Detroit Water and Sewerage Department
Engineering Services Group

DWSD
Drafting / CAD Standards
(VERSION 3)

Engineering Technology Team

November 2020

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Section 1

1.0 Introduction

(DWSD) has established this Policy Manual of computer-aided design and drafting (CADD) standards (DWSD CADD Standards) for use by contractors and subcontractors/sub-consultants (hereinafter collectively referred to as subcontractor or subcontractors) that work on DWSD projects. Each sub-contractor agrees to use the DWSD CADD Standards based on AutoCAD (version 2018 or later) to execute work and to follow the requirements set forth in the applicable contractor agreement. It is understood that exceptions and deviations from this Policy Manual or the DWSD CADD Standards may be necessary and desirable for some projects. The DWSD Engineering Department or the DWSD CADD Manager for that specific project shall approve any such exceptions or deviations and any such approval shall be in writing.

This Policy Manual and all documents and data files are the property of DWSD. The Policy Manual, documents and files are furnished for use solely in connection with work performed for a specific DWSD project and permission is granted only for such use. Contractor agrees not to permit third parties to copy or use Policy Manual or any document or file for any other purpose.

DWSD will provide contractors with appropriate CADD related layering guidelines, drawing templates including AutoCAD layers, general graphic drafting symbols, and appropriate project borders and title block information developed by DWSD. This material is supplied as an aid in conformance to DWSD CADD Standards and to enhance efficiency when placing DWSD standard symbology. In addition, plotter settings, standard text styles, and Sheet Number Structure will be provided to assist in placing information in the correct manner and structure.

Limited direct CADD support services are available to the subcontractor. If specifically directed by a DWSD Project Manager, consulting support will be made available and these services will be charged to the project. Contractors should contact the DWSD Project Manager for technical support information.

The CADD instructions contained herein are for use on DWSD projects only. This manual is always to be followed, with no exceptions. Permission must be granted specifically from DWSD in order to deviate from these standards. This manual may be revised at any time due to changing conditions/project requirements.

1.1 What's Available On-line

The postings are provided and updated on DWSD website. The address to the website is provided by DWSD Project Manager, and the postings online to the website are:

- AutoCAD Templates (.dwt) Used for creating NEW drawings:
    1. Survey Base Plan
    2. Proposed Water Main Design Plan
    3. Proposed Sewer Design Plan

- AutoCAD line type template file
- Plotting configuration files for plotting per DWSD standards.
- Utility Legend and Keyed Notes.

Section 2

2.1 CADD Guidelines

- ALL Model space entities to be drawn FULL scale unless noted otherwise.
- Dimensions should be associative and NOT exploded.
- ALL External references should be “OVERLAYED”.
- ALL Model space entities to be created **“Bylayer”** and not color or line type specific.
- Do not place entities on layer ‘0”.
- Use DWSD Standard symbols provided in template files.
- DWSD text and Dimension styles should be used without exception.
- Use Templates provided for creating new Drawings.

2.2 File Naming Conventions

Drawing files supplied to DWSD by the contractor should be named in accordance with the rules set out in this section.

All drawing file names must be assigned in a logical and consistent manner so any user may access the files as required. CADD user should be assigned the responsibility of maintaining consistent individual directories for each project, cataloging file names used, and verifying that the names used are consistent with these standards.

2.3 Assigning File Names

The name of a drawing file must avoid duplication within any specific project. The file naming convention has four fields. The first field is a single character representing the Discipline Designator, civil (C) or survey (V). The second field represents the category (utilities, survey, water, sewer, restoration, etc.) The third field represents the file type (Model or Sheet file). The final field identifies the location of the work represented in the drawing file, which can include Section number, neighborhood name, street name or another descriptive identifier. All fields shall be separated by a hyphen.

Example:

V-UTIL-MODEL-AREANAME.dwg
V-SURV-MODEL-AREANAME.dwg
C-WTR-MODEL-LOCATION.dwg
C-SWR-MODEL-LOCATION.dwg
C-WTR-SHEET-LOCATION.dwg
C-SWR-SHEET-LOCATION.dwg

Where external references are used, they should be included and noted. Any shape or font files, (.SHP or .SHX) that is used to create the drawing must be transmitted to DWSD along with the file. It is the responsibility of the contractor to provide DWSD with any necessary files and copyrights.

Sheet file will contain layouts for sheets and sheet numbers will be assigned utilizing the following system:

Example:

G-00	General drawings
WM-00	Water main replacement drawings
WL-00	Water main lining drawings
WMR-00	Water main restoration drawings
S-00	Sewer replacement drawings
P&MH-00	Pipe and manhole rehabilitation repairs
O&M-00	O&M pipe and manhole rehabilitation repairs
SR-00	Sewer restoration
L-00	Green Storm Sewer infrastructure
R-00	Tree planting
TP-00	Traffic plan
SD-00	Standard Details

Upon completion, all contract drawings are sealed by the responsible Professional Engineer or Architect in accordance with State licensing regulations.

Signatures and registration seals shall be on G-01 INDEX sheet before prints are ordered for bidders.

Record drawings normally do not require signatures or seals.

Upon completion of construction, the contractor shall issue to DWSD a set of plans with construction notes and changes as done in the field. Drawings to be submitted electronically.

Upon completion of all work, the words "as built" will be inserted in the revision block of every sheet in the contract. In addition to this, the words "record drawing" will be stamped on the cover sheet, in the center of the sheet if possible. Unless contractually obligated otherwise, a set of PDF drawings are then produced for the client files with the original drawings retained by DWSD.

2.4 External Reference Files

AutoCAD supports External Reference files using the “XREF” command. It permits a user to “refer” to and use a drawing file created by another discipline. When properly applied, this feature can reduce drawing production cost and eliminate some of the inter-discipline coordination required during a project.

It is beyond the scope of this document to provide detailed instructions and descriptions of all the various possibilities. Large multi-discipline projects almost always need a dedicated coordinator to resolve the common pitfalls. This dedicated coordinator should act as a file supervisor and file manager to ensure that duplicate work efforts are reduced using reference files.

Specific layers are provided within the DWSD sample drawing templates for External Reference files. (Provided by DWSD on Web site) Please use these layers when attaching Xref’s.

Example: layer **R-XREF-SURV** for survey, layer **R-XREF-WTR** for water main etc.

2.5 Layer Naming Conventions

Subcontractor MUST use the standard DWSD CADD layering convention based on the National Cad Standards with some variations for DWSD specifics when developing drawings. The layering convention, however, does allow each discipline to customize layers depending on how drawing entities need to be organized. All operators must follow the layer system designated by DWSD standards, and the DWSD Engineering Department, where required, will decide upon special customized needs, for all drawings produced on a specific project. The layering convention is based on AIA and National Cad Standards CADD Layer Guidelines – Computer-Aided Design Management Techniques for Architecture, Engineering, and Facility Management. Layer names can be found in template drawings.

2.6 Text and General Annotation

All text input into a CADD drawing file must follow the standards described in this Section. DWSD practice is to use text styles normally used in the drawing production that will be automatically created at sizes based on the DIMSCALE dimensioning variable in paper space mode.

Styles are to be defined with a fixed height and width factor of 1.00 based on paper space. This will cover most drafting needs and, when the sizes are modified to match the plotting scale.

To be consistent with general DWSD standards, all proposed text, dimensions, general notes and title block text shall be in style 'DWSD Proposed', Existing labels and dimensions shall use 'DWSD Existing'. All general notes should be placed in a layer with a modifier of ANNO. Text styles can be found in template drawings.

When text is part of the symbology for a line, such as the property line or centerline designation, it must be on the layer associated with that line, not a text layer. The color/pen weight should also be explicitly assigned so that the text will be readable on the final plot.

Use Arial type font titles and 0.3 lettering for main titles.

Example:

Title captions are underlined and are used under large views

Plan View, Profile View

2.7 Abbreviations and Spelling

All applicable abbreviations can be found on the attached plan sheets.

Always utilize abbreviations listed unless client requirements dictate otherwise.

Abbreviate words only when space is limited and only words that appear in the abbreviation legend.

Include periods when abbreviating example: ex.

Always check spelling of doubtful words with reference to the dictionary.

2.8 Dimensions

Dimension styles can be found in template files.

Dimensions are set to Annotative scale with a Dimscale of “0”.

Duplicate dimensions should be avoided. When a revision is made there is a danger of one dimension being altered and not the other.

Dimensions should be given from a base line or a finished surface that can be readily established. Dimensioning from a center line should be avoided if possible, except with pumps, piping and diverters.

The use of the drawings should determine whether decimal (normally used) or fractional dimensions are to be used. When using the decimal, usually one or two place decimals will be adequate. Where decimal dimensions are used, place a leading digit before the decimal point for clarity.

Dimension lines should be terminated by cad produced arrowheads. The arrowhead should touch the object pointing to but don’t overrun the object.

The leader is a straight line leading from dimension view, note, or nomenclature to the view on the drawing to which it applies. The leader should always touch the part referred to and terminate with an arrowhead. When the leader is leading from a note or nomenclature, it should begin at the first or last word of the note or nomenclature.

Dimension lines should be kept outside the view or outline of the part. The distance that lines are placed from the object depends upon the scale of the drawing and the space available.

Dimensions should be placed directly in the middle between the dimension line and above, midway between the arrowheads. Where space does not permit this, the dimension may be placed outside the extension lines on the line, or above the line and a leader line used.

Enough dimensions should be used to give adequate information so that it will not be necessary for those using the drawings to make calculations to determine size of location.

Avoid crossing dimension lines with extension lines or leaders wherever possible. If unavoidable, break the extension line of the least important dimension.

A dimension indicating a diameter, or hole, has DIA. after the dimension specified DRILL, BORE, etc.

The dimension of a radius should be placed between the radius line and between the arrowhead and the center of the radius wherever possible and should be followed by the letter R. On large radii or circles where it is impractical to show the full dimension lines, only part need be shown, or labeling the radius along the center line of the arc is permissible.

Add letters NTS (Not to Scale) adjacent to the appropriate dimension or directly under views sections or detail title that have dimensions that are not to scale.

2.9 Units

All civil work, including piping, site plans, and grading plans must be worked on in AutoCAD's decimal units, with the drawing unit understood as being one foot.

Angular units will need to be set as required by the needs of the individual drawing; however, zero degrees should always remain to the right. Angular precision will be left to the operator's discretion. Note that this setting only affects the way the number is displayed, not what is stored in the database, stored internally within the Drawing Database.

2.10 Line Types

All used line types are provided in the DSWD.lin line type definition file. (Provided by DWSD on Web site)

For consistency, all drawings will have an LTSCALE set to drawing scale, System Variable to be turned on, MSLSCALE=1, PSLSCALE=1. The "PSLTSCALE" variable must be set to 1 at all times to ensure that line types look consistent in view ports having different scales.

2.11 Drawing Setup and Scales

Refer to CADD layering guidelines section for appropriate layer on which the border should reside. This block will have all required drawing attribute information necessary for your specific project. This block should NOT be exploded for any reason. Refer to "Sheet Borders and Title Block info" within this document to obtain the correct Sheet border/Logo etc.

All plans, sections and details of structures shall be drawn full scale (1=1) in "Model Space or reference files". For example, a line drawn using AutoCAD showing the 200' long pipe should be measured 200' in reference drawing.

The Title Block File is also drawn at a scale of 1:1.

The scales shall be set to clearly show the necessary details. Keep in mind half size drawing reproduction.

The following scales are to be used on the types of drawings noted below:

Water Main and Sewer Replacement Plan and Profile Sheets:

Plan View:
1" = 40'

Profile View:
Horizontal – 1"=40'
Vertical – 1"=4'

Water Main Lining Sheets:
1" =40'

Water Main and Sewer Restoration Sheets:
1" =40'

All plan drawings coordinate systems shall be set to NAD83 Michigan State Planes, South Zone, International Foot. All vertical elevations shall be in City of Detroit Datum.

The direction North shall be represented on plan sheets as facing upwards or to the left. All construction stationing shall read from left to right on the sheets, directions West to East or North to South.

2.12 Plotting

Plot files will be delivered to DWSD in AutoCAD and PDF format. Settings shall be to a scale and the PDF will print to that scale.

2.13 Electronic Deliverables

When delivering electronic files to DWSD, the following guidelines should be followed:

- USB Flash Memory Drives or Portable Hard Drives are an acceptable method of transferring files. These should be labeled, and a complete list of the included files should also be sent along with the drive.

- A secure private FTP site or third-party file transfer application (Dropbox, OneDrive, etc.) may be used with engineer's approval.

- If files are to be E-mailed, a standard "ZIP" file should first be created of the files. This "ZIP" file can then be E-mailed to the appropriate personnel. All required external references, fonts, etc., should also be delivered along with the electronic drawing files. The maximum file size for this type of deliverable is 20MB. If larger then refer to one of the above methods.

2.14 Quality Control

During the Project Design milestones (60%, 90% and 100%) DWSD may perform a quality audit on pdf submittals received. This is to ensure that the DWSD standards provided are being followed as closely as possible.

Check prints shall be submitted at 30%, 60%, and 90% completion or as required.

The checker will return the marked print to the originator to have the corrections made.

All comments will be transferred to a response log (excel spreadsheet) and responses will be submitted to DWSD and discussed at a review meeting before submitting revised drawings.

DWSD will provide backcheck comments for revised 90% drawings before submitting 100% drawings.

Please refer to the DETROIT WATER AND SEWARAGE DEPARTMENT Capital Improvement Program Management Organization – Program Procedures Manual for additional quality control information.

2.15 Conclusion

This Policy Manual has been established as a guideline to be used when working on DWSD projects. These standards apply to DWSD projects only. The standards should NOT be reproduced or copied in any way without the prior express, written permission of DWSD. This Policy Manual may be updated by DWSD at any time due to changes in AutoCAD Technology or DWSD CAD standards. In the event this occurs, the revised portions will be reprinted and redistributed.

Appendix A

DWSD Standard Title Blocks

The following pages illustrate the standard title blocks used for all DWSD contract documents. Title blocks MUST be used without any modification. Any Deviation requires the permission of the DWSD Project Manager.

Drawings Sizes and Arrangement

- 8.5” x 11” For details, report figures and joint permit application drawings.
- 11” x 17” For report figures.
- 22” x 34” For construction plan sets.

Use for details, report figures and Joint Permit Application drawings
Plot scale 1:1

REV	DESCRIPTION	DATE

REVISIONS

CITY OF DETROIT

WATER AND SEWERAGE DEPARTMENT

ENGINEERING DIVISION

SCALE	SHEET
DATE	DWG. No.

For 11"x17" report figures and half size construction documents use plot scale 1:2

For 22"x34" full size construction documents use plot scale 1:1

F					DESIGNED BY: -	SEAL / STAMP	CONTRACT NAME	CONSULTANT IDENTIFICATION
E					DRAWN BY: -			
D					CHECKED BY: -		SHEET TITLE	
C					MANAGER: -			
B								
A								
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE				

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
- - -	- -	- - -	- - -	- - -

MDEQ SRF Project No. -

DRMS. No. CS-XXXX

DWSD CONTRACT No. XX-XXXX

FILE No. -

DRAWING No. XX-XXX

Appendix B

The following pages represent DWSD contract documents from selected DWSD water main and sewer projects. They are attached for reference purposes only.

Attached Water Main Design Sheets

	COVER SHEET
G-1	INDEX SHEET
G-2	SCHEDULE OF QUANTITIES
G-3	LOCATION MAP
G-4	WATER MAIN INTERVENTIONS MAP
G-5	LEGEND, ABBREVIATIONS AND GENERAL NOTES
G-6	WAYNE COUNTY NOTES
G-7	SOIL EROSION AND SEDIMENTATION CONTROL NOTES, C.E.D. NOTES AND CONTROL POINTS
WM-5	PLAN AND PROFILE SHEET – HORIZONTAL DIRECTIONAL DRILL INSTALLATION
WM-12	PLAN AND PROFILE SHEET – OPEN CUT INSTALLATION
WM-23	PLAN AND PROFILE SHEET – PIPE BURST INSTALLATION
WMR-5	RESTORATION SHEET - HORIZONTAL DIRECTIONAL DRILL INSTALLATION
WMR-12	RESTORATION SHEET - OPEN CUT INSTALLATION
WMR-23	RESTORATION SHEET - PIPE BURST INSTALLATION
SD-1	STANDARD DETAILS WATER MAIN
SD-2	STANDARD DETAILS WATER MAIN
SD-3	STANDARD DETAILS WATER MAIN
SD-4	STANDARD DETAILS SOIL EROSION AND SEDIMENTATION CONTROL
SD-5	STANDARD DETAILS SOIL EROSION AND SEDIMENTATION CONTROL
SD-6	STANDARD DETAILS RESTORATION 1
SD-7	STANDARD DETAILS RESTORATION 2
SD-8	STANDARD DETAILS RESTORATION 3
SD-9	STANDARD DETAILS RESTORATION 4
SD-10	RESTORATION TREE PLANTINGS SCHEDULE AND DETAIL
SD-11	ELECTRICAL SERVICE ENTRANCE DETAILS

Attached Sewer Design Sheets

	COVER SHEET
G-1	INDEX SHEET
G-2	SCHEDULE OF QUANTITIES
G-3	LOCATION MAP
G-4	SEWER INTERVENTIONS MAP
G-5	SEWER INTERVENTIONS MAP
G-6	ABBREVIATIONS AND GENERAL NOTES
G-7	SOIL EROSION AND SEDIMENTATION CONTROL NOTES AND C.E.D. NOTES
INDEX-P&MH	PIPE AND MANHOLE REHABILITATION REPAIRS
A-P&MH (1 of 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
A-P&MH (2 of 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
INDEX-O&M	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
A-O&M (1 of 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
A-O&M (2 of 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
S-1	EXTERNAL POINT REPAIR AND RESTORATION
TP-1	TYPICAL TRAFFIC CONTROL DETAILS
TP-2	TYPICAL TRAFFIC CONTROL DETAILS
TP-3	MAINTENANCE OF TRAFFIC INFORMATION
SD-1	STANDARD DETAILS SEWER
SD-2	STANDARD DETAILS SEWER
SD-3	STANDARD DETAILS SEWER
SD-4	STANDARD DETAILS SOIL EROSION AND SEDIMENTATION CONTROL
SD-5	STANDARD DETAILS SOIL EROSION AND SEDIMENTATION CONTROL
SD-6	STANDARD DETAILS RESTORATION
SD-7	STANDARD DETAILS RESTORATION
SD-8	STANDARD DETAILS RESTORATION
SD-9	STANDARD DETAILS RESTORATION
SD-10	RESTORATION TREE PLANTING SCHEDULE AND DETAIL

MIKE DUGGAN, MAYOR
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT ENGINEERING DIVISION

CONTRACT NO. WS-715, DWRF NO. 7483-01

WATER IMPROVEMENTS
WESTSIDE NEIGHBORHOODS
(MCNICHOLS EVERGREEN/MILLER GROVE/ MINOCK PARK/RIVERDALE/ROSEDALE PARK)

CONTRACT DRAWINGS

APRIL 27, 2020

ISSUED FOR PROCUREMENT

DETROIT
Water & Sewerage
Department

DETROIT CITY COUNCIL

BRENDA JONES, PRESIDENT
MARY SHEFFIELD, PRESIDENT PROTEM
JANEÉ AYERS, AT LARGE
ANDRÉ L. SPIVEY
JAMES TATE
SCOTT BENSON
RAQUEL CASTAÑEDA-LÓPEZ
GABE LELAND
ROY McCALISTER JR.

BOARD OF WATER COMMISSIONERS

MICHAEL EINHEUSER, CHAIRMAN
MARY E. BLACKMON, VICE CHAIRPERSON
LANE COLEMAN
JOHN HENRY DAVIS
LINDA D. FORTE
JANE C. GARCIA
JONATHAN C. KINLOCH

811 Know what's Below Call before you dig.

EXECUTIVE/ADMINISTRATIVE STAFF

GARY BROWN
DIRECTOR

PALENCIA MOBLEY, P.E.
DEPUTY DIRECTOR/CHIEF ENGINEER

MOHAMAD FARHAT, P.E.
DIRECTOR OF ENGINEERING AND CONSTRUCTION

TIMOTHY CAVITT
CHIEF OPERATING OFFICER

THOMAS NAUGHTON
CHIEF FINANCIAL OFFICER

SHEET NO.	DESCRIPTION
	COVER SHEET
G-1	INDEX SHEET
G-2	SCHEDULE OF QUANTITIES
G-3	LOCATION MAP
G-4	WATER MAIN INTERVENTIONS MAP
G-5	LEGEND, ABBREVIATIONS, AND GENERAL NOTES
G-6	WAYNE COUNTY NOTES
G-7	SOIL EROSION AND SEDIMENTATION CONTROL NOTES, C.E.D. NOTES AND CONTROL POINTS
	WATER MAIN PLAN AND PROFILE
WM-1	PLAN AND PROFILE - BURT RD. - GRAND RIVER AVE. TO MCNICHOLS RD. (MCNICHOLS EVERGREEN)
WM-2	PLAN AND PROFILE - AUBURN ST. - OUTER DRIVE TO STA 17+00 (MINOCK PARK)
WM-3	PLAN AND PROFILE - AUBURN ST. - STA 17+00 TO STA 24+00 (MINOCK PARK)
WM-4	PLAN AND PROFILE - AUBURN ST. - STA 24+00 TO STA 31+00 (MINOCK PARK)
WM-5	PLAN AND PROFILE - AUBURN ST. - STA 31+00 TO STA 38+00 (MINOCK PARK)
WM-6	PLAN AND PROFILE - AUBURN ST. - STA 38+00 TO GRAND RIVER AVE. (MINOCK PARK)
WM-7	PLAN AND PROFILE - MINOCK ST. - FENKELL AVE. TO STA 15+00 (MINOCK PARK)
WM-8	PLAN AND PROFILE - MINOCK ST. - STA 15+00 TO STA 21+00 (MINOCK PARK)
WM-9	PLAN AND PROFILE - MINOCK ST. - STA 21+00 TO STA 27+00 (MINOCK PARK)
WM-10	PLAN AND PROFILE - MINOCK ST. - STA 27+00 TO GRAND RIVER AVE. (MINOCK PARK)
WM-11	PLAN AND PROFILE - CHALFONTE AVE. - ARTESIAN ST. TO STAHELIN RD. (ROSEDALE PARK)
WM-12	PLAN AND PROFILE - PENROD ST. - LYNDON AVE. TO EATON AVE. (ROSEDALE PARK)
WM-13	PLAN AND PROFILE - RIDGE RD. - FLORENCE ST. TO STA 16+00 (RIVERDALE)
WM-14	PLAN AND PROFILE - RIDGE RD. - STA 16+00 TO RIVERDALE DR. (RIVERDALE)
WM-15	PLAN AND PROFILE - BRAMELL ST. - PURITAN AVE. TO STA 17+50 (RIVERDALE)
WM-16	PLAN AND PROFILE - BRAMELL ST. - STA 17+50 TO STA 23+50 (RIVERDALE)
WM-17	PLAN AND PROFILE - BRAMELL ST - STA 23+50 TO STA 29+50 (RIVERDALE)
WM-18	PLAN AND PROFILE - BRAMELL ST. - STA 29+50 TO MCNICHOLS RD. (RIVERDALE)
WM-19	PLAN AND PROFILE - PURITAN AVE. - BEAVERLAND ST. TO CHATHAM (RIVERDALE)
WM-20	PLAN AND PROFILE - LAMPHERE ST. - VERNE AVE. TO STA 7+50 (RIVERDALE)
WM-21	PLAN AND PROFILE - LAMPHERE ST. - STA 7+50 TO PURITAN AVE. (RIVERDALE)
WM-22	PLAN AND PROFILE - DOLPHIN ST. - GROVE ST. TO DEHNER ST. (RIVERDALE)
WM-23	PLAN AND PROFILE - VERNE AVE. - DOLPHIN ST. TO LAHSER RD. (RIVERDALE)
WM-24	PLAN AND PROFILE - BLACKSTONE ST. - GRAND RIVER AVE. TO STA 8+00 (MILLER GROVE)
WM-25	PLAN AND PROFILE - BLACKSTONE ST. - STA 8+00 TO FLORENCE ST. (MILLER GROVE)
WM-26	PLAN AND PROFILE - PURITAN AVE. - BLACKSTONE ST. TO BURT RD. (MILLER GROVE)
WM-27	PLAN AND PROFILE - BURT RD. - GRAND RIVER AVE. TO STA 6+00 (MILLER GROVE)
WM-28	PLAN AND PROFILE - BURT RD. - STA 6+00 TO FLORENCE ST. (MILLER GROVE)
WM-29	PLAN AND PROFILE - PIERSON ST. - GRAND RIVER AVE. TO STA 7+00 (MILLER GROVE)
WM-30	PLAN AND PROFILE - PIERSON ST. - STA 7+00 TO PURITAN AVE. (MILLER GROVE)
WM-31	PLAN AND PROFILE - BRAILE ST. - FLORENCE ST. TO PURITAN AVE. (MILLER GROVE)
WM-32	PLAN AND PROFILE - PATTON ST. - GRAND RIVER AVE. TO STA 6+00 (MILLER GROVE)
WM-33	PLAN AND PROFILE - PATTON ST. - STA 6+00 TO PURITAN AVE. (MILLER GROVE)
WM-34	WM SHEETS SEWER STRUCTURE DETAILS
WL-1	RELINING PLAN - SOUTHFIELD SERVICE DR. - LYNDON AVE. TO STA 23+00 (ROSEDALE PARK)
WL-2	RELINING PLAN - SOUTHFIELD SERVICE DR. - STA 23+00 TO GRAND RIVER AVE. (ROSEDALE PARK)
WL-3	RELINING PLAN - LAHSER RD. - MCNICHOLS RD. TO GROVE ST., KESSLER ST. TO PURITAN AVE. (RIVERDALE)
WL-4	RELINING PLAN - WESTBROOK ST. - VERNE AVE. TO PURITAN AVE. (MILLER GROVE)
WL-5	WL SHEETS SEWER STRUCTURE DETAILS

RESTORATION PLANS	
WMR-1	WATER MAIN RESTORATION PLAN - BURT RD. - MCNICHOLS RD. TO GRAND RIVER AVE. (MCNICHOLS EVERGREEN)
WMR-2	WATER MAIN RESTORATION PLAN - AUBURN ST. - OUTER DRIVE TO STA 17+00 (MINOCK GROVE)
WMR-3	WATER MAIN RESTORATION PLAN - AUBURN ST. - STA 17+00 TO STA 24+00 (MINOCK GROVE)
WMR-4	WATER MAIN RESTORATION PLAN - AUBURN ST. - STA 24+00 TO STA 31+00 (MINOCK GROVE)
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WMR-18	WATER MAIN RESTORATION PLAN - BRAMELL ST. - STA 29+50 TO MCNICHOLS RD. (RIVERDALE)
WMR-19	WATER MAIN RESTORATION PLAN - PURITAN AVE. - BEAVERLAND ST. TO CHATHAM (RIVERDALE)
WMR-20	WATER MAIN RESTORATION PLAN - LAMPHERE ST. - VERNE AVE. TO STA 7+50 (RIVERDALE)
WMR-21	WATER MAIN RESTORATION PLAN - LAMPHERE ST. - STA 7+50 TO PURITAN AVE. (RIVERDALE)
WMR-22	WATER MAIN RESTORATION PLAN - DOLPHIN ST. - GROVE ST. TO DEHNER ST. (RIVERDALE)
WMR-23	WATER MAIN RESTORATION PLAN - VERNE AVE. - DOLPHIN ST. TO LAHSER RD. (RIVERDALE)
WMR-24	WATER MAIN RESTORATION PLAN - BLACKSTONE ST. - GRAND RIVER AVE. TO STA 8+00 (MILLER GROVE)
WMR-25	WATER MAIN RESTORATION PLAN - BLACKSTONE ST. - STA 8+00 TO FLORENCE ST. (MILLER GROVE)
WMR-26	WATER MAIN RESTORATION PLAN - PURITAN AVE. - BLACKSTONE ST. TO BURT RD. (MILLER GROVE)
WMR-27	WATER MAIN RESTORATION PLAN - BURT RD. - GRAND RIVER AVE. TO STA 6+00 (MILLER GROVE)
WMR-28	WATER MAIN RESTORATION PLAN - BURT RD. - STA 6+00 TO FLORENCE ST. (MILLER GROVE)
WMR-29	WATER MAIN RESTORATION PLAN - PIERSON ST. - GRAND RIVER AVE. TO STA 7+00 (MILLER GROVE)
WMR-30	WATER MAIN RESTORATION PLAN - PIERSON ST. - STA 7+00 TO PURITAN AVE. (MILLER GROVE)
WMR-31	WATER MAIN RESTORATION PLAN - BRAILE ST. - FLORENCE ST. TO PURITAN AVE. (MILLER GROVE)
WMR-32	WATER MAIN RESTORATION PLAN - PATTON ST. - GRAND RIVER AVE. TO STA 6+00 (MILLER GROVE)
WMR-33	WATER MAIN RESTORATION PLAN - PATTON ST. - STA 6+00 TO PURITAN AVE. (MILLER GROVE)
WLR-1	WATER MAIN RESTORATION PLAN - SOUTHFIELD SERVICE DR. - LYNDON AVE. TO STA 23+00 (ROSEDALE PARK)
WLR-2	WATER MAIN RESTORATION PLAN - SOUTHFIELD SERVICE DR. - STA 23+00 TO GRAND RIVER AVE. (ROSEDALE PARK)
WLR-3	WATER MAIN RESTORATION PLAN - LAHSER RD. - MCNICHOLS RD. TO GROVE ST., KESSLER ST. TO PURITAN AVE. (RIVERDALE)
WLR-4	WATER MAIN RESTORATION PLAN - WESTBROOKE ST. - VERNE AVE TO PURITAN AVE. (MILLER GROVE)
	DETAILS
TP-1	TRAFFIC PLAN - TYPICAL TRAFFIC CONTROL DETAILS
TP-2	TRAFFIC PLAN - TYPICAL TRAFFIC CONTROL DETAILS
TP-3	TRAFFIC PLAN - MAINTENANCE OF TRAFFIC INFORMATION
SD-1	STANDARD DETAILS WATERMAIN
SD-2	STANDARD DETAILS WATERMAIN
SD-3	STANDARD DETAILS WATERMAIN
SD-4	STANDARD DETAILS SOIL EROSION AND SEDIMENTATION CONTROL
SD-5	STANDARD DETAILS SOIL EROSION AND SEDIMENTATION CONTROL
SD-6	STANDARD DETAILS RESTORATION-1
SD-7	STANDARD DETAILS RESTORATION-2
SD-8	STANDARD DETAILS RESTORATION-3
SD-9	STANDARD DETAILS RESTORATION-4
SD-10	RESTORATION TREE PLANTINGS SCHEDULE AND DETAIL
SD-11	ELECTRICAL SERVICE ENTRANCE DETAILS

REVIEWED AND ACCEPTED BY THE DETROIT WATER AND SEWERAGE DEPARTMENT

ENGINEER OF WATER SYSTEMS _____ DATE _____

DIRECTOR OF ENGINEERING AND CONSTRUCTION _____ DATE _____

F					
E					
D					
C					
B					
A	ISSUED FOR PROCUREMENT			4/27/20	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

DESIGNED BY:

DRAWN BY:

CHECKED BY:

MANAGER:

SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

INDEX

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

MDEQ SRF Project No. 7483-01

REF. No. CS-1812

DWSD CONTRACT No. WS-715

FILE No. -

DRAWING No. G-1

Unit		Item	Total	WM-1	WM-2	WM-3	WM-4	WM-5	WM-6	WM-7	WM-8	WM-9	WM-10	WM-11	WM-12	WM-13	WM-14	WM-15	WM-16	WM-17	WM-18	WM-19	WM-20	WM-21	WM-22	WM-23	WM-24	WM-25	WM-26	WM-27	WM-28	WM-29	WM-30	WM-31	WM-32	WM-33	WL-1	WL-2	WL-3	WL-4	Contingency
EA	28	Fire Hydrant Assembly, Rem	61	3	2	1	2	2	1	1	1	1	1	1	1	2	2	3	2	1	1		1		1	3	3	2		1	2	1	2	1	1	2	3	4	2	4	
EA	29	Fire Hydrant Assembly, Install	75	3	3	2	2	2	2	1	2	2	1	1	1	3	2	3	2	2	1	1	1	1	1	3	3	2		1	2	2	2	2	2	2	4	4	3	4	
LFT	30	Water Main, Abandon, Fill with Flowable Fill, 6 inch	3,623										250	344									702	670	527	225	47			470	388										
LFT	31	Water Main, Abandon, Fill with Flowable Fill, 8 inch	7,470	737		63										580	540	75		115		560		66			770	610				700	860	605	589	600					
EA	32	Gate Valve and Box, Rem, 6 inch	1																																					1
EA	33	Gate Valve and Box, Rem, 8 inch	1																																					1
EA	34	Gate Valve and Box, 8 inch	41		1	1	1	2	1	1	1	1	1	4	1			1	1	1	1	3	2	4	1		1	1	2	1				1	1		1	2		2	
EA	35	Gate Valve and Well, Abandon, Fill with Flowable Fill, 6 inch	7											2									1	2	2																
EA	36	Gate Valve and Well, Abandon, Fill with Flowable Fill, 8 inch	7																			1		1			2						1	1	1						
EA	37	Gate Valve and Well, Rem, 6 inch	12		1	2		1		1		1			1								1	1		2				1										
EA	38	Gate Valve and Well, Rem, 8 inch	25					1	1					2		1	1	2	1	1		2				1		1	2			1	1			1	1	2	3	
EA	39	Gate Valve and Well, 8 inch	23	1											2	1	1							1	3	3	1			1		2				1	1	4	1	
LFT	40	Water Main, Open Cut, Ductile Iron, 8 inch	6,767	58	20	231	20	83	40	20	86	70	271	137	40	600	551	207	105	120	20	111	178	272	176	165	797	65	58	149	41	700	846	46	106	89	62	62	87	78	
LFT	41	Water Main, Pipe Bursting, HDPE, 6 inch to 8 inch	4,890		680	469	680	85		480	514	530	234		730											488														
LFT	42	Water Main, Pipe Bursting, HDPE, 8 inch to 8 inch	3,583					532	491									543	495	480	540								502											
LFT	43	Water Main, Direction Drill, HDPE, 8 inch	5,956	675										276								470	619	550	384		38	554		451	366			560	494	519				
LFT	44	Water Main, Concrete Encasement	35					15				20																												
LFT	45	Water Main, Lining, 8 inch	4,390																																		1238	1161	775	1216	
EA	46	Water Main, Connect to Existing	57	2	1			2	1	1			1	4	2	1	1	1			1	2	2	4	4	3	3	1	4	1	1	1	1	2	1	1	1	1	4	2	
LFT	47	Water Main, Temporary	11,656		750	750	750	750	575	550	650	650	556		830			800	650	535	610					100												850	1300	
EA	48	Water Service, 1 inch, Short	303	1	10	11	13	16	8	13	11	10	7		19	5	6	10	11	11	9		9	6	9		10	9		6	7	8	10	15	9	11				23	
EA	49	Water Service, 1 inch, Long	282		9	14	17	12	9	8	11	7			17			12	10	11	8		11	9	3		12	11		3	8	10	11	15	8	9			5	22	
EA	50	Water Service, 1.5 inch, Short	1																																					1
EA	51	Water Service, 1.5 inch, Long	1																																					1
EA	52	Water Service, 2 inch, Short	1																																	1				
EA	53	Water Service, 3 inch	3	1																						1				1										
EA	54	Water Service, Reconnect Existing Copper Service, 1 inch	10												1	2							1	1				1		2						1		1		
EA	55	Water Service, Reconnect Existing Copper Service, 1.5 inch	2																																			1		1
EA	56	Water Service, Reconnect Existing Copper Service, 2 inch	3										1																									2		
LFT	57	Water Service, Remove and Replace Lead Service Line, 1 inch	9,785	25	300	275	325	475	275	250	325	300	175		1300	20	40	325	325	350	350		325	300	100		380	300		50	250	325	300	705	375	280			100	560	
EA	58	Water Service, Hydro-Vac	603	2	19	25	30	28	17	21	22	17	8		37	7	6	22	21	22	17		21	16	12	1	22	21		12	15	18	21	30	17	22			9	45	
EA	59	Water Service, Remove and Replace Curb Box	121																																					121
EA	60	Water Service, Remove and Replace Curb Stop	121																																					121
EA	61	Electrical Grounding System	477	2	19	25	30	28	17	21	22	17	8		37			22	21	22	17		21	16	12	1	2	21		12	15			30	17	22					
EA	62	Pitcher Style Filters and Refill Filter Cartridges	549	2	19	25	30	28	17	21	22	17	8		37	7	6	22	21	22	17		21	16	12	1	22	21		12	15	18	21	30	17	22					
LFT	63	Water Main, Hydrostatic Pressure Test	25,586	733	700	700	700	700	531	500	600	600	505	413	770	600	551	750	600	600	560	581	797	822	560	653	835	619	560	600	407	700	846	606	600	608	1300	1223	862	1294	
LFT	64	Water Main, Chlorination and Flushing	25,586	733	700	700	700	700	531	500	600	600	505	413	770	600	551	750	600	600	560	581	797	822	560	653	835	619	560	600	407	700	846	606	600	608	1300	1223	862	1294	
EA	65	Water Main, Bacteriological Test	74	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
LS	66	Permit Allowance	ALLOW																																					
LS	67	Contaminated Material Allowance	ALLOW																																					
LS	68	Provisional Allowance	ALLOW																																					

Unit		Item	Total	WMR-1	WMR-2	WMR-3	WMR-4	WMR-5	WMR-6	WMR-7	WMR-8	WMR-9	WMR-10	WMR-11	WMR-12	WMR-13	WMR-14	WMR-15	WMR-16	WMR-17	WMR-18	WMR-19	WMR-20	WMR-21	WMR-22	WMR-23	WMR-24	WMR-25	WMR-26	WMR-27	WMR-28	WMR-29	WMR-30	WMR-31	WMR-32	WMR-33	WLR-1	WLR-2	WLR-3	WLR-4	Contingency
LS	1	Mobilization/Demobilization	1																																					
LS	2	Material Testing	1																																					
LS	3	Traffic Control	1																																					
LS	4	Pre-Construction Site Documentation	1																																					
EA	5	Project Sign	4																																					
LS	6	Closeout	1																																					
SYD	7	Sidewalk, Rem	40																																					40
SYD	8	Sidewalk, Conc, 4 inch	2,444	6	53	76	88	97	54	85	121	93	235	75	108	79	17	82	58	78	47	12	86	50	56	27	34	59	21	30	47	32	47	82	76	75	39	51	27	120	20
SYD	9	Sidewalk, Conc, 6 inch	48			5				5	11		21											6																	
SYD	10	ADA Ramp, w/ Curb	438		9	16		12				15		39				35	16	33		16	17	27	36		11	21	19					16		24	31	8	5		13	20
LFT	11	Curb and Gutter, Rem	20																																						20
LFT	12	Curb and Gutter, Conc	1,408	15		15		58	51	38	34	67	37	61	9	239	112	178	60	102		55	20	20			40						14				56	77	20	10	20
SYD	13	Pavement, Rem	4,540																				33	138			655			27			1642	1867				10	18	150
SYD	14	Driveway, Conc, 6 inch	340	18	25	61	10		9	7	15		37	14	8	33	43		26					14									6				14				
SYD	15	Aggregate Base, No. 22A, 6-inch	7,642	65		78		31				85	20	14	5	264	250	338	23	19		194	95	275			1189		6				2124	2436		60			9	14	28	20
SYD	16	Concrete Base, 8 inch	564												5			34	23	19				47	52	131	17	19	7	93	12					21		9	55		20
SYD	17	Concrete Base, 10 inch	78			78																																			
SYD	18	HMA Pavement, Rem, Milling, 2 inch Depth to 4 inch Depth	3,777	99		62		29						17	39	525	370	166	40	25				77	248	144	45	20	17	1373	43					259			129		50
SYD	19	HMA Pavement, 36A, 1.5 inch	4,897	164				60						31	44	789	620	200	62	44				124	300	276	62	39	24	1467	55					280		21	184		50
SYD	20	HMA Pavement, 13A, 2 inch	5,535	236				97						46	44	1052	870	200	62	44				124	300	276	62	39	24	1467	55					280		21	184		50
SYD	21	HMA Pavement, 5E3, 2 inch	140			140																																			
SYD	22	Concrete Paving, 9 inch	6,910									85	20					304				194	95	261			1189		6				2119	2436		60			14	28	100
EA	23	Structure, Adjust Existing Casting to Grade	33	1									1			4						1		2	2		4			3			5	10							
SYD	24	Mulched Seeding	3,767	26	122	193	106	100	83	74	112	73	41	93	163	277	393	126	157	175	82	95	125	112	95	46	60	62	24	46	57	44	83	93	74	70	23	19	16	127	100
EA	25	Tree, Rem, 6 inch to 18 inch Diameter	3												1																									2
EA	26	Tree, Rem, Greater than 18 inch Diameter	2			1					1																													
EA	27	Tree, Install	5			1					1				1																									2

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A	ISSUED FOR PROCUREMENT			4/27/20	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

DESIGNED BY:

DRAWN BY:

CHECKED BY:

MANAGER:

SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

SCHEDULE OF QUANTITIES - WATER MAIN, AND RESTORATION

AECOM
400 RENAISSANCE CENTER
SUITE 2600
DETROIT, MI 48243
T. 313.309.7184

DLZ
ARCHITECTURE • ENGINEERING • PLANNING
SURVEYING • CONSTRUCTION SERVICES

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

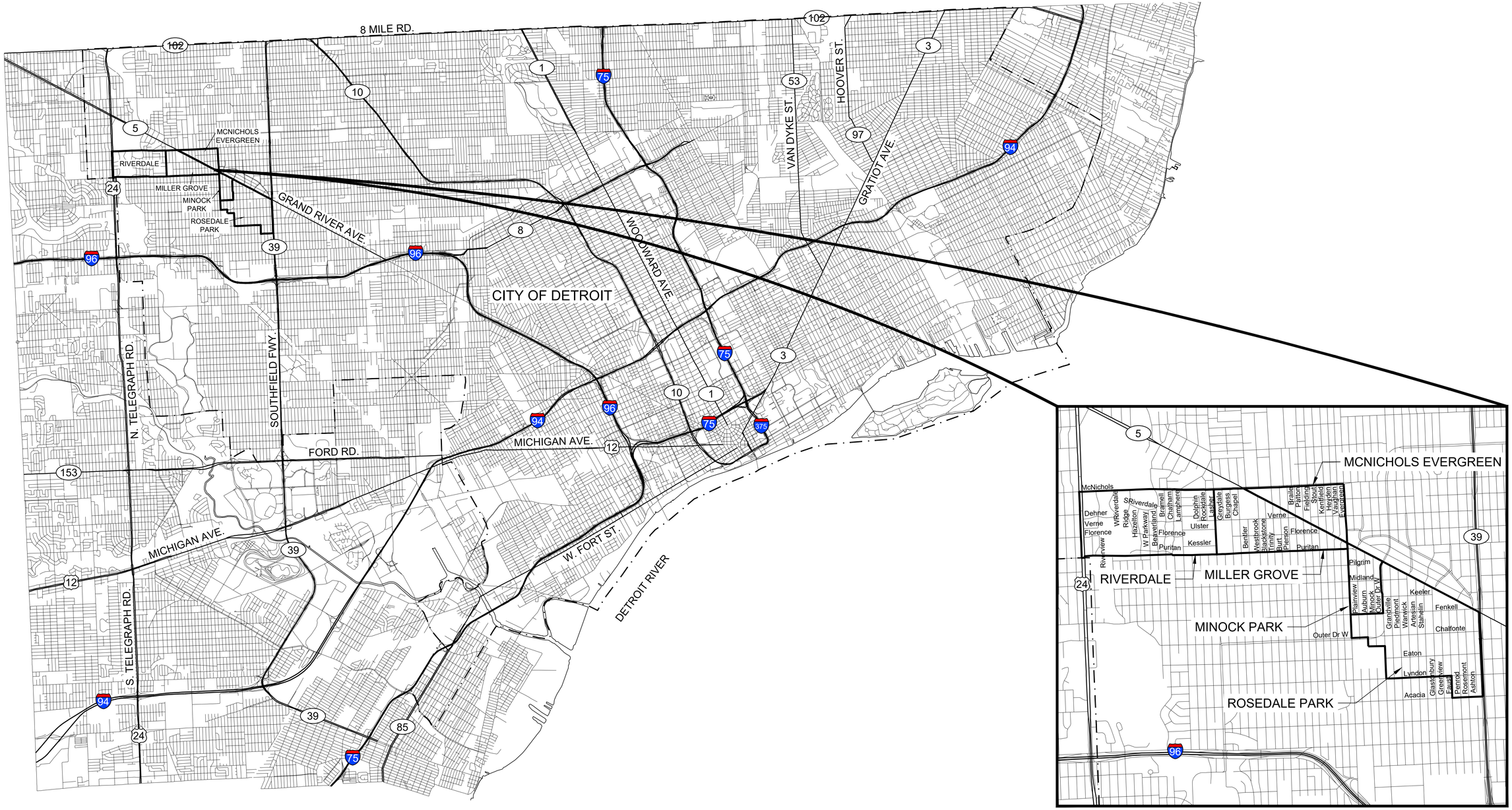
MDEQ SRF Project No. 7483-01

REF. No. CS-1812

DWSD CONTRACT No. WS-715

FILE No. -

DRAWING No. G-2



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B					CHECKED BY:	
A	ISSUED FOR PROCUREMENT			4/27/20	MANAGER:	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

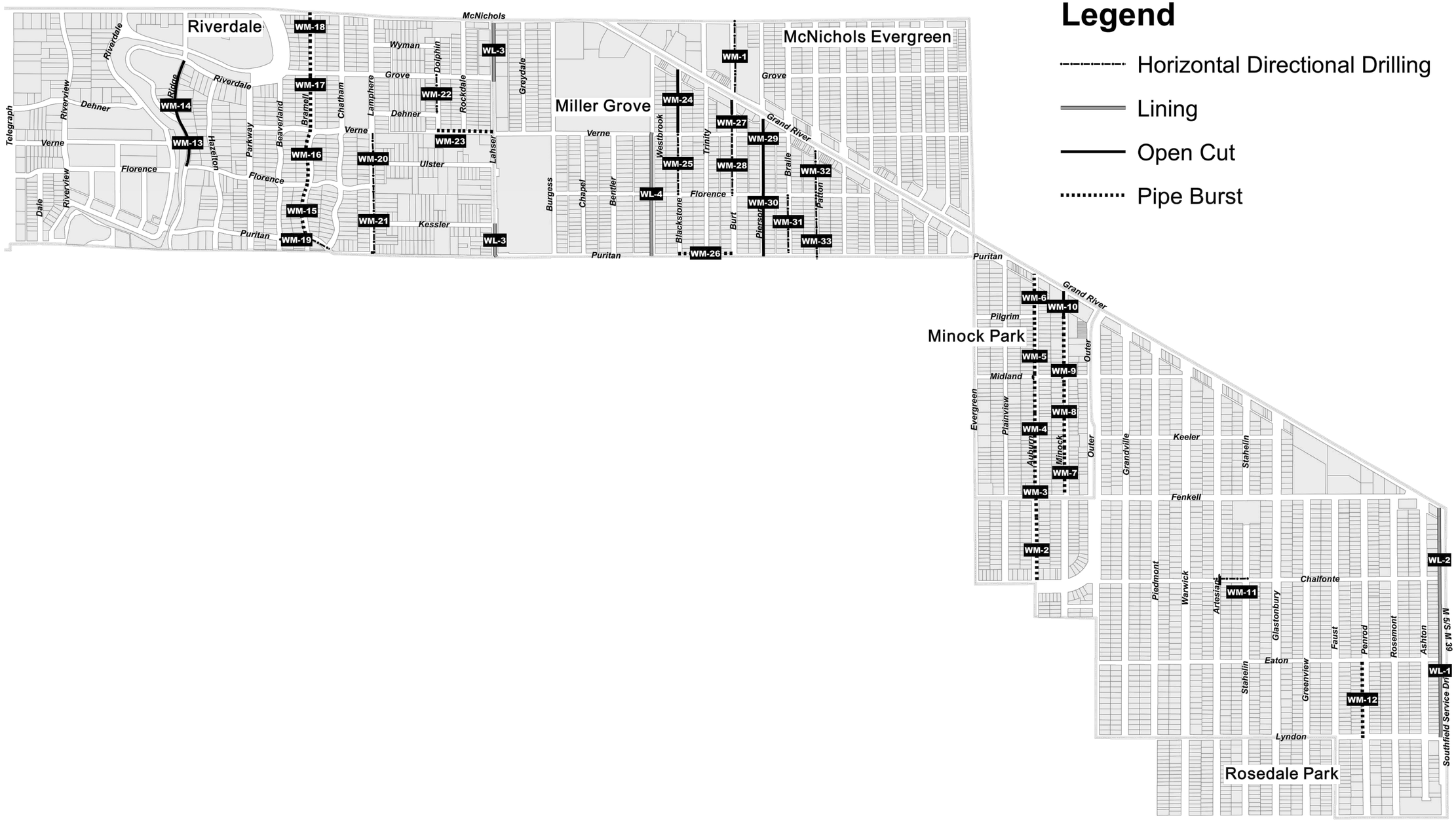
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

WESTSIDE LOCATION MAP

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

MDEQ SRF Project No.	7483-01
REF. No.	CS-1812
DWSD CONTRACT No.	WS-715
FILE No.	-
DRAWING No.	G-3



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B					CHECKED BY:	
A	ISSUED FOR PROCUREMENT			4/27/20	MANAGER:	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

WATER MAIN INTERVENTIONS MAP

AECOM
400 RENAISSANCE CENTER
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WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

MDEQ SRF Project No.	7483-01
REF. No.	CS-1812
DWSD CONTRACT No.	WS-715
FILE No.	-
DRAWING No.	G-4

LEGEND

UNDER 24" W / 24" & OVER	NEW D.I. WATER MAIN"
UNDER 24" W / 24" & OVER	EXISTING WATER MAIN
UNDER 24" W / 24" & OVER	EXIST. WATER MAIN TO BE ABANDONED
UNDER 24" W / XX 24" & OVER XX	PREVIOUSLY ABANDONED WATER MAIN
UNDER 24" W / 24" & OVER	EXISTING WATER MAIN ENCASED
	NEW GATE VALVE & WELL
XX' N.N. XX' E.W.	NEW GATE VALVE & WELL LOCATION CALL OUT XX' NORTH OF NORTH LINE/EAST OF WEST LINE ETC.
	NEW GATE VALVE & BOX
	EXISTING GATE VALVE & WELL
	EXISTING GATE VALVE & BOX
W	EXISTING WATER MANHOLE
H	EXISTING HANDHOLE
	NEW OR RELOCATED FIRE HYDRANT
	EXISTING FIRE HYDRANT
BO	EXISTING BLOW OFF
	WATER SERVICE SHUT-OFF, STOP/CURB BOX
(M) M	WATER METER, METER IN PIT
	NEW SEWER MANHOLE
UNDER 24" / 24" & OVER	NEW SEWER
UNDER 24" SA / SA 24" & OVER	EXISTING SANITARY SEWER
UNDER 24" ST / ST 24" & OVER	EXISTING STORM SEWER
STM STM	DETROIT THERMAL, LLC STEAM MAIN & MANHOLE
G G G	DTE GAS MAIN & MANHOLE
UE E UE	ELECTRICAL CONDUIT & MANHOLE
UT T UT	TELECOMMUNICATION CONDUIT & MANHOLE
P	PLA CONDUIT & MANHOLE OR HANDHOLE
FO FO	FIBER OPTIC CONDUIT
OH OH	OVERHEAD UTILITIES
[] []	FENCE
	TREES - DECIDUOUS, PINE
	STUMP
U	UTILITY POLE
	STREET LIGHT
TS	TRAFFIC SIGNAL ON LIGHT POLE
	TRAFFIC SIGNAL ON POLE OR PEDESTAL
	AERIAL TRAFFIC SIGNAL
	TRAFFIC SIGNAL CONTROLLER
	GUY POLE
CB	CATCH BASIN
	GAS DRIP OR GAS VALVE
	MAIL BOX, PARKING METER, SIGN, POST
	CONCRETE MONUMENT
CP-158	SURVEY CONTROL POINT
	D.S.R. OR RAILROAD TRACK
	CITY - COUNTY BOUNDARY LINE
	ROW - RIGHT OF WAY

ABBREVIATIONS

ASPH	ASPHALT PAVEMENT	PLA	PUBLIC LIGHTING AUTHORITY
AC	ASBESTOS CEMENT PIPE	ROW	RIGHT OF WAY
C.E.D.	CITY ENGINEERING DIVISION	SAC	ASPHALT ABOVE CONCRETE
CONC.	CONCRETE	SPL/NPL/EPL/WPL	SOUTH/NORTH/EAST/WEST
DTE/D.E. CO	DETROIT EDISON COMPANY		PROPERTY LINE
DWSD	DETROIT WATER AND SEWERAGE DEPT.	PROP.	PROPOSED
EX.	EXISTING	STM	STORM
F.G.	FINISH GROUND	UN-DEAD	UNKNOWN MATERIAL - DEAD
HORIZ..	HORIZONTAL	VERT.	VERTICAL
HDD	HORIZONTAL DIRECTIONAL DRILLING	WM	WATER MAIN
HMA	HOT MIX ASPHALT	WMR	WATER MAIN RESTORATION
HYD.	HYDRANT	WS	WATER SERVICE
I.E.	INVERT ELEVATION	WTR.	WATER

GENERAL NOTES

1. THE COORDINATES SHOWN ON THESE PLANS ARE BASED ON NORTH AMERICAN DATUM OF 1983. THE ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON CITY OF DETROIT VERTICAL DATUM.

2. A DETAILED SURVEY OF THE STREETS INVOLVED IN THIS CONTRACT HAS BEEN MADE. UNDERGROUND STRUCTURES AND UTILITIES SHOWN ARE FROM FIELD MEASUREMENTS AND INFORMATION FURNISHED TO THE ENGINEER BY THE MAJOR SERVICE COMPANIES. NO GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS.

3. THE CONTRACTOR TO VERIFY ALL EXISTING STRUCTURES AND UTILITIES IN THE FIELD PRIOR TO WORK COMMENCING.

4. BIDDER SHALL VERIFY TYPES AND LOCATIONS OF PAVEMENTS AND CURBS OF STREETS AND ALLEYS (ESPECIALLY AT INTERSECTIONS) WITH RESPECT TO THEIR INTERFERENCE WITH THE WATER MAIN REPLACEMENT AND/OR INSTALLATION AND SHALL INCLUDE COST OF CROSSING AND RESTORATION USING THE RELEVANT UNIT PRICE ITEMS.

5. ALL SIDEWALKS, DRIVEWAYS, SERVICE WALKS, CURBS, UTILITY POLES, TRAFFIC SIGNAL POLES, LIGHT POLES, TREES, LAWNS ETC., MAY NOT BE SHOWN ON THESE DRAWINGS. THE BIDDER SHALL VISIT THE PROJECT SITE AND MAKE THEIR OWN DETERMINATION OF THE SITUATION AND INCLUDE ALL WORK AND RESTORATION INVOLVING THESE IMPROVEMENTS USING THE RELEVANT UNIT PRICE ITEMS.

6. EXACT LOCATION AND DEPTH OF EXISTING WATER MAINS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.

7. WATER MAIN CONSTRUCTION OR REPLACEMENT IN CLOSE PROXIMITY TO UTILITY POLES, CATCH BASINS, TREES, ETC., MAY REQUIRE TUNNELING AND/OR THE USE OF CASING PIPES OR APPLYING BENDS TO OFFSET OBSTRUCTION. THE SUPPORT OF THESE STRUCTURES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT WORK AND THEREFORE INCLUDED IN THE UNIT PRICE OF THE PIPE INSTALLATION.

8. UNLESS OTHERWISE NOTED AND SHOWN ON THE DRAWINGS, ALL SERVICE CONNECTIONS 3 INCHES AND LARGER ON EXISTING WATER MAINS ARE ASSUMED AS TAPPING SLEEVE AND VALVE CONNECTIONS AND SHALL BE RECONNECTED TO THE NEW WATER MAIN BY INSTALLING TEES, GATE VALVES AND GATE BOXES, ALL AT THE ESTABLISHED UNIT PRICE.

9. THE CONTRACTOR SHALL REPLACE ALL EXISTING FITTINGS WITH NEW FITTINGS, AT NO ADDITIONAL COST TO THE DWSD, UNLESS OTHERWISE NOTED ON DRAWINGS.

10. ALL EXISTING FIRE HYDRANT CONNECTIONS EMPLOYING TAPPING SLEEVE AND VALVE (T.S.&V.) SHALL HAVE THEIR CONNECTION TO THE WATER MAIN REPLACED. THE CONTRACTOR SHALL RECONNECT ALL EXISTING HYDRANTS (TO REMAIN) TO THE NEW WATER MAIN BY INSTALLING/REPLACING REQUIRED TEE, GATE VALVE, GATE BOX AND WATER MAIN PIPES. TAPPING SLEEVES WILL NOT BE USED FOR HYDRANT CONNECTIONS.

11. THE CONTRACTOR SHALL REPLACE ALL SINGLE NOZZLE HYDRANTS WITH STANDARD 5-BR250 FIRE HYDRANTS, AT THE ESTABLISHED UNIT PRICE FOR FIRE HYDRANT ASSEMBLY.

12. DAMAGE TO EXISTING VALVE WELLS OCCURRING DURING PIPE AND/OR VALVE INSTALLATION SHALL BE REPAIRED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER, AT NO ADDITIONAL COST TO DWSD REPAIRING OF THE WELL SHALL INCLUDE, BUT NOT BE LIMITED TO, BRICK REPLACEMENT, REMORTARING JOINTS AND ADJUSTING THE FRAMES AND COVERS TO GRADE. WORN FRAMES AND COVERS LOCATED IN THE PAVEMENT SHALL BE EXCHANGED FOR NEW FRAMES AND COVERS PER THE STANDARD DRAWINGS. REMOVAL AND REPLACEMENT OF FRAMES AND COVERS SHALL BE REQUIRED AS DIRECTED BY THE ENGINEER. FRAMES COVERS AND VALVES SHALL BE SALVAGED AND RETURNED TO DWSD AT NO COST TO THE OWNER.

13. DWSD WATER MAIN THRUST RESTRAINT WILL BE ATTAINED WITH THE USE OF LOCKING GASKETS AS PER THE DETAILED SPECIFICATIONS. ON SOME OCCASIONS, DWSD'S STANDARD CONCRETE THRUST BLOCKS MAY BE CALLED OUT TO BE PLACED ON FITTINGS, AS NOTED ON THE DRAWINGS. IF REQUIRED, VERTICAL THRUST BLOCKS FOR TOP BENDS WILL REQUIRE REINFORCING STEEL. IF VERTICAL THRUST BLOCKS ARE APPROVED BY THE ENGINEER, THE CONTRACTOR SHALL PLACE VERTICAL THRUST BLOCKS AT ALL VERTICAL BENDS 22-1/2 DEGREES AND LARGER.

14. THE CONTRACTOR SHALL PROVIDE TEMPORARY RESTRAINTS (BRACED PLUGS, CAPS, VALVES, ETC.) AS REQUIRED TO KEEP ALL EXISTING WATER MAINS IN SERVICE OR WITH MINIMAL SHUT DOWN TIME AS DIRECTED BY THE ENGINEER, UNLESS TEMPORARY SERVICES ARE PROVIDED. THE BIDDER SHALL INCLUDE THIS WORK IN THE UNIT PRICE OF THE PIPE INSTALLATION.

15. IN COMPLIANCE WITH MICHIGAN PUBLIC ACT 53 OF THE ACTS OF 1974, THE CONTRACTOR SHALL NOTIFY, 3 WORKING DAYS (72 HOURS) IN ADVANCE OF CONSTRUCTION, ALL PUBLIC AND PRIVATE OWNERS HAVING EXISTING FACILITIES IN OR NEAR THE IMMEDIATE WORKING AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING UTILITY LOCATIONS AND NOTIFYING MISS DIG (PHONE 1-800-482-7171).

16. ALL SIDEWALK AND SIDEWALK RAMP REPLACEMENT, IN THE CITY OF DETROIT RIGHT-OF-WAY, SHALL BE ADA COMPLIANT. IN ADDITION, THE SIDEWALK CROSS SLOPE SHALL NOT BE GREATER THAN 2% AND SHALL BE SLOPED TO ASSURE DRAINAGE TO THE STREET (TRY TO MAINTAIN A MINIMUM 1% SLOPE IN THE DIRECTION OF FLOW).

17. MANHOLE COVERS, GATE BOXES, FIRE HYDRANTS AND ANY SURFACE ITEMS SHALL NOT BE LOCATED IN SIDEWALK RAMPS, LANDINGS OR CROSSWALKS. STOP BOXES SHALL BE LOCATED 1 FOOT BEYOND THE PROPERTY LINE WITHIN PROPERTY.

18. THE BIDDER'S ATTENTION IS DIRECTED TO THE SPECIFICATIONS AND STANDARD DRAWINGS FOR THE REQUIREMENTS OF THE CITY ENGINEERING DIVISION OF THE DEPARTMENT OF PUBLIC WORKS (D.P.W.), CITY OF DETROIT.

19. IF PARKING RESTRICTIONS ADJACENT TO THE CONTRACTOR'S WORK ZONE DO NOT ALLOW OVERNIGHT PARKING OR RESTRICT DAYTIME PARKING, THE CONTRACTOR SHALL PROVIDE ACCESS TO PRIVATE PROPERTIES DURING CONSTRUCTION. THIS INCLUDES, BUT IS NOT LIMITED TO, PROVIDING A TEMPORARY RAMP TO CROSS ANY TEMPORARY WATER PIPES OR EXCAVATIONS THAT MAY LIMIT ACCESS TO DRIVEWAYS.

20. THE TRAFFIC REQUIREMENTS SET FORTH BY THE CITY OF DETROIT DEPARTMENT OF PUBLIC WORKS (D.P.W.), TRAFFIC ENGINEERING DIVISION, THE WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES (WCDPS) AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION (M.D.O.T.) ARE INCLUDED IN THE CONTRACT SPECIFICATIONS. WHERE THE REQUIREMENTS CONFLICT, THE MOST STRINGENT WILL GOVERN.

21. "FIRE HYDRANT ASSEMBLY" SHALL INCLUDE FURNISHING AND INSTALLING NEW 5-BR250 FIRE HYDRANT, 6-INCH SERVICE GATE VALVE, SHOE, FROST JACKET, TEE AND ALL RELATED PIPING AND APPURTENANCES. THE CONTRACTOR SHALL ASCERTAIN THE EXACT LOCATION FOR THE NEW HYDRANT FROM THE D.F.D. AND THE ENGINEER IN SUFFICIENT TIME PRIOR TO CONSTRUCTION. THE HYDRANT TEE SHALL BE CONSIDERED INCIDENTAL WITH FIRE HYDRANT ASSEMBLY REPLACEMENT. REMOVAL AND/OR SALVAGE AND DELIVERY TO DWSD OF AN EXISTING HYDRANT SYSTEM SHALL BE AS DIRECTED BY THE ENGINEER. COSTS ASSOCIATED SHALL BE INCLUDED IN THE UNIT PRICE OF THE HYDRANT REMOVAL ITEM. NEW HYDRANTS SHALL NOT BE LOCATED BEYOND A TEN-FOOT RADIUS OF THE ORIGINAL HYDRANT LOCATION UNLESS APPROVED IN WRITING BY THE DWSD ENGINEER.

22. AT LOCATIONS WHERE THERE IS INSUFFICIENT VERTICAL (18") OR HORIZONTAL (3') CLEARANCE BETWEEN NEW WATER MAIN AND EXISTING UTILITIES, THE CONTRACTOR SHALL CONSTRUCT THE NEW WATER MAIN AS DIRECTED BY THE DWSD ENGINEER. THIS INCLUDES THE USE OF VERTICAL OR HORIZONTAL BENDS WHERE REQUIRED. THE USE OF BENDS SHALL BE INCIDENTAL TO THE WORK AND COSTS THEREFORE SHALL BE INCLUDED IN THE LINEAR FOOT UNIT PRICE OF PIPE INSTALLATION.

23. NEW WATER MAINS ARE TO BE INSTALLED AT A MINIMUM OF TEN FEET (10') HORIZONTALLY FROM SANITARY AND STORM SEWERS, WHENEVER POSSIBLE. IF TEN FEET (10') HORIZONTAL CLEARANCE CANNOT BE ATTAINED, THE NEW WATER MAIN SHALL BE INSTALLED AT THE LOCATION SHOWN ON THE PLANS, AS DIRECTED BY THE DWSD ENGINEER.

24. A MINIMUM OF 18 INCHES OF VERTICAL SEPARATION SHALL BE MAINTAINED AT ALL TIMES WHERE A WATER MAIN CROSSES A SANITARY OR STORM SEWER WITH A FULL LENGTH OF PIPE CENTERED ON THE CROSSING SO THAT JOINTS ARE AS FAR FROM THE SEWER CROSSING AS POSSIBLE TO MINIMIZE POTENTIAL FOR CROSS CONTAMINATION. ACTUAL DEPTHS OF EXISTING WATER MAINS AND SEWERS SHALL BE VERIFIED IN THE FIELD. REFER TO DETAIL NO. 312333-07.

25. THE CONTRACTOR SHALL RECONNECT ALL EXISTING DI AND COPPER SERVICES TO THE NEW WATER MAIN. FOR SERVICES THREE INCHES AND LARGER, INSTALL REQUIRED TEE, GATE VALVE, GATE BOX AND DI WATER MAIN PIPES. FOR SERVICES AT LEAST ONE INCH AND SMALLER THAN THREE INCHES, INSTALL CORPORATION STOP AND COPPER TUBING. FOR SERVICES SMALLER THAN ONE INCH, INSTALL CORPORATION STOP, ONE INCH COPPER TUBING AND REDUCER.

26. EXISTING WATER MAINS ARE TO BE REPLACED ACCORDING TO THE SIZE AND MATERIAL SHOWN IN THE SPECIFICATIONS AND ON THE DRAWINGS, AND DUCTILE IRON WATER MAINS ARE TO BE INSTALLED WITH AN 8-MIL POLYETHYLENE WRAP.

27. THE MINIMUM BURIAL DEPTH FOR NEW WATER MAIN SHOULD NOT BE LESS THAN 5 FEET TO PROTECT FROM FREEZING. IF THE BURIAL DEPTH WILL BE LESS THAN 5 FEET, THE OWNER SHALL BE NOTIFIED AND OTHER MEANS OF INSULATION SHOULD BE USED. THE FORM OF INSULATION AND LOCATION OF INSTALLATION MAY OR MAY NOT BE INDICATED ON THE DRAWINGS. REFER TO DWSD'S STANDARD DETAIL FOR WATER MAIN TRENCH INSULATION.

28. EXISTING WATER MAINS TO BE CUT AND ABANDONED FOR NEW WATER MAIN CONSTRUCTION SHALL BE BULK HEADED AND FILLED WITH FLOWABLE FILL PER THE DETAILED SPECIFICATIONS.

29. THE CONTRACTOR IS REFERRED TO THE DETAILED SPECIFICATIONS REGARDING "SHEETING AND BRACING" REQUIREMENTS. THE CONTRACTOR SHALL PROVIDE SHEETING AND BRACING TO PROTECT ADJACENT PAVEMENT, CURBS, SIDEWALKS, PIPELINES, CONDUITS, THE WORK AND PERSONNEL. THE CONTRACTOR SHALL BE TOTALLY RESPONSIBLE FOR ANY AND ALL DAMAGES AND INJURIES RESULTING FROM A FAILURE TO PROVIDE ADEQUATE SHEETING AND BRACING, AT NO ADDITIONAL COST TO DWSD

30. IF A CRANE, BACKHOE OR A BOOM WILL BE USED IN THE VICINITY OF DETROIT EDISON OVERHEAD LINES, THE DETROIT EDISON COMPANY MUST BE NOTIFIED THREE WORKING DAYS PRIOR TO SUCH USE.

31. THE CONTRACTOR SHALL EXPOSE EXISTING WATER MAINS AT POINTS OF CONNECTION AND VERIFY THEIR LOCATION AND ELEVATION PRIOR TO PIPE LAYING.

32. THE CONTRACTOR SHALL CUT AND CAP OR PLUG EXISTING WATER MAINS TO REMAIN IN SERVICE WHERE REQUIRED.

33. ALL 4" C.I. BLOW-OFF ASSEMBLIES, C.I. PLUGS AND CAPS TO BE INSTALLED AND/OR REMOVED BY THE CONTRACTOR HAVE NOT BEEN SHOWN ON THE DRAWINGS.

34. THE DRAWINGS INDICATE THE ARRANGEMENT, GENERAL DESIGN AND EXTENT OF THE WATER MAIN ALTERATIONS. THE MAINS AND CONNECTIONS ARE SHOWN, MORE OR LESS, IN DIAGRAM AND IN THEIR GENERAL LOCATIONS, EXCEPT WHERE IN CERTAIN CASES THE DRAWINGS MAY INCLUDE DETAILS GIVING THE EXACT LOCATION AND ARRANGEMENT. DUE TO THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, VALVES AND ACCESSORIES THAT ARE REQUIRED. THE CONTRACTOR SHALL CAREFULLY INVESTIGATE THE STRUCTURAL AND OTHER CONDITIONS AFFECTING ALL THE WORK AND SHALL ARRANGE AND PERFORM HIS WORK UNDER THIS CONTRACT ACCORDINGLY, FURNISHING AND INSTALLING SUCH ITEMS OF MATERIAL AS MAY BE REQUIRED TO MEET SUCH CONDITIONS.

35. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING SEWERS, WATER MAINS, DRAINS AND DRAINAGE DITCHES INCLUDING ANY PUBLIC OR PRIVATE UTILITY, OVERHEAD OR UNDERGROUND, BY THE MEANS OF POTHOLING OR OTHER METHODS. IF ANY UTILITIES ARE DAMAGED DURING CONSTRUCTION THEY SHALL BE RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY, TO THE SATISFACTION OF THE ENGINEER, THE UTILITY OWNER AND THE AUTHORITIES HAVING JURISDICTION.

36. ALL PREVIOUSLY ABANDONED OR LIVE UTILITIES, WATER MAINS, STORM SEWERS, AND COMBINED SEWERS MAY NOT BE SHOWN ON THE DRAWINGS. NO GUARANTEE IS MADE AS TO THEIR ACCURACY OR COMPLETENESS. SHOULD THE CONTRACTOR NEED MORE INFORMATION, A TIMELY REQUEST TO INDIVIDUAL UTILITY COMPANIES FOR THEIR FACILITY INFORMATION AND DWSD FOR WATER AND SEWER INFORMATION SHOULD BE MADE.

37. REFER TO SOIL EROSION AND SEDIMENTATION CONTROL NOTES ON G-10.

38. CURB OR CURB AND GUTTER CALLED OUT TO BE INSTALLED SHALL BE PLACED PER THE CITY OF DETROIT'S STANDARD DETAIL INCLUDED IN THESE PLANS.

