



Charlotte County Utilities

Engineering Services

2555 Harbor View Rd, Unit One, Port Charlotte, FL 33980

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www.charlottecountyfl.com

"To exceed expectations in the delivery of public services"

CHARLOTTE COUNTY UTILITIES

MINIMUM DRAWING AND SUBMITTAL REQUIREMENTS FOR WATER, WASTEWATER, AND RECLAIM WATER PROJECTS

Date: January 1, 2008



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Date: January 1, 2008

Date Last Issued: November 14, 2005

Date First Issued: April 12, 2005

This document describes the minimum format and technical content requirements for Charlotte County Utilities (CCU) to accept design, as-built, and record drawings. All plans submitted for review are subject to these requirements. This document does not relieve the Engineer of Record (EOR) of their responsibility to comply with all State, County, and Local regulations. This document does not describe drawing requirements for every situation, and some requirements may not apply in every case. CCU reserves the right to comment on all aspects of the proposed designs and to require changes to the proposed utility infrastructure as part of the plan review process. Deviations from these requirements may be approved during the formal review process, if warranted, at the discretion of CCU.

As used in this document, the term 'coordinate' or 'coordinates' mean northing and easting values in the **Florida West Zone/ NAD 83-90 State Plane Coordinate System FEET**.

Coordinates shall be accurately provided and shown to a precision of the nearest tenth of a foot. All elevations will be based on NGVD 88.

I. REQUIRED SUBMITTALS AND FORMATS

1. Submittals to CCU for review of proposed utility plans must be accompanied by the following:
 - a. Letter of Transmittal listing the documents being forwarded to CCU for review. Failure to provide a Letter of Transmittal with each submittal may result in a delay in the review of the project. Subsequent submittals should reference the assigned CCU Project Number which will be provided with the initial review comments. If a CCU Project Number was assigned as part of an issuance of a Letter of Availability, the Project Number must be referenced in the initial Letter of Transmittal and must be shown on the plans.
 - b. Signed application containing all requested information and accompanied by a check made out to Charlotte County Utilities (CCU) to cover the application review fee. (Initial Submittal Only).

- c. Future submittals of project documents should be accompanied by a letter detailing how each comment made by the CCU staff was addressed.
2. Number of Plan Submittals, Technical Submittals, and Permits:
 - a. Two complete sets of plans signed and sealed by a Professional Engineer licensed in the State of Florida are required for the initial engineering review.
 - b. Two copies of related Technical Reports, if required, signed and sealed by a Professional Engineer licensed in the State of Florida.
 - c. Four copies of each FDEP permit that is required for construction of the proposed utilities. The applicant may elect to delay submittal of any required permits until the plans for the project have been deemed acceptable by CCU.
3. Upon completion of the initial review a letter with comments will be returned to the EOR. The letter will advise the Developer of the number of copies of the revised plans to be resubmitted for a second review.
4. Once the engineering plans are found to be acceptable, the Developer will be advised to submit additional signed and sealed copies of the drawings for approval in addition to a CD of the plans in a DWF or PDF file format.
5. CCU will stamp four sets of plans approved and will return two sets to the Engineer of Record. Approvals are valid for a period of one (1) year from the date of approval.

II. TECHNICAL REPORTS

1. For Water Main extensions, a Water Distribution System Design report should be provided that demonstrates that the water main extension meets Charlotte County Code by providing the required fire hydrant flow at the most remote fire hydrant.
2. For Lift Station or Pump Stations, a Design Report must be provided.

III. FDEP PERMITS

1. All FDEP permits that are required for the project must be completed, signed and sealed by the Engineer of Record, and signed by the Developer or their authorized agent. The necessary forms may be obtained from the FDEP Website.
2. The CCU data for the water and/or sewer plants that serve the proposed project may be found on the CCU Website. The EOR is responsible for identifying the facilities that service the project. This data is updated periodically so the applicant should log on to the website each time a permit is required.
3. Charlotte County Utilities is not the only utility providing service to the County therefore the EOR should verify service by CCU prior to submitting any permits.

IV. GENERAL PLAN REQUIREMENTS

1. All drawings shall be submitted on 22" x 34" or 24" x 36" size sheets.
2. All dimensioning shall be in English Units at a scale shown on an Engineering Scale between the ranges discussed under the section Utility Plan Sheet Requirements.
3. All information on the drawings shall be clear and legible. CCU reserves the right to reject any plans found to be unreadable with no further comment than the simple statement of that fact.
4. The drawing set shall contain a list of abbreviations and symbols used along with identification of their meaning.
5. Sheets shall be numbered and if an index is required as discussed elsewhere in this document, the numbers shall match the index provided on the Cover Sheet.
6. The general order of sheets in the plan set shall be as follows: Cover Sheet, Overall Layout Sheet, Utility Plan Sheets, Conflict Sheet (if deemed necessary, see below), and Construction Detail sheet(s).
7. All plan sheets should include the CCU Project Number.

V. COVER SHEET REQUIREMENTS

The following information shall be provided:

1. Project Name and Section, Township, Range of its location.
2. Name of the engineering firm.
3. Engineering firm's telephone number, fax number, mailing address and email address.
4. Engineer of Record's Name and Florida Registration Number.
5. Seal and Signature of the Engineer of Record.
6. Date of Plan Preparation
7. Revision block to note date of all subsequent plan revisions
8. A general location map showing major roads with the location of the project identified.
9. A specific location map showing the Property in Question (P.Q.) and all local existing roads.
10. An index of the sheets within the plan set shall be provided unless the plan set has 4 sheets or less.
11. The statement:

"CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH CHARLOTTE COUNTY UTILITIES (CCU) STANDARDS AND SPECIFICATIONS. PLANS ARE IN ACCORDANCE WITH CCU MINIMUM DRAWING REQUIREMENTS DATED JANUARY 1, 2008. STATE PLANE COORDINATES (FEET) WILL BE SUPPLIED FOR THE RECORD DRAWINGS."

