

City of Corpus Christi Plan Preparation Standards

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SECTION 1

INTRODUCTION

1.0 PURPOSE AND USE

The purpose of the *City of Corpus Christi Plan Preparation Standards* is to establish, define, and clarify the requirements for preparing **all** project drawings for the City of Corpus Christi (City), including private developer subdivision plans (as applicable). Projects funded by the Federal Aviation Agency (FAA) and the Texas Department of Transportation (TxDOT) may require compliance with their standards in addition to those outlined in this document.

This manual is the first step toward improving the process of producing project drawings for the City. All design professionals who participate in the process of generating design drawings for the City - City staff (in-house design), consultants, drafters, technicians, etc. - will comply with these standards. It is the intent of this manual to provide guidelines and establish standards in order to ensure that all project drawings are consistent and reflect high quality workmanship.

The requirements outlined in the following sections will be incorporated into the production of all designs and drawings submitted to the City. Deviation from that specified herein must be approved in writing by the Director of Engineering Services **prior** to the commencement of the work.

The design professional is responsible for ensuring the compliance of this document with any subordinate staff and sub-consultants. In addition, the design professional is responsible for the quality control of the project drawings throughout the design phase and prior to the submittal to the City for approval, in order to eliminate errors and omissions and reduce review time by City staff.

This manual is meant to be a working document and will be updated, as the City deems necessary; as such, **it is the responsibility of the design professional to confirm the latest version in use by the City.** The City will make available to the design professional with a copy of the latest revisions. The City invites written comments on the contents of this document and suggestions for further refinement. Submit all such correspondence to the Director of Engineering Services.

SECTION 2

DRAWINGS

2.0 GENERAL

The following requirements will be incorporated into the production of all drawings for the City. Any deviation from the following must be approved in writing by the Director of Engineering Services prior to the commencement of the work.

2.1 OWNERSHIP OF DRAWINGS

The City is the owner of all original drawings prepared by the design professional for a City project. The tracings (not the CADD drawing files) will be considered the original record copies for the project. At the completion of the design phase of the project, the design professional will deliver to the City all original drawings prepared by the design professional for a City project. The design professional may make a set of reproducible copies at his expense and retain same for his own future use.

In addition, at the completion of the construction project, the design professional will deliver a computer diskette and hard copy of all AutoCAD (DWG format R14 or latest release) generated record drawings to the City, as per Section 5, paragraph 5.2.

2.2 REUSE OF DRAWINGS

The City hereby expressly reserves the right to copy and reuse the information shown on any drawings or CADD drawing files prepared by the design professional for any use it desires.

Furthermore, **such reuse will not obligate the City to pay the design professional any fee for such reuse.** The City understands that it will use this material at its own risk and agrees to hold harmless the design professional of any claim, liability, or cost arising out of such reuse.

2.3 STANDARD CITY SHEETS

Drawings will be sized to 22" x 34" sheets, (that will reduce to 11" x 17" for half-size) with 21" x 32" drawing area, including the border lines and title block. Borders at the top, bottom and right edges will be ½" and there will be a 1- ½" margin at the left edge, for binding. Drawings must be produced using the standard City title block (see Exhibit No. 2, "Typical City Drawing Sheets"). Upon request, the City will furnish the design professional this information on diskette in AutoCAD format. Design professional's title block sheets **WILL NOT** be used. If plan and profile sheets or other gridded specialty sheets are needed, the design professional must splice the grid onto the standard City title block sheet.

2.4 CITY DRAWING INDEX NUMBERS

All drawings will be numbered according to the City's standard drawing numbering system. The design professional will obtain drawing numbers from the assigned City Project Manager at the "kick-off" meeting. The title sheet index must clearly identify the City's drawing number and sheet title for each drawing included in the set. Each drawing will identify the City's drawing number in the title block. If a design professional wishes to add his own company drawing numbers (and file path in small text), he may do so by adding his individual sheet numbers as indicated on the standard title block sheet in smaller numbers (see Exhibit No. 2).

2.5 AUTOCAD SHAPE AND FONT TYPES

Except in the case of a title sheet, the design professional will use only "standard" AutoCAD font types. Industry standard drafting procedures shall govern the use of line types to be used on project drawings. Typically, **all new work shall be shown with a solid, heavy line and existing conditions will be shown with lighter or dashed lines.**

2.6 MINIMUM LETTERING SIZE AND STYLE

From time to time, the City may use 11" x 17" drawing sets for bidding and construction. To facilitate this practice and the use of microfilm storage, a minimum lettering size is required on all drawings. The minimum size lettering, including all alpha-numeric symbols, will not be less than 3/32-inch high using all uppercase and vertical lettering. **The key to scale selection is that the drawings be readable if reduced to 11" x 17"**. The minimum gap between lines will be equal to one-half the letter height. Fancy, artistic lettering styles are not allowed. "Roman S" lettering is required.

