



Charlotte County Utilities

Engineering Services

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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 POTABLE WATER, WASTEWATER, AND RECLAIMED WATER PROJECTS

Date: November 1, 2011



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Date: January 1, 2011

Date Last Issued: January 1, 2008

Date First Issued: April 12, 2005

This document describes the minimum format, technical content, and submittal requirements for Charlotte County Utilities (CCU) to accept design, as-built, and record drawings. All plans and documents submitted for review are subject to these requirements. This document should be used in conjunction with the document "Charlotte County Utilities CADD Standards" when preparing all plans. This document does not relieve the Engineer of Record (EOR) or the applicant of their responsibility to comply with all State, County, and Local regulations. This document does not describe drawing or submittal 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.

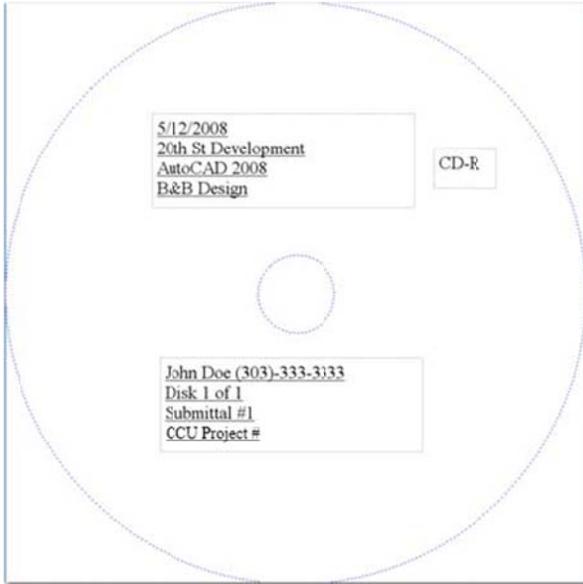
I. REQUIRED SUBMITTALS, FORMATS, AGREEMENTS AND CONTRACTS

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 shown on the application form. Additional review fees may be required depending upon the number of reviews that must be conducted.
 - c. Future submittals of project documents should be accompanied by a letter detailing how each comment made by the CCU staff was addressed. The drawings themselves must have each revision properly clouded and numbered.
2. Number of Plan Submittals, Technical Reports, 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. For major projects such as subdivisions, commercial developments or any project that is of special concern to CCU an AutoCAD file (DWG) on CD-R that conforms to the requirements of I.5 below must be submitted.
 - c. Two copies of related Technical Reports, if required, signed and sealed by a Professional Engineer licensed in the State of Florida (See Technical Reports section for applicability).
 - d. Submission of FDEP permit applications that are required for construction of the proposed utilities should be delayed until the plans for the project have received final utility plan approval from CCU. Any permit applications that are provided may be returned to the applicant/permittee without further review depending upon the complexity of the project and the status of the project review as determined 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. Final utility plan approval is subject to any additional issues that may arise during the Charlotte County Site Plan Review Process which may affect the utility plan. Utility plans that are submitted for Charlotte County Site Plan Review must be the version approved by CCU. Plan modifications of any kind resulting from the Site Plan Review Process will require re-approval by CCU. FDEP permit applications shall be based upon the final approved utility plans, including any last minute modifications.
5. Once final utility plan approval is given by CCU, the Developer will be advised to submit four (4) additional signed and sealed copies of the drawings for stamping in addition to a CD of the plans in the following electronic data deliverable package.
- a. The electronic data deliverable package (EDDP) shall include CD-R with label. Media shall be clearly labeled as follows:

Date:	(Date media was created)
Project:	(Title of project)
AutoCAD Version:	(AutoCAD Version)
Company:	(Name of submitting company)
Contact:	(Name & Phone number of person to contact)
CD-R #	(CD-R number – total number of CD's in set)
Submittal #	(Submittal Number)
CCU Project #	(Assigned CCU number)

Example:



- b. Each CD-R must be accompanied by a file description of **DEPENDENCIES** for the current set of plans. This file may be in one of many text formats (text file or word document); AutoCAD's formatting tool **eTransmit** is recommended for preparing the DWG file for submittal. Master files using reference files should list applicable reference files. Each file description is to include the following information.