12. Tally Blocks shall be provided for the following:
 - a. Water Demand Tally Block showing the contributory flow rate, the Average Daily Demand, and the Peak Daily Demand for each use as well as the total Average Daily Demand and the total Peak Daily Demand based upon a Peaking Factor of 2.5. The contributory flow for each use should be based upon CCU's Table 6-4. The Tally Block should include identification of the proposed use(s), the number of units and /or square footage of the proposed use(s), or, where the contributory flow is based upon another

parameter such as the number of seats for a restaurant or the number of rooms for a hotel, the parameter should be provided.

- b. Wastewater Discharge Tally Block showing the same information as required for the water tally block with the exception that for wastewater Average Daily Flows and Peak Hourly Flows for each use and for the project as a whole shall be provided. The Peak Hourly Flow shall be based upon a Peaking Factor of 4.0 and may be expressed in Gallons Per Day.
 - c. Water Meter Tally Block showing the number, size, and type of meter to be installed, i.e. Residential, Commercial, Irrigation, etc.
 - d. Reclaim Water Usage Tally Block. For projects that include the installation of Reclaim Water transmission and/or distribution piping a tally block shall be included showing the number of irrigable acres broken down by use, i.e. residential, commercial, or golf course and the Potential Reclaim Water Demand per day in MGD at the application rate of 1 inch per week.
13. For "Developer" projects involving private sewers provide the following statement:
- "THIS PROJECT HAS BEEN ACCEPTED CONTAINING PRIVATE SEWERS. PRIVATE SEWERS MAY SEVERELY LIMIT THE ABILITY TO SELL PORTIONS OF THIS PROPERTY IN THE FUTURE. ALL WATER METERS FOR THIS PROJECT MUST BE IN THE NAME OF THE ONE ENTITY THAT IS RESPONSIBLE FOR MAINTAINING THE PRIVATE SEWERS."
14. For projects that are dedicating a 'Blanket' Easement for access and maintenance of assets being turned over to CCU, a statement indicating the intent to dedicate such an easement shall be provided.

VI. OVERALL LAYOUT SHEET REQUIREMENTS

The following information shall be provided:

1. Title Block.
2. Engineer of Record's Name and Florida Registration Number
3. Engineer's Seal and Signature
4. Project Name
5. Horizontal Scale
6. Date drawings were prepared.
7. A revision block with latest revision date
8. North arrow with orientation to the top or right of the sheet preferred. However, such orientation may be rotated in order to provide additional coverage and a larger more readable plan.
9. The drawing shall contain an overall layout of the project on a single sheet, if possible, which indicates all phases of construction, existing and proposed utilities, storm sewers, and building numbers where applicable. The utilities shall include type of mains (water, gravity sewer, force main, reclaim water main, etc); fire hydrant locations; the direction of flow of the gravity sewer and force mains; and a designation (number and/or letter) of the manhole(s), pump/lift stations.
10. For drawing sets containing more than one plan view sheet, the overall layout shall show the coverage of each sheet with corresponding match lines and sheet references.

VII. UTILITY PLAN SHEET(S) REQUIREMENTS

A. General

The following information shall be provided:

1. Title Block.
2. Engineer of Record's Name and Florida Registration Number
3. Engineer's Seal and Signature
4. Project Name
5. Match Lines to assist in sheet to sheet navigation
6. Horizontal and Vertical Scale (on profile sheets)
7. Date of plan preparation.
8. A revision block indicating the date plans were last revised.
9. North arrow with orientation to the top or right of the sheet preferred. Alternate North Arrow orientation may be acceptable if such orientation improves the coverage of the project on each sheet.
10. The horizontal scale shall be a common scale shown on an Engineering Scale between the ranges of 1" = 10' and 1" = 50'.and be selected so drawings are readable. Larger scale blow-ups or details should be provided in congested areas. CCU may require such blow-ups should they be deemed necessary to construct the proposed utilities.
11. Show all existing and proposed above and below ground utilities including utility pole and light stanchion locations. The attributes that must be provided for the existing and proposed utilities are discussed under the heading 'Piping Plan Views.'
12. Show all public and private roadways and identify the Right-Of-Way (R/W) line, Edge of Pavement (EOP), and Centerline. Provide the pavement width and dimension the R/W. Show the location of any sidewalks or walkways. In addition, indicate if new roads are to be private or turned over to the County.
13. Show and dimension all existing and new easements and reference as to whether by plat or otherwise. All existing easements are to be identified as to type, i.e. Utility Easements, Drainage Easements, FPL Easement, etc. Any utilities that are to be dedicated to CCU as a result of these engineering plans require the grant of easements if not located within the road Right-Of-Way (R/W) and shall comply with the following:

Easement descriptions are to be written clearly on 8 ½ "x 11" paper with a point of beginning and a point of termination. A sketch drawn to scale and on 8 ½ "x 11" paper shall accompany the description. The sketch is to reflect the description and shall carry additional information to facilitate construction of the worded description. Street corners are to be shown and the description/sketch should relate the property being described to the streets. The scale shall be such to enable the direction of lines to be clearly observed. Where warranted, the sketch is to be on more than one sheet with the proper match lines shown for each sheet. CCU reserves the right to approve the description and sketch.

