

OFFICE PROCEDURE NO. 8-1552-002

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OPERATIONS PLAN

SUPERSEDES ISSUE

DEPARTMENT OF TRANSPORTATION

DATED October 1980

ENGINEERING DIVISION
ACTIVE PRACTICES GUIDELINES

PAGE 1 OF 8

PREPARED BY: Maps & Records Section

EFFECTIVE: 2/2000

APPROVED BY: *MSA*
[Signature]

DATE: 2/3/2000

SUBJECT: Drafting Standards for the preparation of Project Plans.

PURPOSE: The purpose of this procedure is to establish and promote uniform guidelines and details which are to be used in the preparation of engineering plans for the City of Tucson, Engineering Division.

GENERAL: The outlined procedure shall be used in conjunction with all other City of Tucson Standard Specifications and Details. The standards shall apply to all plans being prepared by the Engineering Division, Consultants preparing plans for the Engineering Division and Consultants preparing plans for private entities that require submittal to and approval by the City of Tucson. If plans are to be submitted to the Arizona Department of Transportation, ADOT standards and details will have precedence over City of Tucson standards and details.

TYPES OF
PLANS:

1. Improvement District Project Plans

Plans for improvement districts are ordered by the Mayor and Council. Benefiting property owners within each improvement district pay for a portion of the cost of the improvement in their area. For this reason, assessment diagram plans along with the construction plans are required for the determination of the individual property owner charges.

2. Bond and non-bond Plans

These plans are usually improvements in which costs are borne by the City. The preparation of plans shall be accomplished in the same manner as improvement district plans without the necessity of an assessment diagram.

3. Arizona Department of Transportation and Federally funded project plans

These plans are for construction of arterial streets within the City of Tucson, which are designated to receive Federal aid. The City of Tucson shares in the project cost. Plans for these projects shall be drawn in accordance with first, the City of Tucson standards; and second the Arizona Department of Transportation standards - in that order of precedence. FHWA and ADOT Trac project numbers need to be shown on the plans.

If a share of the cost is to be assessed to property owners, an assessment diagram will be required.

4. Private Improvement Agreement Project Plans

These plans are drawn by consultant engineers for private developers / individuals or other concerns. If the work to be performed is within the public right-of-way, a City easement, or is so designed that drainage through or across private property affects the drainage in a public right-of-way or easement, plans for work on the right-of-way must be approved by the City Engineer and should conform to the City of Tucson standards and details as outlined in this procedure.

TYPES OF SHEETS:

1. Cover Sheet

This is to be the first sheet or sheets of a set of plans. This sheet(s) shall be 24"x36" as shown on page 6, and a title block as shown on page 7. The cover sheet will show the locations and the extent of the work to be performed and is to be drawn to the scale of 1"=100'. The cover sheet shall also show the name of the job, subdivision name, map and plat book and page, development number (if applicable), job number, plan number, sheet index, typical sections (may need additional sheets), legend for symbols, general notes and a location map at a scale of 3"= 1 mile in the upper right hand corner. Starting with the cover sheet all sheets will have a sequential page number located on the lower right hand corner (no letters).

2. Plan and Profile Sheets

A. Each sheet shall be 24"x 36" in size (see page 6) and contain borders, profile grid across the bottom portion and a title block in the lower right hand corner, see

page 7. The stationing in the profile shall line up appropriately with the stationing in the plan view above. Plan/profile sheets shall not utilize aerial photographs unless approved by the City Engineers office.

B. The plan/profile scale shall be 1"= 40' horizontal and 1"= 4' vertical unless directed otherwise by the City Engineers office. The profile grid shall contain a Plate "A" type pattern.

C. The alignment and profile of an improvement shall be produced from Existing Maps and Data. Information shall be gathered from Maps & Plats, Record of Surveys, New Survey Data, Existing Survey Field Books, Docket and Page information and other necessary sources to show the area to be improved.

D. The plan/profile shall show existing topography, culture, existing right-of-way, new right-of-way, survey control lines, existing curbs, new curbs, parcel, lot, block, subdivision name, dimensions, stationing, notes, all existing utility systems and new systems.

E. The profile portion shall show existing grades at both right-of-way lines and centerline alignment. The new grades shall be shown at centerline and both top of curb and gutter, or at edge of pavement if no curb is to be constructed. All three control lines will show elevations, stationing, percent of grade and all necessary related profiles pertaining to existing sanitary sewers, storm sewers, utilities and house floor elevations.

2. Detail Sheets

All details of manholes, drainage pipes, catch basins, other structures, and cross-sections, which are required to complete a working set of drawings shall be shown on detail sheets. These sheets shall be the same size as the plan/profile sheets. The suggested minimum scale for sections should be 1/4" = 1'. Details of reinforced concrete should be at a scale of 3/8" = 1' or larger. The scale for most details will depend on the judgment of the designer. Clarity and space for dimensions and notes should form the criteria for the proper scale.