39. FOR RESTORATION ITEMS, MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CITY OF DETROIT DEPARTMENT OF PUBLIC WORKS CITY ENGINEERING DIVISION STANDARD SPECIFICATIONS FOR PAVING AND RELATED CONSTRUCTION AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS AND SPECIFICATIONS.

40. CONTRACTOR IS ADVISED THAT THE MAXIMUM PAYMENT DIMENSIONS FOR ACCESS PITS ASSOCIATED WITH LINING OF EXISTING WATER MAINS IS 10-FT BY 10-FT, THE MAXIMUM PAYMENT DIMENSION FOR ACCESS PITS ASSOCIATED WITH HORIZONTAL DIRECTIONAL DRILLING IS 10-FT BY 5-FT, AND THE MAXIMUM PAYMENT DIMENSION FOR ACCESS PITS ASSOCIATED WITH PIPE BURSTING IS 20-FT BY 8-FT, OR AS INDICATED ON THE DRAWINGS. IF CONTRACTOR'S ACCESS PITS EXCEED THESE PLAN AREAS, THE ASSOCIATED RESTORATION TO CONDITIONS STATED ON THE DRAWINGS FOR THESE AREAS OUTSIDE THE MAXIMUM PAYMENT DIMENSIONS WILL BE AT NO COST TO THE OWNER. ALL OTHER RESTORATION LIMITS ARE AS SHOWN ON THE RESTORATION DRAWINGS.

41. ACCESS PITS FOR TRENCHLESS INSTALLATIONS SHOWN ON THE DRAWINGS INDICATE THE ANTICIPATED LOCATIONS OF THE PITS BASED ON ENGINEERING JUDGEMENT. HOWEVER, ACTUAL LOCATIONS, NUMBER AND SIZING OF ACCESS PITS SHALL BE DETERMINED BY THE CONTRACTOR AND BASED ON CHOSEN MEANS AND METHODS FOR INSTALLATION OF PROPOSED IMPROVEMENTS. CONTRACTOR IS RESPONSIBLE FOR SIZING, SPACING AND ASSOCIATED RESTORATION OF ACCESS PITS, AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.

42. THE CONTRACTOR IS TO COMPLETE ALL SURFACE RESTORATION PRIOR TO SUBSTANTIAL COMPLETION. IF TEMPORARY RESTORATION CONDITIONS EXIST THROUGH THE WINTER, OR LONGER THAN 6 WEEKS, COLD PATCHES/TEMPORARY PAVEMENTS ARE PERMITTED AS DIRECTED BY THE ENGINEER. ALSO REFER TO AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE), BOOK 1 OF BIDDING DOCUMENTS CONTRACT TIMES FOR HARD SURFACE RESTORATION.

43. COORDINATE SHUTDOWN OF THE EXISTING WATER MAIN WITH THE OWNER/ENGINEER A MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE. IN ORDER TO MAKE CONNECTION AND INSTALL NEW VALVES, THE EXISTING MAIN MAY ONLY BE SHUT-DOWN FOR A MAXIMUM OF TEN (10) HOURS. NO ADDITIONAL SHUTDOWNS ARE PERMITTED UNLESS APPROVED IN WRITING BY THE OWNER. CONTRACTOR IS NOT ALLOWED TO PROCEED WITH A SHUT-DOWN OF ANY EXISTING WATER MAIN WITHOUT WRITTEN APPROVAL OF THE SHUT-DOWN REQUEST PLAN.

44. CONTRACTOR IS RESPONSIBLE FOR ANY NECESSARY REPAIRS TO PRIVATE PROPERTIES THAT ARE MADE TO ACCOMMODATE CONSTRUCTION OF PROPOSED IMPROVEMENTS, AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.

45. CONTRACTOR TO PERFORM WORK IN ACCORDANCE WITH THE STANDARD DETAILS AND SPECIFICATIONS INCLUDED IN THE CONTRACT DOCUMENTS.

46. STANDARD DETAILS SHOWN ON THE STANDARD DETAIL (SD) DRAWINGS SHALL BE APPLIED FOR ALL NEW CONSTRUCTION.

47. DETAILS AND INFORMATION SHOWN ON THE TRAFFIC PLANNING (TP) DRAWINGS SHALL BE APPLIED FOR ALL NEW CONSTRUCTION AND RESTORATION.

48. STANDARD DETAILS SHOWN ON THE DRAWING SD-11 SHALL BE APPLIED FOR ALL SERVICE CONNECTIONS CONNECTED TO HDPE WATER MAIN AND CONNECTED TO ISOLATED LENGTHS OF D.I. WATER MAIN (D.I. WATER MAIN CONNECTED TO HDPE WATER MAIN ON BOTH ENDS).

F					DESIGNED BY:	SEAL / STAMP
E						
D					DRAWN BY:	
C						
B					CHECKED BY:	
A	ISSUED FOR PROCUREMENT			4/27/20		
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	MANAGER:	

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

LEGEND, ABBREVIATIONS, AND GENERAL NOTES

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-715
FILE No. -
DRAWING No. G-5

WAYNE COUNTY (W.C.D.P.S.) NOTES

ALL WORK WITHIN WAYNE COUNTY'S JURISDICTION SHALL BE DONE AS DIRECTED BY THE WAYNE COUNTY ENGINEER,
CURRENT WAYNE COUNTY SPECIFICATIONS AND STANDARDS SHALL APPLY WHERE DIFFERENT FROM THESE NOTES AT THE TIME OF CONSTRUCTION.

1. TRAFFIC CONTROL NOTES:

A. SEE TRAFFIC RESTRICTIONS IN SPECIFICATIONS.

B. ONE LANE OF THROUGH TRAFFIC SHALL BE MAINTAINED IN EACH DIRECTION AT ALL TIMES.

C. AT SIGNALIZED INTERSECTIONS, WHERE A CENTER LEFT-TURN-LANE IS PROVIDED, ONE LANE OF THROUGH TRAFFIC AND A LEFT-TURN-LANE SHALL BE MAINTAINED IN ALL DIRECTIONS WITHIN 250 FEET OF THESE INTERSECTIONS AT ALL TIMES.

D. ALL TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED, INSTALLED, AND/OR SALVAGED AND RESET IN ACCORDANCE WITH CURRENT M.D.O.T. STANDARDS AND SPECIFICATIONS.

E. THE REMOVAL AND INSTALLATION OF PAVEMENT MARKINGS SHALL ALSO CONFORM TO THE CURRENT M.D.O.T. STANDARDS AND SPECIFICATIONS

F. ALL CHARGES INCURRED BY THE DEPARTMENT TO REPLACE AND/OR MAINTAIN TRAFFIC CONTROL ITEMS REMOVED AND NOT REPLACED BY THE CONTRACTOR, WILL BE BILLED TO THE CONTRACTOR.

G. ALL CONSTRUCTION STAGING AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).

2. EXISTING UTILITIES:

A. ALL UTILITIES, INCLUDING DRAINAGE FACILITIES, SHALL BE LOCATED PRIOR TO EXCAVATION IN THE W.C.D.P.S. RIGHT-OF-WAY.

B. M.D.O.T. FACILITIES ARE NOT LOCATED THROUGH THE MISS DIG SYSTEM.

3. EXISTING SIGNS:

A. APPLICABLE WARNING, REGULATORY, AND GUIDE SIGNS SHALL NOT BE REMOVED, BUT SHALL BE RETAINED DURING THE PROGRESS OF THE WORK IN THEIR EXISTING LOCATION UNLESS OTHERWISE DIRECTED BY W.C.D.P.S. OR ITS INSPECTOR.

B. ALL SIGNS REQUIRING RELOCATION DUE TO THE CONTRACTOR'S OPERATIONS SHALL BE SALVAGED, AS PER THE CURRENT VERSION OF THE M.D.O.T. STANDARD SPECIFICATIONS FOR CONSTRUCTION, AND REINSTALLED BY THE CONTRACTOR AT THE ORIGINAL LOCATION UNLESS OTHERWISE DIRECTED BY M.D.O.T. OR THEIR INSPECTING AGENCY, OR THE COUNTY ENGINEER.

C. SALVAGED SIGNS SHALL BE RE-INSTALLED NO LATER THAN ONE (1) DAY AFTER THE COMPLETION OF THE WORK OR THIRTY (30) DAYS AFTER THEIR REMOVAL, WHICHEVER OCCURS FIRST.

4. PEDESTRIAN TRAFFIC:

A. SAFE AND ADEQUATE TRAVEL ROUTE FOR PEDESTRIANS SHALL BE MAINTAINED AT ALL TIMES THROUGHOUT THE PROJECT.

B. THE CONTRACTOR SHALL SUBMIT A PEDESTRIAN TRAFFIC PLAN TO THE W.C.D.P.S. DISTRICT TRAFFIC AND SAFETY DIVISION FOR REVIEW AND APPROVAL PRIOR TO STARTING CONSTRUCTION.

C. PEDESTRIANS SHALL NOT BE DETOURED INTO THE EXISTING ROADWAY. INDICATE THE METHODS OF MAINTAINING PEDESTRIAN TRAFFIC THROUGH THE WORK AREA, WHEN APPLICABLE.

5. WAYNE COUNTY DPS GENERAL NOTES:

A. ALL WORK WITHIN THE WAYNE COUNTY ROAD RIGHT-OF-WAY (ROW) AND DRAIN EASEMENT SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND GENERAL SPECIFICATION, INCLUDING SOIL EROSION AND SEDIMENTATION CONTROL OF THE WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES, AND M.D.O.T. 2012, OR LATEST VERSION, SPECIFICATION FOR CONSTRUCTION.

B. THESE PLANS ARE NOT VALID WITHOUT ATTACHMENT OF THE WAYNE COUNTY PERMIT SPECIFICATIONS FOR CONSTRUCTION WITHIN ROAD ROW, PARKS, DRAIN EASEMENTS OR SANITARY SEWER UNDER THE JURISDICTION OF WAYNE COUNTY. (07/01/93) REVISED 12-15-2004.

C. CONTRACTOR SHALL CONTACT MISS DIG AT 811 TO IDENTIFY AND FLAG/MARK THE LOCATIONS OF ALL UNDERGROUND UTILITIES AT THE PROPOSED CONSTRUCTION AREAS PRIOR TO START OF CONSTRUCTION, AND SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS OF ALL UNDERGROUND UTILITIES, AND RESOLVE ANY CONFLICT BETWEEN THE PROPOSED WORK AND THE EXISTING UNDERGROUND OR ABOVEGROUND UTILITIES.

D. CONTRACTOR SHALL MAINTAIN 18" MINIMUM VERTICAL CLEARANCE AND 3 FEET MINIMUM HORIZONTAL CLEARANCE BETWEEN THE PROPOSED AND EXISTING UTILITIES. ANY PROPOSED UTILITIES PERMITTED TO CROSS UNDER THE ROAD OR DRAIN, MUST BE PLACED A MINIMUM OF 7 FEET BELOW THE LOWEST POINT OF ROAD, OR 6 FEET BELOW THE DRAIN BOTTOM. OVERHEAD WIRES/CABLES MUST BE INSTALLED 18 FEET MINIMUM ABOVE THE ROAD CENTERLINE. TO RELOCATE ANY UTILITY WITHIN THE ROAD ROW, THE CONTRACTOR SHALL COORDINATE THE RELOCATION WITH THE UTILITY COMPANY AND AS DIRECTED BY THE WAYNE COUNTY ENGINEER.

E. ALL SURVEY MONUMENTS/CORNERS AND BENCH MARKS LOCATED WITHIN THE CONSTRUCTION AREA MUST BE PRESERVED IN ACCORDANCE WITH PUBLIC ACT 74 AS AMENDED(INCLUDING ACT 34,P.A. 2000) AND AS PER WAYNE COUNTY PERMIT RULE 1.5. THE PERMIT HOLDER AND CONTRACTOR SHALL COORDINATE THE WORK WITH A PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF MICHIGAN DURING CONSTRUCTION ACTIVITIES FOR THE PURPOSE OF WITNESSING PRESERVING OR REPLACING SURVEY MONUMENTS AND MONUMENT BOXES.

F. EXPOSURE OF ANY UTILITIES UNDER THE PAVEMENT WILL NOT BE PERMITTED, UNLESS APPROVED BY THE WAYNE COUNTY ENGINEER. PAVEMENT REMOVAL AND REPLACEMENT SHALL BE PERFORMED PER APPLICABLE WAYNE COUNTY STANDARD DETAILS AN AS DIRECTED BY THE WAYNE COUNTY ENGINEER.

G. CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS WITHIN THE WAYNE COUNTY ROAD ROW AND DRAIN EASEMENT WITH 3" TOPSOIL, THM SEED MIX AND MULCH. SLOPES STEEPER THAN 1 ON 3 SHALL BE RESTORED BY PLACING SOD ON 2" TOPSOIL.

H. ALL BACKFILLS UNDER OR WITHIN 3 FEET OF THE PROPOSED OR EXISTING PAVEMENT, CURB OR SIDEWALK SHALL CONFORM TO THE WAYNE COUNTY TRENCH "B" BACKFILL REQUIREMENTS. TRENCH "A" BACKFILL MAY BE USED WITHIN THE ROAD ROW AREAS UNDER CONDITIONS OTHER THAN THOSE SPECIFIED FOR TRENCH "B".

I. CONTRACTOR IS RESPONSIBLE FOR RESTORING OR REPLACING ALL DISTURBED LANDSCAPED AREAS, SPRINKLER SYSTEMS, FENCES, SIGNS, MAIL BOXES, ETC. WITHIN THE WAYNE COUNTY ROAD ROW AND/OR AS DIRECTED BY THE COUNTY ENGINEER.

J. CONTRACTOR SHALL MAINTAIN TWO-WAY TRAFFIC AT ALL TIMES. OTHERWISE, DETOURING TRAFFIC MUST BE PER APPROVED PLANS. ALL SIGNING AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF M.M.U.T.C.D.

K. BEFORE PLACEMENT OF AGGREGATE BASE, WAYNE COUNTY TESTING AND INSPECTION OFFICE WILL INSPECT THE SUB-BASE AND MAY RECOMMEND UNDERCUTTING, WHICH IS TO BE BACK FILLED WITH APPROVED MATERIAL (C.I.P).

L. OVERNIGHT VEHICLE PARKING AND STORAGE OF CONSTRUCTION MATERIALS AND EQUIPMENT ARE NOT PERMITTED WITHIN THE WAYNE COUNTY ROADS RIGHT-OF-WAY.

M. CONTRACTOR SHALL NOTIFY THE WAYNE COUNTY TRAFFIC SIGNAL SHOP AT (734)955-2154 AT LEAST 72 HOURS PRIOR TO START OF WORK AT OR NEAR ANY SIGNALIZED INTERSECTIONS.

N. CONTRACTOR SHALL NOTIFY WAYNE COUNTY 72 HOURS PRIOR TO START OF CONSTRUCTION. CONTACT FLOYD SPANN AT (734)858-2764.

O. MAINTAIN A SAFE AND ADEQUATE TRAVEL ROUTE FOR PEDESTRIANS AT ALL TIMES THROUGHOUT THE PROJECT DURATION.

P. REMOVE ALL ABANDONED UNUSED WATER MAIN FROM THE COUNTY ROADS ROW OR AS DIRECTED BY THE WAYNE COUNTY ENGINEER.

Q. THE WAYNE COUNTY ENGINEER SHALL DETERMINE IF WEATHER LIMITATIONS ALLOW FOR PAVEMENT REMOVAL AND/OR MAY REQUIRE TEMPORARILY PAVEMENT.

R. FOR TEMPORARILY PAVEMENT REPLACEMENT OF ROADS AND/OR DRIVE APPROACHES, THE PAVEMENT MUST INCLUDE 3" OF COLD PATCH OR H.M.A. UNTIL PERMANENT REPAIR IS DONE. THESE PAVEMENTS MUST BE MAINTAINED BY PERMIT HOLDER OR THEIR REPRESENTATIVE.

S. FOR PERMANENT PAVEMENT REPLACEMENT, PROVIDE COLD WEATHER CONCRETE PROTECTION AS SPECIFY PER WAYNE COUNTY SPECIFICATION AND M.D.O.T. REQUIREMENT.

6. WATER MAIN CONSTRUCTION:

A. ALL OPEN CUTS SHALL BE PLATED DURING NON-WORKING HOURS OR AS DIRECTED BY THE COUNTY ENGINEER.

B. ALL OPEN CUT TRENCHES WITH VERTICAL FACES GREATER THAN FIVE FEET SHALL HAVE SHORING, BRACING OR BOX TRENCH TO PREVENT TRENCH COLLAPSES AND SHALL MEET M.I.O.S.H.A. STANDARDS.

C. PROVIDE 7' MIN. COVER FOR PROPOSED WATER MAINS WITHIN W.C. ROAD PAVEMENTS, MEASURED FROM GUTTER LINE. MAINTAIN 7' MIN. ACROSS ROAD TO FARTHER OF 3' BEHIND CURB OR TO STORM SEWER.

D. WHERE DIRECTED BY COUNTY ENGINEER, JACK AND BORE 20" (DEPENDING ON WATER PIPE SIZE) STEEL CASING HAVING 11/32" WALL THICKNESS (TYP. FOR ALL DRIVES WHERE THERE IS NO. EX. WATER MAIN TO BE REMOVED) LOCATE BORE HOLES AT 10' MIN. FROM E./P.

E. "TRENCH B BACKFILL "SHALL BE PLACED UNDER AND/OR WITHIN THREE FEET OF PAVEMENT, SIDEWALK OR CURB, WHERE TRENCH IS CONSTRUCTED (SEE ATTACHMENT), AND AS PER W.C.D.P.S. PERMIT SPECIFICATIONS.

F. BORE WATER MAIN UNDER ALL TREES. FOR WATER MAIN IN WAYNE COUNTY RIGHT-OF-WAY, SEE " FOR TUNNELING UNDER TREES" IN THE WAYNE COUNTY SPECIFICATIONS. OTHERWISE, USE SPECIFICATIONS USED IN SPECIFICATIONS PORTION OF THE CONTRACT DOCUMENTS.

G. TRENCHED AREAS SHALL BE PLATED DURING NON-WORKING HOURS. ALL UTILITY CUTS IN LANES OPEN TO TRAFFIC SHALL BE PLATED PRIOR TO THE PLACING OF ASPHALT SURFACE.

H. PROVIDE 18" (MIN.) VERTICAL CLEARANCE BETWEEN THE PROPOSED WATER MAINS AND ANY OTHER EXISTING UTILITIES OR SEWERS WITHIN THE RIGHT-OF-WAY.

I. ANY WATER MAIN OR STRUCTURE THAT IS TO BE ABANDONED WITHIN THE WAYNE COUNTY R.O.W. MUST BE REMOVED COMPLETELY.

J. ALL PROPOSED ABANDON WATER MAIN LINES TO BE FILLED WITH FLOWABLE FILL MATERIAL PER WAYNE COUNTY SPECIAL PROVISION FOR FLOWABLE FILL (WC206A) OR AS DIRECTED BY THE COUNTY ENGINEER.

K. CONCRETE SHALL NOT BE PLACED DIRECTLY UPON A FROZEN SUBGRADE. THE SUBGRADE SHALL BE COVERED WITH A LAYER OF STRAW OR HAY 12 INCHES IN THICKNESS TO PROTECT AGAINST FREEZING. SUBGRADE IS TO BE CLEANED OF ALL LOOSE STRAW BEFORE PLACING CONCRETE. CONCRETE SHALL BE COVERED WITH STRAW, HAY OR PROTECTIVE COVERING, AS SPECIFIED BY THE ENGINEER AND SHALL REMAIN IN PLACE UNTIL THE CONCRETE HAS DEVELOPED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 PSI OR FOR A MINIMUM PERIOD OF 14 DAYS.

7. UTILITY NOTES:

A. ALL DISTURBED UTILITIES MUST BE REPLACED OR RELOCATED AS DIRECTED BY THE COUNTY ENGINEER & THE UTILITY COMPANY REPRESENTATIVE.

B. THE CONTRACTOR IS RESPONSIBLE FOR AVOIDING ANY CONFLICT BETWEEN THE PROPOSED WATER MAINS AND ANY EXISTING UTILITY.

C. ALL PROPOSED UTILITIES WITHIN WAYNE COUNTY ROAD R.O.W. SHALL BE PLACED PER WAYNE COUNTY TRENCH DETAILS "S-12" & "S-13", OR AS DIRECTED BY THE COUNTY ENGINEER.

8. SECTION CORNERS:

A. SECTION CORNERS, IF DISTURBED DURING CONSTRUCTION OR DUE TO CONSTRUCTION ACTIVITIES, SHALL BE RESET AND REWITNESSED IN ACCORDANCE WITH MICHIGAN COMPILED LAW, CHAPTER 54.

B. SECTION CORNER WITNESS POINTS SHALL BE PROTECTED AT ALL TIMES. IF DISTURBED, THEY SHALL BE RESTORED IN ACCORDANCE WITH STATE OF MICHIGAN LAW.

C. SALVAGE OR REPLACE THE MONUMENT BOXES OF DISTURBED SECTION CORNERS AS DIRECTED BY THE COUNTY ENGINEER.

9. WAYNE COUNTY DPS ROAD PAVEMENT AND DRIVE APPROACH RECONSTRUCTION NOTES:

A. SAW-CUT FULL DEPTH THE EXISTING PAVEMENT TO THE NEAREST JOINT WITHIN WAYNE COUNTY ROAD RIGHT-OF-WAY AND REMOVE THE EXISTING PAVEMENT AND CURB OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

B. CONSTRUCT WAYNE COUNTY ROAD PAVEMENT PER WAYNE COUNTY STANDARDS DETAIL "PR-I" OR "PR-2" AS APPLICABLE, OR AS DIRECTED BY THE WAYNE COUNTY ENGINEER.

C. PLACE 9" OF 21AA AGGREGATE COMPACTED TO MINIMUM 95% DENSITY OF MAXIMUM UNITE WEIGHT OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

D. CONSTRUCT WAYNE COUNTY ROAD PAVEMENT REPAIR WITH MINIMUM 2" H.M.A. TOP (F) ON MINIMUM 10" NON-REINFORCED CONCRETE WC 35 P MIX (3500 PSI AT 28 DAYS) AND INTEGRAL STRAIGHT CURB TYPE "4" AS PER WAYNE COUNTY STANDARDS DETAIL "RS-3" OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

E. TIE THE NEW PAVEMENT TO THE EXISTING PAVEMENT WITH #5 EPOXY COATED THE BARS AT MAXIMUM 43-INCH ON CENTER LONGITUDINALLY AND AT 18-INCH ON CENTER TRANSVERSELY AS PER WAYNE COUNTY STANDARDS DETAIL "RS-2" OR AS DIRECTED BY THE COUNTY ENGINEER.

F. PLACE THE CONSTRUCTION JOINTS OF THE NEW PAVEMENT TO MATCH THE EXISTING PAVEMENT JOINTS OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

G. REPLACE ANY DAMAGED CURB AS A RESULT OF THIS PROJECT ACTIVITY AS PER WAYNE COUNTY STANDARD DETAIL "D-7" OR AS DIRECTED BY THE COUNTY ENGINEER.

H. ANY DAMAGED UNDERDRAIN AS A RESULT OF THIS PROJECT ACTIVITY SHALL BE RECONSTRUCTED AS PER WAYNE COUNTY STANDARD DETAIL "S-14" OR AS DIRECTED BY THE COUNTY ENGINEER.

I. ANY DAMAGED SIDEWALK AS A RESULT OF THIS PROJECT ACTIVITY SHALL BE RECONSTRUCTED AS PER WAYNE COUNTY DETAILS "RS-5" OR AS DIRECTED BY THE COUNTY ENGINEER.

L. MAINTAIN 2% MAXIMUM TRANSVERSAL SLOPE ON THE SIDEWALK.

M. ANY DAMAGED SIDEWALK RAMPS SHOULD BE REPLACED TO MATCH THE ADA REQUIREMENTS AS PER M.D.O.T. STANDARDS DETAIL "R-28-I" ON SHEETS SD-8 AND SD-9.

N. STRUCTURE ADJUSTMENT SHALL BE DETERMINED AT THE SITE BY WAYNE COUNTY ENGINEER.

O. RELOCATE, RESTORE OR REPLACE ANY TRAFFIC SIGNS THAT ARE AFFECTED BY THIS CONSTRUCTIONS AS DIRECTED BY THE COUNTY ENGINEER.

P. CURB HEIGHT ADJUSTMENT WILL BE DETERMINED AT SITE AS DIRECTED BY THE WAYNE COUNTY ENGINEER TO MAINTAIN A POSITIVE FLOW FOR OVER CURB DRAINAGE.

Q. FOR COMMERCIAL DRIVE APPROACHES RECONSTRUCT THE EXISTING DRIVE APPROACH OPENING PER WAYNE COUNTY STANDARDS DETAILS "D-6" OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

R. ANY DAMAGED STRUCTURE AS RESULT OF THIS CONSTRUCTION ACTIVITY SHALL BE ADJUSTED AND/OR RECONSTRUCTED AS DIRECTED BY THE WAYNE COUNTY ENGINEER.

10. WAYNE COUNTY COMMERCIAL DRIVE APPROACH CONSTRUCTION NOTES:

A. SAW CUT FULL DEPTH OF THE EXISTING PAVEMENT AT 12" FROM BACK OF CURB AND REMOVE PAVEMENT, CURB AND CURB DROP OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

B. CONSTRUCT THE DRIVE APPROACH OPENING PER WAYNE COUNTY STANDARDS DETAILS "D-6" OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

C. CONSTRUCT CURB AND CURB DROP PER WAYNE COUNTY STANDARDS DETAILS "D-7" OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

D. PLACE MINIMUM 6" OF 21AA BASE COURSE AGGREGATE COMPACTED IN PLACE TO 95% MAXIMUM DENSITY OF ITS UNIT WEIGHT UNDER THE PROPOSED DRIVE APPROACH OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

E. CONSTRUCT THE DRIVE APPROACH WITH 8" NON-REINFORCED CONCRETE P1 MIX AND INTEGRAL STRAIGHT CURB TYPE "3" AS PER WAYNE COUNTY STANDARDS DETAIL "RS-3" OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

F. DROP CURB TO ZERO HEIGHT AT FACE OF SIDEWALK.

G. PLACE 1" EXPANSION JOINT BEHIND THE CURB THROUGHOUT THE DRIVE APPROACH OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

H. CONSTRUCT THE SIDEWALK THROUGHOUT THE DRIVE APPROACH WITH 8" NON REINFORCED CONCRETE PER WAYNE COUNTY STANDARDS DETAILS "RS-5" OR AS DIRECTED BY WAYNE COUNTY ENGINEER.

I. MAINTAIN MAX 2% TRANSVERSAL SLOPE ON THE SIDEWALK.

J. PLACE 12" EXPANSION JOINT AT SIDEWALK FACES.

K. STRUCTURE ADJUSTMENT SHALL BE DETERMINED AT THE SITE BY WAYNE COUNTY ENGINEER.

L. RECONSTRUCT EXISTING DISTURBED RESIDENTIAL DRIVE APPROACH PER WAYNE COUNTY STANDARD DETAIL "D-1" AND/OR AS DIRECTED BY THE WAYNE COUNTY ENGINEER.

11. PIPE BURSTING NOTES:

A. THE CONTRACTOR IS TO EXERCISE DUE CARE AND CAUTION TO PROTECT COUNTY FACILITIES FROM DAMAGE DURING THE PIPE BURSTING OPERATION. THE PERMIT HOLDER AND CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES THAT COUNTY FACILITIES SUSTAIN AS A RESULT OF PIPE BURSTING OPERATION. REPAIR OF ANY FACILITES SHALL BE AS DETERMINED BY THE COUNTY ENGINEER.

B. THE CONTRACTOR IS TO CLOSELY MONITOR THE AFFECTS THE PIPE BURSTING HAS ON OTHER UTILITIES WITHIN THE CONSTRUCTION INFLUENCE AREA. THE REPAIR OF ANY DAMAGES TO OTHER FACILITIES SHALL BE THE RESPONSIBILITY OF THE PERMIT HOLDER/CONTRACTOR.

C. SHOULD ANYTHING PREVENT THE COMPLETION OF THE INSTALLATION OF THE WATER MAIN USING THE PIPE BURSTING METHOD, THE REMAINDER OF THE WATER MAIN SHALL BE CONSTRUCTED BY METHODS APPROVED BY THE WAYNE COUNTY ENGINEER.

D. PIPE FOR PIPE BURSTING SHALL BE FUSABLE PVC (AWWA C903), DUCTILE IRON PIPE SIZE, DR-18, 235 PSI, WITH BUTT FUSED JOINTS PER SECTION 33 0523 PIPE BURSTING.

E. TRACER WIRE SHALL BE INSTALL ON ALL WATER MAIN.

F. CONTRACTOR SHALL POTHOLE, LOCATE, AND OBTAIN ELEVATION OF GAS MAIN, GAS SERVICE, WATER MAIN, WATER SERVICES, SEWERS, UNDERGROUND TELEPHONE, ELECTRIC, CABLE TV AND ALL OTHER BURIED UTILITEIS PRIOR TO BEGINNING PIPE BURSTING WORK. SEE PIPE BURSTING SPECIFICATIONS FOR REQUIREMENTS FOR BORE PATH PLANNING.

G. WATER SERVICES CONNECTED TO PVC WATER MAINS SHALL USE BRONZE, FULLY CIRCULAR SERVICE SADDLES PER SPECIFICATION SECTION 33 1100. WATER SERVICE CONNECTIONS LARGER THAN 1" ON PIPE BURST WATER MAINS REQUIRE A RESTRAINING HARNESS.

H. IF THE ROAD PAVEMENT HEAVED/DAMAGED, THE CONTRACTOR IS REPONSIBLE TO RECONSTRUCT THE ROAD PAVEMENT PER NOTES & DETAILS SHOWN AND MUST STOP THIS METHOD AND CHOOSE ANOTHER METHOD OF WATERMAIN REPLACEMENT AS DIRECTED BY THE WAYNE COUNTY ENGINEER. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO ROADS, SIDEWALKS, TREES, SIGNAGE AND DRIVEWAYS AS A RESULT OF PIPE BURSTING AND/OR CONTRACTOR OPERATIONS.

THE FOLLOWING WAYNE COUNTY STANDARD DETAILS APPLY TO WAYNE COUNTY ROADS IN THIS CONTRACT. THESE DETAILS MAY BE OBTAINED ONLINE AT: https://www.waynecounty.com/departments/publicservices/engineering/construction-permit.aspx

D-6	Commercial Driveway Approach
D-7	Curb Detail A, B & C, Concrete Curb Cap, Integral Curb And Walk
P-1	Primary Road Class "A" Cross Section
P-5	Joint Layout
PR-1	Pavement Repair Patching - Class "A" Road (Under 20 Years Old)
PR-2	Pavement Repair Patching - Class "A" Road (Over 20 Years Old)
RS-1	General Notes
RS-2	Pavement Joints
RS-3	Curb & Gutter Details
RS-5	Concrete Sidewalk
S-1	General Notes - Storm Drainage
S-2	Manhole A
S-3	Manhole B
S-5	Manhole D
S-6	Catch Basin A
S-7	Inlet A
S-12	Sewer Trench A & B
S-13	Sewer Trench D Culvert Installation
S-14	Underdrain
S-15	Frame And Cover A, Cover C
S-16	Frame And Cover S
S-17	Concrete Cradle, Cast Iron Trap

PRE CONSTRUCTION MEETING

A PRE-CONSTRUCTION MEETING SHALL BE REQUIRED PRIOR TO COMMENCING THE ROAD PAVING ACTIVITY.

F					
E					
D					
C					
B					
A	ISSUED FOR PROCUREMENT			4/27/20	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

DESIGNED BY:
DRAWN BY:
CHECKED BY:
MANAGER:

SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

WAYNE COUNTY NOTES

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-715
FILE No. -
DRAWING No. G-6

SOIL EROSION AND SEDIMENTATION CONTROL

1. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE EROSION CONTROL SEDIMENTATION AND CONTAINMENT OF CONSTRUCTION DETAILS SPECIFICATION 01 57 13, IN THE CONTRACT DOCUMENTS, WHERE REFERENCE IS MADE TO THE CONTRACTOR'S RESPONSIBILITIES CONCERNING THIS MATTER.
2. THE CONTRACTOR SHALL ARRANGE HIS CONSTRUCTION OPERATIONS IN SUCH A MANNER THAT THE CONSTRUCTION AREA WILL NOT BE SUSCEPTIBLE TO SOIL EROSION AND THAT THE CONSTRUCTION OPERATIONS WILL NOT CREATE ANY SILTATION PROBLEMS.
3. THE CONTRACTOR SHALL EMPLOY NECESSARY MEANS AND METHODS TO PREVENT EXCAVATED AND LOOSE SOIL MATERIAL FROM BEING COLLECTED ON TIRES OF TRUCKS AND OTHER EQUIPMENT AND BEING DEPOSITED ON STREETS AND ROADS TO AND FROM THE CONSTRUCTION SITE.
4. THE CONTRACTOR SHALL CONTROL DUST AT THE CONSTRUCTION SITE AND ON THE PUBLIC STREETS USED AS HAUL ROADS. THE CONTRACTOR SHALL BE FAMILIAR WITH AND FOLLOW THE REGULATIONS OUTLINED BY THE CITY OF DETROIT FUGITIVE DUST ORDINANCE NO. 32-17 CHAPTER 22, ARTICLE 5.
5. THE DISTANCE BETWEEN THE POINT OF COMPLETE BACK FILLING AND THE PIPE LAYING SHALL NOT EXCEED 40 FEET.
6. THE CONTRACTOR SHALL EMPLOY POSITIVE MEANS TO PREVENT SOIL AND OTHER DEBRIS FROM ENTERING THE EXISTING STREET DRAINAGE SYSTEM. THE EXISTING CATCH BASIN AND DRAIN SYSTEM IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN TO AT LEAST THE CONDITIONS PRIOR TO CONSTRUCTION.
7. IN ADDITION TO THE ABOVE REQUIREMENTS, THE CONTRACTOR'S ATTENTION IS DIRECTED SPECIFICALLY TO DIVISION 14F, "EROSION CONTROL PROGRAM" OF THE CITY ENGINEERING DEPARTMENT'S CURRENT "STANDARD SPECIFICATIONS FOR PAVING AND RELATED CONSTRUCTION" LOCATED AT: https://detroitmi.gov/document/standard-specifications-paving-and-related-construction
8. THE CONTRACTOR SHALL PERFORM ALL ACTIVITIES NECESSARY TO COMPLY WITH THE TEMPORARY EROSION AND SEDIMENT CONTROL SPECIFICATION AND THE CITY ENGINEERING EROSION CONTROL PROGRAM.
9. PERMITTEE AND CONTRACTORS ARE SUBJECT TO: PUBLIC ACT 451 OF 1994, AS AMENDED PART 201. IN THE EVENT OF EXCAVATION ENCOUNTERING ENVIRONMENTAL CONTAMINATION OR AN UNDERGROUND TANK IN MDOT AND/OR OTHER PROJECT RIGHT OF WAY, WORK WITHIN THE RIGHT OF WAY SHALL CEASE UNTIL ALL ACTIONS/NOTIFICATIONS SPECIFIED BY PART 201 HAVE BEEN COMPLETED.
10. REFER TO SHEETS SD-4 AND SD-5 FOR SOIL EROSION AND SEDIMENTATION CONTROL DETAILS.
11. ALL SOIL EROSION AND SEDIMENTATION CONTROL WORK IS CONSIDERED INCIDENTAL TO THE CONTRACT, WITH THE EXCLUSION OF THE GREEN STORMWATER INFRASTRUCTURE WORK.

C.E.D. NOTES

CITY OF DETROIT, DPW, CITY ENGINEERING DIVISION REQUIREMENTS

1. **THE CONTRACTOR SHALL OBTAIN A CITY OF DETROIT STREET RIGHT-OF-WAY PERMIT FROM THE INSPECTION PERMIT OFFICE OF THE ENGINEERING DIVISION.**
2. **THE CONTRACTOR SHALL COMPLY WITH ALL THE CITY ENGINEERING DIVISION STREET RIGHT-OF-WAY PERMIT REQUIREMENTS.**
3. **NEW GATE VALVE WELLS, FIRE HYDRANTS AND ANY SURFACE ITEMS SHALL NOT BE LOCATED IN SIDEWALK RAMPS, LANDINGS AND/OR CROSSWALKS.**
4. **ALL NEWLY CONSTRUCTED OR RECONSTRUCTED SIDEWALKS IN THE CITY OF DETROIT'S RIGHT-OF-WAY, SHALL HAVE A MAXIMUM 2% CROSS-SLOPE. IN ADDITION THERE SHALL BE A SUFFICIENT SLOPE ON THE SIDEWALK TO ASSURE DRAINAGE TO THE STREET (TRY TO MAINTAIN AT LEAST A 1% SLOPE IN THE DIRECTION OF FLOW).**
5. **THE CONTRACTOR IS REQUIRED TO MEET D.P.W. ROADWAY PATCHING AND SIDE WALK PATCHING PER DIVISION 15 AND AS DETAILED IN THESE PLANS, AND ADA RAMP DETAILS PER MDOT STANDARD PLAN R-28-SERIES.**
6. **THE CONSTRUCTION CONTRACTOR NEEDS TO SUBMIT THE CONSTRUCTION PHASING AND DURATION OF EACH PHASE IN ORDER TO MINIMIZE THE IMPACT TO VEHICULAR AND PEDESTRIAN TRAFFIC.**
7. **WHENEVER SIDEWALKS ARE CLOSED, PEDESTRIAN DETOUR SIGNS NEED TO BE POSTED.**

PRE CONSTRUCTION MEETING
A PRE-CONSTRUCTION MEETING SHALL BE REQUIRED PRIOR TO COMMENCING THE ROAD PAVING ACTIVITY.

TO REPORT AN EMERGENCY FIELD CONDITION CALL:

DTE ENERGY ELECTRICAL .....(800) 477-4747

INTERNATIONAL TRANSMISSION CO. .....(877) 482-4829

DETROIT PUBLIC LIGHTING AUTHORITY .....(313) 324-8290

DETROIT WATER & SEWERAGE DEPT.....(313) 267-8000

DTE ENERGY GAS .....(800) 947-5000

CONSUMERS ENERGY GAS .....(800) 477-5050

SUNOCO PIPELINE LP .....(313) 969-9478/(313) 590-9598/(313) 215-1843

SBC/AT&T ..... (800) 288-2020

COMCAST CABLE ..... (800) 934-6489

DPW TRAFFIC SIGNAL CONDUIT ..... (313) 628-5627

CONTROL POINTS			
Point #	Elevation	Northing	Easting
CP-200	149.90	332784.35	13423666.66
CP-201	150.16	332431.20	13423666.76
CP-202	152.62	333573.26	13421639.79
CP-203	152.90	333576.42	13421616.00
CP-204	151.19	334099.49	13423580.36
CP-205	151.57	334278.30	13423602.64
CP-206	164.74	333641.14	13423603.63
CP-207	159.13	333732.09	13423626.60
CP-208	144.07	333869.60	13419613.39
CP-209	143.89	333836.07	13419619.53
CP-210	139.01	334073.66	13419477.12
CP-211	131.77	334374.19	13419436.00
CP-5000	131.02	334715.68	13419509.23
CP-5001	132.52	334218.85	13419432.66
CP-5002	144.05	333859.75	13419610.73
CP-5003	150.53	335134.69	13420871.94
CP-5004	151.40	334660.94	13420894.64
CP-5005	152.15	333962.94	13420927.04
CP-5006	155.12	333333.57	13420962.55
CP-5007	158.04	332860.16	13420919.21
CP-5008	155.70	332742.41	13421078.83
CP-5009	150.78	332681.23	13421640.87
CP-5010	154.44	333606.19	13421599.76
CP-5011	150.61	334655.04	13422274.14
CP-5012	146.95	334007.18	13422306.92
CP-5013	148.45	334013.55	13422897.85
CP-5014	149.06	335130.18	13422857.42
CP-5015	147.85	334802.87	13422872.62
CP-5016	152.29	333035.92	13423014.54
CP-5017	150.61	332877.41	13423022.77
CP-5018	146.85	334122.19	13424631.61
CP-5019	146.77	333596.97	13424715.61
CP-5020	146.28	333073.14	13424740.40
CP-5021	146.95	332752.66	13425004.30

CONTROL POINTS			
Point #	Elevation	Northing	Easting
CP-5022	150.63	332827.80	13425588.16
CP-5023	149.26	333494.87	13425557.63
CP-5024	150.23	333932.34	13425594.24
CP-5025	151.85	334340.20	13425516.45
CP-5026	149.81	335103.39	13425541.09
CP-5027	150.99	334758.63	13425554.53
CP-5028	152.55	334301.25	13425878.13
CP-5029	150.19	333436.76	13425873.56
CP-5030	150.94	332847.45	13425946.06
CP-5031	150.44	332790.59	13426250.09
CP-5032	150.22	333537.34	13426205.60
CP-5033	147.46	332225.02	13426541.33
CP-5034	151.12	332884.22	13426501.52
CP-5035	150.78	333483.57	13426467.53
CP-5036	151.32	333827.69	13426488.59
CP-5037	152.36	332698.31	13428939.50
CP-5038	151.82	332278.72	13428959.91
CP-5039	151.01	331650.02	13428987.45
CP-5040	150.38	330963.03	13428970.51
CP-5041	150.23	330346.59	13429002.75
CP-5042	149.46	329405.36	13429072.77
CP-5043	152.02	332516.49	13429272.99
CP-5044	151.34	331662.48	13429313.88
CP-5045	150.79	330940.20	13429347.26
CP-5046	150.32	330380.50	13429374.28
CP-5047	149.88	329502.75	13431000.27
CP-5048	150.27	329522.85	13431382.38
CP-5049	149.21	328690.95	13432644.71
CP-5050	149.19	327863.43	13432685.75
CP-5051	152.37	330260.86	13433420.87
CP-5052	151.31	329568.24	13433454.40
CP-5053	150.17	328679.10	13433497.79
CP-5054	149.38	327906.55	13433536.16
CP-6000	149.00	333961.49	13422901.98

Know what's **below.** **Call** before you dig.

F					
E					
D					
C					
B					
A	ISSUED FOR PROCUREMENT			4/27/20	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

DESIGNED BY:
DRAWN BY:
CHECKED BY:
MANAGER:
SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

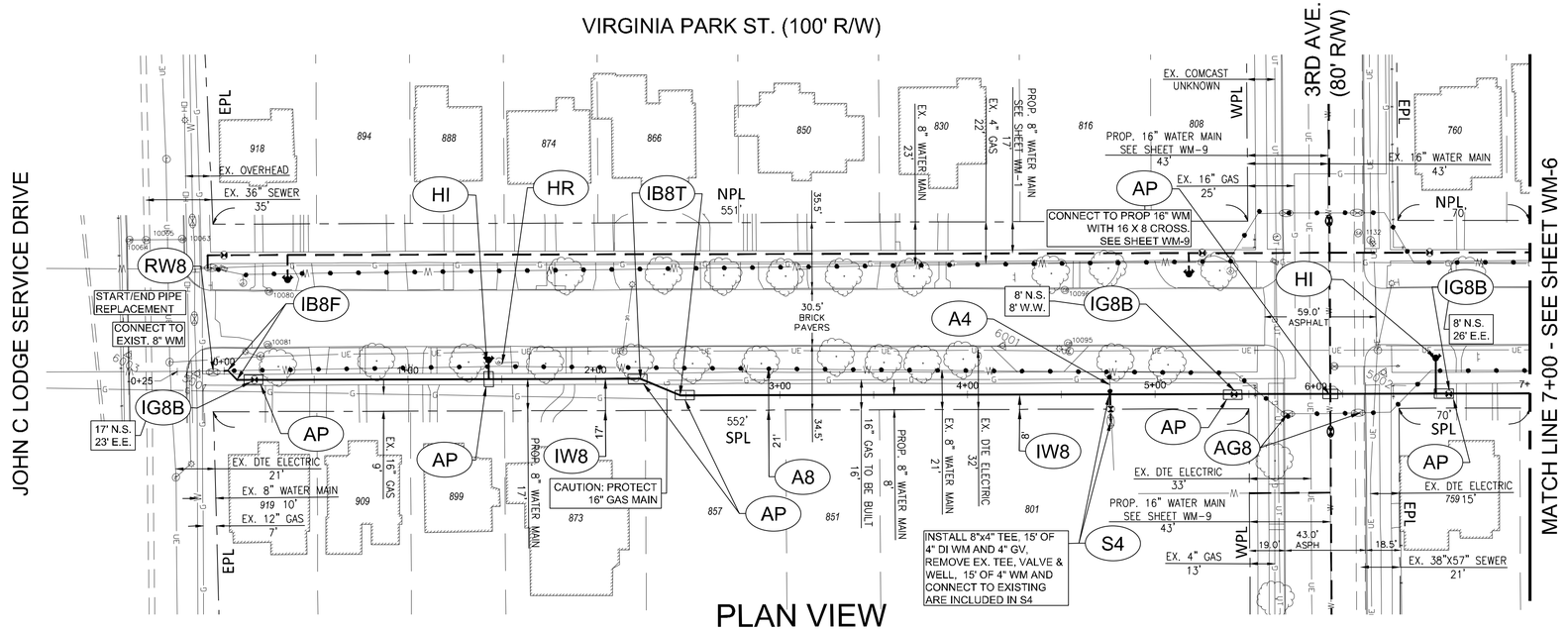
SOIL EROSION & SEDIMENTATION CONTROL NOTES, C.E.D. NOTES AND CONTROL POINTS

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-715
FILE No. -
DRAWING No. G-7



KEYED NOTES:

A8	ABANDON EXIST. 8-INCH WATER MAIN.
A4	ABANDON EXIST. 4-INCH SERVICE.
AG8	REMOVE EXISTING 8-INCH GATE VALVE & ABANDON WELL AS DIRECTED BY THE ENGINEER.
AP	ACCESS PIT.
HI	INSTALL NEW 6-INCH FIRE HYDRANT.
HR	REMOVE EXISTING 6-INCH HYDRANT.
IB8F	INSTALL 8" - 45° BEND.
IB8T	INSTALL 8" - 22.5° BEND.
IG8B	INSTALL 8" DWSD GATE VALVE IN VALVE BOX.
IW8	INSTALL 8-INCH WATER MAIN.
RW8	REMOVE EXIST. 8-INCH GATE VALVE & WELL AS DIRECTED BY THE ENGINEER.
S4	RECONNECT EXIST. 4-INCH SERVICE.

SEWER STRUCTURE DETAILS

POINT #	COMPASS	SIZE "	MATERIAL	RIM	I.E.	SURVEYOR'S NOTES
10063	E	12	BRICK	151.09	141.9	
10064			BRICK	151.15	142.5	NO PIPES VISIBLE : BOLTED SHUT
10065			BRICK	151.4		NO PIPES VISIBLE: BOLTED SHUT
10080			CONC	150.42		NO PIPES VISIBLE: FULL OF WATER
10081			CONC	150.54		NO PIPES VISIBLE: FULL OF WATER
10095				151.61		NO PIPES VISIBLE
10096				151.5		NO PIPES VISIBLE
1132	NW	54	BRICK	152.45	132.3	
	SW	54	BRICK	152.45	132.3	

APPROXIMATE NUMBER OF SERVICE CONNECTIONS TO BE RECONNECTED / REPLACED					
	1" OR LARGER COPPER SERVICES TO BE RECONNECTED	SERVICES IN ROW FROM MAIN TO CURB BOX TO BE REPLACED WITH 1" OR LARGER COPPER SERVICE		LEAD SERVICES TO BE REPLACED FROM CURB BOX TO METER WITH 1" OR LARGER COPPER SERVICE	GROUNDING CONNECTIONS
		COPPER	LEAD		
NORTH	-	-	-	-	7
SOUTH	-	-	**5-1",1-3/4"**	**1"-175'**	

NOTES:

1. THE LOCATION OF SEWER LEADS FROM CATCH BASINS ARE NOT KNOWN. NEW WATER MAIN SHALL BE INSTALLED MEETING THE CLEARANCES INDICATED IN NOTES #24 & 28 ON SHEET G-5.
2. USE PIPE DEFLECTIONS AND/ OR BENDS TO MAINTAIN CLEARANCES INDICATED IN NOTES #24 & 28 ON SHEET G-5, WHERE NECESSARY.
3. USE VERTICAL BENDS TO GO UNDER EXISTING UTILITIES, AS NEEDED.
4. CONTRACTORS ARE ALLOWED TO OPERATE 16" AND SMALLER GATE VALVES. CONTRACTORS SHALL SUBMIT A SHUTDOWN REQUEST SKETCH FOR PLAN OF WATER MAIN SHUTDOWNS FOR THE AREA OF WORK.

Know what's **below.** **Call** before you dig.

F					
E					
D					
C					
B					
A	ISSUED FOR PROCUREMENT			5/4/20	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

DESIGNED BY: SDT
DRAWN BY: MS
CHECKED BY: CRL
MANAGER: RG

SEAL / STAMP

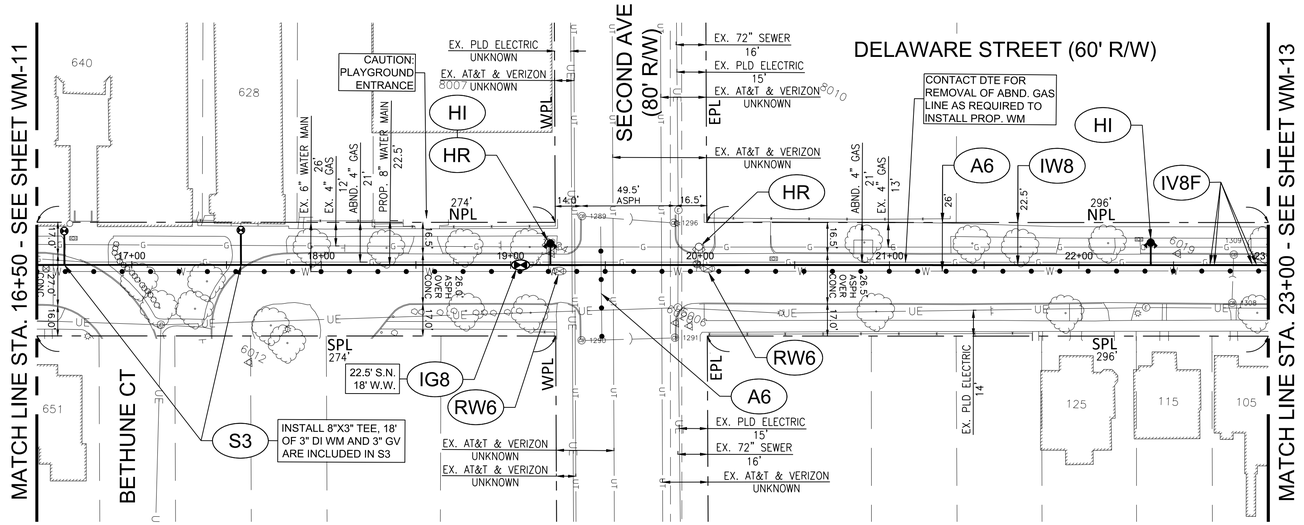
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

VIRGINIA PARK ST. S WTR. MAIN REPLACEMENT
JOHN C LODGE SERVICE DR. TO STA. 7+00

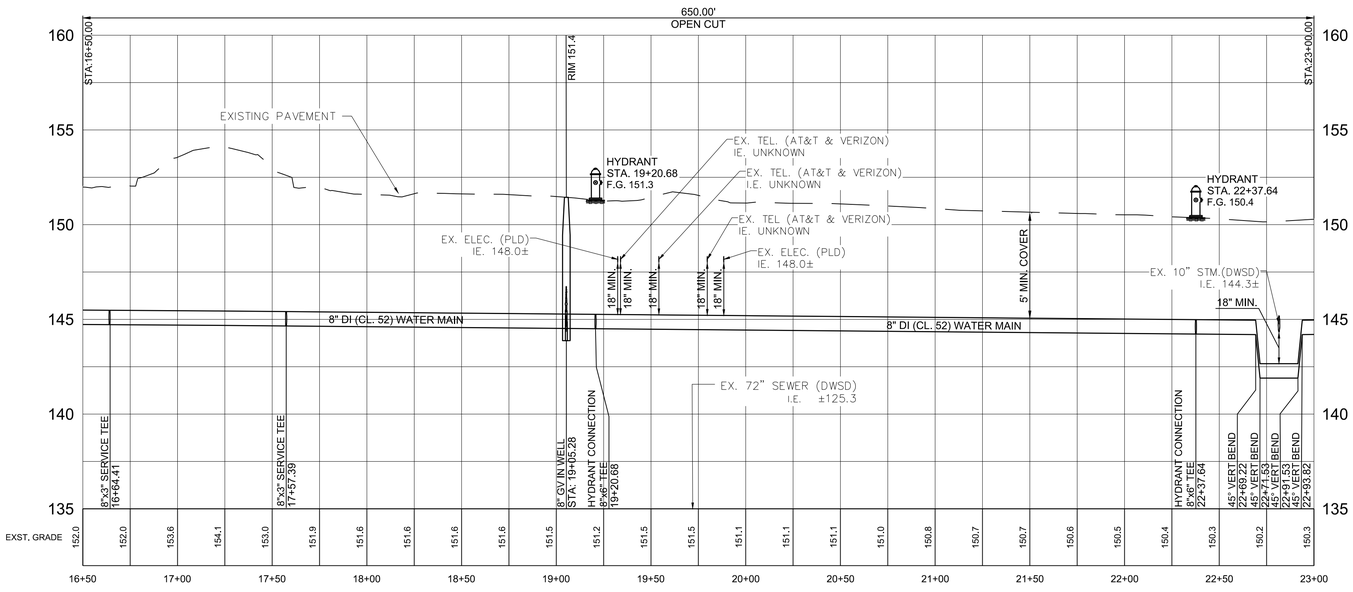
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
2 0 M	1 S	1 1 E	0 3 6	- - -

MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-718
FILE No. -
DRAWING No. WM-5



PLAN VIEW



PROFILE VIEW

0 4' 8' VERT.

0 40' 80' HORZ.

KEYED NOTES:

A6	ABANDON EXIST. 6-INCH WATER MAIN.
HI	INSTALL NEW 6-INCH FIRE HYDRANT.
HR	REMOVE EXISTING 6-INCH HYDRANT.
IG8	INSTALL 8-INCH DWSD GATE VALVE & CONSTRUCT/FURNISH & INSTALL WELL AS DIRECTED BY THE ENGINEER.
IW8	INSTALL 8-INCH WATER MAIN.
RW6	REMOVE EXISTING 6-INCH GATE VALVE & WELL AS DIRECTED BY THE ENGINEER.
S3	RECONNECT EXIST. 3-INCH SERVICE.
IV8F	INSTALL 8" - 45° VERTICAL BEND.

SEWER STRUCTURE DETAILS

POINT #	COMPASS	SIZE	MATERIAL	RIM	I.E.	SURVEYOR'S NOTES
1289	E	12"	CONC	150.76	146.21	
1290	NO ACCESS					CAN'T OPEN. BOLT HOLES FILLED WITH ASPHALT.
1291	NO ACCESS					FULL OF DEBRIS.
1296	WSW	12"	CLAY	150.77	145.57	
1308	N	10"	CLAY	149.55	144.73	
1309	S	10"	CONC	149.47	144.27	

APPROXIMATE NUMBER OF SERVICE CONNECTIONS TO BE RECONNECTED / REPLACED					
	1" OR LARGER SERVICES TO BE RECONNECTED	SERVICES IN ROW FROM MAIN TO CURB BOX TO BE REPLACED WITH 1" OR LARGER COPPER SERVICE		LEAD SERVICES TO BE REPLACED FROM CURB BOX TO METER WITH 1" OR LARGER COPPER SERVICE	GROUNDING CONNECTIONS
		COPPER	LEAD		
NORTH	-	-	-	-	**0**
SOUTH	-	-	**2-1", 2-5/8"**	**1"-40'**	

NOTES:

1. THE LOCATION OF SEWER LEADS FROM CATCH BASINS ARE NOT KNOWN. NEW WATER MAIN SHALL BE INSTALLED MEETING THE CLEARANCES INDICATED IN NOTES #24 & 28 ON SHEET G-5.
2. USE PIPE DEFLECTIONS AND/ OR BENDS TO MAINTAIN CLEARANCES INDICATED IN NOTES #24 & 28 ON SHEET G-5, WHERE NECESSARY.
3. USE VERTICAL BENDS TO GO UNDER EXISTING UTILITIES, AS NEEDED.
4. CONTRACTORS ARE ALLOWED TO OPERATE 16" AND SMALLER GATE VALVES. CONTRACTORS SHALL SUBMIT A SHUTDOWN REQUEST SKETCH FOR PLAN OF WATER MAIN SHUTDOWNS FOR THE AREA OF WORK.

Know what's below. Call before you dig.

F					
E					
D					
C					
B					
A	ISSUED FOR PROCUREMENT			5/4/20	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

DESIGNED BY: TV
DRAWN BY: DS/MK
CHECKED BY: MM
MANAGER: RG
SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

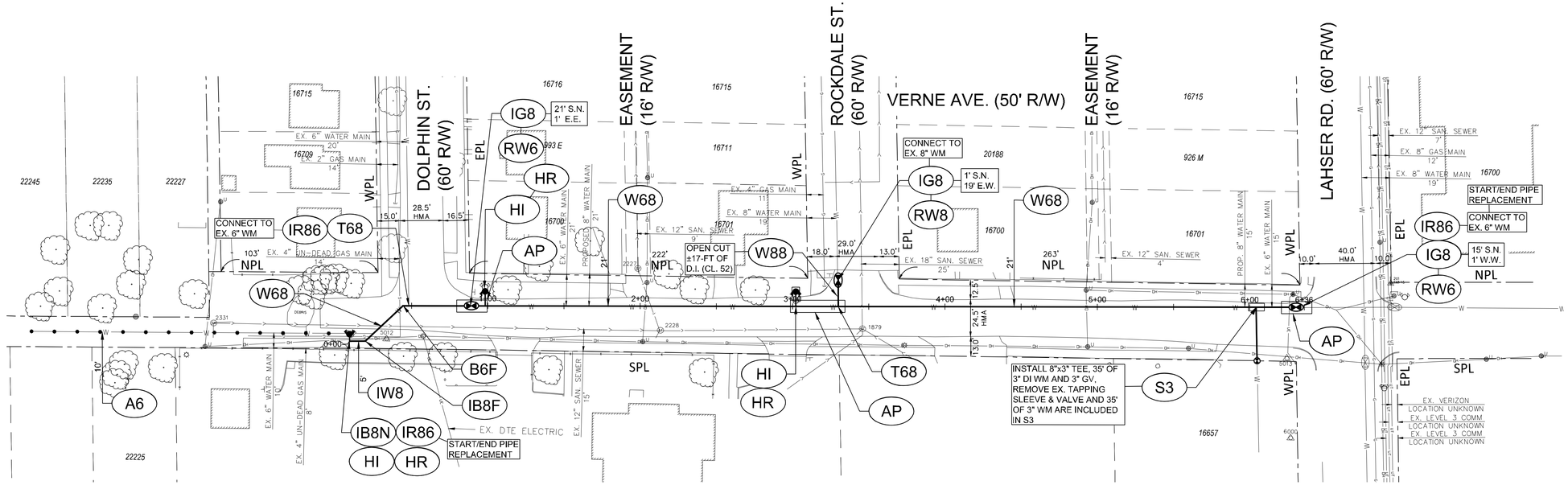
DELAWARE STREET WTR. MAIN REPLACEMENT
STA. 16+50 TO STA. 23+00

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

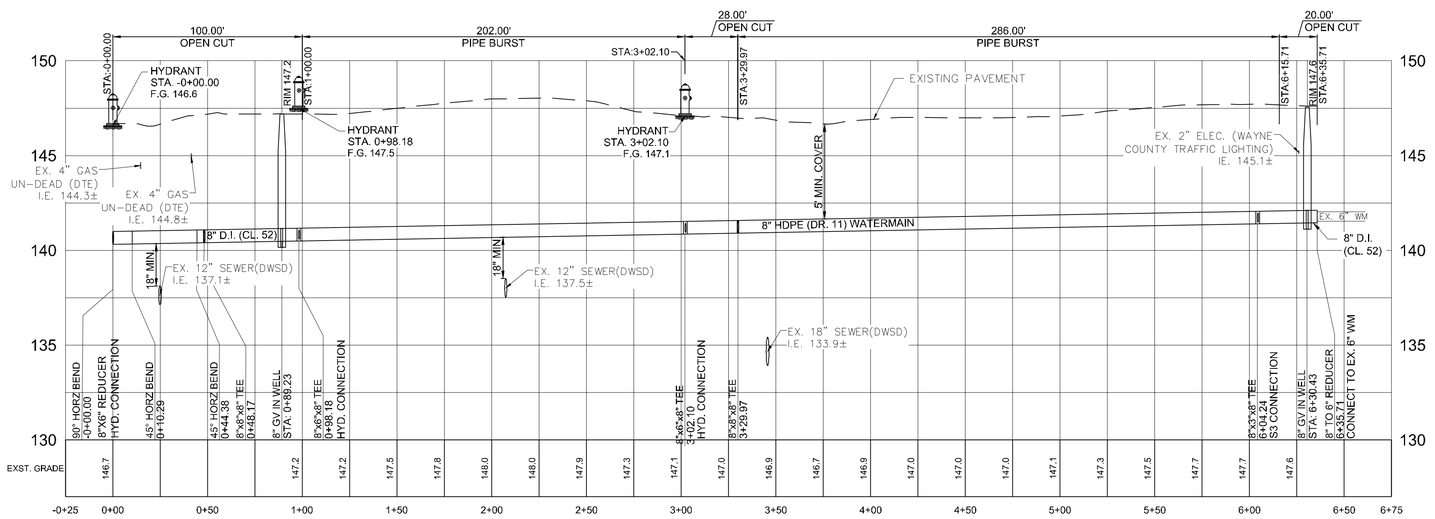
DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
2 0 M				- - -

MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-718
FILE No. -
DRAWING No. WM-12



PLAN VIEW



PROFILE VIEW

0 4' 8' VERT.

0 40' 80' HORZ.

KEYED NOTES:

IG8	INSTALL 8-INCH DWSD GATE VALVE & CONSTRUCT/FURNISH & INSTALL WELL AS DIRECTED BY THE ENGINEER.
RW6	REMOVE EXISTING 6-INCH GATE VALVE & WELL AS DIRECTED BY THE ENGINEER.
RW8	REMOVE EXISTING 8-INCH GATE VALVE & WELL AS DIRECTED BY THE ENGINEER.
AP	ACCESS PIT
A6	ABANDON EXIST. 6-INCH WATER MAIN.
W88	REPLACE EXISTING 8-INCH WM WITH 8-INCH WM
W68	REPLACE EXISTING 6-INCH WM WITH 8-INCH WM
HI	INSTALL NEW 6-INCH FIRE HYDRANT.
HR	REMOVE EXISTING 6-INCH HYDRANT
IB8F	INSTALL 8" - 45° BEND.
T68	REPLACE EXIT. 6"X6" TEE WITH 8"X8" TEE
IR86	INSTALL 8" X 6" REDUCER
B6F	REPLACE EXISTING 6" - 45° BEND WITH 8" - 45° BEND
S3	RECONNECT EXISTING 3-INCH SERVICE
IB8N	INSTALL 8" - 90° BEND
IW8	INSTALL 8-INCH WATER MAIN.

NOTES:

1. THE LOCATION OF SEWER LEADS FROM CATCH BASINS ARE NOT KNOWN. NEW WATER MAIN SHALL BE INSTALLED MEETING THE CLEARANCES INDICATED IN NOTES #24 & 28 ON SHEET G-5.
2. USE PIPE DEFLECTIONS AND/ OR BENDS TO MAINTAIN CLEARANCES INDICATED IN NOTES #24 & 28 ON SHEET G-5, WHERE NECESSARY.
3. USE VERTICAL BENDS TO GO UNDER EXISTING UTILITIES, AS NEEDED.
4. CONTRACTORS ARE ALLOWED TO OPERATE 16" AND SMALLER GATE VALVES. CONTRACTORS SHALL SUBMIT A SHUTDOWN REQUEST SKETCH FOR PLAN OF WATER MAIN SHUTDOWNS FOR THE AREA OF WORK.
5. REFER TO WM-34 FOR SEWER STRUCTURE DETAIL TABLE.

APPROXIMATE NUMBER OF SERVICE CONNECTIONS TO BE RECONNECTED / REPLACED					
	1" OR LARGER COPPER SERVICES TO BE RECONNECTED	SERVICES IN ROW FROM MAIN TO CURB BOX TO BE REPLACED WITH 1" OR LARGER COPPER SERVICE		LEAD SERVICES TO BE REPLACED FROM CURB BOX TO METER WITH 1" OR LARGER COPPER SERVICE	GROUNDING CONNECTIONS
		COPPER	LEAD		
NORTH	-	-	-	-	1
SOUTH	-	-	-	-	

Know what's below. Call before you dig.

F					
E					
D					
C					
B					
A	ISSUED FOR PROCUREMENT			5/4/20	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

DESIGNED BY: CT
DRAWN BY: CW
CHECKED BY: CRL
MANAGER: RG

SEAL / STAMP

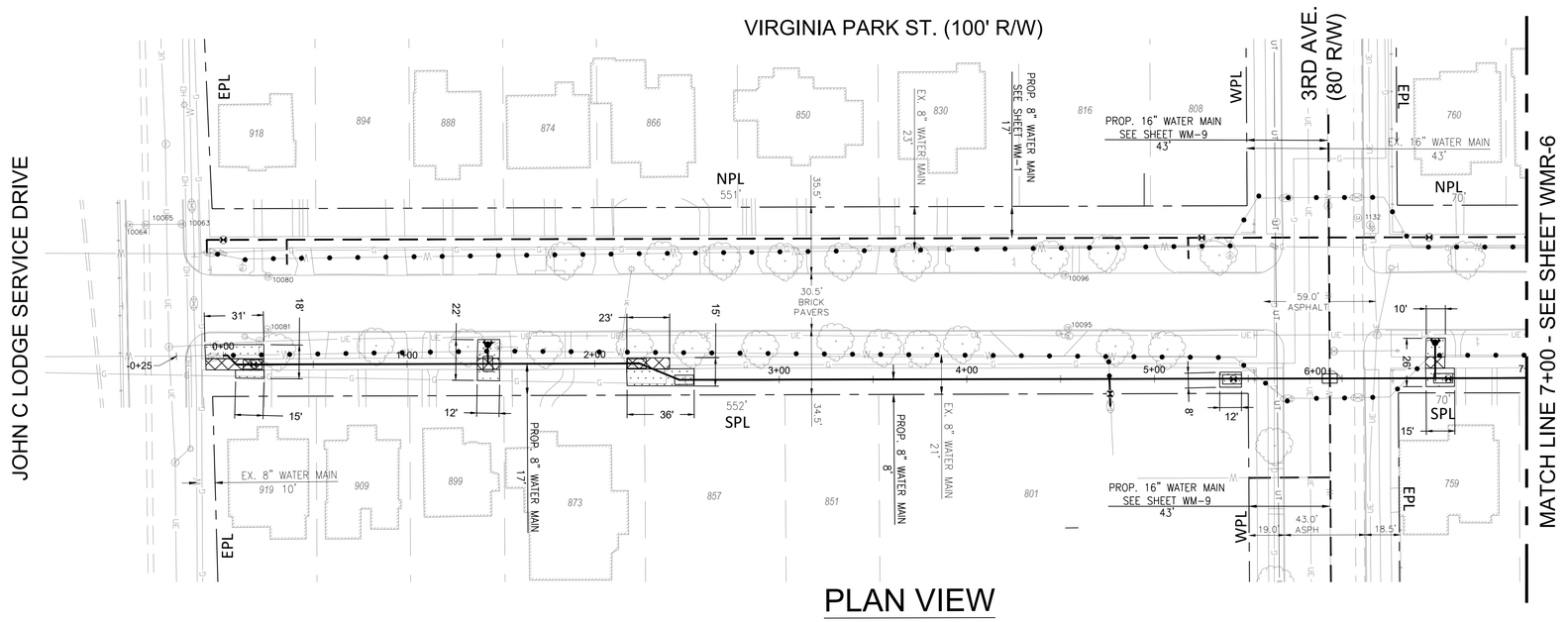
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

VERNE AVE. WTR. MAIN REPLACEMENT
DOLPHIN ST. TO LAHSER RD.

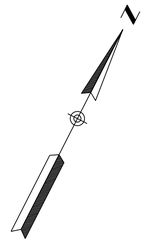
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
09P	1S	10E	016	---

MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-715
FILE No. -
DRAWING No. WM-23



PLAN VIEW



RESTORATION LEGEND

- REMOVE AND REPLACE BITUMINOUS PAVEMENT
- REMOVE AND REPLACE BRICK PAVEMENT
- MULCHED SEEDING
- REMOVE AND REPLACE DRIVEWAY, CONCRETE, 6-INCH
- REMOVE AND REPLACE SIDEWALK
- (R) REMOVE AND REPLACE ADA RAMP(S) (ARROW INDICATES RAMP DIRECTION)
- REMOVE AND REPLACE TREE
- REMOVE AND REPLACE CURB AND GUTTER
- (A) ADJUST CASTING TO GRADE

0 40' 80' HORZ.

Know what's **below.** **Call** before you dig.