Easement Requirements:

- a. Water Mains and Sewer Force Mains:
 - 20 foot minimum width with no less than 7.5 feet on each side of the main.
 - Minimum width may be reduced by 10 feet if the easement is parallel to and

contiguous to a public right of way. The easement must extend 7.5 feet beyond the terminus of the main.

- b. Sewer Gravity Mains:
25 foot minimum width with no less than 12.5 feet on each side of the main. Minimum width may be reduced by 10 feet if the easement is parallel to and contiguous to a public right of way. The easement must extend 12.5 feet beyond the terminus of the main.
- c. Water Main and Sewer Gravity main in same easement:
30 foot minimum width based on 7.5 feet for the water main, 12.5 feet for the sewer gravity main and 10.0 feet separation between the two mains. Minimum width may be reduced by 10 feet if the easement is parallel to and contiguous to a public right of way. The easement must extend the greater of 12.5 feet beyond the terminus of the sewer gravity main or 7.5 feet beyond the terminus of the water main.
- d. Hydrants:
7.5 feet on each side of the hydrant.
- e. Lift Stations, Meter Vaults, and Pump Stations:
30 feet by 30 feet. Under some circumstances CCU may approve a smaller easement but it is unusual for the easement to be less than 25 feet by 25 feet.
- f. All others:
Check with CCU.

14. If the intent of the developer is to grant a 'blanket' easement, a note should be added to the Cover Sheet, Overall Plan Sheet, and the Utility Plan Sheet(s).

15. Indicate facilities that are or will be owned by CCU verses private or other utilities' facilities.

16. In addition to the above, for Site Plan projects provide the following:

- a. Show the perimeter boundary of the Property in Question (P.Q.) in a heavy line weight.
- b. The block and lot number(s) of the lot(s) comprising the PQ.
- c. The block and lot numbers of all adjacent properties.
- d. The street address.
- e. Show the outline of each building to be serviced. Except for single family and multi-family residential buildings, indicate the following:
 - i) The total gross square footage of each building with a breakdown of the square footage by use, i.e. office, retail, warehouse, etc.
 - ii) If the building is a restaurant indicate the number of seats.
 - iii) If the building is a hotel, indicate the number of rooms and include the square footage of any office space or conference facilities.
 - iv) The information provided for the building (s) should match the information used in computing the water demand and wastewater flows shown in the respective Tally Blocks shown on the Cover Sheet.
- f. Indicate the limits of pavement, parking areas, and sidewalks.

- g. Provide a copy of the landscaping plan. In general no landscaping or landscaping improvements such as retaining walls, planters, fencing, and decorative pavers should be installed within existing or proposed utility easements. The proposed occupation of any existing easement requires application to the Charlotte County Real Property Department for approval.

17. In addition to the information above, for Subdivisions provide the following:

- a. Indicate all boundary lines for any property to be served. Show coordinates for boundary property corners and reference one property corner to a section corner.
- b. Identify the property by the proposed or existing block and lot number.
- c. Show the outline of each building to be serviced.
- d. Except for single family and multi-family residential buildings, indicate the total gross square footage of each non-residential building and indicate its proposed use and the number of bathrooms being installed, if any.
- e. For multi-family residential buildings, show the number of units in the building and provide building and unit numbers.
- f. Show existing and proposed roadways including the R/W width, width of pavement, edge of pavement, driveway dimensions, and sidewalk dimensions and locations. Indicate if roads are private or public.
- g. The location and dimensions of all existing and proposed utility easements.

B. Piping Plan Views

1. All proposed utilities and location of services should be shown. Each water main, gravity sewer main, force main, low pressure force main, and reclaim water main shall be marked with its size, type of material, and class. Each gravity sewer main should also indicate the pipe slope. Typical fittings shall be marked with its size and material if the material is different than the main's material. Valves shall be marked with their size and type. Each water service line and sewer lateral shall be marked with its size, length, material, class, and slope (sewer laterals only). With the exception of length, water and sewer services may be marked on each plan sheet as 'Typical' if appropriate. All material and classes must conform to CCU design specifications.
2. Show the design location of all CCU facilities including distance from rights-of-way lines, property lines, or edge of pavement to each main. Distances are not required for water service lines and meters, sewer laterals and cleanouts unless specifically requested by CCU. Low pressure systems should include the offset from the building for each tank and the offset of the low pressure line from the nearest side property line.
3. Show all horizontal deflection points on all mains.
4. Blow-up views of utility configurations shall be provided in congested areas.
5. Show the location of all pressure test points (water and force mains) and bacteriological sampling points (water mains). All tests should be valve to valve.
6. Show the size and general location of all water, irrigation, and reclaim water meters. All meters are to be located within the road Right-of-Way (R/W). When this is not practical or possible a separate easement on the property must be dedicated up to and including the meter.
7. Show the location of air/vacuum releases, blow off assemblies, fire hydrants, fittings, and thrust blocks.