2.7 ARRANGEMENT OF DRAWINGS

To simplify referencing during construction and after project completion, all drawings shall be separated by discipline insofar as possible and practical. For example, all electrical details and diagrams should be separate from mechanical (HVAC and plumbing) details. The drawings should be arranged in the following order (as applicable):

- Title Sheet (including sheet index, vicinity and location maps, City project title and number, design professional's identification, and approval signature(s))
- General Notes and Design Criteria (including control information, benchmarks, hydraulic and/or mechanical flow diagrams, as applicable, and a project layout)
- Quantity Sheet
- Civil Drawings
- Structural Drawings
- Architectural Drawings
- Mechanical Drawings
- Electrical Drawings

- Control Systems Drawings
- Storm Water Pollution Prevention Plan
- Traffic Control Plan

2.8 CIVIL DRAWINGS

The civil drawings normally include the following (as applicable):

- Existing Site Plan, Demolition Plan, and Site Plan
- Plan and Profile Sheets
- Details and Drainage Area

An existing site plan shall define existing features including structures, site work, drainage, etc. A demolition plan shall define the limits, as well as all pertinent details of the demolition. A site plan shall define the limits of the entire project. Plan and profile sheets shall show existing and proposed elevations, grades, rights of way, property lines, easements, and piping systems. Scales to be used in civil drawings are suggested for use as follows:

<u>Drawing</u>	<u>Suggested Scale</u>
Site Plan	1" = 20' to 1" = 50'
Plan and Profile, horizontal	1" = 20' to 1" = 50'
Plan and Profile, vertical	1" = 5' to 1" = 2'
Details	1/4" = 1'-0", 1" = 2'-0" to 1" = 10' (or NTS)

2.9 STRUCTURAL DRAWINGS

The structural drawings shall include, as required by project size and scope, the following:

- Structural Foundation Plans
- Sections and Elevations
- Details

The suggested scale for plan views shall be 1/4" = 1'-0" or 1/8" = 1'-0" minimum. The suggested scale for sections, elevations, and details be 1/2" = 1'-0" (or NTS).

2.10 ARCHITECTURAL DRAWINGS

The architectural drawings shall include, according to the size and scope of the project, the following (as applicable):

- Site Plan
- Floor Plans
- Schedules

- Building Elevations
- Building Cross Sections
- Wall Sections
- Exterior Details
- Interior Elevations
- Interior Details
- Reflected Ceiling Plan
- Roof Plans
- Miscellaneous Details
- Landscape and/or Irrigation Drawings

The floor plan is the main drawing in a set of architectural drawings. It is a plan view of the structure, as seen from above. The following scale standards are suggested for use:

<u>Drawing</u>	<u>Scale</u>
Floor, Roof, and Reflected Ceiling Plans	1/4" = 1'-0" or 1/8" = 1'-0"
Interior and Exterior Elevations	1/4" = 1'-0" or 1/8" = 1'-0"
Interior and Exterior Details	1/2" = 1'-0" or 3/4" = 1'-0" or 1" = 1'-0"
Sections	1/6" = 1'-0" (or NTS)

2.11 MECHANICAL DRAWINGS

The mechanical drawings are usually divided into two disciplines, and shall include the following:

Heating, Ventilating, and Air Conditioning:

- Utility Site Plan
- HVAC Plans
- Sections
- Details
- Schedules
- Schematics/Diagrams

Plumbing:

- Utility Site Plan
- Plumbing Plans
- Sections
- Details
- Schedules
- Schematics/Flow Diagrams

The following suggested scale standards apply:

<u>Drawing</u>	<u>Suggested Scale</u>
Plan Views	1/4" = 1'-0" or 1/8" = 1'-0" (min.) and shall match that used in the architectural floor plan
Details	1/2" = 1'-0" or 3/4" = 1'-0" or 1" = 1'-0" (or NTS)

2.12 ELECTRICAL DRAWINGS

The electrical drawings shall include the following:

- Electrical Site Plan
- Lighting Plans & Details
- Receptacle and Power Plans
- Communication Systems Plans & Details
- Line Diagrams
- Riser Diagrams
- Conduit and Feeder Schedules
- Panelboard Schedules
- Details, Legends, Symbols, etc.
- Control Panels

