ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STATEWIDE

CAD STANDARDS & DRAFTING GUIDE (CSDG)

2016

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Chapter 1: Overview

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SECTION 1. OVERVIEW

The Alaska Department of Transportation & Public Facilities' CAD Standards and Drafting Guide (CSDG) formalizes the establishment of computer-aided drafting (CAD) standards that facilitate integration, ensure consistent data quality, improve work flow, and promote efficient data transfer within the department and between state, federal and local agencies, consultants, and the public. For project competition and continuity, the CSDG will need to be used for all DOT projects and functional groups.

1.1 Organization and Updates

This guide is organized by discipline. Each of the chapters will be reviewed and updated regularly. Although each section is independent, all sections substantially conform to each other. Follow the Department's guidelines for naming and organizing CAD files/sheets. For exceptions please reference the applicable chapter of this guide.

Updating this guide is an ongoing process and revisions will be made periodically. Please check frequently to ensure that you are using the most current version of this document as well as the associated appendices. Questions, comments, and recommendations are always welcome and may be addressed to:

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1.2 Resource Locations

Central Region:

For in-house personnel see the following folder tree:
L:\Engineering\AutoCAD

For Consultants the site is:
http://www.dot.state.ak.us/creg/dot-cadastral/Central-Region-DOT-CAD-Standards/Highway

Northern and Southcoast Regions:

Contact the Project Manager for a copy of the most current files and documentation.

1.3 Intended Use

The information presented in this guide assumes that the user has a solid understanding of the common commands and features of AutoCAD software. Please defer to the Project Manager (PM) or the Consultant Coordinator to request clarifications on this guide or to receive approval to deviate from it.

This guide is not a text book and does not exempt the professional from performing responsible surveying and/or engineering. It is intended to provide uniform procedures and standards for organizations that perform CAD related services for the Alaska DOT&PF. The professional shall have final responsibility for the accuracy of all input and output of computer based applications.

Chapter 2: Drawing Development, Templates, Layering, & CTB

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SECTION 1. INTRODUCTION

The function of an engineering drawing is to illustrate and describe a design project in sufficient detail and clarity to ensure correct interpretation by contractors and construction personnel. To achieve this purpose, a drawing must be prepared according to practices that are universally recognized. This guide establishes the standards for format, content, and structure of drawings developed for roadway projects for the Alaska DOT&PF. The establishment of CAD data and drafting standards ensures consistency in:

- Drawing standards & symbol usage
- Layer naming & properties
- Drawing naming & sequencing
- Electronic deliverables

The creation of design drawings is merely the initial process in the design's life span. These drawings will be shared and referenced by many users and must adhere to a well-defined standard to alleviate potential confusion and maximize efficiency. To accomplish this, all persons involved in the production of plans for the Alaska DOT&PF should use this guide as a basis for their development.

SECTION 2. DRAWING DEVELOPMENT

The cornerstone of all good drafting practice is clarity and precision. The Project Manager, Project Engineer, Designer, and Drafter must decide what is important and ensure that the drawings communicate the information to the intended audience as clearly as possible.

2.1 Basic Information

CAD files are considered models or real maps. Files shall not be broken into sheets in model space but drawn as contiguous layouts, maps, models, etc. Each section creates file information with specific levels and symbols allowing files to be added to or "stacked" as reference files to compile full engineering maps and models.

CAD files are considered working engineering drawings with the appropriate accuracy.

2.2 Drawing Templates & Sheet Templates

All civil base drawings shall be setup using the current appropriate dwt file. "Full sized" sheet format for all plans will be 22"x34" in paper space. "Half sized" format will be 11"x17". Plain bond paper will be used for "Half sized" final drawing submittals unless otherwise specified. Use the standard borders and title sheets for all drawings. Each DOT Region has drawings, templates, and other files available for use by design squads and consultants.

Title and border template sheets are inserted into Paper space at 0,0,0 and attribute information is entered in full. Do not explode title and border sheet xref or blocks (xref of border is preferred).

2.3 Model Space & Paper Space Guidance

Drawing models shall be drawn full scale in model space. Additional items that define the model or add model data such as details, dimensions, elevations, names, descriptive text, or sections are regularly drawn in model space. Secondary drawing elements such as title blocks, sheet borders, notes, schedules, titles, and legends may be created in paper space. Following are general lists of items that belong in model or paper space in AutoCAD:

Model:

- Plans, sections, elevations, and details
- Any physical object located on the ground
- Text that is used to identify a line or a specific object (typically any text with a leader is drawn in model space.)
- Hatch patterns
- Dimensions
- Detail call outs and section cuts
- Object symbols
- Diagrams
- Station and/or offset references
- Elevation references
- Northing and Easting references

Paper:

- Sheet borders, title blocks and any add-ons within the title blocks
- Viewports
- General notes and sheet notes
- Schedules, tables (that are not referencing a 3D element like pipes), and legends
- Any sheet layout information
- Titles and accompanying text

Essentially, model space is where you will do the design work and most of the drafting. Paper space is used to arrange, annotate, and plot various views of the model. Title blocks, general notes, sheet notes and entities that are not attached to articles that represent "real objects on the ground" are placed in paper space. "Real" entities and objects referring to them are placed in model space.

Note: Survey information referenced in design drawings shall not be moved or rotated from the original coordinates used in the survey drawing. When copying model space information between drawings, verify the UCS coordinates in both drawings are set to "World" prior to executing the copy-paste commands.

2.4 Scale & Units

CAD drawing models shall be drafted at full scale in engineering units such that one drawing unit equals one foot. All plans should be in imperial units.

2.5 Callouts & Dimension Settings

All alignment and profile callouts should reference the Civil3D objects. Do not explode or overwrite callouts; all callouts shall remain associative, if possible.

Annotative dimensions and references should be used when available. Care should be taken to ensure that the referenced object or element is correctly identified. Do not explode or overwrite dimensions; all dimensions shall remain associative, if possible.

2.6 Linework, Linetypes, & Lineweights

All line work shall be black and opaque, except for as-built line work which shall be done in red. CAD entity linetypes and colors shall be set "BYLAYER" with only rare exceptions. Linetype scale shall be set to plot correctly at full size. The "linescale" feature in the plot routine can then be used to plot accordingly.

The Legend Sheet shows custom linetypes and standard symbols.

Best practices dictate that:

- All linetypes and lineweights shall be set to "BYLAYER"
- Plotted lineweights are controlled by color and the CTB file
- "Halftoning" or "screening" of lines or entities should be done only in special circumstances

2.7 External References & Data References

All externally referenced source drawings (XREFs) shall be inserted on layer C-ANNO-REFR per the Layering Guide, and the layer should remain locked to avoid unintentionally moving the reference drawing from its original coordinates.

Data references should be used when possible to ensure accurate, up-to-date data is used in the design.

Note: Personnel working on a project should be continually informed of changes to referenced data. A design log or journal in the project folder and logical data naming should be retained to ensure designers use the correct data.

2.8 Font, Text Styles, & Size

All contract document text shall be UPPERCASE. Only three fonts are approved for use; Romans, RomanSM (Central Region only)and Romand. The exception to the allowed text is the title block provided by each DOT Region, fonts used for signage, exceptions per section dictated in the guide, and tables where text alignment provides additional clarity to the planset. Follow the provided regional templates for font, text style, and size.

Central Region Font Sizes

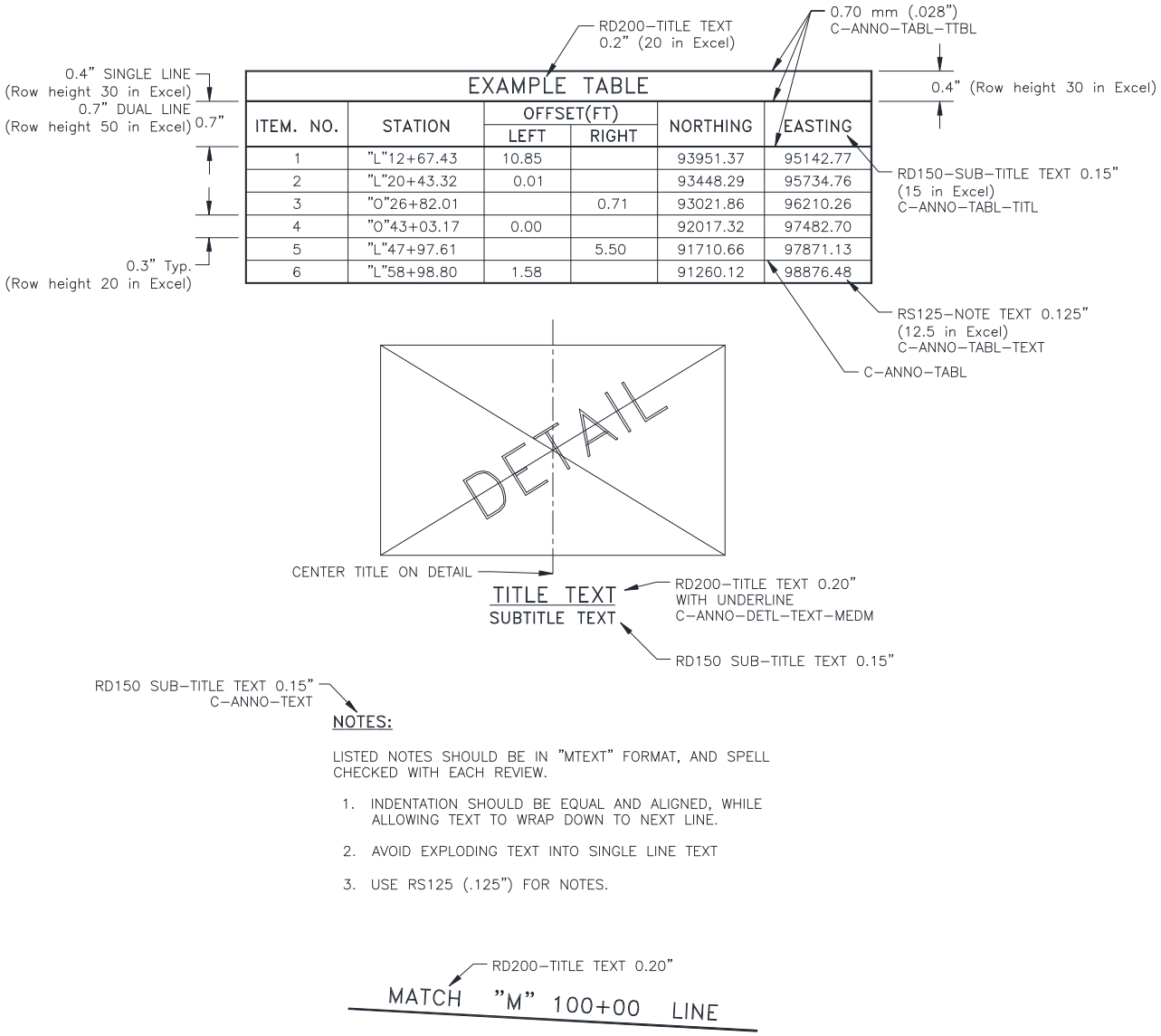
Style	Title	Font	Size (1:1)	Remarks
RS200	Title Text	Romans	0.200”	Detail Titles, Match Lines
RS140	Sub-Title	Romans	0.140”	Table Column Headings, Detail Subtitles, Note Titles
RS120	Note Text	Romans	0.120”	All General Text, & Dimensions
RM120	Table Text	Romansm	0.120”	Table Text
RS100	Note Text	Romans	0.100”	Only when necessary (Parcel text, Dimensions, Grading plans, striping calouts)

Note: Do not use oblique text or a width factor; unless a special case dictates their use. (Water labeling text should be at a 35 degree oblique angle.)

Southcoast and Northern Region Font Sizes

Style	Title	Font	Plot Size (1:1)	Remarks
RD250	Title Text	Romand	0.250”	Table Titles
RD200	Title Text	Romand	0.200”	Sheet Titles, Detail Titles, Match Lines
RD150	Sub-Title	Romand	0.150”	Table Column Headings, Detail Subtitles, Note Titles
RS125	Note & Dimension Text	Romans	0.125”	All General Text, Dimensions & Table Text

*There are two text styles used in all drawings: RS and RD. The number shown after RS or RD is used to denote text height (this is optional). Example: RD250 has a text height of 0.250”.



2.9 Tables, Titles, Notes, & Matchlines

For alignment of tables, RomanSM should be used (Central Region only). This is a monospaced font. Tables, titles, notes, and matchlines shall with conform to what is outlined in the legend sheet and templates provided.

2.10 Blocks

The majority of blocks needed for the planset should be provided in the drawing template of the legend sheet. However, if an additional block is needed, all entities within the block shall be created on layer 0. Masking should be on layer 0 and the color property should be overwritten from “BYLAYER” to the appropriate masking color. Do not nest blocks.

Note: If the block is not in the template, most users will want to copy and paste entities directly from the legend sheet drawing into another drawing in order to set/load the correct layer, linetype, color, and block definitions.

SECTION 3. LAYERING

3.1 Highway Design Layer Layers & Formatting

CAD drawings shall be prepared using the Alaska DOT&PF's variation of the National Cad Standards (NCS) layering scheme. The layers in the templates, legend sheet, drawing files, and those outlined in this guide shall be followed.

The Alaska DOT&PF has eliminated its proprietary CAD layering standard and has adopted the NCS layering scheme with some modifications. By adopting a "common language" of data classification and organization, the need for consultants to maintain multiple layering guides to decipher layer codes is reduced.

The standards outlined in this document substantially conform to the NCS. However, DOT&PF follows its own guidelines for naming and organizing CAD files and for naming sheets. The CTB file, although not entirely NCS, uses elements for simplicity.

Whether a design is in-house or by a consultant, all drawings will be layered in accordance with the layering standard established on the legend sheet (also known as "A3") and the layering guide appendix. During drawing production, if it appears that additional layers are needed, contact the Project Engineer for further direction. Any additional or project specific layers will substantially conform to NCS.

3.2 General Layers & Formatting

Only in rare cases should new layers be created that do not already exist in the Alaska DOT C3D template drawing. Project specific layers will substantially conform to NCS Standards and this guide. This is not intended to be an all-inclusive list; but rather a guideline. Here are some examples of acceptable formula variations, with explanations of formula variables found below:

1 C-TRAF = discipline code + major group
2 C-TRAF-SGNL = discipline code + major group + minor group
3 C-TRAF-SGNL-POLE= discipline code + major group + minor group + minor

3.2.1 Discipline Code:

The discipline code is a one or two-character field with the first character being the discipline code and the second character being either a hyphen or a modifier.

Major Group	Description
C	Civil
*CU	Civil Utilities
E	Electrical (to be used by electrical consultants only)
GIS	GIS enabled
V	Survey
*VU	Survey Utilities

*Central Region Only

3.2.2 Major Group & Minor Group:

The major group designation is a four-character field that identifies the system, such as roads, right-of-way, buildings, etc. Although most major groups are logically associated with specific discipline codes, it

is possible to combine major group codes with any of the discipline codes. For example: C-ASPH-EDGE or VU-ELEC-OVHD. See the box below, Appendix B: NCS Layer Name Field Codes, and Appendix C: Northern and Southcoast Region Layering Guide for additional Major and Minor groups names.

Major Group	Description
TRAF	Traffic related layers
TRAF-SGNL	Traffic signal related layers
TRAF-MRKG	Traffic marking related layers
RWAY	Right-of-Way related layers
RWAY-PROP	Right-of-Way property related layers
RWAY-ESMT	Right-of-Way easement related layers
SURV	Survey

In practice there are cases were clarity or further identifiers may be needed. The minor group codes could be used again following another minor group entry. This is optional. Further differentiation of minor groups could be needed for estimates or different viewport scales. For example, a property line might be better segregated with V-RWAY-PROP-SECT for a section line.