Prepared For:	(Developer and/or Owner)
Project:	(Title of project)
Date:	(Date media was created)
Prepared By:	(Name and phone of person (CAD) able to answer question)
Company:	(Name of submitting company)
Project Manager:	(Name of project manager)
File Name:	(Name of drawing file)
Reference Files:	(Name of reference files)
Remarks:	(Remarks / comments)

Example:

<p>Prepared For: Charlotte County Utilities</p> <p>Project: H - Court</p> <p>Date: 5/7/2008</p> <p>Prepared by: Consulting Company Address & Phone Number</p> <p>Project Manager: John Doe</p> <p>File name: 5.3.1</p> <p><u>The following Water.dwg has the following dependencies:</u></p> <p><u>Reference Files</u> #1 Ref.file waterint.dwg #2 Ref.file waterutil.dwg</p> <p><u>Image Files</u> Water const.tif Areaoverview.bmp</p>

c. File types

i) Submitting AutoCAD Files (DWG)

All text, graphic and other DWG files will be included in the electronic data deliverables.

These files will include the AutoCAD drawing files, AutoCAD line and font definition files and other associated files.

Examples of dependencies files are: dwg, tif, doc, bmp, shx, txt files and will be included.

ii) Design Web Format (DWF) called (Autodesk Design Review)

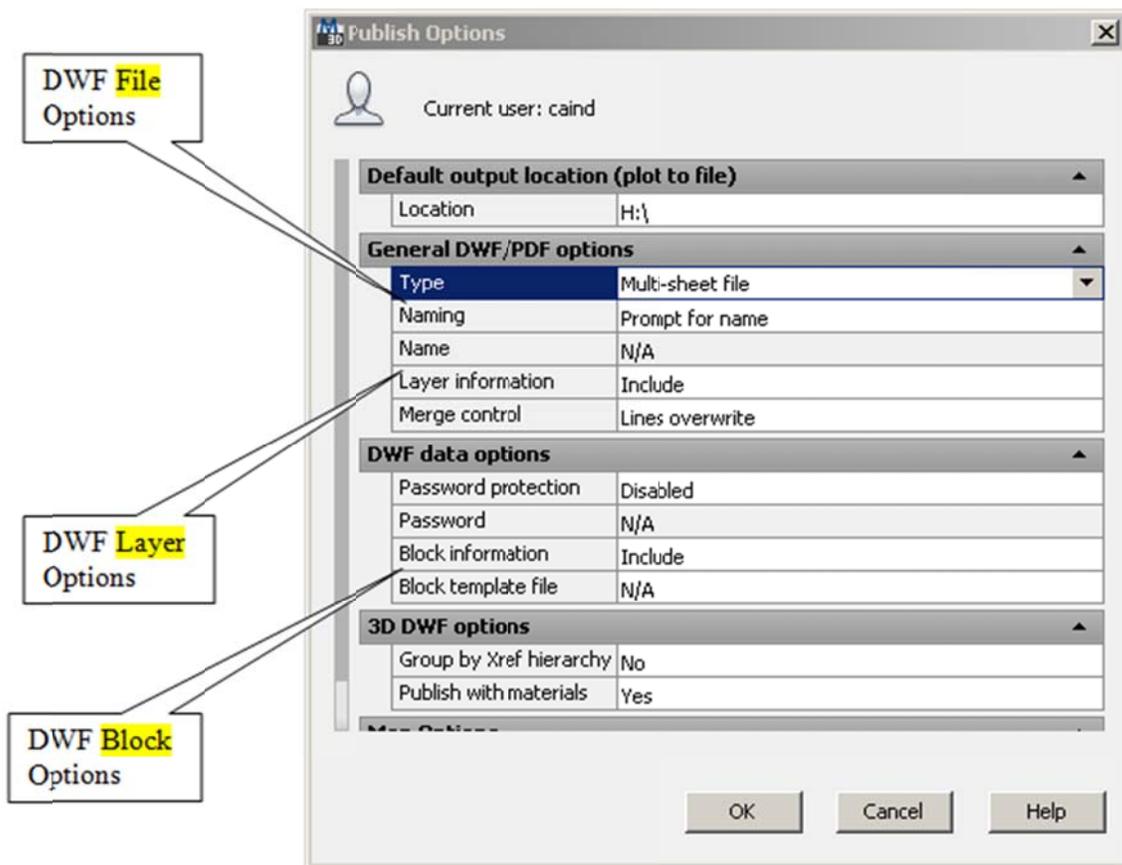
Publishing an electronic drawing set in the Design Web Format:

Assemble drawing sheets into a customized electronic drawing set. An electronic drawing set is the digital equivalent of a set of plotted drawings. An electronic drawing set is saved as a single DWF file.

iii) DWF Data Options

The DWF data option tab allows you to specify the data that you can optionally include in the DWF file. Select Include Layer Information & Block Information.

Example:



6. CCU will stamp the 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.
7. Once the plans are stamped approved a minimum of four (4) copies of the required FDEP permit applications must be submitted for the necessary signatures (see section on FDEP Permit Applications and Certificates to Operate for additional requirements). Depending upon the project, additional permits may have to be obtained by the applicant prior to construction. It is the responsibility of the applicant and the Engineer of Record to identify and obtain all permits that are necessary prior to installation of the utilities.
8. Once the plans are stamped approved the Engineer of Record shall submit an Engineer's Estimate of Probable Cost for CCU review that is prepared utilizing the construction cost estimate spreadsheet format posted on the CCU website.
9. Once the plans are stamped approved the applicant must enter into a Developer's Agreement with CCU prior to the start of utility construction. The applicant must contact CCU for further information regarding the Developer Agreement requirements.
10. Projects that involve the use of reclaimed water for irrigation or other permitted purposes must enter into a Reclaimed Water Supply Contract with CCU prior to the delivery of reclaimed water. The applicant must contact CCU for further information regarding the Reclaimed Water Supply Contract.

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 Stations, a Basis of Design Report must be provided. Prior to design of the lift station(s) the Engineer of Record must contact the CCU Engineering Division to determine the size and type of station to construct. All lift stations shall be constructed in accordance with the specifications posted on the CCU website. Lift station construction details will be provided to the EOR once the type of lift station to be constructed is determined.

III. FDEP PERMIT APPLICATIONS AND CERTIFICATES TO OPERATE

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 Permittee or their authorized agent. The necessary forms may be obtained from the FDEP Website. It is the responsibility of the Engineer of Record and Permittee to properly fill out, sign and seal the permit application forms prior to submittal to CCU.
2. The CCU data for the water and/or sewer plants that serve the proposed project may be found on the CCU Website under the Engineer link. 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 application is being prepared.
3. It is the responsibility of the Permittee and the Engineer of Record to submit the signed FDEP application form(s) to the FDEP and to obtain the required permit prior to construction of the utilities.
4. It is the responsibility of the Permittee and the Engineer of Record to obtain a Certificate to Operate the utility system from the FDEP prior to placing the utility system into service. Application forms to certify the utility for operation can be found on the FDEP website and must be submitted to CCU for the necessary signatures prior to being submitted to the FDEP for approval. Failure to obtain FDEP approval to place a utility into operation may result in the Permittee being fined by the FDEP.
5. 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, Landscape Sheet, Conflict Sheet (if deemed necessary, see below), and Construction Detail sheet(s).
7. All plan sheets shall have the Vertical Datum Source and Elevation.
8. All plan sheets shall, once assigned, 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 and/or Surveyors' seal and signature.
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. Basis of Bearing Information
11. Benchmark Information
12. An index of the sheets within the plan set shall be provided unless the plan set has 4 sheets or less.
13. 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 AND SUBMITTAL REQUIREMENTS FOR POTABLE WATER, WASTEWATER, AND RECLAIMED WATER PROJECTS' DATED NOVEMBER 1, 2011. STATE PLANE COORDINATES (FEET) WILL BE SUPPLIED FOR THE RECORD DRAWINGS."
14. 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. Water meters must be sized utilizing the Water Meter Sizing Form shown in Appendix B. Completed forms must be submitted for each meter shown in the Water Meter Tally Block.
 - 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, the Average Reclaim Water Demand per day in MGD at the application rate of 1 inch per week, whether or not there is reclaimed water storage facilities available on-site and, if so, the type of storage (pond, tank) and volume of storage being provided.
 - e. Grease Interceptor Tally Block. For projects that require the installation of a grease interceptor a tally block shall be included that provides information in accordance with the Grease Interceptor Volume Requirement standard detail including the type and class of establishment, the number of seats, the hours of operation, and the grease interceptor volume.
15. Private sewer collection systems require special approval by CCU. 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.”
16. 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; grease interceptor size and location; 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. Vertical Datum Source and Elevation
8. Date of plan preparation.
9. A revision block indicating the revision number, date, description and person that revised the plans as well as if revisions are made, each revision properly clouded and numbered with a numeric revision symbol which corresponds with the plan set. See examples 1 and 2 below.