The following scale standards shall apply:

<u>Drawing</u>	<u>Suggested Scale</u>
Site Plans	1" = 20' to 1" = 50'
Plan Views	1/4" = 1'-0" or 1/8" = 1'-0" (min.) and shall match that used in the architectural floor plan
Details	1/2" = 1'-0" or 3/4" = 1'-0" or 1" = 1'-0"

2.13 CONTROL SYSTEMS DRAWINGS

The control systems drawings shall be organized as follows:

- General SCADA Architecture
- DSC I/O Documentation
- Logic Drawings

- Loop Sheets
- P & ID
- PFD
- Instrument Lists

The following scale standards shall apply:

<u>Drawing</u>	<u>Scale</u>
Plan Views	1/4" = 1'-0" or 1/8" = 1'-0" (min.) and shall match that used in the architectural floor plan
Details	1/2" = 1'-0" or 3/4" = 1'-0" or 1" = 1'-0"

2.14 SUBMITTALS

Clearly date submittal and indicate the type of submittal (60%, 90%, 100%, re-submittal, etc.). Each submittal shall be clearly marked with the following statement as outlined in Rule 131.138 Section (8) of the Texas Engineering Practices Act instead of a seal:

SAMPLE

THIS DOCUMENT IS
RELEASED FOR THE
PURPOSE OF REVIEW
UNDER THE AUTHORITY
OF _____
P.E. # _____
ON _____
IT IS NOT TO BE USED
FOR ANY OTHER
PURPOSE.

After the City approves the 100% submittal, final completion drawings will be submitted by the design professional, complete with the design professional's seal, signature, and date.

2.15 PROFESSIONAL RESPONSIBILITIES

At the completion of the design phase, all original drawings must be sealed by the professional engineer, registered professional land surveyor, or registered architect responsible for the work portrayed on that drawing. All certifying individuals must be registered in the State of Texas. In case of multi-disciplined projects, the prime professional that executes the contract on behalf of the prime design professional will seal the title sheet and the overall project site plan(s). The registered professional may affix his seal on the original drawing, sign his name in ink below the seal, and date it.

No stick-on seals will be allowed. The consultant will comply with all requirements of the Texas Engineering Practices Act regarding sealing of interim review and completed drawings, etc. CADD or computer files are not considered the official original record copy.

All such files shall be clearly marked, as outlined in the Texas Engineering Practices Act instead of a seal. (see Section 2.14).

2.16 IDENTIFICATION OF DESIGN PROFESSIONAL

Since the use of design professional's title block sheets is not allowed, design professionals furnishing professional services will insert the company name or affix the logo where shown on the standard City sheet (see Exhibit No. 2). The firm name or logo of the prime design professional must appear on every sheet. The names of subconsultants will be shown to the lower right of the title block on the sheets for which they are responsible.

2.17 REPORT REQUIREMENTS

Documents for the Water Department must have the following on the first page:

TITLE

Final or Draft Report
City of Corpus Christi
Project Number xxxx

Prepared for:

Water Department
City of Corpus Christi
P.O. Box 9277
Corpus Christi, TX 78469-9277
(361) 857-1881

Prepared by:

Company
Address
City, State, ZIP
Phone
Date of Report

SECTION 3

DESIGN STANDARDS

3.0 STANDARD DESIGNS AND DETAILS

A. General

The City has developed standard designs and details for a variety of situations. These designs and details have been successfully used on many City projects. City policy is to use these designs and details in order to simplify design, construction, and maintenance, and thus reduce costs. However, it remains the design professional's responsibility to ensure the suitability of these details for the specific project requirements. The design professional is solely responsible for the design submitted under his seal. If the design professional determines that his design mandates a change in or from these standard details, he will discuss the proposed changes with the Director of Engineering Services or his representative (i.e. assigned City project manager) **prior** to making the proposed changes.

B. Current Standards

The following is a list of the standard designs and details currently adopted by the City's Engineering Services Department:

1. City Standard Curb, Gutter, & Sidewalk Details (Exhibit No. 4 – one sheet-Rev. 12-2004)
2. Driveway Details (Exhibit No. 5, two sheets- Rev. 12-2004)
3. City Standard Curb Ramp Details (Exhibit No. 6, three sheets-Rev. 1-21-2002)
4. Standard Water Details (Exhibit No. 7, five sheets-Rev. 7-13-2001)
5. Sanitary Sewer Standard Details (Exhibit No. 8, five sheets-Rev. 12-2-2004)
6. Storm Water Details (Exhibit No. 9, two sheets-Rev. 1-14-2002)
7. Storm Water Pollution Prevention Plan (Exhibit No. 10)
8. Plan Profile & Demolition (Exhibit No. 14)
9. SCADA Documentation Standards (Exhibit No.15)

The City will provide reproducible vellums (or AutoCAD files) of these details for the design professional to use, upon his request.