F					DESIGNED BY: JK	SEAL / STAMP
E					DRAWN BY: JM	
D					CHECKED BY: CRL	
C					MANAGER: RG	
B						
A	ISSUED FOR PROCUREMENT			5/4/20		
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

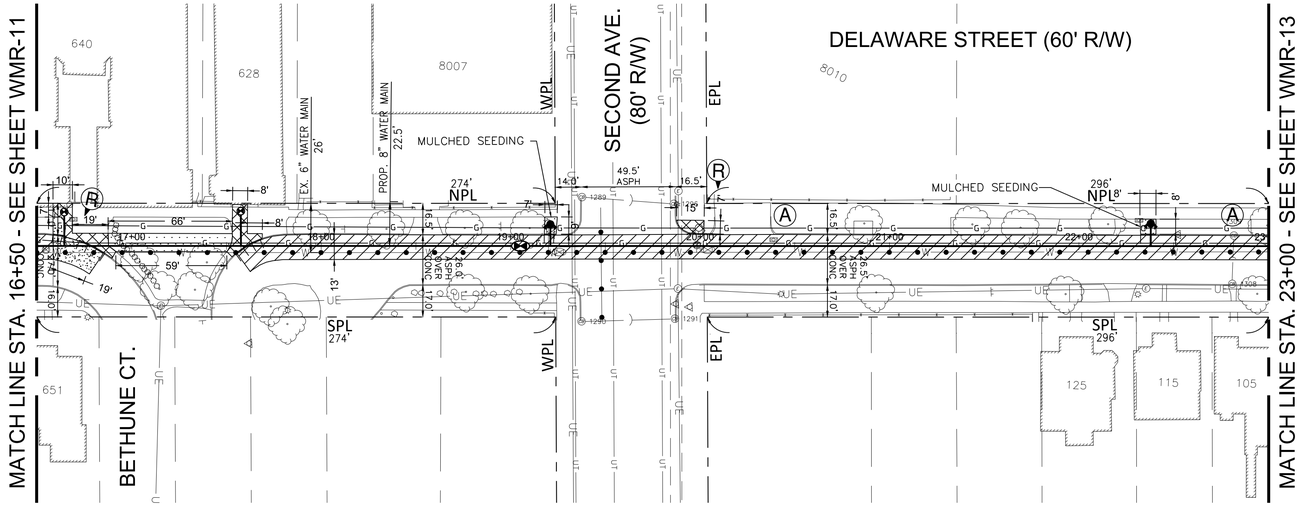
VIRGINIA PARK ST. S RESTORATION PLAN JOHN C LODGE SERVICE DR. TO STA. 7+00

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

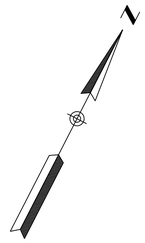
DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
2 0 M	1 S	1 1 E	0 3 6	- - -

MDEQ SRF Project No.	7483-01
REF. No.	CS-1812
DWSD CONTRACT No.	WS-718
FILE No.	-
DRAWING No.	WMR-5



PLAN VIEW



RESTORATION LEGEND

- REMOVE AND REPLACE BITUMINOUS OVER CONCRETE PAVEMENT
- REMOVE AND REPLACE CONCRETE PAVEMENT
- MULCHED SEEDING
- REMOVE AND REPLACE DRIVEWAY, CONCRETE, 6–INCH
- REMOVE AND REPLACE SIDEWALK
- (R) REMOVE AND REPLACE ADA RAMP(S) (ARROW INDICATES RAMP DIRECTION)
- REMOVE AND REPLACE TREE
- REMOVE AND REPLACE CURB AND GUTTER
- (A) ADJUST CASTING TO GRADE

0 40' 80' HORZ.

Know what's **below.** **Call** before you dig.

F					DESIGNED BY: AS	SEAL / STAMP
E					DRAWN BY: DS	
D					CHECKED BY: TV	
C					MANAGER: RG	
B						
A	ISSUED FOR PROCUREMENT			5/4/20		
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

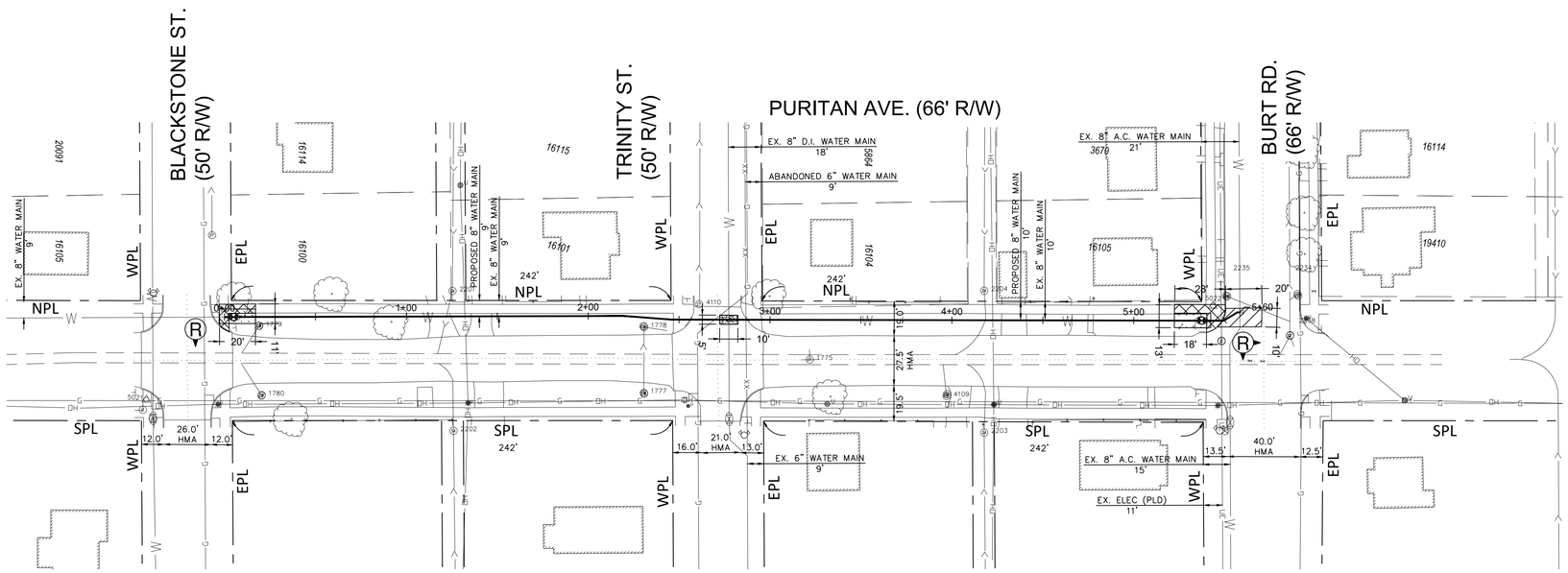
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

DELAWARE STREET RESTORATION PLAN STA. 16+50 TO STA. 23+00

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
2 0 M				- - -

MDEQ SRF Project No.	7483-01
REF. No.	CS-1812
DWSD CONTRACT No.	WS-718
FILE No.	-
DRAWING No.	WMR-12



PLAN VIEW

N

RESTORATION LEGEND

- REMOVE AND REPLACE BITUMINOUS PAVEMENT
- REMOVE AND REPLACE CONCRETE PAVEMENT
- MULCHED SEEDING
- REMOVE AND REPLACE DRIVEWAY, CONCRETE, 6-INCH
- REMOVE AND REPLACE SIDEWALK
- (R) REMOVE AND REPLACE ADA RAMP(S) (ARROW INDICATES RAMP DIRECTION)
- REMOVE AND REPLACE TREE
- REMOVE AND REPLACE CURB AND GUTTER
- (A) ADJUST CASTING TO GRADE

0 40' 80' HORZ.

Know what's **below.** **Call** before you dig.

F					DESIGNED BY: JK	SEAL / STAMP
E					DRAWN BY: JM	
D					CHECKED BY: CRL	
C					MANAGER: RG	
B						
A	ISSUED FOR PROCUREMENT			5/4/20		
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

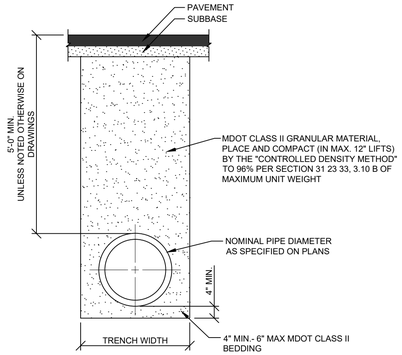
PURITAN AVE. RESTORATION PLAN BLACKSTONE ST. TO BURT RD.

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
1 0 P	1 S	1 0 E	0 1 5	- - -

MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-715
FILE No. -
DRAWING No. WMR-26



NOTES:

1. REFER TO RESTORATION DETAILS FOR PAVEMENT WIDTH.
2. TRENCHING SHALL BE PER OSHA 29 CFR, SUBPART P

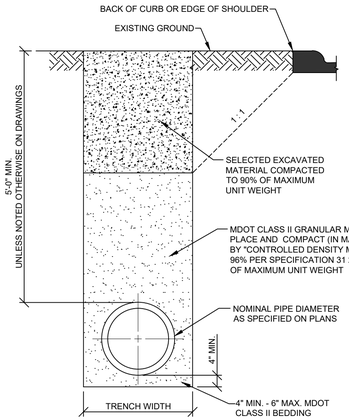
NOMINAL PIPE DIAMETER	MAXIMUM TRENCH WIDTH UP TO 12" ABOVE CROWN OF PIPE
LESS THAN 18"	30"
18" TO 24"	PIPE DIAMETER PLUS 18"
GREATER THAN 24"	PIPE DIAMETER PLUS 24"

STANDARD TRENCH DETAIL FOR WATER MAIN UNDER ROAD BED, PARKING LOTS, SIDEWALKS, DRIVEWAYS, CURBS, GRAVEL ROADS AND ALLEYS

UTILITY TRENCH, WATERMAIN (1 OF 3)

DETAIL NO. 312333-04

NOT TO SCALE



NOTE:

1. TRENCHING SHALL BE PER OSHA 29 CFR, SUBPART P

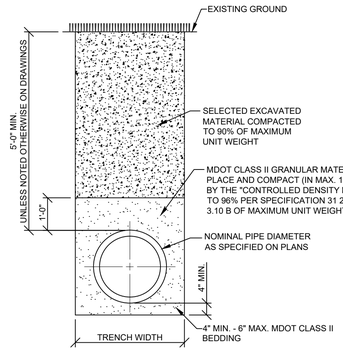
NOMINAL PIPE DIAMETER	MAXIMUM TRENCH WIDTH UP TO 12" ABOVE CROWN OF PIPE
LESS THAN 18"	30"
18" TO 24"	PIPE DIAMETER PLUS 18"
GREATER THAN 24"	PIPE DIAMETER PLUS 24"

STANDARD TRENCH DETAIL FOR WATER MAIN WITHIN INFLUENCE OF ROAD BED

UTILITY TRENCH, WATERMAIN (2 OF 3)

DETAIL NO. 312333-05

NOT TO SCALE



NOTE:

1. TRENCHING SHALL BE PER OSHA 29 CFR, SUBPART P

NOMINAL PIPE DIAMETER	MAXIMUM TRENCH WIDTH UP TO 12" ABOVE CROWN OF PIPE
LESS THAN 18"	30"
18" TO 24"	PIPE DIAMETER PLUS 18"
GREATER THAN 24"	PIPE DIAMETER PLUS 24"

STANDARD TRENCH DETAIL FOR WATER MAIN UNDER BERMS, LAWNS, GRASSY AREAS, (OUTSIDE PAVEMENT INFLUENCE)

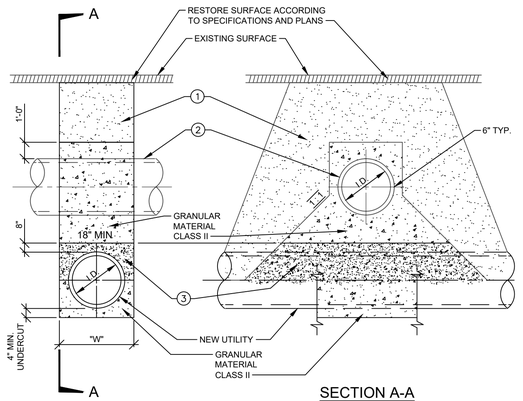
UTILITY TRENCH, WATERMAIN (3 OF 3)

DETAIL NO. 312333-06

NOT TO SCALE

CODED NOTES:

1. BACKFILL ACCORDING TO SPECIFICATIONS AND TYPICAL TRENCH SECTION.
2. EXISTING CATCH BASIN DRAIN. SEWER OR OTHER UNDERGROUND UTILITY CROSSING NEW OPEN CUT CONSTRUCTION.
3. BACKFILL WITH A DRY MIX OF ONE BAG CEMENT PER ONE BAG OF GRANULAR MATERIAL CLASS II.



SECTION A-A

NOTES:

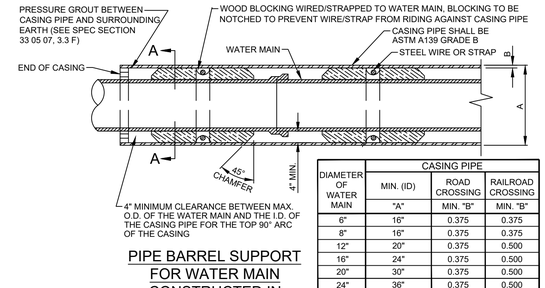
1. ALL GRANULAR BACKFILL MATERIAL SHALL BE COMPACTED TO 96% OF MAXIMUM UNIT WEIGHT.
2. WATER MAINS CROSSING UNDER SEWERS - WHEN IT IS IMPOSSIBLE TO OBTAIN THE MINIMUM 18-INCH CLEARANCE, REPLACE THE SEWER PIPE (MINIMUM OF 10 FT. ON BOTH SIDES OF WATER MAIN) WITH WATER WORKS GRADE 150PSI PRESSURE TESTED TO ENSURE WATER TIGHTNESS.
3. "W" - SEE TRENCH DETAILS FOR TRENCH WIDTH.
4. TRENCHING SHALL BE PER OSHA 29 CFR, SUBPART P

TYPICAL DETAIL AT CROSSING UNDER EXISTING UTILITIES

UTILITY CROSSING

DETAIL NO. 312333-07

NOT TO SCALE

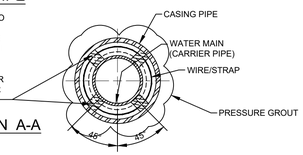


DIAMETER OF WATER MAIN	CASING PIPE		
	MIN. (ID)	ROAD CROSSING	RAILROAD CROSSING
	"A"	MIN. "B"	MIN. "B"
6"	16"	0.375	0.375
8"	16"	0.375	0.375
12"	20"	0.375	0.500
16"	24"	0.375	0.500
20"	30"	0.375	0.500
24"	36"	0.375	0.500

A = PIPE INSIDE DIAMETER
B = PIPE WALL THICKNESS

PIPE BARREL SUPPORT FOR WATER MAIN CONSTRUCTED IN CASING PIPE

WATER MAIN SHALL BE WIRED/STRAPPED TO THE (4) WOLMANIZED WOOD SKID BLOCKS. 85% OF PIPE WITHIN CASING PIPE SHALL BE SUPPORTED. TERMINATE BLOCKS 12" FROM END OF CASING PIPE TO ALLOW BULKHEAD OF ENTIRE PIPE CIRCUMFERENCE. REFERENCE SPEC SECTION 33 05 07, 2.5 FOR ALTERNATE PIPE SUPPORT AND INSULATOR DETAILS.



SECTION A-A

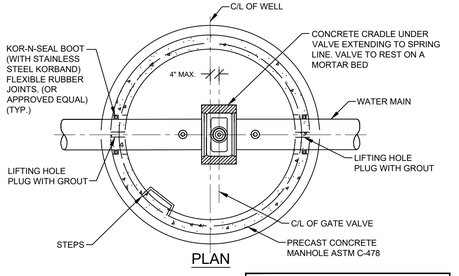
NOTES:

1. CONTRACTOR SHALL SUBMIT IN WRITING THE DETAILS OF THE APPROPRIATE PIPE CASING INSTALLATION FOR REVIEW AND APPROVAL BY THE ENGINEER BEFORE INSTALLATION OF ANY CASING STARTS. ALTERNATE METHODS OF SUPPORTING AND MAINTAINING THE POSITION OF THE CARRIER PIPE WITH RESPECT TO THE CASING PIPE (IN LIEU OF THE USE OF TIMBERS) WILL BE CONSIDERED.
2. IN CASE OF RAILROAD OR BRIDGE FOUNDATION CROSSINGS, SPECIFICATIONS AND REQUIREMENTS OF THE RESPECTIVE RIGHT-OF-WAY AUTHORITY WILL BE CONSIDERED PRIORITY.
3. CARRIER PIPE WITHIN CASING PIPE SHALL HAVE BOLTLESS RESTRAINED JOINTS.
4. THE OUTSIDE DIAMETER OF BELL OF BOLTLESS RESTRAINED PIPE MAY VARY WITH THE SAME MANUFACTURER. THEREFORE, CONTRACTOR SHALL VERIFY O.D. OF BELL AND INCREASE SIZE OF STEEL CASING PIPE AS REQUIRED.
5. DUCTILE IRON CARRIER PIPE SHALL BE POLYWRAPPED AND PIPE SHALL NOT REST ON BELLS.
6. CASING CLOSURE SHALL BE IN ACCORDANCE WITH SPECIFICATION 33 05 07 - TRENCHLESS INSTALLATION OF UTILITY PIPING.

CASING PIPE SECTION FOR WATERMAIN

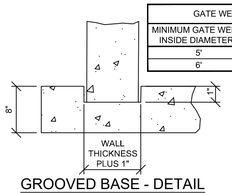
DETAIL NO. 330507-01

NOT TO SCALE



PLAN

GATE WELL SIZING CHART	
MINIMUM GATE WELL INSIDE DIAMETER	WATER MAIN DIAMETER
5'	6" - 8"
6'	12" - 16"



GROOVED BASE - DETAIL

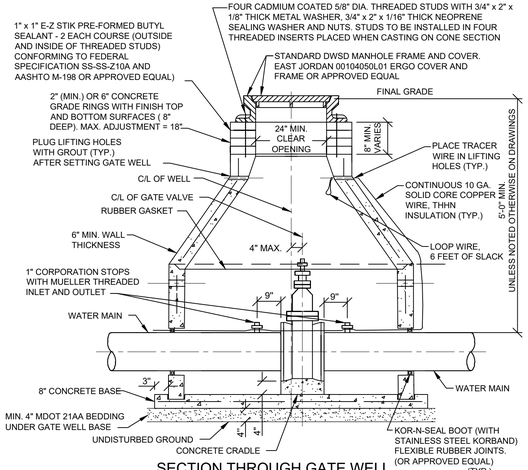
NOTES:

1. MANHOLE STEPS SHALL BE INSTALLED IN WELL WALL WHERE HEIGHT FROM TOP OF PIPE TO TOP OF WELL EXCEEDS 5'-0".
2. PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO ALL THE REQUIREMENTS OF "SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE RISERS AND TOPS" ASTM C-478 WITH SINGLE OFF-SET JOINT CONFORMS TO ASTM C-443.
3. EACH SECTION SHALL HAVE NOT MORE THAN TWO HOLES FOR HANDLING PURPOSES. THESE HOLES SHALL BE SATISFACTORILY PLUGGED WITH GROUT AFTER INSTALLATION.
4. STEPS TO BE INSTALLED DURING MANHOLE MANUFACTURE. PLACE 16" CEN. ON CEN. 45° FROM CENTERLINE OF WATER MAIN

GATE WELL, PRECAST (1 OF 2)

DETAIL NO. 330561-09

NOT TO SCALE



SECTION THROUGH GATE WELL

NOTES:

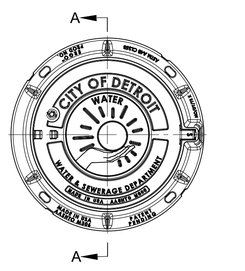
1. MANHOLE STEPS SHALL BE INSTALLED IN WELL WALL WHERE HEIGHT FROM TOP OF PIPE TO TOP OF WELL EXCEEDS 5'- 0".TOP STEP SHALL NOT BE MORE THAN 16" BELOW MH COVER OR AS DIRECTED. BOTTOM STEP SHALL NOT BE MORE THAN 18" ABOVE THE BENCH OR FLOOR LEVEL.
2. STEPS TO BE INSTALLED DURING MANHOLE MANUFACTURE. PLACE 16" CEN. ON CEN. 45° FROM CENTERLINE OF WATER MAIN.
3. RUBBER "O" RINGS FOR ADJUSTING RINGS NOT USED IN PAVEMENT AREAS.
4. TRACING WIRE ON HDPE PIPE ONLY.

GATE WELL SIZING CHART	
MINIMUM GATE WELL INSIDE DIAMETER	WATER MAIN DIAMETER
5'	6" - 8"
6'	12" - 16"

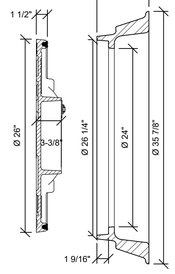
GATE WELL, PRECAST (2 OF 2)

DETAIL NO. 330561-10

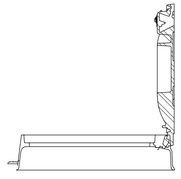
NOT TO SCALE



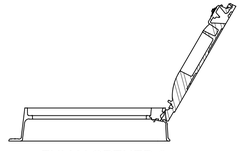
PLAN VIEW OF COVER



SECTION A-A



SAFETY LOCK @ 90°



FULLY OPENED & REMOVAL POSITION @ 120°

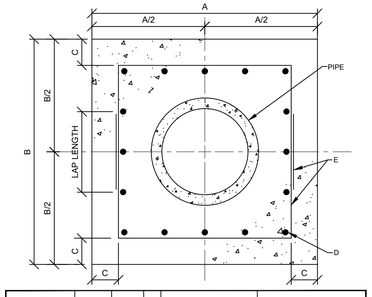
NOTE:

1. EAST JORDAN 00104050L01 ERGO COVER AND FRAME OR APPROVED EQUAL.

MANHOLE FRAME AND COVER WITH LOGO - WATERMAIN

DETAIL NO. 330561-11

NOT TO SCALE



PIPE SIZE	A	B	C	D	E
8 INCH PIPE	2'-6"	2'-6"	6"	#6 BARS @ 1'-6" O.C.	#4 TIE BARS @ 2'-0" O.C.
12 INCH PIPE	3'-0"	3'-0"	6"	#6 BARS @ 1'-0" O.C.	#4 TIE BARS @ 2'-0" O.C.
16 INCH PIPE	3'-6"	3'-6"	6"	#7 BARS @ 7 1/2" O.C.	#4 TIE BARS @ 2'-0" O.C.

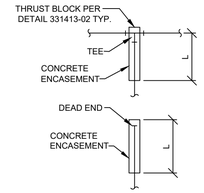
NOTES:

1. TIE BARS MAY BE PLACED AS 2-PIECE U-BARS WITH MINIMUM LAP LENGTH OF 20 INCHES.
2. PROVIDE CORNER BARS AT ALL PIPE ENCASEMENT CORNERS/BENDS TO MATCH SIZE OF TYPICAL LONGITUDINAL REINFORCING BARS. CORNER BARS TO BE LAP SPLICED WITH TYPICAL LONGITUDINAL REINFORCING BARS ON EACH SIDE OF THE CORNER/BEND.
3. LAP SPLICE #6 REINFORCING BARS 39" AT SPLICES. LAP SPLICE #7 REINFORCING BARS 44" AT SPLICES.
4. REFER TO TABLES OF ENCASEMENT LENGTHS FOR REQUIRED MINIMUM ENCASEMENT LENGTHS.
5. CLASS B CONCRETE, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 4,000 PSI.
6. ALL REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60 AND MUST CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE OF THE AMERICAN CONCRETE INSTITUTE (ACI) AND THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).
7. DESIGN SOIL BEARING PRESSURE IS 1,500 PSF. VERIFY IN FIELD.

ENCASEMENT, WATER DISTRIBUTION PIPE IN CONCRETE (1 OF 2)

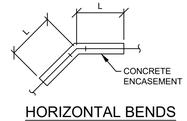
DETAIL NO. 331413-06

NOT TO SCALE



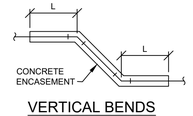
TEE OR DEAD END SIZE	LENGTH L
8" X 8" TEE	13'
8" X 12" TEE	22'
8" X 16" TEE	32'
12" X 16" TEE	32'
16" X 16" TEE	32'
8" DEAD END	13'
12" DEAD END	22'
16" DEAD END	32'

HORIZONTAL TEES AND DEAD ENDS



PIPE SIZE	LENGTH L
8"	10'
12"	16'
16"	23'

HORIZONTAL BENDS



PIPE SIZE	LENGTH L
8"	13'
12"	22'
16"	32'

VERTICAL BENDS

NOTE:

1. MINIMUM ENCASEMENT LENGTHS "L" AT BENDS, TEES AND DEAD ENDS.

ENCASEMENT, WATER DISTRIBUTION PIPE IN CONCRETE (2 OF 2)

DETAIL NO. 331413-07

NOT TO SCALE

F					DESIGNED BY: BM	SEAL / STAMP
E					DRAWN BY: WW	
D					CHECKED BY: CLR	
C					MANAGER: RG	
B						
A	ISSUED FOR PROCUREMENT			4/27/20		
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

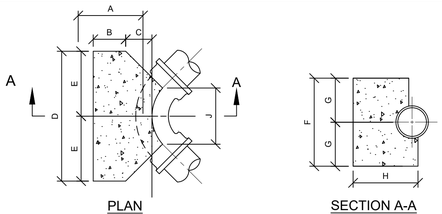
STANDARD DETAILS
WATERMAIN

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-715
FILE No. -
DRAWING No. SD-1



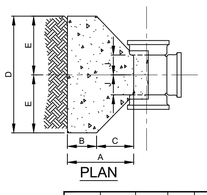
PLAN

SECTION A-A

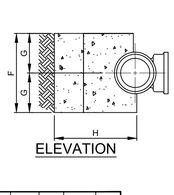
HORIZONTAL BENDS, 22.5, 45 & 90 DEGREE TURNS										
SIZE OF PIPE (IN)	DEGREE OF BEND	A (FT)	B MIN. (FT)	C (FT)	D (FT)	E (FT)	F (FT)	G (FT)	H MIN. (FT)	J (FT)
6	45	1.75	0.75	1.00	2.00	1.00	1.50	0.75	1.92	1.33
6	90	1.75	0.75	1.00	2.50	1.25	1.50	0.75	1.92	1.17
8	45	1.75	0.75	1.00	2.33	1.17	2.00	1.00	1.92	1.33
8	90	1.75	0.75	1.00	3.33	1.67	2.50	1.25	1.92	1.08
12	22.5	1.75	0.75	1.00	2.50	1.25	2.00	1.00	2.00	1.33
12	45	2.08	0.75	1.33	3.50	1.75	2.50	1.25	2.33	1.33
12	90	2.08	0.75	1.33	5.50	2.75	3.00	1.50	2.33	1.67
16	22.5	2.67	1.00	1.67	3.33	1.67	2.50	1.25	3.00	1.17
16	45	2.67	1.00	1.67	5.33	2.67	3.00	1.50	3.00	2.50
16	90	2.67	1.00	1.67	6.00	3.00	5.00	2.50	3.00	2.67

NOTES:
1. THE THRUST BLOCK FACE SHALL BE POURED AGAINST UNDISTURBED EARTH.
2. CLASS B CONCRETE, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 4,000 PSI.
3. THRUST BLOCK TO ABUT OR REST AGAINST UNDISTRIBUTED SOIL OR EARTH COMPACTED TO 95% MODIFIED PROCTER.
4. THRUST BLOCKS FOR HDPE PIPE SHALL BE PER PIPE MANUFACTURER.

THRUST BLOCK, HORIZONTAL BEND - TRADITIONAL DWSD SIZING
DETAIL NO. 331413-01
NOT TO SCALE



PLAN

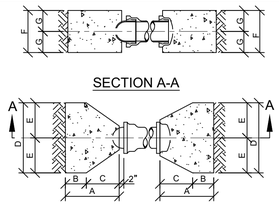


ELEVATION

SIZE OF PIPE (IN)	A (FT)	B MIN. (FT)	C (FT)	D (FT)	E (FT)	F (FT)	G (FT)	H MIN (FT)	J (FT)
6X6	1.75	0.75	1.00	2.50	1.25	1.50	0.75	2.25	0.50
8X8	1.75	0.75	1.00	3.00	1.50	2.00	1.00	2.25	0.50
12X8	1.75	0.75	1.00	3.00	1.50	2.00	1.00	2.42	0.50
12X12	2.08	0.75	1.33	4.00	2.00	3.00	1.50	2.75	0.67
16X8	1.75	0.75	1.00	3.00	1.50	2.00	1.00	2.75	0.50
16X12	2.08	0.75	1.33	4.00	2.00	3.00	1.50	3.08	0.67
16X16	2.67	1.00	1.67	5.00	2.50	4.00	2.00	3.67	0.92

NOTES:
1. THE THRUST BLOCK FACE SHALL BE POURED AGAINST UNDISTURBED EARTH.
2. CLASS B CONCRETE, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 4,000 PSI.
3. THRUST BLOCK TO ABUT OR REST AGAINST UNDISTRIBUTED SOIL OR EARTH COMPACTED TO 95% MODIFIED PROCTER.
4. THRUST BLOCKS FOR HDPE PIPE SHALL BE PER PIPE MANUFACTURER.

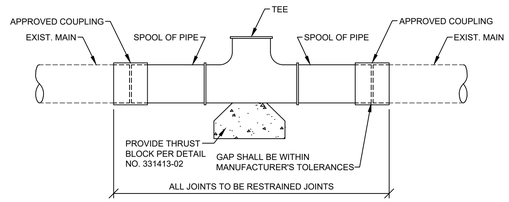
CONCRETE THRUST BLOCK FOR TEES
THRUST BLOCK, TEES (TRADITIONAL DWSD SIZING)
DETAIL NO. 331413-02
NOT TO SCALE



SIZE OF PIPE (IN)	A MIN. (FT)	B MIN. (FT)	C (FT)	D (FT)	E (FT)	F (FT)	G (FT)
6	1.92	0.75	1.17	2.50	1.25	1.50	0.75
8	1.92	0.75	1.17	3.00	1.50	2.00	1.00
12	2.08	0.75	1.33	4.00	2.00	3.00	1.50
16	2.67	1.00	1.67	5.00	2.50	4.00	2.00

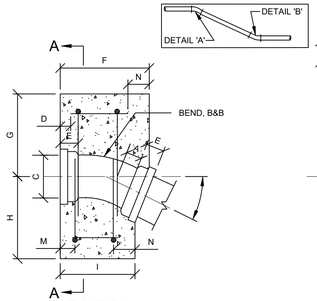
NOTES:
1. THE THRUST BLOCK FACE SHALL BE POURED AGAINST UNDISTURBED EARTH.
2. CLASS B CONCRETE, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 4,000 PSI.
3. THRUST BLOCK TO ABUT OR REST AGAINST UNDISTRIBUTED SOIL OR EARTH COMPACTED TO 95% MODIFIED PROCTER.
4. THRUST BLOCKS FOR HDPE PIPE SHALL BE PER PIPE MANUFACTURER.

CONCRETE THRUST BLOCK FOR PLUGS AND CAPS
THRUST BLOCK, PLUGS AND CAPS (TRADITIONAL DWSD SIZING)
DETAIL NO. 331413-03
NOT TO SCALE



NOTE:
1. POLYWRAP ALL PIPE AND FITTINGS BEFORE BACKFILLING.

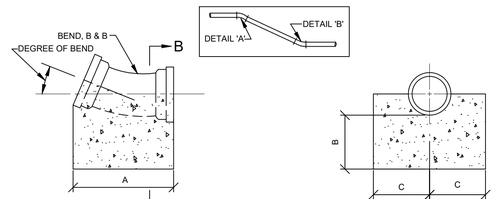
CONNECTION WITH EXISTING WATER MAIN (2 OF 2)
DETAIL NO. 331413-09
NOT TO SCALE



SCHEDULE OF THRUST BLOCK DIMENSIONS											DIMENSIONS - INCHES					
SIZE OF PIPE (IN)	BEND IN DEGREE	F (FT)	G (FT)	H (FT)	I (FT)	J (FT)	K (FT)	L (FT)	M (FT)	N (FT)	**	A	C	E	R	D	T
6	22.5	1.583	1.33	1.67	1.33	2.67	3.00	0.00	0.33	0.25	3@8"	5.0	10.6	4.0	15.06	1.50	0.55
6	45	1.583	1.33	1.67	1.00	2.67	3.00	0.00	0.33	0.25	3@8"	5.0	10.6	4.0	07.25	1.50	0.55
8	22.5	1.583	1.33	1.67	1.33	2.67	3.00	0.33	0.33	0.25	4@8"	5.5	13.0	4.0	17.62	1.50	0.60
8	45	1.67	1.50	2.50	1.00	4.00	4.00	0.50	0.50	0.25	4@12"	5.5	13.0	4.0	08.44	1.50	0.60
10	22.5	1.83	1.50	2.50	1.42	3.50	4.00	0.50	0.50	0.25	4@10"	6.5	15.3	4.0	22.62	1.50	0.68
10	45	1.92	1.67	2.83	1.00	4.00	4.50	0.67	0.67	0.25	4@12"	6.5	15.3	4.0	10.88	1.50	0.68
12	22.5	2.00	1.50	2.50	1.583	4.00	4.00	0.67	0.50	0.33	4@12"	7.5	17.6	4.0	27.62	1.50	0.75
12	45	2.08	1.50	3.00	1.17	5.00	4.50	0.92	0.75	0.25	4@14"	7.5	17.6	4.0	13.25	1.50	0.75
16	22.5	2.17	1.67	2.83	1.583	5.00	4.50	0.83	0.75	0.33	4@14"	8.0	22.2	4.0	27.62	1.75	0.89

NOTES:
1. THE THRUST BLOCK FACE SHALL BE POURED AGAINST UNDISTURBED EARTH.
2. CLASS B CONCRETE, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 4,000 PSI.
3. THRUST BLOCK TO ABUT OR REST AGAINST UNDISTRIBUTED SOIL OR EARTH COMPACTED TO 95% MODIFIED PROCTER.
4. THRUST BLOCKS FOR HDPE PIPE SHALL BE PER PIPE MANUFACTURER.

THRUST BLOCK, VERTICAL BEND - TRADITIONAL DWSD SIZING (1 OF 2)
DETAIL NO. 331413-04
NOT TO SCALE

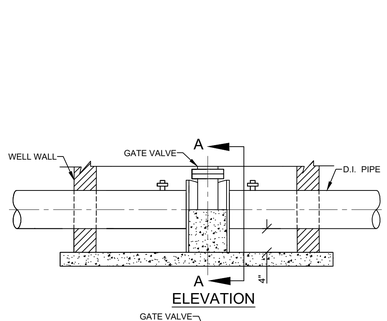


SIZE OF PIPE (IN)	BEND IN DEGREE	A (FT)	B (FT)	C (FT)
6	22.5	1.67	1.00	1.00
6	45	1.67	1.00	1.00
8	22.5	1.75	1.00	1.00
8	45	1.75	1.00	1.00
10	22.5	1.92	1.00	1.00
10	45	1.92	1.00	1.00
12	22.5	2.17	1.00	1.00
12	45	2.17	1.00	1.00
16	22.5	2.25	1.00	1.25
16	45	2.25	1.00	1.25

DETAIL "B"

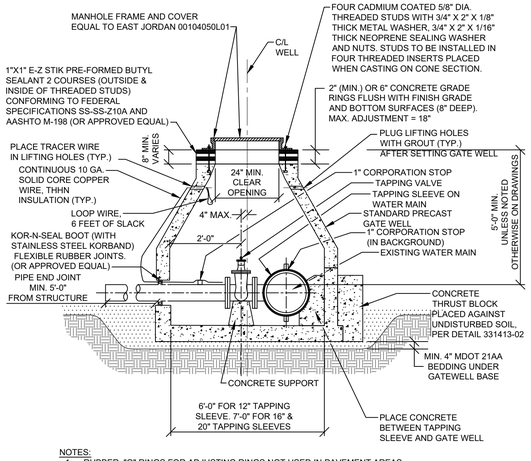
NOTES:
1. THE THRUST BLOCK FACE SHALL BE POURED AGAINST UNDISTURBED EARTH.
2. CLASS B CONCRETE, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 4,000 PSI.
3. THRUST BLOCK TO ABUT OR REST AGAINST UNDISTRIBUTED SOIL OR EARTH COMPACTED TO 95% MODIFIED PROCTER.
4. THRUST BLOCKS FOR HDPE PIPE SHALL BE PER PIPE MANUFACTURER.

THRUST BLOCK, VERTICAL BEND - TRADITIONAL DWSD SIZING (2 OF 2)
DETAIL NO. 331413-05
NOT TO SCALE



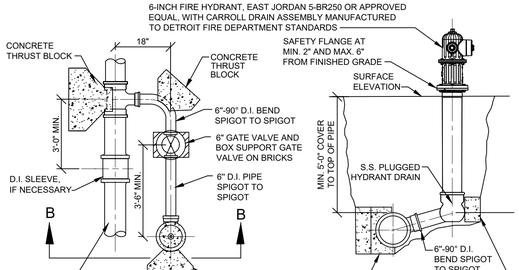
NOTE:
1. SIZE AND REINFORCEMENT REQUIREMENTS TO BE PER MANUFACTURERS RECOMMENDATIONS.

VALVE, GATE, CRADLE SUPPORT, CONCRETE
DETAIL NO. 331419-01
NOT TO SCALE



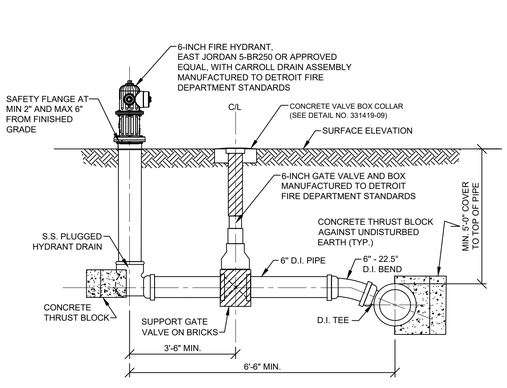
NOTES:
1. RUBBER "O" RINGS FOR ADJUSTING RINGS NOT USED IN PAVEMENT AREAS.
2. MANHOLE STEPS SHALL BE INSTALLED IN WELL WALL WHERE HEIGHT FROM TOP OF PIPE TO TOP OF WELL EXCEEDS 5'- 0".TOP STEP SHALL NOT BE MORE THAN 16" BELOW MH COVER OR AS DIRECTED. BOTTOM STEP SHALL NOT BE MORE THAN 18" ABOVE THE BENCH OR FLOOR LEVEL..
3. TRACING WIRE ON HDPE PIPE ONLY.

CONNECTION, NEW MAIN TO EXISTING MAIN USING TAPPING VALVE
DETAIL NO. 331419-05
NOT TO SCALE



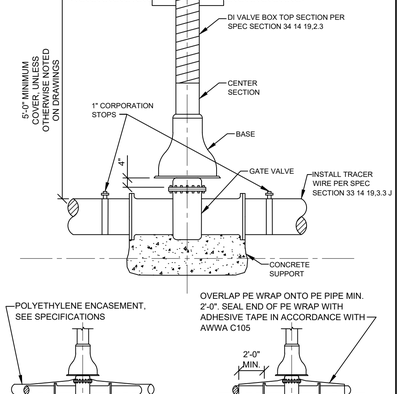
NOTES:
1. ALL INSTALLATION OR REPLACEMENT WORK FROM PROPOSED WATER MAIN AND TO HYDRANT SHALL BE A COMPLETE ASSEMBLY.
2. HYDRANT TO BE A MINIMUM OF 3 FEET BEHIND CURB.
3. THRUST BLOCKS TO BE SIZED ACCORDING TO THRUST BLOCK STANDARD DETAIL DRAWING.
4. SEE TRENCH DETAIL FOR BACKFILL AND COMPACTION.
5. PROVIDE COLLAR AT HYDRANT VALVE.
6. SEE DETAIL 331419-06 FOR TRACER WIRE INSTALLATION.
7. PUMPER NOZZLE SHALL FACE STREET.
8. TAPPING SLEEVE & VALVE SHALL NOT BE USED TO ESTABLISH A HYDRANT CONNECTION TO THE WATER MAIN.
9. UNDER NO CIRCUMSTANCES SHALL A WATER SERVICE BE TAPPED OFF OF THE 6-INCH DI HYDRANT SERVICE PIPE.

HYDRANT, 6 INCH, INSTALLATION OFFSET
DETAIL NO. 331419-02
NOT TO SCALE



NOTES:
1. ALL INSTALLATION OR REPLACEMENT WORK FROM PROPOSED WATER MAIN AND TO HYDRANT SHALL BE CONSIDERED A COMPLETE ASSEMBLY.
2. HYDRANT TO BE A MINIMUM OF 3 FEET BEHIND CURB.
3. THRUST BLOCKS TO BE SIZED ACCORDING TO THRUST BLOCK STANDARD DETAIL DRAWING.
4. SEE TRENCH DETAIL FOR BACKFILL AND COMPACTION.
5. SEE DETAIL 331419-06 FOR TRACER WIRE INSTALLATION.
6. PUMPER NOZZLE SHALL FACE STREET.
7. TAPPING SLEEVE & VALVE SHALL NOT BE USED TO ESTABLISH A HYDRANT CONNECTION TO THE WATER MAIN.
8. UNDER NO CIRCUMSTANCES SHALL A WATER SERVICE BE TAPPED OFF OF THE 6-INCH DI HYDRANT SERVICE PIPE.

HYDRANT, 6 INCH, INSTALLATION STRAIGHT AWAY
DETAIL NO. 331419-03
NOT TO SCALE



NOTES:
1. ALL MECHANICAL JOINTS REQUIRE RETAINER GLAND.
2. 12 INCH DIAMETER VALVES AND SMALLER SHALL BE TWO PIECE TYPE.
3. VALVES LARGER THAN 12 INCH DIAMETER SHALL BE THREE PIECE TYPE.
4. WRAP ALL BURIED VALVES, MECHANICAL JOINTS, AND JOINT RESTRAINT DEVICES WITH WAX TAPE IN ACCORDANCE WITH AWWA C217. OVERWRAP WAX TAPE WITH ONE WRAP OF PE ENCASEMENT IN ACCORDANCE WITH AWWA C105. TIGHTLY TAPE THE PE WRAP TO SEAL ALL JOINTS AND FOLDS.

VALVE BOX INSTALLATION
DETAIL NO. 331419-04
NOT TO SCALE

F					DESIGNED BY: BM	SEAL / STAMP
E					DRAWN BY: WW	
D					CHECKED BY: CLR	
C					MANAGER: RG	
B						
A	ISSUED FOR PROCUREMENT			4/27/20		
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

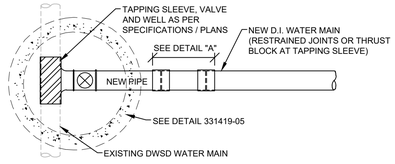
STANDARD DETAILS
WATERMAIN

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

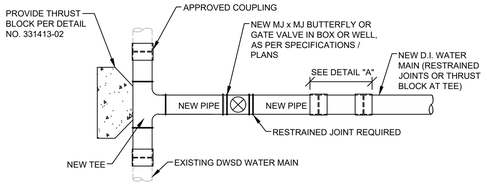
DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

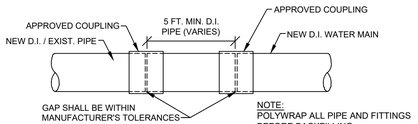
MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-715
FILE No. -
DRAWING No. SD-2



CONNECTION WITH EXISTING DWSD MAIN WITH TAPPING SLEEVE AND VALVE



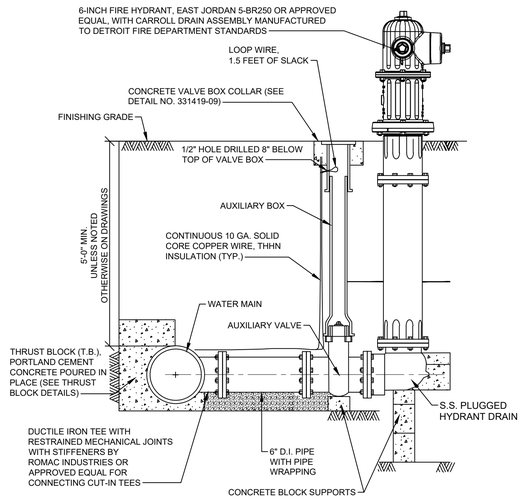
CONNECTION AT EXISTING DWSD MAIN WITH TEE / VALVE



DETAIL "A"

CONNECTION WITH EXISTING WATERMAIN
DETAIL NO. 331413-08

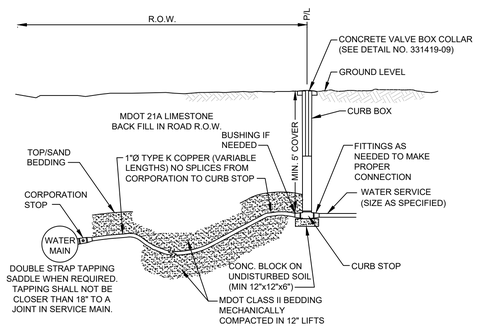
NOT TO SCALE



NOTES:
1. HYDRANT SHALL BE MANUFACTURED BY EJ.
2. USE RESTRAINED MECHANICAL JOINTS WITH STIFFENERS THAT ARE SUITABLE FOR THE EXISTING PIPE MATERIAL.
3. HYDRANT TO BE MIN. 3 FT. FROM CURB.
4. PUMPER NOZZLE SHALL FACE STREET.

FIRE HYDRANT INSTALLATION (HDPE PIPE)
DETAIL NO. 331419-06

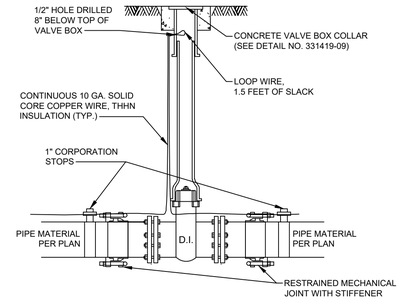
NOT TO SCALE



NOTES:
1. CURB BOX SHALL BE INSTALLED ON PROPERTY LINE.
2. TRENCH CONSTRUCTION / BACK FILL SHALL BE DONE IN SAME MANNER AS WATER MAIN TRENCH DETAIL.
3. IF EXISTING SERVICE RUN IS LEAD PIPE (Pb), THEN REPLACE PER SPECIFICATIONS SECTION 331417-81.
4. WRAP CORPORATION AND SERVICE SADDLE WITH WAX TAPE CONFORMING WITH AWWA C217.

RESIDENTIAL SERVICE CONNECTION
DETAIL NO. 331413-10

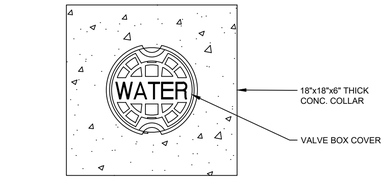
NOT TO SCALE

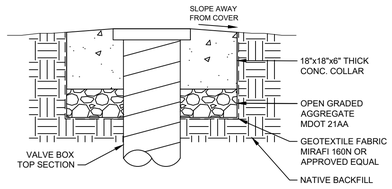


NOTES:
1. USE RESTRAINED MECHANICAL JOINTS WITH STIFFENERS THAT ARE SUITABLE FOR THE PIPE MATERIAL. STIFFENERS SHALL BE BY ROMAC INDUSTRIES OR APPROVED EQUAL.
2. POLYWRAP VALVE PER DETAIL 331419-04.
3. 12 INCH DIAMETER VALVES AND SMALLER SHALL BE TWO PIECE TYPE.
4. VALVES LARGER THAN 12 INCH DIAMETER SHALL BE THREE PIECE TYPE.

VALVE BOX (HDPE PIPE)
DETAIL NO. 331419-07

NOT TO SCALE

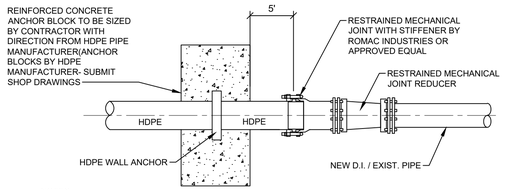




NOTE:
1. CLASS B CONCRETE, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 4,000 PSI.

CONCRETE VALVE BOX COLLAR
DETAIL NO. 331419-09

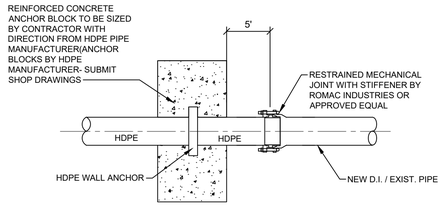
NOT TO SCALE



NOTES:
1. USE RESTRAINED MECHANICAL JOINTS WITH STIFFENERS THAT ARE SUITABLE FOR THE EXISTING PIPE MATERIAL OR NEW D.I. PIPE.
2. USE PIPE WRAPPING, PIPE COUPLINGS/ SLEEVES AS NECESSARY TO FACILITATE INSTALLATION AS REQUIRED.

HDPE TO EXISTING / NEW D.I. PIPE TRANSITION (REDUCER)
DETAIL NO. 331413-12

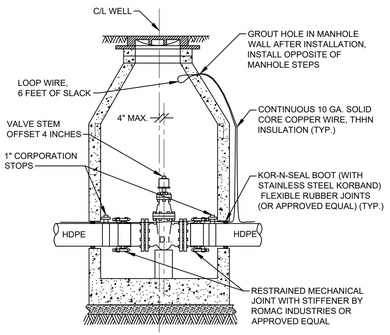
NOT TO SCALE



NOTES:
1. USE RESTRAINED MECHANICAL JOINTS WITH STIFFENERS THAT ARE SUITABLE FOR THE EXISTING PIPE MATERIAL OR NEW D.I. PIPE.
2. USE PIPE WRAPPING, PIPE COUPLINGS/ SLEEVES AS NECESSARY TO FACILITATE INSTALLATION AS REQUIRED.

HDPE TO EXISTING / NEW D.I. PIPE TRANSITION (NO REDUCER)
DETAIL NO. 331413-11

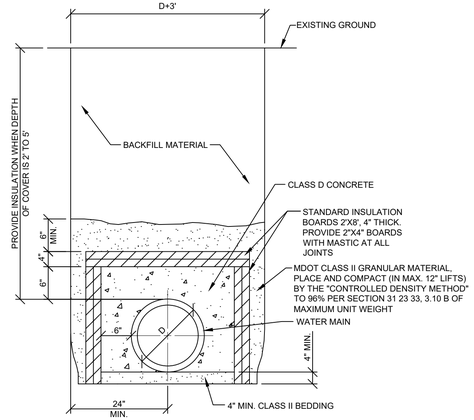
NOT TO SCALE



NOTES:
1. USE RESTRAINED MECHANICAL JOINTS WITH STIFFENERS THAT ARE SUITABLE FOR THE EXISTING PIPE MATERIAL.
2. REINFORCED CONCRETE ANCHOR BLOCK TO BE SIZED BY CONTRACTOR WITH DIRECTION FROM HDPE PIPE MANUFACTURER.
3. MANHOLE STEPS SHALL BE INSTALLED IN WELL WALL WHERE HEIGHT FROM TOP OF PIPE TO TOP OF WELL EXCEEDS 5'- 0".TOP STEP SHALL NOT BE MORE THAN 16" BELOW MH COVER OR AS DIRECTED. BOTTOM STEP SHALL NOT BE MORE THAN 18" ABOVE THE BENCH OR FLOOR LEVEL.

VALVE WELL (HDPE PIPE OPEN CUT)
DETAIL NO. 331419-08

NOT TO SCALE



NOTES:
1. INSULATION BOARD TO BE CLOSED CELL, EXTRUDED POLYSTYRENE FOAM MEETING ASTM 578, TYP VI, 40 PSI COMPERESSING STRENGTH (ASTM D1621) 0.1% MAX. WATER ABSORPTION (ASTM C272).
2. OVERLAP ALL INSULATION BOARD JOINTS. 6" WIDE AND 2" THICK.
3. CLASS B CONCRETE, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 4,000 PSI.
4. TRENCHING SHALL BE PER OSHA 29 CRF, SUBPART P.
5. ENCASEMENT IS REQUIRED FOR PIPING WITH LESS THAN 5 FT. OF COVER (LENGTH WILL VARY).

WATER MAIN TRENCH INSULATION DETAIL
DETAIL NO. 330700-01

NOT TO SCALE

F					DESIGNED BY:	SEAL / STAMP
E						
D					DRAWN BY:	
C						
B					CHECKED BY:	
A	ISSUED FOR PROCUREMENT			4/27/20	MANAGER:	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

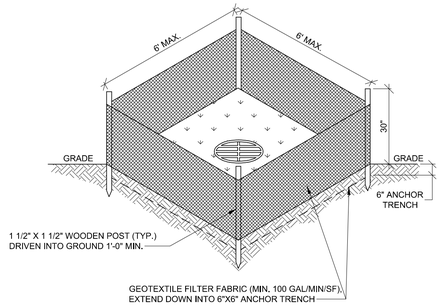
STANDARD DETAILS
WATERMAIN

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 5	- - -

MDEQ SRF Project No. 7483-01
REF. No. CS-1812
DWSD CONTRACT No. WS-715
FILE No. -
DRAWING No. SD-3

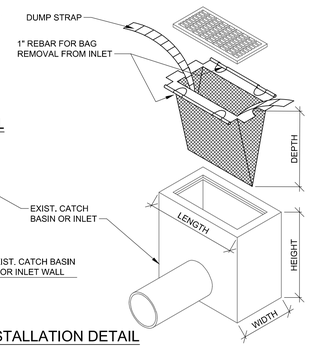


GENERAL NOTES:

1. REFER TO SILT FENCE DETAIL 015713-02 FOR INSTALLATION PROCEDURES.
2. WEEKLY INSPECTION AND MAINTENANCE MUST BE PROVIDED TO INSURE THAT THE DRAIN GUARD OPERATES EFFICIENTLY.
3. SOD INTERIOR OF DRAIN GUARD UNLESS INDICATED OTHERWISE.
4. REMOVE AND DISPOSE OF ACCUMULATED SEDIMENT AS NECESSARY, PER SPECIFICATION SECTION 015713.

DRAIN GUARD
DETAIL NO. 015713-01
NOT TO SCALE

BAG DETAIL

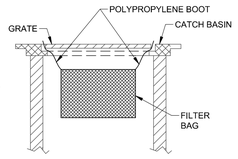


INSTALLATION DETAIL

NOTE:

TEMPORARY INLET SEDIMENT FILTER TO BE INSTALLED ON ALL PAVED CATCH BASINS OR STORM INLETS, SEDIMENT FILTERS TO BE SIMILAR TO:

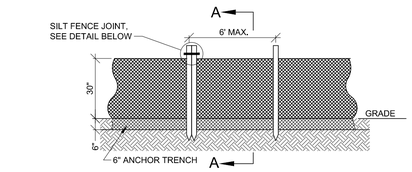
1. "SILTSACK" TYPE B, REGULAR FLOW, BY ACF ENVIRONMENTAL, INC.
2. "INLET PRO SEDIMENT BAG", STANDARD FLOW, WITH OPTIONAL FOAM DEFLECTOR BY HANES GEO COMPONENTS.
3. "DANDY CURB SACK" BY DANDY PRODUCTS, INC.
4. "BASIN BAG", REGULAR FLOW BY CSI GEOTURF, CLEAN FILTER AS NEEDED.



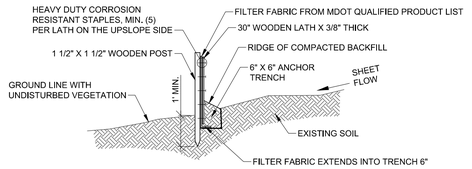
GENERAL NOTES

1. CONTRACTOR SHALL OBTAIN PERMISSION OF THE ENFORCING ROAD AGENCY BEFORE THIS TYPE OF CONTROL IS CONSTRUCTED IN THE ROAD RIGHT-OF-WAY.
2. CONTRACTOR SHALL KEEP CURBS & GUTTER INLET FILTERS (AFTER PAVING) IN PLACE UNTIL ALL AREAS CONTRIBUTING TO THEM ARE STABILIZED WITH VEGETATION.
3. CONTRACTOR SHALL PERFORM WEEKLY INSPECTION AND MAINTENANCE TO ENSURE THAT THE CURB & GUTTER INLET FILTER (AFTER PAVING) OPERATES EFFICIENTLY.

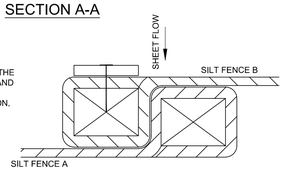
INLET PROTECTION FABRIC DROP
DETAIL NO. 015713-05
NOT TO SCALE



ELEVATION



SECTION A-A

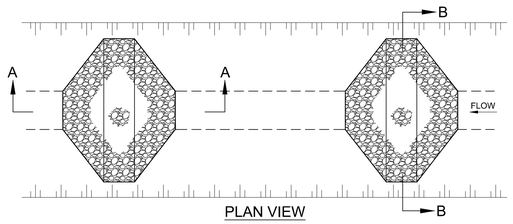


GENERAL NOTE:
SILT FENCE MATERIAL SHALL MEET THE REQUIREMENTS IN SECTION 910.04 AND TABLE 910-1 IN MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

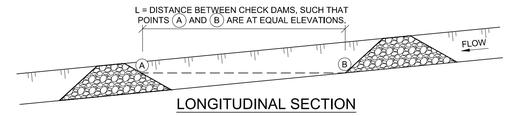
NOTE:
FABRIC TO BE WRAPPED AROUND FENCE POST.

SILT FENCE JOINT - TOP VIEW

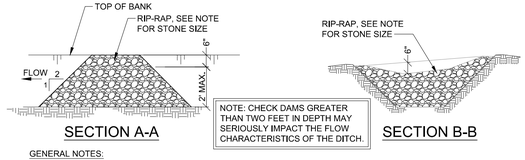
EROSION CONTROL, SILT FENCE
DETAIL NO. 015713-02
NOT TO SCALE



PLAN VIEW



LONGITUDINAL SECTION

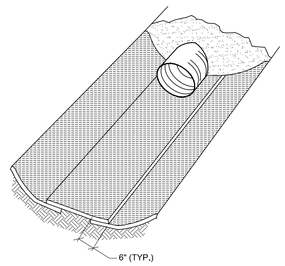


SECTION A-A SECTION B-B

GENERAL NOTES:

1. DEPENDING ON THE VELOCITY, SLOPE AND SOILS, USE THE PROPER SIZE RIP-RAP TO HANDLE THE SHEAR STRESS OF THE SLOPE/CHANNEL.
2. FOR SLOPE AND/OR CHANNEL PROTECTION, SEE THE MDOT CONSTRUCTION SITE SOIL EROSION PREVENTION POCKET GUIDE.
3. RIP-RAP SIZE SHOULD BE 2-4 INCHES FOR DITCH GRADES LESS THAN 2% AND 3-12 INCHES FOR DITCH GRADES GREATER THAN 2%.
4. BASE TO BE AT LEAST 2 X HEIGHT.

CHECK DAMS
DETAIL NO. 015713-06
NOT TO SCALE

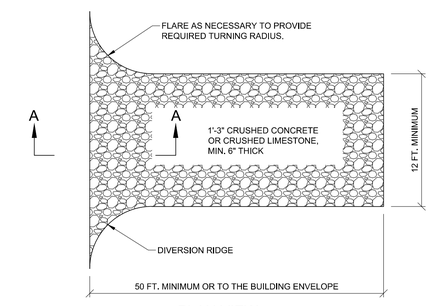


TYPICAL DITCH LINING

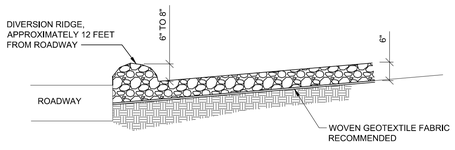
GENERAL NOTES: (FROM MDOT DRAINAGE MANUAL)

1. EROSION CONTROL BLANKETS PROTECT DENUDED SURFACES AGAINST WIND AND WATER EROSION, AND STABILIZE SOIL SURFACES WHILE VEGETATION IS BEING ESTABLISHED.
2. BLANKETS ARE PLACED IN DITCHES AND ON STEEP SLOPES USUALLY WITH RIP-RAP WHERE INDICATED ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER.
3. EXTEND BLANKETS UNDER PIPE THREE (3) INCHES. ANCHOR BLANKETS IN ACCORDANCE WITH MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 816 TURF ESTABLISHMENT.
4. PROVIDE MULCH BLANKETS/HIGH VELOCITY BLANKETS SELECTED FROM THE MDOT QUALIFIED PRODUCTS LIST.
5. USE MULCH BLANKETS WITH NETTING ON TOP SIDE ON SLOPES FLATTER THAN 1:2.
6. USE HIGH VELOCITY BLANKETS WITH NETTING ON TOP AND FIBERS IN CONTACT WITH SOIL ON SLOPES 1:2 OR GREATER.
7. USE MULCH BLANKET AS PERMANENT STABILIZATION TREATMENT FOR DITCHES WITH SLOPES BETWEEN 0.5% AND 1.5%.
8. USE HIGH VELOCITY MULCH BLANKET AS PERMANENT STABILIZATION TREATMENT FOR DITCHES WITH SLOPES BETWEEN 1.5% AND 3.0%.
9. USE ANCHOR TRENCH AT TOP OF SLOPE (SEE DETAIL 01014.02, SECTION A, FOR DETAILS ON TRENCH).

MULCH BLANKETS / HIGH VELOCITY BLANKETS
DETAIL NO. 015713-03
NOT TO SCALE

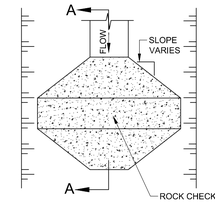


PLAN VIEW

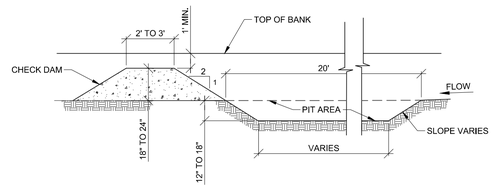


CROSS-SECTION A-A

GRAVEL ACCESS APPROACH
DETAIL NO. 015713-07
NOT TO SCALE



PLAN VIEW

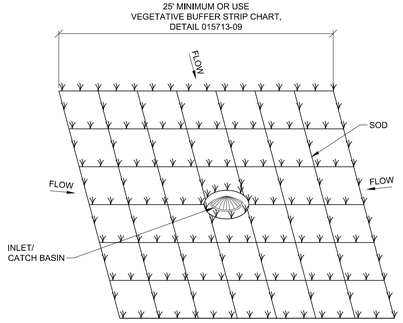


SECTION A-A

GENERAL NOTES:

1. THE DITCH CROSS-SECTION SHOULD ONLY BE PARTIALLY BLOCKED, IN ORDER TO MINIMIZE THE LOSS IN DITCH FLOW CAPACITY.
2. CHECK DAM SHOULD BE REMOVED AND THE SEDIMENT PIT FILLED AS SOON AS THE UPSTREAM AREAS CONTRIBUTING TO IT ARE STABILIZED, THIS WILL ALLOW THE DITCH TO FUNCTION AS DESIGNED.
3. WEEKLY INSPECTION AND MAINTENANCE MUST BE PROVIDED TO INSURE THAT THE DITCH SEDIMENT TRAP OPERATES EFFICIENTLY.
4. THE PERMISSION OF THE GOVERNMENTAL AGENCY, RESPONSIBLE FOR THE MAINTENANCE OF THE DITCH, MUST BE RECEIVED BEFORE A DITCH SEDIMENT TRAP IS INSTALLED.
5. SEE STANDARD DETAIL 015713-06 OR DWSD FOR CHECK DAM SPECIFICATIONS FOR CONSTRUCTION.

DITCH SEDIMENT TRAP
DETAIL NO. 015713-04
NOT TO SCALE



ISOMETRIC VIEW

NOTES:

1. SOD INLET FILTERS ARE PADS OF SOD PLACED AROUND A STORM DRAIN INLET OR CATCH BASIN.
2. SOD INLET FILTERS ARE INSTALLED TO SLOW THE FLOW OF WATER INTO AN INLET OR CATCH BASIN AND FILTER OUT SEDIMENT IN THE PROCESS.
3. SOD INLET FILTERS SHOULD ONLY BE USED TO HANDLE LIGHT CONCENTRATIONS OF SEDIMENT. THEY ARE BEST USED AFTER FINAL GRADING IS COMPLETE AND DURING THE ESTABLISHMENT OF A VEGETATIVE COVER.

SOD FILTER
DETAIL NO. 015713-08
NOT TO SCALE

F					DESIGNED BY: BM	SEAL / STAMP
E					DRAWN BY: WW	
D					CHECKED BY: CLR	
C					MANAGER: RG	
B						
A	ISSUED FOR 60% DESIGN			5/8/20		
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS
SOIL EROSION AND SEDIMENTATION CONTROL

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 4	- - -

MDEQ SRF Project No.	-
REF. No.	CS-XXXX
DWSD CONTRACT No.	WS-720
FILE No.	-
DRAWING No.	SD-4

✱ INDICATES APPLICABILITY OF A SPECIFIC CONTROL MEASURE TO ONE OR MORE OF THE SEVEN PROBLEM AREAS.

KEY	DETAILS	CHARACTERISTICS	SLOPES A	STREAMS AND WATERWAYS B	SURFACE DRAINAGEWAYS C	ENCLOSED DRAINAGE (INLET & OUTFALL CONTROL) D	LARGE FLAT SURFACE AREAS E	BORROW AND STOCKPILE AREAS F	ADJACENT PROPERTIES G
1	STRIPPING & STOCKPILING TOPSOIL	TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREAS TO ACT AS A DIVERSION. STOCKPILE SHOULD BE TEMPORARILY SEEDED. AVOID EXTENSIVE AND UNNECESSARY CLEARING OF TOPSOIL.	✱				✱	✱	
2	GRUBBING OMITTED	SAVES COST OF GRUBBING. PROVIDES NEW SPROUTS. RETAINS EXISTING ROOT MAT SYSTEMS. REDUCES WINDFALL AT NEW FOREST EDGE. REDUCES SHEET FLOW VELOCITIES. DISCOURAGES EQUIPMENT ENTRANCE.	✱				✱		✱
3	PERMANENT / TEMPORARY SEEDING	INEXPENSIVE AND VERY EFFECTIVE. STABILIZES SOIL, THUS MINIMIZING EROSION. PERMITS RUNOFF TO INFILTRATE SOIL, REDUCING RUNOFF. VOLUME SHOULD INCLUDE PREPARED TOPSOIL BED. FERTILIZING MULCHING AND WATERING REQUIRED.	✱		✱		✱	✱	✱
4	MULCH BLANKETS AND HIGH VELOCITY MULCH BLANKETS	MULCH BLANKETS PROVIDE AN IMMEDIATE AND EFFECTIVE COVER OVER RAW ERODIBLE SLOPES AFFORDING EXCELLENT PROTECTION AGAINST RAIN AND WIND EROSION. HIGH VELOCITY MULCH BLANKETS WORK WELL FOR STABILIZING THE BOTTOM OF DITCHES IN WATERWAYS.	✱		✱		✱	✱	
5	HYDRO-SEEDING	EFFECTIVE ON LARGE AREAS. MULCH TACKING AGENT USED TO PROVIDE IMMEDIATE PROTECTION UNTIL GRASS IS ROOTED. SHOULD INCLUDE PREPARED TOPSOIL BED. FERTILIZING, MULCHING AND WATERING ARE REQUIRED.	✱				✱	✱	✱
6	SODDING	PROVIDES IMMEDIATE PROTECTION. CAN BE USED ON STEEP SLOPES WHERE SEED MAY BE DIFFICULT TO ESTABLISH. EASY TO PLACE. MAY BE REPAIRED IF DAMAGED. SHOULD INCLUDE PREPARED TOPSOIL BED.	✱				✱	✱	✱
7	VEGETATIVE BUFFER STRIP	SLOWS RUNOFF VELOCITY. FILTERS SEDIMENT FROM RUNOFF. REDUCES VOLUME OF RUNOFF ON SLOPES. ASSISTS IN ESTABLISHING PERMANENT VEGETATIVE COVER.	✱						✱
8	MULCHING AND MULCH ANCHORING	USED ALONE TO PROTECT EXPOSED AREAS FOR SHORT PERIODS. PROTECTS SOIL FROM IMPACT OF FALLING RAIN. PRESERVES SOIL MOISTURE AND PROTECTS GERMINATING SEED FROM TEMPERATURE EXTREMES. SHOULD BE INSPECTED AFTER EVERY RAINSTORM AND REPAIRED AS NECESSARY UNTIL VEGETATION IS WELL ESTABLISHED.	✱				✱	✱	
9	SLOPE ROUGHENING AND SCARIFICATION	CAN BE ACCOMPLISHED BY HARROWING WITH A DISK, BACK BLADING, OR TRACKING WITH A DOZER PERPENDICULAR TO THE SLOPE. REDUCES VELOCITY AND INCREASES INFILTRATION RATES. COLLECTS SEDIMENT. HOLDS WATER, SEED, AND MULCH BETTER THAN SMOOTH SURFACES.	✱				✱	✱	✱
10	RIP RAP	USED WHERE VEGETATION IS NOT EASILY ESTABLISHED. EFFECTIVE FOR HIGH VELOCITIES OR HIGH CONCENTRATIONS. PERMITS RUNOFF TO INFILTRATE SOIL. DISSIPATES ENERGY FLOW AT SYSTEM OUTLETS. SHOULD BE PLACED ON A GEOTEXTILE LINER.	✱	✱	✱	✱			
11	AGGREGATE COVER	STABILIZES SOIL SURFACE, THUS MINIMIZING EROSION. PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER. MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS. REDUCES POTENTIAL SOIL EROSION AND FUGITIVE DUST BY STABILIZING RAW AREAS.					✱		
12	BENCHES	REDUCES RUNOFF VELOCITY BY REDUCING EFFECTIVE SLOPE LENGTH. COLLECTS SEDIMENT. PROVIDES ACCESS TO SLOPES FOR SEEDING, MULCHING AND MAINTENANCE.	✱					✱	
13	DIVERSION BERM	DIVERTS WATER FROM VULNERABLE AREAS. COLLECTS AND DIRECTS WATER TO PREPARED DRAINAGEWAYS. MAY BE PLACED AS PART OF NORMAL CONSTRUCTION OPERATION.	✱				✱	✱	✱
14	INTERCEPTING DITCH	COLLECTS AND DIVERTS WATER TO A STABLE OUTLET OR SEDIMENT CONTROL DEVICE TO REDUCE EROSION. POTENTIALLY BE INCORPORATED IN PERMANENT PROJECT DRAINAGE SYSTEMS.	✱				✱	✱	✱
15	DIVERSION BERM & INTERCEPTING DITCH	DIVERTS WATER TO A PREPARED DRAINAGEWAY. MAY BE USED AT INTERVALS ACROSS SLOPE FACE TO REDUCE EFFECTIVE SLOPE LENGTH.	✱				✱	✱	✱
16	DUST CONTROL	DUST CONTROL CAN BE ACCOMPLISHED BY WATERING, AND/OR APPLYING CALCIUM CHLORIDE. THE DISTURBED AREAS SHOULD BE KEPT TO A MINIMUM. PERMANENT/TEMPORARY SEEDING SHOULD BE APPLIED AS SOON AS POSSIBLE.	✱				✱	✱	

SOIL EROSION AND SEDIMENTATION CONTROL, MEASURES 1-33
DETAIL NO. 015713-13 THROUGH 015713-19
NOT TO SCALE

✱ INDICATES APPLICABILITY OF A SPECIFIC CONTROL MEASURE TO ONE OR MORE OF THE SEVEN PROBLEM AREAS.