3. Assessment Sheets

The size of assessment diagrams shall be 24"x 36" as shown on page 5. The scale of the assessment property outline shall be 1"= 100'. The positioning of the title, City Clerk's note, series number, legend, sheet number and other required information will vary according to the configuration of the property outline for each project. The City Clerk's signature is to be located to accommodate the City of Tucson pressed seal.

MYLAR: The plans, using black permanent ink, shall be produced on a high quality transparent Mylar similar or equal to K & E, 4 mil., double matte. The Mylar shall have a City of Tucson title block, and black borderlines, as shown on page 6 & 7. If the plans are to be produced electronically, Auto Cad, etc., then the mylars shall

be produced by Silver Halide photographic or Xerographic process. A reference to photographic silver process is made under 11-481.B of the Arizona Revised Statutes. Xerographic production shall only be accomplished by using the Oce 9700/9800 machine or City Engineers office approved equal. No other type of Xerographic or plotting type of process will be accepted. The city may also request the consultant to provide an electronic DXF copy of the improvement plans. The mylars shall be produced on double matte, 4mil, reverse/mirror image. Upon request, the City will furnish a 3-1/2" disc containing the standard title block, borders and plan/profile. The registrant stamp can be electronic, per the Arizona State Board of Technical Registration Rules, R4-30-304, effective May 1, 1995. Each Mylar will be signed by the registrant, using black permanent ink, and therefore become the original document for final submittal. The City's designated staff will sign the mylars for approval. After completion of the improvements, "As Built" will be performed on the mylars. The words "As Built" will be boldly placed on each sheet with a date and a note in the revision block. No erasing of the original document is allowed. Changes of stationing, grades, notes, etc. shall be lined out using black permanent ink and the new "As Built" information will be added using black permanent ink. Large areas of changes will be clouded out or whole pages can be "X" out with "As Built" pages following, using an "A, B, etc." page designation. At no time will pencil notes, lines, dimensions, etc.; be allowed on the Mylar.

LETTERING: In order to produce clear legible prints, which can be reproduced from microfilm/scanning, the lettering shall be no smaller than 1/8" in height or 0.125".

LINE WORK: The line weight shall conform to the City/County Standard Detail Manual for Public Improvement.

Lightweight lines shall be used for all dimension lines and lines from descriptive notes to objects. They shall be continuous unbroken lines. The work shall be spaced so that these lines do not pass through other notes or details.

Arrows must be small and neat. They shall be placed in such a manner that there can be no question as to the line or object to which they refer.

In order to produce clear legible prints which can be reproduced from microfilm/scanning, no size smaller than 00 pen or Auto Cad equivalent .012 inch shall be used.

Stick-on materials to delineate new or existing improvements, notes, etc. will not be allowed unless approved by the City Engineer.

Areas of new pavement shall be lightly shaded, using a red pencil, on the backside of the Mylar. Shading along the new curb or edge of pavement will be adequate. The shading shall not be placed over utility lines, dimensions, etc. that may obscure the information.

Screening of existing conditions to emphasize new improvements will not be allowed unless approved by the City Engineers office. Screening is not feasible

for reasons of microfilming or scanning of the final "As Built" plans.

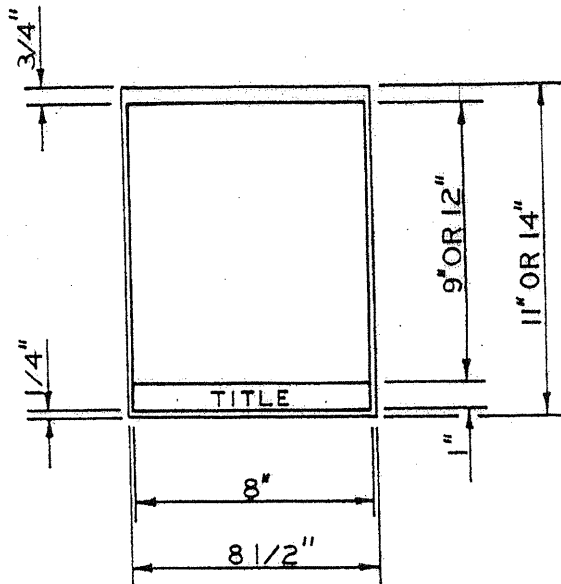
NORTH ARROW: Use the standard north arrow, as shown on page 8 on all maps, drawings and assessments diagrams. Direction of north arrow will be determined by stationing. All stationing will read from left to right.

STATIONING: All stationing on plan and profile sheets should increase as you read from Left to right. To accomplish this, (see NORTH ARROW) the survey should have increasing stationing from west to east or increasing stationing from north to south.