3.1 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

The design professional will prepare a storm water pollution prevention plan for City project as required by regulatory permit. The plan will be prepared in accordance with current local, state, and federal requirements and will consist of a written plan and detailed plan sheet describing the specific locations where temporary erosion control and storm water pollution prevention measures are to be used. Permanent site stabilization will also be addressed in these documents.

The written plan may be included in the bid documents as a separate specification section and/or as notes on a detailed plan sheet. Pollution prevention plans must be prepared in accordance with EPA-832-R-005, and the following guidelines: Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices and the City's Reference Documents: "*Storm Water Guidance Document for Assessment of Water Quality Impacts from New Flood Control Projects*", "*Guidance Document for Assessment of Water Quality Impacts from New Flood Control Projects*", and "*Guidance Document for Evaluation of Feasibility of Retrofitting Existing Flood Control Projects to Benefit Water*".

3.2 TRAFFIC CONTROL PLAN (TCP)

The City's Traffic Engineer at the Traffic Engineering Department, third floor of City Hall, telephone (361) 880-3540, will provide instruction concerning traffic control plans preparation. The design professional shall prepare the TCP in accordance with City standards.

3.3 AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS

The Design Professional is required to perform the following:

- Register project and pay all associated fees.
- Define project scope and clearly identify in the project plans the extent of Architectural Barrier elimination.
- Submit plans to TDLR or approved RAS (within 5 days of sealing documents) for review/comment/approval; incorporate all corrections/revisions into the contract documents (plans and specifications), during the bid phase.
- Schedule final TDLR inspection and assure that all comments/directives/etc. are incorporated into the project, as a condition of and prior to acceptance by CITY OF CORPUS CHRISTI.
- (See also Attachment A, to this section).

Notice

Beginning January 1, 2002, Independent Contract Providers (ICPs) will no longer be authorized to perform plan review or inspections on behalf of TDLR. To perform the Department's review and/or inspection function, an individual will have to certify as registered Accessibility Specialist (RAS). The current registered Accessibility Specialist (RAS) are listed on TDLR web site at www.license.state.tx.us/LicenseSearch.

New rules pertaining to the Texas Architectural Barriers Act., Article 9102, Texas Civil Statutes were adopted effective June 17, 2001. Additionally, an emergency rule relating to fees was adopted effective November 7, 2001 and amended effective February 1, 2005.

Changes to the rules include qualifications for becoming a Registered Accessibility Specialist (RAS) and the associated fees. Persons interested in performing plan reviews and inspections for TDLR must apply to become a RAS. An application and checklist are available online www.license.state.tx.us or by contacting Licensing and Registration at 800-803-9202 (within Texas) or 512-463-6599. Enter "0" to reach Customer Service or on web site at www.license.state.tx.us , customer.service@tdlr.state.tx.us.

This information has also been posted on the TDLR web site at www.license.state.tx.us If you have questions regarding the Registered Accessibility Specialist Program please refer to the Frequently Asked Questions published on the TDLR web site at www.license.state.tx.us/ab/abfaq.htm or contact TDLR Customer Service at the phone numbers referenced above.

SECTION 4

TYPICAL PLAN PREPARATION STANDARDS

4.0 GENERAL

This section includes typical procedures for drafting standards.

4.1 CONSISTENCY

BE CONSISTENT! Drafting techniques shall be consistent throughout the set of project drawings.

4.2 DIMENSIONS

Show only the dimensions necessary for completion of work portrayed. If possible, show all dimensions outside the figure. When a dimension or figure is not to scale on a drawing, indicate this with “NTS” (not to scale), under the figure’s title, where the scale would be indicated.

4.3 SCALES

Drawing scales shall be carefully selected to clearly show the required information. Suggested scales for particular drawings or details are indicated in Section 2.

4.4 LAYOUT OF DRAWING

All drawings shall be laid out with ample space between drawing items and the borders to ensure sufficient space for dimensions, labels, notes, etc. The work shall be laid out in an orderly fashion, with sections following in consistent order (alphabetical or numerical).