Example 1

No.	Description	Revision	By	Date
1	DESCRIPTION OF REVISION	1	CCU	1/01/2011

REVISION SYMBOL

Example 2



10. 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.
11. 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.

12. 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.'
13. 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.
14. Show and dimension all existing and new easements and reference as to whether by plat or otherwise. For existing easements, reference the recorded OR Book and Page number. 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. All such easements shall be included in the drawings and the electronic DWG file that will be submitted to CCU.

The easement requirements shown below are for 'typical' utility installations. CCU reserves the right to amend the easement requirements on a case by case basis depending upon the special circumstances that may exist. In all instances, easements must include access to or be contiguous to public ROW to provide for future vehicle access in order to perform maintenance by the utility.

Easement Requirements:

a. Water Mains and Sewer Force Mains:

20 foot minimum width with no less than 7.5 feet minimum clearance to the outside wall of pipe on either side of the main. Minimum width may be reduced to 10 feet if the easement is parallel to and contiguous to a public right of way so long as the 7.5 feet minimum clearance from the outside easement boundary is maintained. The easement must extend 20 feet beyond the terminus of the main.

b. Sewer Gravity Mains:

25 foot minimum width with no less than 10 feet minimum clearance to the outside wall of the pipe on either side of the main. Minimum width may be reduced to 15 feet if the easement is parallel to and contiguous to a public right of way so long as the 10 feet minimum clearance from the outside easement boundary is maintained. The easement must extend 25 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 minimum clearance to the outside wall of the pipe for the water main, 10 feet minimum clearance to the outside wall of the pipe for the sewer gravity main and 10.0 feet minimum separation between the two mains. Minimum width may be reduced to 20 feet if the easement is parallel to and contiguous to a public right of way so long as the minimum clearance from the outside easement boundary is 7.5 feet for the water main and 10 feet for the sewer main and the 10.0 foot minimum separation is maintained. The easement must extend the greater of 25 feet beyond the terminus of the sewer gravity main or 20 feet beyond the terminus of the water main.
- d. Hydrants:
 - 10 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. Grease Interceptor:
 - Incorporate a four (4) foot perimeter surrounding the footprint of the grease interceptor to determine easement boundaries. The easement must be contiguous with the influent and discharge piping easements that are required for CCU access and inspection purposes.
- g. All others
 - Check with CCU.

15. 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).

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

17. 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 or Building and Construction Services, where applicable, for approval.
18. 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 or low pressure sewer laterals 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 at 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 lateral 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 Standard 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.
3. The Engineer of Record must contact CCU for the necessary lift station or pump station construction details which will be provided once the size and type of lift station or pump station has been determined and approved by CCU.