Note: If necessary, the minor group field may also be defined by the user, allowing additional layers to be added to accommodate special project requirements. However, this should only be done after checking to see if any of the predefined layer names in that list would meet the special project requirements.

SECTION 4. CTB FILE INFORMATION

Plotted lineweights are controlled by color and the CTB file which maps drawing colors to line thicknesses CTB files contain color-based plot styles, or mappings of colors to layers of objects; used to attach color and display settings to design objects. In a color dependent system, use the color parameter – either BYLAYER or BYOBJECT – of an object to control the thickness of the lines in the final printed output.

Appexdix A outlines information for the AKDOT_Fullsize.ctb file. It should be used for all construction plansets. Use a 1:2 plot scale when plotting to halfsize (11”x17”) paper.

Chapter 3: Survey (Roadway)

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SECTION 1. **INTRODUCTION**

This chapter covers the Survey Control Diagram (SCD), the Survey Control Sheet (SCS), and the differences between the two products.

The SCD's purpose to show horizontal and vertical control that was either found or established during the survey. The SCD will show monumentation that was found during a ROW survey if ROW mapping is not done for the project. The SCD will be recorded in the appropriate recording district.

The SCS identifies all existing horizontal and vertical survey control in relationship to the current project centerline or baseline. This differs from a SCD in that the SCD does **NOT** show the current project alignment. The SCS is typically NOT recorded as a Record of Survey.

The principal users of the SCS will be Land Surveyors who are performing construction stakeout work in the vicinity of the project. Near-term users are Land Surveyors staking the project centerline after construction, replacing corners that were disturbed, DOT surveyors checking that work, and the Construction Engineer to ensure that existing monumentation does not get disturbed. The SCS has the potential to be used for many years.

Below is a breakdown of the typical SCD and SCS and what they consist of:

1. **Survey Control Diagram** –Contains all horizontal and vertical control found or set. Contains found ROW and property corners if no ROW Base mapping effort is planned. No project centerline shown, no station & offset tables. The diagram is recorded as a Record of Survey.
2. **Survey Control Sheet (where ROW Mapping has been done)** – Project centerline shown, and related to horizontal and vertical control listed in tables. ROW and property corners are only shown if they may be affected by construction activities. The SCS is used in the Department's plan set.
3. **Survey Control Sheet (where ROW Mapping has not been done)** – Project centerline shown, and related to horizontal and vertical control listed in tables. ROW and property corners may also be shown in station & offset tables. The SCS is used in the Department's plan set.

SECTION 2. DRAWING DEVELOPMENT

2.1 Standards

In the preparation of a SCD/SCS, adherence to the DOT & PF drafting guide will be strictly enforced. Additional drawing requirements are spelled out in the Surveying Statement of Services. Read these documents thoroughly since submittals that do not substantially conform to these criteria will be rejected.

2.2 Scale

The sheets shall be drawn at a scale to clearly show the relationship between survey control and the surrounding features. When selecting the scale, it must be remembered that all plan sets are published on 11”x17” sheets.

2.3 Content Survey Control Diagram/Survey Control Sheet

Horizontal and vertical control points and existing corners shall be identified with standard DOT & PF symbols.

Each SCD/SCS shall show basic planimetric background information using a screened pen. The background will typically consist of the existing edge of pavement, buildings, significant land and water bodies. Label side street names. The goal is to help orient the user without cluttering the sheet.

2.3.1 Data Tables

On projects with multiple sheets, it is preferred that tables show only data applicable to the sheet on which the table is located. Occasionally it is prudent to group larger tables on their own sheets where space dictates.

Tables shall be sorted by ascending Point Number on the SCD, and by ascending Station on the SCS.

Horizontal Control Table—A table containing existing horizontal control points of sufficient quality to control the project. These points can be set or found points. The points shall be part of a closed traverse or redundantly tied points (as spelled out in the Statement of Services). The horizontal control table shall show point numbers, Northings and Eastings (to four decimal places), and a description of the type of monument shall be shown. Station and offset referenced from the current project alignment/baseline(s) will only be shown on a SCS. An example is shown below.

HORIZONTAL CONTROL						
Point	Station	Offset	Northing	Easting	Elevation	Description
10			262540.6528	101712.8682	223.05	Set BC/SSROD: AKDOT MP 130.7 2013
45			257384.9445	98292.5940	213.25	Set Rbr/AC[6714]: MP 132.0 2013
11	4116+35.84	70.25 Rt.	250231.0643	92923.7569	221.25	Set BC/SSROD: AKDOT MP 133.7 2013
12	4130+24.60	73.28 Rt.	249021.7190	92219.2105	223.21	Set BC/SSROD: AKDOT MP 134.0 2013
46	4243+70.87	54.70 Lt.	240352.2324	86917.4890	104.65	Set Rbr/AC[6714]: MP 136.2 2013
13	4350+73.97	79.24 Rt.	232396.1609	80717.7010	246.10	Set BC/SSROD: AKDOT MP 138.3 2013
14	4364+23.63	74.43 Lt.	231075.0577	80553.6310	267.17	Set BC/SSROD: AKDOT MP 138.5 2013
47	4443+75.41	44.97 Rt.	223437.9700	78531.9777	150.47	Set Rbr/AC[6714]: MP 140.1 2013
15	4542+53.14	90.06 Lt.	213722.0743	76808.9169	240.18	Set BC/SSROD: AKDOT MP 142.1 2013

Vertical Control Table—A table containing existing vertical control points of sufficient quality to control the project. These points can be set or found points. All vertical control points shall be part of a closed level loop; side-shots are not acceptable. The vertical control table shall show point number, Northing and Easting to the nearest foot, elevations to the hundredth of a foot, and a description of Benchmarks and TBMs shall be shown. Station and offset to the nearest foot referenced from the current project alignment/baseline(s) will only be shown for a SCS. An example is shown below.

VERTICAL CONTROL						
Point	Station	Offset	Northing	Easting	Elevation	Description
609			256547	98037	216.27	Fd BC[USC&GS]: Z 82 1964
610			254556	95468	218.58	Fd BC[USC&GS]: P 75 1964
611	4181+48.81	21.78 Rt.	244645	90508	72.66	Fd BC[6714-S]: NINILCHIK CREEK BM-1 2005
613	4416+58.27	57.07 Lt.	226099	79089	147.97	Fd BC[USC&GS]: W 75 1964
614	4664+72.42	55.57 Lt.	201723	74552	171.90	Fd BC[USC&GS]: Y 86 RESET 1967
615	4715+62.32	99.63 Rt.	197241	72309	172.71	Fd BC[USC&GS]: X 86 1964
616	4775+75.80	43.62 Lt.	191848	70244	274.86	Fd BC[USC&GS]: W 86 1964

Monument Table—A monument table shall be included as part of the SCD/SCS per the following conditions. An example is shown below.

SCD—A monument table will be included in the SCD when no ROW mapping is being done for the project.

SCS—A monument table will be included in the SCS to show any monumentation that might be affected by construction. For example, centerline monuments, GLO monuments, and property corners that are directly affected by construction.

FOUND MONUMENTATION					
Point	Station	Offset	Northing	Easting	Description
701	3209+55	67 Lt.	317022.6952	147001.0559	Fd BC[BLM]: 1/4 S21|S22 ×TIN R12W SM
702	3377+35	96 Rt.	304462.0861	136204.6052	Fd Rbr: S Cor LIO Bluffs
703	3375+70	66 Lt.	304538.4467	136422.5087	Fd AM[4928-S]: NW Cor Alascom Parcel
704	3377+78	58 Lt.	304355.2450	136324.3865	Fd AM[4928-S]: SW Cor Alascom Parcel
705	3480+78	51 Rt.	294856.4121	133373.6411	Fd AM[7328-S]: CS 1/16 S7 ×TIN R12W SM
706	3852+05	47 Rt.	268995.1383	109088.1892	Fd BC[268-S]: SW 1/16 S5 ×T1S R13W SM

2.3.2 Control Statements

A Horizontal & Vertical Control statement is required and will be provided by the DOT & PF Survey Section. Examples are shown below.

Horizontal Control Statement

Coordinate System:
This project is located entirely within the Anchorage Bowl 2000 adjustment, a U.S. Survey Foot local surface grid coordinate system developed by the Alaska Department of Transportation.

Basis of Coordinates:
The Basis of Coordinates is NGS Station O'Malley, located near the intersection of the New Seward Highway and O'Malley Road. Said station has Anchorage Bowl 2000 coordinates of 303,939.2310 N, 353,362.5446 E.

Basis of Bearings:
The Basis of Bearings is a local plane bearing between NGS Station O'Malley and NGS Station Loop 2 USE RM 3 1964. NGS Station Loop 2 USE RM 3 1964 bears N 01º43'26. 4"E a distance of 49,488.45 U.S. Survey Feet from NGS Station O'Malley. NGS Station Loop 2 USE RM 3 1964 has Anchorage Bowl 2000 coordinates of 353,405.2778 N, 354,851.3982 E.

Translation Parameters:
To convert the local coordinates to NAD83 (92) State Plane foot coordinates, translate using +2,296,868.6878 N, +1,312,517.4905 E, and scale using 0.9998910192.

Vertical Control Statement

MSL NAVD 88 as determined by differential level loops performed by AKDOT between bench marks USC&GS BM V-102 1965, a brass disk clamped to a copper coated rod, with an elevation of 356.05 feet; USC&GS BM D-103 1965, a brass disk clamped to a copper coated rod, with an elevation of 301.58 feet; and USC&GS BM E-103 1965 a brass disk clamped to a copper coated rod, with an elevation of 285.89 feet.

2.3.3 Notes

The notes should contain the following information:

1. The methodology of how the survey was completed.
2. The unit of measurement used for the project.
3. Who completed the survey and the date it was performed.
4. Any additional information or direction that clarifies the survey.

An example is shown below.

NOTES

1. *The information shown hereon is based on a field survey performed by Alaska DOT & PF January 28 through April 1, 2014.*
2. *Background information depicted is shown for orientation only and should not be used for any other purposes.*
3. *All dimensions, coordinates, and elevations shown are in U.S. Survey Feet unless otherwise noted.*
4. *Horizontal control points shown on this sheet were surveyed using networked static GNSS techniques. GNSS measurements were performed using Leica Viva GS15 GNSS receivers and processed using Leica GeoOffice v8.4 software. Differential leveling was performed with a Leica DNA-03 digital level.*
5. *All monument cases will have a permanent riser of sufficient height added so that the top of the monument lid matches finished grade.*
6. *All elevations must be field verified before use.*

2.4 Content Survey Control Diagram

2.4.1 Surveyor's Certificate

The SCD shall be sealed and signed by a Professional Land Surveyor licensed to practice in the State of Alaska. The SCD will be filed as a Record of Survey (ROS). A Surveyors Certificate shall appear and be signed by the PLS responsible for the diagram(s). The following certificate is an example:

Surveyor's Certificate

> *I hereby certify that I am properly Registered and Licensed to practice Land Surveying in the State of Alaska, and that this drawing represents a survey made by me or under my direct supervision, and that the monuments shown hereon actually exist as described, and that all dimensions and other details are correct to the extent shown hereon.*

_____	_____	_____
(Surveyor Name)	*(Surveyor Registration Number)*	*(Date)*

2.4.2 Title Block

The following statements should be placed above the title block.

Recording District
State Business—No Fee
This survey does not constitute a subdivision
As defined by AS 40.15.900(5)

MTRS information shall be placed in the title block.

Cap marking details shall be drawn on the SCD as recovered or set. The cap drawings shall depict all markings on the cap including dings and scratches as well as showing their orientation relative to north.

2.5 Content SCS

1. The current project alignment/baseline(s) shall be shown. Tangents shall be labeled with bearings to the nearest second and distances to the hundredth of a foot. Curves shall have PC and PT's stations and coordinates labeled as well as Delta, Radius, Length, and Tangent values. Curves shall be tangential, unless specifically called out otherwise and labeled accordingly. On projects with multiple adjoining alignment/baseline(s) (such as ramp, side street, bike path, and frontage road alignment/baselines) the consultant shall meet with DOT Survey personnel to determine which alignment/baseline(s) shall be shown and dimensioned.

2. The SCS shall contain the following statement:

   Whether listed or not, ALL monuments or property markers, corners, or accessories, which will be disturbed or buried, shall be referenced and re-established in their original position (A.S. 19.10.260) and recorded (A.S. 34.65.040).

Chapter 5: Highway & Traffic Design

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APPENDIX

SECTION 1. **OVERVIEW**

This chapter of the Alaska Department of Transportation & Public Facilities' (DOT&PF) Highway Design CAD Standards and Drafting Guide covers information pertaining to the Highway Design and Traffic Design sections. This guide is to be used for roadway projects.

Note: For Central Region project completion and continuity, this guide should be used in conjunction with the Central Region Highway Design Project Closeout Guide.

SECTION 2. PLANSET ORGANIZATION

2.1 Planset Series Organization

Arrange highway project plan sets in the order shown below. Plan sheet numbering will be alphanumeric. For example, plan and profile sheets will be numbered from F1 to F19.

Series Letter	*Sheet Category*
A	Title, Index, Sheet Layout Schematic, Legend/Symbols, General Notes and Survey Control Sheets
B	Typical Sections
C	Estimate of Quantities/ Table of Estimating Factors
D	Summary Tables
E	Details
F	Plan & Profile Sheets – Mainline, Pathway, and Approaches
G	Grading (Intersections, Pads, Cul-de-Sacs, Roundabouts, etc.)
H	Traffic Sheets (Legend & Notes, Signalization, Illumination, Signing, & Striping)
J	Unassigned
K	Automated Traffic Recorder (ATR) and Weigh-In-Motion (WIM)
L	Landscaping
M	Retaining Walls
N	Bridge Structures
P	Unassigned
Q	Erosion Sediment Control Plan (Consult PM for inclusion)
R	Right of Way Maps (Consult PM for inclusion)
S	Construction Phasing (Consult PM and Construction PM for inclusion)
T	Traffic Control Plans (Consult PM for inclusion)
U	Utilities (Consult PM for inclusion)
V	Unassigned
W	Unassigned
X	Unassigned
Y	Unassigned
Z	Unassigned

Consult the chapters of this guide for additional information on the planset.

Note: Do not use the letters "I" or "O" for series letters. For all the series, the total *number of sheets shown in the top right corner is for that particular series only. For example, if there are 14 plan and profile sheets, the number in the total sheets box should read "F14" and so forth.*

Note: Do not use aerial imagery in the plansets unless specifically requested by the Project Manager.

2.2 Series Descriptions

Specific planset sheets and/or sections are discussed below:

- **A1 – Title Sheet**

  The Title sheet shows the general location of the project, official name of the project, project number (Federal and State), construction year, location map (with the closest M&O Station), and vicinity map. It also shows the "Project Summary" and "Design Designations" tables which are usually located on the far right side. For in-house designs the title sheet will be signed and dated by the Project Manager (seal included), Regional Preconstruction Engineer and the Director of Design & Construction. Central Region designs shall also include the Design Section Chief (seal included) on sheet A1. For consultant designs, the Title Sheet shall be stamped by the individual that is in responsible charge of the project, as determined by the consultant. The remainder of the planset is sealed by the Professional Engineer responsible for it.

  If designed by a consultant, "PLANS DEVELOPED BY:" (Name of Firm) in 0.12 size text shall be shown just above the Signature Block in the lower right corner. The name of the consultant's firm is located just under the consultant Engineer's Seal on all other sheets. Consultant's logos are not allowed on any plan sheet.