8. All manholes and pumping stations shall be shown and numbered. The piping inverts and rim elevations shall be provided.
9. The location, size, material, and elevations (inverts and castings/rims) of all existing and proposed storm sewers and appurtenances (catch basins, inlets, manholes, headwalls, outlet structures, etc.) shall be shown in areas where water, sewer, and reclaim water utilities are existing or are to be installed. The plans must also include the location and grading of all swales and storm water detention facilities in proximity to the utilities, existing or proposed. Construction details of storm water structures should be provided on the plans if such structures are in close proximity to existing or proposed utility locations.
10. The location of any other piping that may be in conflict with the proposed utility installations must be provided on the plans.
11. All conflicts shall be identified and numbered. Where the profile view does not clearly show the conflict encountered a separate 'Conflict Detail' shall be provided. The Conflict Detail shall show the size, material and class of each pipe, the invert and Top of Pipe elevations, and the proposed separation of each utility. Where the plans have an excessive number of conflict details, a separate Conflict Detail Sheet shall be provided in the plan set. If a separate Conflict Detail Sheet is not provided and CCU determines that Conflict Details should be shown on a separate sheet(s), the Engineer of Record shall add such sheets to the plan set prior to re-submittal of the plans.
12. When a Conflict Box is required, it should include all invert elevations, pipe diameters, and box dimensions.
13. All existing and 'To Be Abandoned' utilities shall be shown. The method of abandonment shall be noted, i.e. pressure grouted and capped, crushed in place, etc. Where abandonment is to be in accordance with FDEP requirements the governing regulation shall be cited by chapter and verse. Where abandonment in place is not desirable, the utilities shall be shown as 'To Be Removed.'

C. Piping Profiles

1. Profiles are required for all gravity sanitary sewer mains and for water mains, force mains, and reclaim water mains that are located within existing and proposed road R/W or within existing or proposed easements. The profile will show the existing and finished grade line; the size, material type, and class of pipe; manhole locations with pipe inverts and rim elevations; drop manhole locations, if applicable; doghouse or core bored manholes, if applicable; lengths of pipe between appurtenances with pipe slopes; wet well locations including rim and invert elevations of all pipes and force mains; attributes of mains, fittings, valves, hydrants, air release valves, vacuum release valves, etc.; and locations of conflicts with separation dimensions and elevations. Where sewer laterals maybe in conflict with paralleling water mains, gravity sewer profiles shall include sewer services locations. All maintenance access structures (manholes) and pump stations must be numbered.
2. All vertical deflection points should be shown.
3. Piping profile and plan views shall be aligned.
4. Profiles at all boring and horizontal directional drilling locations shall be provided.
5. Vertical scale shall be between 1" = 1' and 1" = 5'.
6. Conflict details should be added when required.

VIII. CCU STANDARD SPECIFICATIONS AND DETAILS

1. All utility construction shall be in conformance with the current CCU Standard Specifications and Details which can be found on the CCU Website.
2. Construction details shall be included in the plan set and shall conform to the current CCU General Details which can be found on the CCU Website. Only the details that pertain to the proposed construction should be included in the plan set.

IX. RECORD DRAWINGS

Submittals

Record drawings require one electronic copy and two paper copies for review. **Upon approval** of the record drawings, the Engineer of Record – (EOR) shall provide in accordance with section XII DELIVERY OF ELECTRONIC MEDIA/DATA;

- One electronic copy with all the Florida registered surveyor and mapper (PSM) survey data in tabular data, of the utility assets,
- A signed and sealed letter from the Florida registered surveyor and mapper with the following certifying statement:

“I hereby certify that the as-built location information of the water and sewer facilities shown on these drawings conforms to the minimum technical standards for land surveying in the State of Florida, chapter 61G17-6 (Florida Administrative Code), as adopted by the Department of Business and Professional Regulation, Board of Professional Surveyors and Mappers in September 1981, and that said as-builts are true and correct to the best of my knowledge and belief as surveyed under my direction.”

- The EOR CAD file in AutoCAD 2006 or later,
- Either a PDF or DWF reproducible file,
- Three paper copies.

Record Drawings

Record drawings refer to the final drawing set signed and sealed by a Florida Registered Engineer. The EOR will prepare a record drawing based on as-built information provided by a Florida registered surveyor and mapper. The drawings show changes between the approved design plans and the actual construction. The EOR shall retain and make available the signed and sealed as-built drawings provided by the PSM with the other project records for possible review if required by CCU. Utility assets refer to the potable water, reclaimed water, gravity sewer, forcemains, low pressure forcemains and all facilities that include collection and distribution of utilities.

X. MINIMUM RECORD DRAWING REQUIREMENTS

The EOR will prepare or have prepared record drawings based on as-built information provided by a PSM. The EOR shall retain and make available the signed and sealed as-built drawings provided by the PSM with the other project records for possible review if required by CCU.

Each sheet of the record drawings must be signed and sealed by the EOR. The cover sheet is to be signed and sealed and shall include the following statement: "I certify that these record drawings have been reviewed by me or by individual(s) under my direct supervision and that these drawings incorporate the information contained in the certified as-builts. To the best of my knowledge and belief these record drawings substantially reflect the utility assets as constructed. The accuracy of these record drawings is reliant on the accuracy applied by the surveyor who certified the as-built drawings."

Record Drawings will as a minimum include the information contained in the approved design/construction drawings and as-built drawings, plus the following additional requirements.

1. Drawings will be a complete set including cover sheet, index (if one were included in the approved design/construction drawings), standard details, and any other sheets included in the approved design set.
2. Number of Submittals: Two paper sets and one CD are required for the first and each subsequent submittal. Once CCU has reviewed and **approved** the drawings, two paper sets and one CD shall be submitted. The CD will contain the data as described in section XII DELIVERY OF ELECTRONIC MEDIA/DATA in this document.
3. Record Drawings shall document changes between the design/construction plans and the final construction configuration. All information that is incorrect due to changes during construction will be corrected. Incorrect or no longer relevant information will be struck through. Any CCU facilities constructed in a horizontal location materially different than 5% of the scale of the design location will have their design location struck through and will be redrafted at the constructed location. All facilities shall be labeled with a designator and referenced in a table with the surveyed coordinates and description of the facility. Design drawing dimensioning to utility assets will be corrected as necessary.
4. Drawings will include the MINIMUM RECORD DRAWING CONTENTS described else where in this document.