IX. RECORD DRAWINGS

A. SUBMITTALS

1. Record Drawings

Require one electronic data deliverable package and two paper copies for the first and each subsequent submittal for review. Upon approval of the record drawings, the Engineer of Record (EOR) shall provide in accordance with the document titled Charlotte County Utilities CADD Standards, the following:

- a. One electronic data deliverable package shall be submitted as outlined in Section I item 5 of this document with all of the Florida registered surveyor and mapper (PSM) survey data in tabular data, of the utility assets, along with the Feature Codes and detailed descriptions of all utility assets located by the PSM see Appendix A for Feature Code requirements.
 - o All the Surveyors 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;
 - SDF file (Autodesk spatial data file)
 - CSV file (comma separated values)
 - DBF file (dBase file)
- b. 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, sewer, and reclaimed water 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.”
- c. The EOR DWG file (s) as outlined in Section 1 of this document.
- d. A DWF reproducible file as out lined in Section 1 item 5 of this document.
- e. Two paper copies.

2. Submittal of As-Built Drawing (If Requested)

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, force mains, low pressure force mains and all facilities that include collection and distribution of utilities.

B. RECORD DRAWING REQUIREMENTS

The EOR will prepare or have prepared record drawings based on as-built information provided by a PSM. 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 at 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. 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.
3. The Record Drawings shall be prepared in accordance with the section entitled Minimum Record Drawing Contents that follows.

X. 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. All elevations will be based on NGVD 88.
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. All easements must be recorded and the OR Book and Page Number shall be shown on the drawing.
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.
12. All field data collected shall use the Feature Code Descriptions as outlined in Appendix A.
 13. 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 feature code descriptions as outlined in Appendix A as part of the electronic data deliverable package outlined in Section 1 item 5 of this document;
 - a. SDF file (Autodesk spatial data file)
 - b. CSV file (comma separated values)
 - c. DBF file (dBase file)
 14. A hard copy of this readme file shall be delivered with the disks.

Appendix A

Feature Codes and Descriptions

CODE Type	Description	Data To Be Collected	Feature
22.5B	22.5 BEND	Size, Material, Year*	Point
45B	45 BEND	Size, Material, Year*	Point
90B	90 BEND	Size, Material, Year*	Point
A	Arc, Area		Point
A/C	Air Conditioner		Point
ACP	Asbestos Concrete Pipe	Size	Point or Line
APPROX	Approximate		Point
ASPH	Asphalt		Point
BALL	Locator Ball		Point
BCATV	Buried Cable Television		Point
BE	Buried Electric		Point
BF	Backflow		Point
BIP	Black Iron Pipe	Size	Point
BLDG	Building		Point
BOB	Bottom of Bank		Point
BOC	Back of Curb		Point
BOV	Blow Off		Point
BT	Buried Telephone Cable		Point or Line
BV	Ball Valve	Size, Year*	Point
CALC	Calculated		Point
CATV	Television Cable		Point or Line
CCU	Charlotte County Utilities		Point
CFP	Corrugated Flex Pipe		Point or Line
CG	Crawl Guard		Point
CIP	Cast Iron Pipe	Size	Point
CL	Center Line		Point or Line
CLF	Chain Link Fence		Point or Line
CO	Clean Out		Point
CONC	Concrete		Point
CORS	Continuously Operating Reference Station		Point
CPP	Concrete Power Pole		Point
CROS	Cross	Size, Year*	Point
CSH	Core Sample Hole		Point
CSL	Concrete Slab		Point
DBC	Direct Buried Cable		Point or Line
DBLS	Double Service	Size, Year*	Point
DIA	Diameter		Point
DIP	Ductile Iron Pipe	Size, Year*	Point or Line
DIR	Direction		Point
DIST	Distance		Point
DWY	Driveway		Point
ELEC	Electric		Point or Line
ELEV	Elevation		Point
EOP	Edge of Pavement		Point or Line
ESMT	Easement		Point or Line
EXP	Exposed		Point
FBK	Field Book		Point
FCM	Found Concrete Monument		Point
FCP	Fiber Conduit Pipe		Point

