



**DATE:** March 4, 2008

**TO:** John Holdren MS 125

**FROM:** Chris Johnson/Nabil Dbaibo MS 29

**SUBJECT:** SR 520 XL - 2028  
MP 11.40 to MP 12.83  
W. Lake Sammamish to SR 202, Stage 3B  
**Sign Structures Foundation Report (update)**

As requested by your office, the NW Region Materials Lab has completed the geotechnical investigation for the proposed sign structures. The project proposes to construct one new sign bridge and two new cantilever sign structures along the SR 520 corridor between West Lake Sammamish Parkway NE and SR 202. This memo provides updated geotechnical recommendations, based on discussions with the Bridge and Structures Office, for the foundation design and construction of the new sign structures.

The conclusions and recommendations contained in this memorandum are based on the project description, and site conditions, as they existed at the time of our field investigation. It is further assumed that the subsurface conditions as interpreted from the boring logs are representative of the subsurface conditions throughout the project area. If during construction, subsurface conditions are different from those encountered in the exploratory borings, or appear to be present beneath or beyond the excavations, we should be advised so we can assist you and reevaluate our recommendations.

### **Field Investigation**

The field exploration program for the project consisted of drilling three (3) exploratory borings at the proposed locations of the sign structures. The exploratory borings were drilled utilizing a CME 850 track-mounted drill rig with an automatic hammer. The borings were advanced to depths of 27 feet below existing ground surface using the wet rotary drilling method. At the boring locations, soil samples were obtained using a 2-inch OD, 1.4-inch ID split-spoon sampler. Standard Penetration Tests (SPT) were performed at 2.5 and 5 feet intervals in general accordance with ASTM Test Method D-1586. SPT values are obtained by driving the split-spoon sampler 18-inches into the soil with a 140-pound hammer using 30-inch drops. The number of blows required to achieve each 6 inches of penetration are recorded. The soil's SPT resistance, or N-value, is calculated as the number of blows required to achieve the final 12 inches of penetration. Disturbed soil samples were recovered and visually classified in the field using the Unified Soil Classification System (USCS) in general accordance with ASTM Test Method D-2488. The boring logs are attached and should be included in the contract documents.

### **Site Soil Condition**

Soil conditions were interpreted from the exploratory borings performed at the approximate locations of the proposed sign bridge and cantilever structures provided by the design office. The boring locations are shown on the Boring Location Plan attached to this report.

Boring TH-1-07, at the proposed location of the sign bridge at station 842+00 indicates that the soils at that location consist of medium dense to dense well graded sand with gravel to a depth of 7 feet. Layers of loose and very loose sand and silt were encountered between 7 and 14 feet. Below these layers, medium dense and dense sand with gravel was encountered.

Boring TH-2-07, at the proposed location of the cantilever structure at station 847+50, indicates that the soils consist of loose poorly graded sand with silt to a depth of 8 feet. Very loose sand with traces of organics and silt with organics were encountered between a depth of 8 and 13 feet. Below these layers, very dense and dense well graded sand with gravel and well graded gravel was encountered.

Boring TH-3-07, at the proposed location of the cantilever structure at station 831+50, generally encountered medium dense to dense well graded sand with gravel. A loose layer of sand with gravel was also encountered at a depth between 10 to 13 feet.

Detailed description of the soil conditions is presented in the attached boring logs.

Groundwater was encountered in the exploratory borings at depth varying between 2 and 9.5 feet below existing grades at all three (3) exploratory boring locations. Fluctuations in the groundwater level will occur with changes in seasons, variations in rainfall, and other factors.

### **Foundation Recommendations**

#### **Sign Bridge**

Based on the soil conditions encountered in the exploratory boring TH-1-07 at the location of the proposed sign bridge structure at station 842+00 and given that the proposed sign will have a span of 72.25 feet, a Type 3 sign bridge standard foundation as shown on Monotube Sign Structures Sign Bridge Layout, sheet 10.1-A3-2 of the Bridge Design Manual can be used. Based on the Type 3 Foundation Table, the stem will be 15.5' deep, placing its bottom below the loose silt. However, based on our discussions with the Bridge & Structures Office, they indicated a preference for using a drilled shaft foundation. The shaft should be designed using the allowable lateral bearing pressures presented in Table 1.