4.5 ORIENTATION

The north arrow shall be directed (pointed) up or to the left side of the sheet, if practical, and placed in the upper right hand corner of the sheet, if practical, and in approximately the same location on all drawings in the set (i.e., in the same location for all plan views be they structural, architectural, mechanical, electrical, etc.). If a vicinity map is used, ensure the orientation of its north arrow is the same as the plan view orientation. Plan views drawn by different disciplines for the same facility shall be laid out in the same orientation. On plan and profile sheets, plan views shall be situated **directly** above the profile section. **All station numbers along the baseline shall increase in numbers from left to right.**

Label orientation shall be as indicated in the example found in Exhibit No. 3.

4.6 REFERENCE INFORMATION

The drawings shall clearly identify construction benchmarks, base or control lines with stationing, bearings, curvature points, offsets, and all dimensions necessary to define the location, limits, size, and geometry of items to be constructed. Alignment data shall be tabulated to show stationing, coordinates, and curve data.

4.7 MISCELLANEOUS PLAN PREPARATION STANDARDS

A. Decals, Stick-on Drafting Aids, and Labels

Decals, stick-on drafting aids, and labels must not be affixed to final original drawings. However, in the interest of saving drafting time, consultants may prepare a base sheet using these stick-ons and have a 4-mil film mylar (auto-positive, film quality) or vellum copy made at the completion of the design or construction phase and submit this as the final "record" original tracing, at no additional cost to the City.

B. Shading

Certain kinds of shading (manual and stick-on) become illegible when a film mylar is made of an original drawing. The consultant will use cross-hatching or other means to avoid the loss of clarity.

C. Scales

The consultant will clearly indicate the scale at which all details or plan views are drawn. In the case of a detail sheet where several details are drawn at different scales, each detail will show a separate scale beneath its identifying title. In the case of a plan sheet where all of the drawing is at one scale, the scale will be noted in the title block. In addition, engineering graphic scales will be used on all civil, site, and other plan drawings.

D. Sections

Sections shall be **lettered** in consecutive order on each drawing. The direction of the section view is indicated by the direction of the arrow. Heavy dark lines indicate the location of the cutting plane, which must be located in the exact position where the section is cut. Reference mark text shall be placed so that it can be read from the bottom of the drawing. See example in Exhibit No. 3.

E. Details

Details shall be **numbered** in consecutive order on each drawing. Reference mark text shall be placed so that it can be read from the bottom of the drawing. See example in Exhibit No. 3.

F. Titles

Titles shall be used on all drawings to name sections, elevations, plans, details, etc. They shall be located below and centered on the view to which they apply. All text in the title shall be placed so that it can be read from the bottom of the drawing.

G. North Arrows

North arrows shall be as shown on Exhibit 3. North arrows shall be the same size and configuration throughout a set of drawings.

H. Title Blocks

Title blocks will be completed as indicated in Exhibit No. 2. (See paragraph 4.10, DRAWING FORMAT)

I. Title Sheets

All projects shall include a title sheet. This sheet shall include a sheet index, vicinity map, location map, project title, City assigned project number, and consultant's information. An example of a standard title sheet is found in Exhibit No. 1. If the sheet index is too long to fit on the title sheet, it may be located on the second sheet, adjacent to the title block on the right-hand side of the sheet.

J. Line Weights

Normally there will be a differentiation between "existing" and "proposed" which can best be conveyed through use of varying line weights and shapes, that will still be legible when reduced and/or microfilmed. Linework portraying existing conditions must always be lighter or thinner than linework portraying the proposed work or installation.

Existing conditions - 0.10 (min.)

Proposed - 0.14 (min.)

4.8 UNITS OF MEASUREMENT

The standard of measurement for all dimensions and quantities will be in English units of measure. Metric equivalents may be shown in parenthesis, if required.

4.9 REVISIONS TO DRAWINGS

An equilateral triangle, (revision marker), shall encase the revision number. The

revision marker shall appear on the drawing near the changed or affected area(s). Also, cloud the affected area.

The first marked change of a drawing shall be number "1"; additional changes shall increase numerically. For all revisions, made to the drawings **after** the Director of Engineering has approved and signed the drawings, the revision marker, date, description of the revision, and the initials of the design professional who issued the revision, shall be entered in the revision block. When all of the available space for revision notes has been used, add more lines and increase the revision block. **DO NOT ERASE DOCUMENTATION IN A REVISION BLOCK!** Design revisions during construction are covered in Section 7.