FDOT	Florida Department of Transportation		Point
FIP	Found Iron Pipe		Point
FIR	Found Iron Rod		Point
FM	Force Main		Point or Line
FND	Found		Point
FOC	Fiber Optic Cable		Point or Line
FPL	Florida Power and Light Inc.		Point or Line
FRD	Found Rivet & Disk		Point
GALV	Galvanized		Point
GAS	Gas Line		Point or Line
GPR	Ground Penetrating Radar		Point
GPS	Global Positioning System		Point
GSP	Galvanized Steel Pipe		Point or Line
GSS	Gravity Sanitary Sewer	Size, Material, Year*	Point or Line
GT	Grease Trap		Point
GV	Gate Valve	Size, Year*	Point
GYA	Guy Anchor		Point
HYD	Hydrant	Size, Material, Year*, Manufacturer	
	Point		
INV	Invert Elevation		Point
IRR	Irrigation System		Point or Line
LP	Light Pole		Point
LPS	Low Pressure Sewer	Size, Year*	Point or Line
LS	Lift Station		Point
LSCP	Lift Station Control Panel		Point
LT	Left		Point
M	Meters	Size	Point
MD	Measure Down	Distance	Point
MEAS	Measured		Point
MH	Man Hole	Size, Material, Year*, Invert Elevations	
	Point		
MHWL	Mean High Water Line		Point
MISC	Miscellaneous		Point
MULTI	Maintenance of Traffic		Point
N/A	Not Available		Point
NAD	North American Datum		Point
NAVD	North American Vertical Datum of 1988		Point
NFV	Not Field Verified		Point
NGS	National Geodetic Survey		Point
NGVD	National Geodetic Vertical Datum		Point
NO.	Number		Point
NTS	Not to Scale		Point
O/S	Offset		Point
OHL	Over Head Line		Point or Line
P	Point		Point
PAVMT	Pavement		Point
PC	Point of Curvature		Point
PCC	Point of Compound Curvature		Point
PCP	Permanent Control Point		Point
PED	Pedestrian		Point
PET	Petroleum Pipeline		Point or Line
PG	Page		Point
PI	Point of Intersection		Point
PID	Permanent Identifier		Point
PK&D	PK Nail and Disk	PLS Number	Point
PLS	Professional Land Surveyor		Point

POLY	Polyethylene	Size, Year*	Point or Line
PP	Power Pole		Point
PRC	Point of Reverse Curvature		Point
PRM	Permanent Reference Monument		Point
PSM	Professional Surveyor and Mapper		Point
PT	Point of Tangent		Point
PVC	Polyvinyl Chloride	Size, Year*	Point or Line
R	Record		Point
R/W	Right of Way		Point
RAD	Radius		Point
RCP	Reinforced Concrete Pipe		Point or Line
RCW	Reclaimed Water Main		Point
RNG	Range		Point
RT	Right		Point
RTU	RTU Antenna		Point
SAN	Sanitary		Point or Line
SAR	Sewer Air Release		Point
SCM	Set Concrete Monument		Point
SDL	Tapping Saddle	Size, Year*	Point
SEC	Section		Point
SL	Sewer Lateral	Size, Material, Year*	Point
SM	Sewer Main	Size, Material, Year*	Point or Line
SGLS	Single Service	Size, Material, Year*	Point
SHP	Shared Pole		Point
SIR	Set Iron Rod		Point
SND	Set Nail and Disk		Point
SOP	Shot on Pipe		Point
SR	State Road		Point
SRD	Set Rivet and Disk		Point
SPP	Steel Power Pole		Point
ST	Street		Point
STA	Station		Point
STMD	Stamped Disk		Point
STORM	Storm Drainage		Point or Line
SUE	Subsurface Utility Engineering		Point
SWK	Sidewalk		Point
TBM	Temporary Bench Mark		Point
TECO	Teco Gas		Point or Line
TEE	Tee	Size, Material, Year*	Point
TEL	Telephone		Point or Line
TEMP	Temporary		Point
TOB	Top of Bank		Point
TOP	Top of Utility Elevation		Point
TP	Traverse Point		Point
TRAFF	Traffic Signalization Line		Point
TRNF	Transformer		Point
TWP	Township		Point
UNK	Unknown		Point
UNKB	Unknown Bend		Point
VCP	Vitrified Clay Pipe	Size	Point or Line
VCW	Valve Cover Water		Point
VRZ	Verizon Telephone		Point or Line
WDL	Woods Line		Point
WF	Wood Fence		Point or Line
WS	Water Service	Size, Year*	Point
WTM	Water Meter	Size, Year*	Point or Line