XI. MINIMUM RECORD DRAWING CONTENTS

1. If the amount of information required on record drawings requires the drawing author to organize its presentation in order to make the drawings readable, it may be necessary to put utility assets information on separate sheets and/or use a table to show coordinate information.
2. All facilities shall be labeled with a designator and referenced in a table with the surveyed coordinates and description of the facility.
3. Show the location of easements used by the utility assets.
4. Indicate all boundary lines for project property. Show coordinates for all boundary property corners and reference one property corner to a section corner.
5. Dimension pipe joint location offsets where utility asset piping cross.
6. Indicate the length of gravity sewer piping and actual slope between maintenance access structures (manholes) and the stationing from the upstream maintenance access structure to each service lateral at main.
7. Show all abandoned in place facilities including the extent and method of abandonment.
8. All distances from valve to valve, valve to fitting, manhole to manhole and fitting to fitting shall be in incremental measurements.
9. Show elevations to the nearest tenth of a foot for:
 - a. Top of pipe for utility assets at deflection points and every 100 feet along straight runs.
 - b. Top of pipe for utility asset fittings.
 - c. Top of pipe for connection to existing facilities.
 - d. Top of operating nut for valves.
 - e. Top of pipe of utility asset where they conflict with other facilities (drainage, telephone, cable TV, electric, etc.)
10. Show elevations to the nearest one hundredth of a foot for:
 - a. Maintenance access structure (manhole) rims.
 - b. Inverts of every gravity sewer pipe and low pressure and force main connection to maintenance access structures.
 - c. Lift station top of slab, bottom of wet well, influent pipe invert and control set points.
11. State Plane Coordinates will be provided for CCU maintained facilities, including:
 - a. Utility assets at deflection points and every 100 feet along straight runs.
 - b. The center of each maintenance access structure (manhole), fitting, valve, blow off, hydrant, water meter, sewer cleanout, lift station wet well, double detector check or other non-pipe water or sewer facility.
 - c. The location on the potable and reclaimed water main of each tap for a service line.
 - d. The location on the sewer gravity main of each service lateral.
 - e. The location of each connection to existing facilities.
 - f. The corners (vertices) of all easements being granted to the County as a part of the project.
 - g. Other locations designated by CCU.

XII. DELIVERY OF ELECTRONIC MEDIA/DATA

All projects shall submit as-built and record data as follows.

I. Map Projection:

- a. All data submitted in any format shall be in State Plane, Florida West, NAD83 GRS 80 FEET map projection.

II. Map Accuracy:

- a. Charlotte County Utilities has adopted the National Mapping Standards (NMAS) for mapping / GIS products. Horizontal accuracy shall meet or exceed the NMAS. The engineer and/or surveyor shall adhere to NMAS for all mapping or GIS work as referenced at this link <http://nationalmap.gov/gio/standards/>

III. Media type:

- a. All data shall be submitted to CCU in accordance with the required coordinate system. All files shall be delivered to CCU on CD_ROM. The disks must be labeled with the following information and include all pertaining data to the particular file format submitted:
 - i. CCU project number
 - ii. Submittal date
 - iii. Set label (i.e.; disk 1 of 3)

IV. Metadata:

- a. Metadata must adhere to the Federal Geographic Data Committee (FGDC) Standards found at: <http://www.fgdc.gov/metadata/csdgm/>
- b. ArcGIS users should use the FGDC Metadata Editing Interface in ArcCatalog to create and maintain metadata.
- c. Metadata is to be submitted on a standalone basis (for a project, map, non-ESRI data), must be submitted in XML format, and adhere to FGDC standards.

V. All projects shall submit record data in either one of the following formats.

- a. Accepted data formats are:
 - i. ESRI shapefile or ESRI geodatabase 9.x.
 1. GIS Data Layer Naming

- a. GIS naming convention shall be of the form: XxxxxXxxxXxx {1st letter of each word capitalized) Examples: CensusTract2000, FutureLandUse, etc
- b. Raster, aerial or orthophoto naming convention shall be: Aerial_[yyyymm]_[BW/Color/IR]_[Resolution] Example: Aerial _200202 _BW _1M
- c. In all cases, GIS data or map layer names shall describe, in layperson terms, the data contained. In all cases, metadata will contain a layperson description of the data. Data / Layer names must not exceed 30 characters in length.

2. Attribute Table Column Names

- a. The maximum length for a column name shall be 30 characters.
- b. Columns or fields containing numbers that will not be used in calculations (like PID, Address numbers, etc) shall be a text string or varchar datatype.
- c. The use of a hyphen in a field name is not allowed. If column title uses acronyms, these can be capitalized. Use underscores to separate words (example: USGS_Waterways).
- d. Columns or fields containing numbers that will be used in calculations (like length, area, volume, etc.) shall be stored with a numeric datatype (floating point, integer, etc.) appropriate to the intended calculation. For example a floating point is used for answers requiring decimal numbers and integer for answers requiring whole numbers answers.
- e. An ESRI coverage or shapefile stores dates in a date field with this format: yyyy-mm-dd. A geodatabase formats date as datetime yyyy-mm-dd hh:mm:ss AM or PM. All date fields created in coverage, shapefile, or geodatabase (personal or enterprise) format shall be created as a date field type, and populated according to this standard.
- f. Do NOT use 'system reserve words' like 'DATE', NUMBER, TEXT, TO, FROM, GRANT' to name column or fields. If source data columns have a reserve word naming, the data supplier or maintainer shall change the column name to "something else". If the source data column contains a name that is a date or numeric reference then the data supplier or maintainer shall change the name to "something else_date" – "date" being the actual date, or number or other for the original column name.