4.10 DRAWING FORMAT

There are two (2) drawing formats currently acceptable to the City's Engineering Services Department. The format shown in Exhibit No. 2 is 11" x 17", half-size Title Block & Borders presentation. The 22" x 34", full-size Title Block & Borders are also available by selecting/deselecting the appropriate layers, within the AutoCAD environment. **DO NOT MIX FORMATS, I.E. HALF-SIZE BLOCK WITH FULL SIZE BORDERS, ETC.**

SECTION 5

SOFTWARE COMPATIBILITY

5.0 GENERAL

The City engineering staff has adopted certain standard computer software for use in all of its in-house production of design drawings and specifications. In order to maintain ease of reference and later modification, the City requires its consultants to use this same software.

5.1 SPECIFIC SOFTWARE

The software currently adopted by the City is **AutoCAD Release 2002**.

5.2 COMPUTER DISK RECORDS

The design professional shall furnish the City with a copy of all electronic files on computer diskettes or CDs used in the preparation of the drawings. These disks should be submitted at the time the original drawings are finalized and delivered to the City for distribution to bidders. In addition, at the completion of the construction project, the design professional will deliver an electronic file of all AutoCAD (**DWG format 2002 or earlier**) generated record drawings to the City. A computer disk with the changes and information shall be furnished to the City in the time frame stated in the design professional's contract after the project's construction is completed, for record drawing purposes.

SECTION 6

SUBMITTALS

6.0 GENERAL

This section covers the type of submittals (60%, 90%, 100%, Re-submittals, Final Submittal) that are required by the City for review of the drawings for each project, and what shall be included in each type submittal. Each submittal shall be dated and the type of submittal indicated and clearly marked according to paragraph 2.14 "Submittals" of Section 2.0.

6.1 PROJECT CHECKLIST

A checklist of items (see Exhibit No. 11) is to be completed by the design professional and included with each submittal (except for the Final Submittal).

6.2 DRAWINGS REVIEW CHECKLIST

A checklist of items (see Exhibit No. 12) is to be completed by the design professional and included with each submittal (except for the Final Submittal).

6.3 PLAN EXECUTIVE SUMMARY

Included with each 60% submittal shall be a concise summary, which will identify and summarize the project by distinguishing key elements such as:

- Description (refer to the project design memorandum)
- Pipe Size or Building Size
- Pipe Material, etc.
- Pros/Cons of selections
- ROW requirements
- Permit and Regulatory requirements
- Easement requirements
- Embedment type
- Constructability, etc.
- Specific requirements of the City
- Standard specifications
- Non-standard specifications
- Any unique requirements
- Cost, alternatives, etc.
- Owner Permit Requirements and status

6.4 60% SUBMITTAL

Included in a 60% Submittal shall be the following:

- plans indicating the existing conditions and proposed improvements, including flowline information, proposed pipe routes, proposed layouts, etc.
- design calculations (if requested) and equipment criteria and selection information
- list of specifications to be used on the project
- completed Project Checklist (**MANDATORY** - See Exhibit #11)
- completed Drawings Review Checklist (**MANDATORY** – See Exhibit #12)
- completed Plan Executive Summary (**MANDATORY** – See section 6.3)
- electronic file of project design, as required, to be used by the Traffic Engineering to develop Traffic Control Plans.

6.5 90% SUBMITTAL

Included in a 90% Submittal shall be the following:

- a 90% submittal set of plans, including a cover sheet, vicinity and location maps, general notes, project layout, and details
- the City’s red-lined set of review comments from the 60% Submittal
- a 90% submittal set of specifications and contract documents
- preliminary opinion of probable construction costs
- completed Project Checklist (**MANDATORY** - see Exhibit #11)
- completed Drawings Review Checklist (**MANDATORY** – See Exhibit #12)

6.6 100% SUBMITTAL

Included in a 100% Submittal shall be the following:

- a 100% submittal set of plans
- the City’s red-lined set of review comments from the 90% Submittal
- a 100% submittal set of specifications and contract documents
- consultant’s opinion of probable construction costs
- **project layout and hydraulic analysis sheet(s)**

6.7 RE-SUBMITTAL

If the City should reject the design professional’s submittal as “not complete” for that stage of submittal, the design professional shall correct the deficiencies and re-submit under the same type submittal as was previously rejected.

6.8 FINAL SUBMITTAL

After the 100% Submittal is approved by the City, a final set of reproducible plans, specifications, and contract documents (with electronic file copy) shall be submitted by the design professional (with engineer’s seal and signature) as suitable for bidding.

6.9 RECORD DRAWINGS

Contractor is responsible for providing to Engineer red-lined field documentation, addenda, change orders, and other applicable information for incorporation into record drawings. At the completion of the construction project, the design professional will deliver a hard copy “originals” and CD of all AutoCAD (**DWG format R2002 or earlier**) generated record drawings to the City, as per Section 5, paragraph 5.2.