- **A2 – Index, Sheet Layout Schematic, and General Notes**

  The Sheet Layout, Index, and General Notes belong on sheet A2. The Index is located on the right side of A2 followed by the list of Regional Standard Drawings and Standard Drawings that apply to the project. This placement ensures that these items are consistently easy to locate when the planset is "Z" folded.

  Included in the remaining space is the comprehensive overview of the project, known as the Sheet Layout or Schematic. It is a quick-reference "stick" drawing of the roadway with plan view outlines (from the F sheets) and sheet numbers superimposed on a scaled-down view of the entire project. Consider including project stationing, BOP/EOP, and key features of the design to highlight and provide a "quick overview" to the user. It is placed on A2 (if it will fit) with any remaining schematics following.

  A draft of the general notes is provided on the A2 template drawing. The notes should be modified to suit the project, and additional notes may be needed.

  Note: Additional schematic sheets will bump the legend sheet and survey control drawings. The first sheet of plan schematics contains a table listing any alignment abbreviations.

- **A3 – Legend**

  This sheet consists of a general Legend (blocks, linetypes, etc.) that applies to the planset. It is provided by DOT&PF and includes the layer names, linetypes, colors, blocks, text sizes, etc. that apply to the planset. If extra space is needed for project specific items not otherwise shown, use space on A2 or create a new sheet that will follow the standard legend.

It is intended that this drawing be dynamic. There is a revision table in model space to inform users of any revisions. Please ensure that you are using the most current version of the legend available.

Note: Specific legends such as Survey Control, Electrical, Landscaping, ESCP, etc. generally appear on the first sheet of their respective sections.

- **A4 – Survey Control**

  See the Survey Chapter of this Guide.

- **B – Typical Sections**

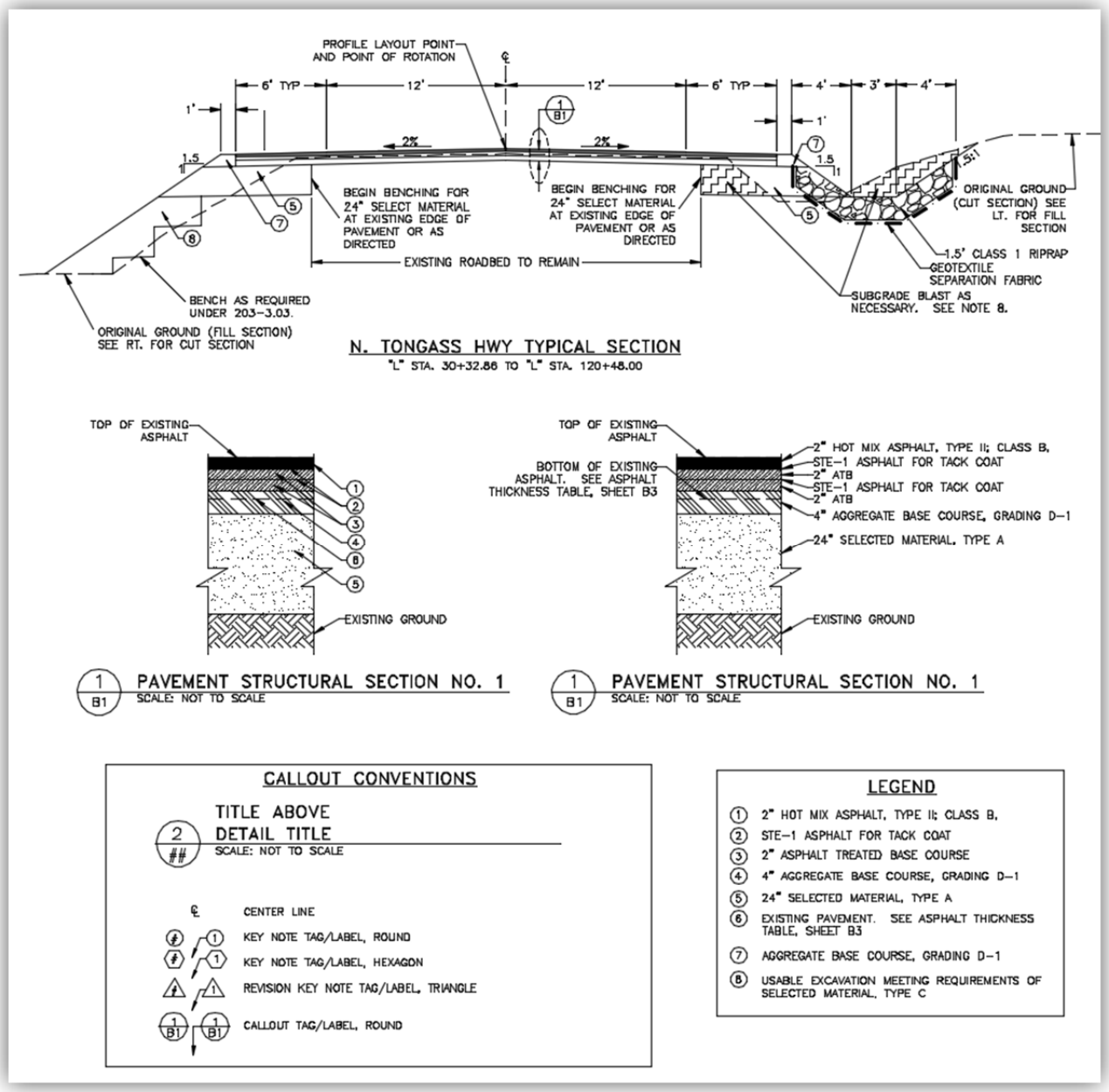
  The Typical Section sheets show cross-section views that are typical to all or a large portion of the project with only minor modifications. If several typical sections run sequentially with direct transitions between them, the transitions do not generally require their own details. Typical sections should be organized in ascending order by station, wherever possible.

  The titles of each typical are generally the street name. The locations or stations that apply are noted under the title of each typical section, as appropriate. The words "Typical Sections" are shown only in the title block in the bottom right corner.

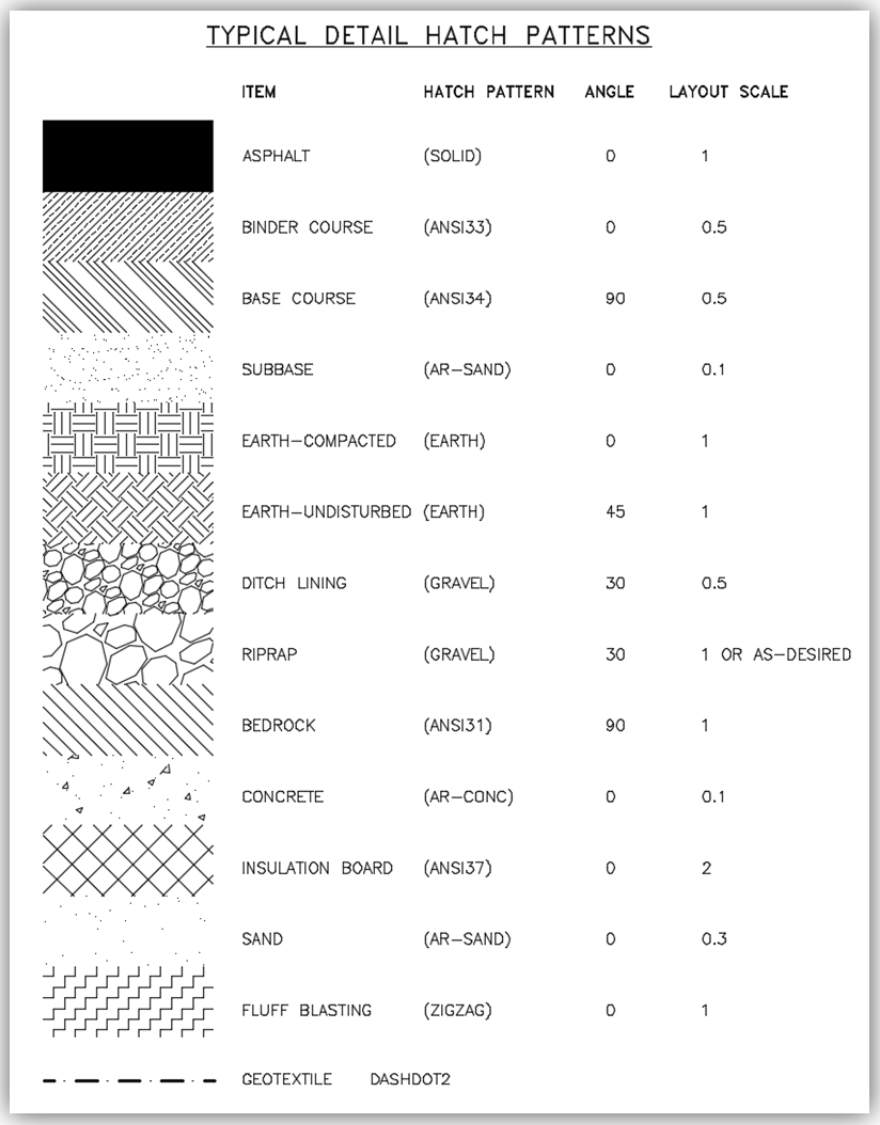
  If applicable, the "Cut Section" is generally shown on the left of the centerline and the "Embankment Section" is generally on the right.

  The roadway structural section material types and depths are shown in order, from top to bottom. These should be condensed into separate details called "Pavement Structural Section No. 1", "… No. 2", etc.

  General typical section notes are shown on the first sheet, "B1", and are located in the upper right corner, if possible.



Typical Section Conventions



- **C – Estimate of Quantities**

  The Estimate of Quantities sheets show the item number, item descriptions, unit of measurement, and quantities necessary to construct the project and shall match the bid schedule, Engineer's estimate, and the pay items in the specifications. All item numbers are shown in numeric order, starting with the smallest item number at the top. Include extra spaces, generally following each section, to allow for the possible addition of items during construction. The "Table of Estimating Factors" is always shown on the last C sheet.

- **D – Summary Tables**

  The Summary Sheets contain tables for most work items except those shown on the Plan & Profile sheets, Traffic sheets, Bridge sheets, and the Landscaping sheets. They may contain tables and totals for the project not found elsewhere. For example, a culvert pipe summary

table might be located here if the project does not contain a drainage plan or they do not fit on the Plan & Profile sheets.

Summary tables are shown in numeric order, starting with the smallest item numbers on "D1". In each table extra spaces are included to allow for the possible addition of items during construction as well as for as-built entries. If items are listed by sheet number, there should be a space between each break in the sheet numbers. A general guideline regarding extra spaces is one space for every half-dozen or so entries (unless clarity is added by grouping items together).

Note: The Earthwork Quantities table may be added to the project on rare occasion. On projects with significant earthwork quantities, include a "D0" sheet with information about the excavation and embankment preparation such as what types of earthwork can be expected in different areas of the project and overall expected volumes for excavation, assumed swell factors, etc. This sheet will be included in the reviews and likely removed prior to advertisement. The inclusion in the final planset will be at the discretion of the Project Manager and the Construction Project Manager. If an Earthwork Summary table is included in the project, it is always the first summary sheet shown "D1" and is given its own individual sheet. If not included in the planset, the information should be provided in the Design Quantity Notebook.

- **E – Details**

  The Detail sheets are drawings developed for anything that is not clearly shown elsewhere. Examples might include details for curbs and gutters, pipe installations, curb ramps, drainage, etc. Details should be organized first by general details pertaining to the whole project followed by any particular of specific details. Similar work items should be grouped together.

- **F – Plan & Profile Sheets**

  The Plan and Profile sheets (P&P's) orient horizontal features of the alignment to the vertical information of the profile. Generally the minimum scale of the full size planset is as follows: 1"=50' for rural projects and 1"=20' for urban projects. (Pavement Preservation projects may be set at a larger scale depending on the complexity. Prior to setting up sheets, confirm the appropriate scale with the Project Manager.) The preferred horizontal to vertical scale ratio is 1:10; depending on the terrain. This may be reduced to 1:5 in steep terrain.

  Adjacent sheets are connected with match lines along the alignment. Stations on the profile shall proceed from left to right. Consider lining up the beginning or ending station, or a tangent section of the roadway in the plan view with the corresponding profile station. Attempt to line up features if stationing has not been established. Stationing will typically increase from South to North or from West to East. (Before setting a new stationing check if a preferred stationing has already been established for the roadway.)

  Major approach roadway Plan and Profile sheets generally match the scale of the mainline. Stationing should run south to north and west to east so that Plan & Profile run left to right but may be shown differently depending on the specific circumstances and as determined by the Project Engineer. Do not start stationing at 0+00; choose stationing that doesn't conflict with mainline. Approach roadway sheets appear after the mainline "F" series.

Pathway Plan and Profile sheets generally match the scale of the mainline and follow the direction of the mainline stationing. Pathway sheets appear after the mainline and major approach roadway P&P sheets.

Driveway sheets are generally at a scale of 1"=20'. Driveway sheets appear at the end of the "F" series. For simple driveway designs, the use of a detail sheet may suffice and no additional plan and profile would be required. Complicated approaches may need a plan and profile view while others may just need a profile. Use 20+00 where the driveway intersects with mainline as a general rule.

- **G – Grading Plans**

  The Grading Plan sheets show how grading features such as intersections, pullouts, gravel pads, cul-de-sacs, roundabouts, etc. should be constructed. Grading features often have complicated grading and drainage designs that vary from the typical sections. Grading plans show detailed elevation information to correctly construct these features and are usually shown at a larger scale than the "F" series sheets that can more easily accommodate labeling and dimensioning.

- **H – Traffic Sheets**

  The H1 sheet consists of legend items and notes that are specific to the project's H Sheets and are not otherwise shown elsewhere within the plan set. General notes regarding Traffic information will be placed here. This drawing is stamped and signed by the Project Engineer.

  Following the H1 sheet will be applicable Traffic detail sheets in the order listed in Appendix Subsequent to the detail sheets, any intersection specific signal and lighting sheets are included. These sheets will contain all the information a contractor would need to install signals or lighting at the specific intersections. Intersection specific plan view sheets will be displayed on the AKDOT Detail border layout, and typically should be at a 1":20' scale. Profile view sheets including Pole Elevation sheets will use the same border but typically are displayed at a 1":10' scale.

  Any detail sheets pertaining to project wide lighting will be placed in order as found in Appendix A. These sheets will include any information needed to install project wide lighting that is not shown elsewhere within the H sheet section or plan set. The project wide illumination plan will be added to the signing and striping plan sheets. Load center, illumination, and other summary table sheets will precede the signing, striping, and illumination plan sheets. Appropriate summary tables may be moved to the D sheet section if confusion can be avoided.
  The signing, striping, and illumination plan sheets are typically shown at a 1":20' scale. Other scales may be used if appropriate detail of striping plans can be shown. The signing and striping plan sheets will be displayed on the AKDOT Plan and Profile border layout and can be shown in a plan and plan format. Alignments and striping station callouts will be displayed as shown on the A3 sheet under the traffic and pavement markings sections. Alignment stationing tic marks will be shown as needed to effectively augment the striping station callouts. For clarity of striping, proposed line work should be emphasized and only the needed existing line work should be shown.

- **K – Automated Traffic Recorder (ATR) and Weigh-In-Motion (WIM) Sheets**

Automated Traffic Recorder (ATR) and Weigh-In-Motion (WIM) sheets generally have the following items and follow a general order. On "K1" there is generally a site plan, "K" series index, notes, labels, and legend. Following "K1" should be the site layout, wiring diagrams, schedule, and details.

- **L – Landscaping**

  The Landscaping sheets are usually only included in urban projects, with rare exceptions. The overall plan usually appears on the first sheet "L1". Total quantities are summarized on the first sheet in the "Landscape Summary" and each quantity agrees with "C1" or the Estimate of Quantities Sheet and the cost estimate. Additional landscaping detail sheets generally follow L1.