3. Spatial Topology

- a. Spatial data submitted for inclusion in the Charlotte County Utilities GIS database will be topologically clean and free of errors. All points, lines, polygons, and regions will have a single unique user-id number. Data will be free of undershoots, overshoots, and sliver polygons unless necessary to accurately describe the specific map data.
- b. GIS data layers derived from foundation data - like parcels, shoreline, hydrology, street centerlines, or administrative boundaries - shall be of the same spatial accuracy as the source data. For example, GIS data derived from the parcels map layer, and which has graphic lines common to parcel lines, shall have those common lines exactly coincident to the originating parcel lines. This criterion is the standard for all data derived from previously published data.

ii. Autodesk MAP 2006 DWG files or current release.

1. The “model space” in the drawings shall be scaled to 1:1 and include the complete project area in the required coordinate system described elsewhere in this document.
2. Rotation of the “model space” from the x, y, and z axis shall not be accepted. The axis shall be set to 0. Any rotation of the project view shall be done in the “layout view” or “paper space”.
3. The drawing shall include all applicable layers as described elsewhere in this document. Only the utility layers shall be turned on and thawed.
4. Electronic “sheet sets” shall only be allowed in the “layout view” or “paper space” of the drawing, and at no time will any “details” be allowed in the model space of the drawing.
5. All plot configurations shall be set to Architectural D landscape page size.
6. All externally referenced (xref) drawings shall be included in the electronic submittal.
7. One electronic file of either a DWF or PDF format for viewing and redlining.

8. All **As-built** point data of utility assets submitted in all AutoCAD DWG files shall be submitted separately in any one of the following file formats with accompanying metadata;
 - a. SDF file (Autodesk spatial data file)
 - b. CSV file (comma separated values)
 - c. DBF file (dBase file)

9. A “readme” file shall be included on disk number 1 that contains the above information and an index of all files that includes;
 - a. Drawing file name,
 - b. Drawing name,
 - c. Drawing number within the set,
 - d. Drawing scale,
 - e. Drawing date, and
 - f. The XREF (externally referenced drawings) listings and their paths.

10. A hard copy of this readme file shall be delivered with the disks.

XIII. CCU CADD LAYER STANDARDS

1. Charlotte County Utilities has developed a CADD standard using the United States National CAD Standard located at the following link <http://tsc.wes.army.mil>. This CADD standard shall be required for all projects submitted to CCU.
2. The following table shows all CAD layers that shall be required for all CAD file submitted to CCU.
3. The template for the CAD layers and line types are available on the CCU web site in the Engineering Services area. At <http://www.charlottecountyfl.com/ccu/Engineering> .

CAD Layer Requirements

The layers described below shall be included in all CAD file submittals. The “Linetype” file and “Layer” template are available on-line at the CCU web site.

	Item	Layer	Color	Linetype	Lineweight [mm]
Water	abandoned water main	C-DOMWABM	white	ABANDONED_WATER_MAIN	0.35
	domestic existing water main	C-DOMWMAM-EX	blue	EXISTING_WATER_MAIN	0.25
	domestic existing water main text	C-DOMWMAMDIP-EX	blue	Continuous	0.13
	1" domestic water main	C-DOMWMAM-1	31	1IN_WATER_MAIN	0.25
	1" domestic water main text	C-DOMWMAMDIP-1	31	Continuous	0.13
	1.5" domestic water main	C-DOMWMAM-1.5	81	1.5IN_WATER_MAIN	0.25
	1.5" domestic water main text	C-DOMWMAMDIP-1.5	81	Continuous	0.13
	2" domestic water main	C-DOMWMAM-2	52	2IN_WATER_MAIN	0.25
	2" domestic water main text	C-DOMWMAMDIP-2	52	Continuous	0.13
	2.5" domestic water main	C-DOMWMAM-2.5	94	2.5IN_WATER_MAIN	0.25
	2.5" domestic water main text	C-DOMWMAMDIP-2.5	94	Continuous	0.13
	3" domestic water main	C-DOMWMAM-3	242	3IN_WATER_MAIN	0.25
	3" domestic water main text	C-DOMWMAMDIP-3	242	Continuous	0.13
	4" domestic water main	C-DOMWMAM-4	cyan	4IN_WATER_MAIN	0.25
	4" domestic water main text	C-DOMWMAMDIP-4	cyan	Continuous	0.13
	6" domestic water main	C-DOMWMAM-6	blue	6IN_WATER_MAIN	0.25
	6" domestic water main text	C-DOMWMAMDIP-6	blue	Continuous	0.13
	8" domestic water main	C-DOMWMAM-8	magenta	8IN_WATER_MAIN	0.25
	8" domestic water main text	C-DOMWMAMDIP-8	magenta	Continuous	0.13
	10" domestic water main	C-DOMWMAM-10	10	10IN_WATER_MAIN	0.25
10" domestic water main text	C-DOMWMAMDIP-10	10	Continuous	0.13	
12" domestic water main	C-DOMWMAM-12	90	12IN_WATER_MAIN	0.25	
12" domestic water main text	C-DOMWMAMDIP-12	90	Continuous	0.13	
14" domestic water main	C-DOMWMAM-14	31	14IN_WATER_MAIN	0.25	
14" domestic water main text	C-DOMWMAMDIP-14	31	Continuous	0.13	
16" domestic water main	C-DOMWMAM-16	11	16IN_WATER_MAIN	0.25	
16" domestic water main text	C-DOMWMAMDIP-16	11	Continuous	0.13	
18" domestic water main	C-DOMWMAM-18	30	18IN_WATER_MAIN	0.25	