**TABLE 1: Sign Bridge Foundation**

Structure Type	Test Hole No.	Station (ft)	Offset: Construction Centerline (ft)	Depth (ft)	Allowable Lateral Bearing Pressure (psf)	Ground Water Level
Sign Bridge	TH-1-07	842+00	72.25' Rt.	0 - 2	4,500	9'
				2 - 7	4,200	
				7 - 10	1,200	
				10 - 15	900	
				15 -27	4,000	

**Note:** Because of the presence of loose compressible silt layer, between 10 and 15 feet below existing grade, we recommend a minimum shaft embedment depth of 15 feet below existing ground elevation, 40.22 feet, at the test hole location.

**Cantilever Structures**

Based on the soil conditions encountered in exploratory boring TH-2-07 at the location of the proposed cantilever structure, the soil does not meet the minimum strength requirements for standard foundation at station 847+50. Therefore, the cantilever structure foundation requires a special design by the WSDOT Bridge and Structure Office. We recommend using the allowable lateral bearing pressure values shown in Table 2 for the cantilever sign shaft foundation design.

**TABLE 2: Cantilever Structure Foundation**

Structure Type	Test Hole No.	Station (ft)	Offset: Construction Centerline (ft)	Depth (ft)	Allowable Lateral Bearing Pressure (psf)	Ground Water Level
Cantilever	TH-2-07	847+50	72.25' Lt.	0-7	1,400	7'
				7-10	800	
				10-13	0	
				13-27	>4,500	

**Note:** Because of the presence of soft compressible silt and silty organic layer, between 10 and 13 feet below existing grade, we recommend a minimum shaft embedment depth of 15 feet below existing ground elevation, 36.69 feet, at the test hole location.

Based on the soil conditions encountered in the exploratory boring TH-3-07 at the location of the proposed cantilever structure at station 831+50, the soil can provide the minimum allowable lateral pressure of 2,000 psf. On that basis a Type 2 cantilever sign standard foundation as shown on Monotube Sign Structure Cantilever Layout sheet, 10.1-A3-2 of the Bridge Design Manual can be used. However, based on our discussions with the Bridge & Structures Office, they indicated a preference for using a drilled shaft

foundation. The shaft should be designed using the allowable lateral bearing pressures presented in Table 3.

**TABLE 3: Cantilever Structure Foundation**

Structure Type	Test Hole No.	Station (ft)	Offset: Construction Centerline (ft)	Depth (ft)	Allowable Lateral Bearing Pressure (psf)	Ground Water Level
Cantilever	TH-3-07	831+50	74.25' Lt.	0 - 10	4,200	2'
				10 - 15	1,400	
				15 - 25	2,500	
				25 - 27	4,500	

Note: Ground elevation at test hole location 34.1 feet

**Construction Consideration**

Groundwater seepage will be encountered at depths varying between 2 and 9 feet below existing grade, depending on the location. The depth to groundwater could be shallower depending on the construction season during the foundation construction. Stabilization measures will be required during shaft drilling or excavation, if excessive water is encountered. These measures could include the use of temporary casing or excavation wall bracing, and could involve the use of slurries and/or the placement of concrete using tremie method. The base of the shaft boring or excavation should be cleaned from any loose soil before concrete placement. Excessive loose material left in the bottom of the shaft borings will increase the amount of settlement that occurs, affecting the performance of the sign bridge or cantilever structure. After placement of the reinforcing steel and concrete, the temporary casing, if used, must be removed so that the shaft can develop its friction resistance from the concrete/soil interface.

**Closure**

We trust the information contained in this report is sufficient so you can complete the design of your project. If you have any questions or require additional information, contact Nabil Dbaibo at 206-768-5905.

CJJ/NTD:ntd

File No.: XL-2028  
 Serial File: 08-050

- cc: Jim Larson MS NB82-117
- Jim Cuthbertson MS 47365
- Gary Bedi/Stuart Bennion MS 47340



EXPIRES 7/22/08



# Test Boring Legend

Sampler Symbols	
	Standard Penetration Test
	Oversized Penetration Test (Dames & Moore, California)
	Shelby Tube
	Piston Sample
	Washington Undisturbed
	Vane Shear Test
	Core
	Becker Hammer
	Bag Sample

Soil Density Modifiers			
Gravel, Sand & Non-plastic Silt		Elastic Silts and Clay	
SPT Blows/ft	Density	SPT Blows/ft	Consistency
0-4	Very Loose	0-1	Very Soft
5-10	Loose	2-4	Soft
11-24	Medium Dense	5-8	Medium Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

Angularity of Gravel & Cobbles	
Angular	Coarse particles have sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Coarse grained particles are similar to angular but have rounded edges.
Subrounded	Coarse grained particles have nearly plane sides but have well rounded corners and edges.
Rounded	Coarse grained particles have smoothly curved sides and no edges.