- **M – Retaining Walls**

  Retaining wall drawings belong in the M series sheets and not the E series sheets.

- **N – Bridge Structures**

  Consult with the DOT&PF's Bridge section for guidance on the Bridge sheets.

- **Q – Erosion Sediment Control Plan**

  Generally, the Erosion Sediment Control Plans (ESCP) are not included as a part of the planset and are available separately to the contractor at the time of bidding in an appendix of the ESCP document. However, the general guidelines of this guide apply to the ESCP sheets.

  If there are specific requirements, the ESCP may be included in the planset. The most common case is when a specific permanent erosion control measure is called out for on the plans and is included as a separate pay item. The details would be included in the "Q" series.

- **R – Right-of-Way Maps**

  See the Right-of-Way Chapter of this Guide.

- **S – Construction Phasing**

  Generally, the Construction Phasing Plans are not in the planset and are rarely provided to the contractor. However, the general guidelines of this Guide still apply to the sheets. If there are specific requirements, the phasing plans may be included in the planset.

- **T – Traffic Control Plan**

  Traffic Control Plans (TCP) are generally not in the planset. They are commonly provided to the contractor under a separate cover. If there are specific requirements, the TCP may be included in the planset.

  See Chapter 14 of the current edition of the Highway Preconstruction Manual on when a TCP should be included in the planset.

- **U – Utilities**

  If utility relocations are to be done by the project's contractor, the U series sheets will be included in the planset. If the utility companies are doing their own relocations, the sheets will not be included in the planset. The sheets are generally signed by the individual that is in responsible charge of the project, as determined by the utility company.

SECTION 3. **FILE NAMING**

3.1 Drawing Naming Convention

3.1.1 Engineering Drawings

These are drawing that have the data referenced material created in them. Use the following naming convention:

- (Last 5 digest of the State Project #)-(Suffix - Discipline or Drawing Type)-(Brief Description, if needed)
  Suffixes include:

C	Alignment & Profile	PN	Pipe Network
CM	Corridor Model	SR	Design Surface
GIS	GIS enabled	SV	Survey
ROS	Record of Survey	SVBM	Survey Basemap
P&P	Plan and Profile	TR	Traffic and Safety
RW	Right of Way plans	UL	Utility
RWBM	Right of Way Base Map	XS	Cross-Sections

  Examples:

  12345-C.dwg
  12345-CM-M2.dwg
  12345-CM-A.dwg
  12345-PN-M4.dwg
  12345-SR-Lidar.dwg
  12345-XS-M2.dwg
  12345-PN-Culverts.dwg

  Alignment name convention may be used for clarification based on project complexity:

  Mainline Alignments: M<counter>
  Approach Alignments: A-<counter>
  Target Alignments: T-<Parent Alignment>-<Description>-<RT/LT>
  R.O.W. Alignments: R-<Parent Alignment>-<RT/LT>

  Profile name convention may be:

  <FG/EG>-<Parent Alignment>-
  i.e. “FG-M2” or “EG-M2” meaning finished or existing grade for mainline alignment #2
  Note: if there are multiple FG options, supplement FG with a counter, ex “FG2-M2”

  Corridor name convention may be:

  Mainline Corridor: M-<Description>
  Approach Corridor: A-<Description>-<RT/LT>
  i.e. M-Mainline or A-LocalRoad

  Surface name convention may be:

  <Profile Name>
  i.e. “FG-M2” or “FG2-M2” or “EG-M2”

3.1.2 External Referenced Drawings

External Reference Drawings should be named with XR so that they group together. Use the following naming convention for external references:

Central Region

- (Last 5 digits of the State Project #)-XR-(Brief Description)
- Examples:
  12345-XR-BDR_DTL.dwg
  12345-XR-BDR_PnP.dwg
  12345-XR-Design.dwg
  12345-XR-ROW.dwg

Northen and Southcoast Region

- (x)(Last 5 digits of the State Project #)- (Brief Description)
- Examples:
  x12345-BDR_DTL.dwg
  x12345-BDR_PnP.dwg
  x12345-DesignLinework.dwg
  x12345-ROW Limits.dwg

3.1.3 Planset Drawings

Use the following naming convention:

- (Last 5 digits of the State Project #)_(Series Letter and/or Number)_(Brief Description)
- Examples:
  12345_A01_Title.dwg
  12345_B01_Typ.dwg
  12345_H05_Signal.dwg
  12345_H23_SignStripe.dwg

Note: It is important to keep file names as short as possible; therefore, keep descriptions short or do not use them unless necessary. Example: 12345_B01_Typ.dwg, 12345_F12_PnP.dwg

SECTION 4. ADVERTISING, ADDENDUMS, & AS-BUILTS

4.1 Advertising

All 11x17's submitted for advertising shall be signed originals. It is the drafter's responsibility to ensure that all sheets are numbered correctly, stamped, signed, and dated. Signatures shall be in blue ink. Electronic signatures will not be accepted. Traffic, Bridge, Utilities, and Right-of-Way sections will provide originals as well, without exception.

4.1.1 N.I.C. (Not In Contract)

Sometimes an element of the project will be eliminated. If this occurs, "N.I.C." is printed across the affected area. For more extensive deletions, a cloud may be drawn around an area and the "N.I.C." label added. If an entire sheet is eliminated, a bold diagonal line (in a heavy lineweight) is drawn across the sheet from the lower left corner to the upper right corner and the "N.I.C." label is added. This text is usually very large and bold and is printed at an angle to help set it apart from anything else on the sheet.

4.1.2 Addendums

After transmittal of the final 11x17's for advertisement, no other changes may be made except by addendum. Addendums or modifications to the construction planset are made as follows:

- The change is made to all affected drawings.
- A number is assigned to the revision with a hexagon and is placed adjacent to the revision.
- Additional items may be added at the bottom of summary tables as necessary.
- For more extensive revisions, a cloud line is drawn around the change and the revision number (with hexagon) is added on the outside edge of the cloud.
- If a sheet is added, an "A" is printed after the sheet number in the title block and the index (on A2) is updated to reflect the extra sheet.
- The revision number (with hexagon), along with a brief description of the change that was made such as "Modified notes", "Deleted item", "Revised detail", etc. is noted in the revisions block located at the top of the title block.

Revised originals in addenda will be noted with a block of text in the upper right corner containing the words "ADDENDUM #___, ATTACHMENT #___". The Contracts section now performs this duty along with determining the numbers after the addendum has been received.

4.2 Design Closeout

At the time of Bid Opening, the CAD drawings, including any addenda drawings, will be submitted to the As-Built Archivist.

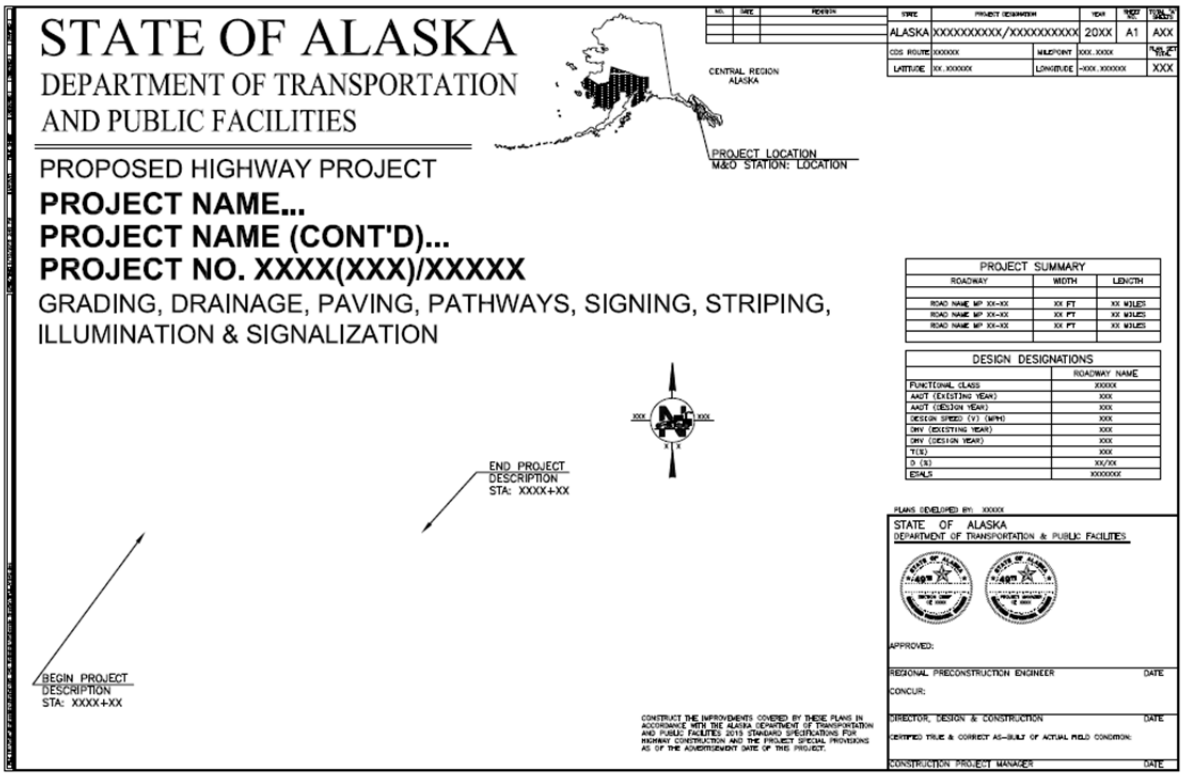
Note: For Central Region, follow the Central Region Highway Design Project Closeout Guide for drawing clean requirements.

4.3 "As-Builts" (also known as "Record Drawings") – Reserved

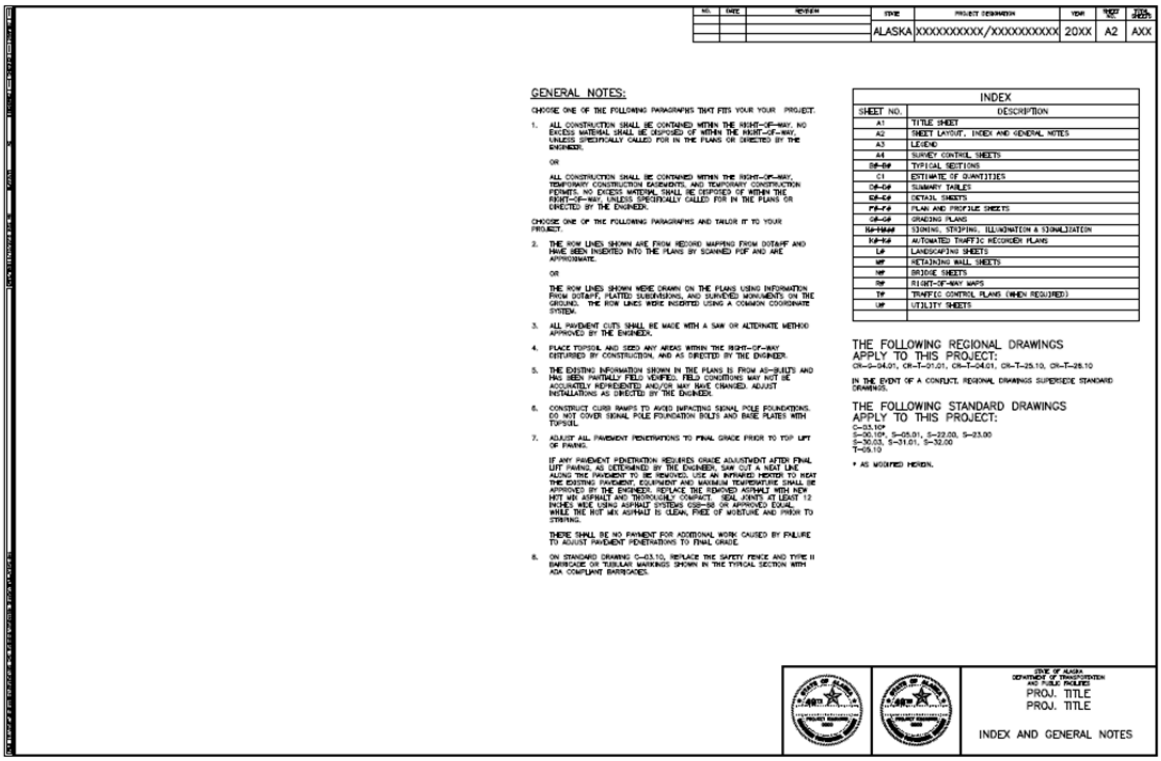
SECTION 5. SHEET TEMPLATES

- All sheets shall be designed in Paperspace at 1" = 1" scale for the title block/border.
- There are six AutoCAD sheet templates for highway projects:
    1. TITLE_A1nA2.dwg
        - Use for Title sheet only
    2. TITLE_A1nA2.dwg
        - Use for Notes sheet only
    3. ACAD_HWY_LEGEND-NR.dwg
        - Use for Legend sheet only
    4. _C3D_HWY_Detail.dwt
        - Use for sheets that do not show a plan or profile view
    5. _C3D Sheets-NR.dwt
        - Use for sheets that have a plan and/or profile view
    6. _C3D Sheets-NR.dwt
        - Use for sheets that have a plan and/or profile view

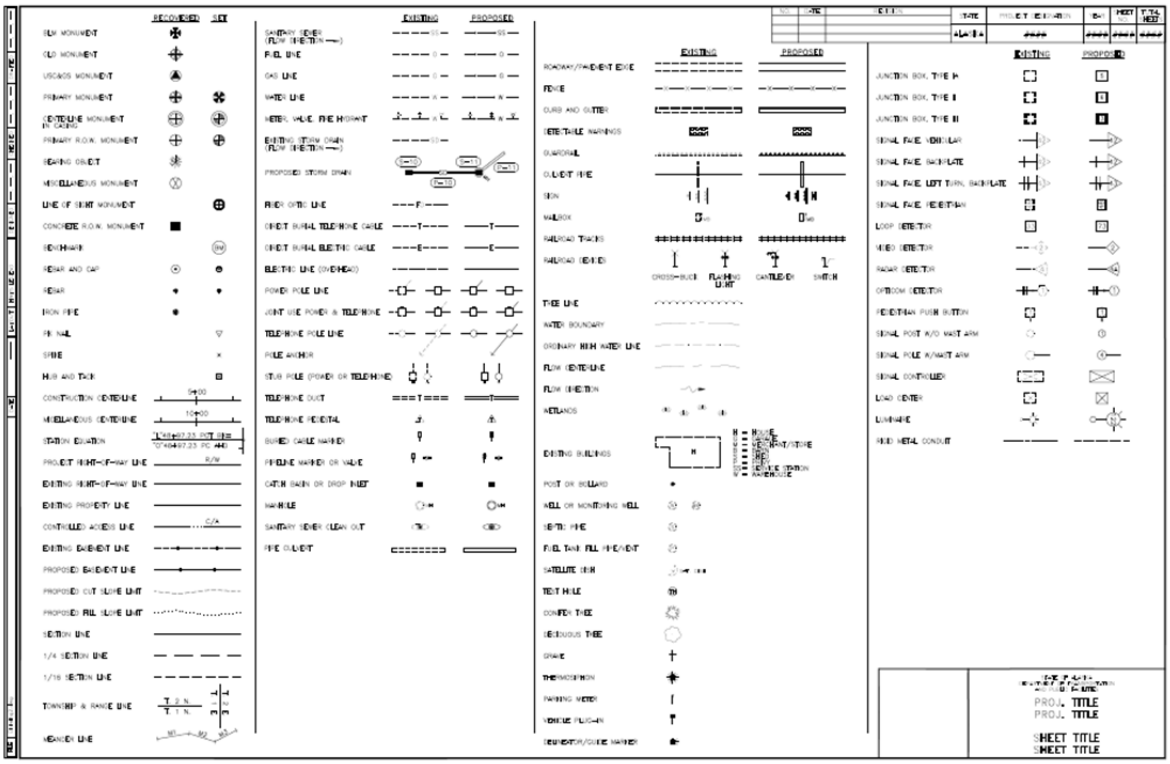
5.1 Title Sheet (TITLE_A1nA2.dwg)