WM	Water Main	Size, Material, Year*	Point
WPP	Wooden Power Pole		

NOTE:

* Year of installation for all newly installed facilities except for hydrants,
Hydrant date is date of manufacture which is stamped on hydrant.

Water Meter Sizing Form (One form per meter)

Project		CCU Project #	
Service Address		Building permit #	
Use of Facility			

This Section to be filled out by Engineer/Architect of Record: The water distribution system shall be designed, and pipe sizes shall be selected such that under conditions of peak demand, the capacities at the fixture supply pipe outlets shall not be less than shown in the table below. The minimum flow rate and flow pressure provided to fixtures and appliances not listed in this table shall be in accordance with the manufacturer's installation instructions.

Enter # of each Fixture Type, then multiply by appropriate Value to get fixture value: (Source: FL Plumbing Code)

Fixture Supply Outlet	Flow rate (gpm)	Pressure (psi)	# of Fixtures	Total Flow value	Total Pressure value		
Automatic clothes Washer Commercial	3.00		x	=			
Automatic clothes Washer Residential	2.00		x	=			
Bathroom group (toilet, sink, tub, shower) (1.6 gpf water closet)	5.00		x	=			
Bathroom group (toilet, sink, tub, shower) (water closet flushing greater than 1.6 gpf)	6.00		x	=			
Bath tub (with or without overhead shower or whirlpool attachments)	4.00	8	x	=			
Bidet	2.00	4	x	=			
Combination Fixture (Sink and Tray)	4.00	8	x	=			
Dental Lavatory (bathroom sink)	1.00		x	=			
Dental unit or cuspidor	1.00		x	=			
Dishwasher, residential	2.75	8	x	=			
Drinking Fountain	0.75	8	x	=			
Emergency Floor Drains	0.00						
Floor Drains	2.00						
Kitchen Sink, residential	2.5		x	=			
Kitchen Sink, residential w/food waste grinder and/or dishwasher	2.00						
Laundry tray (1 or 2 compartments)	4.00	8	x	=			
Lavatory (bathroom sink)	2.00	8	x	=			
Shower	3.00	8	x	=			
Sillcock, hose bibb	5.00	8	x	=			
Sink, residential	2.50	8	x	=			
Sink, service	3.00	8	x	=			
Urinal standard	4.00		x	=			
Urinal, 1 gallon per flush or less	2.00		x	=			
Urinal, 1 flush valve (see last column for GPM per urinal valve)	15.00	15	x	=			
Wash sink (circular or multiple) each set of faucets	2.00		x	=		1	15
Water Closet, blow out, flushometer valve	35.00	25	x	=		2	21
Water Closet, flushometer tank	1.60	15	x	=		3	22
Water Closet, siphonic, flushometer valve	25	15				4	23
Water Closet, tank, close coupled	3	8				5	24
Water Closet, tank, one piece	6	20				6	25
Misc. Connections: 3/8"	2.5					7	26
Misc. Connections: 1/2"	5		x	=		8	27
Misc. Connections: 3/4"	15		x	=		9	28
Misc. Connections: 1"	25		x	=		10	29
Misc. Connections: 1 1/4"	35		x	=			
Lawn and sprinkler, each full head (manufact. installation instructions)			x	=			
Other (*)			x	=			

Total fixture Value per unit =>		
Number of unit in this building =>		
Grand Total Value (Per Unit Total x # of units) =>		

[Proceed to next page]