	18" domestic water main text	C-DOMWMAMDIP-18	30	Continuous	0.13
	20" domestic water main	C-DOMWMAM-20	124	20IN_WATER_MAIN	0.25
	20" domestic water main text	C-DOMWMAMDIP-20	124	Continuous	0.13
	24" domestic water main	C-DOMWMAM-24	200	24IN_WATER_MAIN	0.25
	24" domestic water main text	C-DOMWMAMDIP-24	200	Continuous	0.13
	36" domestic water main	C-DOMWMAM-36	25	36IN_WATER_MAIN	0.25
	36" domestic water main text	C-DOMWMAMDIP-36	25	Continuous	0.13
	domestic fire main	C-DOMW-FIM	10	FIRE_LINE	0.25
	domestic fire main text	C-DOMWDIP-FIM	10	Continuous	0.13
	4" domestic fire main	C-DOMW-FIM-4	10	4IN_FIRE_LINE	0.25
	4" domestic fire main text	C-DOMWDIP-FIM 4	10	Continuous	0.13
	6" domestic fire main	C-DOMW-FIM-6	10	6IN_FIRE_LINE	0.25
	6" domestic fire main text	C-DOMWDIP-FIM 6	10	Continuous	0.13
	8" domestic fire main	C-DOMW-FIM-8	10	8IN_FIRE_LINE	0.25
	8" domestic fire main text	C-DOMWDIP-FIM 8	10	Continuous	0.13
	domestic water service	C-DOMWSEM	30	Continuous	0.25
	water valve	C-DOMWDEM	160	Continuous	0.25
	hydrant	C-DOMWHYM	red	Continuous	0.25
	water meter	C-DOMWMEM	160	Continuous	0.25
	fittings: blow off, cap, tee, cross, bend, reducer, plug	C-DOMWFTM	blue	Continuous	0.35
	water storage tank	C-DOMWTAM	76	Continuous	0.25
	general notes and general remarks	C-DOMWNOP	blue	Continuous	0.13
Sanitary sewer	existing gravity sewer	C-SSWRMAM-EX GS	90	EXISTING_GS	0.25
	existing gravity sewer text	C-SSWRMAMDIP-EX GS	90	Continuous	0.13
	gravity sewer	C-SSWRMAM-GS	90	GRAVITY_SEWER	0.25
	gravity sewer text	C-SSWRMAMDIP-GS	90	Continuous	0.13
	8" gravity sewer	C-SSWRMAM-GS 8	30	8IN_GRAVITY_SEWER	0.25
	8" gravity sewer text	C-SSWRMAMDIP-GS 8	30	Continuous	0.13
	10" gravity sewer	C-SSWRMAM-GS 10	80	10IN_GRAVITY_SEWER	0.25
	10" gravity sewer text	C-SSWRMAMDIP-GS 10	80	Continuous	0.13
	12" gravity sewer	C-SSWRMAM-GS 12	91	12IN_GRAVITY_SEWER	0.25
	12" gravity sewer text	C-SSWRMAMDIP-GS 12	91	Continuous	0.13
	15" gravity sewer	C-SSWRMAM-GS 15	70	15IN_GRAVITY_SEWER	0.25
	15" gravity sewer text	C-SSWRMAMDIP-GS 15	70	Continuous	0.13
	18" gravity sewer	C-SSWRMAM-GS 18	11	18IN_GRAVITY_SEWER	0.25
	18" gravity sewer text	C-SSWRMAMDIP-GS 18	11	Continuous	0.13
	21" gravity sewer	C-SSWRMAM-GS 21	14	21IN_GRAVITY_SEWER	0.25
	21" gravity sewer text	C-SSWRMAMDIP-GS 21	14	Continuous	0.13
	24" gravity sewer	C-SSWRMAM-GS 24	blue	24IN_GRAVITY_SEWER	0.25
	24" gravity sewer text	C-SSWRMAMDIP-GS 24	blue	Continuous	0.13
	36" gravity sewer	C-SSWRMAM-GS 36	120	36IN_GRAVITY_SEWER	0.25
	36" gravity sewer text	C-SSWRMAMDIP-GS 36	120	Continuous	0.13
	1.5" low pressure sewer	C-SSWRMAM-1.5	36	1.5IN_LOW_PRESSURE	0.25
	1.5" low pressure sewer text	C-SSWRMAMDIP-1.5	36	Continuous	0.13
	2" low pressure sewer	C-SSWRMAM-2	82	2IN_LOW_PRESSURE	0.25
	2" low pressure sewer text	C-SSWRMAMDIP-2	82	Continuous	0.13