KEY	DETAILS	CHARACTERISTICS	SLOPES A	STREAMS AND WATERWAYS B	SURFACE DRAINAGEWAYS C	ENCLOSED DRAINAGE (INLET & OUTFALL CONTROL) D	LARGE FLAT SURFACE AREAS E	BORROW AND STOCKPILE AREAS F	ADJACENT PROPERTIES G
17	GRAVEL FILTER BERM	FILTER FLOW PRIOR TO ENTRY INTO A LAKE, STREAM OR WETLAND. NOT TO BE USED AS A CHECK DAM.	✱		✱			✱	✱
18	BRUSH FILTER	USES SLASH AND LOGS FROM CLEARING OPERATIONS. CAN BE COVERED AND SEEDED RATHER THAN REMOVED. ELIMINATES NEED FOR BURNING OR REMOVAL OF MATERIAL FROM SITE.							✱
19	BARE CHANNEL	LEAST EXPENSIVE FORM OF DRAINAGEWAY. MAY BE USED ONLY WHERE GRADIENT IS VERY LOW AND WITH SOILS OF MINIMUM EROSION POTENTIAL.			✱				
20	GRASSED WATERWAY	GRASS TENDS TO SLOW RUNOFF AND FILTER OUT SEDIMENT. USED WHERE BARE CHANNEL WOULD BE ERODED.			✱				
21	SLOPE DRAIN (SUBSURFACE PIPE)	PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGE OF SLOPE AREA. USUALLY PERMANENT. CAN BE CONSTRUCTED OR EXTENDED AS GRADING PROGRESSES.	✱		✱				
22	PIPE DROP	REDUCES RUNOFF VELOCITY. REMOVES SEDIMENT AND TURBIDITY. CAN BE DESIGNED TO HANDLE LARGE VOLUMES OF FLOW. ALLOWS WATER TO DROP RAPIDLY IN ELEVATION WITHOUT CAUSING EXCESSIVE EROSION.	✱		✱				
23	SOD FILTER	INEXPENSIVE TO CONSTRUCT. PROVIDES IMMEDIATE PROTECTION. PROTECTS AREAS AROUND INLETS FROM EROSION.				✱			
24	STRAW BALE FILTER	INEXPENSIVE AND EASY TO CONSTRUCT. CAN BE LOCATED AS NECESSARY TO COLLECT SEDIMENT. MAY BE USED IN CONJUNCTION WITH SNOW FENCE FOR ADDED STABILITY.				✱			✱
25	CHECK DAM	CAN BE CONSTRUCTED ACROSS DITCHED OR ANY AREA OF CONCENTRATED FLOW. PROTECTS VEGETATION IN EARLY STAGES OF GROWTH. A CHECK DAM IS INTENDED TO REDUCE WATER VELOCITIES AND CAPTURE SEDIMENT. A CHECK DAM IS NOT A FILTERING DEVICE	✱		✱			✱	
26	INLET PROTECTION FABRIC DROP	PROVIDES SETTLING AND FILTERING OF SILT LADEN WATER PRIOR TO ITS ENTRY INTO THE DRAINAGE SYSTEM. CAN BE USED IN MEDIAN AND SIDE DITCHES WHERE VEGETATION WILL BE DISTURBED. ALLOWS FOR EARLY USE OF DRAINAGE SYSTEMS PRIOR TO PROJECT COMPLETION.			✱		✱		
27	ROCK FILTER	CAN UTILIZE MATERIAL FOUND ON SITE. EASY TO CONSTRUCT. FILTERS SEDIMENT FROM RUNOFF.				✱			✱
28	INLET SEDIMENT TRAP	EASY TO SHAPE. COLLECTS SEDIMENT. MAY BE CLEANED AND EXPANDED AS NEEDED. CAN BE USED WHERE MEDIUM FLOWS ARE ANTICIPATED.				✱			
29	STONE AND ROCK CROSSING	MAY BE ROCK OR CLEAN RUBBLE MINIMIZES STREAM TURBIDITY. INEXPENSIVE. MAY ALSO SERVE AS DITCH CHECK OR SEDIMENT TRAP.		✱					
30	SILT FENCE	A PERMEABLE BARRIER ERECTED BELOW DISTURBED AREAS TO CAPTURE SEDIMENTS FROM SHEET FLOW. CAN BE USED TO DIVERT SMALL VOLUMES OF WATER TO STABLE OUTLETS. INEFFECTIVE AS A FILTER AND SHOULD NEVER BE PLACED ACROSS STREAMS OR DITCHES WHERE FLOW IS CONCENTRATED.	✱					✱	✱
31	DRAIN GUARD	PERMEABLE BARRIER ERECTED AROUND AN INLET TO CAPTURE SEDIMENTS.				✱			
32	WIND BREAK	MINIMIZES WIND EROSION. MAY BE SNOW FENCE.					✱		
33	GRAVEL ACCESS APPROACH	PROVIDES A STABLE ACCESS TO ROADWAYS MINIMIZING FUGITIVE DUST AND TRACKING OF MATERIALS ONTO PUBLIC STREETS AND HIGHWAYS.					✱	✱	

SOIL EROSION AND SEDIMENTATION CONTROL
TEMPORARY FACILITIES

THE CONTRACTOR SHALL CONSTRUCT THIS PROJECT IN COMPLIANCE WITH PART 91 OF ACT NO. 451 OF 1994, NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, OF THE MICHIGAN COMPILED LAWS ENTITLED "SOIL EROSION AND SEDIMENTATION CONTROL" UNDER THE CONTROL OF THE LOCAL PERMIT AGENCY CHARGED WITH ADMINISTERING THE PROVISIONS OF THIS ACT, THE CONTRACTOR SHALL FOLLOW THE PROCEDURES DELINEATED BELOW AND CONSTRUCT AND MAINTAIN THE FACILITIES SHOWN ON THE DRAWINGS TO CONTROL WATER AND WIND EROSION DURING CONSTRUCTION OF THIS PROJECT.

ALL DISTURBED SURFACE AREA (INCLUDING UTILITY TRENCHES) SHALL BE TEMPORARILY GRADED AND/OR DITCHED TO DIRECT ALL WATER RUNOFF FROM SUCH AREAS TO SEDIMENTATION CONTROL DEVICES WHICH WILL PREVENT WATER CARRYING ERODED SOIL FROM ENTERING A WATERCOURSE, SEWER, OR ADJACENT LANDS. SUCH SEDIMENTATION CONTROL DEVICES SHALL INCLUDE BUT NOT BE LIMITED TO PROTECTIVE DITCHES, SEDIMENT TRAPS, SEDIMENT FILTERS, DITCH TRAPS, PIPE BARRIERS, AND FILTERS AS DETAILED AND REQUIRED AND WHERE INDICATED ON THE DRAWINGS. AFTER THE PROJECT WORK HAS BEEN COMPLETED, INSPECTED, AND APPROVED, THE CONTRACTOR SHALL REMOVE ALL SEDIMENTATION CONTROL DEVICES, MATERIAL AND THEIR COLLECTED SILT AND DEBRIS AND RESTORE THE AREA IN ACCORDANCE WITH THE DRAWINGS.

IN ROADWAY AREAS TEMPORARY AGGREGATE SURFACING SHALL BE PLACED IMMEDIATELY AFTER THE BACKFILLING OPERATION HAS BEEN COMPLETED. POSITIVE DUST CONTROL MEASURES SHALL BE TAKEN AT ALL TIMES.

PERMANENT STABILIZATION SHALL BE COMPLETED WITHIN 5 DAYS OF FINAL EARTH CHANGE. FINAL CLEANUP AND RESTORATION WILL CONSIST OF FINAL GRADING, TOPSOILING, SEEDING AND MULCHING AND/OR SODDING OF ALL DISTURBED AREAS OF THE PROJECT.

IF SEASONAL CONDITIONS PREVENT FINAL CLEANING AND RESTORATION, THE CONTRACTOR SHALL PROCEED WITH TEMPORARY STABILIZATION OF THE DISTURBED AREA. TEMPORARY STABILIZATION SHALL CONSIST OF ROUGH GRADING THE DISTURBED AREA IN ACCORDANCE WITH THESE SPECIFICATIONS. TEMPORARY STABILIZATION MATERIALS SHALL BE REMOVED AND DISPOSED OF AND FINAL CLEANUP AND RESTORATION SHALL BE COMPLETED NOT LATER THAN 5 DAYS AFTER SEASONAL CONDITIONS ALLOW PERFORMANCE OF THE REQUIRED WORK.

SOIL EROSION AND SEDIMENTATION CONTROL, TEMPORARY FACILITIES
DETAIL NO. 015713-10
NOT TO SCALE

SOIL EROSION AND SEDIMENTATION CONTROL
MAINTENANCE NOTES

THE CONTRACTOR SHALL INSPECT SOIL EROSION AND SEDIMENTATION CONTROL DEVICES WEEKLY AND WITHIN 24 HOURS OF A SIGNIFICANT RAIN EVENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SOIL EROSION AND SEDIMENTATION CONTROL DEVICES.

MAINTENANCE INCLUDES ALL WORK NECESSARY FOR PROPER OPERATION OF THE DEVICES. DEVICES WHICH CAN NOT BE REPAIRED MAY NEED TO BE REPLACED. MAINTENANCE OF THE DEVICES SHALL BE PERFORMED WITHIN 24 HOURS OF INSPECTION.

SEDIMENT SHALL BE REMOVED AS NECESSARY TO MAINTAIN THE EFFECTIVENESS OF SOIL EROSION AND SEDIMENTATION CONTROL DEVICES.

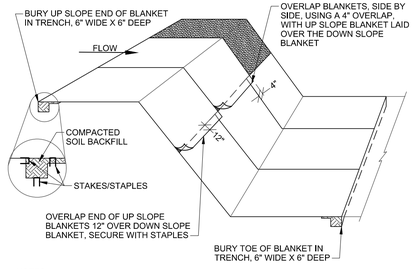
SEDIMENT DEPOSITED ALONG SILT FENCE SHALL BE REMOVED WHEN IT REACHES 1/3 TO 1/2 THE HEIGHT OF THE FENCE.

TURF ESTABLISHMENT MEASURES SHALL BE MAINTAINED AS WOULD ANY OTHER DEVICES PRIOR TO ESTABLISHMENT OF PERMANENT TURF.

ALL MUD, DIRT AND DEBRIS TRACKED ONTO EXISTING ROADS FROM THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.

CONTRACTOR SHALL ENSURE THAT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES PROTECT AGAINST LOSS OF SOIL BY THE ACTION OF WATER, ICE, GRAVITY OR WIND.

SOIL EROSION AND SEDIMENTATION CONTROL, MAINTENANCE NOTES
DETAIL NO. 015713-11
NOT TO SCALE

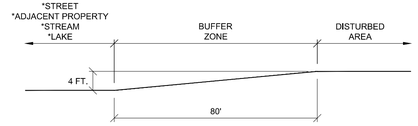


NOTES:

1. PLACE MULCH BLANKET PARALLEL TO FLOW AND ANCHOR SECURELY.
2. WHEN BLANKETS ARE USED IN FLOWING DITCH, BLANKETS SHOULD NOT OVERLAP IN DITCH CENTER, PARALLEL TO FLOW.
3. STAPLES INSTALLED/SECURED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
4. WHERE POSSIBLE, CONSTRUCT WITH BIODEGRADABLE MATERIAL.

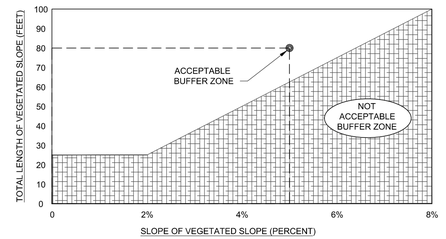
MULCH BLANKETS
DETAIL NO. 015713-20
NOT TO SCALE

EXAMPLE:
LENGTH OF BUFFER ZONE = 80'
% OF SLOPE OF BUFFER ZONE = 5%



ELEVATION VIEW

THE GRAPH SHOWN BELOW IS USED TO DETERMINE THE ADEQUACY OF AN EXISTING VEGETATIVE BUFFER ZONE FOR USE AS A SEDIMENT FILTER. THIS GRAPH IS ONLY APPLICABLE IF THE VEGETATION IS 90% DENSE AND AT LEAST 1" IN LENGTH OVER EVERY SQUARE FOOT OF DISTURBED SOIL. AN AREA COVERED WITH WEEDS OR BUSHES AND TREES, WITHOUT A GOOD GROUND COVER, IS NOT ACCEPTABLE.



VEGETATIVE BUFFER STRIP CHART

VEGETATIVE BUFFER STRIP
DETAIL NO. 015713-09
NOT TO SCALE

SUMMARY OF BASIC PRINCIPLES:

1. KEEP DISTURBED AREA AS SMALL AS POSSIBLE.
2. STABILIZE AND/OR PROTECT DISTURBED AREAS AS SOON AS POSSIBLE.
3. KEEP STORM WATER RUNOFF VELOCITIES LOW.
4. RETAIN SEDIMENT WITHIN IMMEDIATE CONSTRUCTION AREA.

THE PURPOSE OF THIS PLAN IS TO SPECIFY METHODS FOR TEMPORARY EROSION CONTROL DURING CONSTRUCTION. IT IS INTENDED THAT MEASURES CALLED FOR IN THE SPECIFICATIONS AND SHOWN ON THESE STANDARD DETAILS PLANS BE STRICTLY ADHERED TO, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE THAT CONSTRUCTION PROCEDURES UNDERTAKEN BE IN CONFORMANCE WITH THE STATE OF MICHIGAN ACT 451 OF 1994 PART 91, SOIL EROSION AND SEDIMENTATION CONTROL.

ALL SOIL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE REGULARLY MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT. COLLECTED SILT AND SEDIMENTATION SHALL BE REMOVED PERIODICALLY TO MAINTAIN THE EFFECTIVENESS OF THE SILT TRAPS OR SEDIMENTATION CONTROL DEVICES, WHERE REQUIRED, THE CONTRACTOR SHALL REPLACE FILTER MATERIALS WHICH HAVE BECOME INEFFECTIVE DUE TO CONTAMINATION OR PHYSICAL DETERIORATION.

IF POSSIBLE, NO GRUBBING SHOULD BE DONE WITHIN 30' OF AN ACTIVE WATERCOURSE.

AGGREGATES PLACED IN STREAMS SHOULD CONTAIN A MINIMUM OF FINES. AS A GENERAL RULE FOR DAMS IN SMALL STREAMS, AT LEAST 50 STONE SHOULD BE 6" DIAMETER OR LARGER, 3" OR LARGER STONE SHALL BE USED FOR LINING STREAM BOTTOMS WHERE LINING IS REQUIRED.

ALL TEMPORARY EROSION CONTROL FACILITIES SHOULD BE REMOVED BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION UNLESS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE. CARE SHALL BE TAKEN DURING REMOVAL TO MINIMIZE SILTATION IN NEARBY DRAINAGE COURSES.

SURFACE DISRUPTION IN ADVANCE OF CONSTRUCTION INCLUDING CLEARING, GRADING OR SIGNIFICANT SOD REMOVAL SHALL BE LIMITED AS FOLLOWS, UNLESS PERMISSION IS OTHERWISE OBTAINED FROM THE GOVERNING AGENCY:

A. WET WEATHER SEASON (MARCH, APRIL, MAY) - 5 DAYS PRIOR TO BEGINNING ANY EARTH CHANGE ACTIVITY.
B. DRY WEATHER SEASON (JUNE, JULY, AUGUST, SEPTEMBER, OCTOBER, NOVEMBER) - 10 DAYS PRIOR TO BEGINNING ANY EARTH CHANGE ACTIVITY.
C. COLD WEATHER SEASON (DECEMBER, JANUARY, FEBRUARY) - 15 DAYS PRIOR TO BEGINNING ANY EARTH CHANGE ACTIVITY.

SOIL EROSION AND SEDIMENTATION CONTROL, GENERAL NOTES
DETAIL NO. 015713-12
NOT TO SCALE

F					DESIGNED BY: BM
E					
D					DRAWN BY: WW
C					CHECKED BY: CLR
B					
A	ISSUED FOR 60% DESIGN			5/8/20	MANAGER: RG
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

SEAL / STAMP

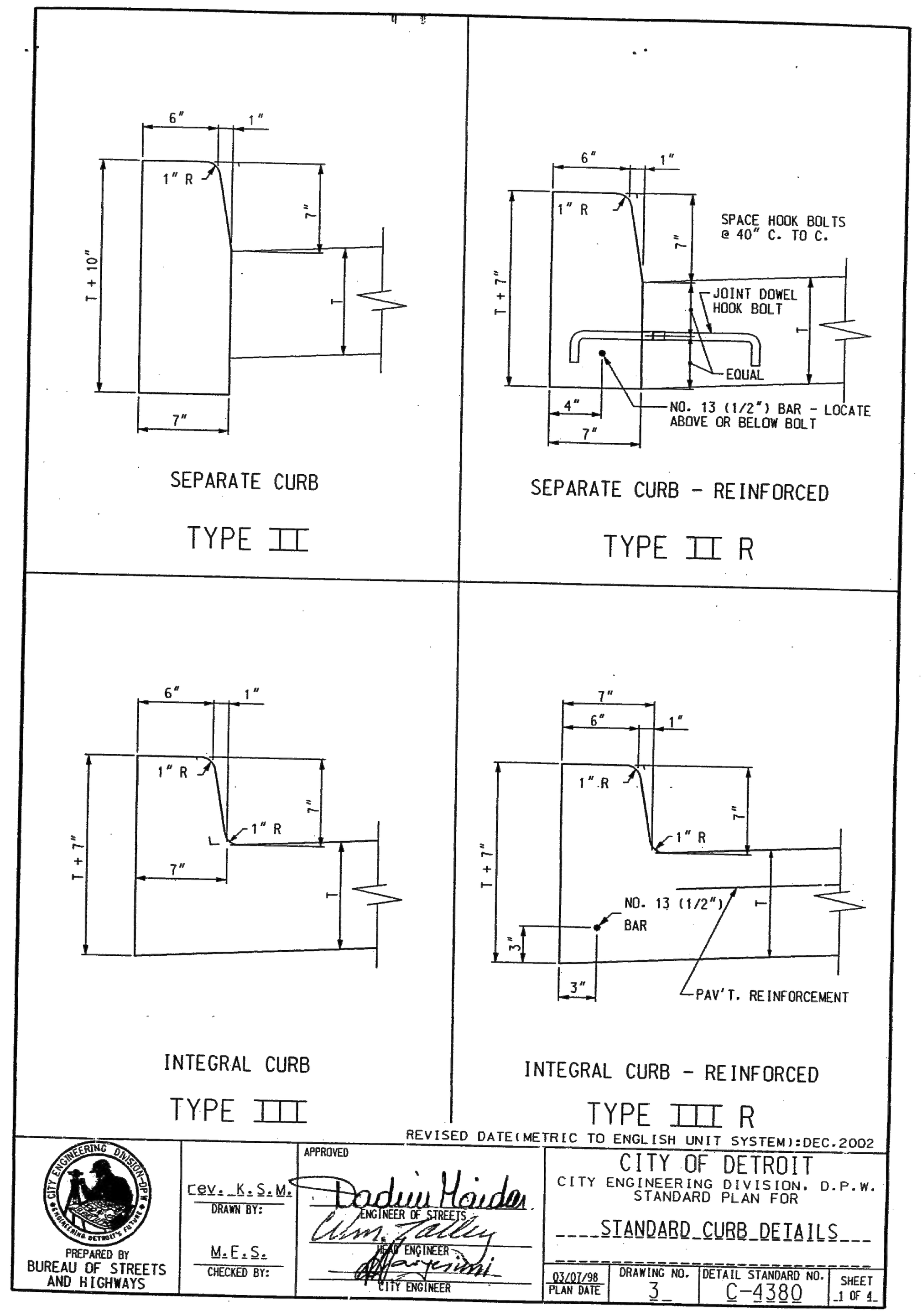
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

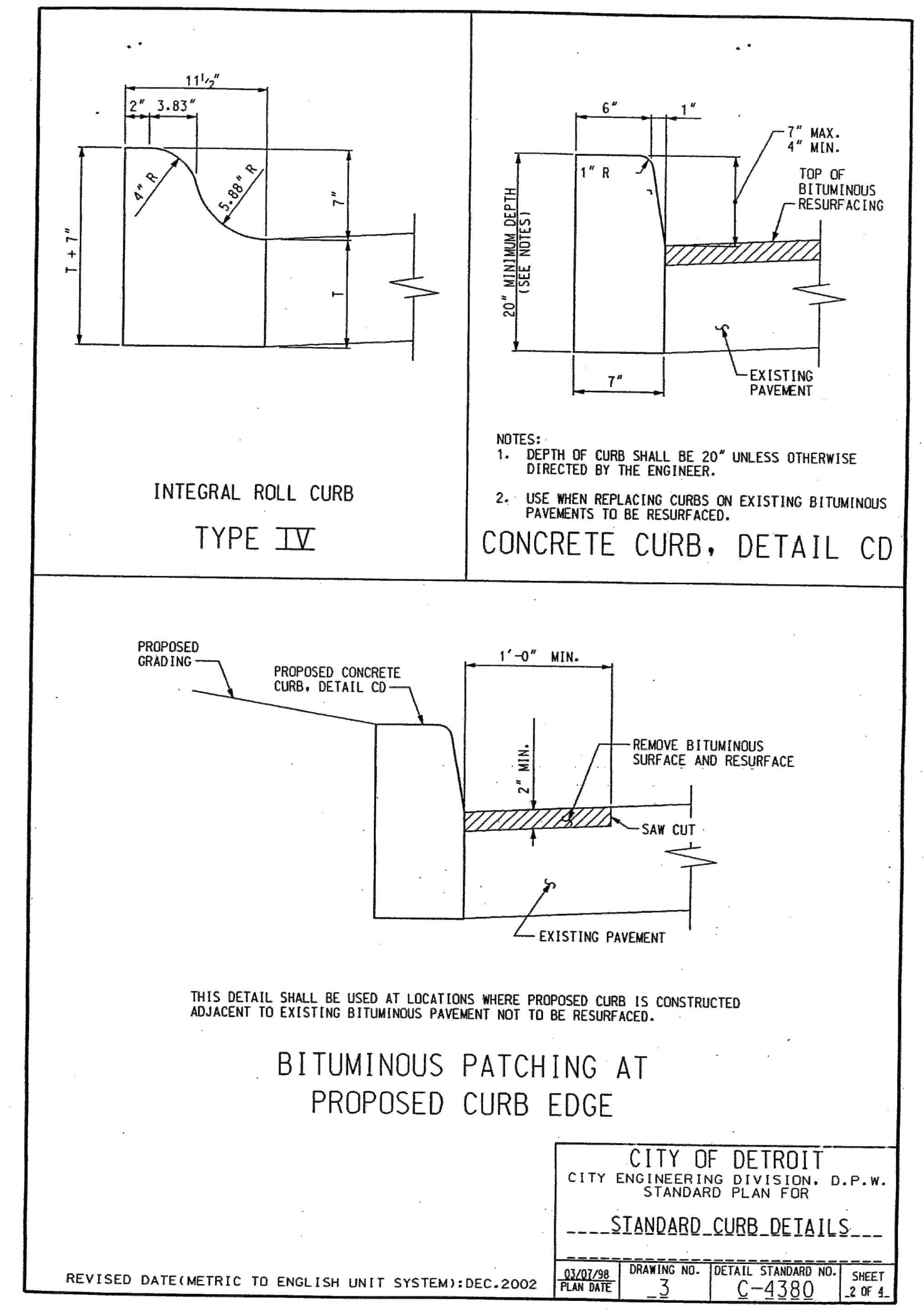
STANDARD DETAILS
SOIL EROSION AND SEDIMENTATION CONTROL

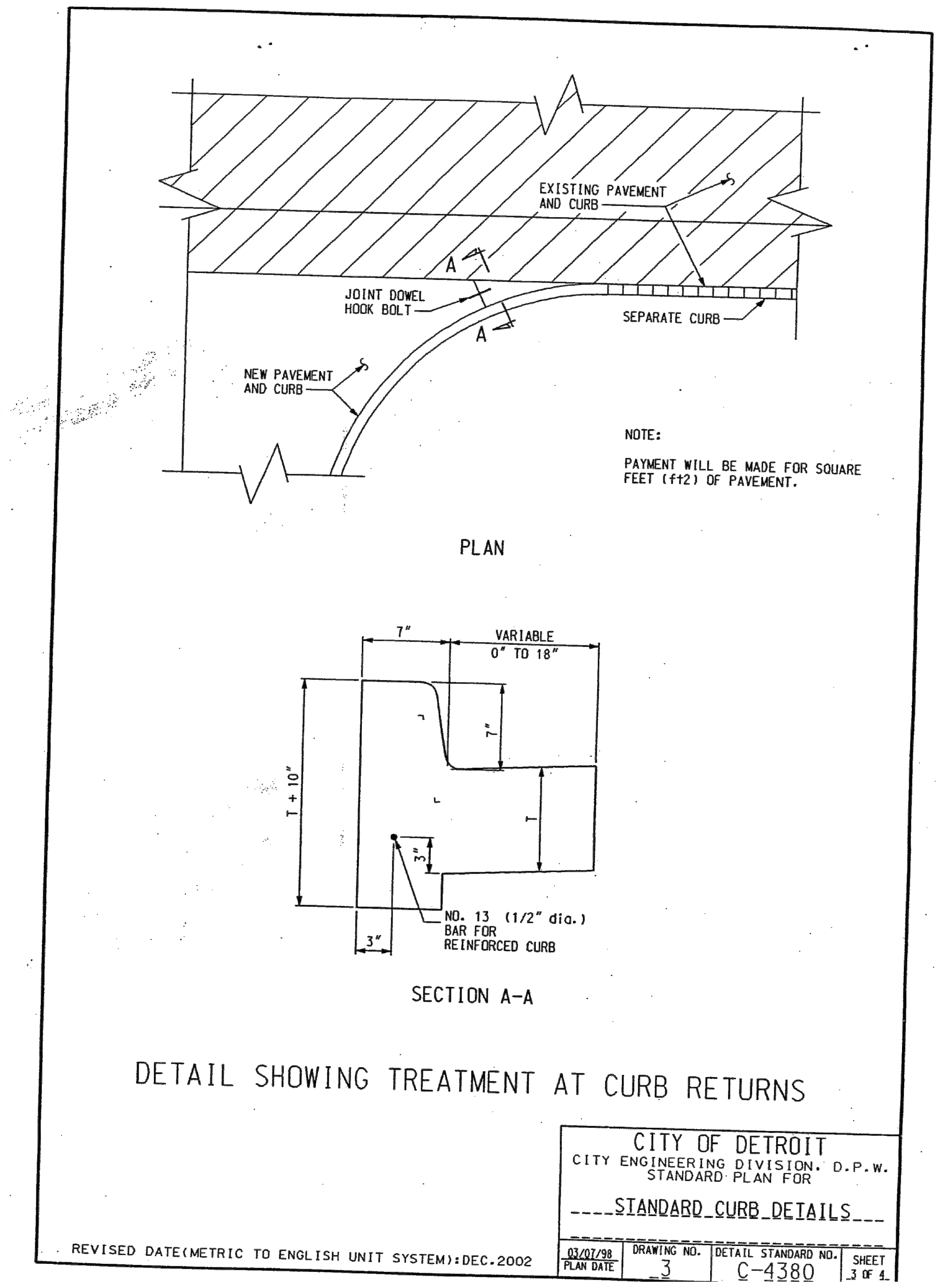
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

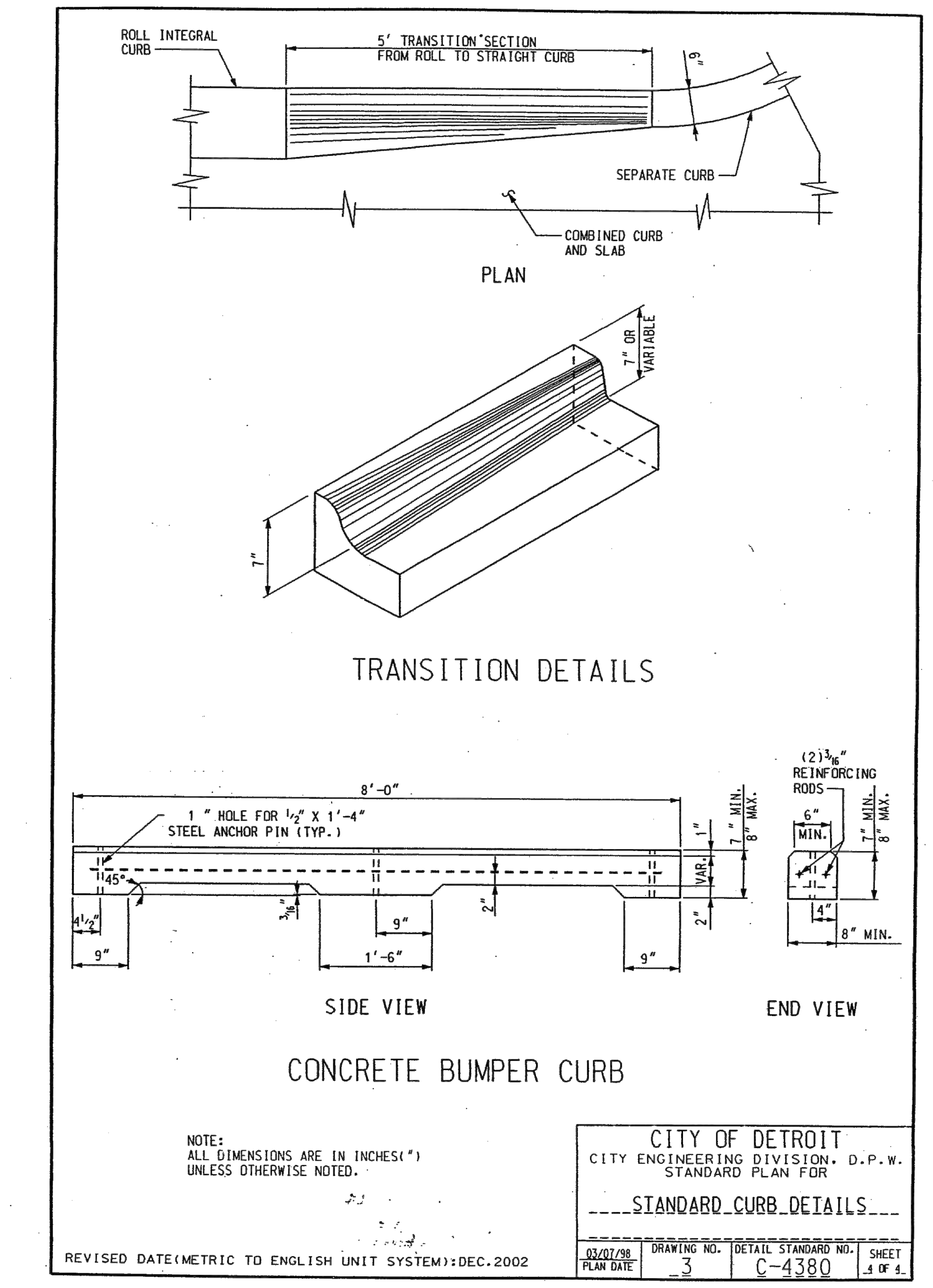
SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 4	- - -

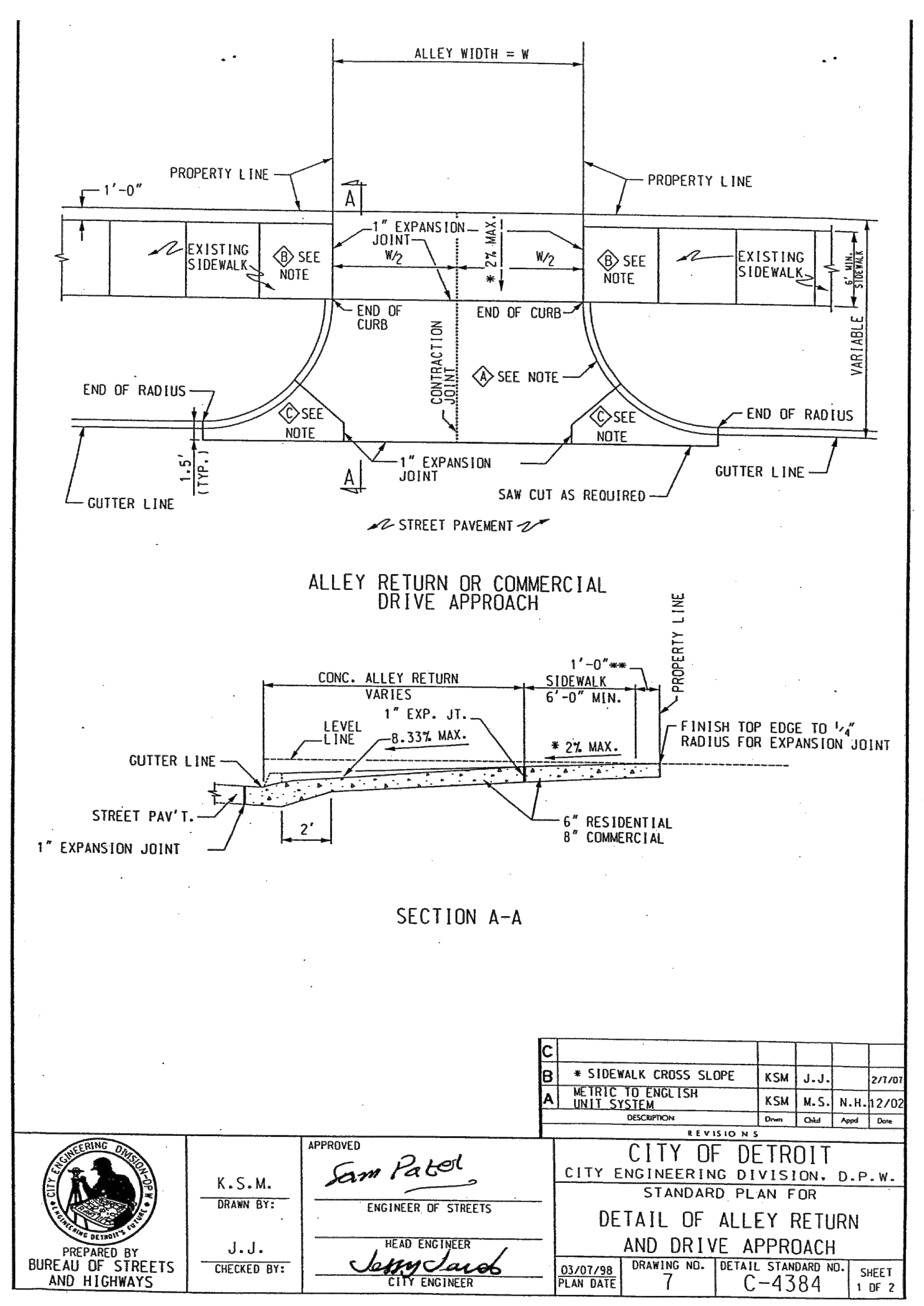
MDEQ SRF Project No. -
REF. No. CS-XXXX
DWSD CONTRACT No. WS-720
FILE No. -
DRAWING No. SD-5

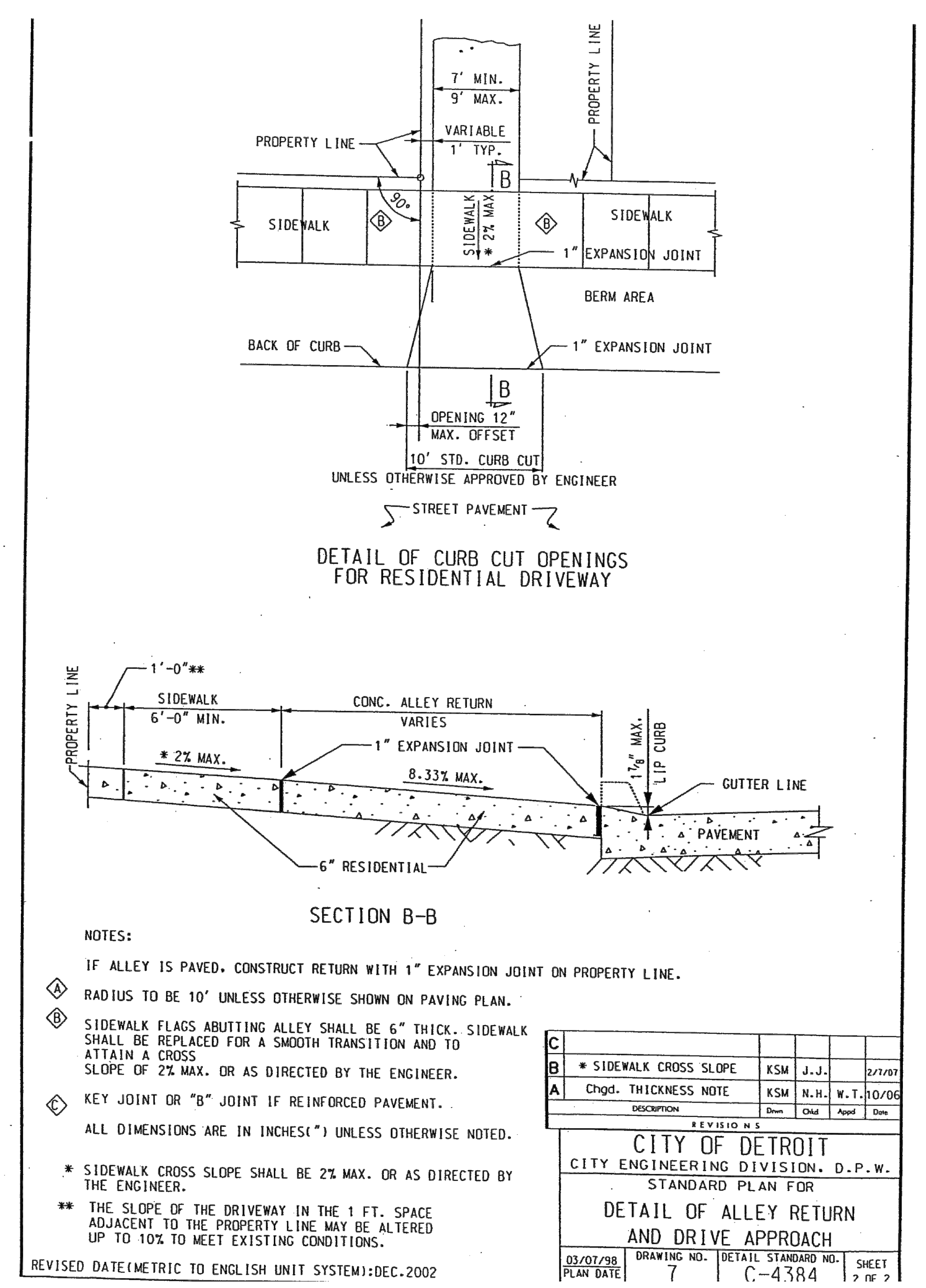


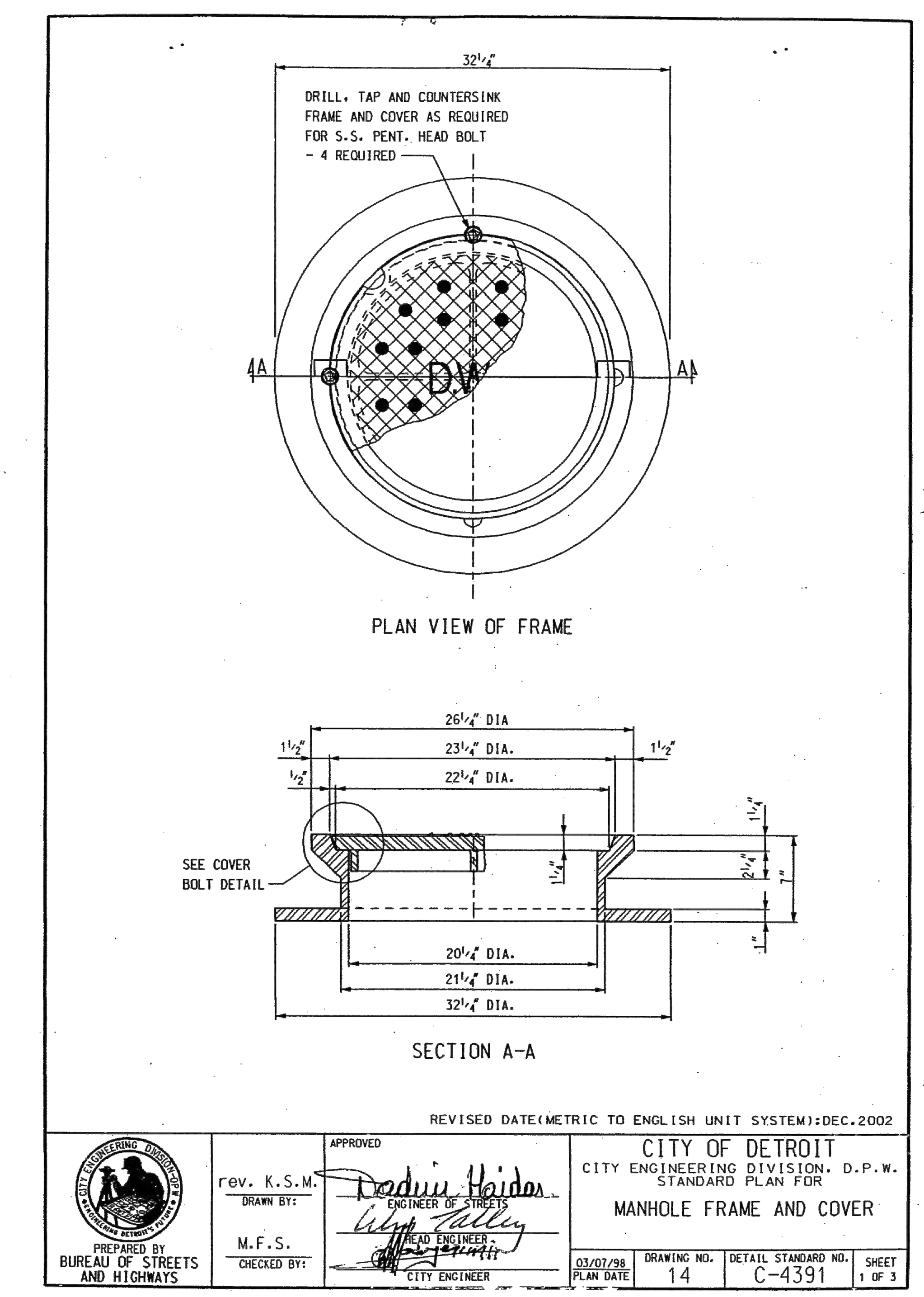


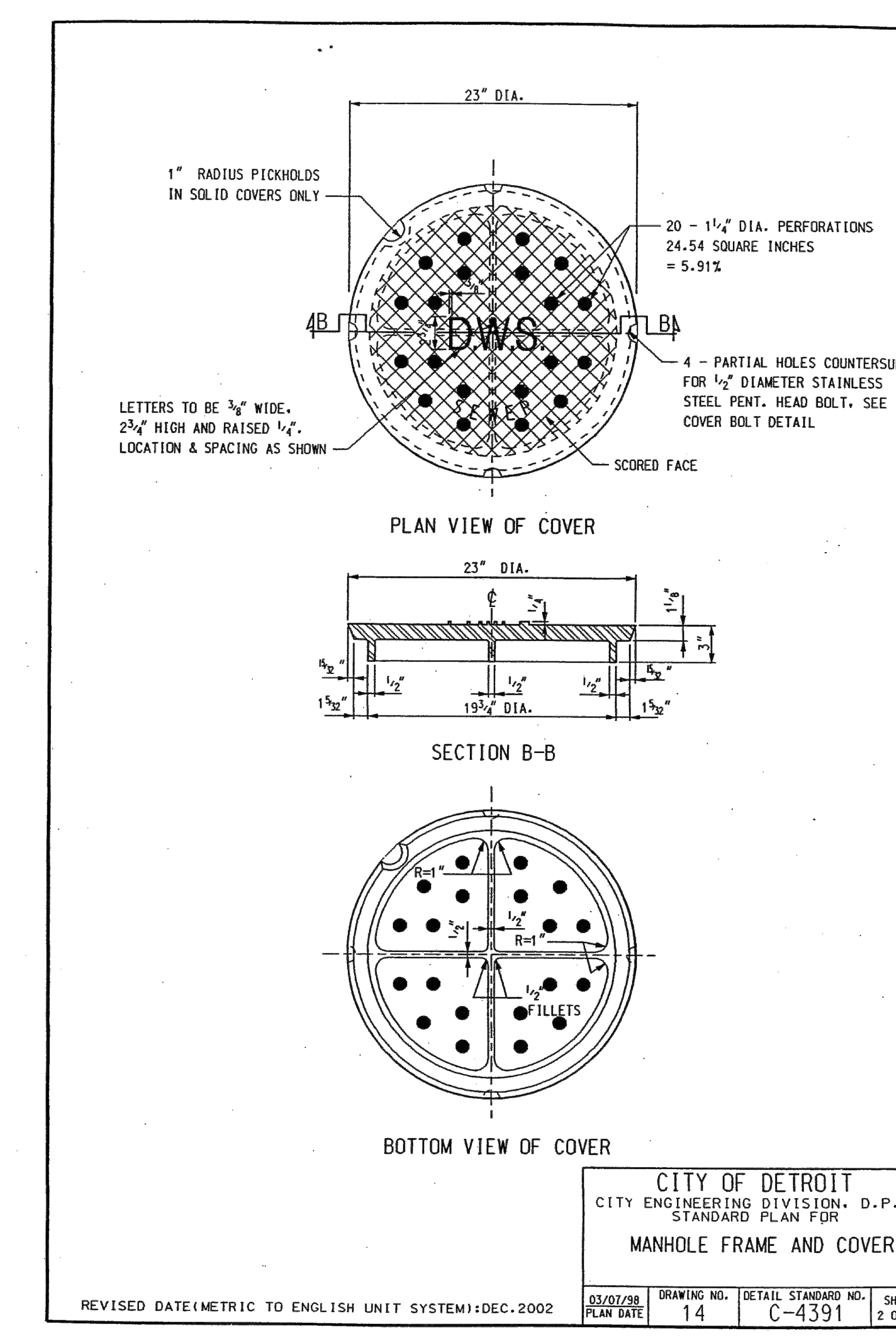












F					
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D					
C					
B					
A	ISSUED FOR 60% DESIGN			5/8/20
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE

DESIGNED BY: JK
DRAWN BY: JM
CHECKED BY: CRL
MANAGER: RG

SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS
RESTORATION-1

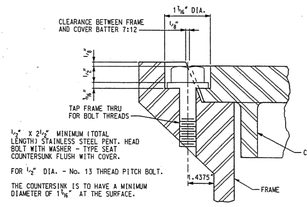
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN		RANGE			SECTION			PORTION CODE		
	1	S	1	0	E	0	1	4	-	-	-

MDEQ SRF Project No. -
REF. No. CS-XXXX
DWSD CONTRACT No. WS-720
FILE No. -
DRAWING No. SD-6

PLAN VIEW OF BOLT



COVER BOLT DETAIL

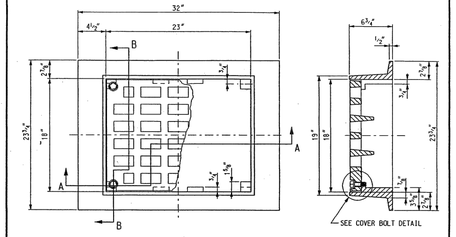
NOTES:

1. FRAME AND COVER TO BE GRAY IRON CASTING. ASTM A48. CLASS 30B
   TOTAL WT. = 410 lbs. (PERF. COVER)
   MANHOLE FRAME = 262 lbs.
   COVER (PERF.) = 148 lbs.
   COVER (BLANK) = 156 lbs.
2. THE SEATING FACE OF THE COVER AND SEAT FOR SAME ON THE FRAME SHALL BE MACHINE FINISHED OR THE EQUIVALENT THEREOF SO THAT THE COVER SHALL HAVE AN EVEN BEARING ON ITS SEAT AT ALL POINTS WITHOUT ROCKING OR TILTING.
3. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
MANHOLE FRAME AND COVER

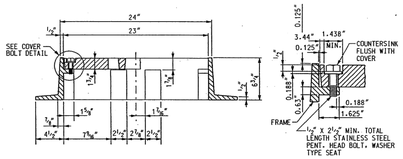
01/07/98 PLAN DATE	DRAWING NO. 14	DETAIL STANDARD NO. C-4391	SHEET 3 OF 3

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002



PLAN VIEW OF FRAME

SECTION B-B



SECTION A-A

COVER BOLT DETAIL

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

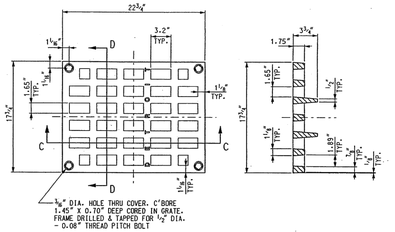
PREPARED BY BUREAU OF STREETS AND HIGHWAYS

DRAWN BY: rev. K.S.M.
CHECKED BY: M.F.S.

APPROVED
ENGINEER OF STREETS
ROAD ENGINEER
CITY ENGINEER

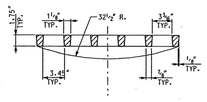
CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
FLAT TYPE
GRATE AND FRAME

01/07/98 PLAN DATE	DRAWING NO. 15	DETAIL STANDARD NO. C-4392	SHEET 1 OF 2

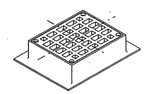


PLAN VIEW OF GRATE

SECTION D-D



SECTION C-C



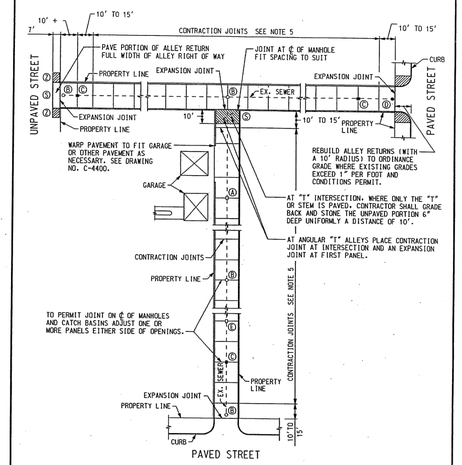
ISOMETRIC VIEW

NOTE:
ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
FLAT TYPE
GRATE AND FRAME

01/07/98 PLAN DATE	DRAWING NO. 15	DETAIL STANDARD NO. C-4392	SHEET 2 OF 2

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002



PAVED STREET

TYPICAL PLAN

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

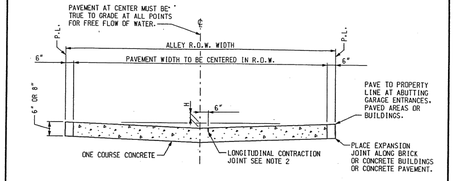
PREPARED BY BUREAU OF STREETS AND HIGHWAYS

DRAWN BY: rev. K.S.M.
CHECKED BY: M.F.S.

APPROVED
ENGINEER OF STREETS
ROAD ENGINEER
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
TYPICAL PLAN AND SECTION FOR
CONCRETE ALLEY PAVEMENT

PLAN DATE	DRAWING NO. 1	DETAIL STANDARD NO. C-4396	SHEET 1 OF 2



TYPICAL SECTION

ELEMENTS		
ALLEY WIDTH PAV'T	R.O.W.	H
19'	20'	5"
17'	18'	4"
15'	16'	3"

NOTES:

1. PLACE EXPANSION JOINTS AT ALL STREET PROPERTY LINES AND ALLEY INTERSECTIONS.
2. LONGITUDINAL CONTRACTION JOINT TO BE CONSTRUCTED IN PAVEMENTS 17' AND OVER IN WIDTH UNLESS OTHERWISE NOTED ON PAVING PLAN.
3. MAXIMUM SPACING BETWEEN EXPANSION JOINTS SHOULD NOT EXCEED 600 FEET.
4. IF STREET IS ECONOMY PAVED THE AREA BETWEEN THE WALK AND EDGE OF PAVEMENT SHALL BE PAVED WITH 6" STONE BASE PLUS 2" OF COLD PATCH MATERIAL. THE WALK FLAG SHALL BE 6" THICK
5. CONTRACTION JOINTS SHALL BE SPACED AT 15' C. TO C. FOR SLAG AGGREGATE AND 6.0 m C. TO C. FOR NATURAL AGGREGATE.

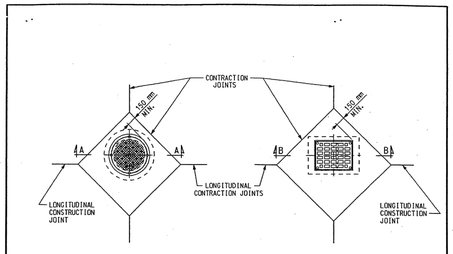
CONSTRUCTION SYMBOLS LEGEND

○	EXISTING SEWER MANHOLE
●	PROPOSED SEWER MANHOLE
□	EXISTING CATCH BASIN
■	PROPOSED CATCH BASIN
Ⓐ	ADJUST EXISTING CATCH BASIN
Ⓑ	ADJUST EXISTING MANHOLE
Ⓒ	CONSTRUCT CATCH BASIN
Ⓓ	CONSTRUCT MANHOLE
Ⓔ	ABANDON EXISTING CATCH BASIN
Ⓢ	STONING AND GRADING
Ⓩ	CONSTRUCT STANDARD 6" CONCRETE SIDEWALK

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
TYPICAL PLAN AND SECTION FOR
CONCRETE ALLEY PAVEMENT

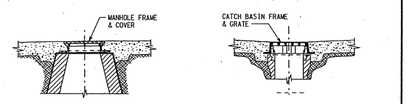
01/07/98 PLAN DATE	DRAWING NO. 1	DETAIL STANDARD NO. C-4396	SHEET 2 OF 2

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002



PLAN

PLAN



SECTION A-A

SECTION B-B

MANHOLE AND CATCH BASIN JOINT DETAILS

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

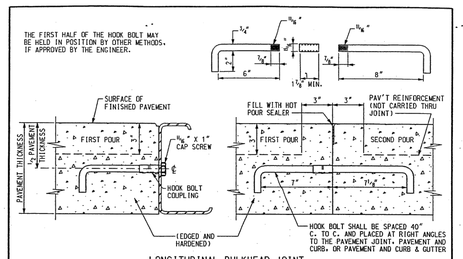
PREPARED BY BUREAU OF STREETS AND HIGHWAYS

DRAWN BY: rev. K.S.M.
CHECKED BY: M.F.S.

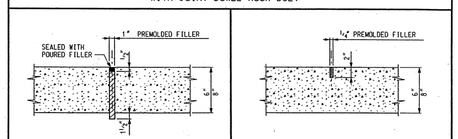
APPROVED
ENGINEER OF STREETS
ROAD ENGINEER
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
DETAIL AND
STANDARD JOINTS

01/07/98 PLAN DATE	DRAWING NO. 2	DETAIL STANDARD NO. C-4397	SHEET 1 OF 2

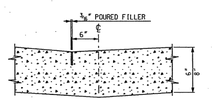


LONGITUDINAL BULKHEAD JOINT
WITH JOINT DOWEL HOOK BOLT



EXPANSION JOINT

TRANSVERSE CONTRACTION JOINT



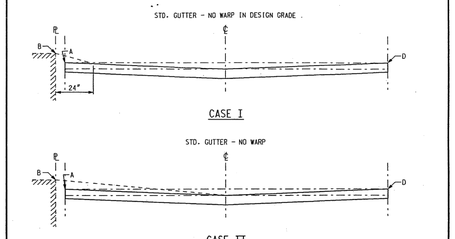
LONGITUDINAL CONTRACTION JOINT

NOTE:
ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
DETAIL AND
STANDARD JOINTS

01/07/98 PLAN DATE	DRAWING NO. 2	DETAIL STANDARD NO. C-4397	SHEET 2 OF 2



REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

PREPARED BY BUREAU OF STREETS AND HIGHWAYS

DRAWN BY: rev. K.S.M.
CHECKED BY: M.F.S.

APPROVED
ENGINEER OF STREETS
ROAD ENGINEER
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
ALLEY PAVING
SPECIAL WARPING DETAILS

01/07/98 PLAN DATE	DRAWING NO. 10	DETAIL STANDARD NO. C-4400	SHEET 1 OF 2

F					DESIGNED BY: JK
E					
D					DRAWN BY: JM
C					CHECKED BY: CRL
B					
A	ISSUED FOR 60% DESIGN			5/8/20	MANAGER: RG
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS
RESTORATION-2

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

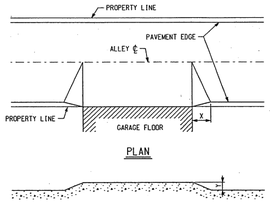
SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 4	- - -

MDEQ SRF Project No. -
REF. No. CS-XXXX
DWSD CONTRACT No. WS-720
FILE No. -
DRAWING No. SD-7

ALLEY PAVING
SPECIAL WARPING DETAILS
DIFFERENCE IN ELEVATION BETWEEN A & B *OR D & E *(IN FEET)

CASE NO.	20' ALLEY HIGH SIDE	20' ALLEY LOW SIDE	18' ALLEY HIGH SIDE	18' ALLEY LOW SIDE	16" ALLEY HIGH SIDE	16" ALLEY LOW SIDE
I	0 - 0.4'		0 - 0.4'		0 - 0.4'	
II	0.4'-0.8'		0.4'-0.8'		0.4'-0.8'	
II	WITH EXTREME CARE IN CONSTRUCTION MAX. = 1.0'					
III	0 - 0.4'		0 - 0.4'		0 - 0.4'	
III_1		0 - 0.4'		0 - 0.4'		0 - 0.4'
III_2		0 - 0.8'		0 - 0.8'		0 - 0.8'
III_3	0.4'-0.7'		0.4'-0.6'		0.4'-0.5'	
IV	0 - 0.4'		0 - 0.4'		0 - 0.4'	
IV_1		0 - 0.4'		0 - 0.4'		0 - 0.3'
IV_2		0 - 0.4'		0 - 0.4'		0 - 0.4'
IV_3	0.4'-0.8'		0.4'-0.8'		0 - 0.6'	

* A & D ARE GRADE ELEVATION (EDGE OF PAVEMENT).
* B & E ARE ELEVATIONS OF GARAGE FLOOR OR OTHER PAVEMENT ON PROPERTY LINE.



PLAN

PROFILE

X = 10 x Y MINIMUM

X = TRANSITION DISTANCE BETWEEN RAMPED SECTION AND ALLEY GRADE

Y = DISTANCE EDGE OF PAVEMENT IS RAISED FOR RAMP TO GARAGE

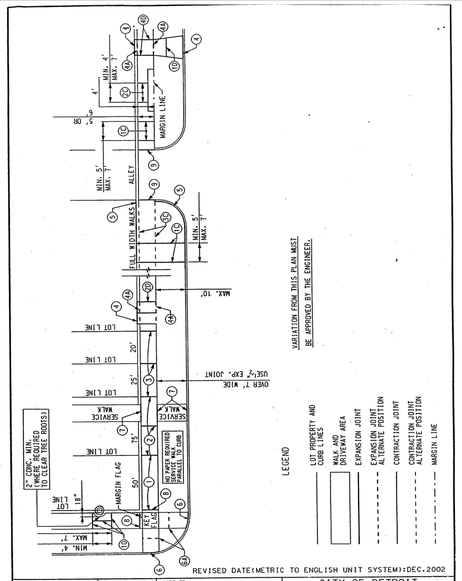
NOTE:

1. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
ALLEY PAVING
SPECIAL WARPING DETAILS

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

01/07/08 PLAN DATE	DRAWING NO. 10	DETAIL STANDARD NO. C-4400	SHEET 2 OF 2



REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

PREPARED BY BUREAU OF STREETS AND HIGHWAYS

rev. K.S.M. DRAWN BY:
M.F.S. CHECKED BY:

APPROVED
ENGINEER OF STREETS
TRAFFIC ENGINEER
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
SIDEWALK JOINTING
STANDARD

01/07/08 PLAN DATE	DRAWING NO. 9	DETAIL STANDARD NO. C-4462	SHEET 1 OF 2

EXPANSION JOINTS

ALL EXPANSION JOINT PAPER SHALL EXTEND 1" BELOW THE BOTTOM OF THE THINNER OF ADJOINING PAVEMENT SECTIONS.

(1) PLACE ½" PAPER EXPANSION JOINTS AT LOT LINES WHEN LOT LINES ARE BETWEEN 25' AND 50' APART.

(2) PLACE ADDITIONAL ½" PAPER EXPANSION JOINTS SO THAT THE DISTANCE BETWEEN JOINTS DOES NOT EXCEED 15.2 m WHEN LOT LINES ARE OVER 15.240 m APART.

(3) PLACE ½" PAPER EXPANSION JOINTS AT EVERY SECOND LOT LINE AND CONTRACTION JOINT AT INTERVENING LOT LINE WHEN LOT LINES ARE LESS THAN 25' APART.

(4) PLACE 1" PAPER EXPANSION JOINTS AT CURB AND BUILDING OR PROPERTY LINE OR AT ALTERNATE POSITION (4A) AS SHOWN FOR DRIVEWAY.

(5) PLACE 1" PAPER EXPANSION JOINTS AT CURB AND BUILDING OR PROPERTY LINE FOR FULL WIDTH SIDEWALK EXCEEDING 7' IN WIDTH.

(6) PLACE 1" PAPER EXPANSION JOINTS AT CURB CIRCLES OR AT ALTERNATE POSITION (6A) AS SHOWN.

(7) PLACE 1" PAPER EXPANSION JOINTS AT INTERSECTIONS OF SERVICE WALKS AND SIDEWALKS AND SERVICE WALKS AND CURBS.

(8) PLACE 1" PAPER EXPANSION JOINTS AT MARGIN FLAGS AT CROSSWALKS.

(9) PLACE 1" PAPER EXPANSION JOINTS AT ALLEY APRONS.

(10) PLACE ½" PAPER EXPANSION JOINT BOTH SIDES OF SIDEWALK FLAG ABUTTING TREE AND ON CENTERLINE JOINT.

CONTRACTION JOINTS

(1C) PLACE CONTRACTION JOINTS AT INTERVALS OF NOT LESS THAN 5' NOR MORE THAN 7' ON WALKS 5' WIDE OR WIDER, INCLUDING FULL WIDTH WALKS.

(2C) PLACE CONTRACTION JOINTS AT INTERVALS OF NOT LESS THAN 4' NOR MORE THAN 7' ON WALKS 4' WIDE.

(3C) PLACE CONTRACTION JOINTS AT THE MARGIN LINE ON FULL WIDTH WALKS (OPTIONAL).

DRIVEWAYS

(1D) PLACE CONTRACTION JOINTS IN DRIVEWAYS SO THAT NO SLAB WILL EXCEED THE DIMENSIONS OF 15' BY 15'.

(2D) PLACE 1" PAPER EXPANSION JOINTS ON ALL SIDES OF COMMERCIAL DRIVES.

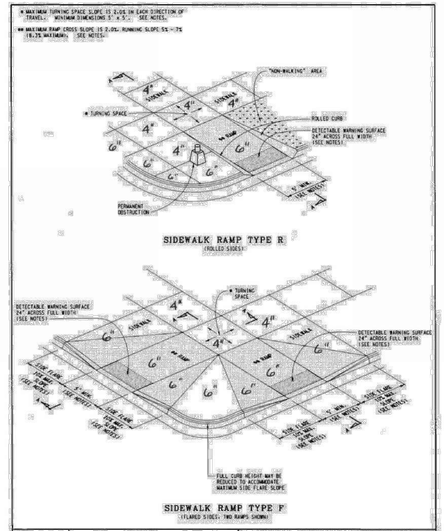
(3D) PLACE CONSTRUCTION OR CONTRACTION JOINT ON CENTERLINE WHEN WIDTH OF DRIVEWAY EXCEEDS 15'

(4D) PLACE ½" PAPER EXPANSION JOINTS ON BOTH SIDES OF RESIDENTIAL DRIVEWAYS. IF DRIVEWAY EDGE IS WITHIN 2' OF LOT LINE, PLACE THIS EXPANSION PAPER AT PROPERTY LINE.

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
SIDEWALK JOINTING
STANDARD

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

01/07/08 PLAN DATE	DRAWING NO. 9	DETAIL STANDARD NO. C-4462	SHEET 2 OF 2

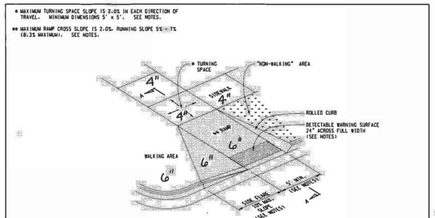


MDOT PREPARED BY DESIGN DIVISION
DRAWN BY: R.L.T.
CHECKED BY: K.S.M.

DEPARTMENT DIRECTOR
APPROVED BY: DIRECTOR OF FIELD SERVICES
APPROVED BY: DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT

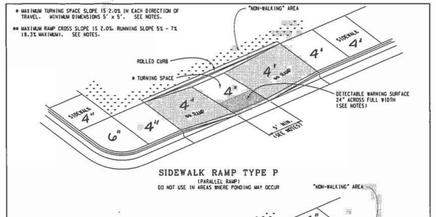
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014 F.H.W.A. APPROVAL	7-1-2014 PLAN DATE	R-28-1	SHEET 1 OF 7



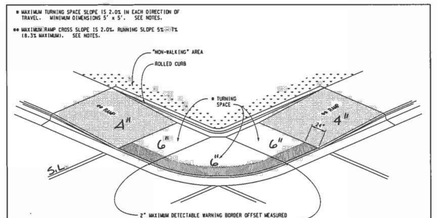
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014 F.H.W.A. APPROVAL	7-1-2014 PLAN DATE	R-28-1	SHEET 3 OF 7



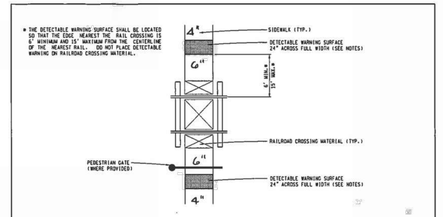
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014 F.H.W.A. APPROVAL	7-1-2014 PLAN DATE	R-28-1	SHEET 3 OF 7



MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014 F.H.W.A. APPROVAL	7-1-2014 PLAN DATE	R-28-1	SHEET 4 OF 7



MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014 F.H.W.A. APPROVAL	7-1-2014 PLAN DATE	R-28-1	SHEET 5 OF 7

F					DESIGNED BY: JK
E					
D					DRAWN BY: JM
C					
B					CHECKED BY: CRL
A	ISSUED FOR 30% DESIGN			4/10/20	MANAGER: RG
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

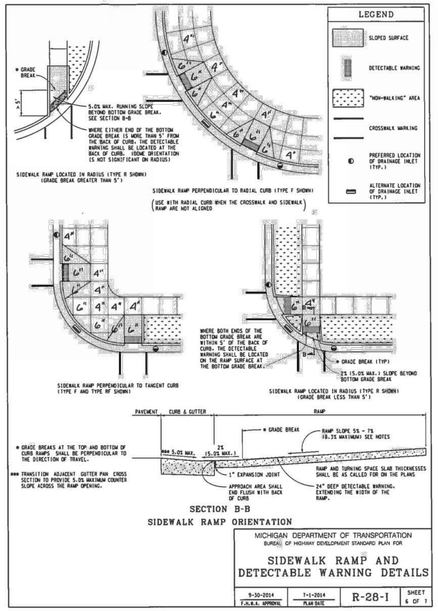
STANDARD DETAILS
RESTORATION-3

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 4	- - -

MDEQ SRF Project No. -
REF. No. CS-XXXX
DWSD CONTRACT No. WS-720
FILE No. -
DRAWING No. SD-8



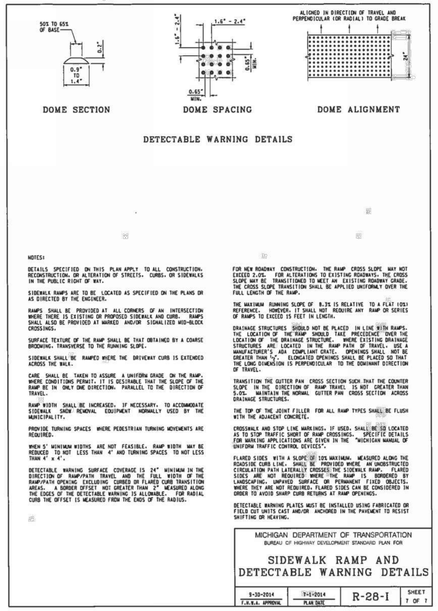
SECTION B-B

SIDEWALK RAMP ORIENTATION

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014	7-1-2014	R-28-I	SHEET
F.H.W.A. APPROVAL	PLAN DATE		6 OF 7



DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP, WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

PROVIDE TURNING SPACES WHERE PEDESTRIAN TURNING MOVEMENTS ARE REQUIRED.

WHEN 5' MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND TURNING SPACES TO NOT LESS THAN 4' x 4'.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 24" MEASURED ALONG THE EDGE OF THE DETECTABLE WARNING IS ALLOWED AT RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION: THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET ANY EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT INCREASE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS, THE TOP OF THE GRATE SHALL BE FLUSH WITH THE ADJACENT SURFACE. THE ELEVATION OF DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN ½". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOWNWARD DIRECTION OF TRAVEL.

TRANSITION THE GUTTER PAN CROSS SECTION SUCH THAT THE COUNTER SLOPE IN THE DIRECTION OF RAMP TRAVEL IS NOT GREATER THAN 5.0%. MAINTAIN THE NORMAL GUTTER PAN CROSS SECTION ACROSS DRAINAGE STRUCTURES.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPIVED SURFACE OR PERMANENT FIXED OBJECTS, WHERE THEY ARE NOT REQUIRED, HANDRAILS SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

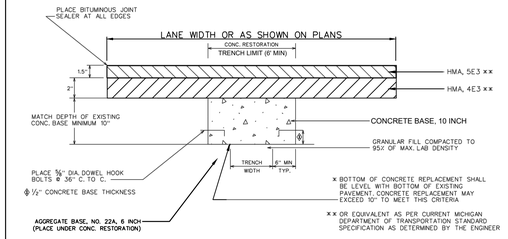
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014	7-1-2014	R-28-I	SHEET
F.H.W.A. APPROVAL	PLAN DATE		7 OF 7

MAJOR STREETS:

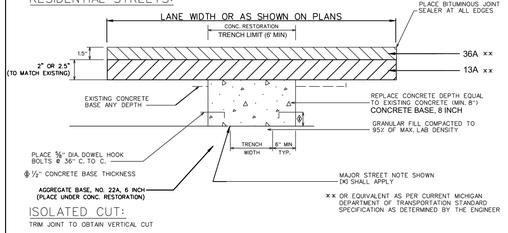
Lahser Rd and Auburn St at Fenkell Ave (use 2" HMA Top Course over 10" Conc per WCDPS Standard PR-2)



EXCEPTION:

TO ABOVE 3" HMA REPLACEMENT, WHEN PAVEMENT REPLACEMENT IS 100 FEET FROM EITHER SIDE OF UNDERPASS REPLACE 10" MIN CONCRETE BASE WITH TOP OF CONCRETE LEVEL WITH TOP OF EXISTING CONCRETE AND REPLACE HMA SECTION AS EXISTING

RESIDENTIAL STREETS:

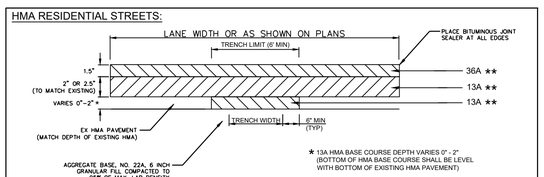


ISOLATED CUT:

TRIM JOINT TO OBTAIN VERTICAL CUT

HMA SURFACE ON CONCRETE BASE UTILITY TRENCH CONSTRUCTION PAVEMENT RESTORATION

HMA RESIDENTIAL STREETS:



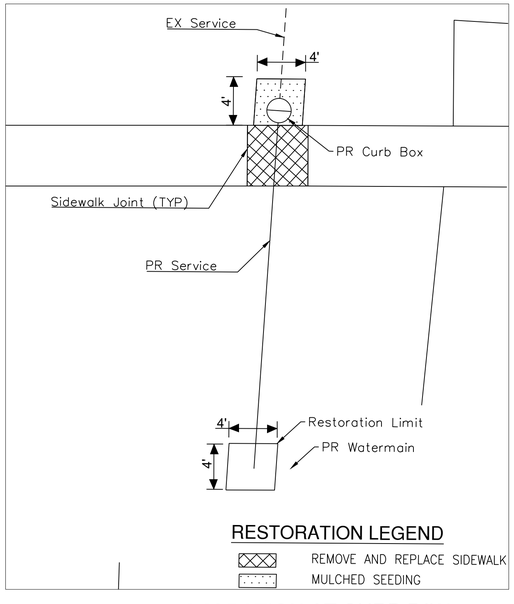
★ 13A HMA BASE COURSE DEPTH VARIES 0" - 2" (BOTTOM OF HMA BASE COURSE SHALL BE LEVEL WITH BOTTOM OF EXISTING HMA PAVEMENT)

×× OR EQUIVALENT AS PER CURRENT MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION AS DETERMINED BY THE ENGINEER

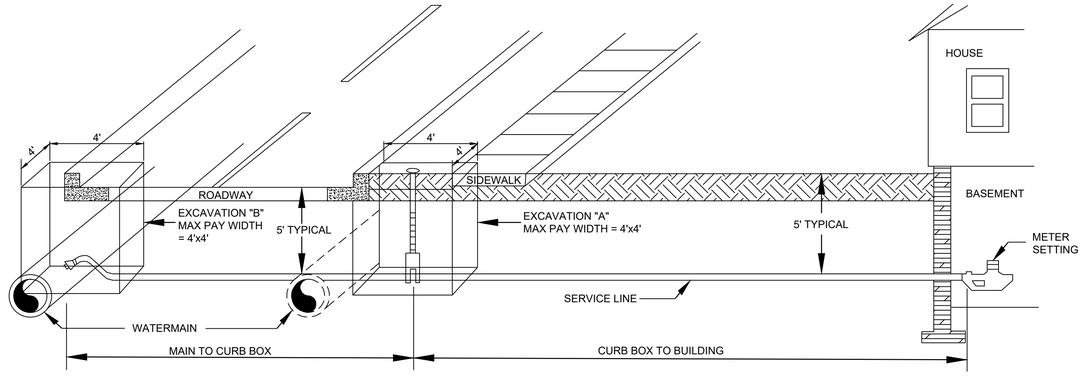
HMA UTILITY TRENCH CONSTRUCTION PAVEMENT RESTORATION

PAVEMENT RESTORATION NOTES

1. MILL (REMOVE) HMA PAVEMENT FOR MIN ONE LANE, OR ROAD WIDTH AS SHOWN ON PLANS.
2. CONCRETE PAVEMENT CUTS SHALL BE MINIMUM 3' WIDE.
3. ALL PAVEMENT CUTS SHALL BE MINIMUM 1' WIDER THAN TRENCH WIDTH.
4. ALL REMOVALS SHALL BE SAWCUT STRAIGHT AND SQUARE (90 DEGREES).
5. CONCRETE RESTORATION PAVEMENT SHALL BE MDOT P1 MIX (3,500 PSI).
6. RESTORED CONCRETE PAVEMENT SHALL MATCH THICKNESS OF EXISTING CONCRETE PAVEMENT IN CONFORMANCE WITH MDOT STANDARD PLAN R-44-F.
7. RESTORED CONCRETE SHALL BE ANCHORED TO EXISTING CONCRETE PAVEMENT IN CONFORMANCE WITH MDOT STANDARD PLAN R-44-F.
8. APPLY HMA TACK COAT PER MDOT STANDARD SPECIFICATIONS SECTION 904.
9. RESTORED HMA PAVEMENT 3½" TO MATCH EXISTING, IN 2 LIFTS:
   1ST LIFT - 2" MDOT HMA 4E3 (13A RESIDENTIAL), COMPACTED
   2ND LIFT - 1½" MDOT HMA 5E3 (36A RESIDENTIAL), COMPACTED
10. BITUMINOUS JOINT SEALER SHALL BE PLACED AT ALL FINISHED HMA JOINTS.
11. ALL DISTURBED PAVEMENT MARKINGS AND OTHER ASSETS, INCLUDING BIKE LANE DELINEATORS, WILL HAVE TO BE REPLACED AT THE COST OF THE PERMIT HOLDER, AND SHALL CONFORM TO THE LATEST CED/TED STANDARDS.
12. FOR OTHER RELATED SPECIFICATIONS (BACKFILL COMPACTION, MATERIALS, ETC...), REFER TO DIVISION 15 OF THE STANDARD SPECIFICATIONS FOR PAVING AND RELATED CONSTRUCTION.
13. NOTIFY THE CITY OF DETROIT ENGINEERING DEPARTMENT 24 HOURS PRIOR TO STARTING CONSTRUCTION.
14. ANY OPEN EXCAVATIONS ARE TO BE STEEL PLATED, IF EXCAVATIONS ARE IN THE PAVEMENT, THE PLATES ARE TO BE SPIKED AND RAMPED WITH COLD PATCH. CONTACT THE CITY WITH LOCATION OF THE STEEL PLATE.
15. THE CITY OF DETROIT REQUIRES ALL CONCRETE WORK TO BE STAMPED WITH A CONTRACTORS IDENTIFICATION STAMP.
16. EXISTING PAVEMENT SECTIONS SHALL BE VERIFIED PER THE GEOTECH REPORT OR EXISTING CONDITION PRIOR TO USE OF APPROPRIATE PAVEMENT RESTORATION DETAIL.



TYPICAL RESTORATION AT CURB BOX



1. NEW WATER SERVICE LINE TO BE INSTALLED BY MEANS OF HORIZONTAL DIRECTIONAL DRILLING.
2. CONTRACTOR TO VERIFY EXISTING UTILITIES PRIOR TO HORIZONTAL DIRECTIONAL DRILLING, AS REQUIRED.

TYPICAL SERVICE RESTORATION PITS

F					
E					
D					
C					
B					
A	ISSUED FOR 60% DESIGN			5/8/20	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

DESIGNED BY: JK
DRAWN BY: JM
CHECKED BY: CRL
MANAGER: RG
SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS
RESTORATION-4

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 4	- - -

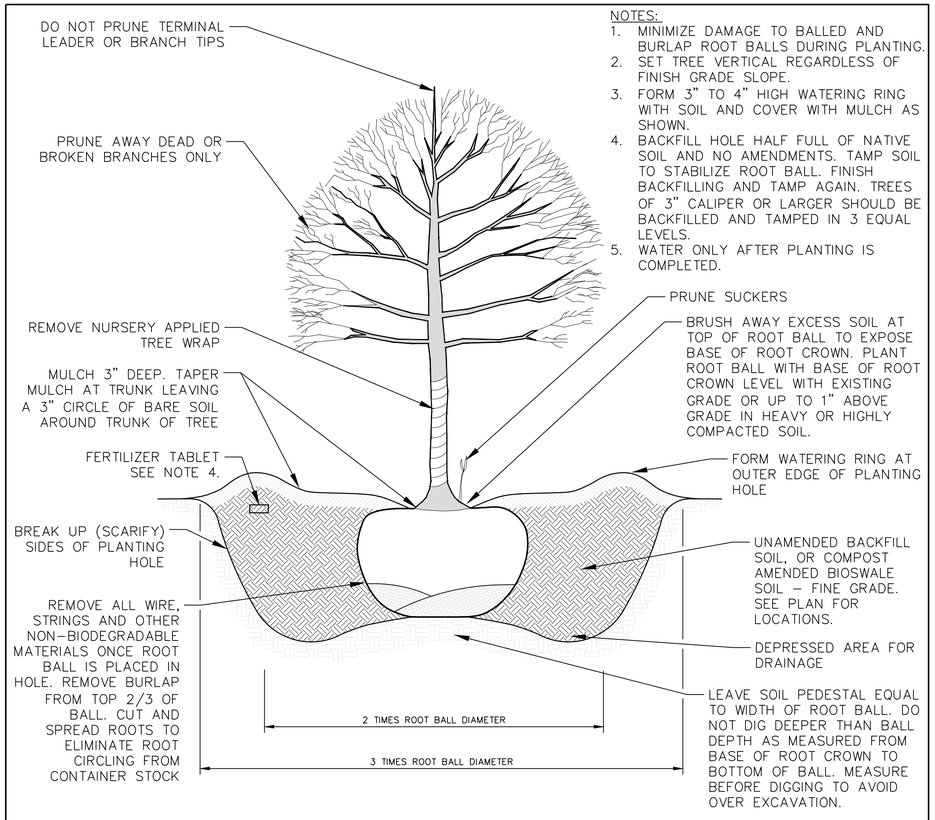
MDEQ SRF Project No.: -
REF. No.: CS-XXXX
DWSD CONTRACT No.: WS-720
FILE No.: -
DRAWING No.: SD-9

LANDSCAPING NOTES

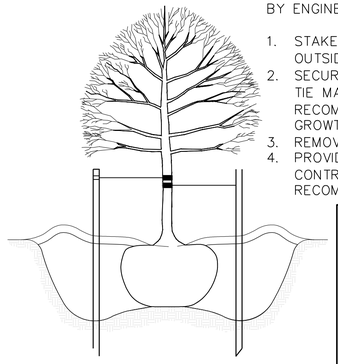
1. **PLANTING TIMES AND PROCEDURES.** SEE SEEDING AND PLANTS SPECIFICATIONS FOR PLANTING PROCEDURES AND ACCEPTABLE PLANTING TIMES.
2. **SITE RESTORATION.** RESTORE ALL DISTURBED AREAS WITH LAWN SEED PER SEEDING SPECIFICATION.
3. **TREE PLANTING.** REFER TO DETAIL G/70 AND PLANTS SPECIFICATION FOR TREE PLANTING REQUIREMENTS.
4. **REPLACEMENT TREES.** ALL TREES THAT WERE REMOVED FOR WATER AND SEWER WORK SHALL BE REPLACED ON A 1:1 BASIS. PLANT NEW TREES AS CLOSE TO ORIGINAL LOCATION AS POSSIBLE TREE SPECIES SHALL BE SUPPLIED IN THE QUANTITIES AND SIZES SPECIFIED IN THE PLANTING SCHEDULE BELOW. CONTRACTOR SHALL CHOOSE WHICH TREE SPECIES TO PLANT IN EACH REPLACEMENT TREE LOCATION, MAKING SURE THAT PLANTING CONDITIONS COMPLY WITH THE NOTES STATED IN THE PLANTING SCHEDULE BELOW.

PLANTING SCHEDULE

KEY	QTY	SCIENTIFIC NAME	COMMON NAME	SIZE	CONTAINER	NOTES
PA	–	PLANTANUS X ACERIFOLIA 'BLOODGOOD'	LONDON BLOODGOOD PLANETREE	2" CAL.	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
UA	–	ULMUS AMERICANA 'PRINCETON'	PRINCETON ELM	2" CAL.	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
QB	–	QUERCUS BICOLOR	SWAMP WHITE OAK	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
QS	–	QUERCUS SCHUMARDII	SHUMARD OAK	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
AR	–	ACER RUBRUM 'RED SUNSET'	RED SUNSET MAPLE	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
TA	–	TILIA AMERICANA	BASSWOOD	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
ZS	–	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS LESS THAN 8 FEET WIDE
GTI	–	GLEDITSIA TRIACANTHOS INERMIS	THORNLESS HONEYLOCUST	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS LESS THAN 8 FEET WIDE
MC	–	MALUS X CENTZAN	CENTURION CRABAPPLE	2" CAL	B&B	SPECIES TO BE USED AT LOCATIONS WITHIN 10 FEET OF OVERHEAD POWER LINES
AG	–	AMENANCHIER X GRANDFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	2" CAL	B&B	SPECIES TO BE USED AT LOCATIONS WITHIN 10 FEET OF OVERHEAD POWER LINES



NOTES:
1. MINIMIZE DAMAGE TO BALLED AND BURLAP ROOT BALLS DURING PLANTING.
2. SET TREE VERTICAL REGARDLESS OF FINISH GRADE SLOPE.
3. FORM 3" TO 4" HIGH WATERING RING WITH SOIL AND COVER WITH MULCH AS SHOWN.
4. BACKFILL HOLE HALF FULL OF NATIVE SOIL AND NO AMENDMENTS. TAMP SOIL TO STABILIZE ROOT BALL. FINISH BACKFILLING AND TAMP AGAIN. TREES OF 3" CALIPER OR LARGER SHOULD BE BACKFILLED AND TAMPED IN 3 EQUAL LEVELS.
5. WATER ONLY AFTER PLANTING IS COMPLETED.



DO NOT STAKE UNLESS IN HEAVY CLAY SOILS OR WINDY CONDITIONS, AS DETERMINED BY ENGINEER. IF STAKING IS REQUIRED:

1. STAKE WITH 2"X2" HARDWOOD STAKES OR APPROVED METAL POST DRIVEN INTO SOIL OUTSIDE OF ROOT BALL, (3) PER TREE.
2. SECURE TO TREE USING 1" 'CHAINLOCK' OR LANDSCAPE ARCHITECT APPROVED TREE TIE MATERIAL. SECURE TREE TIE MATERIAL TO STAKE PER MANUFACTURER'S RECOMMENDATIONS. LOOP TIE AROUND TREE TO PROVIDE 1" SLACK FOR TRUNK GROWTH.
3. REMOVE ALL STAKING MATERIAL AFTER (1) YEAR.
4. PROVIDE 1 FERTILIZER TABLET PER TREE. FERTILIZER MIX SHALL BE 20-10-5, CONTROLLED RELEASE, 24 MONTHS. INSTALL PER MANUFACTURER'S RECOMMENDATION.

TREE PLANTING

SCALE: NONE

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SHEET

DWG No. **G/70**

Know what's **below.** **Call** before you dig.

F					DESIGNED BY: JK	SEAL / STAMP
E						
D					DRAWN BY: KK	
C						
B					CHECKED BY: TW	
A	ISSUED FOR 60% DESIGN			5/8/20	MANAGER: RG	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

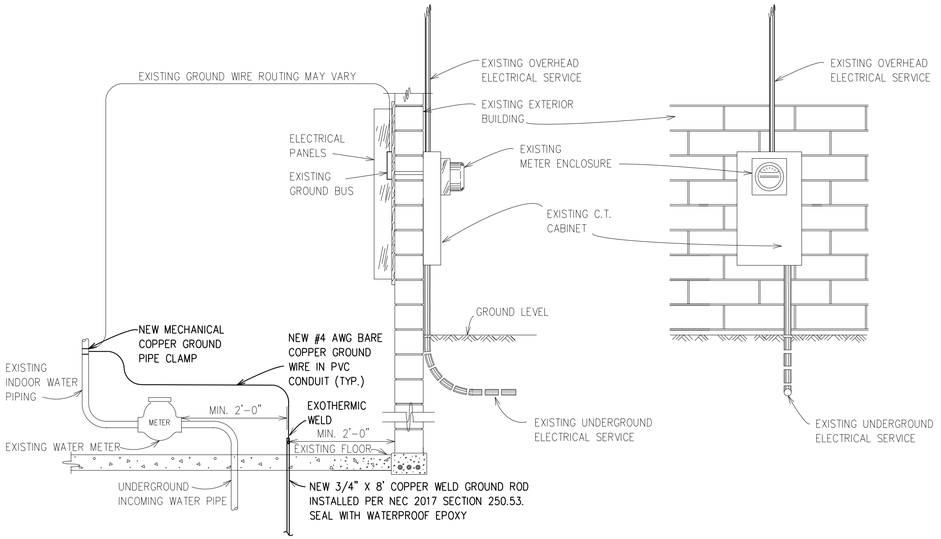
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

RESTORATION TREE PLANTING SCHEDULE AND DETAIL

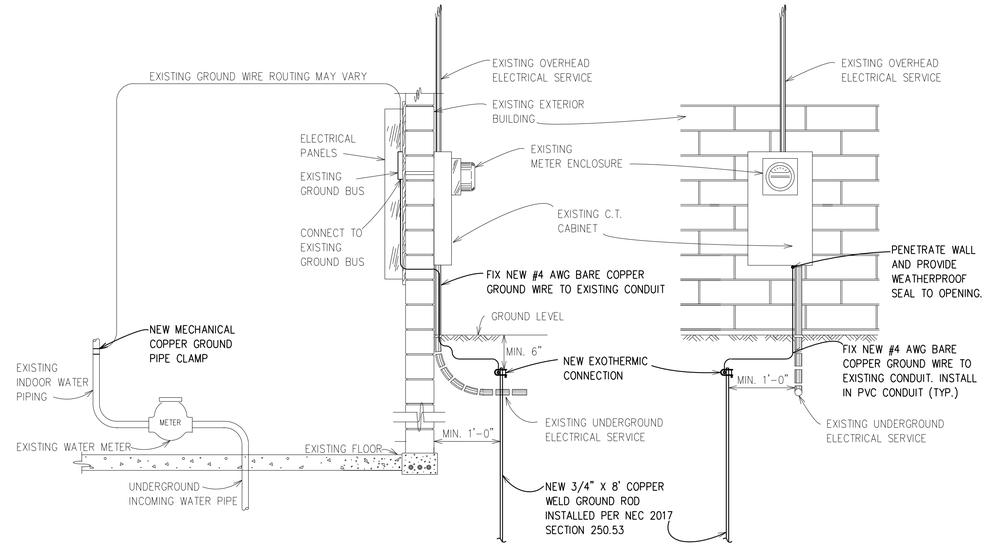
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 4	- - -

MDEQ SRF Project No. -
REF. No. CS-XXXX
DWSD CONTRACT No. WS-720
FILE No. -
DRAWING No. SD-10



INDOOR INSTALLATION



OUTDOOR INSTALLATION

F					DESIGNED BY: CRL	SEAL / STAMP
E						
D					DRAWN BY: DZ	
C						
B					CHECKED BY: RB	
A	ISSUED FOR 60% DESIGN			5/8/20	MANAGER: RG	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

ELECTRICAL SERVICE ENTRANCE DETAILS

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	1 S	1 0 E	0 1 4	- - -

MDEQ SRF Project No. -

REF. No. CS-XXXX

DWSD CONTRACT No. WS-720

FILE No. -

DRAWING No. SD-11

MI□E D□GGAN□MAYOR
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT ENGINEERING DIVISION

CONTRACT NO. DWS□□□□
SEWER IMPROVEMENTS AT PIETY HILL□VIRGINIA PAR□□NEW CENTER COMMONS□□REWSTER HOMES□AND □REWSTER DO□GLASS HIGH PRIORITY NEIGH□ORHOODS

CONTRACT DRAWINGS

APRIL □□□□□□

DETROIT
Water & Sewerage
Department

DETROIT CITY CO□NCIL

□RENDA □ONES□PRESIDENT
MARY SHEFFIELD□PRESIDENT PRO TEM
□ANEÉ AYERS□AT LARGE
ANDRÉ L. SPIVEY
□AMES TATE
SCOTT □ENSON
RA□ □EL CASTAÑEDA□LÓPE□
GA□E LELAND
ROY M□CALISTER □R.

□OARD OF WATER COMMISSIONERS

MICHAEL EINHE□SER□CHAIRMAN
MARY E. □LAC□MON□VICE CHAIRPERSON
LANE COLEMAN
□OHN HENRY DAVIS
LINDA D. FORTE
□ANE C. GARCIA
□ONATHAN C. □INLOCH

811
Know what's Below
Call before you dig.

E□EC□TIVE□ADMINISTRATIVE STAFF

GARY □ROWN
DIRECTOR

PALENCIA MO□LEY□P.E.
DEP□TY DIRECTOR□CHIEF ENGINEER

MOHAMAD FARHAT□P.E.
DIRECTOR OF ENGINEERING
AND CONSTR□CTION

TIMOTHY CAVITT
CHIEF OPERATING OFFICER

THOMAS NA□GHTON
CHIEF FINANCIAL OFFICER

STATE OF MICHIGAN
ENGINEER
No.
LICENSED PROFESSIONAL ENGINEER

DPW PERMIT No.□
PR□□□□□□□

EGLE PERMIT No.□
P□□□□□□□□ □. □

HDC PERMIT No.□
□□□□□□□

SHEET NO.	DESCRIPTION
	COVER
G-1	INDEX SHEET
G-2	SCHEDULE OF QUANTITIES - SEWER AND RESTORATION
G-3	HIGH PRIORITY NEIGHBORHOODS - LOCATION MAP
G-4	BREWSTER HOMES AND BREWSTER DOUGLAS - SEWER INTERVENTIONS MAP SHEET 1 OF 2
G-5	PIETY HILL, VIRGINIA PARK, AND NEW CENTER - SEWER INTERVENTIONS MAP SHEET 2 OF 2
G-6	ABBREVIATION AND GENERAL NOTES
G-7	SOIL EROSION AND SEDIMENTATION CONTROL NOTES AND C.E.D. NOTES
	PIPE AND MANHOLE REHABILITATION REPAIRS
INDEX - P&MH	PIPE AND MANHOLE REHABILITATION REPAIRS
A - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
A - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
B - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
B - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
C - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
C - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
D - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
D - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
E - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
E - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
F - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
F - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
G - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
G - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
H - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
H - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
I - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
I - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
J - P&MH (1 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
J - P&MH (2 OF 2)	PIPE AND MANHOLE REHABILITATION REPAIRS
	OPERATION AND MAINTENANCE PIPE AND MANHOLE REHABILITATION REPAIRS
INDEX - O&M	
A - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
A - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
B - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
B - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
C - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
C - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
D - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
D - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
E - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
E - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
F - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
F - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
G - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
G - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
H - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
H - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
I - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
I - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
J - O&M (1 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
J - O&M (2 OF 2)	O&M PIPE AND MANHOLE REHABILITATION REPAIRS
	SEWER PLANS, PROFILES AND RESTORATION
S-1	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY WEST OF 3RD AVE. BETWEEN TAYLOR ST. AND HAZELWOOD ST.
S-2	EXTERNAL POINT REPAIR AND RESTORATION - N. JOHN C. LODGE SERVICE DR. BETWEEN PHILADELPHIA ST. AND EUCLID ST.
S-3	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY SOUTH OF SEWARD AVE. BETWEEN 2ND AVE. AND WOODWARD AVE.
S-4	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY NORTHEAST OF W. PHILADELPHIA ST. AND JOHN C. LODGE SERVICE DRIVE
S-5	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY EAST OF 3RD AVE. BETWEEN TAYLOR ST. AND HAZELWOOD ST.
S-6	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY SOUTH OF VIRGINIA PARK ST. BETWEEN 3RD AVE. AND JOHN C. LODGE SERVICE DR.
S-7	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY WEST OF 3RD AVE. BETWEEN PALLISTER AVE. AND W. BETHUNE AVE.
S-8	EXTERNAL POINT REPAIR AND RESTORATION - SEWARD ST. AND NORTHBOUND JOHN C. LODGE SERVICE DRIVE.
S-9	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY WEST OF WOODWARD AVE. BETWEEN DELAWARE ST. AND PALLISTER ST.
S-10	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY WEST OF 3RD AVE BETWEEN DELAWARE ST. AND SEWARD AVE.
S-11	EXTERNAL POINT REPAIR AND RESTORATION - SOUTHBOUND I-75 SERVICE DR. BETWEEN MACK AVE. AND WILKINS ST.
S-12	EXTERNAL POINT REPAIR AND RESTORATION - BEAUBIEN ST. BETWEEN MACK AVE. AND ELIOT ST.
S-13	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY WEST OF 3RD AVE. BETWEEN LOTHROP ST. AND W. GRAND BLVD.
S-14	EXTERNAL POINT REPAIR AND RESTORATION - ALLEY EAST OF JOHN C. LODGE SERVICE DR. BETWEEN BLAINE ST. AND PINGREE ST.
	DETAILS
TP-1	TRAFFIC PLAN - TYPICAL TRAFFIC CONTROL DETAILS
TP-2	TRAFFIC PLAN - TYPICAL TRAFFIC CONTROL DETAILS
TP-3	TRAFFIC PLAN - MAINTENANCE OF TRAFFIC INFORMATION
SD-1	STANDARD DETAILS SEWER
SD-2	STANDARD DETAILS SEWER
SD-3	STANDARD DETAILS SEWER
SD-4	STANDARD DETAILS SOIL EROSION AND SEDIMENTATION CONTROL
SD-5	STANDARD DETAILS SOIL EROSION AND SEDIMENTATION CONTROL
SD-6	STANDARD DETAILS RESTORATION
SD-7	STANDARD DETAILS RESTORATION
SD-8	STANDARD DETAILS RESTORATION
SD-9	STANDARD DETAILS RESTORATION
SD-10	RESTORATION TREE PLANTING SCHEDULE AND DETAILS

REVIEWED AND ACCEPTED □Y THE DETROIT WATER AND SEWERAGE DEPARTMENT

ENGINEER OF SEWER SYSTEMS — DATE

ENGINEERING MANAGER — DATE

Know what's **below.** **Call** before you dig.

F					DESIGNED □Y□	SEAL □STAMP	DETROIT WATER AND SEWERAGE DEPARTMENT CAPITAL IMPROVEMENT PROGRAM
E					DRAWN □Y□		
D					CHEC□ED □Y□		INDE□
C					MANAGER□		
□							
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020			
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE			

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDE□ SRF Pro□□No. 5688-01
REF. No. CS□□□□
DWSD CONTRACT No. DWS□□□
FILE No. □
DRAWING No. G□

	Item	Unit	Total
1	Mobilization/Demobilization	LS	1
2	Material Testing	LS	1
3	Traffic Control	LS	1
4	Pre-Construction Site Documentation	LS	1
5	Project Sign	EA	4
6	Closeout	LS	1
7	Sidewalk, Rem	SYD	29
8	Sidewalk, Conc, 6 inch	SYD	144
9	Curb and Gutter, Rem	LFT	42
10	Curb and Gutter, Conc	LFT	142
11	Aggregate Base, No. 22A, 6 inch	SYD	547
12	Concrete Base, 8 inch	SYD	431
13	HMA Pavement, Rem, Milling, Greater than 2 inch Depth up to 4 inch Depth	SYD	914
14	HMA Pavement, 36A, 1.5 inch	SYD	1,349
15	HMA Pavement, 13A, 2 inch	SYD	1,349
16	Concrete Paving, 9 inch	SYD	319
17	Structure, Adjust Existing Casting to Grade	EA	12
18	Mulched Seeding	SYD	158
19	Guardrail, Remove and Replace	LFT	50
20	Sewer Video Inspection, Less than 18 inch Height	LFT	9,953
21	Sewer Video Inspection, 18 inch to 34 inch Height	LFT	4,515
22	Sewer Video Inspection, 36 inch to 57 inch Height	LFT	1,449
23	Taps, Cutting and Grinding	EA	20
24	Flowable Fill	CYD	10
25	Sewer, Clean, Less than 18 inch Height	LFT	8,522
26	Sewer, Clean, 18 inch to 34 inch Height	LFT	2,295
27	Sewer, Clean, 36 inch to 57 inch Height	LFT	6,566
28	Sewer, Clean, 60 inch to 90 inch Height	LFT	1,153
29	Sewer, Trenchless Point Repair, 10 inch	LFT	9
30	Sewer, Trenchless Point Repair, 12 inch	LFT	26
31	Sewer, Trenchless Point Repair, 15 inch	LFT	13
32	Sewer, Trenchless Point Repair, 18 inch	LFT	11
33	Sewer, Trenchless Point Repair, 21 inch	LFT	3
34	Sewer, Trenchless Point Repair, 42 inch	LFT	5
35	Sewer, Trenchless Point Repair, 48 inch	LFT	16
36	Sewer, Trenchless Point Repair, 51 inch	LFT	8
37	Sewer, Trenchless Point Repair, 60 inch	LFT	5
38	Sewer, Trenchless Point Repair, 66 inch	LFT	3
39	Sewer, Trenchless Point Repair, 75 inch	LFT	3
40	Sewer, Trenchless Point Repair, Egg Shaped, 18 inch x 24 inch	LFT	5
41	Sewer, Trenchless Point Repair, Egg Shaped, 28 inch x 42 inch	LFT	5
42	Sewer, Trenchless Point Repair, Egg Shaped, 36 inch x 42 inch	LFT	3
43	Sewer, Trenchless Point Repair, Lateral Tee Liner, 10 inch Mainline	EA	1
44	Sewer, Trenchless Point Repair, Lateral Tee Liner, 15 inch Mainline	EA	4
45	Sewer, Trenchless Point Repair, Lateral Tee Liner, 18 inch Mainline	EA	1
46	Sewer, Trenchless Point Repair, Pointing	LFT	33
47	Sewer, Lining, CIPP, 10 inch	LFT	1,626
48	Sewer, Lining, CIPP, 12 inch	LFT	6,375
49	Sewer, Lining, CIPP, 15 inch	LFT	10,123
50	Sewer, Lining, CIPP, 18 inch	LFT	8,812
51	Sewer, Lining, CIPP, 21 inch	LFT	1,484
52	Sewer, Lining, CIPP, 24 inch	LFT	244
53	Sewer, Lining, CIPP, 36 inch	LFT	30
54	Sewer, Lining, CIPP, Egg Shaped, 12 inch x 20 inch	LFT	134
55	Sewer, Lining, CIPP, Egg Shaped, 12 inch x 24 inch	LFT	95
56	Sewer, Lining, CIPP, Egg Shaped, 15 inch x 20 inch	LFT	1,504
57	Sewer, Lining, CIPP, Egg Shaped, 36 inch x 48 inch	LFT	122
58	Sewer, Lining, Reinstatement of Active Taps	EA	945
59	Sewer, Lining, Cutting of CIPP Lined Tee	EA	7
60	Sewer, External Point Repair, 12 inch	LFT	58
61	Sewer, External Point Repair, 15 inch	LFT	50
62	Sewer, External Point Repair, 18 inch	LFT	5
63	Sewer, External Point Repair, 48 inch	LFT	5
64	Sewer, Lateral Reconnection	EA	7
65	Manhole, New, 4 foot, 0' to 10' Depth	EA	15
66	Manhole, New, 4 foot, Greater than 10' to 20' Depth	EA	8
67	Manhole, New, Over Existing Sewer, 10 foot, Greater than 20' to 25' Depth	EA	1
68	Manhole, Clean	EA	30
69	Manhole, Bench and Channel Reconstruction	EA	3
70	Manhole, Cover	EA	5
71	Manhole, Frame	EA	5
72	Manhole, Spot Repairs	EA	36
73	Manhole, Replace Chimney	EA	4
74	Manhole, Lining	EA	3
75	Catch Basin, Clean	EA	10
76	Catch Basin, New	EA	8
77	Contaminated Material Allowance	ALLOW	1
78	Provisional Allowance	ALLOW	1

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F					DESIGNED □Y□	SEAL □STAMP
E						
D					DRAWN □Y□	
C					CHEC□ED □Y□	
□						
A	ISSUED FOR 100% DESIGN	-	-	10/31/19	MANAGER□	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE		

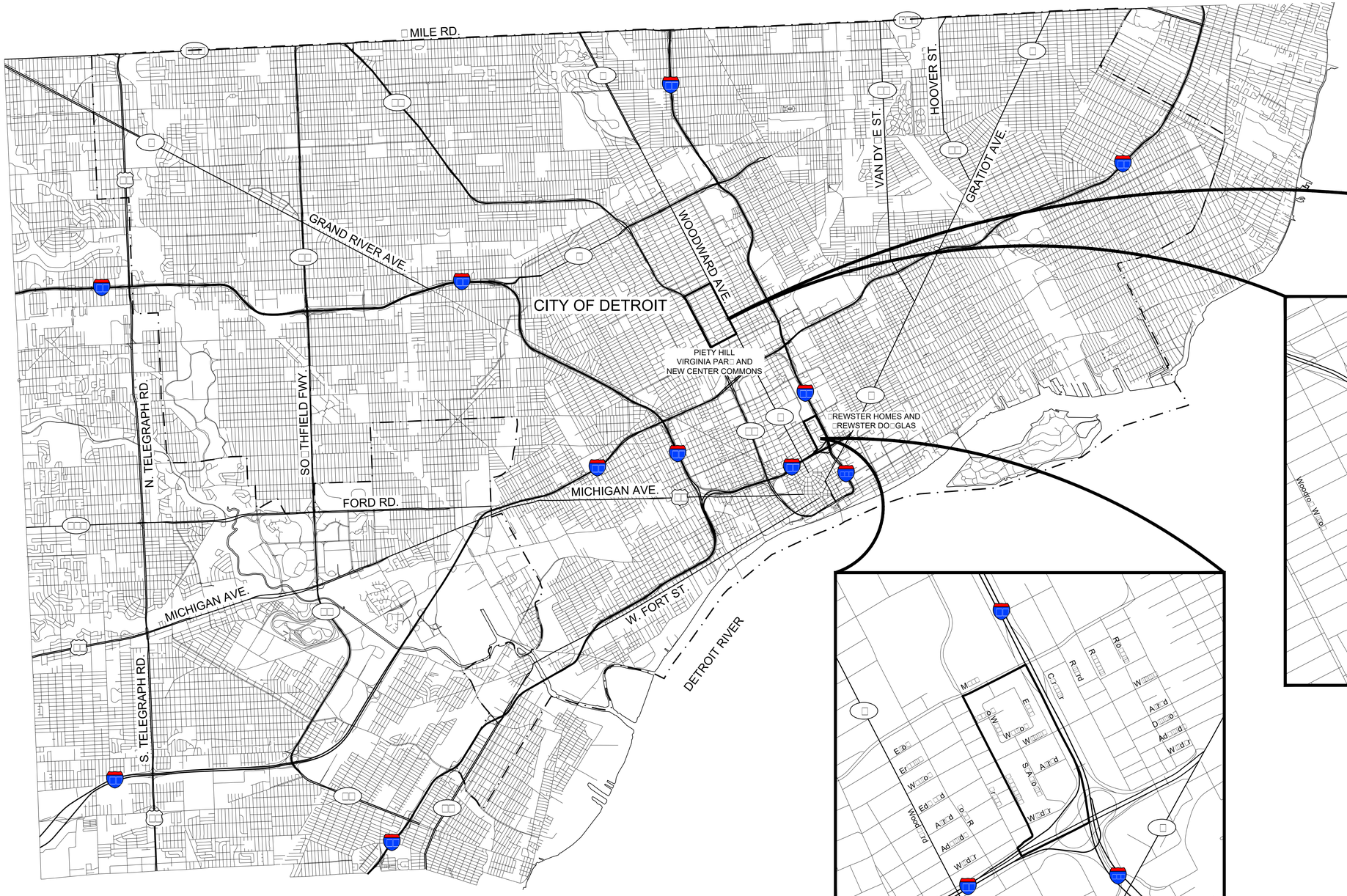
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

SCHED□LE OF □□ANTITIES
SEWER AND RESTORATION

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDE□ SRF Pro□□No.
REF. No. CS□□□□
DWSD CONTRACT No. DWS□□□
FILE No.
DRAWING No. G□□



SITE VICINITY

5,000 0 5,000 10,000

SITE LOCATION

1,000 0 1,000 2,000

SITE LOCATION

1,000 0 1,000 2,000

Know what's **below.**
Call before you dig.

F					DESIGNED □Y□	SEAL □STAMP	DETROIT WATER AND SEWERAGE DEPARTMENT CAPITAL IMPROVEMENT PROGRAM
E					DRAWN □Y□		
D					CHEC□ED □Y□		HIGH PRIORITY NEIGH□ORHOODS LOCATION MAP
C					MANAGER□		
□							
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020			
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE			

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDE□ SRF Pro□□□No. 5688-01

REF. No. CS□□□□□

DWSD CONTRACT No. DWS□□□□

FILE No. □

DRAWING No. G□□

Brewster Homes

Brewster Douglass

F					DESIGNED BY:	SEAL / STAMP	DETROIT WATER AND SEWERAGE DEPARTMENT CAPITAL IMPROVEMENT PROGRAM
E							
D					DRAWN BY:		BREWSTER HOMES AND BREWSTER DOUGLASS SEWER INTERVENTIONS MAP SHEET 1 OF 2
C					CHECKED BY:		
B							
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER:		
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE			

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- -	- - -	- - -

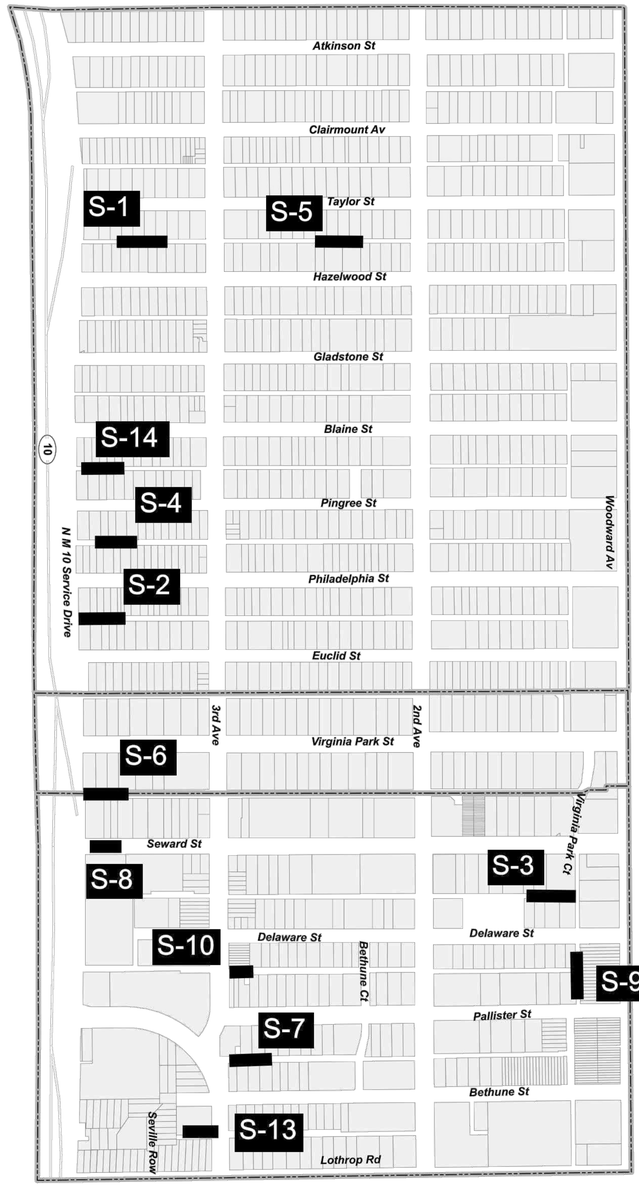
MDEQ SRF Project No. -

REF. No. CS-1812

DWSD CONTRACT No. DWS-916

FILE No. -

DRAWING No. G-4



Piety Hill

Virgina Park

New Center Commons

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	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

PIETY HILL, VIRGINIA PARK, AND NEW CENTER SEWER INTERVENTIONS MAP
SHEET 2 OF 2

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDEQ SRF Project No. -
REF. No. CS-1812
DWSD CONTRACT No. DWS-916
FILE No. -
DRAWING No. G-5

GENERAL NOTES

1. UNDERGROUND STRUCTURES AND UTILITIES SHOWN ARE TAKEN FROM SURVEY AND INFORMATION GATHERED FROM THE MAJOR SERVICE COMPANIES. NO GUARANTEE IS MADE AS TO ACCURACY OR COMPLETENESS.

2. BIDDER SHALL VERIFY TYPES AND LOCATIONS OF PAVEMENTS AND CURBS OF STREETS AND ALLEYS (ESPECIALLY AT INTERSECTIONS) WITH RESPECT TO THEIR INTERFERENCE WITH THE SEWER REPLACEMENT AND/OR INSTALLATION AND SHALL INCLUDE COST OF CROSSING AND RESTORATION USING THE RELEVANT UNIT PRICE ITEMS.

3. ALL SIDEWALKS, DRIVEWAYS, SERVICE WALKS, CURBS, UTILITY POLES, TRAFFIC SIGNAL POLES, LIGHT POLES, TREES, LAWNS ETC., MAY NOT BE SHOWN ON THESE DRAWINGS. THE BIDDER SHALL VISIT THE PROJECT SITE AND MAKE THEIR OWN DETERMINATION OF THE SITUATION AND INCLUDE ALL WORK AND RESTORATION INVOLVING THESE IMPROVEMENTS USING THE RELEVANT UNIT PRICE ITEMS.

4. LOCATIONS OF THE D.W.S.D. SEWERS AS SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. EXACT LOCATION AND DEPTH SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.

5. SEWER CONSTRUCTION OR REPLACEMENT IN CLOSE PROXIMITY TO UTILITY POLES, CATCH BASINS, TREES, ETC., MAY REQUIRE TUNNELING AND/OR THE USE OF CARRIER PIPES. THE SUPPORT OF THESE STRUCTURES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT WORK AND THEREFORE INCLUDED IN THE UNIT PRICE OF THE PIPE INSTALLATION.

6. DAMAGE TO EXISTING MANHOLES OCCURRING DURING SEWER INSTALLATION SHALL BE REPAIRED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER, AT NO ADDITIONAL COST TO D.W.S.D. REPAIRING OF THE MANHOLE SHALL INCLUDE, BUT NOT BE LIMITED TO, BRICK REPLACEMENT, REMORTARING JOINTS AND ADJUSTING THE FRAMES AND COVERS TO GRADE. WORN FRAMES AND COVERS LOCATED IN THE PAVEMENT SHALL BE EXCHANGED FOR NEW FRAMES AND COVERS PER THE STANDARD DETAILS. REMOVAL AND REPLACEMENT OF FRAMES AND COVERS WILL BE REQUIRED AS DIRECTED BY THE ENGINEER. FRAMES AND COVERS SHALL BE SALVAGED AND RETURNED TO D.W.S.D. AT NO COST TO THE CONTRACTOR.

7. IN COMPLIANCE WITH MICHIGAN PUBLIC ACT 53 OF THE ACTS OF 1974, THE CONTRACTOR SHALL NOTIFY, 3 WORKING DAYS (72 HOURS) IN ADVANCE OF CONSTRUCTION, ALL PUBLIC AND PRIVATE OWNERS HAVING EXISTING FACILITIES IN OR NEAR THE IMMEDIATE WORKING AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING UTILITY LOCATIONS AND NOTIFYING MISS DIG (PHONE 1-800-482-7171).

8. ALL SIDEWALK AND SIDEWALK RAMP REPLACEMENT, IN THE CITY OF DETROIT RIGHT-OF-WAY, SHALL BE ADA COMPLIANT. IN ADDITION, THE SIDEWALK CROSS SLOPE SHALL NOT BE GREATER THAN 2% AND SHALL BE SLOPED TO ASSURE DRAINAGE TO THE STREET (TRY TO MAINTAIN A MINIMUM 1% SLOPE IN THE DIRECTION OF FLOW).

9. THE BIDDER'S ATTENTION IS DIRECTED TO THE SPECIFICATIONS AND STANDARD DETAILS FOR THE REQUIREMENTS OF THE CITY ENGINEERING DIVISION OF THE DEPARTMENT OF PUBLIC WORKS (D.P.W.), CITY OF DETROIT.

10. IF PARKING RESTRICTIONS ADJACENT TO THE CONTRACTOR'S WORK ZONE DO NOT ALLOW OVERNIGHT PARKING OR RESTRICT DAYTIME PARKING, THE CONTRACTOR SHALL PROVIDE ACCESS TO PRIVATE PROPERTIES DURING CONSTRUCTION. THIS INCLUDES, BUT IS NOT LIMITED TO, PROVIDING A TEMPORARY RAMP TO CROSS ANY TEMPORARY WATER PIPES OR EXCAVATIONS THAT MAY LIMIT ACCESS TO DRIVEWAYS.

11. THE CONTRACTOR IS REFERRED TO THE DETAILED SPECIFICATIONS REGARDING "SHEETING AND BRACING" REQUIREMENTS. THE CONTRACTOR SHALL PROVIDE SHEETING AND BRACING TO PROTECT ADJACENT PAVEMENT, CURBS, SIDEWALKS, PIPELINES, CONDUITS, THE WORK AND PERSONNEL. THE CONTRACTOR SHALL BE TOTALLY RESPONSIBLE FOR ANY AND ALL DAMAGES AND INJURIES RESULTING FROM A FAILURE TO PROVIDE ADEQUATE SHEETING AND BRACING, AT NO ADDITIONAL COST TO D.W.S.D.

12. IF A CRANE, BACKHOE OR A BOOM WILL BE USED IN THE VICINITY OF DETROIT EDISON OVERHEAD LINES, THE DETROIT EDISON COMPANY MUST BE NOTIFIED THREE WORKING DAYS PRIOR TO SUCH USE.

13. THE CONTRACTOR SHALL NOTIFY D.W.S.D.'S REPRESENTATIVE A MINIMUM OF TWO DAYS (48 HOURS) IN ADVANCE OF THE NEED TO OPEN OR CLOSE ANY VALVES.

14. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING SEWERS, DRAINS AND DRAINAGE DITCHES INCLUDING ANY PUBLIC OR PRIVATE UTILITY, OVERHEAD OR UNDERGROUND. IF ANY UTILITIES ARE DAMAGED DURING CONSTRUCTION THEY SHALL BE RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY, TO THE SATISFACTION OF THE ENGINEER, THE UTILITY OWNER AND THE AUTHORITIES HAVING JURISDICTION.

15. ALL PREVIOUSLY ABANDONED OR LIVE UTILITIES, WATER MAINS, STORM SEWERS, AND COMBINED SEWERS MAY NOT BE SHOWN ON THE DRAWINGS. NO GUARANTEE IS MADE AS TO THEIR ACCURACY OR COMPLETENESS. SHOULD THE CONTRACTOR NEED MORE INFORMATION, A TIMELY REQUEST TO INDIVIDUAL UTILITY COMPANIES FOR THEIR FACILITY INFORMATION AND D.W.S.D. FOR WATER AND SEWER INFORMATION SHOULD BE MADE.

16. ALL SEWER CONSTRUCTION SHALL BE PERFORMED WITH MATERIALS AND WORKMANSHIP OF THE HIGHEST QUALITY FOR THE PARTICULAR PURPOSE AND SHALL STRICTLY CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE DETROIT WATER AND SEWERAGE DEPARTMENT.

17. THE HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING SEWERS ARE NOT KNOWN. APPROXIMATE ELEVATIONS SHOWN ON THE PROFILES ARE BASED ON AVAILABLE RECORD DRAWINGS FROM THE DETROIT WATER AND SEWERAGE DEPARTMENT AND SURVEY CONDUCTED. ELEVATIONS OF THE PROPOSED SEWERS ARE SUBJECT TO CHANGE TO SUIT ACTUAL ELEVATIONS OF EXISTING SEWERS, WHERE APPLICABLE. CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS OF EXISTING SEWERS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING PROPOSED SEWERS CONNECTION LOCATIONS AND ELEVATIONS (IF ANY) FOR ENGINEERS REVIEW AND APPROVAL PRIOR TO START OF WORK.

18. A MINIMUM CLEARANCE OF 18 INCHES VERTICALLY AND 3 FEET HORIZONTALLY SHALL BE MAINTAINED BETWEEN THE OUTSIDE SURFACE OF SEWERS AND OTHER UTILITIES, UNLESS OTHERWISE APPROVED BY THE ENGINEER AND D.W.S.D. IF A CONFLICT EXISTS BETWEEN THE SEWERS AND ANY OTHER UTILITY, THAT UTILITY AND ENGINEER SHOULD BE CONSULTED IMMEDIATELY. THE MINIMUM HORIZONTAL DISTANCE BETWEEN WATER MAIN AND SEWER SHALL BE 10 FEET UNLESS OTHERWISE APPROVED BY THE ENGINEER.

19. ELEVATION DATUM IS CITY OF DETROIT DATUM. COORDINATE SYSTEM, IF SHOWN, IS CITY OF DETROIT HORIZONTAL SYSTEM.

20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDANCE AND CLEANUP OF STREET SPILLAGE OF EXCAVATED OR BACKFILL MATERIALS ENTERING OR LEAVING THE SITE. CLEANUP OF MAJOR SPILLS SHALL BE COMPLETED IMMEDIATELY. OTHER SPILLS SHALL BE CLEANED, CONTINUALLY. ALL CLEANUP SHALL BE COMPLETED TO THE FULL SATISFACTION OF THE CITY OF DETROIT AUTHORITIES.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDANCE AND CLEANUP OF MUD TRACKED ONTO ADJACENT CITY, COUNTY AND STATE STREETS FROM VEHICLES LEAVING THE JOB SITE. CLEANUP SHALL BE COMPLETED DAILY AND TO THE FULL SATISFACTION OF THE CITY OF DETROIT, COUNTY AND STATE AUTHORITIES.

22. THE CONTRACTOR SHALL USE ALL MEANS NECESSARY TO PROPERLY MOISTEN ALL SURFACES AS REQUIRED TO PREVENT SOILS FROM BECOMING AIRBORNE AND CREATING A NUISANCE TO NEIGHBORING FACILITIES, THE PUBLIC, AND ANY CONCURRENT WORK ACTIVITIES. THE FINAL DETERMINATION OF THE SUCCESS OF THESE DUST CONTROL MEASURES SHALL BE BY THE CITY OF DETROIT AUTHORITIES.

23. ANY SITE DEWATERING NECESSARY TO MAINTAIN A SAFE AND EFFICIENT ENVIRONMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

24. ALL EXCAVATED MATERIALS SHALL BE REMOVED FROM THE SITE AND PROPERLY AND LEGALLY DISPOSED OF AT AN OFF SITE LOCATION. NO EXCAVATED MATERIALS SHALL BE UTILIZED FOR ANY ON-SITE FILL REQUIREMENTS.

25. THE CONTRACTOR SHALL TELEVISE ALL EXISTING SEWER MANHOLES, CATCHBASINS AND CATCHBASIN LEADS IN THE WORK AREA TO DETERMINE AND RECORD ALL CONNECTIONS TO THESE SEWERS.

26. THE CONTRACTOR SHALL NOT ABANDON ANY EXISTING SEWER CONNECTION UNLESS SO DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL RECONNECT ALL EXISTING SEWERS, EXISTING HOUSE LEADS AND ANY OTHER EXISTING DRAINAGE CONNECTIONS, THAT ARE NOT TO BE ABANDONED, TO THE NEW SEWERS AS DIRECTED BY THE ENGINEER.

27. THE CONTRACTOR SHALL NOTIFY ALL UTILITY OWNERS HAVING EXISTING FACILITIES IN OR NEAR THE IMMEDIATE WORKING AREA. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF VERIFYING THE LOCATIONS AND NOTIFYING ALL UTILITY OWNERS AND MISS DIG.

28. THE CONTRACTOR SHALL VIDEOTAPE ALL STREETS PRIOR TO CONSTRUCTION PER THE CONTRACT DOCUMENTS.

29. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE PROTECTION OF EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES.

30. TRAFFIC CONTROL MUST CONFORM TO ALL APPLICABLE CITY, COUNTY AND STATE REGULATIONS AND GUIDELINES.

31. CURB OR CURB AND GUTTER CALLED OUT TO BE INSTALLED SHALL BE PLACED PER THE CITY OF DETROIT'S STANDARD DETAIL INCLUDED IN THESE PLANS.

32. FOR RESTORATION ITEMS, MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CITY OF DETROIT DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION STANDARD SPECIFICATIONS FOR PAVING AND RELATED CONSTRUCTION AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS AND SPECIFICATIONS.

33. THE CONTRACTOR IS TO COMPLETE ALL SURFACE RESTORATION PRIOR TO SUBSTANTIAL COMPLETION. IF TEMPORARY RESTORATION CONDITIONS EXIST THROUGH THE WINTER, OR LONGER THAN 6 WEEKS, COLD PATCH/TEMPORARY PAVEMENTS ARE PERMITTED AS DIRECTED BY THE ENGINEER.

A□□REVIATIONS

ASPH	ASPHALT PAVEMENT
AC	AS□ESTOS CEMENT
DWSD	DETROIT WATER AND SEWERAGE DEPARTMENT
E□.	E□ISTING
F.G.	FINISH GRO□ND
HORI□.	HORI□ONTAL
HYD.	HYDRANT
I.E.	INVERT ELEVATION
R□W	RIGHT OF WAY
STM	STORM
□N□DEAD	□N□NOWN MATERIAL □DEAD
VERT.	VERTICAL
WM	WATERMAIN
WTR.	WATER

Know what's **below.**
Call before you dig.

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A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE	

DESIGNED □Y□

DRAWN □Y□

CHEC□ED □Y□

MANAGER□

SEAL □STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

A□□REVIATIONS AND GENERAL NOTES

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDE□ SRF Pro□□□No. 5688-01

REF. No.

DWSD CONTRACT No. DWS□□□□

FILE No. □

DRAWING No. G□□

SOIL EROSION AND SEDIMENTATION CONTROL

1. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE EROSION CONTROL SEDIMENTATION AND CONTAINMENT OF CONSTRUCTION DETAILS SPECIFICATION IN THE CONTRACT DOCUMENTS, WHERE REFERENCE IS MADE TO THE CONTRACTOR'S RESPONSIBILITIES CONCERNING THIS MATTER.

2. THE CONTRACTOR SHALL ARRANGE HIS CONSTRUCTION OPERATIONS IN SUCH A MANNER THAT THE CONSTRUCTION AREA WILL NOT BE SUSCEPTIBLE TO SOIL EROSION AND THAT THE CONSTRUCTION OPERATIONS WILL NOT CREATE ANY SILTATION PROBLEMS.

3. THE CONTRACTOR SHALL EMPLOY NECESSARY MEANS AND METHODS TO PREVENT EXCAVATED AND LOOSE SOIL MATERIAL FROM BEING COLLECTED ON TIRES OF TRUCKS AND OTHER EQUIPMENT AND BEING DEPOSITED ON STREETS AND ROADS TO AND FROM THE CONSTRUCTION SITE.

4. THE CONTRACTOR SHALL CONTROL DUST AT THE CONSTRUCTION SITE AND ON THE PUBLIC STREETS USED AS HAUL ROADS. THE CONTRACTOR SHALL BE FAMILIAR WITH AND FOLLOW THE REGULATIONS OUTLINED BY THE CITY OF DETROIT FUGITIVE DUST ORDINANCE NO. 32–17 CHAPTER 22, ARTICLE 5.

5. THE DISTANCE BETWEEN THE POINT OF COMPLETE BACK–FILLING AND THE PIPE LAYING SHALL NOT EXCEED 40 FEET.

6. THE CONTRACTOR SHALL EMPLOY POSITIVE MEANS TO PREVENT SOIL AND OTHER DEBRIS FROM ENTERING THE EXISTING STREET DRAINAGE SYSTEM. THE EXISTING CATCH BASIN AND DRAIN SYSTEM IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN TO AT LEAST THE CONDITIONS PRIOR TO CONSTRUCTION.

7. IN ADDITION TO THE ABOVE REQUIREMENTS, THE CONTRACTOR'S ATTENTION IS DIRECTED SPECIFICALLY TO DIVISION 14E, "EROSION CONTROL PROGRAM" OF THE CITY ENGINEERING DEPARTMENT'S CURRENT "STANDARD SPECIFICATIONS FOR PAVING AND RELATED CONSTRUCTION."

8. THE CONTRACTOR SHALL PERFORM ALL ACTIVITIES NECESSARY TO COMPLY WITH THE TEMPORARY EROSION AND SEDIMENT CONTROL SPECIFICATION AND THE CITY ENGINEERING EROSION CONTROL PROGRAM.

9. PERMITTEE AND CONTRACTORS ARE SUBJECT TO: PUBLIC ACT 451 OF 1994, AS AMENDED PART 201. IN THE EVENT OF EXCAVATION ENCOUNTERING ENVIRONMENTAL CONTAMINATION OR AN UNDERGROUND TANK IN MDOT AND/OR OTHER PROJECT RIGHT OF WAY, WORK WITHIN THE RIGHT OF WAY SHALL CEASE UNTIL ALL ACTIONS/NOTIFICATIONS SPECIFIED BY PART 201 HAVE BEEN COMPLETED.

10. REFER TO SHEETS SD–3 AND SD–4 FOR SOIL EROSION AND SEDIMENTATION CONTROL DETAILS.

11. ALL SOIL EROSION AND SEDIMENTATION CONTROL WORK IS CONSIDERED INCIDENTAL TO THE CONTRACT, WITH THE EXCLUSION OF THE GREEN STORMWATER INFRASTRUCTURE WORK.

C.E.D. NOTES

CITY OF DETROIT, DPW, CITY ENGINEERING DIVISION REQUIREMENTS

1. **THE CONTRACTOR SHALL OBTAIN A CITY OF DETROIT STREET RIGHT-OF-WAY PERMIT FROM THE INSPECTION PERMIT OFFICE OF THE ENGINEERING DIVISION.**
2. **THE CONTRACTOR SHALL COMPLY WITH ALL THE CITY ENGINEERING DIVISION STREET RIGHT-OF-WAY PERMIT REQUIREMENTS.**
3. **NEW GATE VALVE WELLS, FIRE HYDRANTS AND ANY SURFACE ITEMS SHALL NOT BE LOCATED IN SIDEWALK RAMPS, LANDINGS AND/OR CROSSWALKS.**
4. **ALL NEWLY CONSTRUCTED OR RECONSTRUCTED SIDEWALKS IN THE CITY OF DETROIT'S RIGHT-OF-WAY, SHALL HAVE A MAXIMUM 2% CROSS-SLOPE. IN ADDITION THERE SHALL BE A SUFFICIENT SLOPE ON THE SIDEWALK TO ASSURE DRAINAGE TO THE STREET (TRY TO MAINTAIN AT LEAST A 1% SLOPE IN THE DIRECTION OF FLOW).**
5. **THE CONTRACTOR IS REQUIRED TO MEET D.P.W. ROADWAY PATCHING, SIDE WALK PATCHING AND ADA RAMP DETAILS AND REQUIREMENTS SHOWN ON STANDARD DETAILS.**
6. **THE CONSTRUCTION CONTRACTOR NEEDS TO SUBMIT THE CONSTRUCTION PHASING AND DURATION OF EACH PHASE TO THE OWNER IN ORDER TO MINIMIZE THE IMPACT TO VEHICULAR AND PEDESTRIAN TRAFFIC.**
7. **WHENEVER SIDEWALKS ARE CLOSED, PEDESTRIAN DETOUR SIGNS NEED TO BE POSTED.**

PRE CONSTRUCTION MEETING
A PRE-CONSTRUCTION MEETING SHALL BE REQUIRED PRIOR TO COMMENCING THE ROAD PAVING ACTIVITY.

TO REPORT AN EMERGENCY FIELD CONDITION CALL□

DTE ENERGY ELECTRICAL .....□□□□□□□□□□□□

INTERNATIONAL TRANSMISSION CO.....□□□□□□□□□□□□

DETROIT P□□LIC LIGHTING A□THORITY.... □□□□□□□□□□□□

DETROIT WATER □ SEWERAGE DEPT. ..... □□□□□□□□□□□□

DTE ENERGY GAS.....□□□□□□□□□□□□

S□C □AT□T .....□□□□□□□□□□□□

COMCAST CA□LE .....□□□□□□□□□□□□

DPW TRAFFIC SIGNAL COND□IT .....□□□□□□□□□□□□ □□□□□□□□□□□□

CONS□MERS ENERGY GAS.....□□□□□□□□□□□□

S□NOCO PIPE LINE COMPANY.....□□□□□□□□□□□□

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	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE	MANAGER□	

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

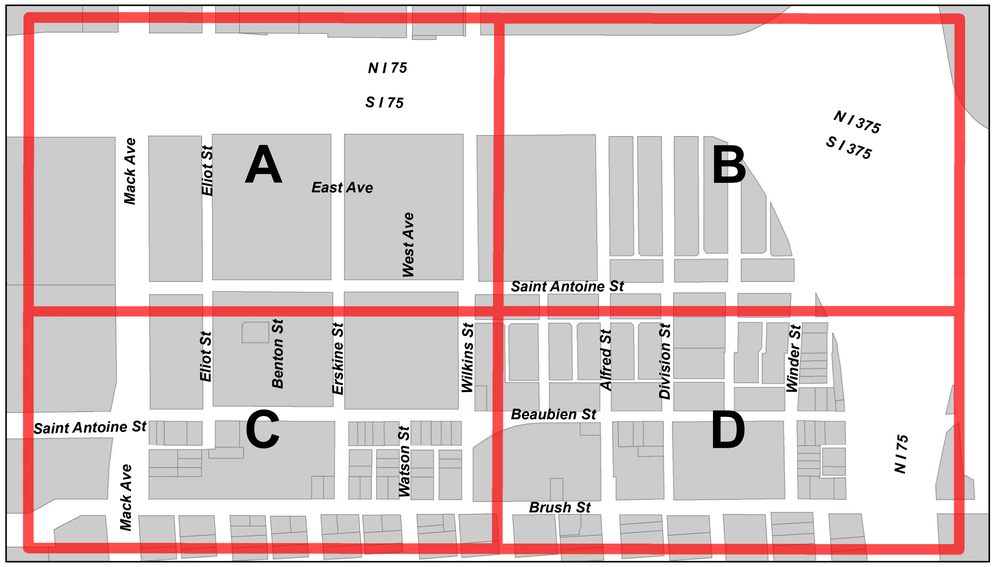
SOIL EROSION AND SEDIMENTATION CONTROL NOTES AND C.E.D. NOTES

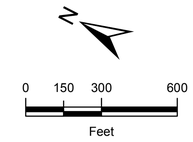
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDE□ SRF Pro□□No. 5688-01
REF. No. CS□□□□□
DWSD CONTRACT No. DWS□□□□
FILE No. □
DRAWING No. G□□





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	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

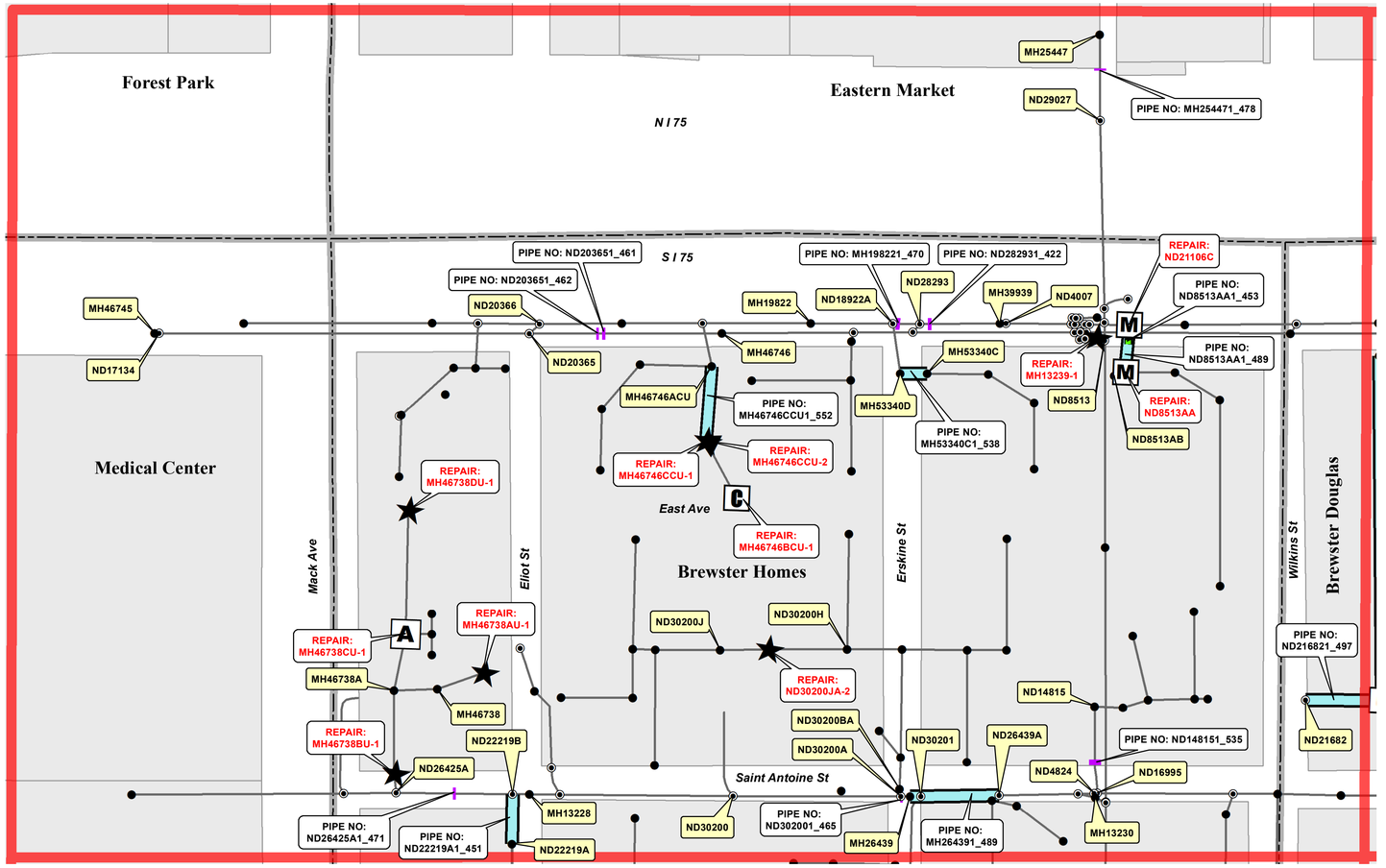
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

HIGH PRIORITY NEIGHBORHOODS
PIPE AND MANHOLE REHABILITATION REPAIRS

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT

SECTION MAP	TOWN	SECTION	RANGE	PORTION CODE

MDEQ SRF Project No.	5688-01
REF. No.	CS-1812
DWSD CONTRACT No.	DWS-916
FILE No.	
DRAWING No.	INDEX - P&MH



Pipe Rehabilitation Legend

- External Point Repair
- Lining
- Lining with External Point Repair
- Trenchless Point Repair

Manhole Rehabilitation Legend

- A — Adjust to Grade
- C — Replace Chimney Only
- Frame/Cover Replacement and/or Adjustment
- General and/or Spot Repairs
- Benching and Channel Re-Construction
- M — New Manhole

General Legend

- Neighborhood Boundary
- Parcels
- Manhole
- Other Structure

Material	Description
BR	Brick
AC	Asbestos Cement
CROCK	Clay Pipe
CP	Concrete Pipe
CT	Clay Tile
NA*	See General Note #3
PCP	Pre-stressed Concrete Cylinder Pipe
PVC	Polyvinyl Chloride
RCP	Reinforced Concrete Pipe
VCP	Vitrified Clay Pipe

General Notes:

1. All lengths are shown in feet except as noted.
2. NA - Data Not Available.
3. NA* - Upon review of CCTV video, pipe appears to be lined.
4. Print Sheet in color.

MANHOLE REPAIR TABLE

Manhole ID	Repair Type	Defect Type	Chamber Floor Depth (ft)	MH Diameter (in)	Cone Depth (in)	Chimney Depth (in)	Chimney Repair Depth (in)	Spot Repair Depth (in)
ND8513AA	NEW MANHOLE	BLIND TEE	11.6	48	–	–	–	–
ND21106C	NEW MANHOLE	BLIND TEE	16.47	48	–	–	–	–
ND30200JA-2	MH_GENERAL	WALL	10	24	0	0	4.8	4.8
MH13239-1	MH_GENERAL	CHIMNEY	24	48	59.52	1.06	0	26.4
MH46738AU-1	MH_GENERAL	CHIMNEY	7.4	47	42.96	0.77	0	14.4
MH46738BU-1	MH_GENERAL	CHIMNEY	9.3	51	31.44	1.09	0	14.4
MH46738CU-1	MH_ADJ_REPLACE	ADJUSTERS	8.8	40	40.56	1.09	0	0
MH46738DU-1	MH_GENERAL	CHIMNEY	7.4	47	47.16	1.2	0	14.4
MH46746BCU-1	MH_CHIM_REPLACE	CHIMNEY	8.6	47	59.16	1.55	12	0
MH46746CCU-1	MH_GENERAL	CHIMNEY	8.2	47	28.32	1.1	0	12
MH46746CCU-2	MH_STRUCT	WALL	8.2	47	28.32	1.1	0	33.6

Key Map

0 50 100 200

Feet

F					DESIGNED BY:	SEAL / STAMP
E						
D					DRAWN BY:	
C						
B					CHECKED BY:	
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER:	
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

HIGH PRIORITY NEIGHBORHOODS
PIPE AND MANHOLE REHABILITATION REPAIRS

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT

SECTION MAP	TOWN	SECTION	RANGE	PORTION CODE

MDEQ SRF Project No. 5688-01
REF. No. CS-1812
DWSD CONTRACT No. DWS-916
FILE No.
DRAWING No. A - P&MH (1 of 2)

PIPE REPAIR TABLE

Pipe Repair ID	Up Stream Node ID	Down Stream Node ID	Pipe Segment Ref / Asset ID	Location	Start Length From Upstream Node (ft)	Repair Length (ft)	Total Pipe Length (ft)	Repair Type	Shape	Width (in)	Height (in)	Material	US MH Depth (ft)	DS MH Depth (ft)	No. of Taps	No. of Active Taps	No. of Intruding Taps	No. of Root Defects > 20%	No. of Root Defects < 20%	Continuous Root Length	No. of Obstruction Defects >20%	No. of Obstruction Defects <20%	No. of Grease Defects > 20%	No. of Grease Defects < 20%	No. of Encrustations > 20%	No. of Encrustations < 20%	Continuous Encrustation Length	No. of Other Deposit Defects >20%	% Length Not Surveyed
ND148151_535	ND14815	ND16995	WWGM0000139541	In Street near Intersection of East Ave, Saint Antoine St and West Ave	73	8.0	119.5	TPR-Liner	C	18	18	RCP	9.7	12.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
ND203651_461	ND20365	MH46746	WWGM0000189185	In Street near Intersection of East Ave and Eliot St	100	1.0	264.7	TPR-Pointing	E	36	40	BR	9.621	8	8	6	1	0	0	0	0	0	0	0	0	2	257.1	3	0
ND203651_462	ND20365	MH46746	WWGM0000189185	In Street near Intersection of East Ave and Eliot St	92	2.0	264.7	TPR-Pointing	E	36	40	BR	9.621	8	8	6	1	0	0	0	0	0	0	0	0	2	257.1	3	0
ND216821_497	ND21682	MH32289	WWGM0000148419	In Alley near Intersection of Saint Antoine St and Wilkins St	0	104.9	104.9	LINE (A, C)	E	20	15	BR	9.229	11.2	1	1	0	0	0	0	0	0	0	0	0	2	20.2	0	77
ND22219A1_451	ND22219A	ND22219B	WWGM0000149301-2	In Street near Intersection of Eliot St and Saint Antoine St	0	68.3	68.3	LINE (B, H) (Blind Tee)	C	10	10	VCP	11.5	12	0	0	0	0	0	0	0	1	0	1	0	10	0	0	25
ND26425A1_471	ND26425A	ND22219B	WWGM0000189165-1	In Street near Intersection of Eliot St and Saint Antoine St	78	1.0	160.0	TPR-Pointing	C	48	48	BR	13.42	13.23	1	1	0	0	0	0	0	0	0	0	0	2	158.9	2	0
ND282931_422	ND28293	MH39939	WWGM0000189153	In Street near Intersection of S I 75 Service Drive and Wilkins St	11	5.0	110.4	TPR-Pointing	E	36	54	BR	16.13	16.376	2	2	1	0	0	0	0	0	0	0	0	6	0	0	0
ND302001_465	ND30200	ND30200A	WWGM0000189176	In Street near Intersection of East Ave, Saint Antoine St and West Ave	230	2.0	230.7	TPR-Pointing	E	36	48	BR	12.615	13.029	7	7	2	0	0	0	0	0	0	0	1	1	229.775	0	0
ND8513AA1_453	ND8513AA	ND21106C	WWGM0000118608-3D	In Street near Intersection of S I 75 Service Drive and Wilkins St	–	–	–	External Point Repair (See Sheet S-11)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
ND8513AA1_489	ND8513AA	ND21106C	WWGM0000118608-3D	In Street near Intersection of S I 75 Service Drive and Wilkins St	0	64.7	64.7	LINE	C	12	12	VCP	11.6	11.6	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
MH198221_470	MH18922A	ND28293	WWGM0000160308	In Street near Intersection of S I 75 Service Drive and Wilkins St	0	2.0	36.8	TPR-Pointing	E	36	54	BR	15.2	16.13	7	5	1	0	0	0	0	0	0	0	0	9	9.4	0	0
MH254471_478	MH25447	ND29027	WWGM0000170604	In Alley near Intersection of N I 75 Service Drive and Wilkins St	47	3.0	118.9	TPR-Liner	C	66	66	RCP	26.993	27.655	0	0	0	0	0	0	0	0	0	0	0	1	117.917	0	0
MH264391_489	MH26439	MH26439A	WWGM0000160278	In Street near Intersection of East Ave, Saint Antoine St and West Ave	0	122.2	122.2	LINE (E) (See Note AA)	E	36	48	BR	13	13.68	3	3	2	0	0	0	1	0	0	0	0	2	9.7	1	78
MH46746CCU1_552	MH46746CCU	MH46746ACU	WWGM0000110533-5U	In Alley near Intersection of East Ave and Eliot St	0	103.3	103.3	LINE	C	10	10	VCP	8.2	12	3	3	0	0	0	0	0	0	0	0	0	3	95.6	0	3
MH53340C1_538	MH53340C	MH53340D	WWGM0000109243-4	In Alley near Intersection of S I 75 Service Drive and Wilkins St	0	37.2	37.2	LINE	C	10	10	BR	12	12.9	0	0	0	0	0	0	0	0	0	0	0	4	18.7	0	5

Note AA:
Grinding of bricks may be necessary. Final determination in field after cleaning prior to lining.

Pipe Repair Table Notes:
In locations where CCTV was not complete, Contractor to CCTV entire segment and send televising results to Engineer to confirm repair or recommend another repair(s) prior to making repair(s). Below is reason for incomplete CCTV:
(A) Inaccessible, (B) No Reversal, (C) Manhole Not Found, (D) Abandoned Due To Roots, (E) Abandoned Due To Obstruction, (F) Abandoned Due To High Water, (G) Line Deviation, (H) Encrustation, (I) Debris, (J) Joint Defect.

	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE
F				
E				
D				
C				
B				
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020

DESIGNED BY:
DRAWN BY:
CHECKED BY:
MANAGER:
SEAL / STAMP

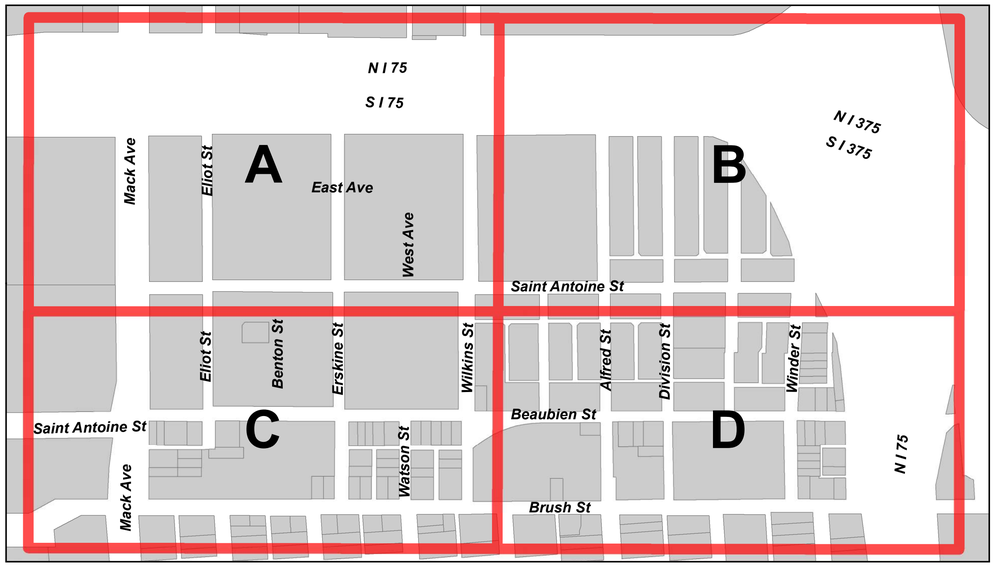
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

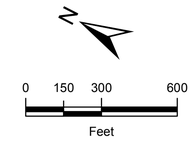
HIGH PRIORITY NEIGHBORHOODS
PIPE AND MANHOLE REHABILITATION REPAIRS

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT

SECTION MAP | TOWN | SECTION | RANGE | PORTION CODE

MDEQ SRF Project No. 5688-01
REF. No. CS-1812
DWSD CONTRACT No. DWS-916
FILE No.
DRAWING No. A - P&MH (2 of 2)





F					DESIGNED BY:	SEAL / STAMP
E					DRAWN BY:	
D					CHECKED BY:	
C					MANAGER:	
B						
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020		
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE		

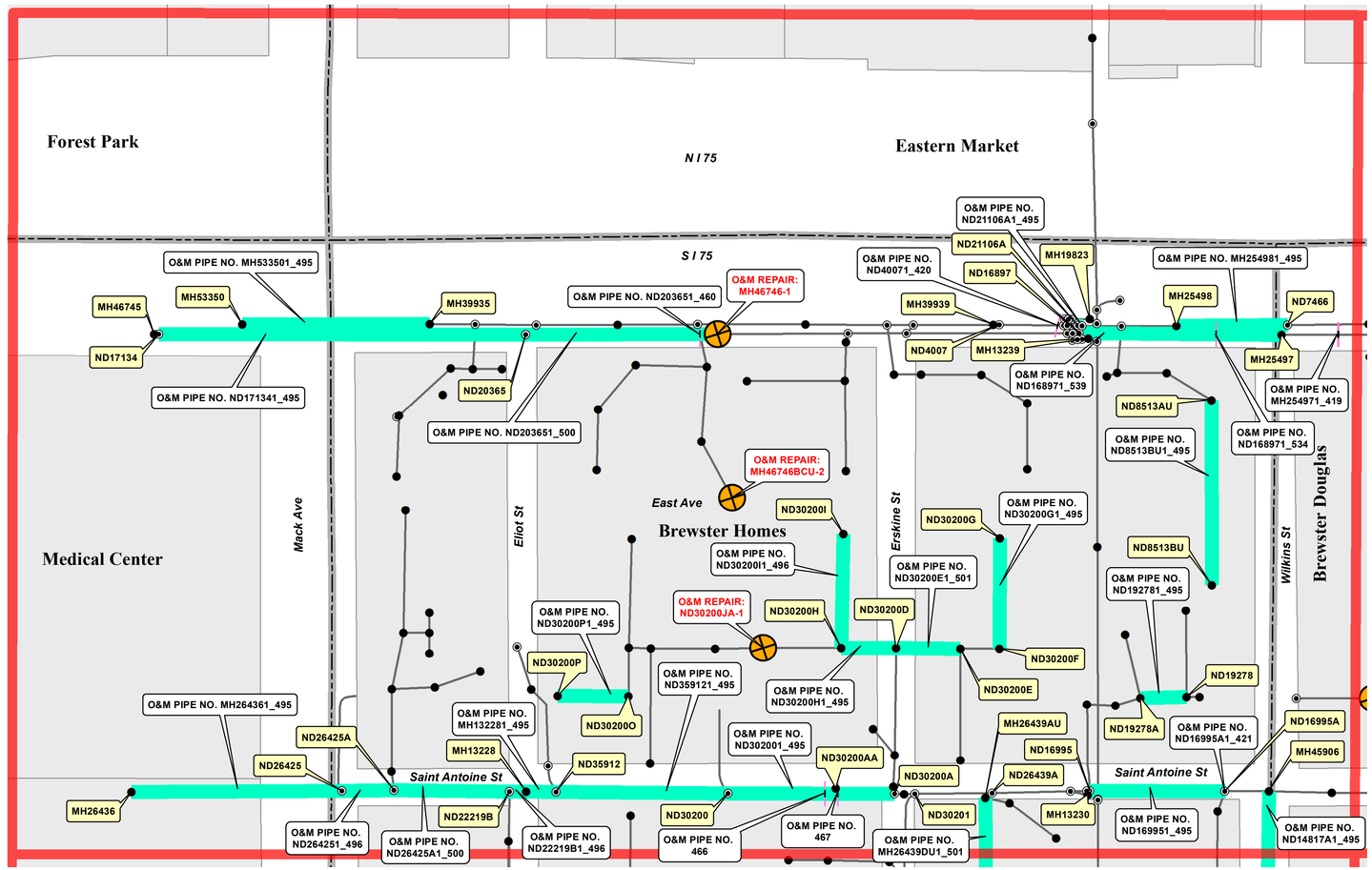
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

HIGH PRIORITY NEIGHBORHOODS
O&M PIPE AND MANHOLE REHABILITATION REPAIRS

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT

SECTION MAP	TOWN	SECTION	RANGE	PORTION CODE

MDEQ SRF Project No. 5688-01
REF. No. CS-1812
DWSD CONTRACT No. DWS-916
FILE No.
DRAWING No. INDEX - O&M



Pipe O&M Legend

- Cutting/Grinding Of Taps - Immediate
- Sewer Cleaning

Manhole O&M Legend

- Manhole Cleaning

General Legend

- Neighborhood Boundary
- Parcels
- Manhole
- Other Structure

Material	Description
BR	Brick
AC	Asbestos Cement
CROCK	Clay Pipe
CP	Concrete Pipe
CT	Clay Tile
NA*	See General Note #3
PCP	Pre-stressed Concrete Cylinder Pipe
PVC	Polyvinyl Chloride
RCP	Reinforced Concrete Pipe
VCP	Vitrified Clay Pipe

General Notes:

1. All lengths are shown in feet except as noted.
2. NA - Data Not Available.
3. NA* - Upon review of CCTV video, pipe appears to be lined.
4. Print Sheet in color.

MANHOLE REPAIR TABLE

Manhole ID	Repair Type	Defect Type	Chamber Floor Depth From Cover (ft)	MH Diameter (in)	Cone Depth (in)	Chimney Depth (in)	Chimney Repair Depth (in)	Spot Repair Depth (in)
ND30200JA-1	MH_CLEAN	DEBRIS	10	0	0	0	0	0
MH46746-1	MH_CLEAN	DEBRIS	8	32	63.84	0.68	0	0
MH46746BCU-2	MH_CLEAN	DEBRIS	8.6	47	59.16	1.55	0	0

Key Map

0 50 100 200

Feet

F					DESIGNED BY:	SEAL / STAMP	DETROIT WATER AND SEWERAGE DEPARTMENT CAPITAL IMPROVEMENT PROGRAM
E					DRAWN BY:		
D					CHECKED BY:		HIGH PRIORITY NEIGHBORHOODS O&M PIPE AND MANHOLE REHABILITATION REPAIRS
C					MANAGER:		
B							
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020			
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE			

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT

SECTION MAP	TOWN	SECTION	RANGE	PORTION CODE
29A				

MDEQ SRF Project No. 5688-01
REF. No. CS-1812
DWSD CONTRACT No. DWS-916
FILE No.
DRAWING No. A - O&M (1 of 2)

PIPE REPAIR TABLE

Pipe Repair ID	Up Stream Node ID	Down Stream Node ID	Pipe Segment Ref / Asset ID	Location	Start Length From Upstream Node (ft)	Repair Length (ft)	Total Pipe Length (ft)	Repair Type	Defect Type	Shape	Width (in)	Height (in)	Material	US MH Depth (ft)	DS MH Depth (ft)	No. of Taps	No. of Active Taps	No. of Intruding Taps	No. of Root Defects > 20%	No. of Root Defects < 20%	Continuous Root Length	No. of Obstruction Defects >20%	No. of Obstruction Defects <20%	No. of Grease Defects > 20%	No. of Grease Defects < 20%	No. of Encrustations > 20%	No. of Encrustations < 20%	Continuous Encrustation Length	No. of Other Deposit Defects >20%	% Length Not Surveyed
466	ND30200	ND30200A	WWGM0000189176	In Street near Intersection of Saint Antoine St and Erskine St	133	2.0	230.7	CUT_GRIND_I	O&M	E	36	48	BR	12.615	13.029	7	7	2	0	0	0	0	0	0	0	1	1	229.775	0	0
467	ND30200	ND30200A	WWGM0000189176	In Street near Intersection of Saint Antoine St and Erskine St	151	2.0	230.7	CUT_GRIND_I	O&M	E	36	48	BR	12.615	13.029	7	7	2	0	0	0	0	0	0	0	1	1	229.775	0	0
ND14817A1_495	ND14817A	MH45906	WWGM0000141445-1	In Street near Intersection of Saint Antoine St and Wilkins St	0	122.3	122.3	CLEAN	O&M	E	15	18	BR	11	11.8	0	0	0	0	0	0	1	0	0	0	0	2	0	0	4
ND168971_534	ND16897	MH25497	WWGM0000189183	In Street near Intersection of S I 75 Service Drive and Wilkins St	189	2.0	280.3	CUT_GRIND_I (C) (See Note AA)	O&M	E	30	40	BR	9.204	10	7	7	1	0	0	0	0	0	0	0	1	2	55.3	1	94
ND168971_539	ND16897	MH25497	WWGM0000189183	In Street near Intersection of S I 75 Service Drive and Wilkins St	0	280.3	280.3	CLEAN (C)	O&M	E	30	40	BR	9.204	10	7	7	1	0	0	0	0	0	0	0	1	2	55.3	1	94
ND169951_495	ND16995	ND16995A	WWGM0000189109	In Street near Intersection of East Ave, Saint Antoine St and Wilkins St	0	186.9	186.9	CLEAN (G)	O&M	E	36	48	BR	13.4	12	8	8	0	0	0	0	2	1	0	0	0	1	157.849	0	7
ND16995A1_421	ND16995A	MH45906	WWGM0000189109-1	In Street near Intersection of Saint Antoine St and Wilkins St	0	1.0	61.0	CUT_GRIND_I (G)	O&M	E	36	48	BR	12	12.5	3	3	1	0	0	0	0	0	0	0	1	60.951	0	0
ND171341_495	ND17134	ND20365	WWGM0000189115	In Street near Intersection of Mack Ave and S I 75 Service Drive	0	508.4	508.4	CLEAN	O&M	E	36	40	BR	5.48	9.621	21	20	1	0	0	0	0	0	0	0	2	4	499.2	0	0
ND192781_495	ND19278	ND19278A	WWGM0000189133-1	In Alley near Intersection of East Ave, Saint Antoine St and West Ave	0	64.0	64.0	CLEAN	O&M	C	10	10	PVC	9.5	9.8	2	2	0	0	0	0	0	0	0	2	1	1	0	0	0
ND203651_460	ND20365	MH46746	WWGM0000189185	In Street near Intersection of East Ave and Eliot St	240	2.0	264.7	CUT_GRIND_I	O&M	E	36	40	BR	9.621	8	8	6	1	0	0	0	0	0	0	0	2	257.1	3	0
ND203651_500	ND20365	MH46746	WWGM0000189185	In Street near Intersection of East Ave and Eliot St	0	264.7	264.7	CLEAN	O&M	E	36	40	BR	9.621	8	8	6	1	0	0	0	0	0	0	0	2	257.1	3	0
ND21106A1_495	ND21106A	ND21106B	WWGM0000189114-1	In Street near Intersection of S I 75 Service Drive and Wilkins St	0	6.2	6.2	CLEAN	O&M	E	36	54	BR	16.35	16.45	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
ND22219B1_496	ND22219B	MH13228	WWGM0000189165-2	In Street near Intersection of Eliot St and Saint Antoine St	0	23.2	23.2	CLEAN	O&M	C	48	48	BR	13.23	13.293	2	2	0	0	0	0	0	0	0	0	0	2	15.8	2	0
ND264251_496	ND26425	ND26425A	WWGM0000189165	In Street near Intersection of Mack Ave and Saint Antoine St	0	71.9	71.9	CLEAN	O&M	C	48	48	BR	13.228	13.42	5	5	1	0	0	0	0	0	0	0	0	2	67.8	2	6
ND26425A1_500	ND26425A	ND22219B	WWGM0000189165-1	In Street near Intersection of Eliot St and Saint Antoine St	0	160.0	160.0	CLEAN	O&M	C	48	48	BR	13.42	13.23	1	1	0	0	0	0	0	0	0	0	0	2	158.9	2	0
ND302001_495	ND30200	ND30200A	WWGM0000189176	In Street near Intersection of Benton St and West Ave	0	230.7	230.7	CLEAN	O&M	E	36	48	BR	12.615	13.029	7	7	2	0	0	0	0	0	0	0	1	1	229.775	0	0
ND30200E1_501	ND30200E	ND30200D	WWGM0000189175-4	In Alley near Intersection of East Ave, Saint Antoine St and West Ave	0	89.1	89.1	CLEAN (G)	O&M	C	10	10	PVC	8.4	8.9	4	4	0	0	0	0	0	0	0	5	0	0	0	0	24
ND30200G1_495	ND30200G	ND30200F	WWGM0000189175-6	In Alley near Intersection of East Ave, Saint Antoine St and West Ave	0	153.1	153.1	CLEAN (E)	O&M	C	10	10	PVC	8	9.1	10	10	0	0	0	0	1	1	0	4	0	0	0	0	24
ND30200H1_495	ND30200H	ND30200D	WWGM0000189175-7	In Alley near Intersection of East Ave, Saint Antoine St and West Ave	0	75.8	75.8	CLEAN	O&M	C	12	12	PVC	9.6	8.9	3	3	0	0	0	0	0	0	1	4	0	0	0	0	0
ND30200I1_496	ND30200I	ND30200H	WWGM0000189175-8	In Alley near Intersection of East Ave, Saint Antoine St and West Ave	0	158.3	158.3	CLEAN	O&M	C	10	10	PVC	6.3	9.4	13	13	0	0	0	0	0	0	0	2	0	0	0	1	0
ND30200P1_495	ND30200P	ND30200O	WWGM0000189175-15	In Alley near Intersection of Eliot St and Saint Antoine St	0	98.3	98.3	CLEAN	O&M	C	10	10	PVC	5	8.2	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0
ND359121_495	ND35912	ND30200	WWGM0000189174	In Street near Intersection of Eliot St and Saint Antoine St	0	238.0	238.0	CLEAN	O&M	C	48	48	BR	13.449	12.615	5	4	0	0	0	0	0	0	0	0	2	2	184.6	0	0
ND40071_420	ND4007	ND2881	WWGM0000189111	In Street near Intersection of S I 75 Service Drive and Wilkins St	80	2.0	89.5	CUT_GRIND_I	O&M	E	36	54	BR	15.895	15.774	4	4	1	0	0	0	0	0	0	0	0	3	95	0	0
ND8513BU1_495	ND8513BU	ND8513AU	WWGM0000118608-2U	In Alley near Intersection of S I 75 Service Drive and Wilkins St	0	256.2	256.2	CLEAN	O&M	C	10	10	PVC	7.4	9.8	10	10	0	0	0	0	0	0	0	0	1	3	0	0	0
MH132281_495	MH13228	ND35912	WWGM0000180119	In Street near Intersection of Eliot St and Saint Antoine St	0	41.6	41.6	CLEAN	O&M	C	48	48	BR	13.293	13.449	5	4	0	0	0	0	2	0	0	0	0	2	38.8	0	0
MH254971_419	MH25497	ND36753	WWGM0000110462	In Street near Intersection of S I 75 Service Drive and Wilkins St	77	3.0	127.6	CUT_GRIND_I	O&M	E	36	48	BR	10	10.128	5	4	1	0	0	0	0	0	5	0	0	0	4	126.3	0	0
MH254981_495	MH25498	ND7466	WWGM0000140318	In Street near Intersection of S I 75 Service Drive and Wilkins St	0	153.7	153.7	CLEAN	O&M	E	36	48	BR	16.2	16.792	3	3	0	0	0	0	1	7	0	0	0	3	39.3	0	0
MH264361_495	MH26436	ND26425	WWGM0000170267	In Street near Intersection of Mack Ave and Saint Antoine St	0	291.7	291.7	CLEAN	O&M	C	48	48	BR	12.778	13.228	11	9	0	0	0	0	2	0	0	0	0	2	238.6	2	0
MH26439DU1_501	MH26439DU	MH26439AU	WWGM0000189151-4U	In Alley near Intersection of East Ave, Saint Antoine St and West Ave	0	200.8	200.8	CLEAN	O&M	C	10	10	PVC	8.2	12.3	11	11	0	0	0	0	0	0	0	1	0	0	0	0	0
MH533501_495	MH53350	MH39935	WWGM0000170052	In Street near Intersection of Mack Ave and S I 75 Service Drive	0	259.3	259.3	CLEAN	O&M	E	36	54	BR	16	15.464	3	3	0	0	0	0	0	0	0	0	2	4	153.3	0	0

Note AA:
Grinding of bricks may be necessary. Final determination in field after cleaning prior to lining.

Pipe Repair Table Notes:
In locations where CCTV was not complete, Contractor to CCTV entire segment and send televising results to Engineer to confirm repair or recommend another repair(s) prior to making repair(s). Below is reason for incomplete CCTV:
(A) Inaccessible, (B) No Reversal, (C) Manhole Not Found, (D) Abandoned Due To Roots, (E) Abandoned Due To Obstruction, (F) Abandoned Due To High Water, (G) Line Deviation, (H) Encrustation, (I) Debris, (J) Joint Defect.

F					DESIGNED BY:
E					
D					DRAWN BY:
C					
B					CHECKED BY:
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER:
	DESCRIPTIONS / REVISIONS	CHK'D	APPR.	DATE	

SEAL / STAMP

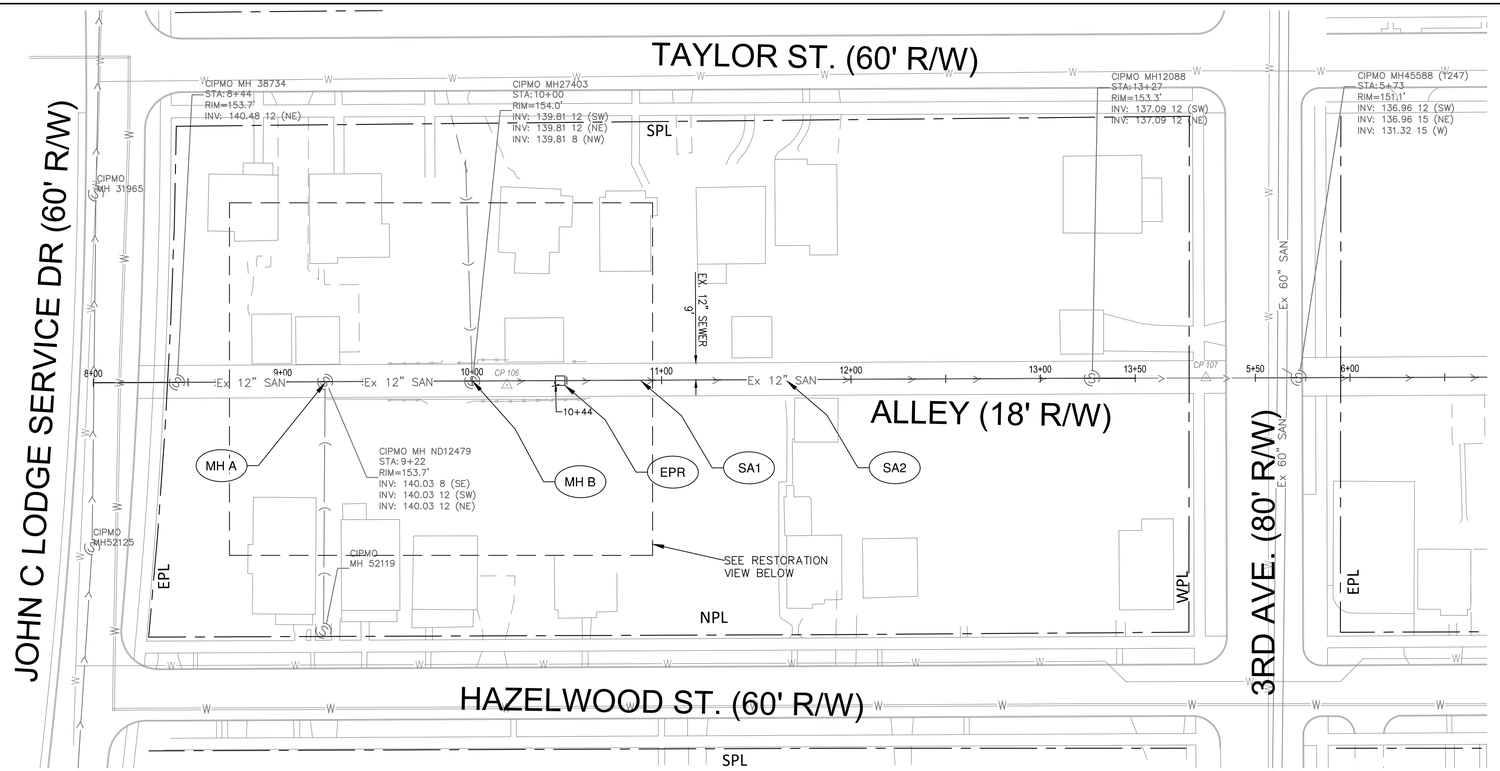
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

HIGH PRIORITY NEIGHBORHOODS
O&M PIPE AND MANHOLE REHABILITATION REPAIRS

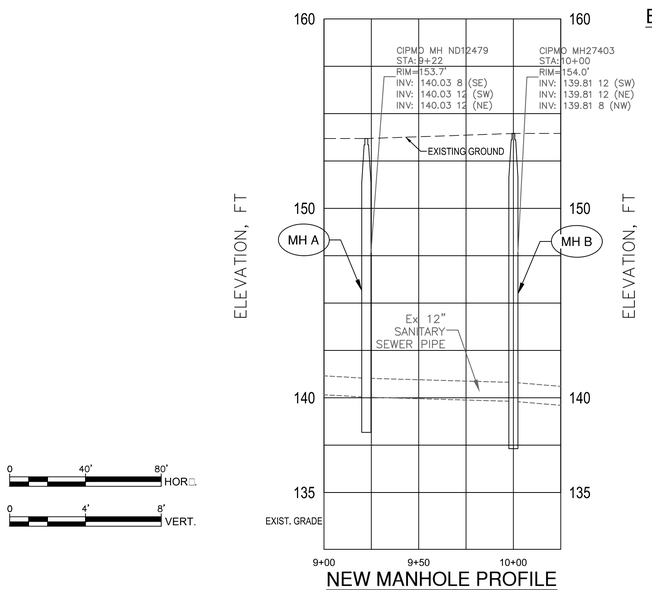
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT

SECTION MAP	TOWN	SECTION	RANGE	PORTION CODE

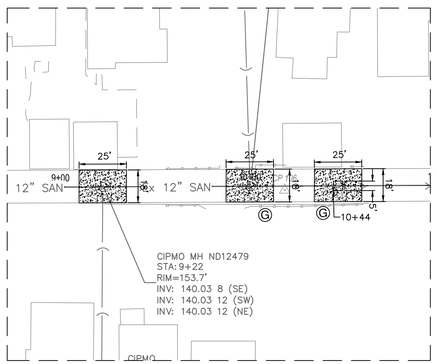
MDEQ SRF Project No. 5688-01
REF. No. CS-1812
DWSD CONTRACT No. DWS-916
FILE No.
DRAWING No. A - O&M (2 of 2)



EXTERNAL POINT REPAIR PLAN



NEW MANHOLE PROFILE



SITE RESTORATION PLAN

KEYED NOTES:

MH A	NEW MANHOLE AT STA. 9+22 (ND12479)
MH B	NEW MANHOLE AT STA. 10+00 (27403)
EPR	EXTERNAL POINT REPAIR AT STA. 10+44 AND IS 5 FEET LONG. RECONNECT CATCH BASIN CONNECTION.
SA1	CCTV ABANDONED 80 FEET FROM MH 27403 DUE TO DEBRIS
SA2	CCTV ABANDONED 204 FEET FROM MH 12088 DUE TO ROOTS. CONTRACTOR TO SURVEY ADDITIONAL 196 FEET OF SEWER SEGMENT

RESTORATION LEGEND

------	FENCE CONFLICT
▬ ▬ ▬	STRUCTURE CONFLICT
	REMOVE AND REPLACE BITUMINOUS PAVEMENT
	MULCHED SEEDING
	REMOVE AND REPLACE CONCRETE PAVEMENT, 6–INCH
	REMOVE AND REPLACE SIDEWALK
Ⓡ	REMOVE AND REPLACE ADA RAMP(S) (ARROW INDICATES RAMP DIRECTION)
	REMOVE AND REPLACE TREE
⊓⊓⊓⊓⊓⊓	REMOVE AND REPLACE CURB AND GUTTER
Ⓐ	ADJUST CASTING TO GRADE
Ⓕ	REMOVE AND REPLACE FENCE
Ⓟ	PROTECT
Ⓖ	REMOVE AND REPLACE GUARDRAIL

NOTES:

1. LOCATE AND RECONNECT ALL LIVE LATERAL CONNECTIONS TO SEWER AT EPR LOCATION.
2. ABANDONED SERVICES SHALL NOT BE RECONNECTED. DWSD WILL CONFIRM IF ABANDONED.
3. LINE SEGMENT AFTER EPR. REFER TO GIS DATA REPAIR ID ND274031_451 FOR PERTINENT LINING INFORMATION.
4. REPAIR ID IS ND274031_424 (SHEET H–P&MH). ASSET ID IS 189170.

Know what's **below.** **Call** before you dig.

F					DESIGNED □Y□	SEAL □STAMP
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C					CHEC□ED □Y□	
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A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER□	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

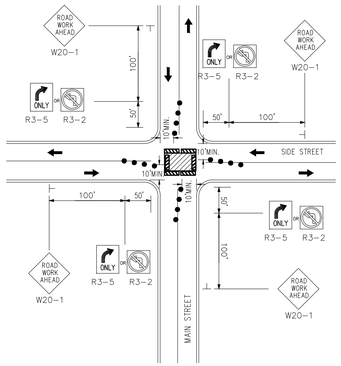
E□TERNAL POINT REPAIR AND RESTORATION
ALLEY WEST OF □RD AVE. □ETWEEN
TAYLOR ST. AND HA□ELWOOD ST.

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP			TOWN		RANGE			SECTION			PORTION CODE		
S	32	E	-	-	-	-	-	-	-	-	-	-	-

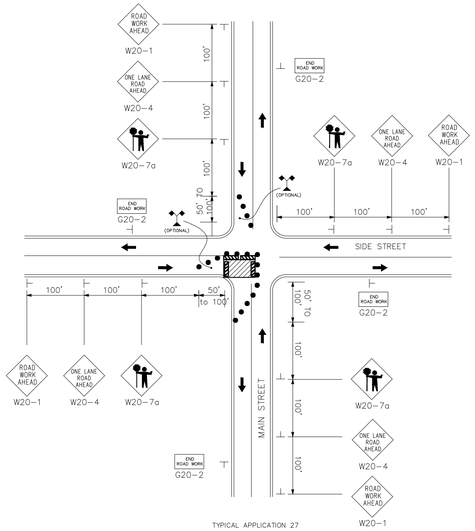
MDE□ SRF Pro□□No. 5688-01
REF. No. CS□□□□□
DWSD CONTRACT No. DWS□□□□
FILE No. □
DRAWING No. S□□

FIGURE 6H-26 CLOSURE IN CENTER OF INTERSECTION (TA-26)



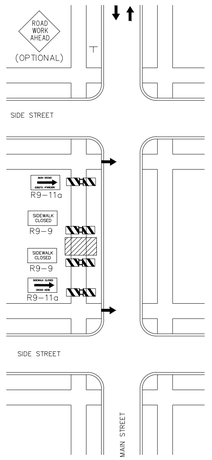
TYPICAL APPLICATION 26

FIGURE 6H-27 CLOSURE AT THE SIDE OF AN INTERSECTION (TA-27)

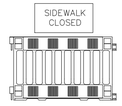


TYPICAL APPLICATION 27

FIGURE 6H-28 SIDEWALK DETOUR OR DIVERSION (TA-28)



TYPICAL APPLICATION 28



PEDESTRIAN TYPE II BARRICADE, TEMP R9-9 (30" X 18") MOUNTED ON SEPARATE SUPPORTS CENTERED ON SIDEWALK

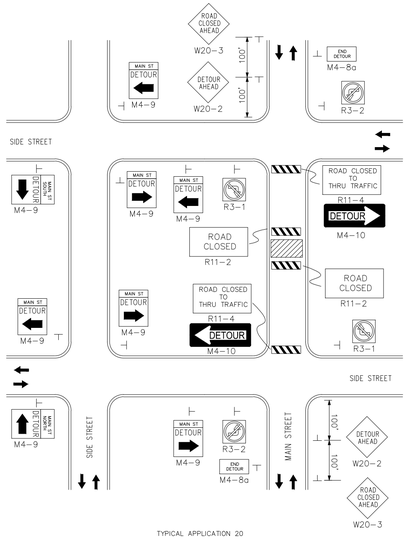
MMUTCD 2009 EDITION

TABLE 6H-2. MEANING OF SYMBOLS ON TYPICAL APPLICATION DIAGRAMS

- ARROW PANEL
- ARROW PANEL SUPPORT OR TRAILER (SHOWN FACING DOWN)
- CHANGEABLE MESSAGE SIGN OR SUPPORT TRAILER
- CHANNELIZING DEVICE
- CRASH CUSHION
- DIRECTION OF TEMPORARY TRAFFIC DETOUR
- DIRECTION OF TRAFFIC
- TRAFFIC REGULATOR
- HIGH LEVEL WARNING DEVICE (FLAG TREE)
- LUMINAIRE
- PAVEMENT MARKINGS THAT SHOULD BE REMOVED FOR A LONG TERM PROJECT
- SIGN (SHOWN FACING LEFT)
- SURVEYOR
- TEMPORARY BARRIER
- TEMPORARY BARRIER WITH WARNING LIGHTS
- TRAFFIC OR PEDESTRIAN SIGNAL
- TRUCK MOUNTED ATTENUATOR
- TYPE III BARRICADE
- PEDESTRIAN TYPE II BARRICADE
- WARNING LIGHTS
- WORK SPACE
- WORK VEHICLE

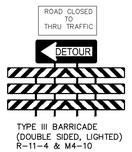
FIGURE 6H-20 DETOUR FOR A CLOSED STREET (TA-20)

TO CLOSE OFF LOW-TRAFFIC-VOLUME, NON-THROUGH, INTERSECTING STREETS FOR SHORT TERM.



TYPICAL APPLICATION 20

NO TWO CONSECUTIVE STREETS MAY BE CLOSED AT THE SAME TIME.



TYPE III BARRICADE (DOUBLE SIDED, LIGHTED) R-11-4 & M4-10

PEDESTRIAN AND VEHICULAR TRAFFIC CONTROL

PUBLIC SAFETY AND NORMALCY ARE OF PARAMOUNT CONCERN AND IMPORTANCE. BOTH PEDESTRIAN AND VEHICULAR TRAFFIC ARE TO BE MAINTAINED IN THEIR NORMAL MODE AS MUCH AS POSSIBLE. WHEN NORMAL PEDESTRIAN OR VEHICULAR TRAFFIC MUST BE DISTURBED, SAFETY PRECAUTIONS MUST BE IMPLEMENTED CONCURRENTLY.

FOR BOTH VEHICULAR AND PEDESTRIAN TRAFFIC, SAFETY PROTECTION ITEMS, SUCH AS, BUT NOT LIMITED TO, LIGHTED BARRELS, LIGHTED ARROWS, DIRECTION AND WARNING SIGNS, PORTABLE CONCRETE BARRIERS, TEMPORARY PAVEMENT MARKINGS, AND TEMPORARY FENCING MUST BE INSTALLED, MAINTAINED AND REMOVED AS NEEDED.

VEHICULAR AND PEDESTRIAN TRAFFIC CONTROL AND SAFETY SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE TRAFFIC ENGINEERING DIVISION OF THE CITY OF DETROIT DEPARTMENT OF PUBLIC WORKS, THE SPECIFICATIONS OF THE CITY OF DETROIT WATER AND SEWERAGE DEPARTMENT AND THE REQUIREMENTS OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION. IF THE THREE ENTITIES HAVE DIFFERENT REQUIREMENTS FOR THE SAME ITEM, THE MOST STRICT SHALL APPLY AS DETERMINED BY THE ENGINEER.

IN GENERAL, TRAFFIC CONTROL SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE CURRENT VERSION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD). THE CONTRACTOR MUST USE BARRICADES, SIGNS, ARROW BOARDS, TEMPORARY PAINT LINES, ETC., APPROPRIATELY.

THE CONTRACTOR SHALL PROVIDE/INSTALL A POSTED PEDESTRIAN DETOUR WHENEVER NORMAL PEDESTRIAN MOVEMENT IS DISRUPTED. AS A GUIDE, USE FIGURES 6H-28 & 6H-29 OF THE MMUTCD TO REGULATE PEDESTRIAN TRAFFIC AROUND CONSTRUCTION AREAS. SIGNS, TO DIRECT PEDESTRIANS TO THE SIDE AND BACK STREETS OR THE OTHER SIDE OF THE STREET, MUST BE INSTALLED AT LOCATIONS WHERE THE CROSSING IS SAFE.

SUPPLY SUFFICIENT NUMBER OF PEDESTRIAN TYPE II BARRICADES TO CONNECT THEM TOGETHER FROM EDGE OF SIDEWALK TO EDGE OF SIDEWALK SUCH THAT THERE ARE NO GAPS BETWEEN THE BARRICADES.

SUPPORTS FOR SIGNS PLACED BEHIND THE PEDESTRIAN TYPE II BARRICADE(S) MUST BE ENTIRELY LOCATED BEHIND THE BARRICADE(S).

NOTES

TEMPORARY LANE CLOSURE MAX 5 DAYS (PER BLOCK) TO REPAIR SEWER.

CONTRACTOR TO RESTORE EXISTING LANE MARKING, PAVEMENT CURB, SIDEWALK AND ANY OTHER ITEMS EXIST DURING CONSTRUCTION TO ITS ORIGINAL OR BETTER CONDITION AS APPROVED BY THE CITY ENGINEER.

CONTRACTOR TO PROVIDE ACCESS TO ALL DRIVEWAYS AT ALL TIMES.

CONTRACTOR TO USE A FLAGGER FOR BOTH DIRECTIONS OF TRAFFIC MOVEMENT AT ALL TIMES.

CONTRACTOR TO MAINTAIN ONE LANE OF TRAFFIC ON CROSS STREETS WHEN CROSSING INTERSECTIONS.

CONTRACTOR TO RESTORE ALL WORK IN A BLOCK BEFORE MOVING ONTO THE NEXT BLOCK.

SIGN DESIGNATION IS SHOWN BELOW THE SIGN. SEE TABLE 6F-1 OF MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR SIGN SIZES OF EACH SIGN DESIGNATION.

Know what's **below.**
Call before you dig.

F					DESIGNED □Y□ TV	SEAL □STAMP
E					DRAWN □Y□ DS□M□	
D					CHEC□ED □Y□ MM	
C					MANAGER□ RG	
□						
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020		
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

TRAFFIC PLAN
TYPICAL TRAFFIC CONTROL DETAILS

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
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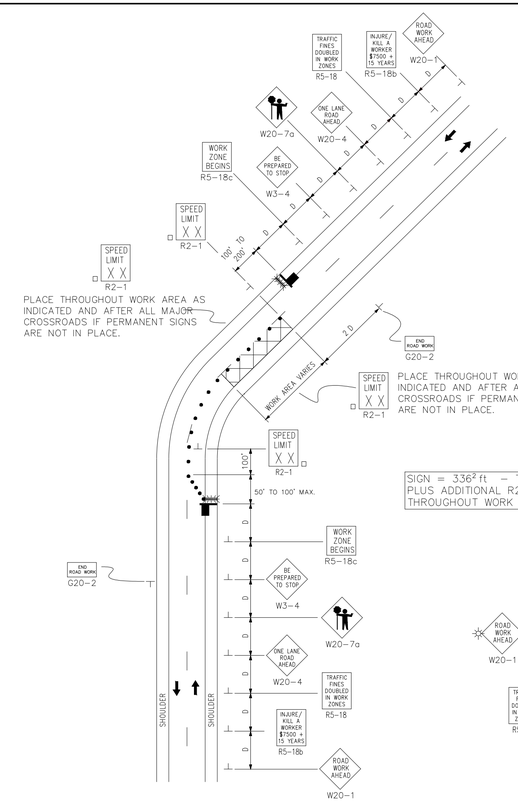
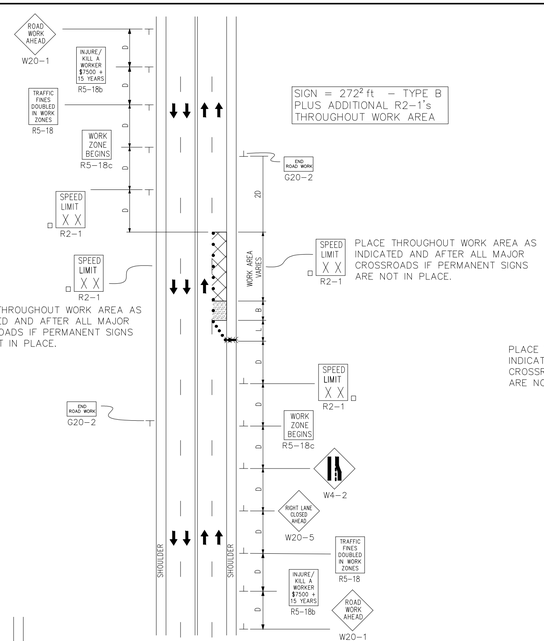
MDE□ SRF Pro□□□No. 5688-01
REF. No. CS□□□□□
DWSD CONTRACT No. DWS□□□□
FILE No. □
DRAWING No. TP□□

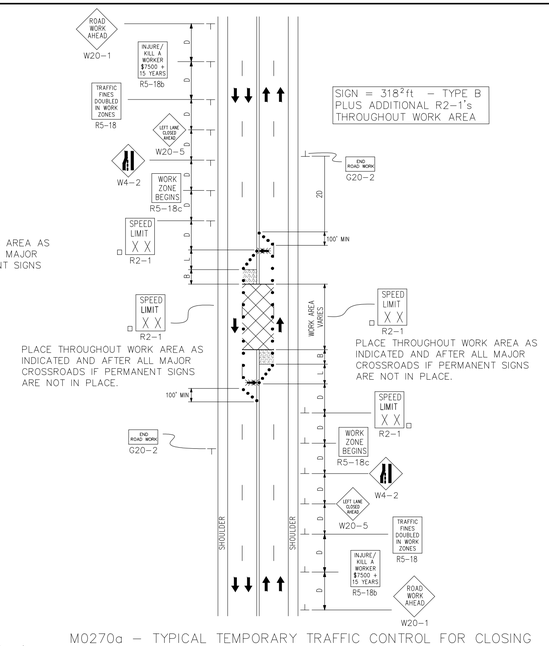


M0140a – TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO–LANE TWO–WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS, NO SPEED REDUCTION

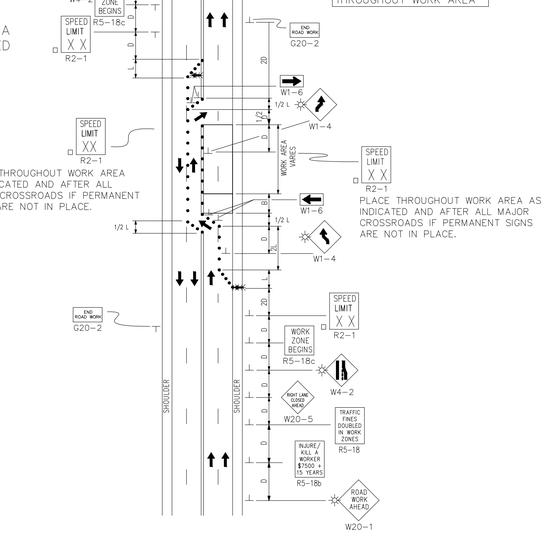
SIGN = 336² ft – TYPE B PLUS ADDITIONAL R2–1's THROUGHOUT WORK AREA



M0240a – TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE–LANE CLOSURE ON AN UNDIVIDED MULTI–LANE ROADWAY, NO SPEED REDUCTION



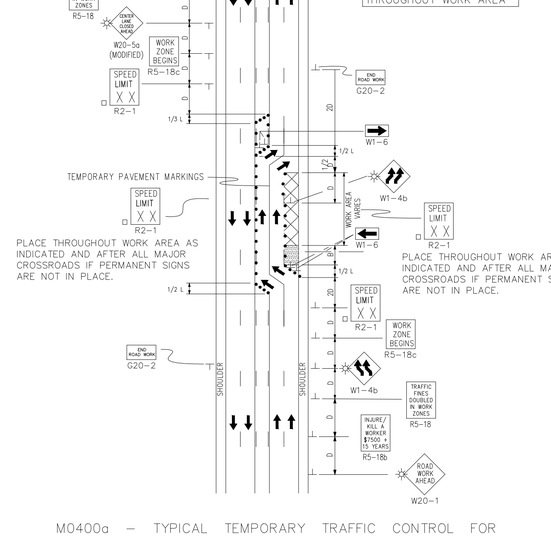
M0270a – TYPICAL TEMPORARY TRAFFIC CONTROL FOR CLOSING THE CENTER TWO LANES OF A MULTI–LANE UNDIVIDED ROADWAY,(NO CLFLTO), NO SPEED REDUCTION



M0300a – TYPICAL TEMPORARY TRAFFIC CONTROL FOR CLOSING ONE–HALF OF A FOUR–LANE UNDIVIDED ROADWAY, NO SPEED REDUCTION

SIGN SIZES

DIAMOND WARNING	– 48" x 48"
W1–6 WARNING	– 48" x 24"
R2–1 REGULATORY	– 48" x 60"
R5–18c REGULATORY	– 48" x 48"



M0400a – TYPICAL TEMPORARY TRAFFIC CONTROL FOR CLOSING ONE LANE OF A FIVE–LANE UNDIVIDED ROADWAY AND MAINTAINING TWO THROUGH LANES IN EACH DIRECTION, NO SPEED REDUCTION

WARNING SIGNS

THE MINIMUM SIZE OF ALL DIAMOND SHAPED WARNING SIGNS IS 48"X48".

REFLECTORIZED SIGNING IS REQUIRED.

ALL WARNING SIGNS MAY BE EQUIPPED WITH AN ORANGE OR DAY–GLO FLAG MOUNTED ABOVE THE SIGN.

TYPE A WARNING LIGHTS WILL NOT BE REQUIRED WITH THE USE OF ROLL–UP SIGNS.

DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D" AND LENGTH OF LONGITUDINAL BUFFER SPACE ON "WHERE WORKERS PRESENT" SEQUENCES

THE SPACING BETWEEN SIGNS IS BASED UPON THE PERMANENTLY POSTED ROADWAY SPEED. THE SIGN SPACING DISTANCES ARE MINIMUMS AND MAY BE ADJUSTED TO MEET CHANGING ROADWAY AND TRAFFIC CONDITIONS.

"D"	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
DISTANCES	25	30	35	40	45	50	55	60	65	70
D (FEET)	250	300	350	400	450	500	550	600	650	700

MINIMUM MERGING TAPER LENGTH "L" (FEET)

OFFSET	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
FEET	25	30	35	40	45	50	55	60	65	70
1	10	15	20	27	45	50	55	60	65	70
2	21	30	41	53	90	100	110	120	130	140
3	31	45	61	80	135	150	165	180	195	210
4	42	60	82	107	180	200	220	240	260	280
5	52	75	102	133	225	250	275	300	325	350
6	63	90	123	160	270	300	330	360	390	420
7	73	105	143	187	315	350	385	420	455	490
8	83	120	163	213	360	400	440	480	520	560
9	94	135	184	240	405	450	495	540	585	630
10	104	150	204	267	450	500	550	600	650	700
11	115	165	225	293	495	550	605	660	715	770
12	125	180	245	320	540	600	660	720	780	840
13	135	195	266	347	585	650	715	780	845	910
14	146	210	286	374	630	700	770	840	910	980
15	157	225	307	400	675	750	825	900	975	1050

TAPER LENGTH "L" IN FEET

TYPES OF TAPERS	TAPER LENGTH
UPSTREAM TAPERS	L – MINIMUM
MERGING TAPER	½ L – MINIMUM
SHIFTING TAPER	⅓ L – MINIMUM
SHOULDER TAPER	100 – MAXIMUM
TWO–WAY TRAFFIC TAPER	
DOWNSTREAM TAPERS (USE IS OPTIONAL)	100 – MINIMUM (PER LANE)

THE FORMULAS FOR THE MIMIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

$L = \frac{W \times S^2}{60}$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

$L = W \times S$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
W = WIDTH OF OFFSET

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B"

"B"	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
LENGTHS	20	25	30	35	40	45	50	55	60	65	70
B (FEET)	33	50	83	132	181	230	279	329	411	476	542

POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

TRAFFIC REGULATION NOTES

1. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
   L, ½ L & ⅓ L = MINIMUM LENGTH OF TAPER
   B = LENGTH OF LONGITUDINAL BUFFER
2. ALL NON–APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
4. THE "WORK ZONE BEGINS" (R5–18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.
5. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES IN THE TAPER AREA(S) SHOULD BE 15 FEET, TWICE THE POSTED SPEED IN MILES PER HOUR IN THE PARALLEL AREA(S), 25 FEET IN THE DOWNSTREAM TAPER AREAS AND SHOULD NOT EXCEED 90 FEET WHEN USED FOR TANGENT CHANNELIZATION.
5. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.
6. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.
7. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.
8. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
9. ALL TRAFFIC REGULATORS SHALL BE PROPERLY TRAINED AND SUPERVISED.
10. IN ANY OPERATION INVOLVING MORE THAN ONE TRAFFIC REGULATOR, ONE PERSON SHOULD BE DESIGNATED AS HEAD TRAFFIC REGULATOR.
11. ALL TRAFFIC REGULATORS' CONDUCT, THEIR EQUIPMENT, AND TRAFFIC REGULATING PROCEDURES SHALL CONFORM TO THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CURRENT EDITION OF THE MDOT HANDBOOK ENTITLED "TRAFFIC REGULATORS INSTRUCTION MANUAL."
12. WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS, APPROPRIATE LIGHTING SHALL BE PROVIDED TO SUFFICIENTLY ILLUMINATE THE TRAFFIC REGULATOR'S STATIONS.
13. THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS SHALL BE NO MORE THAN 2 MILES IN LENGTH UNLESS RESTRICTED FURTHER IN THE SPECIAL PROVISIONS FOR MAINTAINING TRAFFIC. ALL SEQUENCES OF MORE THAN 2 MILES IN LENGTH WILL REQUIRE WRITTEN PERMISSION FROM THE ENGINEER BEFORE PROCEEDING.
14. WHEN INTERSECTING ROADS OR SIGNIFICANT TRAFFIC GENERATORS (SHOPPING CENTERS, MOBILE HOME PARKS, ETC.) OCCUR WITHIN THE ONE–LANE TWO–WAY OPERATION, INTERMEDIATE TRAFFIC REGULATORS AND APPROPRIATE SIGNING SHALL BE PLACED AT THESE LOCATIONS.
15. ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W3–4 SIGNS.
16. THE HAND HELD (PADDLE) SIGNS REQUIRED BY THE MMUTCD TO CONTROL TRAFFIC WILL BE PAID FOR AS PART OF FLAG CONTROL.
17. THE TRAFFIC REGULATORS SHOULD BE POSITIONED AT OR NEAR THE SIDE OF THE ROAD SO THAT THEY ARE SEEN CLEARLY AT A MINIMUM DISTANCE OF 500 FEET. THIS MAY REQUIRE EXTENDING THE BEGINNING OF THE LANE CLOSURE TO OVERCOME VIEWING PROBLEMS CAUSED BY HILLS AND CURVES.
18. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME–ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.
19. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

MDOT TRAFFIC AND SAFETY
MAINTAINING TRAFFIC TYPICALS

KEY

- TRAFFIC REGULATOR
- CHANNELIZING DEVICES
- LIGHTED ARROW PANEL (CAUTION MODE)
- TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT
- LIGHTED ARROW PANEL TYPE A WARNING FLASHER (REQUIRED)

F					DESIGNED □Y□	SEAL □STAMP	DETROIT WATER AND SEWERAGE DEPARTMENT CAPITAL IMPROVEMENT PROGRAM
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D					DRAWN □Y□		
C					CHEC□ED □Y□		TRAFFIC PLAN TYPICAL TRAFFIC CONTROL DETAILS
□							
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER□		
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE			

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDE□ SRF Pro□□No. 5688-01
REF. No. CS□□□□□
DWSD CONTRACT No. DWS□□□□
FILE No. □
DRAWING No. TP□□

MOT INFORMATION (DURING CONSTRUCTION AND RESTORATION)

ID	LOCATION	METHOD	MOT
S-1	ALLEY WEST OF 3RD AVE. BETWEEN TAYLOR ST. AND HAZELWOOD ST.	OPEN CUT	NONE
S-2	N. JOHN C. LODGE SERVICE DR. BETWEEN PHILADELPHIA ST. AND EUCLID ST.	OPEN CUT	FULL CLOSURE
S-3	ALLEY SOUTH OF SEWARD AVE. BETWEEN 2ND AVE. AND WOODWARD AVE.	OPEN CUT	NONE
S-4	ALLEY NORTHEAST OF W. PHILADELPHIA ST. AND JOHN C. LODGE SERVICE DR.	OPEN CUT	NONE
S-5	ALLEY EAST OF 3RD AVE. BETWEEN TAYLOR ST. AND HAZELWOOD ST.	OPEN CUT	NONE
S-6	ALLEY SOUTH OF VIRGINIA PARK ST. BETWEEN 3RD AVE. AND JOHN C. LODGE SERVICE DR.	OPEN CUT	NONE
S-7	ALLEY EAST OF 3RD AVE. BETWEEN PALLISTER AVE. AND W. BETHUNE AVE.	OPEN CUT	NONE
S-8	SEWARD AVE. AND NORTHBOUND JOHN C. LODGE SERVICE DR.	OPEN CUT	INTERSECTION
S-9	ALLEY WEST OF WOODWARD AVE. BETWEEN DELAWARE ST. AND PALLISTER ST.	OPEN CUT	NONE
S-10	ALLEY EAST OF 3RD AVE. BETWEEN DELAWARE ST. AND SEWARD AVE.	OPEN CUT	LANE CLOSURE
S-11	SOUTHBOUND I-75 SERVICE DR. BETWEEN MACK AVE. AND WILKINS ST.	OPEN CUT	FULL CLOSURE
S-12	BEAUBIEN ST. BETWEEN MACK AVE. AND ELIOT ST.	OPEN CUT	LANE CLOSURE
S-13	ALLEY WEST OF 3RD AVE. BETWEEN LOTHROP ST. AND W. GRAND BLVD.	OPEN CUT	NONE
S-14	ALLEY EAST OF JOHN C. LODGE SERVICE DR. BETWEEN BLAINE ST. AND PINGREE ST.	OPEN CUT	NONE

Know what's **below.**
Call before you dig.

F					DESIGNED □Y□	SEAL □STAMP
E						
D					DRAWN □Y□	
C					CHEC□ED □Y□	
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A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER□	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

TRAFFIC PLAN
MAINTENANCE OF TRAFFIC INFORMATION

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDE□ SRF Pro□□□No. 5688-01
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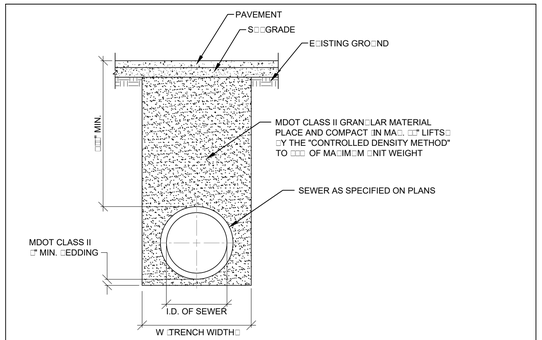
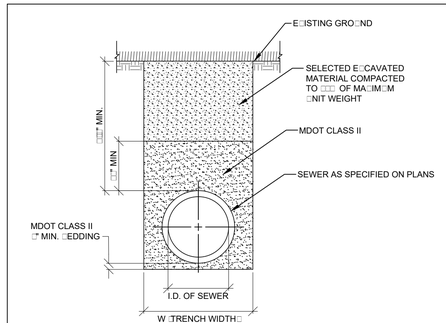


I.D. PIPE SI□E □INCHES□	LESS THAN □□	□□	□□	□□	□□	□□	□□	□□	□□	□□	□□
MINIM□M TRENCH WIDTH □FEET□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□□.□□	□□.□□	□□.□□

STANDARD TRENCH DETAIL FOR SEWER
□NDER ROAD □ED□PAR□ING LOTS□
SIDEWAL□S□DRIVEWAYS□C□R□S□
GRAVEL ROADS AND ALLEYS

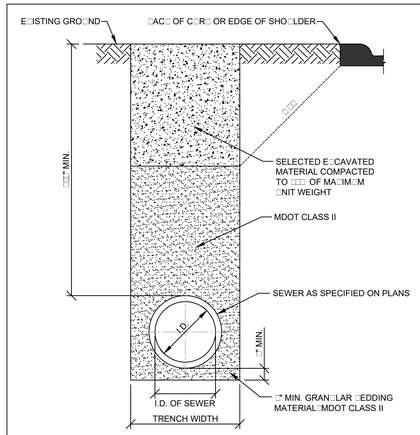
TRENCH DETAIL□SANITARY SEWER □□ OF □□
DETAIL NO. □□□□□□□□□
NOT TO SCALE



I.D. PIPE SI□E □INCHES□	LESS THAN □□	□□	□□	□□	□□	□□	□□	□□	□□	□□	□□
MINIM□M TRENCH WIDTH □FEET□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□□.□□	□□.□□	□□.□□

STANDARD TRENCH DETAIL FOR SEWER
□NDER □ERMS□LAWNS□GRASSY AREAS□
□O□TSIDE PAVEMENT INFL□ENCE□

TRENCH DETAIL□SANITARY SEWER □□ OF □□
DETAIL NO. □□□□□□□□□
NOT TO SCALE



I.D. PIPE SI□E □INCHES□	LESS THAN □□	□□	□□	□□	□□	□□	□□	□□	□□	□□	□□
MINIM□M TRENCH WIDTH □FEET□	□.□	□.□	□.□	□.□	□.□	□.□	□.□	□.□	□□.□	□□.□	□□.□

TRENCH WIDTH FROM MDOT

STANDARD TRENCH DETAIL FOR SEWER
WITHIN INFL□ENCE OF ROAD □ED

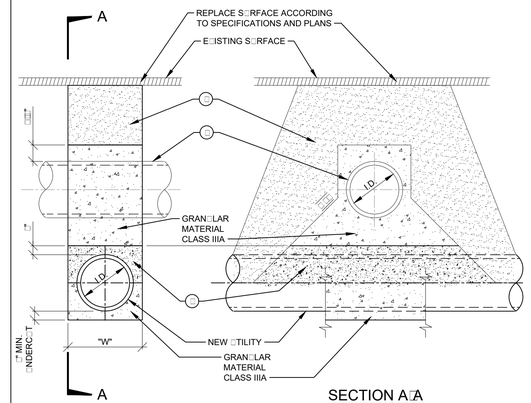
TRENCH DETAIL□SANITARY SEWER □□ OF □□
DETAIL NO. □□□□□□□□□
NOT TO SCALE

NOTES□

□. □AC□FILL ACCORDING TO SPECIFICATIONS AND TYPICAL TRENCH SECTION.

□. E□ISTING CATCH □ASIN DRAIN, SEWER OR OTHER □NDERGRO□ND □TILITY CROSSING NEW OPEN C□T CONSTR□CTION.

□. □AC□FILL WITH A DRY MI□ OF ONE □AG CEMENT PER ONE □AG OF GRAN□LAR MATERIAL CLASS II.



NOTES□

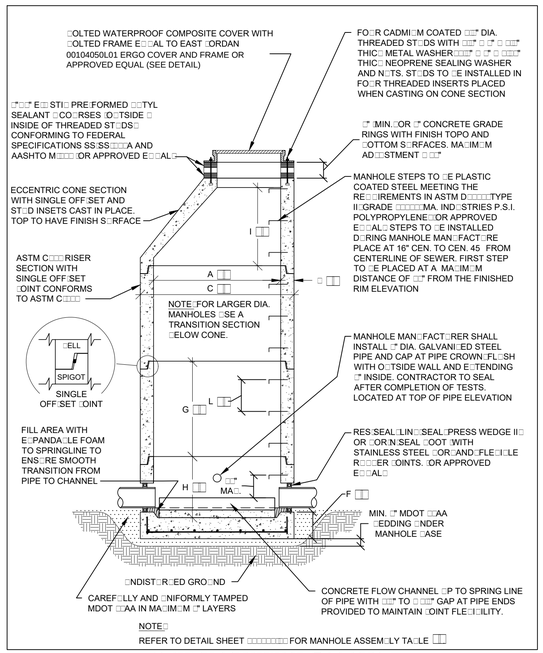
□. ALL GRAN□LAR □AC□FILL MATERIAL SHALL □E COMPACTED TO □□□ OF MA□IM□M □NIT WEIGHT.

□. WATERMAINS CROSSING □NDER SEWERS □WHEN IT IS IMPOSSI□LE TO O□TAIN THE MINIM□M □□INCH CLEARANCE, REPLACE THE SEWER PIPE IMINIM□M OF □□ FT. ON □OTH SIDES OF WATERMAIN□WITH WATER WOR□S PVC GRADE □□PSI PRESS□RE TESTED TO ENS□RE WATER TIGHTNESS □AWWA C□□□□

□. "W" □SEE TRENCH DETAILS FOR TRENCH WIDTH.

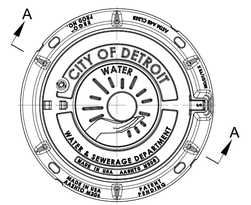
TYPICAL DETAIL AT CROSSING □NDER E□ISTING □TILITIES

□TILITY CROSSING
DETAIL NO. □□□□□□□□
NOT TO SCALE

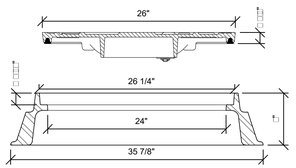


NOTE□
REFER TO DETAIL SHEET □□□□□□□□ FOR MANHOLE ASSEM□LY TA□LE □□

STANDARD MANHOLE□PRECAST
DETAIL NO. □□□□□□□□□
NOT TO SCALE



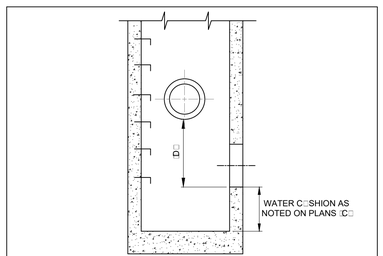
PLAN VIEW OF COVER



SECTION A□A

NOTE□
EAST □ORDAN □□□□□□□L□□ ERGO COVER AND FRAME OR APPROVED E□□AL.

MANHOLE FRAME AND COVER WITH LOGO □SEWER
DETAIL NO. □□□□□□□□
NOT TO SCALE



DIFFERENCE □ETWEEN HIGHEST INLET AND O□TLET INVERTS □D□	DEPTH OF C□SHION □C□
□□□" TO □□□"	□□"
□□□" TO □□□"	□□"
□□□" TO □□□"	□□"
□□□ TO □□".□□	□□"
OVER □□□"	□□"

NOTES□

□. ALL OTHER RE□□IREMENTS SAME AS FOR PRECAST MANHOLE RISER SECTIONS.

□. FOR PIPE SI□E AND INVERT SEE PLAN AND PROFILE.

MANHOLE□WATER C□SHIONS
DETAIL NO. □□□□□□□□□
NOT TO SCALE

A	RISER DIAMETER	IN	□□	□□	□□	□□	□□	□□	□□□	□□□	
□	WALL THIC□NESS	IN	□	□	□	□	□	□	□	□□	
C	O□TSIDE DIAMETER	IN	□□	□□	□□	□□	□□□	□□□	□□□	□□□	
D	□OINT DEPTH	IN	□.□□	□.□□	□.□□	□	□	□	□.□□	□.□	
E	□		□	□	□	□	□	□	□	□	
F	INTEGRAL □ASE	IN	□	□	□	□	□	□	□	□	
G	RISER HEIGHTS	FT	□	□.□□	□.□□	□.□□					
		FT	□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	
		FT		□	□	□	□	□	□	□	
		FT		□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	
		FT			□	□	□	□	□		
H	□ASE HEIGHT RISER HEIGHTS CAN ALSO □E □SED AS □ASE SECTIONS	FT	□		□	□	□	□	□	□	
		FT	□		□	□	□	□	□	□	
		FT	□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	
		FT	□□		□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	
		FT		□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	□.□□	
		FT			□	□	□	□	□	□	
		FT			□	□	□	□	□	□	
		FT				□	□	□	□		
I	CONE HEIGHT TO □□"	FT			□.□	□					
					CON.	CON.					
					□						
					□						
	CONE HEIGHT TO □□"	FT			□.□□	□.□□					
□	LOOSE □ASE □" TH□. O□TSIDE DIA.	IN	□□								
		□" TH□.	IN	□□	□□	□□	□□				
		□□" TH□.	IN			□□	□□□	□□□		□□□	
L	STEP SPACING	IN		□□	□□	□□	□□	□□	□□	□□	
	APPRO□. WEIGHT □FT.	L□	□□□	□□□	□□□□	□□□□	□□□□	□□□□	□□□□	□□□□	

NOTES□

□. SOME DIMENSIONS MAY VARY □Y MAN□FACT□RER. DESIGN ENGINEER SHALL ENS□RE DETAIL MEETS AGENCY RE□□IREMENTS.

□. SEE DETAIL SHEET □□□□□□□□ FOR STANDARD MANHOLE PRECAST DESIGN.

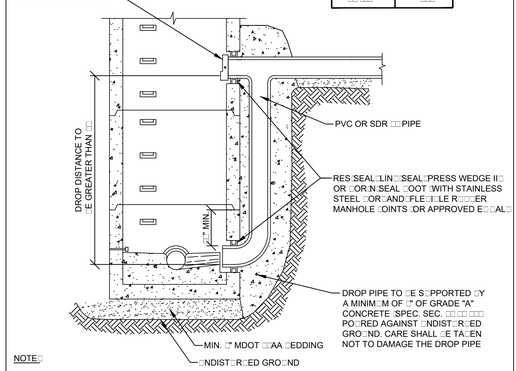
MANHOLES ASTM C□□□□
WEIGHTS AND DIMENSIONS □□S C□STOMARY

MANHOLE ASSEM□LY
DETAIL NO. □□□□□□□□□
NOT TO SCALE

NOTE□
SEE STANDARD MANHOLE DRAWING FOR OTHER MANHOLE DETAILS.

REMOVA□LE PIPE CAP□SLIP□ON FIT □TOP TWO THIRDS OF END REMOVED□ SEC□RE IN PLACE WITH □ □□□□" SHEET METAL SCREWS AT □□□ DEGREES APART. COAT SCREWS W□IT□MINO□S SEALER

SEWER PIPE SI□E	DROP PIPE SI□E
□" □□"	□"
□□" □□"	□□"
□□ □□□"	□□"
□□" □□"	□□□



NOTE□
DROP PIPE LOCATION SHALL NOT INTERFERE WITH MANHOLE STEPS□OR STEPS AND CONE SHALL □E REPOSITIONED.

MANHOLE□E□TERIOR DROP
DETAIL NO. □□□□□□□□□
NOT TO SCALE

F					
E					
D					
C					
□					
A	ISSUED FOR PROCUREMENT			4/1/2020	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE	

DESIGNED □Y□
DRAWN □Y□
CHEC□ED □Y□
MANAGER□

SEAL □STAMP

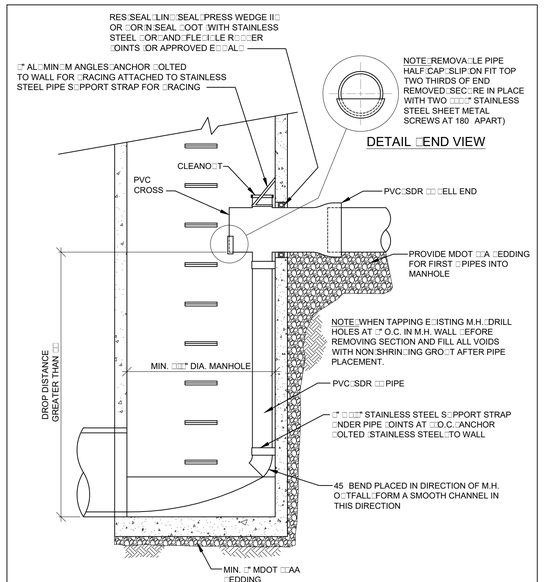
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS
SEWER

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	- -	- - -	- - -	- - -

MDE□ SRF Pro□□□No. 5688-01
REF. No. CS□□□□□
DWSD CONTRACT No. DWS□□□□
FILE No. □
DRAWING No. SD□□

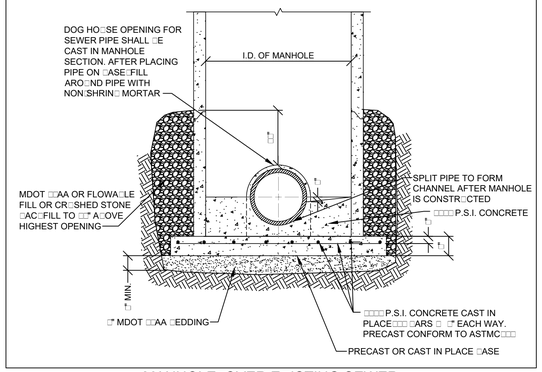


MANHOLE□INTERIOR DROP
DETAIL NO. □□□□□□□□□□
NOT TO SCALE

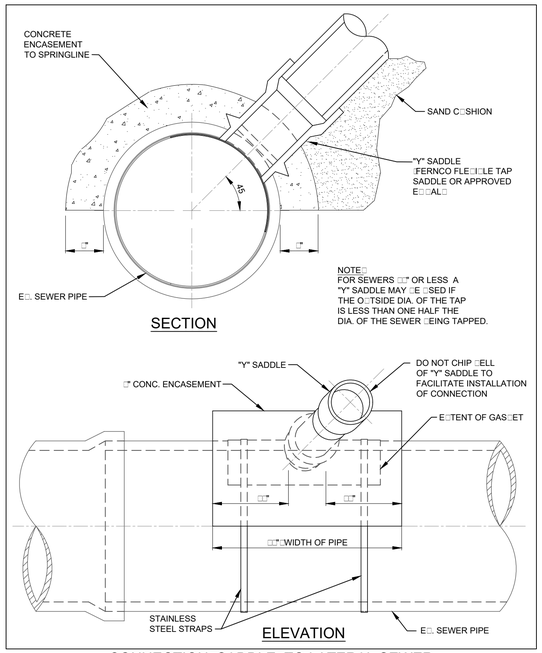
DOG HO□SE OPENING SI□ES	
SEWER SI□E	MA□ OPENING
□" □□□"	□□□"
□□" □□□"	□□"
□□" □□□"	□□"

FOR OTHER DETAILS OF MANHOLE □SEE STANDARD MANHOLE DETAIL

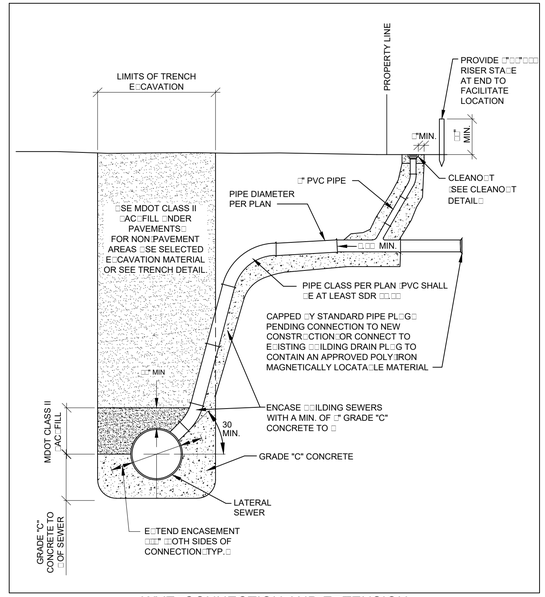
MANHOLE SI□ING	
SEWER PIPE SI□E	MANHOLE DIAMETER
□□"	□□□"
□□"	□□□"
□□"	□□□"



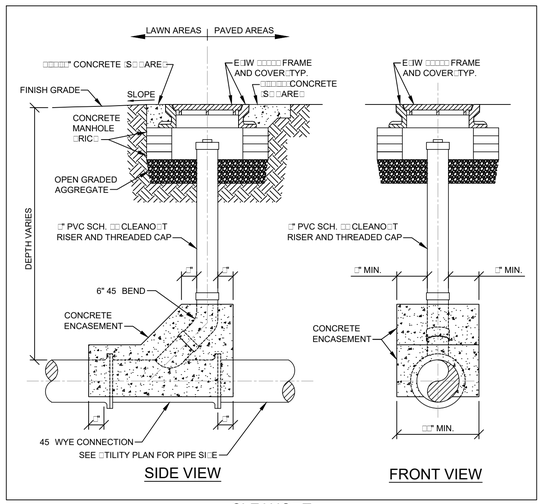
MANHOLE□OVER E□ISTING SEWER
DETAIL NO. □□□□□□□□□
NOT TO SCALE



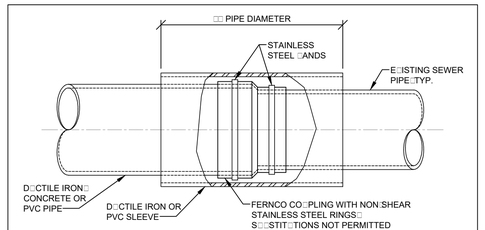
CONNECTION□SADDLE□TO LATERAL SEWER
DETAIL NO. □□□□□□□□□
NOT TO SCALE



WYE□CONNECTION AND E□TENSION
DETAIL NO. □□□□□□□□□□
NOT TO SCALE



CLEANO□T
DETAIL NO. □□□□□□□□□
NOT TO SCALE



DISSIMILAR SEWER PIPE □OINT DETAIL

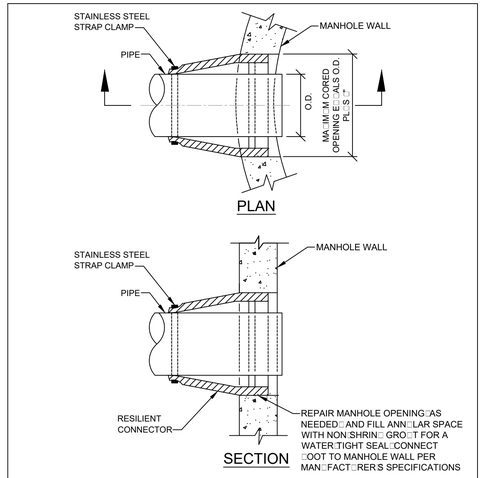
□. D□CTILE IRON OR CAST IRON PIPE
PLAIN END PIPES CAN □E CONNECTED □SING M□□ SLEEVE□M□□ TRANSITION SLEEVE OR M□□ SPLIT SLEEVE. □ELL AND SPIGOT PIPES CAN □E CONNECTED IN A NORMAL WAY □SING P□SH ON □OINT□□ METHOD. IF E□ISTING □ELL OR SPIGOT IS COMPATI□LE WITH NEW □ELL OR SPIGOT□OTHERWISE M□□ SPLIT □ELL SLEEVE MAY □E □SED.

□. PVC PIPE
PLAIN END PVC PIPES CAN □E CONNECTED □SING ELASTOMERIC□GAS□ET PVC CO□PLINGS. WHERE PVC CO□PLINGS ARE NOT S□ITA□LE D□CTILE IRON M□□ SLEEVES MAY □E □SED. IF MISSION □AND SEAL CO□PLING IS □SED □NDER AN A□NORMAL SIT□ATION□A D□CTILE IRON OR PVC SLEEVE PROTECTION M□ST □E □SED.

□. CONCRETE PIPE
WHERE NORMAL □ELL AND SPIGOT GAS□ETED □OINT IS NOT PRACTICA□LE□MISSION □AND SEAL CO□PLING WITH D□CTILE IRON OR PVC SLEEVE PROTECTION SHALL □E □SED TO COMPLETE THE □OINT.

SIMILAR SEWER PIPE □OINT DETAIL NOTES

SEWER PIPE □OINT DETAIL
DETAIL NO. □□□□□□□□□
NOT TO SCALE



WATERTIGHT RESILIENT CONNECTOR
FOR CONNECTING PROPOSED PIPES TO E□ISTING MANHOLES
AND E□ISTING PIPES TO PROPOSED MANHOLES

SEWER PIPE CONNECTION WITH MANHOLE
DETAIL NO. □□□□□□□□□
NOT TO SCALE

F					DESIGNED □Y□	SEAL □STAMP
E						
D					DRAWN □Y□	
C					CHEC□ED □Y□	
□						
A	ISSUED FOR PROCUREMENT			4/1/2020	MANAGER□	
	DESCRIPTIONS □REVISIONS	CH□□D	APPR.	DATE		

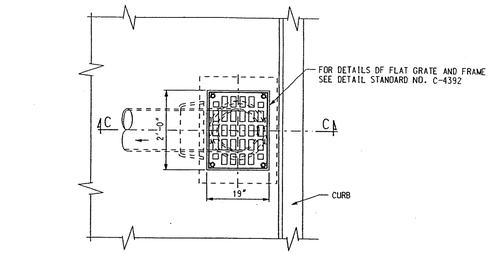
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS
SEWER

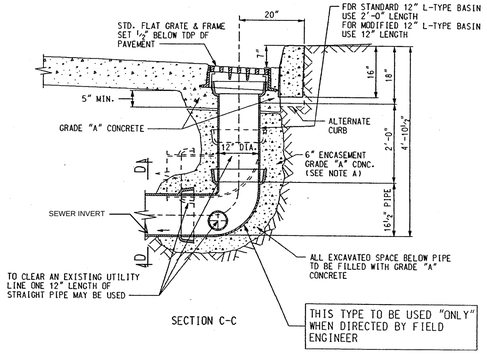
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	- -	- - -	- - -	- - -

MDE□ SRF Pro□□□No. 5688-01
REF. No. CS□□□□
DWSD CONTRACT No. DWS□□□
FILE No. □
DRAWING No. SD□□



PLAN VIEW



SECTION C-C

"L" TYPE BASIN

NOTE A

WHERE STANDARD STRENGTH VIT. CLAY PIPE IS USED ENCASE IN 6" GRADE "A" CONCRETE.

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR

TYPICAL SUMP MANHOLE AND "L" TYPE CATCH BASIN

NOTES:
1. CONTRACTOR TO REMOVE EXISITING "Y" CATCH BASIN FOR LINING PURPOSES.
2. CONTRACTOR TO INSTALL NEW CATCH BAIN.

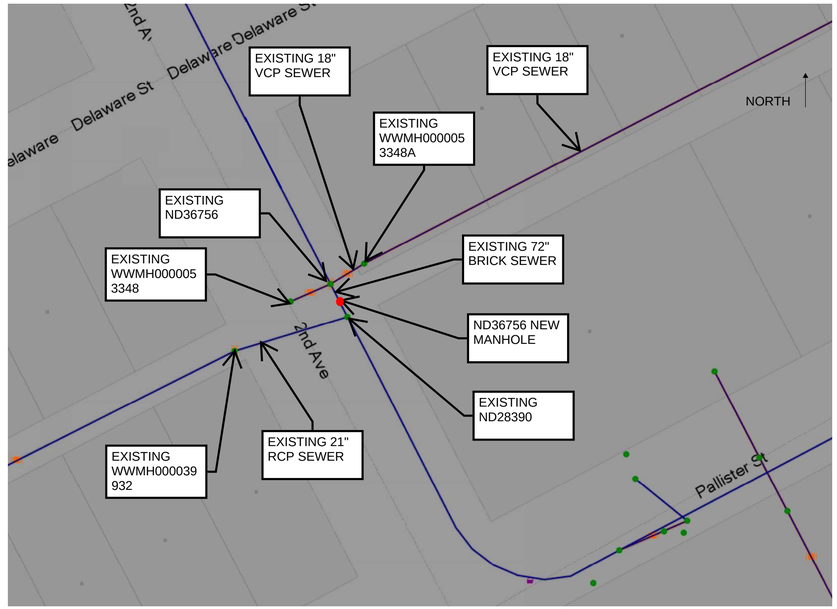
CATCH BASIN
NOT TO SCALE

NEW CATCH BASIN STRUCTURE DATA TABLE

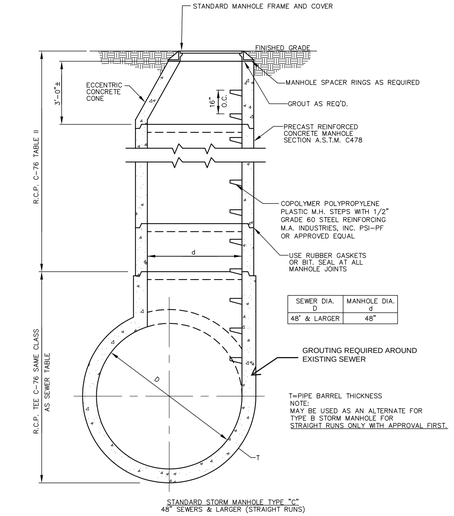
SHEET	MANHOLE ID	SEWER INVERT	DEPTH OF STRUCTURE	MANHOLE DIAMETER
I P&MH	ND3761	4.6 FT	4.6 FT	12 IN
I P&MH	ND3760	5.1 FT	5.1 FT	12 IN
I P&MH	ND21987	4.1 FT	4.1 FT	12 IN
I P&MH	ND8518	5.7 FT	5.7 FT	12 IN
I P&MH	ND8517	5.2 FT	5.2 FT	12 IN
I P&MH	ND26441AU	7.7 FT	7.7 FT	12 IN
I P&MH	ND29173	5.5 FT	5.5 FT	12 IN
D P&MH	ND5977	5.0 FT	5.0 FT	12 IN

NEW MANHOLE STRUCTURE DATA TABLE

SHEET	MANHOLE ID	SEWER INVERT	DEPTH OF STRUCTURE	MANHOLE DIAMETER	MANHOLE TYPE
A P&MH	ND21106C	REFER TO SHEET S-11			STANDARD MANHOLE
A P&MH	ND8513AA	REFER TO SHEET S-11			STANDARD MANHOLE
C P&MH	ND18629	7.3 FT	7.8 FT	48 IN	STANDARD MANHOLE
C P&MH	ND57431	9.2 FT	9.7 FT	48 IN	STANDARD MANHOLE
C P&MH	ND14817AU	6.9 FT	7.4 FT	48 IN	STANDARD MANHOLE
D P&MH	ND27596	5.3 FT	5.8 FT	48 IN	STANDARD MANHOLE
D P&MH	ND36750	11.8 FT	12.4 FT	48 IN	STANDARD MANHOLE
E P&MH	ND24965	5.8 FT	6.4 FT	48 IN	STANDARD MANHOLE
E P&MH	ND24964	8.7 FT	9.2 FT	48 IN	STANDARD MANHOLE
G P&MH	ND20516	REFER TO SHEET S-9			STANDARD MANHOLE
G P&MH	ND36756	25.5 FT	26 FT	10 FT	Refer to SD-3 for Detail.
H P&MH	ND12479	REFER TO SHEET S-1			STANDARD MANHOLE
H P&MH	MH24703	REFER TO SHEET S-1			STANDARD MANHOLE



ND 36756 MANHOLE DETAIL (PLAN)
NOT TO SCALE



STANDARD STORM MANHOLE TYPE "C"
48" SEWERS & LARGER (STRAIGHT RUNS)

NOTES:
1. WHERE DESIGNATED OR AS NEEDED CASTING LID SHALL BE OF NON-ROCKING TYPE.
2. WHERE DESIGNATED OR AS NEEDED PROVIDE FLOTATION COLLAR.
3. MANHOLE DIAMETER IS SHOWN AS MINIMUM AND MAY INCREASE DUE TO LOCATION OF PIPES.
4. THIS TYPE "C" STORM MANHOLE SHALL BE USED FOR STORM SEWERS 48" IN DIAMETER AND LARGER AND IN STRAIGHT ROWS.

ND 36756 MANHOLE DETAIL (PROFILE)
NOT TO SCALE

F					DESIGNED □Y□	SEAL □STAMP
E						
D					DRAWN □Y□	
C					CHEC□ED □Y□	
□						
A	ISSUED FOR PROCUREMENT			4/1/2020	MANAGER□	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

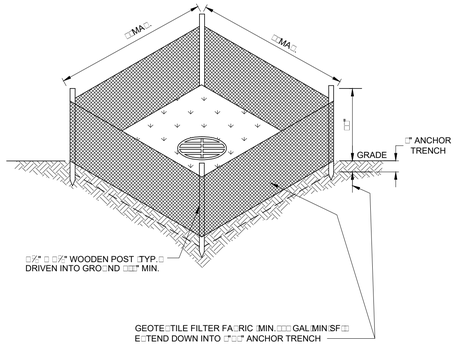
STANDARD DETAILS
SEWER

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

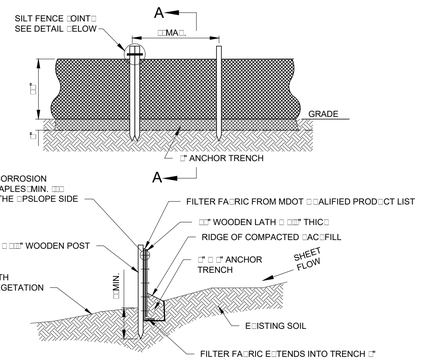
SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	- -	- - -	- - -	- - -

MDE□ SRF Pro□□□No. 5688-01
REF. No. CS□□□□□
DWSD CONTRACT No. DWS□□□□
FILE No. □
DRAWING No. SD-3



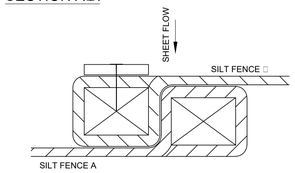
GENERAL NOTES

1. REFER TO SILT FENCE DETAIL □□□□□□□□ FOR INSTALLATION PROCED□RES.
2. WEE□LY INSPECTION AND MAINTENANCE M□ST □E PROVIDED TO INS□RE THAT THE DRAIN G□ARD OPERATES EFFICIENTLY.
3. SOD INTERIOR OF DRAIN G□ARD □NLESS INDICATED OTHERWISE.
4. REMOVE AND DISPOSE OF ACC□M□LATED SEDIMENT AS NECESSARY□PER SPECIFICATION SECTION □□□□□□.



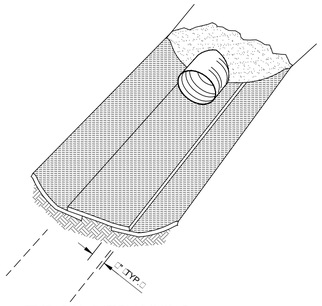
SECTION A□A

GENERAL NOTE□
SILT FENCE MATERIAL SHALL MEET THE RE□□IREMENTS IN SECTION □□□.□□ AND TA□LE □□□□□ IN MDOT STANDARD SPECIFICATIONS FOR CONSTR□CTION.



NOTE
FA□RIC TO □E WRAPPED ARO□ND FENCE POST.

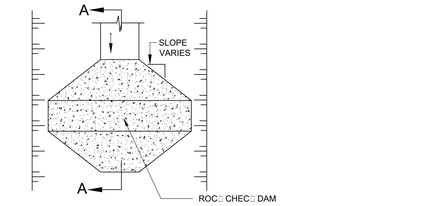
SILT FENCE □OINT



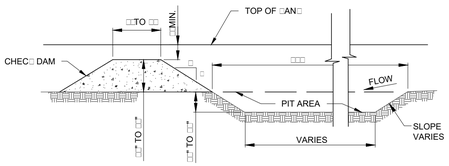
TYPICAL DITCH LINING

GENERAL NOTES□ □FROM MDOT DRAINAGE MAN□AL□

1. EROSION CONTROL □LAN□ETS PROTECT DEN□DED S□RFACES AGAINST WIND AND WATER EROSION□AND STA□ILI□E SOIL S□RFACES WHILE VEGETATION IS □EING ESTA□LISHED.
2. □LAN□ETS ARE PLACED IN DITCHES AND ON STEEP SLOPES □S□ALLY WITH RIP□RAP WHERE INDICATED ON THE DRAWINGS OR AS DIRECTED □Y THE ENGINEER.
3. E□TEND □LAN□ETS □NDER PIPE THREE □□INCHES. ANCHOR □LAN□ETS IN ACCORDANCE WITH MDOT STANDARD SPECIFICATIONS FOR CONSTR□CTION□SECTION □□□ T□RF ESTA□LISHMENT.
4. PROVIDE M□LCH □LAN□ETS□HIGH VELOCITY □LAN□ETS SELECTED FROM THE MDOT □□ALIFIED PROD□CTS LIST.
5. □SE M□LCH □LAN□ETS WITH NETTING ON TOP SIDE ON SLOPES FLATTER THAN □□.
6. □SE HIGH VELOCITY □LAN□ETS WITH NETTING ON TOP AND FI□ERS IN CONTACT WITH SOIL ON SLOPES □□□ OR GREATER.
7. □SE M□LCH □LAN□ET AS PERMANENT STA□ILI□ATION TREATMENT FOR DITCHES WITH SLOPES □ETWEEN □.□□ AND □.□□ .
8. □SE HIGH VELOCITY M□LCH □LAN□ET AS PERMANENT STA□ILI□ATION TREATMENT FOR DITCHES WITH SLOPES □ETWEEN □.□□ AND □.□□ .
9. □SE ANCHOR TRENCH AT TOP OF SLOPE □SEE DETAIL □□□□.□□ SECTION A□FOR DETAILS ON TRENCH□



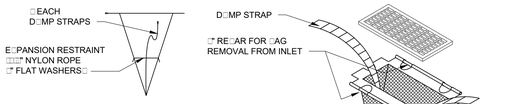
PLAN VIEW



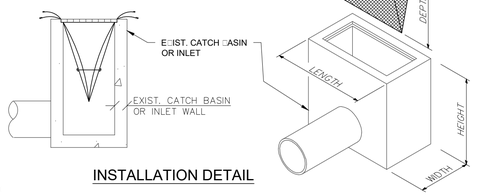
SECTION A□A

GENERAL NOTES

1. THE DITCH CROSS□SECTION SHO□LD ONLY □E PARTIALLY □LOC□ED□IN ORDER TO MINIMI□E THE LOSS IN DITCH FLOW CAPACITY.
2. CHEC□ DAM SHO□LD □E REMOVED AND THE SEDIMENT PIT FILLED AS SOON AS THE □PSTREAM AREAS CONTRI□□TING TO IT ARE STA□ILI□ED. THIS WILL ALLOW THE DITCH TO F□NCTION AS DESIGNED.
3. WEE□LY INSPECTION AND MAINTENANCE M□ST □E PROVIDED TO INS□RE THAT THE DITCH SEDIMENT TRAP OPERATES EFFICIENTLY.
4. THE PERMISSION OF THE GOVERNMENTAL AGENCY□RESPONSI□LE FOR THE MAINTENANCE OF THE DITCH□M□ST □E RECEIVED □EFORE A DITCH SEDIMENT TRAP IS INSTALLED.
5. SEE STANDARD DETAIL □□□□□□□□ OR DWSD FOR CHEC□ DAM SPECIFICATIONS FOR CONSTR□CTION.



□AG DETAIL

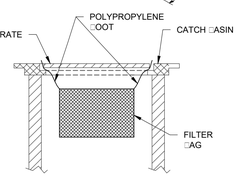


INSTALLATION DETAIL

NOTE□

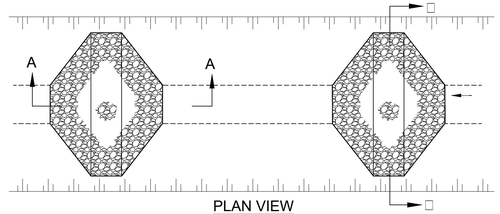
TEMPORARY INLET SEDIMENT FILTER TO □E INSTALLED ON ALL PAVED CATCH □ASINS OR STORM INLETS. SEDIMENT FILTERS TO GRATE □E SIMILAR TO□:

1. "SILTSAC□" TYPE □□REG□LAR FLOW□□Y ACF ENVIRONMENTAL□INC.
2. "INLET PRO SEDIMENT □AG" □STANDARD FLOW□WITH OPTIONAL FOAM DEFLECTOR □Y HANES GEO COMPONENTS.
3. "DANDY C□R□ SAC□" □Y DANDY PROD□CTS□INC.
4. "□ASIN □AG"□REG□LAR FLOW □Y CSI GEOT□RF□CLEAN FILTER AS NEEDED.

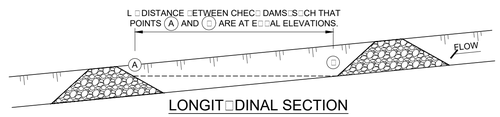


GENERAL NOTES

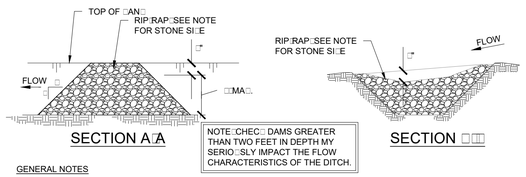
1. CONTRACTOR SHALL O□TAIN PERMISSION OF THE ENFORCING ROAD AGENCY □EFORE THIS TYPE OF CONTROL IS CONSTR□CTED IN THE ROAD RIGHT□OF□WAY.
2. CONTRACTOR SHALL □EEP C□R□S □ G□TTER INLET FILTERS □AFTER PAVING□IN PLACE □NTIL ALL AREAS CONTRI□□TING TO THEM ARE STA□ILI□ED WITH VEGETATION.
3. CONTRACTOR SHALL PERFORM WEE□LY INSPECTION AND MAINTENANCE TO ENS□RE THAT THE C□R□ □ G□TTER INLET FILTER □AFTER PAVING□OPERATES EFFICIENTLY.



PLAN VIEW



LONGIT□DINAL SECTION



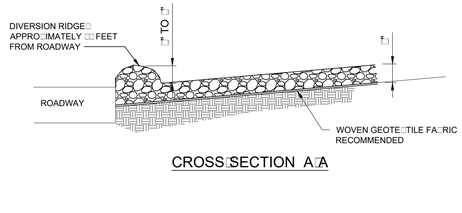
SECTION A□A

NOTE□CHEC□ DAMS GREATER THAN TWO FEET IN DEPTH MY SERIO□SLY IMPACT THE FLOW CHARACTERISTICS OF THE DITCH.

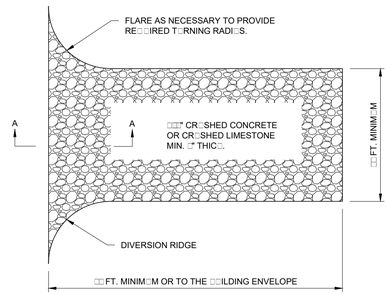
SECTION □□

GENERAL NOTES

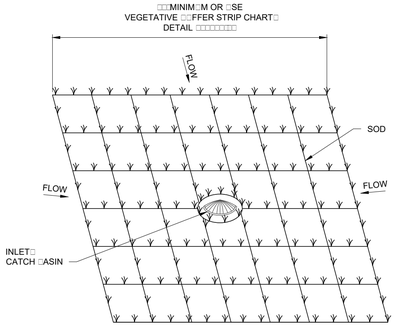
1. DEPENDING ON THE VELOCITY□SLOPE AND SOILS□□SE THE PROPER SI□E RIP□RAP TO HANDLE THE SHEAR STRESS OF THE SLOPE□CHANNEL..
2. FOR SLOPE AND□OR CHANNEL PROTECTION□□SEE THE MDOT CONSTR□CTION SITE SOIL EROSION PREVENTION POC□ET G□IDE.
3. RIP□RAP SI□E SHO□LD □E □□INCHES FOR DITCH GRADES LESS THAN □□ AND □□□INCHES FOR DITCH GRADES GREATER THAN □□ .
4. □ASE TO □E AT LEAST □ □ HEIGHT.



CROSS□SECTION A□A



PLAN VIEW



ISOMETRIC VIEW

NOTES□

1. SOD INLET FILTERS ARE PADS OF SOD PLACED ARO□ND A STORM DRAIN INLET OR CATCH □ASIN.
2. SOD INLET FILTERS ARE INSTALLED TO SLOW THE FLOW OF WATER INTO AN INLET OR CATCH □ASIN AND FILTER O□T SEDIMENT IN THE PROCESS.
3. SOD INLET FILTERS SHO□LD ONLY □E □SED TO HANDLE LIGHT CONCENTRATIONS OF SEDIMENT. THEY ARE □EST □SE AFTER FINAL GRADING IS COMPLETE AND D□RING THE ESTA□LISHED OF A VEGETATIVE COVER.

F					DESIGNED □Y□ □M	SEAL □STAMP
E						
D					DRAWN □Y□ WW	
C						
□					CHEC□ED □Y□ CLR	
A	ISSUED FOR PROCUREMENT			4/1/2020	MANAGER□ RG	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS
SOIL EROSION AND SEDIMENTATION

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	- -	- - -	- - -	- - -

MDE□ SRF Pro□□No. 5688-01
REF. No. CS□□□□
DWSD CONTRACT No. DWS□□□
FILE No. □
DRAWING No. SD-4

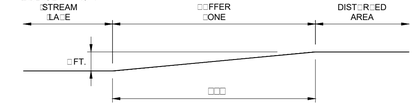
✱ INDICATES APPLICABILITY OF A SPECIFIC CONTROL MEASURE TO ONE OR MORE OF THE SEVEN PROBLEM AREAS.

□EY	DETAILS	CHARACTERISTICS	SLOPES A	STREAMS AND WATERWAYS □	S□RFACE DRAINAGEWAYS C	ENCLOSED DRAINAGE INLET □ □TFALL CONTROL□ D	LARGE FLAT S□RFACE AREAS E	□ORROW AND STOC□PILE AREAS F	AD□ACENT PROPERTIES G
□	STRIPPING & STOCKPILING TOPSOIL	TOPSOIL MAY □E STOC□PILED A□OVE □ORROW AREAS TO ACT AS A DIVERSION. STOC□PILE SHO□LD □E TEMPORARILY SEEDED. AVOID E□TENSIVE AND □NNECESSARY CLEARING OF TOPSOIL.	✱				✱	✱	
□	GRUBBING OMITTED	SAVES COST OF GR□□□ING□PROVIDES NEW SPRO□□TS. RETAINS E□ISTING ROOT MAT SYSTEMS. RED□CES WINDFALL AT NEW FOREST EDGE. RED□CES SHEET FLOW VELOCITIES. DISCO□RAGES E□□PMENT ENTRANCE.	✱				✱		✱
□	PERMANENT / TEMPORARY SEEDING	INE□PENSIVE AND VERY EFFECTIVE. STA□IL□ES SOIL□TH□S MINIMI□ING EROSION. PERMITS R□NOFF TO INFILTRATE SOIL□RED□□ING R□NOFF. VOL□ME SHO□LD INCL□DE PREPARED TOPSOIL □ED. FERTILI□ING M□□CHING AND WATERING RE□□IRED.	✱		✱		✱	✱	✱
□	MULCH BLANKETS AND HIGH VELOCITY MULCH BLANKETS	M□LCH □LAN□ETS PROVIDE AN IMMEDIATE AND EFFECTIVE COVER OVER RAW EROD□□LE SLOPES AFFORDING E□CELLENT PROTECTION AGAINST RAIN AND WIND EROSION. HIGH VELOCITY M□LCH □LAN□ETS WOR□□ WELL FOR STA□IL□ING THE □OTTOM OF DITCHES IN WATERWAYS.	✱		✱		✱	✱	
□	HYDRO-SEEDING	EFFECTIVE ON LARGE AREAS. M□LCH TAC□ING AGENT □SED TO PROVIDE IMMEDIATE PROTECTION □NTIL GRASS IS ROOTED. SHO□LD INCL□DE PREPARED TOPSOIL □ED. FERTILI□ING M□□CHING AND WATERING ARE RE□□□IRED.	✱				✱	✱	✱
□	SODDING	PROVIDES IMMEDIATE PROTECTION. CAN □E □SED ON STEEP SLOPES WHERE SEED MAY □E DIFFIC□LT TO ESTA□LISH. EASY TO PLACE. MAY □E REPAIRED IF DAMAGED. SHO□LD INCL□DE PREPARED TOPSOIL □ED.	✱				✱	✱	✱
□	VEGETATIVE BUFFER STRIP	SLOWS R□NOFF VELOCITY. FILTERS SEDIMENT FROM R□NOFF. RED□CES VOL□ME OF R□NOFF ON SLOPES. ASSISTS IN ESTA□LISHING PERMANENT VEGETATIVE COVER.	✱						✱
□	MULCHING AND MULCH ANCHORING	□SED ALONE TO PROTECT E□POSED AREAS FOR SHORT PERIODS. PROTECTS SOIL FROM IMPACT OF FALLING RAIN. PRESERVES SOIL MOIST□RE AND PROTECTS GERMINATING SEED FROM TEMPERAT□RE E□TREMES. SHO□LD □E INSPECTED AFTER EVERY RAINSTORM AND REPAIRED AS NECESSARY□NTIL VEGETATION IS WELL ESTA□LISHED.	✱				✱	✱	
□	SLOPE ROUGHENING AND SCARIFICATION	CAN □E ACCOMPLISHED □Y HARROWING WITH A DIS□□□AC□□LADING□OR TRAC□ING WITH A DO□ER PERPENDIC□LAR TO THE SLOPE. RED□CES VELOCITY AND INCREASES INFILTRATION RATES. COLLECTS SEDIMENT. HOLDS WATER□SEED□AND M□LCH □ETTER THAN SMOOTH S□RFACES.	✱				✱	✱	✱
10	RIP RAP	□SED WHERE VEGETATION IS NOT EASILY ESTA□LISHED. EFFECTIVE FOR HIGH VELOCITIES OR HIGH CONCENTRATIONS. PERMITS R□NOFF TO INFILTRATE SOIL. DISSIPATES ENERGY FLOW AT SYSTEM □□TLETS. SHO□LD □E PLACED ON A GEOTE□TILE LINER.	✱	✱	✱	✱			
11	AGGREGATE COVER	STA□IL□ES SOIL S□RFACE□TH□S MINIMI□ING EROSION. PERMITS CONSTR□CT□ON TRAFFIC IN ADVERSE WEATHER. MAY □E □SED AS PART OF PERMANENT □ASE CONSTR□CT□ON OF PAVED AREAS. RED□CES POTENTIAL SOIL EROSION AND F□GITIVE D□ST □Y STA□IL□ING RAW AREAS.					✱		
12	BENCHES	RED□CES R□NOFF VELOCITY □Y RED□CING EFFECTIVE SLOPE LENGTH. COLLECTS SEDIMENT. PROVIDES ACCESS TO SLOPES FOR SEEDING□M□LCHING AND MAINTENANCE.	✱					✱	
13	DIVERSION BERM	DIVERTS WATER FROM V□LNERA□LE AREAS. COLLECTS AND DIRECTS WATER TO PREPARED DRAINAGEWAYS. MAY □E □SED AT INTERVALS ACROSS SLOPE FACE TO RED□CE EFFECTIVE SLOPE LENGTH.	✱				✱	✱	✱
14	INTERCEPTING DITCH	COLLECTS AND DIVERTS WATER TO A STA□LE O□□TLET OR SEDIMENT CONTROL DEVICE TO RED□CE EROSION. POTENTIALLY □E INCORPORATED IN PERMANENT PRO□ECT DRAINAGE SYSTEMS.	✱				✱	✱	✱
15	DIVERSION BERM & INTERCEPTING DITCH	DIVERTS WATER TO A PREPARED DRAINAGEWAY. MAY □E □SED AT INTERVALS ACROSS SLOPE FACE TO RED□CE EFFECTIVE SLOPE LENGTH.	✱				✱	✱	✱
16	DUST CONTROL	D□ST CONTROL CAN □E ACCOMPLISHED □Y WATERING□AND OR APPLYING CALCI□M CHLORIDE. THE DIST□R□ED AREAS SHO□LD □E □EPT TO A MINIM□M. PERMANENT□TEMPORARY SEEDING SHO□LD □E APPLIED AS SOON AS POSSI□LE.	✱				✱	✱	
17	GRAVEL FILTER BERM	FILTER FLOW PRIOR TO ENTRY INTO A LA□E□STREAM OR WETLAND. NOT TO □E □SED AS A CHEC□□ DAM.	✱		✱			✱	✱
18	BRUSH FILTER	□SES SLASH AND LOGS FROM CLEARING OPERATIONS. CAN □E COVERED AND SEEDED RATHER THAN REMOVED. ELIMINATES NEED FOR □□RNING OR REMOVAL OF MATERIAL FROM SITE.							✱
19	BARE CHANNEL	LEAST E□PENSIVE FORM OF DRAINAGEWAY. MAY □E □SED ONLY WHERE GRADIENT IS VERY LOW AND WITH SOILS OF MINIM□M EROSION POTENTIAL.			✱				
20	GRASSED WATERWAY	GRASS TENDS TO SLOW R□NOFF AND FILTER O□T SEDIMENT. □SED WHERE □ARE CHANNEL WO□LD □E ERODED.			✱				

✱ INDICATES APPLICABILITY OF A SPECIFIC CONTROL MEASURE TO ONE OR MORE OF THE SEVEN PROBLEM AREAS.

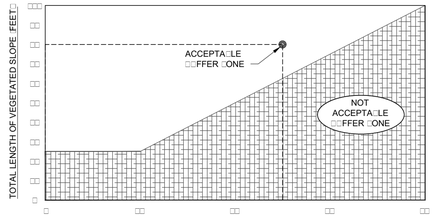
□EY	DETAILS	CHARACTERISTICS	SLOPES A	STREAMS AND WATERWAYS □	S□RFACE DRAINAGEWAYS C	ENCLOSED DRAINAGE INLET □ □TFALL CONTROL□ D	LARGE FLAT S□RFACE AREAS E	□ORROW AND STOC□PILE AREAS F	AD□ACENT PROPERTIES G
21	SLOPE DRAIN (SUBSURFACE PIPE)	PREVENTS EROSION ON SLOPES WHEN R□NOFF CANNOT □E DIVERTED TO EDGE OF SLOPE AREA. □S□ALLY PERMANENT. CAN □E CONSTR□CTED OR E□TENDED AS GRADING PROGRESSES.	✱		✱				
22	PIPE DROP	RED□CES R□NOFF VELOCITY. REMOVES SEDIMENT AND T□R□IDITY. CAN □E DESIGNED TO HANDLE LARGE VOL□MES OF FLOW. ALLOWS WATER TO DROP RAPIDLY IN ELEVATION WITHO□T CA□SING E□CESSIVE EROSION.	✱		✱				
23	SOD FILTER	INE□PENSIVE TO CONSTR□CT. PROVIDES IMMEDIATE PROTECTION. PROTECTS AREAS ARO□ND INLETS FROM EROSION.				✱			
24	STRAW BALE FILTER	INE□PENSIVE AND EASY TO CONSTR□CT. CAN □E LOCATED AS NECESSARY TO COLLECT SEDIMENT. MAY □E □SED IN CON□□NCTION WITH SNOW FENCE FOR ADDED STA□ILITY.				✱			✱
25	CHECK DAM	CAN □E CONSTR□CTED ACROSS DITCHED OR ANY AREA OF CONCENTRATED FLOW. PROTECTS VEGETATION IN EARLY STAGES OF GROWTH. A CHEC□ DAM IS INTENDED TO RED□CE WATER VELOCITIES AND CAPT□RE SEDIMENT. A CHEC□ DAM IS NOT A FILTERING DEVICE	✱		✱			✱	
26	INLET PROTECTION FABRIC DROP	PROVIDES SETTLING AND FILTERING OF SILT LADEN WATER PRIOR TO ITS ENTRY INTO THE DRAINAGE SYSTEM. CAN □E □SED IN MEDIAN AND SIDE DITCHES WHERE VEGETATION WILL □E DIST□R□ED. ALLOWS FOR EARLY □SE OF DRAINAGE SYSTEMS PRIOR TO PRO□ECT COMPLETION.			✱		✱		
27	ROCK FILTER	CAN □TILI□E MATERIAL FO□ND ON SITE. EASY TO CONSTR□CT. FILTERS SEDIMENT FROM R□NOFF.				✱			✱
28	INLET SEDIMENT TRAP	EASY TO SHAPE. COLLECTS SEDIMENT. MAY □E CLEANED AND E□PANDED AS NEEDED. CAN □E □SED WHERE MEDI□M FLOWS ARE ANTICIPATED.				✱			
29	STONE AND ROCK CROSSING	MAY □E ROC□ OR CLEAN R□□□LE MINIMI□ES STREAM T□R□IDITY. INE□PENSIVE. MAY ALSO SERVE AS DITCH CHEC□□ OR SEDIMENT TRAP.		✱					
30	SILT FENCE	A PERMEA□LE □ARRIER ERECTED □ELOW DIST□R□ED AREAS TO CAPT□RE SEDIMENTS FROM SHEET FLOW. CAN □E □SED TO DIVERT SMALL VOL□MES OF WATER TO STA□LE O□TLETS. INEFFECTIVE AS A FILTER AND SHO□LD NEVER □E PLACED ACROSS STREAMS OR DITCHES WHERE FLOW IS CONCENTRATED.	✱					✱	✱
31	DRAIN GUARD	PERMEA□LE □ARRIER ERECTED ARO□ND AN INLET TO CAPT□RE SEDIMENTS.				✱			
32	WIND BREAK	MINIMI□ES WIND EROSION. MAY □E SNOW FENCE.					✱		
33	GRAVEL ACCESS APPROACH	PROVIDES A STA□LE ACCESS TO ROADWAYS MINIMI□ING F□GITIVE D□ST AND TRAC□ING OF MATERIALS ONTO P□□LIC STREETS AND HIGHWAYS.					✱	✱	

E□AMPLE□
LENGTH OF □□FFER □ONE □ □□□
□ OF SLOPE OF □□FFER □ONE □ □□



ELEVATION VIEW

THE GRAPH SHOWN □ELOW IS □SED TO DETERMINE THE ADE□□ACY OF AN E□ISTING VEGETATIVE □□FFER □ONE FOR □SE AS A SEDIMENT FILTER. THIS GRAPH IS ONLY APPLICA□LE IF THE VEGETATION IS □□□ DENSE AND AT LEAST □" IN LENGTH OVER EVERY S□□ARE FOOT OF DIST□R□ED SOIL. AN AREA COVERED WITH WEEDS OR □□SHES AND TREES□WITHO□T A GOOD GRO□ND COVER□IS NOT ACCEPTA□LE.



VEGETATIVE □□FFER STRIP CHART

SOIL EROSION AND SEDIMENTATION CONTROL (TEMPORARY FACILITIES)

THE CONTRACTOR SHALL CONSTR□CT THIS PRO□ECT IN COMPLIANCE WITH PART □□ OF ACT NO. □□□ OF □□□□NAT□RAL RESO□RCES AND ENVIRONMENTAL PROTECTION ACT□OF THE MICHIGAN COMPILED LAWS ENTITLED "SOIL EROSION AND SEDIMENTATION CONTROL" □NDER THE CONTROL OF THE LOCAL PERMIT AGENCY CHARGED WITH ADMINISTERING THE PROVISIONS OF THIS ACT. THE CONTRACTOR SHALL FOLLOW THE PROCED□RES DELINEATED □ELOW AND CONSTR□CT AND MAINTAIN THE FACILITIES SHOWN ON THE DRAWINGS TO CONTROL WATER AND WIND EROSION D□RING CONSTR□CTION OF THIS PRO□ECT.

ALL DIST□R□ED S□RFACE AREA □NCL□DING □TILITY TRENCHES□SHALL □E TEMPORARILY GRADED AND□OR DITCHED TO DIRECT ALL WATER R□NOFF FROM S□CH AREAS TO SEDIMENTATION CONTROL DEVICES WHICH WILL PREVENT WATER CARRYING ERODED SOIL FROM ENTERING A WATERCO□RSE□SEWER□OR AD□ACENT LANDS. S□CH SEDIMENTATION CONTROL DEVICES SHALL INCL□DE □□T NOT □E LIMITED TO PROTECTIVE DITCHES□SEDIMENT TRAPS□SEDIMENT FILTERS□DITCH TRAPS□PIPE □ARRIERS□AND FILTERS AS DETAILED AND RE□□IRED AND WHERE INDICATED ON THE DRAWINGS. AFTER THE PRO□ECT WOR□ HAS □EEN COMPLETED□INSPECTED□AND APPROVED□THE CONTRACTOR SHALL REMOVE ALL SEDIMENTATION CONTROL DEVICES□MATERIAL□AND THEIR COLLECTED SILT AND DE□RIS AND RESTORE THE AREA IN ACCORDANCE WITH THE DRAWINGS.

IN ROADWAY AREAS TEMPORARY AGGREGATE S□RFACING SHALL □E PLACED IMMEDIATELY AFTER THE □AC□FILLING OPERATION HAS □EEN COMPLETED. POSITIVE D□ST CONTROL MEAS□RES SHALL □E TA□EN AT ALL TIMES.

PERMANENT STA□IL□ATION SHALL □E COMPLETED WITHIN □ DAYS OF FINAL EARTH CHANGE. FINAL CLEAN□P AND RESTORATION WILL CONSIST OF FINAL GRADING□TOPSOILING□SEEDING AND M□LCHING AND□OR SODDING OF ALL DIST□R□ED AREAS OF THE PRO□ECT.

IF SEASONAL CONDITIONS PREVENT FINAL CLEANING AND RESTORATION□THE CONTRACTOR SHALL PROCEED WITH TEMPORARY STA□IL□ATION OF THE DIST□R□ED AREA. TEMPORARY STA□IL□ATION SHALL CONSIST OF RO□GH GRADING THE DIST□R□ED AREA IN ACCORDANCE WITH THESE SPECIFICATIONS. TEMPORARY STA□IL□ATION MATERIALS SHALL □E REMOVED AND DISPOSED OF AND FINAL CLEAN□P AND RESTORATION SHALL □E COMPLETED NOT LATER THAN □ DAYS AFTER SEASONAL CONDITIONS ALLOW PERFORMANCE OF THE RE□□IRED WOR□.

SOIL EROSION AND SEDIMENTATION CONTROL MAINTENANCE NOTES

THE CONTRACTOR SHALL INSPECT SOIL EROSION AND SEDIMENTATION CONTROL DEVICES WEE□LY AND WITHIN □□HO□RS OF A SIGNIFICANT RAIN EVENT. THE CONTRACTOR SHALL □E RESPONSI□LE FOR MAINTAINING THE SOIL EROSION AND SEDIMENTATION CONTROL DEVICES.

MAINTENANCE INCL□DES ALL WOR□ NECESSARY FOR PROPER OPERATION OF THE DEVICES. DEVICES WHICH CAN NOT □E REPAIRED MAY NEED TO □E REPLACED. MAINTENANCE OF THE DEVICES SHALL □E PERFORMED WITHIN □□HO□RS OF INSPECTION.

SEDIMENT SHALL □E REMOVED AS NECESSARY TO MAINTAIN THE EFFECTIVENESS OF SOIL EROSION AND SEDIMENTATION CONTROL DEVICES.

SEDIMENT DEPOSITED ALONG SILT FENCE SHALL □E REMOVED WHEN IT REACHES □□ TO □□ THE HEIGHT OF THE FENCE.

T□RF ESTA□LISHMENT MEAS□RES SHALL □E MAINTAINED AS WO□LD ANY OTHER DEVICES PRIOR TO ESTA□LISHMENT OF PERMANENT T□RF.

ALL M□D□DIRT AND DE□RIS TRAC□ED ONTO E□ISTING ROADS FROM THIS SITE SHALL □E PROMPTLY REMOVED □Y THE CONTRACTOR.

CONTRACTOR SHALL ENS□RE THAT SOIL EROSION AND SEDIMENTATION CONTROL MEAS□RES PROTECT AGAINST LOSS OF SOIL □Y THE ACTION OF WATER□ICE□GRAVITY OR WIND.

S□MMARY OF □ASIC PRINCIPLES

- □EEP DIST□R□ED AREA AS SMALL AS POSSI□LE.
- STA□IL□E AND□OR PROTECT DIST□R□ED AREAS AS SOON AS POSSI□LE.
- □EEP STORM WATER R□NOFF VELOCITIES LOW.
- RETAIN SEDIMENT WITHIN IMMEDIATE CONSTR□CTION AREA.

THE P□RPOSE OF THIS PLAN IS TO SPECIFY METHODS FOR TEMPORARY EROSION CONTROL D□RING CONSTR□CTION. IT IS INTENDED THAT MEAS□RES CALLED FOR IN THE SPECIFICATIONS AND SHOWN ON THESE STANDARD DETAILS PLANS □E STRICTLY ADHERED TO. IT SHALL □E THE RESPONSI□ILITY OF THE CONTRACTOR TO ASS□RE THAT CONSTR□CTION PROCED□RES □NDERTA□EN □E IN CONFORMANCE WITH THE STATE OF MICHIGAN ACT □□□ OF □□□□ PART □□□SOIL EROSION AND SEDIMENTATION CONTROL.

ALL SOIL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL □E REG□LARLY MAINTAINED □Y THE CONTRACTOR THRO□GHO□T THE D□RATION OF THE PRO□ECT. COLLECTED SILT AND SEDIMENTATION SHALL □E REMOVED PERIODICALLY TO MAINTAIN THE EFFECTIVENESS OF THE SILT TRAPS OR SEDIMENTATION CONTROL DEVICES. WHERE RE□□IRED□THE CONTRACTOR SHALL REPLACE FILTER MATERIALS WHICH HAVE □ECOME INEFFECTIVE D□E TO CONTAMINATION OR PHYSICAL DETERIORATION.

IF POSSI□LE□NO GR□□□ING SHO□LD □E DONE WITHIN □□□OF AN ACTIVE WATERCO□RSE.

AGGREGATES PLACED IN STREAMS SHO□LD CONTAIN A MINIM□M OF FINES. AS A GENERAL R□LE FOR DAMS IN SMALL STREAMS□AT LEAST □□ STONE SHO□LD □E □" DIAMETER OR LARGER □" OR LARGER STONE SHALL □E □SED FOR LINING STREAM □OTTOMS WHERE LINING IS RE□□IRED.

ALL TEMPORARY EROSION CONTROL FACILITIES SHO□LD □E REMOVED □Y THE CONTRACTOR AT THE COMPLETION OF CONSTR□CTION □NLESS ORDERED □Y THE ENGINEER TO □E LEFT IN PLACE. CARE SHALL □E TA□EN D□RING REMOVAL TO MINIMI□E SILTATION IN NEAR□Y DRAINAGE CO□RSES.

S□RFACE DISR□PTION IN ADVANCE OF CONSTR□CTION INCL□DING CLEARING□GRADING OR SIGNIFICANT SOD REMOVAL SHALL □E LIMITED AS FOLLOWS□□NLESS PERMISSION IS OTHERWISE O□TAINED FROM THE GOVERNING AGENCY.

A. WET WEATHER SEASON □MARCH□APRIL□MAY□□□ DAYS PRIOR TO □EGINNING ANY EARTH CHANGE ACTIVITY.

□. DRY WEATHER SEASON □□NE□□□LY□A□G□ST□SEPTEM□ER□OCTO□ER□NOVEM□ER□□ □□DAYS PRIOR TO □EGINNING ANY EARTH CHANGE ACTIVITY.

C. COLD WEATHER SEASON □DECEM□ER□AN□ARY□FE□R□ARY□□□□ DAYS PRIOR TO □EGINNING ANY EARTH CHANGE ACTIVITY.

F					
E					
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C					
□					
A	ISSUED FOR PROCUREMENT				4/1/2020
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE	

DESIGNED □Y□ □M
DRAWN □Y□ WW
CHEC□ED □Y□ CLR
MANAGER□ RG

SEAL □STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

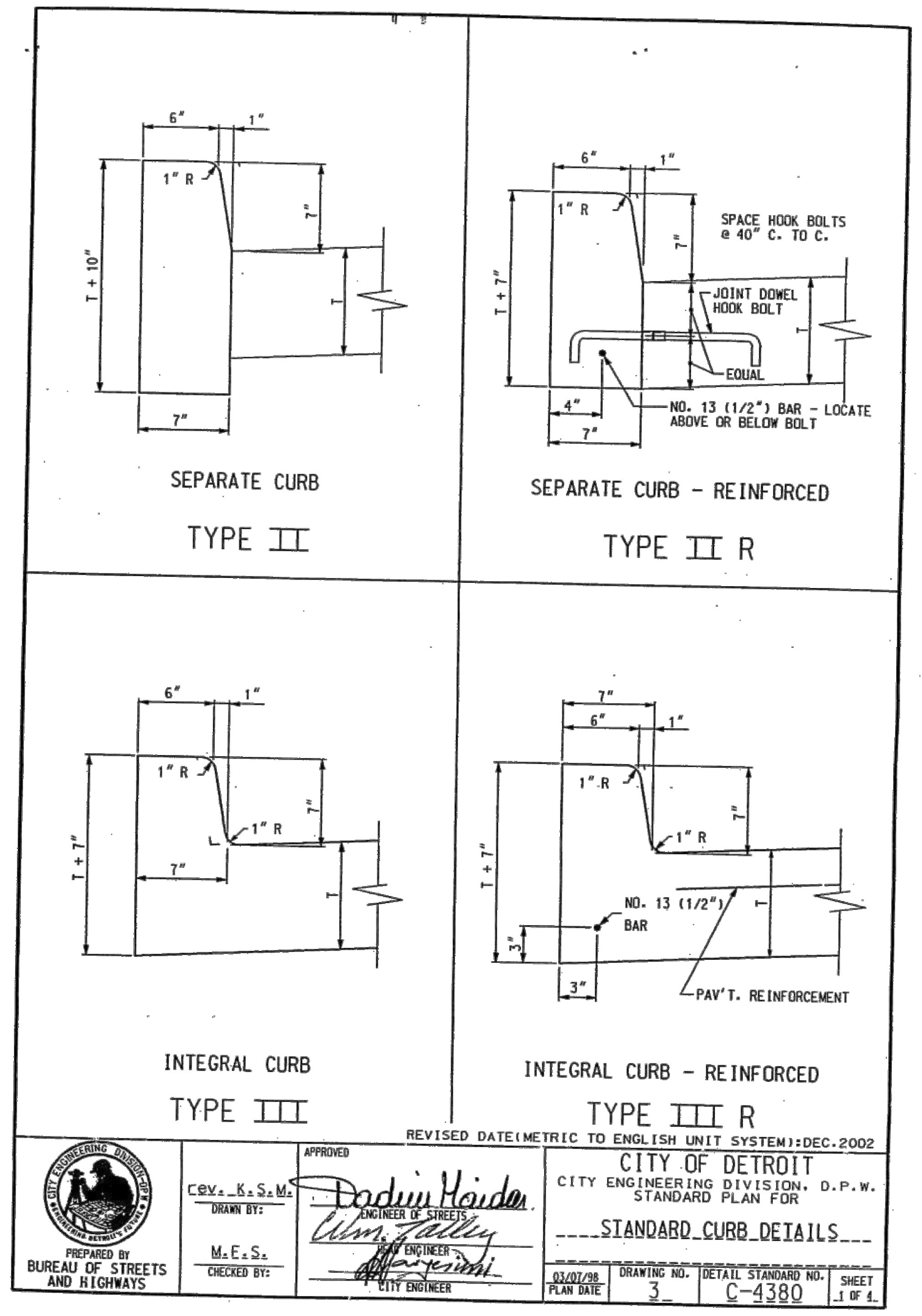
STANDARD DETAILS
SOIL EROSION AND SEDIMENTATION

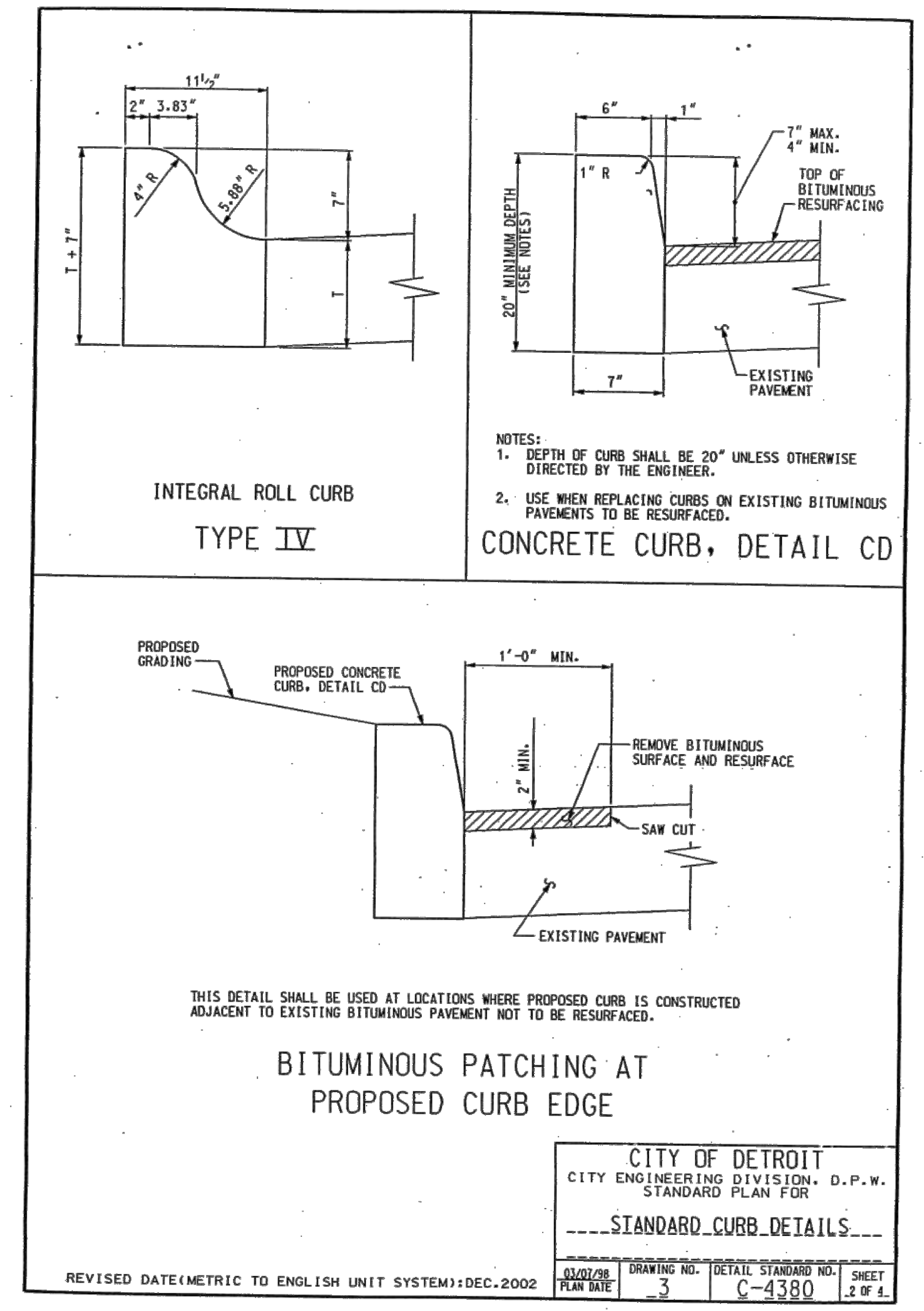
CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

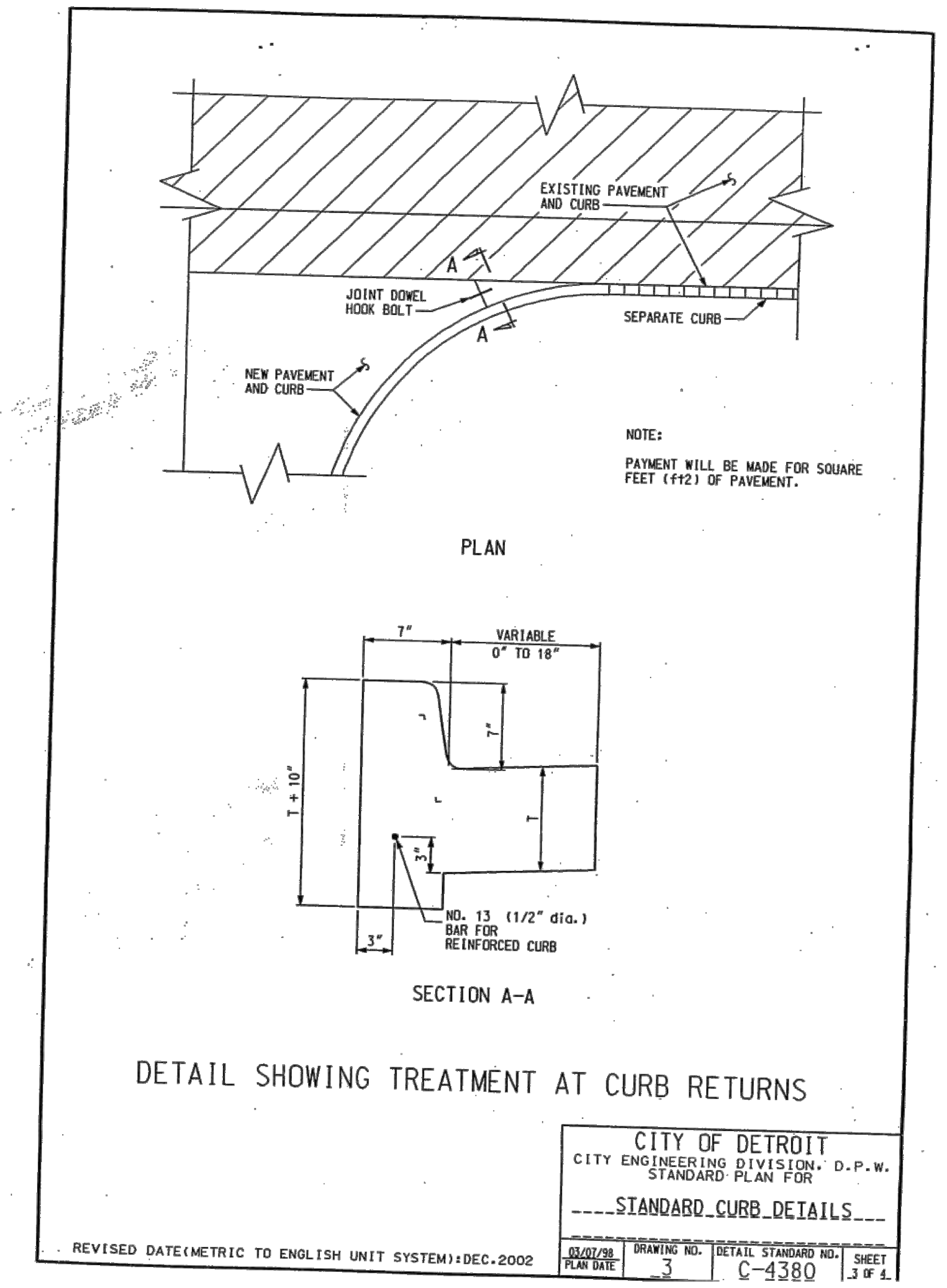
DETROIT Water & Sewerage Department

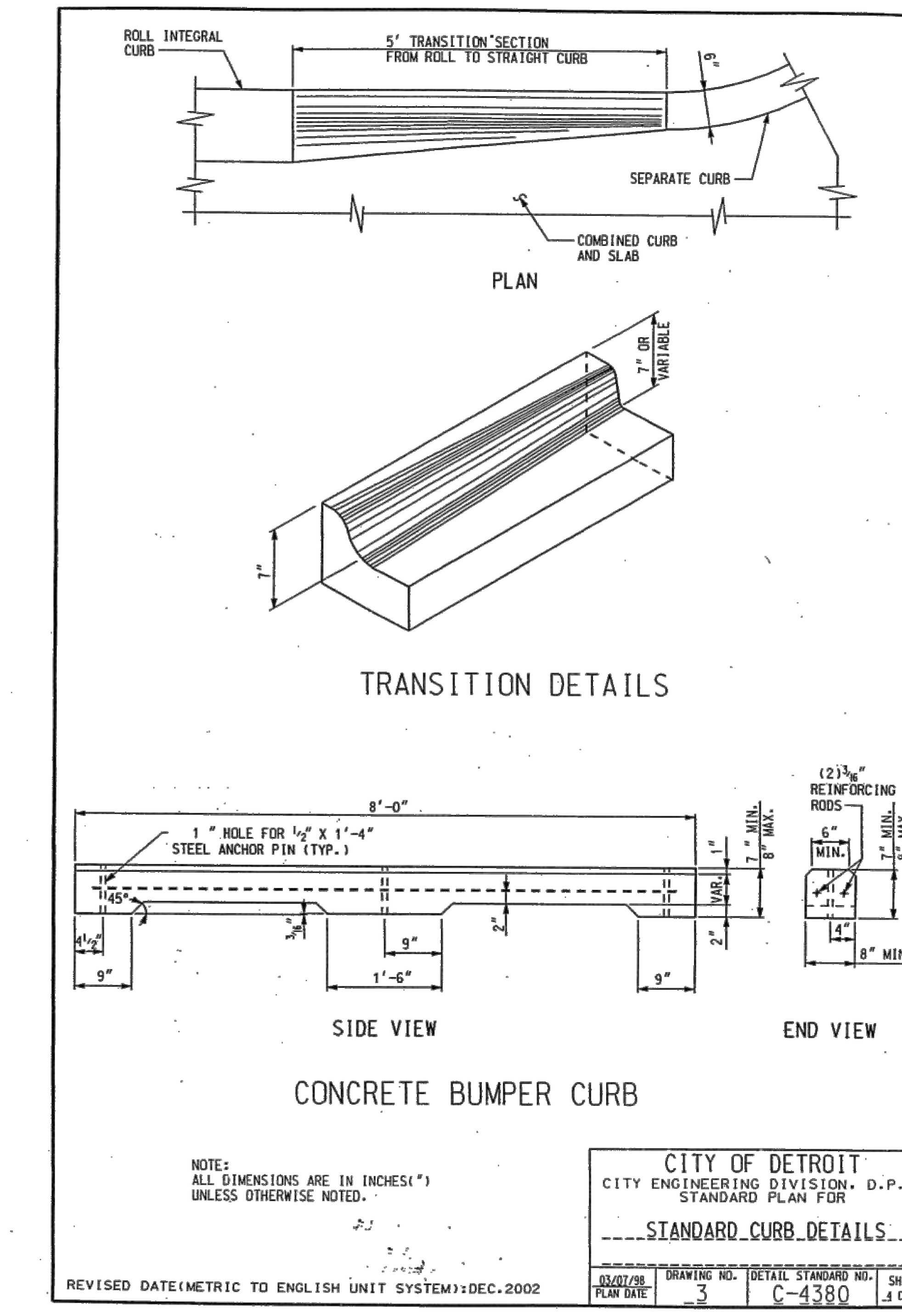
SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
	- -	- - -	- - -	- - -

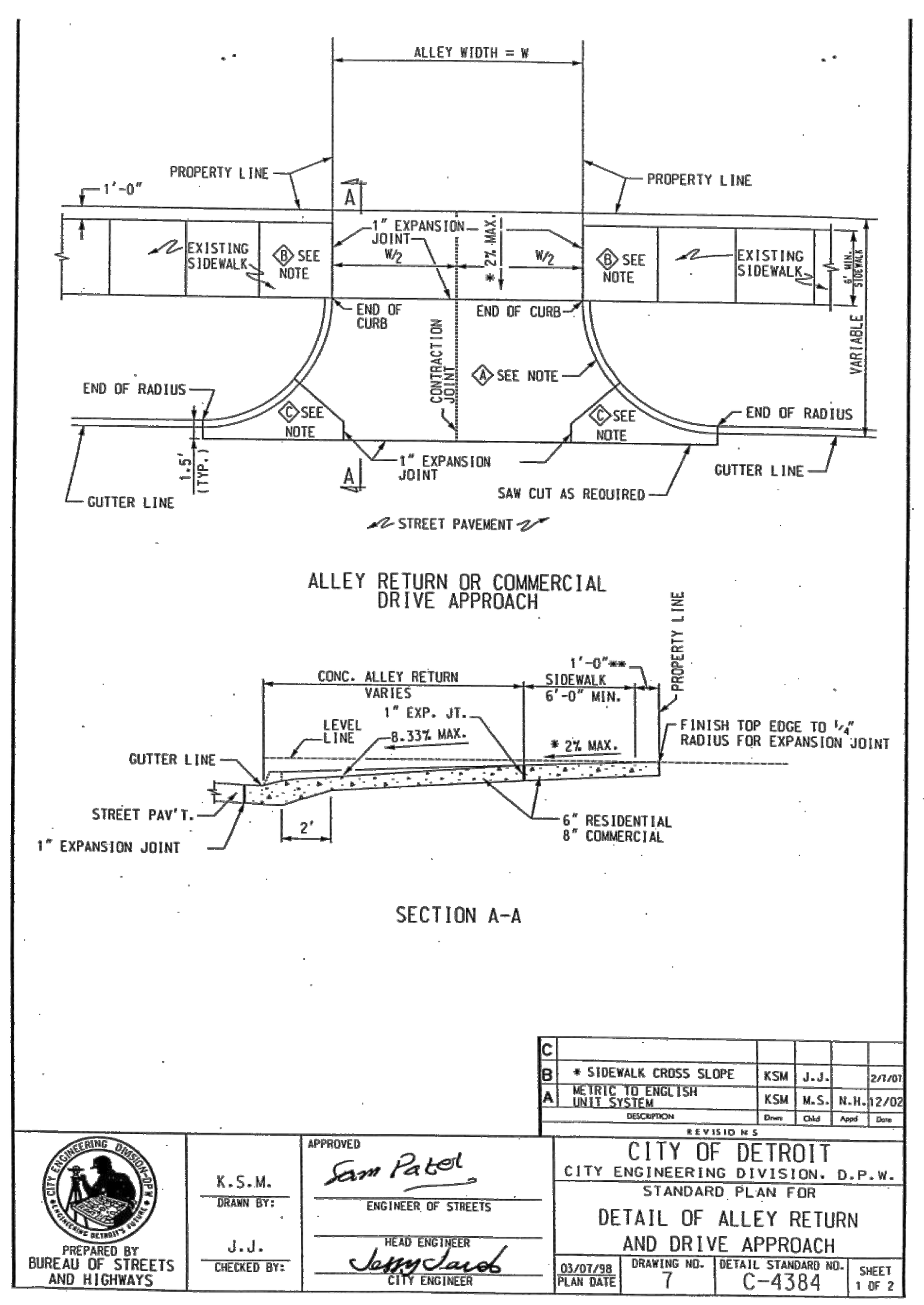
MDE□ SRF Pro□□No. 5688-01
REF. No. CS□□□□
DWSD CONTRACT No. DWS□□□
FILE No. □
DRAWING No. SD-5