5.2 Notes Sheet (TITLE_A1nA2.dwg)

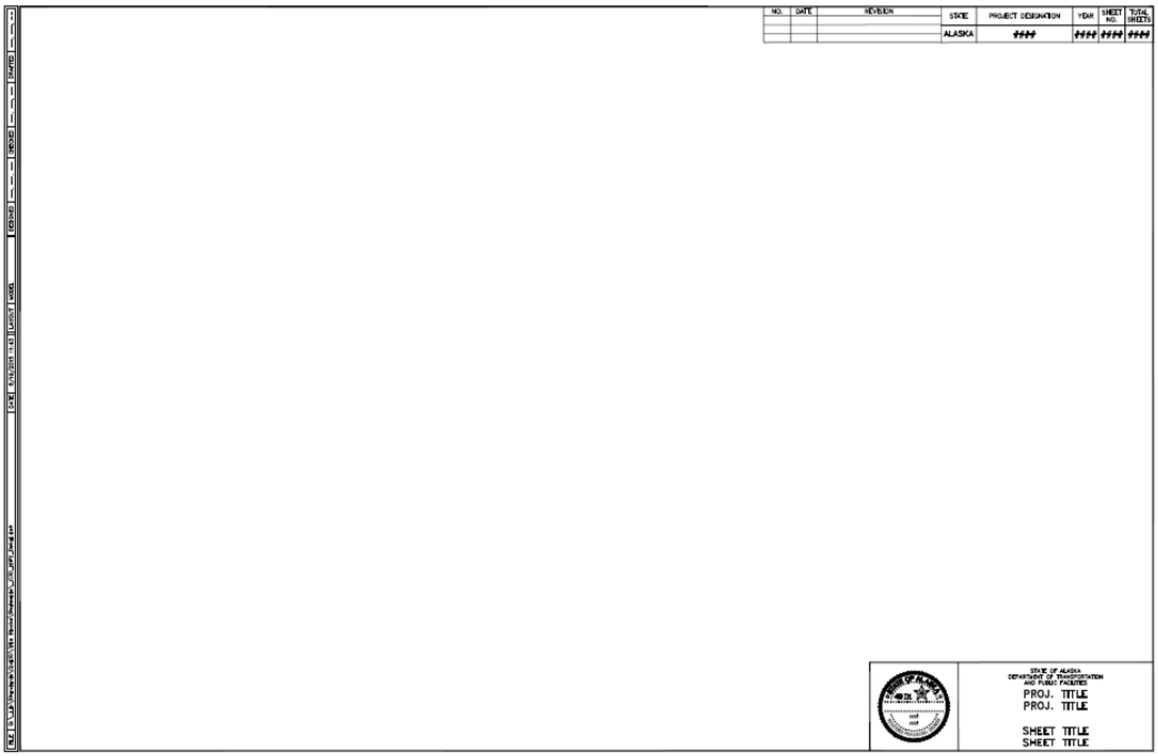


5.3 Legend Sheet (ACAD_HWY_LEGEND-NR.dwg)

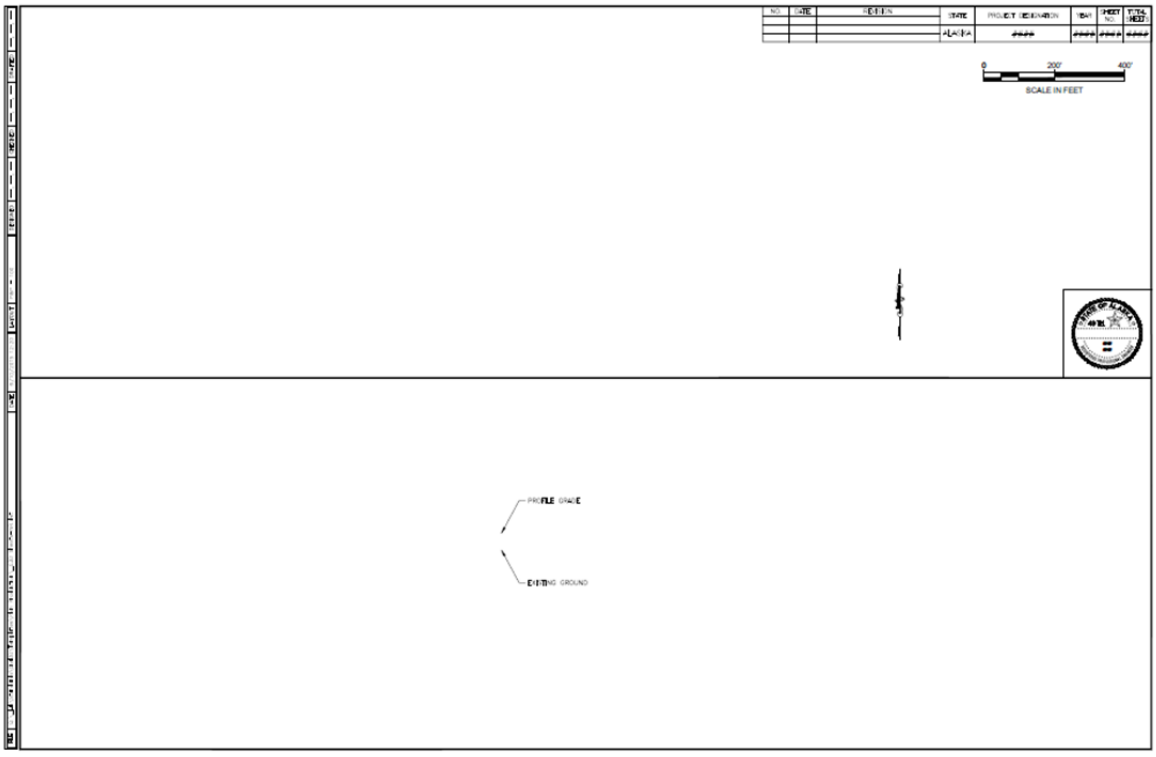


Note: Use this legend sheet for Northern and Southcoast Regions only

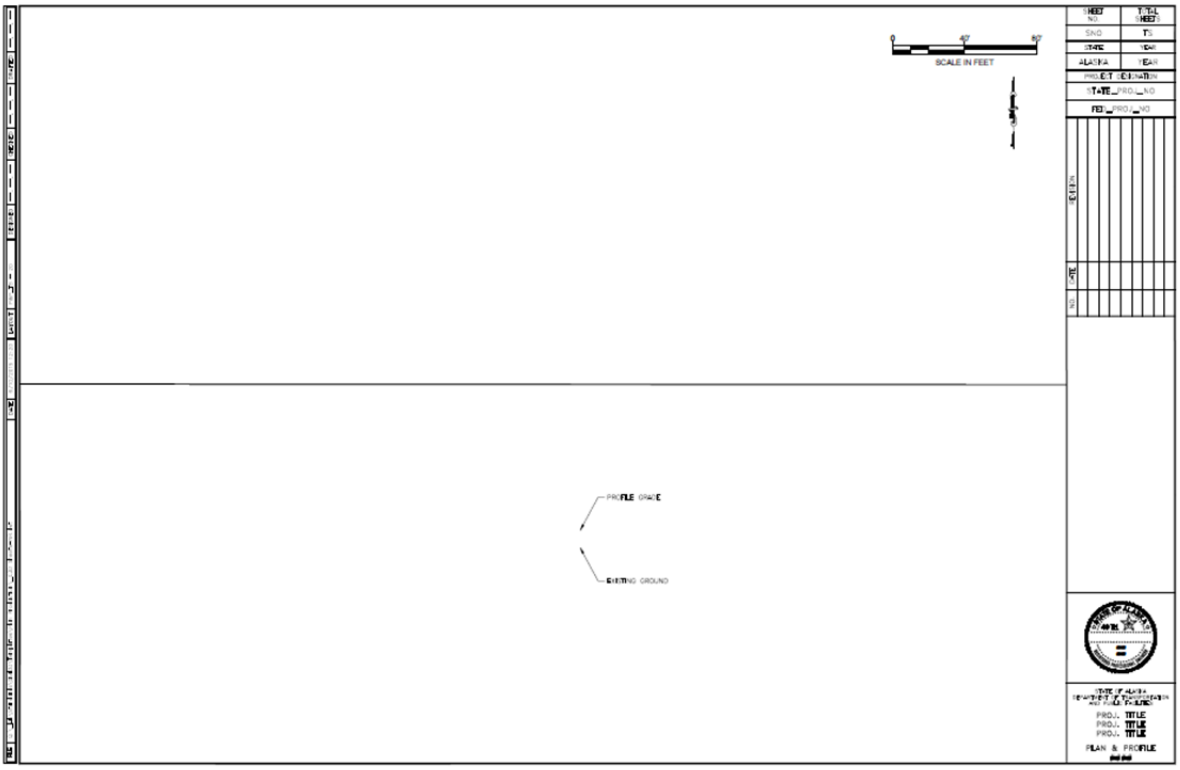
5.4 Detail Sheet Template (_C3D_HWY_Detail.dwt)



5.5 Plan and Profile Template (_C3D Sheets-NR.dwt)



5.6 Plan and Profile Template (_C3D Sheets-NR.dwt)



Note: The profile grid can be generated using Civil 3D or it is available in paperspace on layer C-ANNO-GRID

Appendix A:
H Sheet Order (Central Region Only)

Arrange applicable sheets in the order shown below.

DETAIL SHEETS:

- Traffic Legend and Notes
- Type 1A Load Center
- Type 1 Load Center
- Type 2 & 3 Load Center
- Junction Box
- Loop Detector
- Splice Details
- Controller Foundation
- Controller Cabinet
- Flasher Cabinet
- Pipe Pile Foundation
- Lighting Standard
- Lighting Standard 2
- Lighting Standard 3 (45deg)
- Rural Beacon
- School Beacon
- Breakaway Pole
- Firehouse Beacon
- Eight Foot Pedestrian Pole
- High Tower Pipe Foundation
- Wood Pole Signal
- Span Wire
- Pole Wiring & Grounding
- Signal Hardware
- Antenna Mounting Bracket
- EVP Detector
- Sign attachment details (2 Sheets)
- Delineator details
- Mast Arm Dampening Device
- 22-24 Inch Pole Adapter

SHEET ORDER FOR SPECIFIC INTERSECTIONS:

Additional letter identifiers may be used with the sheet numbers after the H, to emphasis intersection groups. Examples being HA1-HA-5 for intersection 1 of a 3 intersection project, whereas intersection 3 of 3 would be HC1-HC5.

- Signal Systems Plan
- Signal Operations
- Wiring (include LC Summary if possible)
- Pole Elevations
- Controller Equipment (include communications and EVP equipment)

SHEETS ORDER FOR PROJECT WIDE AREA:

- Load Center Summary
- Illumination Summary
- J-Box Summary
- Signing, Striping and Illumination (including any special marking details)
- Sign Summary and Salvage tables
  Sign Build Sheets are to be added to the Specifications as an appendix.

Appendix A:
Northern and Southcoast Region CTB File Information

FULLSIZE-National_Standards.ctb

ACAD Color #	Plot Pen		Screening	Plot Color
	Halfsize (mm)	Fullsize (in)		
1 RED	0.07	0.005	100%	Black
2 YELLOW	0.13	0.010	100%	Black
3 GREEN	0.18	0.014	100%	Black
4 CYAN	0.18	0.014	100%	Black
5 BLUE	0.25	0.020	100%	Black
6 MAGENTA	0.50	0.039	100%	Black
7 BLACK	0.70	0.055	100%	Black
8 DK GRAY	0.18	0.014	50%	Black
9 LT GRAY	1.00	0.079	100%	Black
10	0.07	0.005	100%	Black
11	0.13	0.010	100%	Black
12	0.18	0.014	100%	Black
13	0.25	0.020	100%	Black
14	0.35	0.028	100%	Black
15	0.50	0.039	100%	Black
16	0.70	0.055	100%	Black
17	0.35	0.028	50%	Black
18	0.18	0.014	50%	Black
19	1.00	0.079	100%	Black
20	0.07	0.005	100%	Rust
21	0.13	0.010	100%	Rust
22	0.18	0.014	100%	Rust
23	0.25	0.020	100%	Rust
24	0.35	0.028	100%	Rust
25	0.50	0.039	100%	Rust
26	0.70	0.055	100%	Rust
27	0.35	0.028	100%	Rust
28	0.18	0.014	100%	Rust
29	1.00	0.079	100%	Rust
30	0.07	0.005	100%	Black
31	0.13	0.010	100%	Black
32	0.18	0.014	100%	Black
33	0.25	0.020	100%	Black
34	0.35	0.028	100%	Black
35	0.50	0.039	100%	Black
36	0.70	0.055	100%	Black
37	0.35	0.028	50%	Black
38	0.18	0.014	50%	Black
39	1.00	0.079	100%	Black
40	0.07	0.005	100%	Gold
41	0.13	0.010	100%	Gold
42	0.18	0.014	100%	Gold
43	0.25	0.020	100%	Gold
44	0.35	0.028	100%	Gold
45	0.50	0.039	100%	Gold
46	0.70	0.055	100%	Gold
47	0.35	0.028	100%	Gold
48	0.18	0.014	100%	Gold
49	1.00	0.079	100%	Gold

ACAD Color #	Plot Pen		Screening	Plot Color
	Halfsize (mm)	Fullsize (in)		
50	0.07	0.005	100%	Black
51	0.13	0.010	100%	Black
52	0.18	0.014	100%	Black
53	0.25	0.020	100%	Black
54	0.35	0.028	100%	Black
55	0.50	0.039	100%	Black
56	0.70	0.055	100%	Black
57	0.35	0.028	50%	Black
58	0.18	0.014	50%	Black
59	1.00	0.079	100%	Black
60	0.07	0.005	100%	Olive
61	0.13	0.010	100%	Olive
62	0.18	0.014	100%	Olive
63	0.25	0.020	100%	Olive
64	0.35	0.028	100%	Olive
65	0.50	0.039	100%	Olive
66	0.70	0.055	100%	Olive
67	0.35	0.028	100%	Olive
68	0.18	0.014	100%	Olive
69	1.00	0.079	100%	Olive
70	0.07	0.005	100%	Black
71	0.13	0.010	100%	Black
72	0.18	0.014	100%	Black
73	0.25	0.020	100%	Black
74	0.35	0.028	100%	Black
75	0.50	0.039	100%	Black
76	0.70	0.055	100%	Black
77	0.35	0.028	50%	Black
78	0.18	0.014	50%	Black
79	1.00	0.079	100%	Black
80	0.07	0.005	100%	Green
81	0.13	0.010	100%	Green
82	0.18	0.014	100%	Green
83	0.25	0.020	100%	Green
84	0.35	0.028	100%	Green
85	0.50	0.039	100%	Green
86	0.70	0.055	100%	Green
87	0.35	0.028	100%	Green
88	0.18	0.014	100%	Green
89	1.00	0.079	100%	Green
90	0.07	0.005	100%	Black
91	0.13	0.010	100%	Black
92	0.18	0.014	100%	Black
93	0.25	0.020	100%	Black
94	0.35	0.028	100%	Black
95	0.50	0.039	100%	Black
96	0.70	0.055	100%	Black
97	0.35	0.028	50%	Black
98	0.18	0.014	50%	Black
99	1.00	0.079	100%	Black