2.5" low pressure sewer	C-SSWRMAM-2.5	12	2.5IN_LOW_PRESSURE	0.25
2.5" low pressure sewer text	C-SSWRMAMDIP-2.5	12	Continuous	0.13
3" low pressure sewer	C-SSWRMAM-3	155	3IN_LOW_PRESSURE	0.25
3" low pressure sewer text	C-SSWRMAMDIP-3	155	Continuous	0.13
4" low pressure sewer	C-SSWRMAM-4	21	4IN_LOW_PRESSURE	0.25
4" low pressure sewer text	C-SSWRMAMDIP-4	21	Continuous	0.13
6" low pressure sewer	C-SSWRMAM-6	154	6IN_LOW_PRESSURE	0.25
6" low pressure sewer text	C-SSWRMAMDIP-6	154	Continuous	0.13
8" low pressure sewer	C-SSWRMAM-8	40	8IN_LOW_PRESSURE	0.25
8" low pressure sewer text	C-SSWRMAMDIP-8	40	Continuous	0.13
12" low pressure sewer	C-SSWRMAM-12	magenta	12IN_LOW_PRESSURE	0.25
12" low pressure sewer text	C-SSWRMAMDIP-12	magenta	Continuous	0.13
existing force main	C-SSWRMAM-EX FM	30	EXISTING_FORCE_MAIN	0.25
existing force main text	C-SSWRMAMDIP-EX FM	30	Continuous	0.13
2" force main	C-SSWRMAM-FM 2	yellow	2IN_FORCE_MAIN	0.25
2" force main text	C-SSWRMAMDIP-FM 2	yellow	Continuous	0.13
3" force main	C-SSWRMAM-FM 3	133	3IN_FORCE_MAIN	0.25
3" force main text	C-SSWRMAMDIP-FM 3	133	Continuous	0.13
4" force main	C-SSWRMAM-FM 4	13	4IN_FORCE_MAIN	0.25
4" force main text	C-SSWRMAMDIP-FM 4	13	Continuous	0.13
6" force main	C-SSWRMAM-FM 6	blue	6IN_FORCE_MAIN	0.25
6" force main text	C-SSWRMAMDIP-FM 6	blue	Continuous	0.13
8" force main	C-SSWRMAM-FM 8	30	8IN_FORCE_MAIN	0.25
8" force main text	C-SSWRMAMDIP-FM 8	30	Continuous	0.13
10" force main	C-SSWRMAM-FM 10	cyan	10IN_FORCE_MAIN	0.25
10" force main text	C-SSWRMAMDIP-FM 10	cyan	Continuous	0.13
12" force main	C-SSWRMAM-FM 12	magenta	12IN_FORCE_MAIN	0.25
12" force main text	C-SSWRMAMDIP-FM 12	magenta	Continuous	0.13
14" force main	C-SSWRMAM-FM 14	200	14IN_FORCE_MAIN	0.25
14" force main text	C-SSWRMAMDIP-FM 14	200	Continuous	0.13
15" force main	C-SSWRMAM-FM 15	53	15IN_FORCE_MAIN	0.25
15" force main txt	C-SSWRMAMDIP-FM 15	53	Continuous	0.13
16" force main	C-SSWRMAM-FM 16	22	16IN_FORCE_MAIN	0.25
16" force main text	C-SSWRMAMDIP-FM 16	22	Continuous	0.13
18" force main	C-SSWRMAM-FM 18	13	18IN_FORCE_MAIN	0.25
18" force main txt	C-SSWRMAMDIP-FM 18	13	Continuous	0.13
20" force main	C-SSWRMAM-FM 20	34	20IN_FORCE_MAIN	0.25
20" force main text	C-SSWRMAMDIP-FM 20	34	Continuous	0.13
21" force main	C-SSWRMAM-FM 21	20	21IN_FORCE_MAIN	0.25
21" force main txt	C-SSWRMAMDIP-FM 21	20	Continuous	0.13
24" force main	C-SSWRMAM-FM 24	150	24IN_FORCE_MAIN	0.25
24" force main txt	C-SSWRMAMDIP-FM 24	150	Continuous	0.13
36" force main	C-SSWRMAM-FM 36	red	36IN_FORCE_MAIN	0.25
36" force main text	C-SSWRMAMDIP-FM 36	red	Continuous	0.13
treatment plant	C-SSWRPLM	blue	Continuous	0.25
treatment plant txt	C-SSWRPLMDIP	blue	Continuous	0.13
airline	C-SSWRMAM-AIRLINE	240	AIRLINE	0.25
airline txt	C-SSWRMAMDIP-AIRLINE	240	Continuous	0.13

	drainage	C-SSWRMAM-DRAINAGE	blue	DRAINAGE	0.25
	drainage txt	C-SSWRMAMDIP-DRAINAGE	blue	Continuous	0.13
	sanitary sewer service	C-SSWRSEM	30	Continuous	0.25
	general notes and general remarks	C-SSWRNOP	white	Continuous	0.13
	lift station	C-SSWRLIM-LS	90	Continuous	0.25
	lift station number	C-SSWRLIMDIP-LS NR	90	Continuous	0.13
	manhole	C-SSWRJBM-MANHOLE	90	Continuous	0.25
	manhole number	C-SSWRJBMDIP-MANHOLE NR	90	Continuous	0.13
	sewer valve	C-SSWRDEM	green	Continuous	0.25
	fittings: cleanout, cap, reducer	C-SSWRFTM	green	Continuous	0.35
	flow direction arrow	C-SSWRFLM	magenta	Continuous	0.25
Reclaimed Water	existing reuse water	C-SSWRMAM-EX RECL	210	EXISTING_RECLAIMED_MAIN	0.25
	existing reuse water text	C-SSWRMAMDIP-EX RECL	210	Continuous	0.13
	3" reuse water	C-SSWRMAM-RECL 3	210	3IN_RECLAIMED_MAIN	0.25
	3" reuse water text	C-SSWRMAMDIP-RECL 3	210	Continuous	0.13
	6" reuse water	C-SSWRMAM-RECL 6	211	6IN_RECLAIMED_MAIN	0.25
	6" reuse water text	C-SSWRMAMDIP-RECL 6	211	Continuous	0.13
	8" reuse water	C-SSWRMAM-RECL 8	241	8IN_RECLAIMED_MAIN	0.25
	8" reuse water text	C-SSWRMAMDIP-RECL 8	241	Continuous	0.13
	10" reuse water	C-SSWRMAM-RECL 10	211	10IN_RECLAIMED_MAIN	0.25
	10" reuse water text	C-SSWRMAMDIP-RECL 10	211	Continuous	0.13
	12" reuse water	C-SSWRMAM-RECL 12	210	12IN_RECLAIMED_MAIN	0.25

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