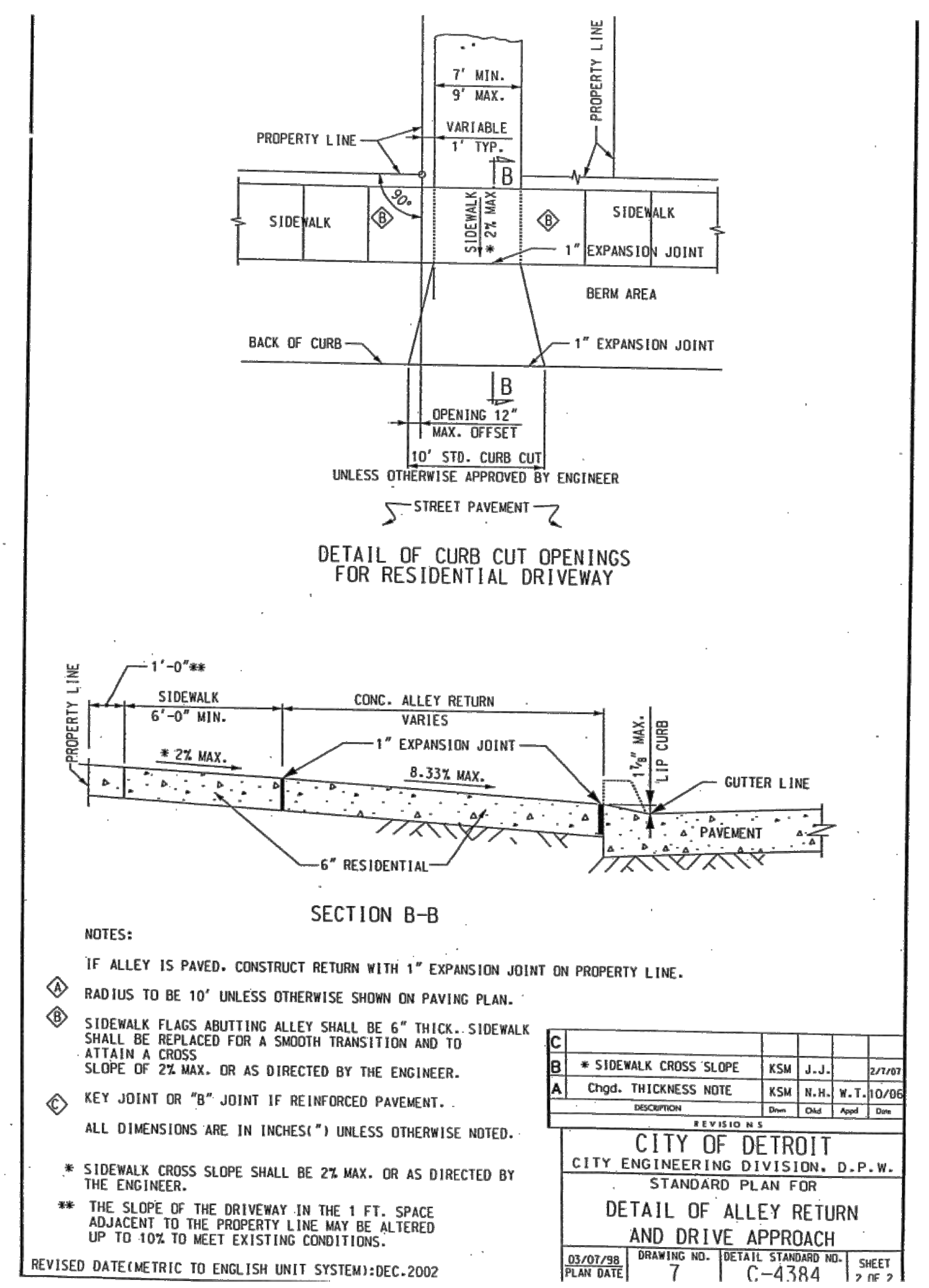


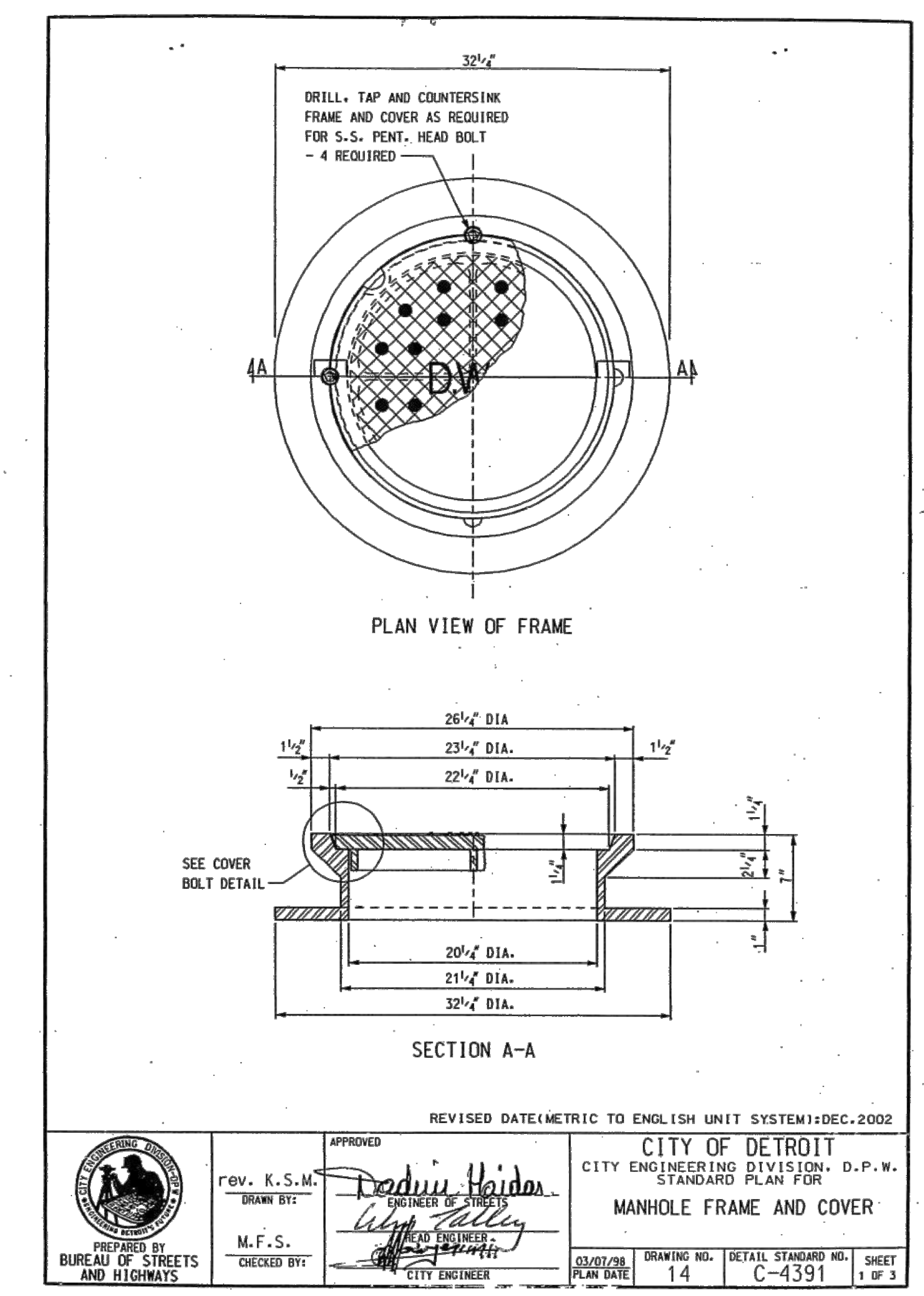


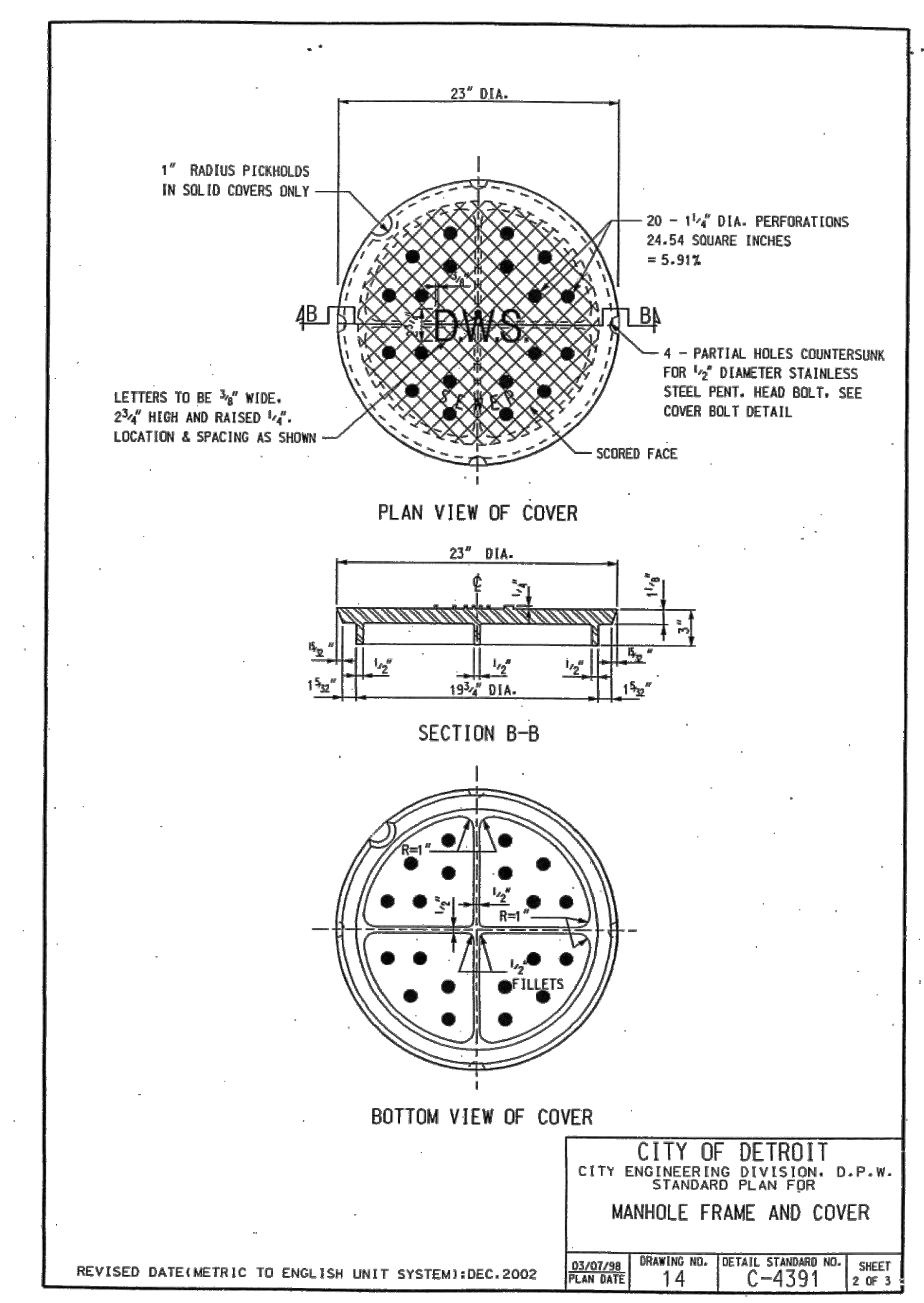












F					DESIGNED BY
E					DRAWN BY
D					CHECKED BY
C					
B					
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER
	DESCRIPTIONS / REVISIONS	CHKD	APPR.	DATE	

SEAL / STAMP

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS - RESTORATION

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

MDEQ SRF Project No. 5688-01
REF. No. CS
DWSD CONTRACT No. DWS
FILE No.
DRAWING No. SD-6

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
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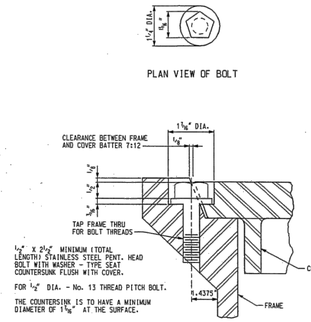


PLAN VIEW OF BOLT

COVER BOLT DETAIL

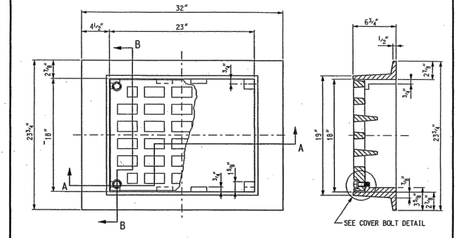
NOTES:

1. FRAME AND COVER TO BE GRAY IRON CASTING. ASTM A48, CLASS 30B
   TOTAL WT. = 410 lbs. (PERF. COVER)
   MANHOLE FRAME = 262 lbs.
   COVER (PERF.) = 148 lbs.
   COVER (BLANK) = 156 lbs.
2. THE SEATING FACE OF THE COVER AND SEAT FOR SAME ON THE FRAME SHALL BE MACHINE FINISHED OR THE EQUIVALENT THEREOF SO THAT THE COVER SHALL HAVE AN EVEN BEARING ON ITS SEAT AT ALL POINTS WITHOUT ROCKING OR TILTING.
3. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
MANHOLE FRAME AND COVER

01/07/08 PLAN DATE	DRAWING NO. 14	DETAIL STANDARD NO. C-4391	SHEET 3 OF 3

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002



PLAN VIEW OF FRAME

SECTION B-B

SECTION A-A

COVER BOLT DETAIL

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

PREPARED BY BUREAU OF STREETS AND HIGHWAYS

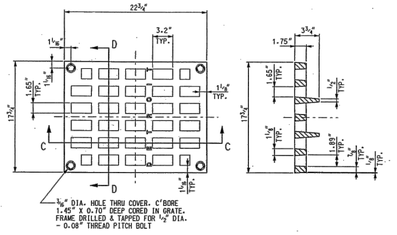
DRAWN BY: rev. K.S.M.

CHECKED BY: M.F.S.

APPROVED
ENGINEER OF STREETS
CITY ENGINEER

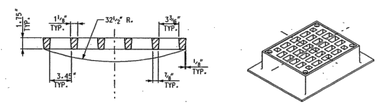
CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
FLAT TYPE
GRATE AND FRAME

01/07/08 PLAN DATE	DRAWING NO. 15	DETAIL STANDARD NO. C-4392	SHEET 1 OF 2.



PLAN VIEW OF GRATE

SECTION D-D



SECTION C-C

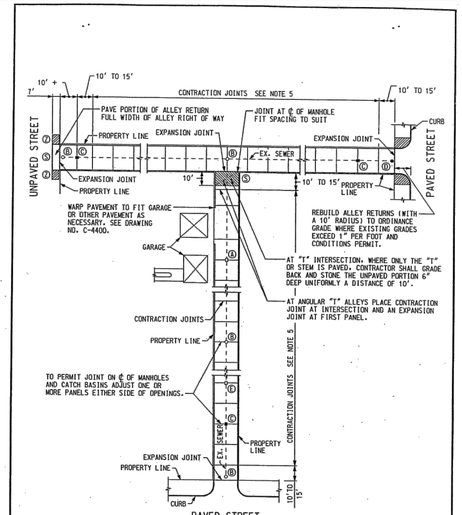
ISOMETRIC VIEW

NOTE:
ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
FLAT TYPE
GRATE AND FRAME

01/07/08 PLAN DATE	DRAWING NO. 15	DETAIL STANDARD NO. C-4392	SHEET 2 OF 2.

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002



PAVED STREET

TYPICAL PLAN

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

PREPARED BY BUREAU OF STREETS AND HIGHWAYS

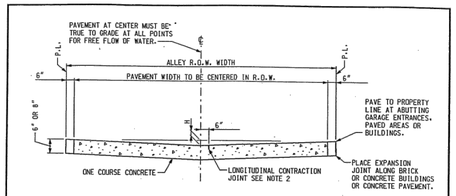
DRAWN BY: rev. K.S.M.

CHECKED BY: M.F.S.

APPROVED
ENGINEER OF STREETS
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
TYPICAL PLAN AND SECTION FOR CONCRETE ALLEY PAVEMENT

PLAN DATE	DRAWING NO. 1	DETAIL STANDARD NO. C-4396	SHEET 1 OF 2



TYPICAL SECTION

ELEMENTS		
ALLEY WIDTH PAV'T	R.O.W.	H
15'	20'	5"
17'	18'	4"
15'	16'	3"

NOTES:

1. PLACE EXPANSION JOINTS AT ALL STREET PROPERTY LINES AND ALLEY INTERSECTIONS.
2. LONGITUDINAL CONTRACTION JOINT TO BE CONSTRUCTED IN PAVEMENTS 17' AND OVER IN WIDTH UNLESS OTHERWISE NOTED ON PAVING PLAN.
3. MAXIMUM SPACING BETWEEN EXPANSION JOINTS SHOULD NOT EXCEED 600 FEET.
4. IF STREET IS ECONOMY PAVED THE AREA BETWEEN THE WALK AND EDGE OF PAVEMENT SHALL BE PAVED WITH 6" STONE BASE PLUS 2" OF COLD PATCH MATERIAL. THE WALK FLAG SHALL BE 6" THICK
5. CONTRACTION JOINTS SHALL BE SPACED AT 15' C. TO C. FOR SLAG AGGREGATE AND 6.0 m C. TO C. FOR NATURAL AGGREGATE.

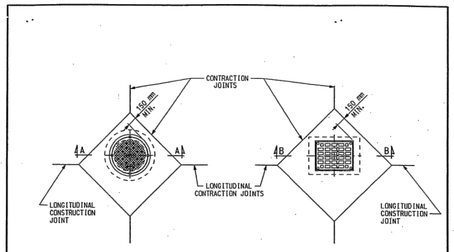
CONSTRUCTION SYMBOLS LEGEND

- ○ EXISTING SEWER MANHOLE
- ● PROPOSED SEWER MANHOLE
- □ EXISTING CATCH BASIN
- ■ PROPOSED CATCH BASIN
- Ⓐ ADJUST EXISTING CATCH BASIN
- Ⓑ ADJUST EXISTING MANHOLE
- Ⓒ CONSTRUCT CATCH BASIN
- Ⓓ CONSTRUCT MANHOLE
- Ⓔ ABANDON EXISTING CATCH BASIN
- Ⓢ STONING AND GRADING
- Ⓩ CONSTRUCT STANDARD 6" CONCRETE SIDEWALK

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
TYPICAL PLAN AND SECTION FOR CONCRETE ALLEY PAVEMENT

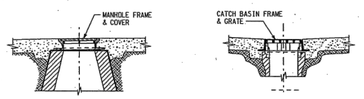
01/07/08 PLAN DATE	DRAWING NO. 1	DETAIL STANDARD NO. C-4396	SHEET 2 OF 2

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002



PLAN

PLAN



SECTION A-A

SECTION B-B

MANHOLE AND CATCH BASIN JOINT DETAILS

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

PREPARED BY BUREAU OF STREETS AND HIGHWAYS

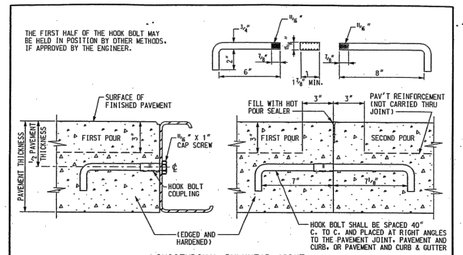
DRAWN BY: rev. K.S.M.

CHECKED BY: M.F.S.

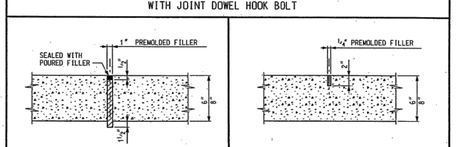
APPROVED
ENGINEER OF STREETS
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
DETAIL AND STANDARD JOINTS

01/07/08 PLAN DATE	DRAWING NO. 2	DETAIL STANDARD NO. C-4397	SHEET 1 OF 2

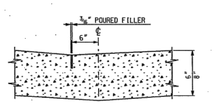


LONGITUDINAL BULKHEAD JOINT WITH JOINT DOWEL HOOK BOLT



EXPANSION JOINT

TRANSVERSE CONTRACTION JOINT



LONGITUDINAL CONTRACTION JOINT

NOTE:
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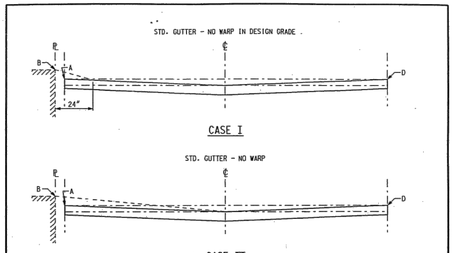
REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
DETAIL AND STANDARD JOINTS

01/07/08 PLAN DATE	DRAWING NO. 2	DETAIL STANDARD NO. C-4397	SHEET 2 OF 2



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DRAWN BY: rev. K.S.M.

CHECKED BY: M.F.S.

APPROVED
ENGINEER OF STREETS
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
ALLEY PAVING
SPECIAL WARPING DETAILS

PLAN DATE	DRAWING NO. 10	DETAIL STANDARD NO. C-4400	SHEET 1 OF 2

F					DESIGNED □Y□	SEAL □STAMP
E						
D					DRAWN □Y□	
C						
□					CHEC□ED □Y□	
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER□	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS □RESTORATION

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

DETROIT Water & Sewerage Department

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDE□ SRF Pro□□No. 5688-01

REF. No. CS□□□□□

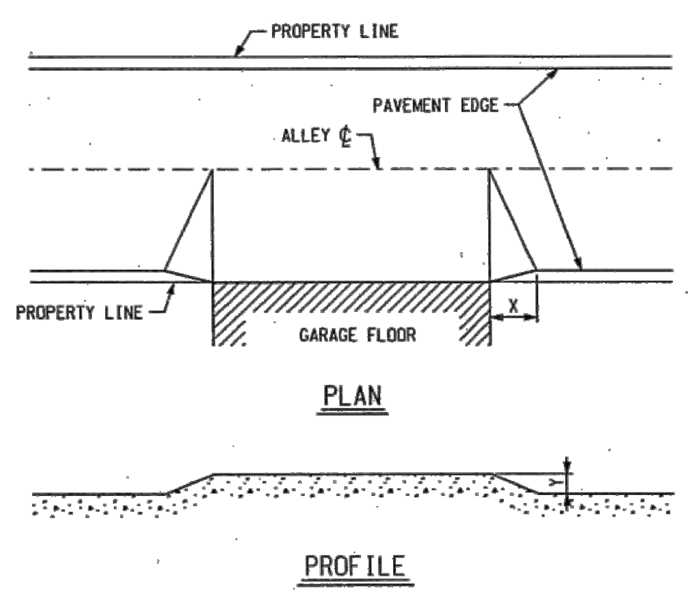
DWSD CONTRACT No. DWS□□□□

FILE No. □

DRAWING No. SD-7

ALLEY PAVING SPECIAL WARPING DETAILS DIFFERENCE IN ELEVATION BETWEEN A & B *OR D & E *(IN FEET)						
CASE NO.	20' ALLEY		18' ALLEY		16" ALLEY	
	HIGH SIDE	LOW SIDE	HIGH SIDE	LOW SIDE	HIGH SIDE	LOW SIDE
I	0 - 0.4'		0 - 0.4'		0 - 0.4'	
II	0.4'-0.8'		0.4'-0.8'		0.4'-0.8'	
II	WITH EXTREME CARE IN CONSTRUCTION MAX. = 1.0'					
III	0 - 0.4'		0 - 0.4'		0 - 0.4'	
III_1		0 - 0.4'		0 - 0.4'		0 - 0.4'
III_2		0 - 0.8'		0 - 0.8'		0 - 0.8'
III_3	0.4'-0.7'		0.4'-0.6'		0.4'-0.5'	
IV	0 - 0.4'		0 - 0.4'		0 - 0.4'	
IV_1		0 - 0.4'		0 - 0.4'		0 - 0.3'
IV_2		0 - 0.4'		0 - 0.4'		0 - 0.4'
IV_3	0.4'-0.8'		0.4'-0.8'		0 - 0.6'	

* A & D ARE GRADE ELEVATION (EDGE OF PAVEMENT).
* B & E ARE ELEVATIONS OF GARAGE FLOOR OR OTHER PAVEMENT ON PROPERTY LINE.

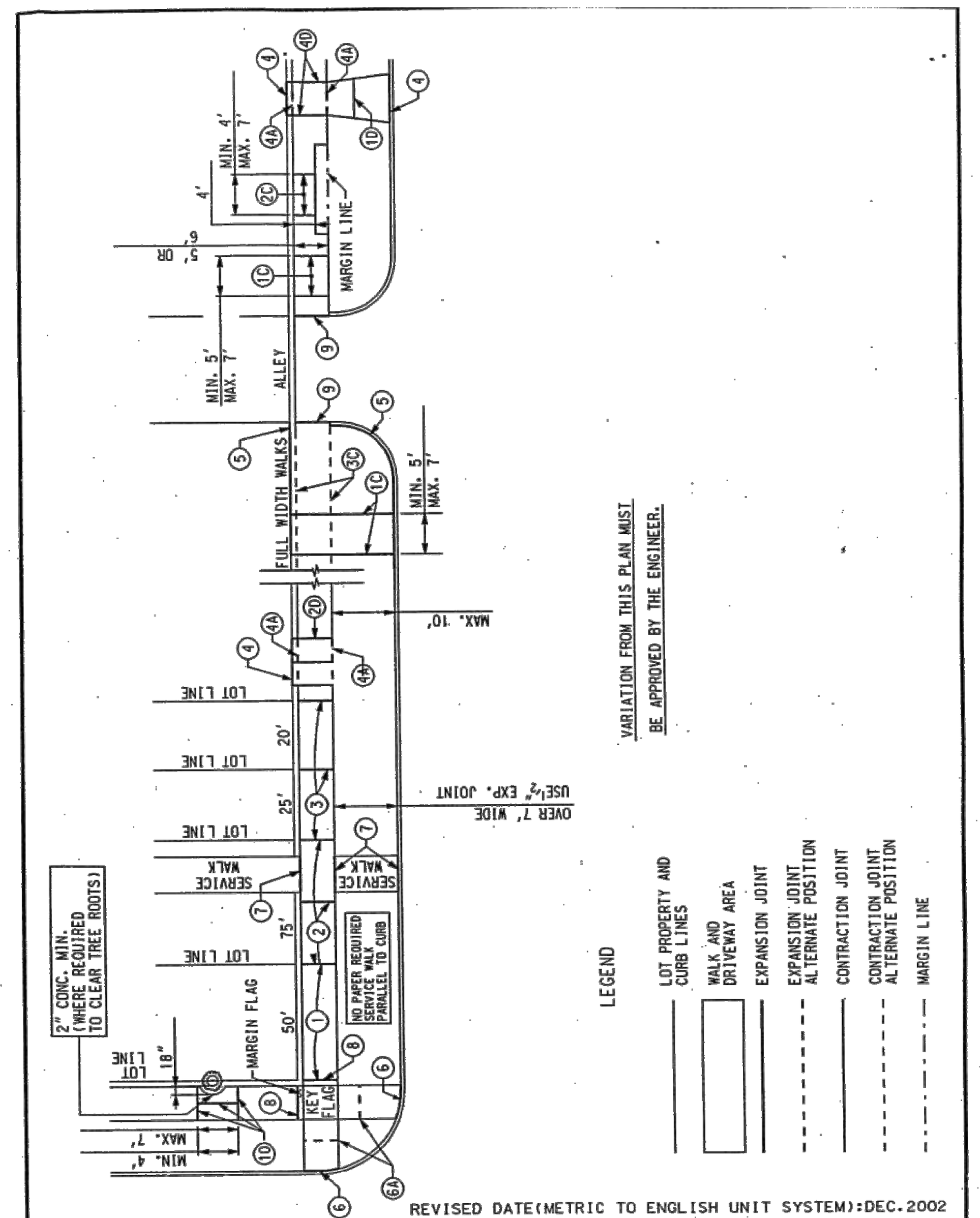


X = 10 x Y MINIMUM
X = TRANSITION DISTANCE BETWEEN RAMPED SECTION AND ALLEY GRADE
Y = DISTANCE EDGE OF PAVEMENT IS RAISED FOR RAMP TO GARAGE

NOTE:
1. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
ALLEY PAVING
SPECIAL WARPING DETAILS
03/07/98 PLAN DATE | DRAWING NO. 10 | DETAIL STANDARD NO. C-4400 | SHEET 2 OF 2



PREPARED BY BUREAU OF STREETS AND HIGHWAYS
rev. K.S.M. DRAWN BY:
M.F.S. CHECKED BY:
APPROVED
ENGINEER OF STREETS
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
SIDEWALK JOINTING
STANDARD
03/07/98 PLAN DATE | DRAWING NO. 9 | DETAIL STANDARD NO. C-4462 | SHEET 1 OF 2

EXPANSION JOINTS

ALL EXPANSION JOINT PAPER SHALL EXTEND 1" BELOW THE BOTTOM OF THE THINNER OF ADJOINING PAVEMENT SECTIONS.

(1) PLACE ½" PAPER EXPANSION JOINTS AT LOT LINES WHEN LOT LINES ARE BETWEEN 25' AND 50' APART.

(2) PLACE ADDITIONAL ½" PAPER EXPANSION JOINTS SO THAT THE DISTANCE BETWEEN JOINTS DOES NOT EXCEED 15.2 m WHEN LOT LINES ARE OVER 15.240 m APART.

(3) PLACE ½" PAPER EXPANSION JOINTS AT EVERY SECOND LOT LINE AND CONTRACTION JOINT AT INTERVENING LOT LINE WHEN LOT LINES ARE LESS THAN 25' APART.

(4) PLACE 1" PAPER EXPANSION JOINTS AT CURB AND BUILDING OR PROPERTY LINE OR AT ALTERNATE POSITION (4A) AS SHOWN FOR DRIVEWAY.

(5) PLACE 1" PAPER EXPANSION JOINTS AT CURB AND BUILDING OR PROPERTY LINE FOR FULL WIDTH SIDEWALK EXCEEDING 7' IN WIDTH.

(6) PLACE 1" PAPER EXPANSION JOINTS AT CURB CIRCLES OR AT ALTERNATE POSITION (6A) AS SHOWN.

(7) PLACE 1" PAPER EXPANSION JOINTS AT INTERSECTIONS OF SERVICE WALKS AND SIDEWALKS AND SERVICE WALKS AND CURBS.

(8) PLACE 1" PAPER EXPANSION JOINTS AT MARGIN FLAGS AT CROSSWALKS.

(9) PLACE 1" PAPER EXPANSION JOINTS AT ALLEY APRONS.

(10) PLACE ½" PAPER EXPANSION JOINT BOTH SIDES OF SIDEWALK FLAG ABUTTING TREE AND ON CENTERLINE JOINT.

CONTRACTION JOINTS

(1C) PLACE CONTRACTION JOINTS AT INTERVALS OF NOT LESS THAN 5' NOR MORE THAN 7' ON WALKS 5' WIDE OR WIDER, INCLUDING FULL WIDTH WALKS.

(2C) PLACE CONTRACTION JOINTS AT INTERVALS OF NOT LESS THAN 4' NOR MORE THAN 7' ON WALKS 4' WIDE.

(3C) PLACE CONTRACTION JOINTS AT THE MARGIN LINE ON FULL WIDTH WALKS (OPTIONAL).

DRIVEWAYS

(1D) PLACE CONTRACTION JOINTS IN DRIVEWAYS SO THAT NO SLAB WILL EXCEED THE DIMENSIONS OF 15' BY 15'.

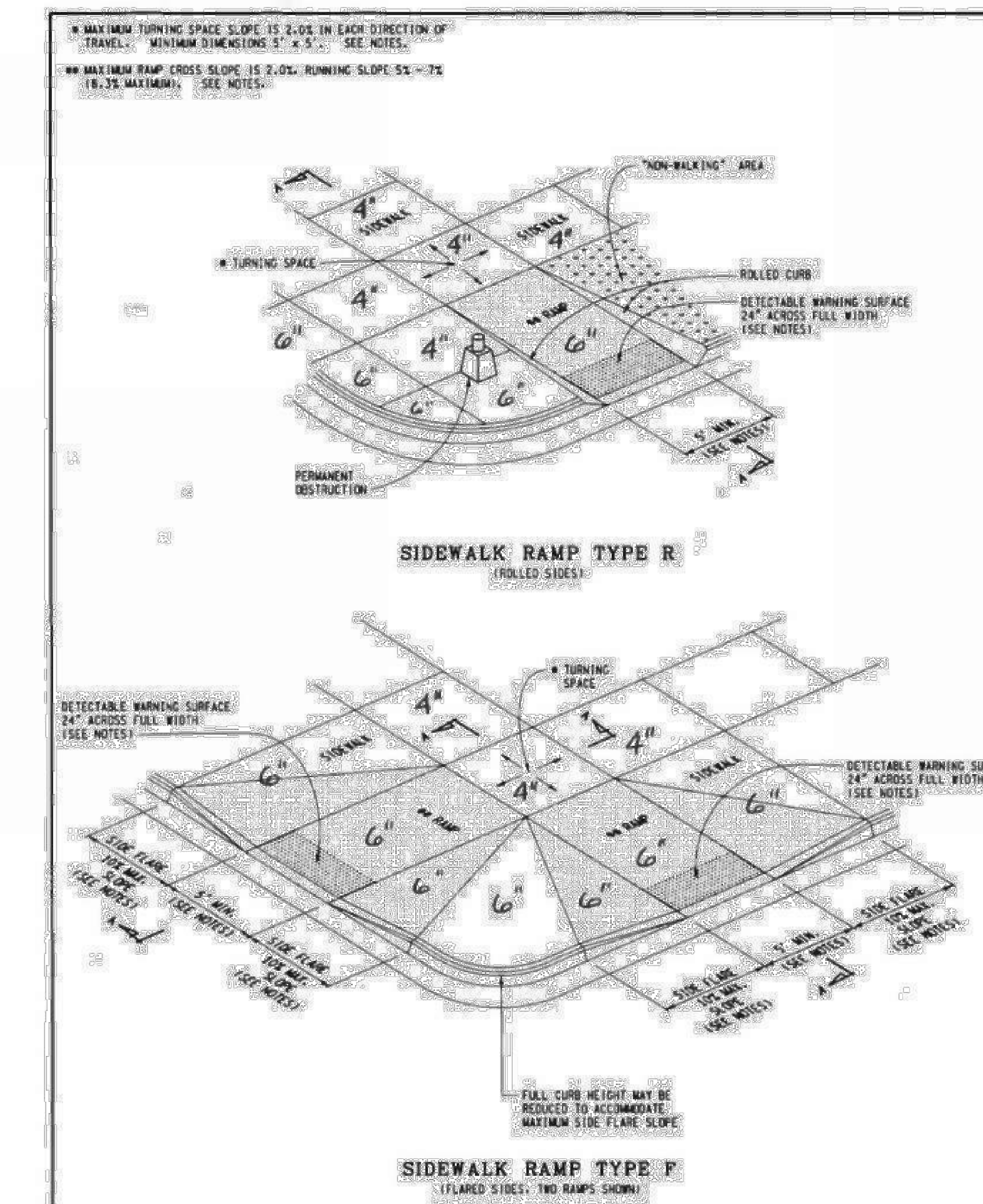
(2D) PLACE 1" PAPER EXPANSION JOINTS ON ALL SIDES OF COMMERCIAL DRIVES.

(3D) PLACE CONSTRUCTION OR CONTRACTION JOINT ON CENTERLINE WHEN WIDTH OF DRIVEWAY EXCEEDS 15'

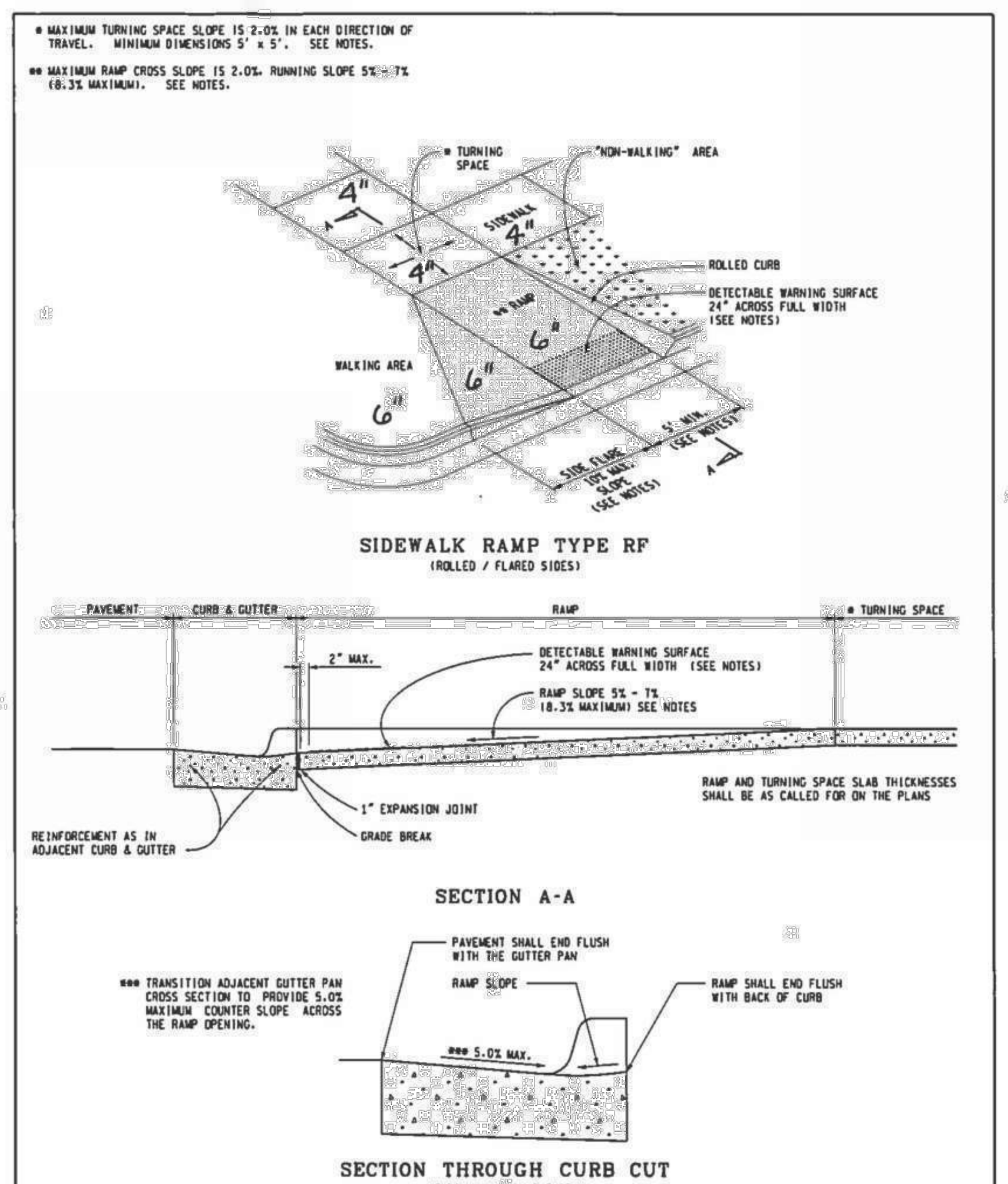
(4D) PLACE ½" PAPER EXPANSION JOINTS ON BOTH SIDES OF RESIDENTIAL DRIVEWAYS. IF DRIVEWAY EDGE IS WITHIN 2' OF LOT LINE, PLACE THIS EXPANSION PAPER AT PROPERTY LINE.

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

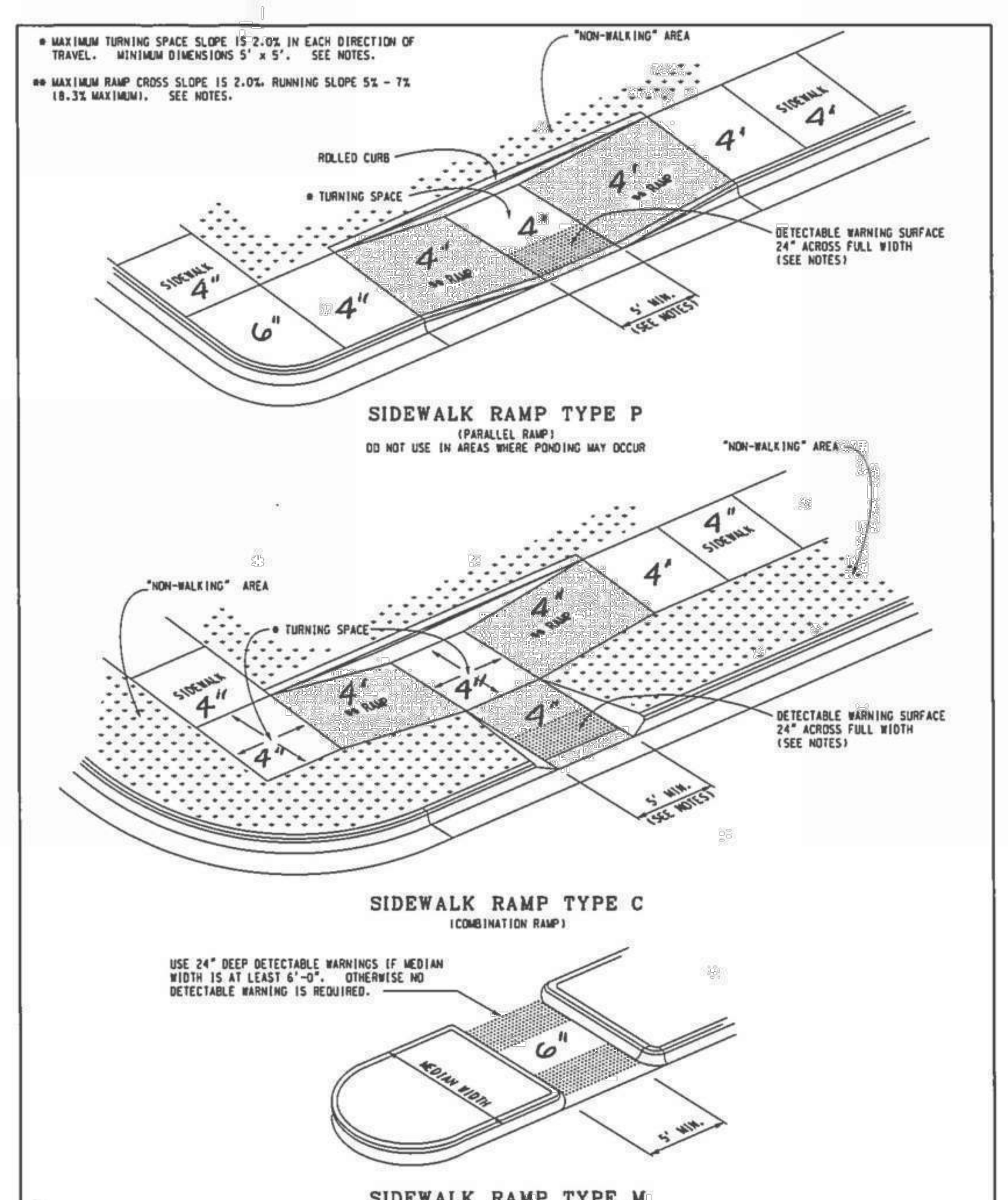
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
SIDEWALK JOINTING
STANDARD
03/07/98 PLAN DATE | DRAWING NO. 9 | DETAIL STANDARD NO. C-4462 | SHEET 2 OF 2



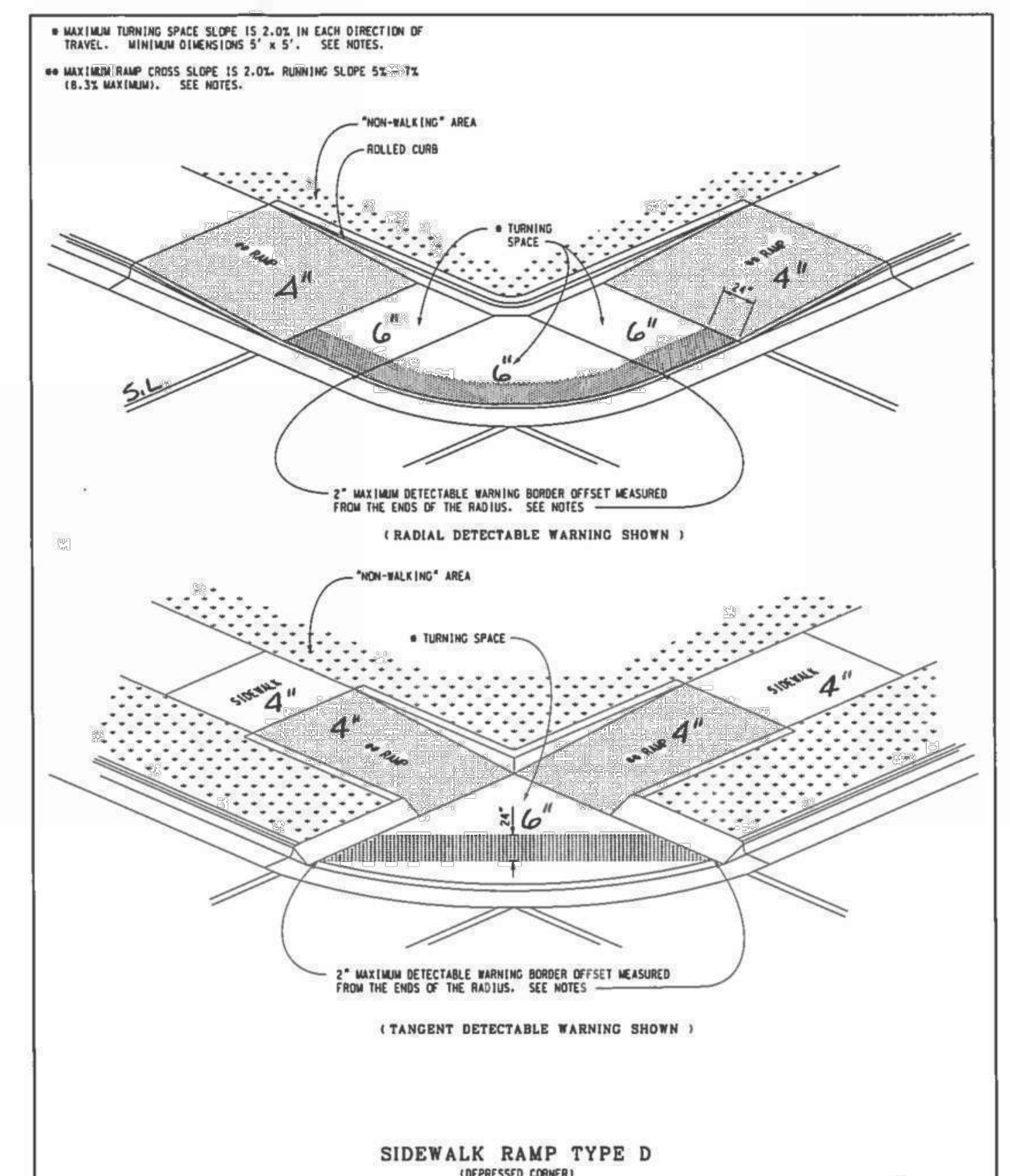
MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
R-28-I SHEET 1 OF 5



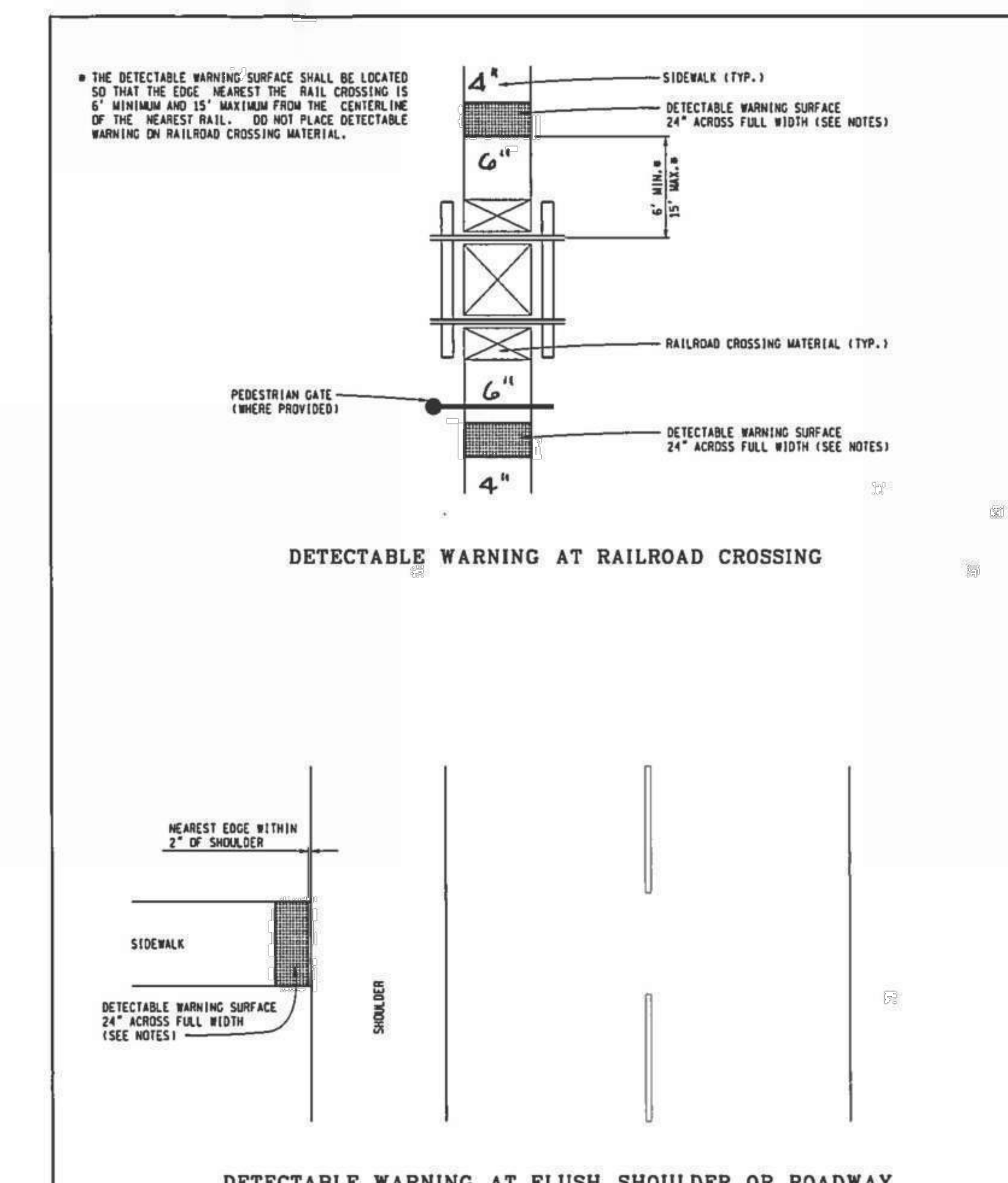
MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
R-28-I SHEET 2 OF 5



MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
R-28-I SHEET 3 OF 5



MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
R-28-I SHEET 4 OF 5



MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
R-28-I SHEET 5 OF 5

F					DESIGNED BY
E					
D					DRAWN BY
C					
					CHECKED BY
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	
	DESCRIPTIONS REVISIONS	CHKD	APPR.	DATE	MANAGER

SEAL STAMP

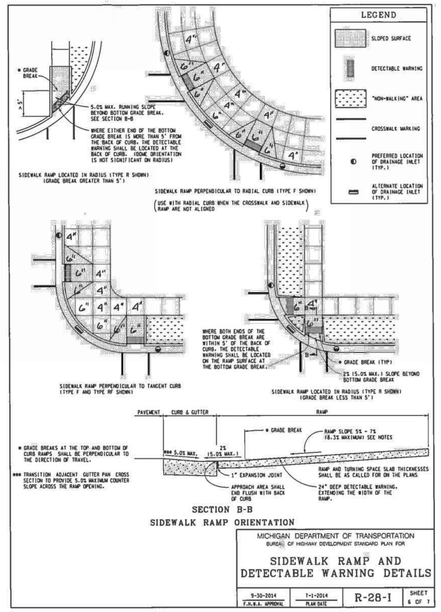
DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS RESTORATION

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

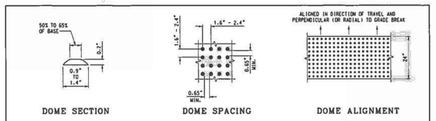
MDEQ SRF Project No. 5688-01
REF. No. CS
DWSD CONTRACT No. DWS
FILE No.
DRAWING No. SD-8



MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014	7-1-2014	R-28-I	SHEET 6 OF 7
F.H.W.A. APPROVAL	PLAN DATE		



DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE EITHER, (1) EXISTING OR PROPOSED SIDEWALKS AND CURBS. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. GRADE VARIATIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

PROVIDE TURNING SPACES WHERE PEDESTRIAN TURNING MOVEMENTS ARE REQUIRED.

WHEN 5' MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND TURNING SPACES TO NOT LESS THAN 4' x 4'.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURVED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF DRAINAGE STRUCTURES SHALL TAKE PRECEDENCE OVER THE LOCATION OF DETECTABLE WARNINGS. WHERE DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN ½". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

TRANSITION THE GUTTER PAN CROSS SECTION SUCH THAT THE COUNTER SLOPE IN THE DIRECTION OF RAMP TRAVEL IS NOT CREATED THAN 5.0%. MAINTAIN THE NORMAL GUTTER PAN CROSS SECTION ACROSS DRAINAGE STRUCTURES.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE CO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID CURB RETURNS AT RAMP OPENINGS.

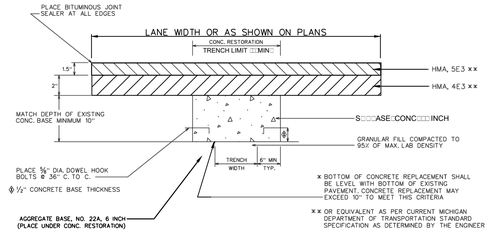
DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014	7-1-2014	R-28-I	SHEET 7 OF 7
F.H.W.A. APPROVAL	PLAN DATE		

MAJOR STREETS:



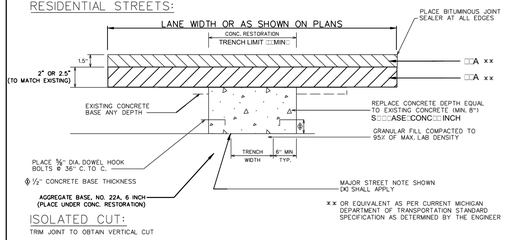
× BOTTOM OF CONCRETE REPLACEMENT SHALL BE LEVEL WITH BOTTOM OF EXISTING PAVEMENT. CONCRETE REPLACEMENT MAY EXCEED 10" TO MEET THIS CRITERIA

×× OR EQUIVALENT AS PER CURRENT MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION AS DETERMINED BY THE ENGINEER

EXCEPTION:

TO ABOVE 3" HMA REPLACEMENT, WHEN PAVEMENT REPLACEMENT IS 100 FEET FROM EITHER SIDE OF UNDERPASS REPLACE 10" MN CONCRETE BASE WITH TOP OF CONCRETE LEVEL WITH TOP OF EXISTING CONCRETE AND REPLACE HMA SECTION AS EXISTING

RESIDENTIAL STREETS:



×× OR EQUIVALENT AS PER CURRENT MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION AS DETERMINED BY THE ENGINEER

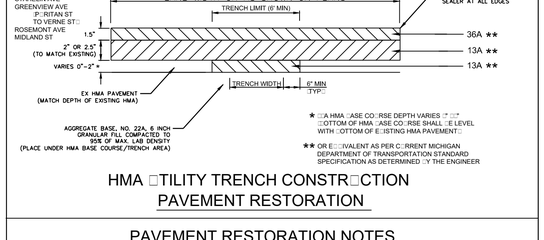
ISOLATED CUT:

TRIM JOINT TO OBTAIN VERTICAL CUT

HMA S□RFACE ON CONCRETE S□□□ASE □TILITY TRENCH CONSTR□CTION PAVEMENT RESTORATION

HMA RESIDENTIAL STREETS□

VERNE ST
STAHELIN AVE
GREENVIEW AVE
P□RITAN ST TO VERNE ST□
ROSEMONT AVE
MIDLAND ST



× □□A HMA □ASE CO□RSE DEPTH VARIES □" □□" □□TTOM OF HMA □ASE CO□RSE SHALL □E LEVEL WITH □□TTOM OF E□ISTING HMA PAVEMENT□

×× OR E□□IVALENT AS PER C□RRENT MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION AS DETERMINED □Y THE ENGINEER

HMA □TILITY TRENCH CONSTR□CTION PAVEMENT RESTORATION

PAVEMENT RESTORATION NOTES

□. MILL □REMOVE□HMA PAVEMENT FOR MIN ONE LANE□OR ROAD WIDTH AS SHOWN ON PLANS.

□. CONCRETE PAVEMENT C□TS SHALL □E MINIM□M □WIDE.

□. ALL PAVEMENT C□TS SHALL □E MINIM□M □WIDER THAN TRENCH WIDTH.

□. ALL REMOVALS SHALL □E SAWC□T STRAIGHT AND S□□ARE □□DEGREES□

□. CONCRETE RESTORATION PAVEMENT SHALL □E MDOT P□MI□ □□□□PSI□

□. RESTORED CONCRETE PAVEMENT SHALL MATCH THIC□NESS OF E□ISTING CONCRETE PAVEMENT IN CONFORMANCE WITH MDOT STANDARD PLAN R□□□F.

□. RESTORED CONCRETE SHALL □E ANCHORED TO E□ISTING CONCRETE PAVEMENT IN CONFORMANCE WITH MDOT STANDARD PLAN R□□F.

□. APPLY HMA TAC□ COAT PER MDOT STANDARD SPECIFICATIONS SECTION □□□.

□. RESTORED HMA PAVEMENT □" TO MATCH E□ISTING□IN □LIFTS□
□ST LIFT □□" MDOT HMA □E□ □□A RESIDENTIAL□COMPACTED
□ND LIFT □□" MDOT HMA □E□ □□A RESIDENTIAL□COMPACTED

□□.□T□MINO□S □OINT SEALER SHALL □E PLACED AT ALL FINISHED HMA □OINTS.

□□.ALL DIST□R□ED PAVEMENT MAR□INGS AND OTHER ASSETS□INCL□DING □□E LANE DELINEATORS□WILL HAVE TO □E REPLACED AT THE COST OF THE PERMIT HOLDER□AND SHALL CONFORM TO THE LATEST CED□TED STANDARDS.

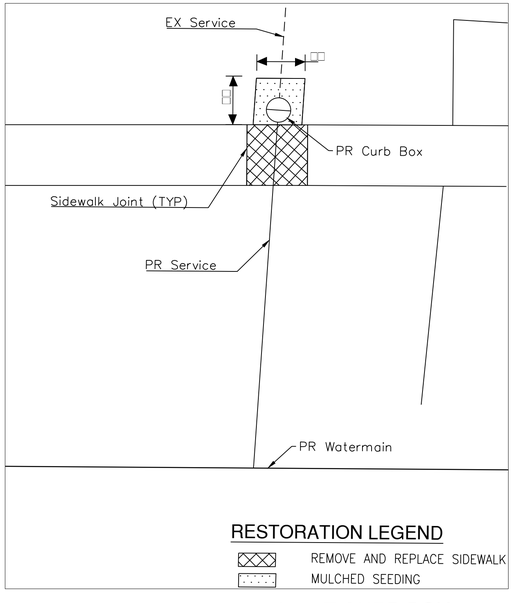
□□.FOR OTHER RELATED SPECIFICATIONS □□AC□FILL COMPACTION□MATERIALS□ETC.,□□REFER TO DIVISION □□ OF THE STANDARD SPECIFICATIONS FOR PAVING AND RELATED CONSTR□CTION.

□□.NOTIFY THE CITY OF DETROIT ENGINEERING DEPARTMENT □□HO□RS PRIOR TO STARTING CONSTR□CTION.

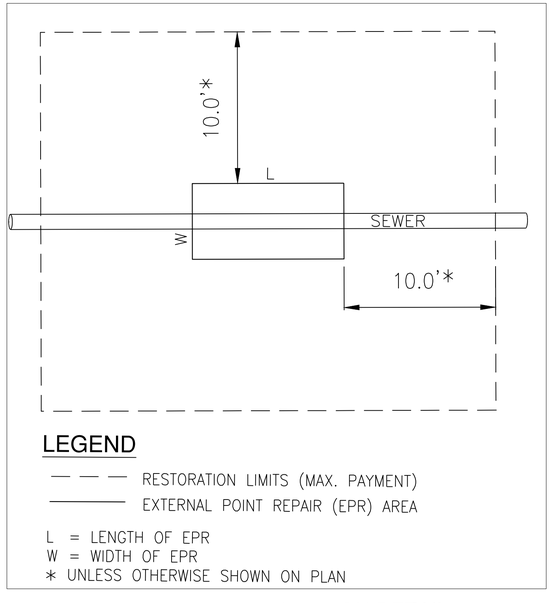
□□.ANY OPEN E□CAVATIONS ARE TO □E STEEL PLATED□IF E□CAVATIONS ARE IN THE PAVEMENT□THE PLATES ARE TO □E SPI□ED AND RAMPED WITH COLD PATCH. CONTACT THE CITY WITH LOCATION OF THE STEEL PLATE.

□□.THE CITY OF DETROIT RE□□IRES ALL CONCRETE WOR□ TO □E STAMPED WITH A CONTRACTORS IDENTIFICATION STAMP.

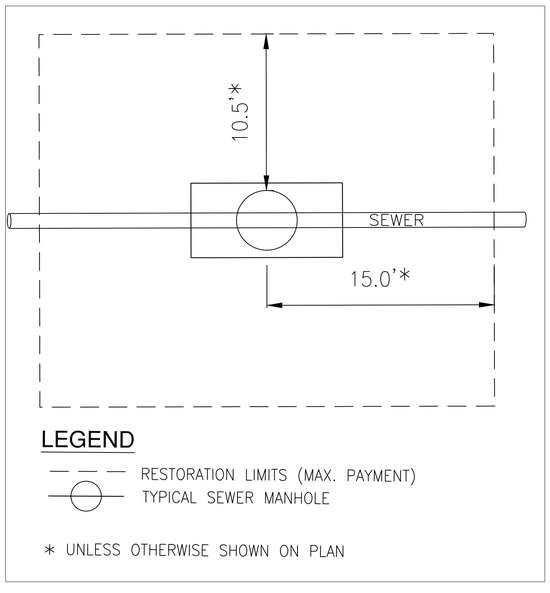
□□.E□ISTING PAVEMENT SECTIONS SHALL □E VERIFIED PER THE GEOTECH REPORT OR E□ISTING CONDITION PRIOR TO □SE OF APPROPRIATE PAVEMENT RESTORATION DETAIL.



TYPICAL RESTORATION AT CURB BOX



TYPICAL EPR RESTORATION DETAIL



TYPICAL MANHOLE RESTORATION DETAIL

F					DESIGNED □Y□	SEAL □STAMP
E						
D					DRAWN □Y□	
C					CHEC□ED □Y□	
□						
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER□	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

STANDARD DETAILS □RESTORATION

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

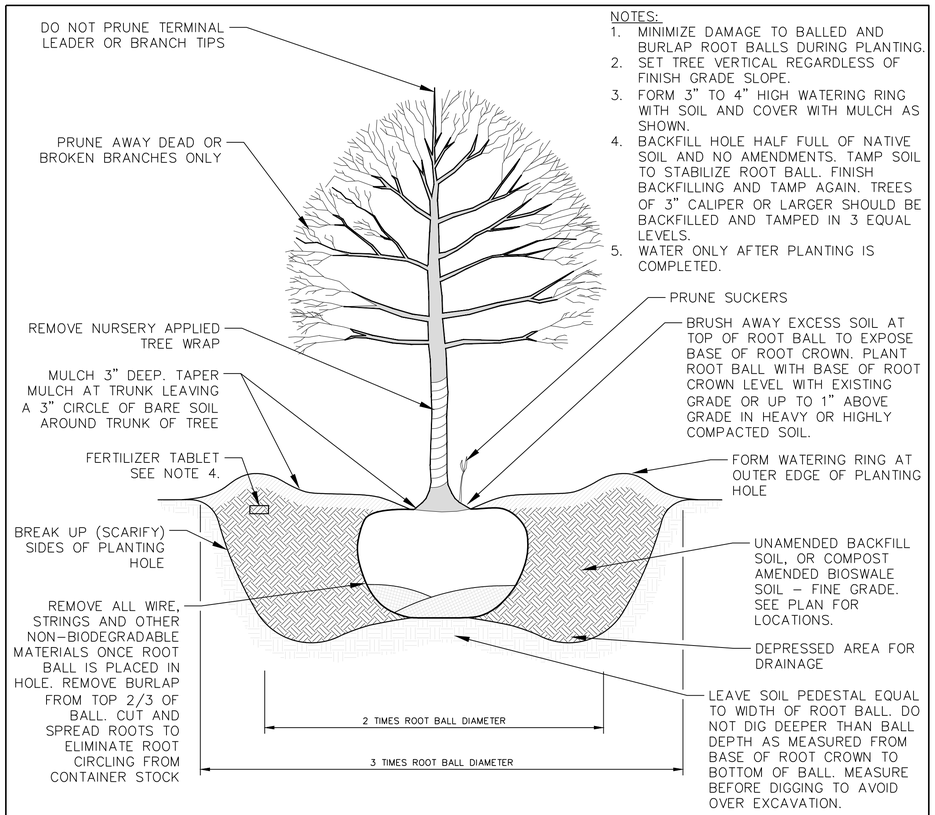
MDE□ SRF Pro□□□No. 5688-01
REF. No. CS□□□□□
DWSD CONTRACT No. DWS□□□□
FILE No. □
DRAWING No. SD-9

LANDSCAPING NOTES

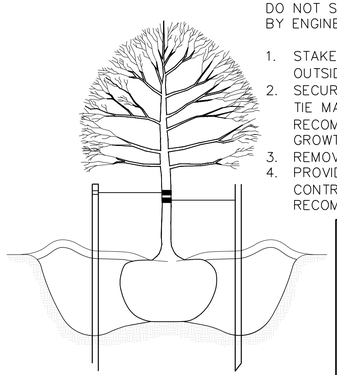
1. **PLANTING TIMES AND PROCEDURES.** SEE SEEDING AND PLANTS SPECIFICATIONS FOR PLANTING PROCED□RES AND ACCEPTA□LE PLANTING TIMES.
2. **SITE RESTORATION.** RESTORE ALL DIST□R□ED AREAS WITH LAWN SEED PER SEEDING SPECIFICATION.
3. **TREE PLANTING.** REFER TO DETAIL G□□□ AND PLANTS SPECIFICATION FOR TREE PLANTING RE□ □IREMENTS.
4. **REPLACEMENT TREES.** ALL TREES THAT WERE REMOVED FOR WATER AND SEWER WOR□ SHALL □E REPLACED ON A □□□ □ASIS. PLANT NEW TREES AS CLOSE TO ORIGINAL LOCATION AS POSSI□LE TREE SPECIES SHALL □E S□PPLIED IN THE □□ANTITIES AND SI□ES SPECIFIED IN THE PLANTING SCHED□LE □ELOW. CONTRACTOR SHALL CHOOSE WHICH TREE SPECIES TO PLANT IN EACH REPLACEMENT TREE LOCATION□MA□ING S□RE THAT PLANTING CONDITIONS COMPLY WITH THE NOTES STATED IN THE PLANTING SCHED□LE □ELOW.

PLANTING SCHEDULE

KEY	QTY	SCIENTIFIC NAME	COMMON NAME	SIZE	CONTAINER	NOTES
PA	–	PLANTANUS X ACERIFOLIA 'BLOODGOOD'	LONDON BLOODGOOD PLANETREE	2" CAL.	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
UA	–	ULMUS AMERICANA 'PRINCETON'	PRINCETON ELM	2" CAL.	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
QB	–	QUERCUS BICOLOR	SWAMP WHITE OAK	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
QS	–	QUERCUS SCHUMARDII	SHUMARD OAK	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
AR	–	ACER RUBRUM 'RED SUNSET'	RED SUNSET MAPLE	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
TA	–	TILIA AMERICANA	BASSWOOD	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS GREATER THAN OR EQUAL TO 8 FEET WIDE
ZS	–	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS LESS THAN 8 FEET WIDE
GTI	–	GLEDITSIA TRIACANTHOS INERMIS	THORNLESS HONEYLOCUST	2" CAL	B&B	SPECIES TO BE USED ONLY IN PLANTING STRIPS LESS THAN 8 FEET WIDE
MC	–	MALUS X CENTZAN	CENTURION CRABAPPLE	2" CAL	B&B	SPECIES TO BE USED AT LOCATIONS WITHIN 10 FEET OF OVERHEAD POWER LINES
AG	–	AMENANCHIER X GRANDFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	2" CAL	B&B	SPECIES TO BE USED AT LOCATIONS WITHIN 10 FEET OF OVERHEAD POWER LINES



NOTES:
1. MINIMIZE DAMAGE TO BALLED AND BURLAP ROOT BALLS DURING PLANTING.
2. SET TREE VERTICAL REGARDLESS OF FINISH GRADE SLOPE.
3. FORM 3" TO 4" HIGH WATERING RING WITH SOIL AND COVER WITH MULCH AS SHOWN.
4. BACKFILL HOLE HALF FULL OF NATIVE SOIL AND NO AMENDMENTS. TAMP SOIL TO STABILIZE ROOT BALL. FINISH BACKFILLING AND TAMP AGAIN. TREES OF 3" CALIPER OR LARGER SHOULD BE BACKFILLED AND TAMPED IN 3 EQUAL LEVELS.
5. WATER ONLY AFTER PLANTING IS COMPLETED.



DO NOT STAKE UNLESS IN HEAVY CLAY SOILS OR WINDY CONDITIONS, AS DETERMINED BY ENGINEER. IF STAKING IS REQUIRED:

1. STAKE WITH 2"X2" HARDWOOD STAKES OR APPROVED METAL POST DRIVEN INTO SOIL OUTSIDE OF ROOT BALL, (3) PER TREE.
2. SECURE TO TREE USING 1" 'CHAINLOCK' OR LANDSCAPE ARCHITECT APPROVED TREE TIE MATERIAL. SECURE TREE TIE MATERIAL TO STAKE PER MANUFACTURER'S RECOMMENDATIONS. LOOP TIE AROUND TREE TO PROVIDE 1" SLACK FOR TRUNK GROWTH.
3. REMOVE ALL STAKING MATERIAL AFTER (1) YEAR.
4. PROVIDE 1 FERTILIZER TABLET PER TREE. FERTILIZER MIX SHALL BE 20-10-5, CONTROLLED RELEASE, 24 MONTHS. INSTALL PER MANUFACTURER'S RECOMMENDATION.

TREE PLANTING

SCALE: NONE

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SHEET

DWG No. **G/70**

Know what's **below.** **Call** before you dig.

F					DESIGNED □Y□ □□	SEAL □STAMP
E						
D					DRAWN □Y□ □□	
C					CHEC□ED □Y□ TW	
□						
A	ISSUED FOR PROCUREMENT	-	-	4/1/2020	MANAGER□ □G	
	DESCRIPTIONS □REVISIONS	CH□D	APPR.	DATE		

DETROIT WATER AND SEWERAGE DEPARTMENT
CAPITAL IMPROVEMENT PROGRAM

RESTORATION TREE PLANTING SCHED□LE AND DETAIL

CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
ENGINEERING DIVISION

SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE
S	- -	- - -	- - -	- - -

MDE□ SRF Pro□□□No. 5688-01
REF. No. CS□□□□□
DWSD CONTRACT No. DWS□□□□
FILE No. □
DRAWING No. SD-10