Well Symbols	
	Cement Surface Seal
	Piezometer Pipe in Granular Bentonite Seal
	Piezometer Pipe in Sand
	Well Screen in Sand
	Granular Bentonite Bottom Seal
	Inclinometer Casing in Concrete Bentonite Grout

Soil Moisture Modifiers	
Dry	Absence of moisture; dusty, dry to touch
Moist	Damp but no visible water
Wet	Visible free water

Laboratory Testing Codes	
UU	Unconsolidated Undrained Triaxial
CU	Consolidated Undrained Triaxial
CD	Consolidated Drained Triaxial
UC	Unconfined Compression Test
DS	Direct Shear Test
CN	Consolidation Test
GS	Grain Size Distribution
MC	Moisture Content
SG	Specific Gravity
OR	Organic Content
DN	Density
AL	Atterberg Limits
PT	Point Load Compressive Test
SL	Slake Test
DG	Degradation
LA	LA Abrasion
HT	Hydrometer Test

Soil Structure	
Stratified	Alternating layers of varying material or color at least 6mm thick; note thickness and inclination.
Laminated	Alternating layers of varying material or color less than 6mm thick; note thickness and inclination.
Fissured	Breaks along definite planes of fracture with little resistance to fracturing.
Slickensided	Fracture planes appear polished or glossy, sometimes striated.
Blocky	Cohesive soil that can be broken down into smaller angular lumps which resist further breakdown.
Disrupted	Soil structure is broken and mixed. Infers that material has moved substantially - landslide debris.
Homogeneous	Same color and appearance throughout.

HCL Reaction	
No HCL Reaction	No visible reaction.
Weak HCL Reaction	Some reaction with bubbles forming slowly.
Strong HCL Reaction	Violent reaction with bubbles forming immediately.

Degree of Vesicularity of Pyroclastic Rocks	
Slightly Vesicular	5 to 10 percent of total
Moderately Vesicular	10 to 25 percent of total
Highly Vesicular	25 to 50 percent of total
Scoriaceous	Greater than 50 percent of total



# Test Boring Legend

Grain Size		
Fine Grained	< 1mm	Few crystal boundaries/grains are distinguishable in the field or with hand lens.
Medium Grained	1mm to 5mm	Most crystal boundaries/grains are distinguishable with the aid of a hand lens.
Coarse Grained	> 5mm	Most crystal boundaries/grains are distinguishable with the naked eye.

Weathered State		
Term	Description	Grade
Fresh	No visible sign of rock material weathering; perhaps slight discoloration in major discontinuity surfaces.	I
Slightly Weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than its fresh condition.	II
Moderately Weathered	Less than half of the rock material is decomposed and/or disintegrated to soil. Fresh or discolored rock is present either as a continuous framework or as core stones.	III
Highly Weathered	More than half of the rock material is decomposed and/or disintegrated to soil. Fresh or discolored rock is present either as discontinuous framework or as core stone.	IV
Completely Weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.	V
Residual Soil	All rock material is converted to soil. The mass structure and material fabric is destroyed. There is a large change in volume, but the soil has not been significantly transported.	VI

Relative Rock Strength			
Grade	Description	Field Identification	Uniaxial Compressive Strength approx
R1	Very Weak	Specimen crumbles under sharp blow from point of geological hammer, and can be cut with a pocket knife.	1 to 25 MPa
R2	Moderately Weak	Shallow cuts or scrapes can be made in a specimen with a pocket knife. Geological hammer point indents deeply with firm blow.	25 to 50 MPa
R3	Moderately Strong	Specimen cannot be scraped or cut with a pocket knife, shallow indentation can be made under firm blows from a hammer.	50 to 100 MPa
R4	Strong	Specimen breaks with one firm blow from the hammer end of a geological hammer.	100 to 200 MPa
R5	Very Strong	Specimen requires many blows of a geological hammer to break intact sample.	Greater than 200 MPa

