Appendix H

Record Drawing Checklists

TOHO RECORD DRAWING CHECKLIST

[ ] Accepted **[ ] Rejected** **[ ] N/A**

1: GENERAL INFORMATION:

[ ] Project Name:
[ ] Project Number:
[ ] Project Location:
[ ] Submitted by:
[ ] Cover Sheet with Sheet Index
[ ] The following certification shall be provided on the Record Drawing Cover Sheet:

' I CERTIFY THAT THESE RECORD DRAWINGS HAVE BEEN REVIEWED BY ME OR BY INDIVIDUAL(S) UNDER MY DIRECT SUPERVISION AND THAT THESE RECORD DRAWINGS INCORPORATE THE INFORMATION CONTAINED IN CHAPTER 61G17, BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS. TO THE BEST OF MY KNOWLEDGE AND BELIEF THESE RECORD DRAWINGS SUBSTANTIALLY REFLECT ALL WATER, SANITARY SEWER, AND RECLAIM WATER UTILITIES THAT APPLIES, AS CONSTRUCTED. THE ACCURACY OF THESE RECORD DRAWINGS IS RELIANT ON THE ACCURACY APPLIED BY THE SURVEYOR THAT PREPARED THE CERTIFIED AS-BUILT SURVEY'

[ ] Street names
[ ] Right of way
[ ] Centerline of roadway
[ ] Survey control line with stations
[ ] Parcels
[ ] Scaled vicinity map
[ ] Scale of drawings and bar scale
[ ] North arrow
[ ] Location of Bench Mark reference Site / Project Bench Mark
[ ] Seal and signature of Florida registered P.E. or R.L.S. on each sheet
[ ] All easements identified and dimensioned
[ ] Statement designating drawings are "Record Drawing" on each sheet
[ ] Horizontal Control Datum Note and Vertical Control Datum Note
[ ] Drawing sheets numbered in sequence
[ ] Match Lines with sheet match data
[ ] The ¼ Section, Township, Range shall be displayed on the lower right hand corner of the cover sheet, as NE ¼ S29 T25S R29E

2: WATER SYSTEM:

[ ] Overall master plan of project (including all phases)
[ ] Water, reclaim and sewer drawings may be shown on same sheet or separate.
[ ] Show state plane coordinates where water main connects to water laterals (services)
[ ] Pipe size, material and class must be labeled
[ ] Separation from water, reclaim and sewer shown on plans
[ ] All valves and blow-offs shall have description of size and type of valve on water plan sheet.
[ ] Display a separate, recorded easement for utility extensions outside public rights of way.
[ ] Tap sizes, location with coordinates
[ ] Water meters with coordinates
[ ] Show state plane coordinates for all assets, hydrants, valves bends, tees, reducers, etc…
[ ] Show existing water mains and connections for all new water piping tie ends.

3: RECLAIM SYSTEM:

[ ] Overall master plan of project (including all phases)
[ ] Water, reclaim and sewer drawings may be shown on same sheet or separate.
[ ] Show state plane coordinates where reclaim main connects to reclaim laterals (services)
[ ] Pipe size, material type and class must be labeled
[ ] Separation from water, reclaim and sewer shown on plans
[ ] All valves and blow-offs shall have description of size and type of valve on reclaim plan sheet.
[ ] Display a separate recorded easement for utility extensions outside public rights of way.
[ ] Tap sizes, location with coordinates
[ ] Reclaim meters with coordinates
[ ] Show state plane coordinates for all assets, hydrants, valves bends, tees, reducers, etc…
[ ] Show existing reclaim mains and connections for all new reclaim piping tie ends.

