)
- In-line Ball Valve
- Point of service
- Check Valves (including Double Detector Check Valves)
- Adapter Couplings (including HDPE-to-PVC, HYMAX and Type of Material Transition Points, etc.)
- All other service polylines are connected, with no broken segment.

All Gravity main lines:

- ☐ Are entered as a single line (not broken between manholes).
- ☐ Are digitized in the direction of the design flow (the beginning point of every line is the upstream end and the ending point of every line is the downstream end).
- ☐ Lengths and slopes information are identified.
- ☐ Block elevations in callouts match both the Asset Table elevations and survey elevations.
- ☐ Main are broken at manholes and ends snapped to center nodes as required.
- ☐ On all manholes that have radial service lateral penetrations (i.e., in cul-de-sacs or end-of-pipe runs), check for the service lateral inverts in the call outs, and verify if added to the asset table manhole data.

All Force main lines:

- ☐ Are entered as a single line (not broken).

All text and dimensions:

- ☐ Is masked or uses wipeout, and properly aligned. Uses CCUA standard dimension style (Arial font) located within the CCUA template.
- ☐ Is visible on the drawing with the base set to the upper left-hand corner of the text which is clear of linear or block features.
- ☐ Labels are placed onto a separate layer, not on the feature layer.
- ☐ Labels are properly rotated for easy legibility (horizontal alignment).
- ☐ The text callouts for the fittings are in the correct CCUA Annotative Style formats.
- ☐ The dimensions tie-down styles shown are in the correct CCUA style and font formats.
- ☐ The lot numbers and road name text fonts are the approved CCUA Annotative Text styles.
- ☐ The primary units of the annotative dimensions are in "feet and inches" format, not survey tenths of a foot.

Features and blocks:

- ☐ Are placed on their appropriate layers/colors.
- ☐ The fitting blocks are a consistent scale size across the drawing.
- ☐ All fitting blocks are rotated in the direction of the pipe flows.
- ☐ All AutoCAD drawing text annotation, detail ‘blow-ups’, and dimensions are shown in Model Space.

- ☐ Blocks comply with the available CCUA tool palette.
- ☐ Asset Table Worksheet contains an inventory of items installed, is complete via a Block Count, and corresponds to the sequential Feature ID that has been added to said blocks.
- ☐ All blocks shown in the drawing are verified present in the asset table.
- ☐ All fitting sizes in the asset table match the actual mains connected to them and the text callouts also match the asset table listings.
- ☐ All 90 and 45 bend fitting blocks that are in the turned, vertical, or stacked orientation (i.e., not lying flat or horizontal) are replaced by the correct CCUA turned bend block as shown in the CCUA block palettes; the Feature IDs for these bends also need to be updated to the correct "turned" designation as shown in the Appendix A of the CCUA As-built Specifications Standards Manual.

Polylines:

- ☐ Do not contain cut/broken lines behind text.
- ☐ Are continuous from structure to structure (except for items listed above).
- ☐ All end points of polylines are snapped to the end points of connecting polylines, with a structure/fitting block center node being snapped to the end point as required.
- ☐ All drawings contain no exploded blocks (except in details/ 'blow-ups').

Layers:

- ☐ The Layer Name Format: Uses the proper layering format that follows the National CAD Standards guidelines.
- ☐ Any existing mains used for connections are shown in the correct layer; these lines need to be placed in the layer(s) corresponding with their sizing that has the suffix of "EX" (for Existing).

Directional drills include:

- ☐ Profiles on the drawing for the engineer.
- ☐ Drill logs provided in PDF format as a separate item or attachment.

Pump Stations:

- ☐ Pump Station plans include boundary data (platted bearings and distances, unless privately owned).
- ☐ The pump station site plan detail matches the actual existing CCUA approved plan.
- ☐ Ownership transferred Pump Stations (private-to-CCUA), new Treatment Plants, and well sites include separate boundary survey, or partial boundary surveys, as the case demands (unless private).

Coordinates:

Coordinate points on utility mains are included at all pipes dead ends, size changes, points of connection to existing system, fittings (bends, valves, tees, plugs, etc.), and at intersections of pipe):

- ☐ Water mains – every 100 Feet
- ☐ Reclaimed and force mains – every 500 Feet

Nearest fitting or structure (whichever is less than above)

Dimensions:

- ☐ Dimension measurements are included (two (2) per structure, or stations and offsets (if approved by CCUA); no diagonal ties are accepted, or ties to drainage structures or power poles (unless approved by CCUA).

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INSPECTORS REVIEW

Water:

- ☐ No Diagonal Measurements unless in Cul-De-Sacs
- ☐ Ensure sample points match the numbered locations on the as-builts.
- ☐ If sample point is not a service, 2 tie downs required
- ☐ Verify that road names are called out
- ☐ Verify that the sheet name at far right calls out appropriate Water sheet and Project name
- ☐ Check that all mains are properly installed in proper location.
- ☐ Pipe sizes are correct, and pipe material is called out.
- ☐ Verify that Wet taps are called out properly and tied down Horizontal and vertical.
- ☐ Check that private backflows are added to as-builts and called out private.
- ☐ Check for all services, long side, and short side. 2 tie downs horizontal and vertical needed on each service.
- ☐ Check all fittings and callouts, make sure they have two tie downs.
- ☐ Check all Case A and Case B crossings. 2 tie downs horizontal and vertical for each fitting.
- ☐ Check all case A and B crossing bends are identified as turned and identify angles.
- ☐ Check all gate valves are installed in proper locations with call out boxes and 2 tie downs horizontal and vertical.
- ☐ Check all locate wire box locations for correct installation and 2 tie downs horizontal and vertical.
- ☐ Make sure all sample points are called out on water main and are correct distance.
- ☐ Check call outs for private utilities are not marked as owned by CCUA.
- ☐ Check all fire hydrant locations for proper call out and double tie downs.
- ☐ Check wire box (which are not gate valves) are called out as a locate wire box and not a gate valve.
- ☐ Check all ARV Locations make sure call outs and tie downs are correct.
- ☐ Check all fire hydrant locations and tie downs.
- ☐ Check all flushing hydrant locations, check for tap cap call out and 2 horizontal and vertical tie downs.
- ☐ Check asset table for all fittings. If item is missing, call it out.

Reclaimed Water:

- ☐ No Diagonal Measurements unless in Cul-De-Sacs.
- ☐ Verify that Road names are called out.
- ☐ Verify that the sheet name at far right calls out appropriate Reuse sheet and Project name.
- ☐ Check that all mains are properly installed in proper location.
- ☐ Pipe sizes are correct, and pipe material is called out.
- ☐ Verify that Wet taps are called out properly and tied down Horizontal and vertical.
- ☐ Check for all services, long side, and short side. 2 tie downs horizontal and vertical needed on each service.
- ☐ Check all fittings and callouts, make sure they have two tie downs.
- ☐ Check all Case A and Case B crossings. 2 tie downs horizontal and vertical for each fitting.
- ☐ Check all case A and B crossing bends are identified as turned and identify angles.
- ☐ Check all gate valves are installed in proper locations with call out boxes and 2 tie downs horizontal and vertical.
- ☐ Check all locate wire box locations for correct installation and 2 tie downs horizontal and vertical.
- ☐ Check call outs for private utilities are not marked as owned by CCUA.
- ☐ Check wire box (which are not gate valves) are called out as a locate wire box and not a gate valve
- ☐ Check all ARV Locations make sure call outs and tie downs are correct.
- ☐ Check all flushing hydrant locations, check for tap cap call out and 2 horizontal and vertical tie downs.
- ☐ Check asset table for all fittings. If item is missing, call it out.

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Force Main:

- ☐ No Diagonal Measurements unless in Cul-De-Sacs.
- ☐ Verify that Road names are called out
- ☐ Verify that the sheet name at far right calls out appropriate Force Main sheet and Project name
- ☐ Check that all mains are properly installed in proper location.
- ☐ Pipe sizes are correct, and pipe material is called out.
- ☐ Verify that Wet taps are called out properly and tied down Horizontal and vertical.
- ☐ Check all fittings and callouts, make sure they have two tie downs.
- ☐ Check all Case A and Case B crossings. 2 tie downs horizontal and vertical for each fitting.
- ☐ Check all case A and B crossing bends are identified as turned and identify angles.
- ☐ Check all gate valves are installed in proper locations with call out boxes and 2 tie downs horizontal and vertical.
- ☐ Check all locate wire box locations for correct installation and 2 tie downs horizontal and vertical.
- ☐ Check call outs for private utilities are not marked as owned by CCUA.
- ☐ Check wire box (which are not gate valves) are called out as a locate wire box and not a gate valve
- ☐ Check all ARV Locations make sure call outs and tie downs are correct.
- ☐ Check asset table for all fittings. If item is missing, call it out.

Gravity Sewer Main:

- ☐ No Diagonal Measurements unless in Cul-De-Sacs.
- ☐ Verify that Road names are called out.
- ☐ Check all manhole numbers and manhole locations. Every manhole will have 2 tie downs horizontal and vertical.
- ☐ Check that all sewer services are installed corresponding with Project plans and have 2 tie downs.
- ☐ If a manhole has a drop installed, make sure that the drop is noted on the callout for the as built.
- ☐ Verify that slopes, pipe footages, material, and sizes are called out between each run of gravity sewer.
- ☐ Check invert directions with compass on as-builts for each manhole.
- ☐ Every straight through piped manhole must have .05 fall (500ths) every 90-degree piped manhole must have .10 fall (1/10th).
- ☐ Check 6” services out of manholes. Make sure elevations and pipe sizes are called out.
- ☐ Check slopes between manholes.

Lift Station:

- ☐ Check location and tie downs on force main valves to lift station.
- ☐ Check water service and gate valve feeding lift station to termination point at backflow. 2 tie downs required on backflow.
- ☐ Check wet well invert Elevation, bottom of wet well Elevation, and top of wet well elevation.