Spacing		Condition	
Very Widely	Greater than 3 m	Excellent	Very rough surfaces, no separation, hard discontinuity wall
Widely	1 m to 3 m	Good	Slightly rough surfaces, separation less than 1 mm, hard discontinuity wall.
Moderately	0.3 m to 1 m	Fair	Slightly rough surfaces, separation greater than 1 mm, soft discontinuity wall.
Closely	50 mm to 300 mm	Poor	Slickensided surfaces, or soft gouge less than 5 mm thick, or open discontinuities 1 to 5 mm.
Very Closely	Less than 50 mm	Very Poor	Soft gouge greater than 5 mm thick, or open discontinuities greater than 5 mm.
<b>RQD (%)</b> $\frac{100(\text{length of core in pieces} > 100\text{mm})}{\text{Length of core run}}$			

Fracture Frequency (FF) is the average number of fractures per 300 mm of core. Does not include mechanical breaks caused by drilling or handling.



Start Card SEO1950

Job No. XL-2028 SR 520 Elevation 40.220' ft

HOLE No. TH-1-07

Sheet 1 of 2

Project SR 520, Westlake Sammamish to SR 202

Driller Dickson, Jody Lic# 2637

Site Address MP 12.25

Inspector Dickson, Jody

Start December 13, 2007 Completion December 13, 2007 Well ID# \_\_\_\_\_ Equipment CME 850 with Autohammer

Station 842+00 Rt Offset 72.25' Rt of Const. C/Hole Dia 4 (Inches) Method Wet Rotary

Northing \_\_\_\_\_ Easting \_\_\_\_\_ Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

County King Subsection \_\_\_\_\_ Section \_\_\_\_\_ Range \_\_\_\_\_ Township \_\_\_\_\_

Depth (ft)	Elevation (ft)	Profile	Field SPT (N)				Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			20	40	60	80							
5													
10													
15													
20													

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Depth (ft)	Elevation (ft)	Profile	◆ Field SPT (N) + Moisture Content ▨ RQD 20    40    60    80	Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				11 28 16 14 (44)		D-7		Well graded SAND with gravel, dense, Gray, wet, homogenous, HCl not tested. Length Recovered:0.8 ft. Length Retained:0.8 ft. w/ large gravels as indicated by drilling		
25			◆	9 12 15 12 (27)		D-8		Well graded SAND with gravel, dense, Gray, wet, homogenous, HCl not tested. Length Recovered:1.1 ft. Length Retained:1.1 ft. w/ large gravels indicated by drilling action		
30								End of test hole boring at 27 ft below ground elevation. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data. Note: REF = SPT Refusal		
35										
40										
45										



LOG OF TEST BORING

Start Card SEO1950

Job No. XL-2028 SR 520 Elevation 36.690' ft

HOLE No. TH-2-07

Sheet 1 of 2

Project SR 520, Westlake Sammamish to SR 202

Driller Dickson, Jody Lic# 2637

Site Address MP 12.36

Inspector Dickson, Jody

Start December 13, 2007 Completion December 14, 2007 Well ID# \_\_\_\_\_ Equipment CME 850 with Autohammer

Station 847+50 Lt Offset 72.25' Lt of Const. C/Hole Dia 4 Method Wet Rotary  
(inches)

Northing \_\_\_\_\_ Easting \_\_\_\_\_ Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

County King Subsection \_\_\_\_\_ Section \_\_\_\_\_ Range \_\_\_\_\_ Township \_\_\_\_\_

Depth (ft)	Elevation (ft)	Profile	Field SPT (N)				Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			20	40	60	80							
2							2	D-1		Poorly graded SAND with silt, medium dense, brown, moist, homogenous, HCl not tested. Length Recovered:1.2 ft. Length Retained:1.2 ft.			
4							4						
7							7						
5							5 (11)	D-2		Poorly graded SAND with silt, loose, brown, moist, homogenous, HCl not tested. Length Recovered:1.5 ft. Length Retained:1.5 ft.			
							3						
							3						
							4						
							3						
							(7)						
5							2	D-3		Poorly graded SAND with silt, loose, Gray, moist, homogenous, HCl not tested. Length Recovered:1.4 ft. Length Retained:1.4 ft.			
							3						
							6						
							6						
							(9)						
							4	D-4		Well graded SAND, traces of organics, very loose, Gray, moist, homogenous, HCl not tested. Length Recovered:1.2 ft. Length Retained:1.2 ft.			
							2						
							1						
							1						
							(3)						
10							0	D-5		SILT, with organics, interbedded layers of Peat, very loose, Gr/Br, wet, homogenous, HCl not tested. Length Recovered:2 ft. Length Retained:2 ft.			
							0						
							0						
							2						
							(0)						
15							21	D-6		Well graded SAND with gravel, very dense, Gray, wet, homogenous, HCl not tested. Length Recovered:0.6 ft. Length Retained:0.6 ft. w/large gravels as indicated by drilling			
							32						
							50/5"						
							0						
							(72)						
20													