SECTION 7

MISCELLANEOUS PROJECT GUIDELINES

7.0 GENERAL

The following subsections have been developed to standardize the procedures involving preparation of project drawings. From time to time, the conditions involving a particular project may require a certain degree of deviation from these guidelines. In such cases, the design professional must submit an explanation of the necessity of such deviation to the Director of Engineering Services or his designated representative in writing and obtain his approval **prior** to implementing any revisions.

7.1 ADDENDA

During the bidding phase, if the City or the design professional determines it is necessary to clarify, reword, add, or delete any information contained in the drawings, the design professional, unless otherwise directed by the Engineering Services Department, will prepare an addendum, in City format, and deliver it to the City for approval and distribution to all bidders, in a timely manner. An example of an addendum in City format can be found in Exhibit No. 13.

7.2 DESIGN REVISIONS DURING CONSTRUCTION

During the course of construction, problems and questions occur in the field that necessitate changes, clarifications, or modifications (change order, etc.) in the construction drawings as originally prepared by the design professional. Many times, these changes are minor and do not affect the safety, suitability, or performance of a particular design. Other times, there are major changes. In order to protect the safety of the public, and to ensure the long-term performance of the facility, and to maintain the design professional's liability for the design, all significant changes should be reviewed with the design professional and his concurrence/approval obtained before the change is made. All revisions should be noted on the record drawings.

7.3 RECORD DRAWINGS

In order to properly maintain existing facilities and construct new facilities, it is absolutely essential that all changes or deviations from the original design drawings be properly documented to reflect the actual field conditions. The Contractor is required to submit, at the completion of the project, a copy of drawings marked with field changes. It is the responsibility of the Contractor to ensure that proper records are kept during the course of construction. These records must accurately describe the final shape, size, location, elevation, components, and/or equipment used on a project if different from that originally specified. Furthermore, at the completion of the project, the Design Professional will then have these field changes permanently recorded on the final original set of drawings that will constitute the record drawings, with certification block (sign & date).

SECTION 8

SPECIFICATIONS

8.0 GENERAL

For the production of specifications for the proposed project, please refer to the City's standard contract documents on disk and hard copy, as updated and provided by the City Engineering Services Department.

8.1 CONSTRUCTION AND UTILITY CASTINGS

* AASHTO-M-306 (See Attachment A, to this section).

SPECIFICATIONS FOR CONSTRUCTION AND UTILITY CASTINGS

- Manhole Frames and Covers/Grates
- Catch Basin Inlets
- Curb and Gutter Inlets
- Ditch and Median Inlets
- Trench Drainage Inlets

1. Applicable Codes

A. Whenever reference is made to the furnishing of materials or testing thereof to conform to the Standards of any technical society, organization or body, it shall be construed to mean the latest standard, code specification or tentative specifications adopted and published at the time of advertisement for bids, even though reference has been made to an earlier standard. Such standards are made a part hereof to the extent, which is indicated or intended.

B. The following are names and abbreviations of such groups:

AASHTO	for American Association of State Highway and Transportation Officials
ACI	for American Concrete Institute
AISC	for American Institute of Steel Construction
ANSI	for American National Standards Institute
API	for American Pipe Institute
ASA	for American Standards Association
ASCE	for American Society of Civil Engineers
ASTM	for American Society of Testing Materials
AWSC	for American Welding Society Code
AWWA	for American Water Works Association
CIPRA	for Cast Iron Pipe Research Association
Fed. Spec	for Federal Specification
NPCI	for National Clay Pipe Institute
SDHPT	for State Department of Highways and Public Transportation
UL Inc.	for Underwriter's Laboratories, Inc.
UPPA	for Uni-Bell Plastic Pipe Association

C. Where no reference is made to a code, standard or specification, the Standard Specification of ASTM, AWWA, or ANSI, as appropriate, shall govern.

D. If the specifications and drawings show requirements that are in excess of codes and ordinances, then the specifications and drawings shall be followed. Should there be any conflicts between the specifications and drawings, and the codes and ordinances having jurisdiction, the Bidder shall report these in his bid.

2. General

This specification is applicable for gray and ductile iron castings for frames, grates, rings, and covers that are for use by the City of Corpus Christi, Texas. Castings shall be manufactured by East Jordan Iron Works, or other approved USA manufacturer. The approved manufacturer shall be able to demonstrate that there is an acceptable quality control program at the producing foundry, prior to supplying castings.

3. **Materials**

Gray iron castings shall be manufactured from iron conforming to ASTM A48 Class 35B, as noted in section 3.1 of AASHTO M306. Ductile iron castings shall be manufactured from iron conforming to ASTM A536. The iron material used in products provided shall have a minimum recycled material content of 75%. The recycled materials shall consist of post-consumer material.
4. **Manufacture**

Castings shall be of uniform quality, free from sand holes, gas holes, shrinkage, cracks and other surface defects. Castings shall be reasonably smooth and well cleaned by shot blasting. For traffic service castings, bearing surfaces between manhole rings and covers or grates and frames shall be ground or machined with such precision to prevent rocking. As-cast dimensions may vary within accepted foundry tolerances as outlined in the Iron Castings Handbook published by the American Foundrymen's Society, Inc. Nominally, casting dimensional tolerances shall be +/- 1/16" per foot. All published casting weights are average and approximate values and shall vary +/- 5%. Castings shall be furnished painted or unpainted as specified by the purchaser.
5. **Workmanship**

Castings shall show careful finished workmanship in all particulars. Castings which have been damaged either during manufacture or shipping may be rejected. Defects which would constitute poor workmanship include pinholes, shrink, crack, dirt, scab, and slag.
6. **Sampling**

Random checks on the castings may be conducted by the purchaser. These random checks shall be conducted in accordance with the AASHTO M306 Section 6.0 guidelines.
7. **Proof Load Testing**

Traffic service castings shall have a first article proof load test conducted and the results of that proof load shall be made available to the purchaser upon request. The proof load shall be conducted in accordance with the method and procedure that is outlined in AASHTO M306 Section 7.0, proof load testing. The casting shall be tested on a suitable and calibrated load testing machine and the casting shall hold a 40,000 pound proof load for one minute without experiencing any cracks or detrimental permanent deformation.
8. **Inspection**

Inspections shall be in accordance with 9.1.1 (refer to #7 above-Proof Load Testing) or 9.1.2 of AASHTO M306. Results of these tests shall be furnished to the purchaser upon request. The heat or production date and product numbers, as cast on the casting shall be the basis of trace-ability and recording of the tests.
9. **Certification**

A foundry certification shall be furnished to the purchaser stating that samples representing each lot have been tested, inspected, and are in accordance with this specification.

10. **Marking**

Each casting shall be identifiable and show, at a minimum, the following: name of the producing foundry, country of manufacture (such as "Made in USA"), ASTM material designation, recycle symbol, individual part number, cast or heat date. Castings shall also include all lettering as shown on the specification drawings.

11. **Records**

Test results for each lot of castings shall be maintained by the foundry for a minimum of seven years and shall be available to the purchaser upon request.

APPENDIX

Index

- Exhibit No. 1 Typical City Title Sheet
- Exhibit No. 2 Typical City Drawing Sheets (3 sheets)
- Exhibit No. 3 Miscellaneous Plan Preparation Standards
- Exhibit No. 4 **Curb, Gutter, & Sidewalk Details (one sheet-Rev. 12-2004)**
- Exhibit No. 5 **Driveway Details (2 sheets-Rev. 12-2004)**
- Exhibit No. 6 City Standard Curb Ramp Details (3 sheets-Rev. 1-21-02)
- Exhibit No. 7 Standard Water Details (5 sheets-Rev. 7-13-2001)
- Exhibit No. 8 **Sanitary Sewer Standard Details (5 sheets-Rev. 12-2-2004)**
- Exhibit No. 9 Standard Storm Water Details (2 sheets-Rev. 1-14-2002)
- Exhibit No. 10 **Storm Water Pollution Prevention Plan Details – SAMPLE ONLY**
- Exhibit No. 11 Project Checklist (2 sheets)
- Exhibit No. 12 **Drawings Review Checklist (2 sheets)**
- Exhibit No. 13 **Samples and Other Guidelines**
- a. **New' Sample Addendum in City Format**
 - b. **Guidelines for Street Plan Sheets**
 - c. **Sample Contractor Qualification Language for Contract Documents**
 - d. **Sample A/E's Letter to 3 Lowest Bidders**
 - e. **Elements of a Design Memorandum**
 - f. **Sample Citizen/s Meeting Format**
 - g. **Sample Traffic Control Details**
 - h. **New Construction Plan Sample (Wesley Seale Dam Operations Center
Emergency Generator)**
- Exhibit No. 14 Plan/Profile and Demolition
- Exhibit No. 15 SCADA Documentation Standards