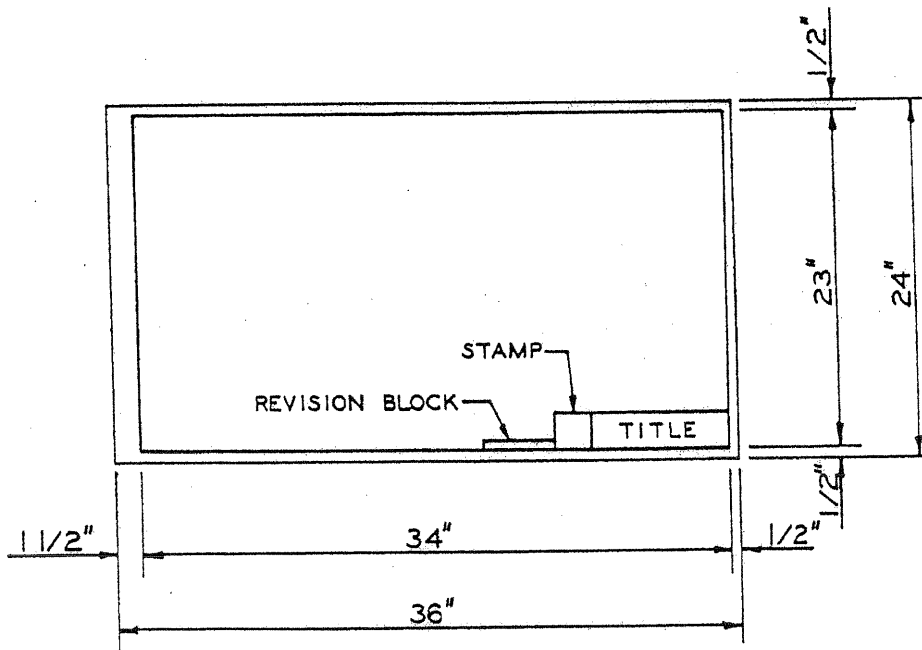
Note: If a survey is inadvertently run with increasing stationing in the wrong direction (say from south to north), the draftsman should lay out his sheet so that the stationing reads from left to right, regardless of which way the north arrow points (in this case, the north arrow would point to the right).

SYMBOLS AND

ABBREVIATIONS: Engineering Plans shall conform to the Standards found in the "City/County Standard" Detail Manual for Public Improvement, 1994 Edition.



MISCELLANEOUS MAPS
AND DRAWINGS



COVER SHEETS, PLAN, PLAN PROFILE
AND ASSESSMENT DIAGRAMS

STANDARD DRAWING SIZES

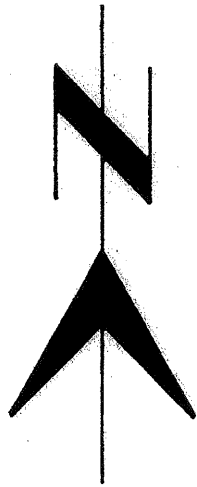
COVER SHEET

THIS AREA OPTIONAL FOR CONSULTANT'S NAME/LOGO		THIS AREA FOR CONSULTANT'S NAME/LOGO WHEN USED	
DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION TITLE 3 1/16"		DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION TITLE 3 1/16"	
APPROVED ENGINEERING ADMINISTRATOR TRAFFIC PLANNING & DESIGN ADMINISTRATOR LANDSCAPE ARCHITECT	SIGNATORY _____ _____ _____	DATE _____ 20____	APPROVED _____ 20____ OF TRANSPORTATION DIRECTOR REF. _____ SCALE: _____ PLAN NO. _____
THIS AREA FOR ENGINEER'S STAMP CITY OF TUCSON	DRWN. BY _____ 20____ DESGN. BY _____ 20____ CHKO. BY _____ 20____	2"	8 1/4"
NO. _____ DATE _____ REVISION _____ BY _____ CHKO. _____ APPR. _____	5"		

SUBSEQUENT SHEETS

THIS AREA FOR ENGINEER'S STAMP		THIS AREA FOR CONSULTANT'S NAME/LOGO WHEN USED	
DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION TITLE 2"		DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION TITLE 2"	
CITY OF TUCSON	DRWN. BY _____ DESGN. BY _____ CHKO. BY _____	REF. _____ SCALE: _____ PLAN NO. _____	1"
THIS AREA FOR ENGINEER'S STAMP	2"	8 1/4"	5"
NO. _____ DATE _____ REVISION _____ BY _____ CHKO. _____ APPR. _____	5"		

STANDARD NORTH ARROW



COVER SHEETS, PLAN, PLAN PROFILE
AND ASSESSMENT DIAGRAMS



FOR 8 1/2" X 11" OR 8 1/2" X 14"
MISCELLANEOUS MAPS AND DRAWINGS