ACAD Color #	Plot Pen		Screening	Plot Color
	Halfsize (mm)	Fullsize (in)		
100	0.07	0.005	100%	Forest Green
101	0.13	0.010	100%	Forest Green
102	0.18	0.014	100%	Forest Green
103	0.25	0.020	100%	Forest Green
104	0.35	0.028	100%	Forest Green
105	0.50	0.039	100%	Forest Green
106	0.70	0.055	100%	Forest Green
107	0.35	0.028	100%	Forest Green
108	0.18	0.014	100%	Forest Green
109	1.00	0.079	100%	Forest Green
110	0.07	0.005	100%	Black
111	0.13	0.010	100%	Black
112	0.18	0.014	100%	Black
113	0.25	0.020	100%	Black
114	0.35	0.028	100%	Black
115	0.50	0.039	100%	Black
116	0.70	0.055	100%	Black
117	0.35	0.028	50%	Black
118	0.18	0.014	50%	Black
119	1.00	0.079	100%	Black
120	0.07	0.005	100%	Teal
121	0.13	0.010	100%	Teal
122	0.18	0.014	100%	Teal
123	0.25	0.020	100%	Teal
124	0.35	0.028	100%	Teal
125	0.50	0.039	100%	Teal
126	0.70	0.055	100%	Teal
127	0.35	0.028	100%	Teal
128	0.18	0.014	100%	Teal
129	1.00	0.079	100%	Teal
130	0.07	0.005	100%	Black
131	0.13	0.010	100%	Black
132	0.18	0.014	100%	Black
133	0.25	0.020	100%	Black
134	0.35	0.028	100%	Black
135	0.50	0.039	100%	Black
136	0.70	0.055	100%	Black
137	0.35	0.028	50%	Black
138	0.18	0.014	50%	Black
139	1.00	0.079	100%	Black
140	0.07	0.005	100%	Cyan
141	0.13	0.010	100%	Cyan
142	0.18	0.014	100%	Cyan
143	0.25	0.020	100%	Cyan
144	0.35	0.028	100%	Cyan
145	0.50	0.039	100%	Cyan
146	0.70	0.055	100%	Cyan
147	0.35	0.028	100%	Cyan
148	0.18	0.014	100%	Cyan
149	1.00	0.079	100%	Cyan

ACAD Color #	Plot Pen		Screening	Plot Color
	Halfsize (mm)	Fullsize (in)		
150	0.07	0.005	100%	Black
151	0.13	0.010	100%	Black
152	0.18	0.014	100%	Black
153	0.25	0.020	100%	Black
154	0.35	0.028	100%	Black
155	0.50	0.039	100%	Black
156	0.70	0.055	100%	Black
157	0.35	0.028	50%	Black
158	0.18	0.014	50%	Black
159	1.00	0.079	100%	Black
160	0.07	0.005	100%	Blue
161	0.13	0.010	100%	Blue
162	0.18	0.014	100%	Blue
163	0.25	0.020	100%	Blue
164	0.35	0.028	100%	Blue
165	0.50	0.039	100%	Blue
166	0.70	0.055	100%	Blue
167	0.35	0.028	100%	Blue
168	0.18	0.014	100%	Blue
169	1.00	0.079	100%	Blue
170	0.07	0.005	100%	Black
171	0.13	0.010	100%	Black
172	0.18	0.014	100%	Black
173	0.25	0.020	100%	Black
174	0.35	0.028	100%	Black
175	0.50	0.039	100%	Black
176	0.70	0.055	100%	Black
177	0.35	0.028	50%	Black
178	0.18	0.014	50%	Black
179	1.00	0.079	100%	Black
180	0.07	0.005	100%	Navy
181	0.13	0.010	100%	Navy
182	0.18	0.014	100%	Navy
183	0.25	0.020	100%	Navy
184	0.35	0.028	100%	Navy
185	0.50	0.039	100%	Navy
186	0.70	0.055	100%	Navy
187	0.35	0.028	100%	Navy
188	0.18	0.014	100%	Navy
189	1.00	0.079	100%	Navy
190	0.07	0.005	100%	Black
191	0.09	0.007	100%	Black
192	0.18	0.014	100%	Black
193	0.25	0.020	100%	Black
194	0.35	0.028	100%	Black
195	0.50	0.039	100%	Black
196	0.70	0.055	100%	Black
197	0.35	0.028	50%	Black
198	0.18	0.014	50%	Black
199	1.00	0.079	100%	Black

ACAD Color #	Plot Pen		Screening	Plot Color
	Halfsize (mm)	Fullsize (in)		
200	0.07	0.005	100%	Purple
201	0.13	0.010	100%	Purple
202	0.18	0.014	100%	Purple
203	0.25	0.020	100%	Purple
204	0.35	0.028	100%	Purple
205	0.50	0.039	100%	Purple
206	0.70	0.055	100%	Purple
207	0.35	0.028	100%	Purple
208	0.18	0.014	100%	Purple
209	1.00	0.079	100%	Purple
210	0.07	0.005	100%	Black
211	0.13	0.010	100%	Black
212	0.18	0.014	100%	Black
213	0.25	0.020	100%	Black
214	0.35	0.028	100%	Black
215	0.50	0.039	100%	Black
216	0.70	0.055	100%	Black
217	0.35	0.028	50%	Black
218	0.18	0.014	50%	Black
219	1.00	0.079	100%	Black
220	0.07	0.005	100%	Magenta
221	0.13	0.010	100%	Magenta
222	0.18	0.014	100%	Magenta
223	0.25	0.020	100%	Magenta
224	0.35	0.028	100%	Magenta
225	0.50	0.039	100%	Magenta
226	0.70	0.055	100%	Magenta
227	0.35	0.028	100%	Magenta
228	0.18	0.014	100%	Magenta
229	1.00	0.079	100%	Magenta
230	0.07	0.005	100%	Black
231	0.13	0.010	100%	Black
232	0.18	0.014	100%	Black
233	0.25	0.020	100%	Black
234	0.35	0.028	100%	Black
235	0.50	0.039	100%	Black
236	0.70	0.055	100%	Black
237	0.35	0.028	50%	Black
238	0.18	0.014	50%	Black
239	1.00	0.079	100%	Black
240	0.07	0.005	100%	Red
241	0.13	0.010	100%	Red
242	0.18	0.014	100%	Red
243	0.25	0.020	100%	Red
244	0.35	0.028	100%	Red
245	0.50	0.039	100%	Red
246	0.70	0.055	100%	Red
247	0.35	0.028	100%	Red
248	0.18	0.014	100%	Red
249	1.00	0.079	100%	Red

ACAD Color #	Plot Pen		Screening	Plot Color
	Halfsize (mm)	Fullsize (in)		
250	0.07	0.007	30%	Black
251	0.09	0.007	50%	Black
252	0.13	0.010	50%	Black
253	0.25	0.020	50%	Black
254	0.35	0.028	50%	Black
255	0.25	0.020	0%	Black

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NOTE:

THIS SHEET WAS PLOTTED WITH THE FULLSIZE-National_Standard.CTB FILE AND SHOWS THE LINE THICKNESS AND COLOR ASSOCIATED WITH EACH OF THE ACAD COLORS. SEE THE PDF FILE, *NCS FULLSIZE CTB FILE PROPERTIES*, LOCATED AT Q:_*LIB\STANDARDS\CIVIL3D\C3D CTB FILE INFORMATION* FOR A LIST OF COLOR/LINEWEIGHT PROPERTIES FOR THE *FULLSIZE-NATIONAL_STANDARD.CTB*.

Q:_LIB\STANDARDS\CIVIL3D\CTB PROPERTIES – DOT & NCS\C3D CTB LINEWEIGHTS (11X17).DWG 07/14/14 – 10:51am

Appendix B:
Central Region CTB File Information

CR DOT&PF CTB FILE

ACAD Color #	Plot Pen Fullsize (mm)	Screening	Plot Color
1 Red	0.13	100%	Black
2 Yellow	0.18	100%	Black
3 Green	0.25	100%	Black
4 Cyan	0.35	100%	Black
5 Blue	0.50	100%	Black
6 Magenta	0.70	100%	Black
7 Black	1.00	100%	Black
8 Gray	1.40	100%	Black
9 Gray	2.00	100%	Black
EVEN GROUPS OF 10			
*0	0.130	100%	Plot Color
*1	0.180	100%	Plot Color
*2	0.250	100%	Plot Color
*3	0.350	100%	Plot Color
*4	0.500	100%	Plot Color
*5	0.700	100%	Plot Color
*6	1.000	100%	Plot Color
*7	0.500	100%	Plot Color
*8	0.180	100%	Plot Color
*9	2.000	100%	Plot Color

PLOT COLOR	
Colors 1 - 9	Black
Odd Groups of 10	Black
20's	Orange
40's	Yellow
60's	Olive
80's	Green
100's	Forest Green
120's	Teal
140's	Cyan
160's	Blue
180's	Navy
200's	Purple
220's	Magenta
240's	Red

ACAD Color #	Plot Pen Fullsize (mm)	Screening	Plot Color
ODD GROUPS OF 10			
*0	0.13	100%	Black
*1	0.18	100%	Black
*2	0.25	100%	Black
*3	0.35	100%	Black
*4	0.50	100%	Black
*5	0.70	100%	Black
*6	Varies	0%	White/Mask
*7	0.13	100%	Black
*8	0.13	80%	Black
*9	2.00	100%	Black
SCREENED COLORS			
(*6 in odd groups of 10)			
16	0.13	0%	White/Mask
36	0.35	0%	White/Mask
56	0.50	0%	White/Mask
76	0.70	0%	White/Mask
96	1.00	0%	White/Mask
136	0.13	0%	White/Mask
156	0.35	0%	White/Mask
176	0.50	0%	White/Mask
196	0.70	0%	White/Mask
216	1.00	0%	White/Mask
236	1.40	0%	White/Mask
EXCEPTIONS			
20	0.70	100%	Red
21	0.25	60%	Black
22	0.35	0%	White/Mask
40	0.13	0%	White/Mask
51	0.25	0%	White/Mask
60	0.13	10%	Screened
61	0.25	10%	Black
116	1.40	60%	Screened
155	0.13	0%	White/Mask
174	0.70	60%	Screened
249	2.00	0%	White/Mask
251	0.25	50%	Screened
252	0.50	50%	Screened
253	1.00	50%	Screened
254	0.50	0%	White/Mask
255	0.50	0%	White/Mask

CR DOT&PF CTB FILE						
ACAD Color #	Plot Pen			Screening	Plot Color	Remarks
	Halfsize (mm)	Fullsize (mm)	Fullsize (in)			
1 Red	0.065	0.130	0.005	100%	Black	
2 Yellow	0.090	0.180	0.007	100%	Black	
3 Green	0.125	0.250	0.010	100%	Black	
4 Cyan	0.175	0.350	0.014	100%	Black	
5 Blue	0.250	0.500	0.020	100%	Black	
6 Magenta	0.350	0.700	0.028	100%	Black	
7 Black	0.500	1.000	0.039	100%	Black	
8 Gray	0.700	1.400	0.055	100%	Black	
9 Gray	1.000	2.000	0.079	100%	Black	
10	0.065	0.130	0.005	100%	Black	
11	0.090	0.180	0.007	100%	Black	
12	0.125	0.250	0.010	100%	Black	
13	0.175	0.350	0.014	100%	Black	
14	0.250	0.500	0.020	100%	Black	
15	0.350	0.700	0.028	100%	Black	
16	0.065	0.130	0.005	0%	White/Mask	*
17	0.065	0.130	0.005	100%	Black	
18	0.065	0.130	0.005	80%	Black	
19	1.000	2.000	0.079	100%	Black	
20	0.350	0.700	0.028	100%	Red	* As-built
21	0.125	0.250	0.010	60%	Screened	*
22	0.175	0.350	0.014	0%	White/Mask	*
23	0.175	0.350	0.014	100%	Orange	
24	0.250	0.500	0.020	100%	Orange	
25	0.350	0.700	0.028	100%	Orange	
26	0.500	1.000	0.039	100%	Orange	
27	0.250	0.500	0.020	100%	Orange	
28	0.090	0.180	0.007	100%	Orange	
29	1.000	2.000	0.079	100%	Orange	
30	0.065	0.130	0.005	100%	Black	
31	0.090	0.180	0.007	100%	Black	
32	0.125	0.250	0.010	100%	Black	
33	0.175	0.350	0.014	100%	Black	
34	0.250	0.500	0.020	100%	Black	
35	0.350	0.700	0.028	100%	Black	
36	0.175	0.350	0.014	0%	White/Mask	*
37	0.065	0.130	0.005	100%	Black	
38	0.065	0.130	0.005	80%	Screened	
39	1.000	2.000	0.079	100%	Black	
40	0.065	0.130	0.005	0%	White/Mask	*
41	0.090	0.180	0.007	100%	Yellow	
42	0.125	0.250	0.010	100%	Yellow	
43	0.175	0.350	0.014	100%	Yellow	
44	0.250	0.500	0.020	100%	Yellow	

45	0.350	0.700	0.028	100%	Yellow	
46	0.500	1.000	0.039	100%	Yellow	
47	0.250	0.500	0.020	100%	Yellow	
48	0.090	0.180	0.007	100%	Yellow	
49	1.000	2.000	0.079	100%	Yellow	
50	0.065	0.130	0.005	100%	Black	
51	0.125	0.250	0.010	0%	White/Mask	*
52	0.125	0.250	0.010	100%	Black	
53	0.175	0.350	0.014	100%	Black	
54	0.250	0.500	0.020	100%	Black	
55	0.350	0.700	0.028	100%	Black	
56	0.250	0.500	0.020	0%	White/Mask	*
57	0.065	0.130	0.005	100%	Black	
58	0.065	0.130	0.005	80%	Screened	
59	1.000	2.000	0.079	100%	Black	
60	0.065	0.130	0.005	10%	Screened	*
61	0.125	0.250	0.010	10%	Screened	*
62	0.125	0.250	0.010	100%	Olive	
63	0.175	0.350	0.014	100%	Olive	
64	0.250	0.500	0.020	100%	Olive	
65	0.350	0.700	0.028	100%	Olive	
66	0.500	1.000	0.039	100%	Olive	
67	0.250	0.500	0.020	100%	Olive	
68	0.090	0.180	0.007	100%	Olive	
69	1.000	2.000	0.079	100%	Olive	
70	0.065	0.130	0.005	100%	Black	
71	0.090	0.180	0.007	100%	Black	
72	0.125	0.250	0.010	100%	Black	
73	0.175	0.350	0.014	100%	Black	
74	0.250	0.500	0.020	100%	Black	
75	0.350	0.700	0.028	100%	Black	
76	0.350	0.700	0.028	0%	White/Mask	*
77	0.065	0.130	0.005	100%	Black	
78	0.065	0.130	0.005	80%	Screened	
79	1.000	2.000	0.079	100%	Black	
80	0.065	0.130	0.005	100%	Green	
81	0.090	0.180	0.007	100%	Green	
82	0.125	0.250	0.010	100%	Green	
83	0.175	0.350	0.014	100%	Green	
84	0.250	0.500	0.020	100%	Green	
85	0.350	0.700	0.028	100%	Green	
86	0.500	1.000	0.039	100%	Green	
87	0.250	0.500	0.020	100%	Green	
88	0.090	0.180	0.007	100%	Green	
89	1.000	2.000	0.079	100%	Green	
90	0.065	0.130	0.005	100%	Black	
91	0.090	0.180	0.007	100%	Black	
92	0.125	0.250	0.010	100%	Black	
93	0.175	0.350	0.014	100%	Black	
94	0.250	0.500	0.020	100%	Black	

95	0.350	0.700	0.028	100%	Black	
96	0.500	1.000	0.039	0%	White/Mask	*
97	0.065	0.130	0.005	100%	Black	
98	0.065	0.130	0.005	80%	Screened	
99	1.000	2.000	0.079	100%	Black	
100	0.065	0.130	0.005	100%	Forest Green	
101	0.090	0.180	0.007	100%	Forest Green	
102	0.125	0.250	0.010	100%	Forest Green	
103	0.175	0.350	0.014	100%	Forest Green	
104	0.250	0.500	0.020	100%	Forest Green	
105	0.350	0.700	0.028	100%	Forest Green	
106	0.500	1.000	0.039	100%	Forest Green	
107	0.250	0.500	0.020	100%	Forest Green	
108	0.090	0.180	0.007	100%	Forest Green	
109	1.000	2.000	0.079	100%	Forest Green	
110	0.065	0.130	0.005	100%	Black	
111	0.090	0.180	0.007	100%	Black	
112	0.125	0.250	0.010	100%	Black	
113	0.175	0.350	0.014	100%	Black	
114	0.250	0.500	0.020	100%	Black	
115	0.350	0.700	0.028	100%	Black	
116	0.700	1.400	0.055	60%	Screened	*
117	0.065	0.130	0.005	100%	Black	
118	0.065	0.130	0.005	80%	Screened	
119	1.000	2.000	0.079	100%	Black	
120	0.065	0.130	0.005	100%	Teal	
121	0.090	0.180	0.007	100%	Teal	
122	0.125	0.250	0.010	100%	Teal	
123	0.175	0.350	0.014	100%	Teal	
124	0.250	0.500	0.020	100%	Teal	
125	0.350	0.700	0.028	100%	Teal	
126	0.500	1.000	0.039	100%	Teal	
127	0.250	0.500	0.020	100%	Teal	
128	0.090	0.180	0.007	100%	Teal	
129	1.000	2.000	0.079	100%	Teal	
130	0.065	0.130	0.005	100%	Black	
131	0.090	0.180	0.007	100%	Black	
132	0.125	0.250	0.010	100%	Black	
133	0.175	0.350	0.014	100%	Black	
134	0.250	0.500	0.020	100%	Black	
135	0.350	0.700	0.028	100%	Black	
136	0.065	0.130	0.005	0%	White/Mask	*
137	0.065	0.130	0.005	100%	Black	
138	0.065	0.130	0.005	80%	Screened	
139	1.000	2.000	0.079	100%	Black	
140	0.065	0.130	0.005	100%	Cyan	
141	0.090	0.180	0.007	100%	Cyan	
142	0.125	0.250	0.010	100%	Cyan	
143	0.175	0.350	0.014	100%	Cyan	
144	0.250	0.500	0.020	100%	Cyan	

145	0.350	0.700	0.028	100%	Cyan	
146	0.500	1.000	0.039	100%	Cyan	
147	0.250	0.500	0.020	100%	Cyan	
148	0.090	0.180	0.007	100%	Cyan	
149	1.000	2.000	0.079	100%	Cyan	
150	0.065	0.130	0.005	100%	Black	
151	0.090	0.180	0.007	100%	Black	
152	0.125	0.250	0.010	100%	Black	
153	0.175	0.350	0.014	100%	Black	
154	0.250	0.500	0.020	100%	Black	
155	0.065	0.130	0.005	0%	White/Mask	*
156	0.175	0.350	0.014	0%	White/Mask	*
157	0.065	0.130	0.005	100%	Black	
158	0.065	0.130	0.005	80%	Screened	
159	1.000	2.000	0.079	100%	Black	
160	0.065	0.130	0.005	100%	Blue	
161	0.090	0.180	0.007	100%	Blue	
162	0.125	0.250	0.010	100%	Blue	
163	0.175	0.350	0.014	100%	Blue	
164	0.250	0.500	0.020	100%	Blue	
165	0.350	0.700	0.028	100%	Blue	
166	0.500	1.000	0.039	100%	Blue	
167	0.250	0.500	0.020	100%	Blue	
168	0.090	0.180	0.007	100%	Blue	
169	1.000	2.000	0.079	100%	Blue	
170	0.065	0.130	0.005	100%	Black	
171	0.090	0.180	0.007	100%	Black	
172	0.125	0.250	0.010	100%	Black	
173	0.175	0.350	0.014	100%	Black	
174	0.350	0.700	0.028	60%	Screened	*
175	0.350	0.700	0.028	100%	Black	
176	0.250	0.500	0.020	0%	White/Mask	*
177	0.065	0.130	0.005	100%	Black	
178	0.065	0.130	0.005	80%	Screened	
179	1.000	2.000	0.079	100%	Black	
180	0.065	0.130	0.005	100%	Navy	
181	0.090	0.180	0.007	100%	Navy	
182	0.125	0.250	0.010	100%	Navy	
183	0.175	0.350	0.014	100%	Navy	
184	0.250	0.500	0.020	100%	Navy	
185	0.350	0.700	0.028	100%	Navy	
186	0.500	1.000	0.039	100%	Navy	
187	0.250	0.500	0.020	100%	Navy	
188	0.090	0.180	0.007	100%	Navy	
189	1.000	2.000	0.079	100%	Navy	
190	0.065	0.130	0.005	100%	Black	
191	0.090	0.180	0.007	100%	Black	
192	0.125	0.250	0.010	100%	Black	
193	0.175	0.350	0.014	100%	Black	
194	0.250	0.500	0.020	100%	Black	

195	0.350	0.700	0.028	100%	Black	
196	0.350	0.700	0.028	0%	White/Mask	*
197	0.065	0.130	0.005	100%	Black	
198	0.065	0.130	0.005	80%	Screened	
199	1.000	2.000	0.079	100%	Black	
200	0.065	0.130	0.005	100%	Purple	
201	0.090	0.180	0.007	100%	Purple	
202	0.125	0.250	0.010	100%	Purple	
203	0.175	0.350	0.014	100%	Purple	
204	0.250	0.500	0.020	100%	Purple	
205	0.350	0.700	0.028	100%	Purple	
206	0.500	1.000	0.039	100%	Purple	
207	0.250	0.500	0.020	100%	Purple	
208	0.090	0.180	0.007	100%	Purple	
209	1.000	2.000	0.079	100%	Purple	
210	0.065	0.130	0.005	100%	Black	
211	0.090	0.180	0.007	100%	Black	
212	0.125	0.250	0.010	100%	Black	
213	0.175	0.350	0.014	100%	Black	
214	0.250	0.500	0.020	100%	Black	
215	0.350	0.700	0.028	100%	Black	
216	0.500	1.000	0.039	0%	White/Mask	*
217	0.065	0.130	0.005	100%	Black	
218	0.065	0.130	0.005	80%	Screened	
219	1.000	2.000	0.079	100%	Black	
220	0.065	0.130	0.005	100%	Magenta	
221	0.090	0.180	0.007	100%	Magenta	
222	0.125	0.250	0.010	100%	Magenta	
223	0.175	0.350	0.014	100%	Magenta	
224	0.250	0.500	0.020	100%	Magenta	
225	0.350	0.700	0.028	100%	Magenta	
226	0.500	1.000	0.039	100%	Magenta	
227	0.250	0.500	0.020	100%	Magenta	
228	0.090	0.180	0.007	100%	Magenta	
229	1.000	2.000	0.079	100%	Magenta	
230	0.065	0.130	0.005	100%	Black	
231	0.090	0.180	0.007	100%	Black	
232	0.125	0.250	0.010	100%	Black	
233	0.175	0.350	0.014	100%	Black	
234	0.250	0.500	0.020	100%	Black	
235	0.350	0.700	0.028	100%	Black	
236	0.700	1.400	0.055	0%	White/Mask	*
237	0.065	0.130	0.005	100%	Black	
238	0.065	0.130	0.005	80%	Screened	
239	1.000	2.000	0.079	100%	Black	
240	0.065	0.130	0.005	100%	Red	
241	0.090	0.180	0.007	100%	Red	
242	0.125	0.250	0.010	100%	Red	
243	0.175	0.350	0.014	100%	Red	
244	0.250	0.500	0.020	100%	Red	

245	0.350	0.700	0.028	100%	Red	
246	0.500	1.000	0.039	100%	Red	
247	0.250	0.500	0.020	100%	Red	
248	0.090	0.180	0.007	100%	Red	
249	1.000	2.000	0.079	0%	White/Mask	*
250	0.065	0.130	0.005	100%	Black	
251	0.125	0.250	0.010	50%	Screened	*
252	0.250	0.500	0.020	50%	Screened	*
253	0.500	1.000	0.020	50%	Screened	*
254	0.250	0.500	0.020	0%	White/Mask	*
255	0.250	0.500	0.020	0%	White/Mask	*

Appendix C:
NCS LAYER NAME FIELD CODES

Layer Name Field Codes			
Discipline Designator	Description		
V	Survey		
C	Civil		
Major Group (Civil & Survey)	Description	**Minor Group** (Civil & Survey)	Description
AFLD	Airfield	**ABUT**	Abutment
BLDG	Building	**ACCS**	Access
BLIN	Faseline	**ANNO**	Notes, Callouts, Specifications
BORE	Test Borings	**ASPH**	Asphalt Surface
BRDG	Bridge	**BACK**	Back
CATV	Cable TV	**BMRK**	Benchmarks
CEME	Cemetery	**BNDY**	Boundary
CHAN	Navigable Channels	**BOLD**	Bold Lines or Text
COMM	Communications	**BORE**	Test Borings
CTRL	Control Points	**BOTD**	Bottom of Ditch
DFLD	Drain Fields	**BOTM**	Bottom
DRIV	Driveways	**BWTR**	Breakwater
DTCH	Ditches or Washes	**CARS**	Cars and Other Vehicles
EROS	Erosion and Sediment Control	**CATV**	Cable Television
ESMT	Easements	**CIPR**	Culver Inlet Protection
FENC	Fences	**CMTL**	Corrugated Metal
FIRE	Fire Protection System	**CNTE**	Construction Entrance
FLHA	Flood Hazard Area	**CNTJ**	Construction Joint
FUEL	Fuel gas	**CNTR**	Centerline
LOCN	Limits of Construction	**CONC**	Concrete Surface
NGAS	Natural Gas	**CONS**	Conservation
PERC	Perc Testing	**CSTG**	Construction / Grading
PRKG	Parking Lots	**CTLJ**	Control Joints
POND	Ponds	**CURB**	Curb
POWR	Power	**DDIV**	Drainage Divides
PROP	Property	**DECK**	Outdoor Decks
PVMT	Pavement	**DEPR**	Depression
RAIL	Railroad	**DIAG**	Diagram
RIVR	River	**DIMS**	Dimensions

Major Group	Description
ROAD	Roadways
RRAP	Riprap
SGHT	Sight Distance
SOIL	Soils
SSWR	Sanitary Sewer
STEM	Steam System
STRM	Storm Sewer
SWLK	Sidewalks
TINN	Triangulated Irregular Network
TOPO	Topography
TRAL	Trails or Paths
WALL	Walls
WATR	Water Supply Systems
WETL	Wetlands

Major Group (Survey Only)	Description
BNDY	Political Boundary
BRKL	Breakline
BRLN	Building Restriction Zone
BZNA	Buffer Zone Area
NODE	Node
RWAY	Right of Way
SITE	Site Features
SURV	Survey
UNID	Unidentified Site Objects

Minor Group	Description
DOCK	Docks, Floats, Piers
DRAN	Drainage Slope
DVDK	Diversion Dike
EDGE	Edge
ELEC	Electrical
EQPM	Equipment
EWAT	Edge of Water
EXPJ	Expansion Joint
FACE	Face
FALT	Fault / Break Line
FDPL	Flood Plain
FENC	Fence
FINE	Light Lines or Text
FIXT	Fixtures
FLNE	Fire Lane
FLYS	Fly Station
FORC	Force Main
GRAL	Guard Rail
GRID	Grid Lines
GRVL	Gravel Surface
HCPT	Horizontal Control Points
HDLN	Hidden Line
HIDD	Objects or Lines Hidden from View
HOLE	Test Holes
HVPT	Horizontal / Vertical Control Points
HWAL	Headwall
HYDR	Hydrants and Connections
INEG	Ingress / Egress
INPR	Inlet Protection
INST	Instrumentation
LATL	Lateral Line
LINE	Line
LSCP	Landscape
MAJR	Major

Minor Group	Description
MEDM	Medium Lines or Text
MHOL	Manhole
MINR	Minor
MISC	Miscellaneous
MRKG	Pavement Marking
NAID	Navigation Aids
NGAS	Natural Gas
NSBR	Noise Barrier
OBJT	Objects
OTLN	Outline
OVHD	Overhead
PATT	Hatch patterns and Textures
PERM	Permanent
PHON	Telephone Line
PIPE	Piping
PNPT	Panel Points
POLE	Pole
POST	Posts
PRCH	Porch
PRIM	Primary
PROF	Profile
RBAR	Reinforcing Bar
RCON	Reinforced Concrete
RDME	Read-me layer (not plotted)
ROAD	Roadway
RTWL	Retaining Wall
RWAY	Right of Way
SBCK	Setback
SECD	Secondary
SGHT	Sight Distance
SHEA	Structural Bearing or Shear Wall
SIGN	Signs
SILT	Silt Fence
SPOT	Spot Elevation

Minor Group	Description
SSLT	Super Silt Fence
SSWR	Sanitary Sewer
STAN	Stationing
STEL	Steel
STRC	Structures
STRM	Storm Sewer
STRP	Striping
SWAY	Spillway
SWMT	Storm Water Management
SYMB	Symbol
TANK	Storage Tank
TEMP	Temporary
TEXT	Text
TICK	Tick Marks
TOPB	Top of Bank
TOPD	Top of Ditch
TPIT	Test Pit
TRAK	Track
TRAV	Traverse
UNDR	Underground
UPVD	Unpaved Surface
UTIL	Utilities
VCPT	Vertical Control Points
VIEW	View
WATR	Water Supply
WELL	Well
WHIT	White Paint
WOOD	Wood
YELO	Yellow Paint
Minor Group (Survey Only)	Description
ACTL	Aerial Horizontal & Vertical Control Points
BENT	Top of Bent
BLIN	Baseline
BORO	Borough

Minor Group	Description
BROW	Brush row
BRSH	Brush
CABL	Cable
CITY	City
CNTL	Centerline
CNTY	County
CORP	Corporation
CTLA	Controlled Access
DASP	Description Attributes for Survey Points
DATA	Data
DRIV	Driveway
EASP	Elevation Attributes for Survey Points
FLOW	Flowline
GRND	Ground
LMTA	Limited Access
MRKR	Marker
NATL	National
PASP	Point Number Attributes for Survey Points
POLI	Political Boundary
POND	Pond
PROV	Province
QTRS	Quarter Section
ROCK	Rocks & Rock Outcroppings
RSRV	Reserve
SECT	Section boundary
SOUN	Soundings
STAT	State
SUBD	Subdivision
SXTS	Sixteenth Section
TREE	Tree
TROW	Tree row
TSHP	Township or Town
VEGE	Vegetation (trees, shrubs)
ZONE	Zoning

Appendix D:
Northern and Southcoast Region Layering Guide

DOT-NR LAYERING GUIDE

LAYERING GUIDE

Northern Region (Rev. 04/09/14)

FOR SYMBOLS, ADD MINOR GROUP "SYMB" TO END LAYER NAME (Exception - do not add "SYMB" to V-NODE layers)
FOR TEXT, ADD MINOR GROUP "TEXT" TO END OF LAYER NAME
LABELS CREATED BY CIVIL 3D ARE ON LAYERS WITH A MINOR GROUP OF "LABL". DO NOT EXPLODE THESE LABELS

DESCRIPTION		LAYER NAME	COLOR	LINETYPE
AIRPORTS				
AREA	RWY OBJECT-FREE AREA	C-AFLD-BNDY-ROFA	5	DASHED2
	RWY SAFETY AREA	C-AFLD-BNDY-RSA	5	CONTINUOUS
	TWY OBJECT-FREE AREA	C-AFLD-BNDY-TOFA	3	CONTINUOUS
	ULTIMATE RWY SAFETY AREA	C-AFLD-BNDY-URSA	5	HIDDEN2
CENTERLINE		C-AFLD-CNTR	6	CONTINUOUS
EDGE		C-AFLD-ASPH	3	CONTINUOUS
		C-AFLD-UPVD	4	CONTINUOUS
MARKING		C-AFLD-MRKG	12	CONTINUOUS
	WHITE	C-AFLD-MRKG-WHIT	4	CONTINUOUS
	YELLOW	C-AFLD-MRKG-YELO	52	CONTINUOUS
SIGN		C-AFLD-SIGN	4	CONTINUOUS
ZONE	RWY OBJECT-FREE ZONE	C-AFLD-BNDY-ROFZ	5	DASHED2
	RWY PROTECTION ZONE	C-AFLD-BNDY-RPZ	5	DASHDOT2
ROADWAY				
CENTERLINE	EXISTING CENTERLINE (Splits)	V-ROAD-CNTR	5	DASHED
	OBJECT LAYER	C-ALGN-(Align. Name, e.g., L or O)		CONTINUOUS
	CONST. CL DISPLAY LAYER	C-ROAD-CNTR	6	CONTINUOUS
	MISC. CL DISPLAY LAYER	C-ROAD-MISC	4	CONTINUOUS
	CURVE LABELS	C-ROAD-STAN-LABL	3	CONTINUOUS
	SUPERELEVATION LABELS	C-ROAD-STAN-SUPR	3	CONTINUOUS
	STATION LABELS	C-ROAD-STAN-MAJR	3	CONTINUOUS
	STATION POINTS	C-ROAD-STAN-(MAJR or MINR)	3	CONTINUOUS
DAYLIGHT	CUT	C-ROAD-CORR-DYLT-CUT	13	CSLP
		C-ROAD-CORR-DYLT	40	CONTINUOUS
	FILL	C-ROAD-CORR-DYLT-FILL	74	FSLP
EDGE	EXISTING PAVEMENT	V-ROAD-ASPH	110	XSH
	PAVEMENT	C-ROAD-ASPH	113	CONTINUOUS
	SHOULDER	V-ROAD-SHLR	130	XSH
	EXISTING SIDEWALK	V-SWLK	110	XSH
	SIDEWALK	C-SWLK	3	CONTINUOUS
MARKING		C-ROAD-MRKG	212	CONTINUOUS
	WHITE	C-ROAD-MRKG-WHIT	132	CONTINUOUS
	YELLOW	C-ROAD-MRKG-YELO	52	CONTINUOUS
IMPROVEMENTS				
DRAINAGE	EXISTING CULVERT (2D)	V-DTCH-PIPE	130	TOPO
	EXISTING CULVERT (3D)	C-DTCH-PIPE-E	130	TOPO
	CULVERT	C-DTCH-PIPE	132	CONTINUOUS
	EXISTING STRUCTURE	V-DTCH-STRC	130	TOPO
	STRUCTURE	C-DTCH-STRC	132	CONTINUOUS
	CENTERLINE	C-DTCH-CNTR	132	CENTER2

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DESCRIPTION		LAYER NAME	COLOR	LINETYPE
DRIVEWAYS	EXISTING CENTERLINE	V-DRIV-CNTR	170	DASHED
	CENTERLINE	C-DRIV-CNTR	172	CONTINUOUS
	PAVED	C-DRIV-ASPH	152	CONTINUOUS
	UNPAVED	C-DRIV-UPVD	72	CONTINUOUS
ORNAMENTAL		C-SITE-VEGE-ORNM	3	CONTINUOUS
GUARDRAIL	EXISTING	V-ROAD-GRAL	110	GUARDRAIL-EL or -ER
		C-ROAD-GRAL	3	GUARDRAIL-PL or -PR
RIPRAP		C-RRAP	3	CONTINUOUS
STRUCTURE	EXISTING CURB	V-ROAD-CURB	110	TOPO
	CURB	C-ROAD-CURB	112	CONTINUOUS
	EXISTING BRIDGE	V-BRDG	130	TOPO
	BRIDGE	C-BRDG	132	CONTINUOUS
	EXISTING BUILDING	V-BLDG	110	TOPO
	BUILDING	C-BLDG	112	CONTINUOUS
	EXISTING FENCE	V-FENC	130	FENCE-E
	FENCE	C-FENC	132	FENCE-P
	EXISTING MAILBOX	V-NODE-STRC-MB	110	TOPO
	EXISTING POST	V-NODE-STRC-POST	110	TOPO
	POST	C-SITE-POLE	3	CONTINUOUS
	EXISTING RAILROAD	V-RAIL	110	TOPO
	EXISTING SIGN	V-NODE-SIGN	110	CONTINUOUS
	SIGN	C-ROAD-SIGN	112	CONTINUOUS
TRAIL	EXISTING	V-TRAL	90	TOPO
		C-TRAL	92	CONTINUOUS
WALL		V-WALL	110	TOPO
		C-WALL	3	CONTINUOUS
	NOISE BARRIER	C-WALL-NSBR	112	CONTINUOUS
	RETAINING WALL	C-WALL-RTWL	3	CONTINUOUS
RIGHT OF WAY				
AIRPORTS	TRACTS	V-RWAY-AFLD	5	CONTINUOUS
		V-RWAY-AFLD-LBL	3	CONTINUOUS
ACCESS CONTROL		V-RWAY-CTLA	12	CA
CENTERLINE		V-RWAY-CNTR	95	CONTINUOUS
EASEMENT	EXISTING	V-RWAY-ESMT-E	52	EASEMENT-E
		V-RWAY-ESMT-N	52	EASEMENT-P
HATCHING		V-RWAY-PATT	11	CONTINUOUS
MONUMENTS	EXISTING HORZ. CONTROL	V-NODE-HCPT	3	CONTINUOUS
	EXISTING VERT. CONTROL	V-NODE-VCPT	3	CONTINUOUS
	EXISTING H&V CONTROL	V-NODE-HVPT	3	CONTINUOUS
	PROPOSED	V-RWAY-MNMT-SYMB	3	CONTINUOUS

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DESCRIPTION		LAYER NAME	COLOR	LINETYPE
PROPERTY LINE		V-RWAY-PROP	4	CONTINUOUS
SECTION LINES	SECTION	V-RWAY-SECT	72	CONTINUOUS
	1/4 LINE	V-RWAY-SECT-QTRS	72	DASHED
	1/16 LINE	V-RWAY-SECT-SXTS	72	DASHED2
TCE		V-RWAY-TCE	6	CONTINUOUS
TCP		V-RWAY-TCP	6	CONTINUOUS
TEXT	EASEMENTS	V-RWAY-LABL-ESMT	52	CONTINUOUS
	PROPERTY	V-RWAY-LABL-PROP	3	CONTINUOUS
	EXISTING ROW	V-RWAY-LABL-RWAY-E	12	CONTINUOUS
	PROPOSED	V-RWAY-LABL-RWAY-N	52	CONTINUOUS
	TCE	V-RWAY-LABL-TCE	52	CONTINUOUS
	TCP	V-RWAY-LABL-TCP	52	CONTINUOUS
SURVEY CONTROL		V-CTRL-LINE	72	DASH DOT
		V-RWAY-CTRL-SYMB	72	CONTINUOUS
RWAY LIMITS	EXISTING	V-RWAY-RWAY-E	134	CONTINUOUS
	NEW	V-RWAY-RWAY-N	6	CONTINUOUS
	PROPOSED BY DESIGN	C-RWAY-N	6	CONTINUOUS
WORKING		V-RWAY-WORK	7	CONTINUOUS
TOPOGRAPHY				
TIN/DTM		V-TINN-VIEW	1	CONTINUOUS
BOUNDARY		V-TINN-BNDY	44	CONTINUOUS
BREAK		V-TOPO-BRKL	3	CONTINUOUS
CONTOURS		V-TINN-MAJR	1	HIDDEN2
		V-TINN-MINR	50	HIDDEN2
VEGETATION	EXISTING EDGE	V-TOPO-VEGE	110	VEGETATION-L or -R
	EXISTING TREE	V-NODE-VEGE	110	CONTINUOUS
WATER	EXISTING EDGE	V-TOPO-EWAT	110	PHANTOM2
	EXISTING CENTERLINE	V-CHAN-FLOW	150	CENTER
	EXISTING MEANDER	V-CHAN-OHWM	150	BORDER2
UTILITIES				
STORM DRAIN	EXISTING PIPING (2D)	V-STRM-PIPE	130	STORM_DRAIN-EL or ER
	EXISTING PIPING (3D)	C-STRM-PIPE-E	130	TOPO
	PIPING	C-STRM-PIPE	132	CONTINUOUS
	EXISTING STRUCTURES	V-NODE-STRM	130	TOPO2
	STRUCTURES	C-STRM-STRC	132	CONTINUOUS

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DESCRIPTION		LAYER NAME	COLOR	LINETYPE
ELECTRICAL	EXISTING ELECTRIC	V-NODE-POWR	10	TOPO
	ELECTRIC	C-POWR-SYMB	12	CONTINUOUS
	EXISTING ELEC. LINE OVHD	V-POWR-LINE	10	TOPO
	ELECTRIC LINE OVHD	C-POWR-LINE	12	CONTINUOUS
	EXISTING UNDERGRND LINE	V-POWR-LINE-UNDR	10	ELEC_ND-EL or -ER
	UNDERGROUND LINE	C-POWR-LINE-UNDR	12	ELEC_ND-PL or -PR
	EXISTING LIGHTING	V-NODE-LITE	10	TOPO
	LIGHTING	C-ROAD-LITE-SYMB	12	CONTINUOUS
	EXISTING SIGNAL SYSTEM	V-NODE-SIGL	10	TOPO
	SIGNAL SYSTEM	C-ROAD-SIGL-SYMB	12	CONTINUOUS
	EXISTING RMC	V-ROAD-(LITE or SIGL)-CNDT	10	RMC_EXST
	RIGID METAL CONDUIT	C-ROAD-(LITE or SIGL)-CNDT	14	RMC_PROP
FUEL	EXISTING	V-NODE-STRC	130	TOPO
		C-FUEL-SYMB	52	CONTINUOUS
	EXISTING FUEL LINE	V-FUEL-LINE	50	OIL-E or -EB
	FUEL LINE	C-FUEL-LINE	52	OIL-P or -PB
GAS	EXISTING	V-NODE-NGAS	50	TOPO
		C-NGAS-SYMB	52	CONTINUOUS
	EXISTING GAS LINE	V-NGAS-LINE	50	GAS-EL or -ER
	GAS LINE	C-NGAS-LINE	52	GAS-PL or -PR
SANITARY SEWER	EXISTING STRUCTURES	V-NODE-SSWR	110	TOPO
	STRUCTURES	C-SSWR-STRC	112	CONTINUOUS
	EXISTING SEWER LINE	V-SSWR-LINE	110	SAN_SEWER-E or -EB
	SEWER LINE	C-SSWR-LINE	112	SAN_SEWER-P or -PB
	PIPING	C-SSWR-PIPE	112	CONTINUOUS
TELEPHONE	EXISTING	V-NODE-PHON	30	TOPO
		C-COMM-PHON-SYMB	32	CONTINUOUS
	EXIST. PHONE LINE BURIED	V-COMM-PHON-LINE-UNDR	30	TELE_ND-EL or -ER
	EXISTING PHONE LINE OVHD	V-COMM-PHON-LINE	30	TOPO
	TELEPHONE LINE BURIED	C-COMM-PHON-LINE-UNDR	32	TELE_ND-PL or -PR
	TELEPHONE LINE OVHD	V-COMM-PHON-LINE	32	CONTINUOUS
WATER	EXISTING	V-NODE-WATR	170	TOPO
		C-WATR-SYMB	172	CONTINUOUS
	EXISTING WATER-LINE	V-WATR-LINE	170	WATER_EL or _ER
	WATER-LINE	C-WATR-LINE	172	WATER_PL or _PR

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Northern Region (Rev. 04/09/14)

FOR SYMBOLS, ADD MINOR GROUP "SYMB" TO END LAYER NAME (Exception - do not add "SYMB" to V-NODE layers)
FOR TEXT, ADD MINOR GROUP "TEXT" TO END OF LAYER NAME
LABELS CREATED BY CIVIL 3D ARE ON LAYERS WITH A MINOR GROUP OF "LABL". DO NOT EXPLODE THESE LABELS

DESCRIPTION		LAYER NAME	COLOR	LINETYPE
MISCELLANEOUS				
NORTH ARROW		C-ANNO-SYMB-E	4	CONTINUOUS
DIMENSIONS		C-ANNO-DIMS	32	CONTINUOUS
HATCHING		C-ANNO-PATT	250	CONTINUOUS
LABELING	NOTE TEXT	C-ANNO-TEXT	4	CONTINUOUS
	TITLE TEXT	C-ANNO-TITL	4	CONTINUOUS
NO PLOT/REFERENCE		C-ANNO-RDME	15	CONTINUOUS
SCALE		C-ANNO-SYMB-E	4	CONTINUOUS
PE/LS SEAL		C-ANNO-SEAL	3	CONTINUOUS
TITLEBLOCK	LINES	C-ANNO-TTLB	130	CONTINUOUS
	TEXT - FINE	C-ANNO-TTLB-TEXT-FINE	130	CONTINUOUS
	TEXT - MEDIUM	C-ANNO-TTLB-TEXT-MEDM	4	CONTINUOUS
TABLES	TABLE	C-ANNO-TABL	1	CONTINUOUS
	TEXT	C-ANNO-TABL-TEXT	4	CONTINUOUS
	TITLE	C-ANNO-TABL-TITL	4	CONTINUOUS
	BORDER	C-ANNO-TABL-TTBL	174	CONTINUOUS
VIEWPORTS		C-ANNO-VFRM	135	CONTINUOUS
IMAGES		C-ANNO-IMGS	152	CONTINUOUS
X-REFS		C-ANNO-REFR	152	CONTINUOUS
DETAILS				
LINES	FINE	C-DETL-LINE-FINE	30	CONTINUOUS
	FINE-HIDDEN	C-DETL-HDLN-FINE	30	HIDDEN
	MEDIUM	C-DETL-LINE-MEDM	4	CONTINUOUS
	MEDIUM-HIDDEN	C-DETL-HDLN-MEDM	4	HIDDEN
	BOLD	C-DETL-LINE-BOLD	5	CONTINUOUS
	BOLD-HIDDEN	C-DETL-HDLN-BOLD	4	HIDDEN
	EXTRA BOLD	C-DETL-LINE-XBOLD	6	CONTINUOUS
	GEO FABRIC	C-DETL-FABRIC	6	DASHDOT2
TEXT	FINE	C-DETL-TEXT-FINE	30	CONTINUOUS
	MEDIUM	C-DETL-TEXT-MEDM	3	CONTINUOUS
HATCHING	FINE	C-DETL-PATT-FINE	190	CONTINUOUS
	MEDIUM	C-DETL-PATT-MEDM	54	CONTINUOUS
	50% SCREENING	C-DETL-PATT-SCREEN	252	CONTINUOUS
	0% SCREENING	C-DETL-PATT-MASK	255	CONTINUOUS