4: SANITARY SEWER SYSTEM:

[ ] Overall master plan of project (including all phases)
[ ] Water, reclaim and sewer drawings may be shown on same sheet or separate.
[ ] Show state plane coordinates where sewer main connects to sewer laterals (services).
[ ] Pipe size, material type and class must be labeled
[ ] Separation from water, reclaim and sewer shown on plans
[ ] Rim, invert and grade elevations in plan and profile
[ ] Show street sewer main cleanouts with coordinates
[ ] Show lateral cleanouts with coordinates
[ ] Display grades of sewer mains
[ ] Force main location with appurtenances
[ ] Display a separate, recorded easement for utility extensions outside public rights of way
[ ] Plan and profile is required for all TWA owned sewer mains
[ ] Show existing sewer mains and connections for all new sewer piping tie ends
[ ] Provide a boundary survey for the lift station
[ ] Provide lift station detail sheets
[ ] Dimensions between all manholes shall be field verified and shown. The inverts and rim elevation of all manholes shall be shown on the drawings and provided in the Coordinate Asset Table

5: DIGITAL DATA

[ ] Provide a CD with the following information:

a. **[ ]** Original CAD drawings with all associated xref files
b. **[ ]** PDF scans of signed and sealed record drawings
c. **[ ]** Coordinate asset table in Excel format
d. **[ ]** PDF scan of the boundary survey for the lift station

6: MISCELLANEOUS:

[ ] Provide a copy of the original surveyor certified as-built drawing
[ ] Provide engineer certified record drawings
[ ] All privately maintained utilities shall be clearly marked 'PRIVATE' and the limits of the privately maintained areas shown on the record drawings
[ ] Toho maintained utilities shall be clearly marked 'EXISTING TWA' and shown on the record drawings
[ ] Provide coordinates for all fittings, valves, clean-outs, meters, etc. constructed with this project. These coordinates should be included in a Coordinate Asset Table which lists the Northing, Easting, and elevations shot by the surveyor.
[ ] Record drawings shall clearly show all field changes of dimension and details
[ ] Drawings shall clearly show all details not on the original accepted construction drawings
[ ] Create larger details in those instances where essential assets are displayed but the drawing is too cluttered to understand.
[ ] All abandoned or demolished water, reclaim and sewer infrastructure shall be clearly indicated on the drawing.
[ ] There should be three distinct sets of lines for the water, reuse, and sanitary sewer
[ ] All drawing information needs to be legible and easy to interpret.
[ ] All underlying proposed utility locations and base data from the approved drawings should be gray while the as-built information should be a bold and black.
[ ] Plans approved for construction and as-built surveys stamped 'Record Drawings' will not be accepted for review by TWA. The engineer of record shall be responsible for transferring the as-built information on to the record drawings and re-drawing as necessary.
[ ] All construction must be completed in accordance with the approved plans, and applicable Toho Water Authority standards and specifications. Record drawings shall clearly show all field changes. Any and all deviations from the approved plans are verified by a TWA inspector to be true and correct.

7: RECORD DRAWING SUMMARY:

I. All other requirements outlined in Section 11.6 of the TWA Standards and Specifications must be adhered to with future submittals.

II. After engineering review of compliance with these comments, the TWA GIS department will review the electronic files to ensure all requirements have been met.

RECORD DRAWING SUFFICIENCY REVIEW

1 - GENERAL REQUIREMENTS

- ☐ Toho Project Name
- ☐ Toho Project Number
- ☐ Scaled Vicinity Map w/ Marked Project Location
- ☐ North Arrow
- ☐ Sheet Index
- ☐ Overall Master Plan of project (including ALL phases)
- ☐ The following certification shall be provided on the Record Drawing Cover Sheet:

> ***' I CERTIFY THAT THESE RECORD DRAWINGS HAVE BEEN REVIEWED BY ME OR BY INDIVIDUAL(S) UNDER MY DIRECT SUPERVISION AND THAT THESE RECORD DRAWINGS INCORPORATE THE INFORMATION CONTAINED IN CHAPTER 61G17-6, BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS. TO THE BEST OF MY KNOWLEDGE AND BELIEF THESE RECORD DRAWINGS SUBSTANTIALLY REFLECT ALL WATER, SANITARY SEWER, AND RECLAIM WATER UTILITIES THAT APPLIES, AS CONSTRUCTED. THE ACCURACY OF THESE RECORD DRAWINGS IS RELIANT ON THE ACCURACY APPLIED BY THE SURVEYOR THAT PREPARED THE CERTIFIED AS-BUILT SURVEY'***