(*) For any fixtures not listed or listed with no value, submit manufacturer's data sheets and enter appropriate description and value Information and values in accordance with Florida Plumbing Code

Water services need to be based upon residual pressures during maximum day consumption while still maintaining the required residual pressure at the fixtures:

Total Fixture Value per Unit (Refer to previous table)	Required Meter Size (2" and smaller are supplied by CCU)	Pressure Loss at Max Continuous Operation (PSI)
0-15	5/8" x 3/4" meter	2.8 at 15 GPM
15.5 - 25	3/4" meter	5.0 PSI at 25 GPM
25.5 – 50	1" meter	6.5 at 50 GPM
50.5 – 80	1.5" meter	4.8 at 80 GPM
80.5 – 100	2" meter	3.3 at 100 GPM
100.5 count and more	Meters larger than 2" shall be specially ordered by the Developer through CCU for installation	Specific operating characteristics documentation will be available upon request

Please Note:

1. All commercial facilities must be metered separately from residential facilities with the exception of those commercial facilities that are within a master metered residential development and designed for the exclusive use of the residents within such development.
2. The water meter shall be selected to allow a maximum pressure loss as indicated on the above table.
3. Additional fees may apply if a backflow device is deemed necessary by the Water Distribution Department.
4. The Design Engineer/Architect must submit signed and sealed documentation supporting meter sizing. For meters larger than 2-in, submit the County approved manufacturer's name and model number. For meters 2-inch and smaller the sizing shall be based upon Fixture Flow Values as shown on the previous page and sized as per the Table on this page unless approved otherwise by the Charlotte County Utilities Engineering Department. For all meters the Engineer/Architect must consider all relevant factors before selecting the final meter size.
5. For remodeling projects this form must be submitted only if there is a net increase in Fixture Flow Value.

Demand in accordance with the Fixture Flow Value Worksheet and the Table for Estimating Demand

(Engineer/Architect must attach a completed Fixture Flow Value Worksheet)

Meter Size in Inches

(Engineer/Architect must identify the meter manufacturer and model number)

Type or Print Name of Engineer/Architect of Record for Project

Signature of Engineer/Architect of Record for Project and Date
[Affix Engineering/Architect Stamp Here]

**Table for Estimating Demand
Supporting Documentation**

SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH TANKS		SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH VALVES	
Load	Demand	Load	Demand
Fixture Flow Value	Gallons per minute	Fixture Flow Value	Gallons per minute
1	3.0	---	---
2	5.0	---	---
3	6.5	---	---
4	8.0	---	---
5	9.4	5	15.0
6	10.7	6	17.4
7	11.8	7	19.8
8	12.8	8	22.2
9	13.7	9	24.6
10	14.6	10	27.0
11	15.4	11	27.8
12	16.0	12	28.6
13	16.5	13	29.4
14	17.0	14	30.2
15	17.5	15	31.0
16	18.0	16	31.8
17	18.4	17	32.6
18	18.8	18	33.4
19	19.2	19	34.2
20	19.6	20	35.0
25	21.5	25	38.0
30	23.3	30	42.0
35	24.9	35	44.0
40	26.3	40	46.0
45	27.7	45	48.0
50	29.1	50	50.0
60	32.0	60	54.0
70	35.0	70	58.0
80	38.0	80	61.2
90	41.0	90	64.3
100	43.5	100	67.5
120	48.0	120	73.0
140	52.5	140	77.0
160	57.0	160	81.0
180	61.0	180	85.5
200	65.0	200	90.0
225	70.0	225	95.5
250	75.0	250	101.0
275	80.0	275	104.5
300	85.0	300	108.0
400	105.0	400	127.0
500	124.0	500	143.0
750	170.0	750	177.0
1,000	208.0	1,000	208.0
1,250	239.0	1,250	239.0
1,500	269.0	1,500	269.0
1,750	297.0	1,750	297.0
2,000	325.0	2,000	325.0
2,500	380.0	2,500	280.0
3,000	433.0	3,000	433.0
4,000	535.0	4,000	525.0
5,000	593.0	5,000	593.0