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Depth (ft)	Elevation (ft)	Profile	◆ Field SPT (N) + Moisture Content ▨ RQD 20 40 60 80	Blows/6" (N) and/or RQD FF	Sample Type Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			◆ 20	8 14 12 12 (26)	D-7		Well graded SAND with gravel, dense, Gray, wet, homogenous, HCl not tested. Length Recovered:1 ft. Length Retained:1 ft. w/large gravels as indicated by drilling		
25			◆ 40	12 23 20 18 (43)	D-8		Well graded GRAVEL with sand, sub-angular, dense, Gray, wet, homogenous, HCl not tested. Length Recovered:1.4 ft. Length Retained:1.4 ft. w/large gravels as indicated by drilling		
30							End of test hole boring at 27 ft below ground elevation. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data. Note: REF = SPT Refusal		
35									
40									
45									



LOG OF TEST BORING

Start Card SEO1950

Job No. XL-2028 SR 520 Elevation 34.097' ft

HOLE No. TH-3-07

Sheet 1 of 2

Project SR 520, Westlake Sammamish to SR 202

Driller Dickson, Jody Lic# 2637

Site Address MP 12.05

Inspector Dickson, Jody

Start December 6, 2007 Completion December 6, 2007 Well ID# \_\_\_\_\_ Equipment CME 850 with Autohammer

Station 831+50 Lt Offset 74.25' Lt of Const. C/Hole Dia 4 Method Wet Rotary  
(inches)

Northing \_\_\_\_\_ Easting \_\_\_\_\_ Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

County King Subsection \_\_\_\_\_ Section \_\_\_\_\_ Range \_\_\_\_\_ Township \_\_\_\_\_

Depth (ft)	Elevation (ft)	Profile	Field SPT (N)				Blows/6" (N) and/or RQD FF	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			20	40	60	80							
7								D-1		Well graded SAND with gravel, medium dense, Gray, wet, homogenous, HCl not tested. Length Recovered:0.9 ft. Length Retained:0.9 ft. mixed soils			
14								D-2		Well graded SAND with gravel, dense, Gray, wet, homogenous, HCl not tested. Length Recovered:1 ft. Length Retained:1 ft.			
10								D-3		Well graded SAND with gravel, dense, Gray, wet, homogenous, HCl not tested. Length Recovered:0.7 ft. Length Retained:0.7 ft. w/ large gravels as indicated by drilling			
12								D-4		Well graded SAND with gravel, medium dense, Gray, wet, homogenous, HCl not tested. Length Recovered:1.1 ft. Length Retained:1.1 ft. w/ large gravels as indicated by drilling			
15								D-5		Well graded SAND with gravel, loose, Brown, wet, homogenous, HCl not tested. Length Recovered:1 ft. Length Retained:1 ft. w/ large gravels as indicated by drilling			
18								D-6		Well graded SAND with gravel, medium dense, Gray, wet, homogenous, HCl not tested. Length Recovered:0.9 ft. Length Retained:0.9 ft. w/ large gravels as indicated by drilling			
14													
12													
10													
8													
6													
4													
2													
0													

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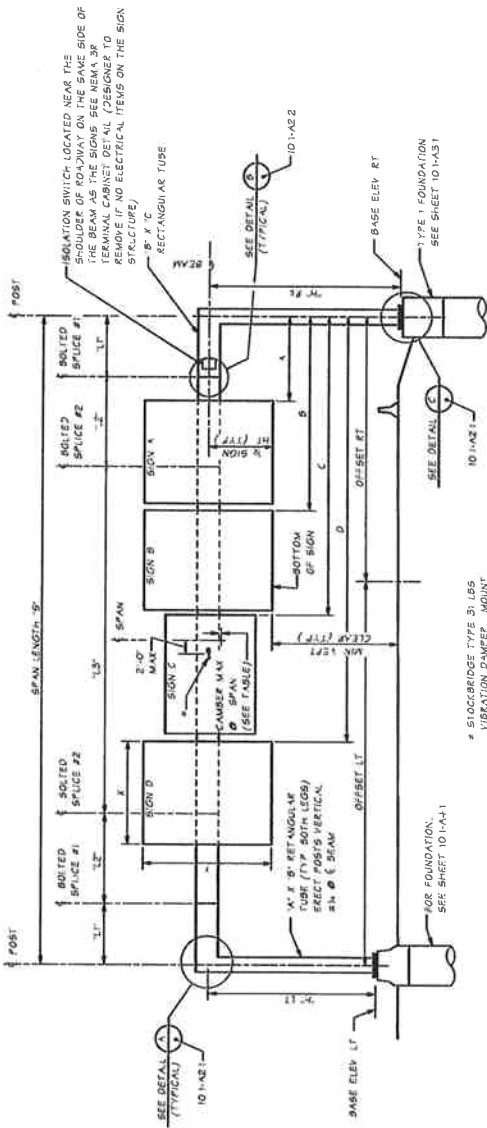
Depth (ft)	Elevation (ft)	Profile	Field SPT (N) Moisture Content RQD	Blows/6" (N) and/or RQD FF	Sample Type Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			◆ 20 40 60 80 ◆						
				7 7 7 9 (14)	D-7		Well graded SAND with gravel, medium dense, Gray, wet, homogenous, HCl not tested. Length Recovered:0.9 ft. Length Retained:0.9 ft. w/ large gravels as indicated by drilling		
25			◆	8 13 20 16 (33)	D-8		Well graded SAND with gravel, dense, Gray, wet, homogenous, HCl not tested. Length Recovered:0.7 ft. Length Retained:0.7 ft. w/ large gravels as indicated by drilling		
30							End of test hole boring at 27 ft below ground elevation. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data. Note: REF = SPT Refusal		
35									
40									
45									

**GENERAL NOTES**

- ALL MATERIAL AND WORKSMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR MONOTUBE SIGN BRIDGE CONSTRUCTION (ENGLISH) DATED 2002 AND AMENDMENTS.
- ALL BUTT JOINT WELDS SHALL BE FULL PENETRATION GROOVE WELDS WITH BACK-UP PLATES OF 1/2" MIN THICKNESS.
- THE BACK-UP PLATES FOR ALL FULL PENETRATION WELDS SHALL BE WELDED CONTINUOUSLY TO THE JOINED PIECES. THIS CAN BE DONE BY EITHER A CONTINUOUS FILLET WELD ON THE OUTSIDE OR A CONTINUOUS WELD IN THE ROOT OF THE FULL PENETRATION WELD.
- ALL BOLTS, RODS AND RELATED HARDWARE SHALL BE GALVANIZED AFTER FABRICATION PER AASHTO M 232.
- STEEL SURFACES SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M 111 ALL EXTERIOR STEEL SURFACES SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- SIGN PANELS AS SHOWN IN THE CONTRACT PLANS SHALL BE INSTALLED WITH THE SIGN STRUCTURE OR IMMEDIATELY AFTER THE SIGN STRUCTURE IS RECEIVED.
- FABRICATE BEAM TO PROVIDE SMOOTH PARABOLIC CAMBER CURVE. SEE CAMBER DIAGRAM. DO NOT SHIM AT BOLTED SPLICES.
- FABRICATE POSTS STRAIGHT.
- MATERIALS SPECIFICATIONS:  
 ALL STRUCTURAL STEEL: A572 GR 50 OR A574 A 588  
 ANCHOR RODS: A307  
 HANDHOLE COVER SCREWS: A514 F 553 GR 1  
 SIGN BRACKET BOLTS: A514 A 307  
 MOUNTING BEAM BOLTS: A514 M 164  
 COVER PLATES: A514 A 36
- SAGE ELEVATIONS AND POST HEIGHTS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD MEASURE ANCHOR BOLT LOCATIONS, ELEVATIONS AND ALL STEEL STRUCTURE DIMENSIONS PRIOR TO FABRICATION OF THE STRUCTURAL STEEL AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. ALL DIMENSIONS SHALL BE FURNISHED BY THE ENGINEER PRIOR TO FABRICATION.
- SEE OTHER PLANS FOR CONDUIT PENETRATIONS AND HAND CARRYING TENSILE MEMBERS OR TENSION COMPONENTS OF CONDUITORS. CONDUIT CONDUITORS SHALL NOT BE ATTACHED TO THE OUTSIDE OF THE SIGN STRUCTURE.
- POSTS, BASE PLATES, BEAMS AND SPLICE PLATES ARE MAIN 10-10 CARBON TENSILE MEMBERS OR TENSION COMPONENTS OF CONDUITORS. CONDUITORS SHALL NOT BE ATTACHED TO THE OUTSIDE OF THE SIGN STRUCTURE.