- ☐ Statement designating drawings as "Record Drawing" on each sheet
- ☐ Drawing sheets numbered in sequence
- ☐ Demolition sheets
- ☐ Line type, leaders, labels, etc. shall be legible and should not interfere with other required information. If a sheet is illegible due to the amount of information provided it should be cleaned up and separated as necessary
    - ☐ All underlying base data from the approved drawings should be thin weight or gray while the record drawing information for the water, reuse, & sewer should be bold and black.
- ☐ Pipe size, material and class must be labeled for all mains and services
- ☐ Plan view is required for all TWA owned water, reuse, and sanitary sewer force mains
- ☐ Profile view is required for all gravity sewer mains as well as all crossings between water, reuse, sanitary sewer force mains, storm sewer, and gas mains
    - ☐ Finished grade shall be provided on all profile sheets and crossing details

2 – ASSET TABLE(S)

- ☐ Asset tables for water, reuse, force main, manholes, and lift station appurtenances are required and shall be complete
    - ☐ All assets for pipelines should include the following
        - ☐ Asset ID
        - ☐ Northing & Easting
        - ☐ Elevation
    - ☐ All assets for manholes should include the following
        - ☐ Asset ID
        - ☐ Northing & Easting
        - ☐ Invert Elevations
        - ☐ Rim Elevation
- ☐ All appurtenances must include size, type, angle, etc.

TOHO INSPECTOR RECORD DRAWING CHECKLIST

1 - GENERAL NOTES

- Accepted construction drawings simply stamped ‘Record Drawings’ and as-built surveys will not be accepted for review by TWA. The engineer of record shall be responsible for transferring the as-built survey information on to the accepted drawings and re-drawn as necessary to reflect changes
- Water, Reuse, & Sewer plans may be shown on the same sheet or on separate sheets

2 - GENERAL REQUIREMENTS

- ☐ Match Lines with proper sheet match data
- ☐ Demolition sheets showing all removed or abandoned existing infrastructure must be included. Any removed or abandoned appurtenance must meet the requirements outlined and shall be treated as an Asset
- ☐ Line type, leaders, labels, etc. shall be legible and should not interfere with other required information. If a sheet is illegible due to the amount of information provided it should be cleaned up and separated as necessary
    - All underlying base data from the approved drawings should be thin weight or gray while the record drawing information for the water, reuse, & sewer should be bold and black.
- ☐ Plan sheets clearly delineate ‘Toho’ owned infrastructure and ‘Private’ infrastructure
- ☐ Existing utilities shown on the drawings clearly marked as ‘Existing’

General Comments:

3 - POTABLE WATER

- Provide surveyed shots with Northing, Easting, & Elevation for all appurtenances to include, but not limited to:
    - Tees, bends, crosses, reducers, sleeves, valves, hydrants, wet taps, service saddles, corporation stops, curb stops, water meters, backflows, flushing devices, blow-offs, etc.
- All appurtenances must include size, type, angle, etc. If a fitting comprises more than one size (tee, tap, reducer, etc.) it must include all sizes associated with that fitting
- Limits of pipe restraint must be indicated on the drawings
- If pipe runs exceed 100’ without additional fittings, elevation shots shall be provided on the top of pipe and finished grade at 100’ intervals
- Pipe size, material and class must be labeled for all mains and services
- Provide surveyed elevation shots for top and bottom of pipe at all crossings between the water main and reuse, gravity sewer, force main, storm sewer, and/or gas mains
- All appurtenances on large meter assemblies must be provided with individual Asset IDs. A single Asset ID for the entire assembly is not acceptable
- Bore logs for any directional bore shall be provided with elevation shots, ensure the adapters on each end are provided individual Asset ID information

Potable Water Comments:

4 - RECLAIM WATER

- Provide surveyed shots with Northing, Easting, & Elevation for all appurtenances to include, but not limited to:
  - Tees, bends, crosses, reducers, sleeves, valves, hydrants, wet taps, service saddles, corporation stops, curb stops, water meters, backflows, flushing devices, blow-offs, etc.
- All appurtenances must include size, type, angle, etc. If a fitting comprises more than one size (tee, tap, reducer, etc.) it must include all sizes associated with that fitting
- Limits of pipe restraint must be indicated on the drawings
- If pipe runs exceed 100’ without additional fittings, elevation shots shall be provided on the top of pipe and finished grade at 100’ intervals
- Pipe size, material and class must be labeled for all mains and services
- Provide surveyed elevation shots for top and bottom of pipe at all crossings between the reuse main and water, gravity sewer, force main, storm sewer, and/or gas mains
- All appurtenances on large meter assemblies must be provided with individual Asset IDs. A single Asset ID for the entire assembly is not acceptable
- Bore logs for any directional bore shall be provided with elevation shots, ensure the adapters on each end are provided individual Asset ID information

Reclaim Water Comments:

5 - SANITARY SEWER FORCE MAIN

- Provide surveyed shots with Northing, Easting, & Elevation for all appurtenances to include, but not limited to:
  - Tees, bends, crosses, reducers, sleeves, valves, wet taps, service saddles, corporation stops, curb stops, meters, etc.
- All appurtenances must include size, type, angle, etc. If a fitting comprises more than one size (tee, tap, reducer, etc.) it must include all sizes associated with that fitting
- Limits of pipe restraint must be indicated on the drawings
- If pipe runs exceed 100’ without additional fittings, elevation shots shall be provided on the top of pipe and finished grade at 100’ intervals
- Pipe size, material and class must be labeled for all mains and services
- Provide surveyed elevation shots for top and bottom of pipe at all crossings between the force main and water, reuse, gravity sewer, storm sewer, and/or gas mains
- All appurtenances on large meter assemblies must be provided with individual Asset IDs. A single Asset ID for the entire assembly is not acceptable
- Bore logs for any directional bore shall be provided with elevation shots, ensure the adapters on each end are provided individual Asset ID information

Sanitary Sewer Force Main Comments:

6 - GRAVITY SANITARY SEWER

- Provide surveyed shots with Northing, Easting, & Elevation for all appurtenances to include, but not limited to:
  - Wyes, bends, sleeves, core-drill connections, manholes, cleanouts, etc.
- All appurtenances must include size, type, angle, etc. If a fitting comprises more than one size it must include all sizes associated with that fitting
- Pipe size, material and class must be labeled for all mains and services
- Pipe length and slope shall be provided between all manholes
- Plan and Profile view is required for all Toho owned gravity sewer mains
  - Profile views shall include as-built finished grade
- Provide surveyed elevation shots for top and bottom of pipe at all crossings between the gravity sewer main and water, reuse, force main, storm sewer, and/or gas mains
- Provide linear footage from the downstream manhole to all sewer lateral connections to the main. Distances shall be measured for each connection from the manhole, not between connections
- Provide finished rim and invert elevations for all manholes installed with the project and existing manholes that were connected to as part of the project
  - Invert elevations shall include ALL connections into the manhole regardless of size
  - Drop connections shall require an elevation at the incoming invert as well as at the bottom of the drop piping
  - This information shall be provided on both the plan & profile sheets AND the Coordinate Asset Table(s)

Gravity Sanitary Sewer Comments:

7: Lift Stations

- Separate lift station detail sheets shall be provided for each lift station
- Provide surveyed shots with Northing, Easting, & Elevation for all appurtenances to include, but not limited to:
    - Tees, bends, reducers, valves, check valves, backflows, meters, etc..
- All appurtenances must include size, type, angle, etc. If a fitting comprises more than one size it must include all sizes associated with that fitting
- All appurtenances on the above ground piping and inside the wet well must be provided with individual Asset IDs.
- Pipe size, material and class must be labeled for all piping with the lift station yard and the wet well
- Provide surveyed elevation shots for top and bottom of pipe for all utility crossings within the lift station yard
- Pipe casings under walls shall be provided with pipe size and material, length, and Asset ID information for both ends of the casing
- Provide finished rim and invert elevations for the wet well
    - Invert elevations shall include ALL connections into the wet well regardless of size
    - Drop connections shall require an elevation at the incoming invert as well as at the bottom of the drop piping
- Provide elevation shots:
    - All four corners of the yard
    - Wet well top slab
    - Finished grade of rock around wet well

Lift Station Comments: