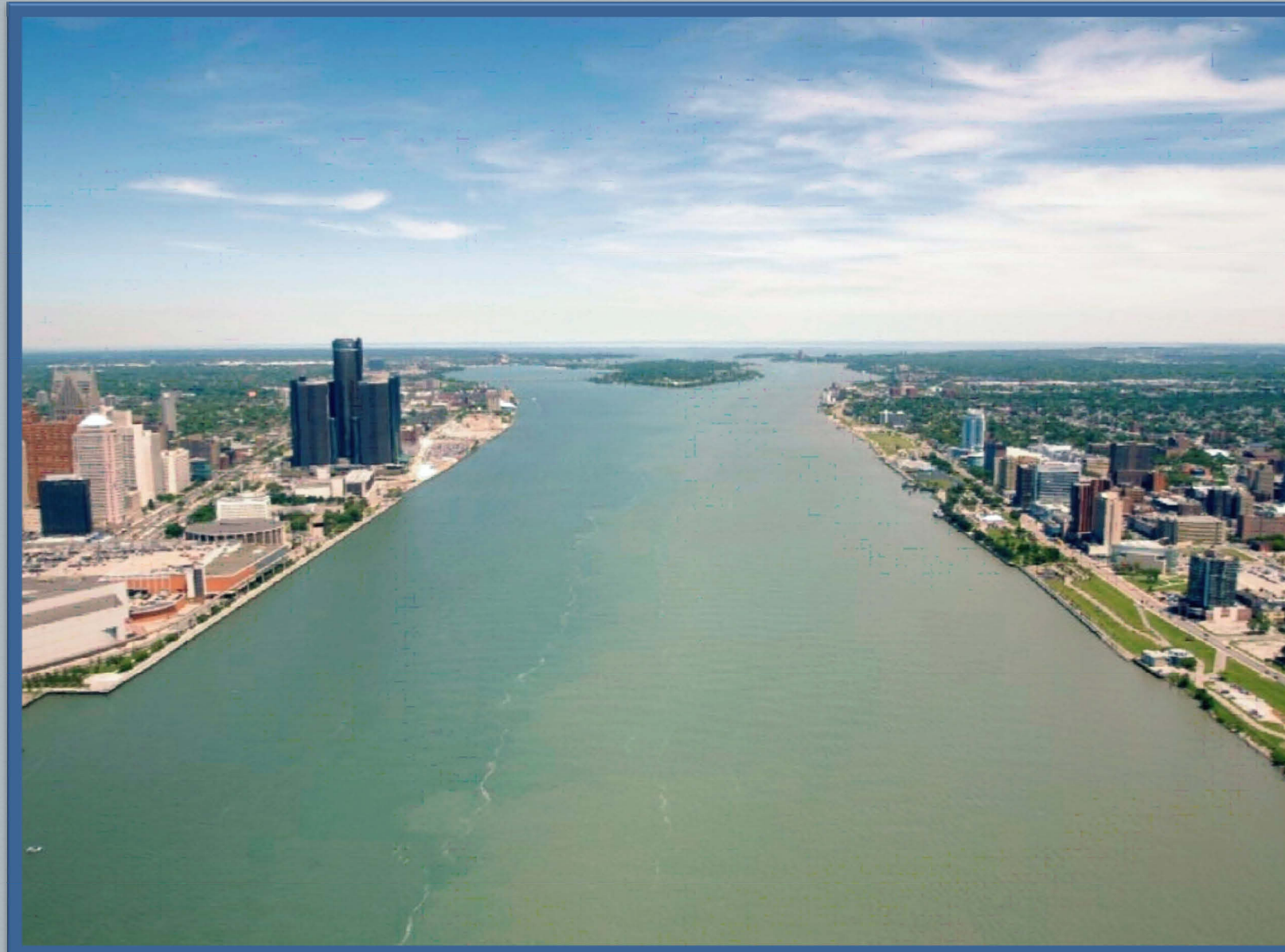


Detroit River
INTERNATIONAL CROSSING
PROJECT

A BORDER TRANSPORTATION PARTNERSHIP



DETROIT RIVER INTERNATIONAL CROSSING

Engineering Report

VOLUME 2: BOUND APPENDICES

November 2008

Prepared by:

PARSONS

In association with:

benesch

NCI
NORTHWEST CONSULTANTS, INC.



SE Somat Engineering,
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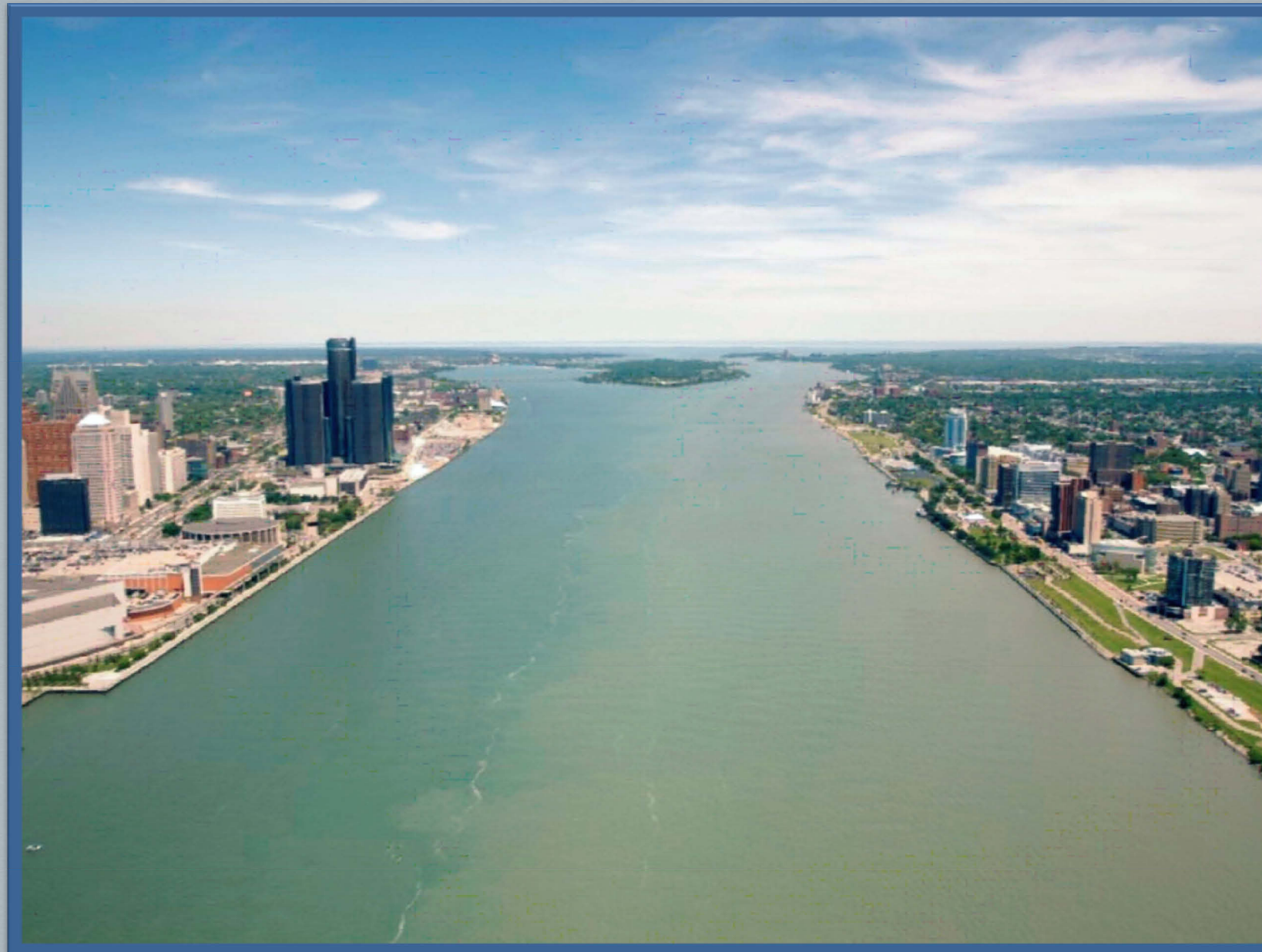
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Detroit River
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Canada



DETROIT RIVER INTERNATIONAL CROSSING

Engineering Report

APPENDIX A: DESIGN CRITERIA

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Appendix A – DESIGN CRITERIA

The following design criteria has been used to develop the preferred alternative alignment for this project. The criteria are from the following reference manuals:

- AASHTO = American Association of State Highway and Transportation Officials: A Policy on Geometric Design of Highways and Streets, 2004
- AASHTO RDG = AASHTO Roadside Design Guide
- ADA = Americans with Disabilities Act (28 CFR Part 36)
- MDM = Michigan Metric Road Design Manual
- GDG = Michigan Geometric Design Guide
- BDM = Michigan Bridge Design Manual
- BDG = Michigan Bridge Design Guide
- Std Plan = MDOT Standard Plans
- MMUTCD = Michigan Manual of Uniform Traffic Control Devices

Highway Connection Geometric Design Criteria

Highway connections for the Preferred Alternative were developed and evaluated using current MDOT, FHWA, and AASHTO geometric guidelines, policies, and standards as listed in Table A-1.

**Table A-1
U.S. Highway Connection Geometric Design Criteria (English)**

Item	Reference	6-Lane Urban Freeway
Roadway Classification	AASHTO	Urban Freeway
Design Level of Service	AASHTO Exhibit 2-32 (p 85) MDOT Practice	LOS C LOS D minimum
Design Speed (MPH)	MDM 3-A	60 MPH
ADT for Year of Completion 2014	Traffic Report	
ADT for Design Year 2035	Traffic Report	
Horizontal Alignment		
Minimum Radius (desirable)	MDM 3.03.01A, Standard Plan R-107	1412 ft min.
Minimum Length of Curve	MDM 3.03.01B	900 ft min.
Maximum Radius Not Requiring a Spiral	AASHTO Exhibit 3-36 (p 187)	1822 ft
Maximum Super elevation	MDM 3.04, MDM Appendix 3A, R-107-G	5%
Maximum Rollover (shoulder)	Standard Plan R-107-G, AASHTO Exhibit 9-49 (p648)	Urban Freeway max. Rollover 4% 5% @ Gores desired
Vertical Alignment		
Maximum Percent of Grade	MDM 2.02.01, MDM Appendix 3-A	3.0%
Minimum Percent of Grade	MDM 2.02.01	0.3% to 0.5% for curbed roadways
Minimum Stopping Sight Distance	AASHTO Exhibit 3-1 (p 112)	570 ft
Minimum Passing Sight Distance and Zone Length	NA	NA
Minimum K-Value for Crest VC	AASHTO Exhibit 3-72 (p 272)	151
Minimum K-Value for Sag VC	AASHTO Exhibit 3-75 (p 277)	136
Bridge Width	AASHTO Chapter 8 (p 510) BDG Section 6	Approach Roadway Lane width + Shoulder width + 2 ft each side
Minimum Vertical Clearance For Bridges (desirable)	BDM 7.01.08 Desired for New Freeways Minimum in Highly Urbanized Areas	16'-3" (16'-0" min.) 14'-9" (14'-6" min.) 17 ft for Ped Bridges
Bridge Structural Capacity	BDM 7.01.04.A	HL-93
Minimum Railroad Vertical Clearance	BDM 13.04.04	23 ft
Minimum Railroad Horizontal Clearance	BDM 13.04.03 BDM 13.04.09	25 ft from piers 20 ft from centerline of track
Cross Section Elements		
Total Number of Lanes	Design Report & Studies	3-lanes each direction (min for new freeway in Metro Detroit)
Lane Width	MDM 3.07A, MDM Appendix 3-A & 6-A	12 ft
Left Shoulder Width	MDM Appendix 3-A & 6-A	8 ft (+ 2 ft. for shy distance)
Right Shoulder Width	MDM Appendix 3-A & 6-A	10ft (+2 ft. for shy distance)
Curb and Gutter Drainage	Design Report & Studies	Yes
Maximum Fore Slope (desirable)	MDM 2.03.01, Drainage Design Manual 4.4.3.2.2, R-105-D	1 on 4 (1 on 6)
Maximum Back Slope (desirable)	MDM 2.03.0, Drainage Design Manual 4.4.3.2.2, R-105-D	1 on 3 (1 on 4)
Minimum Ditch Width (desirable)	Drainage Design Manual 4.4.3.27	4 ft min. – 6 ft desired (w/ open drainage)
Minimum Ditch Grade (desirable)	Drainage Design Manual 4.3.4	0.1% min, 0.3% desired Open Channel Plan
Pavement Cross Slope	Standard Plans R-107, MDM 3.04	2% - 1 st 2 lanes 2% to 3% outside lane
Shoulder Cross Slope	MDM 6.05.05A R-107-G	4%
Clear Zone	MDM 7.01.11	44 ft Fill slopes & 28 ft Cut slopes

System Interchange Geometric Design Criteria

System interchanges for the Preferred Alternative have been designed using current MDOT, FHWA, and AASHTO geometric guidelines, policies, and standards as listed in Table A-2.

**Table A-2
U.S. System Interchange Ramp Geometric Design Criteria (English)**

Item	Reference	Urban Ramp
Roadway Classification	AASHTO	Urban Ramp
Design Level of Service	AASHTO Exhibit 2-32 (p 85) MDOT Practice	LOS C LOS D minimum
Design Speed (MPH)	MDM 3.06.01	60 MPH
Loop Ramps	Standard Plan R-107	30 MPH
Direct Ramps	AASHTO Exhibit 10-56 (p 826)	35-50 MPH
ADT for Year of Completion 2013	Traffic Report	
ADT for Design Year 2035	Traffic Report	
Horizontal Alignment		
Minimum Radius	MDM 3.07.02, R-107, Geometric Design Guides	260 ft Loop Ramp (7% max super) 794 ft Direct Ramp
Minimum Length of Curve	MDM 3.03.01B	450 ft Loop Ramp (30 MPH) 750 ft Direct Ramp (50 MPH)
Maximum Radius Not Requiring a Spiral	AASHTO Exhibit 3-36 (p 187)	456 ft Loop Ramp (30 MPH) 1265 ft Direct Ramp (50 MPH)
Maximum Super elevation	MDM 3.04, Standard Plan R-107-G, MDM Appendix 3A	7% Loop Ramp 5% Direct Ramp
Maximum Rollover (shoulder)	Standard Plan R-107-G, AASHTO Exhibit 9-49, (p 648)	Urban Freeway max. Rollover 4% 8% in AASHTO, 5% @ Gores desired
Maximum Gore Cross Slope	GDG G-200 Series, RDM 3.07.02 B, AASHTO Exhibit 9-49 (p 648)	5.0% desired 8.0% max.
Vertical Alignment		
Maximum Percent of Grade	AASHTO (p 829)	3% to 5% desired
Minimum Percent of Grade	MDM 2.02.01	0.3% to 0.5% for curbed roadways
Minimum Stopping Sight Distance	AASHTO Exhibit 3-1 (p 112) AASHTO Exhibit 3-2 (p 115)	200 ft Loop Ramp 425 ft Direct Ramp
Minimum Passing Sight Distance	NA	NA
Minimum Passing Zone Length	NA	NA
Minimum K-Value for Crest VC	AASHTO Exhibit 3-72 (p. 272)	Loop Ramp: 19 Direct Ramp: 84
Minimum K-Value for Sag VC	AASHTO Exhibit 3-75 (p. 277) Comfort criteria may be used.	Loop Ramp: 37 Direct Ramp: 96
Bridge Width	AASHTO Chapter 8 (p. 510) BDG Section 6	Approach Roadway + Shoulders + 2 ft shy on each side
Minimum Vertical Clearance for Bridges (desirable)	BDM 7.01.08 Desired for New Freeways Minimum in Highly Urbanized Areas	16'-3" (16'-0" min.) 14'-9" (14'-6" min.) 17 ft for Ped Bridges
Bridge Structural Capacity	BDM 7.01.04.A	HL-93
Minimum Railroad Vertical Clearance	BDM 13.04.04	23 ft
Minimum Railroad Horizontal Clearance	BDM 13.04.03 BDM 13.04.09	25 ft from piers 20 ft from centerline of track
Cross Section Elements		
Total Number of Lanes	Design Report & Studies	2-lanes each direction
Lane Width	MDM 3.07A, MDM Appendix 3A & 6A	24 ft – Two Lanes 16 ft – One Lane
Left Shoulder Width	MDM Appendix 6A	6 ft (0 ft for slip) (+2 foot shy)
Right Shoulder Width	MDM Appendix 6A	8 ft (5 ft for slip) (+2 foot shy)
Curb and Gutter Drainage	Design Report & Studies	Yes
Maximum Fore Slope (desirable)	MDM 2.03.01, Drainage Design Manual 4.4.3.2.2, R-105-D	1 on 4 (1 on 6)
Maximum Back Slope (desirable)	MDM 2.03.01, Drainage Design Manual 4.4.3.2.2, R-105-D	1 on 3 (1 on 4)
Minimum Ditch Width (desirable)	Drainage Design Manual 4.4.3.2.2	4 ft min.- 6 ft max.
Minimum Ditch Grade (desirable)	Drainage Design Manual 4.3.4	0.1% min, 0.3% desired Open Channel Plan
Pavement Cross Slope	Standard Plans R-107-G, MDM 3.04	2% min
Shoulder Cross Slope	MDM 6.05.05A & R-107-G	4%
Clear Zone	MDM 7.01.11	28 ft Fill slopes & 22 ft Cut slopes

Service Drive Geometric Design Criteria

Service drives for the Preferred Alternative have been designed using current MDOT, FHWA, and AASHTO geometric guidelines, policies, and standards as listed in Table A-3.

**Table A-3
U.S. Service Drive Geometric Design Criteria (English)**

Item	Reference	Service Drives
Roadway Classification	AASHTO	Urban Collector
Design Level of Service	AASHTO Exhibit 2-32 (p 85) MDOT Practice	LOS C LOS D minimum
Design Speed (MPH)	MDM 3.06.01	35 MPH
ADT for Year of Completion 2013	Traffic Report	
ADT for Design Year 2035	Traffic Report	
Horizontal Alignment		
Minimum Radius	Exhibit 3-16 (p 151) AASHTO	510*
Minimum Length of Curve	MDM 3.03.01B	525 ft
Minimum Radius Not Requiring a Spiral	Exhibit 3-16 (p 151) AASHTO	NA
Maximum Super elevation	Exhibit 3-16 (p 151) AASHTO	NA
Maximum Rollover (shoulder)	Standard Plan R-107-G1, AASHTO Exhibit 9-49 (p 648)	Urban Freeway max. Rollover 4% 8% in AASHTO, 5% @ Gores desired
Vertical Alignment		
Maximum Percent of Grade	AASHTO (p 391) MDOT Appendix 3-A	5% max up or down
Minimum Percent of Grade	AASHTO (p 391) MDM Appendix 3-A	0.3% (0.5% desirable)
Minimum Stopping Sight Distance	AASHTO Exhibit 3-1 (p 112)	250 ft
Minimum Passing Sight Distance	NA	NA
Minimum Passing Zone Length	NA	NA
Minimum K-Value For Crest VC	AASHTO Exhibit 3-72 (p 272)	29
Minimum K-Value For Sag VC	AASHTO Exhibit 3-75 (p 277)	49
Bridge Width	AASHTO Chapter 8 (p 510) BDG Chapter 6.05.02	Approach Roadway + 2 ft each side + Sidewalk
Minimum Vertical Clearance for Bridges (desirable)	BDM 7.01.08 AASHTO Chapter 6 (p 440)	14'-9" desired, 14'-6" min.
Bridge Structural Capacity	BDM 7.01.04.B	HL-93
Minimum Railroad Vertical Clearance	BDM 13.04.04	23 ft
Minimum Railroad Horizontal Clearance	BDM 13.04.03 BDM 13.04.09	25 ft from piers 20 ft from centerline of track
Cross Section Elements		
Total Number of Lanes	Design Report & Studies	2-lanes in one direction Total width 32 ft
Lane Width	AASHTO Chapter 6 (p 437)	12 ft
Median/Left Shoulder Width	NA	0 ft
Right Shoulder Width	NA	0 ft
Curb and Gutter Drainage	Design Report & Studies	Yes
Maximum Fore Slope (desirable)	AASHTO RDG MDM 2.03.01, Drainage Design Manual 4.4.3.2.2, R-105-D	1 on 4 (1 on 6)
Maximum Back Slope (desirable)	MDM 2.03.01, Drainage Design Manual 4.4.3.2.2, R-105-D	1 on 3 (1 on 4)
Minimum Ditch Width (desirable)	Drainage Design Manual 4.4.3.2.2	4 ft min - 6 ft desired
Minimum Ditch Grade (desirable)	Drainage Design Manual 4.3.4	0.1% min, 0.3% desired Open Channel Plan
Pavement Cross Slope	Standard Plans R-107-G1 & MDM 3.04	2%
Shoulder Cross Slope	MDM 6.05.05A & R-107-G	4%
Clear Zone	MDM 7.01.11	18 ft Fill Slopes – 16 ft Cut Slopes

* City of Detroit Design Criteria to be Reviewed and Applied during the Design Phase.
MDOT / AASHTO Criteria followed for purposes of this Engineering Report.

Local Road Geometric Design Criteria

Service drives for the Preferred Alternative have been designed using current MDOT, FHWA, and AASHTO geometric guidelines, policies, and standards as listed in Table A-4.

**Table A-4 (English)
U.S. Local Road Geometric Design Criteria (English)**

Item	Reference	Service Drives
Roadway Classification	AASHTO	Urban Collector
Design Level of Service	AASHTO Exhibit 2-32 (p 85) MDOT Practice	LOS C LOS D minimum
Design Speed (MPH)	MDM 3.06.01	30 MPH
ADT for Year of Completion 2013	Traffic Report	
ADT for Design Year 2035	Traffic Report	
Horizontal Alignment		
Minimum Radius	Exhibit 3-16 (p 151) AASHTO	333 ft *
Minimum Length of Curve	MDM 3.03.01B	450 ft
Minimum Radius Not Requiring a Spiral	AASHTO Exhibit 3-36 (p 187)	NA
Maximum Super elevation	Exhibit 3-16 (p 151) AASHTO	NA
Maximum Rollover (shoulder)	Standard Plan R-107-G1, AASHTO Exhibit 9-49 (p 648)	Urban Freeway max. Rollover 4% 8% in AASHTO, 5% @ Gores desired
Vertical Alignment		
Maximum Percent of Grade	AASHTO (p 391) MDOT Appendix 3-A	5% max up or down
Minimum Percent of Grade	AASHTO (p 391) MDM Appendix 3-A	0.3% (0.5% desirable)
Minimum Stopping Sight Distance	AASHTO Exhibit 3-1 (p 112)	200 ft
Minimum Passing Sight Distance	NA	NA
Minimum Passing Zone Length	NA	NA
Minimum K-Value For Crest VC	AASHTO Exhibit 3-72 (p 272)	19
Minimum K-Value For Sag VC	AASHTO Exhibit 3-75 (p 277)	37
Bridge Width	AASHTO Chapter 8 (p 510) BDG Chapter 6.05.02	Approach Roadway + 2 ft each side + Sidewalk
Minimum Vertical Clearance for Bridges (desirable)	BDM 7.01.08 AASHTO Chapter 6 (p 440)	14'-9" desired, 14'-6" min.
Bridge Structural Capacity	BDM 7.01.04.B	HL-93
Minimum Railroad Vertical Clearance	BDM 13.04.04	23 ft
Minimum Railroad Horizontal Clearance	BDM 13.04.03 BDM 13.04.09	25 ft from piers 20 ft from centerline of track
Cross Section Elements		
Total Number of Lanes	Design Report & Studies	Varies
Lane Width	AASHTO Chapter 6 (p 433)	11 ft to 12 ft
Median/Left Shoulder Width	NA	0 ft
Right Shoulder Width	NA	0 ft
Curb and Gutter Drainage	Design Report & Studies	Yes
Maximum Fore Slope (desirable)	AASHTO RDG MDM 2.03.01, Drainage Design Manual 4.4.3.2.2, R-105-D	1 on 4 (1 on 6)
Maximum Back Slope (desirable)	MDM 2.03.01, Drainage Design Manual 4.4.3.2.2, R-105-D	1 on 3 (1 on 4)
Minimum Ditch Width (desirable)	Drainage Design Manual 4.4.3.2.2	4 ft min - 6 ft desired
Minimum Ditch Grade (desirable)	Drainage Design Manual 4.3.4	0.1% min, 0.3% desired Open Channel Plan
Pavement Cross Slope	Standard Plans R-107-G1 & MDM 3.04	2%
Shoulder Cross Slope	MDM 6.05.05A & R-107-G	4%
Clear Zone	MDM 7.01.11	16 ft Fill Slopes – 14 ft Cut Slopes

* City of Detroit Design Criteria to be Reviewed and Applied during the Design Phase.
MDOT / AASHTO Criteria followed for purposes of this Engineering Report.

Pedestrian Bridge Geometric Design Criteria

Pedestrian Bridges the Preferred Alternative have been designed using current MDOT, FHWA, AASHTO, and ADA geometric guidelines, policies, and standards as listed in Table A-5.

**Table A-5 (English)
U.S. Service Drive Geometric Design Criteria (English)**

Item	Reference	Service Drives
Horizontal Alignment		
Minimum Ramp Clear Width (Desired)	AASHTO - Guide for Pedestrian Facilities p.97	8 ft (14 ft-Shared Use)
Minimum Ramp Landing Width	ADAAG - 4.8.4	8 ft (14 ft-Shared Use)
Minimum Ramp Landing Length	ADAAG - 4.8.4	5 ft
Minimum Ramp Landing Area for a switch back	ADAAG - 4.8.4	5 ft X 5 ft
Minimum Handrail Clearance	ADAAG - 4.8.5 & 4.26.2	1 - 1/2 in
Vertical Alignment		
Maximum Ramp Rise w/o Landing	AASHTO - Guide for Pedestrian Facilities p.97 ADAAG - 4.8.2	30 in over 30 ft
Top of Handrail Elevation over Ramp Deck	ADAAG - 4.8.5	34 in - 38 in
Maximum Overpass Deflection	MDOT Bridge Design Manual - 7.01.06	L/800
Minimum Vertical Clearance for Obstructions (Desired)	MDOT Bridge Design Manual - 7.01.08	8.6 ft (10 ft)
Minimum Underclearance Freeway (Desired)	MDOT Bridge Design Manual - 7.01.08	17 ft (17 ft 3 in)
Minimum Underclearance Local (Desired)	MDOT Bridge Design Manual - 7.01.08	15 ft 6 in (15 ft 9 in)
Cross Section Elements		
Maximum Deck Cross Slope	ADAAG -4.8.6	1:50
Minimum Deck Grade (Desired)	MDOT Bridge Design Manual - 7.01.09	0.3% (0.4%)
Maximum Ramp Slope	AASHTO - Guide for Pedestrian Facilities p.97 ADAAG - 4.8.2	1:12 (8.33%)

River Bridge Geometric Design Criteria

Bridge options for the Preferred Alternative were developed and evaluated using current MDOT, FHWA, and AASHTO geometric guidelines, policies, and standards for bridges as listed in Table A-4. The geometric design criteria recommended for the DRIC reflects the assumption that it will function as a connection between the U.S. and Canadian Plazas, both of which are secure facilities, with traffic entrances and exits to functional areas very close to the ends of the bridge. Traffic entering and exiting the plazas need to be traveling at low speeds to protect the safety of bridge traffic operators and government inspectors working on the plazas. Other traffic crossings in Michigan have posted speed limits of 50 km/h (35 mph). The recommended design speed of 60 km/h enables the use of slightly increased profile grades, and shorter vertical curves than the approach highways, which will substantially reduce the length of bridge approaches needed to cross the shipping channels on the Detroit River. The Detroit River Bridge will be designed in metric units to be consistent with Canada.

**Table A-4 (Metric)
Detroit River Bridge Geometric Design Criteria (Metric)**

Item	Reference	6-Lane Urban Arterial
Roadway Classification	AASHTO Chapter 1 (p 10-11)	Urban Principal Arterial
Design Level of Service	AASHTO Exhibit 2-32 (p 85) MDOT Practice	LOS C LOS D minimum
Design Speed (km/h)	AASHTO Chapter 2 (p 67-72)	60 km/h
ADT for Year of Completion 2013	Traffic Report	Not yet available
ADT for Design Year 2035	Traffic Report	Not yet available
Horizontal Alignment		
Minimum Radius	Std. Plan R-107-D1	162 m (5% max super)
Minimum Length of Curve		NA
Minimum Radius Not Requiring a Spiral		NA
Maximum Super elevation	Std. Plan R-107-D1	5%
Maximum Rollover (shoulder)	Std. Plan R-107-D1	6%
Vertical Alignment		
Maximum Percent of Grade	AASHTO Chapter 3 (p 239)	5.0%
Minimum Percent of Grade	AASHTO Chapter 3 (p 242)	0.3%
Minimum Stopping Sight Distance	AASHTO Exhibit 3-1 (p 112)	85 m
Minimum Passing Sight Distance	NA	NA
Minimum Passing Zone Length	NA	NA
Minimum K-Value for Crest VC	AASHTO Exhibit 3-76 (p 274)	11
Minimum K-Value For Sag VC	AASHTO Exhibit 3-79 (p 280)	18
Minimum Vertical Clearance over Detroit River	US Coast Guard	47.5 m x 30.5 m wide at river center 40.5 m to river's edge
Minimum Vertical Clearance To Roadways (desirable)	BDM 7.01.08 Desired for New Freeways Minimum in Highly Urbanized Areas	4900 mm (5000 mm) 4400 mm (4500 mm)
Minimum Railroad Vertical Clearance	BDM 13.04.04	7010 mm
Minimum Railroad Horizontal Clearance	BDM 13.04.03 BDM 13.04.09	6100 mm Crash Barrier required for piers < 7620 mm from track centerline
Cross Section Elements		
Total Number of Lanes	Design Report & Studies	3-lanes each direction
Lane Width	AASHTO Chapter 4 (p 315)	3.6 m
Left Shoulder Width	AASHTO Chapter 4 (p 318-319)	1.2 m
Right Shoulder Width	AASHTO Chapter 4 (p 318-319)	2.4 m
Curb and Gutter Drainage	Design Report & Studies	Yes
Pavement Cross Slope	BDG 6.05.01	2.0% (English BDG)
Shoulder Cross Slope	BDG 6.05.01	2.0% (English BDG)

See Figures A-1, A-2, and A-3 on the following page.

Figure A-1
Navigation Envelope

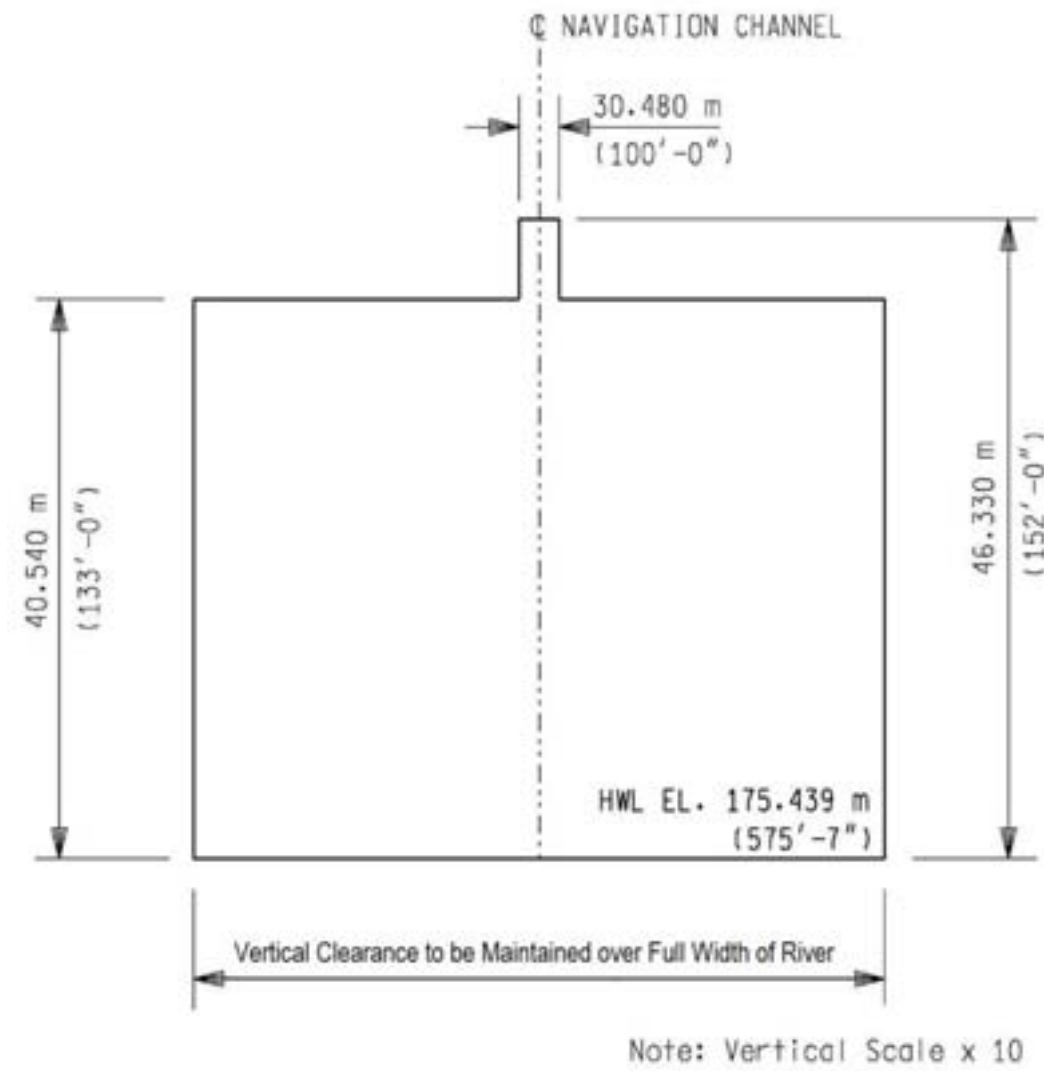


Figure A-2
Main Bridge Proposed Cross-Section

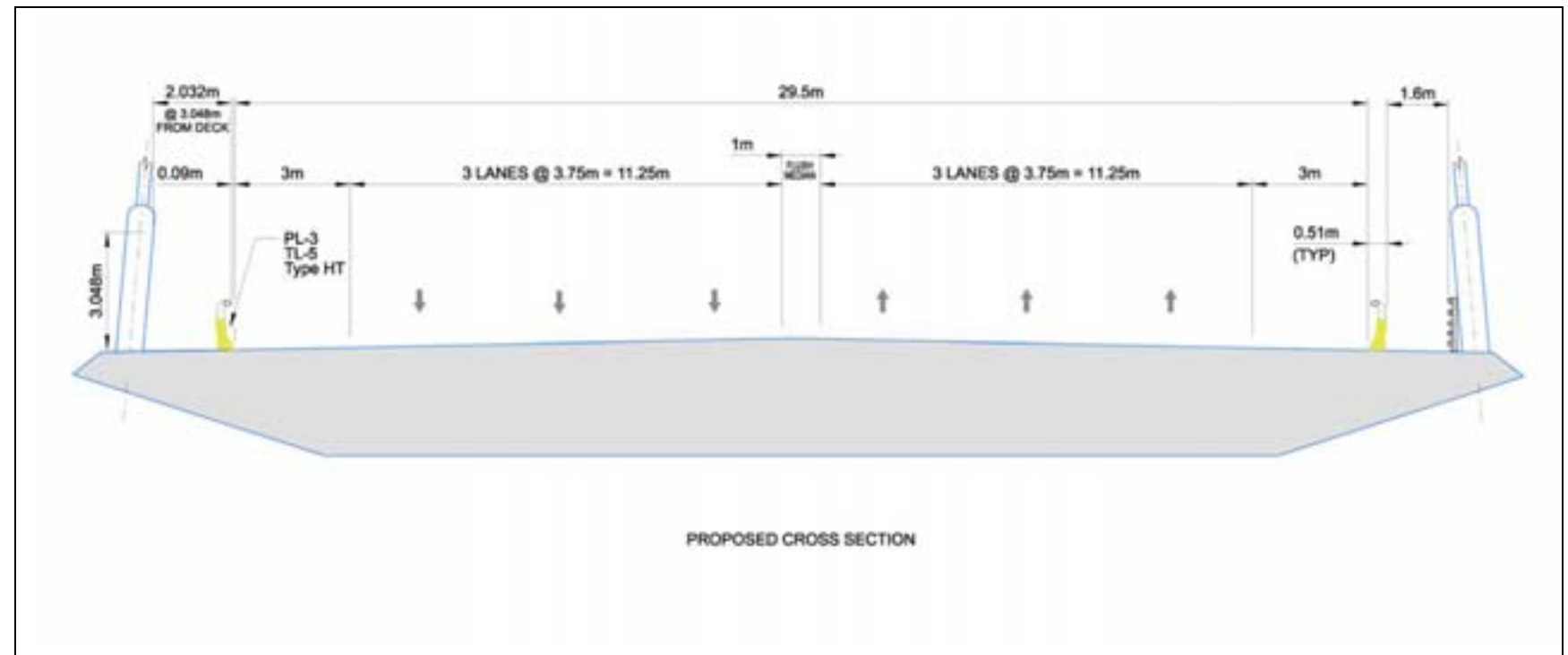
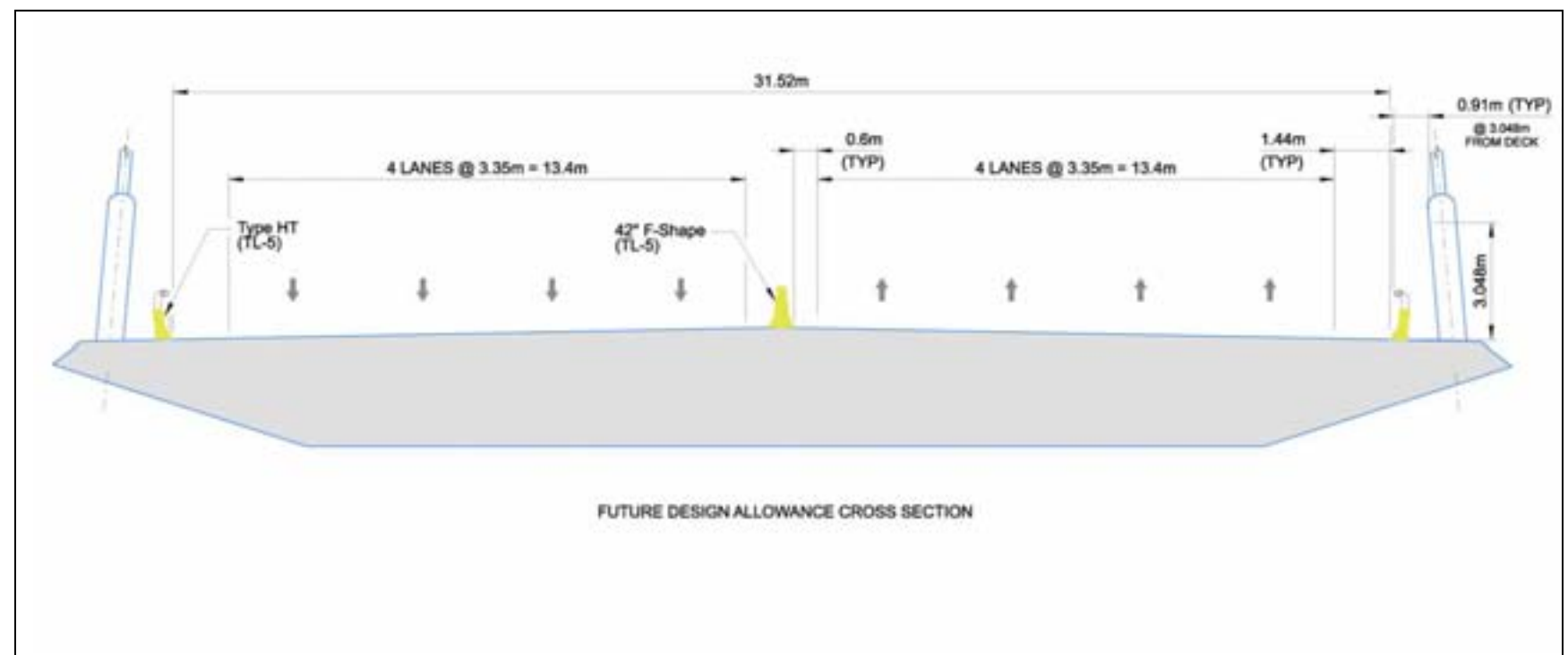


Figure A-3
Main Bridge Future Design Allowance Cross-Section



Guidelines for the DRIC Bridge Aesthetics

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Implementation: Roadway Lighting and Barriers

Design Guidelines: Cable Stay Bridge

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Implementation: Approach Piers

Implementation: Aesthetic Lighting

Implementation: Roadway Lighting and Barriers





Design Guidelines: Approach to Design

Design Guidelines: Approach to Design

Purpose of this Narrative

A great deal of effort has been put forth during the public consultation process to solicit input from the communities surrounding the bridge location. This narrative is intended to describe the final alternatives that have been selected by the public. These alternatives do not represent a final solution for the bridge. Rather, they are a starting point for future design phases which will build on these efforts. Therefore, this document should serve as a guide for the integration of public input to-date during future stages of project development.

Suspension and Cable Stayed bridges are the two types bridges that are technically appropriate for this crossing configuration. This narrative describes the preferred architectural styles and details that have been selected by the public for both Cable-Stayed and Suspension bridges.



Field trip to Toledo, Ohio, with community members






STATION 3





VISUALIZE YOUR BRIDGE

CABLE STAY BRIDGE

There are two visions chosen by the community for the Detroit River Bridge – Friendship and History. The Cable Stay Bridge visualizations shown here are a beginning intended to represent expressions of these visions. Let us know what your preferences are and what other ideas you may have to express these visions.

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Displays from public consultation process

STATION 4





VISUALIZE YOUR BRIDGE

SUSPENSION BRIDGE

There are two visions chosen by the community for the Detroit River Bridge – Friendship and History. The Suspension Bridge visualizations shown here are a beginning intended to represent expressions of these visions. Let us know what your preferences are and what other ideas you may have to express these visions.

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Design Guidelines: Suspension Bridge

Design Guidelines: Suspension Bridge

Suspension bridges are one of the oldest long span bridge types and yet there is still no type of bridge that can match their spanning potential. Suspension bridges have become one of the most significant landmark images in the United States dating back to the Brooklyn Bridge. Their graceful lines and ornate towers become a physical expression of the style of the era in which they were built.

The community determined that it would be appropriate to utilize an architectural theme for a suspension bridge that references the history of the bridge type and the history of the surrounding area.

The Art Deco style was chosen for the suspension bridge. This style has been used extensively on suspension bridges, including the Golden Gate Bridge. In addition, the Art Deco movement was dominant during one of the largest growth periods in the history of Detroit. The Art Deco style can be seen today on many of the historic buildings of Detroit.



Macomb County Building¹

¹ Photo Credit: Art Deco in Detroit by Rebecca Binno Savage and Greg Kowalski (2004)



Historic Suspension Bridges



Design Guidelines: Suspension Bridge

Implementation: Towers

The towers of any suspension bridge are the most dominate visual element. For the DRIC, the towers also serve as the gateway elements, establishing entry and exit for the main span of the bridge. This gateway feature of the pylons is expanded on this project to include a gateway between the United States and Canada.

The suspension bridge should utilize variable depth tower legs with stylistic details applied to the edges of the tower leg and the cross braces. The result will be a bridge with elegant and subtle references to the historic art deco style. It is important that the form of the bridge be used for the stylistic expression instead of applied colors or ornamentation. The goal is a low maintenance enduring solution.



Art Deco Suspension Bridge 1



Art Deco Suspension Bridge 1- Tower

Design Guidelines: Suspension Bridge

Implementation: Towers (cont.)

Another approach for the suspension bridge utilizes a stepped tower leg with stylistic details applied to the corners of the tower legs. It is important that the design of the bridge provides details at a variety of scales so that the user's experience is not one dimensional. The result is a bridge with references to other historic bridges such as the Golden Gate Bridge.

In both options, the superstructure for the bridge is a slender ribbon that spans the river. Efforts should be made to preserve the visual slenderness of the deck to minimize the visual impact of the bridge on the surrounding environment.



Art Deco Suspension Bridge 1



Art Deco Suspension Bridge 1- Tower

Design Guidelines: Suspension Bridge

Implementation: Suspension Bridge Anchorage

Due to the length of the bridge, the suspension bridge anchorage for the proposed crossing will be quite large. This element will play a major role in the visual composition of the bridge and should not be ignored.

The art deco style offers many opportunities to create interesting compositions on the faces of the anchorages. In addition, the anchorages can become a platform for vertical ornamental elements such as large sculptures (see figure 2).

The introduction of a vertical element at the anchorages will provide an opportunity to reinforce the gateway experience of the bridge. These elements can be treated differently on each end of the bridge, making it possible to create direct references to the two communities and countries served by the bridge.



Art Deco Suspension Bridge Anchorage - Figure 1



Art Deco Suspension Bridge Anchorage - Figure 2

Design Guidelines: Suspension Bridge

Implementation: Approach Piers

A large portion of the user's experience will be defined the approach piers. These elements will be seen up close from a variety of different vantage points. The design of the piers should blend harmoniously with the bridge design and the surrounding built environment.

The approach pier should create a visual connection between the design of the bridge towers. People will be driving and walking adjacent to these piers. They will also be located in a variety of landscape settings. Therefore, the scale of the details on the piers should be developed to respond to a variety of project conditions.

The piers should be visually logical for when viewed from a distance. In addition, the piers should have a level of details that are appropriate for up-close interaction.



Approach Pier Design

Design Guidelines: Suspension Bridge

Implementation: Aesthetic Lighting

The lighting should respond to the historical aspects of the surrounding area while melding with the new amenities on the waterfront. The lighting should reveal the bridge structure in a pleasing and aesthetic way, creating a night time experience that is completely different from the day time experience.

Current concepts have focused on enhancing the horizontal line of the bridge across the water with a kinetic lighting solution, an effect that creates a visual connection between the two side of the river. LED panels will be mounted to the outer surface of edge girder. These color-changing LED panels are controlled by a highly flexible and sophisticated lighting control system that allows for the display of infinite numbers of lighting shows across the length of the bridge, from simple one-color panels to complex, color-changing events. (see Figure 1)

The colors and lighting events can be coordinated with seasonal changes and with special events taking place in the community. This active lighting system will serve as a major element of communication and will involve the bridge in the community at a social level.

At night, the simple forms of the towers is transformed into a dramatic statement, expressing the spirit of the Detroit River International Crossing. The sculptural lighting of these elements celebrates environmental responsibility, respects the surrounding area, creates a nighttime image while minimizing light pollution. The result is a lighting solution that is controlled architecturally, staying within the confines of the pylon and cable stays. This creates an image that expresses the strength and grandeur of the structure within a context that is meaningful - and beautiful - to the community.

More nostalgic approaches to lighting are also appropriate including the utilization of necklace lights. When mounted to the main suspension cable, these lights accentuate the parabolic curve of the cable as it stretches across the river and evoke images of historical suspension bridges. (see Figure 2)



Lighting Concept - Figure 1



Lighting Concept - Figure 2

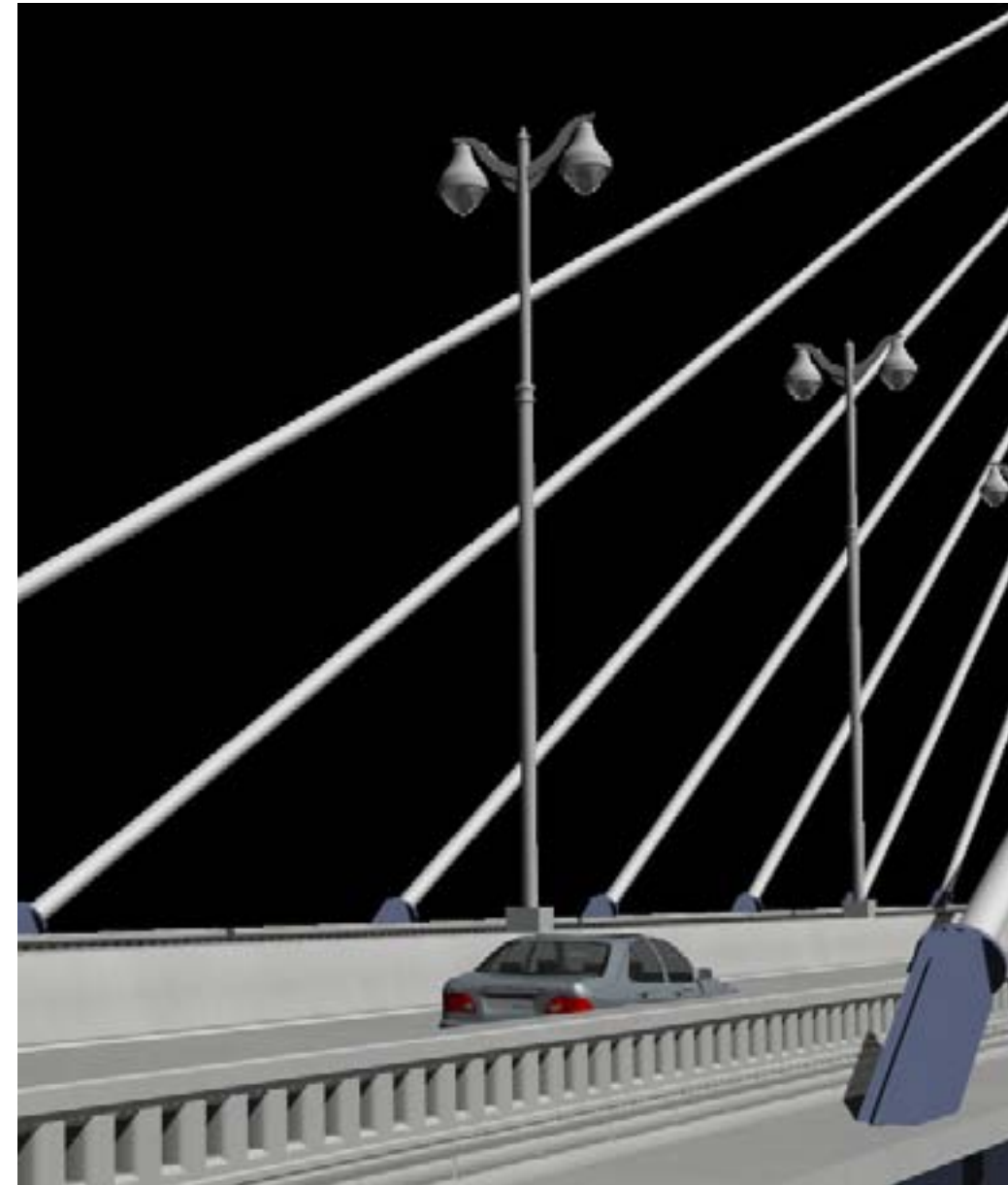
Design Guidelines: Suspension Bridge

Implementation: Roadway Lighting and Barriers

For the bridge to be visually successful, every detail should be developed to follow the theme of the bridge. Two major elements that will effect the way people experience the structure are the light poles and the barrier curbs.

The light poles ultimately selected for the project should reflect the historical theme of the bridge. A wide variety of poles are now available that reference historic themes and forms, while providing state-of-the-art photometric qualities. The pole shown in the illustration is a standard fixture that meets these requirements.

Likewise, barriers play a significant role in shaping the driver's experience. A strong desire was expressed by the public to create barrier that does not obstruct views off of the bridge. There are a number barriers that meet crash testing requirements while providing openness and an historic design. The "Texas Classic" barrier shown in the illustration is one such example.



Light Poles and Barriers



Design Guidelines: Cable Stayed Bridge

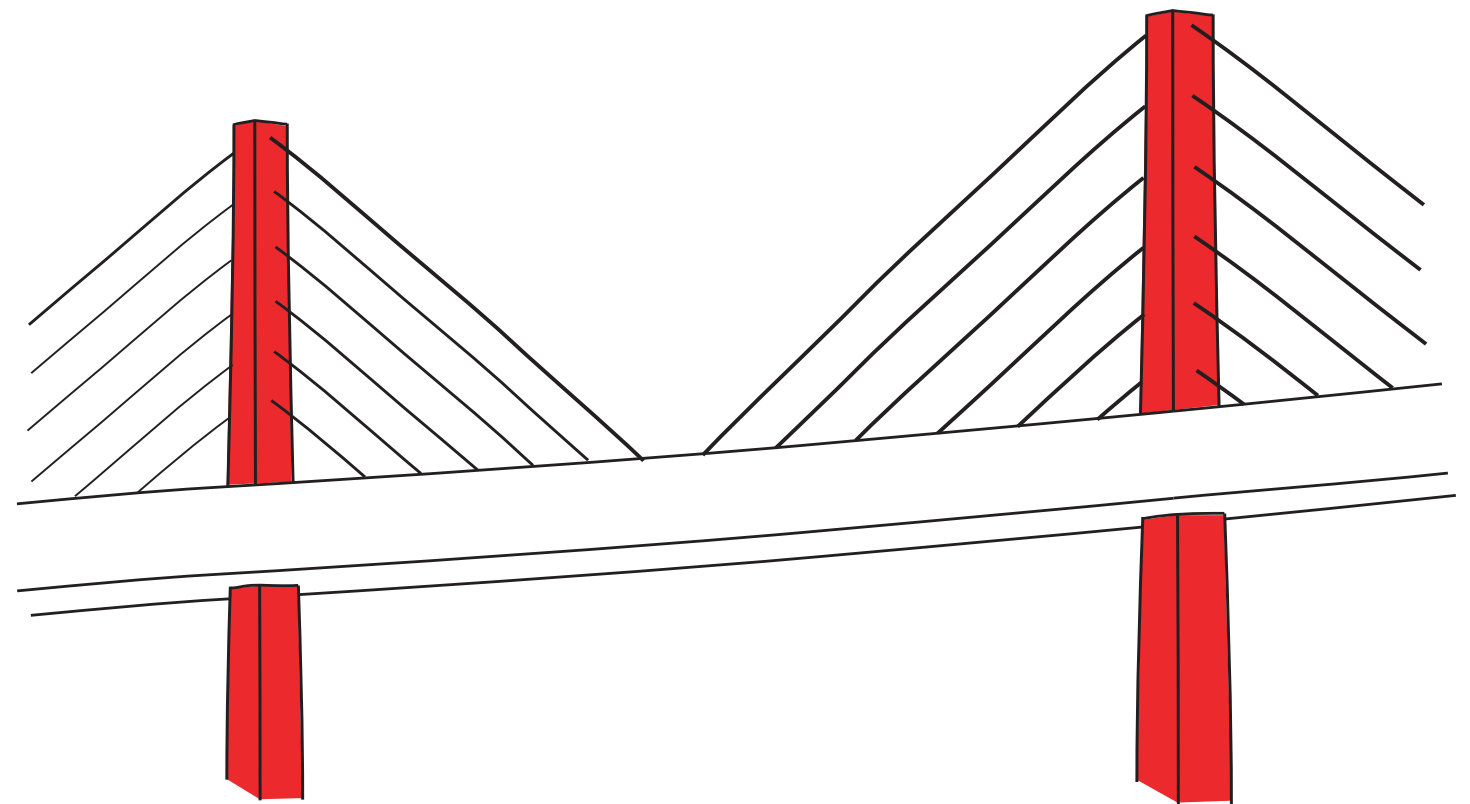
Design Guidelines: Cable Stayed Bridge

A typical cable stayed bridge is a continuous girder with one or more towers erected above piers in the middle of the span. From these towers, cables stretch down diagonally (usually to both sides) and support the girder.

Cable Stayed bridges are a relatively new style of bridge, representing the latest in bridge design technology. Because they are new, there are no historic applications of cable stayed bridges.

The style that has been chosen for the cable stayed alternative is modern and contemporary. The bridge should create an icon for the community that embodies the technologically advanced nature of Detroit and Windsor.

Every effort should be made to utilize the structurally required elements of the bridge to create the visual signature of the project.



Cable Stayed Bridge Examples



Design Guidelines: Cable Stayed Bridge

Implementation: Pylons

The pylons for the cable stayed bridge will be one of the tallest elements on the skyline of Detroit and will therefore be the most visually significant element of the project. The towers also serve as the gateway elements, establishing entry and exit for the main span of the bridge. This gateway feature of the pylons is expanded on this project to include the gateway between the United States and Canada.

Every effort should be made to create a pylon design that is structurally efficient and visually pleasing. Given the height and configuration of the pylons, an inverted “Y” or an “A” configuration is best suited for the application.

Based on public input, the “A” configuration has been eliminated. The following examples indicate how inverted “Y” pylon forms can be developed to meet the desires expressed by the community.



Cable Stayed Pylon Shapes

Design Guidelines: Cable Stayed Bridge

Implementation: Pylons - Inverted “Y”

An inverted “Y” pylon configuration has been determined as a feasible pylon shape by the technical review committee. This shape provides a great deal of transverse stability and can be design with very efficient cross-sections.

The critical areas that should be studied for aesthetic opportunities are the top of the pylon and the vertical component of the shaft. The upper portion of the pylon can be split to create the perception of two separate pylon legs that are joined in the center by bridging elements. The bridging elements also provide an opportunity to introduce color and detail at relatively low cost.

The treatment of the pylon top is critical. It should reinforce the vertical height of the pylon an its slenderness.



Inverted “Y” Pylon

Design Guidelines: Cable Stayed Bridge

Implementation: Pylons - Curving Inverted “Y”

An inverted “Y” pylon configuration has been determined as a feasible pylon shape by the technical review committee. This shape provides a great deal of transverse stability and can be design with very efficient cross-sections. The curved leg version of this shape will provide a very dramatic visual signature. The form of the curve should allow the upper portion of the pylon to join with cross members for a greater length of the pylon than the standard inverted “Y” configuration. In addition, the curve should flare out slightly at the top to create a more dynamic appearance.

The upper portion of the pylon can be split to create the perception of two separate pylon legs that are joined in the center by bridging elements. The bridging elements also provide an opportunity to introduce color and detail at relatively low cost.

The treatment of the pylon top is critical. It should reinforce the vertical height of the pylon an its slenderness.



Inverted “Y” Pylon

Design Guidelines: Cable Stayed Bridge

Implementation: Pylons - Colors

The colors used on the bridge will be limited due to the scale of the structure. The pylon and other concrete elements should be left a natural concrete color. Every attempt should be made to create a consistent color from one concrete pour to the next by controlling the mix designs and aggregate specifications.

There are opportunities to introduce color into the bridge at the main pylon, cable stays and steel superstructure. It is recommended that the stays be treated with a blue color unless cable lighting is anticipated as part of the aesthetic lighting package. If the cables are to be lit at night, white is the preferred color.

Accent colors on the pylon should be limited to cool blue tones to preserve the contemporary style of the bridge.



Design Guidelines: Cable Stayed Bridge

Implementation: Approach Piers

A large portion of the user's experience will be defined the approach piers. These elements will be seen up close from a variety of different vantage points. The design of the piers should blend harmoniously with the bridge design and the surrounding built environment.

The approach pier should create a visual connection between the design of the bridge towers. People will be driving and walking adjacent to these piers. They will also be located in a variety of landscape settings. Therefore, the scale of the details on the piers should be developed to respond to a variety of project conditions.

The piers should be visually logical for when viewed from a distance. In addition, the piers should have a level of details that are appropriate for up-close interaction.



Approach Pier Design

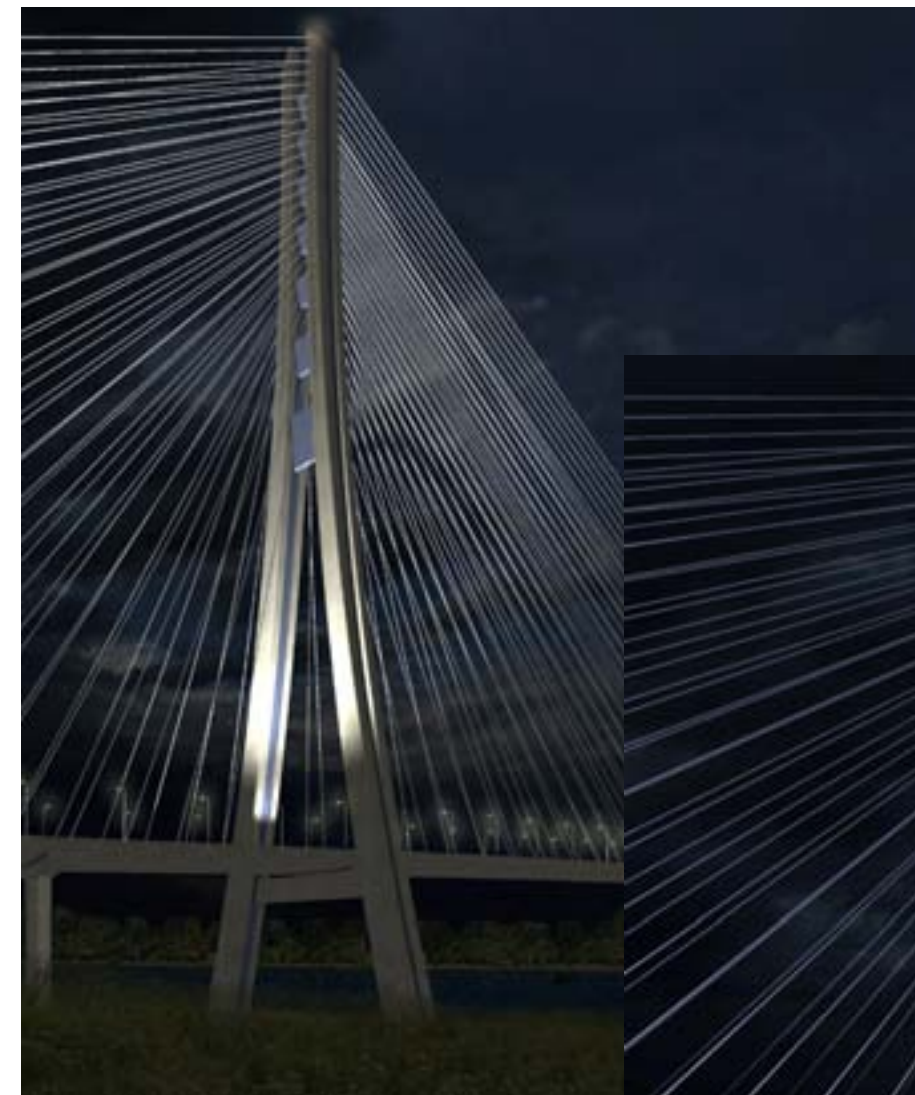
Design Guidelines: Cable Stayed Bridge

Implementation: Aesthetic Lighting

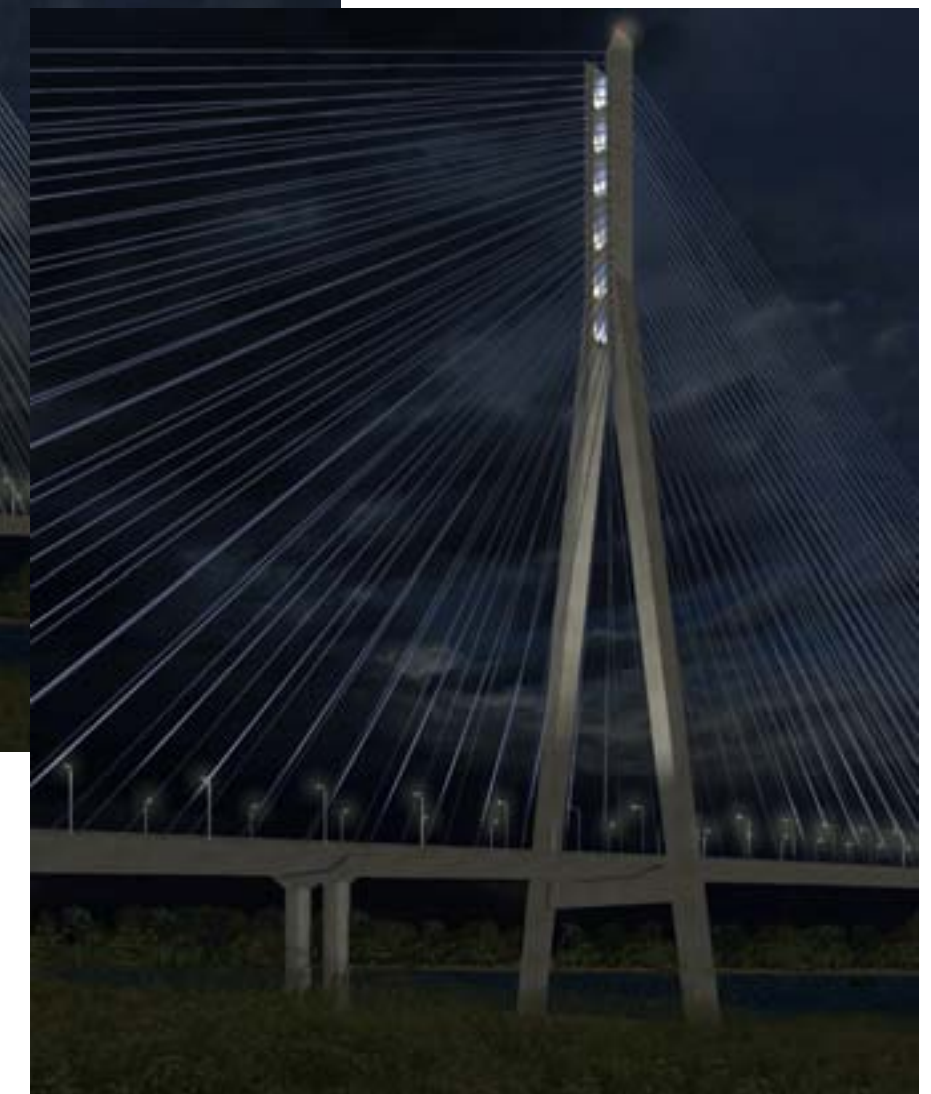
The lighting should respond to the surrounding area while melding with the new amenities on the waterfront. The lighting should reveal the bridge structure in a pleasing and aesthetic way, creating a night time experience that is completely different from the day time experience.

The colors and lighting events can be coordinated with seasonal changes and with special events taking place in the community. An active lighting system will serve as a major element of communication and will involve the bridge in the community at a social level.

At night, the simple forms of the towers is transformed into a dramatic statement, expressing the spirit of the Detroit River International Crossing. The sculptural lighting of these elements celebrates environmental responsibility, respects the surrounding area, creates a unique nighttime image while minimizing light pollution. The result is a lighting solution that is controlled architecturally, staying within the confines of the pylon and cable stays. This creates an image that expresses the strength and grandeur of the structure within a context that is meaningful and beautiful to the community.



Accented Cables



Accented Pylon Cross Members

Design Guidelines: Cable Stayed Bridge

Implementation: Roadway Lighting and Barriers

For the bridge to be visually successful, every detail should be developed to follow the theme of the bridge. Two major elements that will effect the way people experience the structure are the light poles and the barrier curbs.

The light poles ultimately selected for the project should reflect the contemporary theme of the bridge. A wide variety of poles are now available that reinforce a contemporary theme in a simple and elegant fashion, while providing state-of-the-art photometric qualities. The pole shown in the illustration is a standard fixture that meets these requirements.

Likewise, barriers play a significant role in shaping the driver's experience. A strong desire was expressed by the public to create barrier that does not obstruct views off of the bridge. There are a number barriers that meet crash testing requirements while providing openness and a contemporary design. The barrier shown in the illustration is an example of a standard crash tested barrier that meets these requirements.



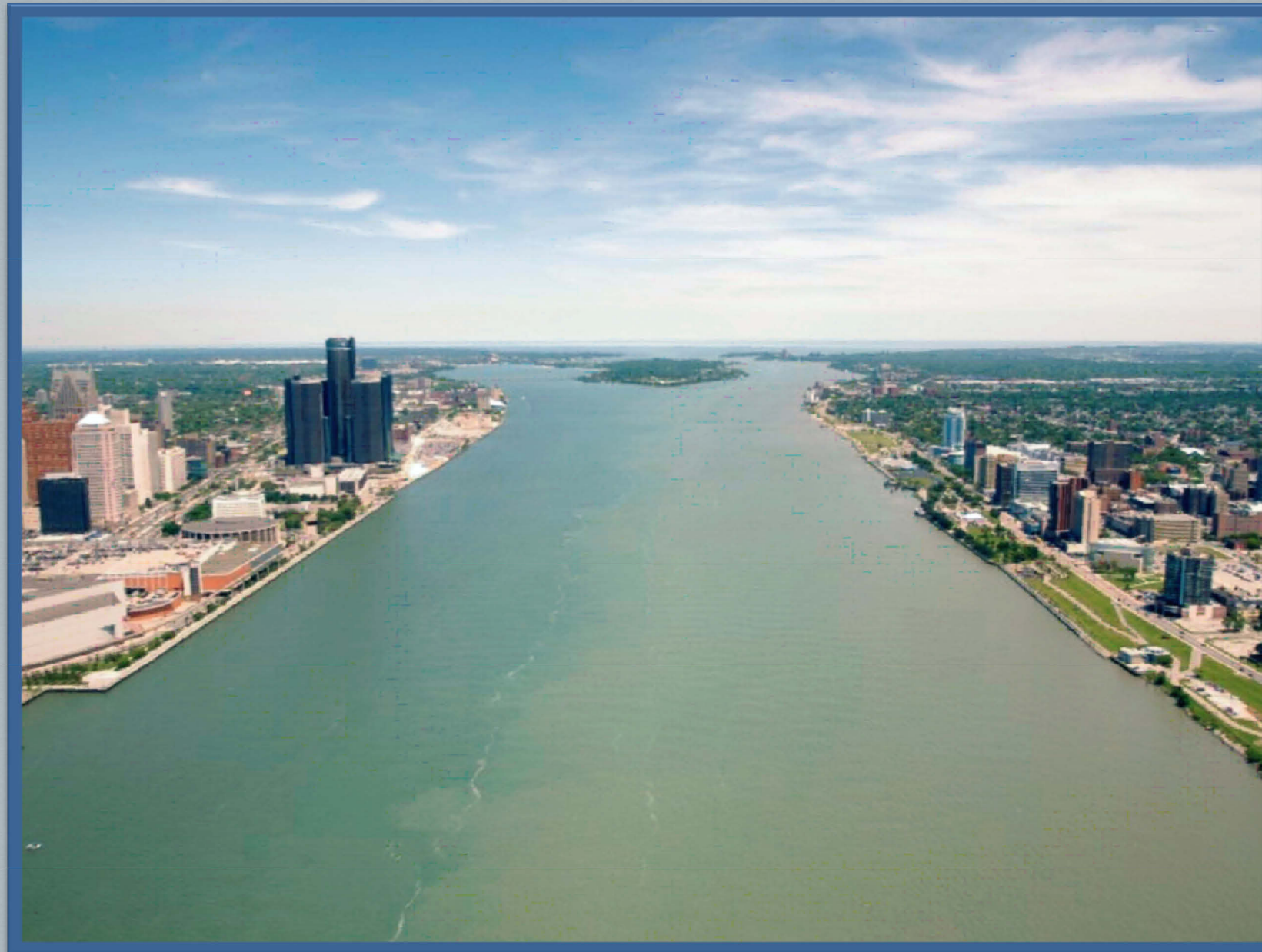
Light Poles and Barriers

Detroit River
INTERNATIONAL CROSSING
PROJECT

A BORDER TRANSPORTATION PARTNERSHIP



Canada



DETROIT RIVER INTERNATIONAL CROSSING

Engineering Report

APPENDIX B: DETAILED COST ESTIMATES

November 2008

Prepared by:

PARSONS

In association with:

benesch

NCI
NORTHWEST CONSULTANTS, INC.



SE Somat Engineering,
INCORPORATED

Under agreement with: **CORRADINO**
THE CORRADINO GROUP

**Detroit River International Crossing
Engineering Report - November 2008**

U.S. Cost

Cost Detail	Bridge Option:	Preferred Alt.	
		4	7
		(million)	
MDOT Construction Costs ¹			
Detroit River Bridge		\$ 395	\$ 399
MDOT Toll Plaza & Plaza Site Work		\$ 57	\$ 57
Interchange & Local Roadways		\$ 190	\$ 190
<i>Subtotal - Construction</i>		\$ 642	\$ 646
Enhancements⁵		\$ 21	\$ 21
Utilities ²		\$ 157	\$ 157
Management Reserve (5%)		\$ 40	\$ 40
Grand Total - Construction		\$ 860	\$ 864
Soft Costs³			
Preliminary Engineering & Permits (10%)		\$ 80	\$ 80
Construction Engineering (10%)		\$ 80	\$ 80
Grand Total - Soft Costs		\$ 160	\$ 161
Grand Total Alternative Cost (rounded)		\$ 1,020	\$ 1,024
Inflation (rounded) 17%		\$ 172	\$ 173
Property Acquisition/Remediation			
Property Acquisition		\$ 365	\$ 365
Remediation		\$ 17	\$ 17
<i>Subtotal - Property</i>		\$ 382	\$ 382
Inflation ROW - 9%		\$ 35	\$ 35
Grand Total - Property		\$ 418	\$ 418
GSA Plaza Costs		\$ 200	\$ 200
Grand Total Cost (rounded)		\$ 1,809	\$ 1,814

General Notes:

- Grand Total Cost in year of expenditure (YOE) dollars.
- Contingency format per FHWA Major Project Estimating Guidance (<http://www.fhwa.dot.gov/programadmin/mega/>).
- Bridge Options: 4 - Cable-Stay, 7 - Suspension

Notes:

1. Construction Costs include design (15%) & construction (10%) contingencies, Maintenance of Traffic (5%) and Mobilization (10%) in 2008\$.
2. Utility costs include both public and private relocation costs.
3. Final Design & Construction Engineering soft costs are 10% of Construction Subtotal and Utilities each.
4. Inflation costs weighted using cash flow for estimated year of expenditure.
5. Enhancements from "Green Sheet" as listed at the end of FEIS Section 4.
6. Property acquisition costs include demolition and all real estate contingencies.
7. Management Reserve - 5% of Construction and Utility cost.



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Project: Detroit River International Crossing Study

By: B. Campbell

Date: 10/20/08

Job No.: 646294

Checked By: P. Gibbons

Date: 10/20/2008

Subject: Preferred Alternative Cost Estimate

**Community Enhancement Cost Estimate
Preferred Alternative**

Items	Total (US\$)
CONSTRUCTION	
Local Road Improvements	
Mill and Resurface	\$9,995,919
Intersection Improvements	\$600,000
Recreation and Greenways	\$700,000
Truck Routing and Enforcement	\$80,000
Improved Public Transit	\$100,000
subtotal (rounded to 10,000's)	\$11,480,000
<i>Design Contingencies</i> 15%	\$1,722,000
subtotal (rounded to 10,000's)	\$1,720,000
<i>Maintenance of Traffic (roads only)</i> 2%	\$229,600
<i>Mobilization</i> 10%	\$194,960
SUBTOTAL A - CONSTRUCTION (rounded to 10,000's)	\$2,140,000
SUBTOTAL B - CONSTRUCTION CONTINGENCY (10%) (rounded to 10,000's)	\$210,000
CONSTRUCTION TOTAL (A+B)	\$2,350,000
STUDIES (C)	
Land Use and Economic Study	\$200,000
Air Quality Study	\$300,000
subtotal (rounded to 10,000's)	\$500,000
GRAND TOTAL (A,B,C)	\$2,850,000
Rounded Total (Millions of Dollars)	\$21



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Project: Detroit River International Crossing Study

By: B. Campbell

Checked By: R.Hill

Date: 11/20/08

Date: _____

Job No.: 646294

Subject: Preferred Alternative Cost Estimate

Estimate for Weighted Inflation Factor - Preferred Alternative

Items not included: Utilities, ROW & Remediation
Assumed Inflation rate/year: 3.0%

0

Assumed Start Date

Construction Element	Construction Cost (2008 \$)	Contingencies Design (15%) Constr. (10%)	MOT		Mobilization		Total	Percent by Construction Year										Totals	
			%	Cost	%	Cost		2011		2012		2013		2014		2015			
								Est. %	Cost	Est. %	Cost	Est. %	Cost	Est. %	Cost	Est. %	Cost		
Enhancements																			
Resurfacing	\$9,995,919	\$2,498,980	5%	\$499,796	10%	\$999,592	\$13,994,287		\$0		\$0		\$0		\$0	100%	\$13,994,287	100%	
Miscellaneous	\$1,480,000	\$370,000	5%	\$74,000	10%	\$148,000	\$2,072,000	100%	\$2,072,000		\$0		\$0		\$0		\$0	100%	
Walls	\$8,500,000	\$2,125,000	5%	\$425,000	10%	\$850,000	\$11,900,000		\$0		\$0		\$0		\$0	100%	\$11,900,000	100%	
Sub Total	\$19,975,919	\$4,993,980		\$998,796		\$1,997,592	\$27,966,287		\$2,072,000		\$0		\$0		\$0		\$25,894,287	\$27,966,287	
Service Dr./Ramps																			
Service Drives (incl. Signals)	\$8,934,915	\$2,233,729	5%	\$446,746	10%	\$893,492	\$12,508,881		\$0	40%	\$5,003,552	20%	\$2,501,776	20%	\$2,501,776	20%	\$2,501,776	100%	
Service Drive Ramps	\$1,072,748	\$268,187	5%	\$53,637	10%	\$107,275	\$1,501,848		\$0	25%	\$375,462	75%	\$1,126,386		\$0		\$0	100%	
Sound Abatement Walls	\$2,800,000	\$700,000	5%	\$140,000	10%	\$280,000	\$3,920,000		\$0	50%	\$1,960,000	20%	\$784,000	20%	\$784,000	10%	\$392,000	100%	
Sub Total	\$12,807,663	\$3,201,916		\$640,383		\$1,280,766	\$17,930,729		\$0		\$7,339,014		\$4,412,162		\$3,285,776		\$2,893,776	\$17,930,729	
I-75 Crossroads																			
Bridges	\$14,154,020	\$3,538,505	5%	\$707,701	10%	\$1,415,402	\$19,815,628		\$0	20%	\$3,963,126	50%	\$9,907,814	15%	\$2,972,344	15%	\$2,972,344	100%	
Local Ramp Bridge	\$620,360	\$155,090	5%	\$31,018	10%	\$62,036	\$868,504		\$0	25%	\$217,126	75%	\$651,378		\$0		\$0	100%	
Pedestrian Bridges	\$3,674,840	\$918,710	5%	\$183,742	10%	\$367,484	\$5,144,776		\$0	50%	\$2,572,388	50%	\$2,572,388	0%	\$0	0%	\$0	100%	
Bridge Demolition	\$1,521,381	\$380,345	5%	\$76,069	10%	\$152,138	\$2,129,934		\$0	30%	\$638,980	30%	\$638,980	20%	\$425,987	20%	\$425,987	100%	
Sub Total	\$19,970,601	\$4,992,650		\$998,530		\$1,997,060	\$27,958,842		\$0		\$7,391,620		\$13,770,560		\$3,398,331		\$3,398,331	\$27,958,842	
Plaza Ramps/I-75 Aux. Lanes																			
Roadway	\$7,681,808	\$1,920,452	5%	\$384,090	10%	\$768,181	\$10,754,532		\$0		\$0	50%	\$5,377,266	50%	\$5,377,266		\$0	100%	
Drainage	\$7,664,033	\$1,916,008	5%	\$383,202	10%	\$766,403	\$10,729,646		\$0		\$0	50%	\$5,364,823	50%	\$5,364,823		\$0	100%	
Retaining Walls	\$16,335,468	\$4,083,867	5%	\$816,773	10%	\$1,633,547	\$22,869,655		\$0		\$0	50%	\$11,434,828	50%	\$11,434,828		\$0	100%	
Bridges	\$58,481,610	\$14,620,403	5%	\$2,924,081	10%	\$5,848,161	\$81,874,254		\$0		\$0	50%	\$40,937,127	50%	\$40,937,127		\$0	100%	
Sub Total	\$90,162,919	\$22,540,730		\$4,508,146		\$9,016,292	\$126,228,087		\$0		\$0		\$63,114,044		\$63,114,044		\$0	\$126,228,087	
Railroad Improvements	\$7,060,000	\$1,765,000	5%	\$353,000	10%	\$706,000	\$9,884,000		\$0	100%	\$9,884,000		\$0		\$0		\$0	\$9,884,000	
Roadway/Interchange Total	\$149,977,103	\$37,494,276		\$7,498,855		\$14,997,710	\$209,967,944											\$209,967,944	
River Bridge *	\$394,947,399	\$0	0%	\$0	0%	\$0	\$394,947,399	15%	\$59,242,110	25%	\$98,736,850	20%	\$78,989,480	20%	\$78,989,480	20%	\$78,989,480	100%	
Plaza *	\$56,880,878	\$0	0%	\$0	0%	\$0	\$56,880,878	0%	\$0	15%	\$8,532,132	30%	\$17,064,264	30%	\$17,064,264	25%	\$14,220,220	100%	
Total to Assess Inflation	\$601,805,381	\$37,494,276		\$7,498,855		\$14,997,710	\$661,796,222		\$61,314,110	9.3%	\$131,883,616	19.9%	\$177,350,509	26.8%	\$165,851,894	25.1%	\$125,396,093	18.9%	\$661,796,222
Percent of Total																		100%	
* Design and Construction Contingencies, and Mobilization are included in the Construction Cost for the River Bridge and Plaza. The MOT costs associated with the River Bridge and Plaza are assumed to be negligible.								Year Beyond Est:	3		4		5		6		7		
								Inflation Factor:	109.27%		112.55%		115.93%		119.41%		122.99%		
								Weighted Inflation Factor:	10.12%		22.43%		31.07%		29.92%		23.30%		116.85%
								Totals with Inflation		\$66,999,583		\$148,436,171		\$205,597,847		\$198,035,835		\$154,221,378	\$773,290,815
																Use	17% Total Inflation		

Project: Detroit river International Crossing Study
By: The Corradino Group

Estimated Remediation Costs

Land Uses	Interchange Area		Plaza Area		Green Blvd. Area		Crossing, Railroad, and West		Total
	Acres	Est. Cost	Acres	Est. Cost	Acres	Est. Cost	Acres	Est. Cost	
Residential (low)	9.8	\$44,545	54.5	\$247,727	4.5	\$20,455	1.4	\$6,364	\$319,091
Commercial and Industrial (med)	25.3	\$3,450,000	68.0	\$9,272,727	12.5	\$1,704,545	4.7	\$640,909	\$15,068,182
Crossing Area (high)	0	\$0	0	\$0	0	\$0	7.0	\$1,909,091	\$1,909,091
Total		\$3,494,545		\$9,520,455		\$1,725,000		\$2,556,364	\$17,296,364

high remediation cost/acre \$272,727
 med remediation cost/acre \$136,364
 low remediation cost/acre \$4,545

**DRIC Right of Way Estimate Probability Determination
(in Millions of Dollars) for FEIS**

By: MDOT Real Estate

Property type	Estimate (millions)	Percentage	Probability	Adjusted Estimate	100% Probability
Residential	40	11%	0.85	34.0	40
Commercially operated	115	32%	0.70	80.5	115
Industrial	190	52%	0.70	133.0	190
Non-Profit	20	5%	0.85	17.0	20
Public	5	1%	0.80	4.0	5
Included in GSA Estimate	-5	-1%		4.0	-5
Total	365	100%		273	365

Engineering Report Cost Estimate by Country

Option	US Cost (millions)	Canadian Cost (millions)	Total (millions) See Note 1
X-10(B)			
Option 4 - Cable-Stayed Bridge			
Approaches	39	35	75
Main Bridge	356	356	711
Total	395	391	790
Option 7 - Suspension Bridge			
Approaches	62	58	120
Main Bridge	337	337	674
Total	399	395	800

Notes:

1) Total may not sum exactly due to rounding.

Project: Detroit River International Crossing Study

By: L. Arias
Checked By: B. Campbell/P. Gibbons

Date: 11/20/08
Date: 11/20/2008

Job No.: 646294
Subject: Preferred Alternative Cost Est.

MDOT¹ U.S. Plaza Cost Estimate

Plaza Component	Quantity	Unit	Unit Cost	Total Cost
General Plaza Areas ³				
Site Civil Work ²				
Roadways ⁴	3.77	Lane Mi.	\$465,000	\$1,753,050
Retaining Walls ⁵	48,646	SF	\$70	\$3,405,220
Bridge	4,214	SF	\$190	\$800,660
Fill	132,845	Cyds	\$3	\$411,820
Storm Water Detention	1	Lsum	\$250,000	\$250,000
Landscape Buffer Walls	1	Lsum	\$8,500,000	\$8,500,000
			<i>Subtotal Site Civil Work</i>	\$15,120,750
Administration				
Building	10,000	SF	\$260	\$2,600,000
Tolls	580	SF	\$3,059	\$1,774,220
Parking	9,025	SF	\$6.50	\$58,663
			<i>Subtotal Administration</i>	\$4,432,883
Brokers				
Building	10,000	SF	\$260	\$2,600,000
Parking and ramps	18,285	SF	\$6.50	\$118,853
			<i>Subtotal Brokers</i>	\$2,718,853
Duty Free ⁶				
Building	15,000	SF	\$260	\$3,900,000
Parking and ramps	116,791	SF	\$6.50	\$759,142
			<i>Subtotal Duty Free⁶</i>	\$4,659,142
Maintenance				
Maintenance Buildings	30,000	SF	\$300	\$9,000,000
Paving	134,783	SF	\$6.50	\$876,090
			<i>Subtotal Maintenance</i>	\$9,876,090
Michigan State Police (MCD)				
Booth	80	SF	\$3,059	\$244,720
Building	5,000	SF	\$300	\$1,500,000
Paving	65,501	SF	\$6.50	\$425,757
Misc. Appurtenances	1	LS	\$250,000.00	\$250,000
			<i>Subtotal Michigan State Police (MCD)</i>	\$2,170,477
			<i>General Plaza Areas Subtotal</i>	\$39,228,192
Miscellaneous Items (curb, drainage, etc.)		20%		\$7,845,638
Mobilization (10%)				\$3,922,819
Design Contingency (15%)				\$5,884,229
			Grand Total General Plaza Areas	\$56,880,878
			Grand Total	\$56,880,878

Notes:

- MDOT Plaza cost estimate includes all items outside of FIS, which are included in GSA estimate.
- Site civil work includes walls and fill for approaches to tolls and customs primary inspections. Roadways and pavement within the FIS boundary are included in the GSA estimate.
Assumes building demolition and remediation included in property acquisition
- Cost of 12' high brick wall included in "enhancement" costs.
- Roadways include all outbound roadways from the railroad to the bridge abutment.
- Retaining walls and fill includes all retaining walls and fill required adjacent to bridge abutments.
- Cost of Duty Free is included in estimate, however, this cost is traditionally borne by the Duty Free operator.

ESTIMATED TOTAL PROJECT COST				
PROJECT TITLE		Detroit River LPOE		
PROJECT LOCATION		Detroit, Michigan		
Item Description	Quantity	Unit Measurement	Totals	
ECC (Estimated Construction Cost)				
Sub-Total UNIFORMAT System Elements		Sum All Elements		\$89,755,273
Design and Site Contingency	10%	%	+	\$8,975,527
Sub - Total				
General Contractor Overhead, Profit, and Bonds	15%	%	+	\$14,809,620
Sub - Total				
Escalation: Current Date To Escal Date - See Summary	32.8%	Use GCCRG %	+	\$37,270,879
ECCA (Estimated Construction Cost At Award)				
Reservations [Note: Reservations are not used unless separate procurement of GFE materials]				
Art-In-Architecture	0.50%	%		\$754,056
		%		\$0
Sub-Total				
Construction Contingency	7%	%	+	\$10,556,791
ECC				
				\$162,122,147
EDRC (Estimated Design & Review Cost)- From D&C Service Tool Website				
Design				\$12,969,772
CM				\$0
Other				\$0
EDRC				
				\$12,969,772
EMIC (Estimated Management & Inspection Cost) - From D&C Service Tool Website				
A-E Services				\$0
CM Services				\$19,454,658
Other				\$0
EMIC				
				\$19,454,658
ESC (Estimated Site Cost)				
Land	\$5,214,404	\$		\$5,214,404
Demolition		\$	+	\$0
Relocation (Associated With Site Purchase)		\$	+	\$0
ESC				
				\$5,214,404
ETPC (Estimated Total Project Cost)				
Date:				ETPC
				\$199,760,980

Project Cost Estimate Form

Jan-06

PROJECT COST SUMMARY		Area (GSF) =		184,156
PROJECT TITLE		Detroit River LPOE		
LOCATION: CITY, STATE		Detroit, Michigan		
NEW CONSTRUCTION OR R&A		▼		
UNIFORMAT SYSTEM ELEMENTS		SUBTOTAL COST	ECC COST	ECC COST/GSF
A11	Foundations	\$2,811,387	\$5,078,120	\$27.58
A12	Basement Construction	\$3,047,020	\$5,503,737	\$29.89
A21	Superstructure	\$6,673,044	\$12,053,310	\$65.45
B11	Exterior Walls	\$7,204,669	\$13,013,569	\$70.67
B12	Exterior Glazing & Doors	\$854,643	\$1,543,714	\$8.38
B13	Roofing	\$3,348,825	\$6,048,878	\$32.85
C11	Partitions, Doors & Specialties	\$4,919,039	\$8,885,106	\$48.25
C12	Access/Platform Floors	\$0	\$0	\$0.00
C13	Interior Finishes	\$1,875,164	\$3,387,050	\$18.39
D11	Conveyance Systems	\$622,750	\$1,124,854	\$6.11
D21	Plumbing	\$1,141,239	\$2,061,384	\$11.19
D22	HVAC	\$2,460,859	\$4,444,974	\$24.14
D31	Fire Protection/Alarm	\$1,159,251	\$2,093,919	\$11.37
D41	Electrical Service, Distribution & Emerg. Power	\$1,436,372	\$2,594,474	\$14.09
D42	Lighting and Branch Wiring	\$1,664,848	\$3,007,163	\$16.33
D43	Communications, Security & Other Electrical Systems	\$6,264,698	\$11,315,728	\$61.45
E11	Equipment & Furnishings	\$1,484,953	\$2,682,225	\$14.56
F11	Special Construction	\$14,051,615	\$25,380,993	\$137.82
F12	Building Demolition and Abatement	\$0.00	\$0	\$0.00
G11	Sitework - Building Related	\$28,734,899	\$51,902,950	\$281.84
G12	Other Sitework - Project Related	\$0	\$0	\$0.00
Sub Total		A	\$89,755,273	\$880.35
Contingency - Unknown Site/Design:		10%	\$8,975,527	\$48.74
Subtotal		B	\$98,730,801	\$536.13
General Conditions and Profit:		15%	\$14,809,620	\$80.42
Current Estimated Construction Award Cost		B + C	\$113,540,421	\$616.54
Escalation to Award Date		32.8%	\$37,270,879	\$202.39
Estimated Construction Cost at Award		E		
ECCA		B + C + D	\$150,811,299	\$818.93
Construction Contingency & Reservation		7.5%	\$11,310,847	\$61.42
Estimated Construction Cost				
ECC		E + F	\$162,122,147	\$880.35
EDRC		8.00%	\$12,969,772	\$70.43
EMIC		12.00%	\$19,454,658	\$105.64
ESC (Est. Site Cost)			\$5,214,404	\$28.32
ETPC		G	\$199,760,980	\$1,084.74
[Link to Location Factors & Escalation]				
Current Date:	11/10/08	Escalation Rate Used:	4.8%	
		Construction Mid-Point Date:	11/29/14	

Jan-06 Project Cost Estimate Form

Michigan Department of Transportation				C-1
Quantity Calculation				
DSE Firm Name:	Parsons Transportation Group			
Project Description:	DRIC		Calcs By: JJB	Date: 11/6/2008
Contract Number:			CHK By:	Date:
DSE Project No:	646294		QA/QC Reviewed By & Date: 11/21/2008	
Into Plaza				
Length (ft)	Height (ft)	Area (sft)		
420	15	3150		
420	13	5460		
625	13	4062.5		
		12672.5 sft		
		25345 sft	Wall Area	
Plaza Width				
145.5	sft			
4811	cyd	Topsoil stripping		
73101.7315	cyd	Embankment		
Out of Plaza				
Length (ft)	Height (ft)	Area (sft)		
660	14	4620		
327	14	4578		
327	15	2452.5		
		11650.5 sft		
		23301 sft	Wall Area	
Plaza Width				
132				
2785	cyd	Topsoil stripping		
59743.2593	cyd	Embankment		
Totals				
48,646	sft	Wall Area		
132,845	cyd	Embankment		
7596	cyd	Excavation		

Michigan Department of Transportation										C-1	
Quantity Calculation											
DSE Firm Name:		Parsons Transportation Group									
Project Description:		DRIC			Calcs By: JJB			Date: 11/6/2008			
Contract Number:					CHK By:			Date:			
DSE Project No:		646294						QA/QC Reviewed By & Date: XX			
										FINAL QUANTITY	304,136
PAY ITEM NUMBER		PAY ITEM NAME							UNIT OF MEASURE		
		CONC PAVT, REINF, 9"							SF		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED									
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	SUBTOTALS	REMARKS			
	STA	STA	LF	WIDTH (LF)	SF	SY					
RAMPS					75,202			AREA FROM CAD			
RAMPS					129,898			AREA FROM CAD			
RAMPS					33,535			AREA FROM CAD			
						238,635	3.77	lane miles			
STATE POLICE FACILITY					62,422						
STATE POLICE FACILITY					3,079						
						65,501					
					TOTAL	304,136		PAVEMENT AREA			



26777 Central Park Boulevard · Suite 275 · Southfield, Michigan 48076 · (248) 262-0013 · Fax: (248) 262-0988 · www.parsons.com

Project: Detroit River International Crossing Study

By: B. Campbell

Date: 11/06/08

Job No.: 646294

Checked By: P. Gibbons

Date: 11/20/08

Subject: Preferred Alternative Cost Estimate

**US Interchange & Local Roadways Cost Estimate
Preferred Alternative**

Items	Total (US\$)
Roadways & Ramps	
Freeway Lanes	\$2,011,570
Plaza Ramps	\$2,383,230
Service Drive Ramps	\$1,072,748
Service Drives	\$7,339,915
Intersection Signalization	\$1,595,000
Signing & ITS	\$3,287,009
<i>subtotal (rounded to 10,000's)</i>	\$17,690,000
Sound Walls	
	\$2,800,000
<i>subtotal (rounded to 10,000's)</i>	\$2,800,000
Retaining Walls	
	\$16,335,468
<i>subtotal (rounded to 10,000's)</i>	\$16,340,000
Bridge Demolition	
	\$1,521,381
<i>subtotal (rounded to 10,000's)</i>	\$1,520,000
Bridges - From Interchange Structure Study	
Plaza Ramp Bridges	\$58,481,610
I-75 Crossing Bridges	\$14,154,020
Local Ramp Bridge	\$620,360
Pedestrian Bridges	\$3,674,840
<i>subtotal (rounded to 10,000's)</i>	\$76,930,000
Roadway Storm Drainage	
	\$7,664,033
<i>subtotal (rounded to 10,000's)</i>	\$7,660,000
Railroad Spur	
Transflo Facility Relocation	\$2,681,275
Wye Construction	\$4,383,500
<i>subtotal (rounded to 10,000's)</i>	\$7,060,000
Construction Subtotal (rounded to 10,000's)	\$130,000,000
<i>Intr_Local_Rd Summary Design Contingencies</i> 15%	\$19,500,000
<i>subtotal (rounded to 10,000's)</i>	\$149,500,000
<i>Intr_Local_Rd Summary MOT</i> 5%	\$7,475,000
<i>Intr_Local_Rd Summary Mobilization</i> 10%	\$15,697,500
SUBTOTAL A - CONSTRUCTION (rounded to 10,000's)	\$172,670,000
SUBTOTAL B - CONSTRUCTION CONTINGENCY (10%) (rounded to 10,000's)	\$17,267,000
GRAND TOTAL (A,B)	\$189,940,000
Rounded Total (Millions of Dollars)	\$190

MICHIGAN DEPARTMENT OF TRANSPORTATION															
ENGINEER'S CONCEPT ESTIMATE ROADS - BY SEGMENT															
DATE : 11/21/2008															
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT	REMARKS	Freeway lanes	Plaza Ramps	Service Drive Ramps	Service Drives	Local Roads	Intersection signalization	Signing & ITS	Roadway Storm Drainage	TOTAL
2040011	PAVEMENT REMOVAL	SY	115,256	3.50	403,396	PAVEMENT REMOVALS	161,358	153,290	88,747						403,396
2040013	SIDEWALK REMOVAL	SY	19,153	3.50	67,036	SIDEWALK REMOVALS				67,036					67,036
2040006	CURB & GUTTER REMOV	LF	48,305	4.00	193,220	CURB& GUTTER REM								193,220	193,220
2040009	FENCE REMOVAL	LF	18,528	1.50	27,792	FENCE REMOVALS				27,792					27,792
2047052	RETAINING WALL REMOV	LF	20,089	10.00	200,890	RETAINING WALL REM									200,890
2030011	DRAINAGE STRUCTURE	EACH	403	200.00	80,600	DRAINAGE REM								80,600	80,600
2030015	SEWER REMOVAL LESS	FT	25,434	8.00	203,472	DRAINAGE REM								203,472	203,472
8200000	SIGNAL REMOVALS	EACH	19	5,000.00	95,000	SIGNAL REM						95,000			95,000
2050010	EMBANKMENT	CY	222,252	3.10	688,981	SERVICE ROADS				688,981					688,981
2050016	EXCAVATION, EARTH	CY	476,780	3.60	1,716,408	SERVICE ROADS				1,716,408					1,716,408
3010002	SUBBASE, CIP	CY	28,076	8.00	224,607	NEW PAVEMENT	89,843	85,351	49,414						224,607
3030020	GEOTEXTILE SEPARATOR	SY	84,228	1.00	84,228	NEW PAVEMENT	33,691	32,007	18,530						84,228
3020016	AGGREGATE BASE 6"	SY	84,228	5.20	437,984	NEW PAVEMENT	175,194	166,434	96,356						437,984
6020112	CONCRETE PAVEMENT, NONREINF CONCRETE	SY	51,178	40.00	2,047,138	NEW PAVEMENT	818,855	777,912	450,370						2,047,138
6020222	SHOULDER, NONREINF CONCRETE 13"	SY	33,049	25.00	826,231	NEW PAVEMENT	330,493	313,968	181,771						826,231
6020200	JOINT CONTRACTION, CP	FT	32,340	10.00	323,402	NEW PAVEMENT	129,361	122,893	71,149						323,402
6020201	JOINT CONTRACTION, C3P	FT	24,014	3.00	72,043	NEW PAVEMENT	28,817	27,376	15,849						72,043
8020005	CURB & GUTTER, DET G-1	FT	4,223	17.00	71,791	NEW PAVEMENT								71,791	71,791
8020016	CURB & GUTTER, DET G-2	FT	5,233	16.00	83,728	NEW PAVEMENT								83,728	83,728
8020024	CURB & GUTTER, DET F-5	FT	39,658	16.00	634,528	NEW PAVEMENT								634,528	634,528
8020030	CURB & GUTTER, DET D-1	FT	5,200	18.00	93,600	NEW PAVEMENT								93,600	93,600
8020060	VALLEY GUTTER CONCRETE	FT	27,276	15.00	409,140	NEW PAVEMENT								409,140	409,140
	CONC BARRIER	FT	6,835	50.00	341,750	NEW PAVEMENT									
5020040	PAVEMENT 10" HMA	TON	70,294	50.00	3,514,706	SERVICE ROADS				3,514,706					3,514,706
3020010	AGGREGATE BASE 4"	SY	125,525	5.20	652,731	SERVICE ROADS				652,731					652,731
3030020	GEOTEXTILE SEPARATOR	SY	125,525	1.00	125,525	SERVICE ROADS				125,525					125,525
3010002	SUBBASE 12"	CY	41,842	10.00	418,417	SERVICE ROADS	167,367	158,999	92,052						418,417
8030002	SIDEWALK CONCRETE 4"	SF	156,145	3.00	468,435	SERVICE ROADS				468,435					468,435

MICHIGAN DEPARTMENT OF TRANSPORTATION															
ENGINEER'S CONCEPT ESTIMATE ROADS - BY SEGMENT															
DATE : 11/21/2008															
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT	REMARKS	Freeway lanes	Plaza Ramps	Service Drive Ramps	Service Drives	Local Roads	Intersection signalization	Signing & ITS	Roadway Storm Drainage	TOTAL
8110182	PAVEMENT MARKING, POLYUREA 4" WHITE	FT	115,506	0.90	103,955	SERVICE ROADS & RAMPS	56,136		6,237	41,582					103,955
8110183	PAVEMENT MARKING, POLYUREA 4" YELLOW	FT	42,089	0.90	37,880	SERVICE ROADS & RAMPS	20,455		2,273	15,152					37,880
8110225	PAVEMENT MARKING, POLYUREA LEFT TURN	EA	8	60.00	480	SERVICE ROADS				480					480
8110226	PAVEMENT MARKING, POLY THROE & LEFT	EA	15	80.00	1,200	SERVICE ROADS				1,200					1,200
8110227	PAVEMENT MARKING, POLY THROE & RIGHT	EA	13	80.00	1,040	SERVICE ROADS				1,040					1,040
8110207	PAVEMENT MARKING, POLY 24" STOP BAR	FT	1,066	9.00	9,594	SERVICE ROADS				9,594					9,594
8110200	PAVEMENT MARKING, POLY 6" CROSS WALK	FT	3,701	2.50	9,253	SERVICE ROADS				9,253					9,253
8100280	MAST ARM	EACH	50	5,000.00	250,000	INTERCHANGE		250,000							250,000
8190338	LUMINARIES 400W HIGH PRESSURE SODIUM	EACH	50	400.00	20,000	INTERCHANGE		20,000							20,000
8190287	LIGHT STANDARD SHAFT 41 TO 50 FT	EACH	50	2,200.00	110,000	INTERCHANGE		110,000							110,000
8190149	CONDUIT SCHEDULE 40, 3 INCH	FT	12,500	7.00	87,500	INTERCHANGE		87,500							87,500
8190211	DB CABLE IN CONDUIT, 600V, 1C#6	FT	31,250	2.00	62,500	INTERCHANGE		62,500							62,500
8190236	CABLE, EQUIPMENT GROUNDING WIRE, 1C#	FT	12,500	1.20	15,000	INTERCHANGE		15,000							15,000
4050001	PUMP STATION, COATING	LS	5	150,000.00	750,000	DRAINAGE								750,000	750,000
4050005	PUMP STATION EQUIPMENT, ELECTRIC	LS	5	200,000.00	1,000,000	DRAINAGE								1,000,000	1,000,000
4050001	PUMP STATION EQUIPMENT,	LS	5	250,000.00	1,250,000	DRAINAGE								1,250,000	1,250,000
4050001	PUMP STATION METAL WORK, MISC	LS	5	100,000.00	500,000	DRAINAGE								500,000	500,000
4020000	SEWER PIPE 24"	FT	8,494	60.00	509,640	DRAINAGE								509,640	509,640
4020000	SEWER PIPE 18"	FT	2,412	45.00	108,540	DRAINAGE								108,540	108,540
4020000	SEWER PIPE 15"	FT	4,824	35.00	168,840	DRAINAGE								168,840	168,840
4020000	SEWER PIPE 12"	FT	16,884	28.00	472,752	DRAINAGE								472,752	472,752
4030000	DR STRUCTURE, 24" DIAMETER	EACH	402	800.00	321,600	DRAINAGE								321,600	321,600
4030001	DR STRUCTURE, ADD DEPTH OF 24" DIA, 8 FT	FT	4,020	65.00	261,300	DRAINAGE								261,300	261,300
4030005	DR STRUCTURE, 48" DIAMETER	EACH	98	1,200.00	117,600	DRAINAGE								117,600	117,600
4030006	DR STRUCTURE, ADD DEPTH OF 48" DIA, 8 FT	FT	980	100.00	98,000	DRAINAGE								98,000	98,000
4040043	UNDERDRAIN, PIPE OPEN GRADE 6"	FT	55,947	6.00	335,682	DRAINAGE								335,682	335,682
8100025	CANTILEVER REMOVAL FOUNDATION	EACH	12	1,200.00	14,400	SIGNING							14,400		14,400
8100075	CANTILEVER REMOVAL	EACH	12	1,600.00	19,200	SIGNING							19,200		19,200

MICHIGAN DEPARTMENT OF TRANSPORTATION															
ENGINEER'S CONCEPT ESTIMATE ROADS - BY SEGMENT															
DATE : 11/21/2008															
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT	REMARKS	Freeway lanes	Plaza Ramps	Service Drive Ramps	Service Drives	Local Roads	Intersection signalization	Signing & ITS	Roadway Storm Drainage	TOTAL
8100200	SIGN TYPE I REMOVAL	EACH	12	160.00	1,920	SIGNING							1,920		1,920
8100201	SIGN TYPE II REMOVAL	EACH	42	20.00	840	SIGNING							840		840
8100202	SIGN TYPE III REMOVAL	EACH	366	10.00	3,660	SIGNING							3,660		3,660
8100213	TRUSS TYPE C, 65'	EACH	1	30,000.00	30,000	SIGNING							30,000		30,000
8100217	TRUSS TYPE C, 85'	EACH	9	35,000.00	315,000	SIGNING							315,000		315,000
8100115	FOUNDATION TRUSS TYPE C	EACH	20	13,000.00	260,000	SIGNING							260,000		260,000
8110031	CANTILEVER TYPE D	EACH	4	21,000.00	84,000	SIGNING							84,000		84,000
8100087	FOUNDATION CANTILEVER TYPE D	EACH	4	18,000.00	72,000	SIGNING							72,000		72,000
8100030	CANTILEVER TYPE C	EACH	5	20,000.00	100,000	SIGNING							100,000		100,000
8100082	FOUNDATION CANTILEVER TYPE C	EACH	5	19,000.00	95,000	SIGNING							95,000		95,000
8100156	POST STEEL 3 POUNDS	FT	5,154	5.00	25,770	SIGNING							25,770		25,770
8100165	WOOD POST 4X6	FT	744	20.00	14,880	SIGNING							14,880		14,880
8100166	WOOD POST 6X8	FT	790	25.00	19,750	SIGNING							19,750		19,750
8100175	SIGN TYPE IA	SF	8,336	21.00	175,046	SIGNING							175,046		175,046
8100176	SIGN TYPE IIA	SF	1,235	14.00	17,294	SIGNING							17,294		17,294
8100177	SIGN TYPE IIIA	SF	348	12.00	4,176	SIGNING							4,176		4,176
8100179	SIGN TYPE IB	SF	54	23.00	1,242	SIGNING							1,242		1,242
8100180	SIGN TYPE IIB	SF	408	17.00	6,936	SIGNING							6,936		6,936
8100181	SIGN TYPE IIIB	SF	1,992	13.00	25,896	SIGNING							25,896		25,896
8200000	CROSSING SIGNALS	LS	15	100,000.00	1,500,000	CROSSING SIGNALS						1,500,000			1,500,000
	INTELLIGENT TRANSPORTATION	LS	1	2,000,000.00	2,000,000	ITS							2,000,000		2,000,000
															0
	TOTAL roadway work				\$ 25,896,145		2,011,570	2,383,230	1,072,748	7,339,915	0	1,595,000	3,287,009	7,664,033	25,554,395

Community Benefits Cost Estimate

By: Corradino Group

Date: 11/20/08

PRELIMINARY INFRASTRUCTURE PRIORITY	STREET	LENGTH	BENEFIT	ADDITIONAL TO DRIC
Existing plus Committed	W Fort St	2.76		
Recently Completed	Dearborn St	0.51		NC
Recently Completed	Westend St	0.61	Mill and Resurface	NC
Mill and Resurface	Anthon St	0.22		\$105,079
Mill and Resurface	Barnes St	0.21		\$112,359
Mill and Resurface	Beard St	0.06		\$29,952
Mill and Resurface	Burdeno St	0.30		\$157,867
Mill and Resurface	Casgrain St	0.04		\$23,662
Mill and Resurface	Cavalry St	0.27		\$143,373
Mill and Resurface	Central St	0.05		\$27,300
Mill and Resurface	Clark St	0.27		\$145,093
Mill and Resurface	Copland	0.68		\$361,223
Mill and Resurface	Crawford St	0.22		\$115,423
Mill and Resurface	Dill Pl	0.18		\$93,418
Mill and Resurface	Dragon St	0.24		\$125,364
Mill and Resurface	Driggs St	0.11		\$60,653
Mill and Resurface	Erie St	0.22		\$116,813
Mill and Resurface	Ferdinand St	0.28		\$148,721
Mill and Resurface	Gaynor Ct	0.07		\$38,842
Mill and Resurface	Glinnan St	0.05		\$26,042
Mill and Resurface	Gould St	0.28		\$146,090
Mill and Resurface	Harvey St	0.11		\$60,655
Mill and Resurface	Hussar St	0.14		\$75,851
Mill and Resurface	Junction St	0.28		\$146,235
Mill and Resurface	Keller St	0.27		\$142,996
Mill and Resurface	Lansing St	0.07		\$39,413
Mill and Resurface	Lauderdale St	0.11		\$60,625
Mill and Resurface	Lewerenz St	0.05		\$27,427
Mill and Resurface	Livernois Ave	0.23		\$118,934
Mill and Resurface	Lyon St	0.24		\$129,313
Mill and Resurface	McKinstry St	0.28		\$146,860
Mill and Resurface	Medina St	0.21		\$108,856
Mill and Resurface	Melville St	1.07		\$563,472
Mill and Resurface	Military St	0.13		\$68,640
Mill and Resurface	Morrell St	0.28		\$149,606
Mill and Resurface	N Post St	0.17		\$90,973
Mill and Resurface	N Rademacher St	0.18		\$94,095
Mill and Resurface	N Solvay St	0.05		\$28,566
Mill and Resurface	Rademacher St	0.05		\$24,115
Mill and Resurface	Reeder St	0.11		\$60,634
Mill and Resurface	S Anderson St	0.09		\$46,875
Mill and Resurface	S Cary St	0.22		\$117,208
Mill and Resurface	S Clark St	0.15		\$81,282
Mill and Resurface	S Cobalt St	0.09		\$46,483
Mill and Resurface	S Cottrell St	0.30		\$156,390
Mill and Resurface	S Crossley St	0.30		\$158,989
Mill and Resurface	S Ferdinand St	0.23		\$120,082
Mill and Resurface	S Fortune St	0.09		\$46,975
Mill and Resurface	S Harbaugh St	0.66		\$347,969
Mill and Resurface	S Harrington St	0.24		\$127,252
Mill and Resurface	S Junction St	0.27		\$145,156
Mill and Resurface	S Leigh St	0.22		\$117,719
Mill and Resurface	S McKinstry St	0.18		\$94,650
Mill and Resurface	S Morrell St	0.25		\$130,479
Mill and Resurface	S Sire St	0.15		\$77,541
Mill and Resurface	S Solvay St	0.30		\$157,602
Mill and Resurface	S Summit St	0.21		\$113,176
Mill and Resurface	S Westend St	0.09		\$46,793
Mill and Resurface	S Yale St	0.12		\$65,445
Mill and Resurface	Sloan St	0.19		\$100,137
Mill and Resurface	South St	0.77		\$404,016
Mill and Resurface	Springwells St	0.04		\$23,272
Mill and Resurface	Summit St	0.20		\$106,662
Mill and Resurface	Thaddeus St	0.70		\$371,930
Mill and Resurface	Vanderbilt St	0.40		\$210,076
Mill and Resurface	W Jefferson Ave	2.07		\$1,093,436
Mill and Resurface	Waterman St	0.22		\$114,697
Mill and Resurface	Wheelock St	0.05		\$29,019
Mill and Resurface	Wilde St	0.06		\$29,519
Mill and Resurface	Zug Island Rd	0.28		\$145,383
Mill and Resurface	Ft Wayne	2.00		\$1,055,164
				\$9,995,919
Intersection Improvements	Dearborn and Jefferson			\$200,000
Intersection Improvements	Dearborn and Westend			\$200,000
Intersection Improvements	Clark and Jefferson			\$200,000
				\$600,000
Recreation and Greenways	Clark Park		Upgrade and maintain recreation areas	\$100,000
Recreation and Greenways	Delray Community Center		Upgrade and maintain recreation areas	\$100,000
Recreation and Greenways	Delray Boat Launch			\$100,000
Recreation and Greenways	Junction Harvey Playlot		Upgrade and maintain recreation areas	\$100,000
Recreation and Greenways	Riverside Park		Upgrade and maintain recreation areas	\$100,000
Recreation and Greenways	Expanded Riverfront Development??			\$100,000
Recreation and Greenways	Corktown and Mexican Town Greenway Plans??			\$100,000
				\$700,000
Truck Routing and Enforcement	Dearborn			\$20,000
Truck Routing and Enforcement	Clark		Accomplished via Education and Enforcement including Local Ordinances and Signing	\$20,000
Truck Routing and Enforcement	Green (Gateway Blvd.)			\$20,000
Truck Routing and Enforcement	Clark			\$20,000
				\$80,000
Improved Public Transit				\$100,000
				\$100,000
Economic Development Study				\$300,000
Air Quality Monitoring and Study				\$200,000
				\$500,000
Land Use Plans			Adoption of Local Draft Plan	NC
Land Use Plans			Adoption of Overlay Draft Plan With DRIC	NC
				\$11,875,919

Michigan Department of Transportation										C-1
Quantity Calculation										
DSE Firm Name:	Parsons Transportation Group									
Project Description:	DRIC									Calcs By: LEA Date: 9/19/2008
Contract Number:	646294									CHK By: EI Date: 11/06/083
DSE Project No:										QA/QC Reviewed By & Date: XX
PAY ITEM NUMBER	PAY ITEM NAME									FINAL QUANTITY
	EARTHWORK									0
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO										UNIT OF MEASURE
LOCATION	FROM	TO	CUT	FILL	REMARKS					
	STA	STA	CY	CY						
SBSD_Earth	000+00	097+00	189,604	21,494	FROM GEOPAK					
NBSD1_Earth	000+00	050+00	76,767	16,078	FROM GEOPAK					
NBSD2_Earth	001+00	027+00	46,858	720	FROM GEOPAK					
RampF_Earth	6169+00	6185+00	91,196	5,536	FROM GEOPAK					
RampJ_Earth	2113+00	2118+00	2,790	15	FROM GEOPAK					
RampA_Earth	1166+00	1176+00	0	151,298	FROM GEOPAK					
RampB_Earth	2172+00	2181+00	0	66,410	FROM GEOPAK					
Springwells_Earth	000+00	013+00	5,074	7,149	FROM GEOPAK					
Green_Earth	000+00	007+00	934	1,615	FROM GEOPAK					
Livernois_Earth	000+00	017+00	6,213	607	FROM GEOPAK					
Clark_Earth	000+00	007+00	2,727	89	FROM GEOPAK					
Green St. (extended)	00+00	33+67	26,252	0	FROM CAD					
Campbell St.	00+00	29+22	16,675	0	FROM CAD					
Clark St. (extended)	n/a	n/a	2,212	0	FROM CAD					
I-75	212+00	218+74	5,765	180	FROM CAD					
Livernois (Bump)	n/a	n/a	262	0	FROM CAD					
	SUBTOTAL		473,329	271,191						
SBSD_TopsoilStrip			5,464	5,464	FROM CAD					
NBSD1_TopsoilStrip			4,256	4,256	FROM CAD					
NBSD2_Earth_TopsoilStrip			846	846	FROM CAD					
RAMPs_TopsoilStrip			12,934	12,934	FROM CAD					
	SUBTOTAL		496,829	294,691						
Adjustment for double counting at structures			-20,049	-72,439						
	TOTAL		476,780	222,252						

Michigan Department of Transportation													C-1
Quantity Calculation													
DSE Firm Name:	Parsons Transportation Group												
Project Description:	DRIC												
Contract Number:	646294												
DSE Project No:													
	Calls By: LEA Date: 9/19/2008												
	CHK By: JJB Date: 10/31/2008												
	QA/QC Reviewed By & Date: XX												
PAY ITEM NUMBER	PAY ITEM NAME											FINAL QUANTITY	291,591
XXXXXX	NEW RETAINING WALL											UNIT OF MEASURE	SF
CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED													
<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	FROM	TO	LENGTH	AVERAGE HEIGHT(LF)	AREA	AREA	SY	REMARKS				
LOCATION		STA	STA	LF	HEIGHT(LF)	SF	SY						
NB	SD1	000+00	001+00	100	10.75	1,075	1,075						
		001+00	002+00	100	11.50	1,150	1,150						
		002+00	002+85	85	17.75	1,512	1,512						
		003+42	004+00	58	17.70	1,027	1,027						
		004+00	004+67	67	7.37	493	493						
		014+93	016+00	107	10.00	1,070	1,070						
		016+00	017+00	100	10.00	1,000	1,000						
		017+00	018+00	100	13.20	1,320	1,320						
		018+00	018+41	41	20.20	828	828						
		020+22	021+00	78	15.00	1,170	1,170						
		021+00	022+00	100	10.00	1,000	1,000						
		022+00	022+71	71	10.00	708	708						
		022+71	023+00	29	10.00	292	292						
		023+00	024+00	100	10.00	1,000	1,000						
		024+00	024+56	56	6.60	370	370						
		030+57	031+00	43	6.60	284	284						
		031+00	032+00	100	11.00	1,100	1,100						
		032+00	033+00	100	16.27	1,627	1,627						
		033+00	034+00	100	20.60	2,060	2,060						
		034+00	035+00	100	20.30	2,030	2,030						
		035+00	036+00	100	16.00	1,600	1,600						
		036+00	037+00	100	12.00	1,200	1,200						
		037+00	038+00	100	9.75	975	975						
		038+00	039+00	100	9.00	900	900						
		039+00	040+00	100	10.00	1,000	1,000						
		040+00	041+00	100	10.00	1,000	1,000						
		041+00	042+00	100	14.00	1,400	1,400						
		041+00	042+00	100	19.00	1,900	1,900						
		042+00	043+00	100	24.00	2,400	2,400						
		043+00	043+49	49	24.00	1,176	1,176						
		035+96	043+50	754	4.00	3,016	3,016						
		045+82	050+23	441	20.00	8,820	8,820						
RAMP A		1181+77	1182+41	64	24.00	1,536	1,536						
NB	SD2	000+00	001+00	100	9.00	900	900						
		001+00	002+00	100	19.50	1,950	1,950						
		002+00	003+00	100	17.00	1,700	1,700						
		003+00	004+00	100	12.00	1,200	1,200						
		004+00	005+00	100	11.50	1,150	1,150						
		005+00	006+00	100	12.20	1,220	1,220						
		006+00	007+00	100	12.50	1,250	1,250						
		007+00	008+00	100	13.25	1,325	1,325						
		008+00	009+00	100	13.62	1,362	1,362						
		009+00	010+00	100	13.35	1,335	1,335						
		001+00	011+00	1,000	13.44	13,440	13,440						
		011+00	012+00	100	13.90	1,390	1,390						
		012+00	013+00	100	14.50	1,450	1,450						
		013+00	014+00	100	14.39	1,439	1,439						
		014+00	014+71	71	13.24	940	940						

			021+53	023+00	147	12.00	1,764		
			023+00	024+00	100	13.65	1,365		
			024+00	025+00	100	15.91	1,591		
			025+00	026+00	100	21.73	2,173		
			026+00	027+94	194	18.43	3,573		
	SD		002+70	004+00	130	7.72	1,003		
			004+00	005+00	100	9.50	950		
			005+00	006+00	100	7.90	790		
			006+00	007+00	100	7.50	750		
			007+00	008+00	100	24.00	2,400		
			008+00	009+00	100	24.00	2,400		
			009+00	010+00	100	20.00	2,000		
			010+00	011+00	100	16.00	1,600		
			001+00	012+00	1,100	14.00	15,400		
			012+00	013+00	100	12.00	1,200		
			013+00	014+00	100	12.60	1,260		
			014+00	015+78	178	8.35	1,486		
			014+33	016+00	167	6.62	1,106		
			016+00	017+00	100	10.60	1,060		
			017+00	018+00	100	12.50	1,250		
			018+00	019+00	100	12.50	1,250		
			019+00	020+00	100	15.00	1,500		
			020+00	021+00	100	17.21	1,721		
			021+00	022+00	100	15.97	1,597		
			022+00	023+00	100	20.00	2,000		
			023+00	024+00	100	24.00	2,400		
			024+00	025+00	100	24.00	2,400		
			025+00	026+00	100	20.00	2,000		
			026+00	027+00	100	18.00	1,800		
			027+00	028+00	100	18.00	1,800		
			028+00	029+00	100	18.00	1,800		
			029+00	030+00	100	16.00	1,600		
			030+00	031+00	100	16.00	1,600		
			031+00	032+00	100	14.00	1,400		
			032+00	033+00	100	16.00	1,600		
			033+00	034+00	100	16.00	1,600		
			034+00	037+00	300	18.00	5,400		
			037+00	038+00	100	20.00	2,000		
			038+00	041+00	300	24.00	7,200		
			041+00	042+00	100	20.00	2,000		
			042+00	043+00	100	18.00	1,800		
			043+00	044+00	100	16.00	1,600		
			044+00	045+00	100	12.00	1,200		
			045+00	046+00	100	18.00	1,800		
			046+00	047+42	142	19.00	2,698		
			044+66	047+34	268	30.08	8,060		
			052+75	056+88	413	12.00	4,956		
			059+65	060+00	35	10.11	354		
			060+00	061+00	100	8.15	815		
			061+00	062+00	100	12.00	1,200		
			062+00	063+00	100	16.00	1,600		
			063+00	065+00	200	20.00	4,000		
			065+00	066+00	100	14.97	1,497		
			066+00	072+00	600	20.00	12,000		
			072+00	073+00	100	16.00	1,600		
			073+00	074+23	123	15.34	1,886		
			072+79	075+00	221	14.86	3,283		
			075+00	076+00	100	10.17	1,017		
			076+00	077+00	100	14.07	1,407		
			077+00	078+00	100	47.80	4,780		
			078+00	079+00	100	14.00	1,400		
			079+00	080+00	100	18.00	1,800		

	080+00	081+00	100	25.57	2,557		
	081+00	082+00	100	22.00	2,200		
	082+00	083+00	100	20.58	2,058		
	083+00	085+00	200	18.00	3,600		
	085+00	086+00	100	16.00	1,600		
	086+00	087+00	100	16.95	1,695		
	087+00	088+00	100	16.65	1,665		
	088+00	089+00	100	16.50	1,650		
	089+00	090+00	100	14.00	1,400		
	090+00	091+00	100	16.93	1,693		
	091+00	091+72	72	18.00	1,304		
	091+72	092+00	28	14.00	385		
	092+00	093+00	100	19.35	1,935		
	093+00	094+00	100	20.47	2,047		
	094+00	095+00	100	22.29	2,229		
	095+00	096+00	100	24.85	2,485		
	096+00	097+00	100	26.68	2,668		
	097+00	098+87	187	12.15	2,272		
RAMP A	1171+00	1172+00	100	36.14	3,614		
	1172+00	1173+00	100	51.00	5,100		
	1173+00	1174+49	149	46.10	6,869		
RAMP D	4213+03	4218+74	571	11.00	6,281		
SB SD	076+79	080+66	387	9.45	3,657		
		TOTAL	18,526		291,591		

Michigan Department of Transportation												C-1	
Quantity Calculation													
DSE Firm Name:		Parsons Transportation Group											
Project Description:		DRIC										Date: 11/5/2008	
Contract Number:		646294										Date: XX	
DSE Project No:												QA/QC Reviewed By & Date: XX	
PAY ITEM NUMBER		CONC BARRIER										FINAL QUANTITY	
PAY ITEM NAME												UNIT OF MEASURE	
XXXXXXX												SF	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED													
LOCATION	FROM STA	TO STA	LENGTH LF	AVERAGE HEIGHT(LF)	AREA SF	AREA SY	REMARKS						
NB I-75	116+52	118+99	247										
NB I-75	109+26	117+78	852										
NB I-75	123+60	128+50	490										
NB I-75	199+58	206+37	679										
SB I-75	109+26	116+80	754										
RAMP A	1167+15	1174+50	735										
RAMP B	2172+17	2181+08	891										
RAMP B	2172+17	2178+76	659										
RAMP C	3175+90	3178+52	262										
RAMP C	3175+90	3177+97	207										
RAMP D	4167+27	4173+57	630										
RAMP D	4169+28	4173+57	429										
TOTAL						6,835							

Michigan Department of Transportation																						
Quantity Calculation																						
DSE Firm Name: Parsons Transportation Group																						
Project Description: DRIC																						
Contract Number:																						
DSE Project No: 646294																						
			Calcs By: LEA Date: 9/19/2008																			
			CHK By: XX Date: XX																			
			OA/QC Reviewed By & Date: XX																			
STA	Cantiliver Removal	Founation Cant rem	Sign type I Rem	Sign type II Rem	Sign type III Rem	Truss type C, 65'	Truss type C, 85'	Found truss typ C	Cantiliver Type D	Foun Cant type D1	Cantiliver type C	Fnd Cant type C	Post steel 3 lb	Wood Post 4x6	Wood Post 6x8	Sign type IA	Sign type IIA	Sign type IIIA	Sign type IB	Sign type IIB	Sign type IIIB	
ITEM #	Ea	Ea	Ea	Ea	Ea	Ea	Ea	Ea	Ea	Ea	Ea	Ea	Ft	Ft	Ft	Sf	Sf	Sf	Sf	Sf	Sf	
NB-109+00						1		2								353						
NB-115+00							1	2								372.25						
Ramp J	2	2	2	5	33								279	100	105			166.5	58	9	16	128
NB Springweells bridge																133						
Ramp L	2	2	2	5	33				1	1			279	100	105	166	58	58	9	16	128	
NB Green St bridge																81						
SB 140+00										1	1					130.5						
NB- 143+00								1	2							726.5						
NB - Pedestrian bridge 145+79																81						
SB - Pedestrian bridge 145+79																126						
NB- 143+00								1	2							731.25						
NB - Pedestrian bridge 160+79																126						
SB Ramp G - 170+00	2	2	2	5	33				1	1			279	100	105	120.5		58	9	16	128	
NB - Ramp B - 150+00	2	2	2	5	33				1	1			279	100	105	81	81	58	9	16	128	
NB Livernois Ave. bridge																255.75						
SB - 172+00								1	2							731.25						
NB Ramp F	2	2	2	5	33								279	100	105			94.25	58	9	16	128
NB Ramp F															36	32						
SB - 178+00																112.5						
NB- 180+00								1	2							372.25						
SB- 189+00																124.5						
NB-192+00								1	2							372.25						
NB - Pedestrian bridge 188+84																81						
NB - Pedestrian bridge 188+84																126						
SB - 198+70								1	2							731.25						
NB Clark St bridge																704						
SB Clark St bridge																704						
SB - Vinewood St								1	2							224.25						
SB- 1 mile ahead of Exit 47								1	2							325.5						
SB - 1/4 mile ahead of Exit 47													1	1		81						
SB - 1/2 mile ahead of Exit 47													1	1		81						
NB SD -17+00																		166.5				
SB-SD- 27+00																		32		58		
NB-SD- 46+00																		36		58		
SB-SD- 56+00																		36		58		
NB- SD- 00+00																			32		189.5	
SB-SD- 98+00																			36		58	
SB-SD- 99+00																				32	166.5	
NB-SDXSPRINGWELLS				1	14											290					26	102
FORT STXSPRINGWELLS				1	14											290					26	102
SB-SD/SPRINGWELLS				1	14											290					26	102
NB-SD/GREEN ST				1	14											290					26	102
SB-SD/GREEN ST				1	14											290					26	102
FORT ST/GREEN ST				1	14											290					26	102
NB-SD/LIVERNOS AVE				1	14											290					26	102
SB-SD/LIVERNOS AVE				1	14											290					26	102
NB-SD/JUNCTION ST				1	14											290					26	102
NB-SD/CLARK ST				1	14											290					26	102
SB-SD/CLARK ST				1	14											290					26	102
FORT ST/CLARK ST				1	14											290					26	102
SB - Ramp A	2	2	2	5	33				1	1			279	100	105	81	81	58	9	16	128	
SB - Ramp D	2	2	2	5	33				1	1			279	100	105	81	81	58	9	16	128	
TOTAL	12	12	12	42	366	1	9	20	4	4	5	5	5154	744	790	8335.5	1235.25	348	54	408	1992	

Michigan Department of Transportation										C-1	
Quantity Calculation											
DSE Firm Name:	Parsons Transportation Group										
Project Description:	DRIC									Calcs By: LEA	Date: 9/19/2008
Contract Number:	646294									CHK By: JJB	Date: 11/3/2008
DSE Project No:										QA/QC Reviewed By & Date: XX	
PAY ITEM NUMBER	PAY ITEM NAME									FINAL QUANTITY	55,947
4040043	UNDERDRAIN, PIPE OPEN GRADED, 6"									UNIT OF MEASURE	FT
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED											
LOCATION	FROM	TO	STA	STA	TOTAL	REMARKS					
NB	110+74	213+00			10,226						
SB	110+74	213+00			10,226						
NB SERVICE ROAD	110+74	213+00			10,226						
SB SERVICE ROAD	110+74	213+00			10,226						
RAMP J	1125+16	1132+97			781						
RAMP J	2112+71	2118+58			587						
RAMP K	3115+34	3119+82			448						
RAMP L	4125+86	4132+29			643						
RAMP A	1167+00	1174+78			778						
RAMP A	1181+88	1192+00			1,012						
RAMP B	2151+45	2162+46			1,101						
RAMP B	2171+89	2181+00			911						
RAMP C	3148+32	3162+00			1,368						
RAMP C	3181+00	3184+00			300						
RAMP C	3175+55	3179+00			345						
RAMP D	4165+00	4173+85			885						
RAMP D	4190+60	4198+72			812						
RAMP E	5169+00	5181+80			1,280						
RAMP F	6168+45	6185+00			1,655						
RAMP G	7158+44	7170+17			1,173						
RAMP H	8181+57	8191+21			964						
						TOTAL	55,947				

Michigan Department of Transportation							C-1
Quantity Calculation							
DSE Firm Name:		Parsons Transportation Group					
Project Description:		DRIC		Calcs By: LEA		Date: 9/19/2008	
Contract Number:				CHK By: XX		Date: XX	
DSE Project No:		646294		QA/QC Reviewed By & Date: XX			
						FINAL QUANTITY	980
PAY ITEM NUMBER		PAY ITEM NAME				UNIT OF MEASURE	
4030006		DR STRUCTURE, ADD DEPTH OF 48" DIA, 8 FT TO 15 FT				FT	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED					
LOCATION	FROM	TO		# OF	AVERAGE	REMARKS	
	STA	STA		STRUCTURES	DEPTH=10'		
NB	110+74	213+00		51	510		
SB	110+74	213+00		47	470		
				TOTAL	980		

Michigan Department of Transportation							C-1
Quantity Calculation							
DSE Firm Name:	Parsons Transportation Group						
Project Description:	DRIC				Calcs By: LEA	Date: 9/19/2008	
Contract Number:					CHK By: XX	Date: XX	
DSE Project No:	646294				QA/QC Reviewed By & Date: XX		
					FINAL QUANTITY	4,020	
PAY ITEM NUMBER	PAY ITEM NAME					UNIT OF MEASURE	
4030001	DR STRUCTURE, ADD DEPTH OF 24" DIA, 8 FT TO 15 FT					FT	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED						
LOCATION	FROM	TO			# OF	AVERAGE	REMARKS
	STA	STA			STRUCTURES	DEPTH=10'	
NB	110+74	213+00			51	510	
SB	110+74	213+00			47	470	
NB SERVICE ROAD	110+74	213+00			156	1,560	
SB SERVICE ROAD	110+74	213+00			148	1,480	
					TOTAL	4,020	

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:		Parsons Transportation Group						
Project Description:		DRIC			Calcs By: LEA		Date: 9/19/2008	
Contract Number:					CHK By: XX		Date: XX	
DSE Project No:		646294			QA/QC Reviewed By & Date: XX			
							FINAL QUANTITY	
							402	
PAY ITEM NUMBER		PAY ITEM NAME				UNIT OF MEASURE		
4030000		DR STRUCTURE, 24" DIAMETER				EACH		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED						
LOCATION		FROM	TO		# OF	AVERAGE	REMARKS	
		STA	STA		STRUCTURES	LENGTH		
NB		110+74	213+00		51			
SB		110+74	213+00		47			
NB SERVICE ROAD		110+74	213+00		156			
SB SERVICE ROAD		110+74	213+00		148			
					TOTAL	402		

Michigan Department of Transportation							C-1
Quantity Calculation							
DSE Firm Name:		Parsons Transportation Group					
Project Description:		DRIC		Calcs By: LEA		Date: 9/19/2008	
Contract Number:				CHK By: XX		Date: XX	
DSE Project No:		646294		QA/QC Reviewed By & Date: XX			
						FINAL QUANTITY	98
PAY ITEM NUMBER	PAY ITEM NAME					UNIT OF MEASURE	
4030000	DR STRUCTURE, 48" DIAMETER					EACH	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED					
LOCATION	FROM	TO			# OF	REMARKS	
	STA	STA			STRUCTURES		
NB	110+74	213+00			51		
SB	110+74	213+00			47		
					TOTAL	98	

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:	Parsons Transportation Group							
Project Description:	DRIC					Calcs By: LEA	Date: 9/19/2008	
Contract Number:						CHK By: XX	Date: XX	
DSE Project No:	646294					QA/QC Reviewed By & Date: XX		
						FINAL QUANTITY	8,494	
PAY ITEM NUMBER	PAY ITEM NAME						UNIT OF MEASURE	
4020000	SEWER PIPE 24"						FT	
<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED						
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	REMARKS	
	STA	STA	LF	WIDTH (LF)	SF	SY		
NB	117+89	136+98	1,909				PS # 1	
NB	139+78	152+41	1,263				PS # 2	
NB	156+72	177+38	2,066				PS # 3	
NB	180+45	213+01	3,256				PS # 4	
		TOTAL	8,494					

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:	Parsons Transportation Group							
Project Description:	DRIC				Calcs By: LEA		Date: 9/19/2008	
Contract Number:					CHK By: XX		Date: XX	
DSE Project No:	646294				QA/QC Reviewed By & Date: XX			
							FINAL QUANTITY	31,250
PAY ITEM NUMBER	PAY ITEM NAME					UNIT OF MEASURE		
8190211	DB CABLE, IN CONDUIT, 600V, 1C#6					FT		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED							
LOCATION	FROM	TO	LENGTH	AVERAGE	# OF	AREA	REMARKS	
	STA	STA	LF	LENGTH (LF)	LIGHT POLES	SY		
RAMP C	3139+00	3165+00	2,600	250	10			
RAMP C	3180+00	3184+00	400	250	2			
RAMP G	7158+44	7171+00	1,256	250	5			
RAMP G	7171+00	7175+00	400	250	2			
RAMP H	8175+00	8191+21	1,621	250	6			
RAMP D	4165+00	4174+00	900	250	4			
RAMP D	4191+00	4198+72	772	250	3			
RAMP D	4198+72	4212+48	1,376	250	6			
RAMP F	6167+60	6185+35	1,775	250	7			
RAMP E	5168+00	5182+00	1,400	250	6			
	TOTAL LENGTH		12,500		50			
	TOTAL CABLE		31,250					

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:	Parsons Transportation Group							
Project Description:	DRIC				Calcs By: LEA		Date: 9/19/2008	
Contract Number:					CHK By: XX		Date: XX	
DSE Project No:	646294				QA/QC Reviewed By & Date: XX			
						FINAL QUANTITY	12,500	
PAY ITEM NUMBER	PAY ITEM NAME					UNIT OF MEASURE		
8190149	CONDUIT, SCHEDULE 40, 3 INCHES					FT		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED							
LOCATION	FROM	TO	LENGTH	AVERAGE	# OF	AREA	REMARKS	
	STA	STA	LF	LENGTH (LF)	LIGHT POLES	SY		
RAMP C	3139+00	3165+00	2,600	250	10			
RAMP C	3180+00	3184+00	400	250	2			
RAMP G	7158+44	7171+00	1,256	250	5			
RAMP G	7171+00	7175+00	400	250	2			
RAMP H	8175+00	8191+21	1,621	250	6			
RAMP D	4165+00	4174+00	900	250	4			
RAMP D	4191+00	4198+72	772	250	3			
RAMP D	4198+72	4212+48	1,376	250	6			
RAMP F	6167+60	6185+35	1,775	250	7			
RAMP E	5168+00	5182+00	1,400	250	6			
		TOTAL	12,500		50			

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:		Parsons Transportation Group						
Project Description:		DRIC		Calcs By: LEA		Date: 9/19/2008		
Contract Number:				CHK By: XX		Date: XX		
DSE Project No:		646294		QA/QC Reviewed By & Date: XX				
							FINAL QUANTITY	50
PAY ITEM NUMBER		PAY ITEM NAME				UNIT OF MEASURE		
8190287		LIGHT STANDARD SHAFT, 41 TO 50 FT				EACH		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED						
LOCATION	FROM	TO	LENGTH	AVERAGE	# OF	AREA	REMARKS	
	STA	STA	LF	LENGTH (LF)	LIGHT POLES	SY		
RAMP C	3139+00	3165+00	2,600	250	10			
RAMP C	3180+00	3184+00	400	250	2			
RAMP G	7158+44	7171+00	1,256	250	5			
RAMP G	7171+00	7175+00	400	250	2			
RAMP H	8175+00	8191+21	1,621	250	6			
RAMP D	4165+00	4174+00	900	250	4			
RAMP D	4191+00	4198+72	772	250	3			
RAMP D	4198+72	4212+48	1,376	250	6			
RAMP F	6167+60	6185+35	1,775	250	7			
RAMP E	5168+00	5182+00	1,400	250	6			
		TOTAL	12,500		50			

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:		Parsons Transportation Group						
Project Description:		DRIC		Calcs By: LEA		Date: 9/19/2008		
Contract Number:				CHK By: XX		Date: XX		
DSE Project No:		646294		QA/QC Reviewed By & Date: XX				
							FINAL QUANTITY	
							50	
PAY ITEM NUMBER	PAY ITEM NAME						UNIT OF MEASURE	
8190338	LUMINAIRE 400 W HIGH PRESSURE SODIUM						EACH	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED						
LOCATION	FROM	TO	LENGTH	AVERAGE	# OF	AREA	REMARKS	
	STA	STA	LF	LENGTH (LF)	LIGHT POLES	SY		
RAMP C	3139+00	3165+00	2,600	250	10			
RAMP C	3180+00	3184+00	400	250	2			
RAMP G	7158+44	7171+00	1,256	250	5			
RAMP G	7171+00	7175+00	400	250	2			
RAMP H	8175+00	8191+21	1,621	250	6			
RAMP D	4165+00	4174+00	900	250	4			
RAMP D	4191+00	4198+72	772	250	3			
RAMP D	4198+72	4212+48	1,376	250	6			
RAMP F	6167+60	6185+35	1,775	250	7			
RAMP E	5168+00	5182+00	1,400	250	6			
		TOTAL	12,500		50			

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:		Parsons Transportation Group						
Project Description:		DRIC		Calcs By: LEA		Date: 9/19/2008		
Contract Number:				CHK By: XX		Date: XX		
DSE Project No:		646294		QA/QC Reviewed By & Date: XX				
							FINAL QUANTITY	
							50	
PAY ITEM NUMBER	PAY ITEM NAME						UNIT OF MEASURE	
8100280	MAST ARM						EACH	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED						
LOCATION	FROM	TO	LENGTH	AVERAGE	# OF	AREA	REMARKS	
	STA	STA	LF	LENGTH (LF)	LIGHT POLES	SY		
RAMP C	3139+00	3165+00	2,600	250	10			
RAMP C	3180+00	3184+00	400	250	2			
RAMP G	7158+44	7171+00	1,256	250	5			
RAMP G	7171+00	7175+00	400	250	2			
RAMP H	8175+00	8191+21	1,621	250	6			
RAMP D	4165+00	4174+00	900	250	4			
RAMP D	4191+00	4198+72	772	250	3			
RAMP D	4198+72	4212+48	1,376	250	6			
RAMP F	6167+60	6185+35	1,775	250	7			
RAMP E	5168+00	5182+00	1,400	250	6			
		TOTAL	12,500		50			

Michigan Department of Transportation							C-1
Quantity Calculation							
DSE Firm Name:		Parsons Transportation Group					
Project Description:		DRIC		Calcs By: LEA		Date: 9/19/2008	
Contract Number:				CHK By: JJB		Date: 10/30/2008	
DSE Project No:		646294		QA/QC Reviewed By & Date: XX			
						FINAL QUANTITY	3,701
PAY ITEM NUMBER		PAY ITEM NAME				UNIT OF MEASURE	
8110200		PAVEMENT MARKING POLYUREA , 6" CROSS WALK				FT	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED					
LOCATION		LENGTH			REMARKS		
		LF					
SPRING WELLS X NB SERVICE ROAD		330					
SPRING WELLS X SB SERVICE ROAD		329					
GREEN STREET X NB SERVICE ROAD		225					
GREEN STREET X SB SERVICE ROAD		150					
LIVERNOIS AVENUE X NB SERVICE ROAD		155					
LIVERNOIS AVENUE X SB SERVICE ROAD		419					
CLARK AVENUE X NB SERVICE ROAD		282					
CLARK AVENUE X SB SERVICE ROAD		300					
SPRINGWELLS X FORT		348					
PED BRIDGE		112					
GREEN X FORT		296					
PED BRIDGE		137					
PED BRIDGE		131					
PED BRIDGE		120					
PED BRIDGE		118					
CLARK X FORT		249					
		TOTAL		3,701			

Michigan Department of Transportation										C-1	
Quantity Calculation											
DSE Firm Name:		Parsons Transportation Group									
Project Description:		DRIC				Calcs By: LEA		Date: 9/19/2008			
Contract Number:						CHK By: JJB		Date: 11/4/2008			
DSE Project No:		646294				QA/QC Reviewed By & Date: XX					
										FINAL QUANTITY	115,506
PAY ITEM NUMBER		PAY ITEM NAME						UNIT OF MEASURE			
8110182		PAVEMENT MARKING POLYUREA, 4" WHITE						FT			
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED									
LOCATION	FROM	TO	LENGTH	SUBTOTALS		REMARKS					
	STA	STA	LF								
RAMP I	125+19	132+96	777								
RAMP J	109+27	118+84	957								
RAMP K	109+27	119+45	1,018								
RAMP L	125+87	135+00	913	3,665	3.17%						
NB	132+96	149+46	1,650								
NB	132+58	149+46	1,688								
NB	112+76	132+97	2,021								
NB	151+47	164+56	1,309								
NB	168+39	181+71	1,332								
SB	211+83	214+83	300								
SB	212+48	218+73	625								
RAMP B	2149+45	2180+42	3,097								
RAMP A	1167+21	1211+83	4,462								
SB OUTSIDE LANE	115+21	132+29	1,708								
SB OUTSIDE LANE	148+33	170+16	2,183								
RAMP C	3135+00	3182+06	4,706								
RAMP G	7158+44	7171+00	1,256								
RAMP G	7171+00	7175+00	400								
RAMP H	8175+00	8191+21	1,621								
RAMP D	4165+00	4212+48	4,748								
RAMP F	6164+60	6185+35	2,075								
RAMP E	5168+00	5191+93	2,393	37,574.00	32.53%						
NB SERVICE ROAD	003+45	006+27	282								
NB SERVICE ROAD	006+27	018+95	1,268								
NB SERVICE ROAD	019+46	048+48	2,902								
NB SERVICE ROAD	000+00	024+55	2,455								
SB SERVICE ROAD	000+00	007+37	737								
SB SERVICE ROAD	008+16	023+59	1,543								
SB SERVICE ROAD	023+59	053+79	3,020								
SB SERVICE ROAD	053+79	076+78	2,299								
SB SERVICE ROAD	076+78	095+25	1,847								
SPRINGWELLS			1,823								
GREEN			5,224								
LIVERNOIS			1,118								
CLARK			8,117								
JEFFERSON			41,632	74,267.00	64.30%						
			TOTAL	115,506	115,506						

Michigan Department of Transportation												C-1			
Quantity Calculation															
DSE Firm Name: Parsons Transportation Group															
Project Description: DRIC												Calcs By: LEA		Date: 9/19/2008	
Contract Number: 646294												CHK By: JJB		Date: 11/4/2008	
DSE Project No: 646294												QA/QC Reviewed By & Date: XX			
PAY ITEM NUMBER												FINAL QUANTITY		33,049	
PAY ITEM NAME												UNIT OF MEASURE			
6020222												SY			
SHOULDER, NONREINF CONCRETE 13"															
CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED															
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO															
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	AREA	REMARKS	AREA	SY	SY	SY			
	STA	STA	LF	WIDTH (LF)	SF	SF	SF		SF						
RAMP J	2109+26	2118+57			5,127	570	AREA FROM CAD								
RAMP K	3109+27	3118+49			8,290	921	AREA FROM CAD								
RAMP I	1125+16	1133+00			4,351	483	AREA FROM CAD								
RAMP L	4125+86	4132+57			3,884	432	AREA FROM CAD								
NB OUTSIDE SHOULDER	112+76	115+02			2,112	235	AREA FROM CAD								
NB	115+02	129+81	1,479.00	8.50	12,572	1,397									
NB OUTSIDE SHOULDER	129+81	133+00			2,269	252	AREA FROM CAD								
NB	133+00	149+46	1,646.00	8.50	13,991	1,555									
RAMP B RIGHT	2149+45	2162+46	1,301.00	6.00	7,806	867									
RAMP B LEFT	2154+33	2162+46	813.00	4.00	3,252	361									
RAMP B RIGHT	2171+89	2181+00	911.00	6.00	5,466	607									
RAMP B LEFT	2171+89	2179+00	711.00	4.00	2,844	316									
RAMP A RIGHT	1167+15	1174+78	763.00	6.00	4,578	509									
RAMP A RIGHT	1181+88	1211+83	2,995.00	6.00	17,970	1,997									
RAMP A LEFT	1170+00	1174+78	478.00	4.00	1,912	212									
RAMP A LEFT	1181+88	1187+76	588.00	4.00	2,352	261									
NB OUTSIDE SHOULDER	151+47	154+32			1,895	211	AREA FROM CAD - GORE								
NB	154+32	167+00	1,268.00	8.50	10,778	1,198									
NB	168+39	171+25			3,407	379	AREA FROM CAD - GORE								
NB	171+25	177+70	645.00	8.50	5,483	609									
NB	177+70	181+71			3,071	341	AREA FROM CAD - GORE								
NB	187+71	191+94			3,394	377	AREA FROM CAD - GORE								
SB	115+21	117+24			2,092	232	AREA FROM CAD - GORE								
SB OUTSIDE LANE	117+24	130+06	1,282.00	8.50	10,897	1,211									
SB	130+06	132+29			2,125	236	AREA FROM CAD - GORE								
SB OUTSIDE LANE	132+29	148+33	1,604.00	8.50	13,634	1,515									
SB	148+32	154+07			5,218	580	AREA FROM CAD - GORE								
SB OUTSIDE LANE	154+07	167+30	1,323.00	8.50	11,246	1,250									
SB	167+30	170+16			3,363	374	AREA FROM CAD - GORE								
RAMP C LEFT	3148+00	3162+00	1,400.00	6.00	8,400	933									
RAMP C RIGHT	3154+06	3162+00	794.00	4.00	3,176	353									
RAMP C LEFT	3175+55	3179+00	345.00	6.00	2,070	230									
RAMP C RIGHT	3175+55	3179+00	345.00	4.00	1,380	153									
RAMP C RIGHT	3181+37	3184+11	274.00	4.00	1,096	122									
RAMP G LEFT	7158+44	7167+48	904.00	6.00	5,424	603									
RAMP G RIGHT	7158+44	7167+33	889.00	4.70	4,178	464									
RAMP H LEFT	8181+67	8191+00	933.00	6.00	5,598	622									
RAMP H	8181+57	8185+60			3,136	348	AREA FROM CAD - GORE								
RAMP H RIGHT	8185+60	8192+00	640.00	4.00	2,560	284									
SB OUTSIDE LANE	185+54	195+85	1,031.00	8.50	8,764	974									
SB	195+85	198+71			3,430	381	AREA FROM CAD - GORE								
SB	167+50	181+65	1,415.00	8.50	12,028	1,336									
SB	212+49	218+74	625.00	8.50	5,313	590									
RAMP D LEFT	4165+00	4173+85	885.00	6.00	5,310	590									
RAMP D RIGHT	4165+00	4173+85	885.00	4.00	3,540	393									
RAMP D LEFT	4190+60	4198+92	832.00	6.00	4,992	555									
RAMP D RIGHT	4190+60	4195+85	525.00	4.00	2,100	233									
RAMP D LEFT	4198+92	4212+48	1,356.00	8.50	11,526	1,281									

RAMP F RIGHT	6167+60	6185+35	1,775.00	6.00	10,650	1,183	
RAMP F LEFT	6171+32	6185+35	1,403.00	4.00	5,612	624	
RAMP E LEFT	5168+00	5177+74	974.00	4.00	3,896	433	
RAMP E RIGHT	5168+00	5187+72	1,972.00	4.00	7,888	876	
					TOTAL	33,049	

Michigan Department of Transportation										C-1	
Quantity Calculation											
DSE Firm Name:	Parsons Transportation Group										
Project Description:	DRIC						Calcs By: LEA	Date: 9/19/2008			
Contract Number:							CHK By: XX	Date: XX			
DSE Project No:	646294						QA/QC Reviewed By & Date: XX				
										FINAL QUANTITY	32,340
PAY ITEM NUMBER	PAY ITEM NAME								UNIT OF MEASURE		
6020200	JOINT CONTRACTION, CP								FT		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED											
LOCATION	FROM	TO	LENGTH	AREA	AVERAGE	# OF SPACING	LENGTH	REMARKS			
	STA	STA	LF	SF	WIDTH (LF)	AT 14'	FT				
RAMP I	1125+17	1132+97	780.00	9,374	12.02	56	682	AREA FROM CAD			
RAMP J	2112+71	2118+58	587.00	14,802	25.22	42	1,083	AREA FROM CAD			
RAMP K	3115+33	3119+81	448.00	5,369	11.98	32	395	AREA FROM CAD			
RAMP L	4126+86	4132+58	572.00	7,712	13.48	41	564	AREA FROM CAD			
NB	132+96	137+67	471.00	1,896	4.03	34	139	AREA FROM CAD			
NB	138+49	149+46	1,097.00	13,822	12.60	78	1,000				
RAMP B	2149+45	2180+42	3,097.00	60,877	19.66	221	4,368	AREA FROM CAD			
RAMP A	1167+21	1192+00	2,479.00	46,828	18.89	177	3,364	AREA FROM CAD			
RAMP A	1192+00	1199+00	700.00	9,091	12.99	50	662	AREA FROM CAD			
RAMP A	1197+00	1214+82	1,782.00	19,690	11.05	127	1,417	AREA FROM CAD			
SB OUTSIDE LANE	120+56	132+29	1,173.00	12,262	10.45	84	886	AREA FROM CAD			
SB OUTSIDE LANE	132+29	139+00	671.00	12,262	18.27	48	894	AREA FROM CAD			
RAMP C	3139+00	3165+00	2,600.00	62,400	24.00	186	4,481				
RAMP C	3180+00	3184+00	400.00	9,600	24.00	29	710				
RAMP G	7158+44	7171+00	1,256.00	20,096	16.00	90	1,451				
RAMP G	7171+00	7175+00	400.00	4,700	11.75	29	347				
RAMP H	8175+00	8191+21	1,621.00	25,936	16.00	116	1,869				
RAMP D	4165+00	4174+00	900.00	21,600	24.00	64	1,567				
RAMP D	4191+00	4198+72	772.00	18,528	24.00	55	1,347				
RAMP D	4198+72	4212+48	1,376.00	20,120	14.62	98	1,452	AREA FROM CAD			
RAMP F	6167+60	6185+35	1,775.00	28,400	16.00	127	2,045				
RAMP E	5168+00	5182+00	1,400.00	22,400	16.00	100	1,616				
						TOTAL		32,340			

Michigan Department of Transportation													C-1	
Quantity Calculation														
DSE Firm Name: Parsons Transportation Group														
Project Description: DRIC														
Contract Number: 646294														
DSE Project No: 646294														
Date: 9/19/2008														
Date: XX														
OAIQC Reviewed By & Date: XX														
FINAL QUANTITY													24,014	
UNIT OF MEASURE													FT	
PAY ITEM NUMBER														
PAY ITEM NAME														
6020201														
JOINT CONTRACTION, C3P														
CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED														
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO														
LOCATION	FROM STA	TO STA	LENGTH LF	AREA SF	AVERAGE WIDTH (LF)	# OF SPACING AT 14'	LENGTH FT	REMARKS						
RAMP J	1125+17	1132+97	780.00	5,127	6.57	56	373	AREA FROM CAD						
RAMP K	2112+71	2118+58	587.00	8,290	14.12	42	606	AREA FROM CAD						
RAMP I	3115+33	3119+81	448.00	4,351	9.71	32	320	AREA FROM CAD						
RAMP L	4126+86	4132+58	572.00	3,884	6.79	41	284	AREA FROM CAD						
NB OUTSIDE SHOULDER	112+76	115+02	226.00	2,112	9.35	16	160	AREA FROM CAD						
NB	115+02	129+81	1,479.00	11,832	8.00	106	853							
NB OUTSIDE SHOULDER	129+81	133+00	319.00	2,269	7.11	23	169	AREA FROM CAD						
NB	133+00	149+46	1,646.00	13,168	8.00	118	949							
RAMP B RIGHT	2149+45	2180+42	3,097.00	18,582	6.00	221	1,333							
RAMP B LEFT	2154+33	2179+20	2,487.00	14,922	6.00	178	1,072							
RAMP A RIGHT	1167+21	1176+74	953.00	5,718	6.00	68	414							
RAMP A RIGHT	1182+00	1211+83	2,983.00	17,898	6.00	213	1,284							
RAMP A LEFT	1169+00	1176+74	774.00	3,096	4.00	55	225							
RAMP A LEFT	1182+00	1187+76	576.00	2,304	4.00	41	169							
NB OUTSIDE SHOULDER	151+47	154+32	285.00	1,895	6.65	20	142	AREA FROM CAD - GORE						
NB	154+32	171+81	1,749.00	10,494	6.00	125	756							
NB	168+39	171+25	286.00	3,407	11.91	20	255	AREA FROM CAD - GORE						
NB	171+25	177+70	645.00	7,740	12.00	46	565							
NB	177+70	181+71	401.00	3,071	7.66	29	227	AREA FROM CAD - GORE						
SB	115+21	117+24	203.00	2,092	10.31	15	160	AREA FROM CAD - GORE						
SB OUTSIDE LANE	117+24	130+06	1,282.00	10,256	8.00	92	741							
SB	130+06	132+29	223.00	2,125	9.53	16	161	AREA FROM CAD - GORE						
SB OUTSIDE LANE	132+29	148+33	1,604.00	19,248	12.00	115	1,387							
SB	148+32	154+07	575.00	5,218	9.07	41	382	AREA FROM CAD - GORE						
SB OUTSIDE LANE	154+07	167+30	1,323.00	10,584	8.00	95	764							
SB	167+30	170+16	286.00	3,363	11.76	20	252	AREA FROM CAD - GORE						
RAMP C LEFT	3148+00	3181+00	3,300.00	19,800	6.00	236	1,420							
RAMP C RIGHT	3154+06	3183+97	2,991.00	11,964	4.00	214	859							
RAMP G LEFT	7158+44	7175+00	1,656.00	13,248	8.00	118	954							
RAMP G RIGHT	7158+44	7167+33	889.00	5,334	6.00	64	387							
RAMP H LEFT	8175+00	8188+81	1,381.00	11,048	8.00	99	797							
RAMP H	8181+57	8185+60	403.00	3,136	7.78	29	232	AREA FROM CAD - GORE						
RAMP H RIGHT	8185+60	8192+00	640.00	2,560	4.00	46	187							
SB OUTSIDE LANE	185+54	195+85	1,031.00	8,248	8.00	74	597							
SB	195+85	198+71	286.00	3,430	11.99	20	257	AREA FROM CAD - GORE						
RAMP D LEFT	4165+00	4174+00	900.00	5,400	6.00	64	392							
RAMP D RIGHT	4165+00	4174+00	900.00	3,600	4.00	64	261							
RAMP D LEFT	4191+00	4198+72	772.00	4,632	6.00	55	337							
RAMP D RIGHT	4191+00	4198+72	772.00	3,088	4.00	55	225							
RAMP D LEFT	4198+72	4212+48	1,376.00	8,256	6.00	98	596							
RAMP D RIGHT	4198+72	4212+48	1,376.00	5,504	4.00	98	397							
RAMP F RIGHT	6167+60	6185+35	1,775.00	14,200	8.00	127	1,022							
RAMP F LEFT	6171+32	6185+35	1,403.00	5,612	4.00	100	405							
RAMP RIGHT	5168+00	5177+74	974.00	3,896	4.00	70	282							
RAMP E	5168+00	5182+00	1,400.00	5,600	4.00	100	404							
							TOTAL		24,014					

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:	Parsons Transportation Group							
Project Description:	DRIC				Calcs By: LEA	Date: 9/12/2008		
Contract Number:					CHK By: JJB	Date: 11/4/2008		
DSE Project No:	646294				QA/QC Reviewed By & Date: XX			
						FINAL QUANTITY	125,525	
PAY ITEM NUMBER	PAY ITEM NAME						UNIT OF MEASURE	
5020040	PAVEMENT 10" HMA						TON	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED							
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	REMARKS	
	STA	STA	LF	WIDTH (LF)	SF	SY		
NB SERVICE ROAD	003+45	006+27			11,052	1,228	AREA FROM CAD	
NB SERVICE ROAD	006+27	018+95			42,200	4,689	AREA FROM CAD	
NB SERVICE ROAD	019+46	048+48			97,986	10,887	AREA FROM CAD	
NB SERVICE ROAD	000+00	024+55			72,503	8,056	AREA FROM CAD	
SB SERVICE ROAD	000+00	007+37			18,754	2,084	AREA FROM CAD	
SB SERVICE ROAD	008+16	023+59			46,713	5,190	AREA FROM CAD	
SB SERVICE ROAD	025+00	053+79			92,869	10,319	AREA FROM CAD	
SB SERVICE ROAD	055+00	076+78			79,162	8,796	AREA FROM CAD	
SB SERVICE ROAD	076+78	095+25			65,952	7,328	AREA FROM CAD	
SPRINGWELLS	000+00	008+60			66,819	7,424	AREA FROM CAD	
SPRINGWELLS	010+07	013+51			18,374	2,042	AREA FROM CAD	
GREEN	005+00	007+67			117,299	13,033		
GREEN	000+00	002+66			15,498	1,722		
LIVERNOS	009+92	012+66			26,014	2,890		
LIVERNOS	015+10	018+63			21,646	2,405		
CLARK	005+60	009+32			27,140	3,016		
CLARK	000+00	003+40			32,099	3,567		
CLARK SOUTH OF FORT					13,301	1,478		
CAMPBELL					105,784	11,754		
GREEN S OF RR					135,359	15,040		
GREEN N OF RR					23,203	2,578		
					TOTAL	125,525 SY		
						70,294 TON Pavement 10"		
						125,525 SY BASE 4"		
						125,525 SY GEOTEXTILE		
						41,842 CY SUBBASE 12"		

Michigan Department of Transportation												C-1	
Quantity Calculation													
DSE Firm Name: Parsons Transportation Group													
Project Description: DRIC													
Contract Number: 646294													
DSE Project No: 646294													
Calcs By: LEA												Date: 9/19/2008	
CHK By: JJB												Date: 11/4/2008	
QA/QC Reviewed By & Date: XX													
PAY ITEM NUMBER												FINAL QUANTITY	
PAY ITEM NAME												39,658	
8020039												UNIT OF MEASURE	
CURB AND GUTTER, CONC, DET F5												LF	
CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED													
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO													
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	SY	REMARKS	AREA	SF	SY	REMARKS	
	STA	STA	LF	WIDTH (LF)									
NB SERVICE ROAD-R	003+68	005+35	175									FROM CAD	
NB SERVICE ROAD-L	003+43	006+00	287									FROM CAD	
NB SERVICE ROAD-R	005+56	008+56	314									FROM CAD	
NB SERVICE ROAD-L	007+82	018+85	1,103									FROM CAD	
NB SERVICE ROAD-R	009+00	012+08	322									FROM CAD	
NB SERVICE ROAD-R	012+39	015+52	323									FROM CAD	
NB SERVICE ROAD-R	015+89	019+00	325									FROM CAD	
NB SERVICE ROAD - R	019+45	022+57	324									FROM CAD	
NB SERVICE ROAD - L	019+83	049+06	3,057									FROM CAD	
NB SERVICE ROAD -R	022+89	026+42	368									FROM CAD	
NB SERVICE ROAD - R	026+79	030+13	349									FROM CAD	
NB SERVICE ROAD -R	030+44	033+76	347									FROM CAD	
NB SERVICE ROAD -R	034+23	037+85	376									FROM CAD	
NB SERVICE ROAD -R	038+15	040+91	290									FROM CAD	
NB SERVICE ROAD -R	041+22	043+92	283									FROM CAD	
NB SERVICE ROAD -R	044+27	049+05	516									FROM CAD	
NB SERVICE ROAD -R	045+48	053+52	856									FROM CAD	
NB SERVICE ROAD -R	001+10	006+42	945									FROM CAD	
NB SERVICE ROAD -L	000+52	024+56	2,544									FROM CAD	
NB SERVICE ROAD -R	006+89	010+12	336									FROM CAD	
NB SERVICE ROAD -R	010+41	014+41	427									FROM CAD	
NB SERVICE ROAD -R	014+77	020+90	634									FROM CAD	
NB SERVICE ROAD -R	021+21	024+87	391									FROM CAD	
NB SERVICE ROAD -L	025+78	027+54	206									FROM CAD	
SB SERVICE ROAD -L	001+83	003+57	183									FROM CAD	
SB SERVICE ROAD -R	001+83	003+64	180									FROM CAD	
SB SERVICE ROAD -L	003+58	007+33	416									FROM CAD	
SB SERVICE ROAD -R	008+26	011+59	358									FROM CAD	
SB SERVICE ROAD -L	007+84	009+99	253									FROM CAD	
SB SERVICE ROAD -L	010+20	013+20	314									FROM CAD	
SB SERVICE ROAD -L	013+65	016+73	321									FROM CAD	
SB SERVICE ROAD -R	014+32	023+50	919									FROM CAD	
SB SERVICE ROAD -L	017+04	020+20	329									FROM CAD	
SB SERVICE ROAD -L	020+53	023+65	331									FROM CAD	
SB SERVICE ROAD -L	024+06	031+05	714									FROM CAD	
SB SERVICE ROAD -R	024+48	042+51	1,852									FROM CAD	
SB SERVICE ROAD -L	031+41	034+80	348									FROM CAD	
SB SERVICE ROAD -L	035+06	038+42	344									FROM CAD	
SB SERVICE ROAD -L	038+88	042+58	377									FROM CAD	
SB SERVICE ROAD -L	042+87	045+63	292									FROM CAD	
SB SERVICE ROAD -L	045+94	048+62	284									FROM CAD	
SB SERVICE ROAD -L	048+93	053+79	479									FROM CAD	
SB SERVICE ROAD -L	054+29	057+66	350									FROM CAD	
SB SERVICE ROAD -R	054+43	074+32	2,034									FROM CAD	
SB SERVICE ROAD -L	058+12	061+53	358									FROM CAD	
SB SERVICE ROAD -L	061+92	065+41	383									FROM CAD	
SB SERVICE ROAD -L	065+88	071+05	742									FROM CAD	
SB SERVICE ROAD -L	071+47	077+03	598									FROM CAD	

Michigan Department of Transportation							C-1	
Quantity Calculation								
DSE Firm Name:	Parsons Transportation Group							
Project Description:	DRIC			Calcs By:	LEA	Date:	9/19/2008	
Contract Number:				CHK By:	JJB	Date:	11/4/2008	
DSE Project No:	646294			QA/QC Reviewed By & Date:				XX
							FINAL QUANTITY	5,200
PAY ITEM NUMBER	PAY ITEM NAME						UNIT OF MEASURE	
8020030	CURB AND GUTTER, CONC, DET D1						LF	
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED							
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	REMARKS	
	STA	STA	LF	WIDTH (LF)	SF	SY		
RAMP G - RIGHT	7160+64	7167+33	985					
RAMP G - LEFT			126					
RAMP E - LEFT	5172+16	5181+74	833					
RAMP J - LEFT			604					
RAMP K - LEFT			434					
RAMP I - LEFT			489					
RAMP L - RIGHT			420					
RAMP F - LEFT	6171+32	6184+41	1,309					
		TOTAL	5,200					

Michigan Department of Transportation										C-1	
Quantity Calculation											
DSE Firm Name:		Parsons Transportation Group									
Project Description:		DRIC				Calcs By: LEA		Date: 9/19/2008			
Contract Number:						CHK By: JJJ		Date: 11/4/2008			
DSE Project No:		646294				QA/QC Reviewed By & Date: XX					
										FINAL QUANTITY	27.276
PAY ITEM NUMBER		PAY ITEM NAME							UNIT OF MEASURE		
8020060		VALLEY GUTTER CONCRETE							LF		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED									
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	REMARKS				
	STA	STA	LF	WIDTH (LF)	SF	SY					
NB	116+54	128+50	1,196								
NB	133+87	143+49	962								
RAMP B RIGHT	2149+46	2162+46	1,300								
RAMP B LEFT	2154+33	2162+46	813								
NB	164+56	169+61	505								
RAMP F RIGHT	6175+38	6176+50	112								
RAMP F LEFT	6174+58	6176+50	192								
NB	171+25	177+70	645								
RAMP A RIGHT	1167+15	1174+78	763								
RAMP A LEFT	1170+35	1174+78	443								
NB	211+83	214+77	294								
SB	117+27	130+07	1,280								
RAMP C RIGHT	3154+06	3162+00	794								
RAMP C LEFT	3135+00	3162+00	2,700								
SB	167+13	171+44	431								
RAMP H LEFT	8175+00	8188+77	1,377								
RAMP H RIGHT	8185+59	8191+20	561								
SB	212+49	218+74	625								
RAMP K - LEFT	3109+28	3117+20	792								
RAMP J - RIGHT	2109+27	2117+58	831								
RAMP L -LEFT	4128+60	4135+00	640								
RAMP C - RIGHT	3175+55	3179+00	345								
RAMP C - LEFT	3175+55	3179+00	345								
RAMP C - RIGHT	3181+37	3184+00	263								
RAMP A - RIGHT	1184+90	1211+84	2,694								
RAMP A - LEFT	1181+88	1187+78	590								
RAMP B - RIGHT	2171+89	2181+00	911								
RAMP B - LEFT	2171+89	2179+00	711								
RAMP D - RIGHT	4165+00	4173+85	885								
RAMP D LEFT	4167+12	4173+85	673								
RAMP D - RIGHT	4190+60	4194+75	415								
RAMP D LEFT	4190+60	4212+48	2,188								
		TOTAL	27,276								

Michigan Department of Transportation							C-1			
Quantity Calculation										
DSE Firm Name:		Parsons Transportation Group								
Project Description:		DRIC			Calcs By: LEA		Date: 9/19/2008			
Contract Number:					CHK By: JJB		Date: 11/4/2008			
DSE Project No:		646294			QA/QC Reviewed By & Date: XX					
							FINAL QUANTITY	4,223		
PAY ITEM NUMBER		PAY ITEM NAME					UNIT OF MEASURE			
8020005		CURB, CONC, DET G1					LF			
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED								
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	REMARKS			
	STA	STA	LF	WIDTH (LF)	SF	SY				
RAMP G LEFT		7161+07	7167+12	605						
RAMP E RIGHT		5168+68	5181+80	1,312						
RAMP I		1126+70	1132+66	596						
RAMP F RIGHT		6169+70	6184+30	1,460						
RAMP A RIGHT		1182+40	1184+90	250						
			TOTAL	4,223						

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:		Parsons Transportation Group						
Project Description:		DRIC		Calcs By: LEA		Date: 9/12/2008		
Contract Number:				CHK By: JJB		Date: 11/4/2008		
DSE Project No:		646294		QA/QC Reviewed By & Date: XX				
							FINAL QUANTITY	5,233
PAY ITEM NUMBER		PAY ITEM NAME				UNIT OF MEASURE		
8020006		CURB, CONC, DET G2				LF		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED						
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	REMARKS	
	STA	STA	LF	WIDTH (LF)	SF	SY		
RAMP I LEFT	1132+66	1133+86	120					
NB	115+05	116+54	149					
NB	128+50	129+80	130					
NB	143+49	149+50	601					
NB	154+33	164+56	1,023					
SB	154+07	167+30	1,323					
SB	171+44	174+00	256					
NB	181+71	187+71	600					
SB	185+54	195+85	1,031					
		TOTAL	5,233					

Michigan Department of Transportation												C-1
Quantity Calculation												
DSE Firm Name: Parsons Transportation Group												
Project Description: DRIC												
Contract Number: 646294												
DSE Project No: 646294												
Calcs By: LEA												Date: 9/19/2008
CHK By: JJB												Date: 11/4/2008
QA/QC Reviewed By & Date: XX												
PAY ITEM NUMBER												FINAL QUANTITY
PAY ITEM NAME												156,145
8030002												UNIT OF MEASURE
SIDEWALK CONCRETE 4"												SF
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED												
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	REMARKS	SY	SF	SY		
	STA	STA	LF	WIDTH (LF)	AREA	SY						
NB SERVICE ROAD-R	003+68	005+35	167	5	835							
NB SERVICE ROAD-R	005+56	008+56	300	5	1500							
NB SERVICE ROAD	009+00	012+08	308	5	1540							
NB SERVICE ROAD	012+39	015+52	313	5	1565							
NB SERVICE ROAD	015+89	019+00	311	5	1555							
NB SERVICE ROAD - R	019+45	022+57	312	5	1560							
NB SERVICE ROAD - R	022+89	026+42	353	5	1765							
NB SERVICE ROAD - R	026+79	030+13	334	5	1670							
NB SERVICE ROAD - R	030+44	033+76	332	5	1660							
NB SERVICE ROAD - R	034+23	037+85	362	5	1810							
NB SERVICE ROAD - R	038+15	040+91	276	5	1380							
NB SERVICE ROAD - R	041+22	043+92	270	5	1350							
NB SERVICE ROAD - R	044+27	048+48	421	5	2105							
NB SERVICE ROAD - R	000+84	006+25	541	5	2705							
NB SERVICE ROAD - R	006+89	010+12	323	5	1615							
NB SERVICE ROAD - R	010+41	014+41	400	5	2000							
NB SERVICE ROAD - R	014+77	020+90	613	5	3065							
NB SERVICE ROAD - R	021+21	024+87	366	5	1830							
SB SERVICE ROAD - L	003+58	007+33	375	5	1875							
SB SERVICE ROAD - L	008+26	011+59	333	5	1665							
SB SERVICE ROAD - L	010+20	013+20	300	5	1500							
SB SERVICE ROAD - L	013+65	016+73	308	5	1540							
SB SERVICE ROAD - L	017+04	020+20	316	5	1580							
SB SERVICE ROAD - L	020+53	023+65	312	5	1560							
SB SERVICE ROAD - L	024+06	031+05	699	5	3495							
SB SERVICE ROAD - L	031+43	042+55	1,112	5	5560							
SB SERVICE ROAD - L	042+87	045+63	276	5	1380							
SB SERVICE ROAD - L	045+94	048+62	268	5	1340							
SB SERVICE ROAD - L	048+93	053+79	486	5	2430							
SB SERVICE ROAD - L	054+29	057+66	337	5	1685							
SB SERVICE ROAD - L	058+12	061+53	341	5	1705							
SB SERVICE ROAD - L	061+92	065+41	349	5	1745							
SB SERVICE ROAD - L	065+88	071+05	517	5	2585							
SB SERVICE ROAD - L	071+47	077+03	556	5	2780							
SB SERVICE ROAD - L	077+54	080+73	319	5	1595							
SB SERVICE ROAD - L	081+04	084+31	327	5	1635							
SB SERVICE ROAD - L	084+73	087+96	323	5	1615							
SB SERVICE ROAD - L	088+27	091+52	325	5	1625							
SB SERVICE ROAD - L	091+92	095+53	361	5	1805							
SB SERVICE ROAD - L	096+15	097+48	133	5	665							
SPRINGWELLS AVE - L	000+00	003+99			2334							
SPRINGWELLS AVE - R	000+00	004+38			2903							
SPRINGWELLS AVE - L	004+35	006+84			1826							
SPRINGWELLS AVE - R	005+63	007+36			1485							
SPRINGWELLS AVE - L	011+38	012+95	157	5	785							
SPRINGWELLS AVE - R	011+32	013+50	218	5	1090							
LIVERNOIS AVENUE - L	009+96	011+00			749							
LIVERNOIS AVENUE - R	016+13	017+44	131	5	655							

LIVERNOIS AVENUE - L	016+05	017+44	139	5	695	
CLARK STREET - L	000+00	002+49	249	5	1245	
CLARK STREET - R	000+00	002+81	281	5	1405	
CLARK STREET - L	006+91	007+46	55	5	275	
CLARK STREET - R	006+50	009+32	282	5	1410	
CLARK STREET - L	007+64	009+30	166	5	830	
GREEN ST - L	000+00	001+68	168	5	840	
GREEN ST - L	005+85	007+67	182	5	910	
GREEN ST - R	005+87	007+31			893	
GREEN BLVD - L	032+71	000+00	3,271	5	16355	
GREEN BLVD - R	032+59	000+00	3,259	5	16295	
CAMPBELL - L	024+56	000+37	2,419	5	12095	
CAMPBELL - R	024+56	000+29	2,427	5	12135	
POST CUL-DE-SAC					2497	
WATERMAN CUL-DE-SAC					1563	
		TOTAL			156,145	

Michigan Department of Transportation										C-1	
Quantity Calculation											
DSE Firm Name:		Parsons Transportation Group									
Project Description:		DRIC				Calcs By: LEA		Date: 9/19/2008			
Contract Number:						CHK By: JJB		Date: 11/4/2008			
DSE Project No:		646294				QA/QC Reviewed By & Date: XX					
										FINAL QUANTITY	624
PAY ITEM NUMBER		PAY ITEM NAME						UNIT OF MEASURE			
8030002		SIDEWALK CONCRETE 4"						SF			
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED									
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	REMARKS				
	STA	STA	LF	WIDTH (LF)	SF	SY					
SIDEWALK, REM	22.22	\$ 4.39	\$98								
EXCAVATION	3.70	\$ 3.24	\$12								
AGG BASE, 6"	22.22	\$ 4.39	\$98								
SIDEWALK RAMP	200	\$ 7.97	\$1,594								
			\$1,801								
						42					
						20					
						26					
						26					
						34					
						8					
						6					
						10					
						12					
						48					
						16					
						8					
						10					
						18					
						4					
			42	8	336						
						624	TOTAL				
					\$1,123,893		TOTAL COST				

Michigan Department of Transportation								C-1
Quantity Calculation								
DSE Firm Name:		Parsons Transportation Group						
Project Description:		DRIC		Calcs By: LEA		Date: 9/19/2008		
Contract Number:				CHK By: XX		Date: XX		
DSE Project No:		646294		QA/QC Reviewed By & Date: XX				
						FINAL QUANTITY	52,550	
PAY ITEM NUMBER		PAY ITEM NAME				UNIT OF MEASURE		
7087010		SOUND WALL				SF		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		CHECK YES OR NO THAT A SPECIAL PROVISION IS REQUIRED						
LOCATION	FROM	TO	LENGTH	AVERAGE	AREA	AREA	REMARKS	
	STA	STA	LF	HIGHT (LF)	SF	SY		
SB	SERVICE RD	024+85	047+42	2,257	10	22,570	TOP OF RW	
SB	SERVICE RD	059+00	064+00	500	10	5,000	TOP OF GROUND	
SB	SERVICE RD	064+00	074+23	1,023	10	10,230	TOP OF RW	
SB	SERVICE RD	072+80	087+55	1,475	10	14,750	TOP OF RW	
		TOTAL		5,255 ft		52,550 sft		

Structure Summary			
See Interchange Structure Study Engineering Report: Volume 4 - Appendix B (less mob. and MOT)			
Structure		Cost	
I-75 Cross Road Bridges			
Springwells		\$3,558,240	
Green		\$3,365,890	
Livernois		\$3,560,790	
Clark		\$3,669,100	
	<i>subtotal</i>	<i>\$14,154,020</i>	
Plaza Ramp Bridges			
Ramp A		\$6,998,390	
Ramp B		\$10,315,450	
Ramp C		\$17,288,530	
Ramp D		\$17,817,660	
Ramp BD		\$3,500,800	
Ramp AC		\$2,560,780	
	<i>subtotal</i>	<i>\$58,481,610</i>	
Braided Ramp Structure			
Ramp E		\$620,360	
Pedestrian Bridges			
Solvay		\$805,420	
Beard		\$882,460	
Waterman		\$735,270	
Morell		\$456,390	
McKinstry		\$795,300	
	<i>subtotal</i>	<i>\$3,674,840</i>	
Retaining Walls			
		\$16,335,468	
Bridge Demolition¹			
		\$1,521,381	
Notes:			
1. Bridge demolition item for Waterman, Dragoon, Junction bridges. Demo costs for other bridges included in individual estimates.			

PROJECT: Corradino - DRIC
 LOCATION: Preferred Alternative
 BASIS FOR ESTIMATE: CONCEPTUAL PRELIMINARY FINAL
 WORK: Utility Relocation

DATE: November 14, 2008
 PROJECT NO.:
 ESTIMATOR: PK
 CHECKED BY: AK
 CURRENT ENR:

Utility Company	Description	PRIVATE		UNIT	UNIT PRICE	PRIVATE			MDOT		UNIT	UNIT PRICE	MDOT			OVERALL TOTAL COST
		TRANSMISSION PROJ. TOTAL	DISTRIBUTION PROJ. TOTAL			TRANSMISSION COST	DISTRIBUTION COST	TOTAL COST	TRANSMISSION PROJ. TOTAL	DISTRIBUTION PROJ. TOTAL			TRANSMISSION COST	DISTRIBUTION COST	TOTAL COST	
Comcast	Overhead Coaxial Cable, (including pole reloc)	3590	7320	Ft	\$ 300.00	\$ 1,077,000	\$ 2,196,000.00	\$ 3,273,000.00	0	9880	Ft	\$ 300.00	\$ -	\$ 2,964,000.00	\$ 2,964,000.00	\$ 6,237,000.00
	Overhead Fiber Cable (including pole reloc)	1900	0	Ft	\$ 400.00	\$ 760,000.00	\$ -	\$ 760,000.00	0	0	Ft	\$ 400.00	\$ -	\$ -	\$ -	\$ 760,000.00
	Underground Fiber Cable (including trenching)	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ -
DTE	Underground Cable	53870	0	Ft	\$ 150.00	\$ 8,080,500.00	\$ -	\$ 8,080,500.00	0	20130	Ft	\$ 150.00	\$ -	\$ 3,019,500.00	\$ 3,019,500.00	\$ 11,100,000.00
	Substation	0	0	LS	\$ 15,000,000.00	\$ -	\$ -	\$ -	0	1	LS	\$ 15,000,000.00	\$ -	\$ 15,000,000.00	\$ 15,000,000.00	\$ 15,000,000.00
DWSD-Sewer	Sewer, 6 inch to 15 inch (incl trenching, manholes, etc)	0	0	Ft	\$ 250.00	\$ -	\$ -	\$ -	0	28720	Ft	\$ 250.00	\$ -	\$ 7,180,000.00	\$ 7,180,000.00	\$ 7,180,000.00
	Sewer, 15 x 20 inch to 42 inch (incl trenching, manholes, etc)	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	0	16015	Ft	\$ 500.00	\$ -	\$ 8,007,500.00	\$ 8,007,500.00	\$ 8,007,500.00
	Sewer, 6 ft to 10.5 ft (incl trenching, manholes, etc)	0	0	Ft	\$ 1,000.00	\$ -	\$ -	\$ -	7790	0	Ft	\$ 1,000.00	\$ 7,790,000.00	\$ -	\$ 7,790,000.00	\$ 7,790,000.00
	Sewer, 13 ft to 16 ft (incl trenching, manholes, etc)	0	0	Ft	\$ 1,500.00	\$ -	\$ -	\$ -	3190	0	Ft	\$ 1,500.00	\$ 4,785,000.00	\$ -	\$ 4,785,000.00	\$ 4,785,000.00
	Sewer, 5.5 x 5.5 ft to 7 x 5 ft (incl trenching, manholes, etc)	0	0	Ft	\$ 2,500.00	\$ -	\$ -	\$ -	2315	0	Ft	\$ 2,500.00	\$ 5,787,500.00	\$ -	\$ 5,787,500.00	\$ 5,787,500.00
	Sewer, 9 x 8 ft to 10 x 10 ft (incl trenching, manholes, etc)	0	0	Ft	\$ 5,000.00	\$ -	\$ -	\$ -	965	0	Ft	\$ 5,000.00	\$ 4,825,000.00	\$ -	\$ 4,825,000.00	\$ 4,825,000.00
DWSD-Water	Water Main, 6 inch to 12 inch (incl trenching, manholes, etc)	0	0	Ft	\$ 250.00	\$ -	\$ -	\$ -	5150	11680	Ft	\$ 250.00	\$ 1,287,500.00	\$ 2,920,000.00	\$ 4,207,500.00	\$ 4,207,500.00
	Water Main, 6 inch to 12 inch (removal only)	0	0	Ft	\$ 25.00	\$ -	\$ -	\$ -	4100	15905	Ft	\$ 25.00	\$ 102,500.00	\$ 397,625.00	\$ 500,125.00	\$ 500,125.00
	Water Main, 16 inch (incl trenching, manholes, etc)	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	3775	0	Ft	\$ 500.00	\$ 1,887,500.00	\$ -	\$ 1,887,500.00	\$ 1,887,500.00
	Water Main, 42 inch or Greater (incl trenching, manholes, etc)	0	0	Ft	\$ 1,000.00	\$ -	\$ -	\$ -	650	0	Ft	\$ 1,000.00	\$ 650,000.00	\$ -	\$ 650,000.00	\$ 650,000.00
ITC	120kV & Control Line	3.84	0.41	Mi	\$ 9,747,664.00	\$ 37,431,029.76	\$ 3,996,542.24	\$ 41,427,572.00	0	0	Mi	\$ 7,000,000.00	\$ -	\$ -	\$ -	\$ 41,427,572.00
	120kV & 230kV Line and Transmission Towers	0	0	Ea	\$ 1,000,000.00	\$ -	\$ -	\$ -	6	0	Ea	\$ 166,666.67	\$ 1,000,000.00	\$ -	\$ 1,000,000.00	\$ 1,000,000.00
Level3	Fiber Cable	3300	0	Ft	\$ 500.00	\$ 1,650,000.00	\$ -	\$ 1,650,000.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 1,650,000.00
Lightcore	Cable	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ -
MCI	Conduit	11800	0	Ft	\$ 500.00	\$ 5,900,000.00	\$ -	\$ 5,900,000.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 5,900,000.00
	Metallic Conduit	1400	0	Ft	\$ 500.00	\$ 700,000.00	\$ -	\$ 700,000.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 700,000.00
Michcon	Gas Main, 2 inch to 16 inch	2815	2755	Ft	\$ 150.00	\$ 422,250.00	\$ 413,250.00	\$ 835,500.00	0	0	Ft	\$ 150.00	\$ -	\$ -	\$ -	\$ 835,500.00
	Gas Main, 2 inch to 16 inch (removal only)	1440	12545	Ft	\$ 15.00	\$ 21,600.00	\$ 188,175.00	\$ 209,775.00	0	0	Ft	\$ 15.00	\$ -	\$ -	\$ -	\$ 209,775.00
	High Pressure Gas Main	0.27	0	Mi	\$ 2,000,000.00	\$ 540,000.00	\$ -	\$ 540,000.00	0	0	Mi	\$ 2,000,000.00	\$ -	\$ -	\$ -	\$ 540,000.00
Nextel	Fiber Cable	475	900	Ft	\$ 500.00	\$ 237,500.00	\$ 450,000.00	\$ 687,500.00	125	0	Ft	\$ 500.00	\$ 62,500.00	\$ -	\$ 62,500.00	\$ 750,000.00
PLD	Street Lighting (including pole reloc)	0	0	Ft	\$ 200.00	\$ -	\$ -	\$ -	21755	3115	Ft	\$ 200.00	\$ 4,351,000.00	\$ 623,000.00	\$ 4,974,000.00	\$ 4,974,000.00
	24 kV (underground)	0	0	Ft	\$ 1,500.00	\$ -	\$ -	\$ -	8000	0	Ft	\$ 1,500.00	\$ 12,000,000.00	\$ -	\$ 12,000,000.00	\$ 12,000,000.00
	28/48 kV (underground)	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	1000	0	Ft	\$ 500.00	\$ 500,000.00	\$ -	\$ 500,000.00	\$ 500,000.00
Qwest	Cable	500	0	Ft	\$ 500.00	\$ 250,000.00	\$ -	\$ 250,000.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 250,000.00
SBC	Cable in Ducts	9555	0	Ft	\$ 300.00	\$ 2,866,500.00	\$ -	\$ 2,866,500.00	0	0	Ft	\$ 300.00	\$ -	\$ -	\$ -	\$ 2,866,500.00
	Fiber Cable in Ducts	3745	0	Ft	\$ 500.00	\$ 1,872,500.00	\$ -	\$ 1,872,500.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 1,872,500.00
Telecom/AT&T	Fiber Cable	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ -
	Subtotal					\$ 61,808,879.76	\$ 7,243,967.24	\$ 69,052,847.00					\$ 45,028,500.00	\$ 40,111,625.00	\$ 85,140,125.00	\$ 154,192,972.00
	ROUNDED TOTAL OPINION OF PROBABLE COST =					\$ 62,000,000.00	\$ 8,000,000.00	\$ 70,000,000.00					\$ 46,000,000.00	\$ 41,000,000.00	\$ 87,000,000.00	\$ 157,000,000.00

MICHIGAN DEPARTMENT OF TRANSPORTATION
PRELIMINARY ESTIMATE

DETROIT RIVER INTERNATIONAL CROSSING
RELOCATION OF CSX TRANSFLO FACILITY

LOCATION	ITEM	QUANTITY	UNIT	UNIT COST	AMOUNT	
SITE WORK	SITE CLEARING & GRUE	6	ACRE	\$1,500	\$9,000	
	INSTALL RAILROAD TR/	5,000	T.F.	\$200	\$1,000,000	
	#10 TURNOUT	4	EA.	\$110,000	\$440,000	
	BASE AGGREGATE	4,035	C.Y.	\$25	\$100,875	
	CONCRETE PAVEMENT	24,200	S.Y.	\$30	\$726,000	
	YARD LIGHTING	35,000	EA.	\$4	\$140,000	
	BUILDING (YARD OFFIC	1	EA.	\$215,000	\$215,000	
	SECURITY FENCING	1,800	L.F.	\$28	\$50,400	
	SUBTOTAL PROPOSED RAILROAD EXTERNAL IMPROVEMENTS (BASE COST) =					\$2,681,275

SPECIFIC ALLOWANCES	SUBTOTAL SPECIFIC ALLOWANCES =	\$0
NON-SPECIFIC ALLOWANCES	15% DESIGN	1 L.S. 15% \$402,191
	SUBTOTAL NON-SPECIFIC ALLOWANCES =	\$402,191
CONSTRUCTION COST (BASE COST + ALLOWANCES)	SUBTOTAL ALLOWANCES =	\$402,191
		\$3,083,466

SPECIFIC CONTINGENCIES	SUBTOTAL SPECIFIC CONTINGENCIES =	\$0
NON-SPECIFIC CONTINGENCIES	20% CONTINGENCY	1 L.S. 20% \$616,693
	SUBTOTAL NON-SPECIFIC CONTINGENCIES =	\$616,693
PROJECT COST (CONSTRUCTION COST + CONTINGENCIES)	SUBTOTAL CONTINGENCIES =	\$616,693
		\$3,700,160

SPECIFIC RESERVES	SUBTOTAL SPECIFIC RESERVES =	\$0
NON-SPECIFIC RESERVES	SUBTOTAL NON-SPECIFIC RESERVES =	\$0
PROGRAMMED COST (PROJECT COST + RESERVES)	SUBTOTAL RESERVES =	\$0
		\$3,700,160

ITEMS NOT INCLUDED IN ESTIMATE: 1. PROPERTY ACQUISITION
2. ENVIRONMENTAL SPILL CONTAINMENT, IF REQUIRED

MICHIGAN DEPARTMENT OF TRANSPORTATION
PRELIMINARY ESTIMATE

DETROIT RIVER INTERNATIONAL CROSSING

PROPOSED RAILROAD WYE TRACK IMPROVEMENTS TO FACILITATE ZUG ISLAND HEAD IN MOVEMENT
----MINIMUM REQUIRED FOR DRIC (COMPATIBLE WITH DIFT DELRAY INTERLOCKING IMPROVEMENTS)----

LOCATION	ITEM	QUANTITY	UNIT	UNIT COST	AMOUNT
TRACK WORK DELRAY	INSTALL RAILROAD TRACK	400	T.F.	\$200	\$80,000
	#10 TURNOUT	4	EA.	\$110,000	\$440,000
	SIGNALING	1	L.S.	\$1,400,000	\$1,400,000
TRACK WORK ZUG WYE	REMOVE RAILROAD TRACK	350	T.F.	\$50	\$17,500
	REMOVE RAILROAD TURNOUT	1	EA.	\$6,000	\$6,000
	INSTALL RAILROAD TRACK	1,300	T.F.	\$200	\$260,000
	#10 TURNOUT	3	EA.	\$110,000	\$330,000
	RAILROAD-ROADWAY GRADE CROSSING PANELS	120	T.F.	\$1,250	\$150,000
	RAILROAD-ROADWAY GRADE CROSSING SIGNALS	2	L.S.	\$250,000	\$500,000
	SIGNALING	1	L.S.	\$1,200,000	\$1,200,000
SUBTOTAL PROPOSED RAILROAD EXTERNAL IMPROVEMENTS (BASE COST) =					\$4,383,500

SPECIFIC ALLOWANCES

SUBTOTAL SPECIFIC ALLOWANCES = \$0

NON-SPECIFIC ALLOWANCES

15% DESIGN

1 L.S. 15% \$657,525

SUBTOTAL NON-SPECIFIC ALLOWANCES = \$657,525

SUBTOTAL ALLOWANCES = \$657,525

**CONSTRUCTION COST
(BASE COST + ALLOWANCES)**

\$5,041,025

SPECIFIC CONTINGENCIES

SUBTOTAL SPECIFIC CONTINGENCIES = \$0

NON-SPECIFIC CONTINGENCIES

20% CONTINGENCY

1 L.S. 20% \$1,008,205

SUBTOTAL NON-SPECIFIC CONTINGENCIES = \$1,008,205

SUBTOTAL CONTINGENCIES = \$1,008,205

**PROJECT COST
(CONSTRUCTION COST + CONTINGENCIES)**

\$6,049,230

SPECIFIC RESERVES

SUBTOTAL SPECIFIC RESERVES = \$0

NON-SPECIFIC RESERVES

SUBTOTAL NON-SPECIFIC RESERVES = \$0

SUBTOTAL RESERVES = \$0

**PROGRAMMED COST
(PROJECT COST + RESERVES)**

\$6,049,230

ITEMS NOT INCLUDED IN ESTIMATE:

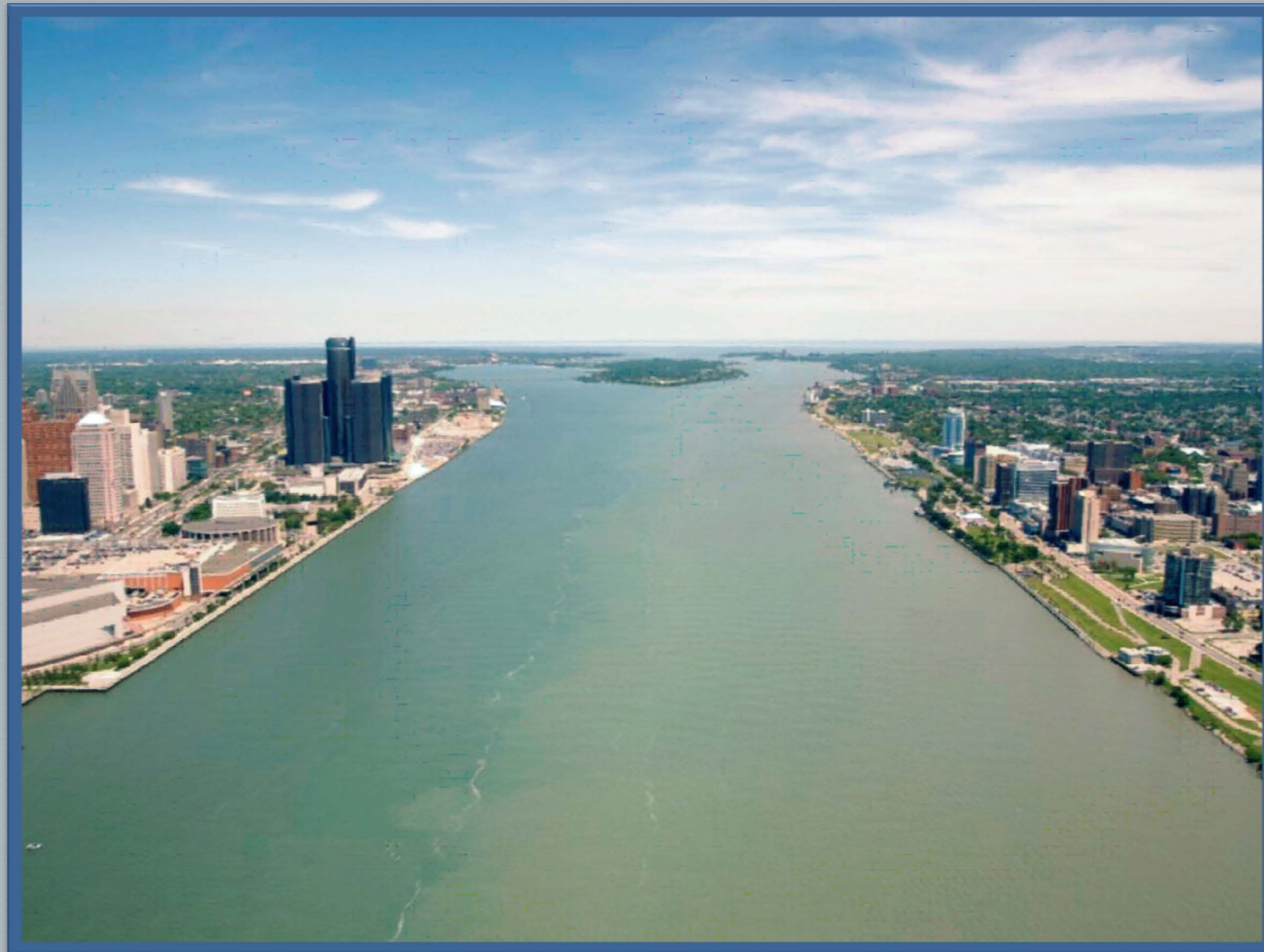
1. PROPERTY ACQUISITION
2. RESIDENTIAL RELOCATION (9 LOCATIONS)
3. BUSINESS RELOCATION (TRANSFLO)

Detroit River
INTERNATIONAL CROSSING
PROJECT

A BORDER TRANSPORTATION PARTNERSHIP



Canada



DETROIT RIVER INTERNATIONAL CROSSING

Engineering Report

APPENDIX C: ROADWAY AND PLAZA GEOTECHNICAL

November 2008

Prepared by:

PARSONS

In association with:

benesch

NCI
NORTHWEST CONSULTANTS, INC.



SE Somat Engineering,
INCORPORATED

Under agreement with: **CORRADINO**
THE CORRADINO GROUP

PROJECT NO. G05002A DATE 8/16/2006 LOG OF TEST BORING B-29

ELEVATION ft. MSL	LOG OF SOIL PROFILE	Depth DEPTH (ft)	FIELD DATA					LABORATORY DATA										
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				▲ DRY DENSITY pcf ▲				
										▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●				
										2000	4000	6000	8000	100	110	120	130	
	Ground Surface Elevation	0																
	4 inches of ASPHALTIC CEMENT CONCRETE	0.3																
	4 inches of aggregate FILL	0.7																
	8 inches of PORTLAND CEMENT CONCRETE	1.3																
	FILL - Very loose to loose fine sand, trace to some silt, trace gravel, light brown, moist (SP/SM)		SS1	2-2-2	4	2.5												
		5	SS2	2-2-5	7	5.0												
	Stiff to medium SILTY CLAY, some sand, trace gravel, gray (CL)		SS3	3-2-3	5	7.5	2000*	23.3										
		10	SS4	2-2-2	4	10.0	1500*	30.8										
	End of Boring at 10 ft.	10																

LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

<p>BORING COORDINATES</p> <p>GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:</p>	<p>Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-16-06 Date Completed: 08-16-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample</p>	 <p>Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI</p>	<p>PROJECT NO. G05002A BORING NO. B-29 PAGE 1 of 1</p>
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10/1/07

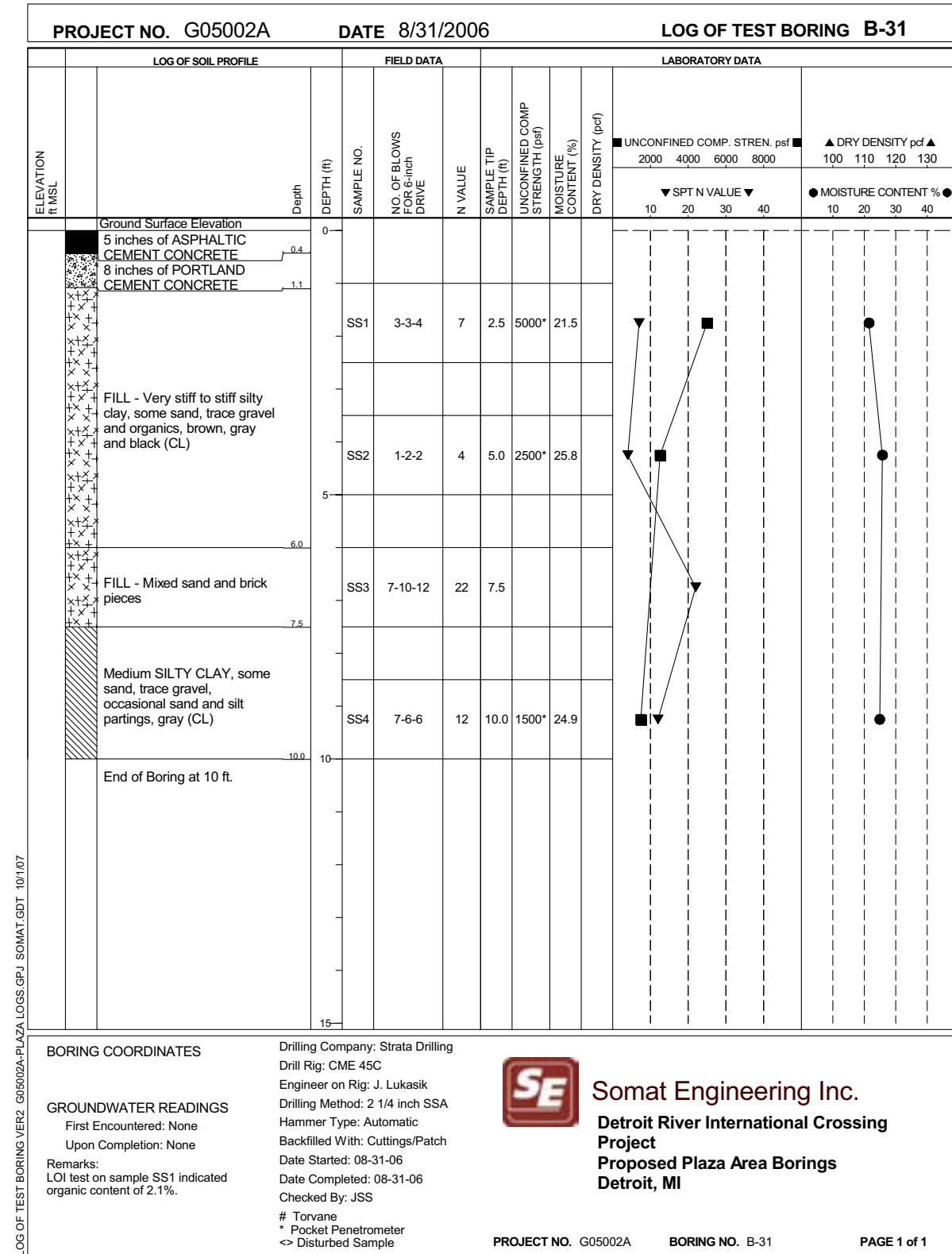
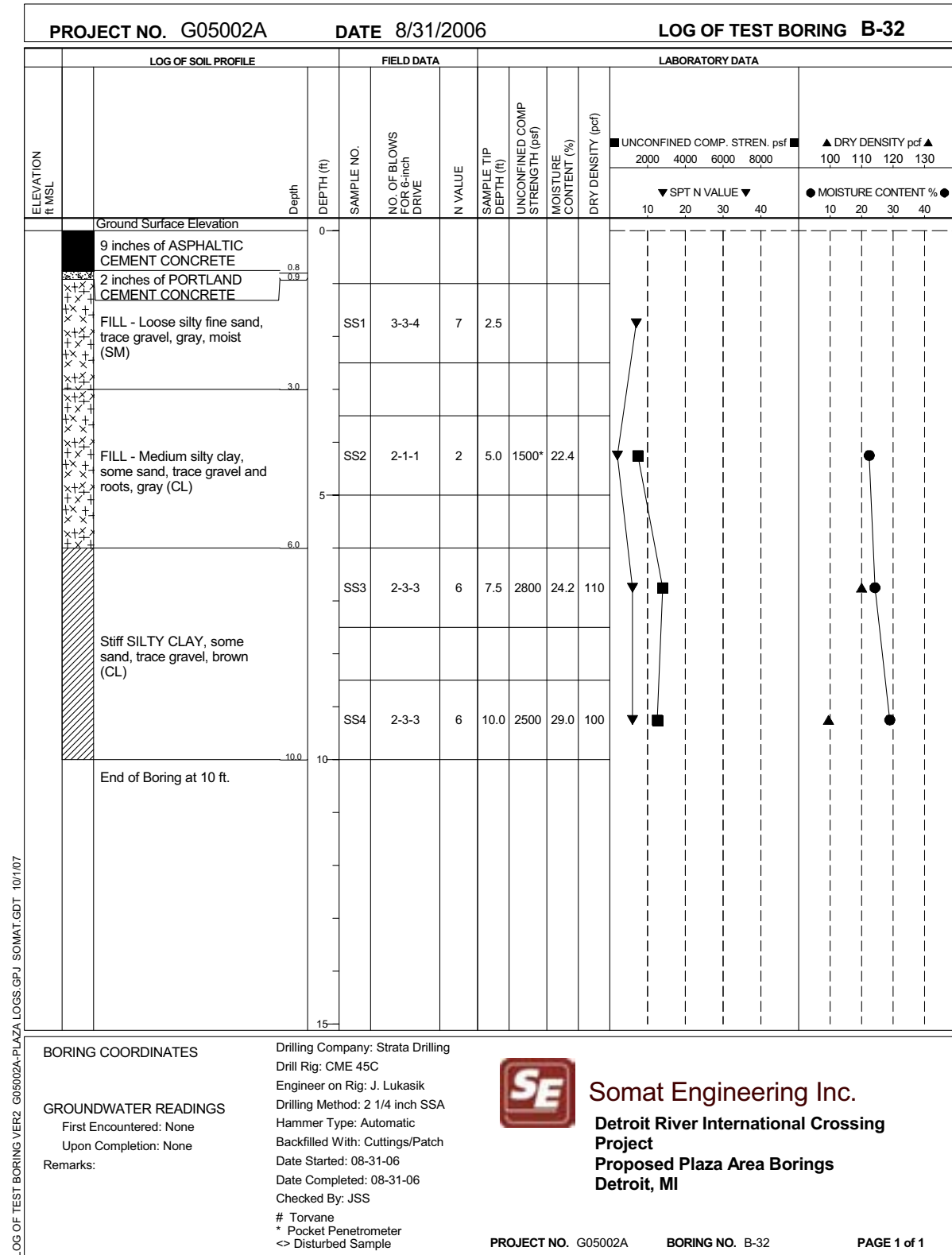
PROJECT NO. G05002A DATE 8/21/2006 LOG OF TEST BORING B-28

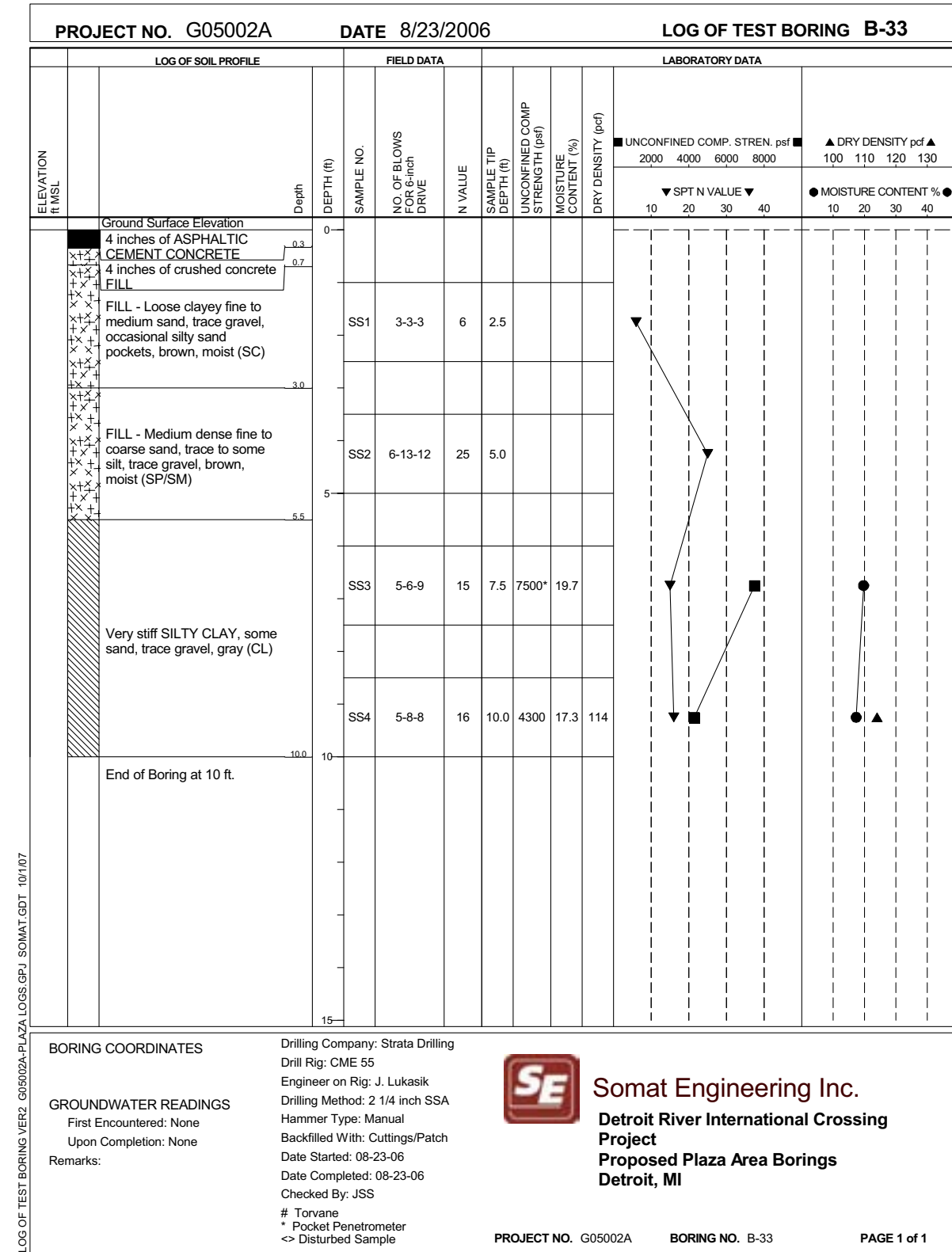
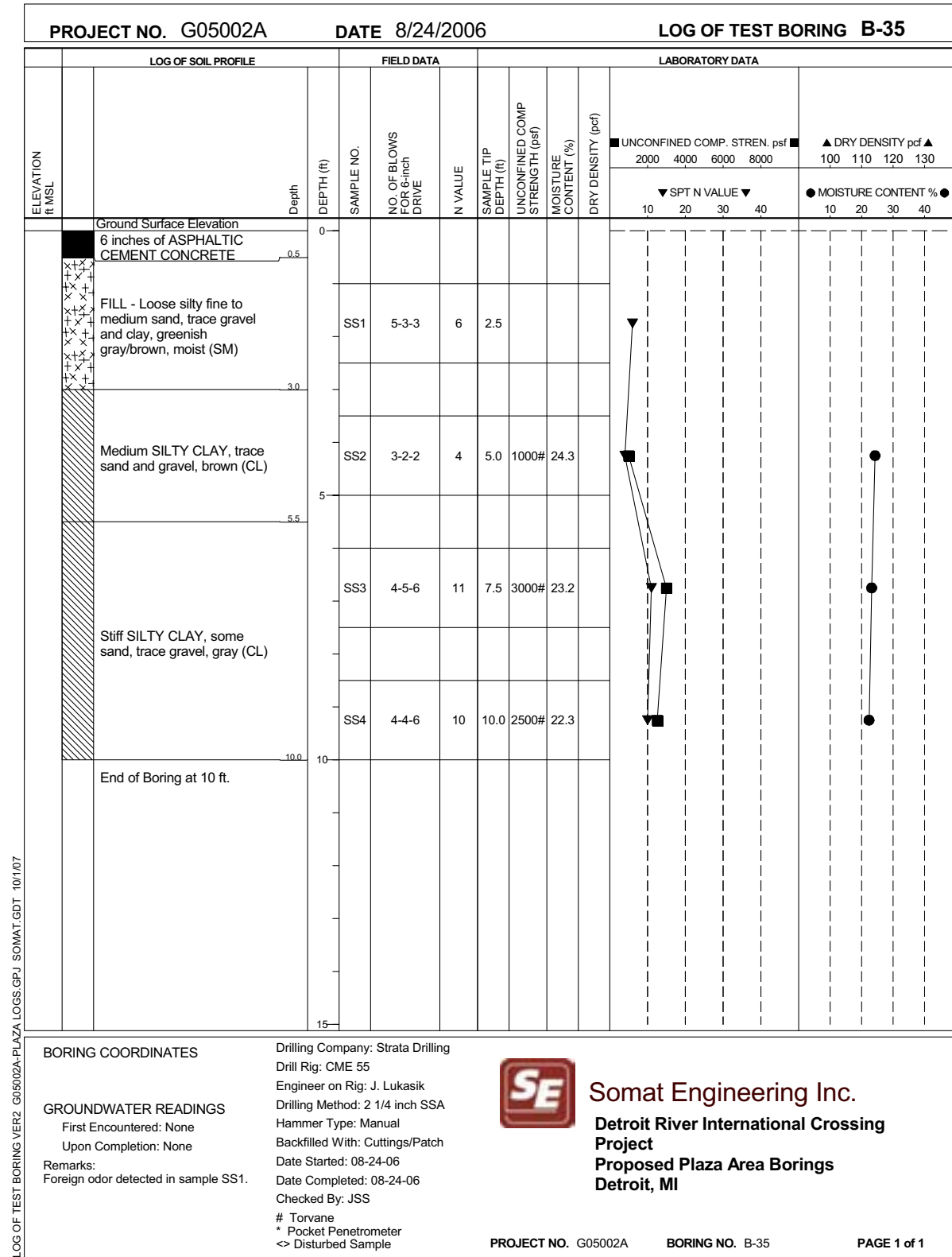
ELEVATION ft. MSL	LOG OF SOIL PROFILE	Depth DEPTH (ft)	FIELD DATA					LABORATORY DATA										
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				▲ DRY DENSITY pcf ▲				
										▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●				
										2000	4000	6000	8000	100	110	120	130	
	Ground Surface Elevation	0																
	6 inches of ASPHALTIC CEMENT CONCRETE	0.5																
	8 inches of PORTLAND CEMENT CONCRETE	1.2																
	FILL - Mixed medium dense silty fine sand, clayey fine sand and sandy clay, trace gravel, asphalt pieces and glass pieces, brown/gray/black, moist (SM)(SC)(CL)		SS1	6-5-4	9	2.5												
		5	SS2	7-5-8	13	5.0												
	Medium dense SANDY SILT, trace gravel, brown, wet (ML)		SS3	4-6-7	13	7.5												
		8.5																
	Very stiff SILTY CLAY, some sand, trace gravel, gray (CL)		SS4	4-2-3	5	10.0	4500*	25.9										
		10																
	End of Boring at 10 ft.	10																

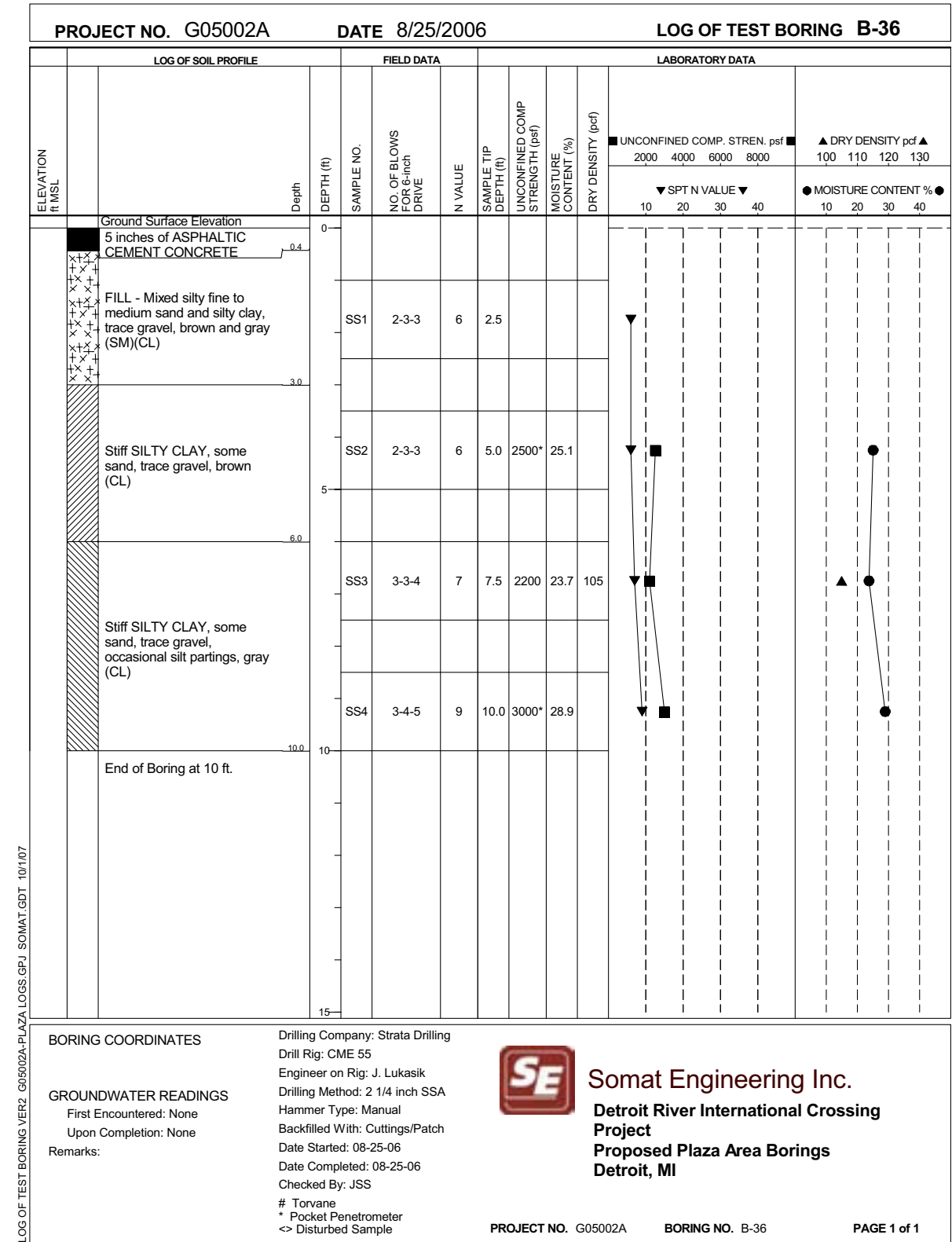
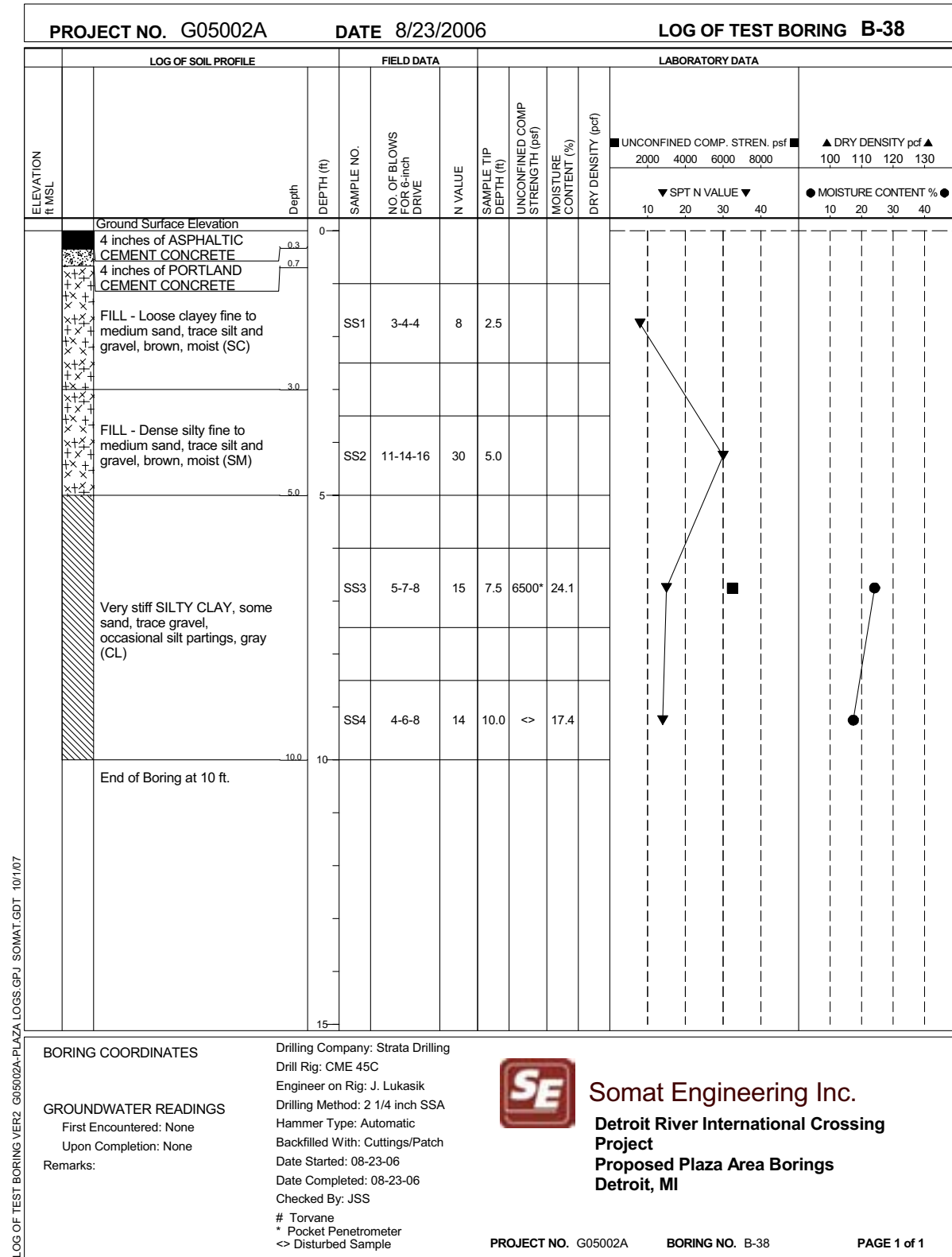
LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

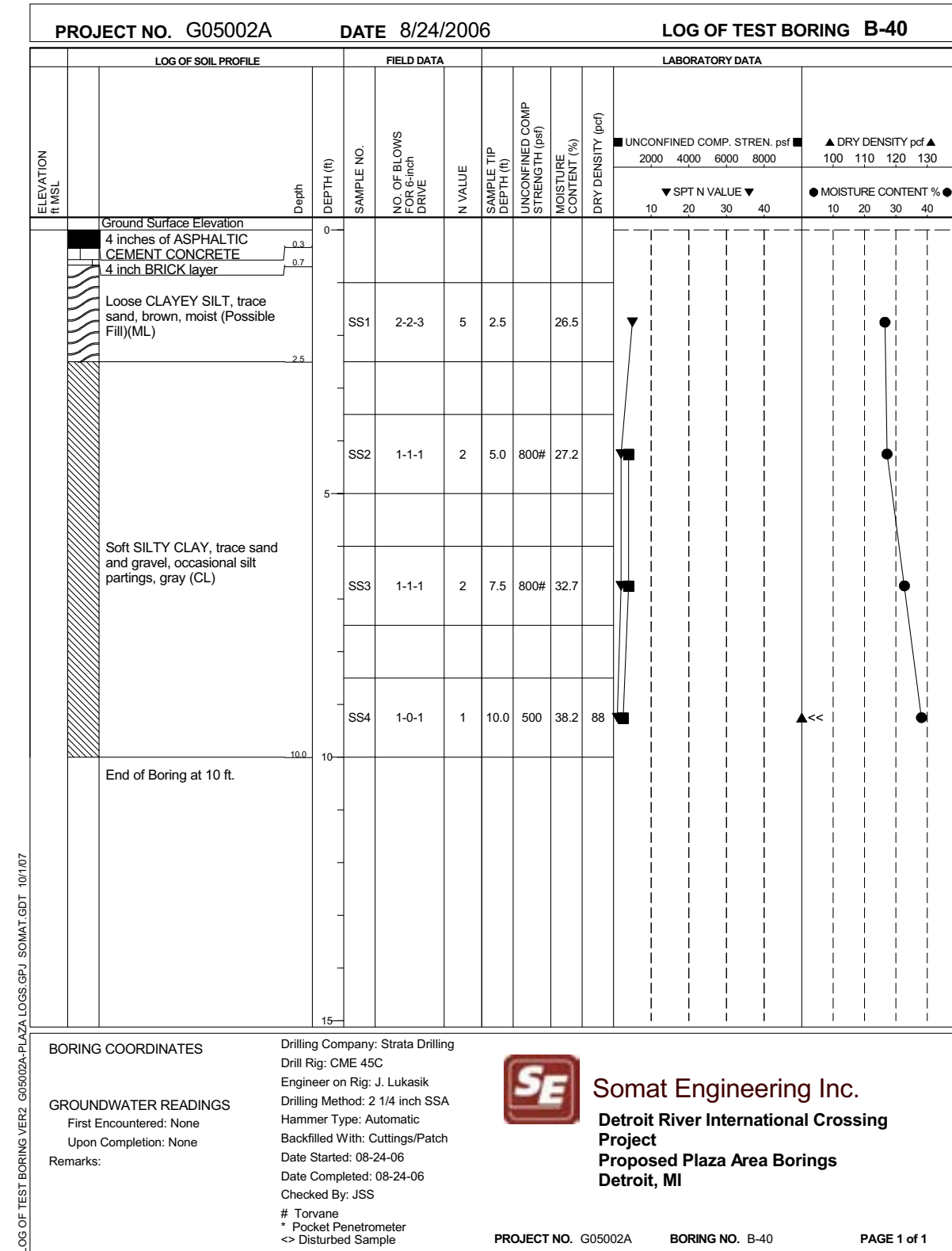
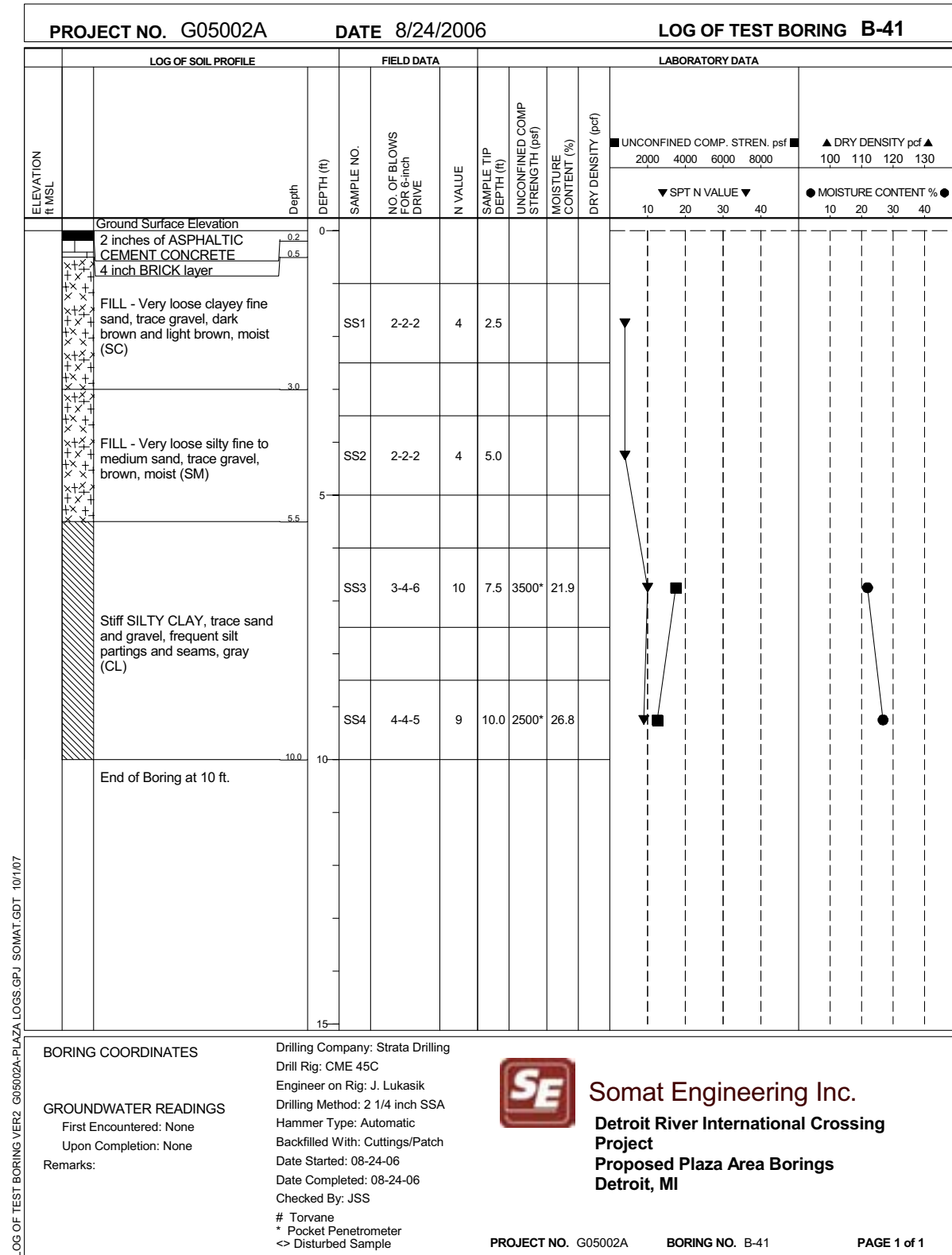
<p>BORING COORDINATES</p> <p>GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:</p>	<p>Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-21-06 Date Completed: 08-21-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample</p>	 <p>Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI</p>	<p>PROJECT NO. G05002A BORING NO. B-28 PAGE 1 of 1</p>
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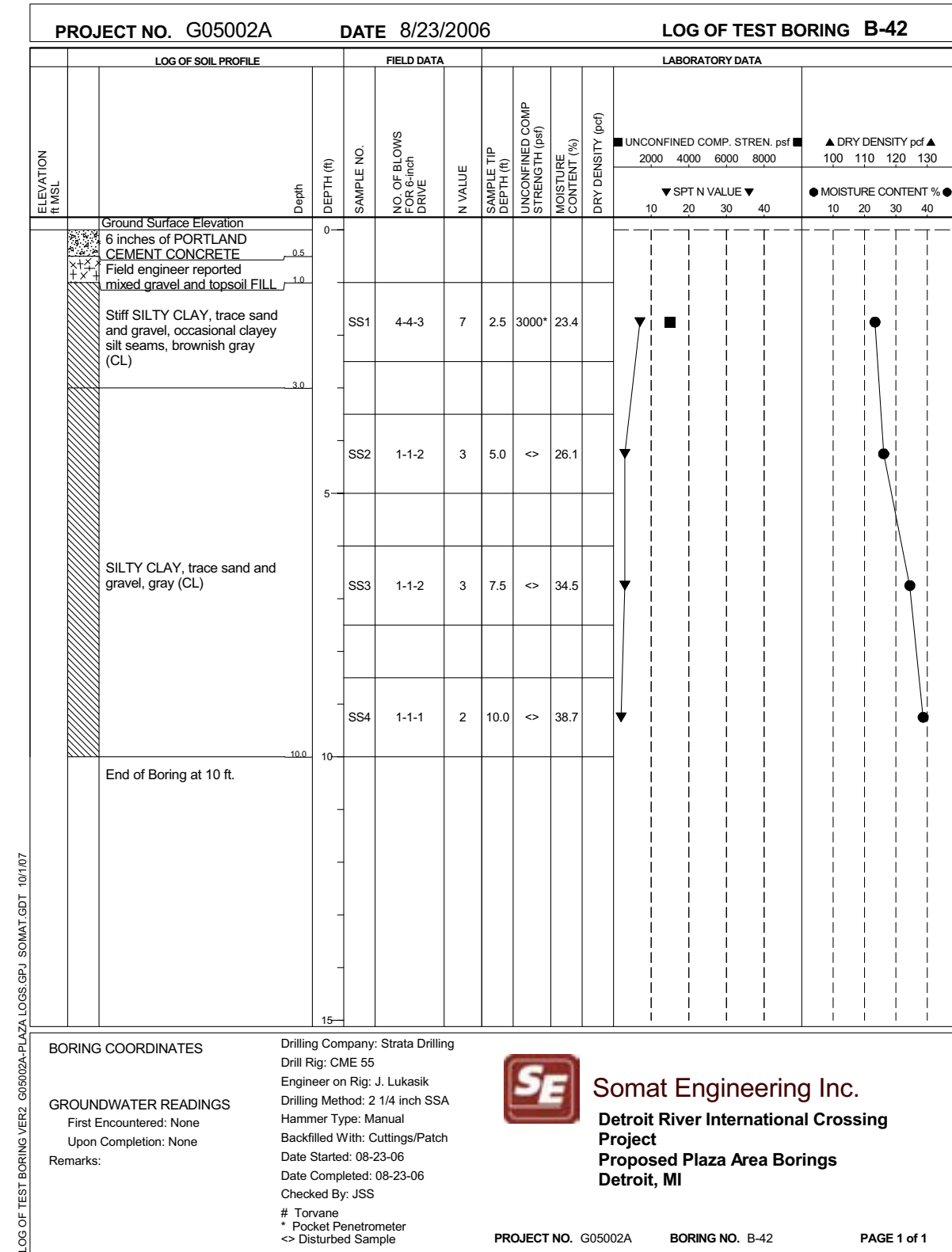
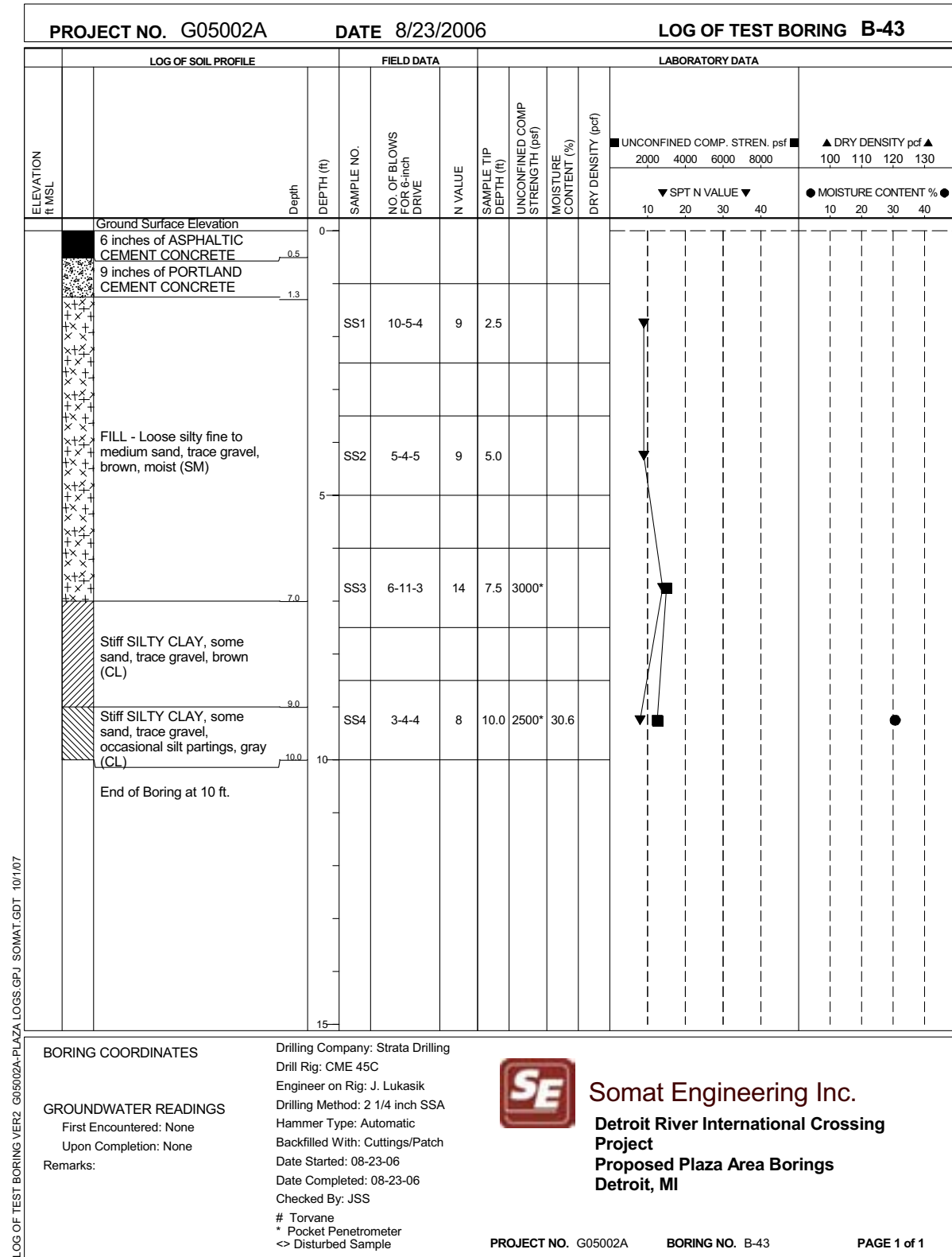
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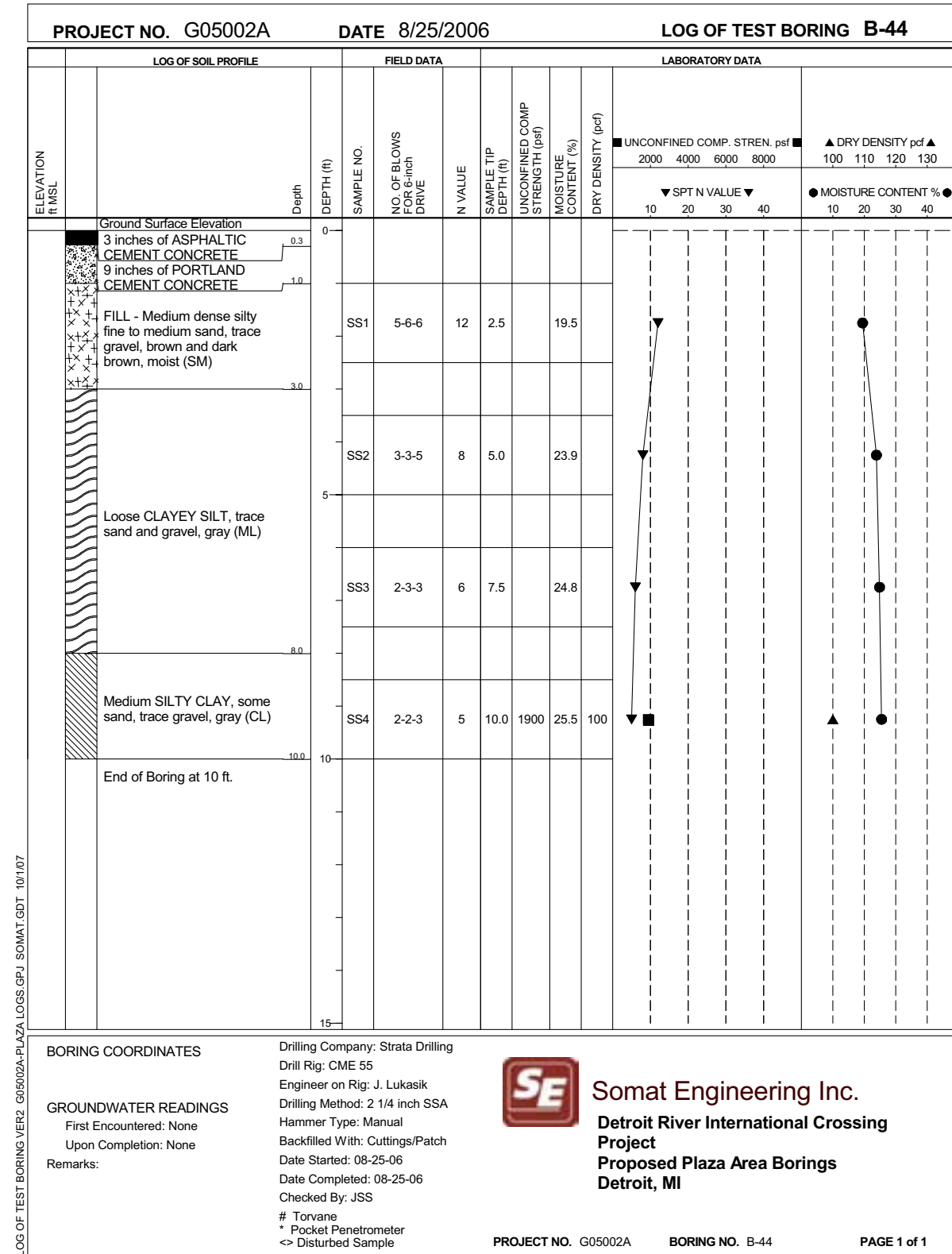
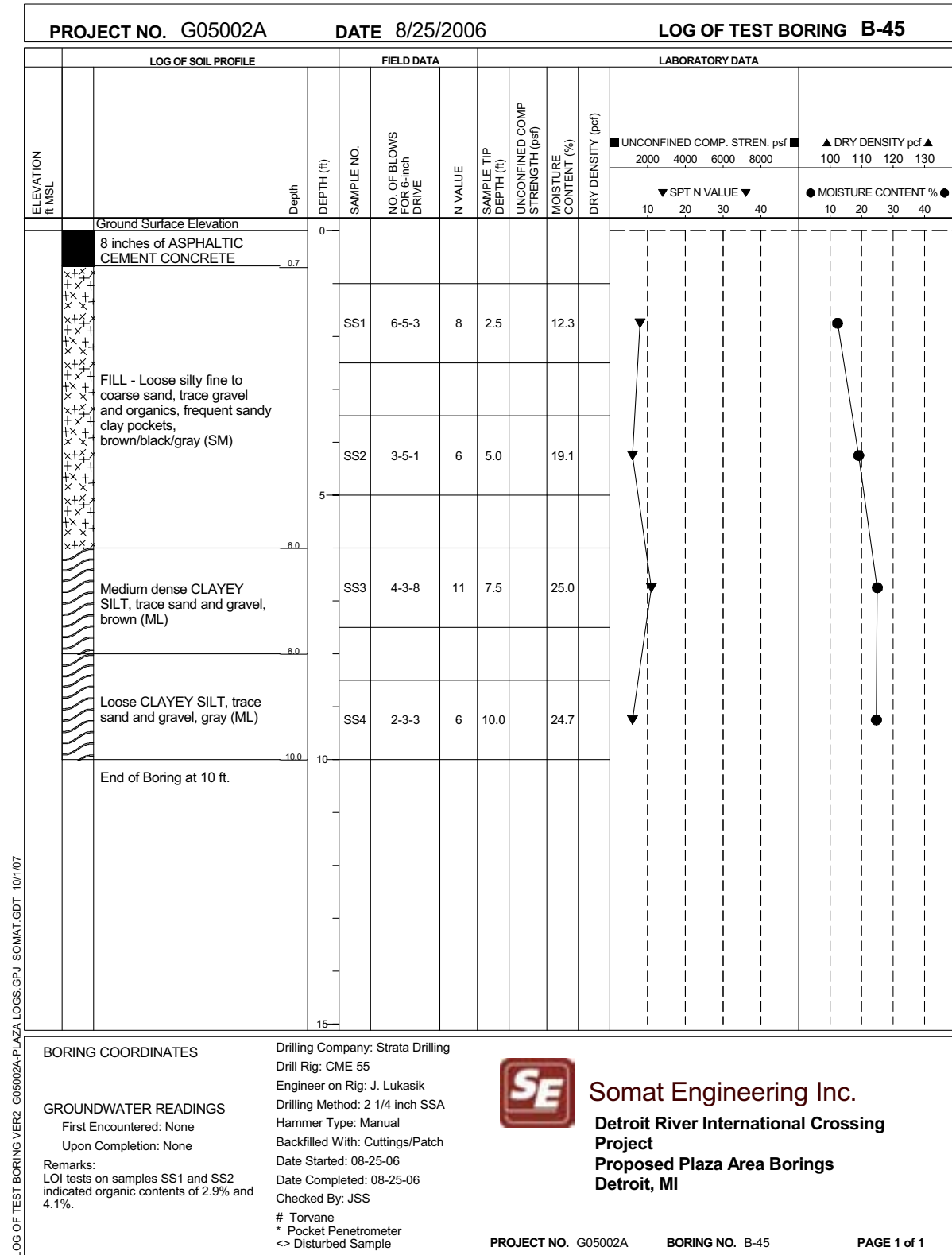


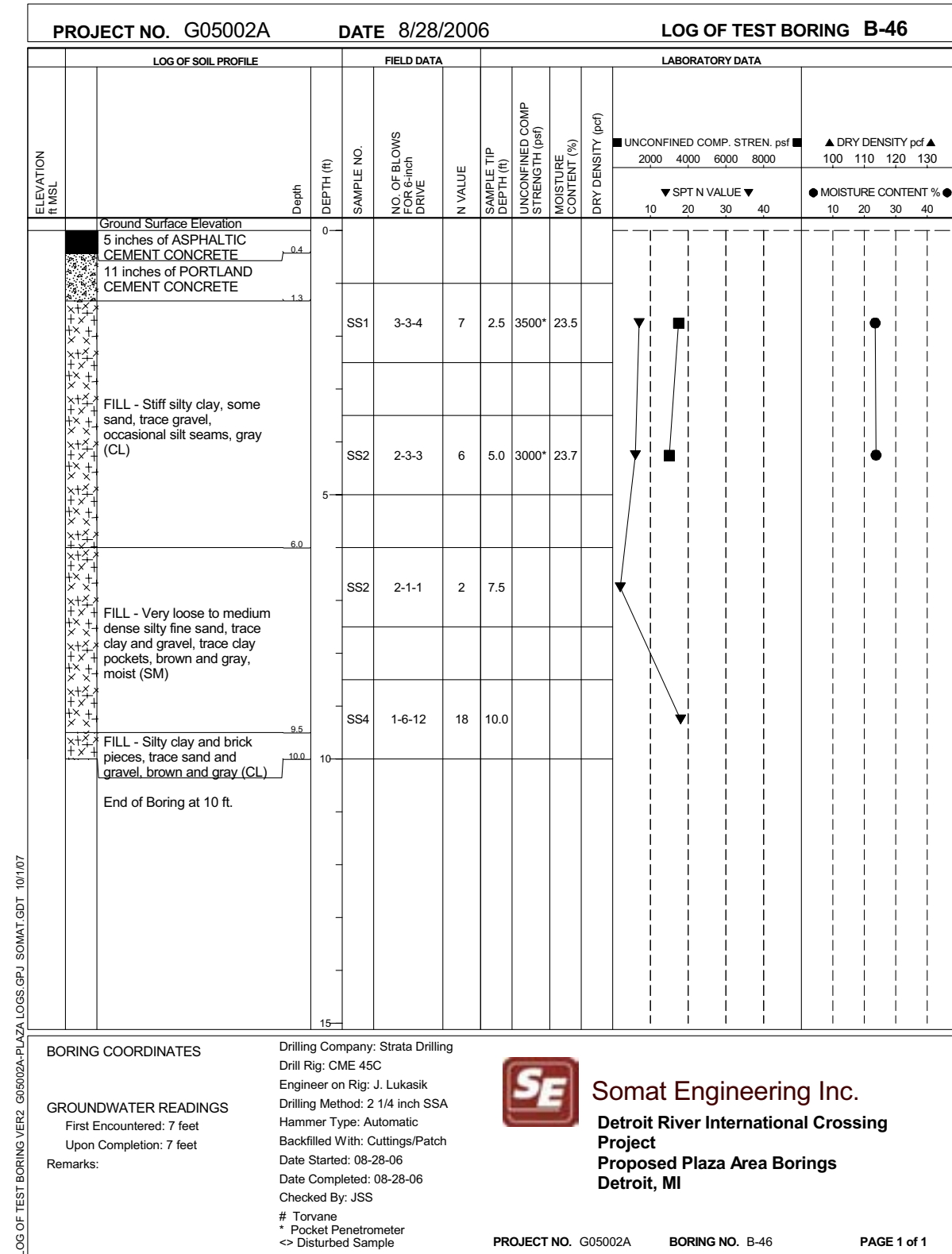
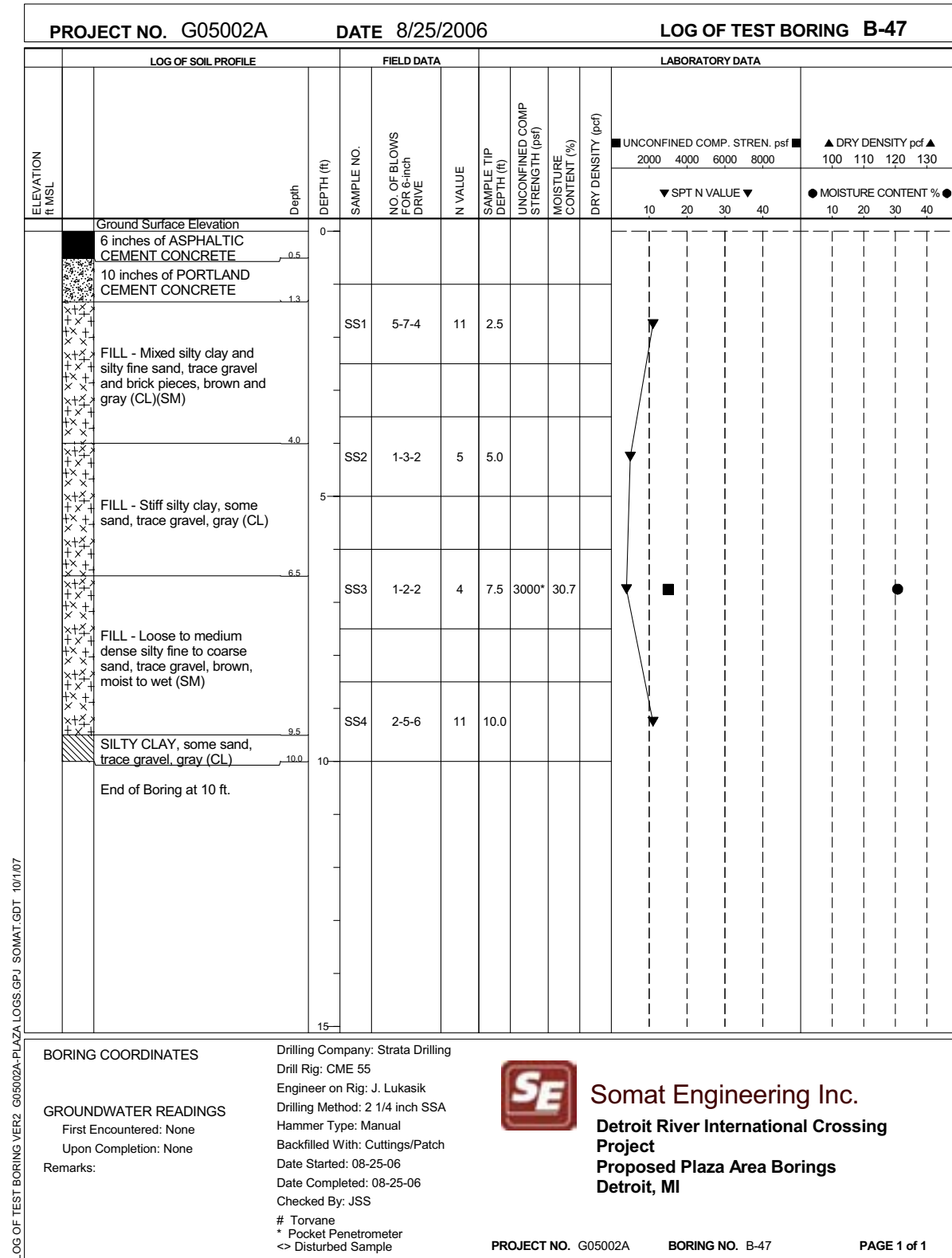


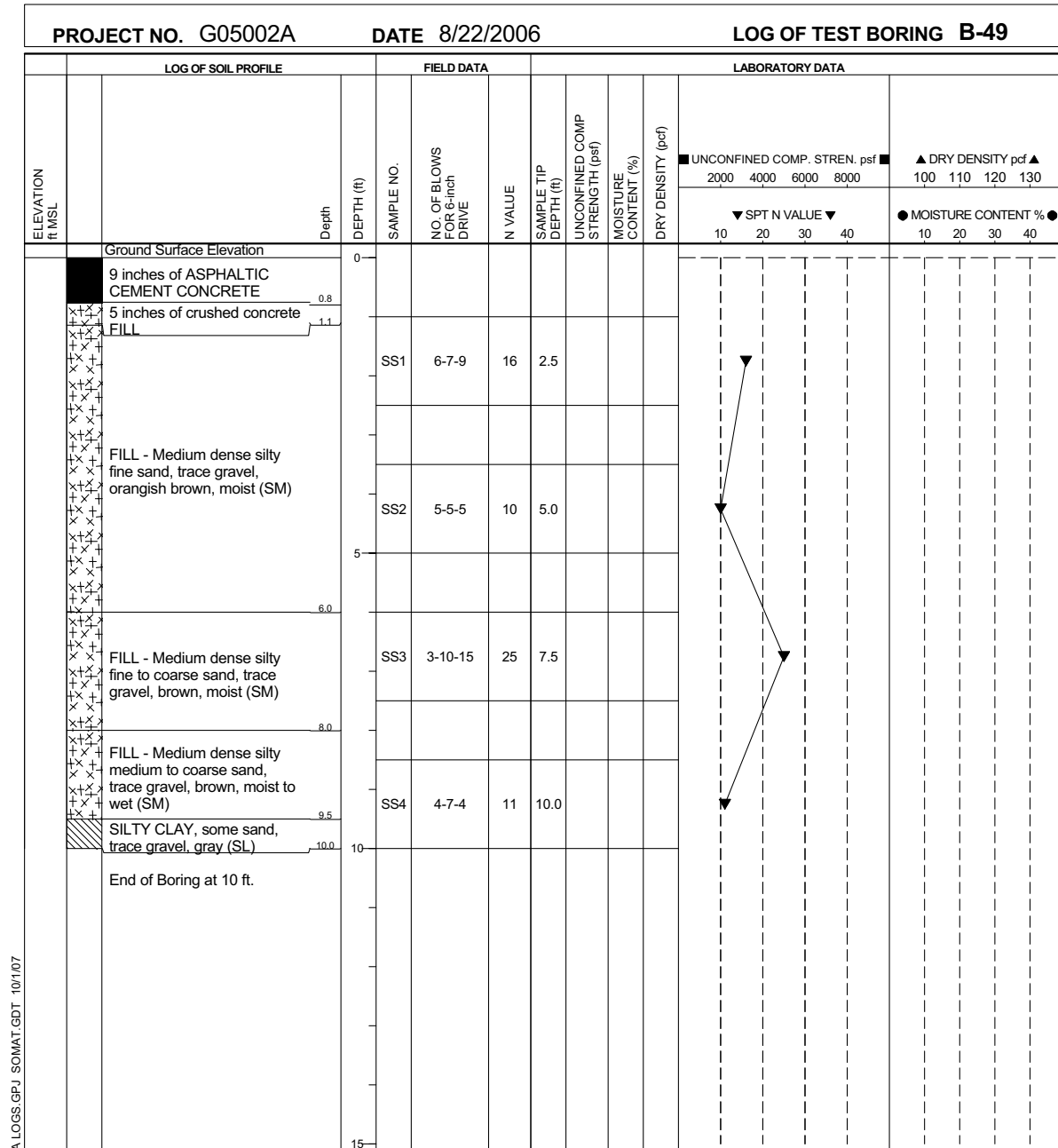






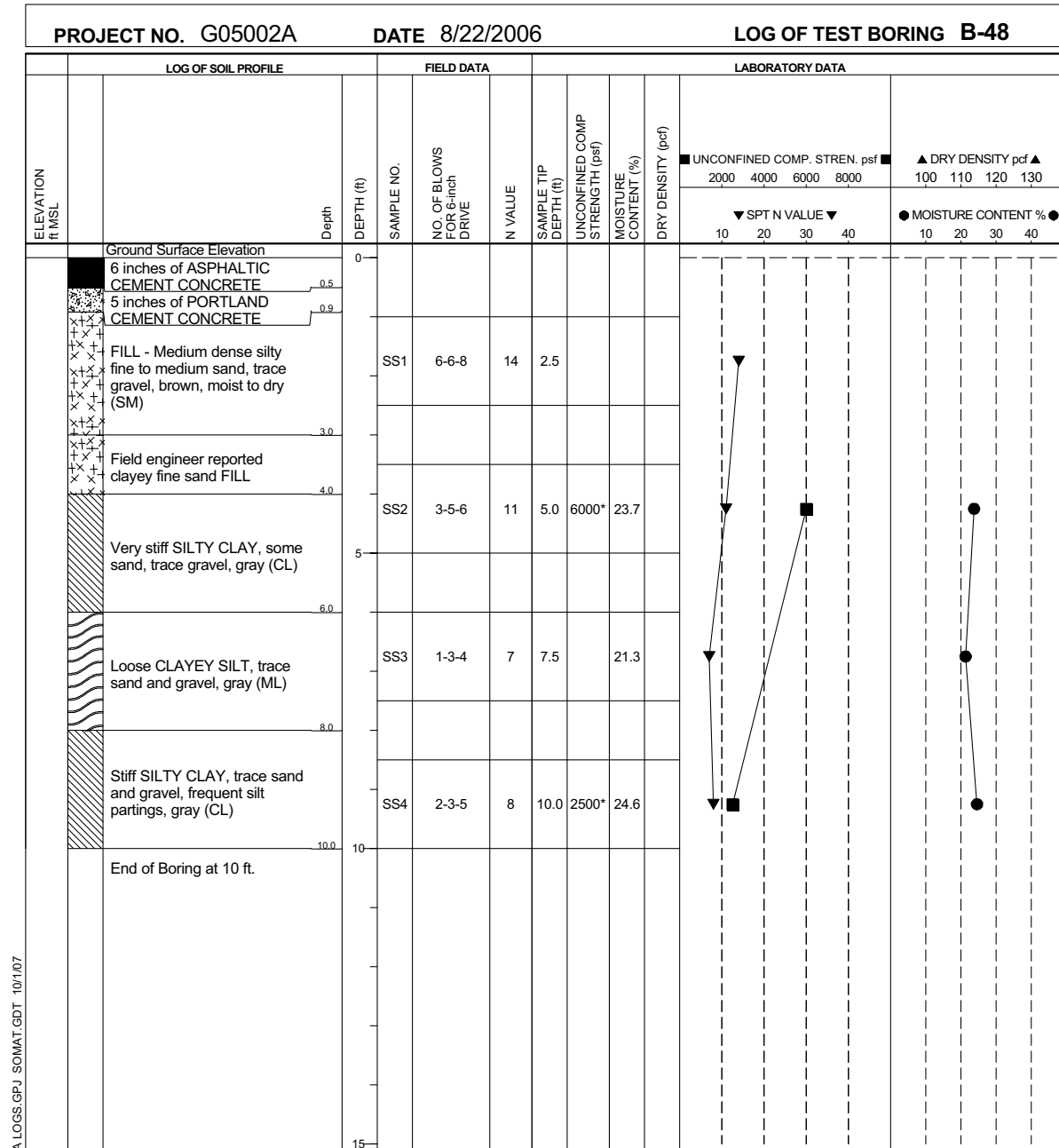






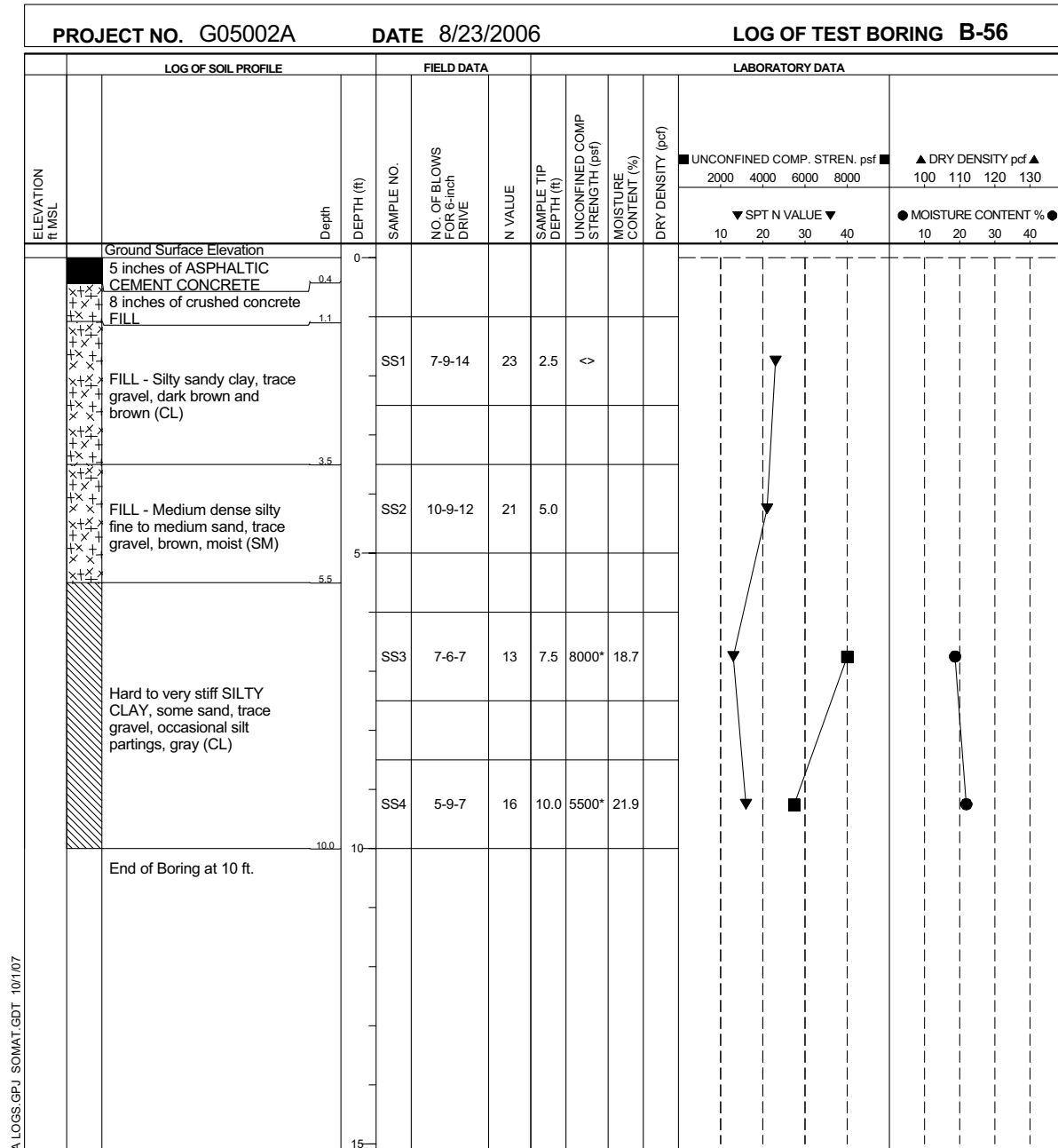
LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-22-06 Date Completed: 08-22-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:	PROJECT NO. G05002A BORING NO. B-49 PAGE 1 of 1	



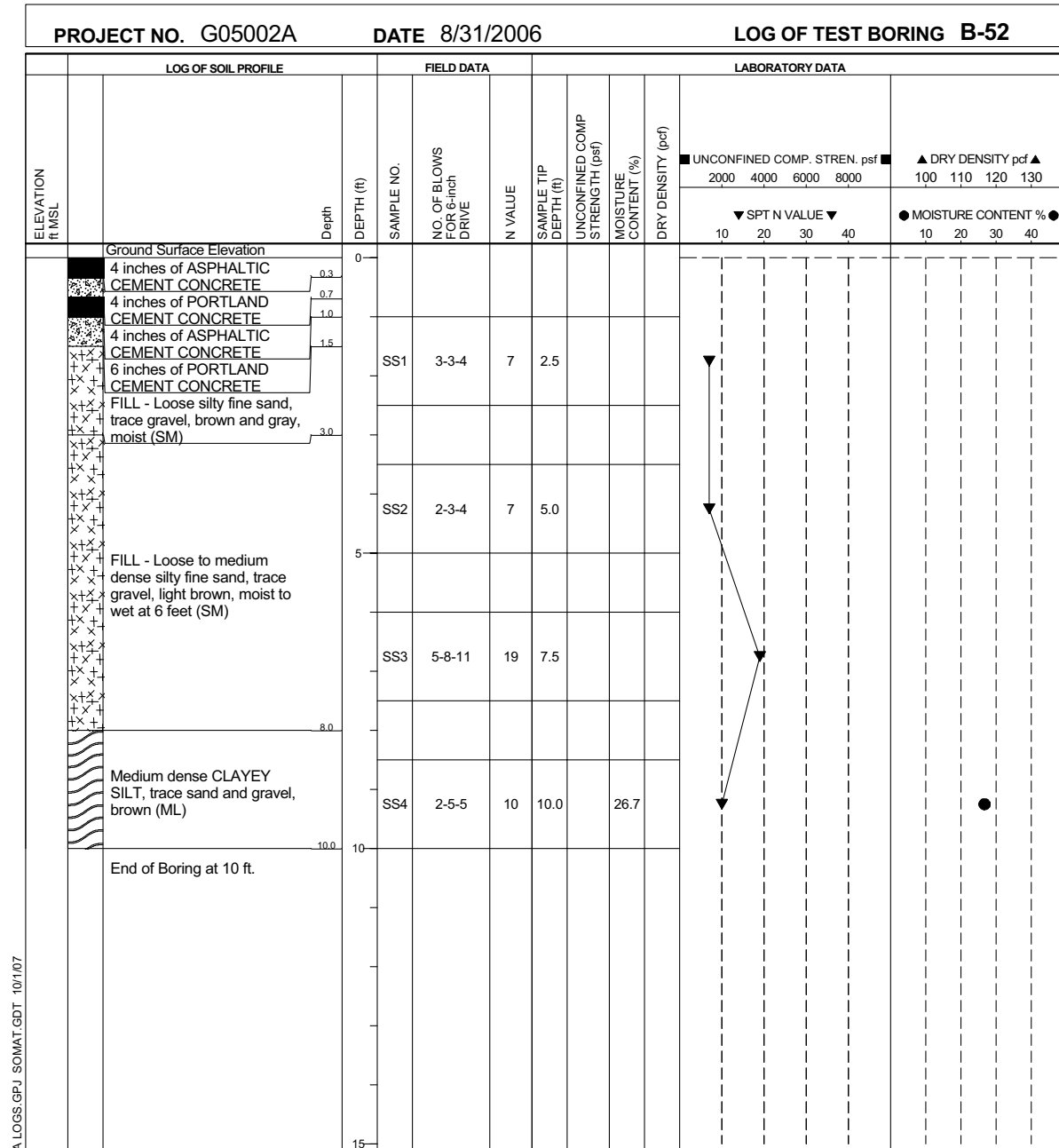
LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-22-06 Date Completed: 08-22-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:	PROJECT NO. G05002A BORING NO. B-48 PAGE 1 of 1	



LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-23-06 Date Completed: 08-23-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:	PROJECT NO. G05002A BORING NO. B-56 PAGE 1 of 1	



LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 45C Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Automatic Backfilled With: Cuttings/Patch Date Started: 08-31-06 Date Completed: 08-31-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:	PROJECT NO. G05002A BORING NO. B-52 PAGE 1 of 1	

PROJECT NO. G05002A		DATE 8/25/2006		LOG OF TEST BORING B-59																
LOG OF SOIL PROFILE		FIELD DATA				LABORATORY DATA				LABORATORY DATA										
ELEVATION ft MSL	Depth DEPTH (ft)	SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf							
									2000	4000	6000	8000	100	110	120	130				
									▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●							
									10	20	30	40	10	20	30	40				
	0																			
	0.4																			
	1.0																			
		SS1	7-10-13	23	2.5															
		SS2	8-6-6	12	5.0															
	5.5																			
		SS3	15-19-12	31	7.5															
	8.0																			
		SS4	7-8-8	16	10.0															
	10.0																			
	10.0																			
	15.0																			

LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

<p>BORING COORDINATES</p> <p>GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:</p>	<p>Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-25-06 Date Completed: 08-25-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample</p>	 <p>Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI</p>	<p>PROJECT NO. G05002A BORING NO. B-59 PAGE 1 of 1</p>
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PROJECT NO. G05002A		DATE 8/24/2006		LOG OF TEST BORING B-58																
LOG OF SOIL PROFILE		FIELD DATA				LABORATORY DATA				LABORATORY DATA										
ELEVATION ft MSL	Depth DEPTH (ft)	SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf							
									2000	4000	6000	8000	100	110	120	130				
									▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●							
									10	20	30	40	10	20	30	40				
	0																			
	0.5																			
	1.5																			
		SS1	3-5-7	12	2.5															
		SS2	5-6-6	12	5.0															
	5																			
		SS3	4-5-5	10	7.5															
	6.0																			
		SS4	3-5-7	12	10.0															
	10.0																			
	10.0																			
	15.0																			

LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

<p>BORING COORDINATES</p> <p>GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:</p>	<p>Drilling Company: Strata Drilling Drill Rig: CME 45C Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Automatic Backfilled With: Cuttings/Patch Date Started: 08-24-06 Date Completed: 08-24-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample</p>	 <p>Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI</p>	<p>PROJECT NO. G05002A BORING NO. B-58 PAGE 1 of 1</p>
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PROJECT NO. G05002A		DATE 8/21/2006		LOG OF TEST BORING B-61																			
ELEVATION ft MSL	LOG OF SOIL PROFILE	Depth DEPTH (ft)	FIELD DATA				LABORATORY DATA																
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf									
										2000	4000	6000	8000	100	110	120	130						
								▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●											
	Ground Surface Elevation	0																					
	3 inches of ASPHALTIC CEMENT CONCRETE	0.3																					
	10 inches of PORTLAND CEMENT CONCRETE	1.1																					
	FILL - Loose silty fine sand, trace gravel, gray, moist (SM)	2.5	SS1	2-3-4	7	2.5																	
		5																					
		6.0	SS2	2-2-3	5	5.0																	
	FILL - Very loose to loose silty fine to coarse sand, trace gravel and asphalt pieces, black, moist to wet (SM)	10.0	SS3	2-1-2	3	7.5																	
		10	SS4	2-3-3	6	10.0																	
	End of Boring at 10 ft.	10																					

LOG OF TEST BORING VER2 G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 45C Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Automatic Backfilled With: Cuttings/Patch Date Started: 08-21-06 Date Completed: 08-21-06 Checked By: JSS	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks: Foreign odor detected in samples SS3 and SS4.	# Torvane * Pocket Penetrometer <> Disturbed Sample	

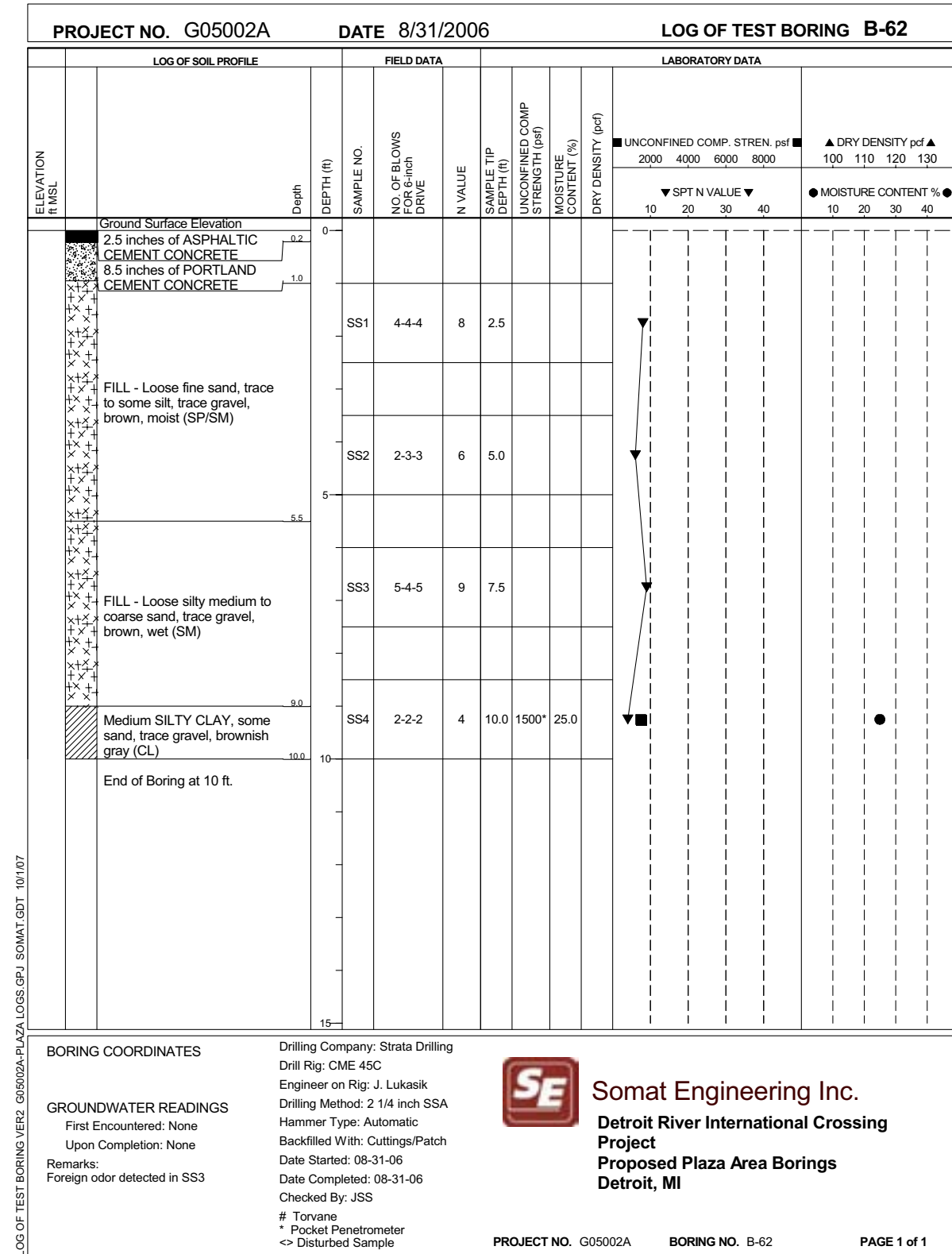
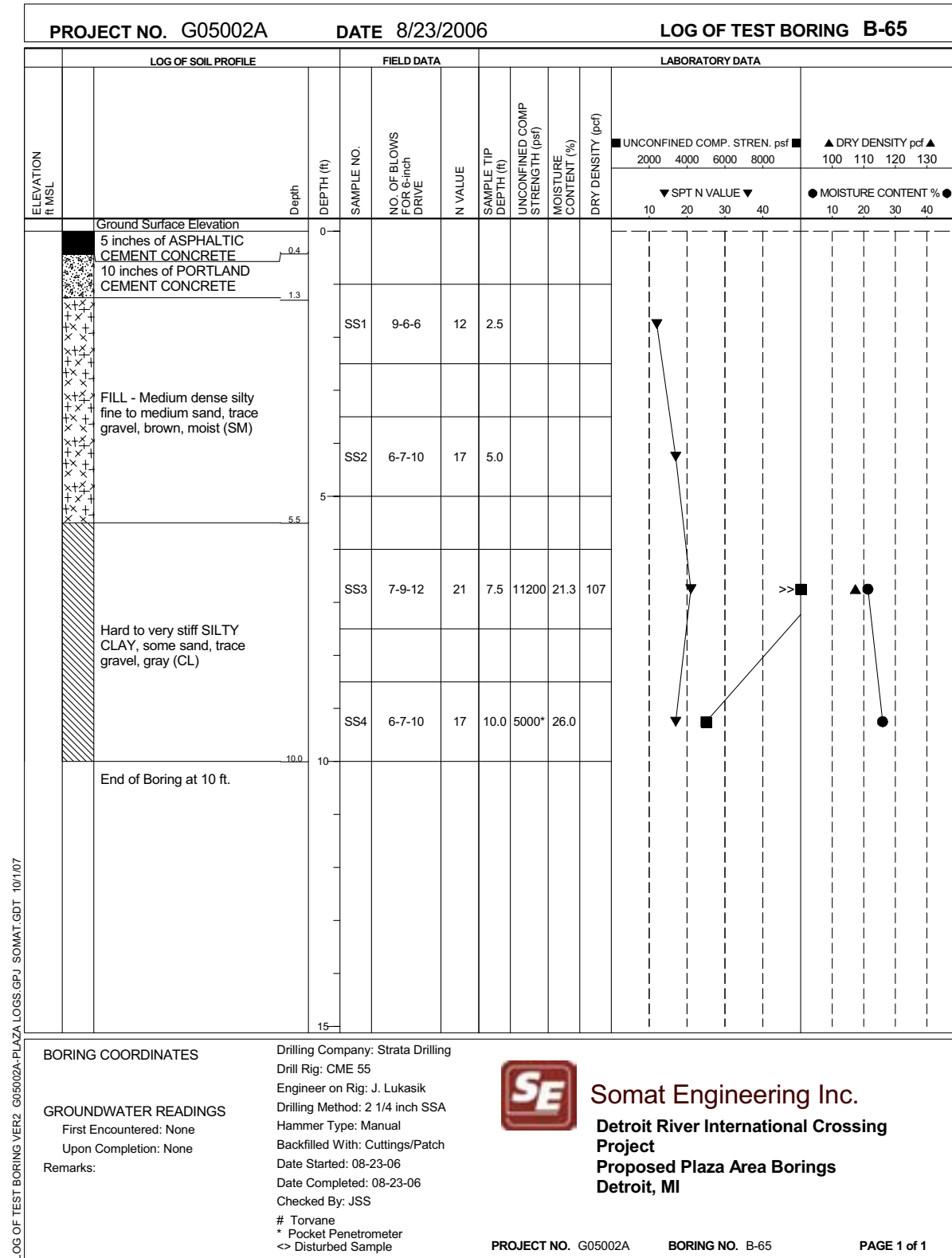
PROJECT NO. G05002A BORING NO. B-61 PAGE 1 of 1

PROJECT NO. G05002A		DATE 8/22/2006		LOG OF TEST BORING B-60																			
ELEVATION ft MSL	LOG OF SOIL PROFILE	Depth DEPTH (ft)	FIELD DATA				LABORATORY DATA																
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf									
										2000	4000	6000	8000	100	110	120	130						
								▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●											
	Ground Surface Elevation	0																					
	8 inches of ASPHALTIC CEMENT CONCRETE	0.7																					
	6 inches of PORTLAND CEMENT CONCRETE	1.2																					
	FILL - Loose silty fine sand, trace gravel and organics, black, moist (SM)	2.5	SS1	2-2-3	5	2.5	17.7																
		5																					
	FILL - Medium dense to loose silty fine to coarse sand, trace gravel, brown, moist to wet (SM)	10.0	SS2	9-9-10	19	5.0																	
			SS3	2-5-11	16	7.5																	
			SS4	3-2-5	7	10.0																	
	End of Boring at 10 ft.	10																					

LOG OF TEST BORING VER2 G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-22-06 Date Completed: 08-22-06 Checked By: JSS	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks: LOI test on sample SS1 indicated an organic content of 3.9%.	# Torvane * Pocket Penetrometer <> Disturbed Sample	

PROJECT NO. G05002A BORING NO. B-60 PAGE 1 of 1



PROJECT NO. G05002A		DATE 8/24/2006		LOG OF TEST BORING B-68																			
ELEVATION ft. MSL	LOG OF SOIL PROFILE	DEPTH (ft)	FIELD DATA					LABORATORY DATA															
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf									
	Ground Surface Elevation	0																					
	6 inches of ASPHALTIC CEMENT CONCRETE	0.5																					
	10 inches of PORTLAND CEMENT CONCRETE	1.3																					
	FILL - Mixed silty fine to medium sand and silty clay, trace gravel, brown and gray (SM)(CL)	3.0	SS1	4-4-5	9	2.5																	
	FILL - Loose silty fine sand, trace gravel, orangish brown, moist (SM)	5.0	SS2	2-2-3	5	5.0																	
	FILL - Medium dense silty fine to medium sand, trace gravel, brown, moist (SM)	6.0	SS3	5-5-7	12	7.5																	
	FILL - Medium dense silty fine to medium sand, trace gravel, brown, moist (SM)	7.5	SS4	7-9-9	18	10.0																	
	End of Boring at 10 ft.	10.0																					

LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 45C Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Automatic Backfilled With: Cuttings/Patch Date Started: 08-24-06 Date Completed: 08-24-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI	PROJECT NO. G05002A	BORING NO. B-68	PAGE 1 of 1
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:					

PROJECT NO. G05002A		DATE 8/23/2006		LOG OF TEST BORING B-67																			
ELEVATION ft. MSL	LOG OF SOIL PROFILE	DEPTH (ft)	FIELD DATA					LABORATORY DATA															
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf									
	Ground Surface Elevation	0																					
	5 inches of ASPHALTIC CEMENT CONCRETE	0.4																					
	8 inches of PORTLAND CEMENT CONCRETE	1.1																					
	FILL - Medium dense silty fine to medium sand, trace gravel, brown, moist (SM)	5.0	SS1	9-7-7	14	2.5																	
	FILL - Medium dense silty fine to medium sand, trace gravel, brown, moist (SM)	7.5	SS2	7-10-7	17	5.0																	
	FILL - Medium dense silty fine to medium sand, trace gravel, brown, moist (SM)	9.5	SS3	9-8-7	15	7.5																	
	Very stiff SILTY CLAY, some sand, trace gravel, brown (CL)	9.5	SS4	8-5-6	11	10.0	4000*	21.1															
	Very stiff SILTY CLAY, some sand, trace gravel, gray (CL)	10.0																					
	End of Boring at 10 ft.	10.0																					

LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-23-06 Date Completed: 08-23-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI	PROJECT NO. G05002A	BORING NO. B-67	PAGE 1 of 1
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:					

PROJECT NO. G05002A		DATE 8/21/2006		LOG OF TEST BORING B-71																					
ELEVATION ft. MSL	LOG OF SOIL PROFILE			FIELD DATA				LABORATORY DATA																	
	Depth DEPTH (ft)	SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				▲ DRY DENSITY pcf ▲												
									2000	4000	6000	8000	100	110	120	130									
								▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●													
								10	20	30	40	10	20	30	40										
	Ground Surface Elevation																								
	3 inches of ASPHALTIC CEMENT CONCRETE 0.3																								
	10 inches of PORTLAND CEMENT CONCRETE 1.1																								
	FILL - Loose fine sand, trace silt and gravel, light brown, moist (SP)			SS1	4-4-4	8	2.5																		
	FILL - Loose fine sand, trace silt and gravel, light brown, moist (SP)			SS2	2-2-3	5	5.0																		
	End of Boring at 5 ft. Boring was terminated on an apparent obstruction																								

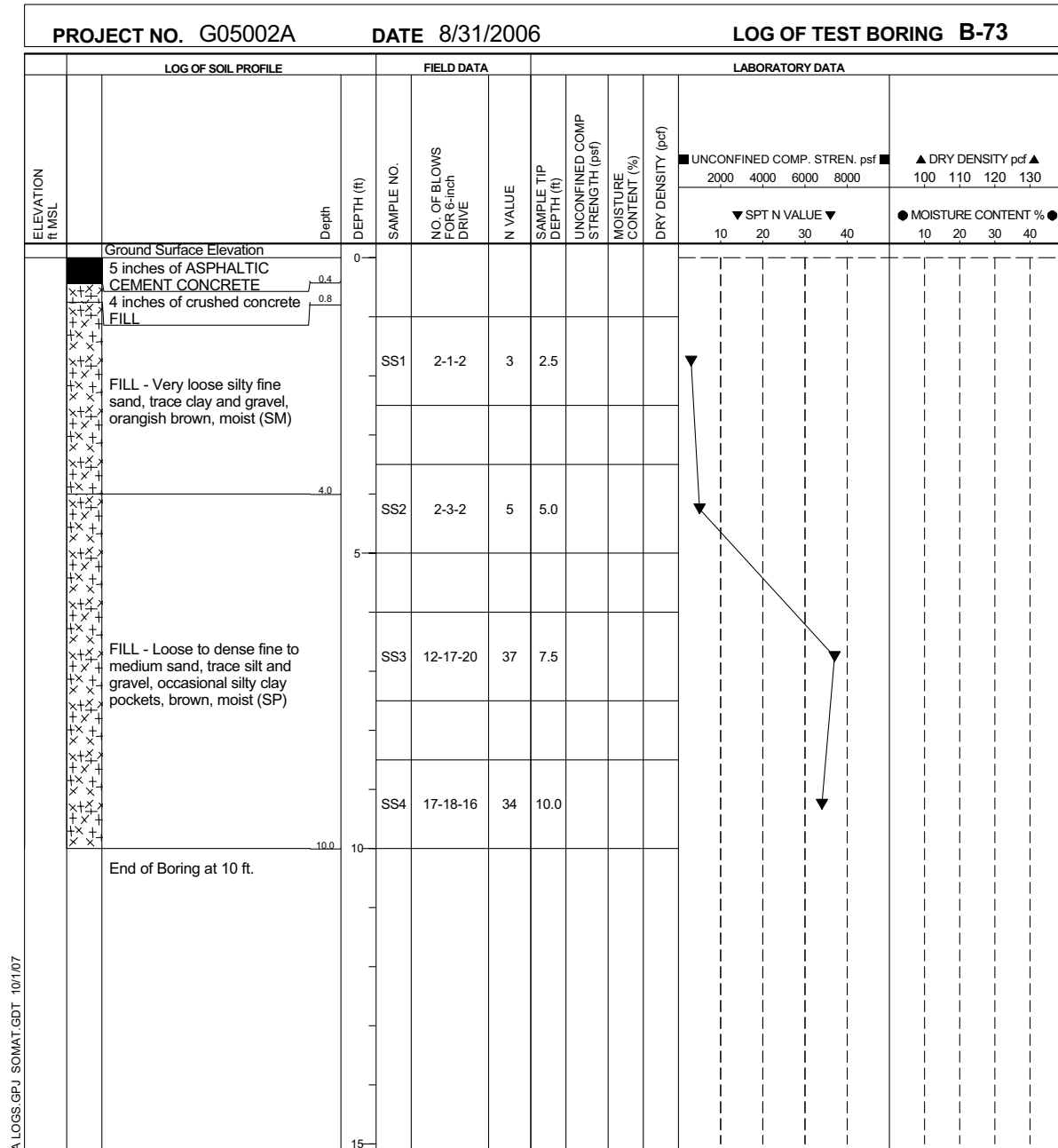
LOG OF TEST BORING VER2 G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-21-06 Date Completed: 08-21-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI	PROJECT NO. G05002A	BORING NO. B-71	PAGE 1 of 1
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:					

PROJECT NO. G05002A		DATE 8/25/2006		LOG OF TEST BORING B-70																					
ELEVATION ft. MSL	LOG OF SOIL PROFILE			FIELD DATA				LABORATORY DATA																	
	Depth DEPTH (ft)	SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				▲ DRY DENSITY pcf ▲												
									2000	4000	6000	8000	100	110	120	130									
								▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●													
								10	20	30	40	10	20	30	40										
	Ground Surface Elevation																								
	5 inches of ASPHALTIC CEMENT CONCRETE 0.4																								
	9 inches of PORTLAND CEMENT CONCRETE 1.2																								
	FILL - Medium dense to loose silty fine to medium sand, trace clay and gravel, brown, moist (SM)			SS1	14-13-10	23	2.5																		
	FILL - Medium dense to loose silty fine to medium sand, trace clay and gravel, brown, moist (SM)			SS2	4-3-4	7	5.0																		
	6 inch BRICK layer 6.0																								
	VOID - Drilling rods dropped from 6.5 to about 10 feet																								
	End of Boring at 10 ft.																								

LOG OF TEST BORING VER2 G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES	Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-25-06 Date Completed: 08-25-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample	 Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI	PROJECT NO. G05002A	BORING NO. B-70	PAGE 1 of 1
GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:					



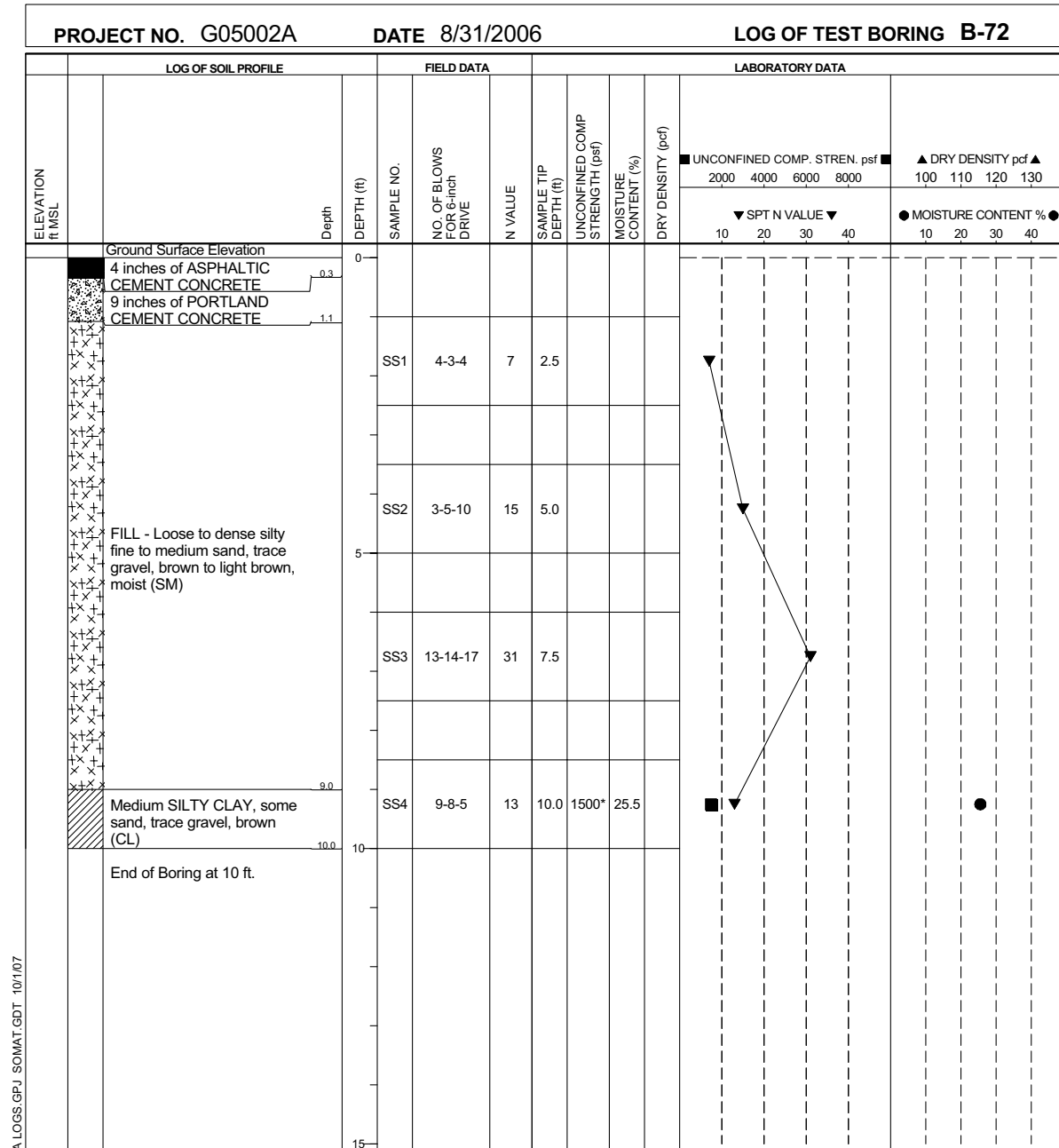
LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

BORING COORDINATES
Drilling Company: Strata Drilling
Drill Rig: CME 45C
Engineer on Rig: J. Lukasik
Drilling Method: 2 1/4 inch SSA
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Date Started: 08-31-06
Date Completed: 08-31-06
Checked By: JSS
Torvane
* Pocket Penetrometer
<> Disturbed Sample

GROUNDWATER READINGS
First Encountered: None
Upon Completion: None
Remarks:

SE Somat Engineering Inc.
Detroit River International Crossing
Project
Proposed Plaza Area Borings
Detroit, MI

PROJECT NO. G05002A BORING NO. B-73 PAGE 1 of 1



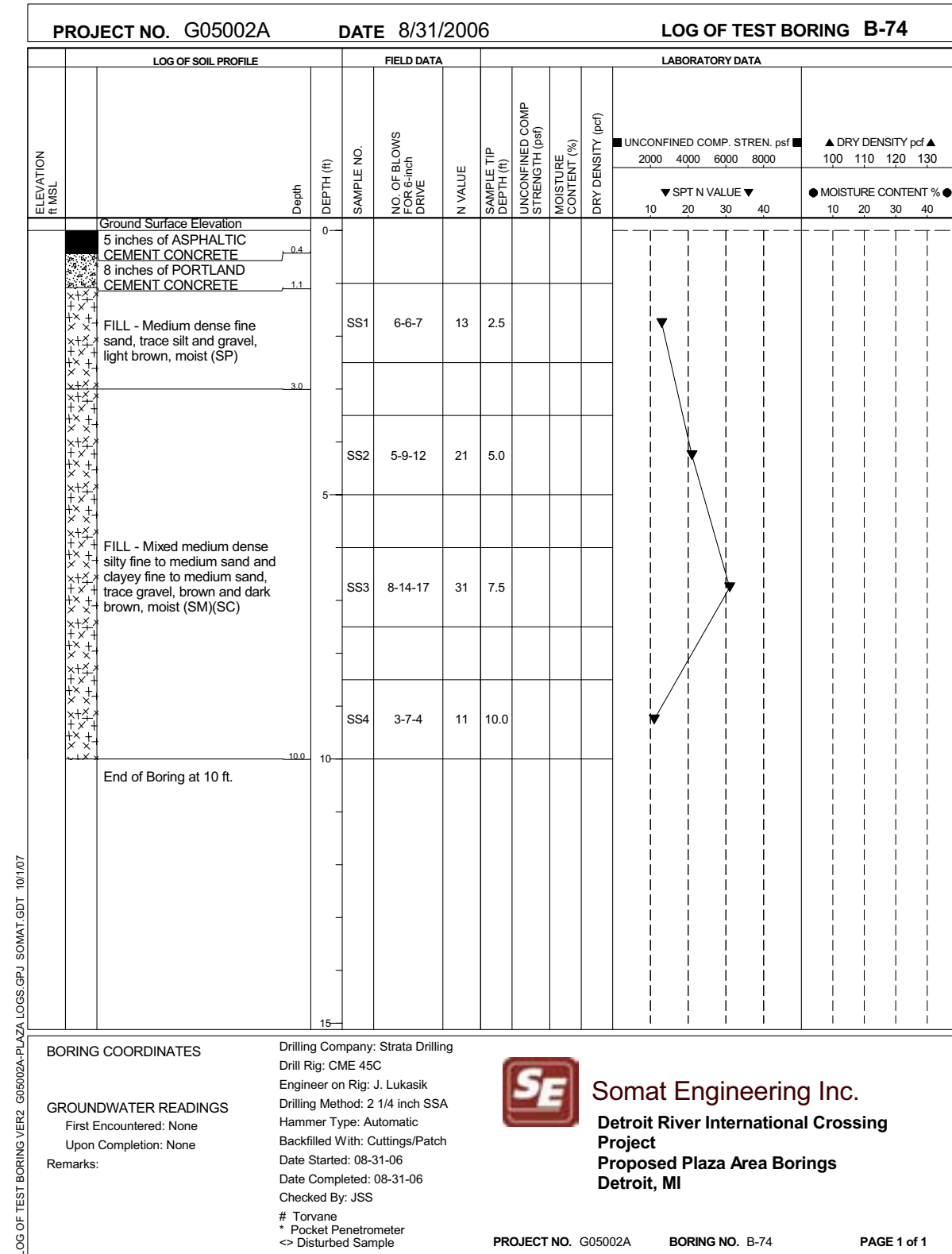
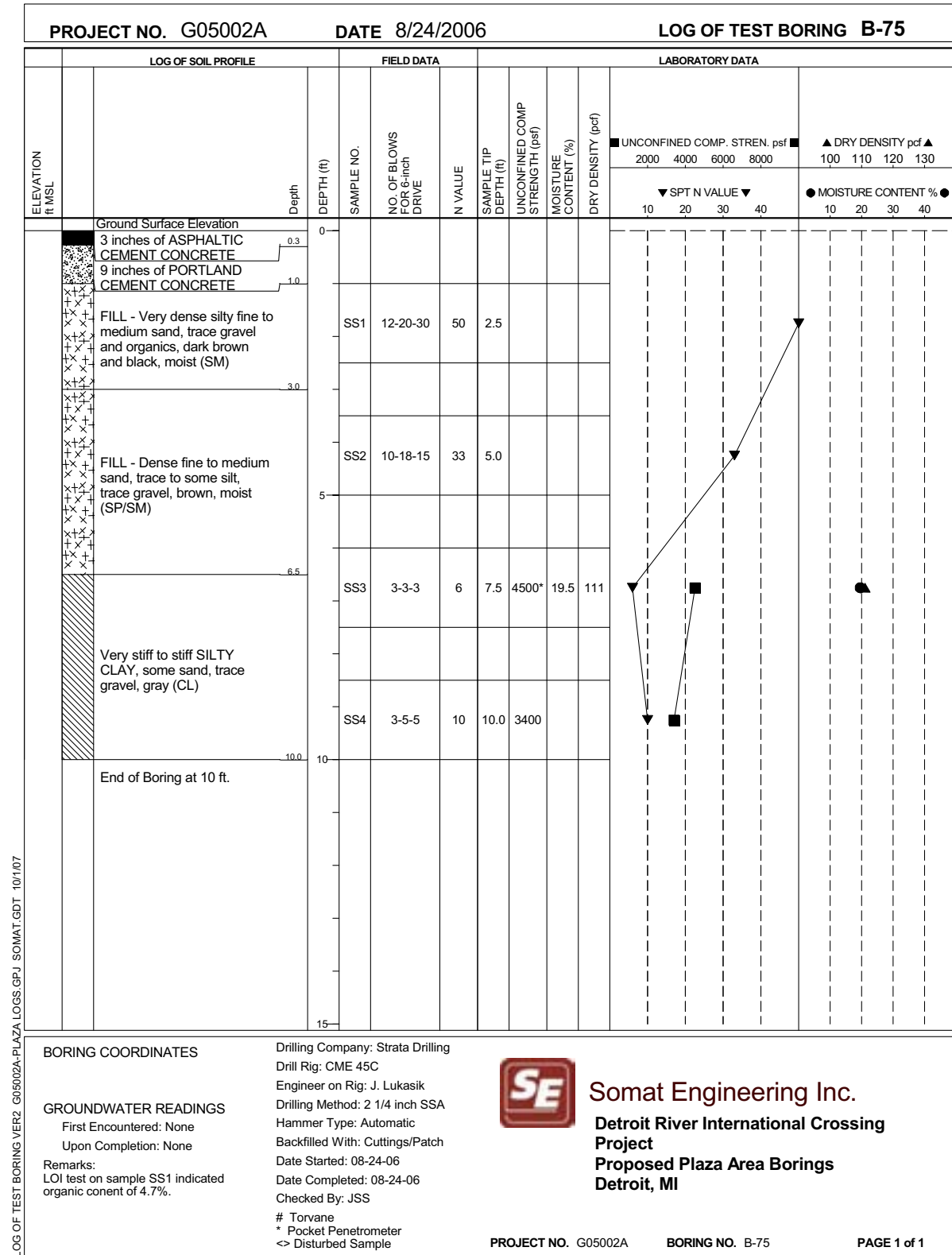
LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

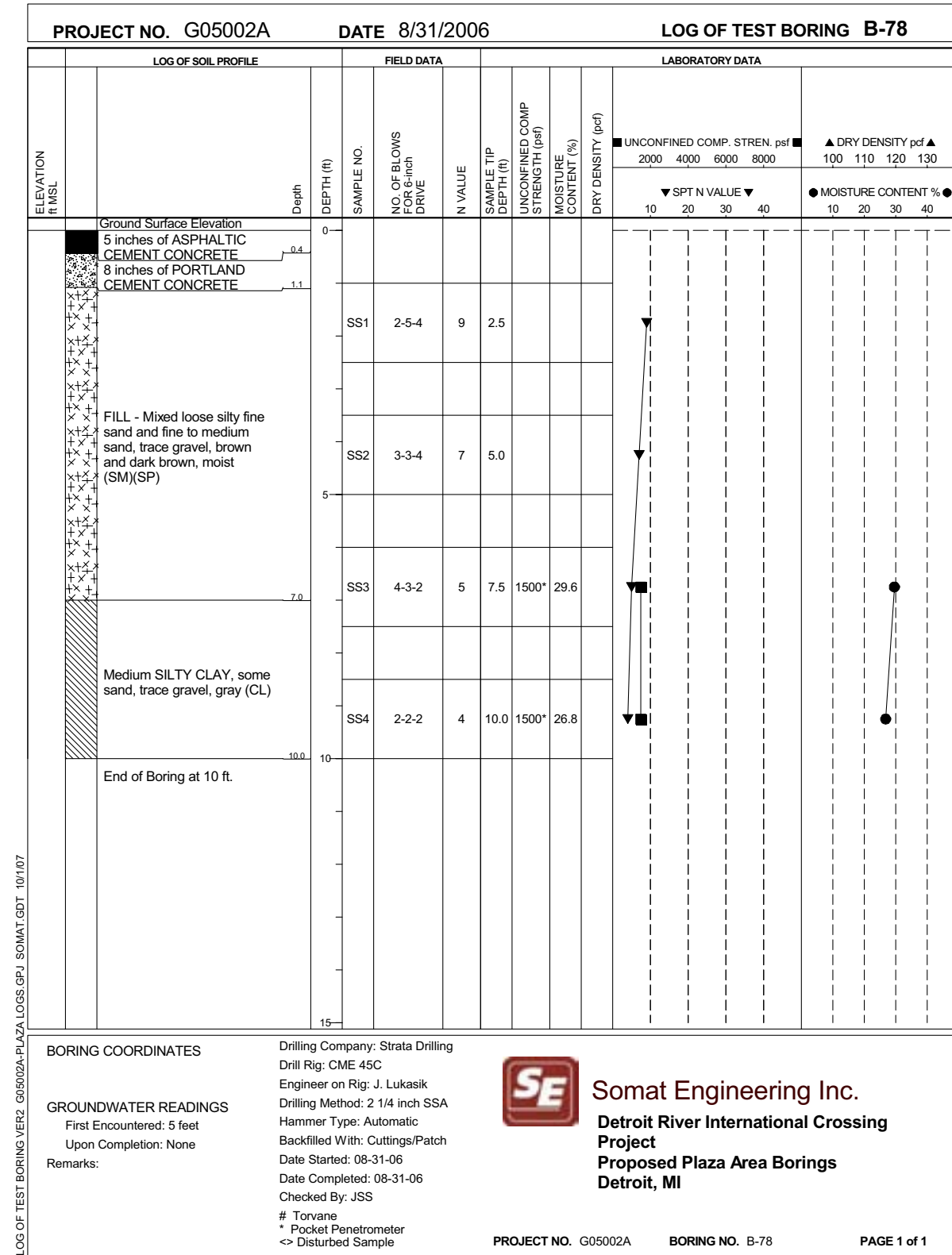
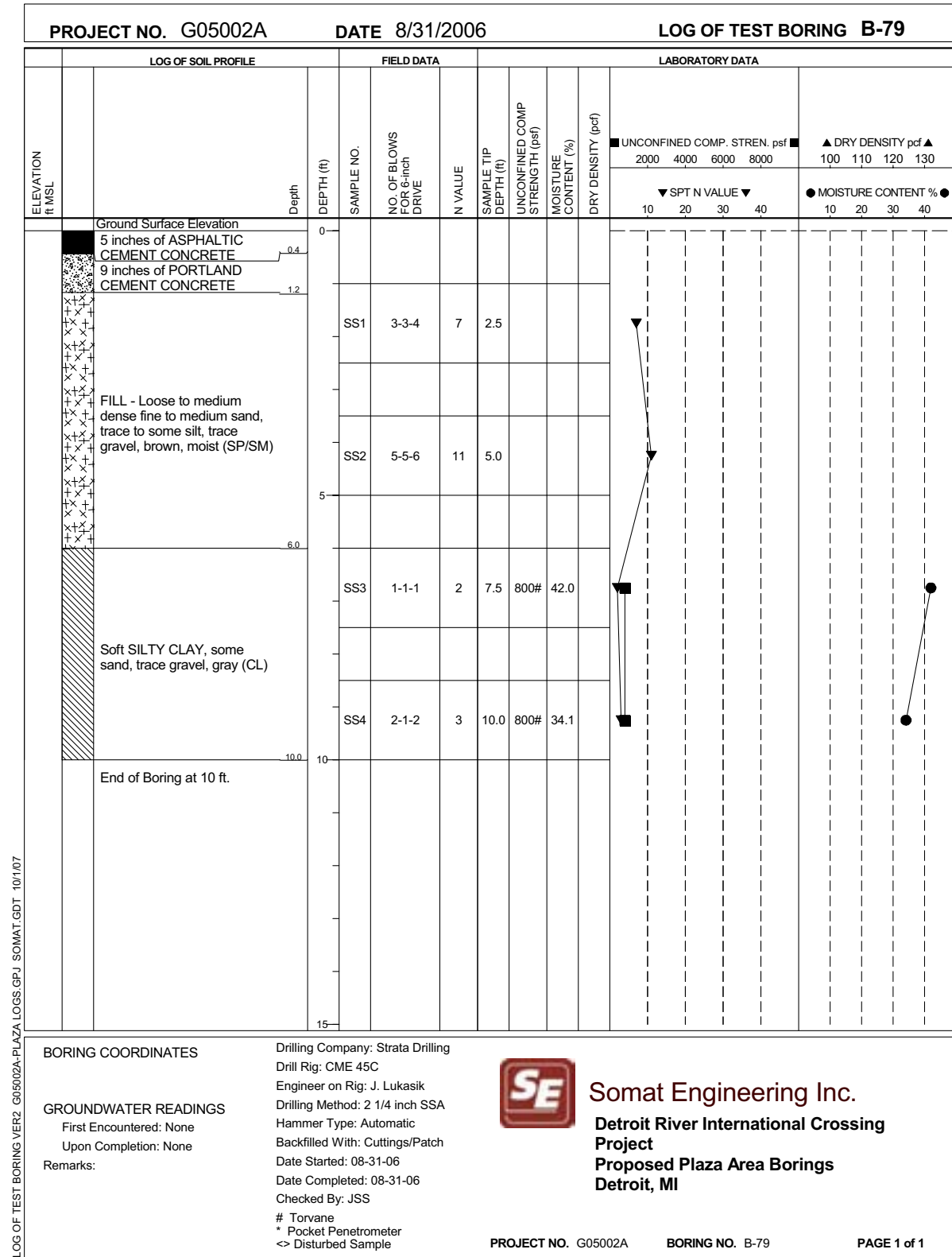
BORING COORDINATES
Drilling Company: Strata Drilling
Drill Rig: CME 45C
Engineer on Rig: J. Lukasik
Drilling Method: 2 1/4 inch SSA
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Date Started: 08-31-06
Date Completed: 08-31-06
Checked By: JSS
Torvane
* Pocket Penetrometer
<> Disturbed Sample

GROUNDWATER READINGS
First Encountered: None
Upon Completion: None
Remarks:

SE Somat Engineering Inc.
Detroit River International Crossing
Project
Proposed Plaza Area Borings
Detroit, MI

PROJECT NO. G05002A BORING NO. B-72 PAGE 1 of 1





PROJECT NO. G05002A		DATE 8/31/2006		LOG OF TEST BORING B-81												
ELEVATION ft MSL	LOG OF SOIL PROFILE	Depth DEPTH (ft)	FIELD DATA					LABORATORY DATA								
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf		
										2000	4000	6000	8000	100	110	120
							▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●					
							10	20	30	40	10	20	30	40		
	Ground Surface Elevation	0														
	6 inches of ASPHALTIC CEMENT CONCRETE	0.5														
	8 inches of PORTLAND CEMENT CONCRETE	1.2														
	FILL - Very loose silty fine sand, trace gravel, dark brown, moist (SM)	3.0	SS1	1-1-2	3	2.5										
	FILL - Very loose clayey fine to medium sand, trace gravel, brown, moist (SC)	5.0	SS2	3-3-1	4	5.0										
	FILL - Medium dense to loose fine to medium sand, trace to some silt, trace gravel, brown, moist to wet (SP/SM)	6.0	SS3	5-7-7	14	7.5										
		10.0	SS4	4-5-3	8	10.0										
	End of Boring at 10 ft.	10														

LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

<p>BORING COORDINATES</p> <p>GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:</p>	<p>Drilling Company: Strata Drilling Drill Rig: CME 45C Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Automatic Backfilled With: Cuttings/Patch Date Started: 08-31-06 Date Completed: 08-31-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample</p>	 <p>Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI</p>	<p>PROJECT NO. G05002A BORING NO. B-81 PAGE 1 of 1</p>
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PROJECT NO. G05002A		DATE 8/31/2006		LOG OF TEST BORING B-80												
ELEVATION ft MSL	LOG OF SOIL PROFILE	Depth DEPTH (ft)	FIELD DATA					LABORATORY DATA								
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf		
										2000	4000	6000	8000	100	110	120
							▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●					
							10	20	30	40	10	20	30	40		
	Ground Surface Elevation	0														
	7 inches of ASPHALTIC CEMENT CONCRETE	0.5														
	6 inches of crushed concrete FILL	1.1														
	FILL - Very loose silty fine to medium sand, trace gravel, brown, moist (SM)	3.0	SS1	5-2-1	3	2.5										
	FILL - Loose clayey fine to medium sand, trace gravel, gray (CL)	5.0	SS2	2-2-4	6	5.0										
	FILL - Medium dense to loose fine to medium sand, trace to some silt, trace gravel, brown, moist to wet (SP/SM)	6.0	SS3	5-5-5	10	7.5										
	SILTY CLAY, some sand, trace gravel, gray (CL)	9.5	SS4	5-4-2	6	10.0	<>	27.7								
	End of Boring at 10 ft.	10														

LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

<p>BORING COORDINATES</p> <p>GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:</p>	<p>Drilling Company: Strata Drilling Drill Rig: CME 45C Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Automatic Backfilled With: Cuttings/Patch Date Started: 08-31-06 Date Completed: 08-31-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample</p>	 <p>Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI</p>	<p>PROJECT NO. G05002A BORING NO. B-80 PAGE 1 of 1</p>
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PROJECT NO. G05002A		DATE 8/24/2006		LOG OF TEST BORING B-84														
LOG OF SOIL PROFILE			FIELD DATA				LABORATORY DATA											
ELEVATION ft. MSL	Depth DEPTH (ft)	SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf					
									2000	4000	6000	8000	100	110	120	130		
									▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●					
									10	20	30	40	10	20	30	40		
	0																	
	0.3																	
	1.1																	
		SS1	2-2-2	4	2.5													
		SS2	1-2-2	4	5.0													
	5																	
		SS3	3-3-4	7	7.5													
		SS4	4-6-6	12	10.0													
	10																	
	10.0																	
	15																	

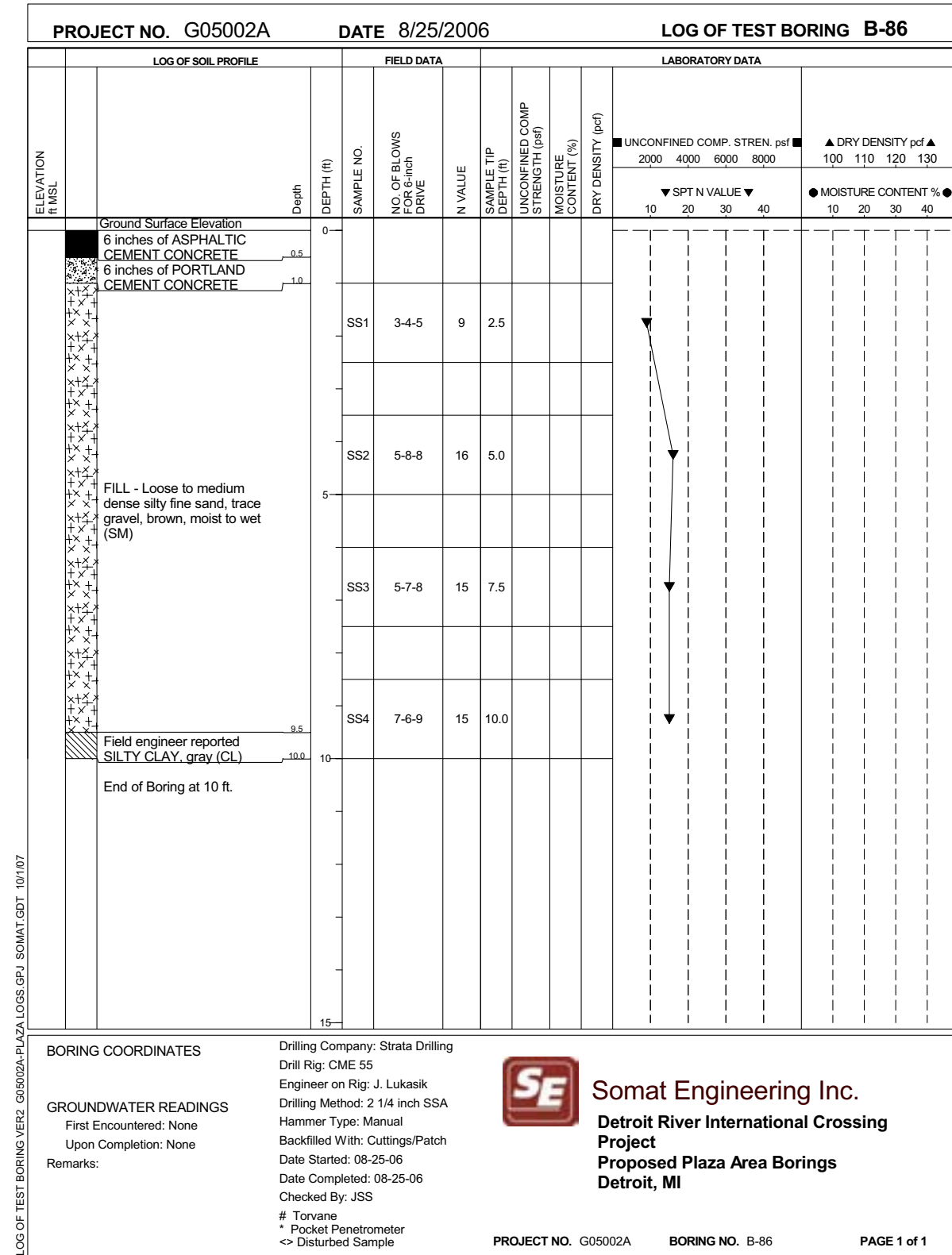
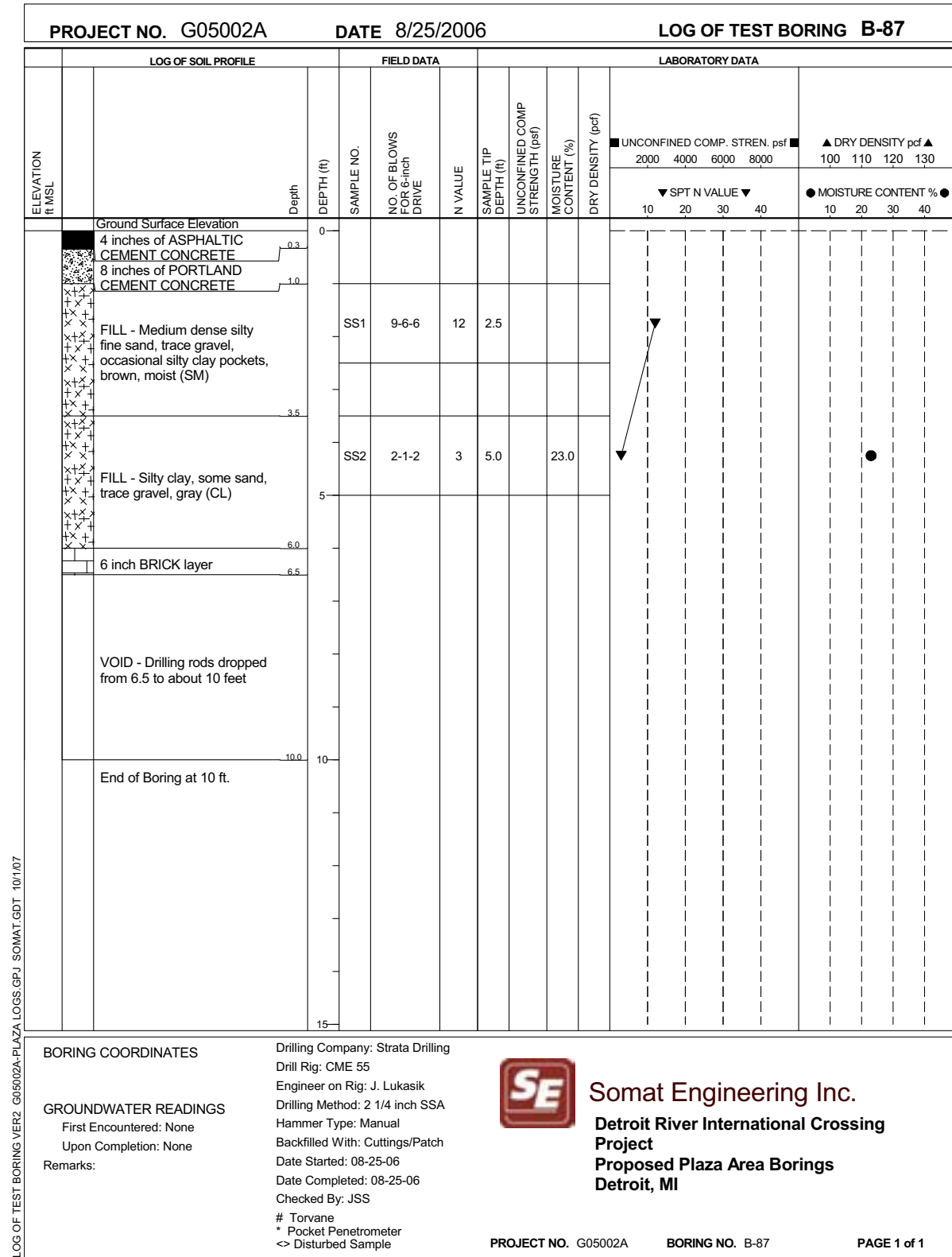
LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

<p>BORING COORDINATES</p> <p>GROUNDWATER READINGS First Encountered: 8 feet Upon Completion: None Remarks:</p>	<p>Drilling Company: Strata Drilling Drill Rig: CME 45C Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Automatic Backfilled With: Cuttings/Patch Date Started: 08-24-06 Date Completed: 08-24-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample</p>	 <p>Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI</p>	<p>PROJECT NO. G05002A BORING NO. B-84 PAGE 1 of 1</p>
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PROJECT NO. G05002A		DATE 8/22/2006		LOG OF TEST BORING B-82														
LOG OF SOIL PROFILE			FIELD DATA				LABORATORY DATA											
ELEVATION ft. MSL	Depth DEPTH (ft)	SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf					
									2000	4000	6000	8000	100	110	120	130		
									▼ SPT N VALUE ▼				● MOISTURE CONTENT % ●					
									10	20	30	40	10	20	30	40		
	0																	
	0.5																	
	1.0																	
		SS1	4-3-3	6	2.5													
	4.0																	
	4.5	SS2	3-3-4	7	5.0													
	5																	
	10																	
	15																	

LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

<p>BORING COORDINATES</p> <p>GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:</p>	<p>Drilling Company: Strata Drilling Drill Rig: CME 55 Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Manual Backfilled With: Cuttings/Patch Date Started: 08-22-06 Date Completed: 08-22-06 Checked By: JSS # Torvane * Pocket Penetrometer <> Disturbed Sample</p>	 <p>Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI</p>	<p>PROJECT NO. G05002A BORING NO. B-82 PAGE 1 of 1</p>
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PROJECT NO. G05002A DATE 8/31/2006 LOG OF TEST BORING B-90

ELEVATION ft. MSL	LOG OF SOIL PROFILE	DEPTH (ft)	FIELD DATA					LABORATORY DATA											
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf		DRY DENSITY pcf							
										2000	4000	6000	8000	100	110	120	130		
	Ground Surface Elevation	0																	
	4 inches of ASPHALTIC CEMENT CONCRETE	0.3																	
	8 inches of PORTLAND CEMENT CONCRETE	1.0																	
	FILL - Loose silty fine sand, trace gravel, brown and light brown, moist (SM)	3.0	SS1	2-2-4	6	2.5													
	FILL - Medium dense fine sand, trace silt and gravel, light brown, moist (SP)	5.0	SS2	4-8-11	19	5.0													
	Medium dense to loose CLAYEY SILT, trace sand and gravel, brown (ML)	6.0	SS3	4-5-5	10	7.5			24.8										
	End of Boring at 10 ft.	10.0	SS4	2-2-3	5	10.0			25.6										

BORING COORDINATES
Drilling Company: Strata Drilling
Drill Rig: CME 45C
Engineer on Rig: J. Lukasik
Drilling Method: 2 1/4 inch SSA
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Date Started: 08-31-06
Date Completed: 08-31-06
Checked By: JSS
Torvane
* Pocket Penetrometer
<> Disturbed Sample

GROUNDWATER READINGS
First Encountered: None
Upon Completion: None
Remarks:

SE Somat Engineering Inc.
Detroit River International Crossing
Project
Proposed Plaza Area Borings
Detroit, MI

PROJECT NO. G05002A BORING NO. B-90 PAGE 1 of 1

PROJECT NO. G05002A DATE 8/22/2006 LOG OF TEST BORING B-88

ELEVATION ft. MSL	LOG OF SOIL PROFILE	DEPTH (ft)	FIELD DATA					LABORATORY DATA											
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf		DRY DENSITY pcf							
										2000	4000	6000	8000	100	110	120	130		
	Ground Surface Elevation	0																	
	5 inches of ASPHALTIC CEMENT CONCRETE	0.4																	
	10 inches of PORTLAND CEMENT CONCRETE	1.3																	
	FILL - Medium dense silty fine sand, trace gravel, trace asphalt pieces below 4.5 feet, brownish gray, moist (SM)	5.0	SS1	8-7-8	15	2.5													
	End of Boring at 5 ft. Boring was terminated on an apparent obstruction	5.0	SS2	5-4-8	12	5.0													

BORING COORDINATES
Drilling Company: Strata Drilling
Drill Rig: CME 45C
Engineer on Rig: J. Lukasik
Drilling Method: 2 1/4 inch SSA
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Date Started: 08-22-06
Date Completed: 08-22-06
Checked By: JSS
Torvane
* Pocket Penetrometer
<> Disturbed Sample

GROUNDWATER READINGS
First Encountered: None
Upon Completion: None
Remarks:

SE Somat Engineering Inc.
Detroit River International Crossing
Project
Proposed Plaza Area Borings
Detroit, MI

PROJECT NO. G05002A BORING NO. B-88 PAGE 1 of 1

PROJECT NO. G05002A DATE 8/31/2006 LOG OF TEST BORING B-94

ELEVATION ft. MSL	LOG OF SOIL PROFILE	Depth DEPTH (ft)	FIELD DATA							LABORATORY DATA								
			SAMPLE NO.	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	UNCONFINED COMP. STREN. psf				DRY DENSITY pcf				
										2000	4000	6000	8000	100	110	120	130	
	Ground Surface Elevation	0																
	4.5 inches of ASPHALTIC CEMENT CONCRETE	0.4																
	11 inches of PORTLAND CEMENT CONCRETE	1.3																
	FILL - Very loose to loose fine sand, trace to some silt, trace gravel, brown, moist (SP/SM)	5	SS1	2-1-1	2	2.5												
			SS2	1-2-1	3	5.0												
			SS3	3-3-3	6	7.5												
	Soft SILTY CLAY, some sand, trace gravel, gray (CL)	8.0																
			SS4	5-3-1	4	10.0	800#											
	End of Boring at 10 ft.	10.0																
		15																

LOG OF TEST BORING VER2: G05002A-PLAZA LOGS.GPJ SOMAT.GDT 10/1/07

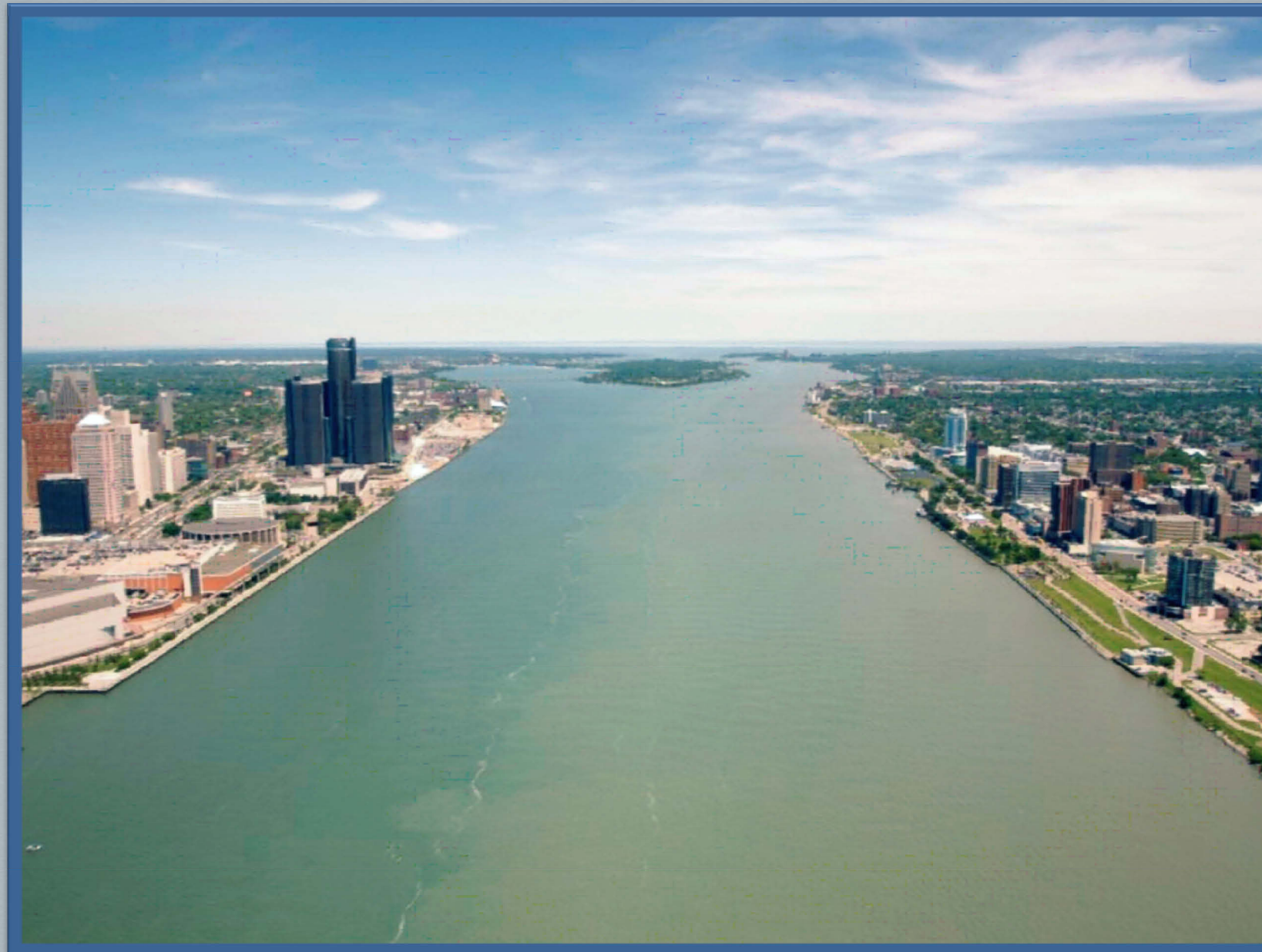
<p>BORING COORDINATES</p> <p>GROUNDWATER READINGS First Encountered: None Upon Completion: None Remarks:</p>	<p>Drilling Company: Strata Drilling Drill Rig: CME 45C Engineer on Rig: J. Lukasik Drilling Method: 2 1/4 inch SSA Hammer Type: Automatic Backfilled With: Cuttings/Patch Date Started: 08-31-06 Date Completed: 08-31-06 Checked By: JSS # Torvane * Pocket Penetrometer <- Disturbed Sample</p>	 <p>Somat Engineering Inc. Detroit River International Crossing Project Proposed Plaza Area Borings Detroit, MI</p>	<p>PROJECT NO. G05002A BORING NO. B-94 PAGE 1 of 1</p> <p style="font-size: small;">10/1/07</p>
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Detroit River
INTERNATIONAL CROSSING
PROJECT

A BORDER TRANSPORTATION PARTNERSHIP



Canada



DETROIT RIVER INTERNATIONAL CROSSING

Engineering Report

APPENDIX D: UTILITY CONFLICTS, EXISTING PLANS, PROPOSED PLANS

November 2008

Prepared by:

PARSONS

In association with:

benesch

NCI
NORTHWEST CONSULTANTS, INC.



SE Somat Engineering,
INCORPORATED

Under agreement with: **CORRADINO**
THE CORRADINO GROUP

DRIC - UTILITY ANALYSIS SUMMARY

Comcast		DTE		DWS-D-Sewer		DWS-D-Water		ITC		Level3		Lightcore		MCI					
Conflicts	OH Coaxial Cable: 20790 ft OH Fiber Cable: 1900 ft UG Fiber Cable: 0 ft	Conflicts	Underground Cable: 53870 ft Substation: 1 Station	Conflicts	Sewer 6" to 15": 28720 ft Sewer 15"x20" to 42": 16015 ft Sewer 6' to 10.5': 7790 ft Sewer 13' to 16': 3190 ft Sewer 5.5'x5.5' to 7'x5': 2315 ft Sewer 9'x8' to 10'x10': 965 ft	Conflicts	6" to 12" Water Main: 16830 ft 6" to 12" Water Main (Rem): 20005 ft 16" Water Main: 3775 ft 42" Water Main: 650 ft	Conflicts	120kV & control line: 20275 ft 120kV & 230kV line & Transmission Towers: 6 ea	Conflicts	Fiber cable: 3300 ft	Conflicts	Cable: 0 ft	Conflicts	Conduit: 11800 ft Metallic Conduit: 1400 ft				
Duration	Study:	Duration	Study:	Duration	Study:	Duration	Study:	Duration	Study:	Duration	Study:	Duration	Study:	Duration	Study:				
	Design:		Approximately 3 - 5 years from design to construction		Design:		Approximately 5 years from design to construction		Design:				Design:			Design:		Design:	
	Const:				Const:				Const:				Const:			Const:		Const:	
Cost	Private: \$4,033,000 MDOT: \$2,964,000 Total: \$6,997,000	Cost	Private: \$8,080,500 MDOT: \$18,019,500 Total: \$26,100,000	Cost	Private: \$0 MDOT: \$38,375,000 Total: \$38,375,000	Cost	Private: \$0 MDOT: \$7,245,125 Total: \$7,245,125	Cost	Private: \$41,427,572 MDOT: \$1,000,000 Total: \$42,427,572	Cost	Private: \$1,650,000 MDOT: \$0 Total: \$1,650,000	Cost	Private: \$0 MDOT: \$0 Total: \$0	Cost	Private: \$6,600,000 MDOT: \$0 Total: \$6,600,000				
Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for relocated sewer mains -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for relocated sewer mains -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements				
Michcon		Nextel		PLD		Qwest		SBC		Telecom/AT&T									
Conflicts	2" to 16" Main: 5570 ft 2" to 16" Main (Rem): 13985 ft High Pressure Main: 1425 ft	Conflicts	Fiber cable: 1500 ft	Conflicts	Street lighting: 24870 ft 24 kV (UG): 8000 ft 28/48 kV (UG): 1000 ft	Conflicts	Cable: 500 ft	Conflicts	Cable in ducts: 9555 ft Fiber cable in ducts: 3745 ft	Conflicts	Fiber Cable: 0 ft								
Duration	Study:	Duration	Study:	Duration	Study:	Duration	Study:	Duration	Study:	Duration	Study:								
	Design:		Approximately 2 - 3 years from design to construction		Design:		Approximately 6 months from design to construction		Design:		Approximately 2 - 4 years from design to construction	Design:		Design:					
	Const:				Const:				Const:			Const:	18 to 24 months	Const:					
Cost	Private: \$1,585,275 MDOT: \$0 Total: \$1,585,275	Cost	Private: \$687,500 MDOT: \$62,500 Total: \$750,000	Cost	Private: \$0 MDOT: \$17,474,000 Total: \$17,474,000	Cost	Private: \$250,000 MDOT: \$0 Total: \$250,000	Cost	Private: \$4,739,000 MDOT: \$0 Total: \$4,739,000	Cost	Private: \$0 MDOT: \$0 Total: \$0								
Required Items	-Verification of cost to relocate high-pressure transmission lines -Diameter of high-pressure main crossing beneath I-75 along Green St -Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction and verification of previously provided construction time -Confirmation of central office on Fort St address -Buffer space requirements for lines within utility corridor -Easement requirements	Required Items	-Schedule for design and construction -Buffer space requirements for lines within utility corridor -Easement requirements								

Total Utilities Cost (rounded)	
Total Cost	Private: \$70,000,000 MDOT: \$87,000,000 Total: \$157,000,000

PROJECT: Corradino - DRIC
 LOCATION: Preferred Alternative
 BASIS FOR ESTIMATE: CONCEPTUAL PRELIMINARY FINAL
 WORK: Utility Relocation

DATE: November 14, 2008
 PROJECT NO.:
 ESTIMATOR: PK
 CHECKED BY: AK
 CURRENT ENR:

Utility Company	Description	PRIVATE			PRIVATE			MDOT			MDOT			OVERALL TOTAL COST		
		TRANSMISSION PROJ. TOTAL	DISTRIBUTION PROJ. TOTAL	UNIT	UNIT PRICE	TRANSMISSION COST	DISTRIBUTION COST	TOTAL COST	TRANSMISSION PROJ. TOTAL	DISTRIBUTION PROJ. TOTAL	UNIT	UNIT PRICE	TRANSMISSION COST		DISTRIBUTION COST	TOTAL COST
Comcast	Overhead Coaxial Cable, (including pole reloc)	3590	7320	Ft	\$ 300.00	\$ 1,077,000	\$ 2,196,000.00	\$ 3,273,000.00	0	9880	Ft	\$ 300.00	\$ -	\$ 2,964,000.00	\$ 2,964,000.00	\$ 6,237,000.00
	Overhead Fiber Cable (including pole reloc)	1900	0	Ft	\$ 400.00	\$ 760,000.00	\$ -	\$ 760,000.00	0	0	Ft	\$ 400.00	\$ -	\$ -	\$ -	\$ 760,000.00
	Underground Fiber Cable (including trenching)	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ -
DTE	Underground Cable	53870	0	Ft	\$ 150.00	\$ 8,080,500.00	\$ -	\$ 8,080,500.00	0	20130	Ft	\$ 150.00	\$ -	\$ 3,019,500.00	\$ 3,019,500.00	\$ 11,100,000.00
	Substation	0	0	LS	\$ 15,000,000.00	\$ -	\$ -	\$ -	0	1	LS	\$ 15,000,000.00	\$ -	\$ 15,000,000.00	\$ 15,000,000.00	\$ 15,000,000.00
DWSD-Sewer	Sewer, 6 inch to 15 inch (incl trenching, manholes, etc)	0	0	Ft	\$ 250.00	\$ -	\$ -	\$ -	0	28720	Ft	\$ 250.00	\$ -	\$ 7,180,000.00	\$ 7,180,000.00	\$ 7,180,000.00
	Sewer, 15 x 20 inch to 42 inch (incl trenching, manholes, etc)	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	0	16015	Ft	\$ 500.00	\$ -	\$ 8,007,500.00	\$ 8,007,500.00	\$ 8,007,500.00
	Sewer, 6 ft to 10.5 ft (incl trenching, manholes, etc)	0	0	Ft	\$ 1,000.00	\$ -	\$ -	\$ -	7790	0	Ft	\$ 1,000.00	\$ 7,790,000.00	\$ -	\$ 7,790,000.00	\$ 7,790,000.00
	Sewer, 13 ft to 16 ft (incl trenching, manholes, etc)	0	0	Ft	\$ 1,500.00	\$ -	\$ -	\$ -	3190	0	Ft	\$ 1,500.00	\$ 4,785,000.00	\$ -	\$ 4,785,000.00	\$ 4,785,000.00
	Sewer, 5.5 x 5.5 ft to 7 x 5 ft (incl trenching, manholes, etc)	0	0	Ft	\$ 2,500.00	\$ -	\$ -	\$ -	2315	0	Ft	\$ 2,500.00	\$ 5,787,500.00	\$ -	\$ 5,787,500.00	\$ 5,787,500.00
	Sewer, 9 x 8 ft to 10 x 10 ft (incl trenching, manholes, etc)	0	0	Ft	\$ 5,000.00	\$ -	\$ -	\$ -	965	0	Ft	\$ 5,000.00	\$ 4,825,000.00	\$ -	\$ 4,825,000.00	\$ 4,825,000.00
DWSD-Water	Water Main, 6 inch to 12 inch (incl trenching, manholes, etc)	0	0	Ft	\$ 250.00	\$ -	\$ -	\$ -	5150	11680	Ft	\$ 250.00	\$ 1,287,500.00	\$ 2,920,000.00	\$ 4,207,500.00	\$ 4,207,500.00
	Water Main, 6 inch to 12 inch (removal only)	0	0	Ft	\$ 25.00	\$ -	\$ -	\$ -	4100	15905	Ft	\$ 25.00	\$ 102,500.00	\$ 397,625.00	\$ 500,125.00	\$ 500,125.00
	Water Main, 16 inch (incl trenching, manholes, etc)	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	3775	0	Ft	\$ 500.00	\$ 1,887,500.00	\$ -	\$ 1,887,500.00	\$ 1,887,500.00
	Water Main, 42 inch or Greater (incl trenching, manholes, etc)	0	0	Ft	\$ 1,000.00	\$ -	\$ -	\$ -	650	0	Ft	\$ 1,000.00	\$ 650,000.00	\$ -	\$ 650,000.00	\$ 650,000.00
ITC	120kV & Control Line	3.84	0.41	Mi	\$ 9,747,664.00	\$ 37,431,029.76	\$ 3,996,542.24	\$ 41,427,572.00	0	0	Mi	\$ 7,000,000.00	\$ -	\$ -	\$ -	\$ 41,427,572.00
	120kV & 230kV Line and Transmission Towers	0	0	Ea	\$ 1,000,000.00	\$ -	\$ -	\$ -	6	0	Ea	\$ 166,666.67	\$ 1,000,000.00	\$ -	\$ 1,000,000.00	\$ 1,000,000.00
Level3	Fiber Cable	3300	0	Ft	\$ 500.00	\$ 1,650,000.00	\$ -	\$ 1,650,000.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 1,650,000.00
Lightcore	Cable	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ -
MCI	Conduit	11800	0	Ft	\$ 500.00	\$ 5,900,000.00	\$ -	\$ 5,900,000.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 5,900,000.00
	Metallic Conduit	1400	0	Ft	\$ 500.00	\$ 700,000.00	\$ -	\$ 700,000.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 700,000.00
Michcon	Gas Main, 2 inch to 16 inch	2815	2755	Ft	\$ 150.00	\$ 422,250.00	\$ 413,250.00	\$ 835,500.00	0	0	Ft	\$ 150.00	\$ -	\$ -	\$ -	\$ 835,500.00
	Gas Main, 2 inch to 16 inch (removal only)	1440	12545	Ft	\$ 15.00	\$ 21,600.00	\$ 188,175.00	\$ 209,775.00	0	0	Ft	\$ 15.00	\$ -	\$ -	\$ -	\$ 209,775.00
	High Pressure Gas Main	0.27	0	Mi	\$ 2,000,000.00	\$ 540,000.00	\$ -	\$ 540,000.00	0	0	Mi	\$ 2,000,000.00	\$ -	\$ -	\$ -	\$ 540,000.00
Nextel	Fiber Cable	475	900	Ft	\$ 500.00	\$ 237,500.00	\$ 450,000.00	\$ 687,500.00	125	0	Ft	\$ 500.00	\$ 62,500.00	\$ -	\$ 62,500.00	\$ 750,000.00
PLD	Street Lighting (including pole reloc)	0	0	Ft	\$ 200.00	\$ -	\$ -	\$ -	21755	3115	Ft	\$ 200.00	\$ 4,351,000.00	\$ 623,000.00	\$ 4,974,000.00	\$ 4,974,000.00
	24 kV (underground)	0	0	Ft	\$ 1,500.00	\$ -	\$ -	\$ -	8000	0	Ft	\$ 1,500.00	\$ 12,000,000.00	\$ -	\$ 12,000,000.00	\$ 12,000,000.00
	28/48 kV (underground)	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	1000	0	Ft	\$ 500.00	\$ 500,000.00	\$ -	\$ 500,000.00	\$ 500,000.00
Qwest	Cable	500	0	Ft	\$ 500.00	\$ 250,000.00	\$ -	\$ 250,000.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 250,000.00
SBC	Cable in Ducts	9555	0	Ft	\$ 300.00	\$ 2,866,500.00	\$ -	\$ 2,866,500.00	0	0	Ft	\$ 300.00	\$ -	\$ -	\$ -	\$ 2,866,500.00
	Fiber Cable in Ducts	3745	0	Ft	\$ 500.00	\$ 1,872,500.00	\$ -	\$ 1,872,500.00	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ 1,872,500.00
Telecom/AT&T	Fiber Cable	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	0	0	Ft	\$ 500.00	\$ -	\$ -	\$ -	\$ -
	Subtotal					\$ 61,808,879.76	\$ 7,243,967.24	\$ 69,052,847.00					\$ 45,028,500.00	\$ 40,111,625.00	\$ 85,140,125.00	\$ 154,192,972.00
						ROUNDED TOTAL OPINION OF PROBABLE COST =	\$ 62,000,000.00	\$ 8,000,000.00	\$ 70,000,000.00				\$ 46,000,000.00	\$ 41,000,000.00	\$ 87,000,000.00	\$ 157,000,000.00

\$DATE\$

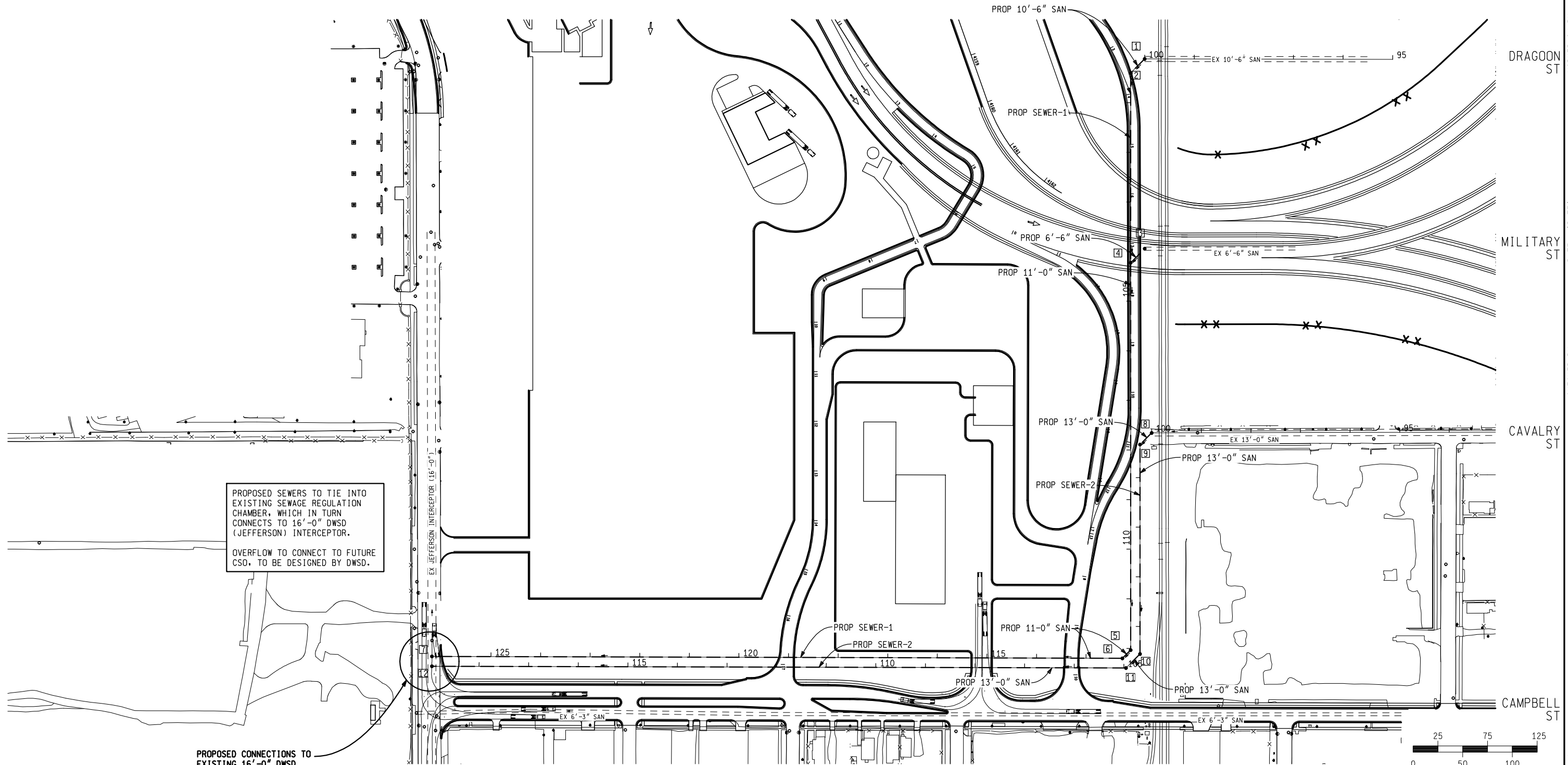
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DATE: \$DATE\$ WORKED ON BY: \$DATE\$ CHECKED BY: \$DATE\$ FILE NAME: drainage_reloc.e.dgn

JEFFERSON AVE

RAILROAD

JUNCTION



PROPOSED SEWERS TO TIE INTO EXISTING SEWAGE REGULATION CHAMBER, WHICH IN TURN CONNECTS TO 16'-0" DWS (JEFFERSON) INTERCEPTOR.

OVERFLOW TO CONNECT TO FUTURE CSO, TO BE DESIGNED BY DWS.

PROPOSED CONNECTIONS TO EXISTING 16'-0" DWS (JEFFERSON) INTERCEPTOR

LAUDERDALE ST

CONSTRUCTION SHEET

DRIGGS ST

RAILROAD

JEFFERSON AVE

REEDER ST

HARVEY ST

		PROP PLAZA SEWER RELOCATIONS (EAST)				
		DATE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO.
		10/03/08	82194	802330	R.O.W	CONST.

JEFFERSON AVE

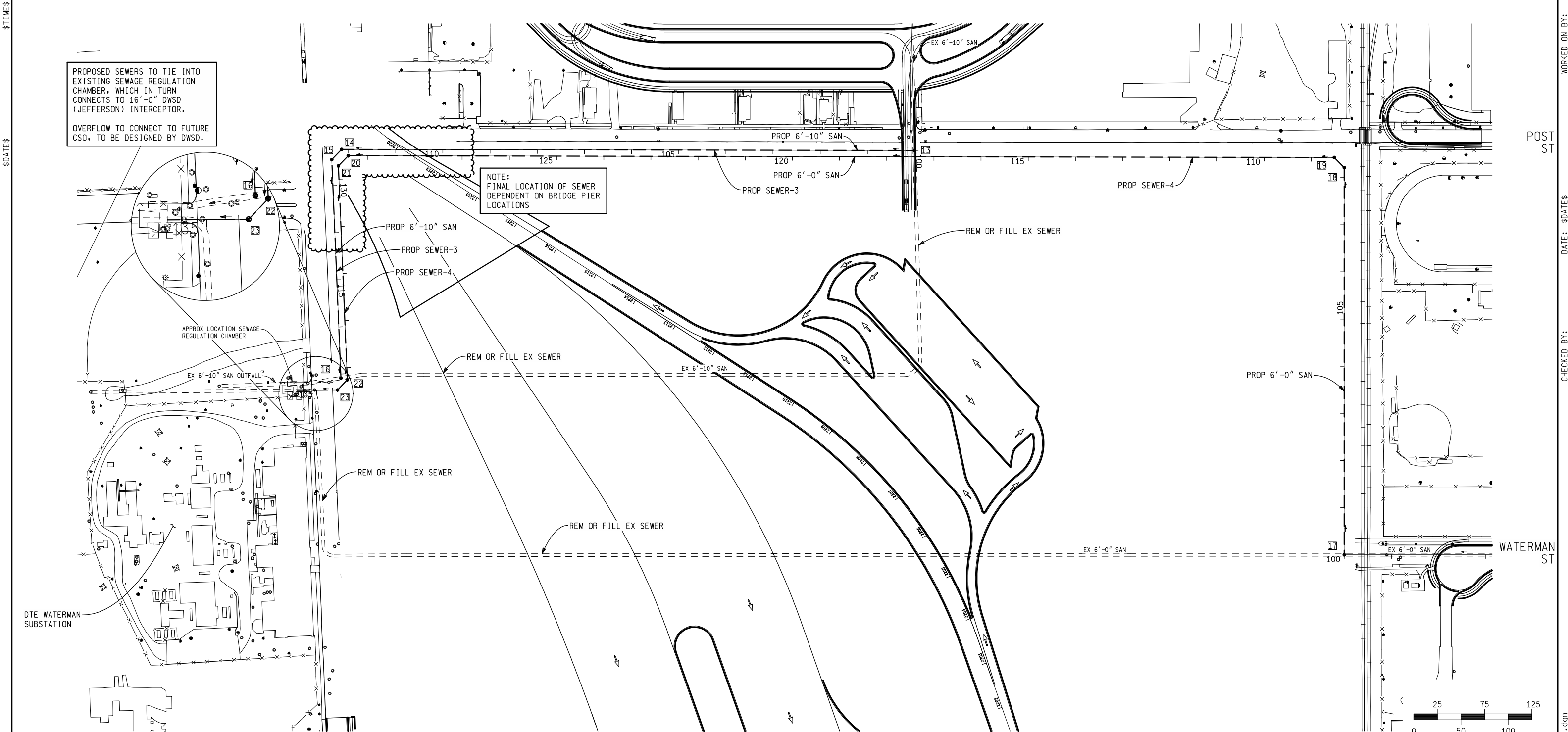
SOUTH ST

POST ST

WATERMAN ST

PROPOSED SEWERS TO TIE INTO EXISTING SEWAGE REGULATION CHAMBER, WHICH IN TURN CONNECTS TO 16'-0" DWS (JEFFERSON) INTERCEPTOR.
OVERFLOW TO CONNECT TO FUTURE CSO, TO BE DESIGNED BY DWS.

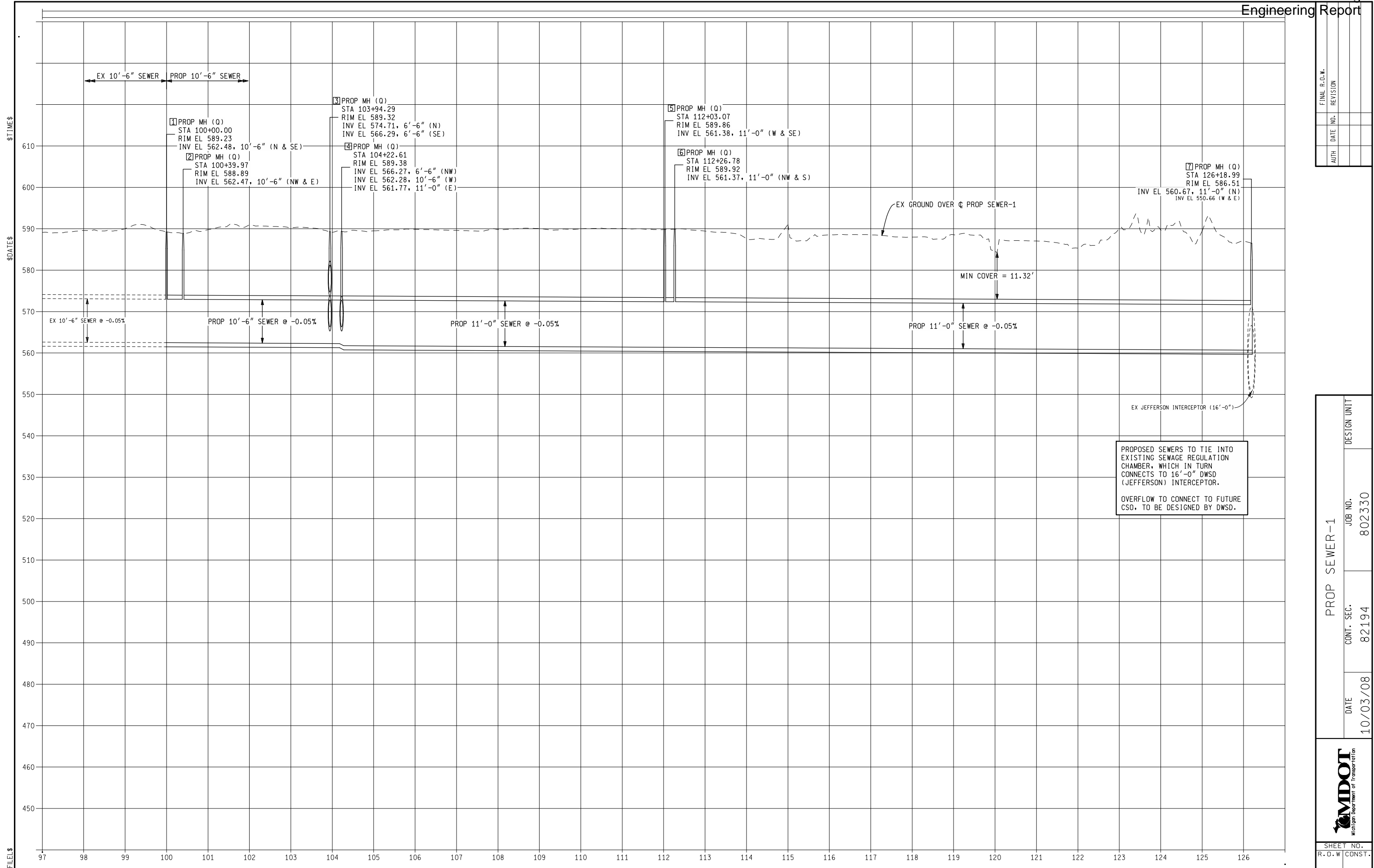
NOTE: FINAL LOCATION OF SEWER DEPENDENT ON BRIDGE PIER LOCATIONS



CONSTRUCTION SHEET

	PROP PLAZA SEWER RELOCATIONS (WEST)				
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	10/03/08	82194	802330		R.O.W / CONST.

FILE NAME: drainage_reloc_w.dgn



PROPOSED SEWERS TO TIE INTO EXISTING SEWAGE REGULATION CHAMBER, WHICH IN TURN CONNECTS TO 16'-0" DWS (JEFFERSON) INTERCEPTOR.

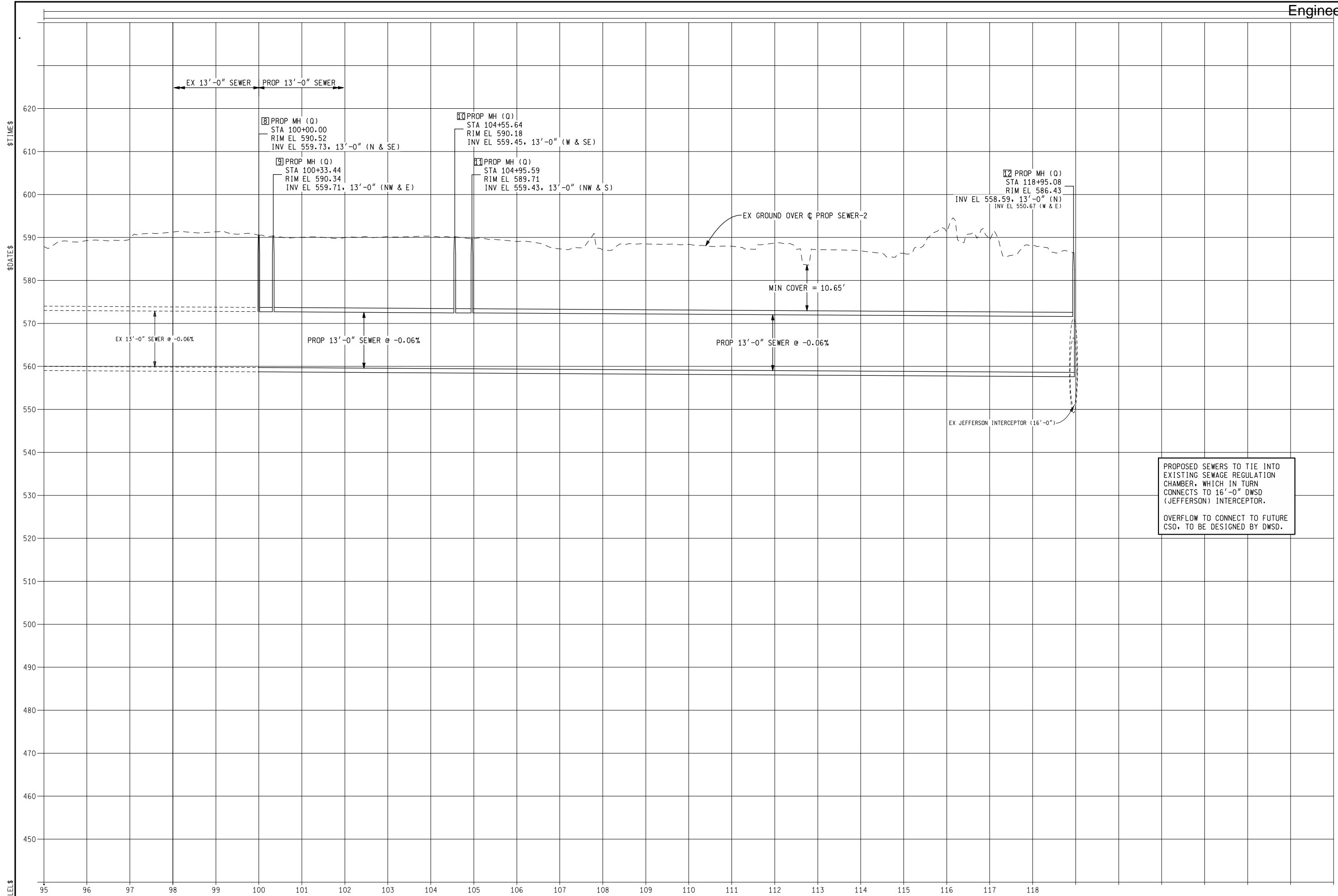
OVERFLOW TO CONNECT TO FUTURE CSD, TO BE DESIGNED BY DWS.

FINAL R.O.W.	REVISION

DATE	BY

DATE	10/03/08
CONT. SEC.	82194
JOB NO.	802330
DESIGN UNIT	

SHEET NO.	
R.O.W	
CONSTR.	



\$FILE\$

\$DATE\$

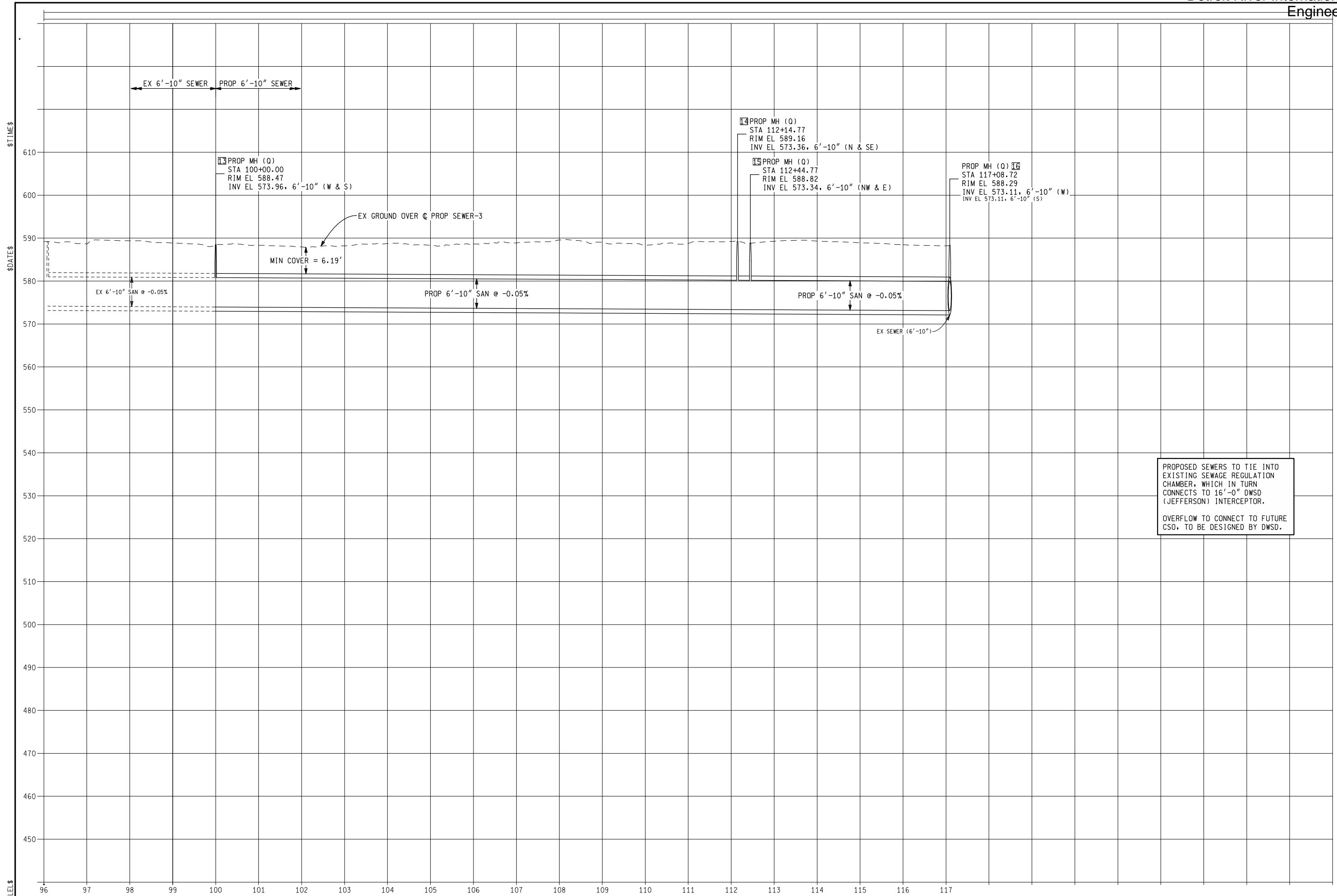
FINAL R.O.W.	REVISION
AUTH	DATE
NO.	

WORKED ON BY: \$DATE\$
 DATE: \$DATE\$

PROP SEWER-2	DESIGN UNIT
CONT. SEC. 82194	JOB NO. 802330
DATE 10/03/08	

	SHEET NO.
Michigan Department of Transportation	R.O.W / CONST.

PROPOSED SEWERS TO TIE INTO EXISTING SEWAGE REGULATION CHAMBER, WHICH IN TURN CONNECTS TO 16'-0" DWS (JEFFERSON) INTERCEPTOR.
 OVERFLOW TO CONNECT TO FUTURE CSD, TO BE DESIGNED BY DWS.



PROPOSED SEWERS TO TIE INTO EXISTING SEWAGE REGULATION CHAMBER, WHICH IN TURN CONNECTS TO 16'-0" DWSD (JEFFERSON) INTERCEPTOR.

OVERFLOW TO CONNECT TO FUTURE CSD, TO BE DESIGNED BY DWSD.

FINAL R.O.W.	REVISION
AUTH	DATE
NO.	

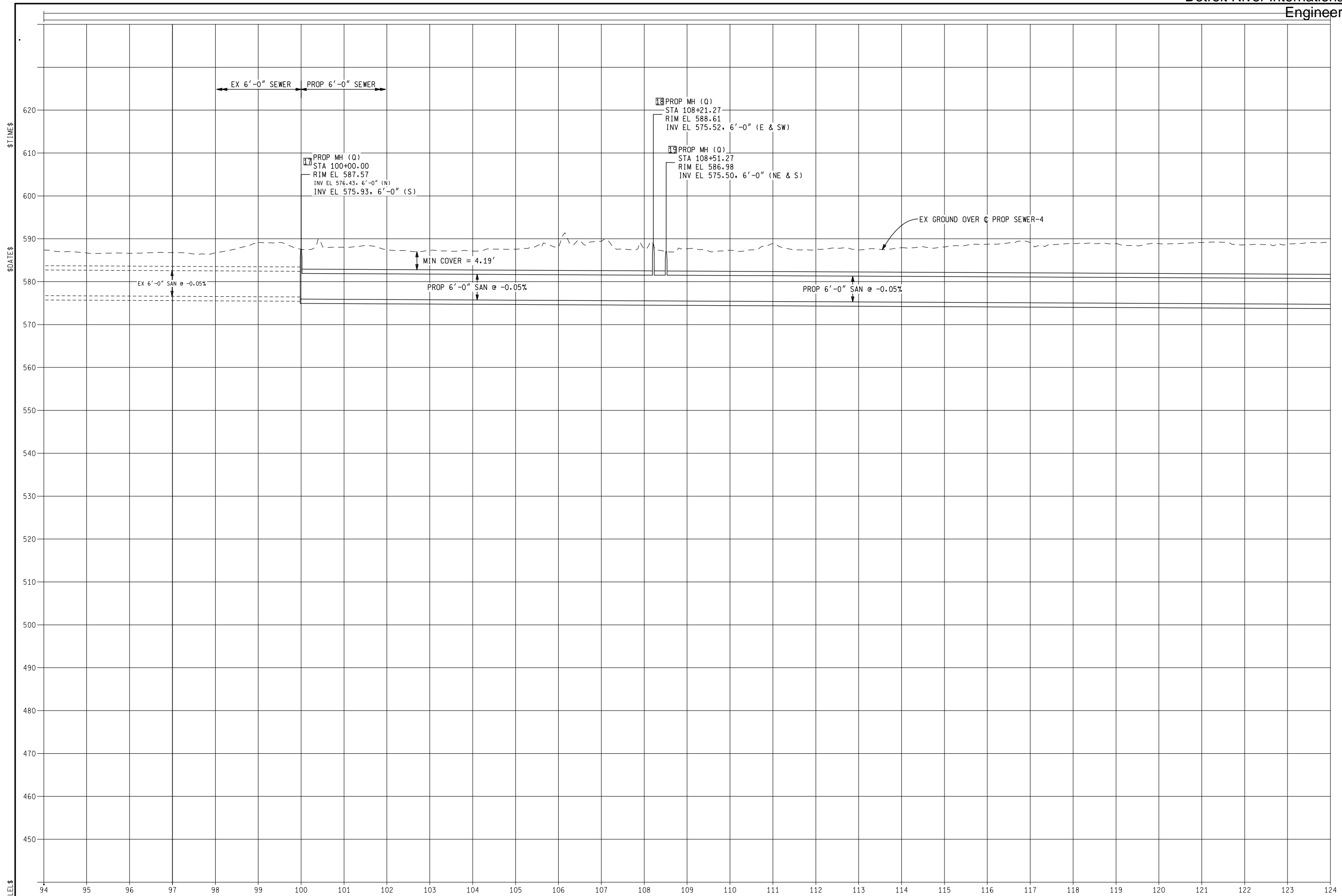
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DATE 10/03/08	CONT. SEC. 82194
DESIGN UNIT	

MMDOT
 Michigan Department of Transportation

SHEET NO. R.O.W / CONST.

FILE NAME: Sewer-3-prof11e-94.dgn



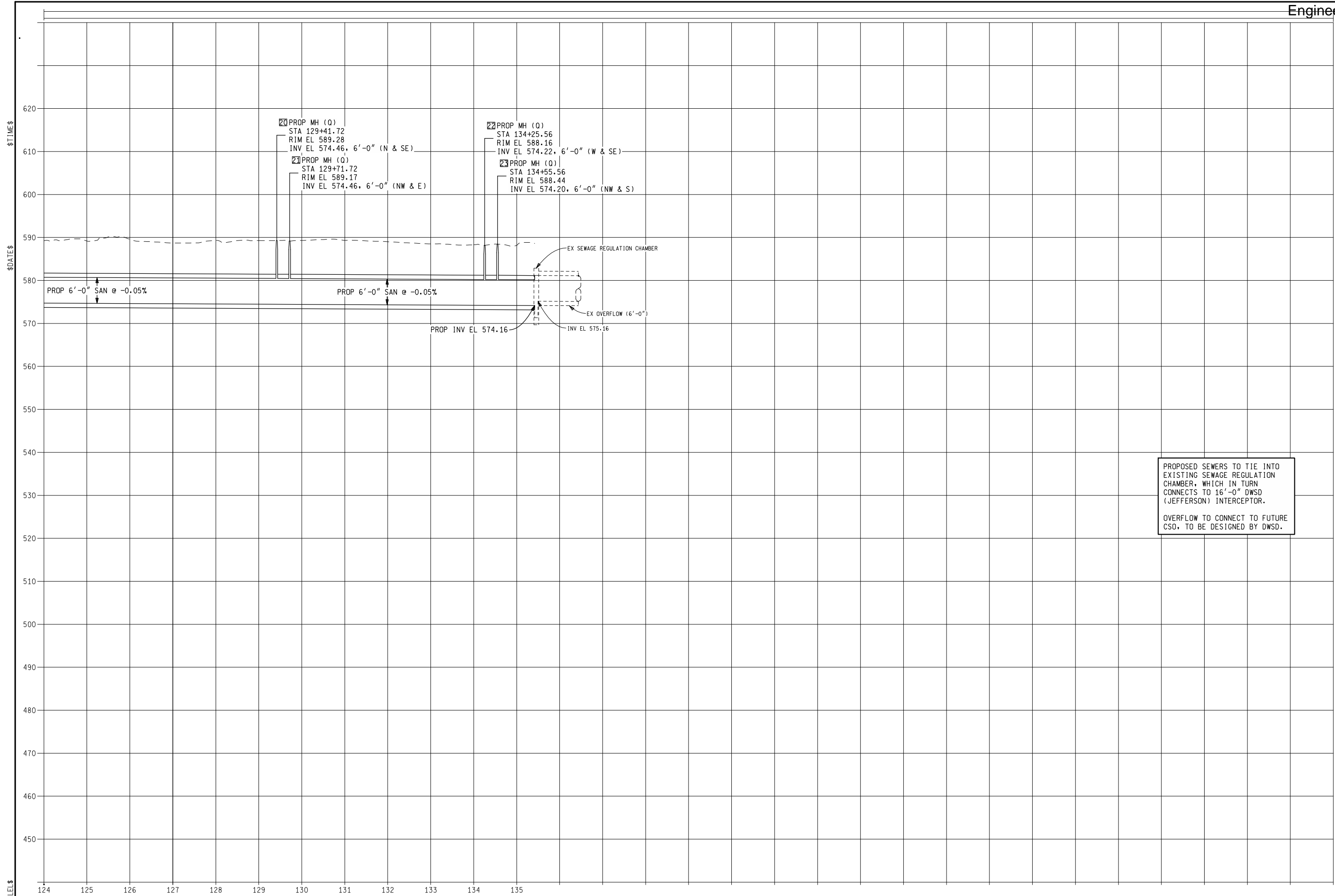
FINAL R.O.W.	REVISION
AUTH	DATE
NO.	

WORKED ON BY: _____
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PROP SEWER-4	JOB NO.	802330
DATE	CONT. SEC.	82194
10/03/08		
DESIGN UNIT		

MMDOT Michigan Department of Transportation
SHEET NO. R.O.W. CONSTRUCTION

FILE NAME: Sewer-4-profile.94.dgn



PROPOSED SEWERS TO TIE INTO EXISTING SEWAGE REGULATION CHAMBER, WHICH IN TURN CONNECTS TO 16'-0" DWS (JEFFERSON) INTERCEPTOR. OVERFLOW TO CONNECT TO FUTURE CSD, TO BE DESIGNED BY DWS.

FINAL R.O.W.	REVISION
AUTH	DATE
NO.	

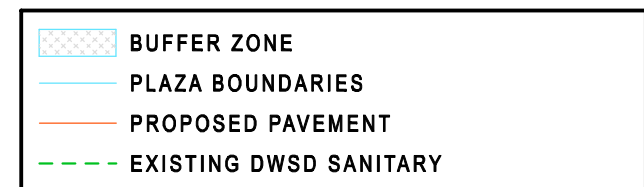
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PROP SEWER-4	JOB NO. 802330
DATE 10/03/08	CONT. SEC. 82194
DESIGN UNIT	

MDOJ Michigan Department of Transportation
SHEET NO. R.O.W. CONST.

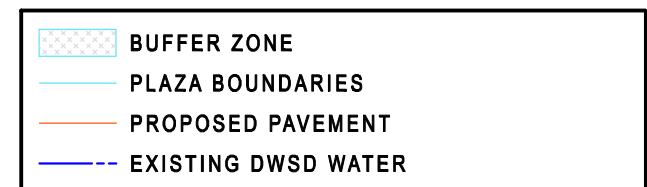


UTILITY LOCATIONS - DWSD (SANITARY)



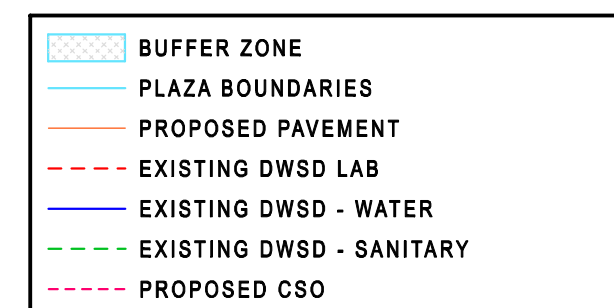


UTILITY LOCATIONS - DWSD (WATER)



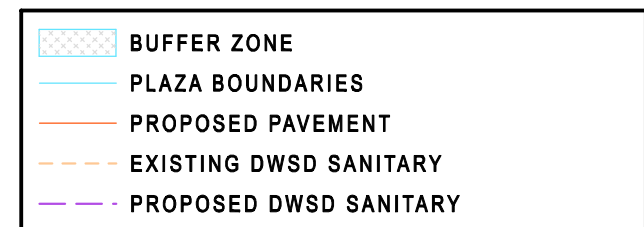


UTILITY LOCATIONS - DWSD LAB





UTILITY LOCATIONS - DWSD (SANITARY)



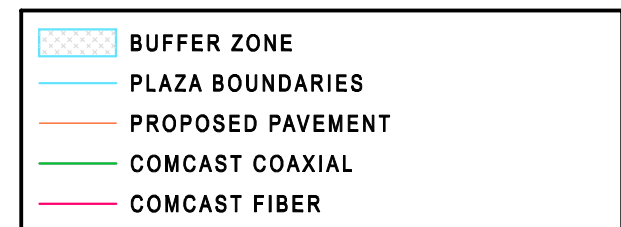


UTILITY LOCATIONS - AT&T/TELECOM

- BUFFER ZONE
- PLAZA BOUNDARIES
- PROPOSED PAVEMENT
- AT&T/TELECOM FIBER

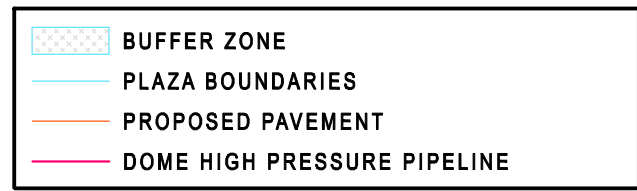


UTILITY LOCATIONS - COMCAST





UTILITY LOCATIONS - DOME











UTILITY LOCATIONS - DTE

- BUFFER ZONE
- PLAZA BOUNDARIES
- PROPOSED PAVEMENT
- DTE CONDUIT IN DUCT BANK
- DTE UNDERGROUND
- DTE SUBSTATION



UTILITY LOCATIONS - ITC

-  BUFFER ZONE
-  PLAZA BOUNDARIES
-  PROPOSED PAVEMENT
-  ITC 120kv & CONTROL CABLE
-  ITC 120kv & 230kv
-  ITC TRANSMISSION TOWER



UTILITY LOCATIONS - LEVEL 3

- BUFFER ZONE
- PLAZA BOUNDARIES
- PROPOSED PAVEMENT
- WILTEL FIBER (CURRENTLY LEVEL 3)

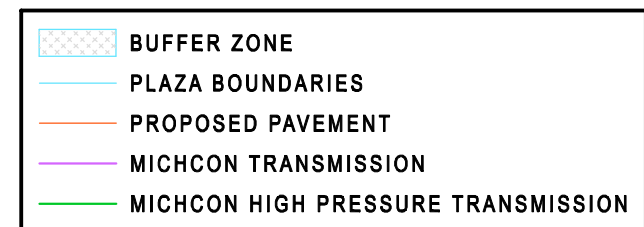


UTILITY LOCATIONS - MCI

- BUFFER ZONE
- PLAZA BOUNDARIES
- PROPOSED PAVEMENT
- MCI CONDUIT
- MCI METALLIC CONDUIT

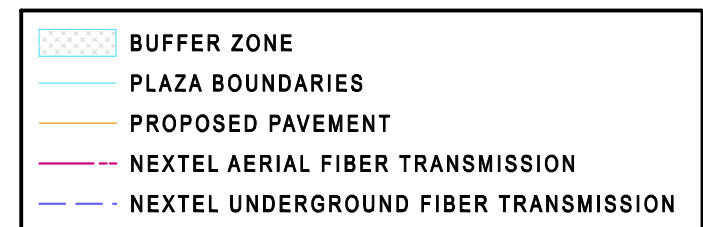


UTILITY LOCATIONS - MICHCON



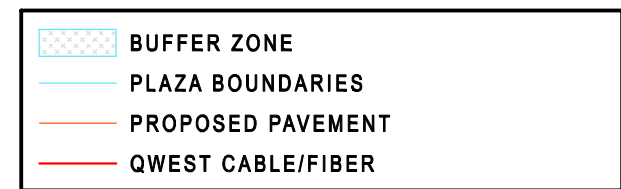


UTILITY LOCATIONS - NEXTEL





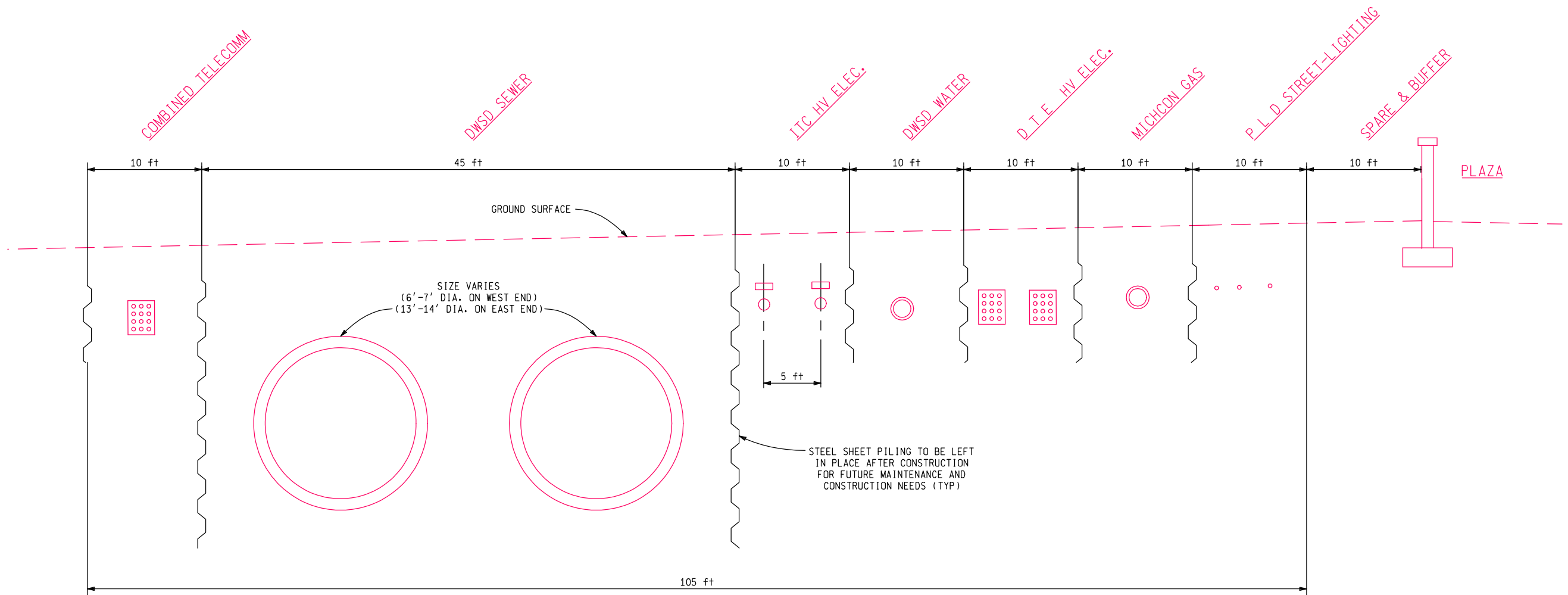
UTILITY LOCATIONS - QWEST





UTILITY LOCATIONS - SBC

- BUFFER ZONE
- PLAZA BOUNDARIES
- PROPOSED PAVEMENT
- SBC TRANSMISSION



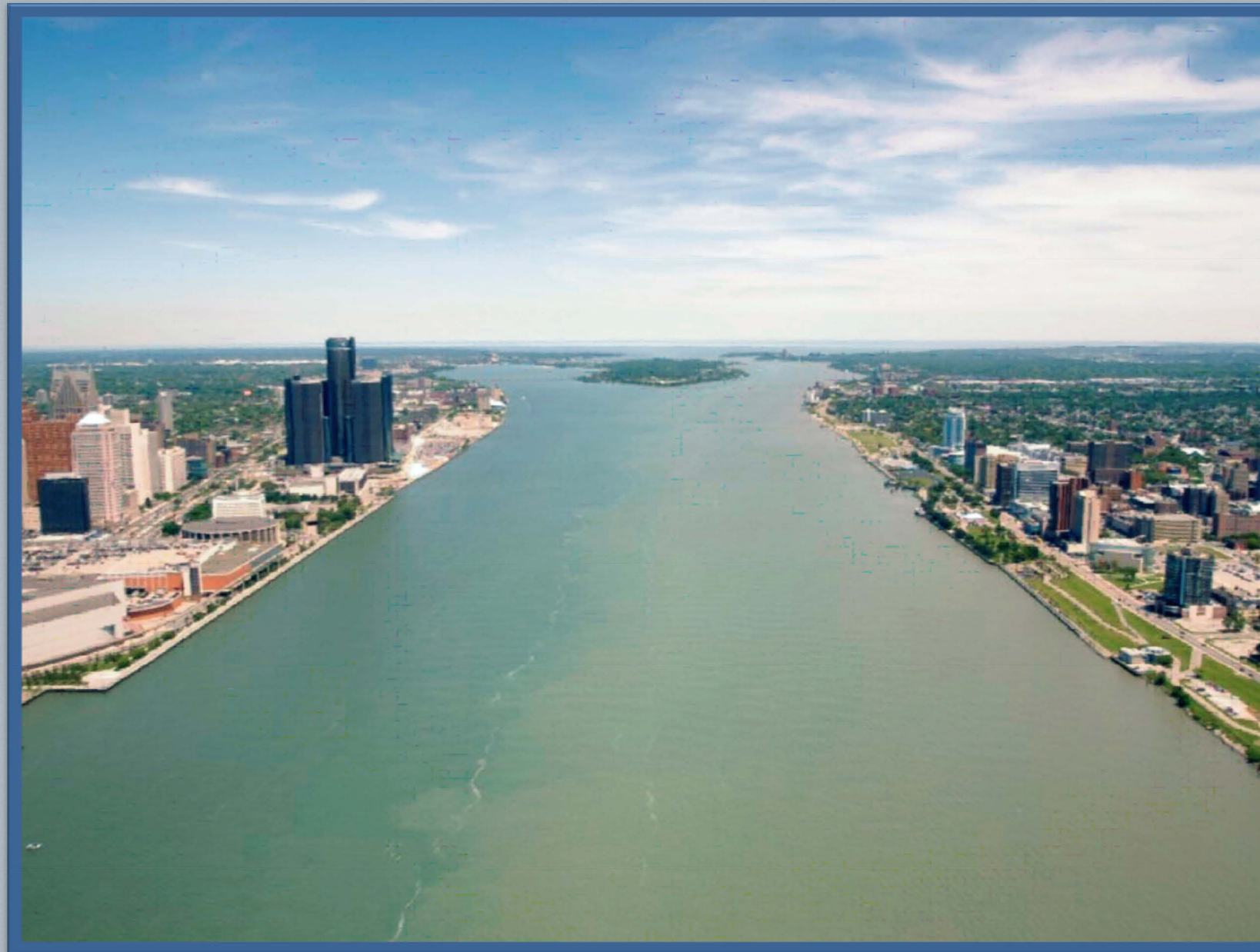
BUFFER ZONE CONCEPT WITH RELOCATED UTILITIES

Detroit River
INTERNATIONAL CROSSING
PROJECT

A BORDER TRANSPORTATION PARTNERSHIP



Canada



DETROIT RIVER INTERNATIONAL CROSSING

Engineering Report

APPENDIX E: TRAFFIC VOLUMES

November 2008

Prepared by:

PARSONS

In association with:

benesch

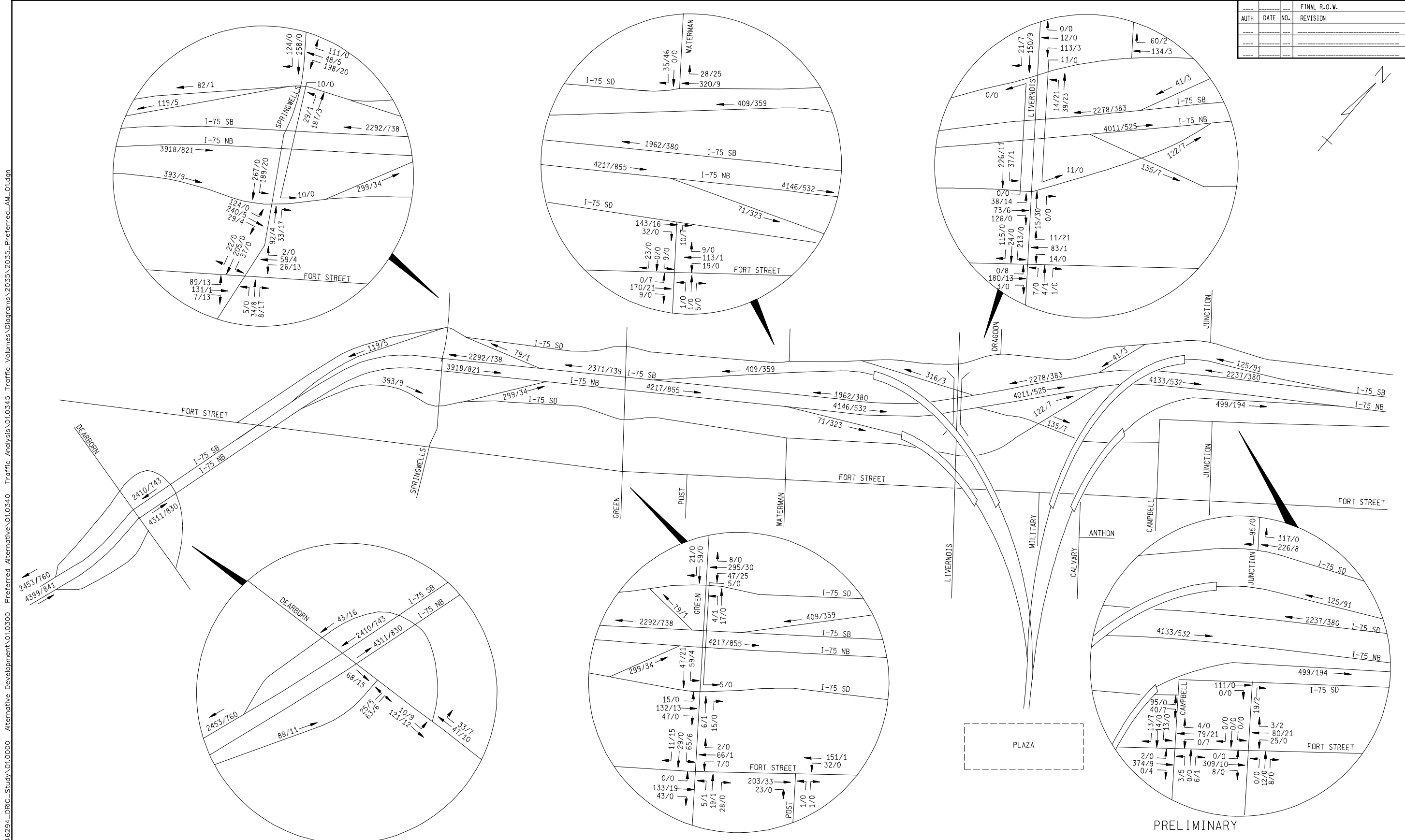
NCI
NORTHWEST CONSULTANTS, INC.



SE Somat Engineering,
INCORPORATED

Under agreement with: **CORRADINO**
THE CORRADINO GROUP

FINAL R.O.W.		
AUTH	DATE	REVISION



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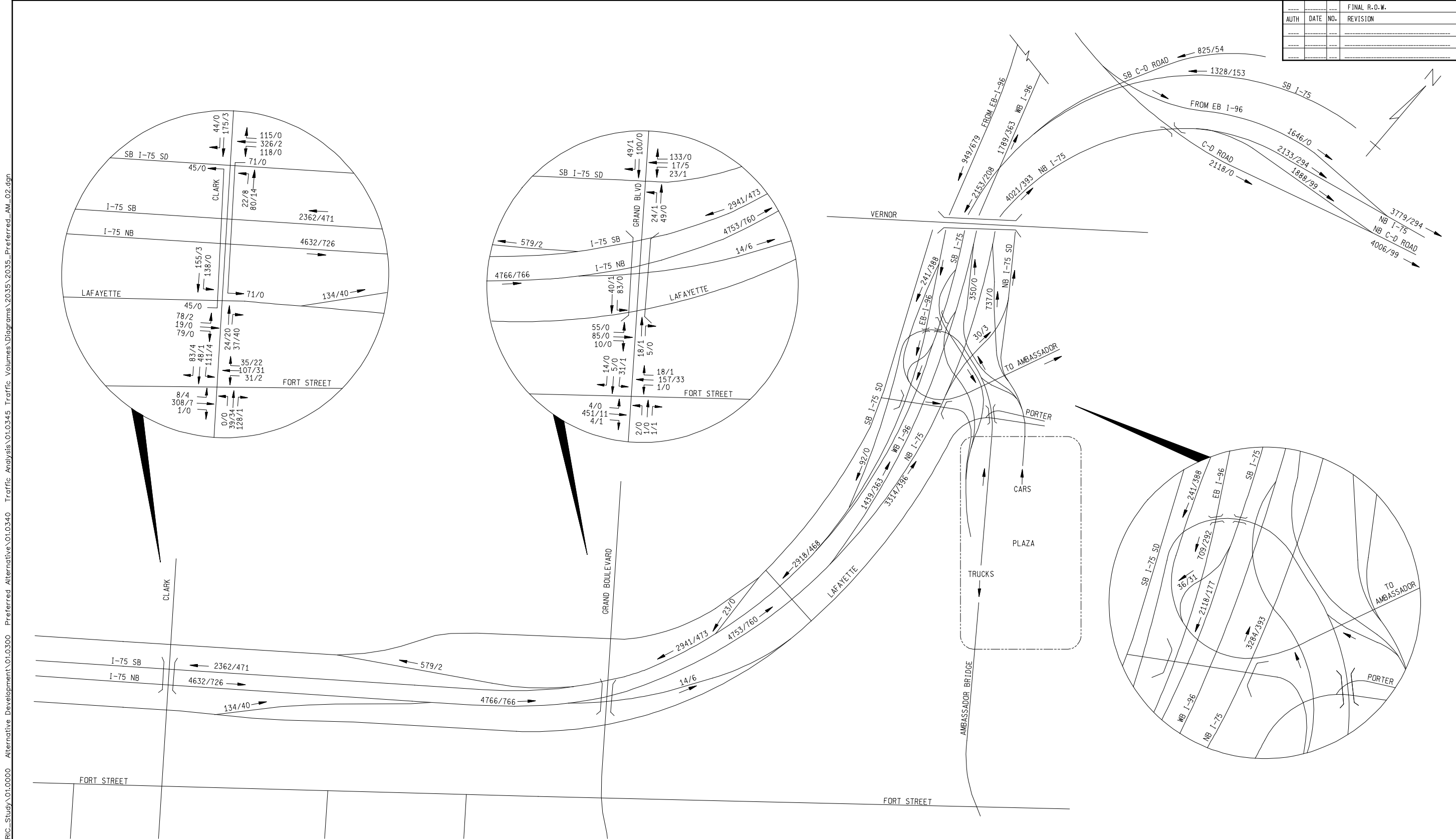
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	DATE	SCALE	CONT. SEC.	JOB NO.	DESIGN UNIT	SHEET NO. R.O.W CONST.
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PRELIMINARY

FINAL R.O.W.		
AUTH	DATE	REVISION



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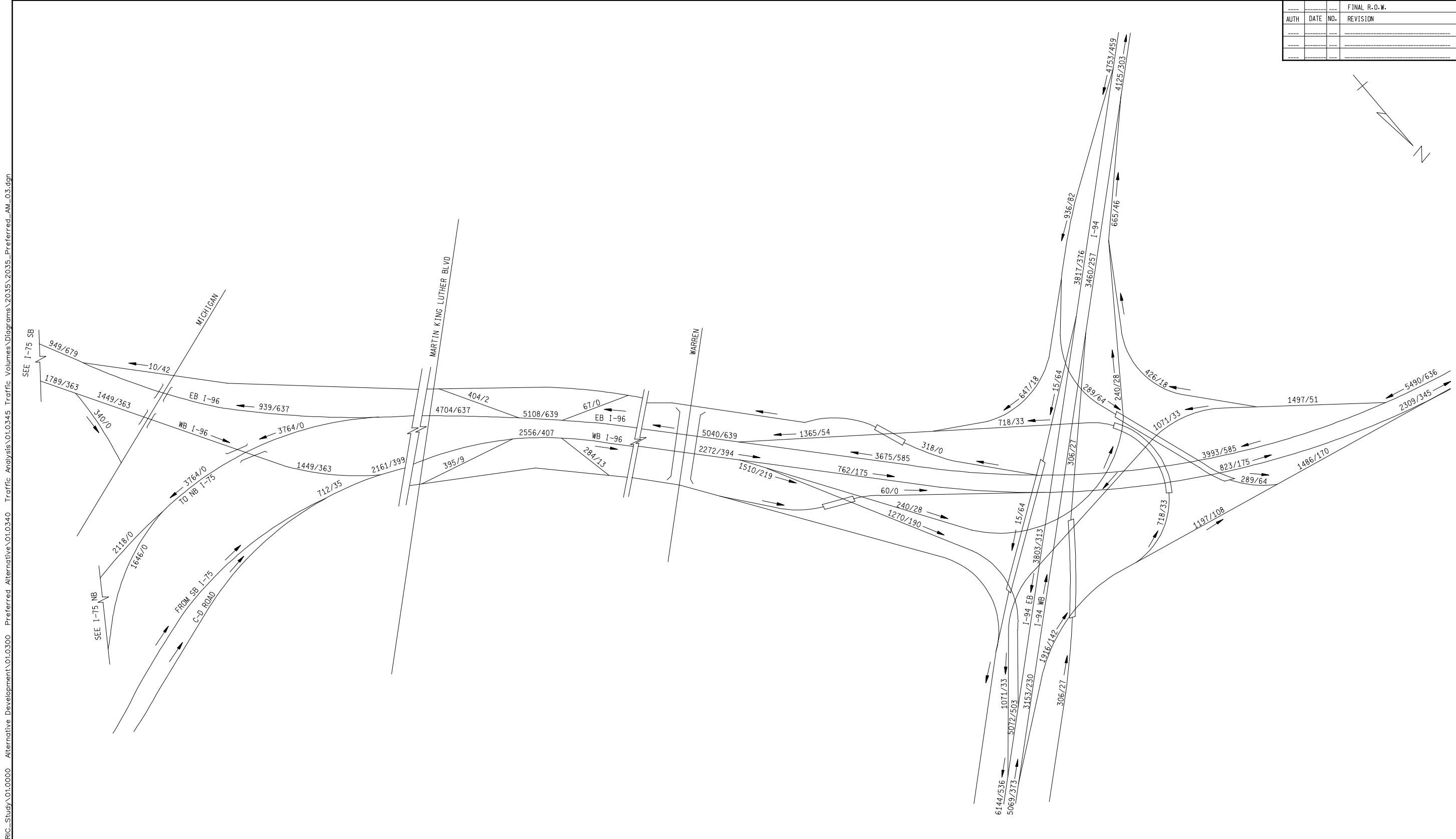
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FINAL R.O.W.		
AUTH	DATE	REVISION



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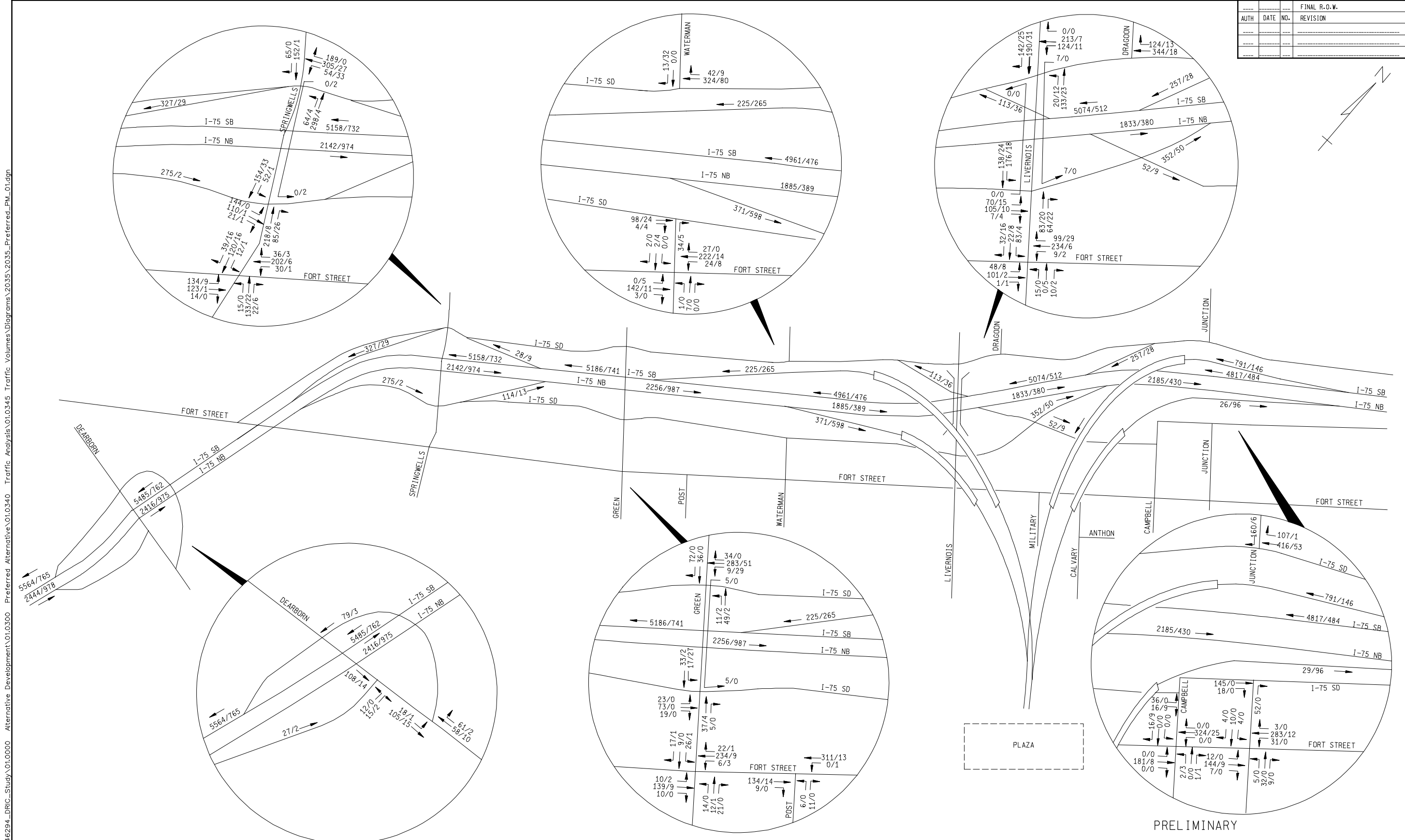
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AUTH	DATE	REVISION



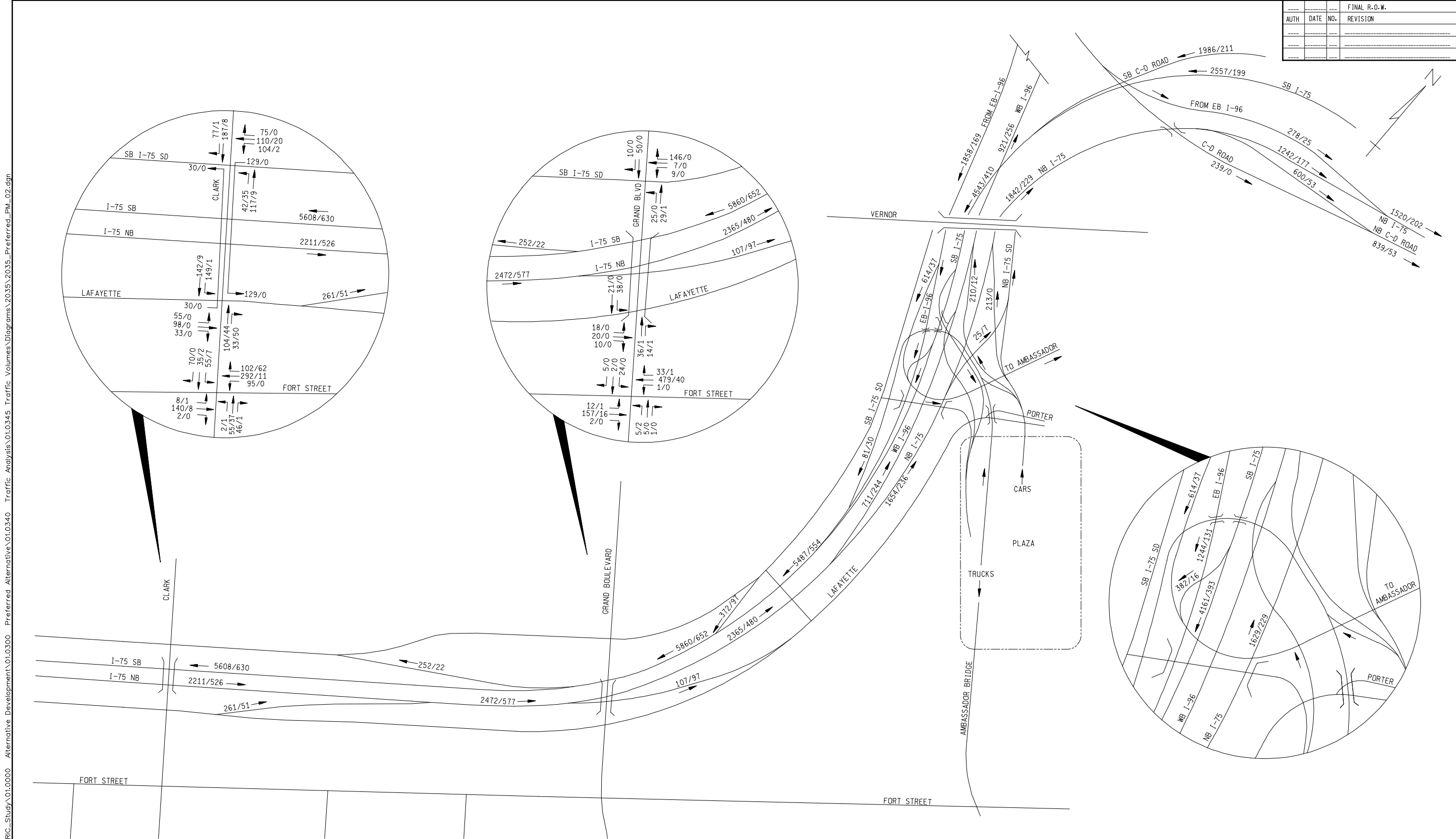
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NTS						

FINAL R.O.W.		
AUTH	DATE	REVISION



PRELIMINARY

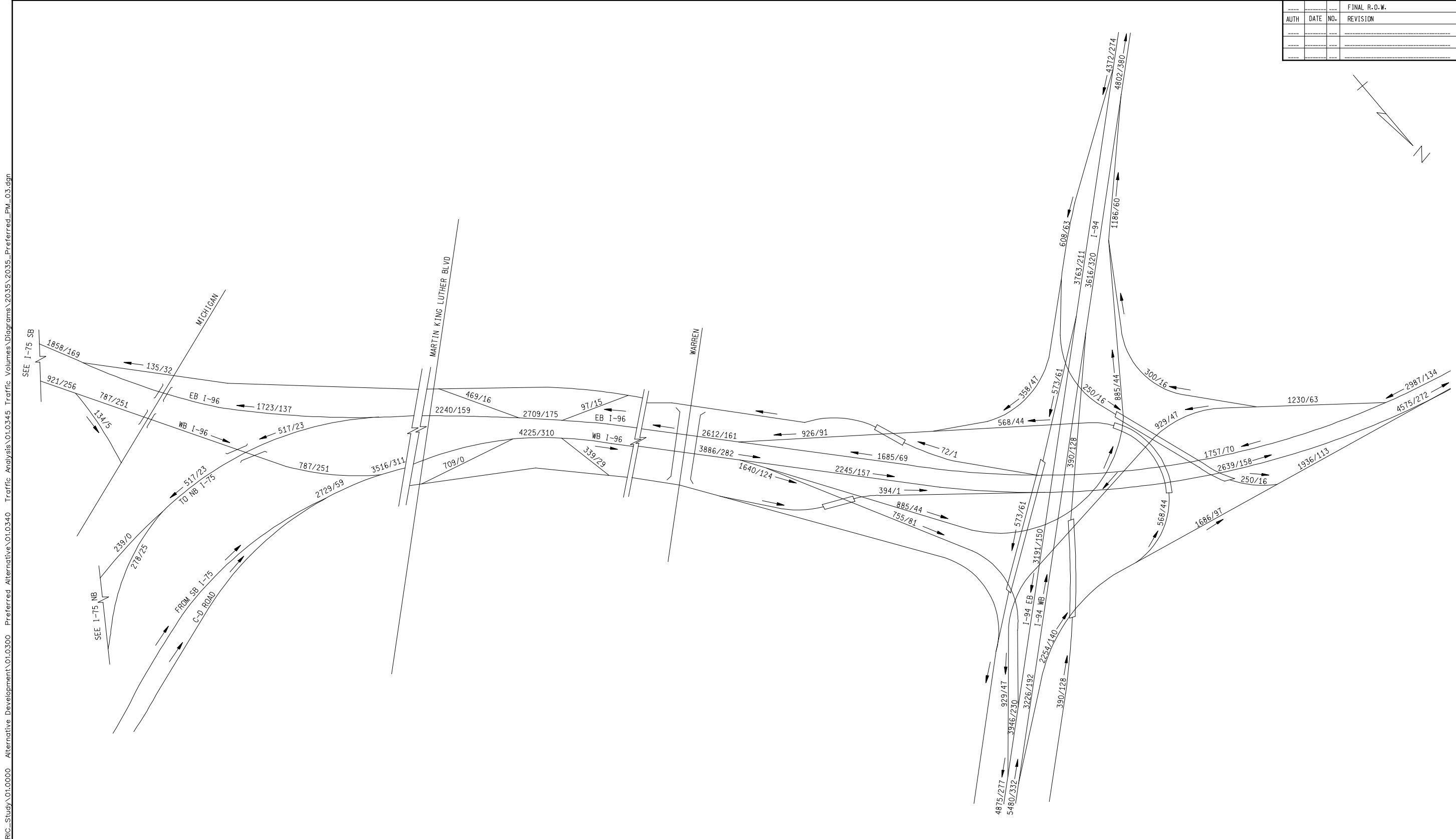
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FINAL R.O.W.		
AUTH	DATE	REVISION



LEGEND: XX / YY (CARS / TRUCKS)

PRELIMINARY

FILE NAME: f:\646294-DRIC_Study\01.0000 - Alternative Development\01.0300 - Preferred Alternative\01.0340 - Traffic Analysis\01.0345 - Traffic Volumes\Diagrams\2035\2035_Preferred_PM_03.dgn

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