**DESIGN CRITERIA**

- THE SIGN STRUCTURE DESIGN AND ANALYSIS HAS BEEN DONE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS - FOURTH EDITION - DATED 2001 - 90 MPH BASIC WIND SPEED AND 50 YEAR DESIGN LIFE WERE ASSUMED. THE STRUCTURE CONFORMS TO FUTURE DESIGN, CATEGORY 1.
- THE MAXIMUM SIGN AREA ON A STRUCTURE SHALL BE AS NOTED

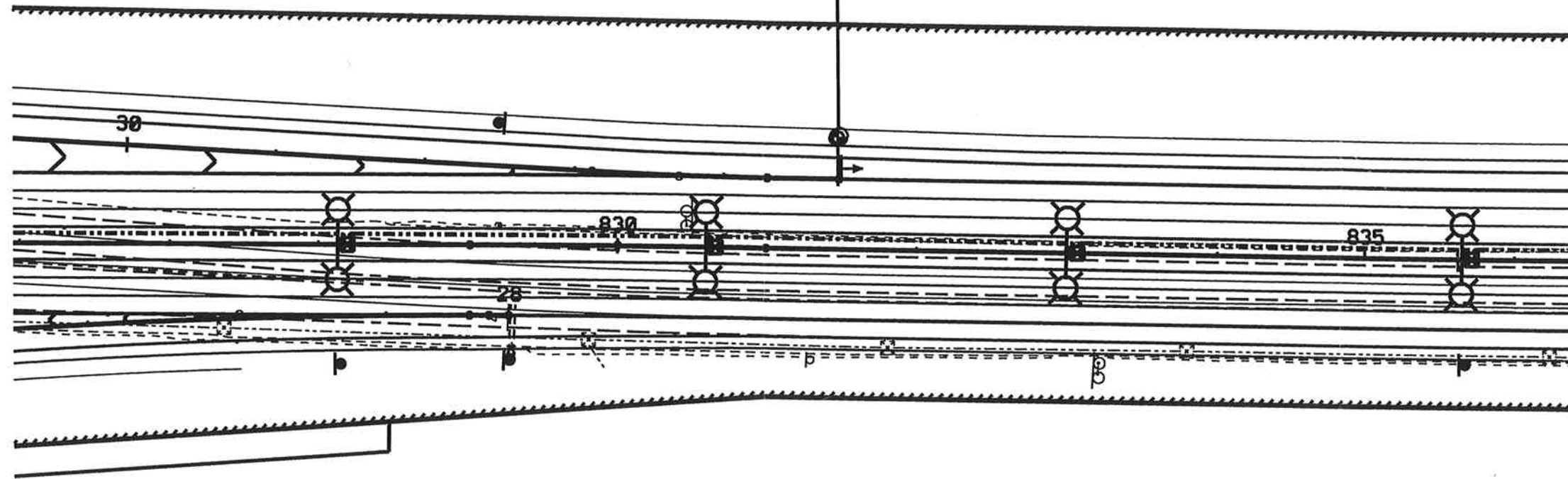





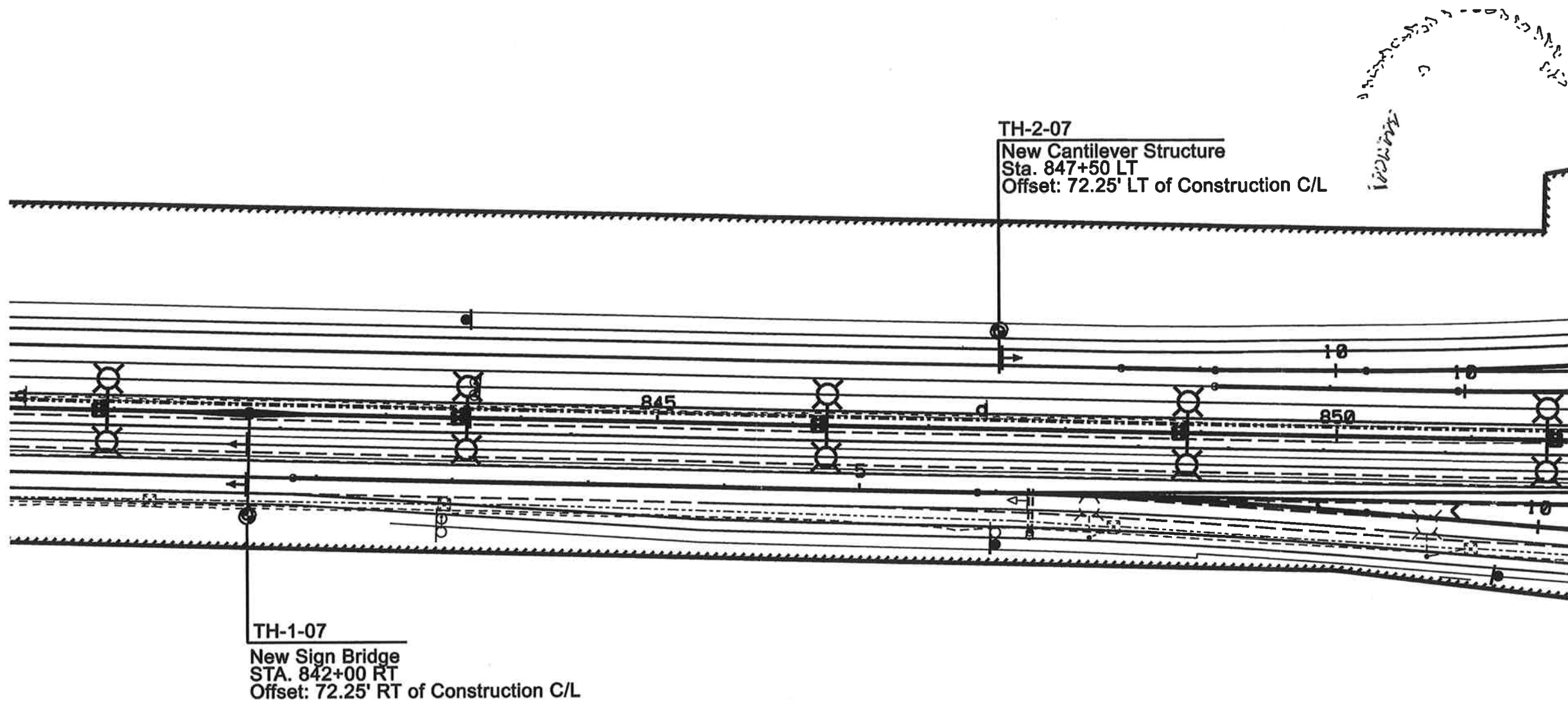


TH-3--07

New Cantilever Structure  
 STA. 831+50 LT  
 Offset: 74.25' LT of Construction C/L



FILE NAME	\$\$\$\$\$\$\$\$DESIGNFILENAME\$\$\$\$\$\$	REGION NO.	STATE	FED. AID PROJ. NO.		 Washington State Department of Transportation	SR 520/W. LAKE SAMMAMISH TO SR 202 - HOV AND SR 202 INTERCHANGE  BORING LOCATION PLAN	PL01
TIME	@@TIME@	10	WASH					BLP1
DATE	\$\$\$\$DATE\$\$\$	JOB NUMBER						SHEET
PLOTTED BY	@@USERNAME@	XL2028						1
DESIGNED BY		CONTRACT NO.		LOCATION NO.				2
ENTERED BY					P.E. Stamp	DATE		SHEETS
CHECKED BY								2
PROJ. ENGR.								2
REGIONAL ADM.								2
	REVISION		DATE	BY				



FILE NAME		\$\$\$\$\$DESIGNFILENAME\$\$\$\$\$		REGION		STATE		FED. AID PROJ. NO.		Washington State Department of Transportation		SR 520/W. LAKE SAMMAMISH TO SR 202 - HOV AND SR 202 INTERCHANGE		PLT2	
TIME		\$\$\$		10		WASH								BLP2	
DATE		\$\$\$		JOB NUMBER		XL2028								SHEET	
PLOTTED BY		\$\$\$		CONTRACT NO.										2	
DESIGNED BY				LOCATION NO.										2	
ENTERED BY														SHEETS	
CHECKED BY														2	
PROJ. ENGR.														2	
REGIONAL ADM.														2	
		REVISION		DATE		BY		P.E. STAMP		DATE		BORING LOCATION PLAN			