

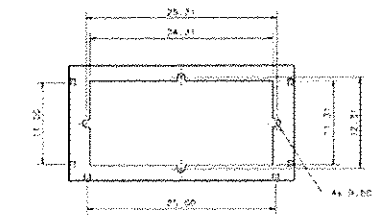
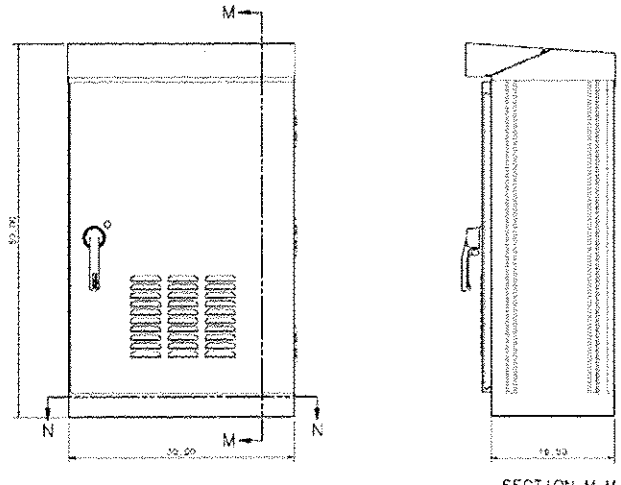
**BILL OF MATERIALS**

ITEM	QTY	DESCRIPTION
A	1	CUTLER HAMMER FD2200L 2P 200A
B	2	CUTLER HAMMER EHD1015L 1P 15A
C	8	CUTLER HAMMER EHD2010L 2P 40A
D	1	ASCO 520220031 2P 200A 120V COIL
E	1	MAGNECRAFT W211ACD50X-7 120V
F	1	SQUARE D 9001KX111 HDA
G	1	RAB VXL900G LIGHT FIXTURE
H	1	MICRO BAERG1-A2 DOOR SWITCH
I	1	LEVITON 8899 20A GFCI RCDF
J	1	CINCH 3PT TB
K	1	WHITE RODGERS THERMOSTAT 2B61-10G
L	1	VULCAN HEATER 051208-156A 150 WATTS
M	1	SQUARE D SDSA1175 SURGE ARRESTER
N	2	GROUND/NEUTRAL BUS BARS
O	4	CUTLER HAMMER EHD1040L 1P 40A

**NOTES**  
 ALL METAL BOXES WILL BE GROUNDED  
 R = RED  
 B = BLACK  
 W = WHITE  
 BL = BLUE

○ = RELAY SOCKET PIN NUMBER  
 PHOTOCELL REMOTELY MOUNTED

CITY OF NAPERVILLE STREET NEW LIGHTING CONTROLLER 200 AMP



**SPECIFICATIONS**

**MATERIAL** - SHEET ALUMINUM, .125" THICKNESS, ANODIZED SURFACE SHALL HAVE A MATTE, SATIN, OR FLUOROPOLYMER FINISH.

**STANDARDS** - CONSTRUCTED TO MEET NEMA-2E REQUIREMENTS, UL 50, TYPE 1E LISTING.

**GENERAL CONSTRUCTION** - INTERIOR HAS 4 VERTICAL MOUNTING CHANNELS HELD TO THE SIDE WALLS BY THE ENDWALLS AND 2 TO BRACE. DRILLING PATTERNS ARE INCLUDED ON BODY AND DOOR. ALL DIMENSIONS TO STAINLESS STEEL OR ALUMINUM.

**VENTILATION** - A VENT FILTER IS PROVIDED ON THE UNDERSIDE OF THE TOP DOOR AND LOWER AIR LOGGED IN THE LOWER PORTION OF THE MAIN BODY. THIS FILTER IS A MESH SCREEN WITH AIR AND OIL. A COIL OF 1/2" DIA. IS LOCATED IN THE LOWER PORTION OF THE MAIN BODY. THE COIL IS LOCATED IN THE MAIN BODY. THE COIL IS LOCATED IN THE MAIN BODY. THE COIL IS LOCATED IN THE MAIN BODY.

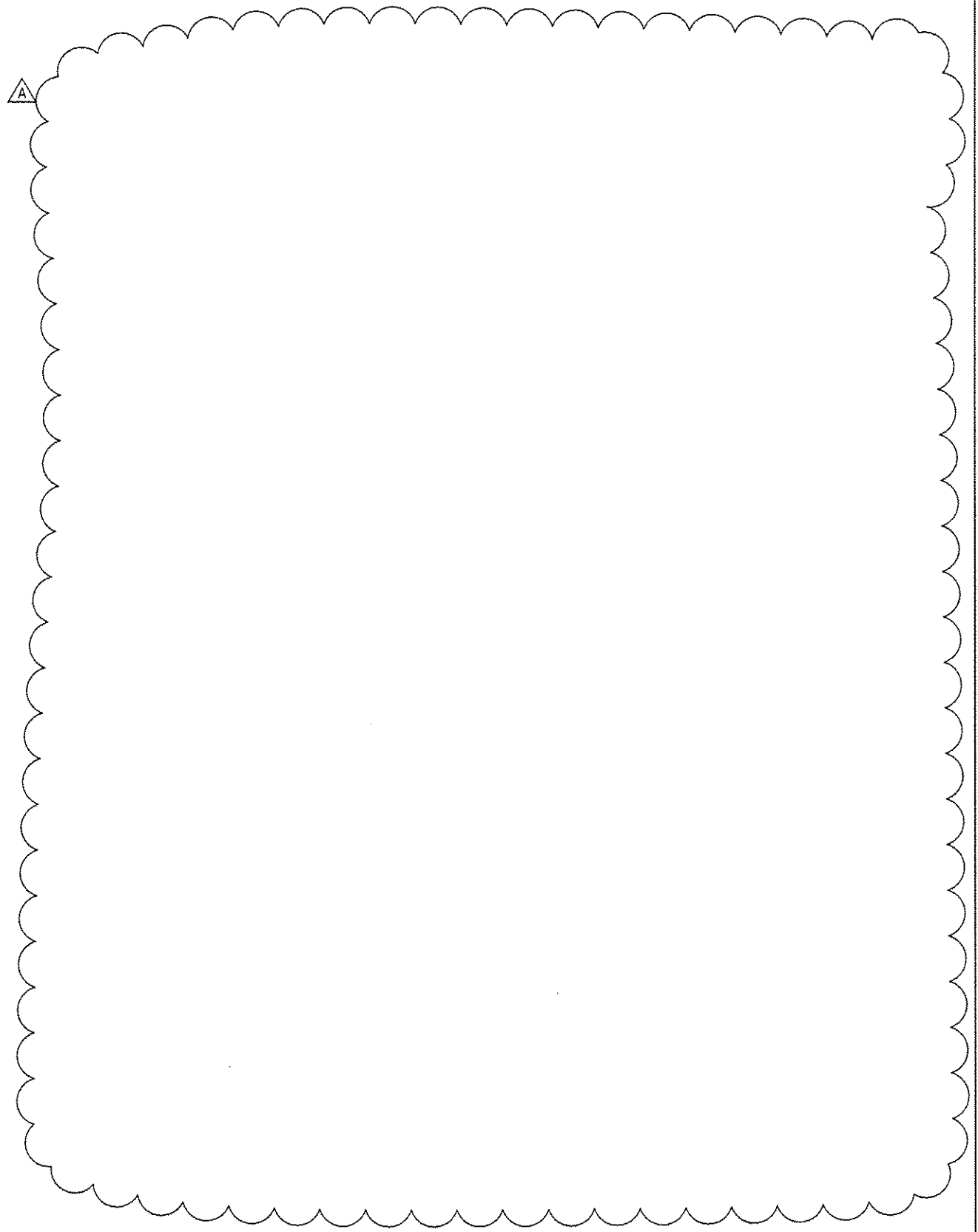
**DOORS & LOCKS** - THE MAIN DOOR IS HEAVY WITH REGULAR MEDIUM DOOR TO MAINTAIN THE DOOR FROM OPENING. THE DOOR IS HEAVY WITH REGULAR MEDIUM DOOR TO MAINTAIN THE DOOR FROM OPENING. THE DOOR IS HEAVY WITH REGULAR MEDIUM DOOR TO MAINTAIN THE DOOR FROM OPENING.

**MOUNTING** - CABINET IS MOUNTED BY USING THE ENDWALLS PLANNED AT THE BOTTOM OF THE CABINET. MOUNTING TABLES ARE PER THE DRAWING SHOWS THE THIS SPECIFICATION SHEET.

**PROPRIETARY DATA**

THE INFORMATION AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF THE MANUFACTURER AND MAY NOT BE USED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE MANUFACTURER.

NO.	DATE	BY	DESCRIPTION
1	12/14/2012	MCP	DESIGN
2	02/20/2013	MLB	REVISED - ADDENDUM A



DESIGNED	REVISIONS	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	LIGHTING DETAILS		F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
MCP	REVISED - ADDENDUM A 02/20/2013				330	(112 & 113) WRS-7	DUPAGE	1156	801
MLB	REVISED -					LT-31			
MCP	REVISED -								
DATE	12/14/2012								
			SCALE: AS SHOWN	SHEET NO. 3 OF 3 SHEETS	STA.	TO STA.	ILLINOIS FED. AID PROJECT		

PROPOSED ELECTRIC CONSTRUCTION  
ALONG RT 59 (DUPAGE COUNTY)  
BETWEEN AURORA AV. AND FERRY RD.  
IN THE CITY OF NAPERVILLE, STATE OF ILLINOIS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-0351</del>	DUPAGE		
			CONTRACT <del>60P42</del>	
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

SPECIAL NOTES

- 1) ALL UTILITIES MAY NOT BE SHOWN. CALL J.U.L.I.E. AT 1-800-892-0123 FOR FIELD LOCATIONS OF UNDERGROUND UTILITY LINES PRIOR TO ANY DIGGING OR CONSTRUCTION.
- 2) THE BRUSH AND TREES SMALLER THAN 6 INCHES IN DIAMETER LOCATED IN ROAD RIGHT OF WAY AND THAT IS PRESENT ALONG MOST OF THE PROPOSED ROUTE ARE TO BE TRIMMED OR REMOVED BY THE CONTRACTOR FOR CLEARANCE TO THE PROPOSED UNDERGROUND OR OVERHEAD ELECTRIC WIRES OR EQUIPMENT AS REQUIRED AND IS UNDER THE DIRECTION OF THE CITY OF NAPERVILLE (ELECTRIC) AND PER PERMIT. ALL TREE WORK IS TO BE PERFORMED BY LANDSCAPE CONTRACTOR PROVIDED BY THE CONTRACTOR. THIS WORK IS INCIDENTAL TO THE CONTRACT.
- 3) THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN HEREON ARE BASED ON ABOVE GROUND STRUCTURES, J.U.L.I.E. PAINT MARKS, AND RECORD DRAWINGS. LOCATIONS OF UNDERGROUND UTILITIES/ STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS WERE MADE DURING THE SURVEY OF THIS WORK TO LOCATE BURIED UTILITIES/STRUCTURES. BEFORE EXCAVATIONS ARE BEGUN, THE FOLLOWING OFFICES SHOULD BE CONTACTED FOR VERIFICATION OF UTILITY TYPE AND FOR FIELD LOCATIONS: TELEPHONE, GAS, ELECTRIC, WATER, SEWER AND CABLE T.V. ALL LOCATED OR POSSIBLE UNDER GROUND FACILITIES SHALL BE EXPOSED ON ALL SIDES BY EXCAVATING TO THE KNOWN OR UNKNOWN UNDER GROUND FACILITY PRIOR TO DIGGING FOUNDATIONS, TRENCHES, HANDHOLES, MANHOLES AND VAULT ETC.
- 4) EXISTING ELECTRICAL FACILITIES SHALL BE DE-ENERGIZED PRIOR TO THE CONTRACTOR AND HIS SUBCONTRACTOR'S WORKERS COMMENCING WORK. THE CONTRACTOR IS TO CONTACT THE DEPARTMENT OF PUBLIC UTILITIES, ELECTRICAL DIVISION TO DE-ENERGIZED ALL NEARBY ELECTRICAL CIRCUITS AND FACILITIES. HOWEVER, IF CONDITIONS EXIST THAT REQUIRE THE CIRCUIT TO REMAIN ENERGIZED, THE CONTRACTOR SHALL PROCEED TO WORK WITH CONDUCTORS/CABLE, PER OSHA AND NESC REGULATIONS. THE CONTRACTOR SHALL COORDINATE THE PLANNED WORK SCHEDULE, CONSTRUCTION SEQUENCE, AND ANY OUTAGE REQUEST WITH THE DPU-E ELECTRICAL CONTRO AND THE ENGINEER.
- 5) CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHILE WORKING IN, ON OR NEAR ELECTRICAL FACILITIES. HE AND ALL HIS SUBCONTRACTOR'S WORKERS SHALL FOLLOW APPROPRIATE OSHA LOCK-OUT/TAG-OUT PROCEDURES, CONFINED SPACE ENTRY, CPR AND CLEARANCE REQUIREMENTS FROM ENERGIZED EQUIPMENT.
- 6) CONNECTION TO EXISTING ELECTRICAL, FACILITIES SHALL BE ACCOMPLISHED ONLY BY CONTRACTOR'S EMPLOYEES AND HIS SUBCONTRACTOR'S EMPLOYEES THAT ARE TRAINED TO WORK ON HIGH VOLTAGE FACILITIES (138kv AND 34.5kv FACILITIES OR LOWER), IN ACCORDANCE WITH OSHA REGULATIONS, 29 CFR. A MINIMUM OF TWO SUCH QUALIFIED PERSONNEL SHALL BE PRESENT WHILE WORKING ON OR NEAR THESE FACILITIES.
- 7) THE CONTRACTOR SHALL ARRANGE FOR INSPECTION OF HIS AND HIS SUBCONTRACTOR'S WORK, BY DPU-E PERSONAL PRIOR TO STARTING AND UPON COMPLETION.
- 8) THE CONTRACTOR SHALL INSTALL ALL WORK (UNLESS OTHERWISE SPECIFIED) AT EACH LOCATION TO THE FINAL ELEVATIONS AND INTENDED PURPOSE. THE CONTRACTOR'S SURVEYOR TO OBTAIN THE ELEVATION AND PROVIDE THIS ELEVATION MARK TO THE CONTRACTOR WITH A FIELD STAKE AND ELEVATION WRITTEN ON IT. IN ADDITION, ELEVATION MARKS FOR ALL PROPOSED ELECTRICAL FACILITIES SHALL BE DETERMINED. THIS WORK IS CONSIDERED INCIDENTAL TO THE CONTRACT. THE SURVEYOR SHALL PERFORM ALL LAYOUT WORK, OFFSET STAKES, PROFILE WORK, VOLUMES, CALCULATIONS, FOUNDATION WORK, AS BUILT WORK, SLOPE, GRADE, BENCHMARK WORK, ELEVATION AND DIMENSIONS PER G.P.S. ALL WORK IS TO BE DOCUMENTED AND PROVIDED TO THE CITY.
- 9) ALL WORK SHALL MEET OSHA REGULATIONS OF LATEST ISSUE.
- 10) THE CONTRACTOR SHALL REMOVE ONLY THOSE TREES, BUSHES, FLOWERS, AND SHRUBS SO DESIGNATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER, OR THOSE WHICH DIRECTLY INTERFERE WITH THE SAFETY OR QUALITY OF CONSTRUCTION PRACTICES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF TWO (2) DAYS IN ADVANCE OF REMOVAL OF TREES WHICH AFFECT SAFETY. THE CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN WORKING NEAR EXISTING TREES AND SHRUBS TO AVOID DAMAGING THOSE NOT SCHEDULED FOR REMOVAL. THE CONTRACTOR SHALL PROTECT ALL OTHER TREES, BUSHES AND LANDSCAPING FEATURES. TREES REMOVED OR DAMAGED BY THE CONTRACTOR WHICH HAVE NOT BEEN DESIGNATED FOR REMOVAL, SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE CITY. TREES TO HAVE BRANCHES OR ROOTS PRUNED SHALL BE DONE IN A NEAT AND CLEAN MANNER (i.e., WITH A SAW OR SHEARS) AND NOT TORN OR BROKEN WITH CONSTRUCTION EQUIPMENT.

GENERAL NOTES

- 1) CONTRACTOR SHALL RESTRICT HIS OPERATIONS TO EASEMENTS AND ROAD RIGHT-OF-WAY AS SHOWN ON THE DRAWINGS.
- 2) PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL ARRANGE TO HAVE ALL UNDERGROUND UTILITIES INCLUDING WATER, GAS, ELECTRIC, STORM SEWER, SANITARY SEWER, SPRINGLER SYSTEM, TRAFFIC CONTROL SIGNALS, TELEPHONE AND CABLE TV LOCATED AND SUITABLY MARKED. SHOULD A UTILITY BE IN CONFLICT WITH THE PROPOSED CONSTRUCTION, THE ENGINEER SHALL BE NOTIFIED AT ONCE. IF UTILITIES INTERFERE WITH THE CONSTRUCTION ALIGNMENT, THEY SHALL BE PROTECTED AT NO ADDITIONAL EXPENSE TO THE OWNER AND WITHOUT CLAIM BY THE CONTRACTOR FOR DELAYS DUE TO UTILITY LINES ENCOUNTERED. THE CITY OF NAPERVILLE SHALL BE NOTIFIED 96 HOURS IN ADVANCE OF WATERMAIN, SANITARY, AND ELECTRIC CROSSINGS.
- 3) INFORMATION ON THE PLANS REGARDING UNDERGROUND UTILITIES IS TAKEN FROM THE BEST AVAILABLE RECORDS, BUT IS NOT REPRESENTED AS BEING ENTIRELY CORRECT OR COMPLETE. THE CONTRACTOR SHALL NOTIFY OPERATING AGENCY IN ADVANCE OF CROSSING OVER OR UNDER ANY UTILITIES SHOWN ON THE PLANS. THE CONTRACTOR SHALL NOTIFY OPERATING AGENCY AND ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THE PLANS. ANY UTILITIES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- 4) MSDS SHEETS ARE REQUIRED ON THE JOB SITE FOR ALL MATERIALS USED.
- 5) THE CONTRACTOR SHALL UNDER NO CIRCUMSTANCES DISTURB OR REMOVE A TREE UNLESS SPECIFICALLY DIRECTED TO DO SO ON THE PLANS OR BY THE ENGINEER. CONTRACTOR SHALL NOTE PROTECTION OF ALL TREES, SHRUBS ETC., ALONG THE LINE OF CONSTRUCTION IS REQUIRED. WRITTEN PERMISSION FROM THE OWNER IS REQUIRED PRIOR TO ANY TREE OR SHRUB REMOVAL.
- 6) THE CONTRACTOR SHALL PROTECT ALL PROPERTY PINS AND SURVEY MONUMENTS AND SHALL RESTORE ANY WHICH ARE DISTURBED BY HIS OPERATIONS AT NO ADDITIONAL COST TO THE CONTRACT.
- 7) ALL FIELD TILE, CULVERTS, GRATES, DRAIN PIPE, ENCOUNTERED DURING CONSTRUCTION OPERATIONS AND DAMAGED SHALL BE REPAIRED WITH NEW MATERIALS PER THE SPECIFICATIONS. A RECORD OF THE LOCATION OF ALL FIELD TILE, CULVERTS OR DRAIN PIPE ENCOUNTERED SHALL BE KEPT BY THE CONTRACTOR AND TURNED OVER TO THE ENGINEER UPON COMPLETION OF THE PROJECT. ALL FIELD REPAIRS SHALL BE AT CONTRACTOR'S EXPENSE.
- 8) ANY PAVEMENT OR PAVEMENT STRIPING DAMAGED OR REMOVED DURING CONSTRUCTION OPERATIONS, OTHER THAN THE AREAS SHOWN ON DRAWING 56270 SHEETS 1 THRU 73, SHALL BE REPLACED IN KIND BY THE CONTRACTOR AT NO COST TO THE CITY.
- 9) ALL EXISTING UTILITY FACILITIES SHALL BE KEPT IN SERVICE DURING CONSTRUCTION EXCEPT WHERE PERMISSION IS GRANTED OTHERWISE BY THE OWNER. ALL VALVE BOXES AND VALVE VAULTS, ELECTRIC MANHOLES, SWITCH GEARS OR TRANSFORMERS SHALL REMAIN ACCESSIBLE TO THE RESPECTIVE UTILITY COMPANY.
- 10) THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING FENCE, POSTS, AND GATES DURING CONSTRUCTION. ALL WORK AND MATERIAL NECESSARY TO REPLACE EXISTING FENCE, POSTS, AND GATES DAMAGED BECAUSE OF NONCOMPLIANCE WILL BE AT CONTRACTOR'S OWN EXPENSE, AND NO EXTRA COMPENSATION WILL BE ALLOWED. ALL REPLACEMENT MATERIALS ARE TO BE NEW.
- 11) ALL EXISTING TRAFFIC SIGNS, ELECTRIC UNDERGROUND CABLES, DUCTS, FENCES, GUARDRAILS, STREET LIGHTS, STREET SIGNS, ETC., WHICH INTERFERE WITH CONSTRUCTION OPERATIONS AND NOT NOTED FOR REMOVAL OR DISPOSAL SHALL BE MAINTAINED BY THE CONTRACTOR OR TEMPORARILY RELOCATED. THIS IS CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. DAMAGE TO THESE ITEMS SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE. IN ADDITION, ALL MAILBOXES THAT INTERFERE WITH CONSTRUCTION SHALL BE SIMILARLY RELOCATED AT NO ADDITIONAL COST. CONTRACTOR SHALL PROVIDE TEMPORARY TRAFFIC, REGULATORY, AND SAFETY SIGNAGE THAT IS DISTURBED BY CONSTRUCTION ACTIVITIES. SUCH COST SHALL BE CONSIDERED INCIDENTAL TO THE COST OF TRAFFIC CONTROL.  
  
THE COST OF A SUFFICIENT NUMBER OF FLAGGERS AND ELECTRONIC MESSAGE BOARDS TO DIRECT TRAFFIC IS INCLUDED AND IS PART OF TRAFFIC CONTROL PAY ITEM.
- 12) THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESS, THE CONSTRUCTION SITE, RESIDENCES, AGRICULTURE AREAS, AND ALL OTHER SITES NECESSARY FOR THE MAINTENANCE OF COMMERCE AND SAFETY AT ALL TIMES. THE CONTRACTOR MAY PLACE TEMPORARY PLATES OR OTHER SUCH DEVICES IN A SAFE AND ACCESSIBLE MANOR TO TEMPORARILY MAINTAIN ACCESS. IN NO CASE MAY MORE THAN ONE POINT OF ACCESS TO ANY RESIDENCE, BUSINESS OR SITE BE UNDER CONSTRUCTION SIMULTANEOUSLY. SHOULD A PROPERTY HAVE ONLY ONE POINT OF ACCESS. THE CONTRACTOR SHALL STAGE HIS WORK SO AS TO ONLY OBSTRUCT ONE HALF OF THIS ENTRANCE AT ANY TIME AND SHALL MAINTAIN ACCESS TO HIS PROPERTY AT ALL TIME. COSTS FOR MAINTAINING ACCESS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT (SEE NOTE 28).
- 13) CONTRACTOR SHALL PLACE AND MAINTAIN TEMPORARY 2" TO 6" HMA PATCHES ACROSS ALL PAVEMENT REPAIR AREAS PRIOR TO THE INSTALLATION OF THE FINAL PAVEMENT REPAIRS. COSTS SHALL BE INCIDENTAL TO THE ASSOCIATED PAY ITEMS. PLATES MAY BE PLACED IN LIEU OF HMA PATCHES AT THE DISCRETION OF THE FIELD ENGINEER. PLATES ARE TO BE RAMPED AND PINNED IN PLACE TO PREVENT MOVEMENT AND CAPABLE OF SUPPORTING HS-20 LOADING. COUNTER SINKING OF PLATES IS REQUIRED.
- 14) THE CONTRACTOR SHALL REMOVE AND REPLACE ALL SIGNS OF ALL TYPES, SIZES, AND OWNERSHIP NECESSARY TO COMPLETE INDICATED WORK. COST OF THIS WORK SHALL BE INCIDENTAL TO THE WORK AND CONTRACT.
- 15) THE CONTRACTOR SHALL BRACE ALL STREET LIGHT POLES, DPU-E POLES, CABLE TV OR COMED POLES WITHIN THE VICINITY OF THE INDICATED WORK. COST OF THIS WORK SHALL BE INCIDENTAL TO THE WORK AND CONTRACT. ANY DELAY DUE TO OBTAINING PERMISSION OR A PERMIT FROM THE OWNER OF THE FACILITY TO SUPPORT OR RELOCATE OF ANY EXISTING FACILITY IS AT THE CONTRACTOR'S EXPENSE.
- 16) THE CONTRACTOR SHALL CONTACT THE CITY OF NAPERVILLE'S TRANSPORTATION ENGINEERING AND DEVELOPMENT BUSINESS GROUP 48 HOURS PRIOR TO PERFORMING WORK IN OR AROUND THE WORK AREA WHERE DETECTOR LOOPS OR TRAFFIC SIGNALS HAVE THE POSSIBILITY OF BEING ENCOUNTERED AND/OR DAMAGED. THE CONTRACTOR SHALL CONTACT THE DUPAGE COUNTY DEPARTMENT OF TRANSPORTATION WITH THE SAME INFORMATION.

CONTINUED ON PAGE 2

PROJECT TITLE					ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION					GENERAL NOTES				
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.		
GIS DESIGN BY	DL	DRAFTED BY	PSM	REVISIONS DATE	N/A	PROJECT #	EU-12		
CHECKED BY		APPROVED BY		CAD FILE	0061123001GN1.DWG	SHEET #	1 OF 40		
Naperville					Department of Public Utilities Electric Division				
					WORK REQUEST # 61123				

PROPOSED ELECTRIC CONSTRUCTION  
ALONG RT 59 (DUPAGE COUNTY)  
BETWEEN AURORA RD. AND  
FERRY RD. AT THE DUPAGE RIVER  
IN THE CITY OF NAPERVILLE, STATE OF ILLINOIS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035</del>	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60P42</del>	
		FED. AID PROJECT		

GENERAL NOTES (CONTINUED)

- 17) THE CONTRACTOR SHALL PROVIDE TIME DURING CONSTRUCTION OPERATIONS FOR THE LANDSCAPER TO REMOVE, PRESERVE, AND REINSTALL ANY BUSH OR SHRUB. EVERGREENS, BUSHES, SHRUBS, VINES, AND SEEDINGS SHALL BE DUG UP WITH CARE, AVOIDING INJURY TO THE PLANTS OR LOSS OR DAMAGE OF THE ROOTS. IMMEDIATELY AFTER DIGGING, ROOTS SHALL BE PROTECTED AGAINST DRYING OUT AND FREEZING BY WRAPPING ROOT SYSTEM IN BURLAP, REMOVED VEGETATION SHALL BE PLACED IN TEMPORARY STORAGE EITHER ON SITE OR AT OTHER APPROVED LOCATIONS. IF LANDSCAPER IS UNABLE TO REUSE EXISTING VEGETATION, HE SHALL REPLACE WITH SAME SIZE AND SPECIES AT HIS OWN EXPENSE. COST OF THIS WORK SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO THE LANDSCAPING CONTRACT AND IS PART OF THE RESTORATION (PAY ITEM).
- 18) DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR IS NOT ALLOWED TO PERMANENTLY STOCK PILE MATERIAL ON SITE. CONTRACTOR SHALL SUPPLY LIGHTED BARRICADES AROUND ALL STOCKPILES AND IS RESPONSIBLE FOR THE SECURITY OF ALL THE MATERIALS STORED OFF SITE.
- 19) ALL RESTORATION IS DIRECTED BY THE CITY OR COUNTY PERMIT WHICH THE CONTRACTOR IS REQUIRED TO OBTAIN PRIOR TO STARTING WORK. ALL REQUESTS REQUIRED BY THE CITY SHALL BE HONORED AND COMPLETED BY THE LANDSCAPER AT NO EXPENSE TO THE CITY. THE LANDSCAPE CONTRACTOR SHALL PERFORM ALL RESTORATION PER CITY OF NAPERVILLE SPECIFICATIONS. THE CONTRACTOR SHALL PERFORM ALL WORK TO THE MOST RESTRICTIVE REQUIREMENT OF THE GOVERNING BODIES. THIS IS PART OF THE RESTORATION PRICE (PAY ITEM). SEE 56270-1000, TRANSMISSION LINE LANDSCAPING OVERHEAD AND UNDER GROUND FOR PROJECT GENERAL REQUIREMENTS.
- 20) ALL IDENTIFIED OR SUSPECTED UNDERGROUND FACILITIES OR OBSTRUCTIONS SHALL BE LOCATED BY HAND DIGGING TO A DEPTH OF 8 FEET, WIDTH OF 4 FEET AND LENGTH OF 5 FEET AND IDENTIFIED BY NAME AND SIZE. THIS IS PART OF THE CONDUIT AND OR MANHOLE (PAY ITEMS).
- 21) WHEN REPAIRING, REPLACING, OR INSTALLING ITEMS, THE ITEMS SUPPLIED BY THE CONTRACTOR SHALL BE NEW AND NOT USED.
- 22) THE COST TO LOCATE SUPPORT, MOVE AND PROTECT THE UTILITIES (SHOWN ON THE DRAWINGS) SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO WORK.
- 23) ALL MATERIALS REMOVED DURING THE CONSTRUCTION OF THE PROJECT AND DESIGNATED ON THE PLANS OR BY THE CITY AS SALVAGED MATERIALS SHALL BE REMOVED, CLEANED, AND STACKED AT THE DESIGNATED CITY OF NAPERVILLE SITE. ALL UNUSED MATERIALS SHALL BE THE PROPERTY OF THE CITY.
- 24) ALL MATERIALS REMOVED BY THE CONTRACTOR, SUCH AS POLES, CONDUIT, HANDHOLES, MANHOLES, RISERS, EXCAVATED MATERIALS, WIRE, STEEL POLES, FOUNDATIONS, ANCHORS, GUYS, CROSS ARMS, INSULATOR GROUND WIRES, CONDUCTORS, AND HARDWARE AND DESIGNATED ON THE PLAN FOR REMOVAL SHALL BE REMOVED TO AN APPROPRIATE DUMP SITE FOR WASTE. DUMP TICKETS RECEIVED AND RETURNED TO THE CITY. ALL AREAS LEFT DAMAGED BY THE REMOVAL SHALL BE REPAIRED, REPLACED OR INSTALLED TO FINISHED GRADE. THIS PART OF THE WORK IS COVERED IN THE COST OF RESTORATION.
- 25) THE CITY OF NAPERVILLE DOES NOT GUARANTEE A SEQUENCE OF WORK OR AVAILABILITY OF THE WORK AREA OR QUANTITY OF WORK.
- 26) ALL WORK WILL OCCUR DURING ALL 4 SEASONS OF THE YEAR. THEREFORE, THERE SHALL BE NO COMPENSATION PAID BY THE CITY FOR SNOW, ICE, RAIN, WIND, OR HOT OR COLD WEATHER. IT IS ASSUMED THE CONTRACTOR HAS INCLUDED THESE ITEMS IN THE PRICING.
- 27) THIS WORK SHALL BE PREFORMED IN ACCORDANCE WITH SECTION 202 OF THE IDOT STANDARDS SPECIFICATIONS EXCEPT AS HEREIN. THE CONTRACTOR IS ADVISED THAT JOINTED, FISSURED ROCK, LARGE BOULDERS (12 INCHES OR LARGER) AND VERY TOUGH STRATIFIED ROCK/SHALE MAY EXISTS FROM 1'-0" TO 10'-0" BELOW GRADE AND SOLID ROCK MAY EXISTS FROM 10'-0" TO 20'-0" BELOW GRADE AND REQUIRES ADDITIONAL WORK AND IS INCLUDED IN THE COST OF INSTALLING THE DUCT BANK WORK OR HAND HOLE WORK, MANHOLE WORK, VAULT WORK OR RISER WORK. THE CONTRACTOR WILL EXCAVATE IN ROCK ACCORDING TO SECTION 502 OF THE STANDARD SPECIFICATIONS FOR ROCK EXCAVATION FOR STRUCTURES. THE BOTTOM OF THE TRENCH SHALL BE LINED WITH 2 INCHES OF FA-2 MATERIALS OR CA-6 MATERIALS TO FORM A BEDDING FOR THE DUCT PACKAGE AND IS INCIDENTAL TO THE COST.
- SEE SPECIFICATION C30-1950 FOR HDD ROCK DEFINITION AND METHOD OF PAYMENT, IS COVERED BY SECTION 109.04 STANDARDS SPECIFICATIONS THIS PRICE SHALL BE FULL COMEPASATION FOR FURNISHING ALL MATERIALS; FOR ALL PREPARATION, EXCAVATION AND DISPOSAL OF ROCK, AND FOR ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE ITEM. DUMP TICKETS ARE REQUIRED.
- 28) THE CONTRACTOR SHALL COORDINATE AND PERFORM ALL WORK OR AS MUCH AS POSSIBLE USING TRAFFIC CONTROL AND LANE CLOSURES AS REQUIRED FOR THE BRIDGE WORK. ALL ELECTRICAL WORK REQUIRING A LANE CLOSURE OR TRAFFIC CONTROL SHALL ONLY BE ACCEPTED IF THE BRIDGE WORK IS NOT INVOLVED. THE CONTRACTOR TO INCLUDE THESE COSTS UNDER THE TRAFFIC CONTROL (PAY ITEM).
- 29) THE CONTRACTOR SHALL, DURING THE PROGRESS OF THE JOB, NOTE ANY AND ALL CHANGES OR DEVIATIONS FROM THE ORIGINAL DRAWING. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COPY OF ALL RECORDED DIMENSIONS AND ELEVATIONS. ALL MANHOLES, HAND HOLES VAULTS OR RISERS, BENDS AND FITTINGS, SHALL BE TIED TO A MINIMUM OF TWO PERMANENT VISIBLE POINTS (I.E. PROPERTY IRONS AND BUILDINGS). DEVIATIONS FROM CHANGES IN GRADE SHALL ALSO BE NOTED ON THE RECORD DRAWINGS.
- 30) WATER MAIN VALVES, INCLUDING TAP VALVES, ADJACENT TO AN EXISTING WATER MAIN, AND EXISTING WATER MAIN VALVES SHALL ONLY BE OPERATED BY THE CITY OF NAPERVILLE, DEPARTMENT OF PUBLIC UTILITIES CEE/CM DIVISION PERSONNEL WITH 48-HOURS NOTICE (MONDAY-FRIDAY) 630-420-4122.
- 31) THE CONTRACTOR PERFORMING THE ELECTRICAL WORK FOR THE CITY OF NAPERVILLE SHALL BE A QUALIFIED ELECTRICAL CONTRACTOR WITH NO LESS THAN SEVEN YEARS EXPERIENCE IN THE ELECTRICAL POWER DISTRIBUTION FIELD (34KV AND BELOW ELECTRICAL WORK).
- THE CONTRACTOR SHALL PROVIDE AT LEAST FOUR REFERENCES. EACH REFERENCES MUST INCLUDE THE FOLLOWING:  
A) CONTRACT NAME AND PHONE NUMBER.  
B) SCOPE OF WORK.  
C) CONTRACT DOLLAR AMOUNT FOR ELECTRICAL DUCT, MANHOLE AND SWITCH GEAR INSTALLATION WORK COMPLETED FOR EACH REFERENCE.
- 32) CONTRACTOR IS ADVISED THE AREA HAS PRESENTLY INSTALLED A 138KV SINGLE CIRCUIT STEEL POLE LINE THAT SHALL REMAIN ENERGIZED DURING THE ENTIRE PROJECT. CONTRACTOR SHALL OBSERVE ALL OSHA SAFETY REQUIREMENTS IN THE WORK AREA.

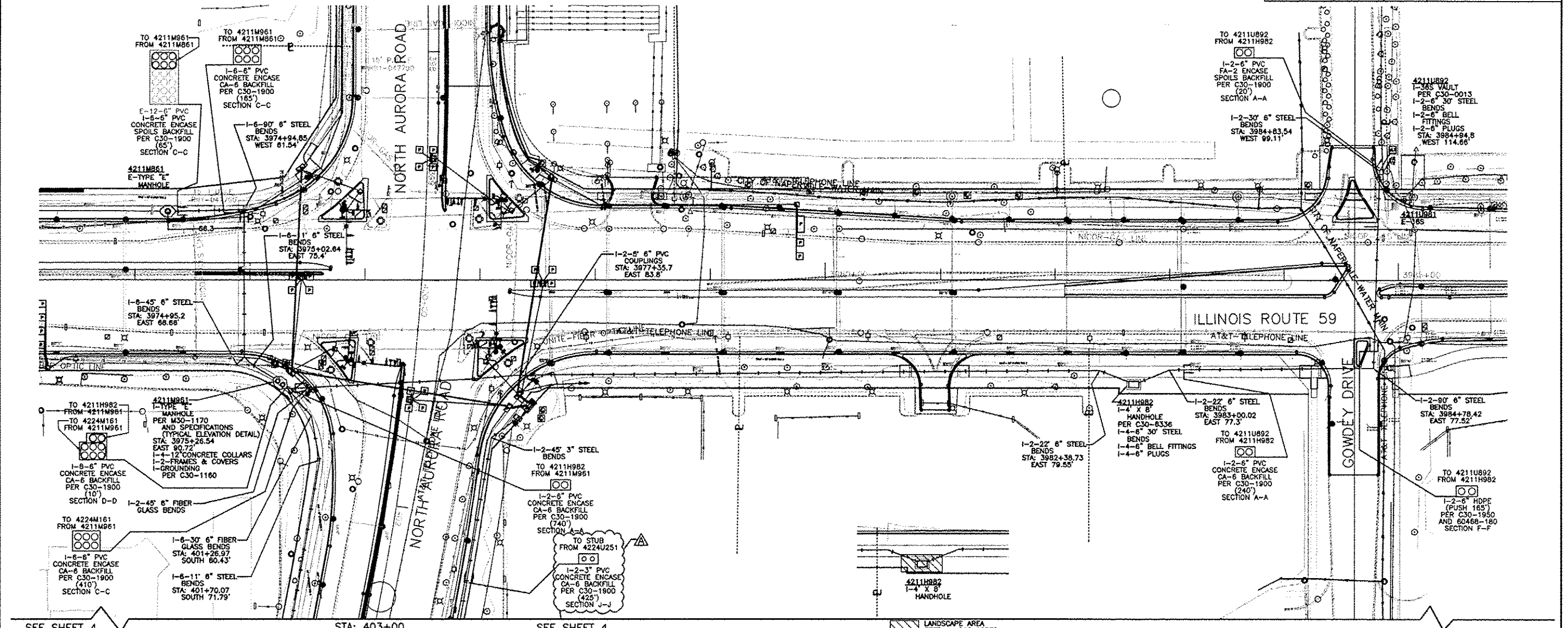
UTILITY CONTACTS:

CITY OF NAPERVILLE:

- NDPU- WATER AND WASTEWATER  
MR. PAT EYRE  
(630) 420-4122
- NDPU- ELECTRIC  
MRS. LUCY HYNES  
(630) 305-5375
- NDPW- PUBLIC WORKS  
MR. DAN VORREN  
(630) 548-2981
- TED- TRANSPORTATION, ENGINEERING & DEVELOPMENT BUSINESS GROUP  
MR. BILL NOVAK  
(630) 420-6704
- OTHER UTILITIES:
- AT&T- MR. GREG LAWERENCE  
(630) 462-5846  
MS. DONNA SZPYTEK  
(630) 941-4223
- COMCAST- MR. BOB SCHULTER  
(630) 600-6347
- COMMONWEALTH EDISION- MR. KIRIL IVANOV  
(630) 723-2108
- NICOR GAS- MS. CONSTANCE LANE  
(630) 983-8676  
X3830
- WIDE OPEN WEST- MR. BRIAN HURD  
(630) 523-1264  
MR. JIM PIRTANO  
(630) 669-2707

PROJECT TITLE					ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION					GENERAL NOTES				
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.		
GIS DESIGN BY	DL	DRAFTED BY	PSM	REVISIONS DATE	N/A	AT&T JOINT AGREEMENT #		PROJECT #	EU-12
CHECKED BY		APPROVED BY		CAD FILE	0060648001GN2.DWG	SHEET #	2 OF 40		
Naperville					Department of Public Utilities Electric Division				
					WORK REQUEST # 61123				

F.A. RTE. 338/IL 59	SECTION 2011-030	COUNTY DUPAGE	TOTAL SHEETS 4	SHEET NO. 3
STA. TO STA.		FED. ROAD DIST. NO. ILLINOIS CONTRACT 60R30		



SEE SHEET 4 STA: 403+00 SEE SHEET 4 LANDSCAPE AREA SEED = .012 ACRES

**LEGEND**

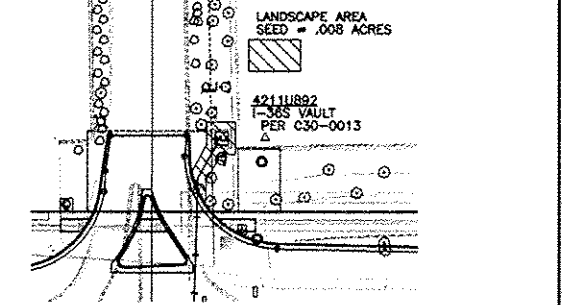
	EXISTING E-SW. MOD.		INSTALL I-TYPE "G" DOUBLE OPENING MANHOLE
	E-TYPE "E" MANHOLE		I-TYPE "E" DOUBLE OPENING MANHOLE
	E-CONDUIT		I-CONDUIT
	E-TYPE "G" MANHOLE		I-SW. VAULT
	E-STEEL TRANSMISSION POLE		I-HANDHOLE PER C30-6336
	E-O.H. 136KV		

**CALL JULIE 48 HRS. PRIOR TO CONSTRUCTION**  
1-800-892-0123 OR CALL 811

**NOTES:**  
1. THE PROJECT ENGINEER FOR THIS PROJECT IS BRIAN CHAMBERLAIN PHONE NUMBER (630)490-0953.  
2. THE PROJECT COORDINATOR FOR THIS PROJECT IS PAUL MICHALOWSKI PHONE NUMBER (630)305-6227.  
3. CONTRACTOR IS RESPONSIBLE FOR MANHOLE PHOTOS TAKEN OF ALL CLEARLY MARKED CABLE AND ALL WALLS OF MANHOLES. PHOTOS WILL BE GIVEN TO THE GIS GROUP WITH THE AS-BUILTS.

**ADDENDUM - 02-20-2013**

**LOCATION MAP**



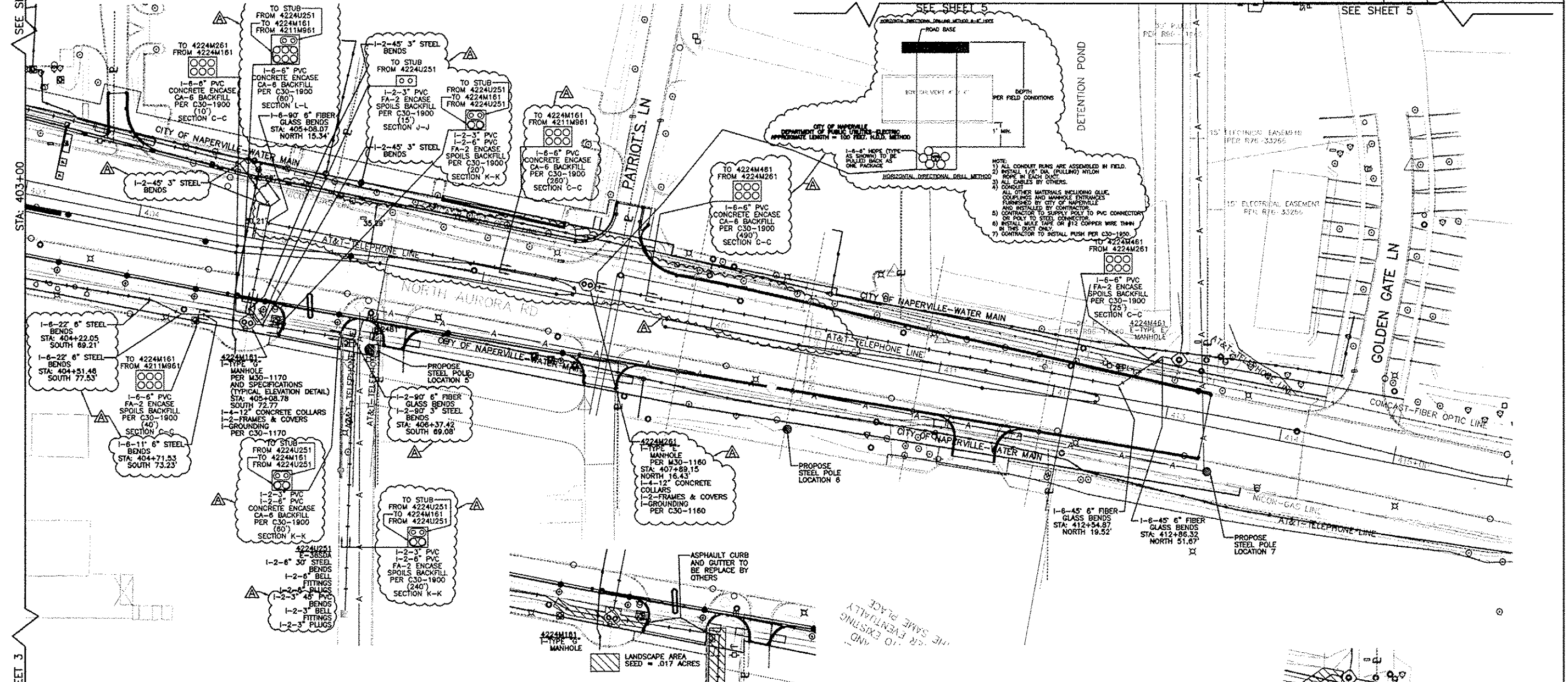
<b>ROUTE 59 ROAD IMPROVEMENTS</b>			
PROJECT DESCRIPTION	TO INSTALL NEW FACILITIES AND RELOCATE OLD FACILITIES ALONG WITH ROAD PROJECT	DATE	2-07-13
PROJECT NO.	BCC	PROJECT VALUE	4211,4224
DATE DESIGNED BY	DL	PROJECT NO.	EU-12
CHECKED BY	PSM	DATE	02-07-13
APPROVED BY		PROJECT NO.	3 OF 40
Naperville		Department of Public Utilities	
Electric Division		61123	



F.A. RTE. 338/IL 59	SECTION 8011-830	COUNTY DUPAGE	TOTAL SHEETS 4	SHEET NO. 3
STA. _____ TO STA. _____		FED. ROAD DIST. NO. ILLINOIS CONTRACT 60R30		

SEE SHEET 3  
STA. 403+00  
SEE SHEET 3

SEE SHEET 5



NOTE:  
1) ALL CONDUIT RUNS ARE ASSEMBLED IN FIELD.  
2) INSTALL 1/8\"/>

**LEGEND**

EXISTING		INSTALL	
	E-SW. MOD.		I-TYPE "G" DOUBLE OPENING MANHOLE
	E-TYPE "E" MANHOLE		I-TYPE "E" DOUBLE OPENING MANHOLE
	E-CONDUIT		I-CONDUIT
	E-TYPE "G" MANHOLE		I-SW. VAULT
	E-STEEL TRANSMISSION POLE		I-HANDHOLE PER C30-633
	E-O.H. 138KV		

REMOVE AND REPLACE TREES

REMOVE AND REPLACE TREE

REMOVE AND REPLACE TREE

LANDSCAPE AREA SEED = .072 ACRES

REMOVE AND REPLACE TREE

AND  
TO EXISTING  
THE SAME PLACE

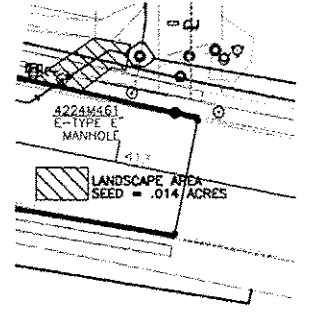
**CALL JULIE 48 HRS. PRIOR TO CONSTRUCTION**  
1-800-892-0123 OR CALL 811

**NOTES:**  
1. THE PROJECT ENGINEER FOR THIS PROJECT IS BRUN CHAMBERLAIN PHONE NUMBER (630)450-0953.  
2. THE PROJECT COORDINATOR FOR THIS PROJECT IS PAUL MICHALOWSKI PHONE NUMBER (630)905-8227.  
3. CONTRACTOR IS RESPONSIBLE FOR MANHOLE PHOTOS TAKEN OF ALL CLEARLY MARKED GABLE AND ALL WALLS OF MANHOLES. PHOTOS WILL BE GIVEN TO THE GIS GROUP WITH THE AS-BUILTS.

**ADDENDUM - 02-20-2013**

**LOCATION MAP**

**DESIGN REVISION DATES**

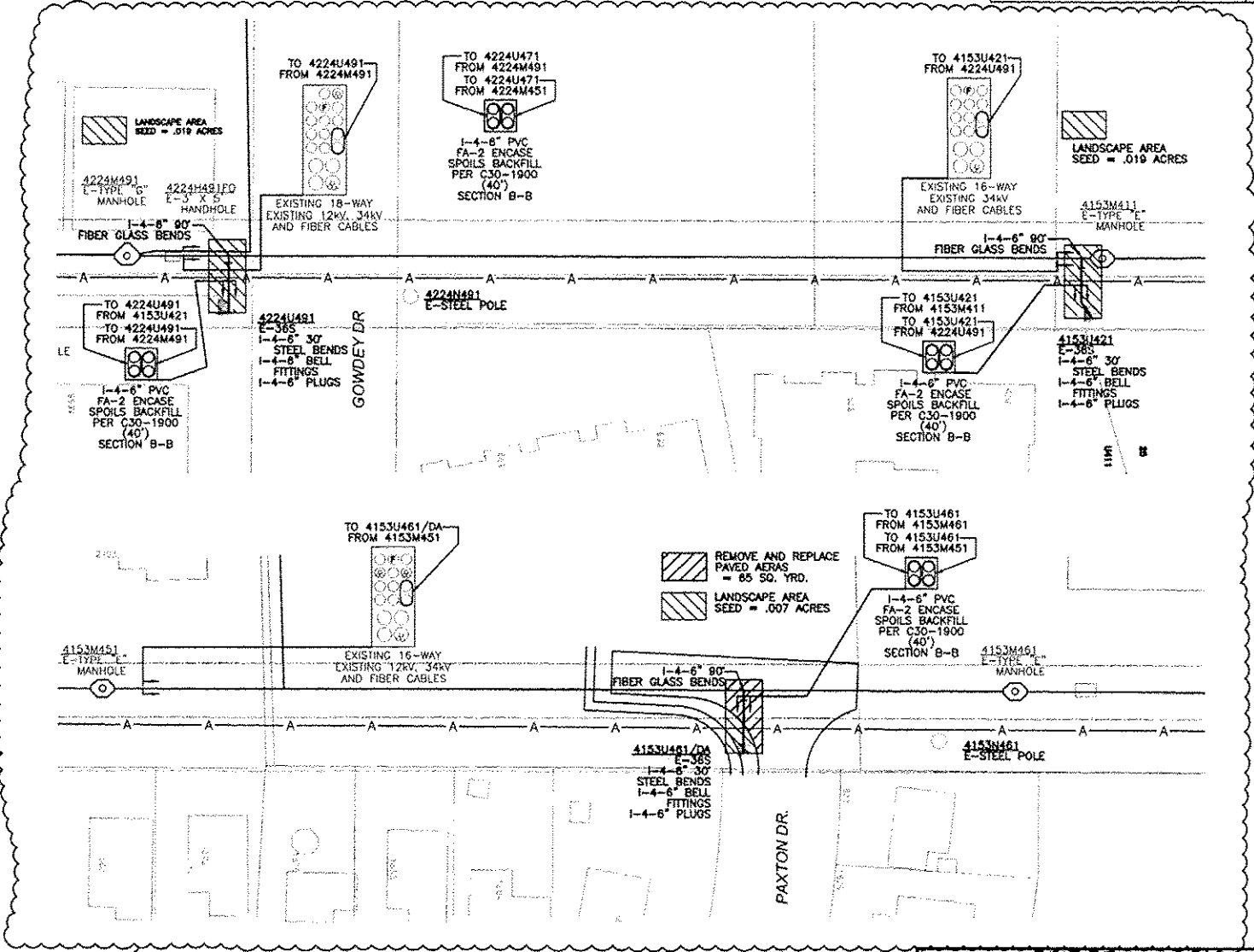
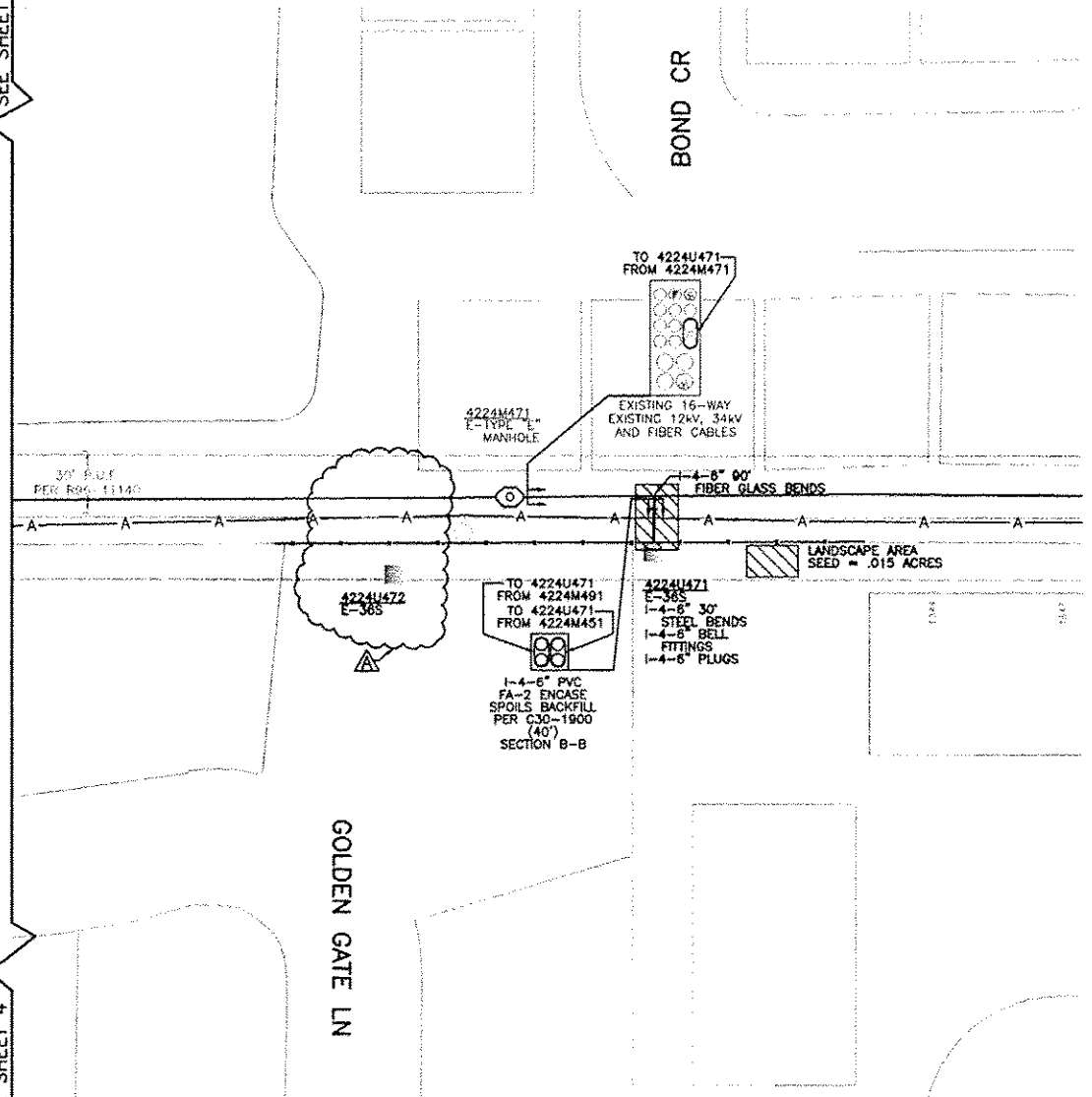


<b>ROUTE 59 ROAD IMPROVEMENTS</b>			
TO INSTALL FACILITIES AND RELOCATE OLD FACILITIES ALONG WITH THE ROAD PROJECT			
OWNER BCC	DATE 2-07-13	DRAWN BY 4211.4224	SCALE 1 = 40
DESIGNED BY DL	DRAWN BY PSM	DATE REVISION N/A	PROJECT # EU-12
CHECKED BY	APPROVED BY	DWG FILE 0061123001C4.DWG	SHEET # 4 OF 40
Naperville Department of Public Utilities Electric Division			WORK REQUEST # 61123

SEE SHEET 4

SEE SHEET 4

F.A. RTE. 338/IL 59	SECTION 2011-030	COUNTY DUPAGE	TOTAL SHEETS 10	SHEET NO. 10
STA.		TO STA.		
FED. ROAD DIST. NO.		ILLINOIS	CONTRACT 60R30	



**LEGEND**

	E-SW. MOD.		I-CONDUIT
	E-TYPE "E" MANHOLE		I-SW. VAULT
	E-CONDUIT		I-HANDHOLE
	E-TYPE "G" MANHOLE		
	E-STEEL TRANSMISSION POLE		

**CALL JULIE 48 HRS. PRIOR TO CONSTRUCTION**  
1-800-892-0123 OR CALL 811

**NOTES:**  
 1. THE PROJECT ENGINEER FOR THIS PROJECT IS BRYAN CHAMBERLAIN PHONE NUMBER (630)430-0665.  
 2. THE PROJECT COORDINATOR FOR THIS PROJECT IS PAUL MICHALOWSKI PHONE NUMBER (630)305-0227.  
 3. CONTRACTOR IS RESPONSIBLE FOR MANHOLE PHOTOS TAKEN OF ALL CLEARLY MARKED CABLE AND ALL WALLS OF MANHOLES. PHOTOS WILL BE OWEN TO THE O&E GROUP WITH THE AS-BUILTS.

**ADDENDUM - 02-20-201**

**LOCATION MAP**

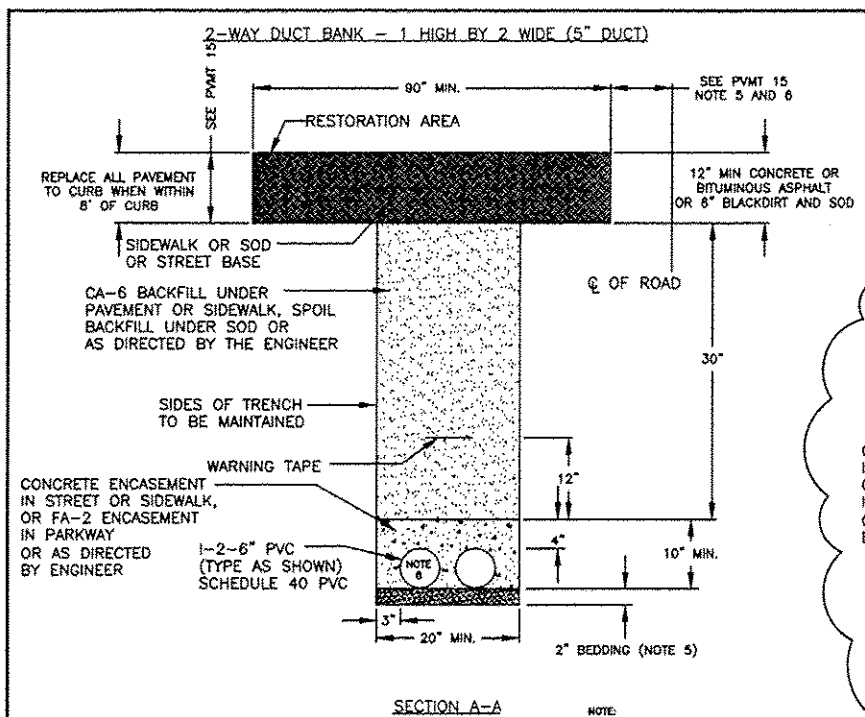
**DESIGN REVISION DATES**

PROJECT TITLE	ROUTE 59 ROAD IMPROVEMENTS		
PROJECT DESCRIPTION	TO INSTALL NEW FACILITIES AND RELOCATE OLD FACILITIES ALONG WITH ROAD PROJECT		
DRAWN BY	DATE	BY	SCALE
BCC	2-07-13	4211,4224	1 = 40
DESIGNED BY	REVISIONS DATE	DATE	PROJECT #
DL	PSM	N/A	EU-12
CREATED BY	APPROVED BY	DATE	SHEET #
		0061123001C5.DWG	5 OF 40

**Naperville** Department of Public Utilities  
Electric Division

61123

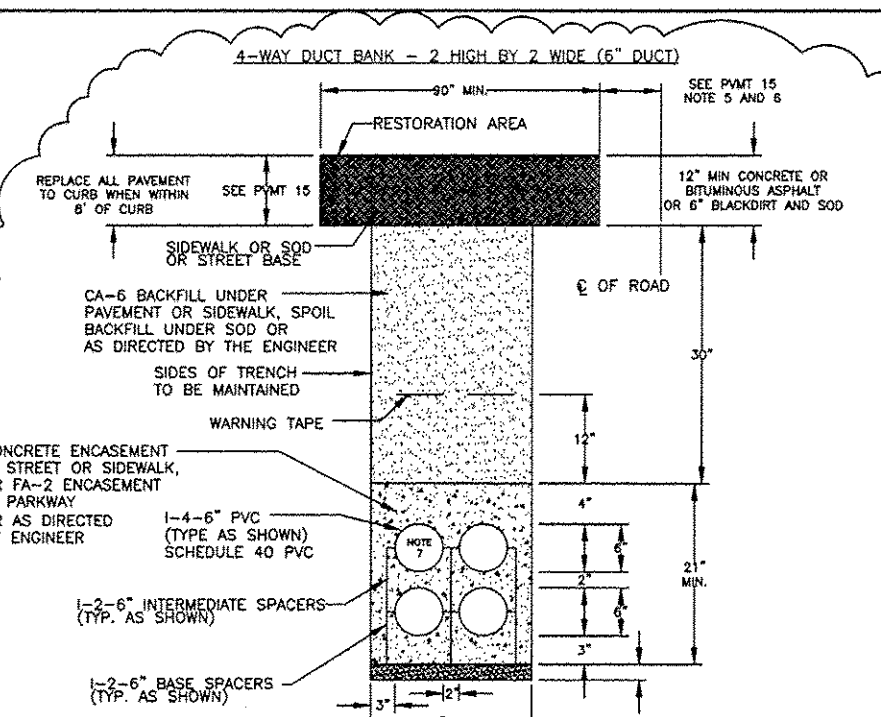
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-036	DUPAGE		
FED. ROAD DIST. NO.		ILLINOIS	CONTRACT 60R30	
		FED. AID PROJECT		



**SECTION A-A**

CITY OF NAPERVILLE  
DEPARTMENT OF PUBLIC UTILITIES-ELECTRIC  
TYPICAL CONDUIT SECTION A-A  
APPROXIMATE LENGTH = (NONE) CONCRETE ENCASE SPOIL BACKFILL  
APPROXIMATE LENGTH = 980 FEET CONCRETE ENCASE CA-6 BACKFILL  
APPROXIMATE LENGTH = 40 FEET (FA-2 ENCASED) SPOIL BACKFILL  
APPROXIMATE LENGTH = (NONE) (FA-2 ENCASED) CA-6 BACKFILL

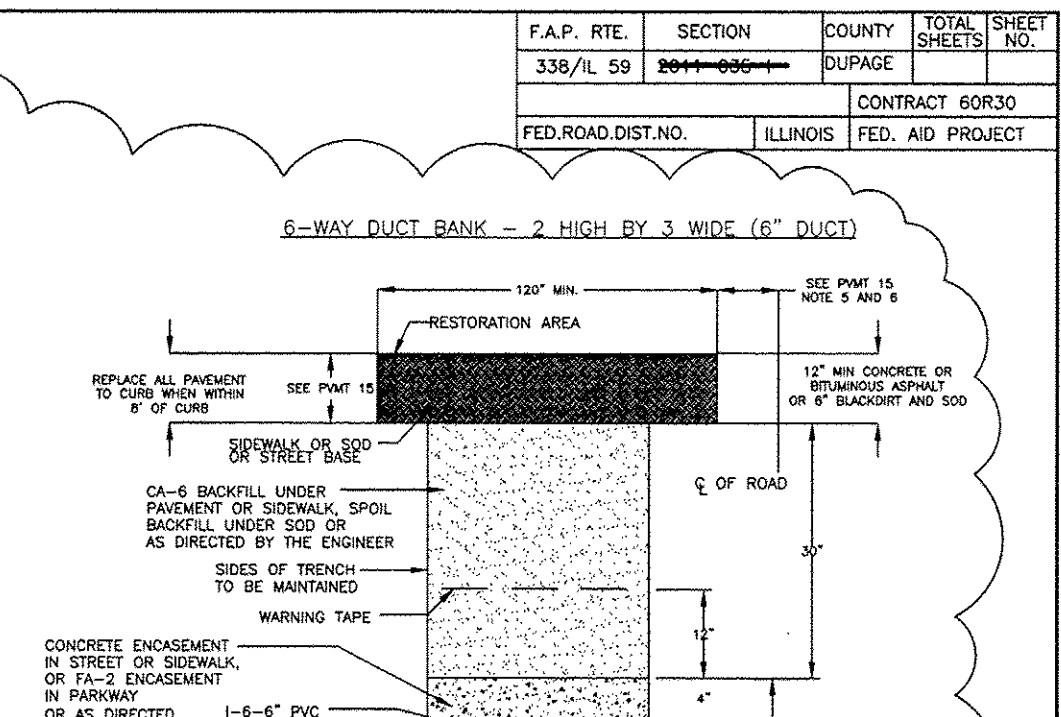
NOTE:  
1) ALL CONDUIT RUNS ARE ASSEMBLED IN FIELD.  
2) INSTALL 1/8" DIA. (PULLING) NYLON ROPE IN EACH DUCT.  
3) ALL CABLES BY OTHERS.  
4) CONDUIT AND SPACERS AND ALL OTHER MATERIALS INCLUDING GLUE, COUPLINGS AND MANHOLE ENTRANCES FURNISHED BY CITY OF NAPERVILLE AND INSTALLED BY CONTRACTOR.  
5) INSTALL BEDDING FA-2 OR CA-6.  
6) INSTALL MULE TAPE OR #12 COPPER WIRE THIN IN THIS DUCT ONLY.  
7) CONTRACTOR TO INSTALL DUCT RUN PER C30-1900.



**SECTION B-B**

CITY OF NAPERVILLE  
DEPARTMENT OF PUBLIC UTILITIES-ELECTRIC  
TYPICAL CONDUIT SECTION B-B  
APPROXIMATE LENGTH = (NONE) CONCRETE ENCASE SPOIL BACKFILL  
APPROXIMATE LENGTH = 200 FEET CONCRETE ENCASE CA-6 BACKFILL  
APPROXIMATE LENGTH = (NONE) (FA-2 ENCASED) SPOIL BACKFILL  
APPROXIMATE LENGTH = (NONE) (FA-2 ENCASED) CA-6 BACKFILL

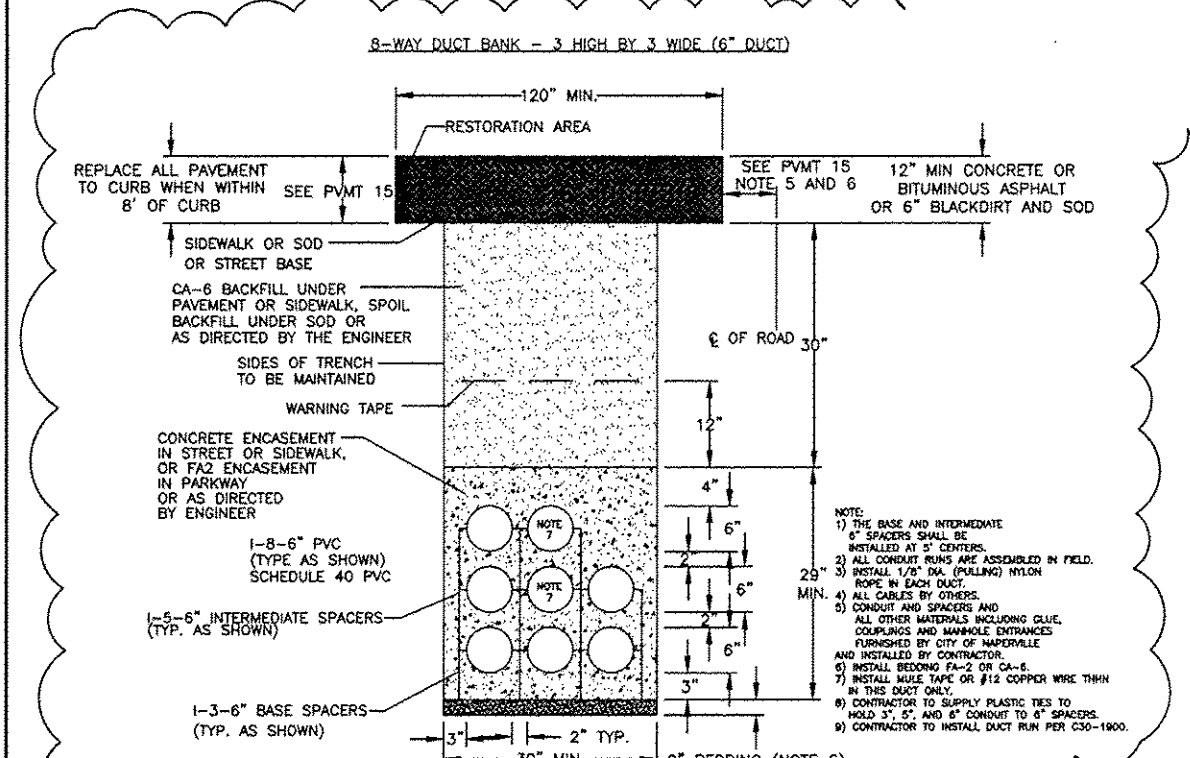
NOTE:  
1) THE BASE AND INTERMEDIATE 6" SPACERS SHALL BE INSTALLED AT 6" CENTERS.  
2) ALL CONDUIT RUNS ARE ASSEMBLED IN FIELD.  
3) INSTALL 1/8" DIA. (PULLING) NYLON ROPE IN EACH DUCT.  
4) ALL CABLES BY OTHERS.  
5) CONDUIT AND SPACERS AND ALL OTHER MATERIALS INCLUDING GLUE, COUPLINGS AND MANHOLE ENTRANCES FURNISHED BY CITY OF NAPERVILLE AND INSTALLED BY CONTRACTOR.  
6) INSTALL BEDDING FA-2 OR CA-6.  
7) INSTALL MULE TAPE OR #12 COPPER WIRE THIN IN THIS DUCT ONLY.  
8) CONTRACTOR TO SUPPLY PLASTIC TIES TO HOLD 3", 5", AND 6" CONDUIT TO 6" SPACERS.  
9) CONTRACTOR TO INSTALL DUCT RUN PER C30-1900.



**SECTION C-C**

CITY OF NAPERVILLE  
DEPARTMENT OF PUBLIC UTILITIES-ELECTRIC  
TYPICAL CONDUIT SECTION C-C  
APPROXIMATE LENGTH = (NONE) CONCRETE ENCASE SPOIL BACKFILL  
APPROXIMATE LENGTH = 1330 FEET CONCRETE ENCASE CA-6 BACKFILL  
APPROXIMATE LENGTH = 126 FEET (FA-2 ENCASED) SPOIL BACKFILL  
APPROXIMATE LENGTH = (NONE) (FA-2 ENCASED) CA-6 BACKFILL

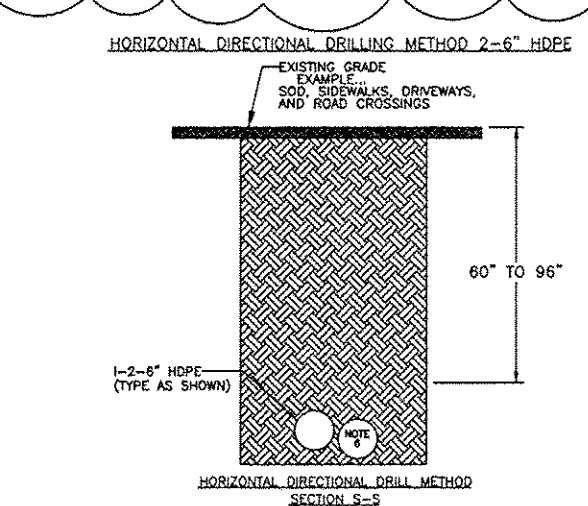
NOTE:  
1) THE BASE AND INTERMEDIATE 6" SPACERS SHALL BE INSTALLED AT 5" CENTERS.  
2) ALL CONDUIT RUNS ARE ASSEMBLED IN FIELD.  
3) INSTALL 1/8" DIA. (PULLING) NYLON ROPE IN EACH DUCT.  
4) ALL CABLES BY OTHERS.  
5) CONDUIT AND SPACERS AND ALL OTHER MATERIALS INCLUDING GLUE, COUPLINGS AND MANHOLE ENTRANCES FURNISHED BY CITY OF NAPERVILLE AND INSTALLED BY CONTRACTOR.  
6) INSTALL BEDDING FA-2 OR CA-6.  
7) INSTALL MULE TAPE OR #12 COPPER WIRE THIN IN THIS DUCT ONLY.  
8) CONTRACTOR TO SUPPLY PLASTIC TIES TO HOLD 3", 5", AND 6" CONDUIT TO 6" SPACERS.  
9) CONTRACTOR TO INSTALL DUCT RUN PER C30-1900.



**SECTION D-D**

CITY OF NAPERVILLE  
DEPARTMENT OF PUBLIC UTILITIES-ELECTRIC  
TYPICAL CONDUIT SECTION D-D  
APPROXIMATE LENGTH = 10 FEET CONCRETE ENCASE SPOIL BACKFILL  
APPROXIMATE LENGTH = (NONE) CONCRETE ENCASE CA-6 BACKFILL  
APPROXIMATE LENGTH = (NONE) (FA-2 ENCASED) SPOIL BACKFILL  
APPROXIMATE LENGTH = (NONE) (FA-2 ENCASED) CA-6 BACKFILL

NOTE:  
1) THE BASE AND INTERMEDIATE 6" SPACERS SHALL BE INSTALLED AT 5" CENTERS.  
2) ALL CONDUIT RUNS ARE ASSEMBLED IN FIELD.  
3) INSTALL 1/8" DIA. (PULLING) NYLON ROPE IN EACH DUCT.  
4) ALL CABLES BY OTHERS.  
5) CONDUIT AND SPACERS AND ALL OTHER MATERIALS INCLUDING GLUE, COUPLINGS AND MANHOLE ENTRANCES FURNISHED BY CITY OF NAPERVILLE AND INSTALLED BY CONTRACTOR.  
6) INSTALL BEDDING FA-2 OR CA-6.  
7) INSTALL MULE TAPE OR #12 COPPER WIRE THIN IN THIS DUCT ONLY.  
8) CONTRACTOR TO SUPPLY PLASTIC TIES TO HOLD 3", 5", AND 6" CONDUIT TO 6" SPACERS.  
9) CONTRACTOR TO INSTALL DUCT RUN PER C30-1900.



**SECTION E-E**

CITY OF NAPERVILLE  
DEPARTMENT OF PUBLIC UTILITIES-ELECTRIC  
TYPICAL CONDUIT SECTION E-E  
APPROXIMATE LENGTH = 185 FEET HORIZONTAL DIRECTIONAL DRILL METHOD

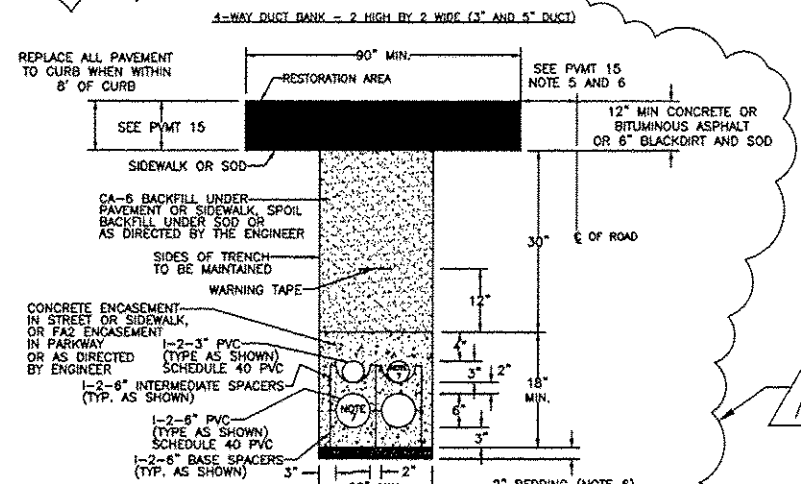
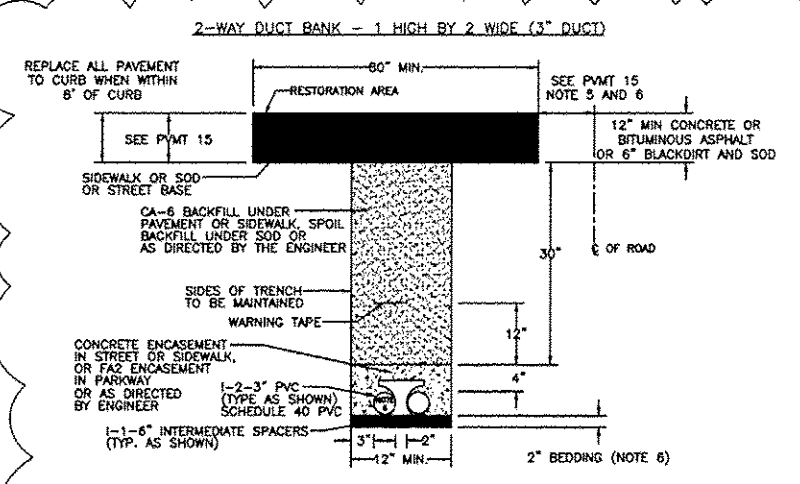
NOTE:  
1) ALL CONDUIT RUNS ARE ASSEMBLED IN FIELD.  
2) INSTALL 1/8" DIA. (PULLING) NYLON ROPE IN EACH DUCT.  
3) ALL CABLES BY OTHERS.  
4) CONDUIT AND SPACERS AND ALL OTHER MATERIALS INCLUDING GLUE, COUPLINGS AND MANHOLE ENTRANCES FURNISHED BY CITY OF NAPERVILLE AND INSTALLED BY CONTRACTOR.  
5) CONTRACTOR TO SUPPLY POLY TO PVC CONNECTOR OR POLY TO STEEL CONNECTOR.  
6) INSTALL MULE TAPE OR #12 COPPER WIRE THIN IN THIS DUCT ONLY.  
7) CONTRACTOR TO INSTALL DUCT RUN PER C30-1900.



ADDENDUM - 02-20-2013

PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAWING DATE	DATE	SCALE	DESIGNER	PROJECT #		
BCC	8-04-12	4211.4224	N.T.S.	DL	EU-12		
DESIGN BY	APPROVED BY	DATE	PROJECT #				
DL	PSM	N/A	EU-12				
CHECKED BY	APPROVED BY	CAD FILE	SHEET #				
		0061123001D6.DWG	6 OF 40				
Naperville			Department of Public Utilities			WORK REQUEST #	
			Electric Division			61123	

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-036-1	DUPAGE		
FED. ROAD DIST. NO.		ILLINOIS	CONTRACT 60R30	
		FED. AID PROJECT		

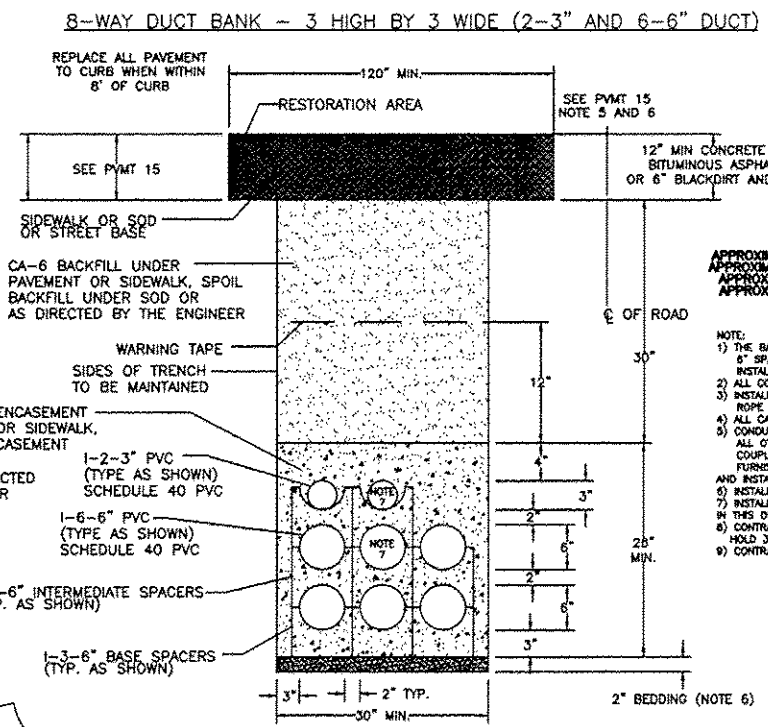


NOTE:  
 1) ALL CONDUIT RUNS ARE ASSEMBLED IN FIELD.  
 2) INSTALL 1/8" DIA. (PULLING) NYLON ROPE IN EACH DUCT.  
 3) CABLES BY OTHERS.  
 4) ALL OTHER MATERIALS INCLUDING GLUE, COUPLINGS AND MANHOLE ENTRANCES FURNISHED BY CITY OF NAPERVILLE AND INSTALLED BY CONTRACTOR.  
 5) INSTALL BEDDING PA-2 OR CA-8.  
 6) INSTALL MULE TAPE OR #12 COPPER WIRE THRU IN THIS DUCT ONLY.  
 7) CONTRACTOR TO INSTALL DUCT RUN PER C30-1900.

CITY OF NAPERVILLE  
 DEPARTMENT OF PUBLIC UTILITIES-ELECTRIC  
 TYPICAL CONDUIT SECTION J-J  
 APPROXIMATE LENGTH = (NONE) CONCRETE ENCASE SPOIL BACKFILL  
 APPROXIMATE LENGTH = 425 FEET CONCRETE ENCASE CA-8 BACKFILL  
 APPROXIMATE LENGTH = 18 FEET (FA2 ENCASED) SPOIL BACKFILL  
 APPROXIMATE LENGTH = (NONE) (FA2 ENCASED) CA-8 BACKFILL

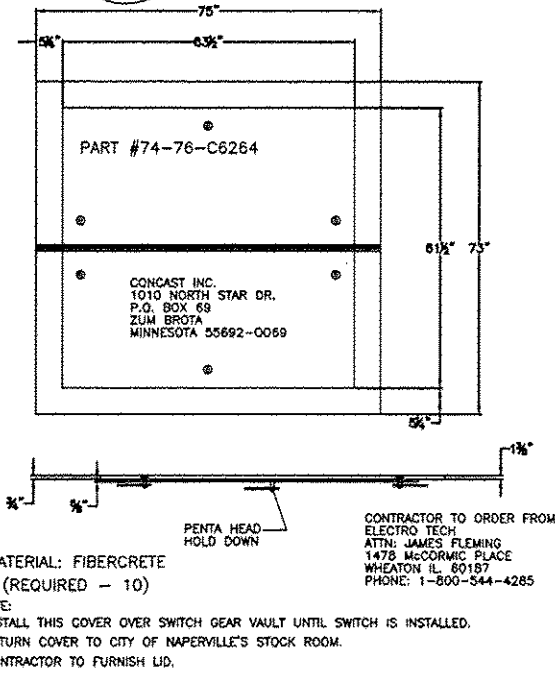
NOTE:  
 1) THE BASE AND INTERMEDIATE 6" SPACERS SHALL BE INSTALLED AT 5" CENTERS.  
 2) ALL CONDUIT RUNS ARE ASSEMBLED IN FIELD.  
 3) INSTALL 1/8" DIA. (PULLING) NYLON ROPE IN EACH DUCT.  
 4) ALL CABLES BY OTHERS.  
 5) CONDUIT AND SPACERS AND ALL OTHER MATERIALS INCLUDING GLUE, COUPLINGS AND MANHOLE ENTRANCES FURNISHED BY CITY OF NAPERVILLE AND INSTALLED BY CONTRACTOR.  
 6) CONTRACTOR TO SUPPLY PLASTIC TIES TO HOLD 3", 5", AND 6" CONDUIT TO 6" SPACERS.  
 7) CONTRACTOR TO INSTALL DUCT RUN PER C30-1900.

CITY OF NAPERVILLE  
 DEPARTMENT OF PUBLIC UTILITIES-ELECTRIC  
 TYPICAL CONDUIT SECTION K-K  
 APPROXIMATE LENGTH = (NONE) CONCRETE ENCASE SPOIL BACKFILL  
 APPROXIMATE LENGTH = 280 FEET (FA2 ENCASED) SPOIL BACKFILL  
 APPROXIMATE LENGTH = (NONE) (FA2 ENCASED) CA-8 BACKFILL

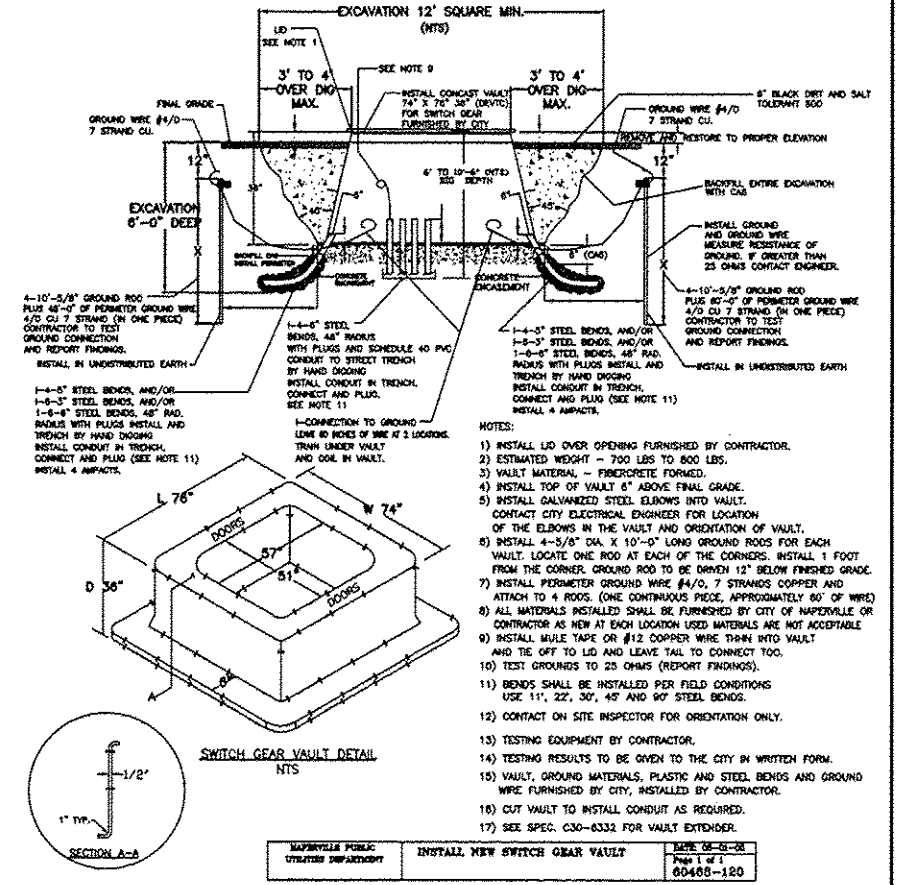


NOTE:  
 1) THE BASE AND INTERMEDIATE 6" SPACERS SHALL BE INSTALLED AT 5" CENTERS.  
 2) ALL CONDUIT RUNS ARE ASSEMBLED IN FIELD.  
 3) INSTALL 1/8" DIA. (PULLING) NYLON ROPE IN EACH DUCT.  
 4) ALL CABLES BY OTHERS.  
 5) CONDUIT AND SPACERS AND ALL OTHER MATERIALS INCLUDING GLUE, COUPLINGS AND MANHOLE ENTRANCES FURNISHED BY CITY OF NAPERVILLE AND INSTALLED BY CONTRACTOR.  
 6) CONTRACTOR TO SUPPLY PLASTIC TIES TO HOLD 3", 5", AND 6" CONDUIT TO 6" SPACERS.  
 7) CONTRACTOR TO INSTALL DUCT RUN PER C30-1900.

CITY OF NAPERVILLE  
 DEPARTMENT OF PUBLIC UTILITIES-ELECTRIC  
 TYPICAL CONDUIT SECTION L-L  
 APPROXIMATE LENGTH = (NONE) CONCRETE ENCASE SPOIL BACKFILL  
 APPROXIMATE LENGTH = 80 FEET CONCRETE ENCASE CA-8 BACKFILL  
 APPROXIMATE LENGTH = (NONE) (FA2 ENCASED) SPOIL BACKFILL  
 APPROXIMATE LENGTH = (NONE) (FA2 ENCASED) CA-8 BACKFILL



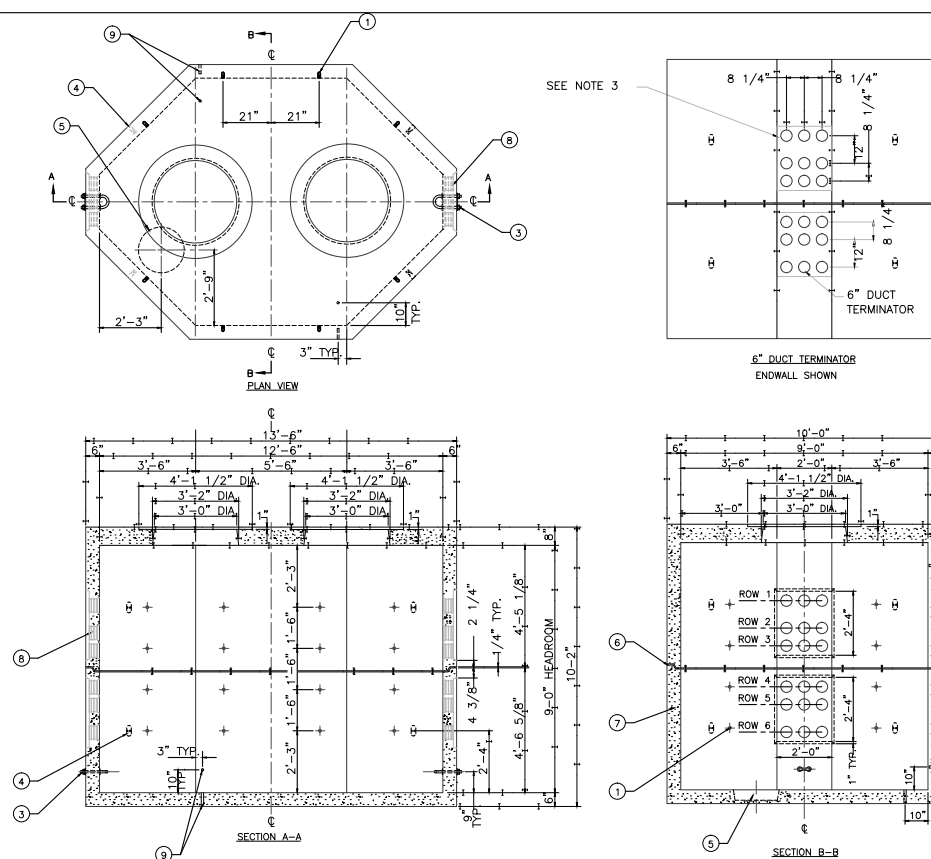
NAPERVILLE PUBLIC UTILITIES DEPARTMENT	SWITCH GEAR VAULT COVER (60 LBS.) (CONSTRUCTION SPECIFICATION)	DATE 08-01-08 Page 1 of 1 00468-110
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ADDENDUM - A 02-20-2013

PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	BCC	DATE	8-04-12	REV #	4211.4224	SCALE	N.T.S.
DESIGNED BY	DL	DESIGNED BY	PSM	DATE	N/A	PROJECT #	EU-12
CHECKED BY		APPROVED BY		CAD FILE	006112300107.DWG	SHEET #	7 OF 40
Naperville				Department of Public Utilities Electric Division			
				WORK REQUEST # 61123			

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT 60P42	
		FED. AID PROJECT		

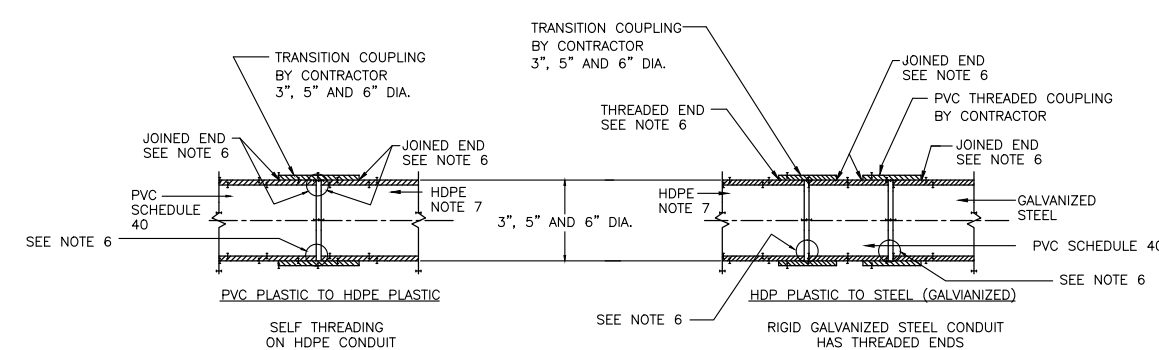


ITEM	DESCRIPTION	QTY	NOTE
	TOTAL MANHOLE WEIGHT	5000	42,470 LBS.
7	TOP SECTION WEIGHT	P.S.I. CONC.	21,470 LBS.
	BASE SECTION WEIGHT		21,000 LBS.
7	REBAR, EPOXY COATED		2
9	1" x 5 1/2" GROUND WIRE HOLE, 1/2" KNOCKOUT	4	
8	6" DUCT TERMINATORS	36	3
6	1" BUTYL RUBBER JOINT SEALANT	4 ROLLS	
5	IBT SUMP DEPRESSION	1	
4	6" LIFTING ANCHORS	8	
3	1" S.S. PULLING IRONS	2	4
1	CABLE RACK INSERTS: 1/2" 304 STAINLESS STEEL THREADED INSERTS EACH WITH 1/2" x 2" 304 S.S. HEX HEAD BOLT, 1/2" S.S. WASHER, AND 1/2" PVC WASHER	32	

- NOTES:
- CONCRETE: 5000 psi @ 28 DAYS, 5%-8% ENTRAINED AIR, 4" MAX. SLUMP.
  - REBAR: ASTM A-615 GRD. 60, EPOXY COATED.
  - DUCT ENTRANCE: SINGLE DUCT TERMINATORS TO ACCEPT 6" DIAMETER SCH. 40 PVC CONDUIT. SEE DETAIL THIS SHEET.
  - PLEASE NOTE PULLING IRON DESIGNED AS PER A.C.I. 318 FOR WORKING LOAD CAPACITY OF 28,000 POUNDS APPLIED CONCENTRIC TO THE MAJOR AXIS OF THE PULLING IRON.
  - IDENTIFICATION: IMPRESSED INTO CEILING OF VAULT.
  - DESIGN CRITERIA:
    - DESIGNED AND BUILT IN ACCORDANCE WITH ASTM C858 "STANDARD SPECIFICATION FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES".
    - ALL LOADING AS PER ASTM C857 "MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES" INCLUDING:
      - EARTH COVER: MIN. 2.0', MAX. 5.0'.
      - AASHTO HS-20 WHEEL LOAD AND APPLICABLE IMPACT.
      - VERTICAL AND LATERAL SOIL PRESSURES DETERMINED USING A SOIL DENSITY OF 120 PCF.
      - GROUNDWATER AT 3'-0" BELOW GRADE.
    - STRUCTURAL DESIGN PERFORMED USING AASHTO STRENGTH DESIGN METHOD.
    - REINFORCING COVER REQUIREMENTS AS PER ACI 318.
  - SEE SPECIFICATION C30-1900 FOR ROW IDENTIFICATION WITH CONDUIT.

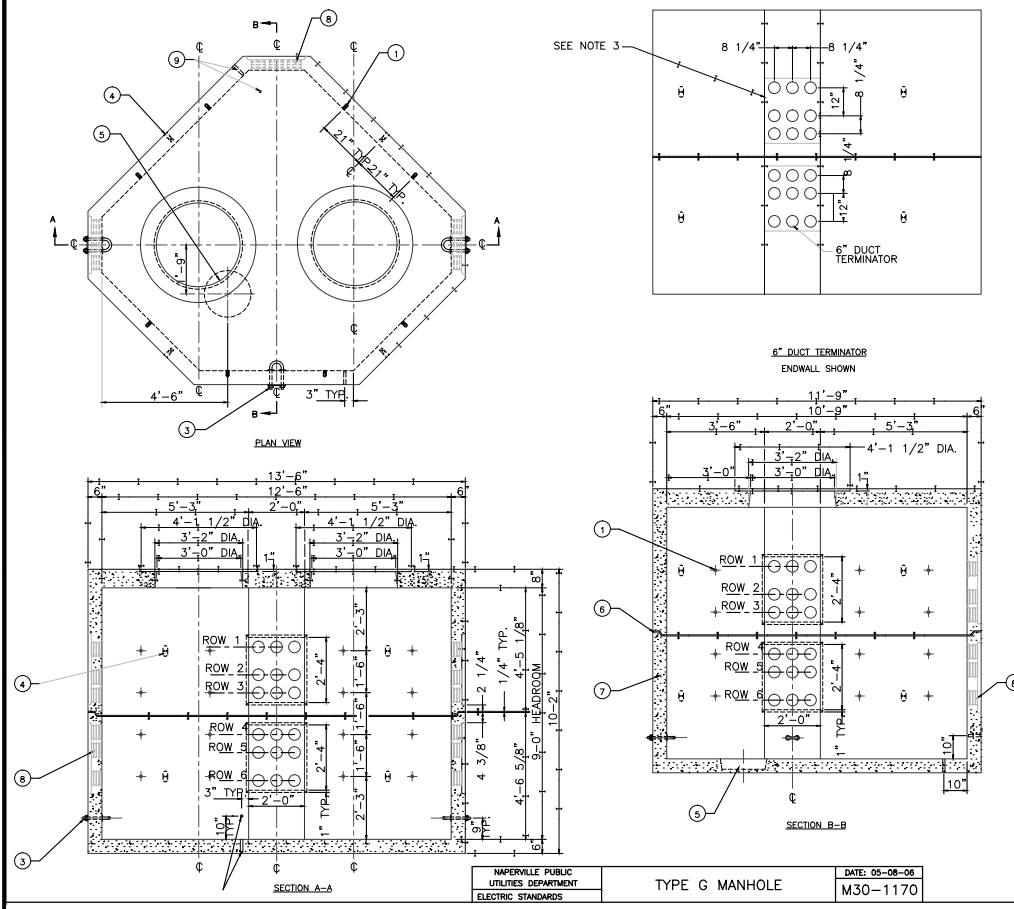
NAPERVILLE PUBLIC UTILITIES DEPARTMENT	TYPE E MANHOLE	DATE: 05-08-06
ELECTRIC STANDARDS		M30-1160

3, 5 AND 6 INCH PLASTIC TRANSITION CONDUIT COUPLINGS  
PVC TO HDPE  
GALVANIZED STEEL TO HDPE



- NOTES:
- CONTRACTOR SHALL SUPPLY TRANSITION COUPLING TO GO FROM HDPE TO STEEL AND HDPE TO PVC SCHEDULE 40.
  - THE COST OF THIS MATERIAL IS INCLUDED IN UNIT PRICES FOR VAULTS AND HANDHOLES, PLUG CANS, FUSE CANS, SIDE WALK SPLICE BOXES AND CONDUIT.
  - THE CONTRACTOR SHALL SUPPLY ALL TRANSITION COUPLINGS.
  - THE CONTRACTOR SHALL NOT USE TRANSITION COUPLING TO CONNECT HDPE TO HDPE IN THE MAIN LINE. ALL MAINLINE CONNECTIONS SHALL BE BUTT FUSED.
  - CONTRACTOR TO USE ELECTROFUSION PROCESS AT ALL TIMES TO MAKE HDPE TO HDPE CONNECTIONS.
  - CONTRACTOR TO ASSEMBLE, CUT, ALIGN, BEVEL, AND FIT TO CREATE A SMOOTH INSIDE INTERFACE AT CONNECTION POINT.
  - HDPE, PVC AND STEEL CONDUIT HAVE DIFFERENT INSIDE DIAMETER.
  - ENCASE IN CONCRETE FOR 5 FEET.

PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
DESIGN BY	DRAWN BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
CHECKED BY	APPROVED BY	CAD FILE	SHEET #				
		0061123001D8.DWG	8 OF 40				
Naperville			Department of Public Utilities		WORK REQUEST #		
			Electric Division		61123		

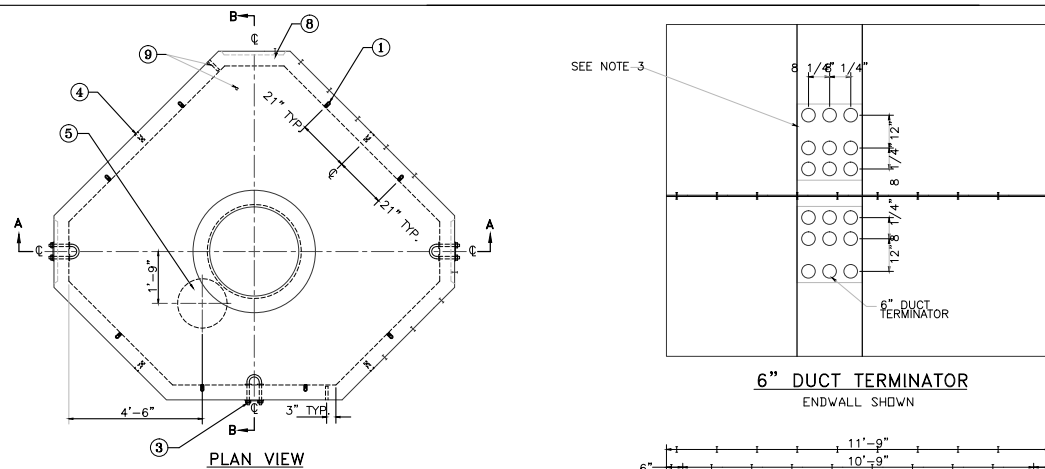


ITEM	DESCRIPTION	QTY	NOTE
	TOTAL MANHOLE WEIGHT	5000	45,470 LBS.
7	TOP SECTION WEIGHT	P.S.I. CONC.	23,470 LBS.
	BASE SECTION WEIGHT		22,000 LBS.
7	REBAR, EPOXY COATED		2
9	1" x 5 1/2" GROUND WIRE HOLE, 1/2" KNOCKOUT	4	
6	6" DUCT TERMINATORS	54	3
6	1" BUTYL RUBBER JOINT SEALANT	4 ROLLS	
5	IBT SUMP DEPRESSION	1	
4	6" LIFTING ANCHORS	8	
3	1" S.S. PULLING IRONS	3	4
1	CABLE RACK INSERTS: 1/2" 304 STAINLESS STEEL THREADED INSERT EACH WITH 1/2" x 2" 304 S.S. HEX HEAD BOLT, 1/2" S.S. WASHER, AND 1/2" PVC WASHER	32	

- NOTES:
- CONCRETE: 5000 psi @ 28 DAYS, 5%-8% ENTRAINED AIR, 4" MAX. SLUMP.
  - REBAR: ASTM A-615 GRD. 60, EPOXY COATED.
  - PULLING IRON: 1" STAINLESS STEEL.
  - ADD GROUND ROD KNOCKOUTS IN FLOOR AND WALLS.
  - RACKING INSERTS: STAINLESS STEEL.
  - IDENTIFICATION: IMPRESSED INTO CEILING OF VAULT.
  - DESIGN CRITERIA:
    - DESIGNED AND BUILT IN ACCORDANCE WITH ASTM C858 "STANDARD SPECIFICATION FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES".
    - ALL LOADING AS PER ASTM C857 "MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES" INCLUDING:
      - EARTH COVER: MIN. 2.0', MAX. 5.0'.
      - AASHTO HS-20 WHEEL LOAD AND APPLICABLE IMPACT.
      - VERTICAL AND LATERAL SOIL PRESSURES DETERMINED USING A SOIL DENSITY OF 120 PCF.
      - GROUNDWATER AT 3'-0" BELOW GRADE.
    - STRUCTURAL DESIGN PERFORMED USING AASHTO STRENGTH DESIGN METHOD.
    - REINFORCING COVER REQUIREMENTS AS PER ACI 318.
  - SEE SPECIFICATION C30-1900 FOR ROW IDENTIFICATION WITH CONDUIT.

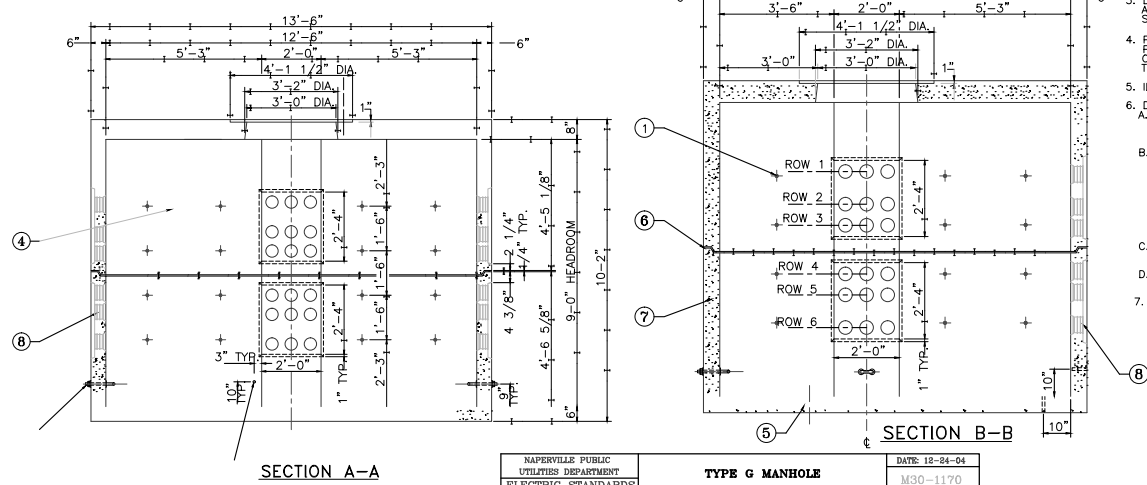
NAPERVILLE PUBLIC UTILITIES DEPARTMENT	TYPE G MANHOLE	DATE: 05-08-06
ELECTRIC STANDARDS		M30-1170

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-1	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT 60P42 FED. AID PROJECT	



ITEM	DESCRIPTION	QTY	NOTE
	TOTAL MANHOLE WEIGHT	4500	46,000 LBS.
	TOP SECTION WEIGHT	P.S.I.	24,000 LBS.
	BASE SECTION WEIGHT	CONC.	22,000 LBS.
1	REBAR, EPOXY COATED	1	2
2	1/2" x 5 1/2" GROUND WIRE HOLE	4	
3	1/2" KNOCKOUT	1	
4	6" DUCT TERMINATORS	54	3
5	1" BUTYL RUBBER JOINT SEALANT	4 ROLLS	
6	1BT SUMP DEPRESSION	1	
7	6" LIFTING ANCHORS	8	
8	1" S.S. PULLING IRONS	5	4
9	CABLE RACK INSERTS: 1/2" 304 STAINLESS STEEL THREADED INSERTS EACH WITH 1/2" x 2" 304 S.S. HEX HEAD BOLT, 1/2" S.S. WASHER, AND 1/2" PVC WASHER	32	

- NOTES:**
- CONCRETE: 4500 psi @ 28 DAYS, 5%-8% ENTRAINED AIR, 4" MAX. SLUMP.
  - REBAR: ASTM A-615 GRD. 60, EPOXY COATED.
  - DUCT ENTRANCE: SINGLE DUCT TERMINATORS TO ACCEPT 6" DIAMETER SCH. 40 PVC CONDUIT. SEE DETAIL THIS SHEET.
  - PLEASE NOTE PULLING IRON DESIGNED AS PER ACI 318 FOR WORKING LOAD CAPACITY OF 28,000 POUNDS APPLIED COINCIDENT TO THE MAJOR AXIS OF THE PULLING IRON.
  - IDENTIFICATION: IMPRESSED INTO CEILING OF VAULT.
  - DESIGN CRITERIA:  
A.) DESIGNED AND BUILT IN ACCORDANCE WITH ASTM C858 STANDARD SPECIFICATION FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.  
B.) ALL LOADING AS PER ASTM C857 "MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES" INCLUDING:  
- EARTH COVER: MIN. 2'-0", MAX. 5'-0"  
- AASHTO HS-20 WHEEL LOAD AND APPLICABLE IMPACT.  
- VERTICAL AND LATERAL SOIL PRESSURES DETERMINED USING A SOIL DENSITY OF 120 PCF.  
- GROUNDWATER AT 3'-0" BELOW GRADE.  
C.) STRUCTURAL DESIGN PERFORMED USING AASHTO STRENGTH DESIGN METHOD.  
D.) REINFORCING COVER REQUIREMENTS AS PER ACI 318.
  - SEE SPECIFICATION C30-1900 FOR ROW IDENTIFICATION WITH CONDUIT.



NAPERVILLE PUBLIC UTILITIES DEPARTMENT  
ELECTRIC STANDARDS

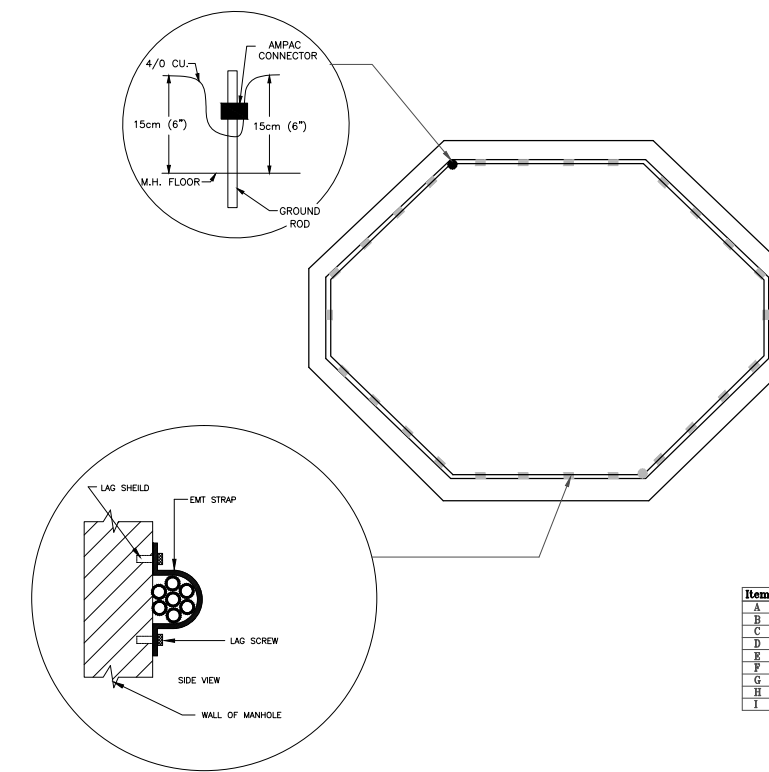
**TYPE G MANHOLE**

DATE: 12-24-04  
M30-1170

PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
GIS DESIGN BY	DRAFTED BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
CHECKED BY	APPROVED BY	CAD FILE	SHEET #				
		0061123001D9.DWG	9 OF 40				
Naperville			Department of Public Utilities Electric Division			WORK REQUEST # 61123	



F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60R42</del>	
		FED. AID PROJECT		



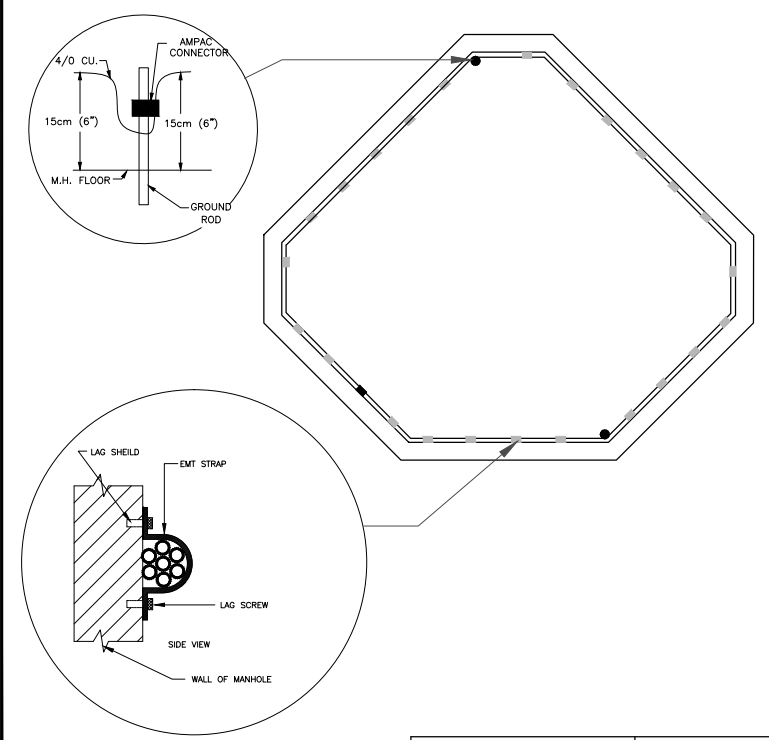
UGMH: GROUNDING MANHOLE

Item	Item Code	Description 1	Description 2	UGMH Qty	UGMHG Qty	UGMHR Qty	UGMC Qty
A	280 107 00070	CU BARE SD	4/0 7-STR	40	40		200
B	283 156 00030	GROUND ROD, COPPER CLAD	5/8" X 5' USE 10 FOOTER	4		4	4
C	283 156 00040	COUPLING, BRONZE	5/8" ROD	2		2	2
D	284 199 00480	LAG SHIELD, LEAD SHORT	1/4"	28			
E	284 199 00470	LAG SCREW, SS	1/4" X 1"	28	28		
F	285 199 00200	STRAP, EMT	1/2" SS	28	28		
G	286 100 00280	CONNECTOR, WEDGE CU	4/0 STR(7) - 4/0 STR(7)	1			2
H	286 100 00320	CONNECTOR, WEDGE CU	4/0 STR(7) - 5/8" ROD	2			2
I	286 101 00010	SHELL, WEDGE AMP	WHITE	3		3	

- KEEP 4/0 CU IN ONE PIECE AROUND INNER WALL; TIE TOGETHER WITH ONE AMPAC.
- 4/0 IS SUPPORTED ALONG INNER WALL OF M.H., 15cm (6") ABOVE M.H. FLOOR, AT (2 FOOT) INTERVALS.
- COPPER STRAP AND LEAD ANCHOR SHALL BE INSTALL AT 60cm (TWO FOOT) INTERVALS.
- THE TWO KNOCKOUTS IN THE FLOOR SHOULD BE USED. IF SOLID ROCK IS ENCOUNTERED UNDER THE MANHOLE, REFER TO ENGINEERING.
- TWO 1.5 METER (5') GROUND RODS AND ONE COUPLING SHOULD BE INSTALLED WITH A DRIVING STUD PER KNOCKOUT.
- SEE STANDARD C30-0020 FOR COUNTERPOISE IF TYPICAL DRIVEN GROUNDS ARE IMPOSSIBLE.

ASSEMBLY CODES		
CODE	QTY	DESCRIPTION
UGMH	1	GROUNDING MANHOLE

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	GROUNDING DETAIL TYPE "E" MANHOLE	DATE: 03-17-04 C30-1160
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UGMH: GROUNDING MANHOLE

Item	Item Code	Description 1	Description 2	UGMH Qty	UGMHG Qty	UGMHR Qty	UGMC Qty
A	280 107 00070	CU BARE SD	4/0 7-STR	40	40		200
B	283 156 00030	GROUND ROD, COPPER CLAD	5/8" X 5' USE 10 FOOTER	4		4	4
C	283 156 00040	COUPLING, BRONZE	5/8" ROD	2		2	2
D	284 199 00480	LAG SHIELD, LEAD SHORT	1/4"	28			
E	284 199 00470	LAG SCREW, SS	1/4" X 1"	28	28		
F	285 199 00200	STRAP, EMT	1/2" SS	28	28		
G	286 100 00280	CONNECTOR, WEDGE CU	4/0 STR(7) - 4/0 STR(7)	1			2
H	286 100 00320	CONNECTOR, WEDGE CU	4/0 STR(7) - 5/8" ROD	2			2
I	286 101 00010	SHELL, WEDGE AMP	WHITE	3		3	

- KEEP 4/0 CU IN ONE PIECE AROUND INNER WALL; TIE TOGETHER WITH ONE AMPAC.
- 4/0 IS SUPPORTED ALONG INNER WALL OF M.H., 15cm (6") ABOVE M.H. FLOOR, AT (2 FOOT) INTERVALS.
- COPPER STRAP AND LEAD ANCHOR SHALL BE INSTALL AT 60cm (TWO FOOT) INTERVALS.
- THE TWO KNOCKOUTS IN THE FLOOR SHOULD BE USED. IF SOLID ROCK IS ENCOUNTERED UNDER THE MANHOLE, REFER TO ENGINEERING.
- TWO 1.5 METER (5') GROUND RODS AND ONE COUPLING SHOULD BE INSTALLED WITH A DRIVING STUD PER KNOCKOUT.
- SEE STANDARD C30-0020 FOR COUNTERPOISE IF TYPICAL DRIVEN GROUNDS ARE IMPOSSIBLE.

ASSEMBLY CODES		
CODE	QTY	DESCRIPTION
UGMH	1	GROUNDING MANHOLE

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	GROUNDING DETAIL TYPE "C" MANHOLE	DATE: 03-17-04 C30-1170
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NOTES:

- ALL MANHOLES SHALL BE INSTALLED AND GROUNDS INSTALLED AND GROUND RODS TESTED IMMEDIATELY.
- IF TESTING INDICATES A GROUND RESISTANCE MORE THAN 25 OHMS ADDITIONAL RODS NEED TO BE ADDED OR COUNTER POISE INSTALLED.
- THE COUNTER POISE IF REQUIRED, WILL BE INSTALLED IN THE TRENCH WHEN THE DUCT IS INSTALLED. INSTALL 4/0 BARE 7-STRAND COPPER WIRE THRU THE 2-KNOCKOUTS IN WALL. TRAIN AROUND MANHOLE TO DUCT RUNS AND INSTALL 200 FEET OF COUNTER POISE IN TWO DIRECTIONS FROM MANHOLE ABOVE DUCT AND BEFORE BACK FILLING.
- CONTRACTOR IS ADVISED IF THE DUCT IS INSTALLED PRIOR TO MANHOLE WORK, THE CONTRACTOR SHALL TEST SOIL RESISTANCE AT MANHOLE LOCATION PRIOR TO INSTALLING DUCT.
- AFTER COUNTER POISE IS INSTALLED GROUNDS SHALL BE RETESTED AND FINDINGS GIVEN TO THE CITY.

PROJECT TITLE ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION DETAILS AND STANDARDS			
ENGINEER BCC	DRAFTING DATE 8-04-12	MAP # 4211,4224	SCALE N.T.S.
GIS DESIGN BY DL	DRAFTED BY PSM	REVISIONS DATE N/A	PROJECT # EU-12
CHECKED BY	APPROVED BY	CAD FILE 0061123001D10DWG	SHEET # 10 OF 40
Naperville Department of Public Utilities Electric Division			WORK REQUEST # 61123

# GROUND ELECTRODE MEASUREMENT

## SCOPE:

GROUNDING TESTS SHALL BE DONE FOR MANHOLE GROUNDS, GROUND ROD CONNECTIONS AND COUNTERPOISE CONNECTIONS TO ENSURE THE INTEGRITY OF THE ELECTRODE INSTALLATION. TESTING OF THE GROUND SYSTEM AND CONNECTIONS SHALL BE DONE USING THE CLAMP-ON RESISTANCE TEST METHOD FOR GROUND RODS AND COUNTERPOISE.

CLAMP-ON GROUND RESISTANCE TEST (NORMAL TEST) /  
THREE POINT FALL OF POTENTIAL TEST (NORMAL TEST)

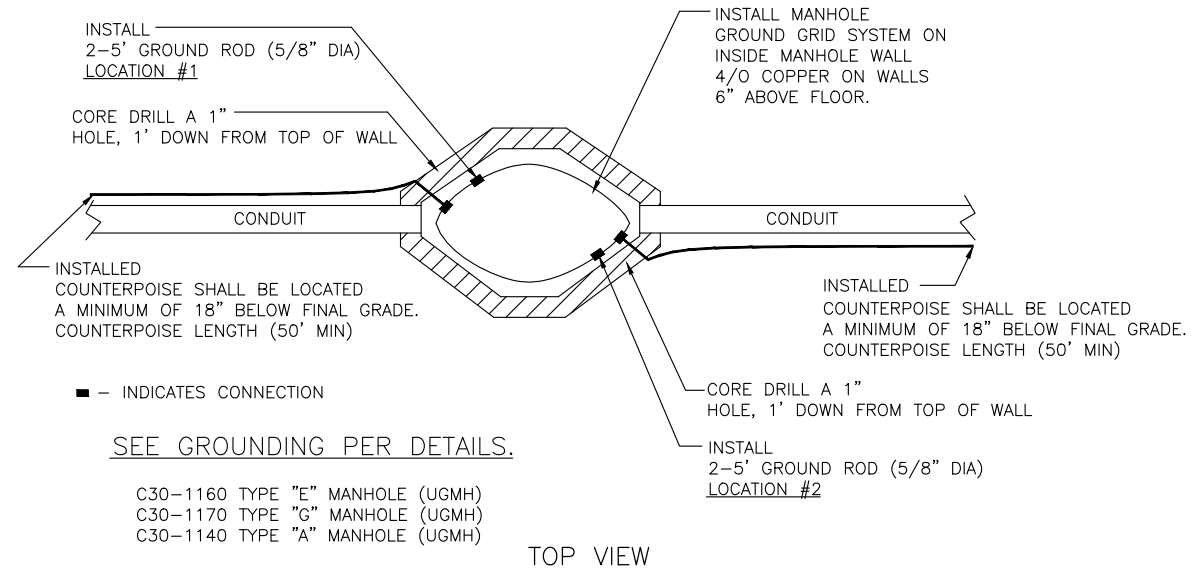
TESTS SHALL BE PERFORMED WHEN THE GROUND IS NOT FROZEN TO ELIMINATE HIGH RESISTANCE READINGS IN THE MANHOLES. THE CLAMP ON TEST SHALL BE DONE AT EACH GROUND ROD AND COUNTERPOISE CONNECTION AND FROM THE MANHOLE PERIMETER GROUND CABLE TO THE GROUND ROD. AEMC INSTRUMENT MODEL 3710, 3730, OR EQUIVALENT MAY BE USED. THE CLAMP ON GROUND METER SHALL CLAMPED ON TO THE POWER NEUTRAL BETWEEN THE UTILITY TRANSFORMER, POLE GROUND, SWITCH GEAR GROUND AND THE SITE GROUND. THE USER MUST BE AWARE THAT A 0.7 READING INDICATION A CONTINUITY LOOP AND NOT A GROUND RESISTANCE. IF A POWER NEUTRAL IS NOT CLOSE TO THE NEW INSTALLATION THEN THE THREE POINT FALL OF  $\Omega$  POTENTIAL, GROUND RESISTANCE CAN BE USED.

ALL TESTING MATERIAL AND TOOLS ARE FURNISHED BY THE CONTRACTOR. THIS SPECIFICATION IS USED TO TEST HANDHOLES, SWITCH GEAR VAULTS, MANHOLES, TRANSFORMER VAULTS AND OTHER EQUIPMENT AS DIRECTED.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	GROUNDING WITH GROUND RODS (DETAIL)	DATE: 05-01-05 Page 1 of 7 56270-100
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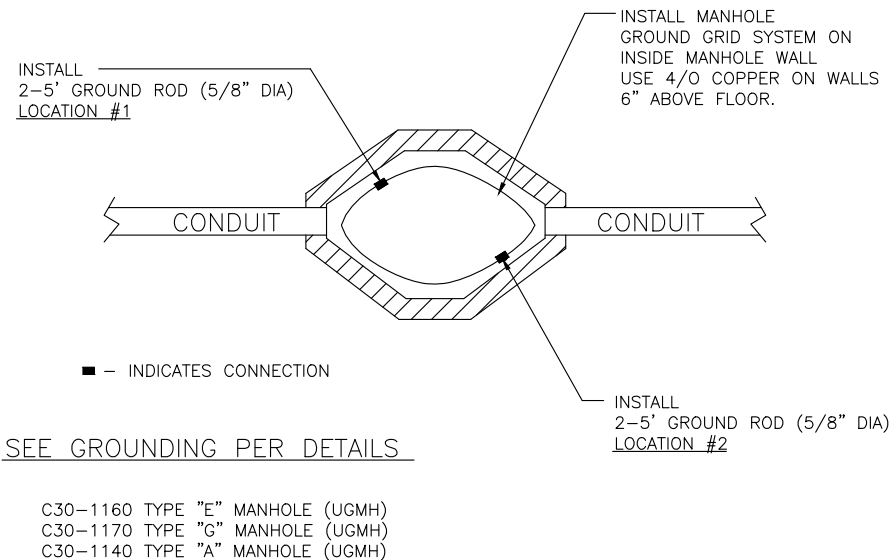
# CLAMP ON METER TEST STANDARD MANHOLE

(GROUNDING WITH GROUND RODS AND COUNTERPOISE)



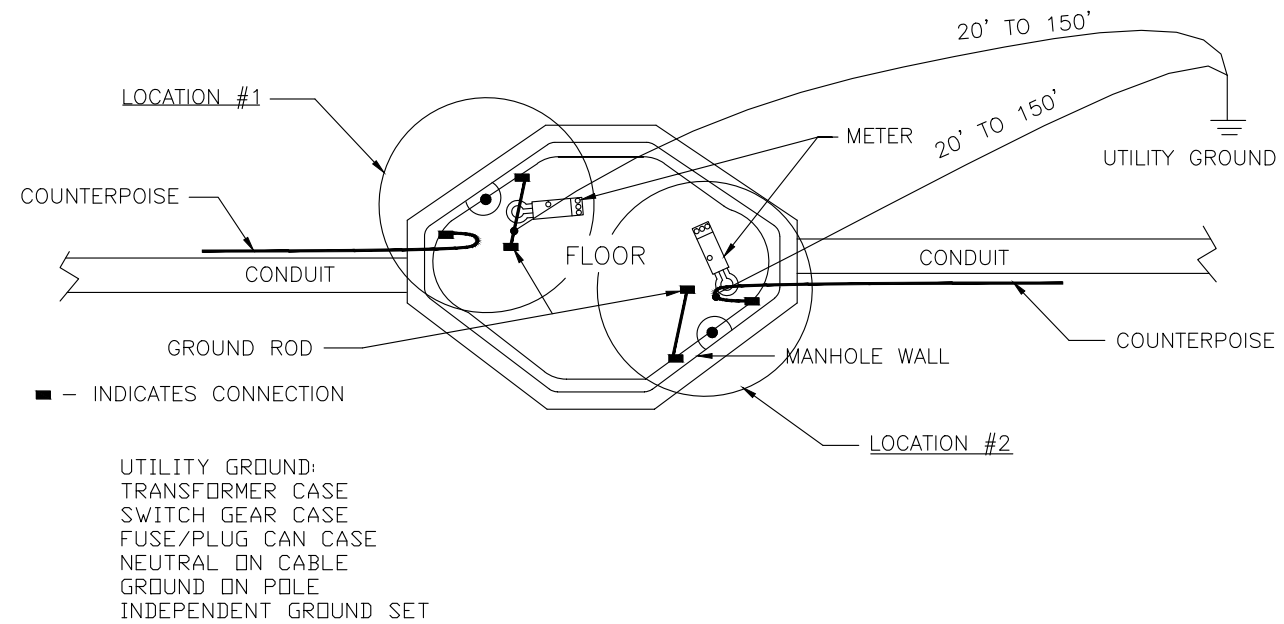
NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	GROUNDING WITH GROUND RODS (DETAIL)	DATE: 05-01-05 Page 2 of 7 56270-100
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# STANDARD MANHOLE (GROUNDING WITH RODS)



NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	GROUNDING WITH GROUND RODS (DETAIL)	DATE: 05-01-05 Page 3 of 7 56270-100
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# PLACEMENT OF METER FOR READING

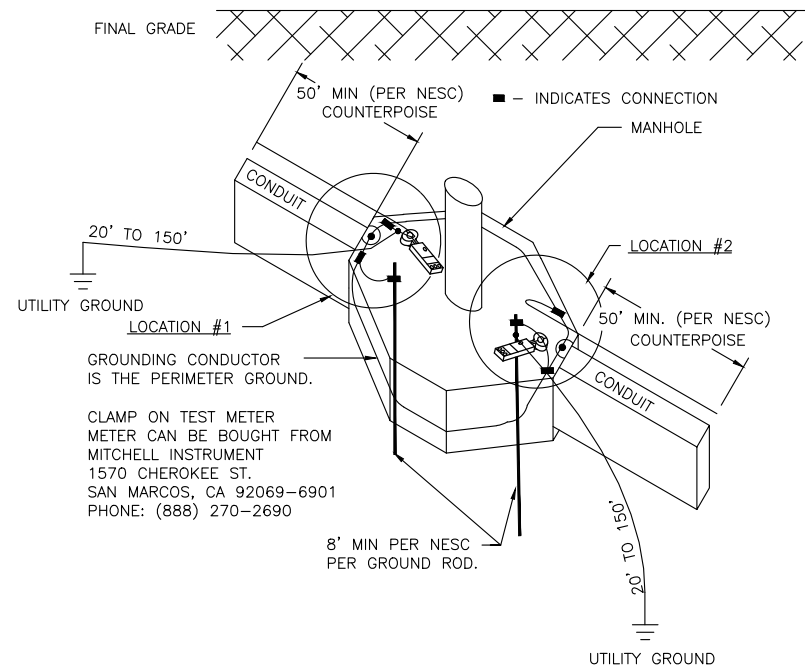


NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	GROUNDING WITH GROUND RODS (DETAIL)	DATE: 05-01-05 Page 4 of 7 56270-100
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F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035	DUPAGE		
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT	
CONTRACT 60R42				

PROJECT TITLE ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION DETAILS AND STANDARDS				
ENGINEER BCC	DRAFTING DATE 8-04-12	MAP # 4211,4224	SCALE N.T.S.	
GIS DESIGN BY DL	DRAFTED BY PSM	REVISIONS DATE N/A	AT&T JOINT AGREEMENT # N/A	PROJECT # EU-12
CHECKED BY	APPROVED BY	CAD FILE 0061123001D11.DWG	SHEET # 11 OF 40	
Naperville Department of Public Utilities Electric Division				WORK REQUEST # 61123

### SAMPLE INSTALLATION (CLAMP ON METER)



**NOTE:**

OBSERVE ALL SAFETY REQUIREMENTS AND THEN REMOVE COVERING ON THE GROUND CONDUCTOR IF PRESENT AND PROVIDE SUFFICIENT ROOM FOR THE MODEL 3710/3730 JAWS, WHICH MUST BE ABLE TO CLOSE EASILY AROUND THE CONDUCTOR. THE JAWS CAN BE PLACED AROUND THE GROUND ROD ITSELF.  
 NOTE: THE CLAMP MUST BE PLACED SO THAT THE JAWS ARE IN AN ELECTRICAL PATH FROM THE SYSTEM NEUTRAL OR GROUND WIRE TO THE GROUND ROD, OR COUNTERPOISE.

SELECT THE CURRENT RANGE "A". CLAMP ONTO THE GROUND CONDUCTOR AND MEASURE THE GROUND CURRENT. THE MAXIMUM CURRENT RANGE IS 30 A. IF THE GROUND CURRENT EXCEEDS 5 A, GROUND RESISTANCE MEASUREMENTS ARE NOT POSSIBLE. DO NOT PROCEED FURTHER WITH THE MEASUREMENT. REMOVE THE CLAMP-ON TESTER FROM THE CIRCUIT, NOTING THE LOCATION FOR MAINTENANCE, AND CONTINUE TO THE NEXT TEST LOCATION. RECORD CURRENT ON DATA SHEET.

AFTER NOTING THE GROUND CURRENT, SELECT THE GROUND RESISTANCE RANGE  $\Omega$  (OHM) AND MEASURE THE RESISTANCE DIRECTLY. THE READING YOU MEASURE WITH THE 3710/3730 INDICATES THE RESISTANCE OF THE ROD, RESISTANCE OF THE COUNTERPOISE, BUT ALSO OF THE CONNECTION TO THE SYSTEM NEUTRAL AND ALL BONDING CONNECTIONS BETWEEN THE NEUTRAL AND THE ROD.

RECORD 2 OR 4 RESISTANCE READINGS ON DATA SHEET. IF ANY ONE READING IS ABOVE 25 OHMS, CONTACT DPU-E IMMEDIATELY.  
 SEND COMPLETED DATA SHEET TO THE PROJECT ENGINEER AND RECORDS.

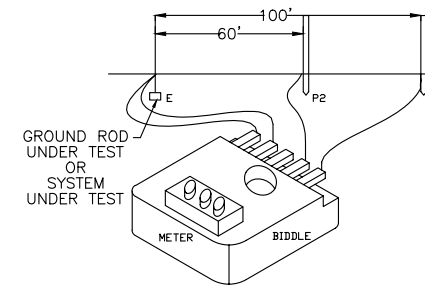
NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	GROUNDING WITH GROUND RODS (DETAIL)	DATE: 05-01-05 Page 5 of 7 56270-100
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### DATA SHEET FOR RECORDING GROUND RESISTANCE BY THE FALL OF POTENTIAL METHOD.

F.A.P. RTE. 338/IL 59	SECTION <del>2011-035</del>	COUNTY DUPAGE	TOTAL SHEETS	SHEET NO.
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60R42</del> FED. AID PROJECT	

TYPE OF METER AND MFG.: \_\_\_\_\_  
 MANHOLE NUMBER + TYPE: \_\_\_\_\_  
 POLE NUMBER + SIZE: \_\_\_\_\_  
 STREET ADDRESS: \_\_\_\_\_  
 NAME OF PERSON PERFORMING TEST: \_\_\_\_\_  
 W.F. # \_\_\_\_\_  
 TEMPERATURE (AIR): \_\_\_\_°F  
 SIZE OF GROUND RODS: 5/8 DIA COPPER CLAD, UNLESS NOTED  
 SIZE OF CABLE FOR GROUND WIRE AND/OR COUNTERPOISE IS 4/0 COPPER (BARE) 7 STRAND, UNLESS NOTED

TEST INSTRUMENT:  
 MANUFACTURER: \_\_\_\_\_  
 MODEL NO: \_\_\_\_\_  
 CALIBRATION DATE: \_\_\_\_\_



TEST METHOD USED  
 1) 3 POINT ELECTRODE AC "FALL-OF-POTENTIAL"

LOCATION	TEST METHOD	NO. OF RODS	ROD SIZE & LENGTH	DISTANCE BETWEEN RODS (FT.)	AUX. ELECTRODE TEST POINT (FT.)		RESISTANCE OHMS	REMARKS
					P2	C2		

**NOTE**

### DATA SHEET FOR RECORDING GROUND RESISTANCE MEASUREMENT BY THE CLAMP ON GROUND RESISTANCE TEST METHOD

DATE: \_\_\_\_\_  
 TYPE OF METER AND MFG.: \_\_\_\_\_  
 MANHOLE NUMBER + TYPE: \_\_\_\_\_  
 POLE NUMBER + SIZE: \_\_\_\_\_  
 STREET ADDRESS: \_\_\_\_\_  
 NAME OF PERSON PERFORMING TEST: \_\_\_\_\_  
 W.F. # \_\_\_\_\_  
 TEMPERATURE (AIR): \_\_\_\_°F  
 SIZE OF GROUND RODS: 5/8 DIA COPPER CLAD, UNLESS NOTED  
 SIZE OF CABLE FOR GROUND WIRE AND/OR COUNTERPOISE IS 4/0 COPPER (BARE) 7 STRAND, UNLESS NOTED

INSTALL FEET OF GROUND RODS TOTAL PER LOCATION		INSTALL FEET OF COUNTERPOISE TOTAL PER LOCATION		MEASURED RESISTANCE OF GROUND RODS (OHMS)		MEASURED RESISTANCE OF COUNTERPOISE (OHMS)		MEASURED RESISTANCE OF GROUND RODS AND COUNTERPOISE (OHMS)		SOIL CONDITION i.e. ROCK, CLAY SAND, WET OR DRY		METHOD OF CONNECTION TO GROUND RODS i.e. CADWELD BOLTED, AMPACT, CRIMP.		CURRENT READING (AMPS)		MEASURED WATER LEVEL IN MANHOLE (FT)		REMARKS	
LOCATION #1	LOCATION #2	LOCATION #1	LOCATION #2	LOCATION #1	LOCATION #2	LOCATION #1	LOCATION #2	LOCATION #1	LOCATION #2	LOCATION #1	LOCATION #2	LOCATION #1	LOCATION #2	LOCATION #1	LOCATION #2	LOCATION #1	LOCATION #2		

**NOTE:**  
 A HIGH READING INDICATES ONE OR MORE OF THE FOLLOWING:  
 1) POOR GROUND RODS.  
 2) OPEN GROUND CONDUCTOR.  
 3) HIGH RESISTANCE, DUE TO POOR CONNECTIONS ON RODS, HARDWARE & CLAMPS.  
 4) METER CLAMP IS IMPROPERLY CLOSED.  
 5) FAULTY METER.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	GROUNDING WITH GROUND RODS (DETAIL)	DATE: 05-01-05 Page 7 of 7 56270-100
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NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	GROUNDING WITH GROUND RODS (DETAIL)	DATE: 05-01-05 Page 6 of 7 56270-100
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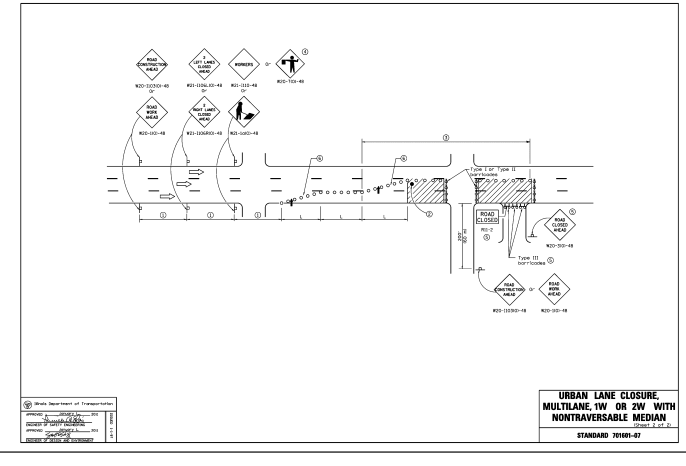
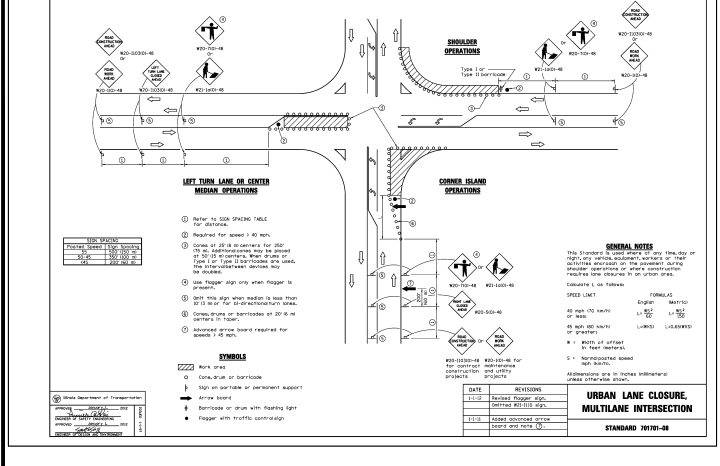
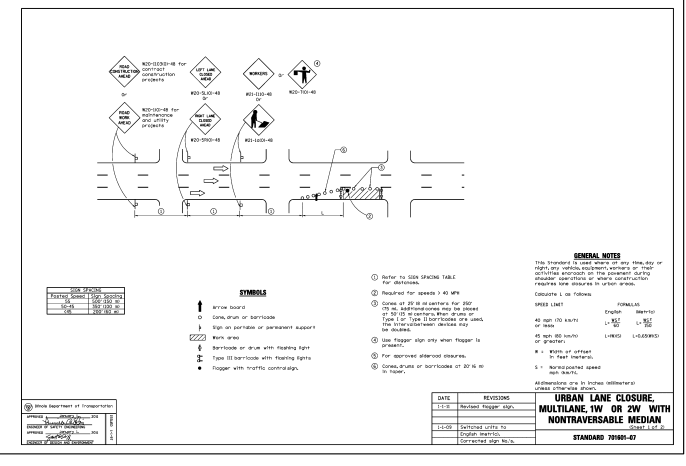
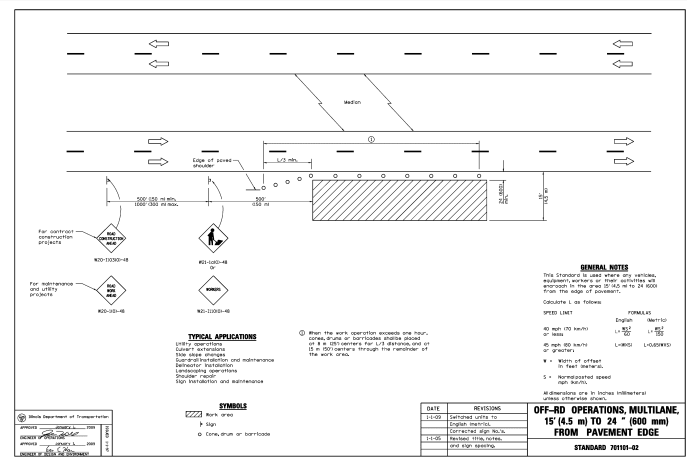
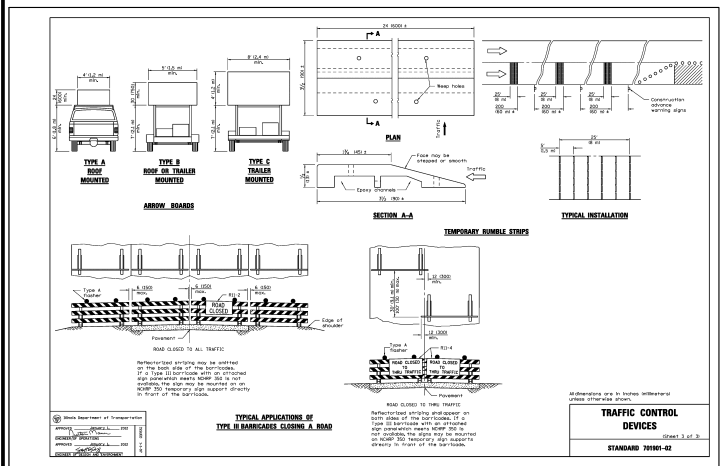
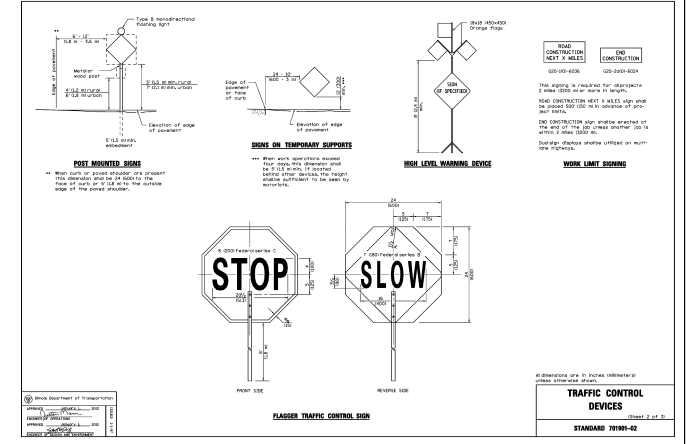
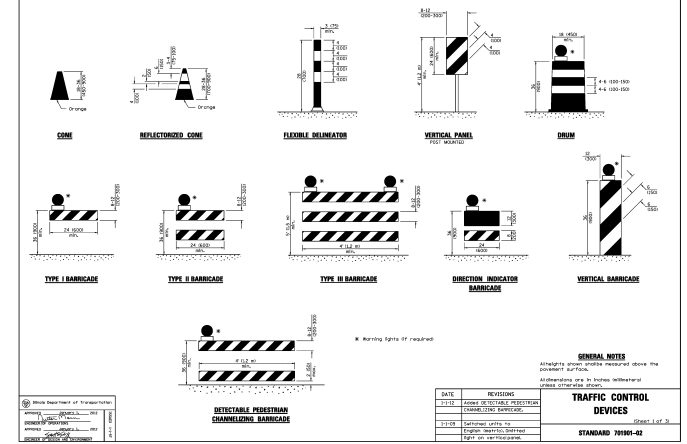
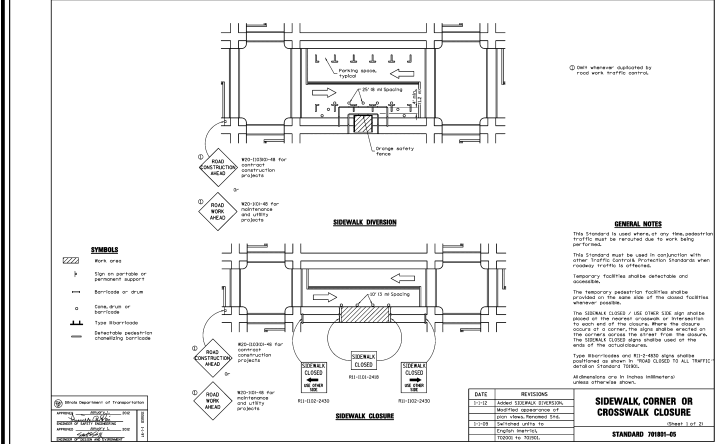
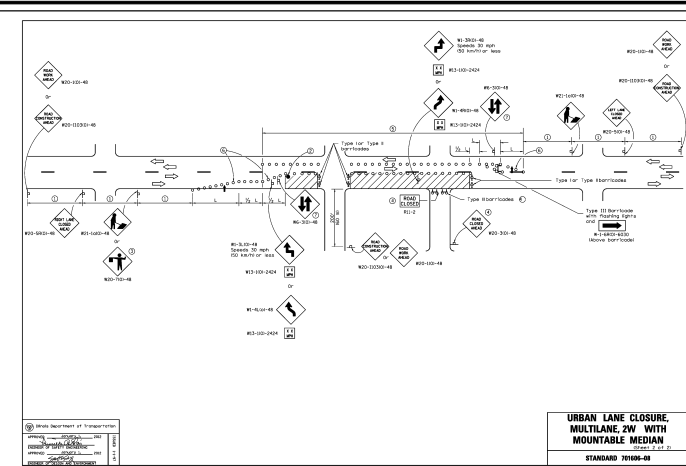
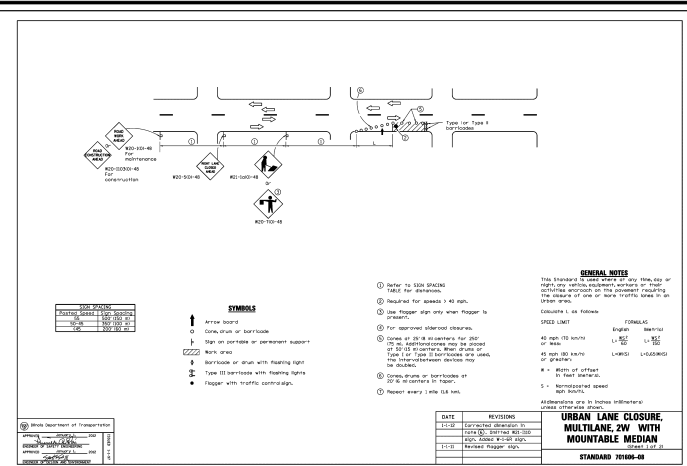
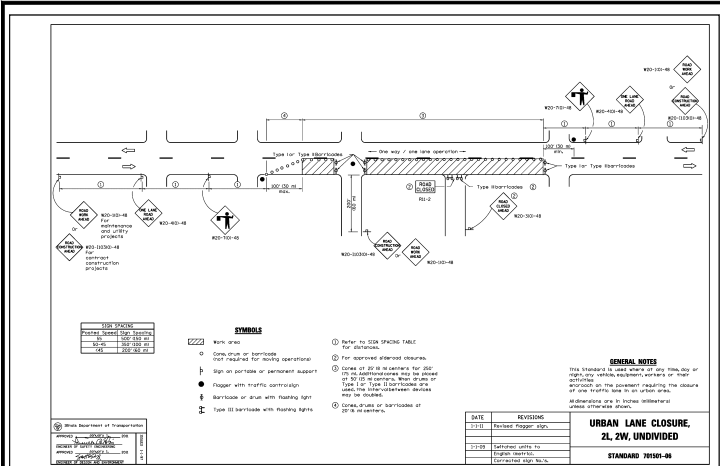
PROJECT TITLE <b>ROUTE 59 ROAD IMPROVEMENTS</b>			
PROJECT DESCRIPTION <b>DETAILS AND STANDARDS</b>			
ENGINEER BCC	DRAFTING DATE 8-04-12	MAP # 4211,4224	SCALE N.T.S.
DESIGN BY DL	DRAFTED BY PSM	REVISIONS DATE	AT&T JOINT AGREEMENT # N/A
CHECKED BY	APPROVED BY	CAD FILE 0061123001D12.DWG	PROJECT # EU-12
SHEET # 12 OF 40		WORK REQUEST # 61123	
Naperville Department of Public Utilities Electric Division			

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035	DUPAGE		
FED. ROAD DIST. NO.		ILLINOIS	CONTRACT 60P42	
		FED. AID PROJECT		

**TRAFFIC CONTROL AND PROTECTION**

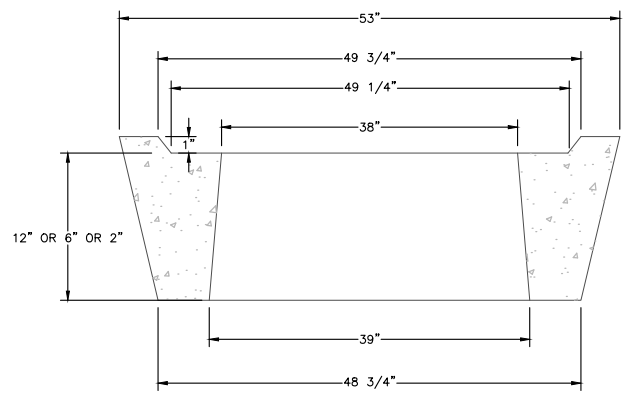
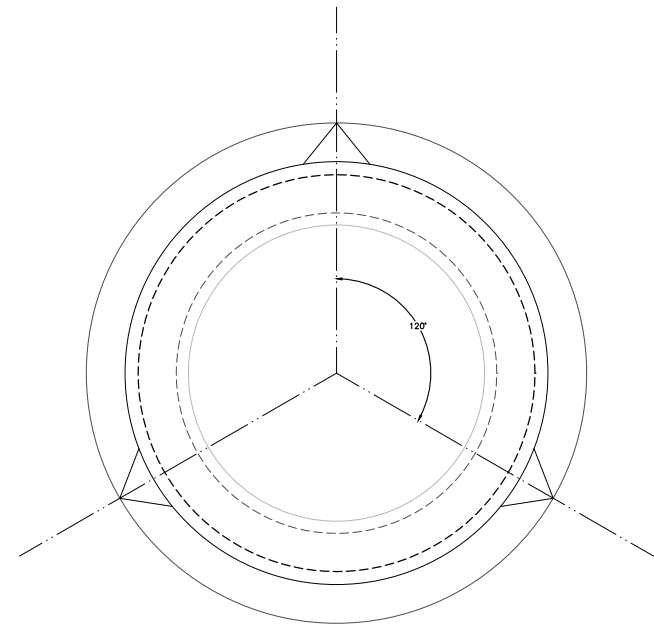
- All work conducted within public right-of-ways shall be governed by the following specifications for traffic control. Traffic control shall be in accordance with the applicable articles of section 107 and 700 of the "Standard Specifications for Road and Bridge Construction", the latest edition of the Illinois Manual on Uniform Traffic Control Devices for Streets and Highways and special details of Illinois Highway Standards listed herein.
- Special attention is called to articles 107.09 of the Standard Specifications and the following highway standards, details and supplemental specifications and mimeographed special provisions contained herein, relating to traffic control.
- The CONTRACTOR shall contact the local agency at least 72 hours in advance of beginning work.
- Standards
 

70101	701501	701602	701801
701501	701502	701606	701901
701401	701601	701701	704001
- At the pre-construction meeting the CONTRACTOR shall furnish the name of the individual in his direct employ who is to be responsible for the installation and maintenance of the traffic control for this project. If the actual installation and maintenance are to be accomplished by a SUB-CONTRACTOR, consent shall be requested of the ENGINEER at the time of the pre-construction meeting in accordance with Article 108.01 of the Standard Specifications. This shall not relieve the CONTRACTOR of the foregoing requirement for a responsible individual in his direct employ to supervise this work. The CONTRACTOR will provide the name of its representative who will be responsible for the administration of the traffic control plan.
- This item of work shall include furnishing, installing, maintaining, relocating and removing all traffic control devices used for the purpose of regulating, warning or directing traffic during the construction or maintenance of this improvement.
- Traffic control and protection shall be provided as called for in the plans, these special provisions, applicable highway standards, applicable sections of the standard specifications, or as directed by the ENGINEER.
- The following traffic control requirements are of special importance. Conformance to these requirements, however, shall not relieve the CONTRACTOR from conforming to all other applicable requirements of the Standard Specifications for Road and Bridge Construction.
- The governing factor in the execution and staging of work for this project is to provide the motoring public with the safest possible travel conditions along the roadway through this construction zone. The CONTRACTOR shall so arrange his operation as to keep the closing of any lane of the roadway to a minimum.
- All traffic control devices used on this project shall conform to the plans, special provisions, traffic control standards, "Standard Specifications for Traffic Control Devices" and the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways". No modification of these requirements will be allowed without prior written approval of the ENGINEER.
- Traffic control devices include: signs and their supports, signals, pavement markings, barricades with sand bags, channelizing devices, warning lights, arrow boards, flagger, or any other device used for the purpose of regulating, warning or guiding traffic through the construction zone.
- The CONTRACTOR shall be responsible for the proper location, installation, and arrangement of all traffic control devices. Special attention shall be given to advance warning signs during construction operations in order to keep lane assignment consistent with barricade placement at all times. The CONTRACTOR shall cover all traffic control devices which are inconsistent with detour or lane assignment patterns during the transition from one construction stage to another.
- Construction signs referring to daytime lane closures during working hours shall be removed or covered during non-working hours.
- The CONTRACTOR shall coordinate all traffic control work on this project with adjoining or overlapping projects, including barricade placement necessary to provide a uniform traffic detour pattern. When directed by the ENGINEER, the CONTRACTOR shall remove all traffic control devices which were furnished, installed and maintained by him under this contract, and such devices shall remain the property of the CONTRACTOR. All traffic control devices shall remain in place until specific authorization for relocation or removal is received from the ENGINEER.
- The CONTRACTOR shall ensure that all traffic control devices installed by him are operational 24 hours a day, including Sundays and Holidays.
- The CONTRACTOR shall provide a manned telephone on a continuous 24-hour-a-day basis to receive notification of any deficiencies regarding traffic control and protection and shall dispatch men, materials and equipment to correct any such deficiencies. The CONTRACTOR shall respond to any call from the department concerning any request for improving or correcting traffic control devices and begin making the requested repairs within two hours from the time of notification.
- When traveling in lanes open to the public the CONTRACTOR'S vehicle shall always move with and not against or across the flow of traffic. These vehicles shall enter or leave work areas in a manner which will not be hazardous to, or interfere with, traffic and shall not park or stop except within designated work areas. Personal vehicles shall not park within the right-of-way except in specific areas designated by the ENGINEER.
- Any drop off greater than three inches, but less than six inches within eight feet of the pavement edge shall be protected by Type I or II barricades equipped with mono-directional steady burn lights at 100 foot center to center spacing. If the drop off within eight feet of the pavement edge exceeds six inches, the barricades mentioned above shall be placed at 50 foot center to center spaces. Barricades that must be placed in excavated areas shall have leg extensions installed such that the top of the barricade is in compliance with the height requirements of standard 702001. Vertical panel or other delineating devices may be substituted for Type I or II barricades with the approval of the ENGINEER.
- Check barricades shall be placed in work areas perpendicular to traffic every 100 feet, one (1) lane and shoulder, to prevent motorist from using work areas as a traveled way. Additional check barricades shall be placed in advance of any hazard in the work area which would endanger a motorist. Check barricades shall be Type I or II and equipped with a flashing light.
- Placement of all signs and barricades shall proceed in the direction of flow of traffic. Removal of all signs and barricades shall start at the end of the construction areas and proceed toward oncoming traffic unless otherwise directed by ENGINEER.
- Delays on the CONTRACTOR caused by complying with these requirements will be considered incidental to the item for traffic control and protection, and no additional compensation will be allowed.
- This item of work will be measured on a lump sum basis for furnishing, installing, maintaining, relocating and removing the traffic control devices required in the plans and these special provisions. Payment for traffic control and protection shall be considered as included in the work being done or as specified in the contract.



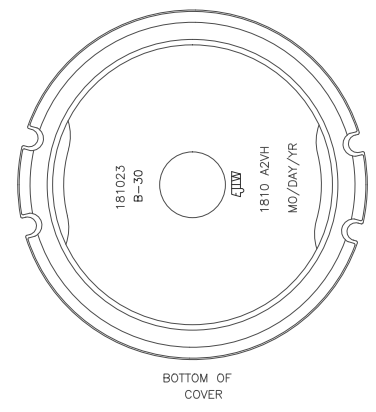
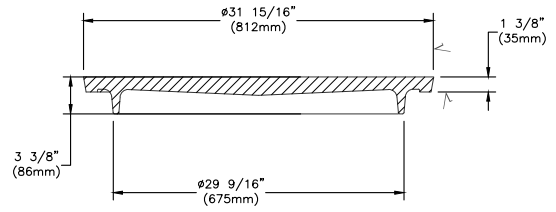
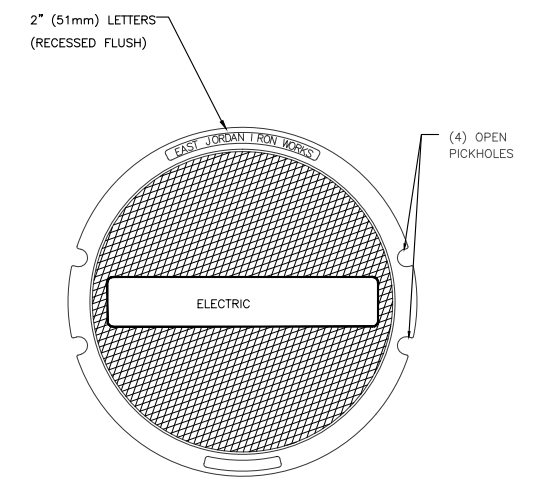
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ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION				
DETAILS AND STANDARDS				
ENGINEER	DRAFTING DATE	MAP #	SCALE	
BCC	8-04-12	4211,4224	N.T.S.	
GIS DESIGN BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #	
DL	PSM	N/A	EU-12	
CHECKED BY	APPROVED BY	CAD FILE	SHEET #	
		0061123001D13.DWG	13 OF 40	
Naperville			Department of Public Utilities	
			Electric Division	
			WORK REQUEST #	
			61123	

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		FED. AID PROJECT		



- NOTES:
1. CONCRETE 4500 PSI AT 28 DAYS
  2. EACH ADJUSTING RING SHALL COME WITH 14 FEET OF 1" INCH DIAMETER JOINT SEALANT TAPE.

**MANHOLE  
ADJUSTING RING**

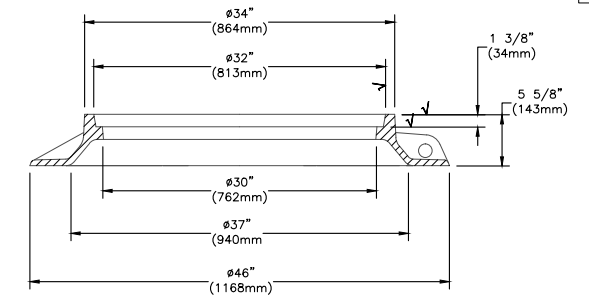
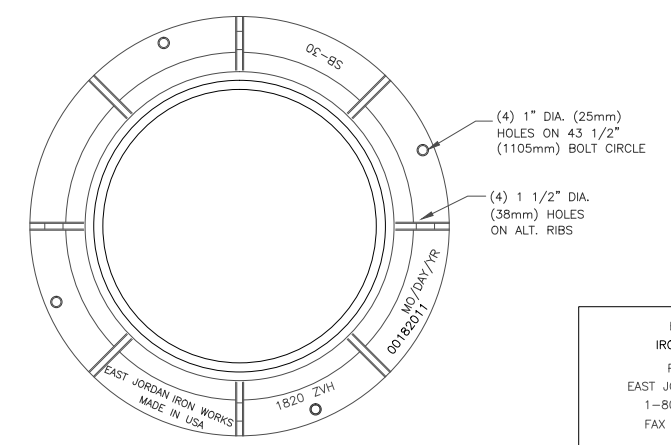


EAST JORDAN  
IRON WORKS, INC.  
P.O. BOX 439  
EAST JORDAN, MI. 49727  
1-800-874-4100  
FAX 231-536-4458

EST. WT.  
COVER: 295 LBS 134kg

✓ MACHINED SURFACE

**COVER SECTION**



EAST JORDAN  
IRON WORKS, INC.  
P.O. BOX 439  
EAST JORDAN, MI. 49727  
1-800-874-4100  
FAX 231-536-4458

EST. WT.  
FRAME: 295 LBS 134kg

✓ MACHINED SURFACE

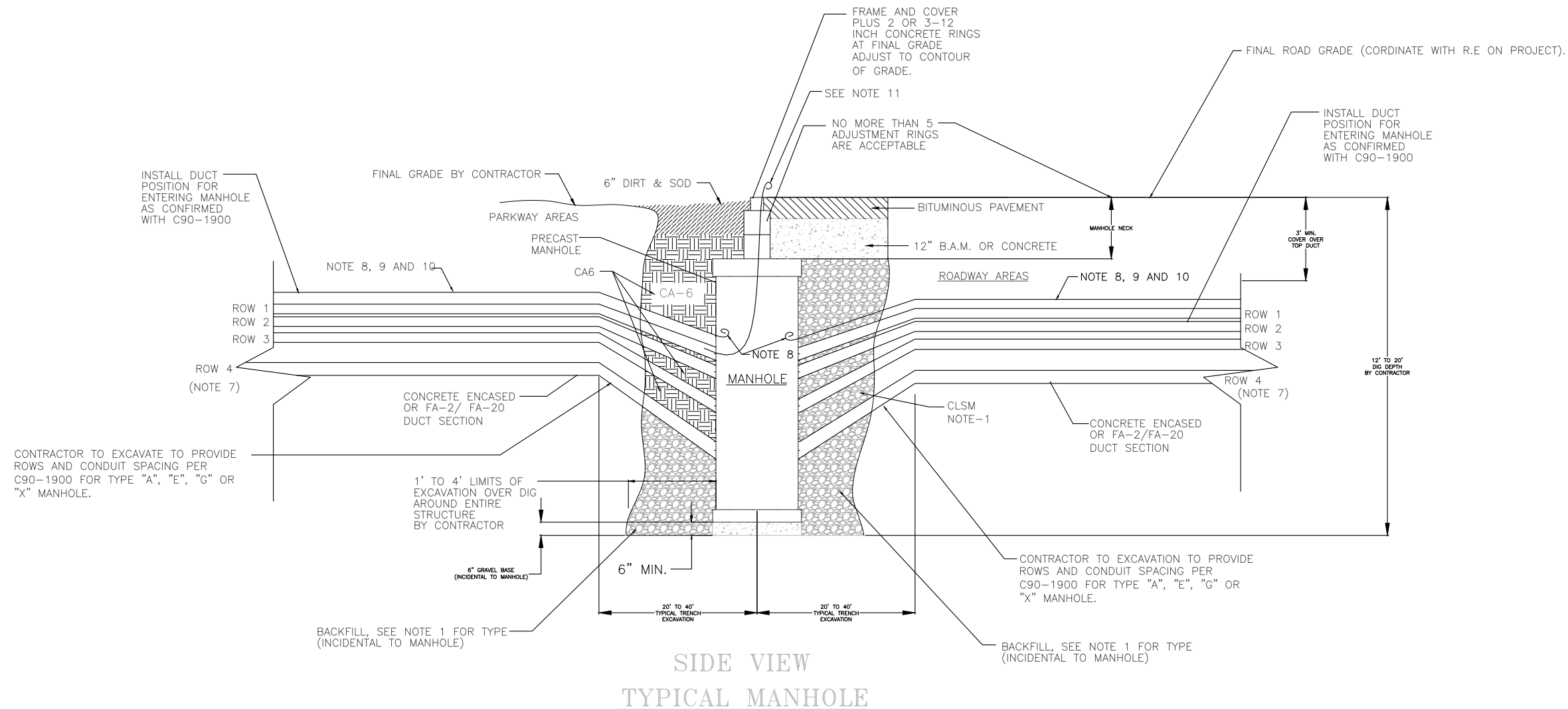
**FRAME SECTION**

- NOTES:
- 1) CONTRACTOR IS ADVISED THE MANHOLE AS SUPPLIED FROM UTILITY CONCRETE PRODUCTS (UCP). IS SHIPPED WITH 4-12" ADJUSTING RING ONLY.
  - 2) CONTRACTOR IS ADVISED THAT 2" AND 6" ADJUSTING RINGS ARE AVAILABLE FROM THE CITY, IF REQUESTED BY THE CONTRACTOR. CONTRACTOR TO PICK UP AND IS INCIDENTAL TO THE CONTRACT.
  - 3) COVERS AND FRAME SECTIONS ARE TO BE PICKED UP AT THE CITY STORAGE YARD AND IS INCIDENTAL TO THE CONTRACT.

PROJECT TITLE					ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION					DETAILS AND STANDARDS				
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.		
GIS DESIGN BY	DL	DRAFTED BY	PSM	REVISIONS DATE	N/A	PROJECT #	EU-12		
CHECKED BY		APPROVED BY		CAD FILE	0061123001D14.DWG	SHEET #	14 OF 40		
Naperville					Department of Public Utilities Electric Division				
					WORK REQUEST # 61123				

**TYPICAL  
EXCAVATION DETAIL  
TYPE "A", "E", "G" OR "X" MANHOLE**

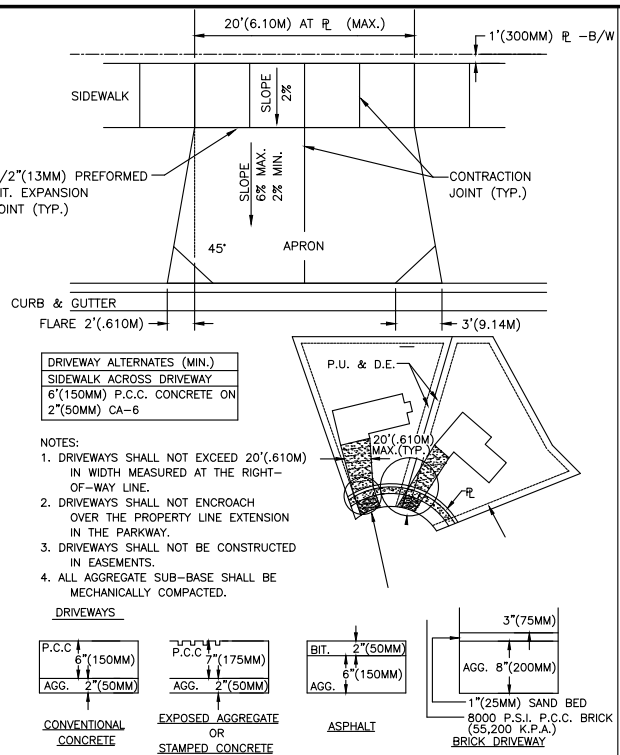
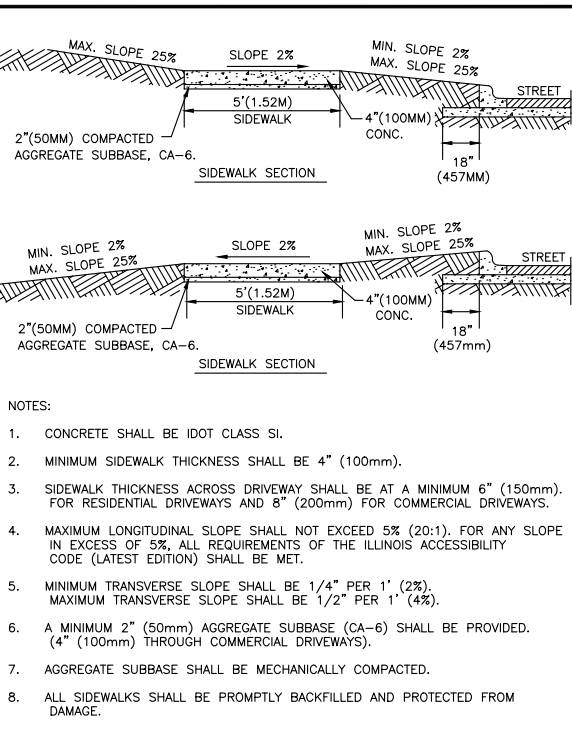
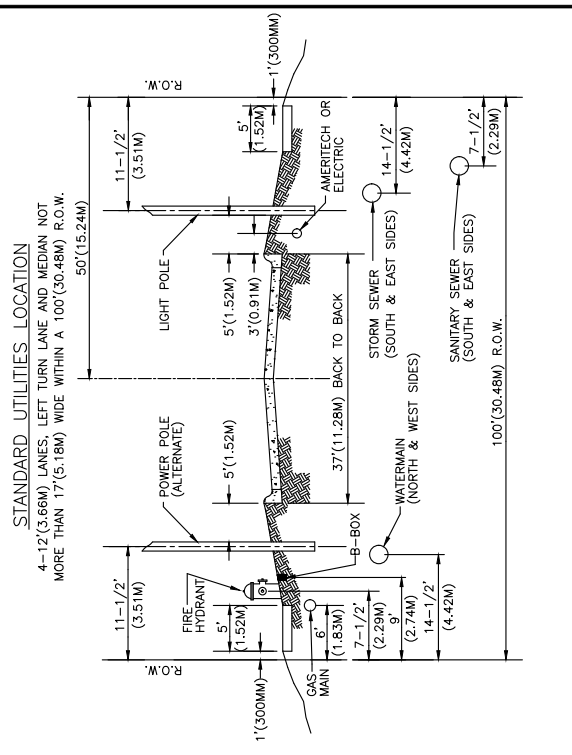
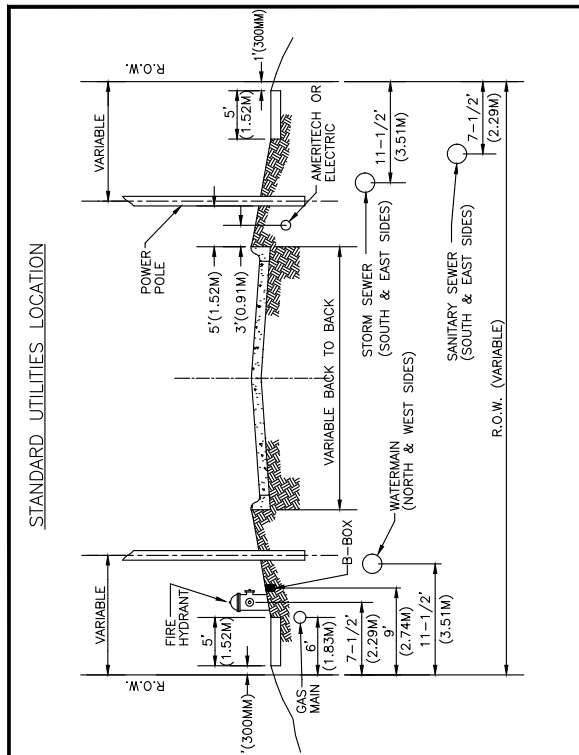
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60P42</del> FED. AID PROJECT	



- NOTE:**
- CA-6 BACKFILL TO BE PLACED 360 DEGREES AROUND MANHOLES TO GRADE. MINUS SURFACE RESTORATION. WHERE MANHOLE IS WITHIN 5' OF ROADWAY, CLSM BACKFILL TO BE USED TO FILL TO TOP OF ROOF OF MANHOLE AND CA-6 BACKFILL TO FILL TO GRADE.
  - SEE MANHOLE DETAIL DRAWINGS FOR DIMENSIONS AND WEIGHT.
  - CONTRACTOR TO ESTABLISH FINAL ELEVATION, LEVEL AND GRADE FOR MANHOLE.
  - MANHOLES DELIVERED TO SITE BY MANUFACTURER. CONTRACTOR TO COORDINATE UNLOAD, STORE AND INSTALL (TAIL GATE DELIVERY BY UCP).
  - CONTRACTOR SHALL SUPPORT AND REROUTE UTILITIES AS REQUIRED.
  - CONTRACTOR SHALL INSTALL CONDUIT INTO MANHOLES PER C30-1900, AND IS PART OF PRICE TO INSTALL MANHOLE.
  - ROWS 5 AND 6 OMITTED FOR CLARITY.
  - ABOUT 20 FEET OF 4/0 BARE COPPER CONDUCTOR FOR TAIL (COUNTER POISE).
  - INSTALL 250 FEET OF 4/0 BARE COPPER CONDUCTOR ABOVE DUCT BANK, COUNTER POISE, IF NEEDED IN 2 DIRECTIONS.
  - CORE DRILL 1 1/2" HOLE THRU WALL OF 6" THICK MANHOLE WALL TO CONNECT COUNTER POISE. IF KNOCK OUTS ARE NOT INSTALLED.
  - INSTALL #12 THIN WIRE (25' AND COIL) FROM MIDDLE DUCT TO MANHOLE COVER, LEAVING 12" TAIL (USED FOR LOCATING).
  - ALL OF THE ABOVE ITEMS AND DETAIL EXCEPT ITEM 9, ARE INCLUDED IN THE COST OF INSTALLING THE MANHOLE.
  - INSTALL MANHOLE PER O.S.H.A REGULATIONS OF LATEST ISSUE.

PROJECT TITLE					ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION					DETAILS AND STANDARDS				
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GIS DESIGN BY	DL	DRAFTED BY	PSM	REVISIONS DATE		AT&T JOINT AGREEMENT #	N/A		
CHECKED BY		APPROVED BY		CAD FILE	0061123001D15.DWG	PROJECT #	EU-12		
						SHEET #	15 OF 40		
Naperville					Department of Public Utilities Electric Division				
					WORK REQUEST # 61123				





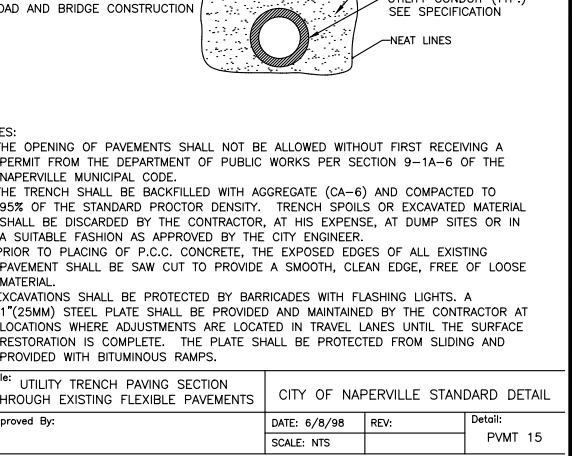
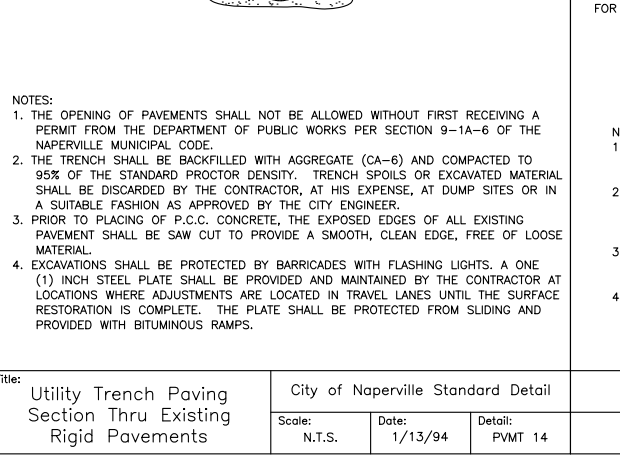
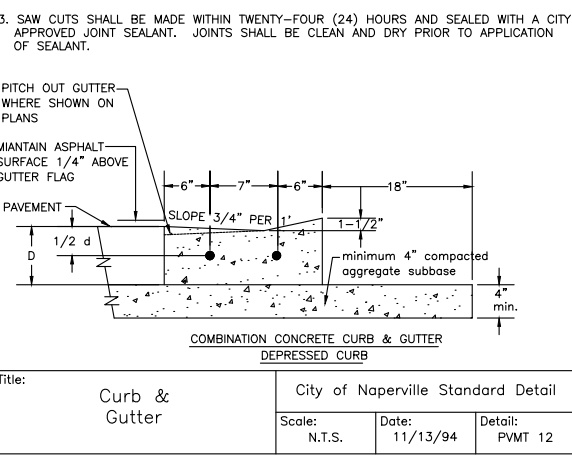
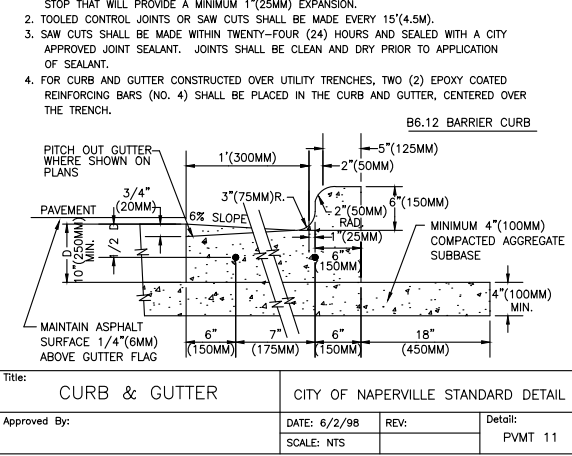
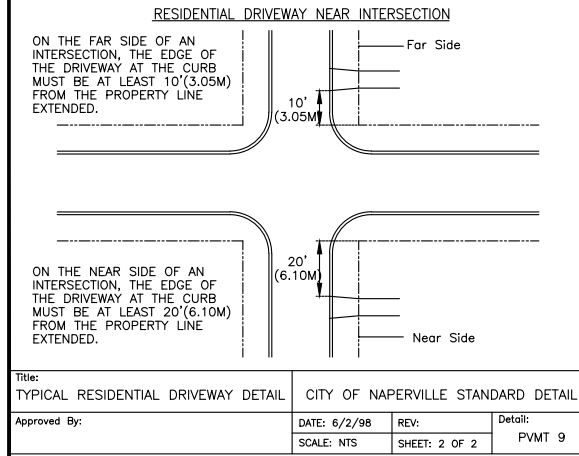
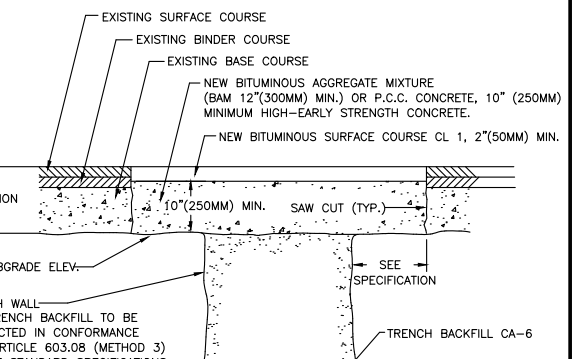
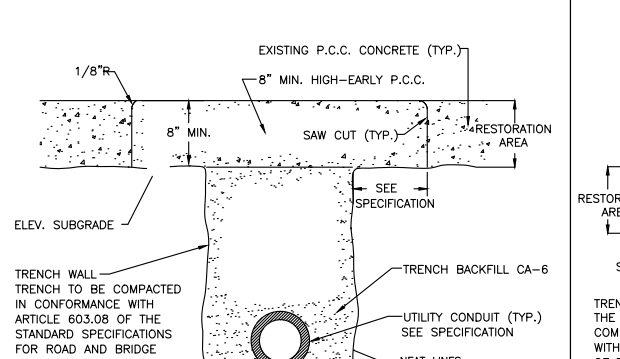
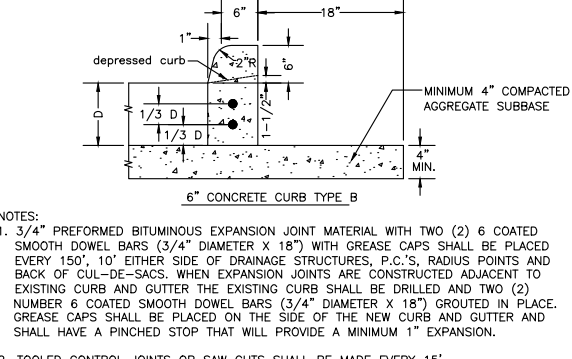
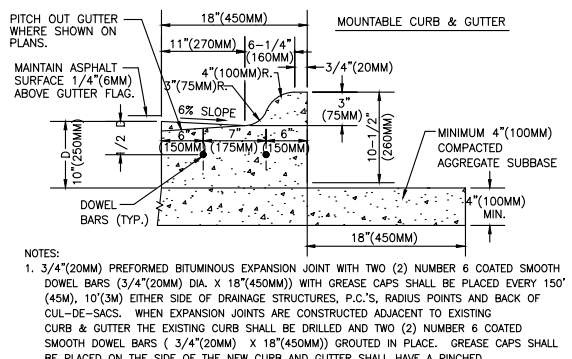
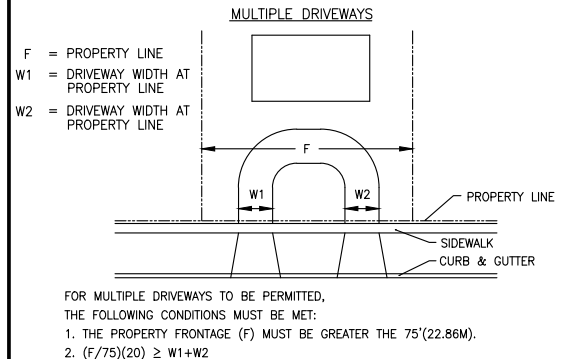
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035	DUPAGE		
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT	
CONTRACT 60P42				

Title: STANDARD UTILITIES LOCATION  
CITY OF NAPERVILLE STANDARD DETAIL

Title: STANDARD UTILITIES LOCATION  
CITY OF NAPERVILLE STANDARD DETAIL

Title: SIDEWALK  
CITY OF NAPERVILLE STANDARD DETAIL

Title: TYPICAL RESIDENTIAL DRIVEWAY DETAIL  
CITY OF NAPERVILLE STANDARD DETAIL



Title: TYPICAL RESIDENTIAL DRIVEWAY DETAIL  
CITY OF NAPERVILLE STANDARD DETAIL

Title: CURB & GUTTER  
CITY OF NAPERVILLE STANDARD DETAIL

Title: Curb & Gutter  
City of Naperville Standard Detail

Title: Utility Trench Paving Section Thru Existing Rigid Pavements  
City of Naperville Standard Detail

Title: UTILITY TRENCH PAVING SECTION THROUGH EXISTING FLEXIBLE PAVEMENTS  
CITY OF NAPERVILLE STANDARD DETAIL

NOTES:  
1) SEE GENERAL SPECIFICATIONS FOR CHANGES TO THE ABOVE SPECIFICATIONS.

PROJECT TITLE			
ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION			
DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE
BCC	8-04-12	4211,4224	N.T.S.
GIS DESIGN BY	DRAFTED BY	AT&T JOINT AGREEMENT #	PROJECT #
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Naperville Department of Public Utilities Electric Division			WORK REQUEST # 61123

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338/IL 59	<del>2011-035-1</del>	DUPAGE		
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		FED. AID PROJECT		

## CONDUIT RUN TRENCH PREPARATION

THESE INSTRUCTIONS COVER DESIGN AND CONSTRUCTION INFORMATION NECESSARY FOR THE LAY-OUT AND INSTALLATION OF CONDUIT RUNS. SAFEGUARDING UNDERGROUND FACILITIES

IN ORDER TO SAFEGUARD THE UNDERGROUND FACILITIES OF BOTH THE CITY OF NAPERVILLE AND OTHERS, APPLICABLE INSTRUCTIONS AND PROCEDURES COVERING THE PROVISIONS OF ANY AGREEMENT BETWEEN THE CITY OF NAPERVILLE AND ANOTHER UTILITY CONCERNING INTERCHANGE OF INFORMATION AND CONSTRUCTION WORK PRACTICES SHALL BE FOLLOWED. BEFORE ANY SOIL IS DISTURBED, J.U.L.I.E. MUST BE NOTIFIED TO MARK ALL UTILITIES IN THE AREA OF THE TRENCH.

### CONDUIT RUN LAYOUT

CONDUIT RUNS AND MANHOLES SHOULD BE LOCATED SO THAT THE RUN WILL FOLLOW AS NEARLY AS POSSIBLE A STRAIGHT LINE BETWEEN MANHOLES. IF OBSTRUCTIONS MAKE THIS IMPRACTICAL, THE RUN MAY BE CURVED AS NECESSARY. CONDUIT RUNS BETWEEN MANHOLES SHALL HAVE AN OVERALL LENGTH FROM MANHOLE TO MANHOLE NOT TO EXCEED 475 FT. SPECIAL CASES INVOLVING LONGER LENGTHS MAY BE CONSIDERED BY THE ENGINEER, BUT ONLY IF SPECIALLY ORDERED CABLE REELS CAN ACCOMMODATE THIS LONG-PULL CONSTRUCTION. A CONDUIT RUN MAY ENTER A STANDARD MANHOLE AT A MAXIMUM ANGLE OF 15° TO THE RESPECTIVE AXIS OF THE MANHOLE. IN CASES WHERE A LARGER ANGLE IS REQUIRED, THE MANHOLE SHALL BE REDESIGNED TO OBTAIN SATISFACTORY CABLE PULLING AND TRAINING CONDITION. IN LOCATIONS WHERE STREET LINES ARE NOT DETERMINED BY CURBS, SIDEWALKS OR BUILDINGS, THE EXACT POSITION OF THE CONDUIT RUN SHALL BE DETERMINED BY A SURVEY. THE PROPOSED TRENCH MAY BE MARKED OFF BY MEANS OF A CHALK LINE IN UNPAVED TERRITORY AND BY A ROUTE IDENTIFICATION SPRAY PAINTED IN PAVED TERRITORY. BOTH SIDES OF THE TRENCH SHALL BE MARKED IF THE TRENCH IS TO BE DUG BY HAND. IF A MACHINE IS TO BE USED, ONLY ONE SIDE OF THE TRENCH NEED BE MARKED.

### EXCAVATION

THE STANDARD WIDTH OF THE TRENCH SHALL BE EQUAL TO THE OVERALL WIDTH OF THE CONDUIT RUN AS SHOWN ON PAGE 6 FOR REGULAR FORMATIONS, AND SHALL BE ADJUSTED TO INCLUDE WHERE TRANSPOSITIONS ARE NECESSARY TO PASS OBSTRUCTIONS. THE SIDES OF THE TRENCH SHALL BE TRIMMED SMOOTHLY TO GIVE A UNIFORM THICKNESS OF CONCRETE AROUND THE CONDUIT. THE SIDES OF THE EXCAVATION SHALL BE SHORED IN ACCORDANCE WITH SAFETY REGULATING COMMISSION PRACTICES TO PREVENT CAVE-INS.

### DEPTH OF TRENCH

THE DEPTH OF THE TRENCH IN THE RUN IS GOVERNED BY THE MINIMUM DEPTH OF THE CONDUIT RUN BELOW THE STREET SURFACE OR ESTABLISHED GRADE, THE HEIGHT OF THE DUCT SECTION, AND THE PRESENCE OF OBSTRUCTIONS. AT THE APPROACH TO THE MANHOLE, THE MINIMUM DISTANCE FROM THE MANHOLE ROOF TO THE TOP DUCTS AND THE FANNING OF THE DUCTS AT THE DUCT ENTRANCE OF THE MANHOLE ALSO GOVERN THE DEPTH OF THE TRENCH.

IF CINDERS, SLAG, RUBBISH FILL OR OTHER MATERIAL HAVING POOR HEAT CONDUCTING PROPERTIES ARE UNCOVERED IN THE EXCAVATION, THE WIDTH AND DEPTH OF THE TRENCH SHALL BE INCREASED. THIS EXTRA SPACE IS TO PROVIDE FOR THE PLACING OF SPECIAL BACKFILL GRAVEL AROUND THE CONDUIT

THE MINIMUM DISTANCE FROM THE TOP OF A CONDUIT RUN TO THE SURFACE OF A ROADWAY OR ESTABLISHED GRADE SHALL BE 2 FEET 6 INCHES EXCEPT WHERE THE CONDUIT PASSES UNDER A VIADUCT AND CAUSES A SUMP IN THE LINE. IN THIS CASE THE MINIMUM DISTANCE SHALL BE 3 FEET 0 INCHES. CONDUIT RUNS WHICH PASS UNDER RAILROAD SWITCH TRACKS, OR MAIN LINE TRACKS SHALL HAVE THE MINIMUM DISTANCE OF 4 FEET 2 INCHES BELOW THE TOP OF THE RAIL.

THE HEIGHT OF THE DUCT SECTION FOR VARIOUS STANDARD CONDUIT FORMATIONS OF DUCTS IS SHOWN ON PAGE 6, AND SHALL BE ADJUSTED FOR TRANSPOSITION SECTIONS.

THE MINIMUM DISTANCE FROM THE TOP OF THE DUCTS TO THE MANHOLE ROOF IS SPECIFIED ON THE MANHOLE DRAWINGS AND THE SEPARATION OF THE DUCTS AT THE MANHOLE DUCT ENTRANCE IS SHOWN ON THE MANHOLE STANDARDS. THIS WILL DETERMINE THE MINIMUM WIDTH AND DEPTH OF THE TRENCH AT THE MANHOLE.

OBSTRUCTIONS AFFECT THE DEPTH OF THE TRENCH. IN THAT THE GRADE OF THE CONDUIT RUN MUST BE ADJUSTED TO AVOID THEM, THE ENTIRE TRENCH SHOULD BE OPENED BETWEEN MANHOLES BEFORE ANY CONDUIT IS LAID TO ASCERTAIN THE EXISTENCE AND POSITION OF ANY OBSTRUCTIONS.

WHEN THE REQUIRED DEPTH OF THE TRENCH IS KNOWN FOR ALL POINTS, THE GRADE MAY BE ESTABLISHED.

### GRADE

IN GENERAL, ALL CONDUIT RUNS SHALL BE UNIFORMLY GRADED SO THAT WATER WILL DRAIN INTO THE MANHOLES FROM ANY POINT IN THE RUN. THE EXCEPTIONS TO THIS RULE ARE CONDUIT RUNS WHICH PASS UNDER RIVERS, VIADUCTS, AND ABNORMAL OBSTRUCTIONS IN THE RUN. IT IS ESSENTIAL THAT THE CONDUIT RUN SHALL BE UNIFORMLY GRADED SO THAT THERE WILL BE NO RIPPLES IN THE RUN.

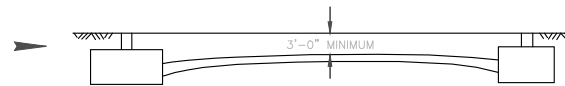
THE MINIMUM GRADE FOR A CONDUIT RUN SHALL BE 1 INCH PER 100 FT. ALL GRADES SHALL BE ESTABLISHED WITH A LEVEL BY THE CONTRACTOR'S ENGINEER AND MARKED BY WOODEN GRADE STAKES ON THE CENTER LINE OF THE BOTTOM OF THE TRENCH. THE STAKES SHALL BE SET 5 FT. APART WHEN CONCRETE CONDUIT IS TO BE INSTALLED AND 10 FT. APART FOR PLASTIC CONDUIT ALONE.

THE TOP OF THE GRADE STAKE SHALL INDICATE THE TOP SURFACE OF THE BOTTOM CONDUIT CONCRETE ENCASUREMENT.

AFTER THE GRADE OF THE CONDUIT RUN HAS BEEN ESTABLISHED BY MEANS OF THE GRADE STAKES, THE BOTTOM OF THE TRENCH SHALL BE TRIMMED 3 INCHES BELOW THE TOP OF THE STAKES EXCEPT WHERE THE TRENCH CROSSES A RAILROAD TRACK. IN SUCH CASES THE BOTTOM SHALL BE TRIMMED 6 INCHES BELOW THE TOP OF THE STAKES. TRENCHES WHICH HAVE BEEN DUG TOO DEEP AND THEN PARTIALLY REFILLED SHALL BE TAMPED SOLID AFTER REFILLING BEFORE POURING THE CONCRETE ENCASUREMENT.

### DOUBLE SLOPE GRADING

THE MOST DESIRABLE METHOD OF GRADING A CONDUIT RUN BETWEEN MANHOLES IS ILLUSTRATED IN THE SKETCH SHOWN BELOW. THE MINIMUM DISTANCE FROM THE TOP OF THE CONDUIT RUN TO THE STREET SURFACE IS 3 FT. 0 INCHES, AT THE CENTER OF THE RUN. FROM THERE THE RUN FALLS IN A DOUBLE SLOPE AND DRAINS TOWARD BOTH MANHOLES.



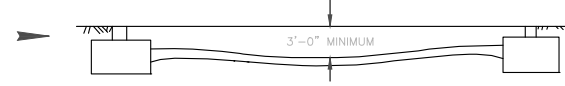
### SINGLE SLOPE GRADING

WHERE THE STREET LEVEL SLOPES FROM ONE MANHOLE TO THE OTHER, OR WHERE OBSTRUCTIONS WILL NOT PERMIT DOUBLE SLOPE GRADING, THE CONDUIT RUN SHALL BE GRADED IN ONLY ONE DIRECTION AS SHOWN.



### GRADING UNDER VIADUCT OR LARGE OBSTRUCTIONS

A CONDUIT RUN, WHICH IS TO BE INSTALLED UNDER A VIADUCT WHERE THE STREET GRADE IS DEPRESSED, OR UNDER A LARGE OBSTRUCTION, MAY BE GRADED WITH A SUMP IN THE LINE AS SHOWN, PROVIDED THAT THE SINGLE SLOPE GRADING METHOD IS NOT PRACTICAL OR ECONOMICAL. THE TOP OF THE RUN SHALL BE AT LEAST 3 FT., BELOW STREET GRADE TO PREVENT FREEZING. IF THE STREET GRADE IS LEVEL UNDER THE VIADUCT THIS RULE DOES NOT APPLY.



## CONDUIT RUN INSTALLATION MONOLITHIC METHOD

### APPLICATION

- THIS STANDARD COVERS THE PROCEDURE TO BE FOLLOWED WHEN INSTALLING CONCRETE ENCASED CONDUIT BY THE MONOLITHIC METHOD. THIS METHOD CONSISTS OF BUILDING UP THE LAYERS OF CONDUIT ON SPACERS AND THEN POURING THE CONCRETE ENCASUREMENT IN A MONOLITHIC MASS.

### GENERAL

THE SIZE AND TYPE OF CONDUIT IS GIVEN ON M30-1500 BUT SHALL BE SPECIFIED FOR EACH JOB ON THE INSTALLATION DRAWINGS. SPLIT CONDUIT, IF AVAILABLE, MAY BE USED TO REBUILD OR CHANGE THE LOCATION OF EXISTING DUCTS THAT CONTAIN CABLES. ALL CONDUIT TRENCHES SHALL BE DUG WITH A 100 FOOT HEADWAY TO ALLOW FOR VERTICAL ADJUSTMENTS. INSTALL ALL TRENCHES AS PER OSHA STANDARDS FOR OPEN CUTTING THE GROUND. ALL CONDUIT WITH BROKEN ENDS SHALL BE CUT, AND USED WHENEVER POSSIBLE.

### TRENCH PREPARATION

THE PREPARATION OF THE TRENCH FOR CONDUIT RUNS SHALL BE AS PRESCRIBED ON PAGE 1 OF THIS STANDARD, WHERE SWAMPY OR UNSTABLE SOIL IS ENCOUNTERED, CONDUIT SHALL BE PLACED ON A CONCRETE BASE, LAYING THE CONDUIT AFTER THE CONCRETE IS LEVELED AND STARTS TO SET. AT THIS POINT THE BASE OF THE CONCRETE WILL SUPPORT THE CONDUIT AND PERMIT THE BASE SPACERS TO BE DEPRESSED AND TO FIND AN EVEN BEARING WHILE THE BASE CONCRETE IS STILL YIELDING. THE BASE CONCRETE IS BY VOLUME: 1 PART PORTLAND CEMENT, 3 PARTS #2 TORPEDO SAND, AND 5 PARTS 3/4 INCH TO #4 GRAVEL (NOT CRUSHED STONE).

IF THE CONDUIT DOES NOT REST ON UNDISTURBED EARTH WITHIN 3 FEET OF THE MANHOLE OR VAULT, BRIDGE THE GAP TO THE UNDISTURBED EARTH WITH A 6 INCH BASE OF REINFORCED CONCRETE. THIS CONCRETE SHALL BE A "DENSE SHEATHING" (PAGE 5) WITH #4 REINFORCING BARS ON 6 INCH CENTERS, 3 INCHES FROM THE BOTTOM.

### CONCRETE MIX FOR CONDUIT ENCASUREMENT (SHEATHING)

#### (a) READY-MIXED

READY MIXED CONCRETE DELIVERED TO THE JOB SHALL BE SPECIFIED AS 3000 POUNDS PER SQUARE INCH MINIMUM (AT 28 DAYS) CONCRETE. THE COARSE AGGREGATE SHALL BE PEA GRAVEL. THE FINE AGGREGATE SHALL BE #2 TORPEDO SAND. SLUMP AT POINT OF DELIVERY SHALL NOT BE MORE THAN 4 INCHES NOR LESS THAN 2 INCHES.

MINIMUM CEMENT CONTENT SHALL BE 3 1/2 BAGS OF TYPE I PORTLAND CEMENT PER CUBIC YARD. FLY ASH SHALL BE INCORPORATED INTO THE MIX ON THE BASIS OF 20 POUNDS PER SACK OF CEMENT. INCLUDE AIR ENTRAINMENT AGENT TO ENTRAIN BETWEEN 4 PERCENT AND 6 PERCENT OF AIR IN THE CONCRETE.

EXCEPT AS OTHERWISE DESIGNATED IN THIS STANDARD, ANY READY-MIXED CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF SPECIFICATIONS FOR READY-MIXED CONCRETE (ASTM C94 LATEST EDITION).

READY-MIXED CONCRETE SHALL BE PLACED WITHIN 1 HOUR AFTER WATER HAS BEEN ADDED TO THE MIX.

#### (b) BATCH-MIXED

WHEN THE CONCRETE IS MIXED ON THE JOB, A PRE-BAGGED CEMENT MIX CONSISTING BY WEIGHT OF 70 PERCENT PORTLAND CEMENT AND 30 PERCENT FLY ASH SHALL NORMALLY BE USED. THE CONCRETE MIX PROPORTIONS (RODDED SATURATED SURFACE DRY BASIS) SHALL BE: 1 PART OF PRE-BAGGED MIX (1 BAG IS 1 CUBIC FOOT), 3 1/2 PARTS OF #2 TORPEDO SAND, AND 2 1/2 PARTS PEA GRAVEL. MAXIMUM WATER CONTENT, INCLUDING FREE SURFACE MOISTURE IN AGGREGATES, SHALL NOT EXCEED 7 GALLONS PER BAG OF CEMENT MIX. SLUMP SHALL BE AS SPECIFIED ABOVE UNDER READY-MIXED CONCRETE.

IN THE EVENT THAT THE PRE-BAGGED CEMENT MIX IS NOT AVAILABLE, 1 BAG OF TYPE I PORTLAND CEMENT SHALL BE SUBSTITUTED FOR 1 BAG OF THE CEMENT MIX. WATER CONTENT, SLUMP, AND THE CONCRETE MIX PROPORTIONS SHALL REMAIN AS STATED IN THE PRECEDING PARAGRAPH.

THE AGGREGATES SHALL BE MEASURED BEFORE BEING PUT IN THE MIXER, AND SHALL BE IN SUCH PROPORTIONS THAT ONE FULL BAG OF CEMENT WILL BE USED IN EACH BATCH. ALL CONCRETE SHALL BE MIXED FOR A MINIMUM OF TWO MINUTES IN A MACHINE MIXER.

HAND MIXING SHALL NOT BE DONE EXCEPT BY THE SPECIAL PERMISSION OF THE ENGINEER. NO MORTAR OR CONCRETE SHALL BE "RETEMPERED" EITHER BY REMIXING OR BY THE ADDITION OF ANY MATERIALS OR ADMIXTURES. THE DRUM OF THE MIXER SHALL BE COMPLETELY EMPTIED BEFORE RECEIVING MATERIALS FOR THE SUCCEEDING BATCH. CONCRETE THAT HAS OBTAINED ITS INITIAL SET BEFORE BEING PLACED SHALL BE DISCARDED AND NOT USED ON THE JOB.

### COLD WEATHER CONCRETING (BELOW 40°F)

INGREDIENTS OF CONCRETE POURED WHEN THE SURROUNDING AIR IS BELOW 40° F SHALL BE HEATED SO THAT THE TEMPERATURE OF THE CONCRETE AFTER PLACEMENT IS NEITHER LOWER THAN 55° F NOR GREATER THAN 65° F. PLUG ENDS OF CONDUIT RUN TO PREVENT AIR CIRCULATION. PROTECT CONCRETE FROM FREEZING FOR A MINIMUM OF 48 HOURS.

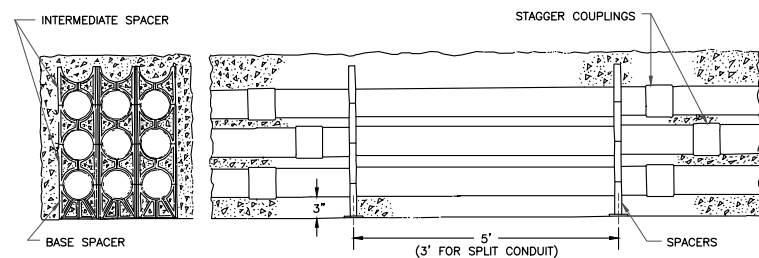
WHEREVER POSSIBLE, ALL CONCRETE MATERIALS AND ALL REINFORCEMENT, FORMS, FILLERS AND GROUND WITH WHICH CONCRETE IS TO COME IN CONTACT SHOULD BE FREE FROM FROST.

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### LAYING CONDUIT



### CONDUIT INSTALLATION

THE STANDARD ARRANGEMENT AND SEPARATION OF DUCTS AND THE THICKNESS OF CONCRETE SHEATHING SHALL BE AS SHOWN ON PAGE 7 FOR CONDUIT RUNS UNDER MAIN LINE RAILROAD TRACK, OR ON PAGE 6 OF THIS STANDARD FOR ALL OTHER LOCATIONS. IF SPECIAL ARRANGEMENTS ARE REQUIRED, THE SECTIONAL OUTLINE OF THE DUCTS SHALL BE SHOWN ON THE INSTALLATION DRAWINGS. TRANSPOSITION OF THE DUCTS, MADE NECESSARY BY OBSTRUCTIONS, SHALL BE MADE FOLLOWING THIS STANDARD, BUT SHALL BE DONE ONLY WHEN SPECIFIED ON THE DRAWINGS OR WHEN SPECIALLY AUTHORIZED BY THE ENGINEER AFTER UNFORESEEN OBSTRUCTIONS ARE UNCOVERED.

THE FIRST LAYER OF THE CONDUIT SHALL BE LAID ON PLASTIC 6 INCH BASE SPACERS (DPU-E #285-199-00170) HORIZONTALLY LOCKED, WHICH WILL PROVIDE A 3-INCH LAYER OF CONCRETE BELOW THE CONDUIT. THEY SHALL BE PLACED AT INTERVALS OF APPROXIMATELY 5 FEET. ALL OF THE SUCCEEDING LAYERS ARE PLACED ON PLASTIC 6 INCH INTERMEDIATE SPACERS (DPU-E #285-199-00180) VERTICALLY LOCKED TO PREVIOUSLY PLACED SPACERS. THE CONDUIT COUPLINGS SHALL BE STAGGERED SO THAT NO COUPLING IS IN-LINE WITH THE COUPLING ON AN ADJACENT CONDUIT. WHEN THE REQUIRED LAYERS OF CONDUIT ARE BUILT UP, THE ENTIRE ASSEMBLY SHALL BE BRACED TO PREVENT LATERAL AND VERTICAL MOVEMENT. WHEN THE INSTALLATION OF SPLIT DUCT IS SPECIFIED, PLACE SPACERS AT THREE FOOT INTERVALS.

THE CONCRETE SHALL BE THOROUGHLY SPADED AND PUDDLED IN AND AROUND THE CONDUIT PACKAGE. BRACING SHALL BE REMOVED WHEN CONCRETE HAS STARTED TO SET AND THERE IS NO FURTHER DANGER THAT DUCTS WILL FLOAT OR MOVE OUT OF ALIGNMENT. HOLES LEFT BY BRACING SHOULD THEN BE FILLED WITH GROUT.

IN FORMATIONS GREATER THAN 4 DUCTS HIGH, THE PREFERRED PRACTICE IS TO INSTALL THE FORMATION IN TWO LAYERS WITH THE CONCRETE BEING POURED IN 2 STEPS. THIS WILL PREVENT THE SPACERS FROM SPREADING OUT UNEVENLY AND CREATING UNEVEN VARIANCES IN CLEARANCES BETWEEN CONDUITS. THIS PROCEDURE WILL ALSO ENSURE THAT THERE IS A CONCRETE ENVELOPE AROUND EVERY DUCT AND DECREASE VERTICAL DROP TO THE LOWEST POSSIBLE DISTANCE WHEN POURING THE CONCRETE.

### UNFINISHED CONSTRUCTION

IF THE CONDUIT RUN MUST BE TEMPORARILY LEFT UNFINISHED DURING CONSTRUCTION, CONDUIT SHALL BE CLOSED WITH PLASTIC CONDUIT PLUGS. IF THE CONDUIT RUN IS TO BE DEAD-ENDED, FOR COMPLETION AT SOME FUTURE TIME, THE END OF EACH CONDUIT SHALL BE PLUGGED AND STAGGERED APPROXIMATELY 3 INCHES FROM THE ADJACENT CONDUIT. THE END OF THE CONCRETE SHEATHING SHALL BE STEPPED BACK APPROXIMATELY 6 INCHES FOR EACH HORIZONTAL ROW OF CONDUIT. THE ENDS OF THE INSTALLED CONDUIT SHALL EXTEND BEYOND THE SHEATHING TO PERMIT CONNECTION TO FUTURE CONDUIT.

IN INSTANCES WHERE THE CONDUIT ENDS MAY NOT BE EASILY LOCATED, INSTALL AN ELECTRONIC MARKER BALL (DPU-E# 284-199-00250) TO ASSIST IN LOCATION. AFTER THE CONDUIT IS INSTALLED, BACKFILL THE HOLE COVERING THE CONDUIT ENDS APPROXIMATELY 6 TO 12 INCHES AND INSERT MARKER IN HOLE ABOVE THE CONDUIT END. LAY MARKER ON FLAT GROUND AND CONTINUE BACKFILLING, INSURING THAT THE MARKER STAYS IN A HORIZONTAL POSITION SO THAT IT MAY BE LOCATED BY THE LOCATOR TOOL.

### TRANSPOSING AROUND OBSTRUCTIONS

WHEN SMALL OBSTRUCTIONS ARE ENCOUNTERED, AND IT IS NOT ECONOMICAL OR DESIRABLE TO INSTALL THE CONDUIT RUN BELOW THE OBSTRUCTION, THE CONDUIT PACKAGE MAY BE TRANSPOSED. IN SUCH AN OPERATION, A 1-INCH SPACE SHALL BE LEFT ABOVE AND BELOW, BETWEEN THE CONCRETE SHEATH AND THE OBSTRUCTION. A 6 INCH GAP SHALL BE LEFT AROUND UTILITIES THAT ARE OBSTRUCTIONS. EACH PORTION OF THE TRANSPOSED CONDUIT SECTION SHALL BE INSTALLED AS A DOUBLE REVERSE CURVE USING A MINIMUM RADIUS OF 300 FEET.

THE SPACE BETWEEN THE TWO PORTIONS OF THE TRANSPOSED SECTION SHALL BE COMPLETELY FILLED WITH CONCRETE TO

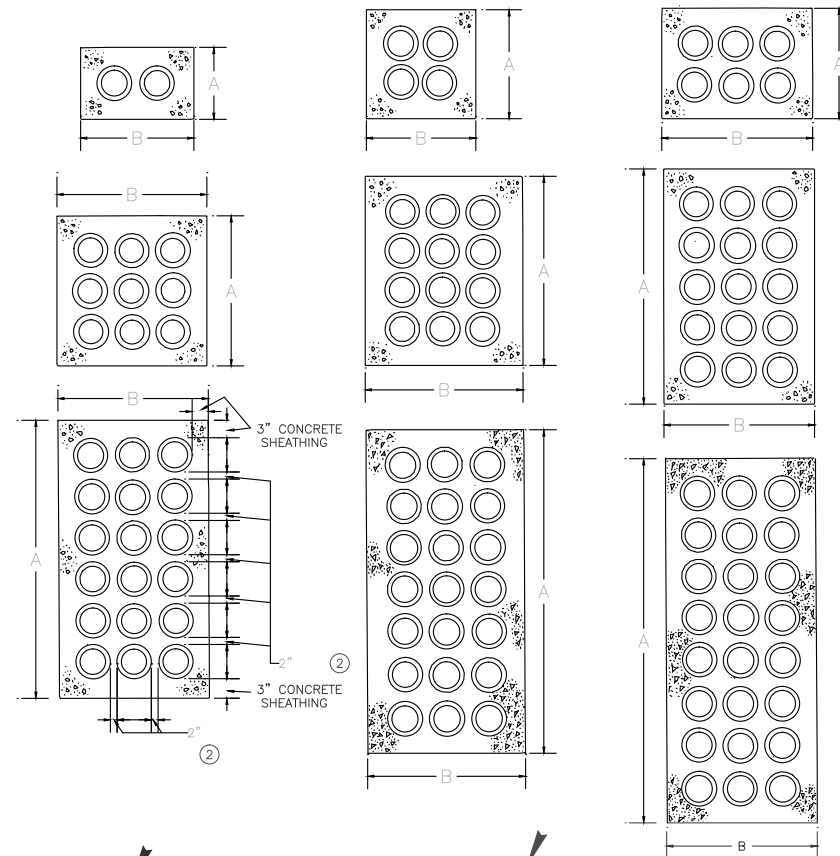
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PROJECT DESCRIPTION					DETAILS AND STANDARDS				
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.		
GIS DESIGN BY	DL	DRAWN BY	PSM	REVISIONS DATE	N/A	PROJECT #	EU-12		
CHECKED BY		APPROVED BY		CAD FILE	0061123001D17.DWG	SHEET #	17 OF 40		
Naperville					Department of Public Utilities Electric Division				
					WORK REQUEST # 61123				

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338/IL 59	2011-035	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT 60R30	
		FED. AID PROJECT		

## CONDUIT RUN FORMATIONS

BETWEEN MANHOLES



NO. OF DUCTS	DIMENSIONS (2) (3)			
	PLASTIC CONDUIT			
	5" CONDUIT		6" CONDUIT	
	A *	B *	A *	B *
4	11 3/4"	19"	12 3/4"	21 1/2"
6	19"	19"	21 1/2"	21 1/2"
9	19"	26 1/2"	21 1/2"	30"
12	26 1/2"	26 1/2"	30"	30"
12	33 3/4"	26 1/2"	38 3/4"	30"
15	41"	26 1/2"	47 1/2"	30"
18	48 1/4"	26 1/2"	55 3/4"	30"
24	55 1/2"	26 1/2"	64 3/4"	30"
24(3X8)	63"	26 1/2"	73"	30"
24(4X6)	48 1/4"	34"	55 3/4"	38 3/4"

**NOTES:**  
**APPLICATION**  
 • THIS STANDARD SHALL BE USED FOR THE ARRANGEMENT OF CONDUIT FORMATIONS BETWEEN MANHOLES.  
**INFORMATION**  
 1 THIS STANDARD COVERS THE ARRANGEMENT OF THE CONDUIT IN CONDUIT RUNS AND LATERALS.  
 2 THE SEPARATION BETWEEN CONDUITS SHALL BE 2" INCHES. CONCRETE SHEATHING SHALL BE 3" INCHES THICK EXCEPT WHERE A CONDUIT RUN IS UNDER RAILROAD SWITCH TRACKS OR MAIN LINE RAILROAD TRACKS. THEN THE SHEATHING SHALL BE AS SHOWN ON PAGE 7.  
 3 THESE DIMENSIONS REFLECT THE USE OF PLASTIC BASE SPACERS WHICH PROVIDES A HORIZONTAL AND VERTICAL SEPARATION AT OR GREATER THAN THE MINIMUM REQUIREMENTS.

**CONDUIT BELLS**

ALL CONDUITS SHALL TERMINATE AT A PRE-CAST MANHOLE IN PLASTIC CONDUIT ENTRANCE BELL ENDS AS SHOWN ON PAGE 8 OF THIS STANDARD. ALL CONDUITS SHALL TERMINATE AT A VAULT PER THIS STANDARD. IF CONDUIT PLUGS ARE USED, THEY SHOULD BE REMOVED AFTER CONSTRUCTION IS COMPLETED UNLESS OTHERWISE SPECIFIED.

**BACKFILLING**

AFTER THE CONCRETE SHEATHING HAS ATTAINED ITS INITIAL SET, THE TRENCH SHALL BE BACKFILLED. SAND OR OTHER STATE OR MUNICIPAL APPROVED MATERIAL SHALL BE USED UNDER PAVEMENTS EXCEPT WHEN THE EXCAVATED MATERIAL IS FINE, DRY, CAN BE WELL COMPACTED, AND WILL NOT SETTLE AFTER PAVEMENT IS RESTORED. IF THE EXCAVATION IS MADE IN SANDY SOIL, THE REMOVED MATERIAL MAY BE USED FOR BACKFILL IF SATISFACTORY TO THE ENGINEER. LAKE SAND SHALL NEVER BE USED FOR THE BACKFILL IN CONDUIT TRENCHES BECAUSE OF ITS POOR HEAT-CONDUCTING PROPERTIES. ALL BACKFILL IN PAVED AREAS SHALL BE THOROUGHLY COMPACTED AND FLOODED.

CONDUIT RUNS IN PARKWAYS MAY BE BACKFILLED WITH THE EXCAVATED MATERIAL IF IT IS CLAY, COARSE SAND, OR CA6 GRAVEL. ALL BACKFILL MATERIALS SHALL BE FREE OF ALL ORGANIC MATERIALS AND ROCKS LARGER THAN 1".

WHEN LAKE SAND, PEAT, CINDERS, SLAG, OR OTHER MATERIALS WITH POOR HEAT CONDUCTING PROPERTIES ARE ENCOUNTERED IN THE CONDUIT EXCAVATION, THERMAL BACKFILL SHALL BE ADDED AROUND AND ABOVE THE CONDUIT, AS SPECIFIED ON THE INSTALLATION PLANS OR BY THE ENGINEER. THIS THERMAL BACKFILL WILL BE SPECIFIED OR BANK RUN GRAVEL FROM A LOCATION APPROVED BY THE ENGINEER.

**PAVING, CURBS, SIDEWALKS**

REPLACEMENT OF PAVING, CURBS, AND SIDEWALKS SHALL BE DONE IN ACCORDANCE WITH THE MUNICIPAL OR STATE REQUIREMENTS.

**CONDUIT PREPARATION**

AFTER THE CONCRETE SHEATHING HAS ATTAINED ITS INITIAL SET, EACH CONDUIT SHALL BE RODDED AND MANDRELLED, BY THE CONTRACTOR OR CREW, THROUGH EACH OF THE CONDUIT. WHEN A PREVIOUSLY DEAD-END CONDUIT RUN IS EXTENDED, THE ENTIRE RUN SHALL BE RODDED AND MANDRELLED. CONDUIT RUNS CONTAINING OR TERMINATING IN SMALL RADIUS BENDS THAT WILL NOT PERMIT THE PASSAGE OF A STANDARD SIZE MANDREL SHALL BE MANDRELLED THROUGH THEIR STRAIGHT PORTION PRIOR TO THE CONSTRUCTION OR INSTALLATION OF THE BENDS. THE MANDRELING OF SMALL RADIUS BENDS SHALL BE DONE WITH A FLEXIBLE MANDREL NO SMALLER IN DIAMETER THAN 1/2 INCH LESS THAN THE NOMINAL DIAMETER OF THE BEND.

WHEN REQUESTED, THE CONTRACTOR SHALL AS A PART OF THE MANDRELING OPERATION, PULL IN AND LEAVE IN CERTAIN DESIGNATED DUCTS A #12 SOL. CU. MARKER CABLE (DPU-E# 280-113-00040, WHITE), (DPU-E# 280-113-00041, BLACK), (DPU-E# 280-113-00042, RED), (DPU-E# 280-113-00043, GREEN), (DPU-E# 280-113-00044, BLUE), (DPU-E# 280-113-00045, ORANGE), OR (DPU-E# 280-113-00046, YELLOW). ADDITIONALLY A 22GA. DETECTABLE MULETAPE 1250# STRENGTH @ 3000' (DPU-E# 450-024-00010), MAY BE USED. EITHER OPTION WILL BE FURNISHED BY THE CITY OF NAPERVILLE DPU-E.

**LATERALS**

CONDUIT LATERALS THAT ARE TO BE CONCRETE ENCASED SHALL BE INSTALLED IN THE SAME MANNER AS MAIN CONDUIT RUNS. LATERALS THAT TERMINATE AT MANHOLE WALLS SHALL BE CONSTRUCTED AS SHOWN ON THIS STANDARD. THOSE THAT TERMINATE AT A POLE SHALL BE CONSTRUCTED PER PAGE 9 OF THIS STANDARD. THOSE TERMINATING AT AN EQUIPMENT FOUNDATION SHALL BE CONSTRUCTED PER THAT SPECIFIC EQUIPMENT FOUNDATION STANDARD.

**DENSE CONDUIT SHEATHING FOR SPECIAL CONDITIONS**

WHEN SPECIFIED ON THE INSTALLATION DRAWINGS, CONDUIT RUNS TO BE INSTALLED IN KNOWN CORROSIVE LOCATIONS, SUCH AS IN CINDER FILL, ADJACENT TO COAL STORAGE PILES, IN GAS PURIFIER SLAG, ETC., SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING INSTRUCTIONS. ALL OTHER PROCEDURES GIVEN IN PRECEEDING PAGES OF THIS STANDARD SHALL BE FOLLOWED.

**FA-2 CONDUIT ENGAGEMENT**

CONDUIT RUNS IN PARKWAY NOT UNDER, BIKE PATHS, SIDEWALKS OR DRIVEWAY MAY BACKFILL WITH FA-2. AGGREGATE TO THE DIMENSIONS SHOWN ON PAGE 6.

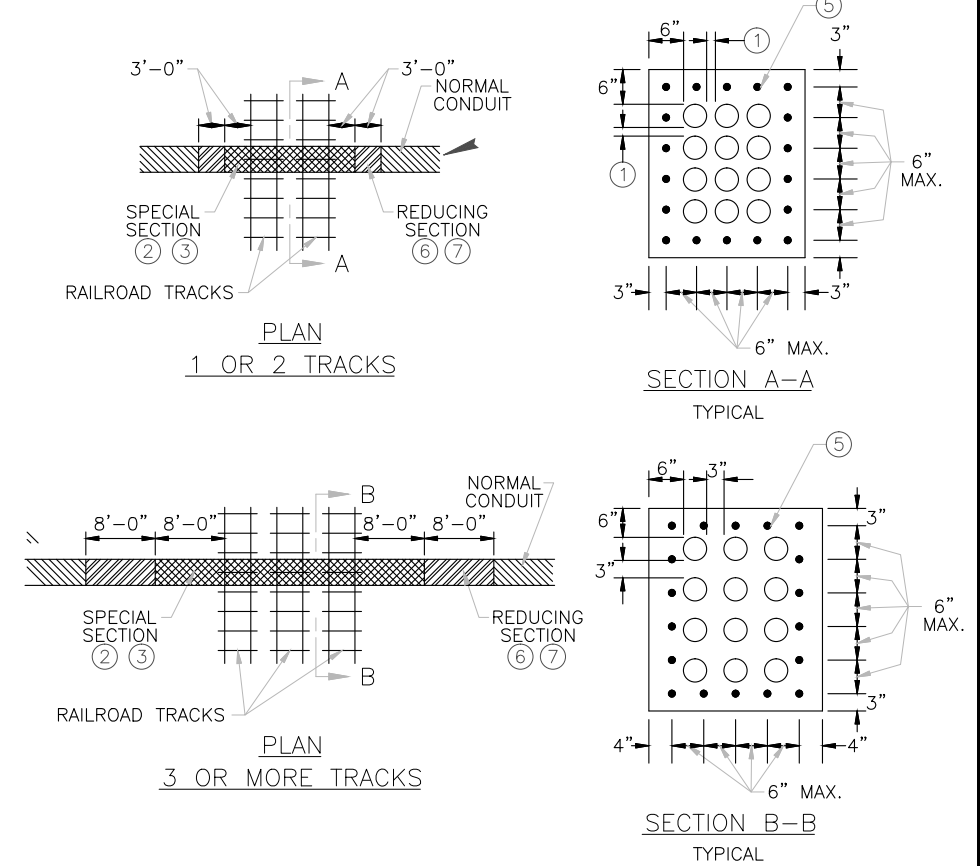
THE OUTER SHEATHING ALL AROUND SHALL BE 4 INCHES THICK.

CONCRETE SHALL CONSIST OF THE FOLLOWING MIX:

- |   |                                 |
|---|---------------------------------|
| 1 PART TYPE 1 PORTLAND CEMENT               | INCLUDING FREE SURFACE MOISTURE |
| 2 PARTS #2 TORPEDO SAND                     | IN THE AGGREGATES OF NOT MORE   |
| 2 PARTS PEA GRAVEL (NOT CRUSHED LIME STONE) | THAN 6 GALLONS OF WATER PER     |
| 1/2 BAG OF FLY ASH SHALL BE ADDED TO THE    | BAG OF CEMENT SHALL BE USED.    |
| MIX FOR EACH BAG OF PORTLAND CEMENT USED.   | MINIMUM SLUMP SHALL BE 2 INCHES |
| FOR AN ALTERNATIVE TO PORTLAND CEMENT AND   | AND MAXIMUM SLUMP IS 4 INCHES.  |
| FLY ASH, LUMNITE CEMENT SHALL BE SPECIFIED. |                                 |
| INCLUDE AIR ENTRAINMENT AGENT TO ENTRAIN    |                                 |
| 7 1/2 PERCENT OF AIR IN CONCRETE.           |                                 |

## CONDUIT RUN RR TRACK CROSSING

SWITCH TRACKS OR MAIN LINE TRACKS



**NOTES:**  
**APPLICATION**  
 • THIS STANDARD SHALL BE USED FOR THE FORMATION OF CONDUIT RUNS THAT CROSS UNDER RAILROAD TRACKS.  
**INFORMATION**  
 1 NORMAL DUCT SPACING AS ON PAGE 6 (2 INCHES).  
 2 TOP OF SPECIAL SECTION TO BE AT LEAST 50" BELOW TOP OF RAIL.  
 3 CONCRETE MIXTURE OF SPECIAL SECTION TO BE OF DENSE SHEATHING, SEE PAGE 5.  
 4 LEAVE TRACK SHORING IN PLACE AT LEAST 7 DAYS UNLESS QUICK SETTING CEMENT IS USED.  
 5 #6 GRADE 60 REINFORCING BARS, OVERLAP THE ENDS 18".  
 6 DUCTS OF REDUCING SECTION TO BE LAID AS REVERSE CURVE.  
 7 REDUCE HORIZONTAL AND VERTICAL SEPARATION OF DUCTS FROM 3" TO NORMAL, AND THE ENVELOPE FROM 6" TO 3". CONCRETE MIXTURE OF REDUCING SECTION TO BE NORMAL SHEATHING.

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PROJECT TITLE <b>ROUTE 59 ROAD IMPROVEMENTS</b>			
PROJECT DESCRIPTION <b>DETAILS AND STANDARDS</b>			
ENGINEER BCC	DRAFTING DATE 8-04-12	MAP # 4211,4224	SCALE N.T.S.
GIS DESIGN BY DL	DRAWN BY PSM	REVISIONS DATE N/A	PROJECT # EU-12
CHECKED BY	APPROVED BY	CAD FILE 0061123001D19.DWG	SHEET # 19 OF 40
Naperville Department of Public Utilities Electric Division			WORK REQUEST # 61123

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338/IL 59	2011-035	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT 60P42	
		FED. AID PROJECT		

## CONDUIT ENTRANCE INTO MANHOLE/HANDHOLE APPLICABLE TO SWITCHGEAR AND TRANSFORMER VAULTS

### GENERAL

CONDUIT ENTRANCES INTO MANHOLES/HANDHOLES SHALL NORMALLY BE MADE WITH PLASTIC ENTRANCE BELLS PER FIGURE 1 OR 2. THE ENTRANCE CONDUIT SHALL BE PLASTIC OR STEEL ENCASED IN CONCRETE AS PER FIGURE 1 AND 2 BELOW, SPECIFIED BY THE ENGINEER ON THE CONSTRUCTION DRAWINGS.

### POCKETS

DUCT POCKETS SHALL BE PROVIDED IN WALLS WHERE SPECIFIED ON CONSTRUCTION DRAWINGS. POCKET NOT REQUIRED ON NEWER STYLE MANHOLE DESIGNS (FIGURE 2). TYPICAL POCKET DIMENSIONS ARE INDICATED BELOW ON FIGURE 1.

### CONDUIT SPACING

CONDUIT SHALL NORMALLY BE SUPPORTED BY VERTICAL AND HORIZONTALLY INTERLOCKED PLASTIC SPACERS TO PROVIDE ALIGNMENT WITH PLASTIC ENTRANCE BELL UNITS AT 8 1/4 IN. SPACING.

### ENTRANCE BELL UNITS

PLASTIC 6 INCH ENTRANCE BELLS, DPU-E# 285-103-00100 SHALL BE USED ON CONDUIT ENTRANCES TO MANHOLES.

### ENTRANCE PIPES

GALVANIZED STEEL CONDUIT, M30-1550, SHALL BE USED FOR ALL BENDS. PIPES INTENDED FOR CABLES ON INITIAL INSTALLATION SHALL BE CAPPED WITH PLUGS (DPU-E# 285-103-00090) TO PREVENT CONTAMINATION FROM ENTERING THE PIPES.

### INSTALLATION METHODS

EVERY EFFORT SHALL BE MADE TO INSURE A WATERTIGHT INSTALLATION OF ENTRANCE PIPES. WHERE PIPES ARE INSTALLED THROUGH AN OPENING LEFT IN A MANHOLE, OR BROKEN OUT OF AN EXISTING MANHOLE WALL, SURFACES SHALL BE CLEANED, WETTED AND COVERED WITH A COATING OF 3 TO 1 SAND AND CEMENT MORTAR. IF BRICKWORK IS EXISTING ON THE INNER FACE OF WALL, IT SHALL ALSO BE COATED WITH A SAND AND CEMENT MORTAR. AN ALTERNATE PROCEDURE IS TO DRILL HOLES IN THE WALL AND GROUT THE PIPES IN PLACE WITH A SAND AND CEMENT MORTAR. THE INSIDE SURFACE OF THE HOLES SHALL BE ROUGHENED TO OBTAIN A STRONG AND WATERTIGHT BOND.

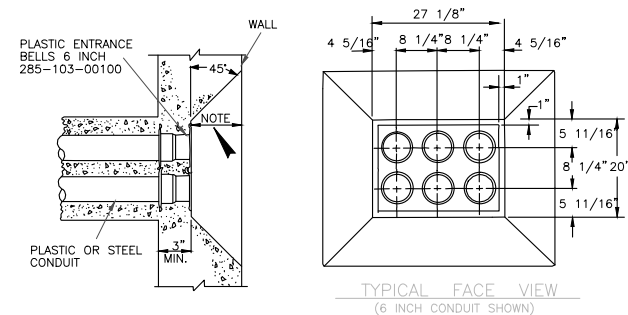


FIG. 1 MANHOLE ENTRANCE WITH PLASTIC TERMINATORS (OLDER STYLE)  
FOR PLASTIC OR STEEL CONDUIT (POCKET TYPE)

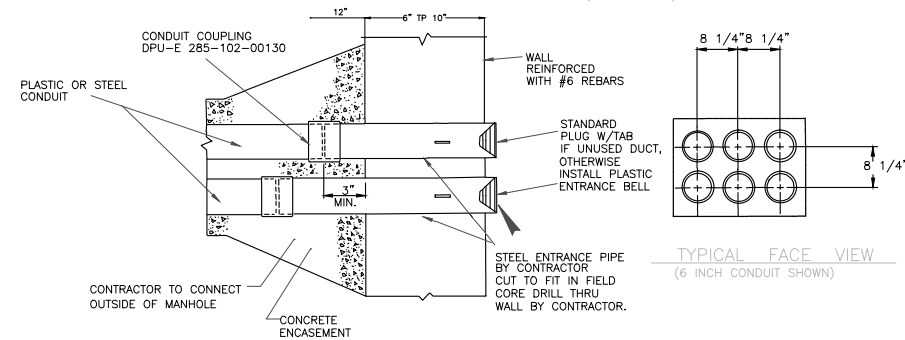


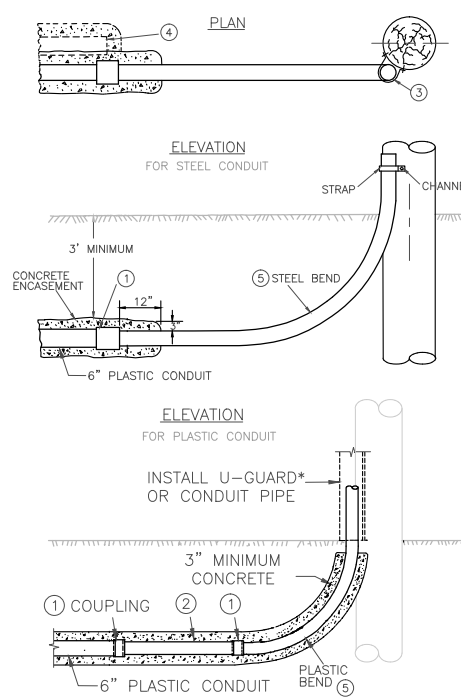
FIG. 2 ENTRANCE IN MANHOLE/HANDHOLE (NEWER STYLE)

## CONDUIT TO RISER AT POLE

CONDUIT TO RISER AT POLE  
FOR PLASTIC OR STEEL CONDUIT

### APPLICATION

- THIS STANDARD SHALL BE USED WHEN A TRANSITION FROM A SINGLE DUCT TO SINGLE RISER PIPE IS REQUIRED.



### SUPPLEMENTARY MATERIAL

- IF BELLED END OF PLASTIC CONDUIT CAN BE CONNECTED TO STEEL BEND OMIT COUPLING.

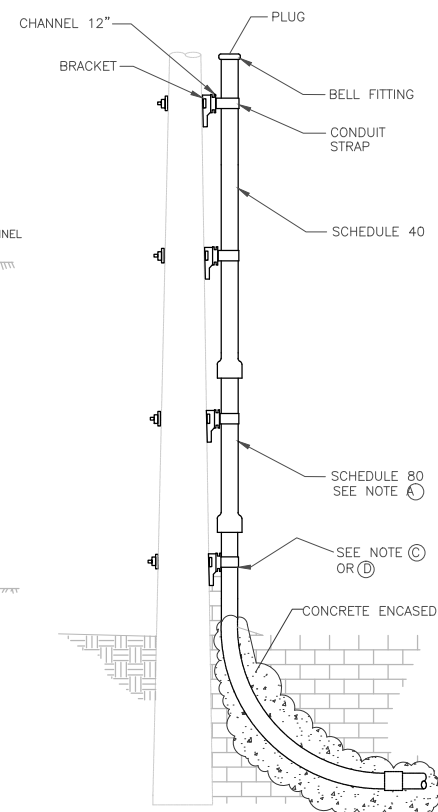
### NOTES:

- FIRST SECTION ABOVE ELBOW MUST BE SCHEDULE 80.
- FOR LARGER POLES (>50'), ADDITIONAL CONDUIT AND HARDWARE MAY BE REQUIRED.
- STEEL BEND AND POLE BRACKET EXISTING FROM PREVIOUS DUCT BANK INSTALLATION.
- INSTALL STEEL BEND AND POLE BRACKET AND CHANNEL.
- INSTALL SPARE OF CONDUIT UP POLE WITH BEND, ATTACH TO BRACKET AND PLUG.

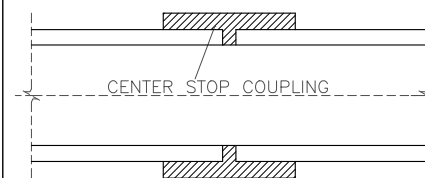
### INFORMATION

- FIELD CUT SO THAT A GOOD CONNECTING FIT CAN BE MADE BETWEEN THE CONDUITS AND BENDS.
- LOCATE THE BEND ON A QUADRANT OF THE POLE WHERE IT IS THE LEAST SUSCEPTIBLE TO DAMAGE BY VEHICLES.
- IF SPARE DUCT IS INSTALLED, PLUG AT BOTH ENDS AND ENCASE IN CONCRETE WHEN NECESSARY.
- SCHEDULE 80 PVC DOES NOT REQUIRE CONCRETE ENCASEMENT.
- CONDUIT TO A U-GUARD\* RISER FOLLOWS C20-5222, FOR USE AS MAINTENANCE ONLY.

## RISER CONSTRUCTION FOLLOW CONSTRUCTION STANDARD C20-5220

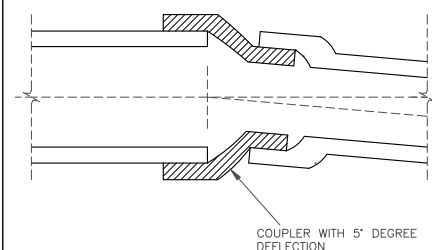


## PLASTIC CONDUIT COUPLINGS SUBTITLE LINE TWO



### PLASTIC TO PLASTIC OR PLASTIC TO STEEL COUPLING

SIZE	DPU-E #	MATERIAL / USE
3"	285-102-00040	PLASTIC TO PLASTIC
5"	285-102-00110	PLASTIC TO PLASTIC
6"	285-102-00140	PLASTIC TO PLASTIC
5"	285-102-00110	PLASTIC TO STEEL
6"	285-102-00140	PLASTIC TO STEEL



### PLASTIC TO PLASTIC 5" COUPLING

SIZE	DPU-E #	MATERIAL / USE
3"	285-102-00050	PLASTIC TO PLASTIC
5"	285-102-00120	PLASTIC TO PLASTIC
6"	285-102-00150	PLASTIC TO PLASTIC

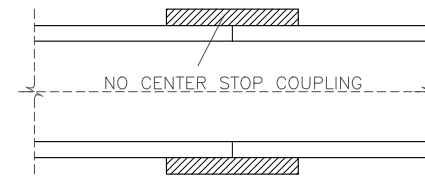
### PLUG W/PULL TAB

SIZE	DPU-E #
3"	285-103-00030
5"	285-103-00070
6"	285-103-00090

### APPLICATION

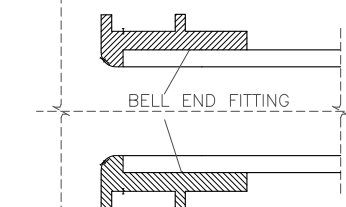
THIS STANDARD SHALL BE USED FOR THE INSTALLATION OF CONDUIT CONNECTIONS ON CONCRETE ENCASED PLASTIC CONDUIT DUCTBANK.

THE 6" EXPANDING PLUG W/EYE NUT DPU-E# 285-103-00150



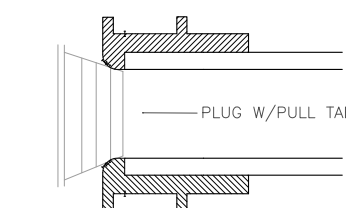
### PLASTIC TO PLASTIC OR PLASTIC TO STEEL SLEEVE

SIZE	DPU-E #	MATERIAL / USE
3"	285-102-00060	PLASTIC TO PLASTIC
5"	285-102-00100	PLASTIC OR STEEL
6"	285-102-00130	PLASTIC OR STEEL



### PLASTIC BELL END FITTINGS

SIZE	DPU-E #	MATERIAL
3"	285-103-00040	PLASTIC
5"	285-103-00080	PLASTIC
6"	285-103-00100	PLASTIC



NAPERVILLE PUBLIC UTILITIES DEPARTMENT	DUCTBANK CONSTRUCTION SPECIFICATION	DATE: 04-24-07
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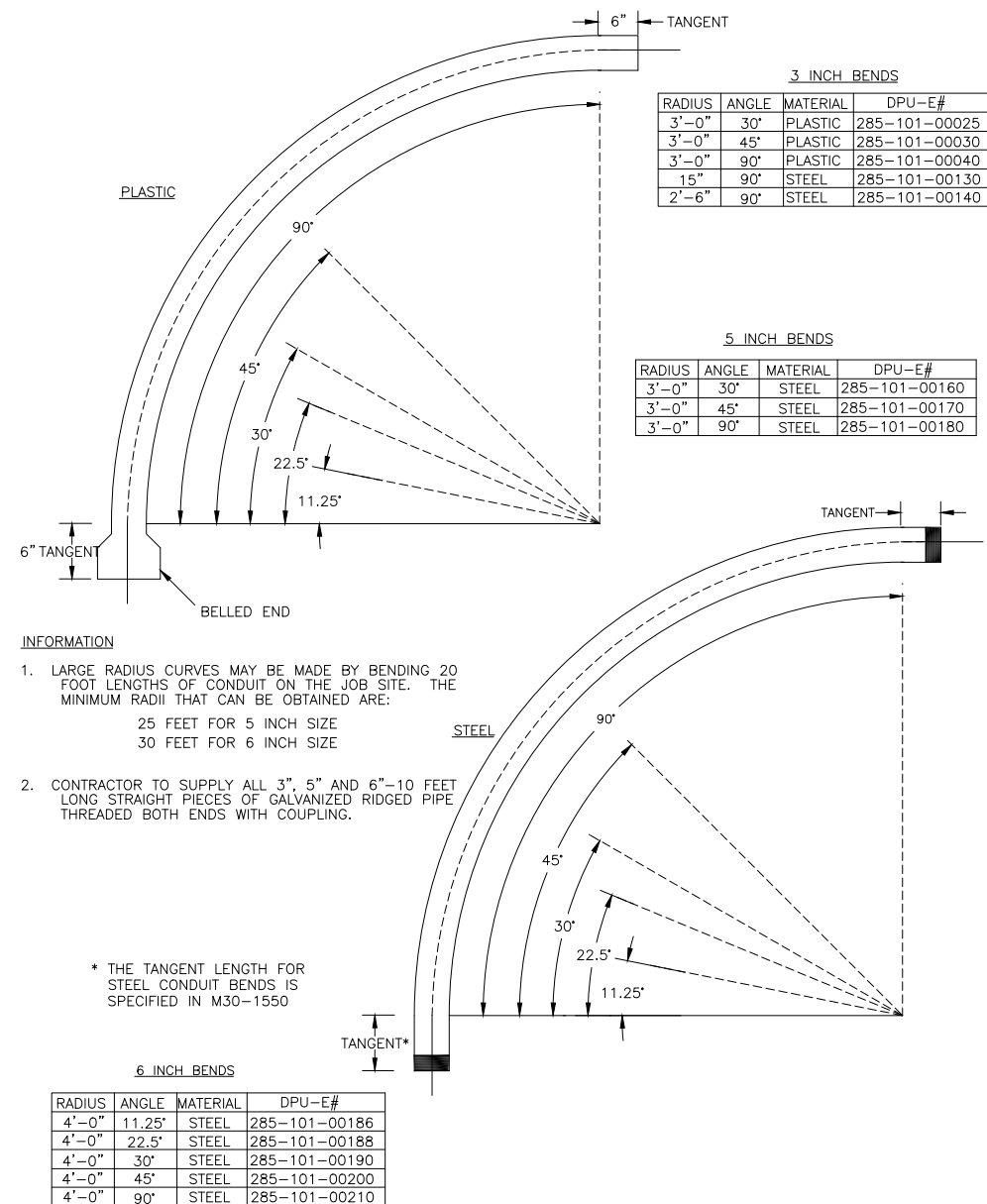
NAPERVILLE PUBLIC UTILITIES DEPARTMENT	DUCTBANK CONSTRUCTION SPECIFICATION	DATE: 04-24-07
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NAPERVILLE PUBLIC UTILITIES DEPARTMENT	DUCTBANK CONSTRUCTION SPECIFICATION	DATE: 04-24-07
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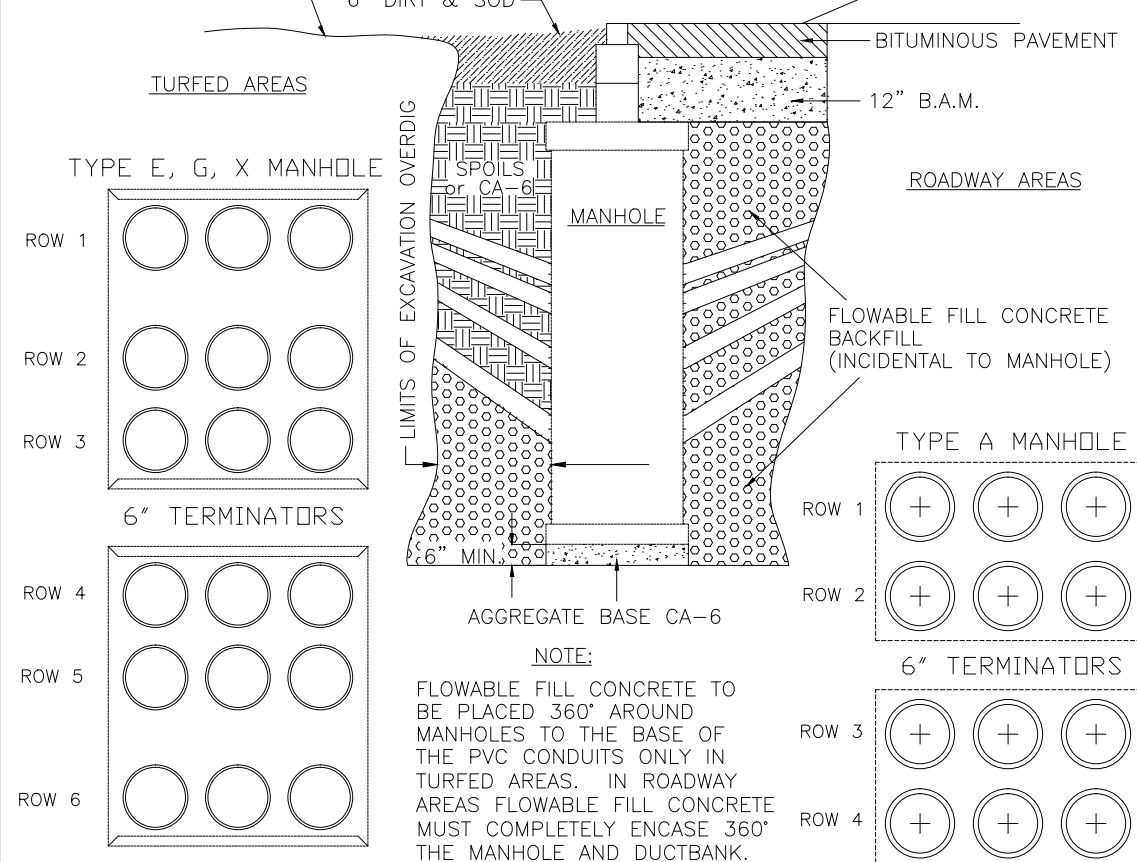
PROJECT TITLE ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION DETAILS AND STANDARDS			
ENGINEER BCC	DRAFTING DATE 8-04-12	MAP # 4211,4224	SCALE N.T.S.
GIS DESIGN BY DL	DRAFTED BY PSM	REVISIONS DATE N/A	PROJECT # EU-12
CHECKED BY	APPROVED BY	CAD FILE 0061123001D19.DWG	SHEET # 19 OF 40
Naperville		Department of Public Utilities Electric Division	
		WORK REQUEST # 61123	

PLASTIC & STEEL CONDUIT BENDS

FOR CONCRETE ENCASED CONDUIT  
BENDS, UP TO 90° DEGREE ANGLES



EXCAVATION DETAIL ELECTRICAL  
MANHOLES

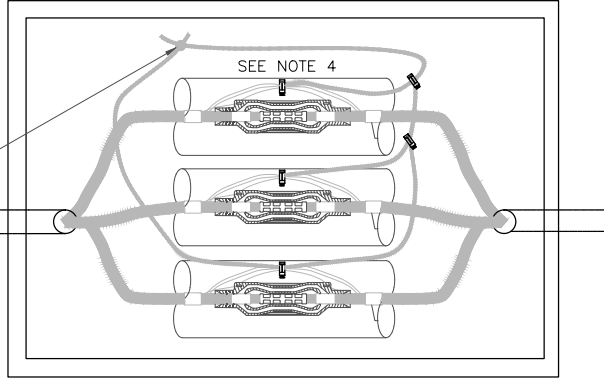
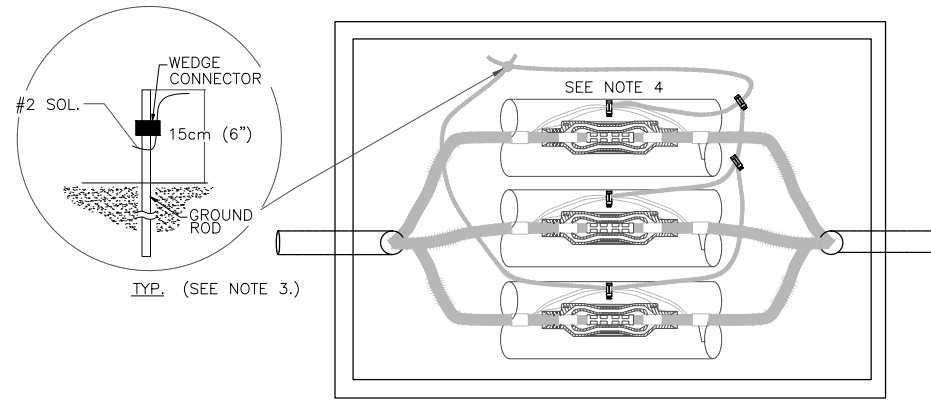


TYPICAL DUCT BANK ARRANGEMENT FOR PORT USAGE INTO MANHOLES

TYPE	ROW 1	ROW 2	ROW 3	ROW 4	ROW 5	ROW 6
4-WAY DUCT BANK	-----	-----	-----	2 X 6"	2 X 6"	-----
6-WAY DUCT BANK	-----	-----	-----	3 X 6"	3 X 6"	-----
8-WAY DUCT BANK	-----	-----	2 X 6"	3 X 6"	3 X 6"	-----
9-WAY DUCT BANK	-----	-----	3 X 6"	3 X 6"	3 X 6"	-----
10-WAY DUCT BANK	-----	1 X 6"	3 X 6"	3 X 6"	3 X 6"	-----
12-WAY DUCT BANK	-----	3 X 6"	3 X 6"	3 X 6"	3 X 6"	-----

FILL THE OUTSIDE DUCTS IN EACH ROW FIRST

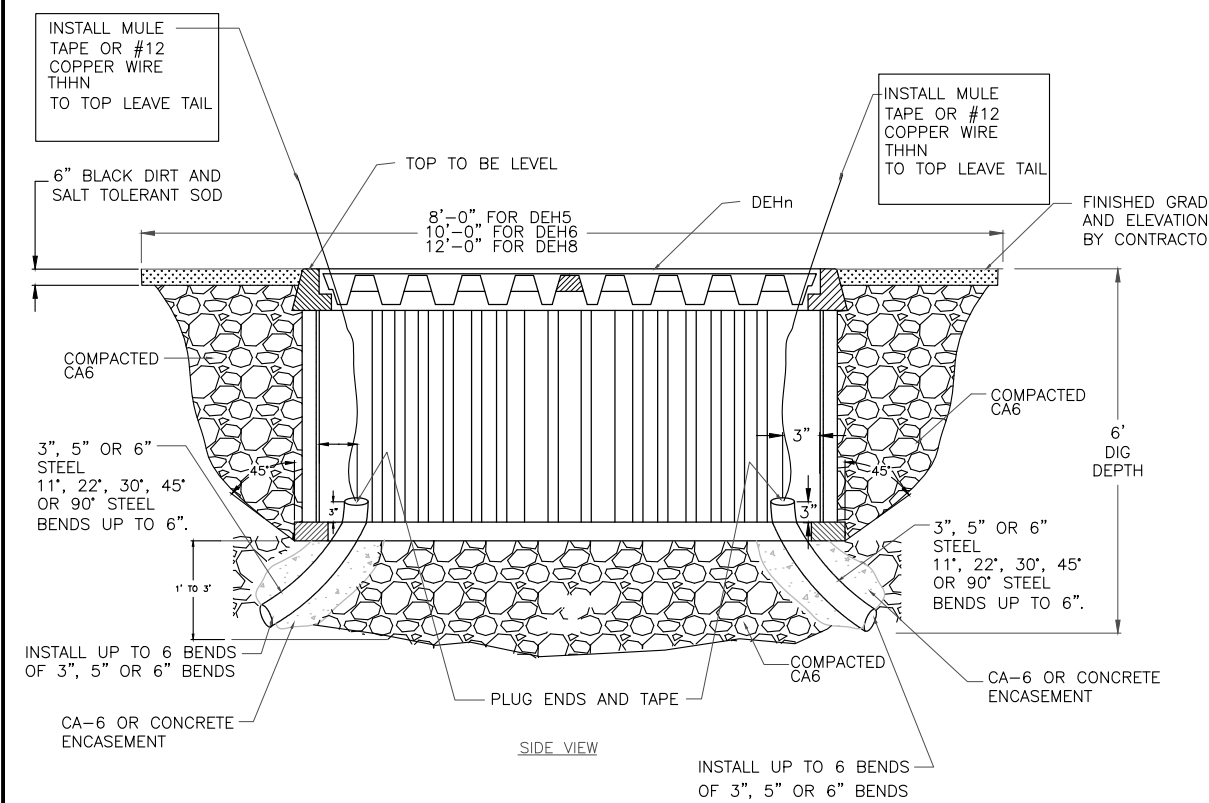
CONTRACT ~~60P42~~



TOP VIEW

ASSEMBLY CODES		
CODE	QTY	DESCRIPTION
DEHn	1	SPLICE BOX
DnBxxP	**	BEND, PVC
DnBxxS	**	BEND, STEEL
UGHn	1	GROUNDING HANDHOLE

n dependent on size  
 xx bend angle dependent on field condition (typically 30°)  
 \*\* quantity is dependent on application



SIDE VIEW

- NOTE:
- BENDS SHALL BE INSTALLED PER FIELD CONDITION.
  - SPARES NOT SHOWN.
  - GROUNDING WILL NOT BE INSTALLED AT TIME OF HANDHOLE INSTALLATION, BUT WILL BE INSTALLED WITH SPLICE.
  - BREAK-AWAY MUST BE WRAPPED WITH AQUA SEAL MASTIC TO PREVENT TEARING OF HEAT SHRINK WRAP AROUND SLEEVE.
  - INSTALL COVERS BEFORE BACKFILLING OPERATIONS TO HELP SUPPORT UPPER BOX SECTION WHILE EARTH IS PLACED AND COMPACTED.
  - EXCAVATION:
    - 8' LONG BY 6' DEEP BY 6' WIDE DEH5.
    - 10' LONG BY 6' DEEP BY 6' WIDE DEH6.
    - 12' LONG BY 6' DEEP BY 6' WIDE DEH8.
  - BACKFILL WITH COMPACTED CA6.
  - CUT HANDHOLE TO INSTALL PIPE, IF REQUIRED.
  - ALL MATERIALS BY THE CITY EXCEPT BACKFILL AND RESTORATION.
  - CABLE WORK NOT REQUIRED.
  - RESTORATION BY CONTRACTOR.

DEHn: HANDHOLE (SPLICE BOX)

Item Code	Description 1	Description 2	DEH			
			5	6	8	8A
284 104 00010	HANDHOLE	36" X 60" X 36"	1			
284 104 00020	HANDHOLE	48" X 78" X 36"		1		
284 104 00030	HANDHOLE	48" X 96" X 36"			1	
284 104 00040	HANDHOLE, ADJUSTABLE	48" X 96" X 36"				1

DnBxxP: BEND, PVC

Assembly	Item Code	Description 1	Description 2	Qty
D3B30P	285 101 00025	ELBOW, PVC 30 DEG 3"	STANDARD RADIUS SCH 40	1
D3B45P	285 101 00030	ELBOW, 36"R PVC 45 DEG 3"	SCH 40	1
D3B90P	285 101 00040	ELBOW, 36"R PVC 90 DEG 3"	SCH 40	1
D5B30P	285 101 00080	ELBOW, 36"R PVC 30 DEG 5"	SCH 40	1
D5B45P	285 101 00090	ELBOW, 36"R PVC 45 DEG 5"	SCH 40	1
D5B90P	285 101 00100	ELBOW, 36"R PVC 90 DEG 5"	SCH 40	1
D6B30P	285 101 00220	ELBOW, 48"R PVC 30 DEG 6"	SCH 40	1
D6B45P	285 101 00230	ELBOW, 48"R PVC 45 DEG 6"	SCH 40	1
D6B90P	285 101 00240	ELBOW, 48"R PVC 90 DEG 6"	SCH 40	1

D3BxxS: BEND, 3" STEEL

Item Code	Description 1	Description 2	Qty
285 101 00140	ELBOW, 30"R STL 90 DEG 3"	GALVANIZED	1
285 102 00040	COUPLING, PVC 3"	LONG LINE SCH 40	1

D5BxxS: BEND, 5" STEEL

Item Code	Description 1	Description 2	D5B30S	D5B45S	D5B90S
285 101 00160	ELBOW, 36"R STL 30 DEG 5"	GALVANIZED	1		
285 101 00170	ELBOW, 36"R STL 45 DEG 5"	GALVANIZED		1	
285 101 00180	ELBOW, 36"R STL 90 DEG 5"	GALVANIZED			1
285 102 00110	COUPLING, PVC 5"	LONG LINE SCH 40	1	1	1

D6BxxS: BEND, 6" STEEL

Item Code	Description 1	Description 2	D6B11S	D6B22S	D6B30S	D6B45S	D6B90S
285 101 00186	ELBOW, 48"R STL 11 DEG 6"	GALVANIZED	1				
285 101 00188	ELBOW, 48"R 22.5 DEG 6"	GALVANIZED		1			
285 101 00190	ELBOW, 48"R STL 30 DEG 6"	GALVANIZED			1		
285 101 00200	ELBOW, 48"R STL 45 DEG 6"	GALVANIZED				1	
285 101 00210	ELBOW, 48"R STL 90 DEG 6"	GALVANIZED					1
285 102 00140	COUPLING, PVC 6"	LONG LINE SCH 40	1	1	1	1	1

UGHn: GROUNDING, HANDHOLE

Item Code	Description 1	Description 2	UGH1	UGH3
280 107 00020	CU BARE SD	#2 SOL	10	30
283 156 00010	GROUND ROD COPPER CLAD	5/8" X 10'	1	1
286 100 00320	CONNECTOR, WEDGE CU	4/0 STR(7) - 5/8" ROD	1	1
286 101 00010	SHELL, WEDGE AMP	BLUE	1	1
286 199 00210	CONNECTOR, BREAK-AWAY CU	2SOL-2/OSTR X 2SOL-2/OSTR		2

PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
GIS DESIGN BY	DRAFTED BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
CHECKED BY	APPROVED BY	CAD FILE	SHEET #				
		0061123001D21.DWG	21 OF 40				
Naperville				Department of Public Utilities Electric Division			
				WORK REQUEST # 61123			



F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035</del>	DUPAGE		
		CONTRACT <del>60P42</del>		
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

**1. SCOPE**

This specification covers the manufacture and delivery of Large Radius Rigid Steel Conduit Galvanized Elbows.

**2. STANDARDS**

The steel elbows shall be manufactured and tested in accordance with the latest applicable standards of Underwriters Laboratory (UL 6), ANSI C80-1, and NEC 2002 – Article 344.

**3. TECHNICAL REQUIREMENTS**

**3.1 Material**

The elbows shall be manufactured from rigid galvanized steel conduit and conform to the most recent UL specifications.

**3.2 Specifications**

SIZE (INCHES)	RADIUS (INCHES)	DEGREES BEND	TANGENT (INCHES)*	NOM WT (LBS)	ARC LENGTH (INCHES)	MATERIAL ID
2"	36"	45°	11" ± 1	16	28.28"	N/A
2"	36"	90°	11" ± 1	18	56.57"	N/A
3"	15"	90°	9" ± ½	22	23.57"	285 101 00130
3"	30"	90°	11" ± 1	42	47.14"	285 101 00140
5"	36"	30°	11" ± 1	73	18.85"	285 101 00160
5"	36"	45°	11" ± 1	77	28.28"	285 101 00170
5"	36"	90°	11" ± 1	91	56.57"	285 101 00180
6"	48"	11°	12" ± 1	112	9.43"	285 101 00186
6"	48"	22.5°	12" ± 1	118	18.85"	285 101 00188
6"	48"	30°	12" ± 1	122	25.14"	285 101 00190
6"	48"	45°	12" ± 1	129	37.71"	285 101 00200
6"	48"	90°	12" ± 1	152	75.43"	285 101 00210

\*Tangent length shall be the same on both ends of the elbow.

**4. SHIPPING**

**4.1 Size**

The rigid steel galvanized elbows shall be shipped in palletized cartons or on pallets. Pallets shall be non-returnable and any associated costs shall be included in the quoted price of the steel elbows. All galvanized items shall have a total skid weight of less than 3000 pounds. Each layer shall have at least three (3) 2 X 4's as dividers for layer support and improved handling characteristics. The top layer shall be level dependent on the quantity ordered.

**4.2 Capping**

Plastic open-end thread protector caps to prevent the entrance of dirt and/or moisture shall be supplied to the open threaded ends of each rigid steel elbow.

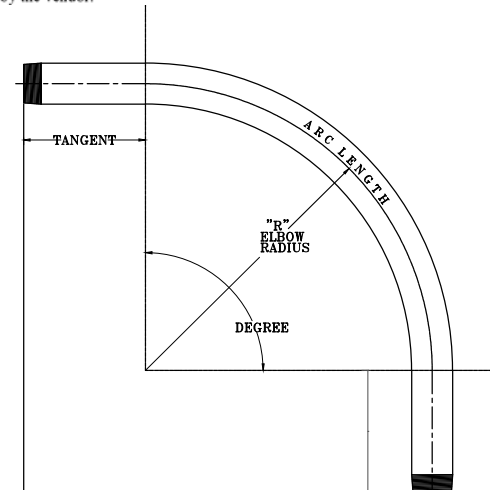
NAPERVILLE PUBLIC UTILITIES DEPARTMENT	LARGE RADIUS RIGID STEEL CONDUIT GALVANIZED ELBOWS	DATE: 01-16-05
ELECTRIC STANDARDS		Page 1 of 2 M30-1550

**4.3 Identification**

Rigid Steel Elbows shall have a durable label securely attached (or have a permanent stencil) on the elbows with the following information: Manufacturer's identification, radius, size, theoretic tangent length and degrees bend, P.O. number, shipping length of elbow, and year of manufacture.

**5. DELIVERY**

All pallets shall be shipped on a flat-bed trailer when the load requires. Pallets shall not be double stacked for shipment. There shall be no mixture of items on each pallet. The City shall be notified by telephone (630-420-6186) at least 24 hours prior to delivery of the pallets. Pallets shall be unloaded by the City between 8:00 a.m. and 3:30 p.m. on weekdays only, holidays excluded. Additional shipping costs resulting from failure to provide the 24 hour notice or from delivery of goods outside the specified times shall be paid by the vendor.



NAPERVILLE PUBLIC UTILITIES DEPARTMENT	LARGE RADIUS RIGID STEEL CONDUIT GALVANIZED ELBOWS	DATE: 01-16-05
ELECTRIC STANDARDS		Page 2 of 2 M30-1550

PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
GIS DESIGN BY	DRAFTED BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
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		0061123001D22.DWG	22 OF 40				
Naperville				Department of Public Utilities Electric Division			
				WORK REQUEST # 61123			

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035-1</del>	DUPAGE		
			CONTRACT <del>60R42-</del>	
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

**I. GENERAL**

- A. THIS SPECIFICATION COVERS THE SODDING AND SEEDING THAT ARE APPLICABLE TO ALL CITY PROPERTIES.
- B. ALL CONTRACTOR'S OPERATIONS ON CITY PROPERTIES SHALL MEET THE APPROVAL OF AND SHALL BE DONE TO THE SATISFACTION OF THE GENERAL SUPERINTENDENT OF THE CITY OR HIS AUTHORIZED REPRESENTATIVE.
- C. THE CONTRACTOR SHALL DEPOSIT WITH THE CITY A CERTIFIED OR CASHIER'S CHECK IN AN AMOUNT AS SPECIFIED IN "SPECIAL INSTRUCTIONS" OF THE "GENERAL SPECIFICATION AND INSTRUCTIONS TO BIDDERS". THE CONTRACTOR SHALL ALSO FURNISH THE CITY WITH A CERTIFICATE OF INSURANCE, PUBLIC LIABILITY AND PROPERTY DAMAGE. IN THE EVENT THE INSURANCE IS DEEMED UNSATISFACTORY BY THE CITY, THE CONTRACTOR SHALL, UPON REQUEST, FURNISH THE CITY WITH A SURETY BOND IN AN AMOUNT AS SPECIFIED IN THE SPECIFICATION "SPECIAL INSTRUCTIONS" OF THE "GENERAL SPECIFICATION".
- D. ALL WORK SHALL BE PAID FOR WORK, IN PLACE. ALL MEASUREMENT MADE BY THE CITY OF NAPERVILLE WITH ASSISTANCE OF THE CONTRACTOR OR NO ASSISTANCE IS FINAL.

**II. NOTIFICATION**

THE CONTRACTOR SHALL GIVE THE CITY 72 HOURS PRIOR NOTICE, EXCLUSIVE OF SATURDAYS, SUNDAYS OR LEGAL HOLIDAYS, BEFORE STARTING WORK OR ANY OPERATIONS ON THE CITY'S PROPERTY.

**III. TREE REMOVAL AND PROTECTION**

- A. ONLY TREES AND/OR OTHER PLANTINGS MARKED WITH PAINT SHALL BE REMOVED OR TRIMMED. ALL OTHER TREES OR PLANTINGS WITHIN THE WORK AREA ARE TO BE PROTECTED BY WOOD CRIBBING. ALL OTHER WORK REQUIRED SHALL BE DIRECTED BY THE PROJECT ENGINEER.

**IV. SODDING**

- B. ALL CONSTRUCTION STORAGE OF EQUIPMENT AND MATERIALS SHALL BE CONFINED TO THE RIGHT-OF-WAY OR SET ASIDE AREA PROVIDED BY THE CONTRACTOR OFF SITE AND SUBJECT TO THE APPROVAL OF THE GENERAL SUPERINTENDENT OF THE CITY OR HIS AUTHORIZED REPRESENTATIVE. ALL CONSTRUCTIONS ACTIVITIES SHALL BE CONFIRMED TO THE RIGHT-OF-WAY.
- C. ALL SURPLUS EXCAVATED MATERIALS SHALL BE DISPOSED OF OFF THE CITY'S PROPERTY. ALL TREES, STUMPS AND OTHER DEBRIS RESULTING FROM CONSTRUCTION OPERATIONS SHALL BE DISPOSED OF OFF THE CITY'S PROPERTY.
- D. IMMEDIATELY AFTER CONSTRUCTION OPERATIONS HAVE BEEN COMPLETED, ALL AREAS DISTURBED BY CONSTRUCTION OPERATIONS SHALL BE GRADED AS NEARLY AS POSSIBLE TO THEIR ORIGINAL CONTOURS EXCEPT AREAS OF EXCAVATION WHICH SHALL BE NEATLY CROWNED OVER TO ALLOW FOR SETTLEMENT.
- E. THE CONTRACTOR SHALL RETAIN A LICENSED LANDSCAPE CONTRACTOR APPROVED BY THE CITY TO PERFORM ALL THE FINAL TOPSOILING, FINE GRADING AND SEEDING OR SODDING WORK IN ACCORDANCE WITH PARAGRAPH F AND G BELOW. THE SEEDING OR SODDING SHALL BE DONE UNDER THE SUPERVISION OF THE CITY IN THE PROPER SEASON FOR SUCH WORK AND SHALL BE AT NO COST TO THE CITY.
- F. THE GRASS AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED WITH SOD AND 6 INCHES OF BLACK PULVERIZED DIRT, AREA PREPARED, EXISTING DIRT AND GRASS DEBRIS REMOVED AND DISPOSED OF OFF SITE, MADE LEVEL AND GRADED, ALL AREAS SHALL PROMOTE DRAINAGE, ALL EXCAVATED MATERIALS AND EXISTING GRASS AND LANDSCAPING SHALL REMOVED AND UNACCEPTABLE FILL REMOVED AND DEPOSITED OFF SITE.
- G. ALL GRASS WORK AREA'S SHOWN ON THE CONSTRUCTION DRAWINGS PLUS ALL OTHER AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED BY THE CONTRACTOR AND IS INCIDENTAL TO THE WORK. THE CONTRACTOR IS ADVISED SOME OF THE WORK AREAS ARE BETWEEN ROAD WAY PROPERTY LINES AND WITHIN THE ROAD AREA AS SHOWN ON COUNTY DRAWINGS SHALL BE DONE TO THE DUPAGE COUNTY DEPARTMENT OF TRANSPORTATION, SATISFACTION THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR SURFACE RESTORATION, FOR ALL AREA'S INSIDE/OUTSIDE THE ROAD AREA'S. THE CONTRACTOR SHALL REVIEW ALL DRAWING PREPARED TO DETERMINE THE EXACT LIMITS OF THE ROADWAY TO DETERMINE THE RESTORATION AREA'S, WHICH IS THEREFORE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL NOT BE GIVEN ANY CONSIDERATION BY THE OWNER FOR ANY CLAIM ARISING OUT OF A LACK OF UNDERSTANDING, INTENT, OR INTERPRETATION NOT CONSIDER WITH DRAWINGS OF THE ROAD AS APPLIED TO SURFACE RESTORATION.

ALL GRASS AREAS SHALL BE RESTORED WITH A MINIMUM 6 INCH LAYER OF DELIVERED SCREENED RICK DARK PULVERIZED TOP SOIL. TOP SOIL SHALL NOT BE PULVERIZED ON THE JOB SITE PRIOR TO THE APPLICATION OF THE TOP SOIL. ALL EXCAVATIONS SHALL BE PROPERLY BACKFILLED AND COMPACTED SO AS MINIMIZE FUTURE SETTLEMENT. TOP SOIL SHALL BE FREE FROM ROOTS STICKS, WEEDS, BRUSH, STONES, OR OTHER LITTER, WASTE PRODUCTS OR VISIBLE ORGANIC MATERIALS SUCH AS WOOD. IT SHALL BE A LOAMY MIXTURE HAVING AT LEAST 90 PERCENT PASSING THE NUMBER 10 SIEVE.

**IV. SODDING (CONTINUED)**

- H. A SAMPLE, FREE FROM EXTRANEIOUS MATERIALS, SHALL COMPLY WITH FOLLOWING REQUIREMENTS.  
IT SHALL CONTAIN NOT LESS THEN 1 PERCENT NOR MORE THAN 10 PERCENT ORGANIC MATTER AS DETERMINED BY THE TEST FOR ORGANIC MATTER IN ACCORDANCE WITH AASHTO T 194.  
IT SHALL CONTAIN NOT LESS THAN 12 PERCENT NOT MORE THAN 50 PERCENT CLAY AS DETERMINED IN ACCORDANCE WITH AASHTO 88.  
THE SAND CONTENT SHALL NOT EXCEED 55 PERCENT AS DETERMINED IN ACCORDANCE WITH AASHTO T 88.
- I. THE PH OF THE SAMPLE SHALL NOT BE LOWER THAN 5.0 OR HIGHER THAN 8.0. THE PH SHALL BE DETERMINED WITH AN ACCEPTABLE PH METER, IN THAT PORTION OF THE SAMPLE PASSING THE NUMBER 10 SIEVE, IN ACCORDANCE WITH THE SUGGESTED METHODS OF TEST FOR HYDROGEN ION CONCENTRATION (PH) OF SOILS INCLUDED IN THE PROCEDURES FOR TESTING SOILS ISSUED DECEMBER 1964 BY THE AMERICAN SOCIETY FOR TESTING AND MATERIALS.
- J. FERTILIZER SHALL BE A COMPLETE FERTILIZER, PART OF THE ELEMENTS OF WHICH IS DERIVED FROM ORGANIC SOURCES. IT SHALL CONTAIN A MINIMUM OF 5 PERCENT NITROGEN, 10 PERCENT PHOSPHORUS AND 5 PERCENT POTASH BY WEIGHT.
- K. SOD SHALL BE GOOD QUALITY KENTUCKY BLUE GRASS (POA PRATENSIS). SODDING SHALL BE DONE IN ACCORDANCE SECTION 252 (SODDING) OF THE LATEST REVISION OF THE STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, ILLINOIS DEPARTMENT OF TRANSPORTATION. THE SOD SHALL BE SALT TOLERANT. THE SOD SHALL BE STAKED TO MAINTAIN POSITION ON THE GROUND DUE TO A SLOPE OR A POSSIBLE TURNOFF.
- L. THE SOD SHALL BE STAKED ON ALL SLOPES OF 1:4 (V:H) OR STEEPER. SOD SHALL BE STAKED WITH NOT LESS THAN 4 STAKED PER SQUARE YARD, WITH A MINIMUM OF ONE STAKE FOR EACH PIECE OF SOD, MOWING STAKES SHALL BE INSTALLED SO THEY HOLD THE SOD FIRMLY AND PRESENT NO DANGER TO PEDESTRIAN OR MOWING CREWS.
- M. WITHIN 2 HOURS AFTER THE SOD HAS BEEN PLACED, 5 GALLONS OF WATER PER SQUARE YARD SHALL BE APPLIED. ANOTHER WATERING WITHIN 3 DAYS OF THE PLACEMENT SHALL BE APPLIED (5 GAL./S.Y.), THEN ONE MORE WATERING WITHIN 5 DAYS OF THE LAST AT THE SAME 5 GAL./S.Y. RATE. HOWEVER, IN THE ABSENCE OF 1 INCH OF RAIN PER WEEK, SODDED AREAS SHALL BE WATERED A MINIMUM OF 3 TIMES A WEEK WITH 5 GALLONS OF WATER PER SQUARE YARD APPLIED FOR NOT LESS THAN 6 WEEKS USING CONTRACTORS SUPPLIED WATER AND AS CALLED FOR IN ACCORDANCE WITH SECTION 250 AND SECTION 252 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE LATEST REVISION, ILLINOIS OF TRANSPORTATION. ALL WATERING SHALL START THE DAY THE SOD IS FIRST PUT DOWN. ALL WATER USED SHALL BE CONTRACTOR SUPPLIED WATER. A FAILURE TO WATER THE SOD MAY RESULT IN THE CITY OF NAPERVILLE REJECTING ALL RESTORATION WORK PERFORMED. CITY OF NAPERVILLE SHALL REQUIRE ALL SOD IN AN AREA REMOVED, RE-PREP THE AREA, AND INSTALL NEW SOD.
- N. THE CONTRACTOR AT HIS EXPENSE SHALL DISPOSE OF SURPLUS MATERIALS AND WASTE ITEMS.
- O. SODDING SHALL BE MEASURED BY THE SQUARE YARD. ALL TURFED AREAS RESTORED WITH SOD WITHIN THE LIMITS OF RESTORATION WILL BE ELIGIBLE FOR PAYMENT. AREAS BEYOND THE PUBLIC RIGHT-OF-WAY OR THE EASEMENT AREAS SHOWN THAT ARE DISTURBED BY THE CONTRACTOR'S ACTIVITIES SHALL BE RESTORED TO EQUAL OR BETTER CONDITION BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. IN NO CASE SHALL THE PAY LIMITS FOR RESTORATION EXTEND BEYOND 20 FEET TOTAL WIDTH/RADIUS FROM THE CENTER OF THE PROPOSED WORK LOCATION BEING CONSTRUCTED OR A 20 FEET WIDTH FOR A TRENCH LENGTH.
- P. CONTRACTOR IS ADVISED SODDING INSTALLATION, REMOVAL AND REPLACEMENT IS INCLUDED IN THE APPROPRIATE UNIT PRICING FOR FOUNDATIONS, POLE ERECTION, CONDUIT WORK, MANHOLE WORK AND VAULT WORK OR AS SPECIFIED.
- Q. ALL VANDALISM, RUTS, OR DAMAGE OF ANY KIND SHALL BE CAUSE FOR REPLACEMENT AT CONTRACTOR'S COST.
- R. PAYMENT FOR SODDING SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SALT TOLERANT SODDING. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS TO COMPLETE THE ITEM AS SHOWN ON THE PLANS AND AS SPECIFIED. FERTILIZING AND INITIAL WATERING SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR SODDING.
- S. THE SODDING AND RESTORATION WORK SHALL CARRY A 1 YEAR 6 MONTHS GUARANTEE FROM THE DATE OF FINAL PAYMENT AND IS INCLUDE IN THE PRICING FOR THIS ITEM.

**V. SEEDING**

- A. THE WORK SHALL INCLUDE THE SEEDING AND FERTILIZING OF ALL DISTURBED AREAS ALONG THE PROPOSED IMPROVEMENTS AS DIRECTED BY THE ENGINEER.
- B. SEEDING AND FERTILIZING MATERIALS SHALL BE IN ACCORDANCE WITH SECTION 250 OF THE STANDARD SPECIFICATIONS. SEED SHALL BE CLASS 1A, SALT TOLERANT LAWN MIXTURE.
- C. CONTRACTOR SHALL REMOVE ALL UNSUITABLE MATERIALS, DEBRIS AND RUBBISH RESULTING FROM CONSTRUCTION OPERATIONS, AND AN STONES OR BOULDERS LARGER THAN 1 INCH SHALL BE REMOVED FROM THE SITE.
- D. THE GROUND SHALL BE PREPARED PRIOR, BUT NOT IN EXCESS OF 24 HOURS BEFORE THE SEED IS PLACED. THE SOIL SHALL BE WORKED UNTIL IT IS RELATIVELY FREE FROM DEBRIS, WASHES, GULLIES, CLOUDS AND STONES. THE SURFACE SHALL BE WORKED TO A DEPTH OF NOT LESS THAN 3 INCHES, WITH A DISK, TILLER, OR THEIR EQUIPMENT APPROVED BY THE ENGINEER. PREPARED SURFACES THAT BECOME CRUSTED SHALL BE REWORKED TO AN ACCEPTABLE CONDITION FOR SEEDING AND A MINIMUM 6 INCHES OF PULVERIZED TOP SOIL SHALL BE PLACED OVER ALL DISTRIBUTED AREAS. ALL SOIL SURFACES SHALL BE MOIST WHEN THE SEED IS APPLIED. AREAS SHOWN TO BE AGRICULTURE IN NATURE SHALL BE RESTORED WITH AN EQUAL DEPTH OF TOP SOIL. SEEDED AREAS SHALL BE COVERED IMMEDIATELY AN EXCELSIOR BLANKET IS INCLUDED IN THIS WORK.
- E. FERTILIZER SHALL BE APPLIED AT THE FOLLOWING RATES:  
  

NITROGEN FERTILIZER NUTRIENTS	90 LBS/ACRE.
PHOSPHORUS FERTILIZER NUTRIENTS	54 LBS/ACRE.
POTASSIUM FERTILIZER NUTRIENTS	36 LBS/ACRE.
- F. HYDRO SEEDED WITH APPROVED GRASS SEED AT A RATE OF 175 POUNDS PER ACRE AND MULCHED AS DIRECTED BY THE CITY OF NAPERVILLE. THE CONTRACTOR SHALL FURNISH APPROVED TOP SOIL TO INSURE A 6 INCH COVERAGE OVER THE AREA TO SEEDED AND WATERED. THE SEED IS TO BE MIXED IN THE FOLLOWING PROPERTIES.  
  

40 LBS. KENTUCKY BLUE GRASS PLUS FERTILIZER PER IDOT REQUIREMENTS.
40 LBS. ALTA FESCUE GRASS.
20 LBS. PERENNIAL RYE GRASS.
- G. AREAS BEYOND THE PUBLIC RIGHT-OF-WAY OR THE EASEMENT AREAS SHOWN THAT ARE DISTURBED BY THE CONTRACTOR'S ACTIVITIES SHALL BE RESTORED TO EQUAL OR BETTER CONDITION BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. IN NO CASE SHALL THE PAY LIMITS FOR RESTORATION EXTEND BEYOND 20 FEET TOTAL WIDTH/RADIUS FROM THE CENTER OF THE PROPOSED UTILITY BEING CONSTRUCTED OR A 20 FEET WIDTH FOR A TRENCH LENGTH.
- H. ALL SEEDED AREAS SHALL BE MOWED 4 TIMES TO A HEIGHT OF 3 INCHES. THE CUT MATERIAL SHALL NOT BE WIND ROWED OR LEFT IN A LUMPY CONDITION BY EVENLY DISTRIBUTED. AREAS BEYOND THE WORK AREA LIMITS SHOWN ON THE PLAN SHALL BE RESTORED TO BETTER OR EQUAL CONDITIONS AT THE CONTRACTOR'S EXPENSE.
- I. WITHIN 2 HOURS AFTER THE SEED HAS BEEN PLACED, 3 GALLONS OF WATER PER SQUARE YARD SHALL BE APPLIED. ANOTHER WATERING WITHIN 3 DAYS OF THE PLACEMENT SHALL BE APPLIED (3 GAL./S.Y.), THEN ONE MORE WATERING WITHIN 5 DAYS OF THE LAST AT THE SAME 3 GAL./S.Y. RATE. HOWEVER, IN THE ABSENCE OF 1 INCH OF RAIN PER WEEK, SEEDED AREAS SHALL BE WATERED A MINIMUM OF 3 TIMES A WEEK, WITH 3 GALLONS OF WATER PER SQUARE YARD APPLIED FOR NOT LESS THAN 6 WEEKS USING CONTRACTORS SUPPLIED WATER AND AS CALLED FOR IN ACCORDANCE WITH SECTION 250 AND SECTION 252 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE LATEST REVISION, ILLINOIS DEPARTMENT OF TRANSPORTATION. ALL WATERING SHALL START THE DAY THE SEED IS FIRST PUT DOWN. ALL WATER USED SHALL BE CONTRACTOR SUPPLIED WATER. A FAILURE TO WATER THE SEED MAY RESULT IN THE CITY OF NAPERVILLE REJECTING ALL RESTORATION WORK PERFORMED. CITY OF NAPERVILLE SHALL REQUIRE ALL SEEDED AREAS REMOVED, RE-PREP THE AREA, AND INSTALL NEW SEED.
- J. THIS WORK INCLUDES ALL SEED, FERTILIZER, WATERING, OTHER MATERIALS, LABOR EQUIPMENT AND INCIDENTALS TO COMPLETE THE JOB OR AS DIRECTED BY THE ENGINEER ON A UNIT OF PER ACRE.
- K. THE SEEDING AND RESTORATION WORK SHALL CARRY A 1 YEAR 6 MONTHS GUARANTEE FROM THE DATE OF FINAL PAYMENT (RECEIPT OF AS BUILTS') AND IS INCLUDED IN PRICING FOR THIS ITEM.
- L. CONTRACTOR IS ADVISED SEEDING INSTALLATION, REMOVAL AND REPLACEMENT IS INCLUDED IN THE APPROPRIATE UNIT PRICING FOR FOUNDATIONS, POLE ERECTION, CONDUIT WORK, MANHOLE WORK AND VAULT WORK OR AS SPECIFIED.
- M. ALL VANDALISM, RUTS, OR DAMAGE OF ANY KIND SHALL BE CAUSE FOR REPLACEMENT AT CONTRACTOR'S COST.
- N. PAYMENT FOR SEEDING SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER ACRE FOR SEEDING. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS TO COMPLETE THE ITEM AS SHOWN ON THE PLANS AND AS SPECIFIED. FERTILIZING AND INITIAL WATERING SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR SEEDING.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	SODDING AND SEEDING WORK ON CITY PROPERTY OVERHEAD OR UNDERGROUND CONSTRUCTION (CONSTRUCTION SPECIFICATION)	DATE: 05-01-05 Page 1 of 3 60468-200
ELECTRIC STANDARDS		

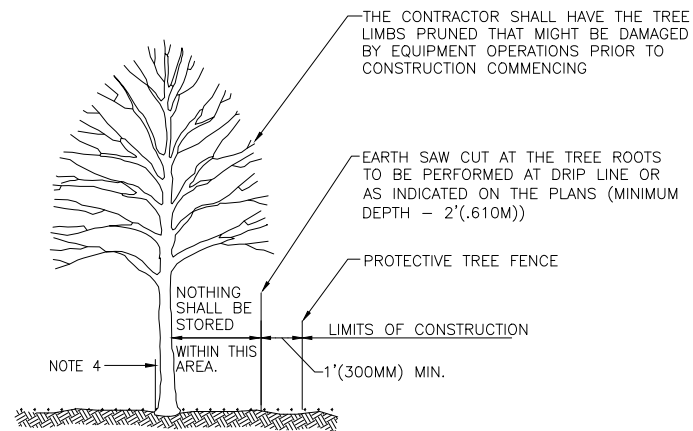
NAPERVILLE PUBLIC UTILITIES DEPARTMENT	SODDING AND SEEDING WORK ON CITY PROPERTY OVERHEAD OR UNDERGROUND CONSTRUCTION (CONSTRUCTION SPECIFICATION)	DATE: 05-01-05 Page 2 of 3 60468-200
ELECTRIC STANDARDS		

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	SODDING AND SEEDING WORK ON CITY PROPERTY OVERHEAD OR UNDERGROUND CONSTRUCTION (CONSTRUCTION SPECIFICATION)	DATE: 05-01-05 Page 3 of 3 60468-200
ELECTRIC STANDARDS		

PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
GIS DESIGN BY	DRAFTED BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
CHECKED BY	APPROVED BY	CAD FILE	SHEET #				
		0061123001D23.DWG	23 OF 40				
Naperville				Department of Public Utilities Electric Division			
				WORK REQUEST # 61123			

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035</del>	DUPAGE		
			CONTRACT <del>60P42</del>	
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

**TREE PROTECTION DETAIL**

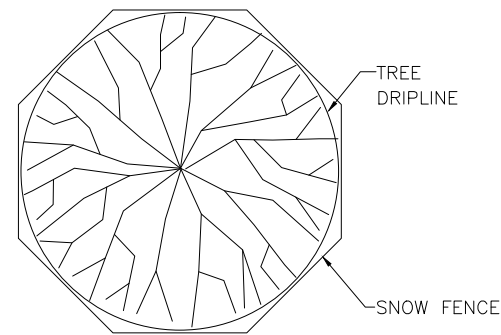


**NOTE:**

1. IF A UTILITY MUST BE WITHIN 15 FEET OF A TREE TRUNK, IT IS RECOMMENDED THAT IT BE AUGERED.
2. ALL TREES PROTECTED SHALL BE DEEP ROOT FERTILIZED.
3. ALL TREES SHALL BE WATERED.
4. PROTECT TREES WITH PLANKS FOR 10' ABOVE GROUND AND COMPLETELY AROUND TREE.
5. ALL MATERIALS SUPPLIED BY CONTRACTOR.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	<b>TREE PROTECTION DETAIL</b>	DATE: 05-01-05 Page 1 of 1 60468-300
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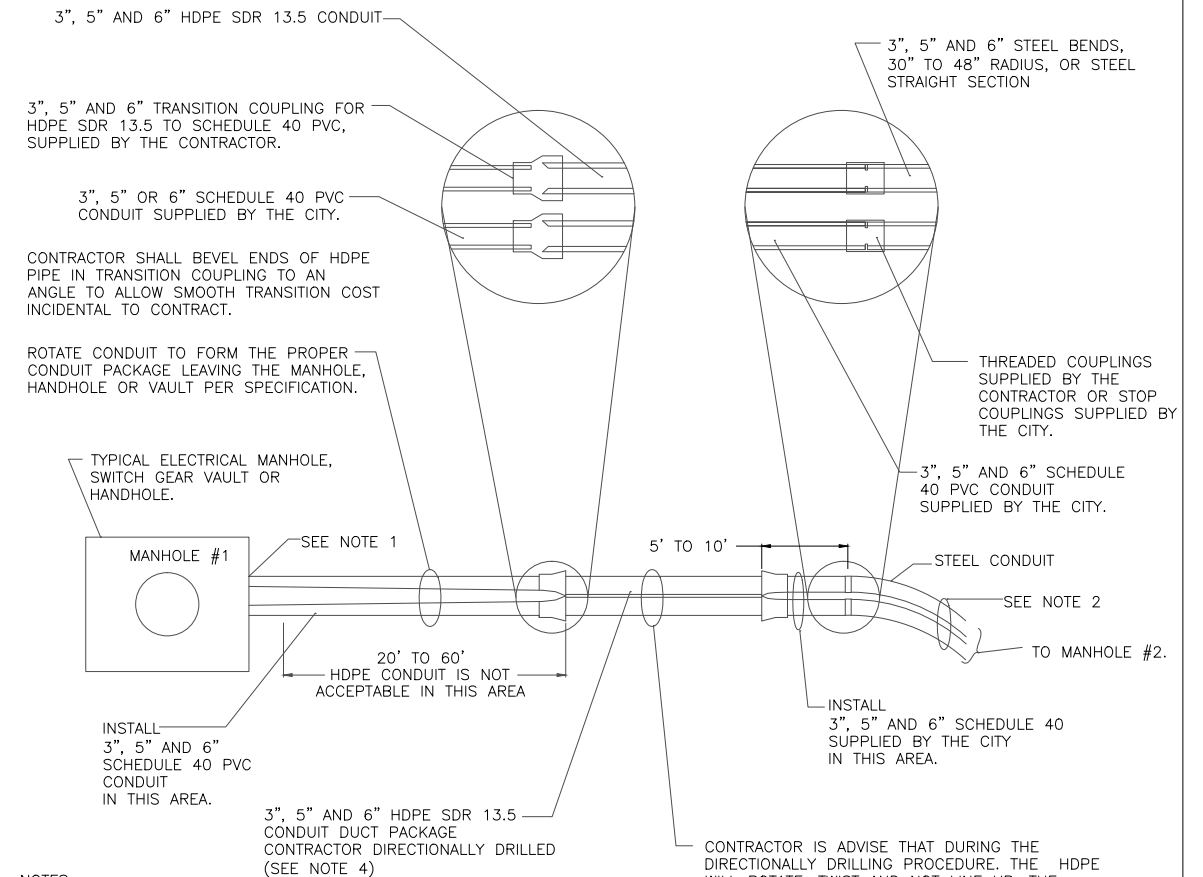
**RECOMMENDED PRACTICES FOR TREES TO BE SAVED**



1. SNOW FENCE SHALL EXTEND TO THE DRIPLINE OF THE TREE. THE SNOW FENCE SHALL BE HIGH ENOUGH SO AS TO BE VISIBLE TO ALL CONSTRUCTION PERSONNEL.
2. GRADE CHANGES, UTILITY TRENCHES, STORAGE OF CONSTRUCTION MATERIAL, DUMPING OF WASTE OR STORAGE OF CONSTRUCTION EQUIPMENT SHALL NOT BE ALLOWED WITHIN SNOW FENCING.
3. IF A UTILITY MUST BE WITHIN 15'(4.57M) OF A TREE TRUNK, IT IS RECOMMENDED THAT IT BE AUGERED.
4. ALL TREES TO BE SAVED WHICH HAVE BEEN SUBJECTED TO CONSTRUCTION ACTIVITY WITHIN THE DRIPLINE SHOULD BE SELECTIVELY THINNED 10% BY AN ARBORIST SKILLED AT THE SELECTIVE THINNING PROCEDURE. NONE OF THE TREES SHALL BE TOPPED, HEADED BACK, SKINNED (REMOVAL OF THE INTERIOR BRANCHES), OR CLIMBED WITH SPIKES. ALL DEAD WOOD SHOULD BE REMOVED TO AVOID HAZARD.
5. IT IS RECOMMENDED THAT FOLLOWING CONSTRUCTION, TREES BE MAINTAINED IN THEIR NATIVE CONDITION. NO LAWN SHOULD BE PLACED AROUND THE TREES. IT IS RECOMMENDED THAT THE AREA BE MULCHED WITH 2"(50MM) OF DECOMPOSED LEAVES AND 2"(50MM) OF WOOD CHIPS OR BARK.
6. ALL TREES PROTECTED SHALL BE DEEP ROOT FERTILIZED.
7. ALL TREES SHALL BE WATERED.
8. ALL MATERIALS SUPPLIED BY CONTRACTOR.

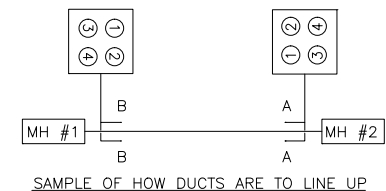
NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	<b>RECOMMENDED PRACTICES FOR TREES TO BE SAVED</b>	DATE: 05-01-05 Page 1 of 1 60468-310
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**TYPICAL CONDUIT CONNECTIONS ENTERING MANHOLE, HANDHOLE AND VAULTS WHEN HDPE CONDUIT IS USED**



**NOTES:**

1. SEE SPECIFICATION FOR PROPER DUCT ALIGNMENT INTO MANHOLE
2. SEE SPECIFICATION FOR PROPER DUCT ALIGNMENT ON THE OTHER END OF DUCT RUN THE NUMBERED DUCTS SHOULD BE IN THE SAME LOCATION ON BOTH ENDS (SEE SAMPLE AT LOWER RIGHT).
3. COST TO PROPERLY INSTALL CONDUIT FROM ONE ELECTRICAL FACILITY TO ANOTHER IS INCIDENTAL TO THE COST OF THE WORK.
4. DUCT PACKAGE CAN BE ANY NUMBER OF DUCTS, FROM 2 DUCTS TO 18 DUCTS.
5. COST OF ALIGNING DUCTS ARE INCIDENTAL TO THE CONTRACT.



NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	<b>TYPICAL CONDUIT CONNECTIONS</b>	DATE: 01-02-08 60468-320
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PROJECT TITLE <b>ROUTE 59 ROAD IMPROVEMENTS</b>			
PROJECT DESCRIPTION <b>DETAILS AND STANDARDS</b>			
ENGINEER BCC	DRAFTING DATE 8-04-12	MAP # 4211,4224	SCALE N.T.S.
GIS DESIGN BY DL	DRAFTED BY PSM	REVISIONS DATE N/A	PROJECT # EU-12
CHECKED BY	APPROVED BY	CAD FILE 0061123001D24.DWG	SHEET # 24 OF 40
Naperville Department of Public Utilities Electric Division			WORK REQUEST # 61123

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035</del>	DUPAGE		
			CONTRACT	<del>60P42</del>
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

### Guided Horizontal Drilling System (HDD)

The work specified in this specification consists of furnishing and installing underground utilities using the horizontal directional drilling (HDD) method of installation, also commonly referred to as directional boring or guided horizontal boring. This work shall include all services, equipment, materials, and labor for the complete and proper installation, testing, restoration of underground utilities and environmental protection and restoration. For the supply of domestic water during construction, the contractor shall utilize cities supply (meter & backflow device) and pay for all water consumed. Un-accountable domestic water quantities shall be minimized, where possible.

The requirements set forth in this specification specify a wide range of procedure precautions necessary to insure that the very basic, essential aspects of proper directional bore installation are adequately controlled. Strict adherence shall be required under specifically covered conditions outlined in these specifications or within any associated permit. Adherences to the specifications contained herein are required. DPU-E approval on any aspect of any directional bore operation covered by this specification shall in no way relieve the Contractor of their ultimate responsibility for the satisfactory completion of the work authorized under the Contract. The HDD Contractor shall be responsible for the repair of all damage to private and/or public property (at no expense to DPU-E). Repair work shall meet all local state and federal rules and requirements.

The project schedule shall be established on the basis of working a normal work schedule including five days per week, single shift, and eight hours per day. Unless approved otherwise by DPU-E normal or general items of work, such as testing, and final inspections, shall be scheduled during the normal work schedule. Due to operational, and manpower limitations on the DPU-E systems, DPU-E will require the Contractor to perform outage work outside of the normal work schedule. These operational outage and manpower limitations, including but not limited to tie-in work, (cut-in work or other work) and other phases of the work are required to limit the impact and the continued (non-interruptible) service to existing DPU-E customers. The Contractor shall plan and anticipate the cost impact of these systems limitations and provide such work or services at no additional cost to DPU-E.

Prior to beginning work, the Contractor must submit to DPU-E a work plan detailing the procedure and schedule to be used to execute the project. The work plan should include a description of all equipment to be used, down-hole tools, a list of personnel and their qualifications and experience (including back-up personnel in the event that an individual is unavailable), list of sub-Contractor, a schedule of work activity, a safety plan (including MSDS of any potentially hazardous substances to be used), traffic control plan (if applicable), an environmental protection plan and contingency plans for possible problems including a Frac-Out and Surface Spill Contingency Plan. Work plan should be comprehensive, realistic and based on actual working conditions for this particular project. Plan should document the thoughtful planning required to successfully complete the project. The HDD Contractor shall submit and obtain DPU-E's approval of a pre-construction bore-log depicting a plan and profile (horizontal and vertical alignment) of the proposed bore path. The bore-log shall show all utility crossings and existing structures.

The DPU-E representative must be notified 96 hours (minimum) in advance of starting the drilling work. The Directional Bore shall not begin until the proper preparation (work plan) for operation has been completed.

Prior to any alterations to work-site, Contractor shall video tape entire work area. One copy of which shall be given to DPU-E Representative and one copy to remain with Contractor for a period of two (2) years following the completion of the project.

HDD – Horizontally directionally drilling by definition.

### Guided Horizontal Drilling System (HDD) (Continued)

Work site shall be graded and filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas. Following drilling operations, Contractor will de-mobilize equipment and restore the work-site to original condition or better. All exactions will be backfilled and compacted to 95% of original density (as a minimum).

Contractor shall place site/silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, state, federal and local regulations. Contractor shall place hay bales, or approved protection, to limit instruction upon project area. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, lines, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations including environment condition stated in local, state and federal permits. Fuel may not be stored in bulk containers (greater than 25 gallons) within 200' of any water-body or wetland.

The horizontal Directional Drilling operation is to be operated in a manner to eliminate the discharge of water, drilling mud and cuttings to the adjacent creek or land areas involved during the construction process. The Contractor shall provide equipment and procedures to maximize the recirculation or reuse of drilling mud to minimize waste. All excavated pits used in the drilling operation shall be lined by Contractor with heavy duty plastic sheeting with sealed joints to prevent the migration of drilling fluids and/or ground water.

The Contractor shall visit the site and must be aware of all structures and the limitations at the directional drill crossing and provide the Engineer with a drilling plan outlining procedures to prevent drilling fluid from adversely affecting the surrounding area.

Clearing and grubbing shall consist of the removal and disposal of all trees (less than 6" dia.), stumps, roots, logs, shrubs, grass, weeds, fallen timber and other surface liter, wherever they occur within the right-of-way and within such other areas as directed and staked out by the Contractor.

Within the limits of the right-of-way and staked out by the Contractor's land surveyor all brush and trees, except those designated to be saved, shall be cut level with the ground, and all surface debris, including fallen timber, slash limbs, brush, grass and weeds, shall be disposed of off site.

Within areas where excavation will be made and where the embankment grade is less than 3 feet above the original ground level, all stumps and roots shall be grubbed out.

Trees shall be felled towards the centre of the area to be cleared. Any brush or trees falling outside of the area to be cleared shall be moved back to the right-of-way and disposed of. The Contractor shall take all precautions against damage to other trees, traffic, structures, pole lines or property in his felling of trees, and he shall be liable for any damages occurring in the performance of this work.

Clearing and grubbing shall be completed in advance of grading operations. The Contractor shall not start any clearing, grubbing without permission from the Engineer.

Removal of debris shall be carried on concurrently with clearing operations so that the debris from each day's operations is disposed of in that day. No additional compensation will be payable because of being required to handle the debris in this manner.

### Guided Horizontal Drilling System (HDD)

Debris and other materials must be disposed of off site by the Contractor and shall perform these operations well in advance of grading operations

Clearing, grubbing operations shall be conducted in accordance with the applicable Federal, County and Municipal regulations and Acts.

Before final acceptance of the work, the Contractor shall make a final clean-up of the right-of-way and remove debris which may have been covered with snow or blown in by the wind after the original clearing and grubbing operations were completed at no cost.

The general work areas on the entry and exit sides of the crossing shall be enclosed by a berm to contain unplanned spills or discharge.

Waste cuttings and drilling mud shall be processed through a solids control plant comprised as a minimum of sumps, pumps, tanks, desalter/desander, centrifuges, material handlers and haulers all in a quantity sufficient to perform the cleaning/separating operation without interference with the drilling program. The cuttings and excess drilling fluids shall be dewatered and dried by the Contractor to the extent necessary for disposal in offsite landfills. Water from the dewatering process shall be treated by the Contractor to meet permit requirements and disposed of locally. The cuttings and water for disposal are subject to being sampled and tested. The construction site and adjacent areas will be checked frequently for signs of unplanned leaks or seeps.

Equipment (graders, shovels, etc.) and materials (such as groundsheets, hay bales, booms and absorbent pads) for cleanup and contingencies shall be provided in sufficient quantities by the Contractor and maintained at all sites for use in the event of inadvertent leaks, frac out, seeps or spills.

Waste drilling mud and cuttings shall be dewatered, dried, and stock piled such that it can be loaded by a front end loader., transferred to a truck and hauled offsite to a suitable legal disposal site. The maximum allowed water content of these solids is 50% of weight.

Due to a limited storage space at the worksites, dewatering and disposal work shall be concurrent with drilling operations. Treatment of water shall satisfy regulatory agencies before it is discharged.

The Contractor shall install; 3inch, 5 Inch or 6 inch HDPE coilable conduit, into various configurations and lengths and combinations. Contractor to review drawings for all work. The HDPE coilable conduit shall be connected by the butt fusion process. The Contractor shall reposition the conduit, for installation in to electrical facilities after installing the HDPE conduit by the HDD method, using schedule 40 PVC or Steel conduit and positioning conduit into the proper cross sections. The Contractor is to connect HDPE conduit by rotating, aligning, cutting, leveling, bending, coupling, mitering, measuring, cropping, fitting, positioning and laying out the conduit using steel conduit or schedule 40 PVC as required to provide the cross section required and then connecting this cross section to splices boxes, hand holes, manholes, switchgear vaults, transformer vaults, pedestals or risers. The work to reposition the HDPE is included in the contract and is incidental to the pricing.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08 PAGE: 1 OF 25 C30-1950
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NAPERVILLE PUBLIC UTILITIES DEPARTMENT	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08 PAGE: 2 OF 25 C30-1950
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NAPERVILLE PUBLIC UTILITIES DEPARTMENT	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08 PAGE: 3 OF 25 C30-1950
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PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
GIS DESIGN BY	DRAFTED BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
CHECKED BY	APPROVED BY	CAD FILE	SHEET #				
		0061123001D25.DWG	25 OF 40				
Naperville				Department of Public Utilities Electric Division			
				WORK REQUEST # 61123			



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338/IL 59	<del>2011-035</del>	DUPAGE		
			CONTRACT	<del>60P42</del>
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

**Guided Horizontal Drilling System (HDD)**

The HDPE conduit shall be installed based on the use of a guided horizontal drilling system. A guided horizontal drilling system is a trench less technique that employs small diameter fluid jets and/or mechanical cutting tools attached to a flexible drill string to form a bore as the head is thrust forward. Steering in both the vertical and horizontal planes can be effected by controlling the orientation of fluid jets or a slanted face head. Soil conditions and obstructions vary the drilling direction; adjustments are made to keep the drill on-line to the receiving pit. Once the bore is accomplished the conduit section up to 24 inches in diameter shall be installed using the same equipment. The Contractor shall provide boring equipment to bore a minimum length of 20 feet and a maximum length of 1000 feet with varying depths of 2-foot 6inches min to 12-foot 6inches in depth max in one setup. The normal drilling depth of all pulls for 3,5or 6inch HDPE and for all configurations is approximately 5 to 6 feet below grade to top of conduit.

The drilling is accomplished in two steps. The first step consists of drilling a small diameter hole along a specific path. The second step consists of enlarging the pilot hole by a back reamer to the size required to install the conduit/ conduits. The first and second step may require several iterations to accomplish the proper diameter hole to install the duct. The position and location of the drilling operation is monitored with an above ground electronic locator and/or a remote guidance system.

The HDPE conduit sections consists of installing conduit sections of one duct, two ducts, three ducts, four ducts, or six ducts of solid coilable HDPE Conduit. The HDPE is supplied in 3 inch **13.5 SDR**, 5 inch **13.5 SDR** or 6 inch **13.5 SDR** conduit of 450 feet to 500 feet on 10-foot diameter steel non-returnable reels or HDPE 3inch **13.5 SDR** conduits of 1000 feet to 1500 feet on 12 feet to 15 foot diameter reels. The Contractor transports the HDPE to the work site, prepares entry pits, exit pits and turning pits at the work site, connecting pits to allow for fusion of the HDPE conduit is done, and the route is prepared, potholes are dug and completed along the route, all prep work is completed, and any adjustments are made to the alignment to miss all obstructions below and above grade, the final alignment is identified and chosen and then the HDPE is assembled into the desired sections, configurations and quantities and lengths. The HDPE shall then be installed. During the installation process the duct section rolls and twists resulting in a cross section not acceptable for connecting to any electrical facilities. The contractor shall correct this situation in the field by performing the following: the HDPE conduits ends shall be connected to a section of schedule 40 PVC or steel conduits, during the connection process the conduits are positioned, rotated and aligned to meet the cross section required by the specification and then connected to the electrical facilities for a complete system by the Contractor. The Contractor is not permitted to install HDPE 3inch SDR or HDPE 5 inch SDR or HDPE 6 inch SDR into any electrical equipment. The conduit to be used for entering equipment is steel conduit section or a section of schedule 40 PVC. HDPE in 40-foot straight sections and then butt fused together is not acceptable. The Contractor is advised 3inch, 5inch, and 6inch HDPE Conduit is furnished on non- returnable steel reels which must be disposed of off site by the contractor. The couplings, connections, materials, and tools to perform the butt fusion process are furnished by the Contractor.

Nominal pipe sizes only are indicated on the drawings and bid form. Outside diameter of pipe is generally 1 to 2 inches greater than the nominal pipe diameter.

Only HDPE conduit shall be installed by the Horizontal Directional Boring method by the Contractor. The 3inch, 5inch, and 6 inch SDR HDPE conduit on steel reels; couplings and connections except 3inch, 5inch or 6inch connections to schedule 40 PVC or steel conduit, which are furnished by the Contractor, are furnished by the City of Naperville and can be picked up at the city storage yard on Aurora Road. The inside duct diameter size is 5.62 inches for 6inch SDR 13.5 and is 4.75 inch for 5inch SDR 13.5 and is 2.75inch for 3inch SDR 13.5. The contractor is advised the wall thickness of HDPE conduit is usually thicker than the wall thickness of steel conduit or Schedule 40 PVC conduit. All duct sections shall be field assembled, cut, positioned, leveled, reamed, fillers inserted, aligned, fused, connected and are to be pulled in at the same time with warning tape and are continuous. The Contractor shall use a spreader tool furnished by the Contractor to reform the HDPE Conduit from oval to round to allow for the installing of couplings. Joining shall be performed by thermal butt fusion in accordance with the manufacturer's recommendations.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08 PAGE: 4 OF 25 C30-1950
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**Guided Horizontal Drilling System (HDD) (Continued)**

The conduit, at the joined inner surface area, at the interface between schedule 40 PVC plastic or steel conduit is to be field milled to a smooth level connection from one material to another. This area shall be level and smooth to allow for the cable to pass with out being obstructed by a difference in conduit thickness or diameters. The Contractor is advised that the site preparation and the process of installing 1 duct, 2ducts, 3ducts, 4ducts or 6ducts of HDPE in a duct package, may require 2 pulls or more and may require additional work to complete the installation and is included in the pricing.

The Contractor at his expense may do exploratory soil borings to determine the existing soil conditions. This information is used to determine the best work method to use, lubricant requirements, determine soil classification, determine the size and type of equipment to use for the HDD operation, determine the auger type to use, speed of installation, and back pressure to help eliminate any frac out of any kind. All work of this type is limited to the City Right of Way. The Contractor is required to HDD bore through all types and classification of earth materials i.e.: sand, clay, clayey sand, peat, mud, muck, silt, water, sandy clay, cobbles, fissured rock, hard pan, splinter rock, gravel, stones, organic materials, and small boulders less than 8 inches in diameter. However, the City will make additional payment on a per linear foot basis of a duct package installed in solid rock for a complete job if the following is met. The city shall be informed when the solid rock is found. Failure to inform the city immediately may be cause for rejecting a claim of solid rock. Solid Rock is defined as having an RDQ of at least 70 or more and bigger than 8 inches in diameter to be classified as solid rock. The Contractor shall employ a materials laboratory, at the Contractors cost, with city approval to make this determination. The final decision is made by the City.

Solid rock, as referred to herein in connection with the classifying of excavation, shall comprise and include (1) 8" diameter or bigger boulders measuring 1 cubic yard or more in volume, (2) all rock material which is in ledges, bedded deposits and unstratified masses and which cannot be removed without drilling and blasting, and (3) conglomerate deposits which are so firmly cemented as to present all the characteristics of solid rock and which cannot be removed without drilling and blasting.

When solid rock layers have an overburden of material of common classification which cannot practically be stripped and handled separately from the solid rock and/or are interspersed with a material of common classification, the entire mass will be classified as solid rock if the solid rock constitutes an area of conduit which crosses under the surfaced portion of the highway or street, the installation shall be either tunneled, jacked, driven or bored under the surface.

The ducts are to be joined together, glued where applicable, fused, and installed with the total degree of bends (vertical and horizontal) not to exceed 235 degrees in 1000 feet. The Contractor is responsible for monitoring this requirement and reports any deviation to the city. The Contractor shall provide a smooth transition from HDPE to HDPE, from HDPE to steel, from HDPE to schedule 40 PVC conduits on the outside and inside of the duct at all connection points. The area at the interface of the connection shall be smooth to the touch without more than a 1/8-inch bead of material left after fusion on the inside of the pipe. Any ridge that is larger than 1/8 inch shall be removed and reconnected to insure the connection will not separate or be an obstruction for the cable pulling process. All connections shall fit uniformly, concrete encased at each connection with ready-mix, and with equal pressure being applied on all exterior conduit pieces and fittings Connections may be tested in the field for pulling capability at the Contractors expense as directed by the Engineer. All ducts shall be inspected for roundness prior to installing. All ducts shall be pulled to the manufactures recommended tensions. Ducts that are necked down due to pulling or become separated shall be rejected. The 3inch SDR HDPE, 5-inch SDR HDPE, 6-inch SDR HDPE conduit that becomes oval shall be cut back a maximum of 7 feet or until the pipe becomes round or is rejected if more than 7 feet is to be cut off. The contractor shall record all depth, speed information as required on the forms provided, with special interest to the duct pulling tensions, torques and depths as installed. Each pull shall be documented and the form filled out by the contractor and given to the city. Any documentation missing may result in not obtaining approval for payment. All 11, 22, 30, 45 and 90 degree steel bends or schedule 40 PVC bends shall be installed by the machine aided trenching method/or hand dug using prefabricated manufactured type steel bends.

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**Guided Horizontal Drilling System (HDD) (Continued)**

The use of 5 inch and 6 inch steel bends for all angles above 5 degrees and 3 inch steel bends for angles at 90 degrees, shall be required at all angles in the line and as directed by the Engineer. The steel or plastic ducts and the area around the ducts (sometimes called turning pits) where bends are installed shall be supported by ready-mix 3000 pound concrete delivered to the location to provide sufficient strength to withstand a pull of 10,000 lbs and remain serviceable.

Please see the specifications and drawings for the number of 3, 5, and 6- inch ducts, configurations, route, lengths and types of formations to be installed. The Contractor shall coordinate all ingress and egress to the work site with the city prior to performing the work. This work may require the Contractor to provide a detail of the work to be done in a particular area with some down time and this is considered a normal working conditions. The Contractor shall install 3 inch, 5inch and 6-inch HDPE SDR 13.5 conduit under and along all street rights of way, easements or road crossings in the number, lengths and locations shown on the drawings. All splice pits; entry and exit pits, exploratory digging, potholing by machine or hand, turning pits and staging areas to make connections of the conduit are included in the work. All conduit staging areas, entry and exit pits, exploratory digging, potholing, turning pits and splice pits shall be approved by the City of Naperville before any work is started. Failure to get approval of the staging areas, entry and exit pits may result in moving an area or pit, abandoning an area or pit and starting over at another location all at the expense of the Contractor. If at the end of a day's work to install the HDPE conduit is not completed The Contractor shall follow the following guidelines: Equipment shall be disconnected from the rods and moved back to the contractor's storage area if the drilling machine is to be left over the weekend in some one's back yard. However, if the contractor can obtain approval from the property owner and the machine can be made safe to the general public the machine can stay. The Contractor shall abide by all permit restriction and work practice methods about leaving equipment out in the General Public.

The Contractor shall, by his won inspection and by careful examination, fully convince himself as to the accessibility of the site for performing the work. The Contractor shall be responsible for maintaining the access roads during the duration of construction. Any modifications to the construction limits shall be submitted by the Contractor to the Engineer for approval at least one week prior to making any modifications

All areas disturbed by the Contractor in constructing temporary access roads and ramps shall be regarded and restored to the pre-existing conditions, or as otherwise approved by the Engineer

All conduit staging area's, turning pits, or splice pits, entry and exit pits shall be identified in the field with stakes, dimensioned and recorded in the surveyor's field book records after the job is awarded to the Contractor. This information is part of the as Build's and documentation required.

The Contractor shall not at any time leave the work area with conduit protruding above the surface of the ground at equipment location sites, turning pits, exit pits, entry pits, access pits, or splice pits. The Contractor shall dig a ditch of sufficient size to push the conduit below the ground surface for later connection. The open ends of all sections of joined and/or installed pipe (not a service) shall be plugged at night to prevent animals or foreign material from entering the pipe line of pipe section.

Waterproof nightcaps of approved design may be used but they shall also be so constructed that they will prevent the entrance off any type of natural precipitation into the pipe and will be fastened to the pipe in such a manner that the wind cannot blow them loose. The practice of stuffing cloth or paper in the open ends of the pipe will be considered unacceptable.

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PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
GIS DESIGN BY	DRAFTED BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
CHECKED BY	APPROVED BY	CAD FILE	SHEET #				
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**Guided Horizontal Drilling System (HDD) (Continued)**

The Contractor shall backfill and level area immediately, and remove fill later to make all connections. No claims for extra compensation will be considered for cost incurred because of delay due to changing the location of a staging area, a frac out incident, splice pit location determination, turning pit location determination, or obtaining approval for said work area or opening the equipment for inspection or installation. The Contractor shall minimize the inconvenience to the public when picking and staging the work. The Contractor shall provide CA-6 backfill materials, black dirt, sod, grading, landscaping, stone/rock removal, tunneling, hand digging, install new fencing, removal of fencing, sidewalk replacement, curb and gutter replacement, tree and brush protection, arborist services, and/or replacement and dispose of all removed materials off site. The removal of spoils off the site is a major concern and must be removed off site immediately or by the end of the work day or next day. The excavated materials as well as spilled drilling fluids shall be removed in the same day as the dig or the next day at the latest. The Contractor shall not block pedestrian traffic or create a line of site problem with their equipment or work methods to the general public and this equipment or method shall be moved or changed at the request of the City of Naperville at no cost. Hand digging is considered incidental to the work and no claim for additional funds shall be honored. Storing of excavated materials of any kind in the City Right of Way over night is not permitted unless a permit has been issued that approves such methods.

The Contractor shall explain in detail in the bid submittal the technique and construction method that shall be used on the project to minimize the amount scrap of 3 inch, 5inch and 6-inch conduit. The Contractor shall provide an approximate estimate of scrap in linear feet of each size. A method that minimizes scrap is very desirable.

All 3 inch, 5inch, and 6 inch HDPE SDR 13.5 is furnished to the Contractor by the City of Naperville and picked up by the Contractor. However, the couplings for 3inch, 5inch and 6 inch 13.5 SDR HDPE to schedule 40 PVC plastic or steel shall be furnished and installed by the Contractor and the cost is in the pricing.

Contractor shall furnish all labor, tools, transportation, communication, supervision, equipment, all materials not furnished by the City of Naperville, however, the following is required: registered professional land surveying services, soil boring services, licensed professional landscaping services, services of a registered professional arborist, and all consumables necessary for a complete job and is included in each unit of pricing of the work for a complete job.

The Contractor shall be responsible, at no additional cost, for timely repair or replacement of structures, equipment, pipelines, power lines, or any facilities and/or other on-going or completed construction item damage by the Contractor's and/or his subcontractor's operations and/or personnel.

The Contractor shall be required to inform the residents if drilling work is going to be done during, before and after a snow fall incident so they can move their cars to allow the Contractor to shovel and remove snow from the street that is being used to get to the job site and at the job site. The Contractor has the responsibility to remove and keep clear at all times the roads being used including snow removal and disposal of snow from street. The Contractor shall spread salt to improve drivability. The Contractor shall include in the installation cost of all 3inch SDR HDPE, 5inch SDR HDPE and 6inch SDR HDPE conduit materials and accessories including couplings, shipping and ordering, transportation of materials and disposal of the reels in the pricing of the unit of foot. Landscaping and restoration including fences gates, trees, bushes, grass, and black dirt, humps, frac outs, cleaning up frac outs, remove and restore all plantings, trimming all trees and brush, all temporary work, all patching, flowers, access to and from job site, pothole repairs, sodding and watering, street repair, curb and gutter repair, side walk repair, transplanting functions, street light cable repair/ move, all cable TV repair/ move, all telephone repairs/ move, and disposal of all excavated materials off site are included.

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**Guided Horizontal Drilling System (HDD) (Continued)**

The Contractor shall submit in writing that the installed HDPE 13.5 (SDR) conduit, pipe couplings, and fittings installed under this specification are in conformance with the material and mechanical requirements for the type of conduit installed and are compatible with the cable tensions required to install: namely 12kv 1000 MCM or 34 Kv 1000 MCM triplexed cable in the installed conduit. The Contractor shall be responsible, for all couplings, fittings, to provide a smooth and unobstructed path through the HDPE conduit and connection area plus provide sufficient strength of the connection to maintain a continuous conduit with out separation for the cable installation. All tooling and connection materials for steel conduit to HDPE conduit and HDPE conduit to PVC schedule 40 conduits are to be supplied by the Contractor. A failure of the cable to be installed in the conduit shall be reason enough to reject the entire installation and delay further payments until the problem is corrected to the satisfaction of the City of Naperville

The contractor shall install pits for example: receiving, sending, entry, exit, turning, connecting etc; the contractor shall layout the work to install the minimum number of pits. The number of pits shall be kept to a minimum to reduce the damage to the surrounding landscaping. All pits must be approved by the city of Naperville before any work is started. All access pits must be identified in the field by staking after the job is awarded by the contractor and documented with a sketch and provided to the City. No claims for extra compensation will be considered for cost incurred because of delay due changing the route location or location of access pits due to lack of notification, or obtaining approval. Contractor to provide compacted CA6 backfill materials and black dirt. Dispose of all removed materials off site.

Hand digging is considered as part of the work. Pits are excavations and must be covered and fenced in and not left open and are to be made safe for the Public and meet OSHA regulations

The Contractor shall furnish all connection fittings, tools, equipment, labor and transportation for joining together the 3-inch, 5inch, and 6- inch flexible poly coiled SDR13.5 HDPE poly conduit to steel conduit or schedule 40 PVC

The Contractor shall provide a butt fused or electro fused coupling to connect the 3, 5or 6-inch to 3, 5 or 6- inch flexible coiled conduit. The Contractor shall provide mechanical adapters to connect 3.5, 6-inch steel or 3.5, 6-inch schedule 40 PVC bends or straight pieces of PVC to the flexible poly coiled 3, 5, 6- inch HDPE (13.5 SDR) conduit.

The Contractor shall provide fast setting glue for schedule 40 PVC conduit connections at the Contractor's cost and furnish in sufficient quantities for a complete job, if the Contractor decides to substitute.

The cost to provide this material is included in the installation price for: 3 inch, 5inch, and 6-inch directional bored 3, 5, and 6-inch conduit 1-way, 2-way, 3 -way, 4way, and 6 way duct sections of HDPE (13.5 SDR) flexible poly coiled conduit.

The cost of all materials furnished by the Contractor shall be included in the installation of the conduit duct section per the unit pricing.

It is the contractor's responsibility to obtain and direct the surveying services required to establish the right of way limits of all the city of Naperville's recorded easements within the work area. The contractor is responsible for installing all duct sections and maintaining all construction activities inside the limits the city of Naperville's right of way. No ingress or egress will be provided other than shown on the recorded easements

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**Guided Horizontal Drilling System (HDD) (Continued)**

The Contractor shall establish reference points to horizontal and vertical control near and/or within the construction site at the beginning of construction from the County or City records. From these reference points, the Contractor shall provide all horizontal and vertical controls necessary to complete the work to grades, slopes and dimensions shown on the Drawings. The Contractor's surveying service shall be in compliance with the vertical and horizontal tolerances in the specifications, and shall be conducted under the direct supervision of Registered Land Surveyor. Marketing and grade stakes shall be provided as needed by the Contractor to facilitate and expedite inspection of the finished grade for compliance with the dimensions on the Drawings and specified grade tolerances.

The lines, grades and dimensions shown on the Drawings have been selected to approximate the best route based on certain simplifying assumptions, and as such are approximate. Final grades, elevations and dimensions are subject to adjustment during construction at the sole discretion of the Engineer. Any such adjustment shall not constitute a changed condition and shall be undertaken at no additional cost.

It is the responsibility of the Contactor to verify all dimensions prior to fabrication, installation and/or construction of any item of work.

After installation, contractor shall mark the plan drawings or provide new drawings to accurately show the actual installation and alignment of the conduit installed. This information shall be provided to the owner.

The information provided by the Contractor's surveyor to the City shall be the measured conduit lengths from electrical structure to electrical structure, number, and size of conduit and depth of conduits. All above and below ground obstructions, road ways drives, entry and exit pits, turning pits and all equipment installed. All elevations and GPS coordinates of every conduit with dimensions and connections shall be identified and shown.

Materials indicated in these Specifications as supplied by the DPU--E shall be picked up by the Contractor at storage facilities as designated by the DPU--E and this picking up, sorting, hauling, loading, unloading, tracking, security, proper size equipment, labor, tools, storage off site, preparing damage claims, and replacing all materials found unacceptable to use after the contractor accepts the materials and keeping an inventory of all materials picked up until completion of the project shall be considered incidental to the contract.

It is the Contractors responsibility to determine from the work specification that materials furnished by the City of Naperville are sufficient to complete the job. The Contractor shall maintain a tally of all materials picked up by WF number and continuously update the tally to show what has been installed and what is needed to complete each WF# as each project progresses. The Contractor Shall notify the City of Naperville in writing, before the commencement of work, of any shortages of one or more types or quantities of materials required for a complete job. The Contractor shall be responsible to provide any shortages of materials in type or quantity furnished by the City of Naperville during the progress of the work. No claims for extra compensation will be considered for cost incurred because of lack of adequate materials.

The Contractor is responsible for inspecting materials delivered to the site for damage. All materials found during inspection or during the progress of work to have cracks, flaws, cracked linings, or other defects shall be rejected and removed from the job site without delay. Unload and store opposite or near the place where the work will proceed with minimum handling. Store material under cover out of direct sun light. Do not store directly on the ground. Keep all materials free of dirt and debris. Contractor is responsible for obtaining, transporting and sorting any fluids, including water, to the work site. Disposal of fluids is the responsibility of the Contractor. Disposal of fluids shall be done in a manner that is in compliance with all permits and applicable federal, state, or local environmental regulations. The bentonite drilling slurry may be recycled for reuse in the hole opening operation, or shall be hauled by the Contractor to an approved location or landfill for proper disposal. Contractor shall thoroughly clean entire area of any fluid residue upon completion of installation, and replace and all plants and sod damaged, discolored or stained by drilling fluids.

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PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
GIS DESIGN BY	DRAFTED BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
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			Electric Division			61123	



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			CONTRACT <del>60P42</del>	
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**Guided Horizontal Drilling System (HDD) (Continued)**

The Contractor shall cause to have prepared in written form, a list of all materials showing quantities, size, and types of materials the Contractor needs to complete the entire Project and present it to the Project Engineer two weeks after the Project is awarded and prior to the start of Work. Failure by the contractor to inventory the materials prior to start of work and inform the City in writing shall indicate to the City of Naperville all materials are correct in size, quantity and type to do all the work required for a complete installed project.

The Contractor shall follow the following material pick up procedures:

- A. Material from the warehouse shall be issued from the "Material Issue Desk" located inside the west service door marked "Water Meter Pickup".
- B. Material shall be issued to the correct WF #. This WF # shall be provided after award. The person picking up material shall have the WF # so we can provide the correct materials to do the work. The person picking up the material shall sign the material ticket indicating materials picked up, condition, quantity and date. The ticket shall be given to the company engineer on the work site.
- C. Material shall be released from the stockyard to the Contractor contacting the warehouse personnel at the "Material Issue Desk".
- D. The Contractor shall be allowed inside the stockyard only when accompanied by warehouse personnel.
- E. Material shall be loaded on trucks, trailers or pickups only with proper restraints to secure material for public safety on the roadways. Warehouse will not supply straps, blocking or other restraints.
- F. Material pick-up - Monday through Friday, 7:00 a.m. to 3:00 p.m. Contractors will not be loaded on Saturdays, Sundays or Holidays.
- G. The warehouse is closed daily from 12:00 p.m. to 12:30 p.m.
- H. Between 7:00 a.m. and 8:00 a.m. City of Naperville crews will be loaded first. After they are loaded, it will be first come, first served.
- J. For any discrepancies in type and quantity of materials to be received, please call the Project Engineer. The Project Engineer will be identified at the preconstruction meeting.
- K. Please call Terry Skala at (630) 420-4136 for questions regarding all warehouse

The contractor is advised this work is located in an area of heavy tree growth, with a high degree of low growing shrubs and vegetation. The lots are fenced in. Also, many lots have dogs which need to be put up before entering. The subdivision is typical for Naperville and the contractor shall work with the people in this subdivision to save and protect all trees and landscaping. The contractor shall develop a plan To work in this environment, the plan shall be reviewed by the city of Naperville.

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**Guided Horizontal Drilling System (HDD) (Continued)**

The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the pipe, a drilling fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the drill, a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused, a guidance system to accurately guide boring operations, a vacuum truck of sufficient capacity to handle the drilling fluid volume, trained and competent personnel to operate the system. All equipment shall be in good, safety operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

The Contractor shall provide a typical drilling system as follows:

Drilling Rig:

The directional drilling machine shall consist of a power system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The power system shall be self contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull back pressure during pull back operations. The rig shall be grounded during drilling and pull back operations. There shall be a system to detect electrical current from the drilling string and an audible alarm which automatically sounds when an electrical current is detected.

Drill Head:

The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets.

Mud Motors (if required):

Mud motors shall be a adequate power to turn the required drilling tools.

Drill Pipe:

Shall be constructed of high quality 4130 seamless tubing, grade D or better.

The contractor's supervision assigned to this work must be experienced in work of this nature and must have successfully completed similar work using guided horizontal drilling systems.

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**Guided Horizontal Drilling System (HDD) (Continued)**

As part of the bid submission, the contractor shall submit a description of such and name the supervision that will be on the work site for the duration of the work

A guided horizontal drilling system consists of the following major components:

- Directional/ steering head
- Electronic navigation system which may include an electronic transmitter and above ground locator and/or a remote guidance system that confirms the position and orientation of the steering head.
- Mobile drilling rig
- Power unit
- High pressure water pumps
- Water/slurry mixing tank

The exact size and manufacture of the guided horizontal drilling system is at the discretion of the contractor. Contractor's selection shall consider the overall project requirements and the anticipated ground damage, digging conditions, water conditions, fence locations, tree conflicts, noise abatement, and seasons of the year and restoration of work area.

The contractor shall furnish the following information;

The guided horizontal drilling system provided shall have the following minimum capabilities: (contractor to fill in blanks)

- Thrust and pullback \_\_\_\_\_
- Spindle torque \_\_\_\_\_
- Drilling fluid pressure and flow rate \_\_\_\_\_

GUIDANCE AND LOCATION

Contractor shall keep the drill head on line and within the maximum deviations from the planned installation.

The contractor shall furnish the following information;

Maximum lateral (horizontal) deviation \_\_\_\_\_

Maximum vertical deviation \_\_\_\_\_

A Magnetic Guidance System (MGS) or proven gyroscopic system shall be used to provide a continuous and accurate determination of the location of the drill head during the drilling operation. The guidance shall be capable of tracking at all depths up to eighty feet and in any soil condition, including hard rock. It shall enable the driller to guide the drill head by providing immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction) the guidance system shall be accurate to +/-2% of the vertical depth of the borehole at sensing position at depths up to one hundred feet and accurate within 4 feet horizontally. The guidance system shall be of a proven type and shall be operated by personnel trained and experience with this system. The operator shall be aware of any magnetic anomalies on the surface of the drill path and shall consider such influences in the operation of the guidance system if using a magnetic system.

Bore Tracking and Monitoring:

At all times during the pilot bore the Contractor shall provide and maintain a bore tracking system that is capable of accurately locating the position of the drill head in the x, y, and z axes. The Contractor shall record these data at least once per drill pipe length of every twenty five (25) feet, whichever is most frequent.

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PROJECT DESCRIPTION					DETAILS AND STANDARDS				
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.		
GIS DESIGN BY	DL	DRAFTED BY	PSM	REVISIONS DATE		AT&T JOINT AGREEMENT #	N/A	PROJECT #	EU-12
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Naperville					Department of Public Utilities Electric Division				
					WORK REQUEST # 61123				

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		FED. AID PROJECT		

**Guided Horizontal Drilling System (HDD) (Continued)**

Down hole and Surface Grid Tracking System:

Contractor shall monitor and record x, y, and z coordinate relative to an established surface survey bench mark. The data shall be continuously monitored and recorded at least once per drill pipe-length or at twenty five (25) feet, whichever is more frequent.

Deviations between the recorded and design bore path shall be calculated and reported on the daily log. If the deviations exceed plus or minus 5 feet (horizontal or vertical deviation) from the design path, such occurrences shall be reported immediately to DPU-E. The Contractor shall undertake all necessary measures to correct deviations and return to design line and grade.

Drilling Fluid Pressures and Flow Rates:

Drilling fluid pressures and flow rates shall be continuously monitored and recorded by the Contractor. The pressures shall be monitored at the pump. These measurements shall be made during pilot bore drilling, reaming and pullback operations.

Drill Path:

Prior to drilling Contractor shall utilize all verified locate information to determine drill pathway. Marked up drawings (see site preparation paragraph) shall be on site at all times, and referred to during the drill operation.

Guidance System:

Contractor shall provide and maintain instrumentation necessary to accurately locate the pilot hole (both horizontal and vertical displacements), measure pilot string tensional and axial and measure drilling fluid discharge rate and pressure. The DPU-E Representative shall have access to instrumentation and reading at all times during operation.

Pilot Hole:

The pilot hole shall be drilled along the path shown on the plans and profile drawings or as directed by the DPU-E Representative in the field. Unless approved otherwise by DPU-E, the pilot hole tolerances shall be as follows:

Elevation:

As shown on the plans.

Alignment:

±5 feet and within 3 feet of right-of-way or easement boundary.

Curve Radius:

The pilot hole radius shall be no less than 80% of the maximum bending radius as recommended by the pipe manufacturer of the pipe being installed. In no case shall the bending radius be less than 30 pipe diameter, unless approved otherwise by DPU-E.

Entry Point Location:

The exact pilot hole entry point shall be within ±5 feet of the location shown on the drawing or as directed by the DPU-E Representative in the field.

Exit Point Location:

The exit point location shall be within ±5 feet of the location shown on the drawing or as directed by the DPU-E Representative in the field.

Limitations on Depth:

If not noted on the plans, 5" and 6" HDPE pipe and smaller shall be installed with a depth of 6 feet and 3" HDPE pipe shall be installed with a depth of 3 feet to 6 feet unless it is required to install the pipe deeper due to utility conflicts. Where utilities cross under roads, the depth of cover shall be a minimum of 7' to top of conduit.

Water Main and Non-Water Main Separation Requirements:

The minimum separation requirement between HDPE conduit and a water main shall be 18" minimum.

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**Guided Horizontal Drilling System (HDD) (Continued)**

Pull Back:

After successfully reaming bore hole to the required diameter, Contractor will pull the pipe through the bore hole. In front of the pipe will be a swivel and reamer to compact bore hole walls. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations Contractor will not apply more than the maximum safe pipe pull pressure at any time. Maximum allowable tensile force imposed on the pull section shall be equal to 80% of the pipe manufacturer's safety pull (or tensile) strength.

Torsional stress shall be minimized by using a swivel to connect a pull section to the reaming assembly. The pull-back section of the pipeline shall be supported during pull-back operations so that it moves freely and the pipe is not damaged. External pressure shall be minimized during installation of the pull-back section in the reamed hole. Damaged pipe resulting from external pressure shall be replaced at no cost to the DPU-E. Buoyancy modification shall be at the discretion of the Contractor and shall be approved by the DPU-E Representative. The Contractor shall be responsible for any damage to the pull section resulting from such modifications. In the event that pipe becomes stuck, Contractor will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If pipe remains stuck, Contractor will notify DPU-E Representative. DPU-E Representative and Contractor will discuss options and then work will proceed accordingly. For HDPE pipe with a pulling length greater the 500 LF, the Contractor shall utilize a break-away link. Contractor shall provide a break-away link between the swivel and the pipe or a combination swivel and break link. Break-away link shall be rated at 80% of pipe manufacturer's safe pull (tensile) strength. Break pins shall be color coded for easy identification. Contractor shall provide rated break-away link for each material and pipe size(s) for the project.

Drilling Operation:

The alignment for drilling the pilot hole and installing the conduit are as specified on the drawing. (Size of conduit, length, location and number of duct in pull) the allowable lateral and vertical deviations are as specified by the contractor above. A boring/drilling head shall be used that is compatible with the expected soil conditions and as specified above.

Entrance and exit angles for drilling operation can be whatever the contractor desires such that the elevation profile for the conduit is maintained. See limit of conduit bend radius

The pilot shall be backed reamed to a diameter suitable for the installation of the various conduit sections required

The contractor to furnish the following information;

Reamed diameter for one 3, 5, or 6 inch HDPE conduit \_\_\_\_\_

Reamed diameter for two 3, 5 or 6 inch HDPE conduit \_\_\_\_\_

Reamed diameter for three 3, 5, or inch HDPE conduit \_\_\_\_\_

Reamed diameter for four 3, 5 or 6 inch HDPE conduit \_\_\_\_\_

Reamed diameter for six 3, 5 or 6 inch HDPE conduit \_\_\_\_\_

Drilling Fluids:

The composition of the drilling fluids shall be submitted to the owner for approval prior to utilization. No fluid will be approved or utilized that does not comply with permit requirements and environmental regulations.

Composition of Drilling Fluids with MSD sheets \_\_\_\_\_

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**Guided Horizontal Drilling System (HDD) (Continued)**

Mixing system:

A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid. Mixing system shall continually agitate the drilling fluid during operations.

Drilling Fluids:

Drilling fluid shall be composed of clean water, appropriate additives and clay. Water shall be from an authorized source with a minimum pH of 6.0. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No potentially hazardous material maybe used in drilling fluid.

Delivery System:

The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and conveyed to the drilling fluid recycling system. A berm, minimum of 12" high, shall be maintained around drill rigs, drilling fluid mixing system entry and exit pits and drilling fluid cycling system to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage and recycling facilities.

Drilling Fluid Recycling System:

The drilling fluid recycling system shall separate sand, dirt and other solids from the drilling fluid to render the drilling fluid re-usable. Spoils separated from the drilling fluid will be stockpiled for later use or disposal.

Control of Drilling fluids:

The Contractor shall follow all requirements of the Frac-Out and Surface Spill Contingency Plan as submitted and approved and shall control operational pressures, drilling mud weights, drilling speeds, and any other operational factors required to avoid hydro fracture fluid losses to formations, and control drilling fluid spillage. This includes any spillages or returns at entry and exit locations or at any intermediate point. All inadvertent returns or spills shall be promptly contained and cleaned up. The Contractor shall maintain on-site mobile spoil removal equipment during all drilling, pre-reaming, reaming and pull-back operations and shall be capable of quickly removing spoils. The Contractor shall immediately notify DPU-E of any inadvertent returns or spills and immediately contain and clean up the return or spill.

Disposal

Disposal of drilling fluids shall be the responsibility of the contractor and shall be conducted in compliance with all relative environmental regulations, right of way, work space agreements and permit requirements.

Drilling fluid returns shall be collected within the entrance pit, exit pit or spoils recovery pit. The contractor shall immediately clean up any inadvertent drilling fluid spills or overflows from these pits or equipment.

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PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
GIS DESIGN BY	DRAFTED BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
CHECKED BY	APPROVED BY	CAD FILE	SHEET #				
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Naperville			Department of Public Utilities			WORK REQUEST #	
			Electric Division			61123	

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-0351</del>	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60P42</del> FED. AID PROJECT	

**Guided Horizontal Drilling System (HDD) (Continued)**

HDPE CONDUIT PREPARATION AND INSTALLATION:

Contractor shall install the HDPE conduit in accordance with the plans for a complete job and meet the completion date as defined by the city of Naperville.

Contractor to provide sketches of each staging area required to install the conduit, store materials, and setup equipment  
All sketches shall be submitted to the city of Naperville for review prior to start of work. This sketch should include approximate square feet of area to be damaged by your construction work force.

The following parameters shall be recorded during the drilling, reaming, and installation, for each push, to ensure design limits are not exceeded.

- Calibrate electronic locator or guidance instrumentation before start of project.
- Locate drill head every 10 feet (minimum)

Depth \_\_\_\_\_  
Alignment \_\_\_\_\_  
Azimuth \_\_\_\_\_  
Pitch \_\_\_\_\_

- Record the following drilling information every 15 minutes or as necessary

Drilling fluid pressure \_\_\_\_\_  
Flow rate \_\_\_\_\_  
Mud weight in \_\_\_\_\_  
Mud weight out \_\_\_\_\_  
Rate of penetration \_\_\_\_\_  
Thrust \_\_\_\_\_  
Torque \_\_\_\_\_

- Pre-ream pilot hole  
Record the following information every 15 minutes or as necessary

Mud weight in \_\_\_\_\_  
Mud weight out \_\_\_\_\_  
Rate of penetration \_\_\_\_\_  
Torque \_\_\_\_\_  
Depth \_\_\_\_\_  
Alignment \_\_\_\_\_

- Conduit installation  
Record the following information every 15 minutes or as necessary

Fluid pressure \_\_\_\_\_  
Flow rate \_\_\_\_\_  
Mud weight in \_\_\_\_\_  
Mud weight out \_\_\_\_\_  
Rate of penetration \_\_\_\_\_  
Torque \_\_\_\_\_  
Depth \_\_\_\_\_  
Alignment \_\_\_\_\_

**Guided Horizontal Drilling System (HDD) (Continued)**

- Conduit quality check of conduit

Broken pieces \_\_\_\_\_  
Out of round, Oval \_\_\_\_\_  
End frayed \_\_\_\_\_  
Slit cracked or cut \_\_\_\_\_  
Belled end distorted \_\_\_\_\_  
Check specification identification on HDPE conduit \_\_\_\_\_

- Verify location and depth of HDPE conduit

Record data \_\_\_\_\_  
Show detail with sufficient information \_\_\_\_\_

Contractor to submit for the owner's review the following 4 items with his bid;

A. Technical specifications and manufacture of guide horizontal drilling system, fluid handling system, guidance and locator system, reamed diameters for various duct configurations, maximum deviations from vertical and horizontal and minimum capabilities of thrust and pullback, spindle torque, drilling fluid pressure and flow rate, provide a schedule using Microsoft Project software of latest edition

B. A work plan showing details and proposed method of construction, number of feet of one, two, three, four duct sections, or six duct sections to be installed in an eight hour day, sequence of operations to be performed, number, size and schedule of construction crew, time and hours and days to be worked in a week. Number of calendar days to complete work, pilot hole drilling procedure, reaming procedure, pulls back/conduit installation procedure, method of monitoring the drilling head and method of verifying conduit location and depth for as built drawings, plus restoration and landscaping plan

C. The contractor shall video tape the entire work area prior to starting the work. The video should document all vegetation condition of the easement and visual obstructions that the contractor will or temporarily move plus delineate with pictures the route with street names right of way and electrical equipment, address, time and date. This video shall be used to restore the work area landscaping to its original/or better condition

D. The Contractor shall identify the following;  
Materials and quantities to be supplied,  
Vendor names supplying materials, equipment, tools and expertise.

After the pipe is in place, cleaning pig/mandrel shall be used to remove residual water and debris. After the cleaning operation, the Contractor shall provide and run a sizing pig/mandrel to check for anomalies in the form of buckles, dents, excessive out-of-roundness, and any other deformations. The sizing pig/mandrel run shall be considered acceptable if the survey results indicate that there are no sharp anomalies (e.g. dens, buckles, gouges, and internal obstructions) greater than 5 percent of the nominal pipe diameter. For gauging purposes, dent location is those defined above which occur within a span of five feet or less. Pipe ovality shall be measured as the percent difference between the maximum and minimum pipe diameter. For gauging purposes, ovality locations are those defined above which exceed a span of five feet

See mandrel requirements at end of this specification. The Contractor shall fabricate, purchase and use mandrel to proof rod all ducts for the entire project.

All conduits shall be subject to television inspection prior to acceptance. Television inspection may be identified at the preconstruction meeting, or later during the project if the inspector has any concerns about the proper installation of the pipe. If television inspection is required by the City, Contractor shall bear all costs incurred in making the inspection and shall bear all costs incurred correcting any deficiencies found during television inspection.

**Guided Horizontal Drilling System (HDD) (Continued)**

Deficiencies that will require pipe removal and replacement include, but are not limited to:

- Visible damage to the pipe.
- Failure of mandrel test.
- Oval pipe.
- Open joints.
- Foreign material that cannot be removed by other means.

After installation, contractor shall mark the plan drawings or provide new drawings to accurately show the actual installation and alignment of the conduit installed. This information shall be provided to the owner.

The Contractor shall satisfy himself as to all local conditions affecting the Work, including the location of underground facilities. He shall make a thorough examination of the Drawings, Specifications, and premises so that he will be entirely familiar with the details and construction of the installation. No charge for an extra shall be allowed where such extra is due to the Contractor's lack of observation or knowledge of local conditions.

The Contractor shall give his personal attention to the faithful prosecution of the Work and shall keep the same under his personal control. He shall maintain sufficient competent supervisory personnel at the job site at all times to represent the Contractor and to supervise and be responsible for the Work and conduct it in cooperation and in coordination with all other work being done on the premises. He shall maintain on the job as many competent foremen as are required to supervise the various operations. The Contractor shall correct at his own expense all errors in the Work arising from his inaccuracy or from the inaccuracy of his employees.

Directional drilling and pipe installation shall be done only by an experienced Contractor specializing in directional drilling and whose key personnel have at least five (5) years experience in this work. Furthermore, the Contractor shall have installed directionally drilled pipe at least as large as 20 inches in diameter, have performed crossings at least 2,000 feet in length, and successfully installed at least 100,000 feet in length.

All Work shall be executed by workmen or artisans who are skilled in their work or trade, and must be done in a neat and skillful manner as specified or detailed in the Contract and in accordance with the best construction practice.

The Contractor shall furnish and be responsible for all the equipment and methods used in the construction Work. The Contractor shall supply the documentation necessary to provide a permanent record of pulling tensions and all other items as related to the installation of the HDPE conduit. The Contractor shall develop a plan that will be reviewed by the engineer.

All roadways that are humped or sunk due to directional boring work shall be fixed immediately. The Contractor is advised to use a registered surveyor to shoot street elevation grade along the Conduit route crossing the street. The surveyor should establish at least 3 elevation points prior to installing any HDPE conduit in the street. The Contractor shall submit a paving plan and a Traffic Control plan along with the Company's name that will repair the street to the City of Naperville for approval. The Contractor is advised the MINIMUM REQUIREMENT is that the entire trench width of 4 feet from curb to curb shall be removed as if it was open cut. The contractor shall repair by removing all unsuitable soil and backfilling with compacted CA6. Replace the street with 12 inches of BAM, tact coat, and then with a 2 inch wearing surface or 10 inches of 4500 psi concrete, tact coat and 2 inches of wearing surface. Then the area 35 feet either side of the repair area for the width of the Street for a depth of 2 inches shall be removed by milling and cutting all edges square. The area is then prepared for an application of a 2 inch thick asphalt-wearing surface with tact coat and finished to level and grade. The street is marked to match the previous stripping and markings The curb and gutter on both sides of the street shall be removed and reinstalled for a length to the first control joint in either direction or 20 feet total on each side or which ever is smaller. However, the final acceptance and requirements shall come from the City of Naperville's Department of Public works. The Contractor is advised the work shall be inspected and approved and the field paving work completed prior to submitting the conduit work for payment.

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PROJECT TITLE ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION DETAILS AND STANDARDS			
ENGINEER BCC	DRAFTING DATE 8-04-12	MAP # 4211,4224	SCALE N.T.S.
GIS DESIGN BY DL	DRAFTED BY PSM	AT&T JOINT AGREEMENT # N/A	PROJECT # EU-12
CHECKED BY	APPROVED BY	CAD FILE 0061123001D30.DWG	SHEET # 30 OF 40
Naperville Department of Public Utilities Electric Division			WORK REQUEST # 61123

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338/IL 59	<del>2011-035-1</del>	DUPAGE		
			CONTRACT <del>60P42</del>	
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

**Guided Horizontal Drilling System (HDD) (Continued)**

The Contractor when installing HDPE conduit is to limit the amount of conduit being ovaled by the installation process. The Conduit being pulled out from an installation at the exit pit shall be controlled so as not to oval the conduit. The conduit is required to be round to allow the installation of couplings, steel pipe, bends or schedule 40 PVC conduit. Force fitting of round conduit on to oval conduit is not acceptable. To provide a round connection for the HDPE, the HDPE has to be cut back to where the conduit is round. In the process of cutting the HDPE back a large amount of scrape can be generated. The Contractor is advised the Conduit supplied by the city is furnished 3% over the required amount to allow for some ovaling. In the event the amount of conduit scraped exceeds 3% the Contractor shall furnish and install all remaining HDPE conduit at the Contractors cost to finish the Project. The use of straight 40-foot lengths of HDPE is not acceptable.

Since some of the construction along the route shall be done in close proximity to existing energized conductors as well as lower voltage distribution circuits now in operation, due caution shall be taken to Prevent accidental contact with or damage to any part of these lines, or any other overhead conductors or underground utilities encountered along the right-of-way. It shall be the Contractor's responsibility to locate all facilities by hand digging and /or machine aided digging as deemed necessary. The Contractor shall consider all electric lines overhead or underground Energized at all times.

The Contractor shall comply with the Occupational Safety and Health Act of 1970 (OSHA). The Contractor may obtain copies from the Regional Administrator of the Department of Labor, Dirksen Federal Office Building Chicago, Illinois 60690

Construction Drawings, showing the route of the HDPE conduit installation are attached and are part of this specification and no deviation from these shall be made without written approval from the Engineer.

The Contractor shall be responsible for all damages occurring on or off the right-of-way, including, fence, grass, flowers, vegetables, drain tile, drainage or lack of drainage, shrubs, sheds, buildings, tree, sidewalk, driveway and, crop damage, when such damage was necessary or not a necessary incident to the execution of the work or was occasioned by carelessness or neglect on the part of the Contractor. The Contractor shall obtain signed releases and wavier of liens from all property Owner's along the route of the conduit runs. The Contractor shall provide a completed and signed release form to the City of Naperville's for file. The form shall be used for this project. The Contractor shall submit a waiver of lien from every entity who could lawfully and/or possibly file a lien in excess of \$75 arising out of the Contract and related work. The City of Naperville reserves the right to designate which entities involved in the work must submit waivers

Where soil and sod has been removed, it shall be replaced as soon as possible after the backfilling is competed. All areas disturbed by work shall be restored to its original or better condition. The restoration shall include any necessary top soiling, fertilizing, liming, seeding, or mulching, as shown on the plans as removed/damaged. All such work shall be performed in accordance with the specifications as directed by the Engineer. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. Restoration shall be considered incidental to the pay item of which it is a component part.

The Contractor will settle damages and obtain releases, releasing Company as well as Contractor, for damages as outlined above.

The approximate locations of existing roads in the vicinity of the work are shown on the drawings furnished by the Company. Any improvement, maintenance, repair or construction required on roads or easements by the Contractor in performing the work covered by the specification, or in traveling to and from the site of the work, shall be at the expense of the Contractor. Access to the work is from existing roads and easements. All other means of egress and ingress shall be provided by and at the expense of the Contractor.

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**Guided Horizontal Drilling System (HDD) (Continued)**

High density polyethylene pipe is subject to conformance testing of fusion welds performed in the field. The Contractor shall ensure the field set-up and operation of the fusion equipment, and the fusion procedure used by the Contractor's fusion operator while on site. Upon request by the Engineer, the Contractor shall verify field fusion quality by making and testing a trial fusion weld. The trial fusion weld shall be allowed to cool completely; then test straps shall be cut out and bent strap tested in accordance with ASTM D2657. If the bent strap test of the trial fusion fails at the joint, the field fusions represented by the trial fusion shall be rejected. The Contractor shall make all necessary corrections to equipment, set-up, operation and fusion procedure, and shall re-make the rejected fusions at Contractor's expense.

The quantities shown on the "Unit Pricing Sheet" is approximations/estimates for comparing bids, and no claim shall be made against the Company for excess or deficiency therein, actual or relative. The Company shall be the final judge on completion and acceptance of the work. Within the first fifteen (15) days of each calendar month, the Company shall make partial payments to the Contractor for construction accomplished during the preceding calendar month or period on the basis of completed assembly units furnished and certified to by the Contractor, recommended by the Engineer and approved by the Company solely for the purposes of payment. However, that such approval by the Company shall not be deemed approval of the workmanship or materials. Ninety percent (90%) of each estimate approved for payment shall be paid by the Company to the Contractor of the work. However, that any time after work, which in the sole determination of the engineer, amounts to fifty percent (50%) of the maximum contract price has been completed, the Company may elect, in lieu of paying ninety percent (90%) of each subsequent estimate, to pay each subsequent estimate in full. The Invoice as submitted shall contain the following information:

- 1 Field record of work accomplished, horizontal drilling log sheet with item types, quantities, sketches, signed, dated, and attached to the invoice with WF#
- 2 Purchase order # and date
- 3 Vendor #
- 4 Project #
- 5 Project description.
- 6 Account #
- 7 Period of time invoice covers
- 8 Partial Payment number
- 9 Contractors name, address, telephone #, pager#, fax#, name of person submitting invoice, invoice number, invoice date, number of pages
- 10 Update resources paid and resources remaining on each invoice (a running total)
- 11 Update number of items installed and the number of items remaining. On each invoice (a running total)
- 12 Indicate quantities of each item, price per item, and price extension of each item
- 13 Include total payment in bottom portion of invoice. (A running total is also required.)
- 14 Include WF #
- 15 The invoice shall be supplied in triplicate to the Department of Public Utilities-Electric
- 16 The invoice shall be submitted on Contractors letterhead stationary.
- 17 Completed Signed Waivers of Lien shall accompany all invoices. Include material tickets.
- 18 A copy of the certified payroll for the period covered on the invoice shall be provided
- 19 The Invoice shall have attached an authorization letter, signed and dated of any work required but Not covered in the estimated units.
- 20 The Invoice shall include an address box showing payment to:  
Bill To:  
Accounts Payable P.O. Box 3020  
Naperville ILL 60566-7020  
Phone (630) 420-6111

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**Guided Horizontal Drilling System (HDD) (Continued)**

Upon completion by the Contractor of the construction of the work, the Engineer with the assistance of the Contractor, if deemed necessary by the Engineer, shall prepare a final inventory of the work completed showing the total number, description, type of electrical equipment installed, lengths in feet, location and character of assembly units and, after checking such inventory with the Contractor, shall certify it to the Company, together with the total cost of the construction work performed. All invoices shall clearly state full assembly units installed, quantities, types, sizes, percentage of work completed and date completed.

Upon approval of such invoices by the Company, the Company shall make payment to the Contractor of all amounts to which the Contractor shall be entitled there under which shall not have been paid previously. Final payment shall be made not later than ninety (90) days after the completion of construction of the work, as specified, unless with held because of the fault of the Contractor.

The Contractor shall be paid on the basis of the number of units actually installed at the direction of the Company shown by the inventory on the material tickets, specifications, and lists provided. However, the total cost shall not exceed the maximum contract price for the construction of the work as set forth in the bid award, unless such excess shall have been approved in writing by the Engineer and approved by the Company. The Company shall pay for no work under a verbal agreement or understanding that is not documented in writing and approved. No exceptions. This documentation shall accompany all payment requests for additional, less work or modifications to the work and performed and completed by the Contractor. Failure to document your claim of work with a signed city authorized employee's signature affixed to the invoice or document or approval letter will result in rejecting your invoice.

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PROJECT TITLE					ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION					DETAILS AND STANDARDS				
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.		
GIS DESIGN BY	DL	DRAFTED BY	PSM	REVISIONS DATE	N/A	PROJECT #	EU-12		
CHECKED BY		APPROVED BY		CAD FILE	0061123001D31.DWG	SHEET #	31 OF 40		
Naperville					Department of Public Utilities Electric Division				
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GUIDED HORIZONTAL DRILLING SYSTEM (HDD) (CONTINUED)

HORIZONTAL DRILLING LOG SHEET  
CITY OF NAPERVILLE DEPARTMENT OF ELECTRIC UTILITIES-ELECTRIC

DATE \_\_\_\_\_  
 LOCATION \_\_\_\_\_  
 LENGTH OF PUSH \_\_\_\_\_ FEET  
 DRILLER NAME \_\_\_\_\_ COMPANY  
 CONTRACTOR'S NAME \_\_\_\_\_ COMPANY  
 NUMBER AND SIZE OF HDPE CONDUIT IN PUSH \_\_\_\_\_

DRILLING EQUIPMENT TYPE AND SIZE \_\_\_\_\_  
 INSPECTOR'S NAME \_\_\_\_\_  
 WEATHER \_\_\_\_\_  
 W.F. \_\_\_\_\_  
 BRAND OF DRILLING FLUID \_\_\_\_\_

PUSH	STATION START	STATION FINISH	TIME HR/MIN	GUIDANCE				DRILLING FLUID				DRILLING PARAMETERS			COMMENTS (NOTES)		
				DISTANCE FT/IN	ANGLE DEGREE	DEPTH FT/IN	LEFT/RIGHT	FLUID	FLOWRATE	MUD WEIGHT IN	MUD WEIGHT OUT	RPM	THRUST/PULL LBS	ROP		TORQUE FT-LBS	
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

SIGNED BY CONTRACTOR \_\_\_\_\_ DATE \_\_\_\_\_ SIGNED BY INSPECTOR \_\_\_\_\_ DATE \_\_\_\_\_

R.O.P. - RATE OF PENETRATION

NOTES:

- CONTRACTOR TO FILL OUT FORM FOR EACH PUSH AND DOCUMENT ALL WORK AND RETURN FILLED OUT FORM TO CITY.
- IDENTIFY ALL FRAC' OUT, DOWN TIME, UNUSUAL DRILLING CONDITIONS, SOLID ROCK WORK ETC.
- MSDS SHEET FOR DRILLING MUD SHALL BE SUPPLIED TO THE CITY PRIOR TO DRILLING.
- THE CONTRACTOR SHALL LAYOUT THE ROUTE IN THE EASEMENT AND WITH IN THE PROPERTY LINES PRIOR TO STARTING WORK. ALL LAYOUT IS TO BE DOCUMENTED AND GIVEN TO THE CITY. THE CONTRACTOR SHALL ENGAGE A LICENSED LAND SURVEYOR TO PROVIDE ROUTE, RIGHT WAY OF WAY LIMITS, ELEVATIONS, LINE AND GRADE AND MEASUREMENTS OF DUCT INSTALLED.
- THE ABOVE BORING LOG SHALL SHOW ALL UTILITY CROSSING, EXISTING STRUCTURES, OBSTRUCTION ENCOUNTERED OR OTHER LAND FEATURES.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08 PAGE: 22 OF 25 C30-1950
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338/IL 59	<del>2011-035</del>	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60P42</del> FED. AID PROJECT	

PROJECT TITLE					ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION					DETAILS AND STANDARDS				
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.		
GIS DESIGN BY	DL	DRAFTED BY	PSM	REVISIONS DATE	N/A	AT&T JOINT AGREEMENT #		PROJECT #	EU-12
CHECKED BY		APPROVED BY		CAD FILE	0061123001D32.DWG	SHEET #	32 OF 40		
Naperville					Department of Public Utilities Electric Division				
					WORK REQUEST # 61123				

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035</del>	DUPAGE		
FED.ROAD.DIST.NO.			ILLINOIS	FED. AID PROJECT
CONTRACT <del>60P42</del>				

GUIDED HORIZONTAL DRILLING SYSTEM (HDD) (CONTINUED)

PVC AND HDPE MATERIAL SPECIFICATION

TABLE 1  
RESIN PROPERTIES  
(THE RESIN PROPERTIES SHALL BEET OR EXCEED THE VALUES LISTED BELOW FOR HDPE.)

SDR 13.5-ASTM D3035/F2160/NEMA TC-7

ASTM TEST	DESCRIPTION	VALUES HDPE
D-1505	DENSITY g/CM <sup>3</sup>	.941-.951
D-1238	MELT INDEX, g/10 MIN CONDITION E	.05-.50
D-790	FLEXURAL MODULUS, MPa (PSI)	80,000 MIN
D-638	TENSILE STRENGTH AT YIELD (PSI)	3000 MIN
D-1693	ENVIRONMENTAL STRESS CRACK RESISTANCE CONDITION B,F <sub>10</sub>	96 HR.MIN.
D-746	BRITTLNESS TEMPERATURE	-75°C

TABLE 2  
HDPE SPECIFICATION  
STANDARD LENGTH AND SIZE - REELS AND COILS FOR HDPE

NOM. SIZE	NOM. ID	NOM.OD OD	MIN.WALL OD	WEIGHT 100 FT.	PULL TENSILE SAFE LBS.	COLOR	TYPE	WALL	REEL SIZE	REEL LENGTH (FT.) NOTE 5	FULL WT./EA. (LBS.) REEL
3"	2.982	3.500	0.259	113.120	2945	BLACK	S/S	SDR 13.5	96X45X68	1000	1364
									102X54X64	1500	1945
									114X45X85	1500	2100
5"	4.738	5.562	0.412	285.394	7444	BLACK	S/S	SDR 13.5	114X45X85	480	1842
									120X45X78	550/750	2067/2637
6"	5.643	6.625	0.491	405.869	10566	BLACK	S/S	SDR 13.5	120X45X85	450/500	2296/2525

TABLE 3  
SCHEDULE 40 PVC SPECIFICATION

NOM. SIZE	NOM. ID	NOM.OD OD	MIN.WALL WALL	WEIGHT 100 FT.	PULL TENSILE SAFE LBS.
3"	3.068	3.500	0.216	95.591	2488
5"	5.046	5.562	0.258	184.410	4801
6"	6.065	6.625	0.280	239.415	6233

NOTES:

- 1) HDPE DUCT IS SMOOTH WALL TYPE. SMOOTH INTERIOR AND SMOOTH EXTERIOR.
- 2) ALL REELS AND NON-RETURNABLE STEEL REELS
- 3) ASTM F 2160 - SOLID WALL HIGH DENSITY POLYETHYLENE (HDPE) CONDUIT BASED ON CONTROLLED OUTSIDE DIAMETER (OD).  
ASTM D 2239 - POLYETHYLENE (PE) PLASTIC PIPE (SIDR) BASED ON CONTROLLED INSIDE DIAMETER.  
ASTM D 3035 - POLYETHYLENE (PE) PLASTIC PIPE (SDR) BASED ON CONTROLLED OUTSIDE DIAMETER.  
NEMA TC-7 - SMOOTH WALL COILABLE POLYETHYLENE ELECTRICAL PLASTIC CONDUIT.
- 4) S/S - SMOOTH INSIDE SURFACE AND SMOOTH OUTSIDE SURFACE.
- 5) LENGTHS ARE ±10%.

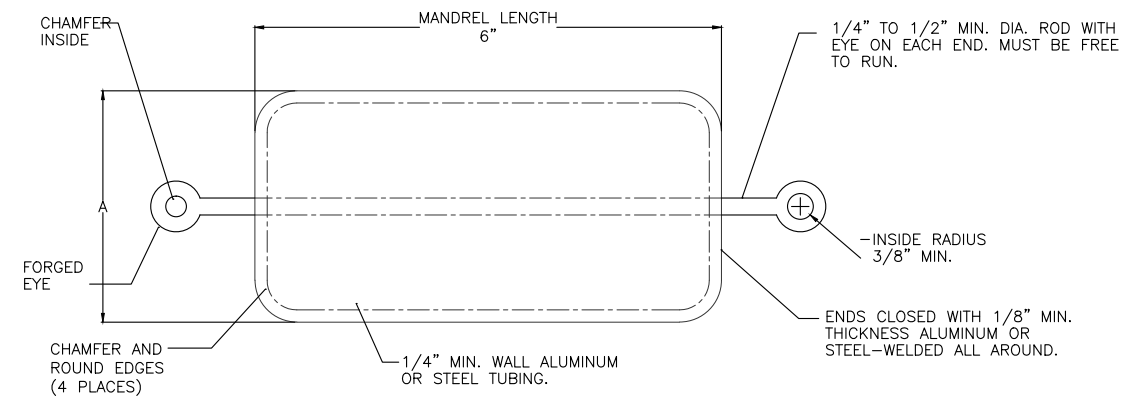
PULL TENSILE SAFE=BASED ON PLASTIC PIPE INSTITUTE TENSILE CALCULATIONS AND MAXI MAXIMUM TENSILE STRESS RECOMMENDATION OF 1/3 YIELD TENSILE FOR PULLS OF 30 TO 60 MINUTES APPLICATIONS AND PULLING.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08 PAGE: 23 OF 25 C30-1950
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GUIDED HORIZONTAL DRILLING SYSTEM (HDD) (CONTINUED)

MANDREL

CONTRACTOR TO PROVIDE THE FOLLOWING MANDREL.  
CONTRACTOR TO FABRICATE OR PURCHASE MANDREL PER THIS DRAWING



CONDUIT MANDREL DATA

NOM. CONDUIT SIZE	DIMENSION "A" (MANDREL LENGTH)		WEIGHT (LBS)
	TYPE I	TYPE II	
3"	2-3/4"	2.375"	2
5"	4-3/4"	4.400"	3
6"	5-3/4"	5.263"	4

- 1) TYPE I MANDRELS ARE USED IN SCHEDULE 40 PLASTIC CONDUITS.
- 2) TYPE II MANDRELS ARE ONLY TO BE USED IN SCHEDULE 80 AND HDPE PLASTIC CONDUITS.
- 3) CONTRACTOR TO FURNISH 3", 5" OR 6" MANDRELS IN THE QUANTITY REQUIRED TO COMPLETE THE PROJECT.

AVAILABLE FROM:  
INWESCO, INC.  
746 N. CONEY AV.  
AZUSA, CA 91702  
PHONE: (626) 334-9304  
FAX: (626) 969-3404  
CONTACT: DON SWEETAPPLE

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08 PAGE: 24 OF 25 C30-1950
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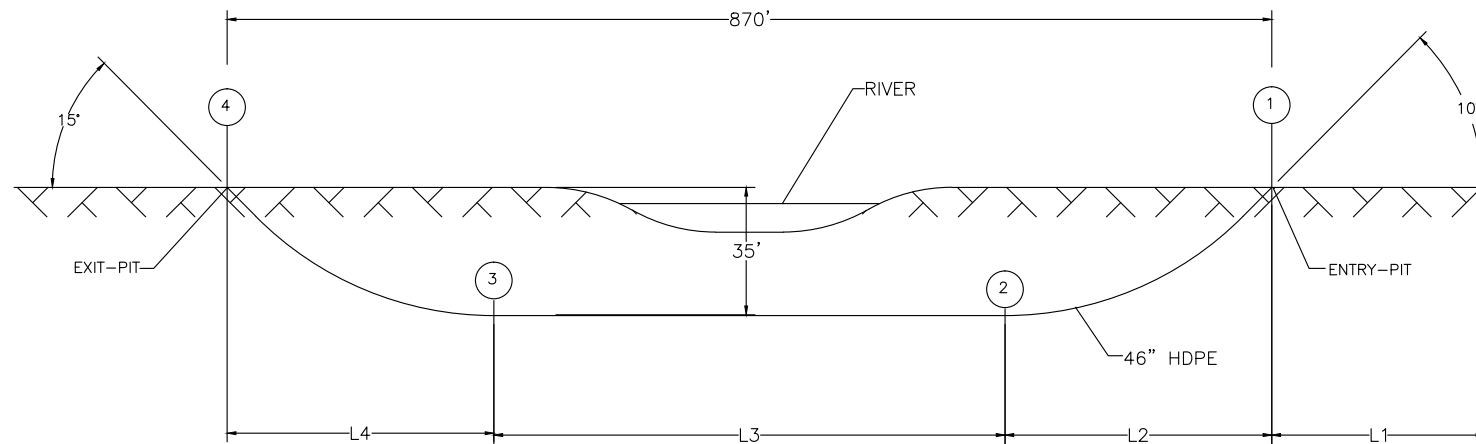
PROJECT TITLE ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION DETAILS AND STANDARDS				
ENGINEER BCC	DRAFTING DATE 8-04-12	MAP # 4211,4224	SCALE N.T.S.	
GIS DESIGN BY DL	DRAFTED BY PSM	REVISIONS DATE N/A	AT&T JOINT AGREEMENT # N/A	PROJECT # EU-12
CHECKED BY	APPROVED BY	CAD FILE 0061123001D33.DWG	SHEET # 33 OF 40	WORK REQUEST # 61123
Naperville Department of Public Utilities Electric Division				



F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035</del>	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60P42</del> FED. AID PROJECT	

GUIDED HORIZONTAL DRILLING SYSTEM (HDD) (CONTINUED)

TYPICAL BORE FOR A CROSSING RIVER



TYPICAL RIVER CROSSING, ASSUME THE HDPE PIPE IS 35' DEEP AND APPROXIMATELY 870' LONG WITH A 10 DEG. ENTRY ANGLE AND A 15 DEG. EXIT ANGLE. ACTUAL PULL BACK FORCE WILL VARY DEPENDING ON HACKREAMER SIZE SELECTION, AND USE; BORE HOLE STAYING OPEN; SOIL CONDITIONS; LUBRICATION WITH BENTONITE, DRILLER EXPERTISE, AND OTHER APPLICATION CIRCUMSTANCES.

L1 = 100' DRAG.

L2 = DISTANCE TO ACHIEVE DEPTH

L3 = 870-L2-L4

L4 = DISTANCE TO ACHIEVE DEPTH

MINIMUM BEND RADIUS AS A FUNCTION OF DIAMETER AND STANDARD DIMENSION RATIO

SDR 13.5				
SIZE	OD in.	WALL in.	MIN. RADIUS in.	WALL in.
3	3.500	.259	40.9	.226
5	-	-	-	-
6	6.625	.491	54.4	.427

OVALIZATION IS INDEPENDENT OF TENSILE STRENGTH OF MODULUS, BUT IS CONTROLLED BY DIAMETER, WALL THICKNESS AND BENDING RADIUS. THE RADIUS LISTED ABOVE ARE ESTIMATED, AS THE MINIMUM UNSUPPORTED BENDING RADIUS REQUIRED PRODUCING A 5% OVALIZATION. THE VALUES IN THE ABOVE TABLE ARE CALCULATED BASED ON MINIMUM WALL THICKNESS AND ARE A FIRST APPROXIMATION TO OVALITY IN THE BENDING CONDUIT (ACTUAL BENDING RADIUS MAY BE SLIGHTLY SMALLER).  
OVALITY IS CALCULATED AS: OVALITY = [(MAX. OD-MIN. OD)/AVG. OD] X 100.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08 PAGE: 25 OF 25 C30-1950
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PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	DRAFTING DATE	MAP #	SCALE				
BCC	8-04-12	4211,4224	N.T.S.				
GIS DESIGN BY	DRAFTED BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
CHECKED BY	APPROVED BY	CAD FILE	SHEET #				
		0061123001D34.DWG	34 OF 40				
Naperville			Department of Public Utilities Electric Division		WORK REQUEST # 61123		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035</del>	DUPAGE		
			CONTRACT	<del>60R42</del>
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

FOUNDATION AGGREGATE  
ILLINOIS DEPARTMENT OF TRANSPORTATION  
(CAB OR CA9)

1. SCOPE

- 1.1 THIS SPECIFICATION COVERS FOUNDATION AGGREGATE CONSISTING OF CRUSHED STONE OR GRAVEL FOR USE IN STABILIZING OR SUSTAINING POLES AND STRUCTURES.

2. GENERAL

- 2.1 AGGREGATE SUPPLIED UNDER THE SPECIFICATION SHALL COMPLY WITH ILLINOIS DEPARTMENT OF TRANSPORTATION SPECIFICATION, FOR GRADE CAB (OR GRADE CA9 COARSE AGGREGATE) LATEST REVISION.

3. PHYSICAL PROPERTIES

- 3.1 GRADATION - THE AGGREGATE SHALL BE MIXED UNIFORMLY, SHALL BE WELL GRADED FROM THE MAXIMUM TO MINIMUM SIZE BETWEEN THE LIMITS SPECIFIED, AND WHEN TESTED WITH LABORATORY SIEVES (SQUARE OPENINGS), SHALL CONFORM TO THE GRADATION GIVEN IN THE FOLLOWING TABLE, WHICH SHOWS THE TOTAL PERCENTAGE PASSING EACH SIEVE.

	PERCENTAGE BY WEIGHT PASSING SIEVE				
	1"	1/2"	#4	#16	#200
CAB	97±3	55±10	10±5	3±3	-
CA9	97±3	60±15	30±15	10±10	6±6

- 3.2 DELETERIOUS SUBSTANCES - THE AGGREGATE SHALL CONSIST OF TOUGH, DURABLE PARTICLES, REASONABLY FREE FROM AN EXCESS OF SOFT AND UNSOUND MATERIAL AND OTHER OBJECTIONABLE MATTER.
- 3.3 OTHER PROPERTIES - AGGREGATE SUPPLIED UNDER THIS SPECIFICATION SHALL BE CAPABLE OF PASSING THE REQUIREMENTS FOR SOUNDNESS, RESISTANCE TO ABRASION, FREEZING AND THAWING AND LACK OF EXCESSIVE REACTIVE MATERIALS AS LISTED IN ASTM SPECIFICATION C33. THESE TESTS WILL BE ORDERED ON AGGREGATE OF QUESTIONABLE QUALITY ONLY WHEN THE SIZE OF THE SQUARE OF THE AGGREGATE AND THE POSSIBILITY OF IDENTIFYING FUTURE DELIVERIES FROM THIS SQUARE JUSTIFY SUCH TESTS.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	FOUNDATION AGGREGATE ILLINOIS DEPARTMENT OF TRANSPORTATION (MATERIAL SPECIFICATION)	DATE: 05-01-05 Page 1 of 2 60468-900
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4. SAMPLING

- 4.1 SEPARATE SAMPLES SHALL BE TAKEN FROM DIFFERENT PARTS OF THE STOCK PILE. THIS SHOULD BE DONE TO OBTAIN A COMPOSITE SAMPLE REPRESENTING THE AVERAGE OF THE PILE. AFTER THOROUGHLY MIXING THE COMPOSITE SAMPLE, IT SHALL BE POURED THROUGH THE SAMPLE CUTTER TO REDUCE ITS SIZE TO THAT REQUIRED FOR THE TESTS. THE BALANCE SHALL BE DISCARDED.

5. TESTING

- 5.1 THE PROPERTIES SPECIFIED IN THIS SPECIFICATION SHALL BE DETERMINED BY TESTS LISTED IN ASTM SPECIFICATION C33 OF LATEST ISSUE.

6. PACKAGING

- 6.1 THIS MATERIAL WILL BE PURCHASED EITHER IN BULK OR WEATERPROOF BAGS. "50 LBS. BAGS".

7. SUPPLEMENTARY SPECIFICATIONS

- 7.1 ASTM SPECIFICATION C33-90 OR LATEST REVISION.

8. ACCEPTANCE

- 8.1 ALL PROVISIONS OF THE PURCHASE ORDER SHALL APPLY.

9. CONSTRUCTION INFORMATION

- 9.1 THE CONTRACTOR SHALL FURNISH ALL ITEMS ON THIS SPECIFICATION.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	FOUNDATION AGGREGATE ILLINOIS DEPARTMENT OF TRANSPORTATION (MATERIAL SPECIFICATION)	DATE: 05-01-05 Page 2 of 2 60468-900
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INSTRUCTION FOR INSTALLING  
AND FURNISHING RIP-RAP

THE CONTRACTOR SHALL FURNISH, INSTALL, REMOVE AND REPLACE RIP RAP OF THE TYPE AND SIZE AT THE LOCATION SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER. PROPOSED RIP RAP SHALL BE GRADATION #3, 12" MINIMUM THICKNESS. RIP RAP SHALL BE IN ACCORDANCE WITH SECTION 261 OF THE IDOT STANDARD SPECIFICATIONS OF LATEST ISSUE.

RIP RAP INSTALLATION REMOVAL AND REPLACEMENT WILL BE MEASURED FOR PAYMENT IN PLACE, AND THE AREA COMPUTED IN SQUARE YARDS.

THE WORK FOR RIP RAP IN PLACE OF THE TYPE SHOWN ON THE PLANS AND SPECIFIED HEREIN OR AS SHOWN ABOVE SHALL INCLUDE ALL MATERIAL, LABOR, EQUIPMENT RESTORATION AND APPURTENANCES REQUIRED FOR A COMPLETE ITEM PLUS LEVELING AND GRADING.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	INSTRUCTION FOR INSTALLING AND FURNISHING RIP-RAP	DATE: 05-01-05 Page 1 of 1 60468-910
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COARSE AGGREGATE

1. SCOPE

- 1.1 THIS SPECIFICATION COVERS COARSE AGGREGATE CONSISTING OF CRUSHED STONE OR GRAVEL FOR USE IN CONCRETE.

2. GENERAL

- 2.1 COARSE AGGREGATE SUPPLIED UNDER THIS SPECIFICATION SHALL COMPLY WITH ASTM SPECIFICATION C33-90 OF LATEST REVISION.

3. PHYSICAL PROPERTIES

- 3.1 GRADING - THE COARSE AGGREGATE SHALL BE WELL GRADED BETWEEN THE FOLLOWING LIMITS:

SIZE NO.	NOMINAL SIZE	PERCENTAGE BY WEIGHT PASSING SIEVE						
		1"	3/4"	1/2"	3/8"	#4	#8	#16
8	3/8" TO #8	-	-	100	85 TO 100	10 TO 30	0 TO 10	0 TO 5
7	1/2" TO #4	-	100	90 TO 100	40 TO 70	0 TO 15	0 TO 5	-
67	3/4" TO #4	100	90 TO 100	-	20 TO 55	0 TO 10	0 TO 5	-

- 3.2 DELETERIOUS SUBSTANCES (CLASS 3S) - THE AMOUNT OF DELETERIOUS SUBSTANCES IN COARSE AGGREGATE SHALL NOT EXCEED THE FOLLOWING ITEM.

ITEM	MAXIMUM PERMISSIBLE PERCENTAGE BY WEIGHT OF TOTAL SAMPLE
CLAY LUMPS AND FRIABLE PARTICLES	5.0
SUM OF CLAY LUMPS, FRIABLE PARTICLES AND CHERT	7.0
COAL AND IGNITE	0.5
MATERIAL FINER THAN #200 SIEVE	1.0

- 3.3 OTHER PROPERTIES - COARSE AGGREGATE SUPPLIED UNDER THIS SPECIFICATION SHALL BE CAPABLE OF PASSING THE REQUIREMENTS FOR SOUNDNESS, RESISTANCE TO ABRASION, FREEZING AND THAWING AND LACK OF EXCESSIVE REACTIVE MATERIALS AS LISTED IN ASTM SPECIFICATION C33. THESE TESTS WILL BE ORDERED ON COARSE AGGREGATE OF QUESTIONABLE QUALITY ONLY WHEN THE SIZE OF THE SOURCE OF THE AGGREGATE AND THE POSSIBILITY OF IDENTIFYING FUTURE DELIVERIES FROM THIS SOURCE JUSTIFY SUCH TESTS.

- 3.4 WEIGHT - THE QUANTITY IS IN TONS. UNIT OF ISSUE IS POUNDS. THE WEIGHT SHOULD BE DETERMINED AS LOADED IN THE HAULING UNIT, INCLUDING ANY NATURAL MOISTURE PRESENT. DO NOT ADD WATER.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	COARSE AGGREGATE (MATERIAL SPECIFICATION)	DATE: 05-01-05 Page 1 of 2 60468-920
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4. SAMPLING

- 4.1 SEPARATE SAMPLES SHALL BE TAKEN FROM DIFFERENT PARTS OF THE STOCK PILE. THIS SHOULD BE DONE TO OBTAIN A COMPOSITE SAMPLE REPRESENTING THE AVERAGE OF THE PILE. AFTER THOROUGHLY MIXING THE COMPOSITE SAMPLE, IT SHALL BE POURED INTO A PILE AND QUARTERED IN FOUR EQUAL PARTS. OPPOSITE QUARTERS SHALL BE DISCARDED, AND THE QUARTERING REPEATED UNTIL THE DESIRED SAMPLE REMAINS.

5. TESTING

- 5.1 THE PROPERTIES SPECIFIED IN THIS SPECIFICATION SHALL BE DETERMINED BY TESTS LISTED IN ASTM SPECIFICATION C33 OF LATEST REVISION.

- 5.2 ALL TEST RESULTS AND SAMPLES SHALL BE DELIVERED TO THE DEPARTMENT OF PUBLIC UTILITIES (ELECTRIC) 1392 AURORA AV, NAPERVILLE, IL 60540.

6. SUPPLEMENTARY SPECIFICATIONS

- 6.1 ASTM SPECIFICATION C33-90 OR LATEST REVISION.

7. ESTIMATED WEIGHT

- 7.1 WEIGHT PER CUBIC FOOT.

COARSE AGGREGATE - 90 LBS. - 95 LBS. LOOSE  
130 LBS. DRY COMPACTED  
140 LBS. WET COMPACTED  
OPTIMUM MOISTURE

NOTE: THE ABOVE WEIGHTS ARE FOR ESTIMATING PURPOSES ONLY. FOR EXACT WEIGHTS USE LABORATORY TEST RESULTS.

8. ACCEPTANCE

- 8.1 ALL PROVISIONS OF THE PURCHASE ORDER SHALL APPLY.

9. CONSTRUCTION INFORMATION

- 9.1 THE CONTRACTOR SHALL FURNISH ALL ITEMS ON THIS SPECIFICATION.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	COARSE AGGREGATE (MATERIAL SPECIFICATION)	DATE: 05-01-05 Page 2 of 2 60468-920
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INSTRUCTION FOR INSTALLING, REMOVAL AND REPLACEMENT  
OF BITUMINOUS PAVEMENT (TYPE-II)

THIS ITEM SHALL CONSIST OF SAW CUTTING THE EXISTING PAVEMENT; THE REMOVAL OF EXISTING BITUMINOUS PAVEMENT (12" TO 18" MINIMUM) ABOVE THE MILLING SURFACE THE INSTALLATION OF BITUMINOUS SURFACE MIX THAT MATCHES THE EXISTING TYPICAL SECTION OF THE ROADWAY IN CONFORMANCE WITH PROVISIONS SET FORTH IN THESE DOCUMENTS, AT LOCATIONS WHERE THE PROPOSED IMPROVEMENT CROSSES OR PARALLELS BITUMINOUS ROADWAYS, AS DETAILED IN THESE PLANS.

BITUMINOUS MATERIAL USED TO COMPLETE THIS ITEM OF WORK SHALL CONFORM TO SECTION 406 OF THE STANDARD SPECIFICATIONS, MORE SPECIFICALLY THE BITUMINOUS CONCRETE SHALL BE CLASS I SURFACE COURSE, TYPE 2, MIXTURE D.

AFTER SAW CUTTING, ALL LOOSE AND UNSOUND MATERIAL SHALL BE REMOVED FROM THE REPAIR AREA BY MEANS OF PNEUMATIC, MECHANICAL, OR OTHER TOOLS AS WILL BE ACCEPTABLE TO THE ENGINEER. MATERIALS REMOVED FROM THE REPAIR AREA SHALL BE DISPOSED OF BY THE CONTRACTOR OFF THE JOB SITE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

AREAS OF UNSOUND BASE OR SUB-BASE SHALL BE IDENTIFIED, MEASURED, AND THE ENGINEER SHALL BE NOTIFIED. A TEMPORARY PATCH MAY BE REQUIRED.

THE OPENINGS SHALL BE PROTECTED WITH TYPE I OR TYPE II BARRICADES WITH LIGHTING FOR THE PERIOD BEGINNING IMMEDIATELY AFTER REMOVAL IS COMPLETED UNTIL THE OPENINGS HAVE BEEN FILLED WITH BITUMINOUS MIXTURE AND ALL DEBRIS IS CLEARED AWAY, OR WITH SUFFICIENT STEEL PLATING TO ALLOW TRAFFIC TO PASS. PROTECTION OF THE EXCAVATION SHALL BE IN ACCORDANCE WITH THESE SPECIAL PROVISIONS NOTED HEREIN AS TRAFFIC CONTROL.

PRIOR TO PLACING BITUMINOUS CONCRETE, ALL SURFACES OF THE REPAIR AREA SHALL BE BLOWN FREE OF DUST AND LOOSE AGGREGATE PARTICLES WITH COMPRESSED AIR. A TACK COAT CONFORMING TO SECTION 406 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL SURFACES OF THE REPLACEMENT AREA AT A RATE OF 0.10 GAL. OF RESIDUAL BITUMEN PER SQUARE YARD. THE OPENING SHALL THEN BE FILLED IN LIFTS OF SURFACE COURSE MIXTURE AND COMPACTED BY MEANS OF A SELF-PROPELLED STEEL WHEEL ROLLER TO NOT LESS THAN 95 PERCENT OF THE MODIFIED PROCTOR DENSITY.

THE FINISHED SURFACE OF THE FINAL REPLACEMENT SHALL BE FLUSH, SMOOTH AND LEVEL TO THE SURROUNDING PAVEMENT SURFACE.

THE FINISHED SURFACE OF THE FINAL REPLACEMENT SHALL MEASURE 2 INCHES IN DEPTH.

WHEN, IN THE OPINION OF THE ENGINEER, BITUMINOUS SURFACE COURSE MIXTURE DELIVERED TO THE WORK SITE FOR PATCHING HAS COOLED TO THE POINT OF BEING UNSATISFACTORY, IT SHALL NOT BE USED IN THE WORK.

THE METHOD OF MEASUREMENT FOR THIS ITEM OF WORK SHALL BE IN SQUARE YARDS, WHICH WILL BE CALCULATED BY THE FIELD MEASUREMENT. MEASUREMENT SHALL BE CONSIDERED FULL COMPENSATION FOR SAW CUTTING, REMOVAL AND DISPOSAL OF EXCAVATED MATERIALS, REMOVAL AND INSTALLATION OF BITUMINOUS MATERIALS TO MATCH EXISTING PAVEMENT SECTIONS, PLACING OF TACK COAT AND BITUMINOUS SURFACE COURSE, TEMPORARY ASPHALT PATCHES, TRAFFIC CONTROL, AND ANY OTHER LABOR, EQUIPMENT, TOOLS OR MATERIALS NECESSARY TO COMPLETE THIS ITEM TO THE SATISFACTION OF THE ENGINEER.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE PER SQUARE YARD FOR BITUMINOUS PAVEMENT REPLACEMENT, TYPE II, WHICH SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, EQUIPMENT AND APPURTENANT NECESSARY FOR A COMPLETE JOB.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	INSTRUCTION FOR INSTALLING, REMOVAL AND REPLACEMENT OF BITUMINOUS PAVEMENT (TYPE II)	DATE: 05-01-05 Page 1 of 1 60468-930
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PROJECT TITLE ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION DETAILS AND STANDARDS				
ENGINEER BCC	DRAFTING DATE 8-04-12	MAP # 4211,4224	SCALE N.T.S.	
GIS DESIGN BY DL	DRAWN BY PSM	AT&T JOINT AGREEMENT # N/A	PROJECT # EU-12	
CHECKED BY	APPROVED BY	CAD FILE 0061123001D35.DWG	SHEET # 35 OF 40	
Naperville Department of Public Utilities Electric Division				WORK REQUEST # 61123

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-0351	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60P42</del>	
		FED. AID PROJECT		

**TRANSMISSION LINE LANDSCAPING OVERHEAD OR UNDERGROUND**

THIS SPECIFICATION COVERS THE REQUIREMENTS FOR THE INSTALLATION OF FLOWERS, PLANTS, TREES, SHRUBS, EVERGREENS AS PART OF THE ELECTRIC LANDSCAPING WORK ASSOCIATED WITH OVERHEAD AND UNDERGROUND LINES AND RELATED FACILITIES IN ACCORDANCE WITH THE JOB DRAWINGS.

**I. GENERAL**

- 1) THE NUMBER, TYPE AND LOCATION OF PLANTINGS SHALL BE AS SHOWN ON THE JOB OR DIRECTED BY THE ENGINEER.
- 2) THE CONTRACTOR SHALL GIVE HIS PERSONAL ATTENTION TO THE FAITHFUL CARRYING OUT THE WORK. COMPETENT AND SKILLFUL MEN SHALL BE EMPLOYED TO EXECUTE THE WORK WHICH SHALL BE SUPERVISED BY AN EXPERIENCED ARBORIST FOREMAN AT ALL TIMES.
- 3) THE CONTRACTOR SHALL HAVE AVAILABLE AND IN GOOD CONDITION ALL EQUIPMENT NECESSARY FOR THE SAFE TRANSPORTING OF PLANTINGS TO THE SITE AND FOR SETTING PLANTINGS IN FINAL POSITION.
- 4) THE CONTRACTOR SHALL CONTAIN HIS OPERATION WITHIN THE OWNER'S PROPERTY AND SHALL AVOID OR MINIMIZE ANNOYANCE OR DISTURBANCE TO THE PUBLIC.
- 5) CARE SHALL BE TAKEN TO AVOID DISTURBANCE OF ALL AREAS OUTSIDE OF THE WORK AREAS AND ANY DAMAGE THERETO SHALL BE IMMEDIATELY REPAIRED AND RESTORED TO THE ORIGINAL CONDITION.
- 6) WHEN THE WORK IS COMPLETED, THE CONTRACTOR SHALL RESTORE THE SURFACE OF OWNER'S PROPERTY AND/OR ANY OTHER LAND USED BY THE CONTRACTOR TO ITS ORIGINAL CONDITION. ALL DEBRIS, EXCESS EXCAVATED MATERIAL, AND ALL OTHER MATERIAL WHICH COLLECTS AS A RESULT OF THE CONTRACTOR'S OPERATION, SHALL BE REMOVED IMMEDIATELY.
- 7) ALL BRICKS MORTAR, DECORATIVE STONE, CONCRETE, STONE, SAND GRAVEL, MODULAR BRICK FORMS, MULCH OF ALL TYPES, PULVERIZED BLACK DIRT, TREES, FENCE INSTALLATION AND REMOVAL, FLOWERS, SHRUBS, EVERGREEN TREES AND TO BE FURNISHED BY THE CONTRACTOR WITH LABOR TO INSTALL.
- 8) THE CONTRACTOR SHALL REMOVE ONLY THOSE TREES AND SHRUBS SO DESIGNATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER, OR THOSE THAT DIRECTLY INTERFERE WITH THE SAFETY OR QUALITY OF CONSTRUCTION PRACTICES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF TWO DAYS IN ADVANCE OF REMOVAL OF TREES THAT AFFECT SAFETY. THE CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN WORKING NEAR EXISTING TREES AND SHRUBS TO AVOID DAMAGING THOSE NOT SCHEDULED FOR REMOVAL AND SHALL REPLACE ANY DAMAGED PLANTS AT HIS OWN EXPENSE. THE CONTRACTOR SHALL PROTECT ALL OTHER TREES, BUSHES AND LANDSCAPING FEATURES. TREES REMOVED OR DAMAGED BY THE CONTRACTOR THAT HAVE NOT BEEN DESIGNATED FOR REMOVAL, SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE CITY. TREES TO HAVE BRANCHES OR ROOTS PRUNED SHALL BE DONE IN A NEAT AND CLEAN MANNER (i.e., WITH A SAW DESIGNED FOR PRUNING OR SHEARS OR LOPPERS) AND NOT TORN, PULLED, OR BROKEN WITH CONSTRUCTION EQUIPMENT. THE CONTRACTOR SHALL HAVE THE SERVICES OF A REGISTERED ARBORIST AND CERTIFIED ARBORIST ON SITE DURING THE TREE REMOVAL, TRIMMING AND PRUNING WORK. THE ARBORIST SHALL IDENTIFY THE TYPE, SIZE, DIAMETER AND CONDITION OF ALL TREES AND EVERGREENS PRIOR TO REMOVAL, TRIMMING AND/OR PRUNING AND PROVIDE A REPORT FOR EACH TREE OR EVERGREEN WORKED ON. THE REPORT SHALL BE PROVIDED IN DUPLICATE AND GIVEN TO THE ENGINEER FOR REVIEW. SEE DETAILS OF TREE REQUIREMENTS IN PLAN DRAWINGS OR AS DIRECTED BY THE ENGINEER.

**I. GENERAL (CONTINUED)**

- 9) TREES SHALL BE INSTALLED A MINIMUM OF FIVE FEET HORIZONTALLY FROM SANITARY SEWERS, SANITARY SERVICES, WATER MAINS, AND WATER SERVICES. TREES SHALL BE INSTALLED A MINIMUM OF TEN FEET HORIZONTALLY FROM UTILITY STRUCTURES AND APPURTENANCES, INCLUDING, BUT NOT LIMITED TO, MANHOLES, VALVE VAULTS, VALVE BOXES AND FIRE HYDRANTS.
- 10) THE CONTRACTOR SHALL PROVIDE THE SERVICES OF A LICENSED AND REGISTERED ARBORIST, A REGISTERED LANDSCAPER ARCHITECT, PLUS A STATE AND COUNTY LICENSED, CERTIFIED AND APPROVED LANDSCAPING SERVICE ASSIGNED AND PERFORM SERVICES FOR THE DURATION OF THE PROJECT. THE ARBORIST AND REGISTERED LANDSCAPER ARCHITECT SHALL OVERSEE ALL RESTORATION REQUIRED ON THE PROJECT AS IT RELATES TO SURFACE RESTORATION, VEGETATION, DECORATIVE FEATURES, PROVIDE LANDSCAPING DESIGNS, GARDENS, AND TREES AND SHRUBS AND EVERGREENS AND SODDING, SEEDING AND BLACK DIRT INSTALLATION, AND SHALL DIRECT PRUNING AND TRIMMING OPERATIONS TO FOLLOW THE BEST PRACTICES AND METHODS WHEN IT COMES TO SURFACE RESTORATION, VEGETATION, TREES AND PLANTS. THE ARBORIST AND/OR ARCHITECT SHALL WRITE REPORTS WITH RECOMMENDATIONS, CAUSE AND EFFECT RELATION SHIPS, PROVIDE LANDSCAPING DESIGNS FOR CUSTOMER APPROVAL AND PROVIDE POSSIBLE SOLUTIONS WITH OPTIONS OF ALL WORK BEING DONE OR PROPOSED WHEN REQUESTED TO DO SO BY THE OWNER. THE REGISTRATION NUMBER AND NAME OF THE REGISTERED LANDSCAPE ARCHITECT SHALL BE PROVIDED PRIOR TO STARTING WORK. IN ADDITION, THE CONTRACTOR SHALL PROVIDE THE ARBORIST NAME AND CREDENTIALS. THE COST OF PROVIDING THIS SERVICE IS INCIDENTAL TO THE COST OF THE CONTRACT.
- 11) ALL RESTORATION SHALL NOT BE DONE EXCEPT FOR PREP WORK OF THE AREA. PRUNING OR TRIMMING WHEN THE SUMMER SEASON TEMPERATURE SHALL EXCEED 85 DEGREES FAHRENHEIT OR BELOW 40 DEGREES FAHRENHEIT WINTER TEMPERATURE. ALL RESTORATION SHALL START BY APRIL 1 AND STOP BY NOVEMBER 15, OR SOONER AS WEATHER PERMITS. IF WINTER CONDITIONS PREVENT RESTORATION WORK, FOLLOWING THE WINTER SEASON THE CONTRACTOR SHALL RESUME RESTORATION WORK BY APRIL 1, WEATHER PERMITTING, OF THE NEXT YEAR OR IN ACCORDANCE WITH LOCAL AGENCIES. THE OWNER SHALL RETAIN FUNDS OF A MINIMUM EQUAL TO THE WORK TO BE DONE OR MORE, AND SHALL BE PAID WHEN THE WORK IS COMPLETED. THE GUARANTEE SHALL BE FROM THE DATE THE ENGINEER HAS SIGNED THAT ALL SURFACE RESTORATION IS COMPLETED.
- 12) THIS WORK SHALL CONSIST OF THE CUTTING, GRUBBING, REMOVAL AND DISPOSAL OF TREES AND EVERGREENS AT THE LOCATIONS SHOWN ON THE PLANS OR SPECIFIED BY THE ENGINEER. NO TREES SHALL BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER. TREE REMOVAL METHODS SHALL BE IN CONFORMANCE WITH IDOT ARTICLE 201.04 OF THE STANDARD SPECIFICATIONS.
- 13) CLEARING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED AS INCLUDED IN THE UTILITY INSTALLATION REQUIRED IN THE CONTRACT.
- 14) THE CONTRACTOR SHALL REMOVE ALL STUMPS, TREES AND EVERGREENS AND DISPOSE OFF SITE, PLUS RESTORE SURFACE WITH A 6" LAYER OF BLACK DIRT AND SOD.
- 15) THE CONTRACTOR SHALL REQUIRE THAT AN ARBORIST AND ARCHITECT LANDSCAPER LOOK AT EACH TREE FOR DISEASE, FUNGUS OR BEETLE INFESTATION AND SOUND TREE FOR STRUCTURAL SUITABILITY AND GENERAL CONDITION OF TREE BEFORE CLIMBING OR SAWING. A REPORT SHALL BE GIVEN TO THE ENGINEER INDICATING THEIR FINDINGS.
- 16) TREES TO BE REMOVED OR INSTALLED WILL BE MEASURED IN INCH-DIAMETER. THE DIAMETER WILL BE MEASURED AT A POINT FOUR FEET ABOVE THE HIGHEST GROUND LEVEL AT THE BASE OF THE TREE AND WILL BE DETERMINED BY ASSURING THE CIRCUMFERENCE OF THE TREE AND DIVIDING THIS MEASURE CIRCUMFERENCE BY 3.1416.
- 17) TREE REMOVAL OR INSTALLATION WILL BE PAID FOR AT THE CONTRACT UNIT PRICES PER UNIT DIAMETER FOR TREE REMOVAL/INSTALLATION, 6-12 INCH DIAMETER, AND 13-30 INCH DIAMETER, WHICH SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, EQUIPMENT AND APPURTENANCES NECESSARY TO COMPLETE THE WORK.
- 18) CONTRACTOR IS ADVISED TREE REMOVAL OR INSTALLATION REQUIRES THAT ALL UTILITIES ARE TO BE IDENTIFIED PRIOR TO REMOVAL AND PROVIDE PROPER PROTECTION (WOOD LAGGING GROUND TREES).

**II. PLANT MATERIAL**

- 1) THE CONTRACTOR SHALL INVESTIGATE SOURCES OF SUPPLY TO ENSURE THAT ALL THE PLANTS DESIGNATED ON THE PLANTING LIST IN THE SIZE, VARIETY, AND QUALITY NOTED AND SPECIFIED ARE AVAILABLE. FAILURE TO TAKE THIS PRECAUTION WILL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY TO FURNISH ALL PLANT MATERIAL IN STRICT ACCORDANCE WITH THE CONTRACT REQUIREMENTS, AND WITHOUT ADDITIONAL COST TO THE OWNER.
- 2) ALL STOCK FURNISHED SHALL BE WELL SHAPED PLANTS AND MUST BETRUE TO NAME. ONE OF EACH SIZE SHALL BE LEGIBLY TAGGED WITH A WEATHER PROOF TAG STATING THE SIZE AND STANDARD BOTANICAL NAME AS RECOMMENDED BY THE AMERICAN ASSOCIATION OF NURSEYMEN.
- 3) ALL BALLED AND BURLAPPED STOCK SHALL CONFORM FULLY TO THE SPECIFICATIONS AS SET FORTH BY THE AMERICAN NURSEYMEN'S ASSOCIATION AND THE ILLINOIS LANDSCAPE CONTRACTOR'S ASSOCIATION.
- 4) THE CALIPER OF TREE TRUNKS SHALL BE TAKEN SIX INCHES ABOVEGROUND LEVEL FOR TREES UP TO AND INCLUDING FOUR INCHES CALIPER AND 12 INCHES ABOVE GROUND LEVEL FOR TREES OF LARGER CALIPER.
- 5) NO SUBSTITUTION SHALL BE MADE WITHOUT WRITTEN AUTHORIZATION BY THE OWNER'S REPRESENTATIVE.
- 6) UPON NOTICE FROM THE OWNER'S REPRESENTATIVE, ALL PLANTS NOT TRUE TO SIZE, QUALITY, VARIETY AND COLOR SPECIFIED SHALL BE REMOVED BY THE CONTRACTOR AND IMMEDIATELY REPLACED AT THE CONTRACTOR'S EXPENSE WITH PLANTS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. THE DECISION OF THE OWNER'S REPRESENTATIVE SHALL BE FINAL.
- 7) ALL PLANTS SHALL BE DUG WITH REASONABLE CARE AND SKILL IMMEDIATELY PREVIOUS TO SHIPMENT, OR, IF DUG IN ADVANCE, ROOTS MUST BE CAREFULLY PROTECTED AT ALL TIMES TO PREVENT EXCESSIVE DRYING AND LOSS OF VITALITY. ROOTS SHALL NOT BE SPLIT NOR SHALL ANY ROOTS OVER ONE AND ONE HALF INCH IN DIAMETER BE CUT OR SPECIAL PRECAUTIONS SHALL BE TAKEN TO AVOID ANY UNNECESSARY INJURY TO OR REMOVAL OF FIBROUS ROOTS.
- 8) EACH SPECIES OR VARIETY SHALL BE HANDLED AND PACKED IN THE APPROVED MANNER FOR THAT PLANT, HAVING REGARD TO THE SOIL AND CLIMATIC CONDITIONS AT THE TIME AND PLACE OF DIGGING, THE TYPE OF TRANSIT, THE DELIVERY SITE, AND THE TIME THAT WILL BE CONSUMED IN TRANSIT OR DELIVERY. ALL PRECAUTIONS THAT ARE CUSTOMARY IN GOOD TRADE PRACTICE SHALL BE TAKEN TO ENSURE THAT UPON ARRIVAL AT THE DESTINATION THE PLANTS ARE IN GOOD CONDITION FOR SUCCESSFUL GROWTH.

**III. TREES AND EVERGREENS**

- 1) IDENTIFY SPECIES USING AN ARBORIST, INSTALL ALL WORK USING A REGISTERED, LICENSED, LANDSCAPING SERVICE, REMOVE, FURNISH, DELIVER, MAKE READY WORK, GRADE, LEVEL, DISPOSE OF EXCAVATED MATERIALS OFF SITE, AND PLANT A TREE OR EVERGREEN OF THE SAME SPECIES, VARIETY AND SAME SIZE, INSTALL SUITABLE BLACK DIRT FILL, GRADE, INSTALL WITH MULCH AND WATER, IF THIS IS NOT POSSIBLE FOR TREE REPLACEMENT DO THE FOLLOWING: FURNISH, DELIVER AND PLANT WITH THE SAME AT LOCATIONS DESIGNATED BY THE ENGINEER. A NUMBER OF TREES OF THE SAME SPECIES AND VARIETY HAVING A MINIMUM DIAMETER OF 4 INCHES, WHOSE TOTAL INCH DIAMETER EQUALS THE INCH DIAMETER OF THE TREE REMOVED. DIAMETER OF THE PRESENT TREE 4" AND LESS IN DIAMETER SHALL BE MEASURED AT 6 INCHES FROM THE TOP OF ROOT BALL OR AS DENOTED ON THE DRAWINGS. TREES 4" AND LARGER IN DIAMETER SHALL BE MEASURED AT 12 INCHES FROM TOP OF ROOT BALL OR AS DENOTED ON THE DRAWINGS. THE EXCAVATION FOR THE TREE OR EVERGREEN SHALL BE THREE TIMES THE DIAMETER SIZE OF THE ROOT BALL, PLUS 3 TO 4 FEET DEEP AND THE EXCAVATED GROUND MATERIALS REMOVED FROM THE SITE AND DISPOSED OF OFF SITE. DECORATIVE EDGING INSTALLED, AND NEW PULVERIZED DIRT WITH THE PROPER NUTRIENTS ADDED, SUPPORTED BY ROPE TIE DOWNS, AND 3 INCH THICK BED OF MULCH AROUND THE TREE COVERING THE ENTIRE EXCAVATED AREA. PLUS WATERING FOR 2 MONTHS UNDER THE DIRECTION OF AN ARBORIST ENGINEER. ALL TREES AND EVERGREENS PLANTED SHALL BE LOCATED AND IDENTIFIED AND DATED AND PUT ON A DRAWING AND THE TREE OR EVERGREEN IDENTIFIED BY SPECIES AND SIZE WITH THE STREET ADDRESS AND GIVEN TO THE ENGINEER FOR THE RECORD. ALL TREES OR EVERGREENS SHALL BE GUARANTEED TO GROW FOR ONE YEAR AND 6 MONTHS FROM THE DATE OF THE AS BUILT DRAWING, WHICH IS SIGNED AND DATED BY THE ENGINEER.

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**III. TREES AND EVERGREENS (CONTINUED):**

- 8) THE CONTRACTOR SHALL NOTE THAT SOME LANDSCAPING MATERIALS MAY BE REQUIRED TO BE TRANSPLANTED THEN ALL RULES, REGULATIONS, PAYMENT, GUARANTEES, WATERING FOR 2 MONTHS, CARE OF TREES, BASS SIZE, PREP AREA SHALL HAVE THE SAME REQUIREMENTS AS IF INSTALLING NEW LANDSCAPING MATERIALS. ALL TRANSFERRED LANDSCAPING MATERIALS ACTIVE SHALL BE DIRECTED AND PERFORMED UNDER THE SUPERVISION OF THE ARBORIST AND LANDSCAPE ARCHITECT. SEE DRAWING FOR PARTICULARS. TRANSPLANTING SHOWN ON THE DRAWING AND IDENTIFIED UNDER A UNIT PRICE SHALL BE DEEMED INCIDENTAL TO THE COST OF THE PROJECT AND SHALL NOT BE PAID FOR SEPARATELY.

**IV. PLANTING**

- 1) IF THE SOIL AT HAND IS NOT SUITABLE FOR PLANTING, A SUITABLE LIGHT RICH SOIL SHALL BE SUPPLIED. THE BACKFILL SOIL SHALL BE FREE OF SOD, LUMPS, CLUMPS, STONES, AND ALL OTHER TYPES OF FOREIGN MATERIALS AND SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO DELIVERY ON THE SITE. BACKFILL SHALL BE MIXED WITH PEAT MOSS, OR EQUIVALENT, AND SHALL BE WELL COMPACTED BY TAMING AND WATERING ACCORDING TO ACCEPTED PRACTICE SO THAT ALL VOIDS AND AIR POCKETS ARE ELIMINATED. A SLIGHT DEPRESSION SHALL BE LEFT AROUND THE PLANTING TO FACILITATE WATERING.
- 2) PLANTING PITS FOR BALLED AND BURLAPPED TREES SHALL BE PREPARED AT THE TIME THE STOCK IS DUG SO THAT NO DELAY WILL OCCUR WHEN THE STOCK IS READY TO BE PLANTED. ALL PITS SHALL BE DUG AT LEAST ONE FOOT WIDER THAN THE DIAMETER OF THE BALL. THE PLANTING PIT SHALL BE DEEP ENOUGH TO PROVIDE PROPER DRAINAGE, TO ALLOW FOUR INCHES OF GOOD SOIL BENEATH THE BALL, AND TO PERMIT THE PLANTING WHEN IT HAS SETTLED TO STAND AT THE ESTABLISHED GRADE AT THE SAME DEPTH AS IT ORIGINALLY GREW. IF THE SOIL CONDITION IN THE PITS ARE SUCH THAT ADDITIONAL DRAINAGE IS REQUIRED TO ENSURE SUCCESSFUL GROWTH, SUITABLE DRAINAGE SHALL BE PROVIDED BY THE CONTRACTOR, WHATEVER TYPE OF DRAINAGE IS PROVIDED SHALL ELIMINATE SUPERFLUOUS WATER IN THE PIT AND DRAIN AWAY FROM THE PLANTING SITE. EACH TREE SHALL BE PLANTED SO AS TO STAND DIRECTLY WHERE STAKED AND AT THE ESTABLISHED GRADE. IMMEDIATELY AFTER BEING PLANTED, THE TRUNKS OF ALL DECIDUOUS TREES SHALL BE WRAPPED SPIRALLY WITH CREPE PAPER MANUFACTURED FOR THIS PURPOSE. WRAPPING SHALL BE APPLIED FROM TOP DOWN AND STARTED AT A POINT FAR ENOUGH UP IN THE TREE TO BE WELL SHADED BY BRANCHES ABOVE. LARGE LOWER LIMBS SHALL BE BOUND AND REINFORCED WITH STOUT CORD WOUND SPIRALLY IN THE OPPOSITE DIRECTION OF THE WRAPPING PAPER.
- 3) ALL BALLED AND BURLAPPED SHRUBS SHALL BE PLANTED IN HOLES TWELVE INCHES LARGER IN DIAMETER THAN THE BALL OF ADEQUATE DEPTH, AND WITH PERPENDICULAR WALLS. THE BALL SHALL BE COVERED TO APPROXIMATELY THREE QUARTERS OF THE DEPTH AND THOROUGHLY WATERED IN PLACE. THE REMAINING ONE QUARTER FILL SHALL BE DRY SOIL WELL COMPACTED INTO PLACE.
- 4) IN AREAS WHERE THE PLANTING OF BALLED STOCK HAS RESULTED IN AN EXCESSIVE AMOUNT OF EXTRA SOIL, SUCH EXCESS SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR AND DISPOSED OF OFF SITE.
- 5) PLANTING PITS FOR BARE ROOTED STOCK SHALL BE AMPLE TO RECEIVE THE ROOTS WITHOUT CROWDING. AFTER PLACING THE PLANTS IN THE HOLES, THE LATTER SHALL BE THREE QUARTERS FILLED WITH TOP SOIL, WATERED AND THEN FILLED WITH COMPACTED DRY EARTH TO THE LEVEL OF THE FINISHED GRADE. THE PLANTS SHALL BE PLANTED PLUMB AND STRAIGHT. ALL DECIDUOUS BARE ROOTED STOCK SHALL BE PROPERLY ROOT PRUNED BEFORE PLANTING TO REMOVE UNDESIRABLE ROOT GROWTH AND TO IMPROVE GROWTH CHARACTERISTICS.

**IV. PLANTING (CONTINUED)**

- 6) THIS WORK SHALL CONSIST OF PLANTING TREES AND EVERGREENS OF VARIOUS SIZES AND TRUNK DIAMETER. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE PROPOSED LOCATION FOR FOREIGN UTILITIES, ROOM FOR GROWTH, SUITABLE DRAINAGE AND SUNLIGHT OR SHADE. THE ARBORIST SHALL BE ON THE PROJECT DURING THE ENTIRE PROCESS AND SHALL DIRECT THE PLANTING.
- 7) PRIOR TO PLANTING, EXAMINE THE AREA FOR OVERHEAD OBSTRUCTIONS WHEN DIGGING AND MOVING. CONTRACTOR SHALL UNDERTAKE ANY PRUNING REQUIRED TO REMOVE POORLY POSITIONED OR DAMAGED LIMBS. THE CONTRACTOR SHALL IDENTIFY IF THE SPECIES, OR SOME PORTION THEREOF, IS DISEASED. THE CONTRACTOR SHALL DETERMINE IF THE TREE OR EVERGREEN IS A SAFETY CONCERN PRIOR TO PERFORMING ANY WORK. FOR EXAMPLE, IF IT CREATES A LINE OF SIGHT PROBLEM FOR VEHICLES. IF IN THE OPINION OF THE ARBORIST THE TREE OR EVERGREEN IS NOT PLANTABLE THEN THE TREE SHALL NOT BE PLANTED.
- 8) CONTRACTOR SHALL EXAMINE THE NEW SITE FOR THE TREE'S HABITAT REQUIREMENTS. FOR EXAMPLE: WIND PROTECTION: TIME OF YEAR, SOIL PH, SUNLIGHT AND MOISTURE REQUIREMENTS. PLANT IN EARLY FALL, BEFORE FIRST FREEZE OR IN THE SPRING BEFORE THE BUDS ON THE TREES OR EVERGREENS BEGIN TO SWELL.
- 9) THE CONTRACTOR SHALL BE REQUESTED TO PLANT THE FOLLOWING TREE OR EVERGREEN SPECIES: USE 15 GALLON SIZE OR 4" HIGH ON 4" DIA. AS MEASURES (DWARF RED BUCK EYE).  

RIVER BIRCH	SARGENT CRAB TREE
HACKBERRY	NINE BARK DARTS GOLD
HAWTHORN	SUMAC SMOOTH
AMERICAN LINDEN	ARROW WOOD VIBURNUM
SILVER MAPLE	WEGELA FLORIDA
PIN OAK	JAPANESE YEW
RED OAK	SUMATRAN YEW
SUMAC	ARBORVITAE GLOBE
COLORADO SPRUCE	ARBORVITAE TECHNY
BALSAM SPRUCE	MUGHO PINE
SPRUCE	ARBORVITAE AMERICAN
FINES OF VARIOUS SPECIES	BOXWOOD WINTERGREEN
CRAB MYRTLE TREE	DWARF RED BUCK EYE
EMERALD ARBORVITAE	CRANBERRY VIBURNUM
- 10) THE CONTRACTOR SHALL PREPARE A DESIGN OF THE PLANTED TREE AS IT FITS ON THE PROPERTY BY AN ARCHITECT LANDSCAPER. THE DRAWING SHALL BE GIVEN TO THE ENGINEER.
- 11) THE CONTRACTOR SHALL GET APPROVAL FOR PLANTING FROM THE CITY OF NAPERVILLE PRIOR TO PLANTING.
- 12) THE CONTRACTOR SHALL IDENTIFY WHAT TYPE OF TREE SHALL BE PLANTED AND PREPARE TREE FOR SHIPPING AND PLANTING.
- 13) THE CONTRACTOR SHALL MAINTAIN ALL ACTIVITIES WITHIN THE EASEMENTS OR PUBLIC WAYS ANY AND ALL OTHER MEANS TO PERFORM THE WORK IS AT THE CONTRACTORS EXPENSE AND SHALL OBTAIN PERMISSION FROM ALL LAND OWNERS TO USE THEIR PROPERTY.
- 14) THE CONTRACTOR UNDER THE DIRECTION OF AN ARBORIST SHALL PREPARE THE SITE FOR THE PLANTING, FERTILIZE, WATER, TRIM ADD MULCH, STAKE AS NECESSARY, PROVIDE DRAINAGE AND MAINTAIN FOR ONE YEAR.
- 15) TREES AND EVERGREENS TO BE PLANTED SHALL BE MEASURED IN INCH DIAMETER. THE DIAMETER WILL BE MEASURED AT A POINT FOUR FEET ABOVE THE HIGHEST GROUND LEVEL AT THE BASE OF THE TREE OR EVERGREEN AND WILL BE DETERMINED BY ASSURING THE CIRCUMFERENCE OF THE TREE AND DIVIDING THIS MEASURE CIRCUMFERENCE BY 3.1416.
- 16) SEE SPECIFICATION 56270-1210 FOR ADDITIONAL REQUIREMENTS AND BASIS OF PAYMENTS. CONTRACTOR SHALL FOLLOW SPECIFICATION OF TREE, SHRUB AND EVERGREEN PRESERVATION REQUIREMENTS, CONTRACTOR TO PROVIDE TREE SURVEY.

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PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.
GIS DESIGN BY	DL	DRAWN BY	PSM	AT&T JOINT AGREEMENT #	N/A	PROJECT #	EU-12
CHECKED BY		APPROVED BY		CAD FILE	0061123001D36.DWG	SHEET #	36 OF 40
Naperville				Department of Public Utilities Electric Division			
				WORK REQUEST # 61123			

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035-1</del>	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60P42</del>	
		FED. AID PROJECT		

**IV. PLANTING (CONTINUED):**

- ALL TREES AND SHRUBS SHALL BE TOP THINNED OR PRUNED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE. PRUNING SHALL BE ONLY FOR THE PURPOSE OF BALANCING TOPS TO ROOTS AND FOR THE REMOVAL OF INTERFERING BRANCHES AND BAD CROTCHES, BUT SHALL NOT CHANGE THE NATURAL GROWTH OR APPEARANCE OF THE PLANT.
- ALL TOP THINNING OR PRUNING SHALL BE PERFORMED WITH THE PROPER TOOLS, PRUNING SHEARS OR LOPPING TOOLS. NORMAL TOP PRUNING OF BALLED STOCK WILL REQUIRE REMOVAL OF APPROXIMATELY ONE QUARTER OF THE BRANCHES; OF BARE ROOTED STOCK APPROXIMATELY ONE THIRD OF THE BRANCHES. ALL PRUNING WOUNDS SHALL BE PAINTED WITH AN APPROVED TREE WOUND DRESSING.

**V. FERTILIZER**

- FERTILIZER SHALL BE A CONTROLLED RELEASE TYPE, SUCH AS MAGAMP, DISTRIBUTED BY JIFFY PRODUCTS OF AMERICA, P.O. BOX 338, WEST CHICAGO, ILLINOIS 60185, OR APPROVED EQUAL. THE FERTILIZER SHALL BE PLACED DIRECTLY INTO PLANTING PITS IN THE QUANTITIES AND METHOD AS SHOWN ON PLAN.

**APPLICATION RATES AND METHODS FOR MAGAMP**

a) 10 IN. BALL	2 OZS. COARSE	PLACE IN BOTTOM OF PLANTING PIT PRIOR TO PLANTING.
b) 12-16 IN. BALL	4 OZS. COARSE	PLACE IN BOTTOM OF PLANTING PIT PRIOR TO PLANTING.
c) 16-20 IN. BALL	8 OZS. COARSE	PLACE IN BOTTOM OF PLANTING PIT PRIOR TO PLANTING.
d) 2 FT. BALL	10-12 OZS. COARSE	PLACE IN BOTTOM OF PLANTING PIT PRIOR TO PLANTING.
e) 3 FT. BALL	1 TO 2 LBS. COARSE	PLACE IN BOTTOM OF PLANTING PIT PRIOR TO PLANTING.
f) BARE ROOT PLANTING 12 IN. TO 8 FT. TALL	2 OZS. TO 2 LBS. COARSE	PLACE IN BOTTOM OF PLANTING PIT AND COVER WITH 1/2 TO 1 IN. SOIL BARRIER.

**VI. INSPECTION**

- INSPECTION OF ALL STOCK MAY BE MADE AT POINT OF ORIGIN OR POINT OF DELIVERY, OR BOTH BY OWNER'S REPRESENTATIVE. STOCK WHICH CANNOT BE SHOWN FOR INSPECTION ON TWENTY-FOUR HOUR NOTICE MAY BE REJECTED. AN INSPECTION DURING DIGGING WILL BE MADE WHENEVER SUCH EXAMINATION IS DEEMED DESIRABLE. FINAL INSPECTION WILL BE MADE BY THE SAME REPRESENTATIVE WHEN THE MATERIAL IS DELIVERED. THE OWNER RESERVES THE RIGHT TO REJECT ALL STOCK WHICH IS FOUND UNSATISFACTORY UPON DELIVERY.

**VII. DELIVERY**

- ALL PLANTS SHALL BE PACKED FOR DELIVERY TO ENSURE ADEQUATE PROTECTION AGAINST CLIMATIC, SEASONAL, OR ANY OTHER INJURY DURING TRANSIT. THE ROOTS OF BARE-ROOTED STOCK SHALL BE CAREFULLY PROTECTED WITH WET STRAW, MOSS OR OTHER SUITABLE PACKING MATERIAL WHICH WILL ENSURE THE ARRIVAL OF PLANTS AT THE DESTINATION IN GOOD CONDITION. SPECIAL ATTENTION SHALL BE GIVEN TO ENSURE PROMPT DELIVERY, CAREFUL HANDLING IN LOADING, PROTECTION BY CANVAS OR OTHER ACCEPTED METHODS IN TRANSIT, AND UNLOADING AT THE POINT OF DELIVERY.
- THE CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION FOR ALL UNPLANTED STOCK ON THE SITE BY CAREFULLY HEELING IN OR BY OTHER STANDARD APPROVED PRACTICES.

**VIII. ROOT PRUNING**

- THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, A REGISTERED ARBORIST, A REGISTERED LANDSCAPE ARCHITECT, AND APPURTENANCES NECESSARY TO PERFORM TREE AND EVERGREEN ROOT PRUNING WORK SHALL BE COMPLETED IN CONFORMANCE WITH SECTION 201 OF THE "STANDARD ROAD SPECIFICATIONS" LATEST EDITION. THIS SHALL BE COMPLETED FOR ALL TREES ENCRANCHING UPON THE CONSTRUCTION AREA. ANY ROOTS ENCOUNTERED SHALL BE TREATED WITH THIS METHOD AS DIRECTED BY THE CITY.
- ROOT PRUNING USING AN APPROVED MECHANICAL ROOT PRUNING SAW, OR LOPPER AS DIRECTED BY A REGISTERED ARBORIST, SHALL BE PERFORMED PRIOR TO DIGGING WHERE NOTED ON THE PLANS. PER CUSTOMER REQUEST OR AS DIRECTED BY THE ENGINEER, WHENEVER ROOTS OF PLANT MATERIAL ARE TO REMAIN EXPOSED DURING CONSTRUCTION, THE DAMAGED ROOTS ARE TO BE REMOVED BY CUTTING THEM OFF CLEANLY. PRUNING SHALL BE DONE IN THE PRESENCE OF THE ENGINEER AND/OR REGISTERED ARBORIST AND IN SUCH A MANNER AS TO PRESERVE THE NATURAL GROWTH HABIT.
- ANY DAMAGE TO THE ROOT ZONE, AS DETERMINED BY THE ENGINEER AND/OR ARBORIST SHALL BE COMPENSATED BY PRUNING AN EQUIVALENT AMOUNT OF THE TOP VEGETATIVE GROWTH OF THE PLANT MATERIAL WITHIN 1 WEEK FOLLOWING ROOT DAMAGE. FERTILIZER NUTRIENTS SHALL BE APPLIED WITHIN 48 HOURS AFTER ROOT DAMAGE OCCURS. A FERTILIZER WITH A 1:1:1 RATION SHALL BE APPLIED AT THE RATE OF 5 LBS. OF NUTRIENTS PER 1000 SQ. FT.
- APPLICATION SHALL BE ACCOMPLISHED BY PLACING DRY FERTILIZER IN HOLES IN THE SOIL. HOLES SHALL BE 8 TO 12 INCHES DEEP AND SPACED 2 FEET APART IN AN AREA BEGINNING 30 INCHES FROM THE BASE OF THE PLANT. HOLES CAN BE PUNCHED WITH A PUNCH BAR, DUG WITH A SPADE, DRILLED WITH AN AUGER OR ANY METHOD APPROVED BY THE ENGINEER. APPROXIMATELY 0.02 LB. OF FERTILIZER NUTRIENTS SHALL BE PLACED BY IN EACH HOLE (250 HOLES PER 1000 SQ. FT.).
- IF THE ENGINEER OR ARBORIST DETERMINE THAT THE HOLE METHOD OF FERTILIZER PLACEMENT IS NOT PRACTICAL OR DESIRABLE, AN APPROVED METHOD OF UNIFORM SURFACE APPLICATION WILL BE ALLOWED.
- IN THE CASE OF INADEQUATE RAINFALL, AS DETERMINED BY THE ENGINEER, SUPPLEMENTAL WATER SHALL BE APPLIED WITHIN 48 HOURS OF ANY ROOT DAMAGE. THE WATER SHALL BE APPLIED AT THE RATE OF 2 GALLONS PER SQ. YD. OF SURFACE WITHIN THE ROOT ZONE OF PLANT MATERIAL HAVING SUSTAINED DAMAGE TO THE ROOT ZONE. THREE SUBSEQUENT WEEKLY WATERING AT 2 GALLONS PER SQ. YD. SHALL BE APPLIED IF DEEMED NECESSARY BY THE ENGINEER. ADDITIONAL WATERING MAY BE REQUIRED. THE ENGINEER SHALL DIRECT THIS WORK.

**IX. SUPPLEMENTAL WATERING**

- THIS WORK SHALL CONSIST OF FURNISHING SUPPLEMENTAL WATERING IN CONFORMANCE WITH IDOT ARTICLE 252.09 OF THE STANDARD SPECIFICATIONS.
- SUPPLEMENTAL WATERING WILL BE MEASURED FOR PAYMENT IN UNITS OF 1000 GALLONS OF WATER APPLIED ON THE SODDED AREAS.
- CONTRACTOR IS ADVISED SUPPLEMENTAL WATERING IS INCLUDED IN THE UNIT PRICING PER STRUCTURES, ERECTION, OR OTHER REMOVAL AND/OR FOUNDATION INSTALLATION. SUPPLEMENTAL WATERING IS AT THE DIRECTION OF THE ENGINEER.

**X. MULCHING**

- THIS ITEM OF WORK SHALL INCLUDE THE MULCHING OF SEEDED AREAS ALONG THE PROPOSED IMPROVEMENTS AT THE LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER.
- MATERIALS AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH SECTION 251 OF THE STANDARD SPECIFICATIONS. MULCH SHALL BE APPLIED AS HYDRAULIC MULCH AS SPECIFIED IN IDOT ARTICLE 251.03 (c), METHOD 3 OF THE STANDARD SPECIFICATIONS. MULCH SHALL BE APPLIED TO ALL SEEDED AREAS WITHIN 24 HOURS FROM THE TIME SEED HAS BEEN APPLIED.
- CONTRACTOR IS ADVISED MULCHING IS INCLUDED IN THE UNIT PRICING PER FOOT FOR INSTALLING CONDUIT, FOUNDATION POLE OR REMOVAL.
- MULCHING WILL BE MEASURED IN PLACE IN ACRES OF SURFACE AREA MULCHED. THE PRICE SHALL INCLUDE ALL MATERIALS, LABOR, EQUIPMENT FOR PLACING THE MULCH OVER SEEDED AREAS AS SPECIFIED. MULCHING SHALL BE AT THE DIRECTION OF THE ENGINEER.

**XI. CONTRACTOR'S RESPONSIBILITY AND GUARANTEE**

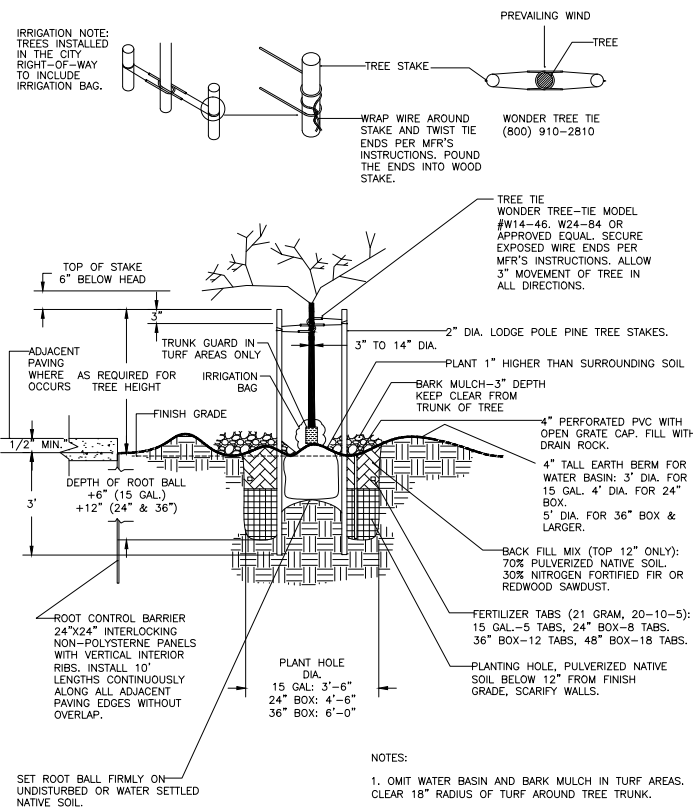
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL PLANTS FOR ONE YEAR FOLLOWING THE DATE OF PLACEMENT INCLUDING WATERING ALL PLANTS AT THE TIME OF PLANTING AND AS NEEDED THROUGHOUT THE GROWING SEASON. HE SHALL VISIT THE SITE MONTHLY DURING THE GROWING SEASON TO CHECK THE PLANT'S CONDITION, AND SHALL REPORT HIS FINDINGS TO THE OWNER'S REPRESENTATIVE. IF AT THE TIME OF HIS VISIT, OR DURING A ROUTINE CHECK BY THE OWNER'S REPRESENTATIVE, IT IS DETERMINED THE PLANTS NEED WATER, THE PLANTS SHALL BE WATERED WITHIN THREE DAYS FROM THAT DATE. NOTICE WILL BE GIVEN THE CONTRACTOR BY THE OWNER'S REPRESENTATIVE BY TELEPHONE AND BY LETTER. ALL REPLACEMENT PLANTS SHALL BE SELECTED, DELIVERED AND PLANTED IN ACCORDANCE WITH THIS SPECIFICATION. ALL REPLACEMENT PLANTS SHALL BE GUARANTEED FOR EIGHTEEN MONTHS FROM TIME OF REPLACEMENT AND SHALL RECEIVE THE SAME CARE AND TREATMENT AS THE ORIGINAL PLANTING. THE CONTRACTOR WITH THE WRITTEN REPORT FROM THE ARBORIST, AND THE OWNER'S REPRESENTATIVE WILL DETERMINE, AND WILL AGREE IN WRITING, THE CAUSES OF THE PLANT'S DEATH OR DISFIGURATION. THE CONTRACTOR WILL RECEIVE IN WRITING A LIST OF ALL PLANTS THAT SHALL BE REPLACED. UPON RECEIPT OF THIS LIST, THE CONTRACTOR SHALL, WITHIN THE SAME PLANTING SEASON AS THE DATE OF THE LIST, REMOVE ALL PLANTS ON THE LIST AND REPLACE THEM WITH HEALTHY PLANTS. THE CONTRACTOR SHALL FURNISH AND HAVE AVAILABLE DURING THE LENGTH OF THE PROJECT A LICENSED, CERTIFIED ARBORIST FOR RECOMMENDATIONS, PURCHASE OF PLANT MATERIALS, DIRECTIONS, SUGGESTION AND GENERAL OVER SIGHT OF ALL ROOT PRUNING AND PLANTING OPERATIONS.
- CONTRACTOR SHALL FURNISH, DELIVER, INSTALL STORE, AND MAINTAIN ALL PLANT MATERIALS INCLUDING TREES, SHRUBS AND FLOWERS FOR THE DURATION OF THE CONTRACT AND GUARANTEE PERIOD. ALL WATERING AND WATER PROTECTION AT THE CONTRACTOR'S COST AND IS INCLUDED IN THE PRICING.
- THE CONTRACTOR SHALL FURNISH ALL MATERIALS, FEES, TOOLS, FERTILIZER, WATER AND PLANT MAINTENANCE ON THIS SPECIFICATION PLUS ALL LANDSCAPING MATERIALS AND LABOR.
- CONTRACTOR SHALL PROVIDE FOR PROTECTION OF TREES, SHRUBS AND EVERGREENS.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	TRANSMISSION LINE LANDSCAPING OVERHEAD OR UNDERGROUND (CONSTRUCTION SPECIFICATION)	DATE: 05-01-05 Page 7 of 11 60468-1000
ELECTRIC STANDARDS		

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ELECTRIC STANDARDS		

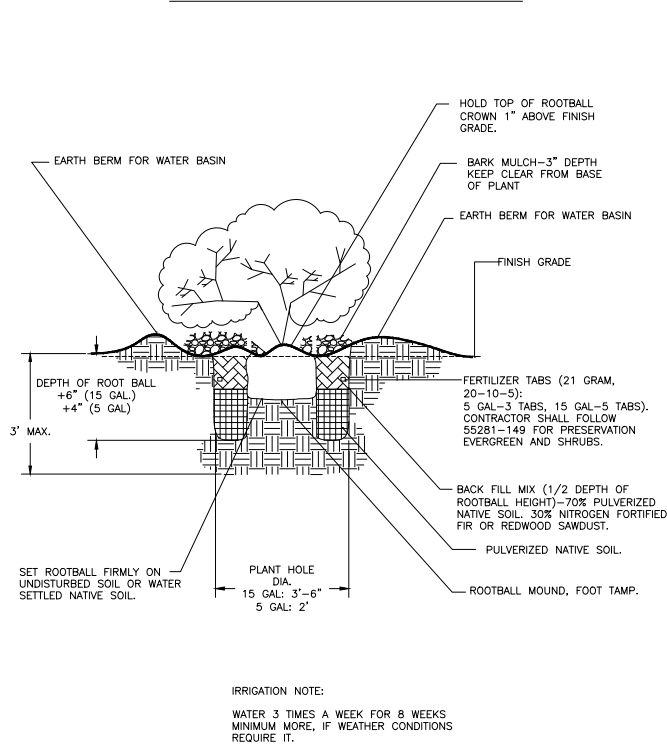
NAPERVILLE PUBLIC UTILITIES DEPARTMENT	TRANSMISSION LINE LANDSCAPING OVERHEAD OR UNDERGROUND (CONSTRUCTION SPECIFICATION)	DATE: 05-01-05 Page 9 of 11 60468-1000
ELECTRIC STANDARDS		

**TREE PLANTING "DETAIL"**



NAPERVILLE PUBLIC UTILITIES DEPARTMENT	TRANSMISSION LINE LANDSCAPING OVERHEAD OR UNDERGROUND (CONSTRUCTION SPECIFICATION)	DATE: 05-01-05 Page 10 of 11 60468-1000
ELECTRIC STANDARDS		

**EVERGREEN AND SHRUB PLANTING "DETAIL"**



NAPERVILLE PUBLIC UTILITIES DEPARTMENT	TRANSMISSION LINE LANDSCAPING OVERHEAD OR UNDERGROUND (CONSTRUCTION SPECIFICATION)	DATE: 05-01-05 Page 11 of 11 60468-1000
ELECTRIC STANDARDS		

PROJECT TITLE: <b>ROUTE 59 ROAD IMPROVEMENTS</b>				
PROJECT DESCRIPTION: <b>DETAILS AND STANDARDS</b>				
ENGINEER: BCC	DRAFTING DATE: 8-04-12	MAP #: 4211,4224	SCALE: N.T.S.	
GIS DESIGN BY: DL	DRAWN BY: PSM	REVISIONS DATE: N/A	PROJECT #: EU-12	
CHECKED BY:	APPROVED BY:	CAD FILE: 0061123001D37.DWG	SHEET #: 37 OF 40	
Naperville Department of Public Utilities Electric Division			WORK REQUEST #: 61123	

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-0351</del>	DUPAGE		
FED.ROAD.DIST.NO.		ILLINOIS	CONTRACT <del>60P42</del>	
		FED. AID PROJECT		

**INSTRUCTION FOR INSTALLING AND REMOVING A SILT FENCE**

THE CONTRACTOR SHALL FURNISH AND INSTALL AND LINEAR FEET IN PLACE WITH ALL MATERIAL, EQUIPMENT AND LABOR FOR THE INSTALLATION OF A GEOTECHNICAL SILT FENCE FOR TEMPORARY EROSION CONTROL.

GEOTECHNICAL FABRIC: FABRIC FOR SILT FENCE SHALL CONSIST OF WOVEN OR NONWOVEN FILAMENTS OF POLYPROPYLENE, POLYESTER OR POLYETHYLENE. NONWOVEN FABRIC MAY BE NEEDLE PUNCHED, HEAT-BONDED, RESIN-BONDED OR COMBINATION THEREOF. THE FILAMENTS IN THE SILT FENCE FABRIC MUST BE DIMENSIONALLY STABLE (I.E., TO EACH OTHER), RESISTANT TO DELAMINATION, AND MUST BE FREE FROM ANY CHEMICAL TREATMENT OR COATING THAT MIGHT SIGNIFICANTLY REDUCE POROSITY AND PERMEABILITY. BOTH FABRICS SHALL BE RESISTANT TO ULTRAVIOLET RADIATION. THE FABRICS SHALL COMPLY WITH THE FOLLOWING PHYSICAL PROPERTIES.

PHYSICAL PROPERTIES	SILT FILTER FENCE FABRIC
GRAB TENSILE STRENGTH (LBS.) ASTM D 4632	200 (MIN.) †
GRAB ELONGATION @ BREAK (%) ASTM D 4632	12 (MIN.) †
BURST STRENGTH (PSI) - ASTM D 751	250 (MIN.) †
TRAPEZOIDAL TEAR STRENGTH (LBS.) ASTM D 4533	-----
WIDTH (FT.)	3.5 (MIN.)
WEIGHT (OZ/SQ) - ASTM D 3776	4.0 (MIN.)
EQUIVALENT OPENING SIZE (EOS) SIEVE NO. CORPSCF ENGRS. CS-02215	30 (MIN.) (NON-WOVEN) † 50 (MIN.) (WOVEN) †

† FOR WOVEN FABRIC, TEST RESULTS SHALL BE REFERENCED TO ORIENTATION WITH WARP OR WEAVE, AND WHICH EVER THE CASE MAY BE. BOTH WOVEN AND NONWOVEN FABRIC SHALL BE TESTED WET.

‡ TEST RESULTS MAY BE OBTAINED BY MANUFACTURER'S CERTIFICATION.

STAKES MAY BE EITHER WOODEN OR METAL POSTS.

THE FILTER BLANKET SHALL BE DELIVERED TO THE JOBSITE IN SUCH A MANNER AS TO FACILITATE HANDLING AND INCORPORATION INTO THE WORK WITHOUT DAMAGE. IN NO CASE SHALL THE FABRIC BE STORED OR EXPOSED TO DIRECT SUNLIGHT THAT MIGHT SIGNIFICANTLY DIMINISH ITS STRENGTH OR TOUGHNESS PRIOR TO ITS INTENDED USE AS A SILT FENCE. THE FABRIC SHALL BE RESISTANT TO ULTRAVIOLET RADIATION FOR THE DURATION OF THE CONSTRUCTION PROJECT.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	INSTRUCTION FOR INSTALLING AND REMOVING A SILT FENCE	DATE: 05-01-05 Page 1 of 2 60468-1100
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**INSTRUCTION FOR INSTALLING AND REMOVING A SILT FENCE**

EXISTING WOODEN OR METAL POSTS SPACED AT ABOUT 1.5M (5FT.) INTERVALS MAY BE UTILIZED TO SUPPORT THE FILTER FABRIC. IN NEW CONSTRUCTION WHERE THERE ARE NO EXISTING POSTS AVAILABLE FOR SUPPORT, 1.8 M (6 FT.) LENGTHS OF TREATED 50 MM X 100 MM (2 INCH X 4 INCH) TIMBER OR GALVANIZED METAL POSTS SPACED AT ABOUT 1.5 M (5 FT.) SHALL BE INSTALLED. THE TIMBER OR METAL POSTS SHALL BE SET IN PREVIOUSLY DUG HOLES AND BACKFILLED TO FORM A STABLE SUPPORT FOR THE FABRIC. OR MAY BE DRIVEN PROVIDED THEY ARE PROTECTED BY A SUITABLE DRIVING CAP AND NO DAMAGE IS DONE TO ANY PORTION OF THE POST. THE POSTS SHALL BE SET PLUMB TO THE REQUIRED DEPTH AND ALIGNMENT WITH ADEQUATE MATERIAL STABILITY. A SMALL TRENCH OF ABOUT 150 MM (6 INCH) WIDTH AND 150 MM (6 INCH) DEPTH SHALL THEN BE EXCAVATED ON THE UPSTREAM SIDE OF THE SILT FENCE TO BURY AND ANCHOR THE LOWER PORTION ON THE FABRIC. THE FABRIC SHALL FIRST BE ATTACHED TO THE POSTS BY AN APPLICABLE MEANS. METAL STAPLES OR NAILS CAN BE USED TO ATTACH THE FABRIC TO WOODEN POSTS. WITH THE MINIMUM WIDTH OF THE FABRIC OF 1.1 M (3.5 FT.), ABOUT 300 MM (12 INCHES) SHALL BE BURIED IN THE TRENCH AND THEN BACKFILLED WITH NATURAL MATERIAL, TAMPING THE BACKFILL TO PROVIDE GOOD ANCHORAGE AND PREVENT SURFACE WATER RUNOFF FROM UNDERMINING THE FENCE.

THE SILT FILTER FENCE SHALL BE SATISFACTORILY MAINTAINED SO AS TO KEEP FUNCTIONING DURING THE LIFE OF THE PROJECT. THIS SHALL INCLUDE REMOVAL OF TRAPPED SEDIMENT AND CLEANING THE FABRIC OF TRAPPED SEDIMENT.

SILT FENCE WILL BE MEASURED IN LINEAR FEET OF FENCE IN PLACE.

THE WORK INCLUDES ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED MAINTENANCE OF THE FENCE, REMOVAL OF THE FENCE WHEN NO LONGER NEEDED, AND RESTORATION OF THE AREA.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	INSTRUCTION FOR INSTALLING AND REMOVING A SILT FENCE	DATE: 05-01-05 Page 2 of 2 60468-1100
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**INSTRUCTION FOR REMOVAL AND REPLACEMENT OF P.C.C. SIDEWALK**

THIS ITEM SHALL CONSIST OF THE REMOVAL OF EXISTING AND INSTALLATION OF NEW P.C.C. SIDEWALK OF VARIOUS TYPES AT THE LOCATIONS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER. THIS ITEM SHALL ALSO INCLUDE THE PREPARATION OF 6 INCHES CA-6SUB-GRADE AND BASE, AND THE PLACEMENT OF A P.C.C. SIDEWALK OF 4 INCHES THICKNESS OR AS SPECIFIED ON THE PLANS, IN ACCORDANCE WITH SECTIONS 423 AND 440 OF THE STANDARD SPECIFICATIONS. CONCRETE SHALL BE IDOT CLASS S1.

SIDEWALK TO BE REMOVED SHALL BE AS INDICATED ON THE PLANS AND MARKED BY THE ENGINEER IN THE FIELD. WHEN THE SIDEWALK IS DAMAGED BY THE CONTRACTOR AND THAT ARE NOT MARKED FOR REMOVAL SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

CONTRACTOR IS ADVISED SIDEWALK REMOVAL AND REPLACEMENT IS INCLUDED IN THE APPROPRIATE UNIT PRICING FOR SWITCH GEAR VAULTS, SIDE WALK SPLICE BOXES, MANHOLES TRENCHES AND HANDHOLES.

P.C.C. SIDEWALK REMOVAL AND REPLACEMENT WILL BE MEASURED FOR PAYMENT IN PLACE, AND THE AREA COMPUTED IN SQUARE FEET. THE SIDEWALK IS 5 FEET WIDE BY 4 INCHES THICK WITH 6 INCHES OF CA-6 COMPACTED BACKFILL UNDER THE SIDEWALK. SIDEWALK INSTALLATION SHALL BE DONE FROM APRIL 15 TO NOVEMBER 15. ALL SIDEWALKS REMOVED AND/OR NOT COMPLETED BEFORE NOVEMBER 15 ARE TO BE TEMPORARILY PATCHED FOR WINTER SERVICE AND MAINTAINED BY THE CONTRACTOR. MEASUREMENT SHALL BE CONSIDERED FULL COMPENSATION FOR SAW CUTTING, EXCAVATING, STEEL PLATING, FLASHING SIGNBOARDS, REMOVAL AND DISPOSAL OF EXCAVATED MATERIALS, REMOVAL AND INSTALLATION OF TRENCH BACKFILL TO PREPARE SIDEWALK TO MATCH EXISTING SIDEWALK, PAVEMENT, AND CURB AND GUTTER, CONCRETE PLACING AND FINISHING, 6 INCHES OF BLACK DIRT AND SOIL, PEDESTRIAN TRAFFIC CONTROL, PLACING OF TEMPORARY COLD PATCH AND/OR CA-6 FOR WINTER, USE OF STEEL PLATES ACROSS DRIVEWAYS, ARROW BOARDS, 2 COATS OF CURING/SEALING COMPOUND, TRAFFIC CONTROL, LINE AND GRADE, PRESSURE WASHING OF ADJACENT SIDEWALKS TO REMOVE GREASE, STAINS OR OTHER MATERIALS NECESSARY TO COMPLETE THIS ITEM TO THE SATISFACTION OF THE ENGINEER. ALL SIDEWALKS INSTALLED SHALL BE USEABLE AS INTENDED. ALL VANDALISM OR DAMAGE OF ANY KIND SHALL BE CAUSE FOR REPLACEMENT AT CONTRACTOR'S COST.

SIDEWALK THICKNESS INCREASES TO 6 INCHES WHEN IT IS PART OF A RESIDENTIAL DRIVEWAY AND 9 INCHES THICK WHEN IT IS PART OF A COMMERCIAL DRIVEWAY.

THE CONTRACTOR SHALL BE PAID FOR ALL SIDEWALK REPLACEMENT SHOWN ON THE DRAWINGS AND OR DIRECTED BY THE ENGINEER. THE ALL OTHER SIDEWALKS DAMAGED OR REMOVED BY THE CONTRACTOR IS INCIDENTAL TO THE CONTRACT.

ALL SIDEWALKS UNDERMINED OR DAMAGE OR MADE UNUSABLE OR CRACKED IN ANY WAY BY THE CONSTRUCTION ACTIVITY SHALL BE REMOVED IN THE ENTIRETY AND INSTALLED NEW BY THE CONTRACTOR AT NO COST TO THE OWNER.

THIS WORK SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR P.C.C. SIDEWALK REMOVAL AND REPLACEMENT, OF THE THICKNESS SPECIFIED, WHICH PRICE SHALL INCLUDE ALL REQUIRED EXPANSION JOINTS, SPECIAL TEXTURING, VARIABLE HEIGHT EDGE TREATMENTS AT SIDEWALK RAMP, DISPOSAL AND SUB-GRADE PREPARATION, FINISHING, PROTECTION OF THE WORK, ALL MATERIALS, LABOR, EQUIPMENT AND APPURTENANCES REQUIRED FOR A COMPLETE ITEM.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	INSTRUCTION FOR REMOVAL AND REPLACEMENT OF P.C.C. SIDEWALK	DATE: 05-01-05 Page 1 of 1 60468-1110
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**RESTORATION OF WORK AREA AND ADJACENT AREA**

THE CONTRACTOR IS ADVISED THE CUSTOMER MUST BE SATISFIED WITH ALL ASPECTS OF THE RESTORATION. THE CONTRACTOR SHALL START ALL AREAS THAT HAVE BEEN DISRUPTED DUG OR COMPACTED OR OTHER WISE USED BY THE CONTRACTOR'S ACTIVITY. ALL RESTORATION SHALL BEGIN WITHIN THREE WEEKS AFTER THE INITIAL ENTRY ONTO THE CUSTOMERS' PROPERTY. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO FINISH EACH PARCEL OF PROPERTY IN AN ORDERLY AND CONTINUOUS EFFORT TO THE FINISH. LARGE LAPSSES OF TIME FROM STARTING TO FINISH ARE NOT ACCEPTABLE. THE CONTRACTOR SHALL BE REQUESTED TO INCREASE THE WORK FORCE AT NO COST TO SPEED UP THE RESTORATION PROCESS WHEN THE RESTORATION PROCESS TAKES LONGER THAN 6 WEEKS AT ANY LOCATION.

THE WORK AREA SHALL BE KEPT CLEAN AND GOOD HOUSEKEEPING IS THE RULE OF THE DAY. THE STORING STOCK PILING OR LEAVING MATERIALS IN THE WORK AREA OVER NIGHT IS NOT ACCEPTABLE. THE EQUIPMENT SHALL BE RETURNED TO THE STAGING AREAS AT THE END OF EACH DAY. ALL PERSONAL VEHICLES SHALL NOT BE PARKED ON ANY OF THE CITY OF NAPERVILLE STREETS.

THE LANDSCAPING PERIOD IS USUALLY APRIL 1 TO NOVEMBER 1. THE CONTRACTOR SHALL FINISH ALL LANDSCAPING STARTED IN THE WORK YEAR BY NOVEMBER 15 OF THE YEAR STARTED OR SOONER.

THE CONTRACTOR SHALL INSTALL ONLY SALT TOLERANT SOIL AND 6 INCHES OF BLACK DIRT IN GREEN AREAS, AND GRASS AREAS OF ALL TYPES, AND/OR DIRT AREAS THAT HAVE BEEN DUG, EXCAVATED, DISRUPTED OR DAMAGED OR WORN BY USE. ALL LANDSCAPING SHALL BE FURNISHED, INSTALLED, ROLLED, STAKED, SUPPLIED AND APPLIED WITH SUFFICIENT QUANTITIES OF WATER AND FERTILIZER TO PROMOTE GROWTH.

THE CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS SUPPLIED AND INSTALLED BY THE CONTRACTOR FOR ONE YEAR FROM THE COMPLETION DATE OF THE CONTRACT. ALL MATERIALS INSTALLED SHALL BE REPLACED WITH NEW MATERIAL IN THE ENTIRETY IF AFTER ONE YEAR THE MATERIALS FAIL.

THE CONTRACTOR SHALL BE SUPPLIED WITH A TREE SURVEY PERFORMED BY THE CONTRACTOR'S ARBORIST AND WILL THE BENCHMARK USED TO RESTORE THE MINIMUM AMOUNT OF LANDSCAPING. THE CONTRACTOR SHALL TAKE A VIDEO OF THE ENTIRE RIGHT-OF-WAY PRIOR TO PERFORMANCE WORK. THIS VIDEO ALSO SHALL BE USED AS A BENCHMARK FOR RESTORATION.

THE CONTRACTOR SHALL PROVIDE A UNIT THAT IS THE TOTAL COST OF ALL LANDSCAPING AND RESTORATION OF THE CITY OF NAPERVILLE'S RIGHTS OF WAYS AND EASEMENTS TO BE DONE AND REQUIRED BUT NOT COVERED UNDER ANOTHER PRICE ITEM AS REQUIRED FOR A COMPLETE THE JOB. THIS UNIT INCLUDES, BUT NOT LIMITED TO, ALL LABOR, TRANSPORTATION, MATERIALS, HAULING, LOADING, UNLOADING, PLACING, INSTALLING, REMOVAL AND DISPOSAL OF ALL MATERIALS OFF-SITE FOR A COMPLETE JOB.

THIS WORK WILL BE PAID FOR AT THE CONTRACT PRICE OF A LUMP SUM AND SHALL INCLUDE ALL LABOR MATERIALS EQUIPMENT TRANSPORTATION AND INCIDENTALS REQUIRED TO PERFORM THE WORK AND MEETS ALL THE GOVERNMENTAL AND CUSTOMER REQUIREMENTS.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	RESTORATION OF WORK AREA AND ADJACENT AREA	DATE: 05-01-05 Page 1 of 2 60468-1130
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**RESTORATION OF WORK AREA AND ADJACENT AREA**

THE CONTRACTOR IS ADVISED THE CUSTOMER MUST BE SATISFIED WITH ALL ASPECTS OF THE RESTORATION. THE CONTRACTOR SHALL START ALL AREAS THAT HAVE BEEN DISRUPTED DUG OR COMPACTED OR OTHER WISE USED BY THE CONTRACTOR'S ACTIVITY. ALL RESTORATION SHALL BEGIN WITHIN THREE WEEKS AFTER THE INITIAL ENTRY ONTO THE CUSTOMERS' PROPERTY. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO FINISH EACH PARCEL OF PROPERTY IN AN ORDERLY AND CONTINUOUS EFFORT TO THE FINISH. LARGE LAPSSES OF TIME FROM STARTING TO FINISH ARE NOT ACCEPTABLE. THE CONTRACTOR SHALL BE REQUESTED TO INCREASE THE WORK FORCE AT NO COST TO SPEED UP THE RESTORATION PROCESS WHEN THE RESTORATION PROCESS TAKES LONGER THAN 6 WEEKS AT ANY LOCATION.

THE WORK AREA SHALL BE KEPT CLEAN AND GOOD HOUSEKEEPING IS THE RULE OF THE DAY. THE STORING STOCK PILING OR LEAVING MATERIALS IN THE WORK AREA OVER NIGHT IS NOT ACCEPTABLE. THE EQUIPMENT SHALL BE RETURNED TO THE STAGING AREAS AT THE END OF EACH DAY. ALL PERSONAL VEHICLES SHALL NOT BE PARKED ON ANY OF THE CITY OF NAPERVILLE STREETS.

THE LANDSCAPING PERIOD IS USUALLY APRIL 1 TO NOVEMBER 1. THE CONTRACTOR SHALL FINISH ALL LANDSCAPING STARTED IN THE WORK YEAR BY NOVEMBER 15 OF THE YEAR STARTED OR SOONER.

THE CONTRACTOR SHALL INSTALL ONLY SALT TOLERANT SOIL AND 6 INCHES OF BLACK DIRT IN GREEN AREAS, AND GRASS AREAS OF ALL TYPES, AND/OR DIRT AREAS THAT HAVE BEEN DUG, EXCAVATED, DISRUPTED OR DAMAGED OR WORN BY USE. ALL LANDSCAPING SHALL BE FURNISHED, INSTALLED, ROLLED, STAKED, SUPPLIED AND APPLIED WITH SUFFICIENT QUANTITIES OF WATER AND FERTILIZER TO PROMOTE GROWTH.

THE CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS SUPPLIED AND INSTALLED BY THE CONTRACTOR FOR ONE YEAR FROM THE COMPLETION DATE OF THE CONTRACT. ALL MATERIALS INSTALLED SHALL BE REPLACED WITH NEW MATERIAL IN THE ENTIRETY IF AFTER ONE YEAR THE MATERIALS FAIL.

THE CONTRACTOR SHALL BE SUPPLIED WITH A TREE SURVEY PERFORMED BY THE CONTRACTOR'S ARBORIST AND WILL THE BENCHMARK USED TO RESTORE THE MINIMUM AMOUNT OF LANDSCAPING. THE CONTRACTOR SHALL TAKE A VIDEO OF THE ENTIRE RIGHT-OF-WAY PRIOR TO PERFORMANCE WORK. THIS VIDEO ALSO SHALL BE USED AS A BENCHMARK FOR RESTORATION.

THE CONTRACTOR SHALL PROVIDE A UNIT THAT IS THE TOTAL COST OF ALL LANDSCAPING AND RESTORATION OF THE CITY OF NAPERVILLE'S RIGHTS OF WAYS AND EASEMENTS TO BE DONE AND REQUIRED BUT NOT COVERED UNDER ANOTHER PRICE ITEM AS REQUIRED FOR A COMPLETE THE JOB. THIS UNIT INCLUDES, BUT NOT LIMITED TO, ALL LABOR, TRANSPORTATION, MATERIALS, HAULING, LOADING, UNLOADING, PLACING, INSTALLING, REMOVAL AND DISPOSAL OF ALL MATERIALS OFF-SITE FOR A COMPLETE JOB.

THIS WORK WILL BE PAID FOR AT THE CONTRACT PRICE OF A LUMP SUM AND SHALL INCLUDE ALL LABOR MATERIALS EQUIPMENT TRANSPORTATION AND INCIDENTALS REQUIRED TO PERFORM THE WORK AND MEETS ALL THE GOVERNMENTAL AND CUSTOMER REQUIREMENTS.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	RESTORATION OF WORK AREA AND ADJACENT AREA	DATE: 05-01-05 Page 2 of 2 60468-1130
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PROJECT TITLE					ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION					DETAILS AND STANDARDS				
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.		
GIS DESIGN BY	DL	DRAWN BY	PSM	REVISIONS DATE	N/A	PROJECT #	EU-12		
CHECKED BY		APPROVED BY		CAD FILE	0061123001D38.DWG	SHEET #	38 OF 40		
Naperville					Department of Public Utilities Electric Division				
					WORK REQUEST # 61123				

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-035-1</del>	DUPAGE		
		CONTRACT <del>60P42</del>		
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

**PLANTING TREES, SHRUBS, AND EVERGREENS 3" TO 5" DIA., 6" TO 8" DIA., 9" TO 11" DIA. AND 12" TO 15" DIA.**

THIS WORK SHALL CONSIST OF PLANTING TREES, SHRUBS AND EVERGREENS OF VARIOUS SIZES AND TRUNK DIAMETERS. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE PROPOSED LOCATION FOR FOREIGN UTILITIES, ROOM FOR GROWTH, SUITABLE DRAINAGE AND SUNLIGHT OR SHADE. THE ARBORIST SHALL BE ON THE PROJECT DURING THE ENTIRE PROCESS AND SHALL DIRECT THE PLANTING.

PRIOR TO PLANTING, EXAMINE THE AREA FOR OVERHEAD OBSTRUCTIONS WHEN DIGGING AND MOVING. CONTRACTOR SHALL UNDERTAKE ANY PRUNING REQUIRED REMOVING POORLY- POSITIONED OR DAMAGED LIMBS. THE CONTRACTOR SHALL IDENTIFY IF THE SPECIES, OR SOME PORTION THEREOF, IS DISEASED. THE CONTRACTOR SHALL DETERMINE IF THE TREE OR EVERGREEN IS A SAFETY CONCERN PRIOR TO PERFORMING ANY WORK. FOR EXAMPLE, IF IT CREATES A LINE OF SIGHT PROBLEM FOR VEHICLES. IF IN THE OPINION OF THE ARBORIST THE TREE OR EVERGREEN IS NOT PLANTABLE THEN THE TREE SHALL NOT BE PLANTED. CONTRACTOR SHALL EXAMINE THE NEW SITE FOR THE TREE'S HABITAT REQUIREMENTS. FOR EXAMPLE: WIND PROTECTION: TIME OF YEAR, SOIL PH, SUNLIGHT, DRAINAGE AND MOISTURE REQUIREMENTS. PLANT IN EARLY FALL, BEFORE FIRST FREEZE OR IN THE SPRING BEFORE THE BUDS ON THE TREES OR EVERGREENS BEGIN TO SWELL.

THE CONTRACTOR SHALL BE REQUESTED TO PLANT THE FOLLOWING TREE SPECIES:

USE 15 GALLON SIZE OR 4 FEET HIGH OR 4" DIAMETER AS APPLICABLE.

RIVER BIRCH	SARGENT CRAB TREE
HACKBERRY	NINE BARK DARTS GOLD
HAWTHORN	SUMAC SMOOTH
LINDEN AMERICAN	ARROW WOOD VIBURNUM
MAPLE SILVER	WIEGELA FLORIDA
MAPLE NORWAY	CLEVELAND PEAR
OAK PIN	JAPANESE YEW
RED OAK	SUMATRAN YEW
ASH GREEN	ARBORVITAE GLOBE
SUMAC	ARBORVITAE TECHNY
COLORADO SPRUCE	ARBORVITAE AMERICAN
BALSAM	MUGHO PIVE
SPRUCE	BOXWOOD WINTERGREEN
PINES OF VARIOUS SPECIES	DWARF RED BUCK EYE

THE CONTRACTOR SHALL PREPARE A DESIGN OF THE PLANTED TREE AS IT FITS ON THE PROPERTY BY AN ARCHITECT LANDSCAPER. THE DRAWING SHALL BE GIVEN TO THE ENGINEER.

THE CONTRACTOR SHALL GET APPROVAL FOR PLANTING FROM THE CITY OF NAPERVILLE PRIOR TO PLANTING.

THE CONTRACTOR SHALL IDENTIFY WHAT TYPE OF TREE SHALL BE PLANTED AND PREPARE TREE FOR SHIPPING AND PLANTING

THE CONTRACTOR SHALL MAINTAIN ALL ACTIVITIES WITHIN THE EASEMENTS OR PUBLIC WAYS ANY AND ALL OTHER MEANS TO PERFORM THE WORK IS AT THE CONTRACTORS EXPENSE AND SHALL OBTAIN PERMISSION FROM ALL LAND OWNERS TO USE THEIR PROPERTY.

THE CONTRACTOR UNDER THE DIRECTION OF AN ARBORIST SHALL PREPARE THE SITE FOR THE PLANTING, FERTILIZE, WATER, TRIM ADD MULCH, STAKE AS NECESSARY, PROVIDE DRAINAGE AND MAINTAIN FOR ONE YEAR.

TREES, SHRUBS AND EVERGREENS TO BE PLANTED SHALL BE MEASURED IN INCH-DIAMETER. THE DIAMETER WILL BE MEASURED AT A POINT FOUR (4) FEET ABOVE THE HIGHEST GROUND LEVEL AT THE BASE OF THE TREE OR EVERGREEN AND WILL BE DETERMINED BY ASSURING THE CIRCUMFERENCE OF THE TREE AND DIVIDING THIS MEASURED CIRCUMFERENCE BY 3.1416.

**THE BASIS OF PAYMENT:**

THIS WORK SHALL BE PAID FOR AT THE CONTRACT PRICE FOR EACH TREE SPECIES INSTALLED COMPLETE AND PLANTED, 3 INCHES TO 5 INCHES, 6 INCHES TO 8 INCHES OR 9 INCHES TO 11 INCHES OR 12 INCHES TO 15 INCHES, THIS INCLUDES EXCAVATING, REMOVING BALL, FERTILIZERS, EQUIPMENT OF ALL TYPES, HAULING, LOADING, UNLOADING, TRAFFIC CONTROL, STORAGE, NEW 6" INCH LAYER OF BLACK DIRT, MULCH, EDGING, STAKING, REMOVE ALL EXCAVATED MATERIAL OFF SITE, REMOVING AND INSTALLING FENCES, TEMPORARY WORK TO GET TO SITE, SETTING AND ALIGNING, PROVIDE TREES WITH ALL WATERING AND FERTILIZER AS REQUIRED, WITH MAINTENANCE AND ONE-YEAR GUARANTEE FROM LAST PAYMENT FOR THE ENTIRE PROJECT.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	PLANTING TREES, SHRUBS, AND EVERGREENS 3" TO 5" DIA., 6" TO 8" DIA., 9" TO 11" DIA. AND 12" TO 15" DIA.	DATE: 05-01-05 Page 1 of 1 60468-1210
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PROJECT TITLE					ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION					DETAILS AND STANDARDS				
ENGINEER	BCC	DRAFTING DATE	8-04-12	MAP #	4211,4224	SCALE	N.T.S.		
GIS DESIGN BY	DL	DRAWN BY	PSM	REVISIONS DATE	N/A	AT&T JOINT AGREEMENT #		PROJECT #	EU-12
CHECKED BY		APPROVED BY		CAD FILE	0061123001D39.DWG	SHEET #	39 OF 40		
Naperville					Department of Public Utilities Electric Division				
					WORK REQUEST # 61123				



F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	<del>2011-036</del>	DUPAGE		
			CONTRACT 60R30	
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

**ELECTRIC DUCT BANK MATERIALS SUPPLIED BY THE CITY OF NAPERVILLE**

Item Description	Part No.	HTE Code	Qty	Unit
Encap. Conc. 1/8 Neutral 1000mm cu	280-112-00140		0	Each
Crossarm, Wood 10 foot	282-105-00030		0	Each
Brace Crossarm 60" Span 18" Drop	282-106-00030		0	Each
Manhole Type "A" PRECAST UCP	284-103-00140	DEMA	0	Each
Manhole Type "E" PRECAST UCP	284-103-00160	DEME	2	Each
Manhole Type "G" PRECAST UCP	284-103-00170	DEMG	1	Each
Anchor System 7"x1" Rod/drip eye/nut	283-101-00040		0	Each
Vault, Switchgear, 74"x76" Fibercrete	284-101-00010	DEVA	1	Each
Bolt, Double Arms 8" x 22"	283-104-00050		0	Each
Guy Plate 3/4"	283-123-00010		0	Each
Clamp, De Wedge 4 / 0 -477.44 93	283-128-00050		0	Feet
Conduit 6" Dia Schedule 40 PVC Pipe	285-100-00070	D6C	12670	Feet
Guy Guard, Yellow 8"	283-133-00010		0	Feet
Bolt, Machine 8" x 12"	283-106-00110		0	Each
Bolt Machine 3/4" x 12"	283-106-00210		0	Each
Elbow 6" Steel 48" Radius, 22°	285-101-00188	D6B22S	36	Each
Elbow 6" Steel 48" Radius, 30°	285-101-00190	D6B30S	28	Each
Elbow 6" Steel 48" Radius, 11°	285-101-00188	D6B11S	12	Each
Elbow 5" Steel 36" Radius, 30°	285-101-00080	D5B30S	0	Each
Elbow 3" Sch. 40 PVC 36" Radius, 90°	285-100-00040	D3B90P	0	Each
Screw Lag 1/2" x 4"	283-112-00010		0	Each
Coupling Sleeve 6" PVC Long Line	285-102-00130	D6V	60	Each
Coupling 6" Long Line Schedule 40 PVC	285-102-00140	D6L	168	Each
Coupling 6" Schedule 40 PVC 5°	285-102-00150	D6L5	0	Each
Bolt, Camage 1/2" x 6"	283-109-00030		0	Each
Washer, Square 2"x2"x 11/16" A1	283-117-00050		0	Each
Washer, Curved 4"x4"x 15/16"	283-117-00090		0	Each
Washer, DBL Coil Springs 1/2"	283-117-00100		0	Each
Washer, DBL Coil Springs 8"	283-117-00110		0	Each
Molding, Ground Wire 1/2" Plastic x 8"	283-134-00010		0	Each
Staple, cu 1/2"	283-135-00120		0	Each
Grip, Dead End Pref 3/8" Steel Wire	283-138-00110		0	Each
Insulator, Guy Stran 18" Fiberglass Roller	283-144-00010		0	Each
Insulator, Guy Stran 35" Fiberglass Rod	283-144-00020		0	Each
Eyclet, Standard 5/8" Slot	283-159-00010		0	Each
Ring, Adjusting, 4" Concrete 36"	284-103-00080		4	Each
Cement PVC Quarts with Brush 24hr Dry Summer	285-199-00090	DMG	48	Each

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	LIST OF ELECTRIC DUCT BANK MATERIALS	DATE: 06-01-06
ELECTRIC STANDARDS		Page 1 of 3 60468-1320

**ELECTRIC DUCT BANK MATERIALS SUPPLIED BY THE CITY OF NAPERVILLE**

Item Description	Part No.	HTE Code	Qty	Unit
Spacer, Base PVC 6"	285-199-00170	D6R	989	Each
Spacer, Intermediate PVC 6"	285-199-00180	D6RT	989	Each
Splice, 35kV 1000mm cu, 346 Mill.	284-115-00175		0	Each
Shrink Wrap, Heat, 48" 1.65 - 4.95	284-117-00410		0	Each
UG Cable Wall Rack 24" 8 Holes	284-199-00390		0	Each
UG Cable Wall Rack Arm 23.5	284-199-00410		0	Each
Cable Rack Saddles Plastics 5"	284-199-00420		0	Each
Elbow, 48" PVC 30 Deg 6" Sch 40	285-101-00220		0	Each
Plug, PVC 6" With Pull Tab	285-103-00090		16	Each
Bell Fitting, PVC 6" Sch. 40 & Sch 80	285-103-00100		16	Each
Connector, Wedge AL / CU#2, 4/0 STR	286-100-00040		0	Each
Connector, Wedge CU #2 Sol - 5/8 Rod	286-100-00290		0	Each
Connector, Wedge CU 4/0 Str (7) - 2# sol	286-100-00290		10	Each
Grounding #2 solid Copper (500 ft / reel)	280-107-00020	UGMH	30	Feet
Grounding 4/0 Stranded Bare Copper/18 strand (500 ft / reel)	280-107-00070	UGMH	195	Feet
Grounding Rod Copper Clad 5/8"x10'	283-156-00010	UGMH	5	Each
5 Ft ground Rod Copper Clad 5/8" (manholes)	283-156-00030	UGMH	12	Each
Connector, Lug CU#2 BR 1 Hole 3/8" Bot	286-103-00068		0	Each
Splice Compression CU 500 x 500mm str	286-106-00160		0	Each
Extender Air Switch Vault Fiber	284-101-00100	DEVAE	0	Each
Copper Bare #4 7 Strand (500 ft reel)	280-107-00060	UGT3	0	Each
Connector Wedge #4 str to 5/8 Rod	286-100-00320	UGMH	0	Each
Frame and Cover for Manholes type "B"	284-103-00050	DEML	6	Each
6" Concrete Ring for Manhole	284-103-00030	DEMR6	4	Each
2" Concrete Ring for Manhole	284-103-00070	DEMR2	4	FT
Butyl Mastic	892-370-00004		30	Reel
Coupling, Braces 7/8" Rod	283-156-00040		6	Each
Elbow, 48" R STL 30 DEG 6" Gal	285-101-00190		20	Each
Elbow, 48" R Fiber Glass 90 DEG 6"	285-101-00210		16	Each
Elbow, 48" R Fiber Glass 45 DEG 6"	285-101-00200		24	Each
Conduit 3" Dia, Schedule 40 PVC			980	Feet
6" O.D. HDPE SDR13.5 CONDUIT	285-100-00072		100	Feet

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	LIST OF ELECTRIC DUCT BANK MATERIALS	DATE: 06-01-06
ELECTRIC STANDARDS		Page 2 of 3 60468-1320

ADDENDUM -  02-20-2013

PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				CITY OF NAPERVILLE MATERIAL LIST			
ENGINEER	DRAFTING DATE	WAP #	SCALE				
BCC	8-04-12	4211.4224	N.T.S.				
DESIGN BY	DRAWN BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #			
DL	PSM		N/A	EU-12			
CHECKED BY	APPROVED BY	CAD FILE	SHEET #	WORK REQUEST #			
		0061123001D140.DWG	40 OF 40	61123			
Naperville			Department of Public Utilities			Electric Division	

Bench Mark: Cross "+" on top of north end of headwall, 50' north of centerline of Phoenix Closures driveway, east side of IL Route 59, Sta. 3958+37, 42' Right, Elev. 696.41

Existing Structure: S.N. 022-0038 originally built in 1935 as a single span bridge. In 1983 the structure was lengthened. The original east abutment was replaced with a pier and a second span was added to the east as part of Section 1977-215-BR. The bridge's steel beams were last painted under Contract 60F01 in 2009. The structure consists of two steel beam simple spans of 46'-2 1/2" and 42'-7 1/2". The substructure consists of closed abutments and a solid reinforced concrete pier supported on piles. The structure is 96'-11" from bk. to bk. of abutments and 43'-0" wide.

Traffic on roadway shall be stage constructed.

No salvage.

**DESIGN SPECIFICATIONS**

AREMA 2011

**LOADING**

Cooper E80 Plus Impact for Equipment without Hammer Blow

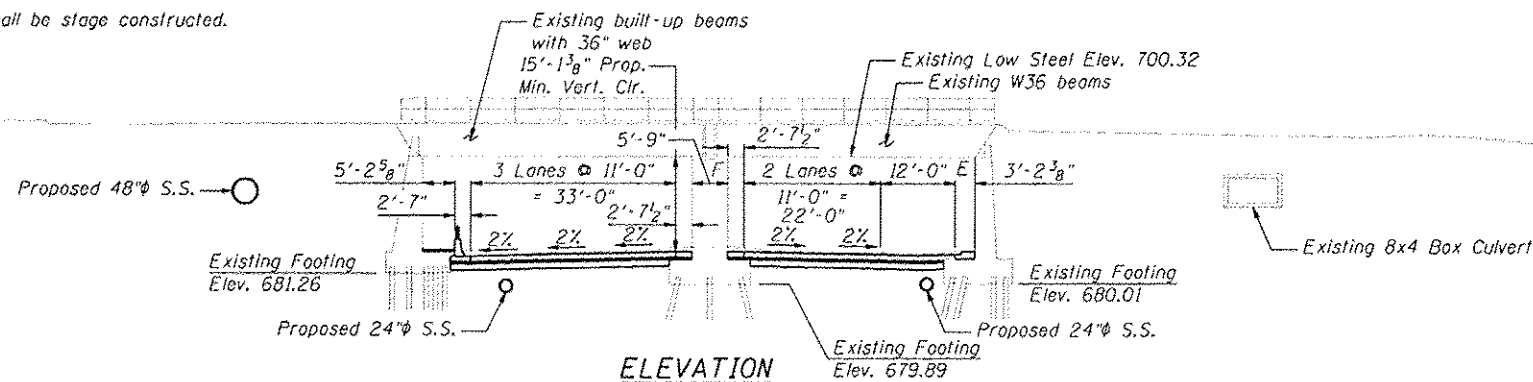
**DESIGN STRESSES**

**EXISTING STRUCTURE**

$f_s = 3,500$  psi  
 $f_y = 60,000$  psi (reinforcement)  
 $f_c = 20,000$  psi (Structural Carbon Steel)

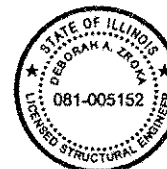
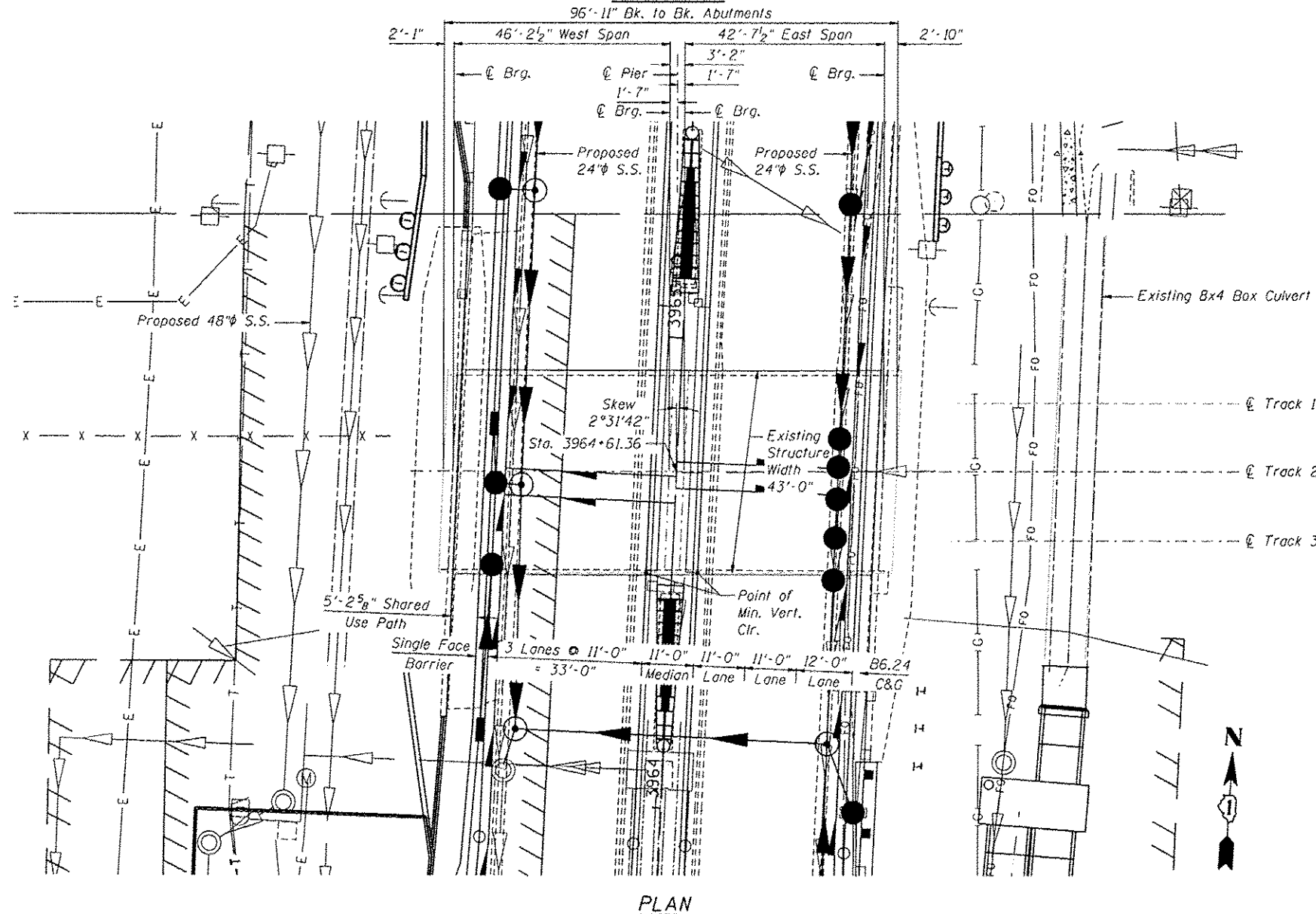
**GENERAL NOTES**

1. Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.
2. The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.

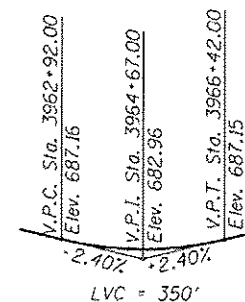


**TOTAL BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Epoxy Crack Injection	Foot	134
Structural Repair of Concrete (Depth < 5")	Sq. Ft.	20
Cleaning Bridge Seats	Sq. Ft.	562
Cleaning and Painting Exposed Rebar	Sq. Ft.	3

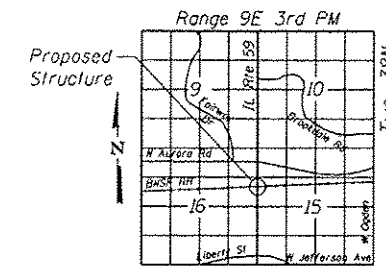


Signature: *[Signature]* Date: 12-14-12  
 November 30, 2014 Expires



**PROFILE GRADE**

(along inside edge of pavement, proposed IL Route 59)



**LOCATION SKETCH**

**INDEX OF SHEETS**

- SC-1. General Plan
- SC-2. Superstructure Repairs
- SC-3. West Abutment Repairs
- SC-4. Pier Repairs
- SC-5. East Abutment Repairs

**GENERAL PLAN**  
**BNSF RAILROAD OVER IL RTE 59**  
**FAP RTE 338**  
**SECTION (112 & 113) WRS-7**  
**DUPAGE COUNTY**  
**STA. 3964+61.36**  
**SN 022-0038**

**ZROKA** engineering  
 Zroka Engineering, P.C.  
 4216 North Hermitage  
 Chicago, IL 60613

DESIGNED - LAS	REVISIONS -
CHECKED - DAZ	REVISIONS -
DRAWN - SAW	REVISIONS -
CHECKED - LAS	REVISIONS -

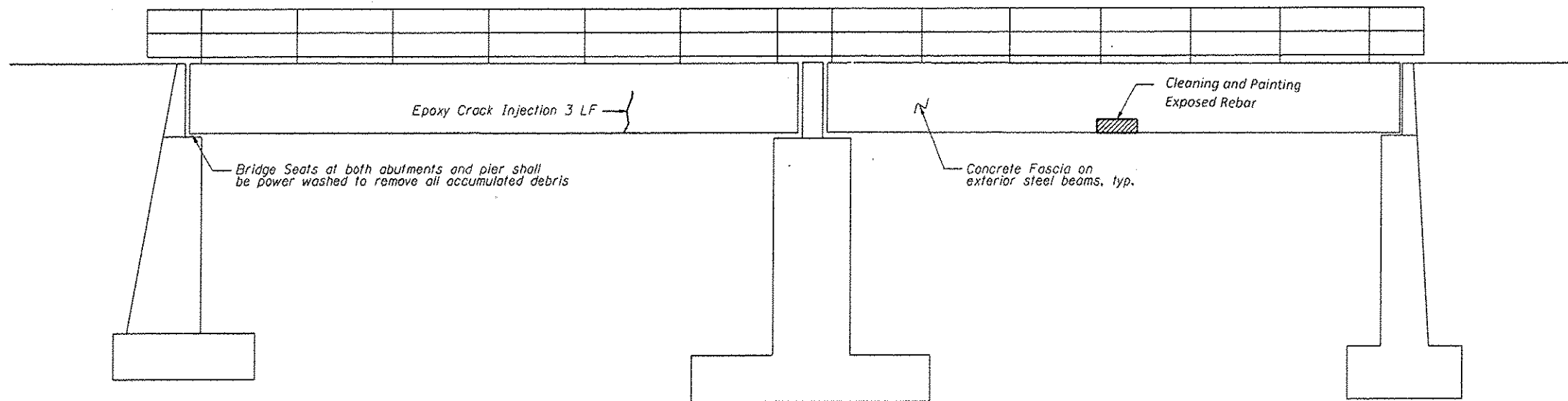
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**GENERAL PLAN & ELEVATION**  
**STA. 3964+61.36 S.N. 022-0038**

SHEET NO. SC-1 OF SC-5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	156	842
				CONTRACT NO. 60R30

ILLINOIS FED. AID PROJECT



**SOUTH ELEVATION**  
(Looking North)

**NOTES**

1. The west span is 46'-2 1/2" long and consists of 18 built-up steel beams with a 36" web. The east span which is 42'-7 1/2" long consists of 18-W36 steel beams.
2. Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

**BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Epoxy Crack Injection	Foot	3
Cleaning and Painting Exposed Rebar	Sq. Ft.	3
Cleaning Bridge Seats	Sq. Ft.	562

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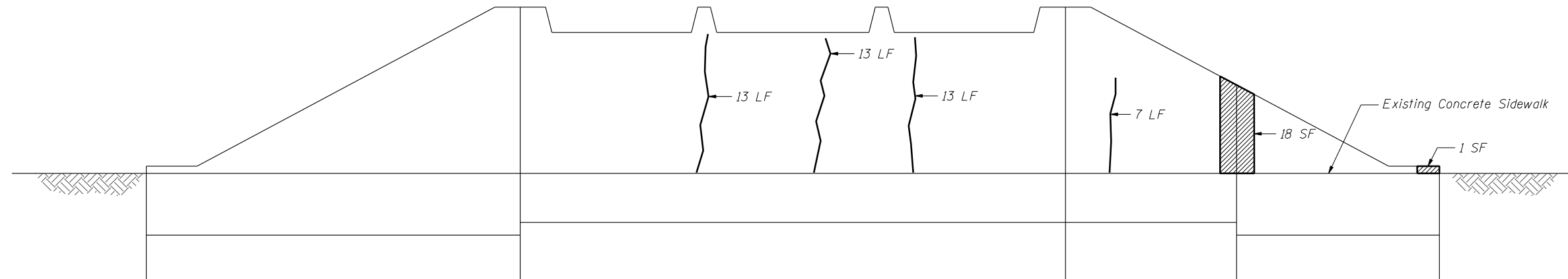
**ZROKA**  
engineering  
Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -
SCALE - NONE	
DATE - 12/14/2012	

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUPERSTRUCTURE REPAIRS**  
**STA. 3964 + 61.36 S.N. 022-0038**  
SHEET NO. SC-2 OF SC-5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	843
			CONTRACT NO. 60R30	
ILLINOIS FED. AID PROJECT				





WEST ABUTMENT

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Epoxy Crack Injection	Foot	46
Structural Repair of Concrete (Depth ≤ 5")	Sq. Ft.	19

LEGEND

-  Epoxy Crack Injection
-  Structural Repair of Concrete (Depth < 5")

FILE NAME = ...\\60R30-0038-003-WAbutRepairs.dgn



Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

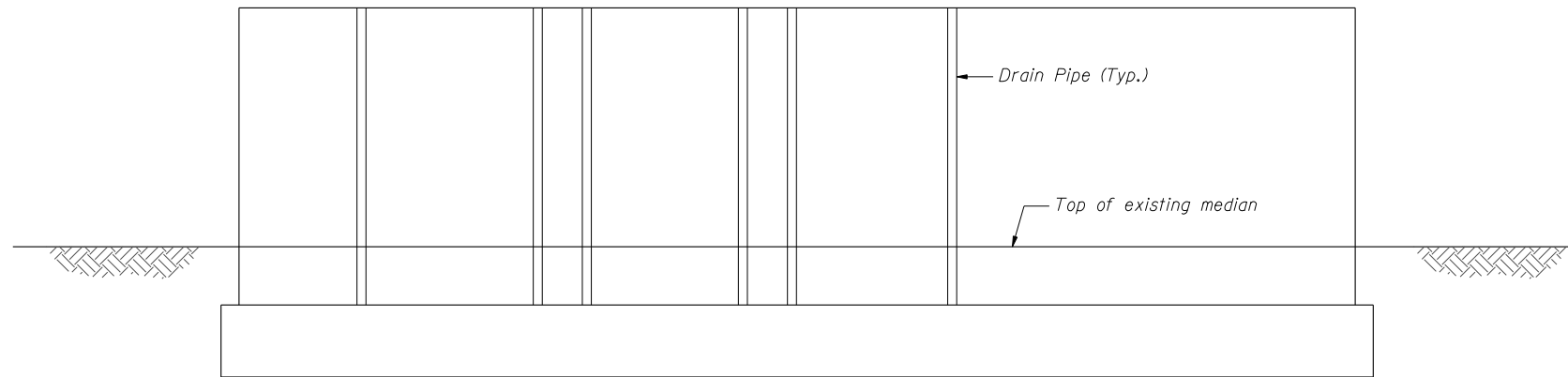
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CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -
SCALE - NONE	
DATE - 12/14/2012	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

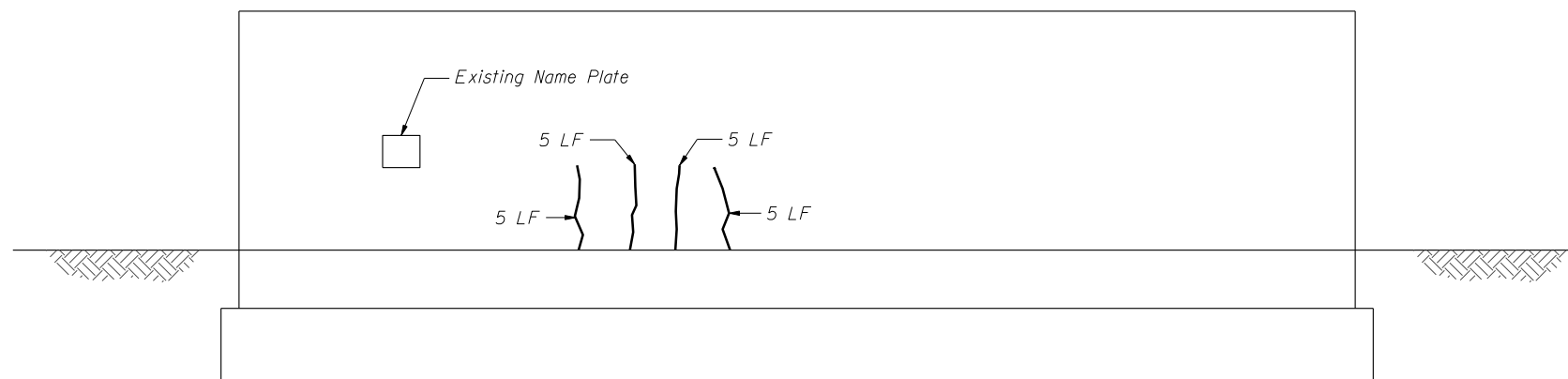
**WEST ABUTMENT REPAIRS  
STA. 3964 + 61.36 S.N. 022-0038**

SHEET NO. SC-3 OF SC-5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	844
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60R30	



PIER EAST ELEVATION



PIER WEST ELEVATION

LEGEND

} Epoxy Crack Injection

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Epoxy Crack Injection	Foot	20

FILE NAME = ...60R30-0038-004-PierRepairs.dgn



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4216 North Hermitage  
Chicago, IL 60613

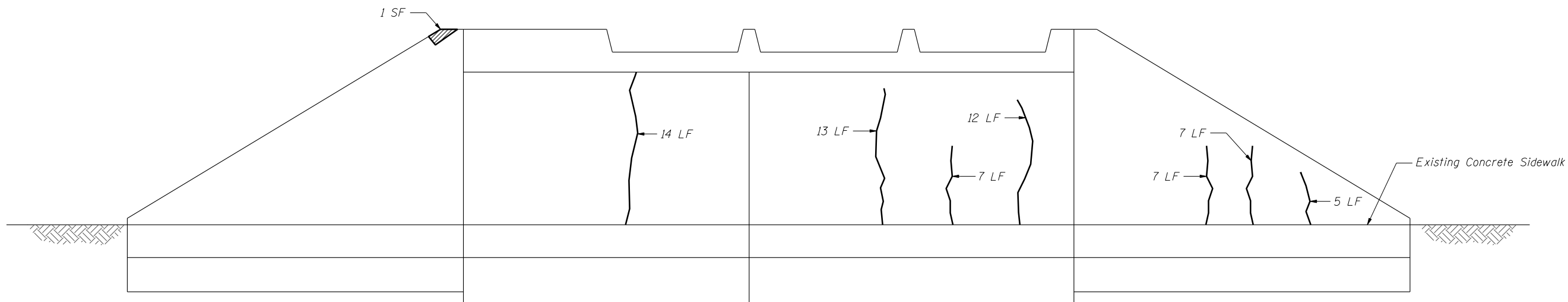
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CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -
SCALE - NONE	
DATE - 12/14/2012	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**PIER REPAIRS  
STA. 3964 + 61.36 S.N. 022-0038**

SHEET NO. SC-4 OF SC-5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	845
			CONTRACT NO. 60R30	
ILLINOIS FED. AID PROJECT				



EAST ABUTMENT

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Epoxy Crack Injection	Foot	65
Structural Repair of Concrete (Depth $\leq$ 5")	Sq. Ft.	1

LEGEND

- Epoxy Crack Injection
- Structural Repair of Concrete (Depth  $\leq$  5")

FILE NAME = ...60R30-0038-005-EAbutRepairs.dgn



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4216 North Hermitage  
Chicago, IL 60613

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CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -
SCALE - NONE	
DATE - 12/14/2012	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EAST ABUTMENT REPAIRS  
STA. 3964 + 61.36 S.N. 022-0038**

SHEET NO. SC-5 OF SC-5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	846
			CONTRACT NO. 60R30	
ILLINOIS FED. AID PROJECT				



Bench Mark: Square "□" cut in base of southern most light pole in parking lot at #177B IL Route 59, Sta. 3966+94, 155' Right, Elev. 701.63

Existing Structure: None

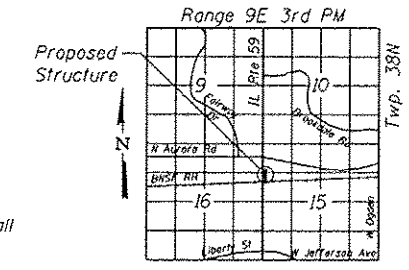
Notes:  
Offsets are measured from the  $\text{\textcircled{C}}$  Proposed IL Rte 59 to the front face of the wall. Front Face of wall does not include architectural finish. See Section on Sheets SA-4 and SA-5.

For Index of Sheets, General Notes, Design Specifications, PGL Information, and Total Bill of Material, see Sheet SA-2 of SA-12.

Notes:  
For Section A-A, see Sheet SA-5 of SA-12.

Soldier piles not shown for clarity.

Buried utilities that cross SN 022-W047 will be relocated by others.



LOCATION SKETCH

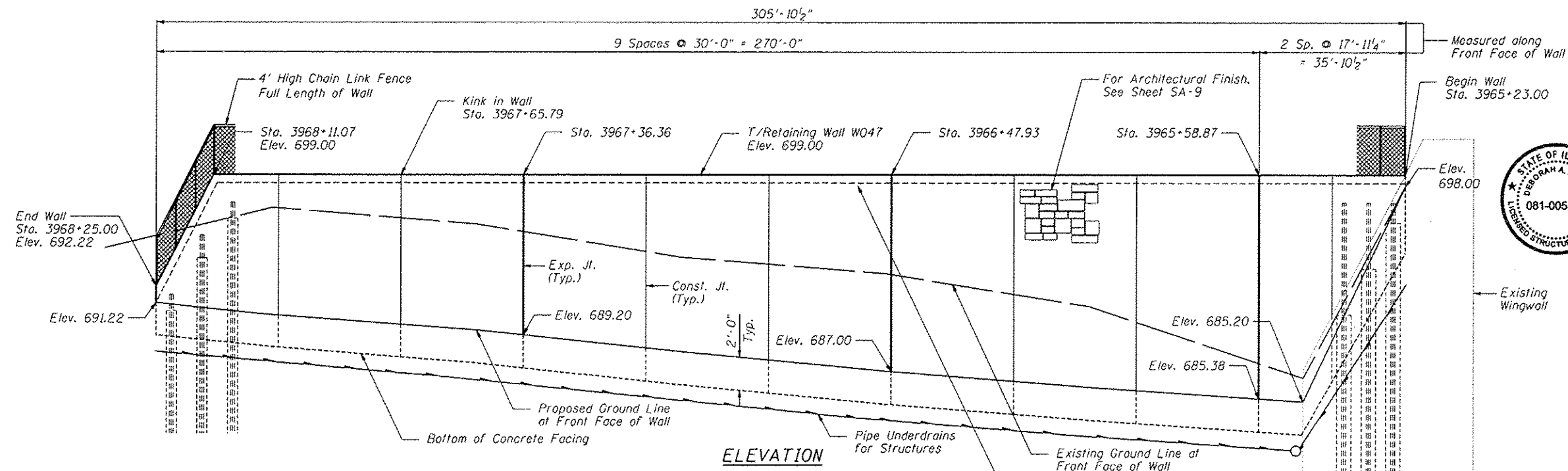


Signature: *Deborah A. Zroma* 12-14-12  
Date: 12-14-12

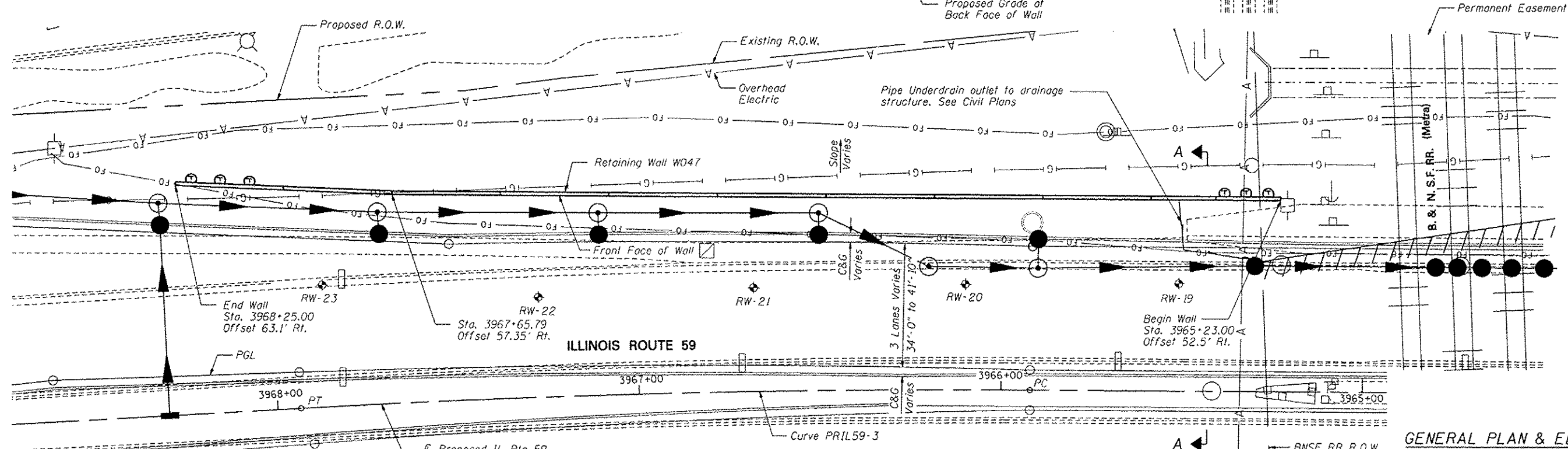
November 30, 2014  
Expires

**APPROVED**  
For Structural Adequacy Only

*D. Carl Purney*  
Engineer of Bridges & Structures



ELEVATION



PLAN

Overhead electric line will be live during construction. Piles in this area may need to be spliced. Pile splices required due to these live electric lines shall not be paid for separately but shall be included in the cost of Furnishing Soldier Piles

GENERAL PLAN & ELEVATION  
IL RTE 59 FAP RTE 338  
SECTION (112 & 113) WRS-7  
DUPAGE COUNTY  
STA. 3965+23.00 TO STA. 3968+25.00  
SN 022-W047

FILE NAME: ... 589030-02-07-021-DPE.dwg

**ZROKA** Engineering  
Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

DESIGNED - LAS	REvised -
CHECKED - DAZ	REvised -
DRAWN - SAW	REvised -
CHECKED - LAS	REvised -

SCALE - NONE	DATE - 12/14/2012
--------------	-------------------

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION  
STA. 3965+23.00 TO STA. 3968+25.00 SN 022-W047

SHEET NO. SA-1 OF SA-13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	827
CONTRACT NO. 60R30			ILLINOIS FED. AID PROJECT	

**INDEX OF SHEETS**

- SA-1. General Plan & Elevation
- SA-2. General Data
- SA-3. Soldier Pile Layout
- SA-4. Typical Section
- SA-5. Section Near Railroad Bridge
- SA-6. Details
- SA-7. Concrete Facing 1
- SA-8. Concrete Facing & Details
- SA-9. Chain Link Fence Details
- SA-10. Architectural Finish Details
- SA-11. Pile Splice Details
- SA-12. Boring Logs 1
- SA-13. Boring Logs 2

**GENERAL NOTES**

1. Reinforcement bars designated (E) shall be epoxy coated.
2. The Contractor is responsible for the design and performance of the lagging using no less than 3" nominal rough-sawn thickness and timber with a minimum allowable bending stress of 1000 psi.
3. Concrete sealer shall be applied to exposed surfaces of the front face and top of wall.
4. Calculated length of Furnishing Soldier Piles (W Section) = 312 Feet (W18x86) and 1080 Feet (W33x141)

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	TOTAL
Structure Excavation	Cu. Yd.	547
Concrete Structures	Cu. Yd.	159.2
Concrete Sealer	Sq. Ft.	3,668
Stud Shear Connectors	Each	496
Reinforcement Bars, Epoxy Coated	Pound	19,780
Geocomposite Wall Drain	Sq. Yd.	255
Untreated Timber Lagging	Sq. Ft.	3,101
Furnishing Soldier Piles (W Section)	Foot	1,392
Pipe Underdrains for Structures, 4"	Foot	345
Drilling and Setting Soldier Piles (In Soil)	Cu. Ft.	11,023
Form Liner Textured Surface	Sq. Ft.	2,598
Chain Link Fence 4' Attached to Structure	Lin. Ft.	306

**DESIGN SPECIFICATIONS**

2002 AASHTO Standard Specifications for Highway Bridges, 17th Edition

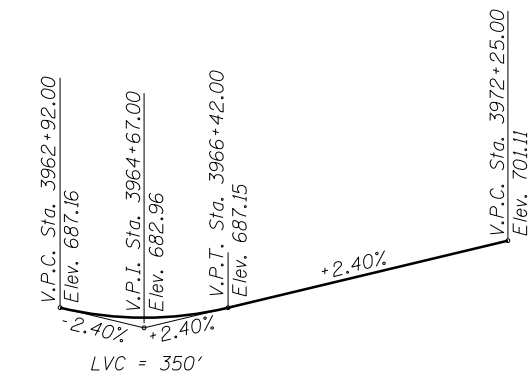
**DESIGN STRESSES**

**FIELD UNITS**

- $f'_c = 3,500$  psi
- $f_y = 60,000$  psi (reinforcement)
- $f_y = 36,000$  psi (M270 Grade 36)

**HORIZONTAL CURVE DATA**

Proposed Curve PR1L59-3  
 PI Sta. = 3966+92.83  
 $\Delta = 3^\circ 39' 58''$  (LT)  
 $D = 1^\circ 49' 07''$   
 $R = 3,150.48'$   
 $T = 100.83'$   
 $L = 201.59'$   
 $E = 1.61'$   
 P.C. Sta. = 3965+92.00  
 P.T. Sta. = 3967+93.59



**PROFILE GRADE**

(along inside edge of pavement, proposed IL Route 59)

FILE NAME = ...60R30-W047-002-GenData.dgn



Zroka Engineering, P.C.  
 4216 North Hermitage  
 Chicago, IL 60613

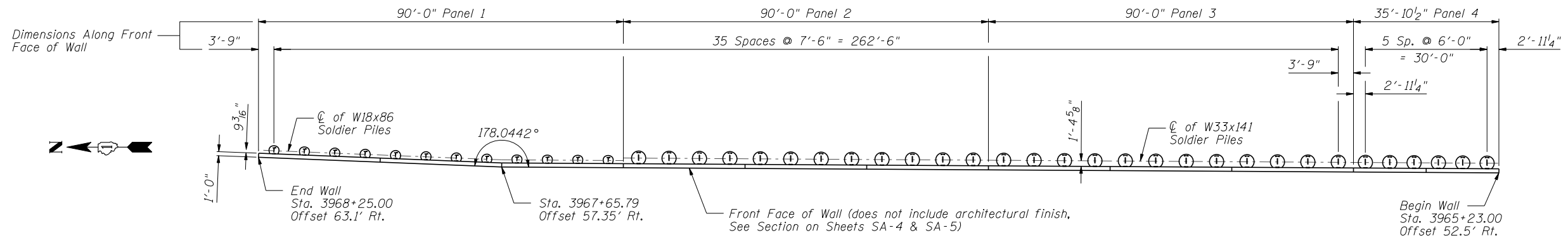
DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
SCALE - NONE	REVISED -
DATE - 12/14/2012	REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

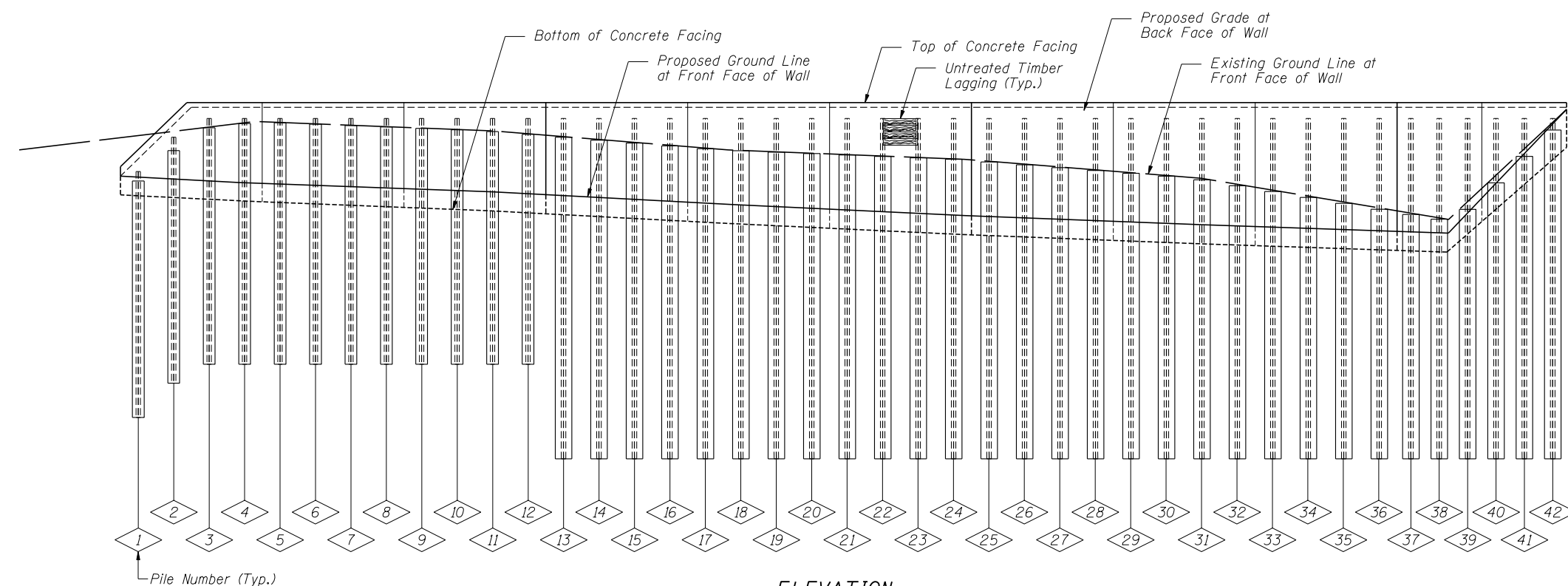
**GENERAL DATA**  
**STA. 3965+23.00 TO STA. 3968+25.00 SN 022-W047**

SHEET NO. SA-2 OF SA-13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	848
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60R30	



**PLAN**



**ELEVATION**

**PILE SUMMARY**

Pile No.	Station	Offset to $\phi$ Pile	Pile Designation	Length	Bottom Elevation	Top Elevation	Pile No.	Station	Offset to $\phi$ Pile	Pile Designation	Length	Bottom Elevation	Top Elevation	Pile No.	Station	Offset to $\phi$ Pile	Pile Designation	Length	Bottom Elevation	Top Elevation
1	3968+21.10	64.49	W18x86	26'-0"	666.37	692.37	15	3967+17.86	57.42	W33x141	36'-0"	661.33	697.33	29	3966+14.72	54.96	W33x141	36'-0"	661.33	697.33
2	3968+13.64	63.76	W18x86	26'-0"	670.00	696.00	16	3967+10.50	57.13	W33x141	36'-0"	661.33	697.33	30	3966+07.35	54.92	W33x141	36'-0"	661.33	697.33
3	3968+06.17	63.02	W18x86	26'-0"	671.33	697.33	17	3967+03.14	56.86	W33x141	36'-0"	661.33	697.33	31	3965+99.98	54.89	W33x141	36'-0"	661.33	697.33
4	3967+98.71	62.29	W18x86	26'-0"	671.33	697.33	18	3966+95.77	56.61	W33x141	36'-0"	661.33	697.33	32	3965+92.61	54.88	W33x141	36'-0"	661.33	697.33
5	3967+91.29	61.56	W18x86	26'-0"	671.33	697.33	19	3966+88.41	56.37	W33x141	36'-0"	661.33	697.33	33	3965+85.12	54.88	W33x141	36'-0"	661.33	697.33
6	3967+83.97	60.84	W18x86	26'-0"	671.33	697.33	20	3966+81.04	56.15	W33x141	36'-0"	661.33	697.33	34	3965+77.62	54.88	W33x141	36'-0"	661.33	697.33
7	3967+76.64	60.13	W18x86	26'-0"	671.33	697.33	21	3966+73.68	55.95	W33x141	36'-0"	661.33	697.33	35	3965+70.12	54.88	W33x141	36'-0"	661.33	697.33
8	3967+69.31	59.45	W18x86	26'-0"	671.33	697.33	22	3966+66.31	55.76	W33x141	36'-0"	661.33	697.33	36	3965+62.62	54.88	W33x141	36'-0"	661.33	697.33
9	3967+62.02	58.91	W18x86	26'-0"	671.33	697.33	23	3966+58.94	55.60	W33x141	36'-0"	661.33	697.33	37	3965+55.93	54.88	W33x141	36'-0"	661.33	697.33
10	3967+54.67	58.52	W18x86	26'-0"	671.33	697.33	24	3966+51.57	55.45	W33x141	36'-0"	661.33	697.33	38	3965+49.93	54.88	W33x141	36'-0"	661.33	697.33
11	3967+47.32	58.14	W18x86	26'-0"	671.33	697.33	25	3966+44.21	55.31	W33x141	36'-0"	661.33	697.33	39	3965+43.93	54.88	W33x141	36'-0"	661.33	697.33
12	3967+39.96	57.78	W18x86	26'-0"	671.33	697.33	26	3966+36.84	55.20	W33x141	36'-0"	661.33	697.33	40	3965+37.93	54.88	W33x141	36'-0"	661.33	697.33
13	3967+32.58	58.06	W33x141	36'-0"	661.33	697.33	27	3966+29.47	55.10	W33x141	36'-0"	661.33	697.33	41	3965+31.93	54.89	W33x141	36'-0"	661.33	697.33
14	3967+25.22	57.73	W33x141	36'-0"	661.33	697.33	28	3966+22.09	55.02	W33x141	36'-0"	661.33	697.33	42	3965+25.93	54.89	W33x141	36'-0"	661.33	697.33

**BILL OF MATERIAL**

Item	Unit	Quantity
Furnishing Soldier Piles (W Section)	Foot	1,392
Drilling and Setting Soldier Piles (In Soil)	Cu Ft	11,023
Untreated Timber Lagging	Sq Ft	3,101
Stud Shear Connectors	Each	496

Note: All offsets are to the right of  $\phi$  IL Rte. 59

FILE NAME = ...60R30-W047-003-F1.eia.dwg



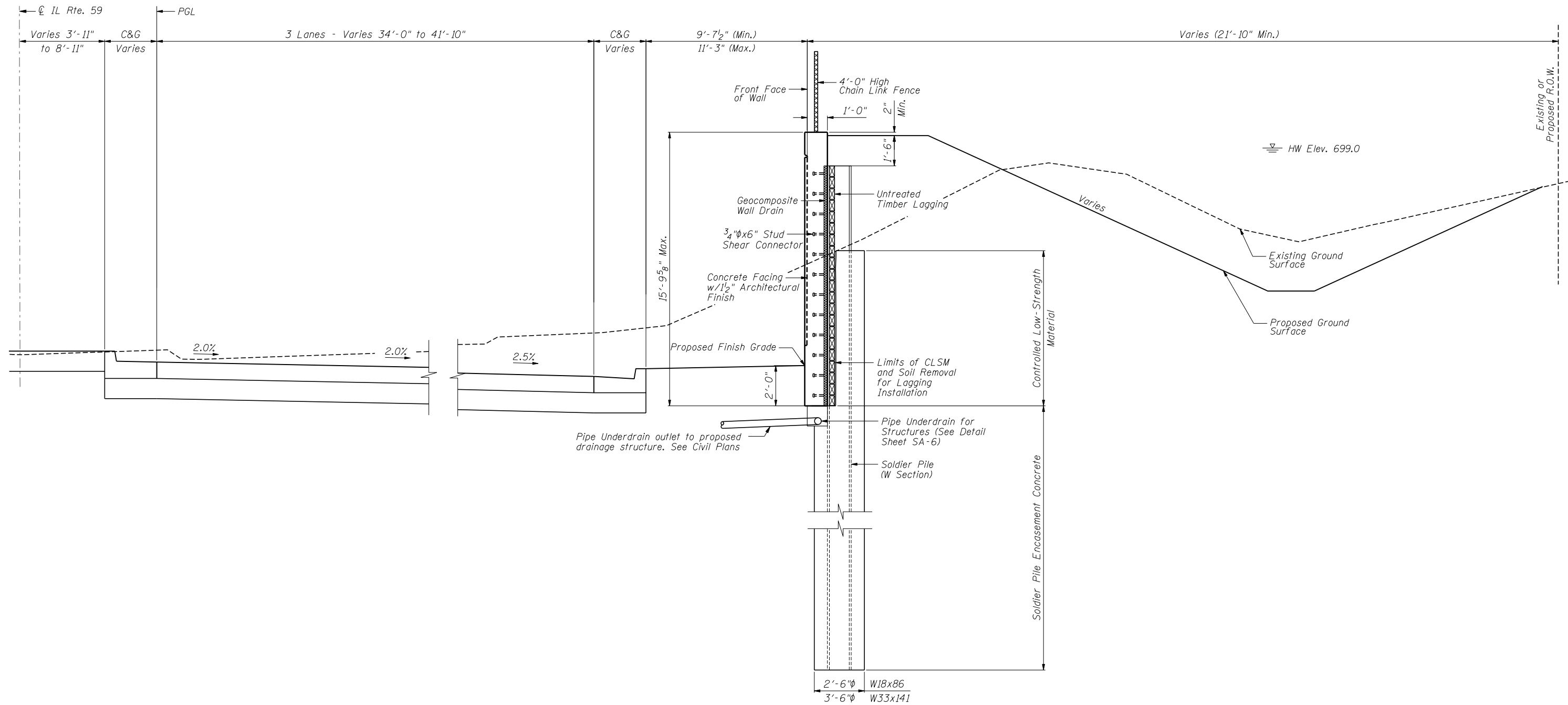
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CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
DATE - 12/14/2012	CHECKED - LAS

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SOLDIER PILE LAYOUT**  
**STA. 3965+23.00 TO STA. 3968+25.00 SN 022-W047**

SHEET NO. SA-3 OF SA-13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	849
CONTRACT NO. 60R30			ILLINOIS FED. AID PROJECT	



**TYPICAL WALL SECTION**  
 Sta. 3965+48.30 to Sta. 3968+25.00  
 (Looking North)

FILE NAME = ...60R30-W047-004-TypSec.dgn

**ZROKA** engineering  
 Zroka Engineering, P.C.  
 4216 North Hermitage  
 Chicago, IL 60613

DESIGNED - LAS	REVISED -
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DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

SCALE - NONE
DATE - 12/14/2012

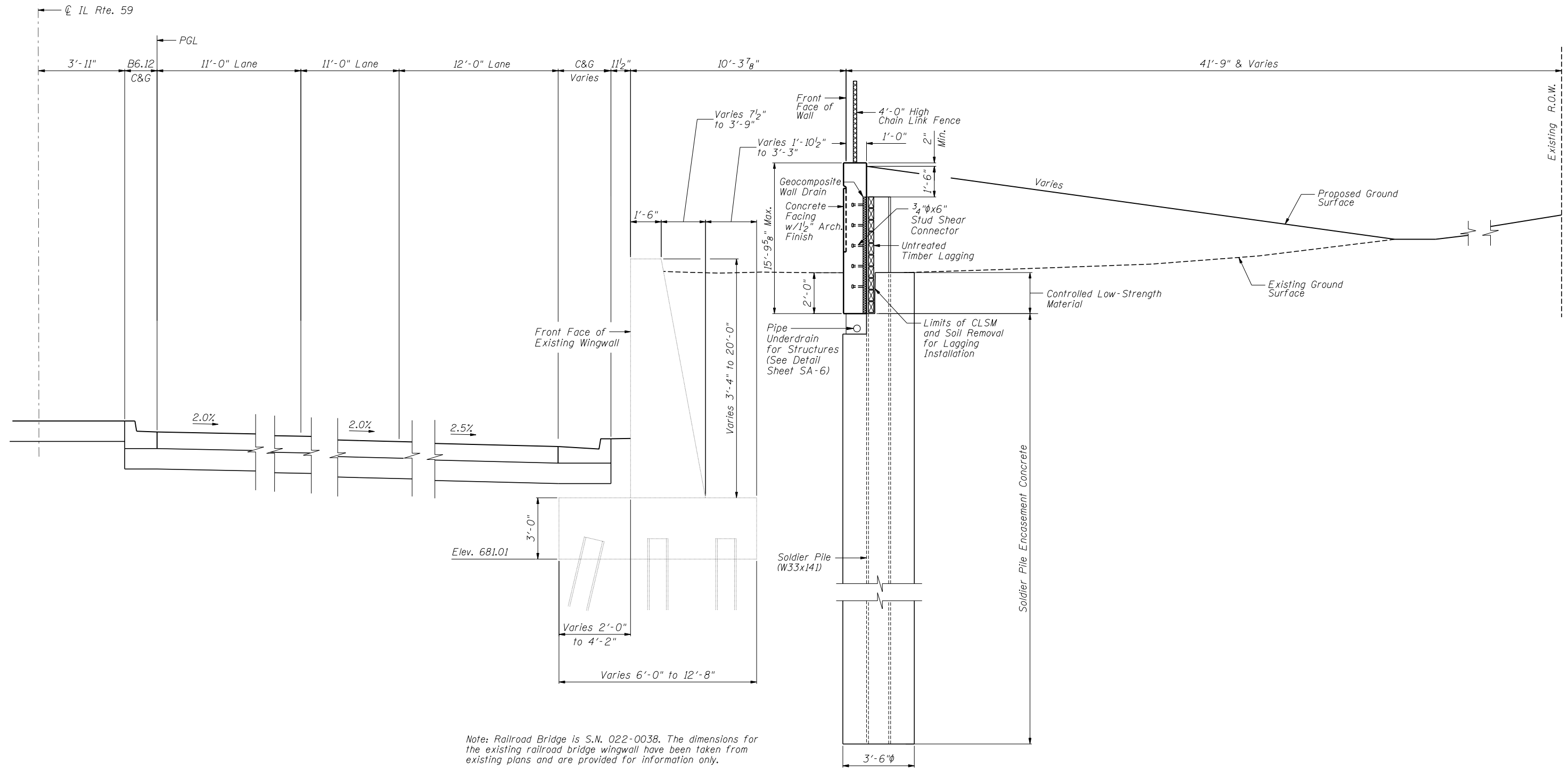
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**TYPICAL SECTION**  
**STA. 3965+23.00 TO STA. 3968+25.00 SN 022-W047**

SHEET NO. SA-4 OF SA-13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	850
CONTRACT NO. 60R30				

ILLINOIS FED. AID PROJECT



**SECTION A-A**  
Sta. 3965+23.00 to Sta. 3965+48.30  
(Looking North)

Note: Railroad Bridge is S.N. 022-0038. The dimensions for the existing railroad bridge wingwall have been taken from existing plans and are provided for information only.

FILE NAME = ...60R30-W047-005-SectionNearRR.dgn



DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

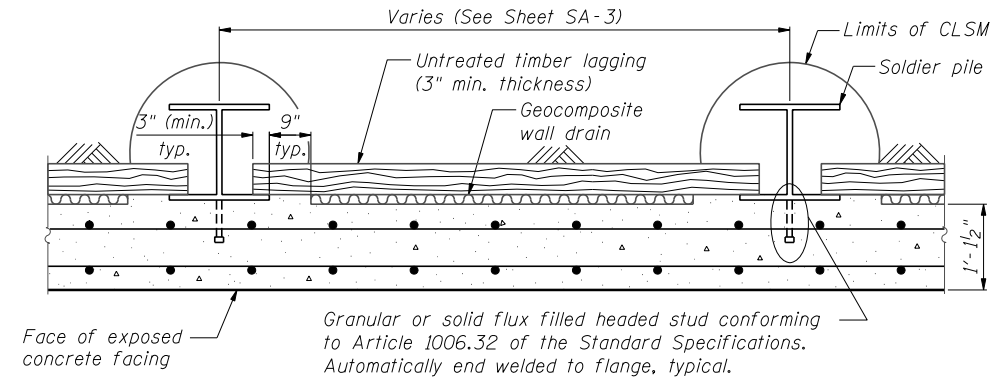
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SECTION NEAR RAILROAD BRIDGE  
STA. 3965+23.00 TO STA. 3968+25.00 SN 022-W047**

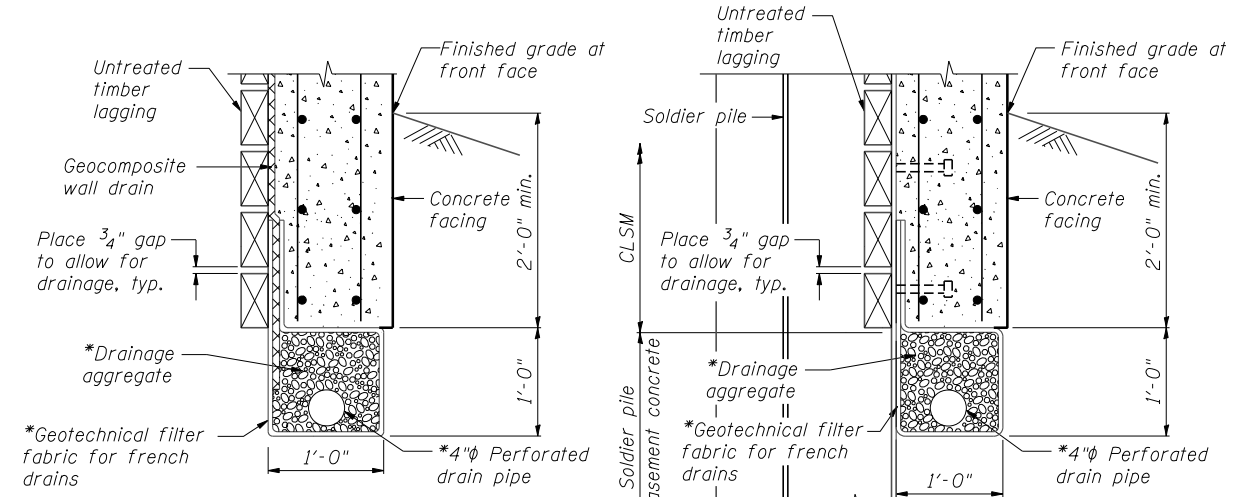
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	851
CONTRACT NO. 60R30				

SHEET NO. SA-5 OF SA-13 SHEETS

ILLINOIS FED. AID PROJECT



**SECTION THRU DRILLED SOLDIER PILE WALL**

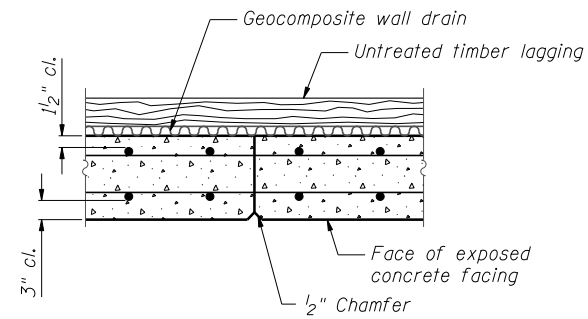


**BETWEEN SOLDIER PILES**

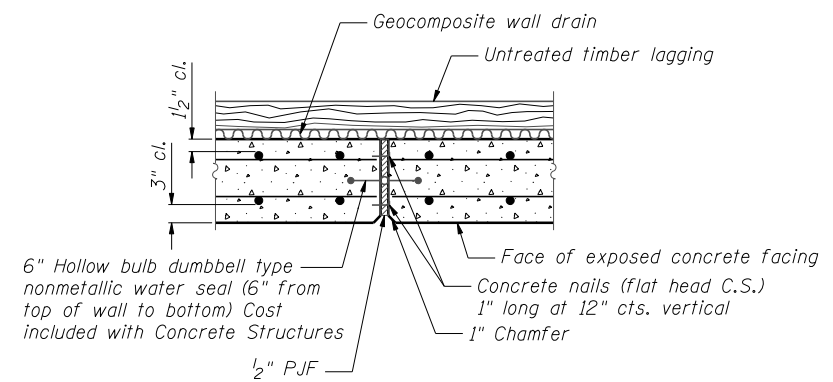
**AT SOLDIER PILES**

**PIPE UNDERDRAIN DETAIL**

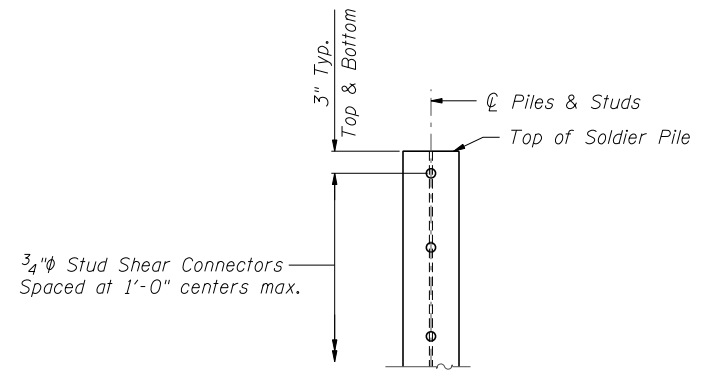
\*Included in the cost of "Pipe Underdrains for Structures, 4"  
For pipe underdrain outlets, see Drainage Plans.



**CONSTRUCTION JOINT DETAIL**



**EXPANSION JOINT DETAIL**



**DETAIL OF SHEAR STUD PLACEMENT**

FILE NAME = ...GPR30-W047-006-Details.dgn

**ZROKA** engineering  
Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

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DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

SCALE - NONE  
DATE - 12/14/2012

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

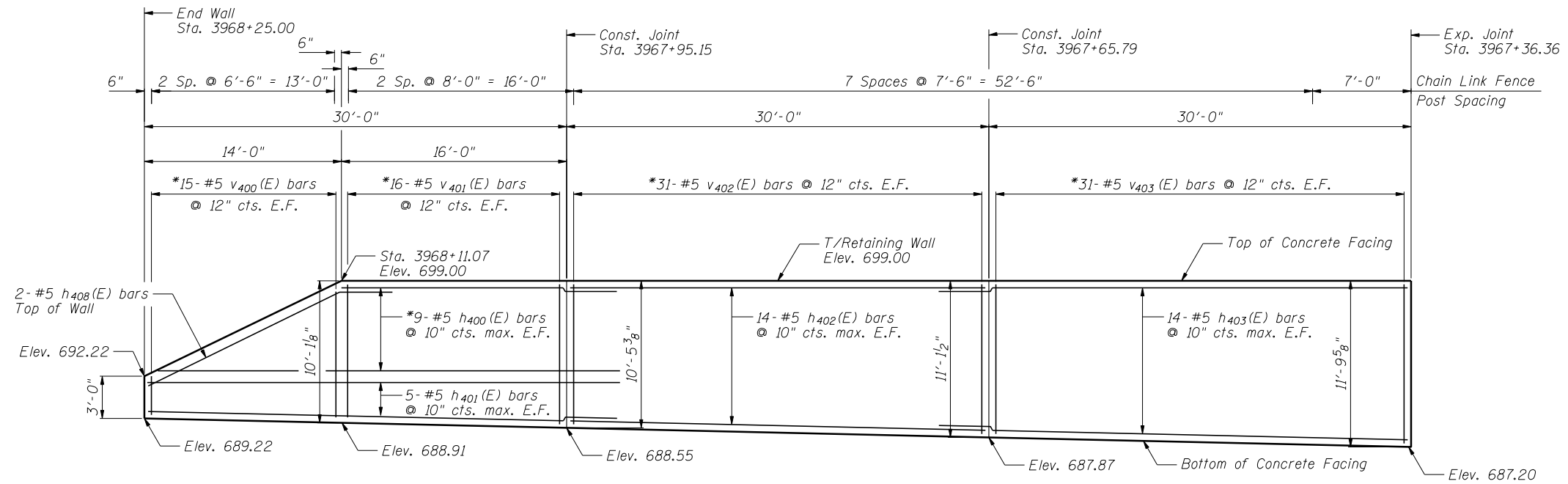
**DETAILS**  
**STA. 3965+23.00 TO STA. 3968+25.00 SN 022-W047**

SHEET NO. SA-6 OF SA-13 SHEETS

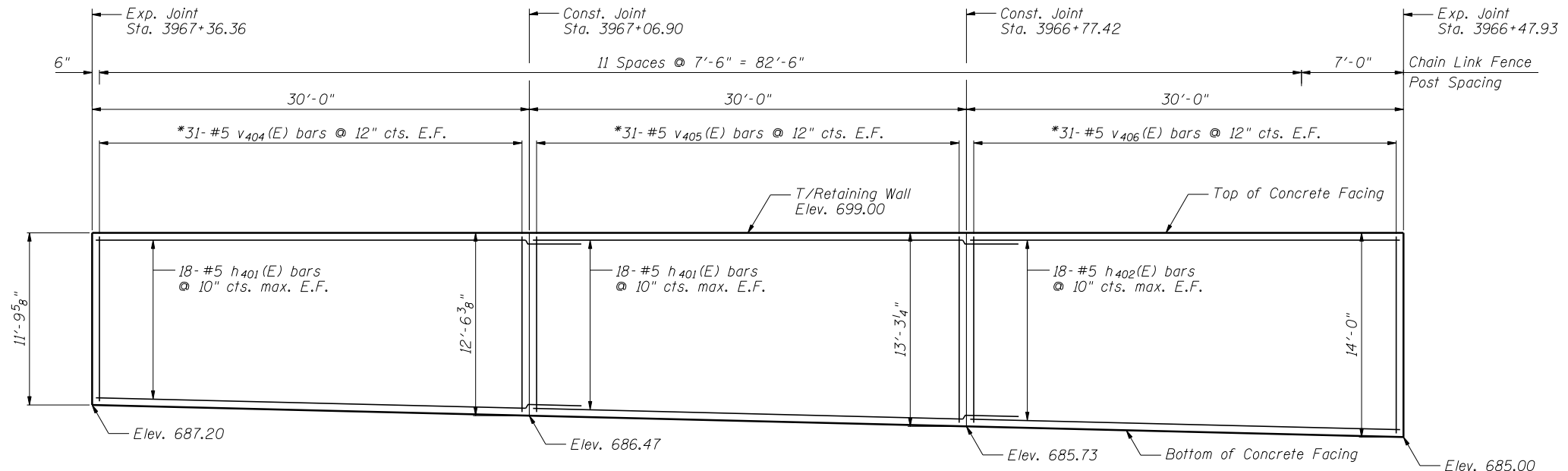
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	852
			CONTRACT NO. 60R30	

ILLINOIS FED. AID PROJECT





ELEVATION



ELEVATION

Notes:

Minimum lap for #5 bar is 3'-8".

Space reinforcement in wall to miss shear studs.

\* signifies cut bar. Order per length on Bill of Material. Cut as shown in Cutting Diagram and use half of bars in each face.

See Sheet SA-8 for Concrete Facing Details and Bill of Material.

FILE NAME = ...60R30-W047-007-ConcreteFacing.dgn



Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

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CHECKED - LAS	REVISED -

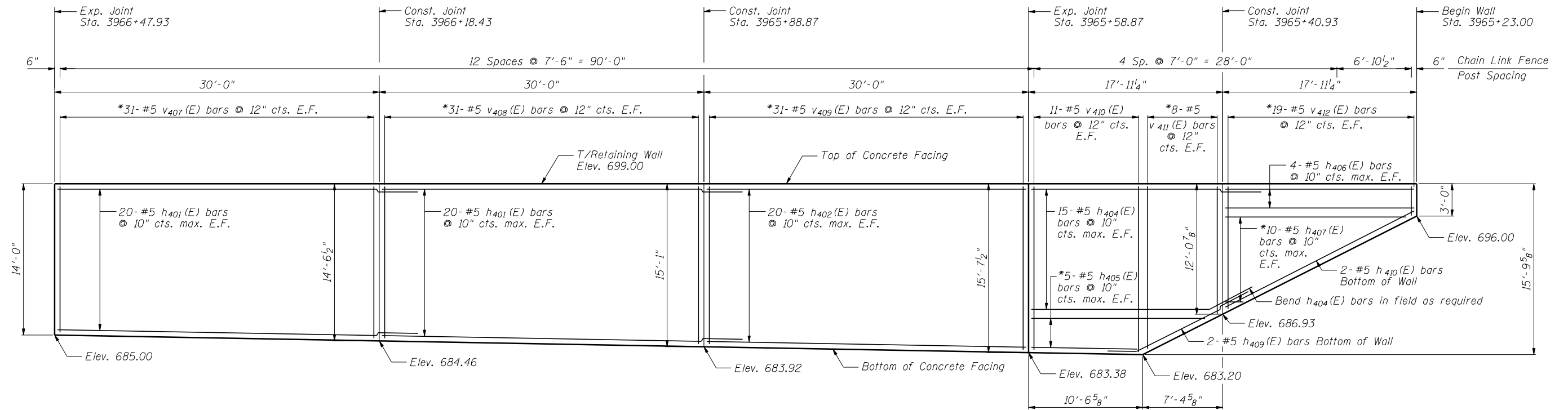
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

CONCRETE FACING 1  
STA. 3965+23.00 TO STA. 3968+25.00 SN 022-W047

SHEET NO. SA-7 OF SA-13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	853
CONTRACT NO. 60R30				

ILLINOIS FED. AID PROJECT



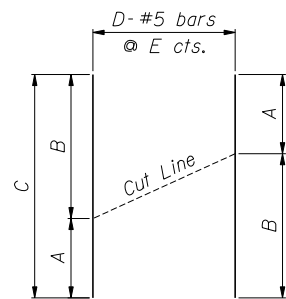
ELEVATION

Notes:

Minimum lap for #5 bar is 3'-8".

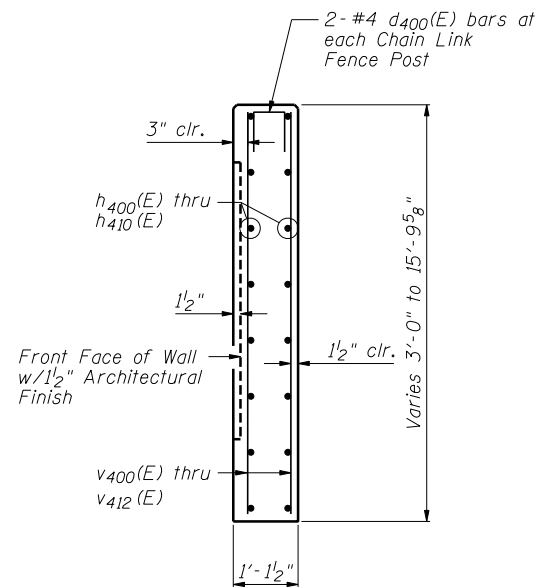
Space reinforcement in wall to miss shear studs.

\* signifies cut bar. Order per length on Bill of Material. Cut as shown in Cutting Diagram and use half of bars in each face.

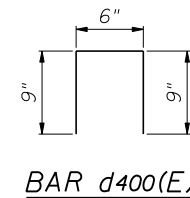


CUTTING DIAGRAM

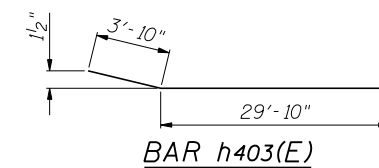
Bar	A	B	C	D	E
h <sub>400</sub> (E)	19'-8"	33'-8"	53'-4"	9	10"
h <sub>405</sub> (E)	10'-2"	17'-7"	27'-9"	5	10"
h <sub>407</sub> (E)	1'-4"	16'-7"	17'-11"	10	10"
v <sub>400</sub> (E)	2'-8"	9'-7"	12'-3"	15	12"
v <sub>401</sub> (E)	9'-7"	10'-1"	19'-8"	16	12"
v <sub>402</sub> (E)	10'-1"	10'-9"	20'-10"	31	12"
v <sub>403</sub> (E)	10'-9"	11'-5"	22'-2"	31	12"
v <sub>404</sub> (E)	11'-5"	12'-2"	23'-7"	31	12"
v <sub>405</sub> (E)	12'-2"	12'-11"	25'-1"	31	12"
v <sub>406</sub> (E)	12'-11"	13'-8"	26'-7"	31	12"
v <sub>407</sub> (E)	13'-8"	14'-2"	27'-10"	31	12"
v <sub>408</sub> (E)	14'-2"	14'-9"	28'-11"	31	12"
v <sub>409</sub> (E)	14'-9"	15'-3"	30'-0"	31	12"
v <sub>411</sub> (E)	15'-4"	11'-9"	27'-1"	8	12"
v <sub>412</sub> (E)	11'-9"	2'-8"	14'-5"	19	12"



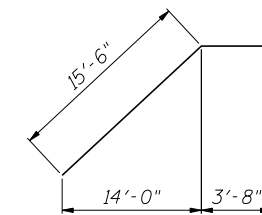
SECTION THRU CONCRETE FACING



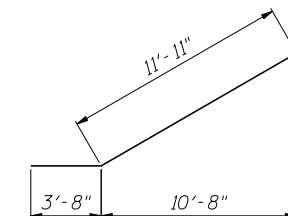
BAR d400(E)



BAR h403(E)



BAR h408(E)



BAR h409(E)

BILL OF MATERIAL

Bar	No.	Size	Length	Shape	
d <sub>400</sub> (E)	86	#4	2'-0"	U	
h <sub>400</sub> (E)	9	#5	53'-4"	—	
h <sub>401</sub> (E)	162	#5	33'-8"	—	
h <sub>402</sub> (E)	104	#5	29'-8"	—	
h <sub>403</sub> (E)	28	#5	33'-8"	—	
h <sub>404</sub> (E)	30	#5	21'-8"	—	
h <sub>405</sub> (E)	5	#5	27'-9"	—	
h <sub>406</sub> (E)	8	#5	17'-7"	—	
h <sub>407</sub> (E)	10	#5	17'-11"	—	
h <sub>408</sub> (E)	2	#5	19'-2"	—	
h <sub>409</sub> (E)	2	#5	15'-7"	—	
h <sub>410</sub> (E)	2	#5	19'-7"	—	
v <sub>400</sub> (E)	15	#5	12'-3"	—	
v <sub>401</sub> (E)	16	#5	19'-8"	—	
v <sub>402</sub> (E)	31	#5	20'-10"	—	
v <sub>403</sub> (E)	31	#5	22'-2"	—	
v <sub>404</sub> (E)	31	#5	23'-7"	—	
v <sub>405</sub> (E)	31	#5	25'-1"	—	
v <sub>406</sub> (E)	31	#5	26'-7"	—	
v <sub>407</sub> (E)	31	#5	27'-10"	—	
v <sub>408</sub> (E)	31	#5	28'-11"	—	
v <sub>409</sub> (E)	31	#5	30'-0"	—	
v <sub>410</sub> (E)	22	#5	15'-3"	—	
v <sub>411</sub> (E)	8	#5	27'-1"	—	
v <sub>412</sub> (E)	19	#5	14'-5"	—	
Item				Unit	Quantity
Concrete Structures				Cu. Yd.	159.2
Reinforcement Bars, Epoxy Coated				Pound	19,780
Pipe Underdrains for Structures, 4"				Foot	345
Geocomposite Wall Drain				Sq. Yd.	255

FILE NAME = ...GPR30-W047-008-ConcreteFacing2.dgn



Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

DESIGNED - LAS	REVISD -
CHECKED - DAZ	REVISD -
DRAWN - SAW	REVISD -
CHECKED - LAS	REVISD -

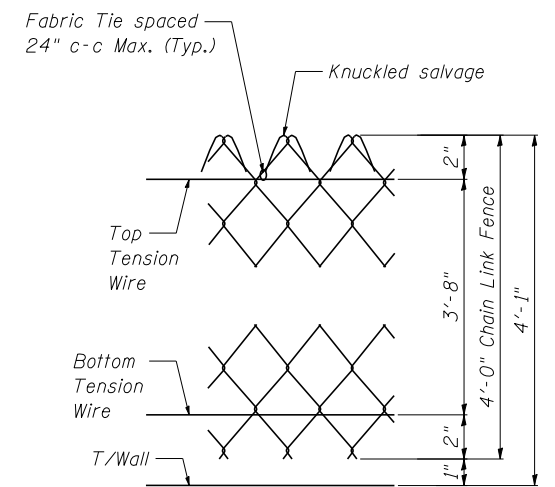
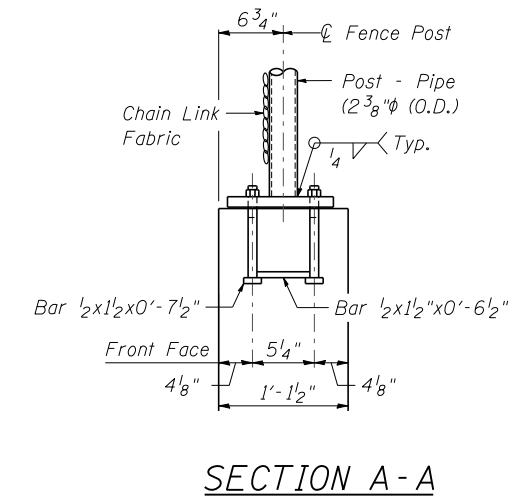
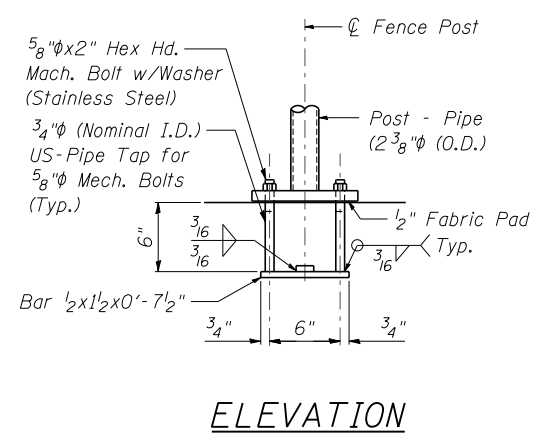
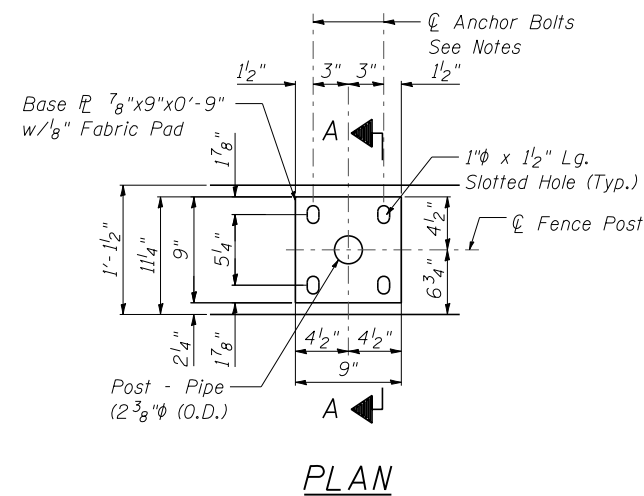
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

CONCRETE FACING & DETAILS  
STA. 3965 +23.00 TO STA. 3968 +25.00 SN 022-W047

SHEET NO. SA-8 OF SA-13 SHEETS

F.A.P. RTE. 338	SECTION (112 & 113) WRS-7	COUNTY DUPAGE	TOTAL SHEETS 1156	SHEET NO. 854
CONTRACT NO. 60R30			ILLINOIS FED. AID PROJECT	



In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting 5/8"  $\phi$  anchor rods according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

FENCE POST ANCHOR ASSEMBLY DETAILS

FILE NAME = ...60R30-W047-009-FenceDetails.dgn



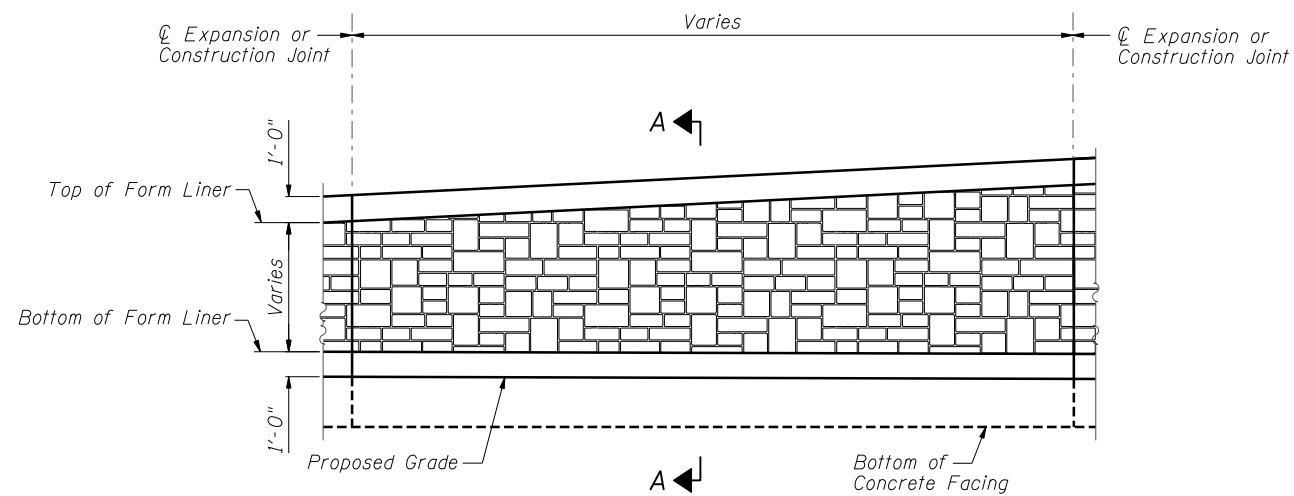
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DRAWN - SAW	REVISED -
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SCALE - NONE	
DATE - 12/14/2012	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

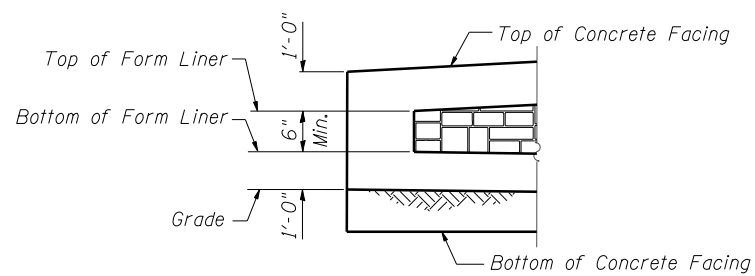
**CHAIN LINK FENCE DETAILS  
STA. 3965 + 23.00 TO STA. 3968 + 25.00 SN 022-W047**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	855
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60R30	

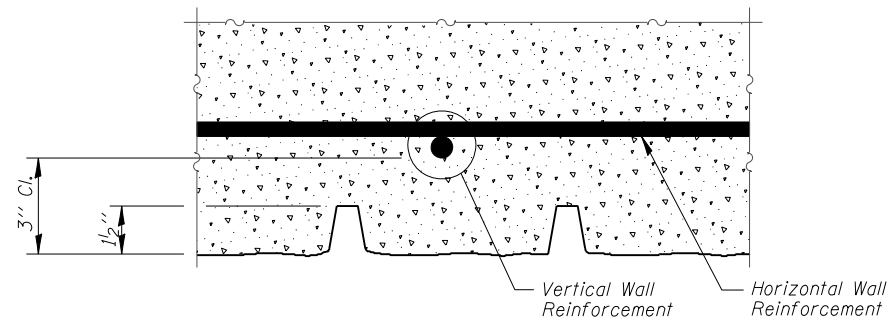
SHEET NO. SA-9 OF SA-13 SHEETS



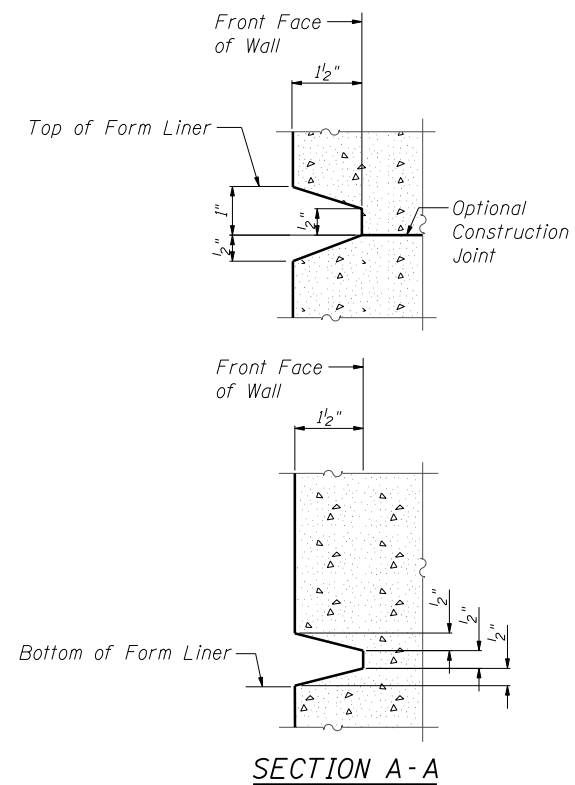
**ELEVATION - FORM LINER**



**END FORM LINER FINISH**



**PLAN - FORM LINER**



**FORM LINER ELEVATION TABLE**

Station	Form Liner Top Elevation	Form Liner Bottom Elevation
3968+25.00	None	None
3968+21.96	692.69	692.19
3968+11.07	698.00	692.06
3967+95.15	698.00	691.55
3967+65.79	698.00	690.87
3967+36.36	698.00	690.20
3967+06.90	698.00	689.47
3966+77.42	698.00	688.73
3966+47.93	698.00	688.00
3966+18.43	698.00	687.46
3965+88.87	698.00	686.92
3965+58.87	698.00	686.38
3965+48.32	698.00	686.20
3965+40.93	698.00	689.93
3965+25.96	698.00	697.50
3965+23.00	None	None

FILE NAME = ...60R30-W047-010-ArchFinish.dgn



DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

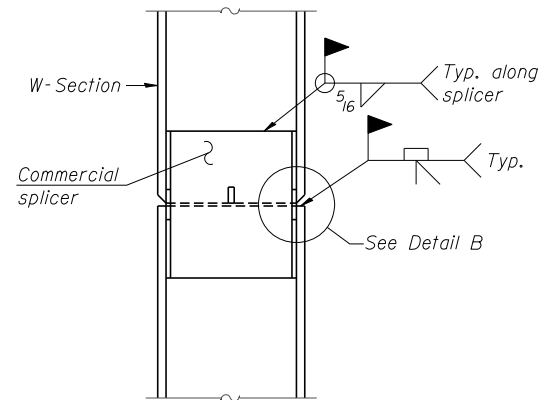
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 DATE - 12/14/2012

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

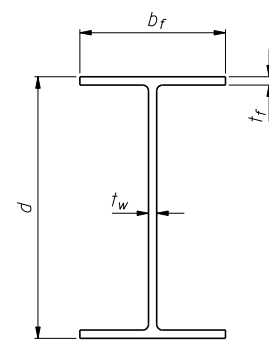
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**STA. 3965 + 23.00 TO STA. 3968 + 25.00 SN 022-W047**

SHEET NO. SA-10 OF SA-13 SHEETS

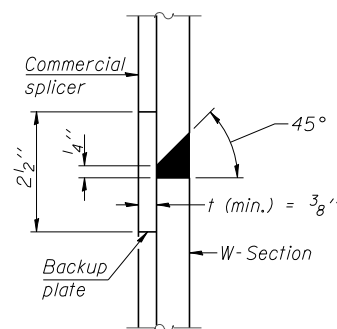
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	856
				CONTRACT NO. 60R30
ILLINOIS FED. AID PROJECT				



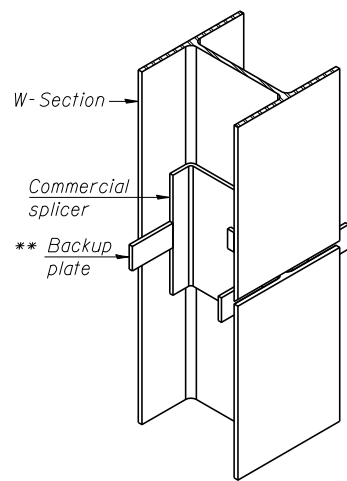
ELEVATION



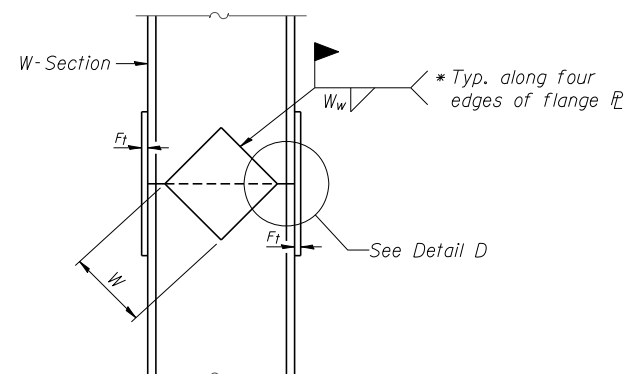
Designation	Depth <i>d</i>	Flange width <i>b<sub>f</sub></i>	Flange thickness <i>t<sub>f</sub></i>	Web thickness <i>t<sub>w</sub></i>	Encasement diameter <i>A</i>
W33x141	33 <sup>3</sup> / <sub>4</sub> "	11 <sup>1</sup> / <sub>2</sub> "	1 <sup>5</sup> / <sub>16</sub> "	5 <sup>5</sup> / <sub>8</sub> "	42"



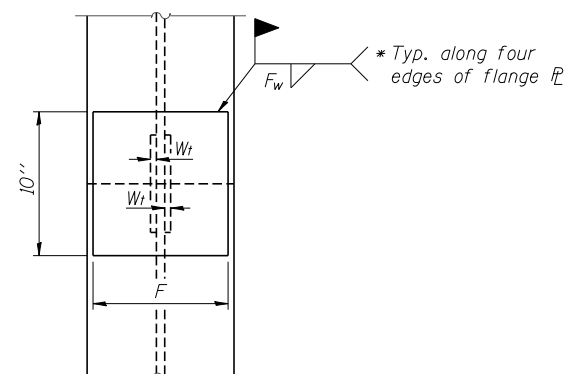
DETAIL "B"



ISOMETRIC VIEW

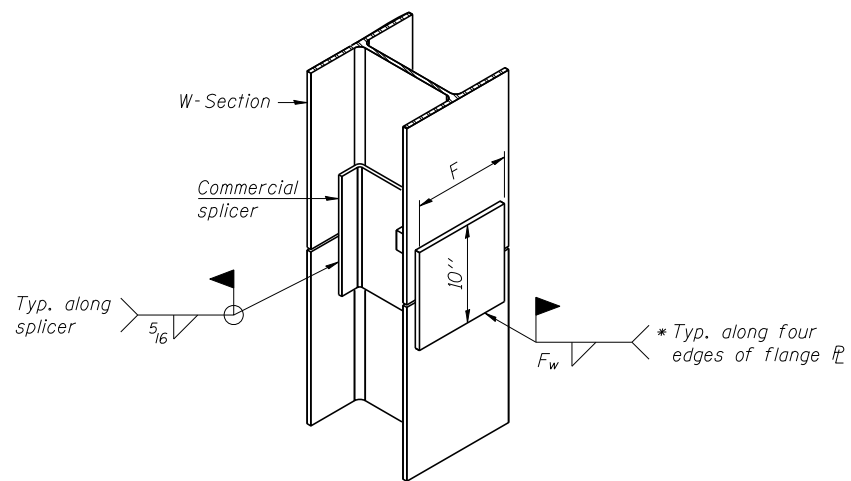


ELEVATION

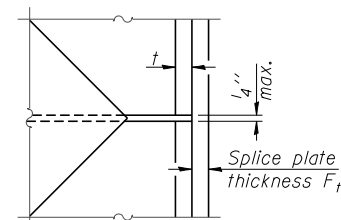


END VIEW

WELDED COMMERCIAL SPLICE



ISOMETRIC VIEW



DETAIL D

Designation	<i>F</i>	<i>F<sub>t</sub></i>	<i>F<sub>w</sub></i>	<i>W</i>	<i>W<sub>t</sub></i>	<i>W<sub>w</sub></i>
W33x141	9"	1 <sup>1</sup> / <sub>4</sub> "	1"	21"	5 <sup>5</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>2</sub> "

WELDED PLATE FIELD SPLICE

WELDED COMMERCIAL SPLICE ALTERNATE

- \* Interrupt welds 1/4" from end of web and/or each flange.
- \*\* Remove portions of backup plates that extend outside the flanges.

Note:  
The steel W-Sections shall be according to  
AASHTO M270 Grade 36.

FILE NAME = ...60R30-W047-011-PileSpliceDetails.dgn



Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PILE SPLICE DETAILS  
STA. 3965 + 23.00 TO STA. 3968 + 25.00 SN 022-W047

SHEET NO. SA-11 OF SA-13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	857
				CONTRACT NO. 60R30

ILLINOIS FED. AID PROJECT

BORING LOG RW-19

PAGE 1 of 1  
DATE 4/21/2011  
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GSI JOB No. 09173

Geo Services, Inc.  
Geotechnical, Environmental & Civil Engineering  
805 Amber-Curt, Lisle, IL 60565  
(630) 355-3838

**SOIL BORING LOG**

ROUTE II Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 022-W047  
Station: 3965+49 to 3968+50  
BORING NO. RW-19  
Station: 3965+51 IL RTE-59  
Offset: 29.5' Right  
Ground Surface Elev. 685.8

DEPTH (ft)	BLU (ft)	UCS	MOIST (%)	DESCRIPTION	DEPTH (ft)	BLU (ft)	UCS	MOIST (%)
0				10.0" CONCRETE, 10.0" CRUSHED STONE	0			
12				684.1	12			
8				SILT LOAM to LOAM-brown & gray-dense (A-4)	8			
9	NP	7		662.8	9	NP	7	
5			111	CLAY-gray-very stiff to hard (A-6)	5			111
7				676.3	7			
5	8	6.5B	18	SANDY LOAM-brown & gray-dense to very dense (A-2)	5	8	6.5B	18
5			110	658.8	5			110
6	3.95B			50/4"	6	3.95B		
10	12.7B	19		FRACTURED ROCK-gray-very dense (A-1)	10	12.7B	19	
4				50/3"	4			
676.3				656.3	676.3			656.3
7				Auger Refusal @ -29.5'	7			
775.3				End Of Boring	775.3			
4			118	Hollow Stem Augers	4			118
4				CME Automatic Hammer	4			
5	2.25B	13			5	2.25B	13	
3			103	CLAY-gray-stiff to very stiff (A-6)	3			103
4					4			
15	5	1.0B	24		15	5	1.0B	24
2			109		2			109
4					4			
5	2.2B	20			5	2.2B	20	
666.8					666.8			
12				Clayey SAND & GRAVEL-gray-medium dense (A-2)	12			
20					20			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) ST-S Shelby Tube Sample VS-Vane Shear Test  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
NR-No Recovery

BORING LOG RW-20

PAGE 1 of 1  
DATE 4/21/2011  
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Geo Services, Inc.  
Geotechnical, Environmental & Civil Engineering  
805 Amber-Curt, Lisle, IL 60565  
(630) 355-3838

**SOIL BORING LOG**

ROUTE II Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 022-W047  
Station: 3965+49 to 3968+50  
BORING NO. RW-20  
Station: 3966+10 IL RTE-59  
Offset: 29.0' Right  
Ground Surface Elev. 686.9

DEPTH (ft)	BLU (ft)	UCS	MOIST (%)	DESCRIPTION	DEPTH (ft)	BLU (ft)	UCS	MOIST (%)
0				10.0" CONCRETE, 10.0" CRUSHED STONE	0			
8				685.2	8			
6	NP	6		SAND & GRAVEL-gray (A-1-b) 666.4	6	NP	6	
3			112	SANDY LOAM-brown & gray-dense to very dense (A-2)	3			112
4					4			
5	7	7.0B	16	CLAY-gray-very stiff to hard (A-6)	5	7	7.0B	16
4					4			
6			112		6			112
9	4.7B	19			9	4.7B	19	
4				658.9	4			
6				50/2"	6			
9	2.75B	21		Clayey SAND, GRAVEL & FRACTURED ROCK-gray-very dense (A-2)	9	2.75B	21	
10	7	2.75B	21	656.9-30	10	7	2.75B	21
6			108	Auger Refusal @ -30.0'	6			108
6				End Of Boring	6			
8	2.1B	21		Hollow Stem Augers	8	2.1B	21	
3			109	CME Automatic Hammer	3			109
4					4			
15	7	3.0B	20		15	7	3.0B	20
4			109		4			109
6					6			
9	2.8B	18			9	2.8B	18	
669.4					669.4			
13				SAND & GRAVEL-gray-medium dense (A-1-b)	13			
8					8			
20	13	NP	20		20	13	NP	20

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) ST-S Shelby Tube Sample VS-Vane Shear Test  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
NR-No Recovery

BORING LOG RW-21

PAGE 1 of 1  
DATE 4/21/2011  
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Geo Services, Inc.  
Geotechnical, Environmental & Civil Engineering  
805 Amber-Curt, Lisle, IL 60565  
(630) 355-3838

**SOIL BORING LOG**

ROUTE II Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 022-W047  
Station: 3965+49 to 3968+50  
BORING NO. RW-21  
Station: 3966+68 IL RTE-59  
Offset: 28.5' Right  
Ground Surface Elev. 688.4

DEPTH (ft)	BLU (ft)	UCS	MOIST (%)	DESCRIPTION	DEPTH (ft)	BLU (ft)	UCS	MOIST (%)
0				10.0" CONCRETE, 10.0" CRUSHED STONE	0			
13				686.7	13			
7				CLAY-gray-very stiff to hard (A-6) 667.9	7			
5	NP	5		SAND & GRAVEL-brown & gray-medium dense (A-1)	5	NP	5	
4			118	664.9	4			118
7					7			
5	8	4.75B	14	CLAY-gray-very stiff to hard (A-6)	5	8	4.75B	14
4					4			
6			112	SANDY LOAM with Fractured Rock-gray-dense to very dense (A-2)	6			112
10	5.8B	16			10	5.8B	16	
5				657.4	5			
8				Auger Refusal @ -31.0'	8			
9	3.7B	19		End Of Boring	9	3.7B	19	
3			110	Hollow Stem Augers	3			110
6				CME Automatic Hammer	6			
15	7	3.2B	20		15	7	3.2B	20
3			107		3			107
5					5			
6	2.8B	19			6	2.8B	19	
688.4					688.4			
5					5			
8	4.9B	16			8	4.9B	16	

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) ST-S Shelby Tube Sample VS-Vane Shear Test  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
NR-No Recovery

FILE NAME = ...\\60R30-W047-012-Bor-mgl-log.dgn



DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**BORING LOGS 1  
STA. 3965 + 23.00 TO STA. 3968 + 25.00 SN 022-W047**

F.A.P. RTE. 338	SECTION (112 & 113) WRS-7	COUNTY DUPAGE	TOTAL SHEETS 1156	SHEET NO. 858
			CONTRACT NO. 60R30	
ILLINOIS FED. AID PROJECT				

SHEET NO. SA-12 OF SA-13 SHEETS



BORING LOG RW-22

PAGE 1 of 1  
DATE 4/21/2011  
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GSI JOB No. 09173

**SOIL BORING LOG**

ROUTE Il. Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 022-W047 Station: 3965+49 to 3968+50  
BORING NO. **RW-22** Station: 3967+27 IL RTE-59  
Offset: 27.5' Right  
Ground Surface Elev. 689.7

DEPTH (ft)	BLOW COUNT	UCS (tsf)	MOISTURE (%)	DESCRIPTION	DEPTH (ft)	BLOW COUNT	UCS (tsf)	MOISTURE (%)	Surface Water Elev.	Stream Bed Elev.	Groundwater Elevation:
									n/a	n/a	First Encounter
0				10.0" CONCRETE, 10.0" CRUSHED STONE	0				n/a	n/a	n/a
13				CLAY-gray-very stiff to hard (A-6)	10				687.7		
6	NP	6		CLAY-gray-very stiff to hard (A-6)	24						
6	NP	6		CLAY-gray-very stiff to hard (A-6)	50/2"	NP	9				
6	NP	6		CLAY-gray-very stiff to hard (A-6)	66.2						
10				CLAY-gray-very stiff to hard (A-6)	40						
12				CLAY-gray-very stiff to hard (A-6)	50/4"						
12				CLAY-gray-very stiff to hard (A-6)	25	NP	19				
3			112	CLAY-gray-very stiff to hard (A-6)	12						
5				CLAY-gray-very stiff to hard (A-6)	15						
7	4.9B	18		CLAY-gray-very stiff to hard (A-6)	15	NP	9				
3			108	CLAY-gray-very stiff to hard (A-6)	4		128				
5				CLAY-gray-very stiff to hard (A-6)	7						
7	2.9B	19		CLAY-gray-very stiff to hard (A-6)	30	8	14B	9			
3			108	CLAY-gray-very stiff to hard (A-6)	7						
5				CLAY-gray-very stiff to hard (A-6)	657.7						
8	3.0B	19		Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer							
3			111	Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer							
6				Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer							
8	3.5B	20		Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer	35						
7			116	Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer							
8				Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer							
11	4.4B	17		Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer							
9				Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer							
11				Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer							
20	13	4.25P	10	Auger Refusal @ -32.0' End Of Boring Hollow Stem Augers CME Automatic Hammer	40						

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Paranometer). ST-Shelby Tube Sample VS-Vane Shear Test  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
NR-No Recovery

BORING LOG RW-23

PAGE 1 of 1  
DATE 4/26/2011  
LOGGED BY MD  
GSI JOB No. 09173

**SOIL BORING LOG**

ROUTE Il. Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 022-W047 Station: 3965+49 to 3968+50  
BORING NO. **RW-23** Station: 3967+86 IL RTE-59  
Offset: 33.5' Right  
Ground Surface Elev. 690.9

DEPTH (ft)	BLOW COUNT	UCS (tsf)	MOISTURE (%)	DESCRIPTION	DEPTH (ft)	BLOW COUNT	UCS (tsf)	MOISTURE (%)	Surface Water Elev.	Stream Bed Elev.	Groundwater Elevation:
									n/a	n/a	First Encounter
0				10.5" CONCRETE, 25.5" CRUSHED STONE-medium dense	0				n/a	n/a	n/a
6				CLAY-gray-very stiff (A-6)	4						
7				CLAY-gray-very stiff (A-6)	7						
7	NP	7		CLAY-gray-very stiff (A-6)	9	3.6B	20				
6				CLAY-gray-very stiff (A-6)	687.4						
4				CLAY-gray-very stiff (A-6)	4						
6				CLAY LOAM-brown- hard (A-6) Apparent Fill	6						
8	4.25P	15		CLAY LOAM-brown- hard (A-6) Apparent Fill	25	8	3.0B	22			
3				CLAY LOAM-brown- hard (A-6) Apparent Fill	665.4						
5				CLAY LOAM-brown- hard (A-6) Apparent Fill	33						
7	3.5P	18		CLAY LOAM-brown- hard (A-6) Apparent Fill	44						
3			109	CLAY LOAM-brown- hard (A-6) Apparent Fill	50/4"	NP	10				
4			109	CLAY LOAM-brown- hard (A-6) Apparent Fill	662.9						
5				CLAY LOAM-brown- hard (A-6) Apparent Fill	13						
7	2.2B	20		CLAY LOAM-brown- hard (A-6) Apparent Fill	29						
3			107	CLAY LOAM-brown- hard (A-6) Apparent Fill	30						
4				CLAY LOAM-brown- hard (A-6) Apparent Fill	43						
6	3.3B	19		CLAY LOAM-brown- hard (A-6) Apparent Fill	30						
3			112	CLAY LOAM-brown- hard (A-6) Apparent Fill	43						
6				CLAY LOAM-brown- hard (A-6) Apparent Fill	655.9-350/4"	NP	8				
9	3.25B	18		CLAY LOAM-brown- hard (A-6) Apparent Fill	30						
3			109	CLAY LOAM-brown- hard (A-6) Apparent Fill	30						
5				CLAY LOAM-brown- hard (A-6) Apparent Fill	43						
7	3.5B	18		CLAY LOAM-brown- hard (A-6) Apparent Fill	30						
4			104	CLAY LOAM-brown- hard (A-6) Apparent Fill	30						
6				CLAY LOAM-brown- hard (A-6) Apparent Fill	43						
9	3.4B	23		CLAY LOAM-brown- hard (A-6) Apparent Fill	40						

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Paranometer). ST-Shelby Tube Sample VS-Vane Shear Test  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
NR-No Recovery

FILE NAME = ...\\60R30-W047-013-Bor-mg-Log2.dgn



DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**BORING LOGS 2  
STA. 3965 +23.00 TO STA. 3968 +25.00 SN 022-W047**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	859
			CONTRACT NO. 60R30	
ILLINOIS FED. AID PROJECT				

SHEET NO. SA-13 OF SA-13 SHEETS

Bench Mark: Cross "+" on top of north end of headwall, 50' north of centerline of Phoenix Closures driveway, east side of IL Route 59, Sta. 3958+37, 42' Right, Elev. 696.41

Existing Structure: None

**DESIGN SPECIFICATIONS**  
2002 AASHTO Standard Specifications  
for Highway Bridges, 17th Edition

**DESIGN STRESSES**

**FIELD UNITS**  
 $f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (reinforcement)  
 $f_y = 36,000$  psi (M270 Grade 36)

**GENERAL NOTES**

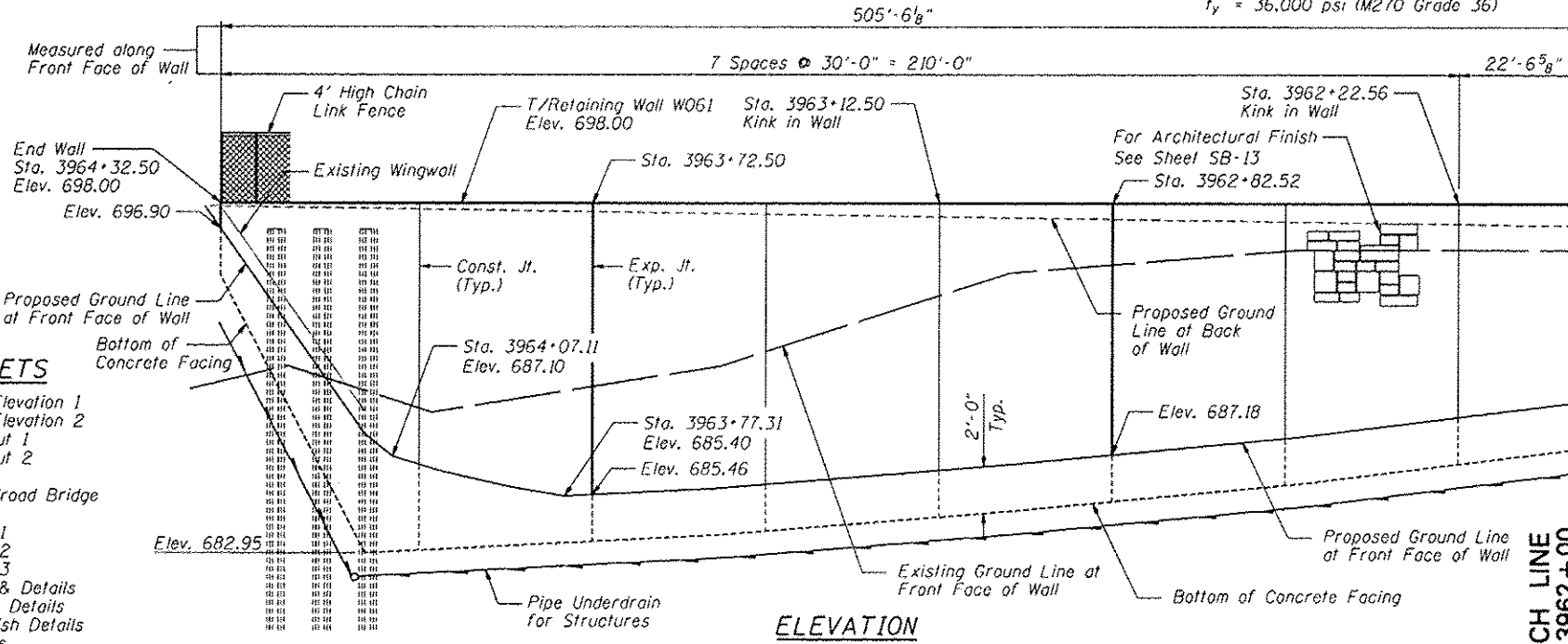
1. Reinforcement bars designated (E) shall be epoxy coated.
2. The Contractor is responsible for the design and performance of the lagging using no less than 3" nominal rough-sawn thickness and timber with a minimum allowable bending stress of 1000 psi.
3. Concrete sealer shall be applied to exposed surfaces of the top and front face of wall.

**TOTAL BILL OF MATERIAL**

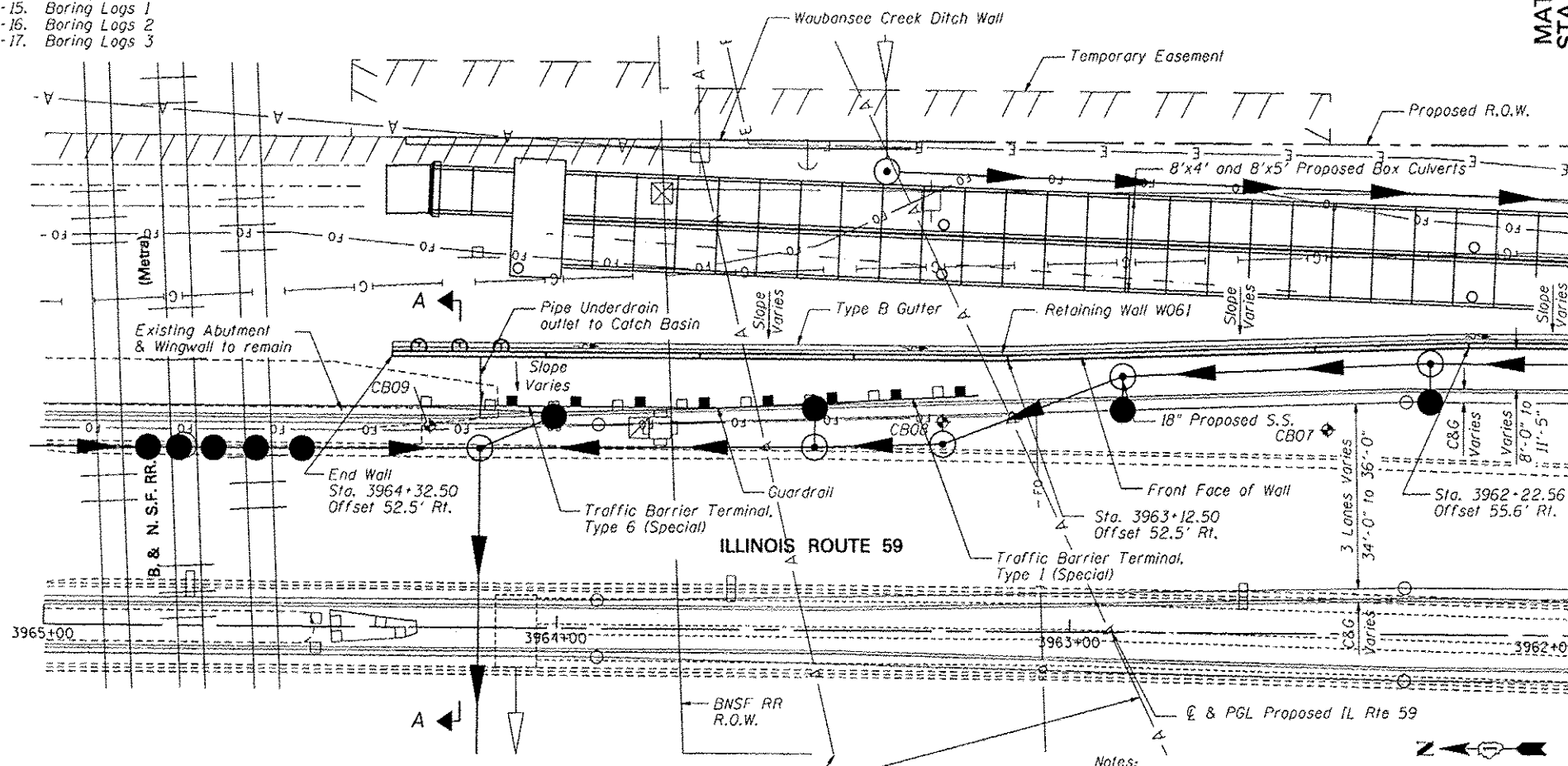
ITEM	UNIT	TOTAL
Structure Excavation	Cu. Yd.	640
Concrete Structures	Cu. Yd.	198.5
Concrete Sealer	Sq. Ft.	4,575
Stud Shear Connectors	Each	602
Reinforcement Bars, Epoxy Coated	Pound	25,010
Geocomposite Wall Drain	Sq. Yd.	312
Untreated Timber Lagging	Sq. Ft.	3,683
Furnishing Soldier Piles (W Section)	Foot	1,788
Pipe Underdrains for Structures, 4"	Foot	526
Drilling and Setting Soldier Piles (In Soil)	Cu. Ft.	12,905
Drilling and Setting Soldier Piles (In Rock)	Cu. Ft.	42
Form Liner, Textured Surface	Sq. Ft.	2,823
Chain Link Fence, 4' Attached to Structure	Foot	506

**INDEX OF SHEETS**

- SB-1. General Plan & Elevation 1
- SB-2. General Plan & Elevation 2
- SB-3. Soldier Pile Layout 1
- SB-4. Soldier Pile Layout 2
- SB-5. Typical Section
- SB-6. Section Near Railroad Bridge
- SB-7. Details
- SB-8. Concrete Facing 1
- SB-9. Concrete Facing 2
- SB-10. Concrete Facing 3
- SB-11. Concrete Facing & Details
- SB-12. Chain Link Fence Details
- SB-13. Architectural Finish Details
- SB-14. Pile Splice Details
- SB-15. Boring Logs 1
- SB-16. Boring Logs 2
- SB-17. Boring Logs 3



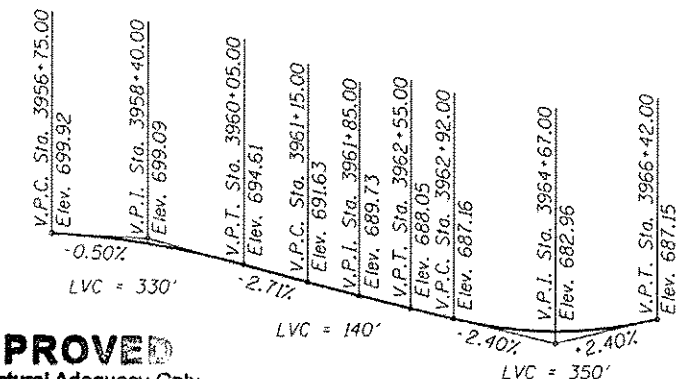
**ELEVATION**



**PLAN**

Overhead electric lines will be live during construction. The Contractor shall utilize extreme care when working around the overhead electric lines.

Notes:  
Offsets are measured from the  $\epsilon$  Proposed IL Rte 59 to the front face of the wall.  
For Section A-A, see Sheet SB-6.



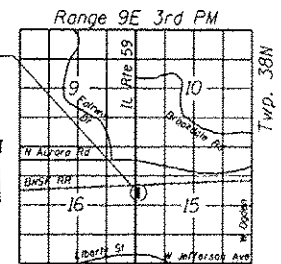
**APPROVED**  
For Structural Adequacy Only

*D. Carl Pappas*  
Engineer of Bridges & Structures

**PROFILE GRADE**



*Deborah A. Zroka* 12-14-12  
November 30, 2014



**LOCATION SKETCH**

**HORIZONTAL CURVE DATA**

Proposed Curve PRIL 59-2  
PI Sta. = 3961+11.77  
 $\Delta = 3^\circ 02' 50''$  (LT)  
 $D = 1^\circ 56' 16''$   
 $R = 2,956.67'$   
 $T = 78.64'$   
 $L = 157.25'$   
 $E = 1.05'$   
P.C. Sta. = 3960+33.13  
P.T. Sta. = 3961+90.37

**GENERAL PLAN AND ELEVATION**

IL RTE 59 FAP RTE 338  
SECTION (112 & 113) WRS-7

DUPAGE COUNTY

STA. 3959+30.00 TO STA. 3964+32.50  
SN 022-W061

FILE NAME: I:\60929\W061-081-CPEL.dwg

**ZROKA** Engineering  
Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

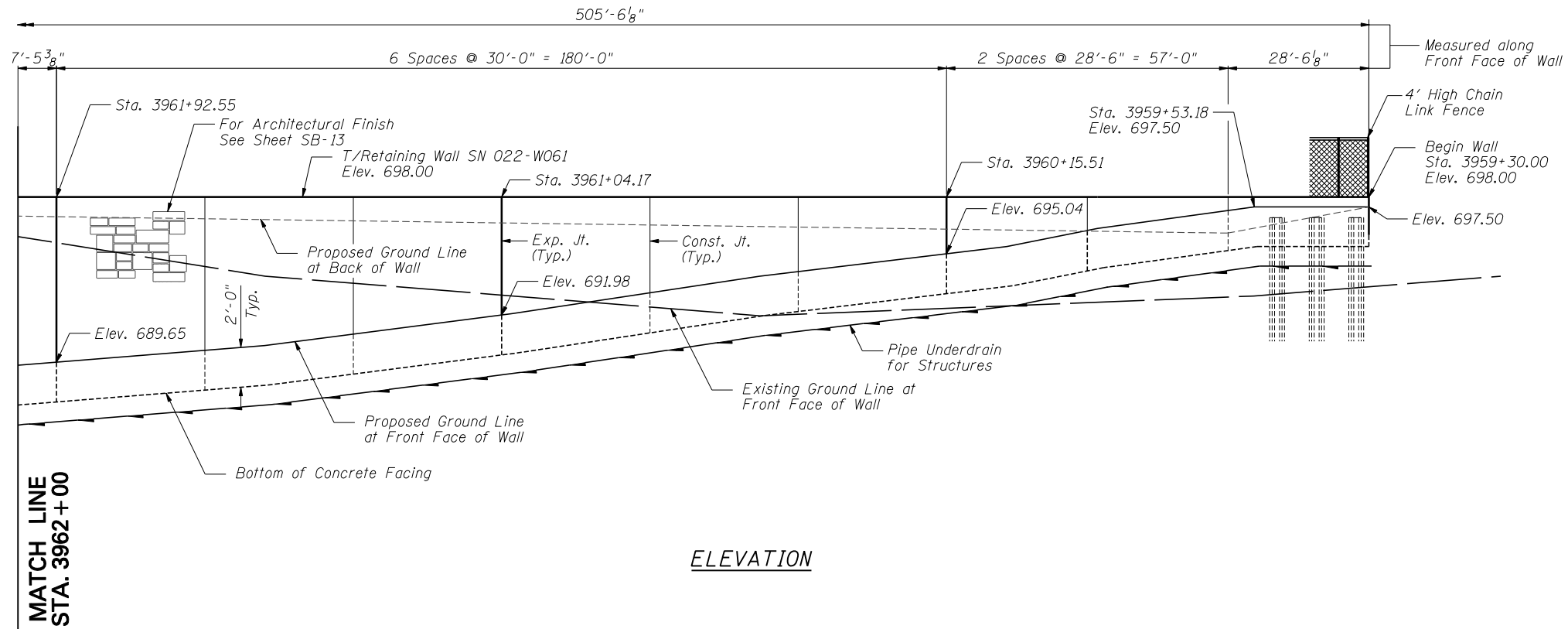
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CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

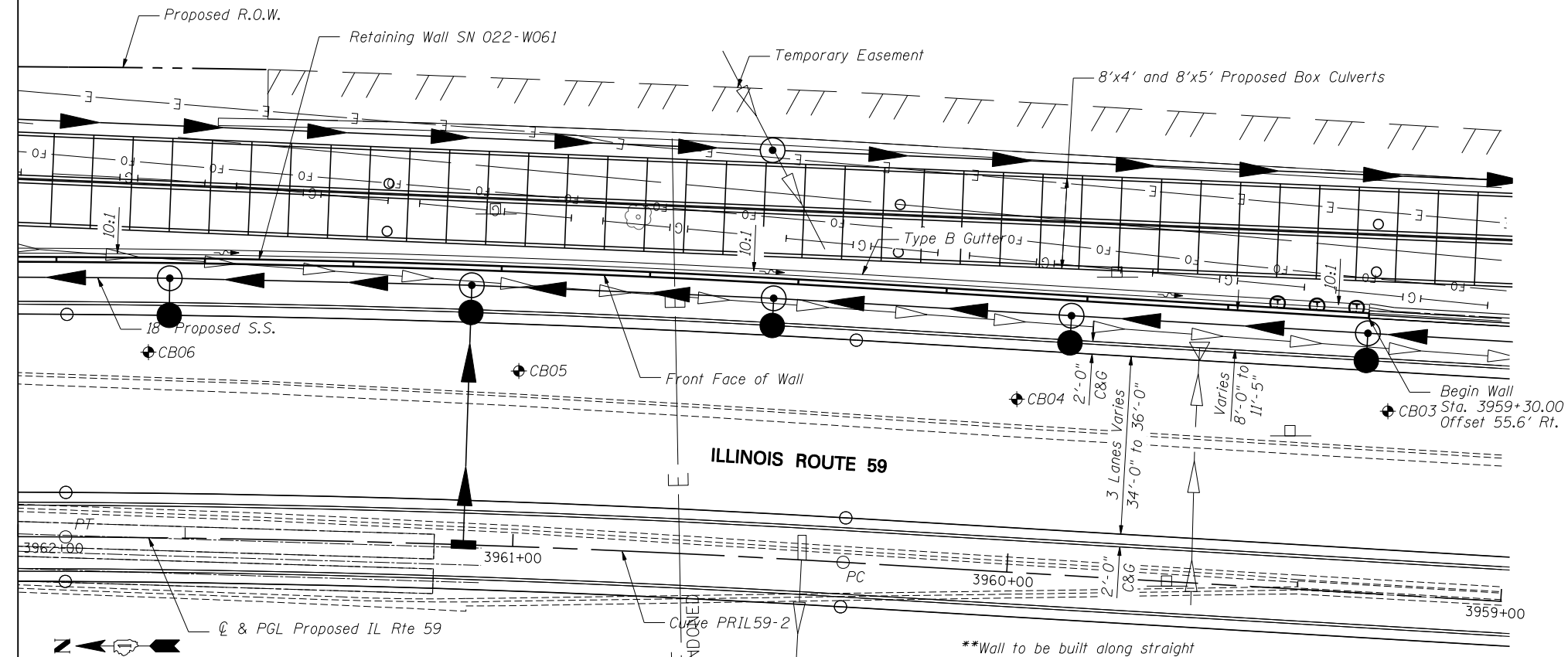
GENERAL PLAN & ELEVATION  
STA. 3959+30.00 TO STA. 3964+32.50 S.N. 022-W061  
SHEET NO. SB-1 OF SB-17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS NO.
338	(112 & 113) WRS-7	DUPAGE	1156/860
			CONTRACT NO. 60R30

ILLINOIS FED. AID PROJECT



ELEVATION



PLAN

Note:  
Offsets are measured from the  $\odot$  Proposed IL Rte 59 to the front face of the wall.

FILE NAME = ... \60R30-W061-002-CPE2.dgn



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CHECKED - DAZ	REVISD -
DRAWN - SAW	REVISD -
CHECKED - LAS	REVISD -

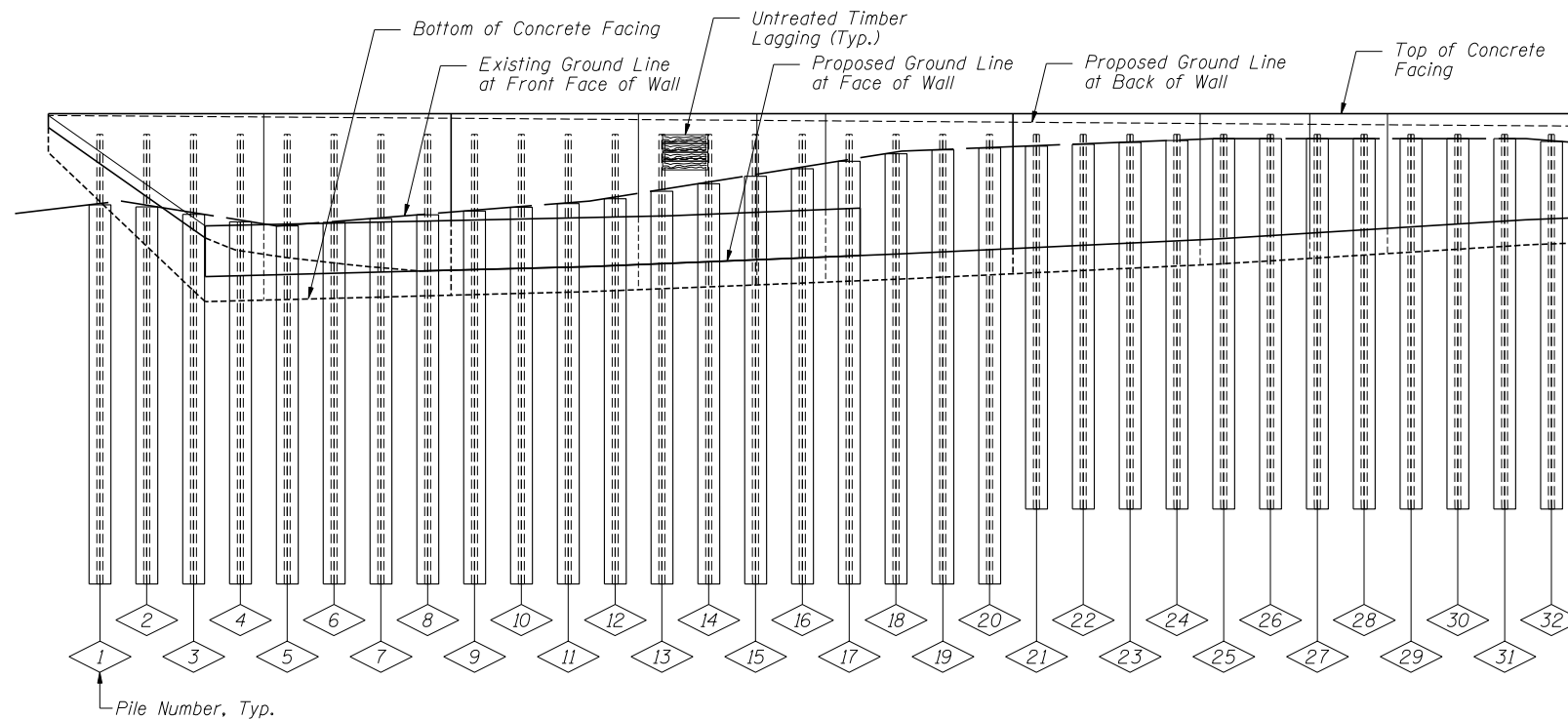
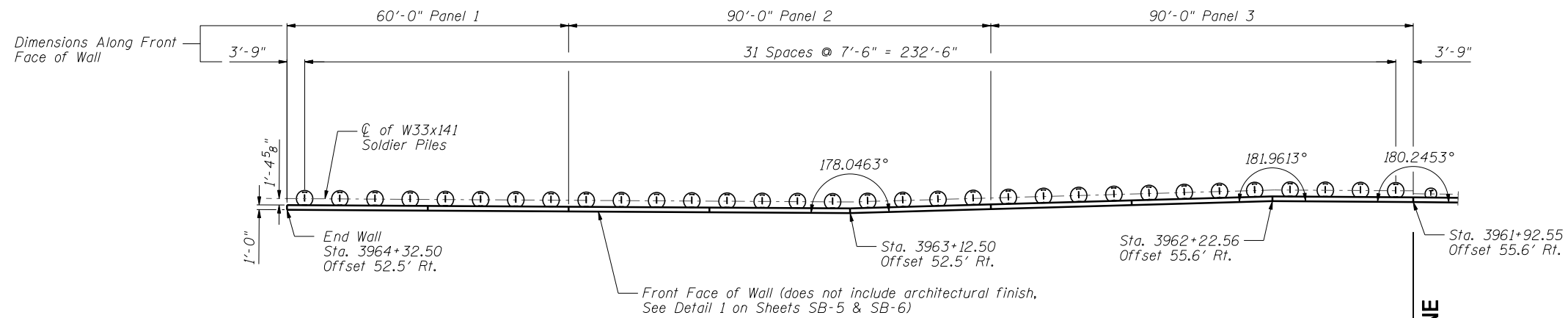
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION 2  
STA. 3959 + 30.00 TO STA. 3964 + 32.50 S.N. 022-W061

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	861
CONTRACT NO. 60R30				

SHEET NO. SB-2 OF SB-17 SHEETS

ILLINOIS FED. AID PROJECT



**ELEVATION**  
**PILE SUMMARY**

Pile No.	Station	Offset to $\phi$ Pile	Pile Designation	Length	Bottom Elevation	Top Elevation	Pile No.	Station	Offset to $\phi$ Pile	Pile Designation	Length	Bottom Elevation	Top Elevation	Pile No.	Station	Offset to $\phi$ Pile	Pile Designation	Length	Bottom Elevation	Top Elevation
1	3964+28.75	54.87	W33x141	36'-0"	660.33	696.33	12	3963+46.25	54.88	W33x141	36'-0"	660.33	696.33	23	3962+63.83	56.55	W33x141	30'-0"	666.33	696.33
2	3964+21.25	54.87	W33x141	36'-0"	660.33	696.33	13	3963+38.75	54.88	W33x141	36'-0"	660.33	696.33	24	3962+56.33	56.81	W33x141	30'-0"	666.33	696.33
3	3964+13.75	54.87	W33x141	36'-0"	660.33	696.33	14	3963+31.25	54.88	W33x141	36'-0"	660.33	696.33	25	3962+48.84	57.07	W33x141	30'-0"	666.33	696.33
4	3964+06.25	54.87	W33x141	36'-0"	660.33	696.33	15	3963+23.75	54.88	W33x141	36'-0"	660.33	696.33	26	3962+41.34	57.32	W33x141	30'-0"	666.33	696.33
5	3963+98.75	54.87	W33x141	36'-0"	660.33	696.33	16	3963+16.25	54.89	W33x141	36'-0"	660.33	696.33	27	3962+33.85	57.58	W33x141	30'-0"	666.33	696.33
6	3963+91.25	54.88	W33x141	36'-0"	660.33	696.33	17	3963+08.80	55.01	W33x141	36'-0"	660.33	696.33	28	3962+26.35	57.84	W33x141	30'-0"	666.33	696.33
7	3963+83.75	54.88	W33x141	36'-0"	660.33	696.33	18	3963+01.31	55.27	W33x141	36'-0"	660.33	696.33	29	3962+18.80	57.97	W33x141	30'-0"	666.33	696.33
8	3963+76.25	54.88	W33x141	36'-0"	660.33	696.33	19	3962+93.81	55.53	W33x141	36'-0"	660.33	696.33	30	3962+11.30	57.97	W33x141	30'-0"	666.33	696.33
9	3963+68.75	54.88	W33x141	36'-0"	660.33	696.33	20	3962+86.32	55.78	W33x141	36'-0"	660.33	696.33	31	3962+03.80	57.97	W33x141	30'-0"	666.33	696.33
10	3963+61.25	54.88	W33x141	36'-0"	660.33	696.33	21	3962+78.82	56.04	W33x141	30'-0"	666.33	696.33	32	3961+96.30	57.97	W33x141	30'-0"	666.33	696.33
11	3963+53.75	54.88	W33x141	36'-0"	660.33	696.33	22	3962+71.32	56.30	W33x141	30'-0"	666.33	696.33							

Note: All offsets are to the right of centerline of IL Rte 59

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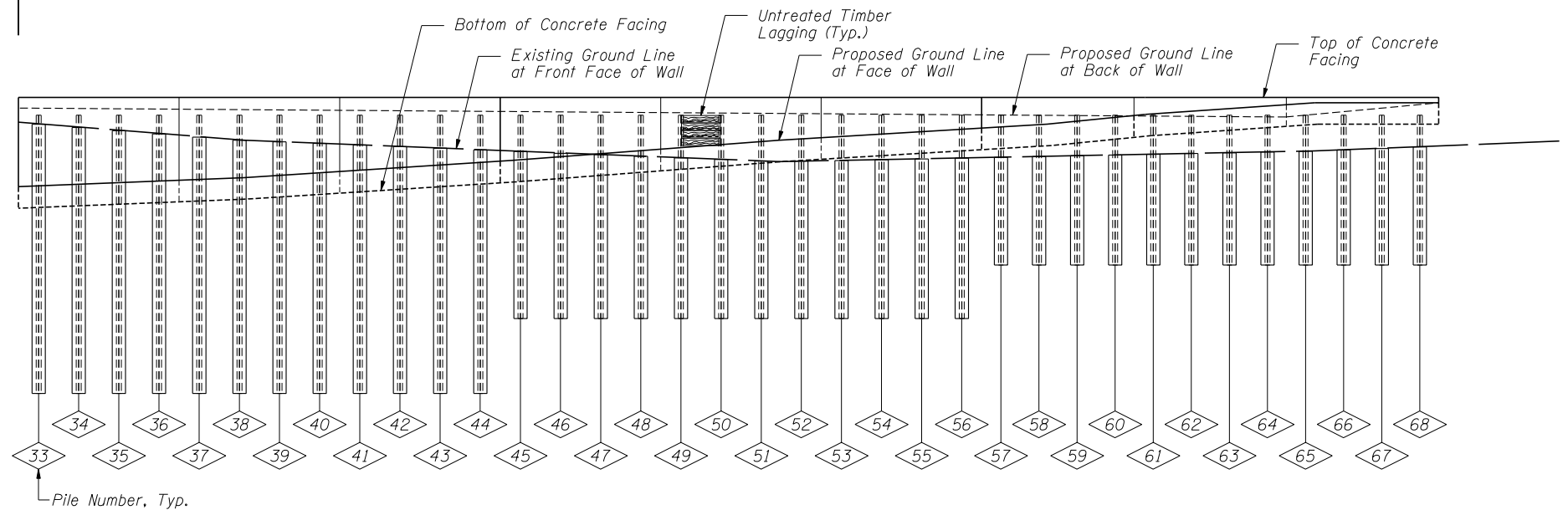
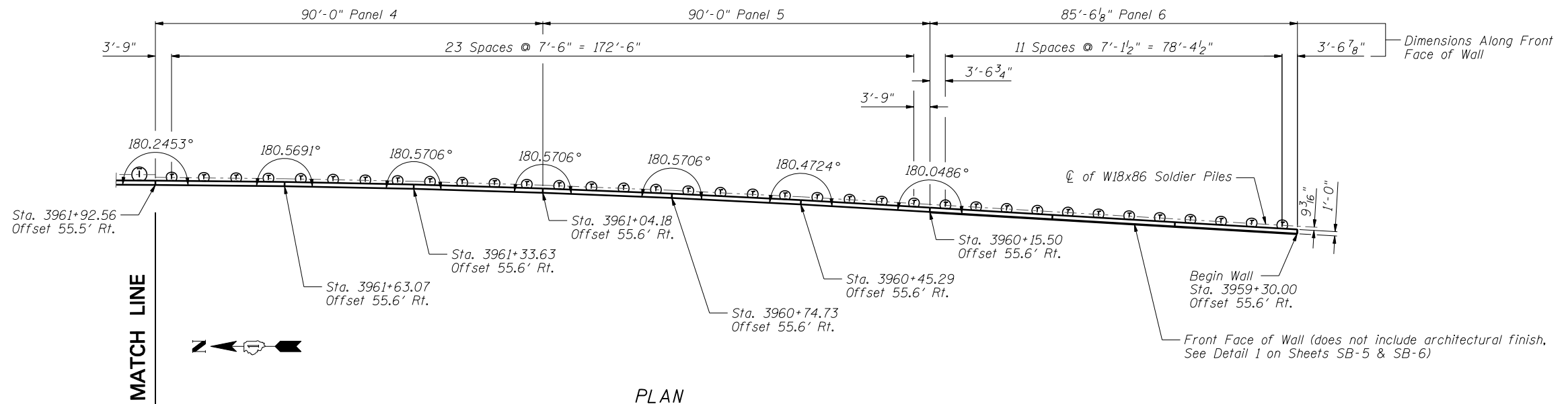
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CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
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SCALE - NONE	
DATE - 12/14/2012	

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SOLDIER PILE LAYOUT 1**  
**STA. 3959+30.00 TO STA. 3964+32.50 S.N. 022-W061**

SHEET NO. SB-3 OF SB-17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	862
CONTRACT NO. 60R30				
ILLINOIS FED. AID PROJECT				



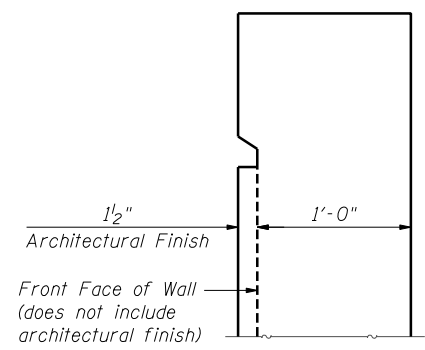
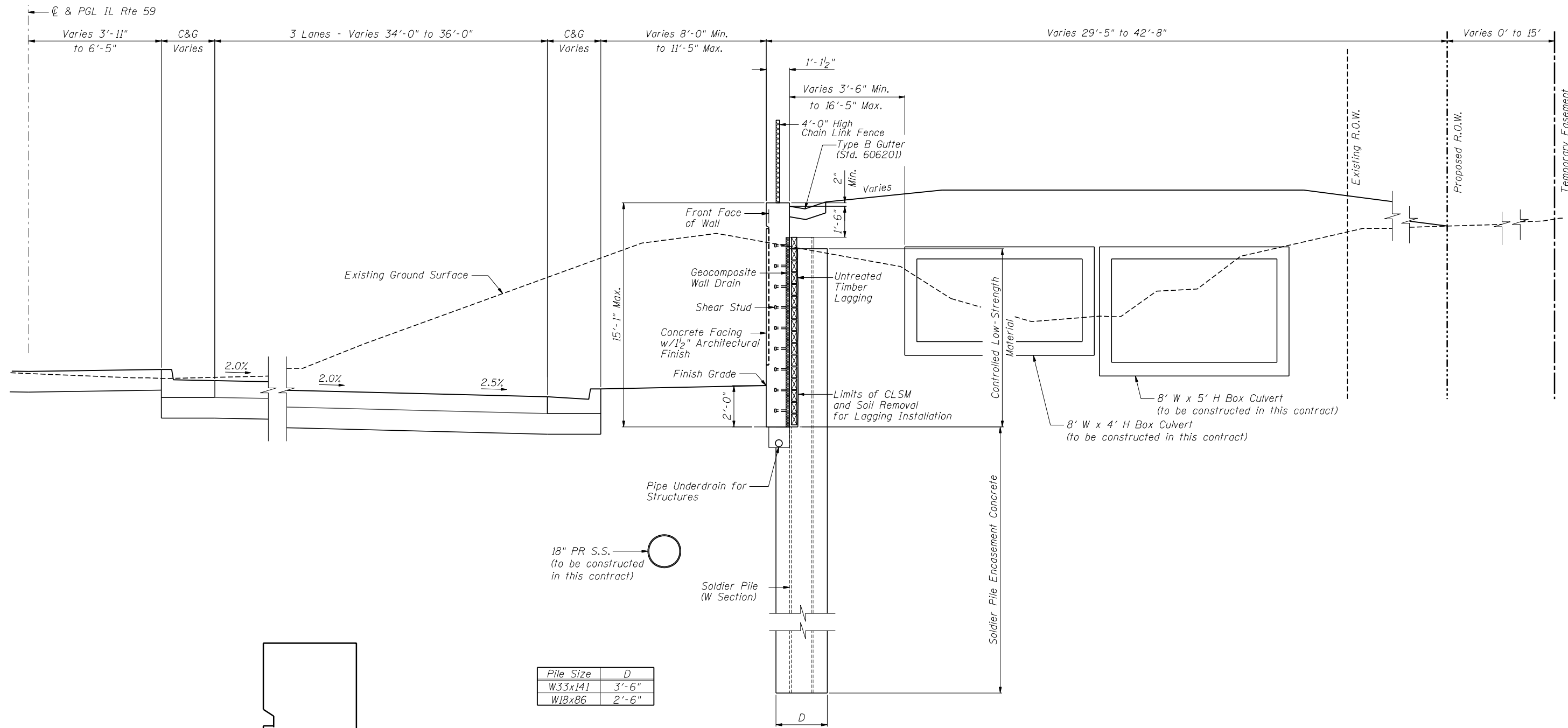
PILE SUMMARY

Pile No.	Station	Offset to CL of Pile	Pile Designation	Length	Bottom Elevation	Top Elevation	Pile No.	Station	Offset to CL of Pile	Pile Designation	Length	Bottom Elevation	Top Elevation	Pile No.	Station	Offset to CL of Pile	Pile Designation	Length	Bottom Elevation	Top Elevation
33	3961+88.84	57.33	W18x86	26'-0"	670.33	696.33	45	3961+00.50	57.33	W18x86	19'-0"	677.33	696.33	57	3960+11.95	57.35	W18x86	14'-0"	682.33	696.33
34	3961+81.48	57.31	W18x86	26'-0"	670.33	696.33	46	3960+93.14	57.31	W18x86	19'-0"	677.33	696.33	58	3960+04.82	57.35	W18x86	14'-0"	682.33	696.33
35	3961+74.12	57.31	W18x86	26'-0"	670.33	696.33	47	3960+85.78	57.31	W18x86	19'-0"	677.33	696.33	59	3959+97.70	57.35	W18x86	14'-0"	682.33	696.33
36	3961+66.76	57.33	W18x86	26'-0"	670.33	696.33	48	3960+78.42	57.33	W18x86	19'-0"	677.33	696.33	60	3959+90.57	57.35	W18x86	14'-0"	682.33	696.33
37	3961+59.39	57.33	W18x86	26'-0"	670.33	696.33	49	3960+71.05	57.33	W18x86	19'-0"	677.33	696.33	61	3959+83.45	57.35	W18x86	14'-0"	682.33	696.33
38	3961+52.03	57.31	W18x86	26'-0"	670.33	696.33	50	3960+63.69	57.31	W18x86	19'-0"	677.33	696.33	62	3959+76.32	57.35	W18x86	14'-0"	682.33	696.33
39	3961+44.67	57.31	W18x86	26'-0"	670.33	696.33	51	3960+56.33	57.31	W18x86	19'-0"	677.33	696.33	63	3959+69.20	57.35	W18x86	14'-0"	682.33	696.33
40	3961+37.32	57.33	W18x86	26'-0"	670.33	696.33	52	3960+48.98	57.33	W18x86	19'-0"	677.33	696.33	64	3959+62.07	57.35	W18x86	14'-0"	682.33	696.33
41	3961+29.94	57.33	W18x86	26'-0"	670.33	696.33	53	3960+41.61	57.34	W18x86	19'-0"	677.33	696.33	65	3959+54.95	57.35	W18x86	14'-0"	682.33	696.33
42	3961+22.59	57.31	W18x86	26'-0"	670.33	696.33	54	3960+34.25	57.33	W18x86	19'-0"	677.33	696.33	66	3959+47.82	57.35	W18x86	14'-0"	682.33	696.33
43	3961+15.23	57.31	W18x86	26'-0"	670.33	696.33	55	3960+26.77	57.34	W18x86	19'-0"	677.33	696.33	67	3959+40.70	57.35	W18x86	14'-0"	682.33	696.33
44	3961+07.87	57.33	W18x86	26'-0"	670.33	696.33	56	3960+19.27	57.34	W18x86	19'-0"	677.33	696.33	68	3959+33.57	57.35	W18x86	14'-0"	682.33	696.33

BILL OF MATERIAL

Item	Unit	Quantity
Furnishing Soldier Piles (W Section)	Foot	1,788
Drilling and Setting Soldier Piles (In Soil)	Cu Ft	12,905
Drilling and Setting Soldier Piles (In Rock)	Cu Ft	42
Untreated Timber Lagging	Sq Ft	3,683
Stud Shear Connectors	Each	602

Note: All offsets are to the right of centerline of IL Rte 59



Pile Size	D
W33x141	3'-6"
W18x86	2'-6"

**TYPICAL WALL SECTION**  
Sta. 3959+30.00 to Sta. 3964+11.70  
(Looking North)

FILE NAME = ...60R30-W061-005-1.jpgSec.dgn

**ZROKA** engineering  
Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -
SCALE - NONE	
DATE - 12/14/2012	

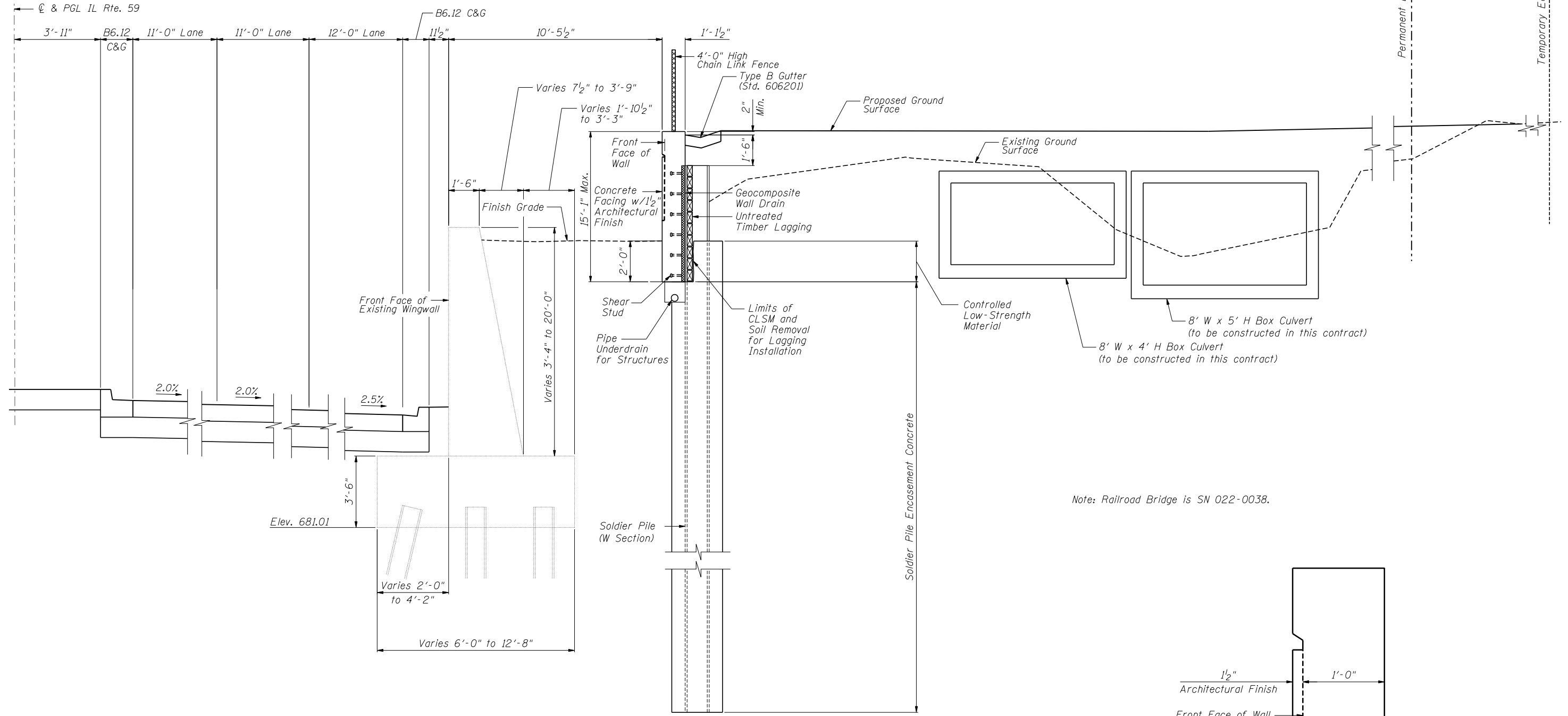
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**TYPICAL SECTION**  
**STA. 3959 + 30.00 TO STA. 3964 + 32.50** S.N. 022-W061

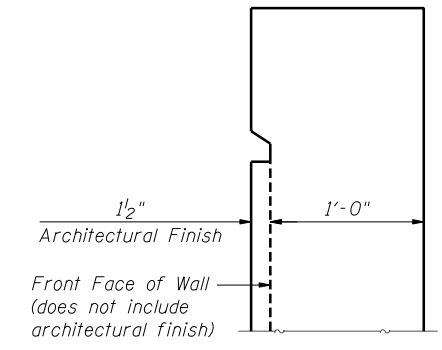
SHEET NO. SB-5 OF SB-17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	864
CONTRACT NO. 60R30				

ILLINOIS FED. AID PROJECT



Note: Railroad Bridge is SN 022-0038.



**SECTION A-A**  
Sta. 3964+11.70 to Sta. 3964+32.50  
(Looking North)

**DETAIL 1**

FILE NAME = ...60R30-W061-006-RRSect.dgn

**ZROKA** engineering  
Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
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SCALE - NONE	
DATE - 12/14/2012	

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

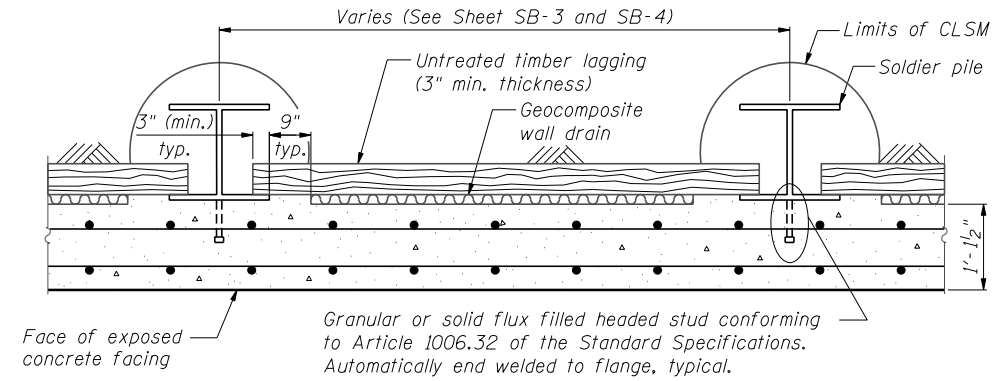
**SECTION NEAR RAILROAD BRIDGE**  
**STA. 3959+30.00 TO STA. 3964+32.50 S.N. 022-W061**

SHEET NO. SB-6 OF SB-17 SHEETS

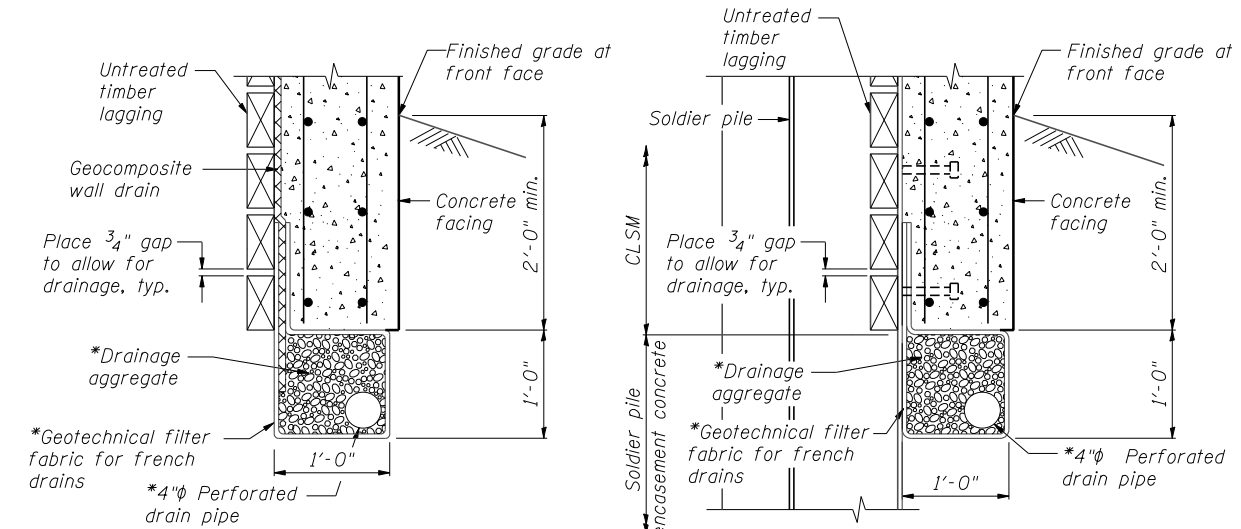
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	865
			CONTRACT NO. 60R30	

ILLINOIS FED. AID PROJECT





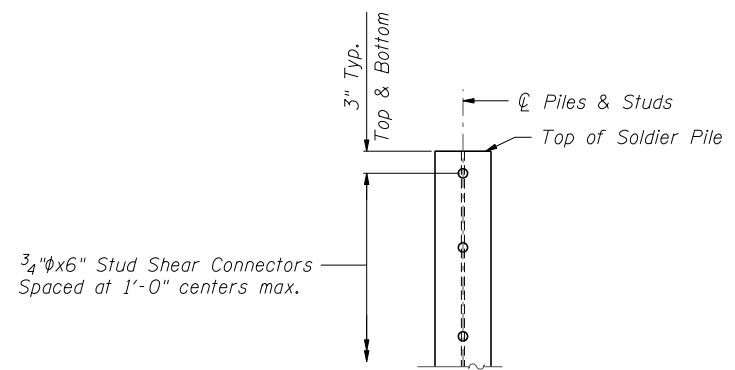
**SECTION THRU DRILLED SOLDIER PILE WALL**



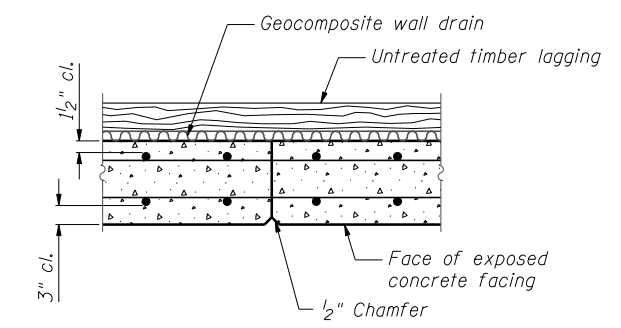
**BETWEEN SOLDIER PILES**      **AT SOLDIER PILES**

**PIPE UNDERDRAIN DETAIL**

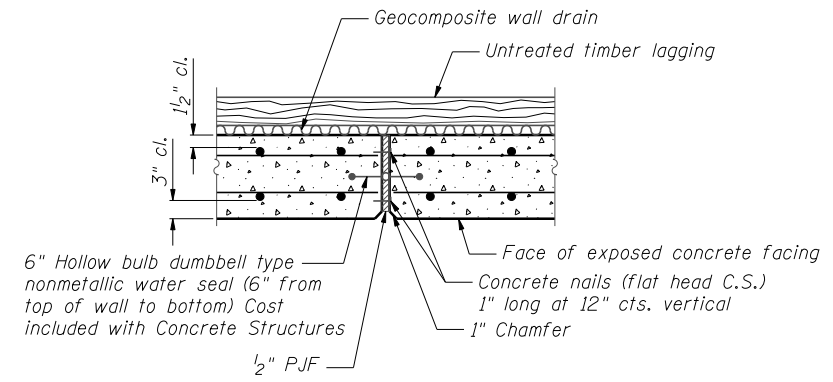
\*Included in the cost of Pipe Underdrains for Structures



**DETAIL OF SHEAR STUD PLACEMENT**



**CONSTRUCTION JOINT DETAIL**

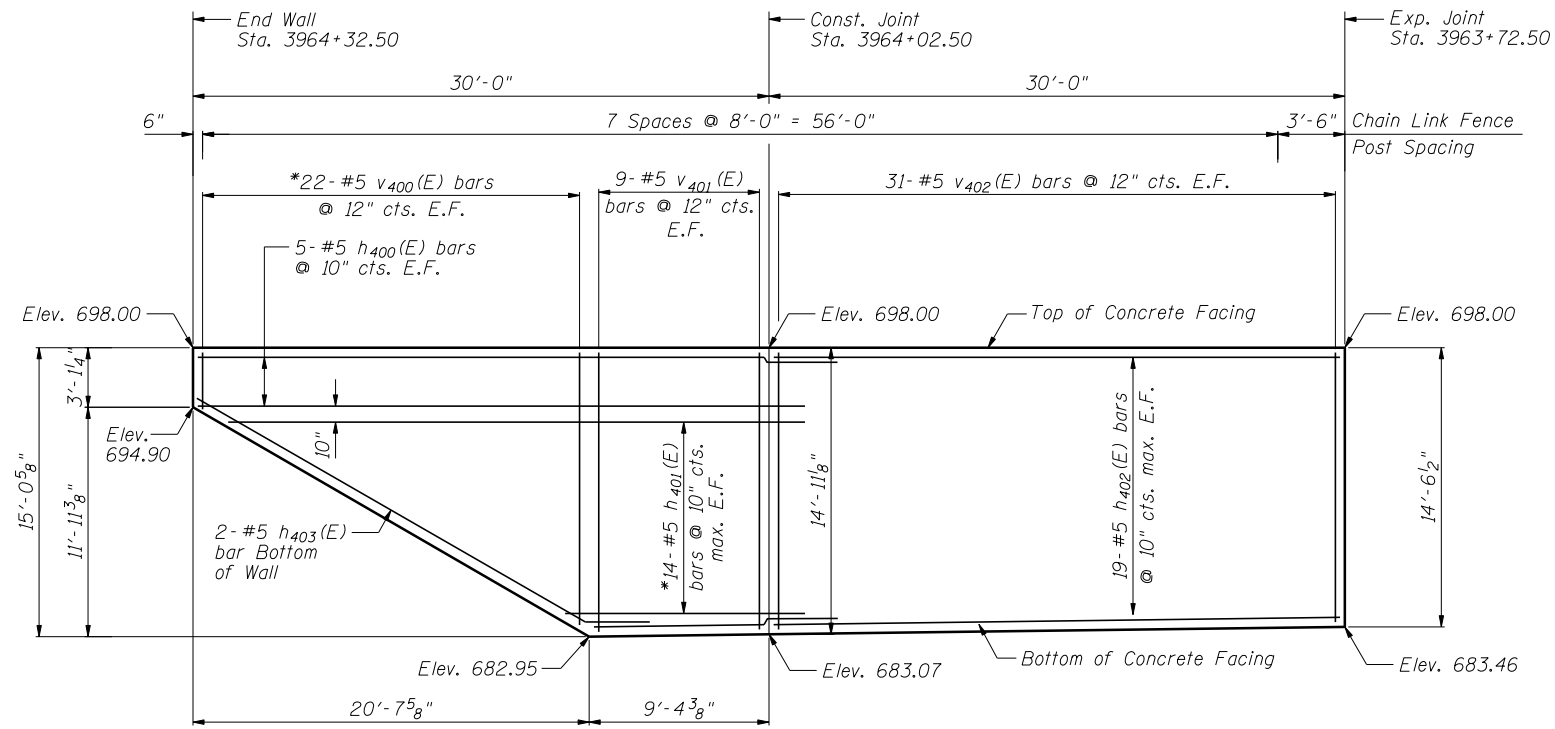


**EXPANSION JOINT DETAIL**

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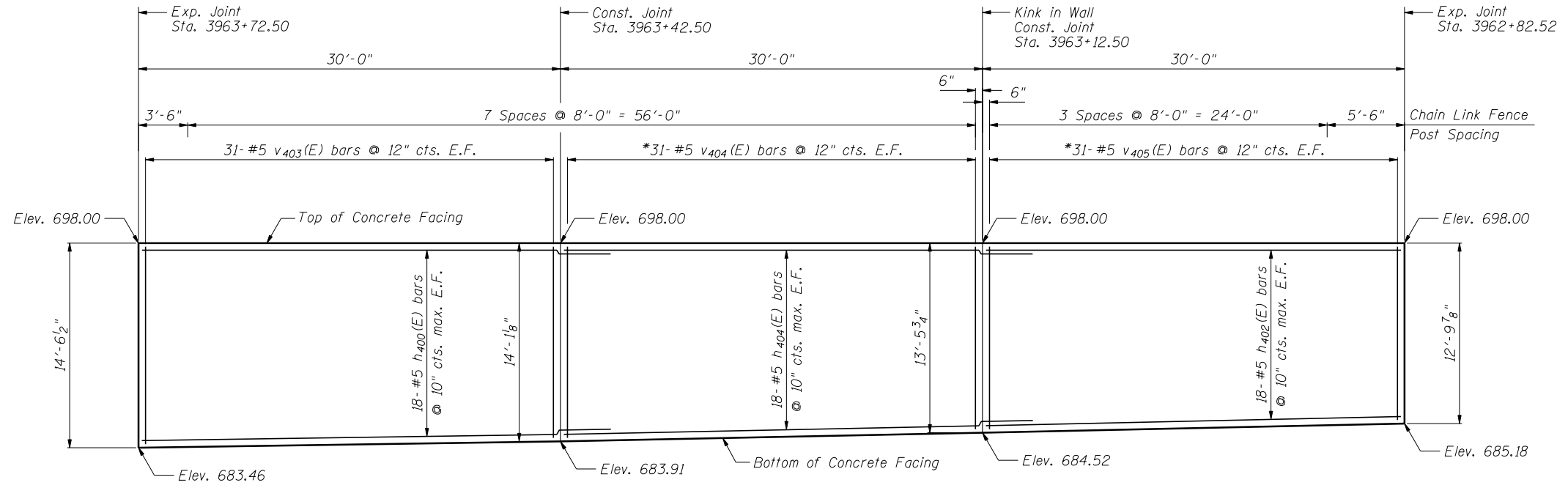
DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -
SCALE - NONE	
DATE - 12/14/2012	

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	866
			CONTRACT NO. 60R30	



**ELEVATION**

Notes:  
 Minimum lap for #5 bar is 3'-8".  
 Space reinforcement in wall to miss shear studs.  
 \* signifies cut bar. Order per length on Bill of Material. Cut as shown in Cutting Diagram and use half of bars in each face.  
 See Sheet SB-11 for Concrete Facing Details and Bill of Material.



**ELEVATION**

FILE NAME = ...60R30-W061-008-ConcreteFacing1.dgn



Zroka Engineering, P.C.  
 4216 North Hermitage  
 Chicago, IL 60613

DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

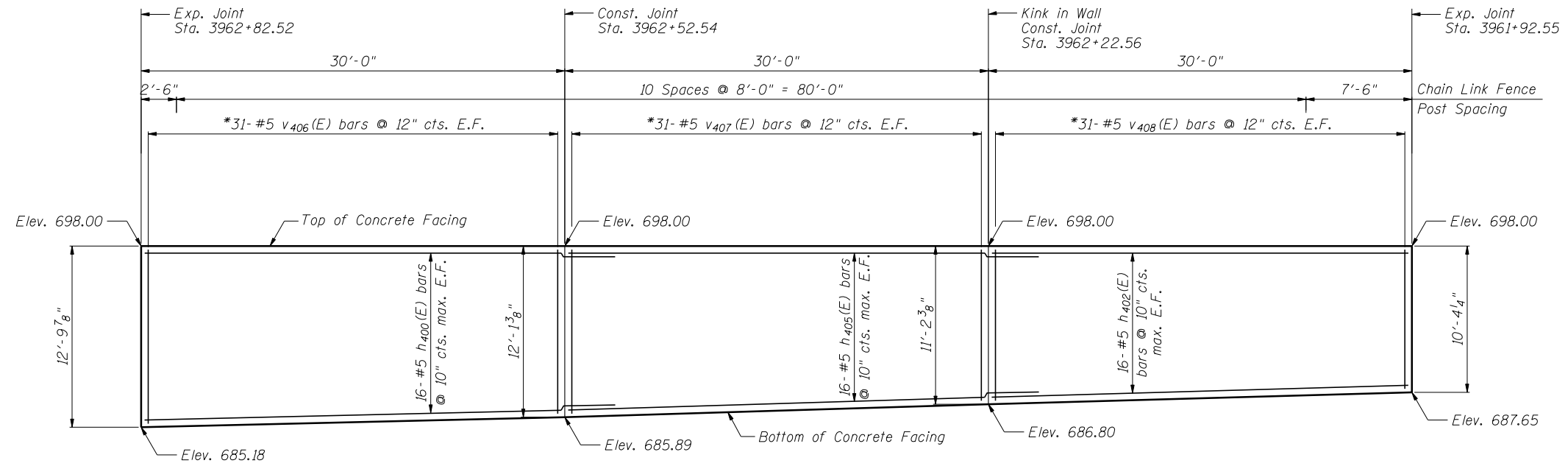
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**CONCRETE FACING 1**  
**STA. 3959 + 30.00 TO STA. 3964 + 32.50 S.N. 022-W061**

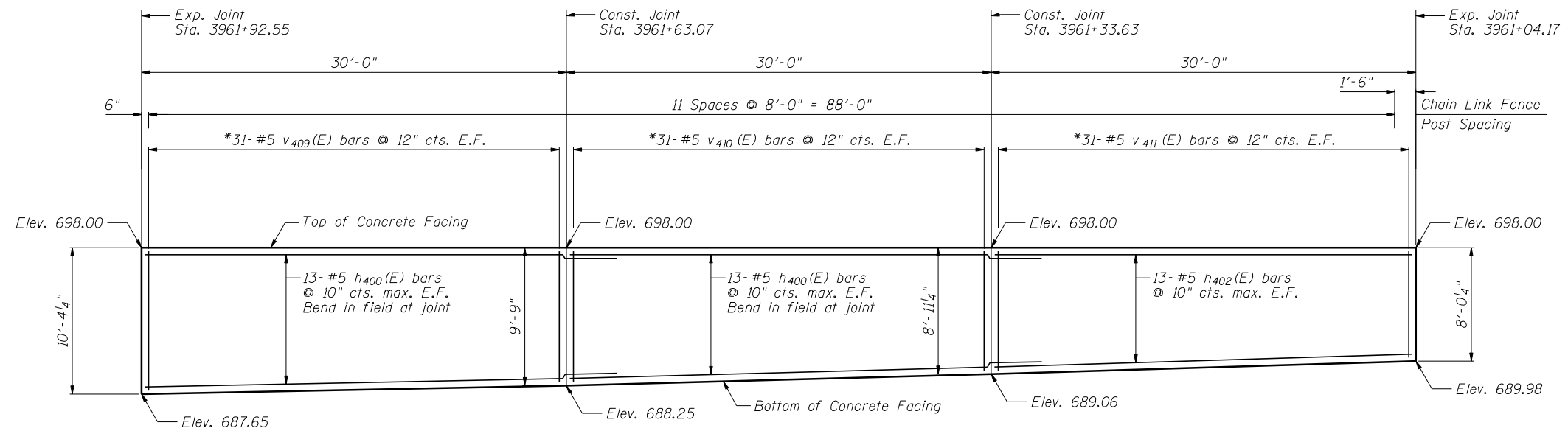
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	867
CONTRACT NO. 60R30				

SHEET NO. SB-8 OF SB-17 SHEETS

ILLINOIS FED. AID PROJECT



ELEVATION



ELEVATION

Notes:

Minimum lap for #5 bar is 3'-8".

Space reinforcement in wall to miss shear studs.

\* signifies cut bar. Order per length on Bill of Material. Cut as shown in Cutting Diagram and use half of bars in each face.

See Sheet SB-11 for Concrete Facing Details and Bill of Material.

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DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
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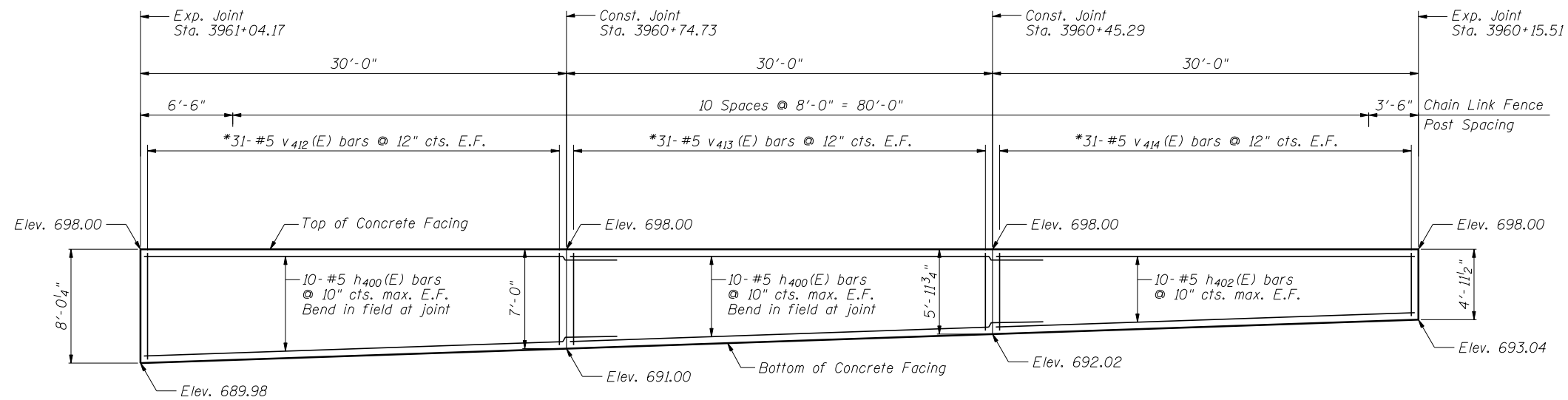
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

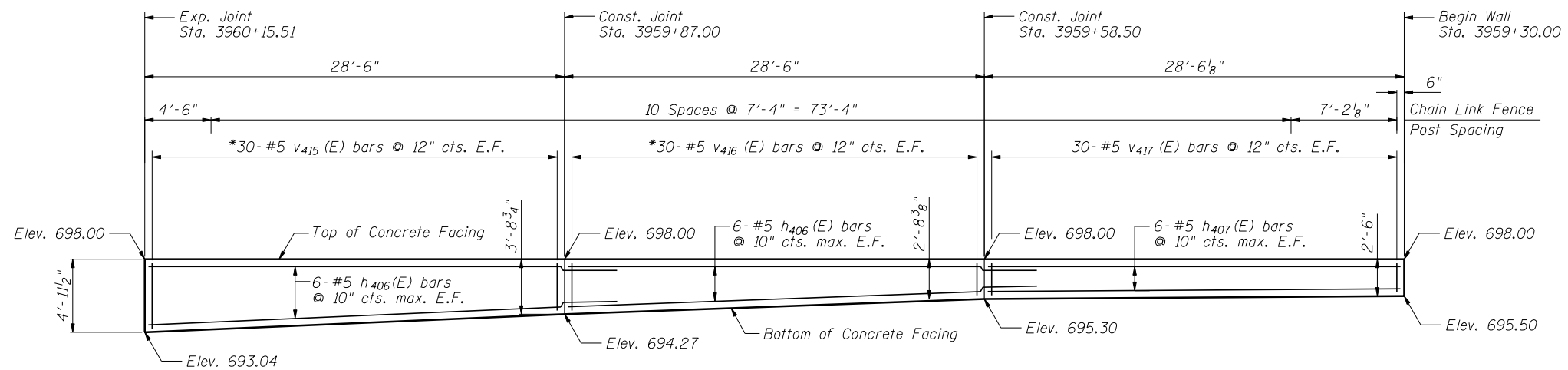
CONCRETE FACING 2  
STA. 3959+30.00 TO STA. 3964+32.50 S.N. 022-W061

SHEET NO. SB-9 OF SB-17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	868
CONTRACT NO. 60R30				
ILLINOIS FED. AID PROJECT				



ELEVATION



ELEVATION

Notes:

Minimum lap for #5 bar is 3'-8".

Space reinforcement in wall to miss shear studs.

\* signifies cut bar. Order per length on Bill of Material. Cut as shown in Cutting Diagram and use half of bars in each face.

See Sheet SB-11 for Concrete Facing Details and Bill of Material.

FILE NAME = ...60R30-W061-010-ConcreteFacing3.dgn



DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
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DATE - 12/14/2012	

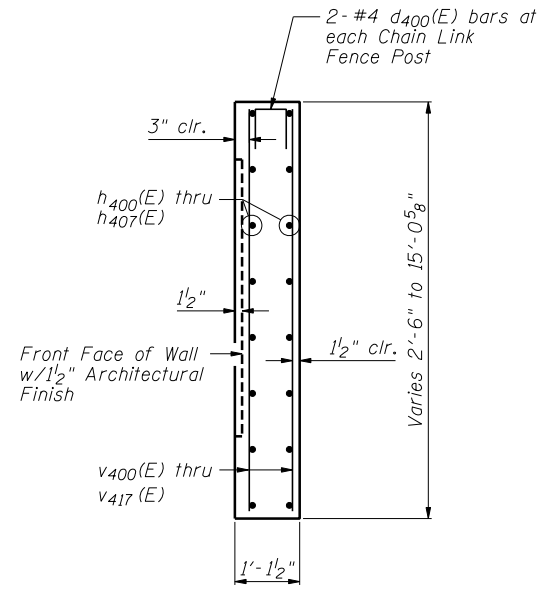
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**CONCRETE FACING 3  
STA. 3959+30.00 TO STA. 3964+32.50 S.N. 022-W061**

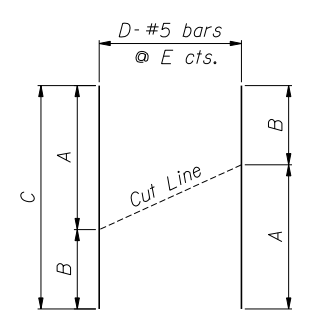
SHEET NO. SB-10 OF SB-17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	869
CONTRACT NO. 60R30				

ILLINOIS FED. AID PROJECT

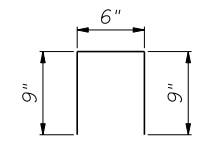


**SECTION THRU  
CONCRETE FACING**

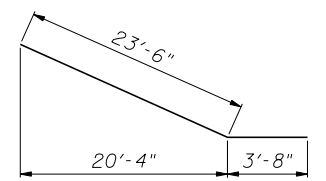


**CUTTING DIAGRAM**

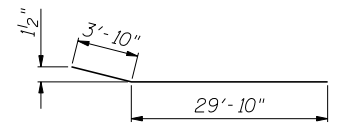
Bar	A	B	C	D	E
h401(E)	33'-8"	13'-0"	46'-8"	14	10"
v400(E)	2'-9"	14'-8"	17'-5"	22	12"
v404(E)	13'-9"	13'-2"	26'-11"	31	12"
v405(E)	13'-2"	12'-6"	25'-8"	31	12"
v406(E)	12'-6"	11'-9"	24'-3"	31	12"
v407(E)	11'-9"	10'-10"	22'-7"	31	12"
v408(E)	10'-10"	10'-0"	20'-10"	31	12"
v409(E)	10'-0"	9'-5"	19'-5"	31	12"
v410(E)	9'-5"	8'-7"	18'-0"	31	12"
v411(E)	8'-7"	7'-8"	16'-3"	31	12"
v412(E)	7'-8"	6'-8"	14'-4"	31	12"
v413(E)	6'-8"	5'-8"	12'-4"	31	12"
v414(E)	5'-8"	4'-8"	10'-4"	31	12"
v415(E)	4'-8"	3'-5"	8'-1"	30	12"
v416(E)	3'-5"	2'-4"	5'-9"	30	12"



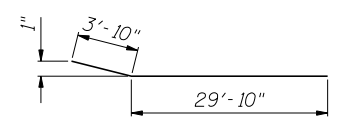
**BAR d400(E)**



**BAR h403(E)**



**BAR h404(E)**



**BAR h405(E)**

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
d400(E)	132	#4	2'-0"	□
h400(E)	170	#5	33'-8"	—
h401(E)	14	#5	46'-8"	—
h402(E)	152	#5	29'-8"	—
h403(E)	2	#5	27'-2"	—
h404(E)	36	#5	33'-8"	—
h405(E)	32	#5	33'-8"	—
h406(E)	24	#5	32'-2"	—
h407(E)	12	#5	28'-2"	—
v400(E)	22	#5	17'-5"	—
v401(E)	18	#5	14'-7"	—
v402(E)	62	#5	14'-3"	—
v403(E)	62	#5	13'-10"	—
v404(E)	31	#5	26'-11"	—
v405(E)	31	#5	25'-8"	—
v406(E)	31	#5	24'-3"	—
v407(E)	31	#5	22'-7"	—
v408(E)	31	#5	20'-10"	—
v409(E)	31	#5	19'-5"	—
v410(E)	31	#5	18'-0"	—
v411(E)	31	#5	16'-3"	—
v412(E)	31	#5	14'-4"	—
v413(E)	31	#5	12'-4"	—
v414(E)	31	#5	10'-4"	—
v415(E)	30	#5	8'-1"	—
v416(E)	30	#5	5'-9"	—
v417(E)	60	#5	2'-2"	—
Item		Unit	Quantity	
Concrete Structures		Cu. Yd.	198.5	
Reinforcement Bars, Epoxy Coated		Pound	25,010	
Pipe Underdrains for Structures, 4"		Foot	526	
Geocomposite Wall Drain		Sq. Yd.	312	

FILE NAME = ...60R30-W061-011-ConcreteFacing.dgn



DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

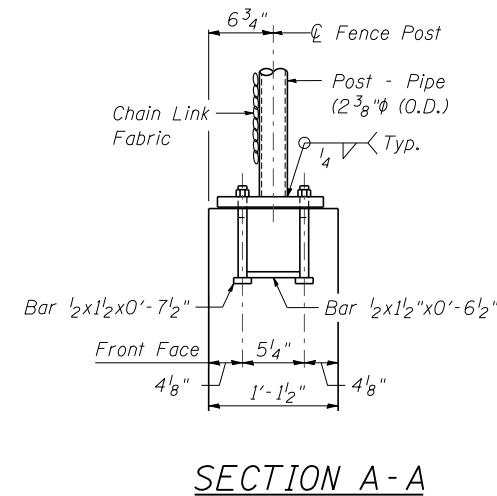
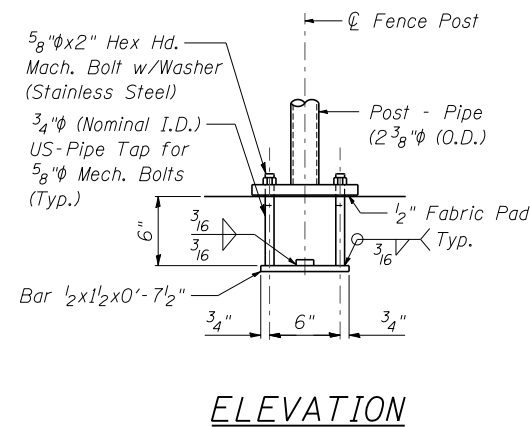
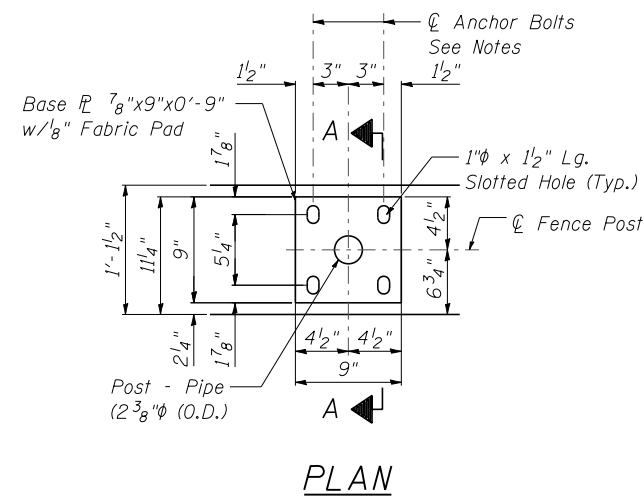
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

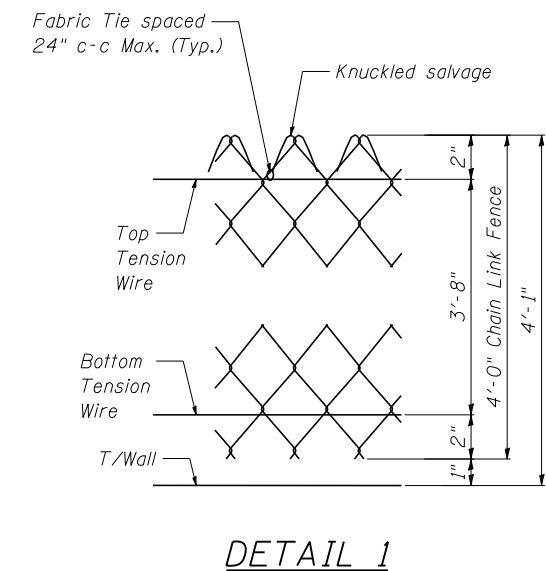
**CONCRETE FACING & DETAILS**  
**STA. 3959+30.00 TO STA. 3964+32.50 S.N. 022-W061**

SHEET NO. SB-11 OF SB-17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	870
			CONTRACT NO. 60R30	
ILLINOIS FED. AID PROJECT				



In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting  $5\frac{5}{8} \phi$  anchor rods according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

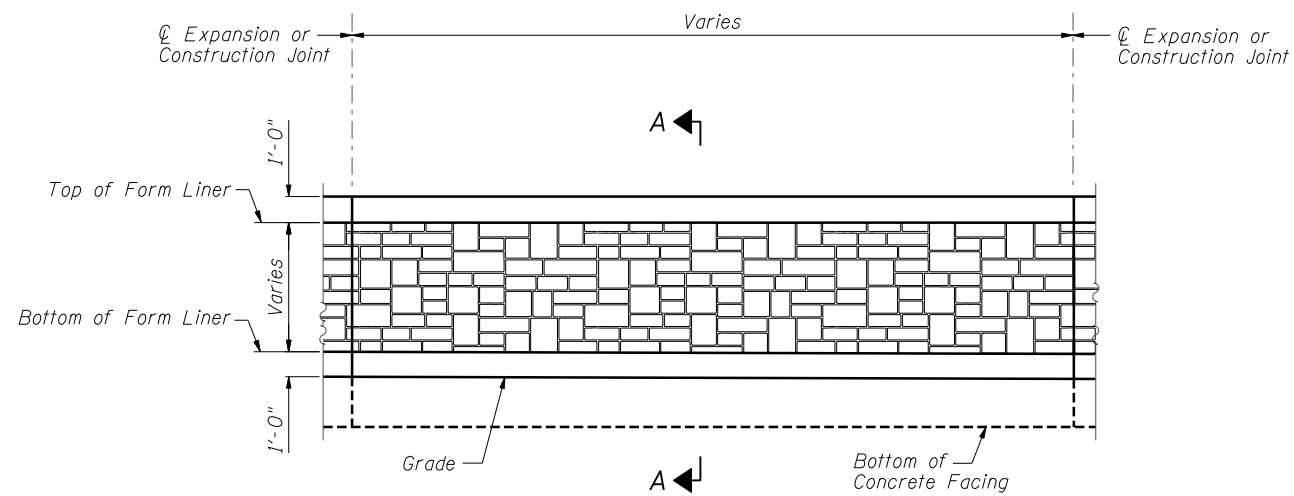


FENCE POST ANCHOR ASSEMBLY DETAILS

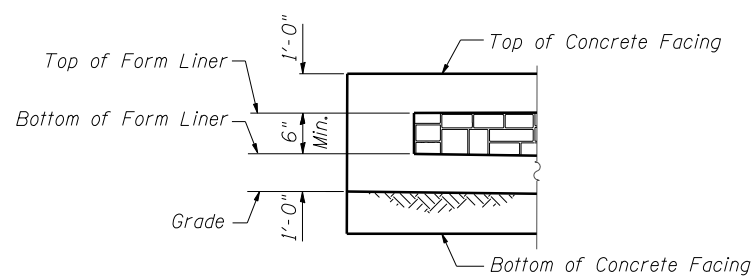
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DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -
SCALE - NONE	
DATE - 12/14/2012	

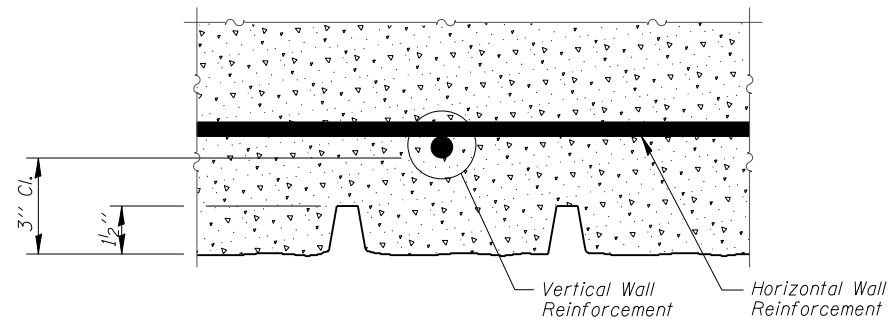
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	871
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60R30	



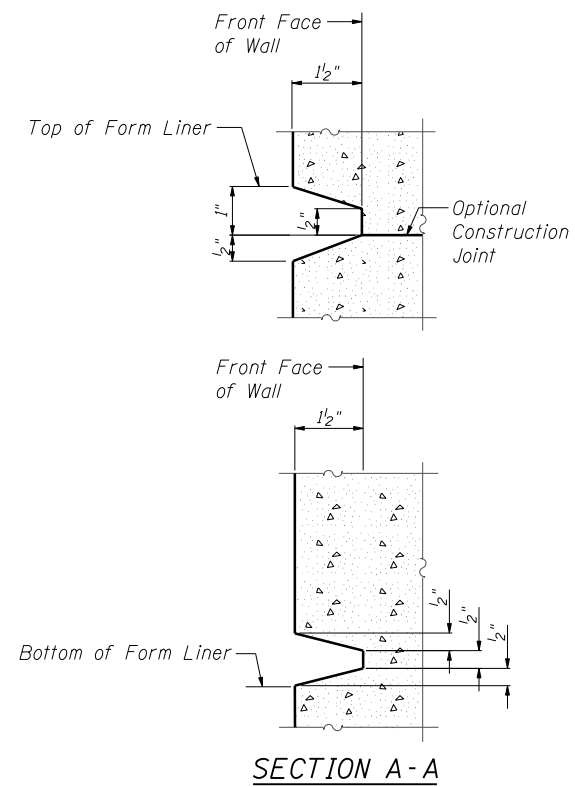
**ELEVATION - FORM LINER**



**END FORM LINER FINISH**



**PLAN - FORM LINER**



**FORM LINER ELEVATION TABLE**

Station	Form Liner Top Elevation	Form Liner Bottom Elevation
3964+32.50	None	None
3964+30.08	697.00	696.50
3964+11.86	697.00	685.95
3964+02.50	697.00	686.07
3963+72.50	697.00	686.46
3963+42.50	697.00	686.91
3963+12.50	697.00	687.52
3962+82.52	697.00	688.18
3962+52.54	697.00	688.89
3962+22.56	697.00	689.80
3961+92.55	697.00	690.65
3961+63.07	697.00	691.25
3961+33.63	697.00	692.06
3961+04.17	697.00	692.98
3960+74.73	697.00	694.00
3960+45.29	697.00	695.02
3960+15.51	697.00	696.04
3960+04.80	697.00	696.50
3959+87.00	None	None
3959+58.50	None	None
3959+30.00	None	None

FILE NAME = ...60R30-W061-013-ArchFinish.dgn

**ZROKA** engineering  
 Zroka Engineering, P.C.  
 4216 North Hermitage  
 Chicago, IL 60613

DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

SCALE - NONE  
 DATE - 12/14/2012

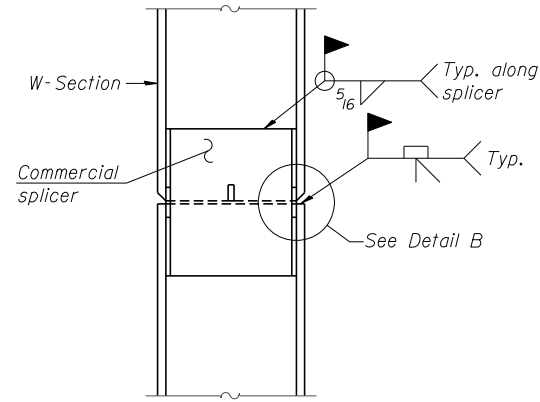
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**ARCHITECTURAL FINISH DETAILS**  
**STA. 3959 + 30.00 TO STA. 3964 + 32.50 SN 022-W061**

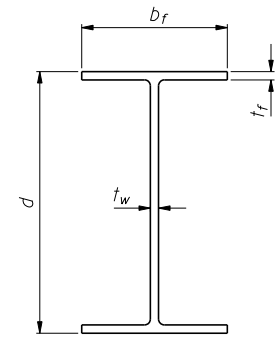
SHEET NO. SB-13 OF SB-17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	872
			CONTRACT NO. 60R30	
ILLINOIS FED. AID PROJECT				

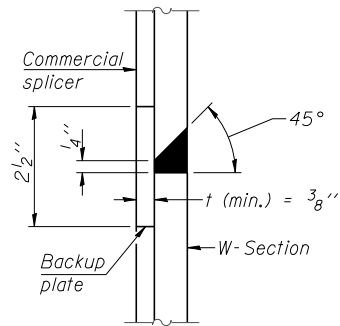




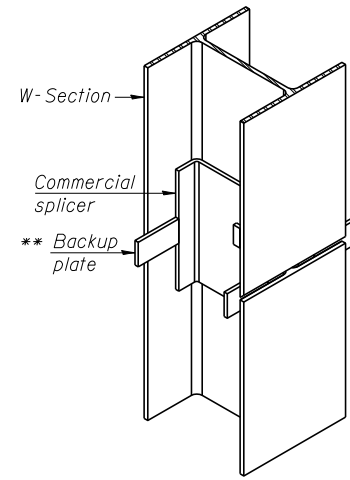
ELEVATION



Designation	Depth d	Flange width b <sub>f</sub>	Flange thickness t <sub>f</sub>	Web thickness t <sub>w</sub>	Encasement diameter A
W33x141	33 1/4"	11 1/2"	1 5/16"	5/8"	42"

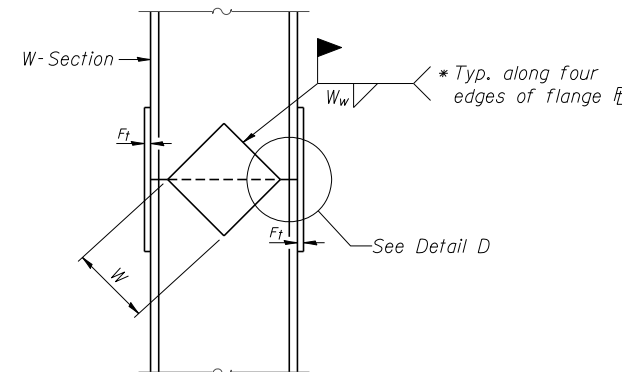


DETAIL "B"

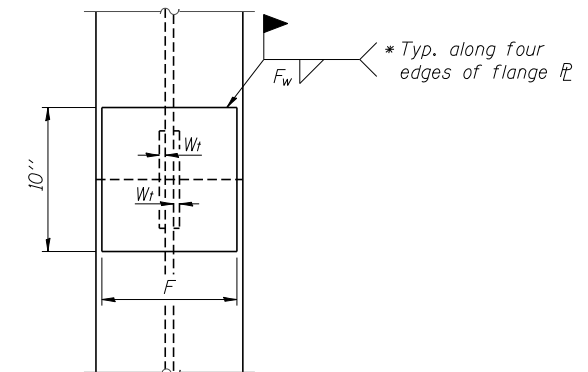


ISOMETRIC VIEW

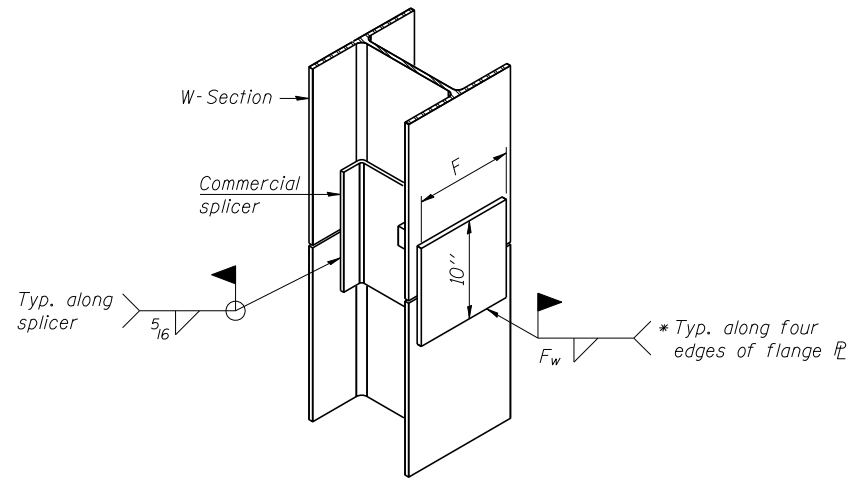
WELDED COMMERCIAL SPLICE



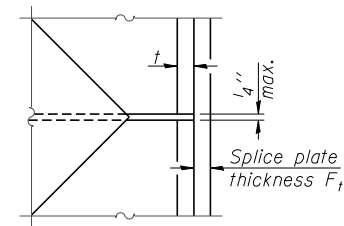
ELEVATION



END VIEW



ISOMETRIC VIEW



DETAIL D

Designation	F	F <sub>t</sub>	F <sub>w</sub>	W	W <sub>t</sub>	W <sub>w</sub>
W33x141	9"	1 1/4"	1"	21"	5/8"	1/2"

WELDED PLATE FIELD SPLICE

WELDED COMMERCIAL SPLICE ALTERNATE

- \* Interrupt welds 1/4" from end of web and/or each flange.
- \*\* Remove portions of backup plates that extend outside the flanges.

Note:  
The steel W-Sections shall be according to AASHTO M270 Grade 36.

FILE NAME = ...60R30-W061-014-PileSplice.dgn



Zroka Engineering, P.C.  
4216 North Hermitage  
Chicago, IL 60613

DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PILE SPLICE DETAILS  
STA. 3959 + 30.00 TO STA. 3964 + 32.50 SN 022-W061

SHEET NO. SB-14 OF SB-17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	873
				CONTRACT NO. 60R30

ILLINOIS FED. AID PROJECT

BORING LOG CB-03

BORING LOG CB-04

BORING LOG CB-05

PAGE 1 of 1

**SOIL BORING LOG**

DATE 8/2/10  
 LOGGED BY RJ  
 GSI JOB No. 09173

ROUTE II. Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
 SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
 COUNTY DuPage DRILLING METHOD Hollow Stem Auger/Rotary HAMMER TYPE CME Automatic

STRUCT. NO. XXXX  
 Station: XX

BORING NO. **CB-03**  
 Station: 3959+25 IL RTE-59  
 Offset: 37.0' Right  
 Ground Surface Elev. 695.7

DEPTH (ft)	BLOW COUNT (S)	UCS (tsf)	MOISTURE (%)	Surface Water Elev.		DEPTH (ft)	BLOW COUNT (S)	UCS (tsf)	MOISTURE (%)
				n/a	n/a				
0-4	AS	-	19			6			111
4-5						7			
5-4	NP	10				8	2.2B	19	
4-6						4			107
6-2		0.3B	17			5		1.7B	21
2-5						5			
5-2						8	2.9B	16	
6-6						9			117
7-7		6.4B	16			4			104
9-9						4	1.9B	23	
6-7						6			97
7-7						5			
10-7		4.3B	18			8	4.6B	15	
6-4						6			115
5-5						7			
7-7		2.2B	20			7	4.8B	17	
4-6						5			110
6-6						6			
15-6		2.6B	18			6	2.3B	20	
5-5						4			110
6-9		1.0B	18			6			
8-8						3			112
10-10						5			
20-11		3.1B	19			6	2.7B	19	

End Of Boring @ -30.0' Hollow Stem Augers CME Automatic Hammer

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B=Brittle, S=Shear, P=Penetrometer) ST=Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
 NR=No Recovery

PAGE 1 of 1

**SOIL BORING LOG**

DATE 8/2/10  
 LOGGED BY RJ  
 GSI JOB No. 09173

ROUTE II. Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
 SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
 COUNTY DuPage DRILLING METHOD Hollow Stem Auger/Rotary HAMMER TYPE CME Automatic

STRUCT. NO. XXXX  
 Station: XX

BORING NO. **CB-04**  
 Station: 3960+00 IL RTE-59  
 Offset: 35.0' Right  
 Ground Surface Elev. 695.1

DEPTH (ft)	BLOW COUNT (S)	UCS (tsf)	MOISTURE (%)	Surface Water Elev.		DEPTH (ft)	BLOW COUNT (S)	UCS (tsf)	MOISTURE (%)
				n/a	n/a				
0-4	AS	-	17			4			108
4-5						4		1.6B	21
5-6	NP	6				3			110
6-9						9			117
9-6						6			
8-5						8	2.9B	16	
6-9						9			117
7-6						6			
9-7		2.8B	17			7	2.8B	17	
6-7						6			120
7-6						6			
10-8		4.6B	15			8	4.6B	15	
6-6						6			115
7-7						7			
7-7		4.8B	17			7	4.8B	17	
5-5						5			110
6-6						6			
15-6		2.3B	20			6	2.3B	20	
4-4						4			110
6-6						6			
6-6						6	2.2B	20	
3-3						3			112
5-5						5			
20-6		2.7B	19			6	2.7B	19	

End Of Boring @ -30.0' Hollow Stem Augers CME Automatic Hammer

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B=Brittle, S=Shear, P=Penetrometer) ST=Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
 NR=No Recovery

PAGE 1 of 1

**SOIL BORING LOG**

DATE 8/2/10  
 LOGGED BY RJ  
 GSI JOB No. 09173

ROUTE II. Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
 SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
 COUNTY DuPage DRILLING METHOD Hollow Stem Auger/Rotary HAMMER TYPE CME Automatic

STRUCT. NO. XXXX  
 Station: XX

BORING NO. **CB-05**  
 Station: 3960+75 IL RTE-59  
 Offset: 35.5' Right  
 Ground Surface Elev. 693.3

DEPTH (ft)	BLOW COUNT (S)	UCS (tsf)	MOISTURE (%)	Surface Water Elev.		DEPTH (ft)	BLOW COUNT (S)	UCS (tsf)	MOISTURE (%)
				n/a	n/a				
0-4	AS	-	24			4			105
4-9						9		1.6B	21
9-4						4	2.75B	19	
6-9						9			115
8-8						8			
8-8						8			
10-8						10	3.75P	14	
6-6						6			112
6-6						6			
10-8		2.0P	18			8	2.0P	18	
5-5						5			111
6-6						6			
6-6						6	2.9B	19	
3-3						3			112
5-5						5			
15-6		2.5P	19			6	2.5P	19	
4-4						4			115
5-5						5			
6-6						6	3.25B	17	
6-6						6			115
10-6						6			
20-7		3.5B	17			7	3.5B	17	

End Of Boring @ -30.0' Hollow Stem Augers CME Automatic Hammer

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B=Brittle, S=Shear, P=Penetrometer) ST=Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
 NR=No Recovery

FILE NAME = ...60R30-W061-015-Boring-log.dgn



Zroka Engineering, P.C.  
 4216 North Hermitage  
 Chicago, IL 60613

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DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**BORING LOGS 1**  
**STA. 3959 + 30.00 TO STA. 3964 + 32.50 S.N. 022-W061**

F.A.P. RTE. 338	SECTION (112 & 113) WRS-7	COUNTY DUPAGE	TOTAL SHEETS 1156	SHEET NO. 874
			CONTRACT NO. 60R30	

SHEET NO. SB-15 OF SB-17 SHEETS

ILLINOIS FED. AID PROJECT

BORING LOG CB-06

PAGE 1 of 1  
DATE 8/4/10  
LOGGED BY RJ  
GSI JOB No. 09173

**SOIL BORING LOG**

ROUTE Il. Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
COUNTY DuPage DRILLING METHOD Hollow Stem Auger/Rotary HAMMER TYPE CME Automatic

STRUCT. NO. XXXX Station: XX  
BORING NO. **CB-06** Station: 3961+75 IL RTE-59  
Offset: 37.5' Right  
Ground Surface Elev. 691.7

DEPTH T W S H S Qu T	B L O C S	U C S	M O I S T	Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>Dry</u> Upon Completion <u>Cave In</u> After _____ Hrs. _____	D E P T H S Qu T	B L O C S	U C S	M O I S T	
12.0"	AS	-	28						
3			122						110
5	2.1B	13							20
5									110
8									
5			14						20
686.2				686.2					
5			112						
7	3.5B	18							14
663.7				663.7					
4			114						
6									
8	2.75B	17		681.7	-30	5	NP	13	
4			113						
6									
5	1.8B	18							
4			108						
8									
8	1.3B	21							
6			109						
9									
8	2.1B	20							
6			108						
5									
20	6	1.5B	21						

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer), ST-Shelby Tube Sample, VS-Vane Shear Test  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
NR-No Recovery

BORING LOG CB-07

PAGE 1 of 1  
DATE 8/4/10  
LOGGED BY RJ  
GSI JOB No. 09173

**SOIL BORING LOG**

ROUTE Il. Route 59 (FAP 338) DESCRIPTION Illinois Route 59-Aurora Avenue/New York Street To Ferry Road  
SECTION (112 & 113) WRS-5 LOCATION SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township  
COUNTY DuPage DRILLING METHOD Hollow Stem Auger/Rotary HAMMER TYPE CME Automatic

STRUCT. NO. XXXX Station: XX  
BORING NO. **CB-07** Station: 3962+50 IL RTE-59  
Offset: 39.5' Right  
Ground Surface Elev. 690.5

DEPTH T W S H S Qu T	B L O C S	U C S	M O I S T	Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>687.0</u> Upon Completion <u>Cave In</u> After _____ Hrs. _____	D E P T H S Qu T	B L O C S	U C S	M O I S T	
18.0"	AS	-	24						
3									20
4									35
5			17						50 NP 11
687.5				687.5					
5			119						12
6									15
5	4.0B	16							25 NP 14
662.5				662.5					
5			117						22
6									23
8	1.9B	16							30 NP 17
662.5				662.5					
5			119						25
6									26
7	1.3B	16		680.5	-30	50	NP	10	
680.0				680.0					
6									
8									
8	NP	10							
677.5				677.5					
3			118						
5									
7	1.8B	16							
677.5				677.5					
4			110						
6									
7	1.9B	20							
14			108						
10									
20	10	1.4B	21						

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer), ST-Shelby Tube Sample, VS-Vane Shear Test  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
NR-No Recovery

FILE NAME = ...60R30-W061-016-Boring-log2.dgn



DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -


**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**BORING LOGS 2  
STA. 3959 + 30.00 TO STA. 3964 + 32.50 S.N. 022-W061**

SHEET NO. SB-16 OF SB-17 SHEETS


F.A.P. RTE. 338	SECTION (112 & 113) WRS-7	COUNTY DUPAGE	TOTAL SHEETS 1156	SHEET NO. 875
			CONTRACT NO. 60R30	
ILLINOIS FED. AID PROJECT				

BORING LOG CB-08

 <b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Amherst Court, Suite 204 Naperville, Illinois 60565 (630) 353-3838		<b>SOIL BORING LOG</b>		PAGE 1 of 1 DATE 8/4/10 LOGGED BY RJ GSI JOB No. 09173	
ROUTE <u>Il. Route 59 (FAP 338)</u> DESCRIPTION <u>Illinois Route 59-Aurora Avenue/New York Street To Ferry Road</u>		SECTION <u>(112 &amp; 113) WRS-5</u> LOCATION <u>SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township</u>			
COUNTY <u>DuPage</u> DRILLING METHOD <u>Hollow Stem Auger/Rotary</u> HAMMER TYPE <u>CME Automatic</u>		STRUCT. NO. <u>XXXX</u> Station: <u>XX</u> BORING NO. <u>CB-08</u> Station: <u>3963+25 IL RTE-59</u> Offset: <u>40.5' Right</u> Ground Surface Elev. <u>688.2</u>			
D E P T H S H	B L O W S Q u	U C S Q u	M O I S T T	D E P T H S H	B L O W S Q u
Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>669.7</u> Upon Completion <u>Cave In</u> After _____ Hrs. _____		(ft) (f/6") (tsf) (%) (ft) (f/6") (tsf) (%)			
18.0" TOPSOIL-black (Fill)		SILT-gray-medium dense (A-4) 667.7			
686.7 3		SAND & GRAVEL-gray-very dense (A-1) 50/3			
4 4.0P 15		665.2 NP 6			
CLAY LOAM-brown-very stiff to hard (A-6) Fill		SAND-brown & gray-dense (A-3) 14			
5 108		15			
8		18 NP 18			
9 2.1B 13		662.7			
682.7		SAND & GRAVEL-brown & gray-very dense (A-1) 25			
8 3.9B 17		50/3 NP 8			
6 108		SILT-gray-dense (A-4) 12			
7		18			
10 7 2.6B 19		658.2-30 22 NP 9			
3 118		End Of Boring @ -30.0' Hollow Stem Augers CME Automatic Hammer			
5		6			
6 2.6B 20		4 108			
6		6 2.9B 20			
15 6 2.9B 20		4 112			
4		6 2.4B 19			
7		669.7			
6		SILT-gray-medium dense (A-4)			
9		20			
20 9 - 16		40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer), ST-Shelby Tube Sample, VS-Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
 NR-No Recovery

BORING LOG CB-09

 <b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Amherst Court, Suite 204 Naperville, Illinois 60565 (630) 353-3838		<b>SOIL BORING LOG</b>		PAGE 1 of 1 DATE 8/5/10 LOGGED BY RJ GSI JOB No. 09173	
ROUTE <u>Il. Route 59 (FAP 338)</u> DESCRIPTION <u>Illinois Route 59-Aurora Avenue/New York Street To Ferry Road</u>		SECTION <u>(112 &amp; 113) WRS-5</u> LOCATION <u>SEC. 3, 9-10, 15-16, 21-22 TWP. 38N, RNG. 9E, Naperville Township</u>			
COUNTY <u>DuPage</u> DRILLING METHOD <u>Hollow Stem Auger/Rotary</u> HAMMER TYPE <u>CME Automatic</u>		STRUCT. NO. <u>XXXX</u> Station: <u>XX</u> BORING NO. <u>CB-09</u> Station: <u>3964+25 IL RTE-59</u> Offset: <u>39.0' Right</u> Ground Surface Elev. <u>685.5</u>			
D E P T H S H	B L O W S Q u	U C S Q u	M O I S T T	D E P T H S H	B L O W S Q u
Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>659.5</u> Upon Completion <u>Cave In</u> After _____ Hrs. _____		(ft) (f/6") (tsf) (%) (ft) (f/6") (tsf) (%)			
18.0" TOPSOIL-black (Fill)		CLAY-gray-very stiff (A-6) 665.0			
684.0 3		CLAYEY SAND & GRAVEL-gray-dense (A-2) 10			
4		20			
4 1.5P 23		25 - 15			
682.5		CLAY LOAM-dark gray & black-stiff (A-6) Fill 662.5			
4 108		12			
5		10			
6 3.8B 16		25 10 - 8			
682.7		CLAY-gray-very stiff (A-6) 108			
4		LOAM-gray-medium dense to dense (A-4) 8			
5 3.1B 19		10			
5 116		15 NP 10			
6		8			
7 3.7B 16		20			
675.0		18 NP 10			
9		End Of Boring @ -30.0' Hollow Stem Augers CME Automatic Hammer			
9 7 NP 14		9			
672.5		SILTY LOAM-gray-medium dense (A-4)			
5 108		7			
7 2.7B 19		35			
672.5		CLAY-gray-very stiff (A-6)			
5 109		7			
7 2.4B 20		5 108			
7		7			
5 108		20			
7 2.7B 20		40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer), ST-Shelby Tube Sample, VS-Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in Italics above moist (%)  
 NR-No Recovery

FILE NAME = ...\\60R30-W061-017-Boring-log3.dgn



DESIGNED - LAS	REVISED -
CHECKED - DAZ	REVISED -
DRAWN - SAW	REVISED -
CHECKED - LAS	REVISED -

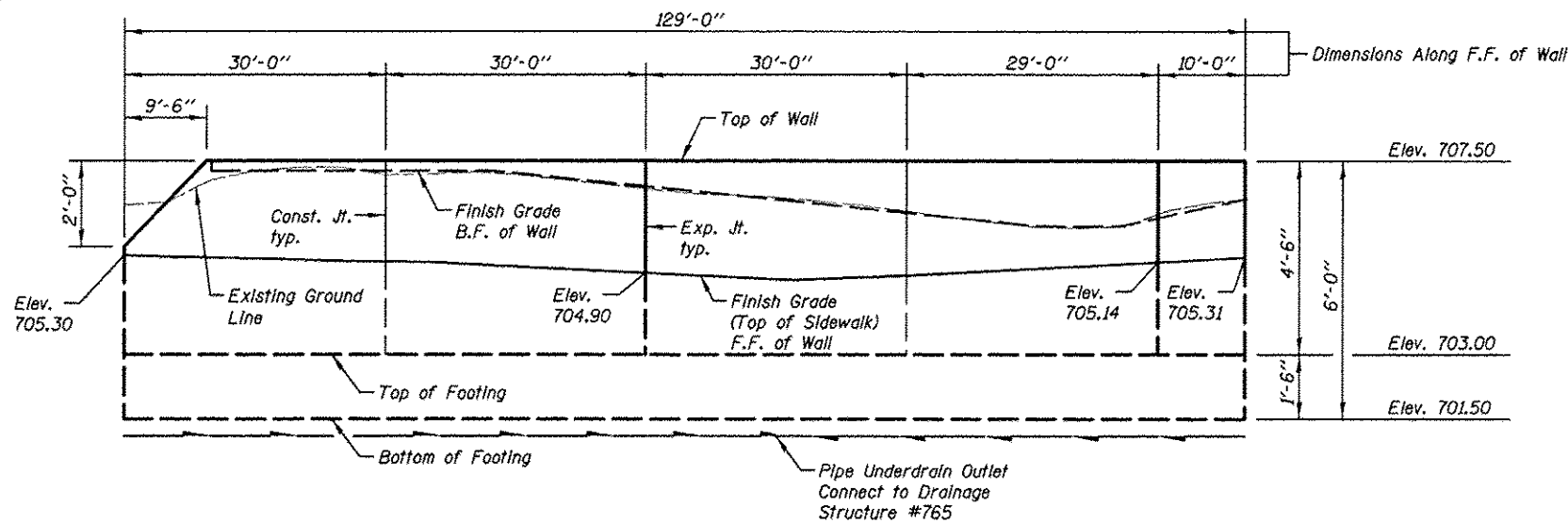
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**BORING LOGS 3**  
**STA. 3959 + 30.00 TO STA. 3964 + 32.50 S.N. 022-W061**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	876
CONTRACT NO. 60R30			ILLINOIS FED. AID PROJECT	

Bench Mark: BM #211 3977+40, 129 RT  
 Square "□" out in south side of light pole base. Just south of CVS Drug Store Sign  
 northeast corner of Route 59 and North Aurora Road.  
 ELEV. 707.30

Existing Structure: None.



**ELEVATION**

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	TOTAL
Subbase Granular Material, Type B 4"	Sq. Yd.	60
Structure Excavation	Cu. Yd.	215
Concrete Structures	Cu. Yd.	60
Reinforcement Bars, Epoxy Coated	Pound	14500
Concrete Sealer	Sq. Ft.	484
Geocomposite Wall Drain	Sq. Yd.	710
Pipe Underdrains for Structures 4"	Foot	129

**CURVE DATA**

☉ North Aurora Rd.  
 Curve PR-MA-1  
 $\Delta = 10^\circ 53' 54''$  (RT)  
 $D = 2^\circ 29' 59''$   
 $R = 2,292.00'$   
 $T = 218.64'$   
 $L = 435.96'$   
 $E = 10.40'$   
 SE = Normal Crown  
 PC STA. 398+44.84  
 PT STA. 402+80.81  
 PI STA. 400+63.49

**DESIGN SPECIFICATIONS**

2012 AASHTO LRFD Bridge Design Specifications  
 6th Edition, with 2012 Interim Revisions

**DESIGN STRESSES**

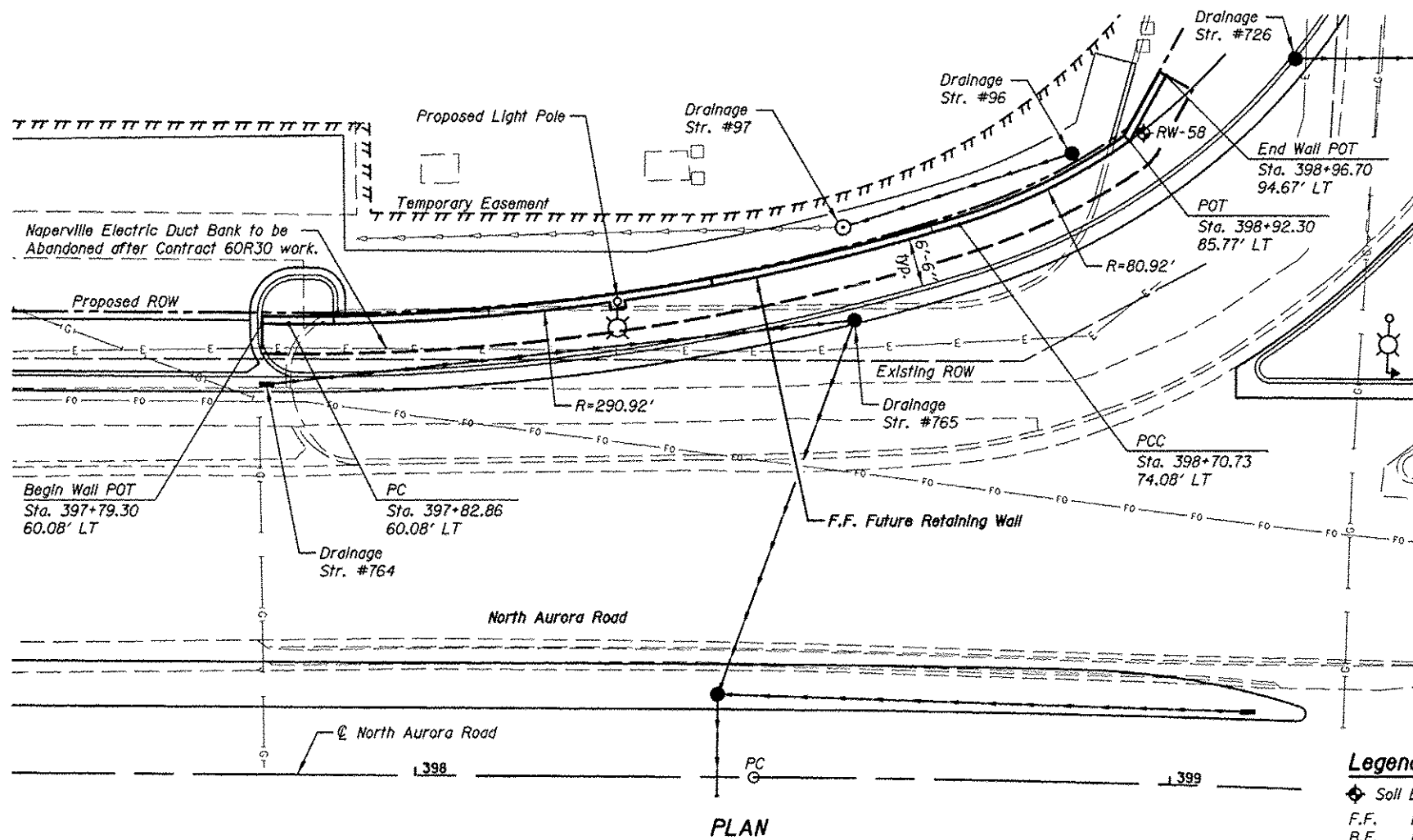
**FIELD UNITS**

$f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (reinforcement)

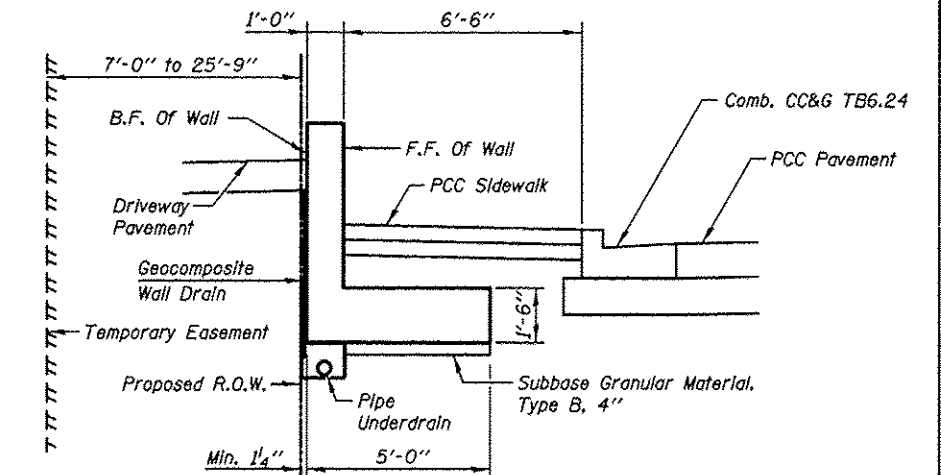
**Notes**

The location of this wall is less than 1' from ROW. The wall will be built to the radius shown and not kinked. No exceptions.

See Roadway Drainage Plans for Drainage Structure Locations.



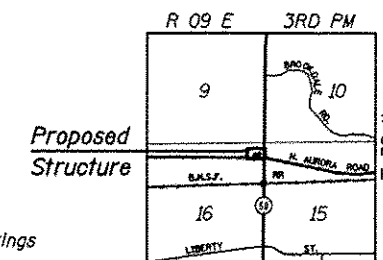
**PLAN**



**TYPICAL SECTION**

**THIS SHEET IS FOR INFORMATION ONLY.**  
 Quantities shown are estimated and NOT included in the Summary of Quantities.

**GENERAL PLAN AND ELEVATION**  
**ILLINOIS ROUTE 59 F.A.P. RTE. 338**  
**SEC. (112 & 113) WRS-7**  
**DUPAGE COUNTY**  
**STA. 397+79 TO STA. 398+97**  
**FUTURE RETAINING WALL**



**LOCATION SKETCH**

**Legend**

◆ Soil Borings  
 F.F. Front Face  
 B.F. Back Face

**KNIGHT**  
 Engineers & Architects

SCALE - NONE  
 DATE - 12/14/2012

DESIGNED - WPM	REVISED 2/11/2013 WPM
CHECKED - TB	REVISED
DRAWN - TB	REVISED
CHECKED - WPM	REVISED

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

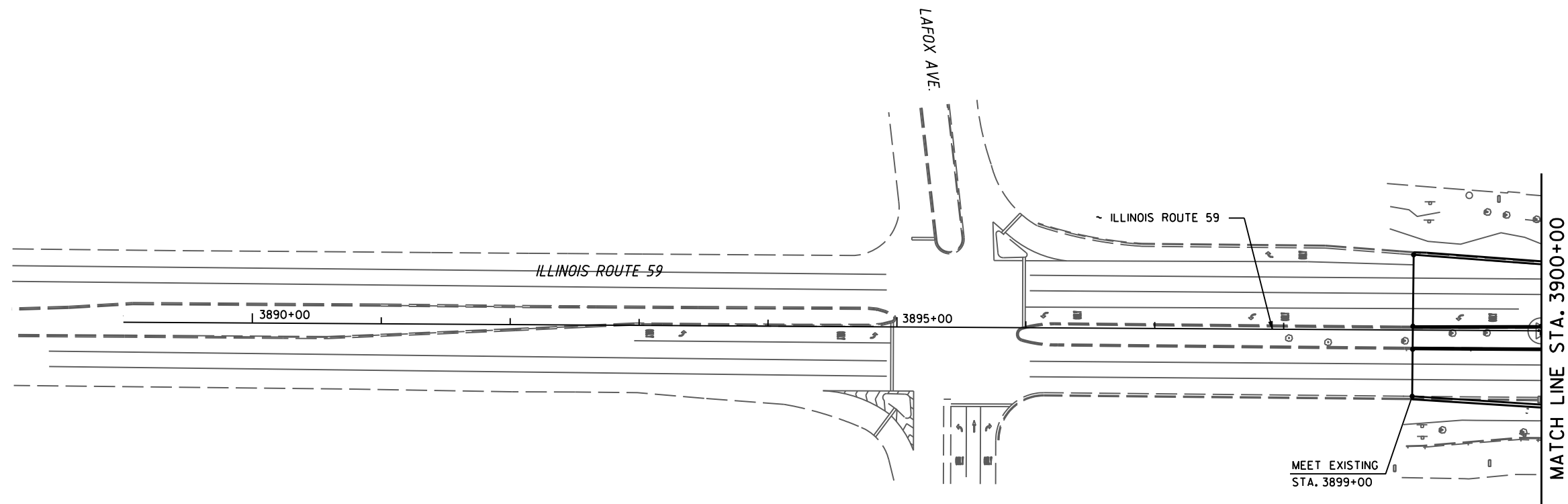
GENERAL PLAN AND ELEVATION  
 FUTURE RETAINING WALL  
 SHEET NO. SC-1 OF 1 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	876A
CONTRACT NO. 60R30				

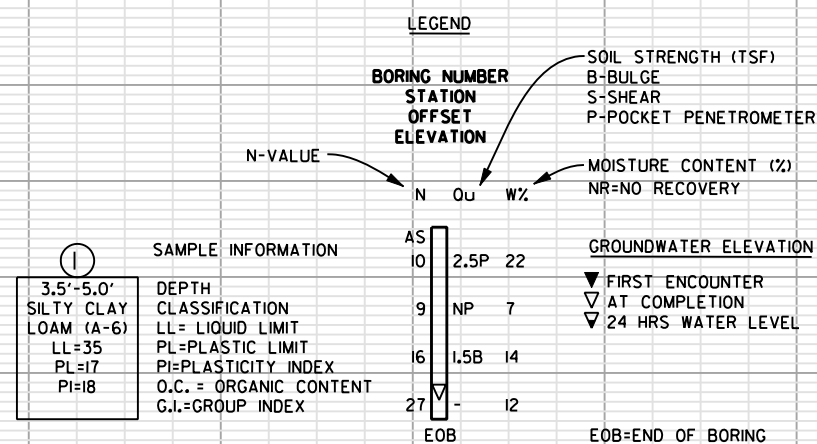
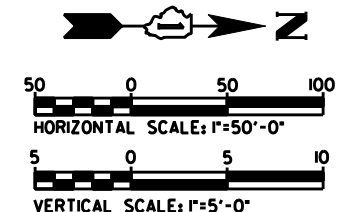
ILLINOIS FED. AID PROJECT

PLAN	SURVEYED	BY	DATE
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	GRADES CHECKED		
	STRUCTURE NOTATIONS CHECKED		
	NOTE BOOK NO.		
	FILE NAME		

PROFILE	SURVEYED	BY	DATE
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	STRUCTURE NOTATIONS CHECKED		
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- ⊕RW- Retaining Wall Boring
- ⊕CB- Culvert Boring
- ⊕RB- Roadway Boring
- ⊕NW- Noise Wall Boring



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 805 Ashurst Court, Suite 204  
 Naperville, Illinois 60563  
 (630) 355-2838

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	DRAWN :	RWC	REVISED :
PLOT SCALE :	CHECKED :	AJP	REVISED :
PLOT DATE :	DATE :	3/24/2011	REVISED :

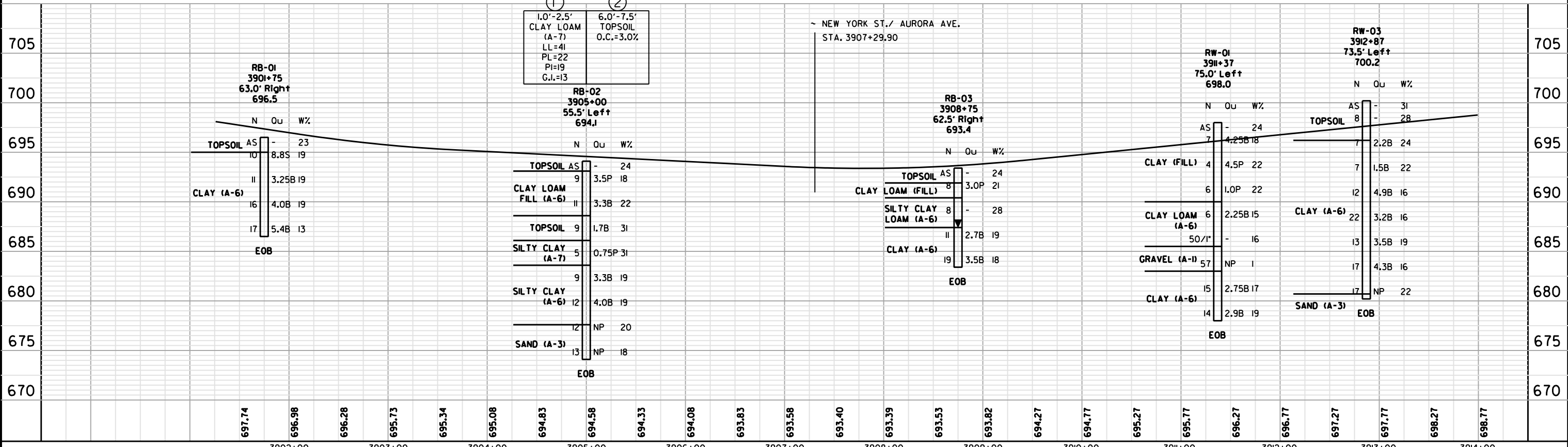
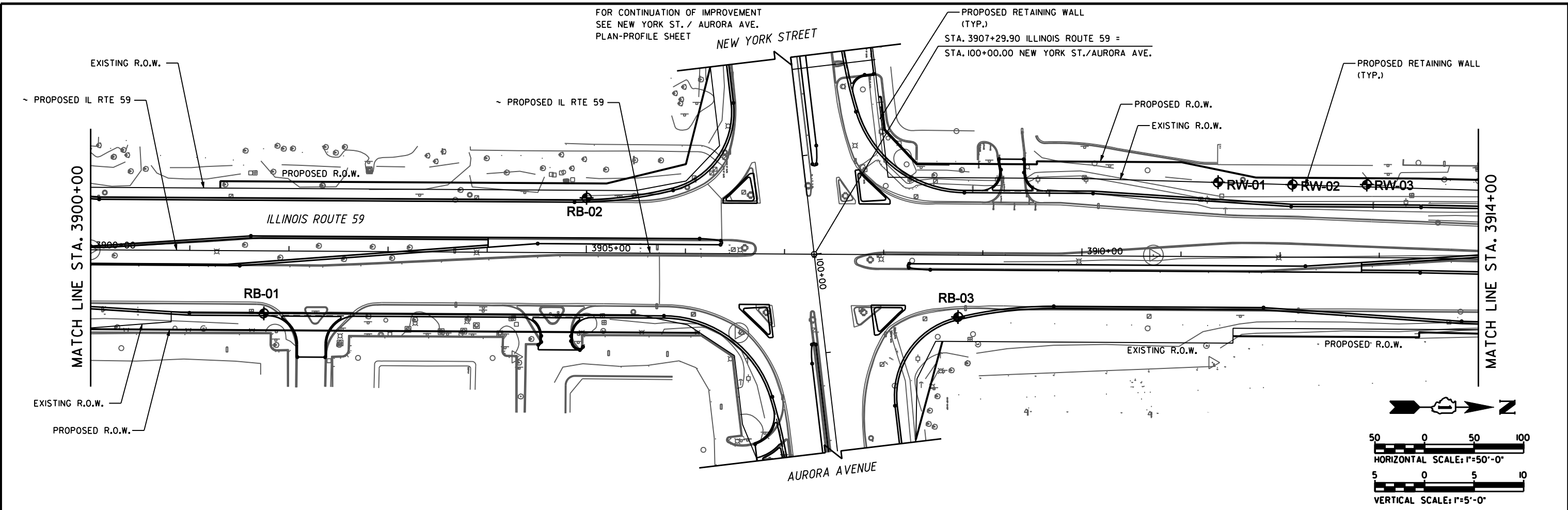
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

<b>SOIL BORING</b>			
<b>PLAN / PROFILE ILLINOIS ROUTE 59</b>			
SCALE:	SHEET NO. OF	SHEETS	STA. 3899+00 TO STA. 3900+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	412-8-131-WRS-5-	DUPAGE	1156	877
CONTRACT NO. 60R30				
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

DATE	
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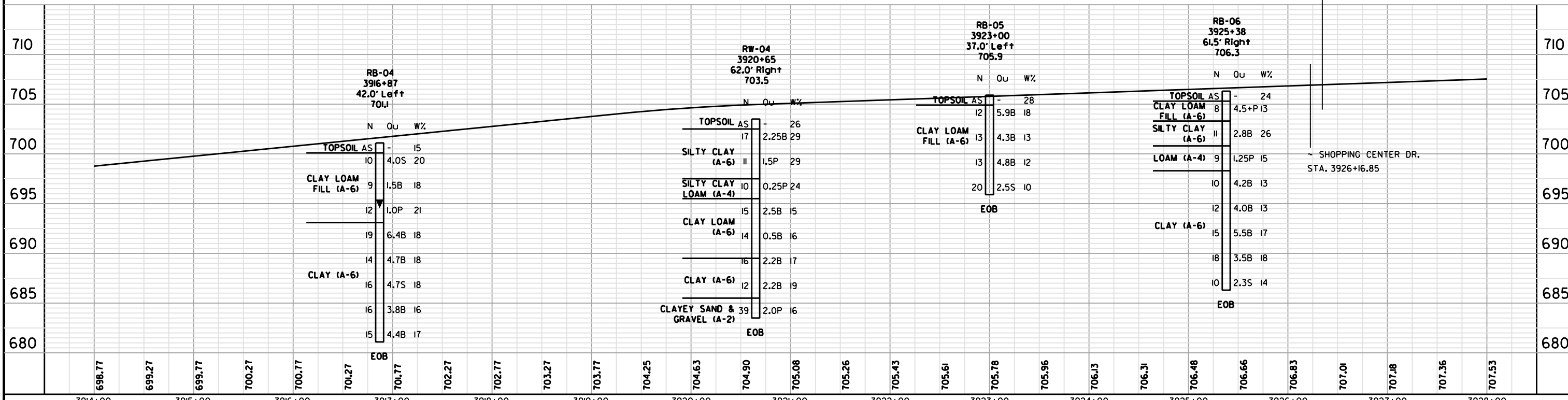
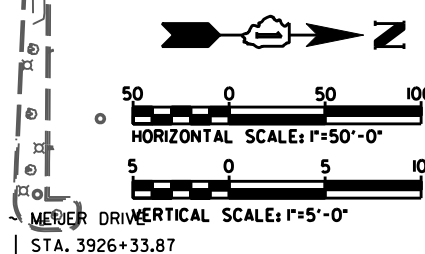
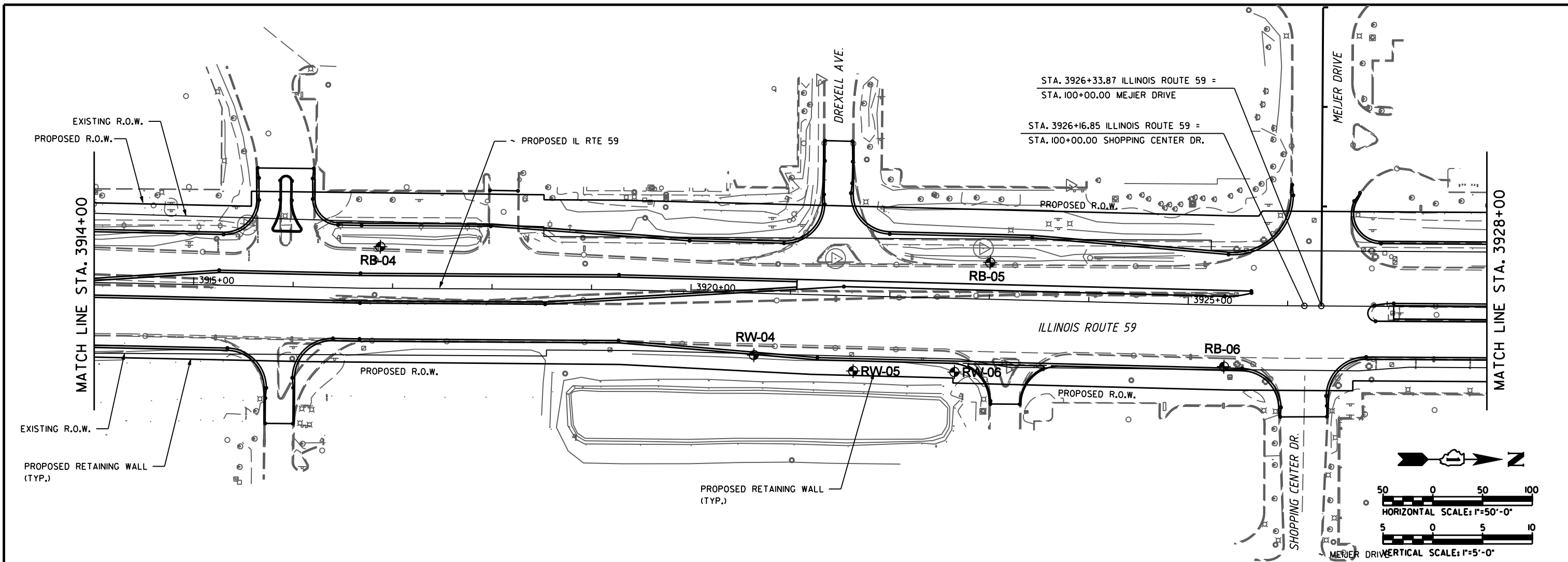


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PLOT DATE :	DATE - 3/24/2011	REVISED -					FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT	CONTRACT NO. 60R30	



PLAN	SURVEYED	DATE
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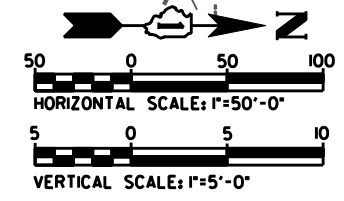
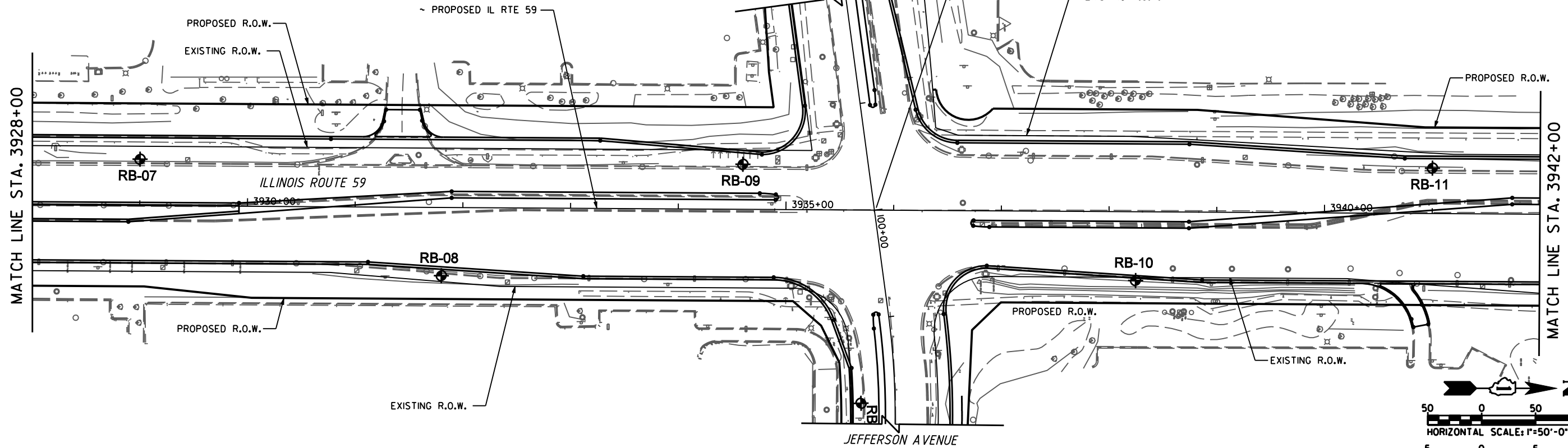
<b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Asher's Court, Suite 204 Naperville, Illinois 60563 630-355-2838	USER NAME :	DESIGNED : RWC	REVISED :	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SOIL BORING</b> <b>PLAN / PROFILE ILLINOIS ROUTE 59</b>			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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	DATE : 3/24/2011	REVISED :	REVISED :				FED. ROAD DIST. NO.					

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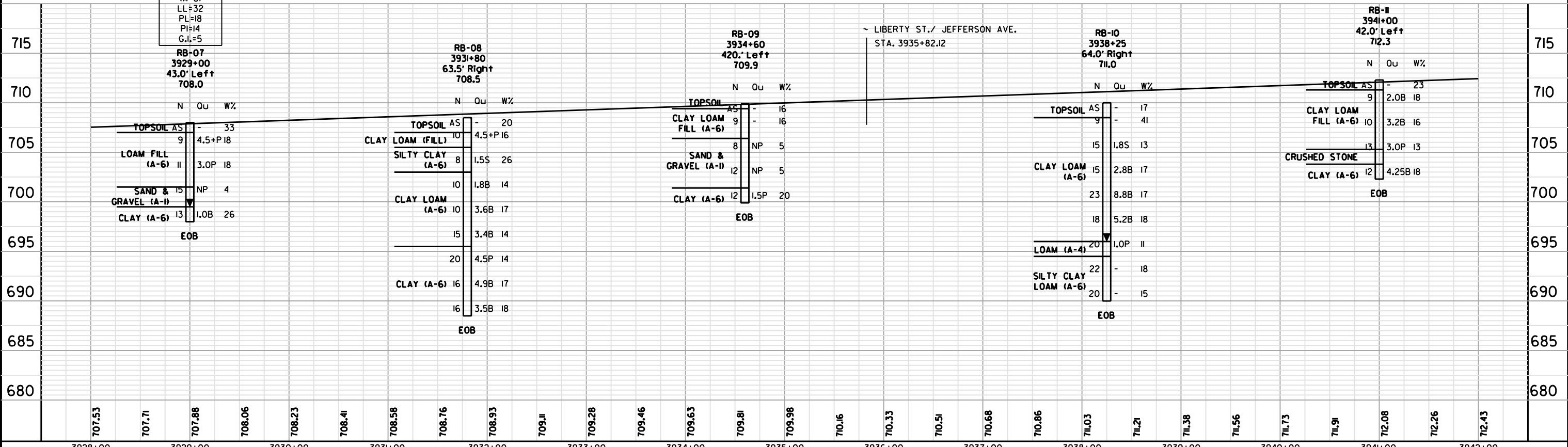
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NOTE BOOK NO.	
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FOR CONTINUATION OF IMPROVEMENT  
SEE LIBERTY ST. / JEFFERSON AVE.  
PLAN-PROFILE SHEET

STA. 3935+82.12 ILLINOIS ROUTE 59 =  
STA. 100+00.00 LIBERTY ST./JEFFERSON AVE.



③  
1.0'-2.5'  
LOAM  
(A-6)  
LL=32  
PL=18  
PI=14  
G.L.=5



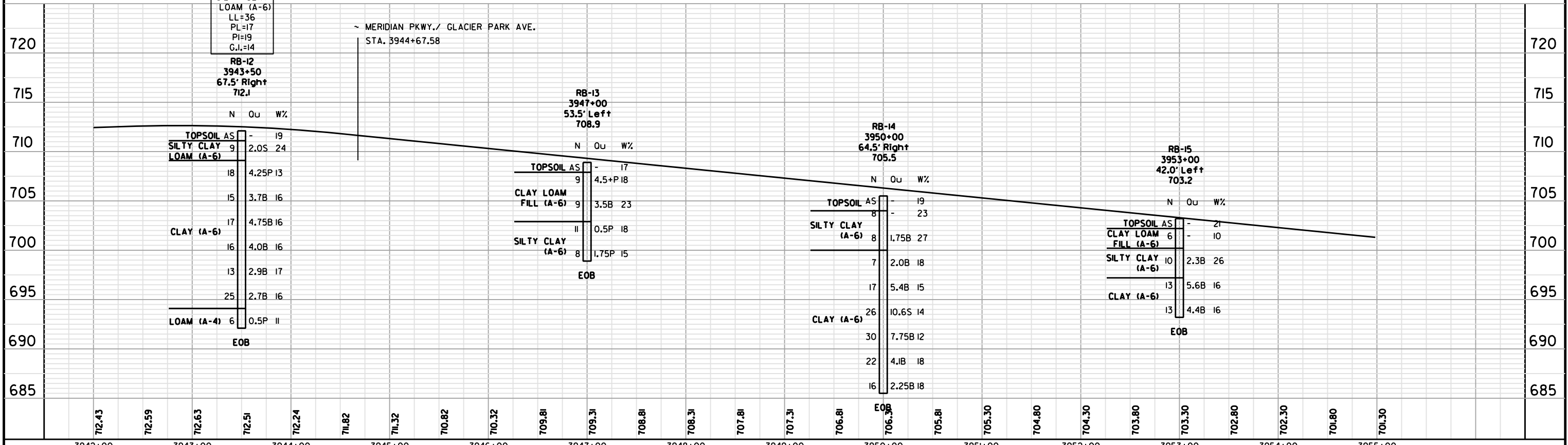
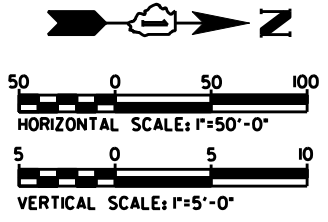
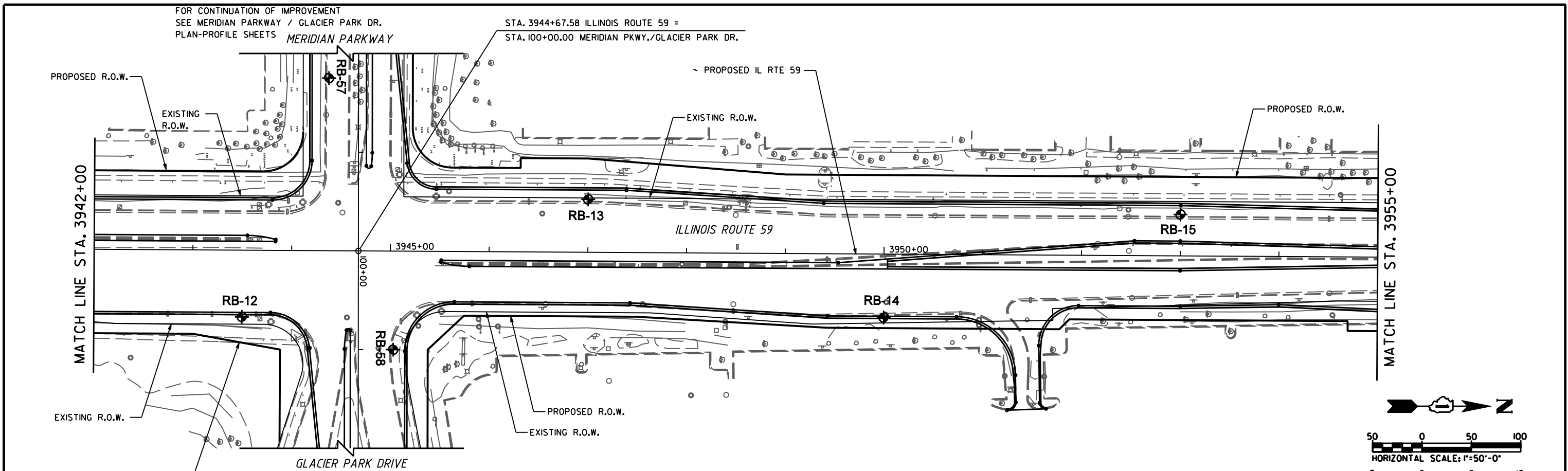
<b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Ashurst Court, Suite 204 Naperville, Illinois 60563 (630) 355-2838	USER NAME :	DESIGNED :	RWC	REVISED :		<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SOIL BORING</b> <b>PLAN / PROFILE ILLINOIS ROUTE 59</b>		F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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PLOT DATE :	DATE :	3/24/2011	REVISED :		FEDERAL ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 60R30					

FOR CONTINUATION OF IMPROVEMENT  
SEE MERIDIAN PARKWAY / GLACIER PARK DR.  
PLAN-PROFILE SHEETS

STA. 3944+67.58 ILLINOIS ROUTE 59 =  
STA. 100+00.00 MERIDIAN PKWY./GLACIER PARK DR.

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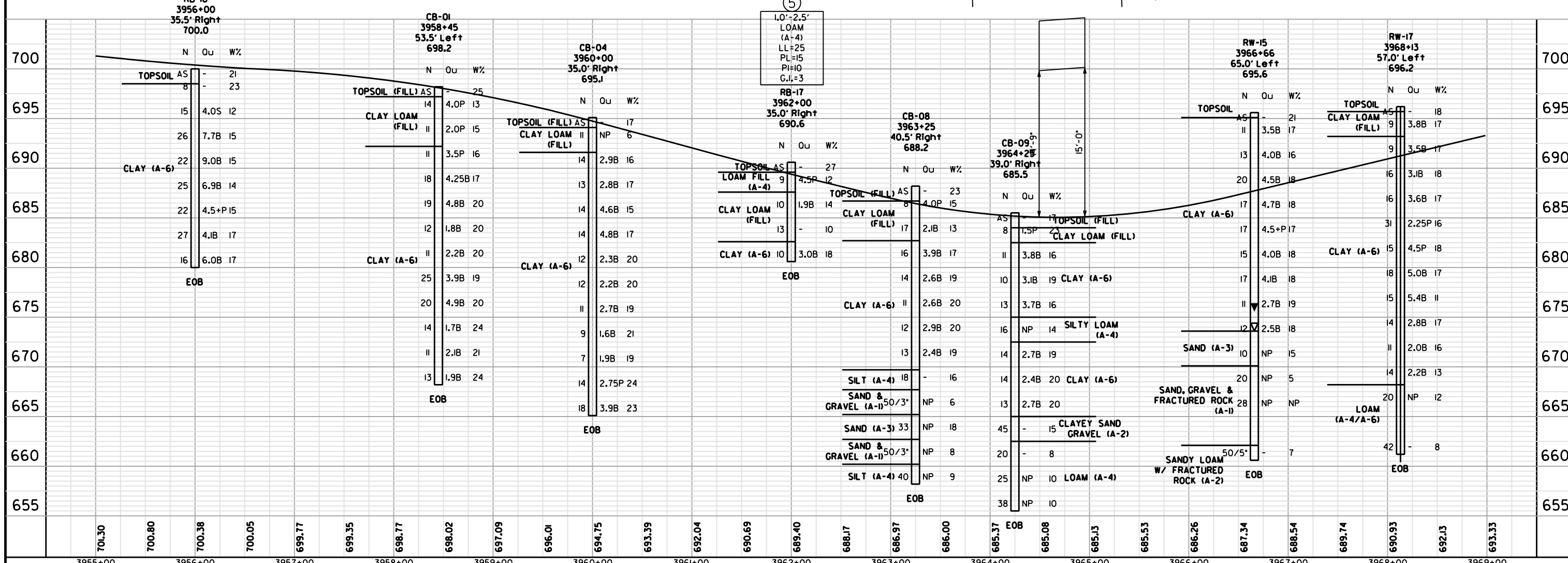
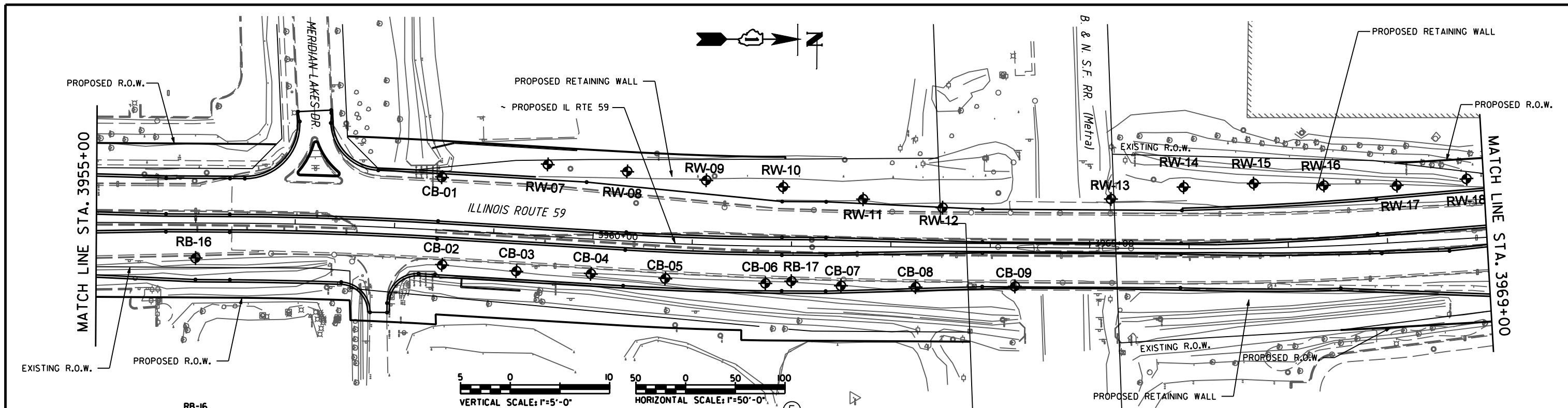
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		DATE - 3/24/2011	REVISED -		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT							

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	GRADES CHECKED	
	STRUCTURE NOTATIONS CHECKED	
	NOTE BOOK NO.	
	FILE NAME	

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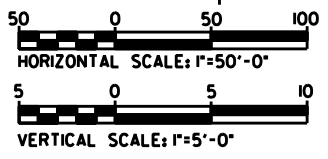
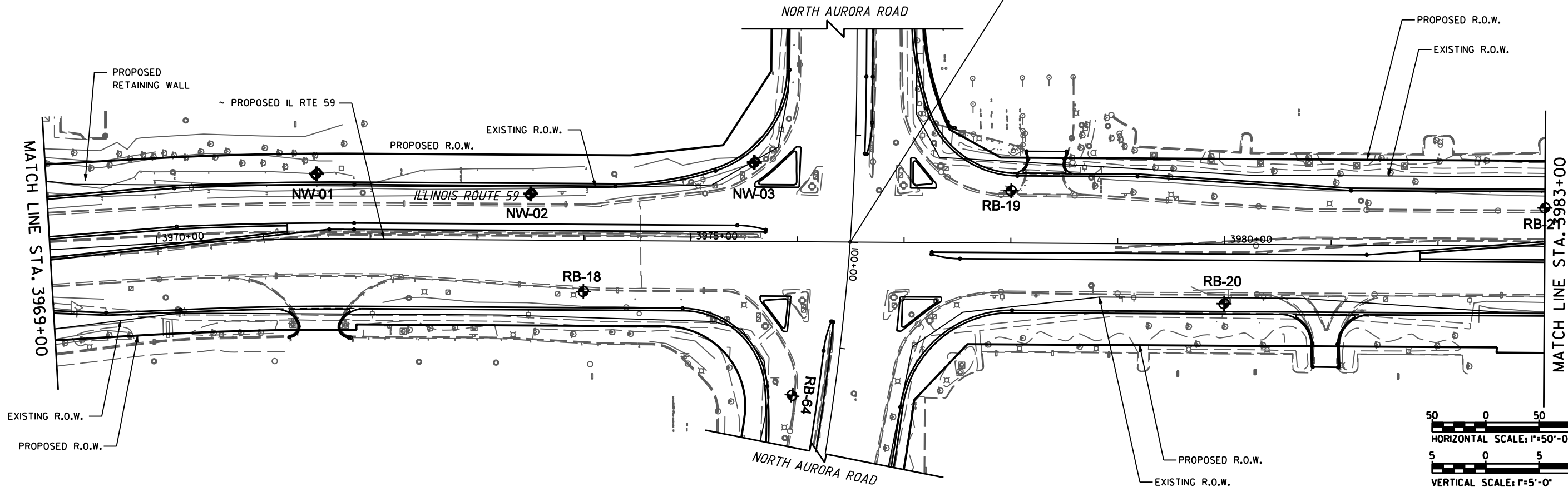


FOR CONTINUATION OF IMPROVEMENT  
SEE NEW YORK ST. / AURORA AVE.  
PLAN-PROFILE SHEET

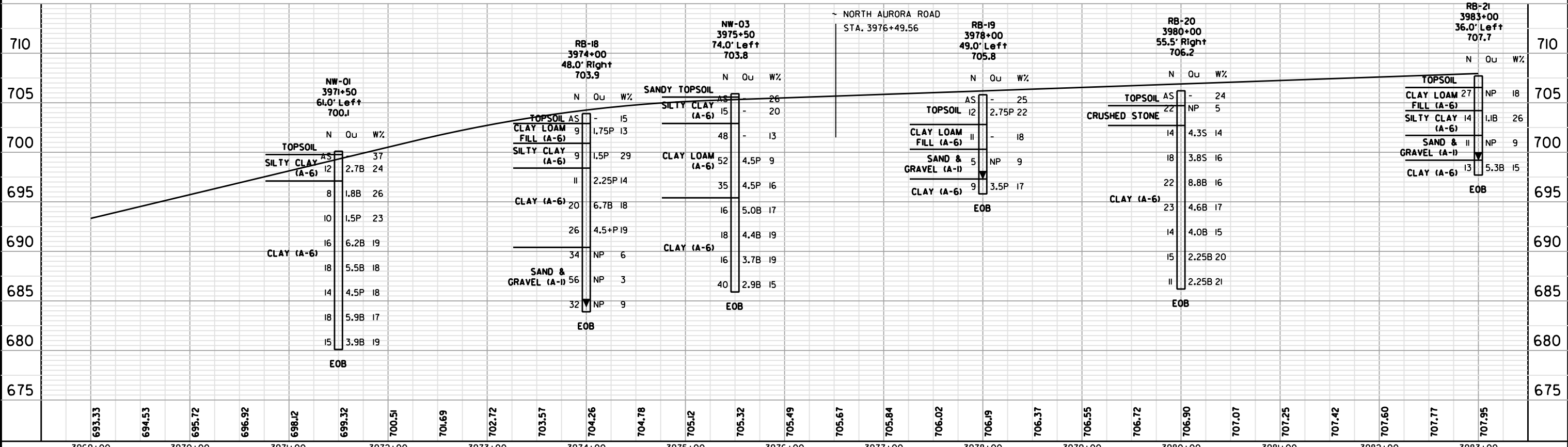
STA. 3976+49.56 ILLINOIS ROUTE 59 =  
STA. 100+00.00 NORTH AURORA RD.



DATE	
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GRADES CHECKED	
STRUCTURE NOTATIONS CHECKED	
NOTE BOOK NO.	
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DATE	
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NOTE BOOK NO.	
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Geotechnical, Environmental & Civil Engineering  
805 Ashurst Court, Suite 204  
Naperville, Illinois 60563  
16301-355-2838

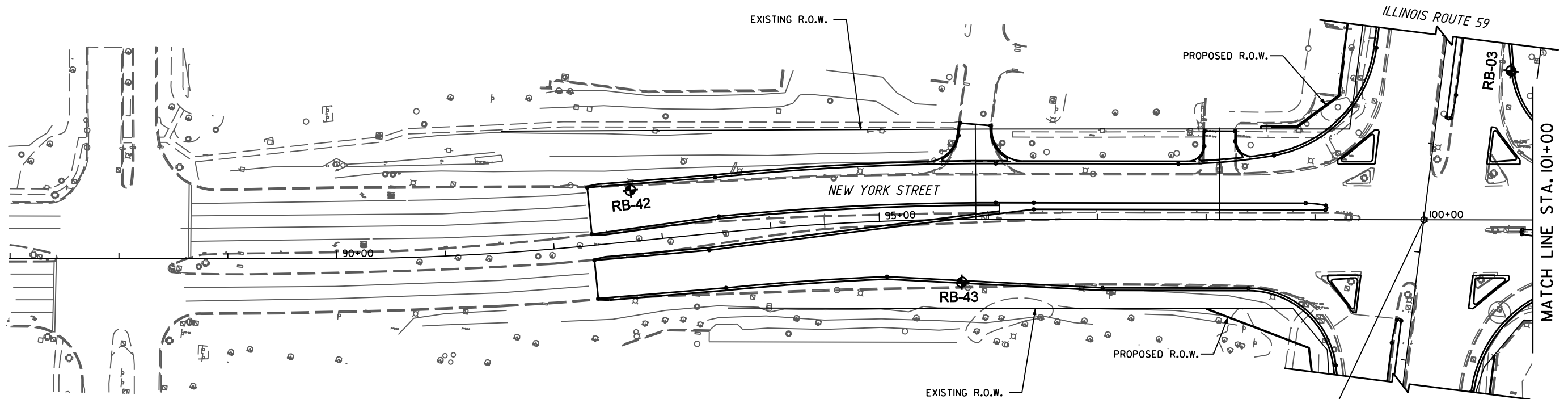
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	DATE - 3/24/2011	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

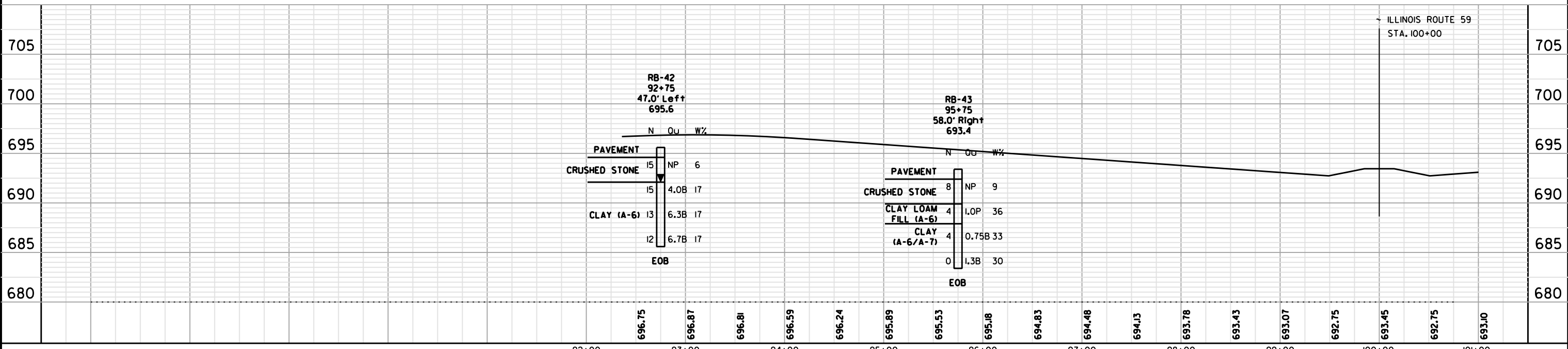
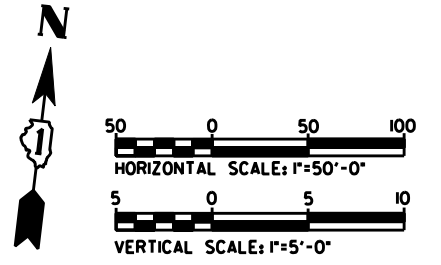
<b>SOIL BORING PLAN / PROFILE ILLINOIS ROUTE 59</b>			
SCALE:	SHEET NO. OF SHEETS	STA. 3969+00 TO STA. 3983+00	

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	412-8-131-WRS-5	DUPAGE	1156	883
CONTRACT NO. 60R30				

FOR CONTINUATION OF IMPROVEMENT  
SEE ILLINOIS ROUTE 59  
PLAN-PROFILE SHEETS



STA. 3907+29.90 ILLINOIS ROUTE 59 =  
STA. 100+00.00 NEW YORK ST./AURORA AVE.



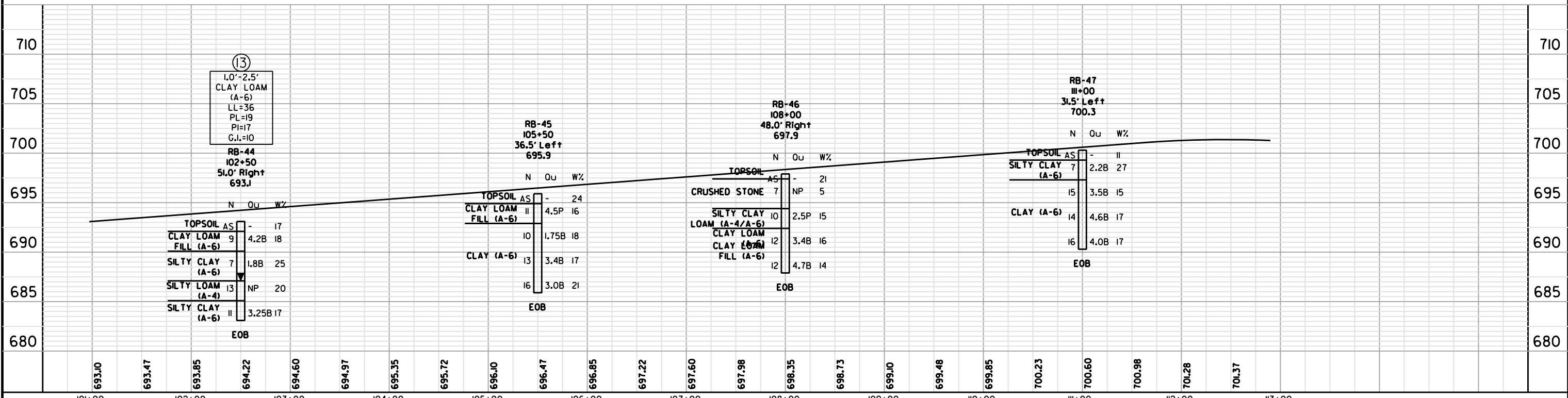
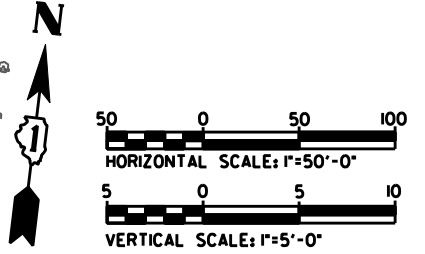
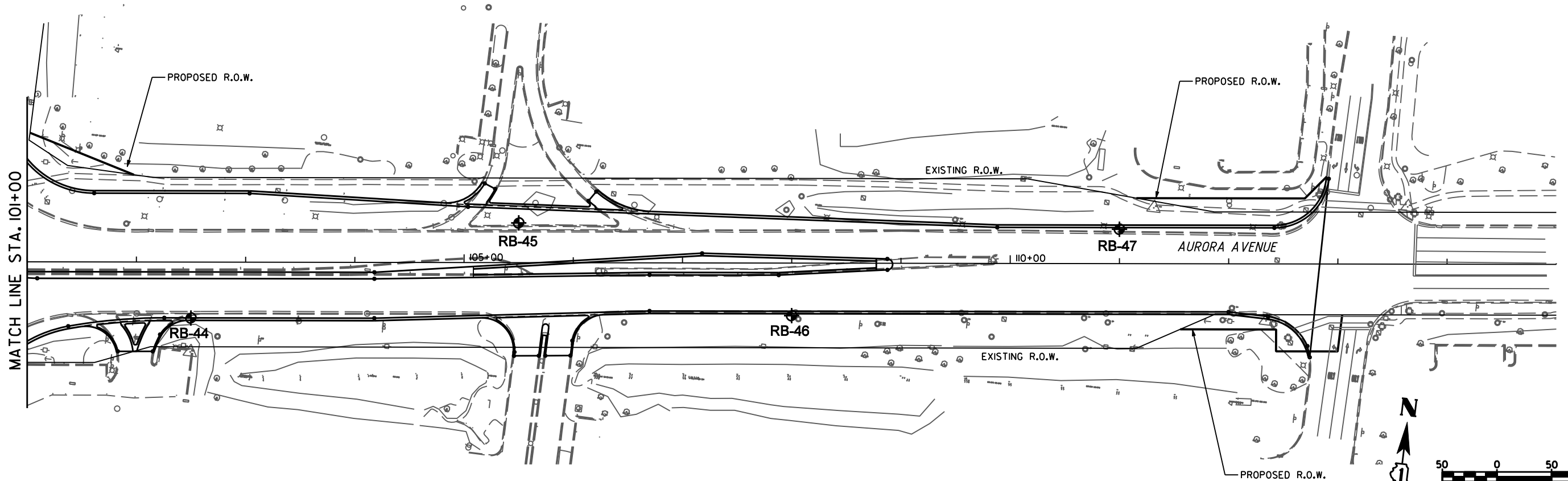
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PROFILE	SURVEYED	BY	DATE
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	NOTE BOOK NO.		
	FILE NAME		

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PLOT DATE :	DATE :	3/24/2011	REVISED :							FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT	CONTRACT NO. 60R30		

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	STRUCTURE NOTATIONS CHECKED		
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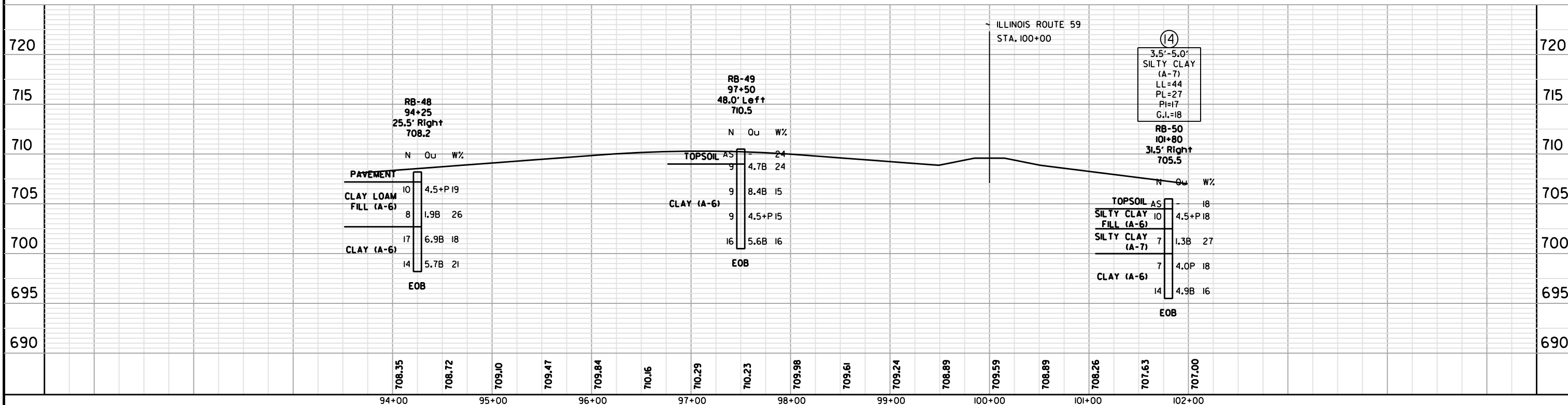
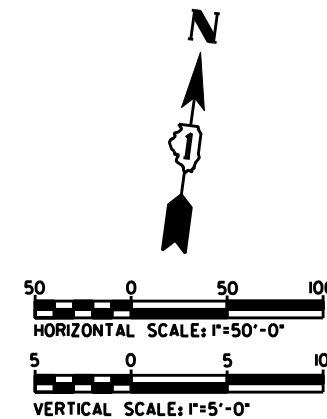
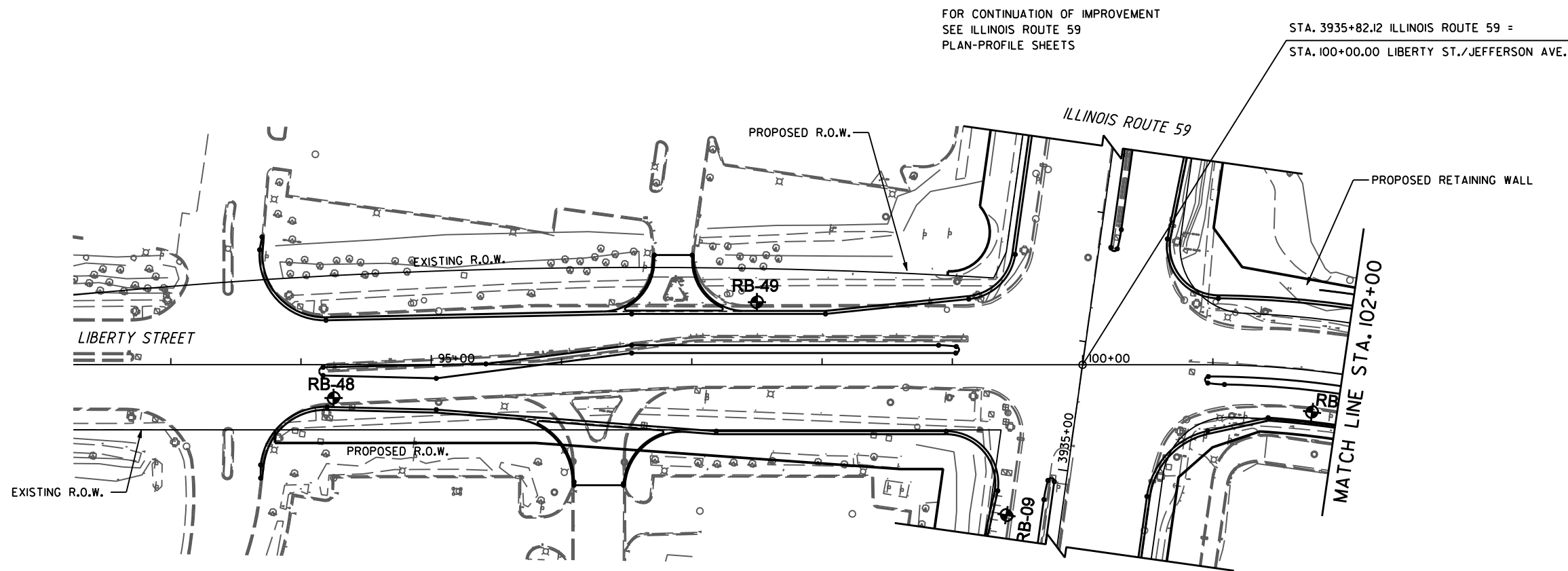


<b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Ashurst Court, Suite 204 Naperville, Illinois 60563 630-355-2838	USER NAME :	DESIGNED - RWC	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SOIL BORING</b> <b>PLAN / PROFILE AURORA AVENUE</b>			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE :	DRAWN - RWC	REVISED -		338/IL 59	#2 & #3 WRS-5	DUPAGE	1156	885			
	PLOT DATE :	CHECKED - AJP	REVISED -		SCALE: SHEET NO. OF SHEETS STA. 101+00 TO STA. 115+00			CONTRACT NO. 60R30				
		DATE - 3/24/2011	REVISED -		FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT				



PLAN	SURVEYED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOTATIONS CHECKED		
	NOTE BOOK NO.		
	FILE NAME		

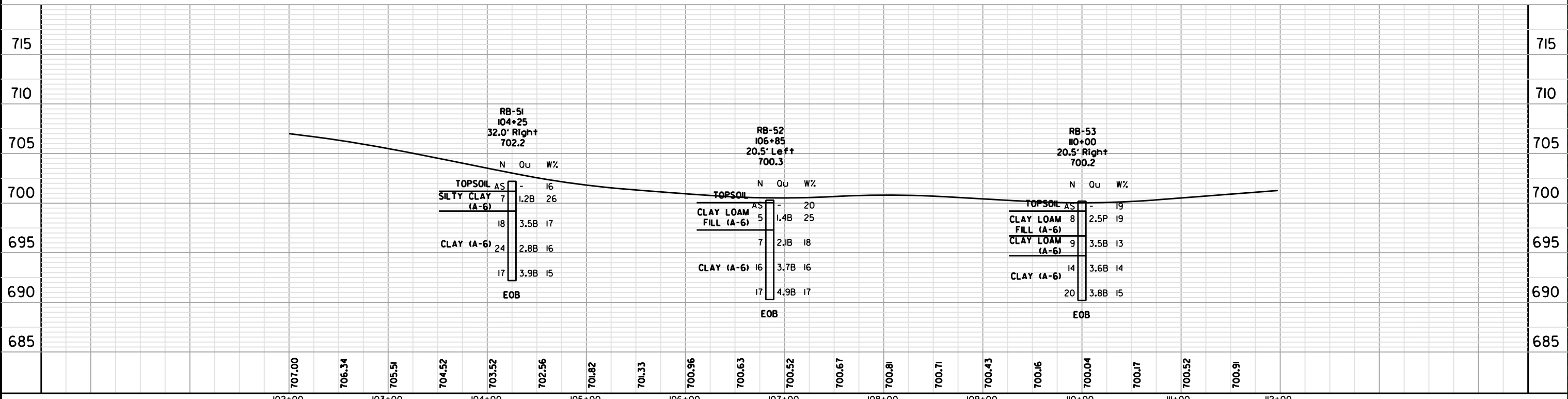
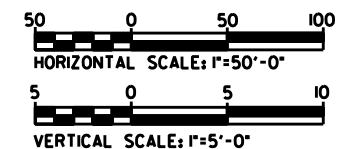
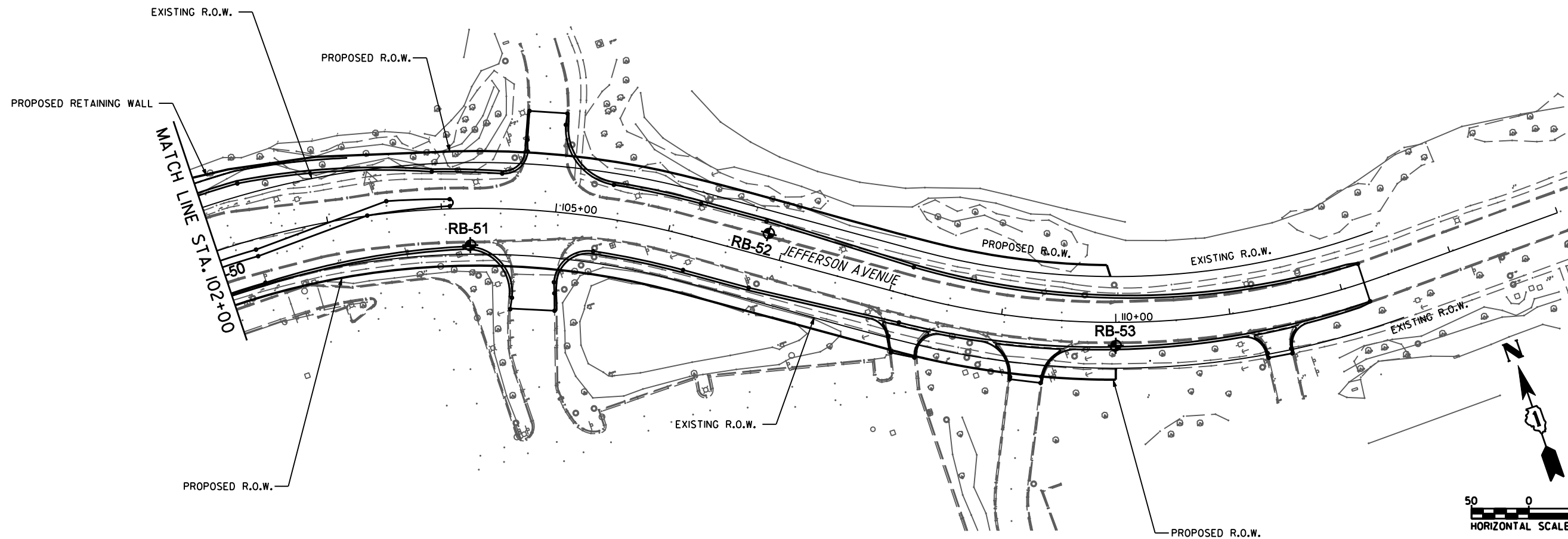
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	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOTATIONS CHECKED		
	NOTE BOOK NO.		
	FILE NAME		



<b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Ashurst Court, Suite 204 Naperville, Illinois 60563 (630) 355-2838	USER NAME :	DESIGNED : RWC	REVISED :	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SOIL BORING</b> <b>PLAN / PROFILE LIBERTY STREET</b>			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
	PLOT SCALE :	DRAWN : RWC	REVISED :		SCALE:	SHEET NO. OF SHEETS	STA. 92+00 TO STA. 102+00	338/IL 59	#2-B-13-WRS-5	DUPAGE	1156	886	
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		DATE : 3/24/2011	REVISED :										
							CONTRACT NO. 60R30						

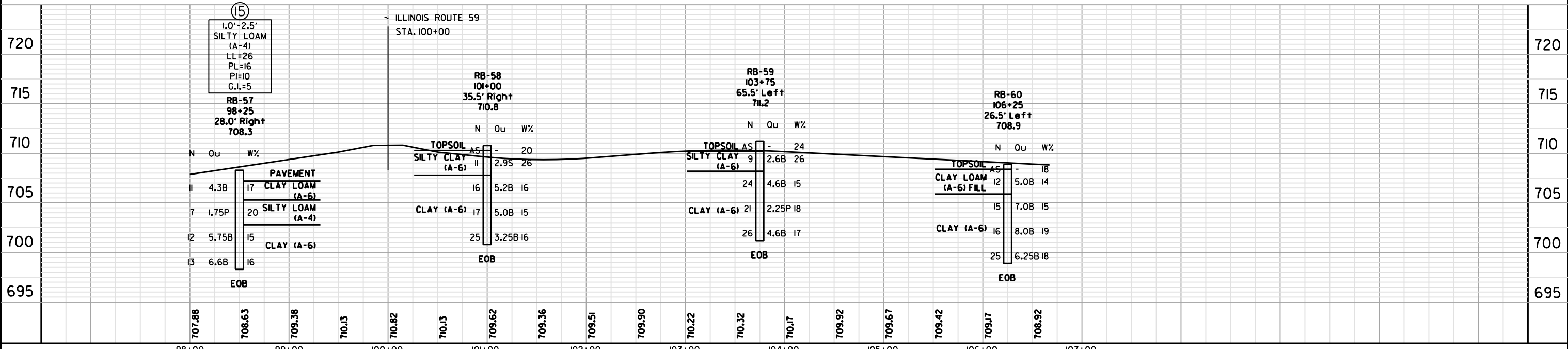
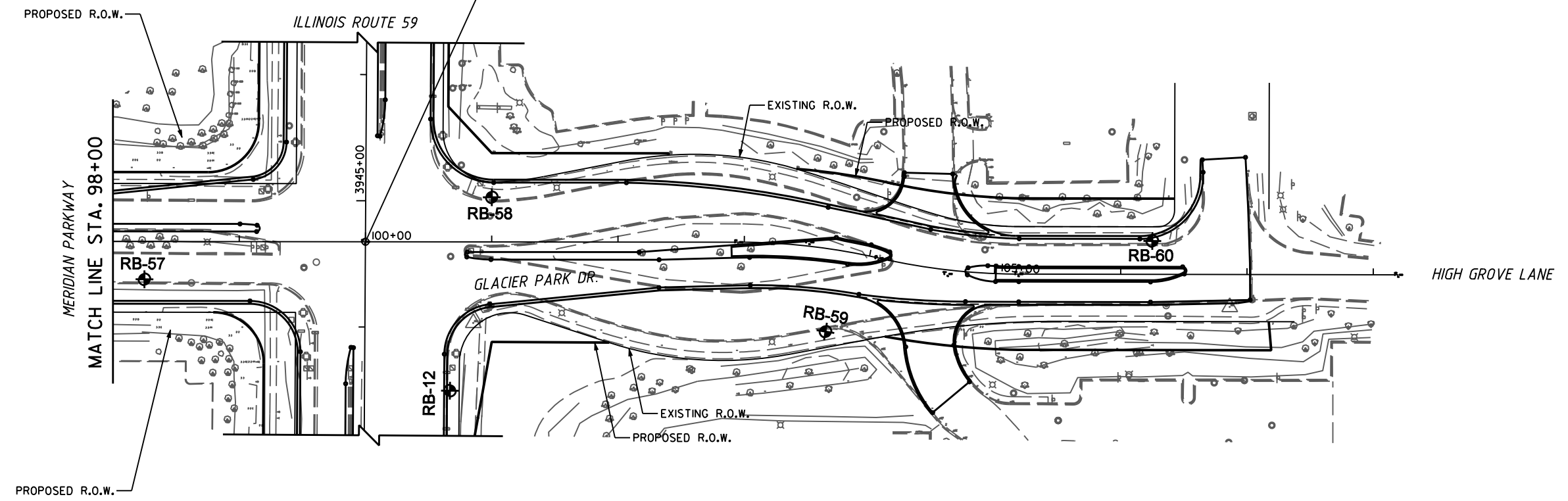
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	FILE NAME		

PROFILE	SURVEYED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOTATIONS CHECKED		
	NOTE BOOK NO.		
	FILE NAME		



FOR CONTINUATION OF IMPROVEMENT  
SEE ILLINOIS ROUTE 59  
PLAN-PROFILE SHEETS

STA. 3944+67.58 ILLINOIS ROUTE 59 =  
STA. 100+00.00 MERIDIAN PKWY./GLACIER PARK DR.



PLAN	SURVEYED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOTATIONS CHECKED		
	NOTE BOOK NO.		
	FILE NAME		

PROFILE	SURVEYED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOTATIONS CHECKED		
	NOTE BOOK NO.		
	FILE NAME		

Geo Services, Inc.  
Geotechnical, Environmental & Civil Engineering  
805 Ashurst Court, Suite 204  
Naperville, Illinois 60563  
1630-355-2838

USER NAME :	DESIGNED - RWC	REVISED -
PLOT SCALE :	DRAWN - RWC	REVISED -
PLOT DATE :	CHECKED - AJP	REVISED -
	DATE - 3/24/2011	REVISED -

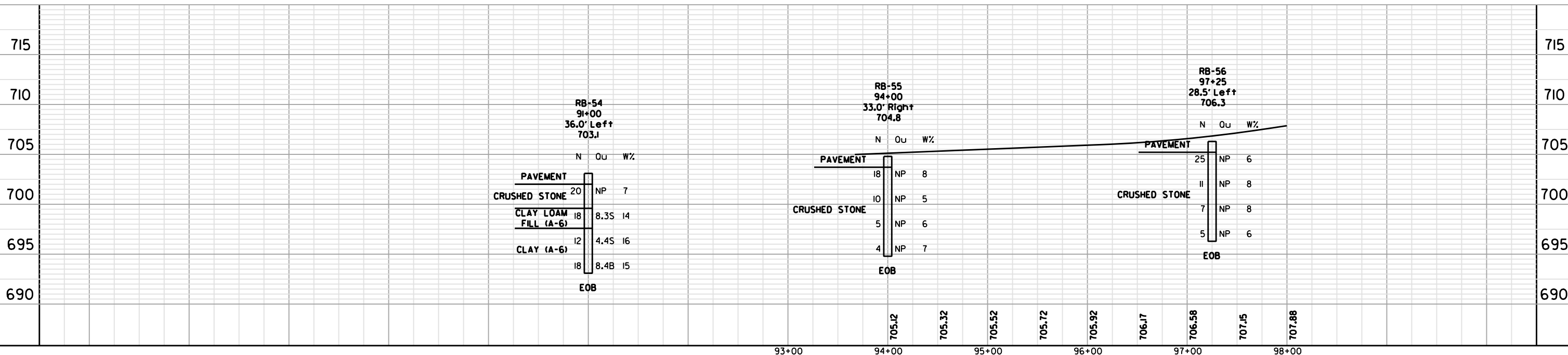
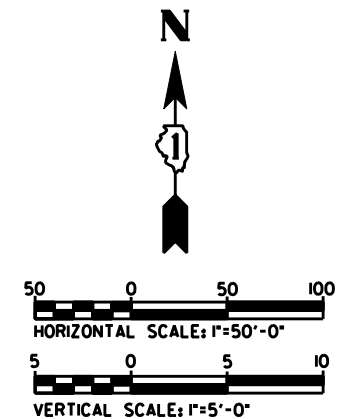
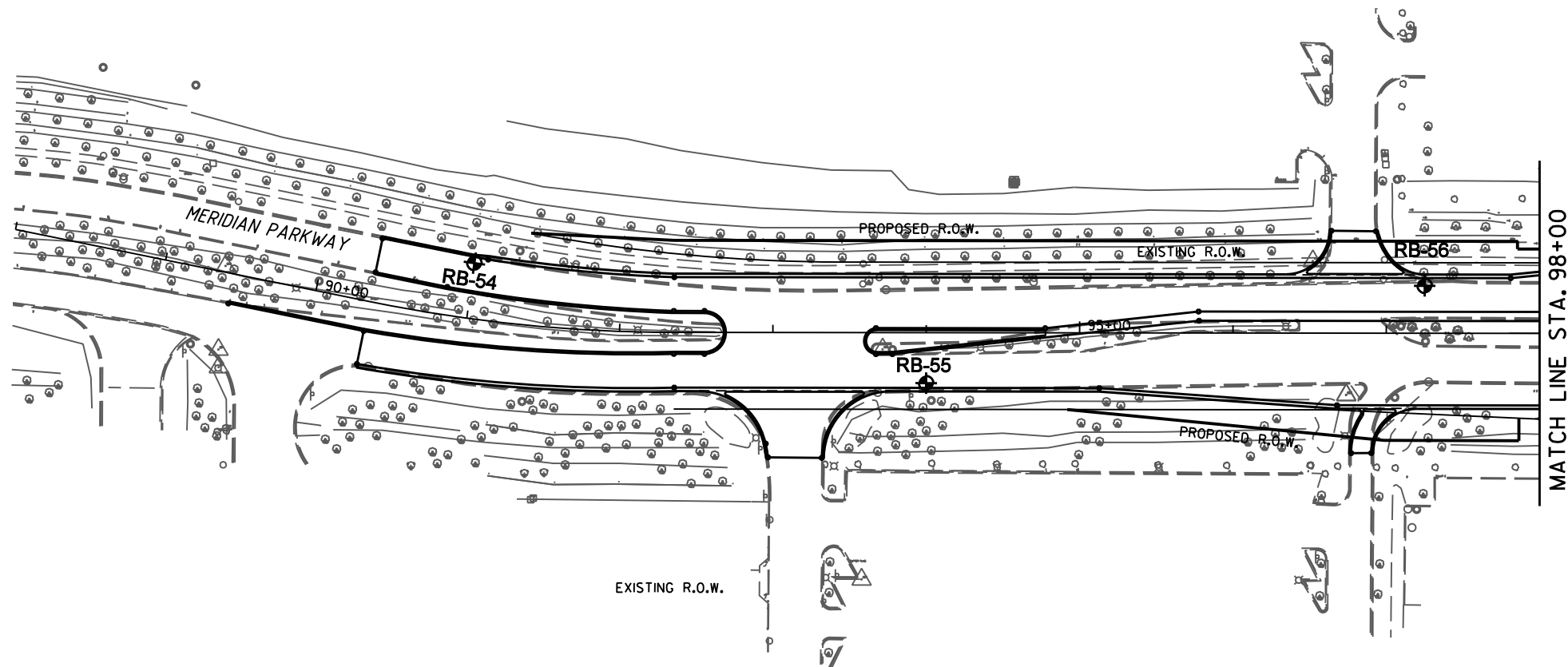
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SOIL BORING			
PLAN / PROFILE MERIDIAN PKWY./GLACIER PARK DR.			
SCALE:	SHEET NO. OF SHEETS	STA. 98+00	TO STA. 108+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/I 59	#2-6-#3#-#5-5	DUPAGE	1156	888
CONTRACT NO. 60R30				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

PLAN	SURVEYED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
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	NOTE BOOK NO.		
	FILE NAME		

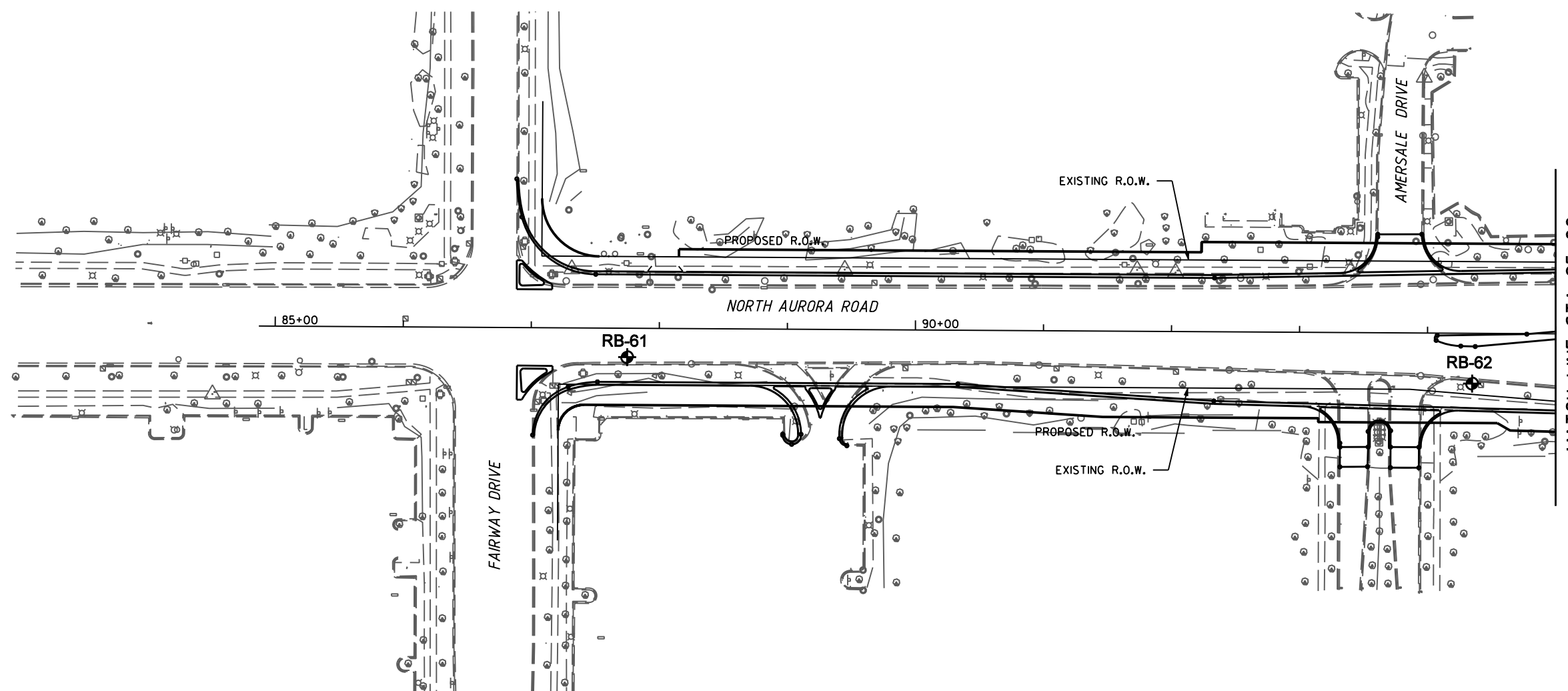
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	NOTE BOOK NO.		
	FILE NAME		



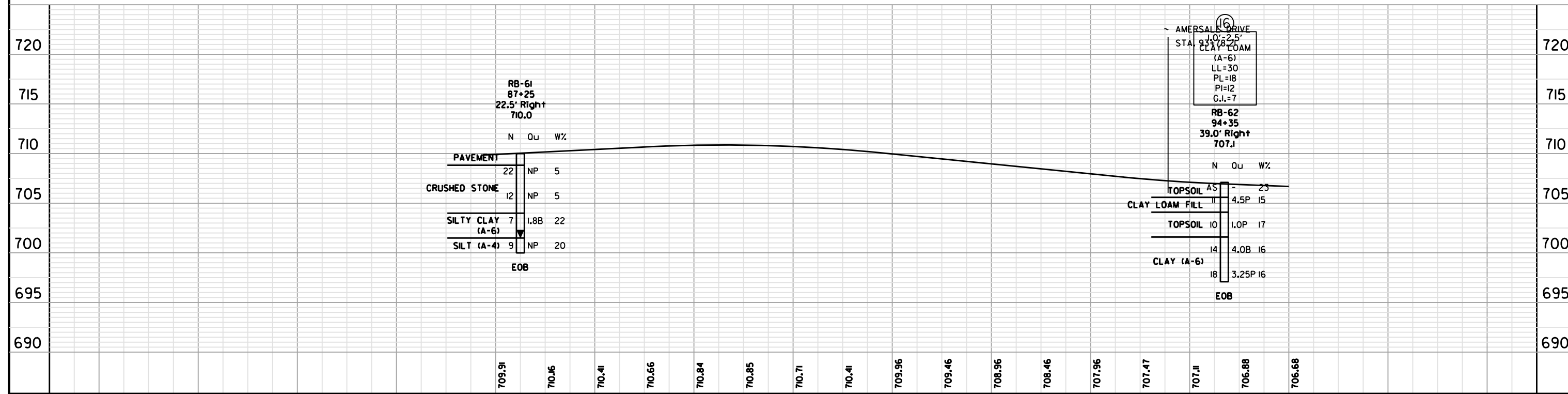
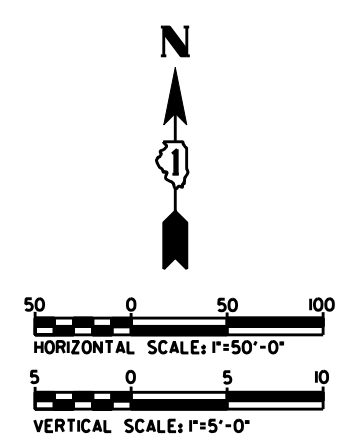
<b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Asher's Court, Suite 204 Naperville, Illinois 60563 16301-355-2838	USER NAME :	DESIGNED : RWC	REVISED :	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SOIL BORING</b> <b>PLAN / PROFILE MERIDIAN PARKWAY</b>			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE :	CHECKED : AJP	REVISED :		338/IL 59	402-6-03-003-5	DUPAGE	1156	889			
PLOT DATE :	DATE : 3/24/2011	REVISED :		SCALE:	SHEET NO. OF SHEETS	STA. 88+00 TO STA. 98+00	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT	CONTRACT NO. 60R30		

PLAN	SURVISED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOTATIONS CHECKED		
	NOTE BOOK NO.		
	FILE NAME		

PROFILE	SURVISED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOTATIONS CHECKED		
	NOTE BOOK NO.		
	FILE NAME		



MATCH LINE STA. 95+00



**RB-61**  
87+25  
22.5' Right  
710.0

	N	Ou	W%
PAVEMENT	22	NP	5
CRUSHED STONE	12	NP	5
SILTY CLAY (A-6)	7	1.8B	22
SILT (A-4)	9	NP	20

EOB

**AMERSALE DRIVE**  
STA. 94+25  
CLAY LOAM (A-6)  
LL=30  
PL=18  
PI=12  
G.I.=7

**RB-62**  
94+35  
39.0' Right  
707.1

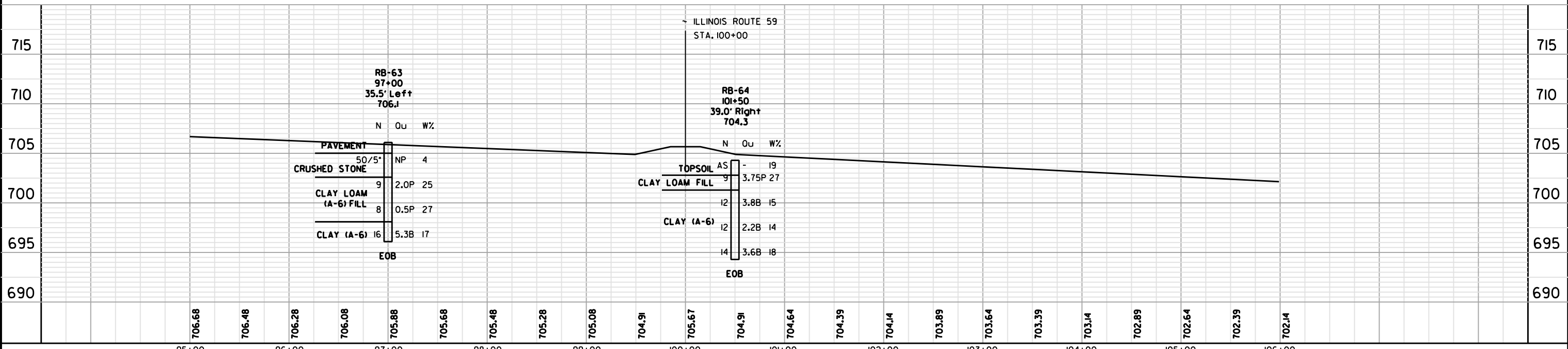
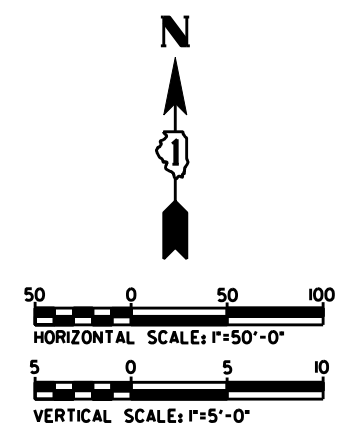
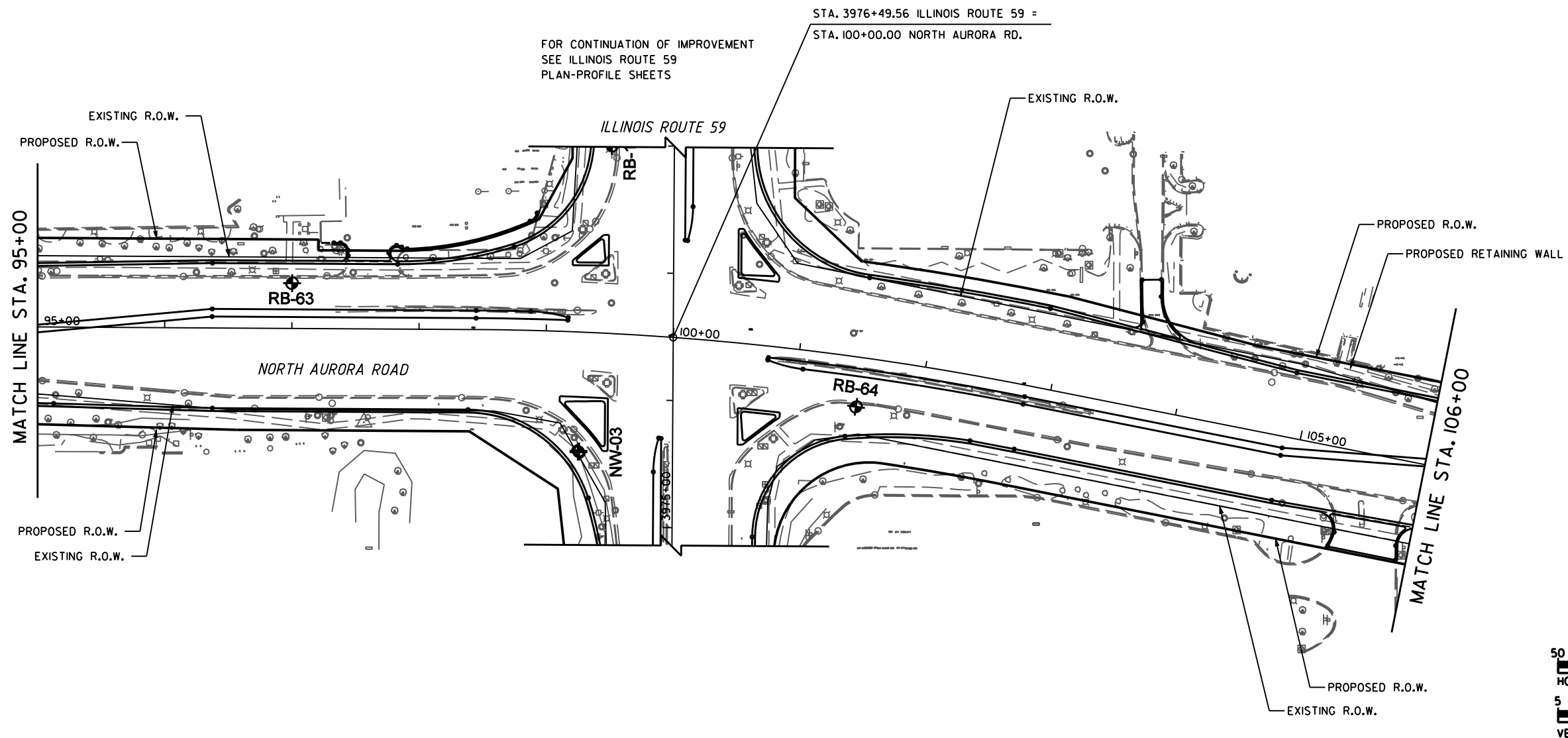
	N	Ou	W%
TOPSOIL AS	-	23	
CLAY LOAM FILL	4.5P	15	
TOPSOIL	10	1.0P	17
CLAY (A-6)	14	4.0B	16
	18	3.25P	16

EOB

<p>Geotechnical, Environmental &amp; Civil Engineering 805 Amherst Court, Suite 204 Naperville, Illinois 60563 16301-3551-2838</p>	USER NAME :	DESIGNED - RWC	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SOIL BORING</b> <b>PLAN / PROFILE NORTH AURORA ROAD</b>			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE :	DRAWN - RWC	REVISED -		338/IL 59	#2-6-#3-WRS-5	DUPAGE	1156	890			
	PLOT DATE :	CHECKED - AJP	REVISED -		SCALE: SHEET NO. OF SHEETS STA. 85+00 TO STA. 95+00			CONTRACT NO. 60R30				
		DATE - 3/24/2011	REVISED -		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT							

PLAN	SURVEYED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOTATIONS CHECKED		
	NOTE BOOK NO.		
	FILE NAME		

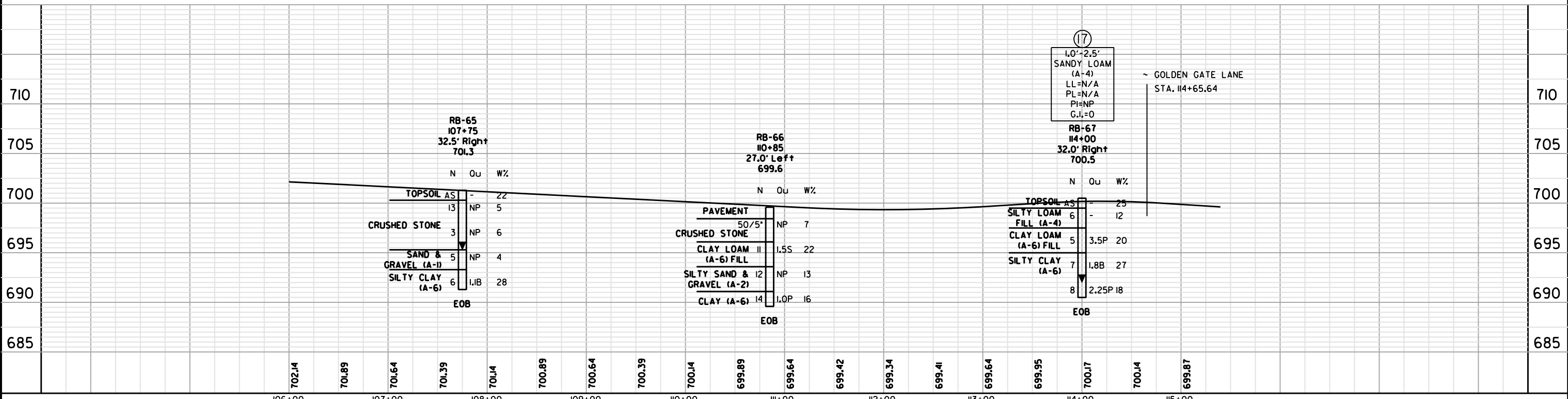
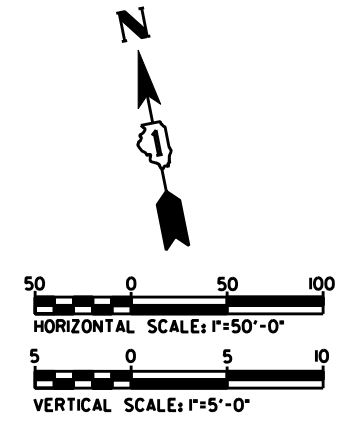
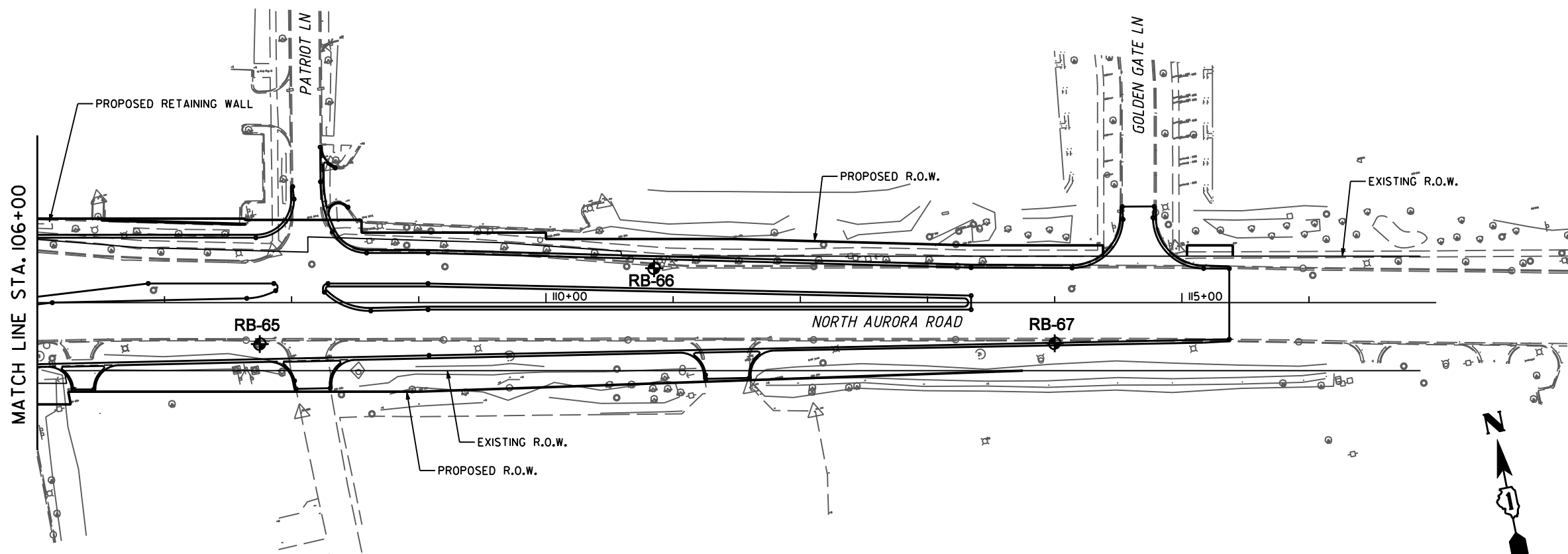
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	NOTE BOOK NO.		
	FILE NAME		



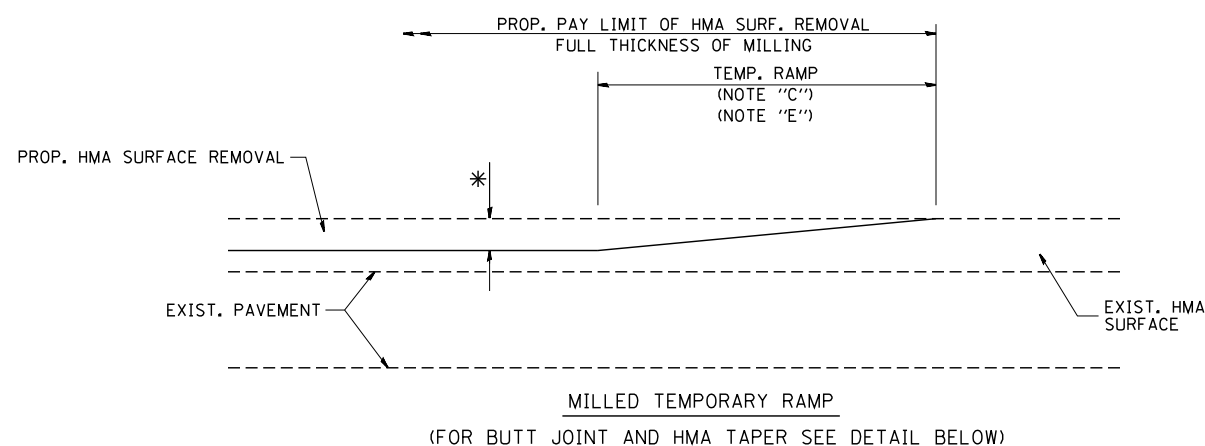
<b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Ashurst Court, Suite 204 Naperville, Illinois 60563 (630) 355-2838	USER NAME :	DESIGNED - RWC	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SOIL BORING</b> <b>PLAN / PROFILE NORTH AURORA ROAD</b>			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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		DATE - 3/24/2011	REVISED -		FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT				

PLAN	SURVEYED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
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	FILE NAME		
	NO.		

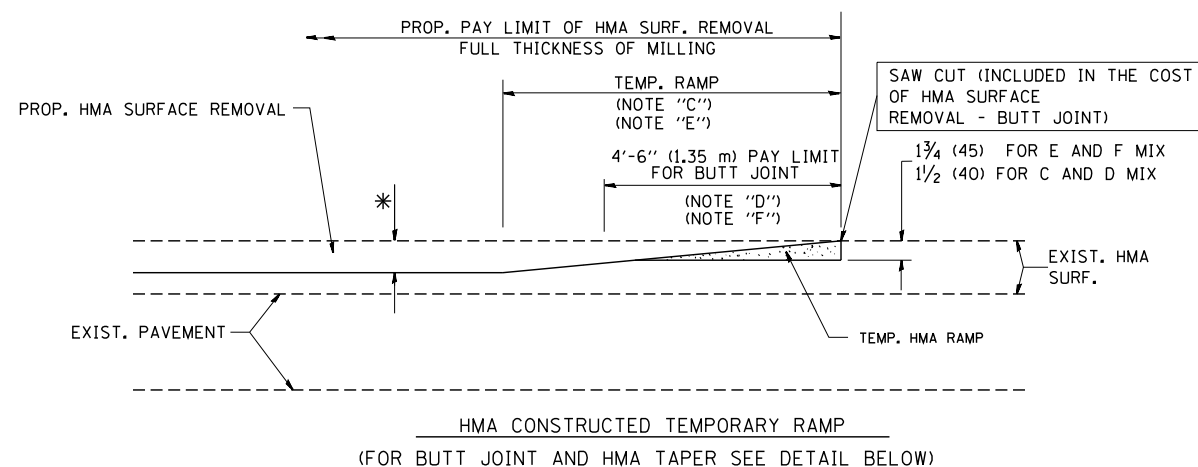
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	STRUCTURE NOTATIONS CHECKED		
	FILE NAME		
	NO.		



<b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Ashurst Court, Suite 204 Naperville, Illinois 60563 1630-355-2838	USER NAME :	DESIGNED - RWC	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SOIL BORING</b> <b>PLAN / PROFILE NORTH AURORA ROAD</b>			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
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CONTRACT NO. 60R30 FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT													

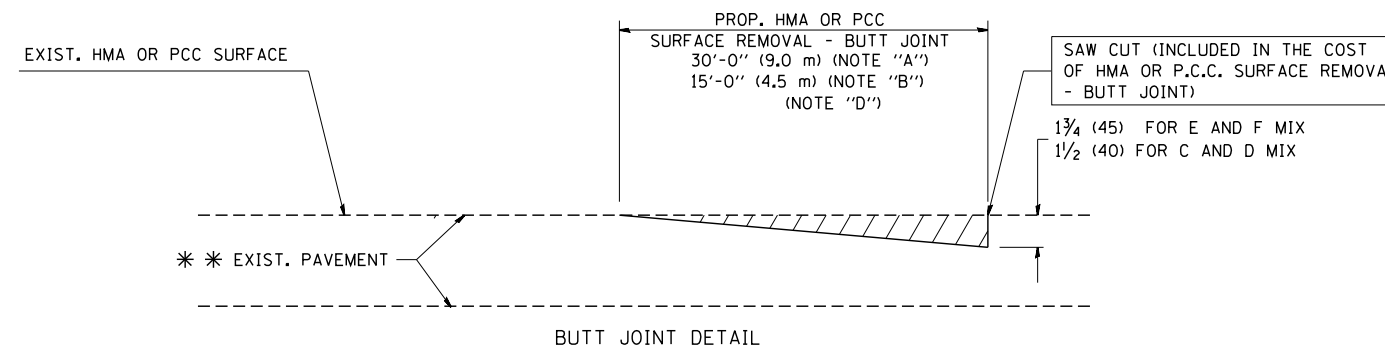


**OPTION 1**

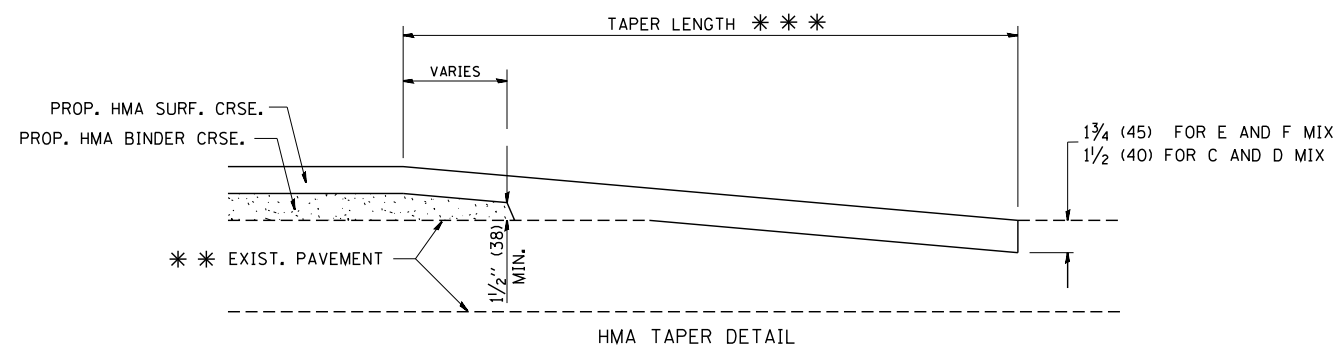


**OPTION 2**

**TYPICAL TEMPORARY RAMP**



**BUTT JOINT DETAIL**



**HMA TAPER DETAIL**

**TYPICAL BUTT JOINT AND HMA TAPER FOR RESURFACING ONLY**

\*\*\* PC CONCRETE, HMA OR HMA RESURFACED PAVEMENT.

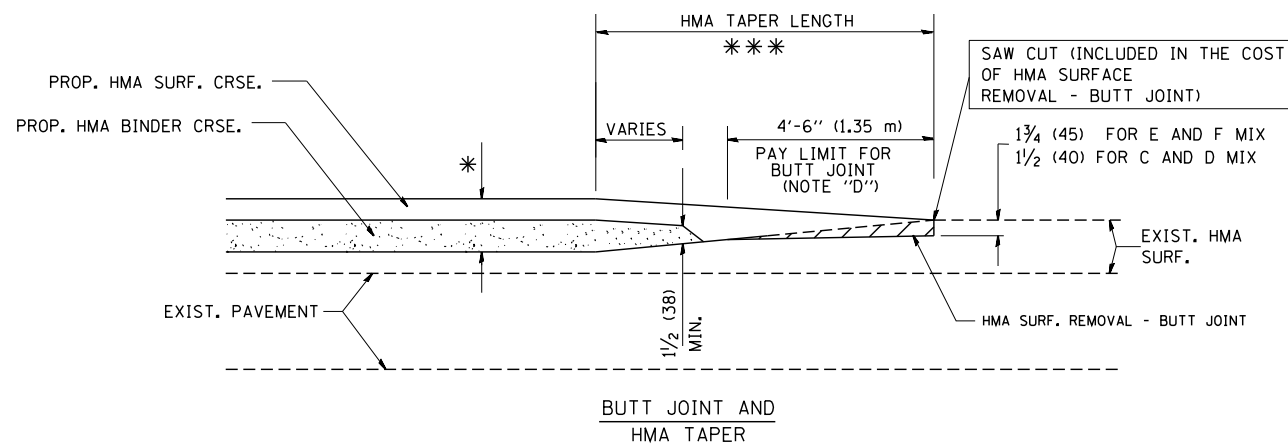
**NOTES**

- A: MAINLINE ROADWAYS AND MAJOR SIDE ROADS.
  - B: MINOR SIDE ROADS.
  - C: THE TEMP. RAMP SHALL BE CONSTRUCTED IMMEDIATELY UPON REMOVAL OF THE EXISTING HMA SURFACE.
  - D: THE BUTT JOINT SHALL BE CONSTRUCTED IMMEDIATELY PRIOR TO PLACING THE PROPOSED HMA COURSES.
  - E: TAPER THE TEMP. RAMP AT A RATE OF 3'-0" (900 mm) PER 1 INCH (25 mm) OF MILLING THICKNESS.
  - F: INSTALLATION AND REMOVAL OF THE 4'-6" (1.35 m) TEMP. RAMP IS INCLUDED IN COST OF HMA SURFACE REMOVAL - BUTT JOINT
  - G: SEE ARTICLE 406.08 AND 406.14 OF THE STANDARD SPECIFICATIONS FOR "HMA AND/OR PCC SURFACE REMOVAL, BUTT JOINT".
- \* SEE TYPICAL SECTIONS FOR MILLING THICKNESS.
- \*\*\* 20'-0" (6.1 m) PER 1 (25) RESURFACING (NOTE "A")  
10'-0" (3.0 m) PER 1 (25) RESURFACING (NOTE "B")

**BASIS OF PAYMENT:**

THE BUTT JOINT WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD (SQUARE METER) FOR "HOT-MIX ASPHALT SURFACE REMOVAL - BUTT JOINT" OR FOR "PORTLAND CEMENT CONCRETE SURFACE REMOVAL - BUTT JOINT".

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.



**TYPICAL BUTT JOINT AND HMA TAPER FOR MILLING AND RESURFACING**

FILE NAME = W:\diststd\22x34\bd32.dgn	USER NAME = gaglianobt	DESIGNED - M. DE YONG	REVISED - R. SHAH 10-25-94
		DRAWN -	REVISED - A. ABBAS 03-21-97
	PLOT SCALE = 50.0000' / IN.	CHECKED -	REVISED - M. GOMEZ 04-06-01
	PLOT DATE = 1/4/2008	DATE - 06-13-90	REVISED - R. BORO 01-01-07

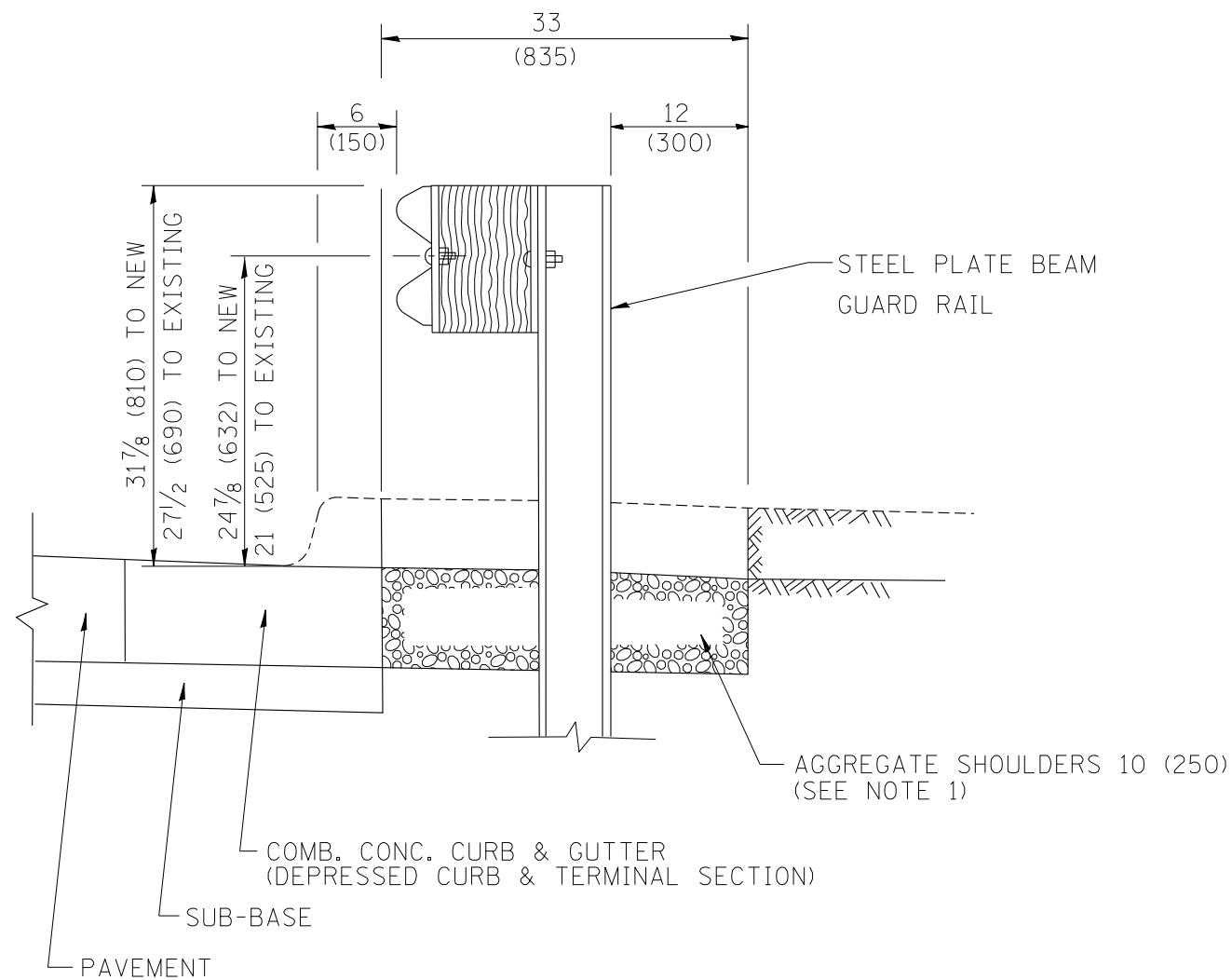
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**BUTT JOINT AND  
HMA TAPER DETAILS**

SCALE: NONE SHEET NO. 1 OF 1 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	893
<b>BD400-05 BD32</b>		CONTRACT NO. 60R30		
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				

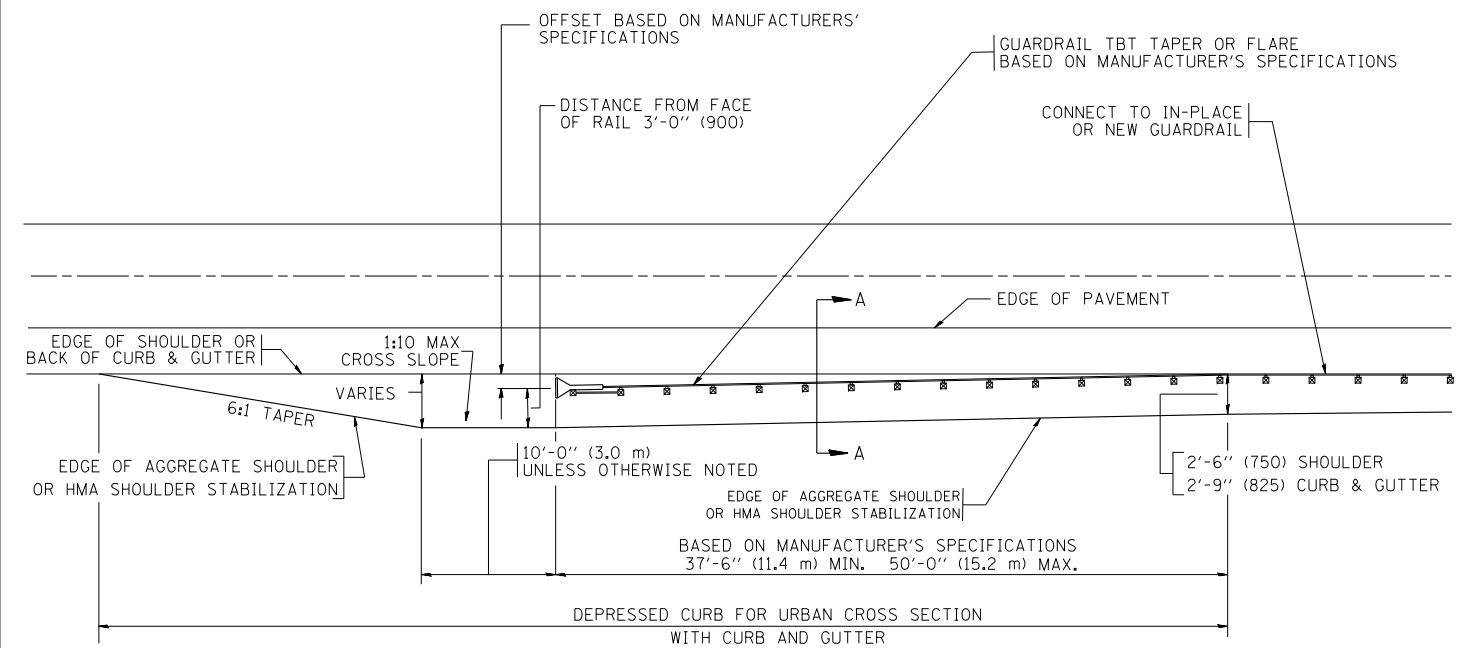




SECTION A-A

- NOTES:
1. THE AGGREGATE SHOULDER, 10" OR HMA SHOULDER, 6" (IF REQUIRED) SHALL EXTEND UNDER THE TRAFFIC BARRIER TERMINAL.
  2. "EXISTING" GUARDRAIL REFERS TO CONNECTING TERMINAL SECTION TO GUARD RAILING PRIOR TO THE MIDWEST GUARDRAIL SYSTEM.
  3. THE CONTRACTOR SHALL VERIFY THE TYPE/HEIGHT OF GUARDRAIL IN-PLACE BEFORE ORDERING THE NEW TERMINAL SECTION. COST INCLUDED WITH THE COST OF THE TERMINAL. THE TERMINAL SECTION HEIGHT TO BE PLACED MUST MATCH THE HEIGHT OF THE IN-PLACE GUARDRAIL.

DETAILS FOR STEEL PLATE BEAM  
GUARD RAIL ADJACENT TO CURB AND GUTTER  
 [FOR ROADWAY SPEED 35 MPH (60 kmh) TO 45 MPH (70 kmh)]



DEPRESSED CURB AND GUTTER AND  
SHOULDER TREATMENT AT TBT TY. 1 SPL.

BASIS OF PAYMENT: HMA SHOULDERS 6 (150) (IF REQUIRED) WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD (SQUARE METER) FOR "HOT-MIX ASPHALT SHOULDERS 6" (150 mm)".

STEEL PLATE BEAM GUARD RAIL AND TRAFFIC BARRIER TERMINAL, OF THE TYPE SPECIFIED WILL BE PAID FOR SEPARATELY.

TBT = TRAFFIC BARRIER TERMINAL  
 ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.

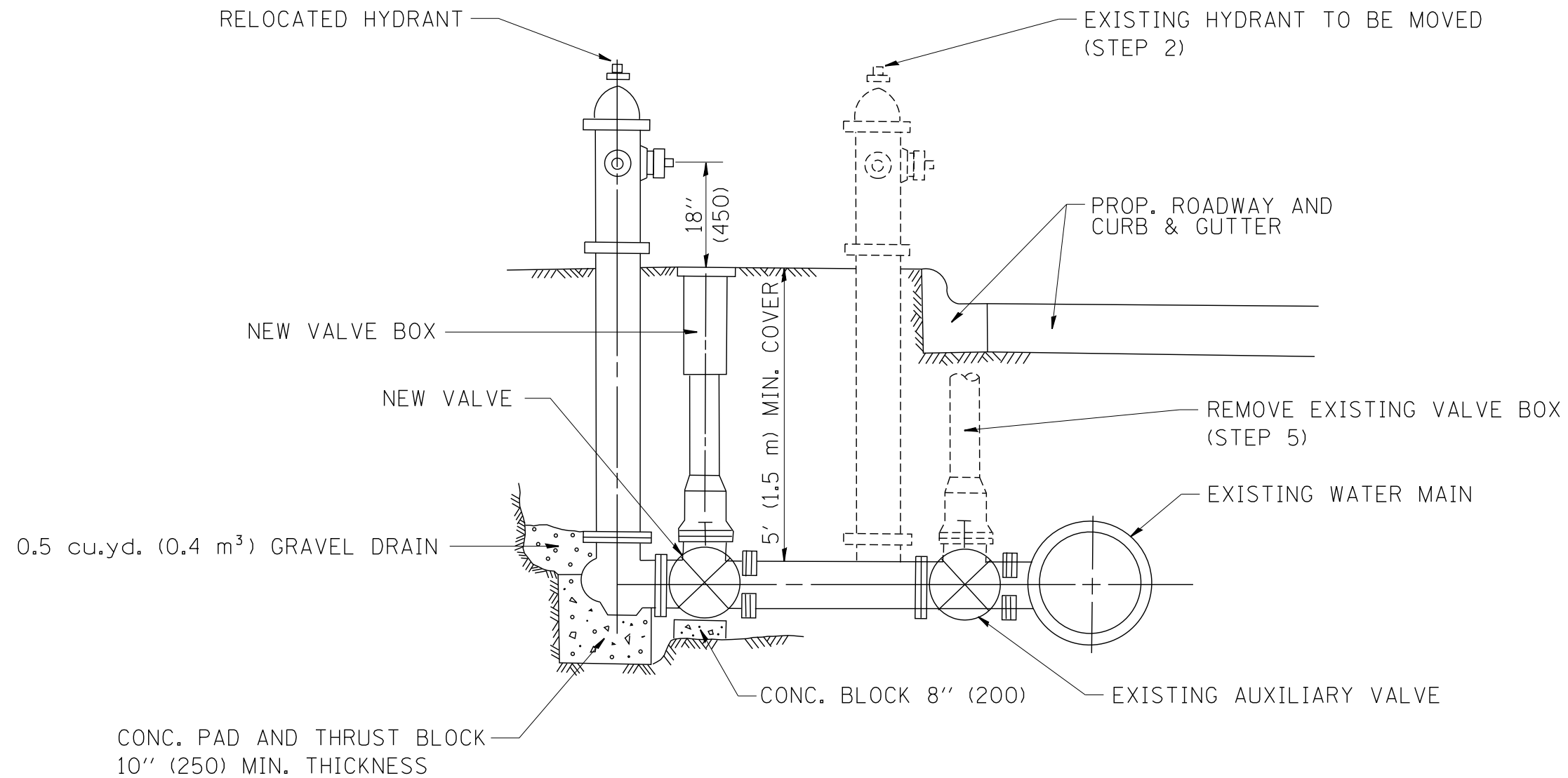
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	PLOT SCALE = 49.9999 ' / IN.	CHECKED -	REVISED - R. BORO 12-08-2008
	PLOT DATE = 9/21/2009	DATE - 09-22-90	REVISED - R. BORO 09-14-2009

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**DETAILS FOR DEPRESSED CURB & GUTTER AND**  
**SHOULDER TREATMENT AT TBT TY 1 SPL.**

SCALE: NONE SHEET NO. 1 OF 1 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	894
BD600-10 (BD 34)			CONTRACT NO. 60R30	
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				



SEQUENCE OF CONSTRUCTION:

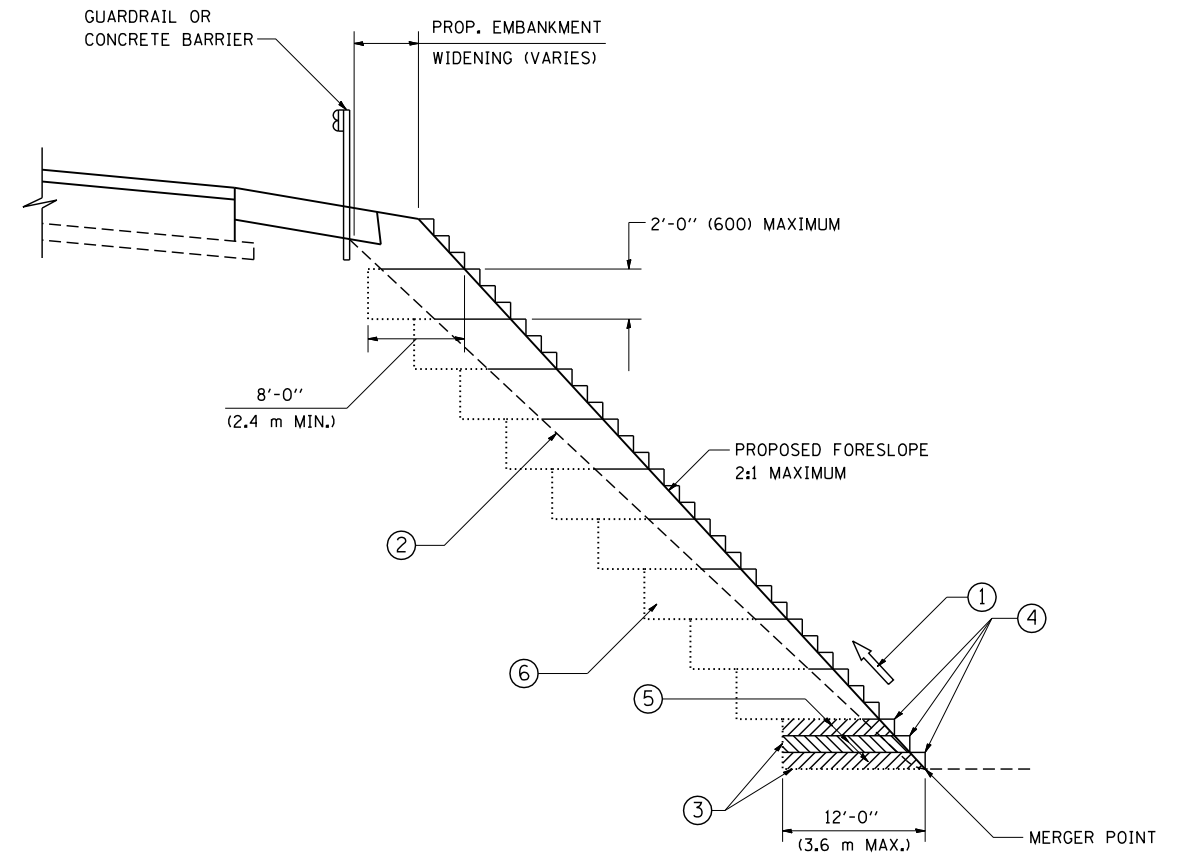
1. CLOSE EXISTING VALVE.
2. REMOVE EXISTING HYDRANT.
3. INSTALL HYDRANT EXTENSION AND NEW VALVE.
4. RELOCATE EXISTING HYDRANT.
5. OPEN EXISTING VALVE, REMOVE BOX.
6. BACKFILL.
7. FLUSH AND TEST FOR CHLORIDE RESIDUAL AND PROVIDE TEST.

ALL WORK TO BE DONE IN ACCORDANCE WITH ARTICLE 564 OF THE STANDARD SPECIFICATIONS. NEW VALVE AND BOX SHALL BE SAME MAKE AND MODEL AS EXISTING.

FIRE HYDRANT TO BE MOVED

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.

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	PLOT SCALE = 50.0000' / IN.	DRAWN -	REVISED - R. SHAH 10-25-94					338	(112 & 113) WRS-7	DUPAGE	1156	895
PLOT DATE = 1/4/2008	CHECKED -	DATE -	REVISED -	SCALE: NONE	SHEET NO. 1 OF 1 SHEETS	STA.	TO STA.	<b>BD-36</b>		CONTRACT NO. 60R30		
								FED. ROAD DIST. NO. 1   ILLINOIS   FED. AID PROJECT				



TYPICAL BENCHING DETAIL  
FOR EMBANKMENT

**NOTES:**

- ① CONSTRUCT SUCCEEDING BENCH CUTS AND EMBANKMENT PLACEMENT AND COMPACTION FROM BOTTOM TO TOP IN STAIRSTEP FASHION.
- ② EXISTING FORESLOPE PREPARED IN ACCORDANCE WITH ARTICLE 205.03 OF THE STANDARD SPECIFICATIONS.
- ③ BENCH CUT EXISTING SLOPE TYPICAL FOR EACH STEP.
- ④ TRIM TO FINAL SLOPE.
- ⑤ EQUAL 8-INCH (200) LIFTS OF EMBANKMENT COMPACTED IN ACCORDANCE WITH ARTICLE 205.05 OF THE STANDARD SPECIFICATIONS.
- ⑥ EXCAVATION OF BENCH CUTS WITHIN EXISTING EMBANKMENT WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC METER OR CUBIC YARD FOR "EARTH EXCAVATION". THIS PRICE WILL INCLUDE ALL LABOR AND MATERIAL, NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- ⑦ SLOPES SHALL BE BENCHED ACCORDING TO THIS DETAIL WHEN THE SLOPE IS STEEPER THAN 4:1 AND THE HEIGHT IS GREATER THAN 5' (1.5 m).

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.

FILE NAME = W:\diststd\22x34\bd51.dgn	USER NAME = gegl1onobt	DESIGNED -	REVISED -
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		CHECKED - S.E.B.	REVISED -
		DATE - 06-16-04	REVISED -

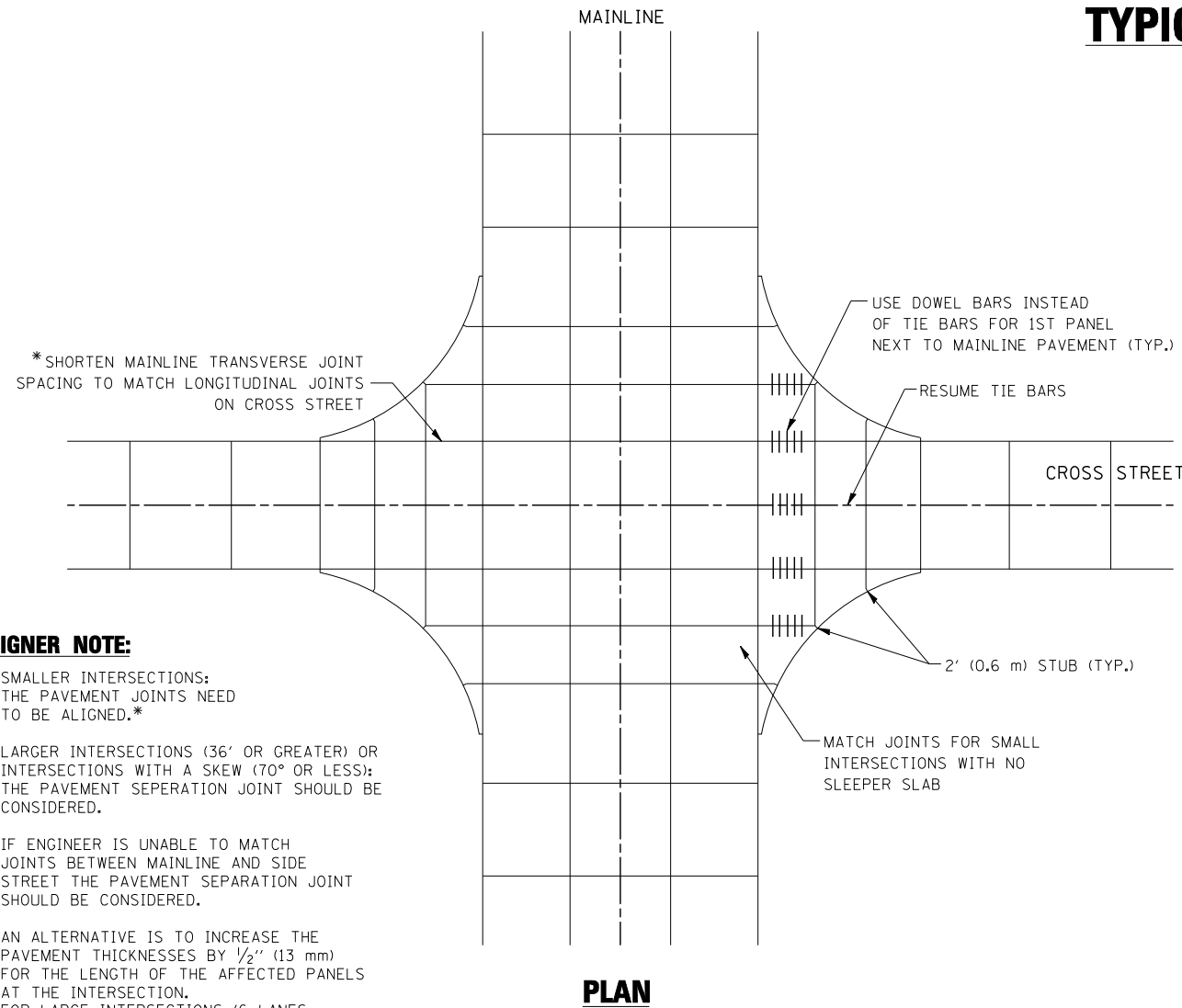
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

<b>BENCHING DETAIL</b>			
<b>FOR EMBANKMENT WIDENING</b>			
SCALE: NONE	SHEET NO. 1 OF 1 SHEETS	STA.	TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	896
<b>BD-51</b>			<b>CONTRACT NO. 60R30</b>	
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				

# TYPICAL APPLICATION

**THE USE OF CROSS STREET PAVEMENT SEPARATION JOINTS FOR SKEWED OR LARGE INTERSECTIONS WHERE JOINTS MAY NOT MATCH**



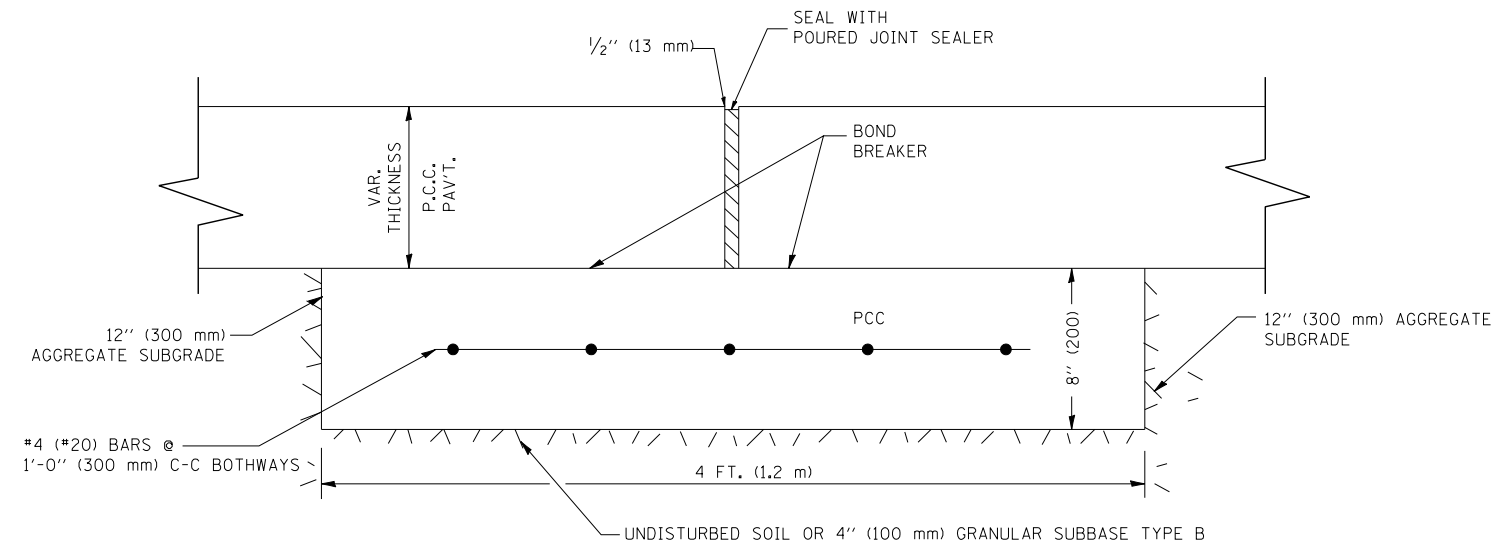
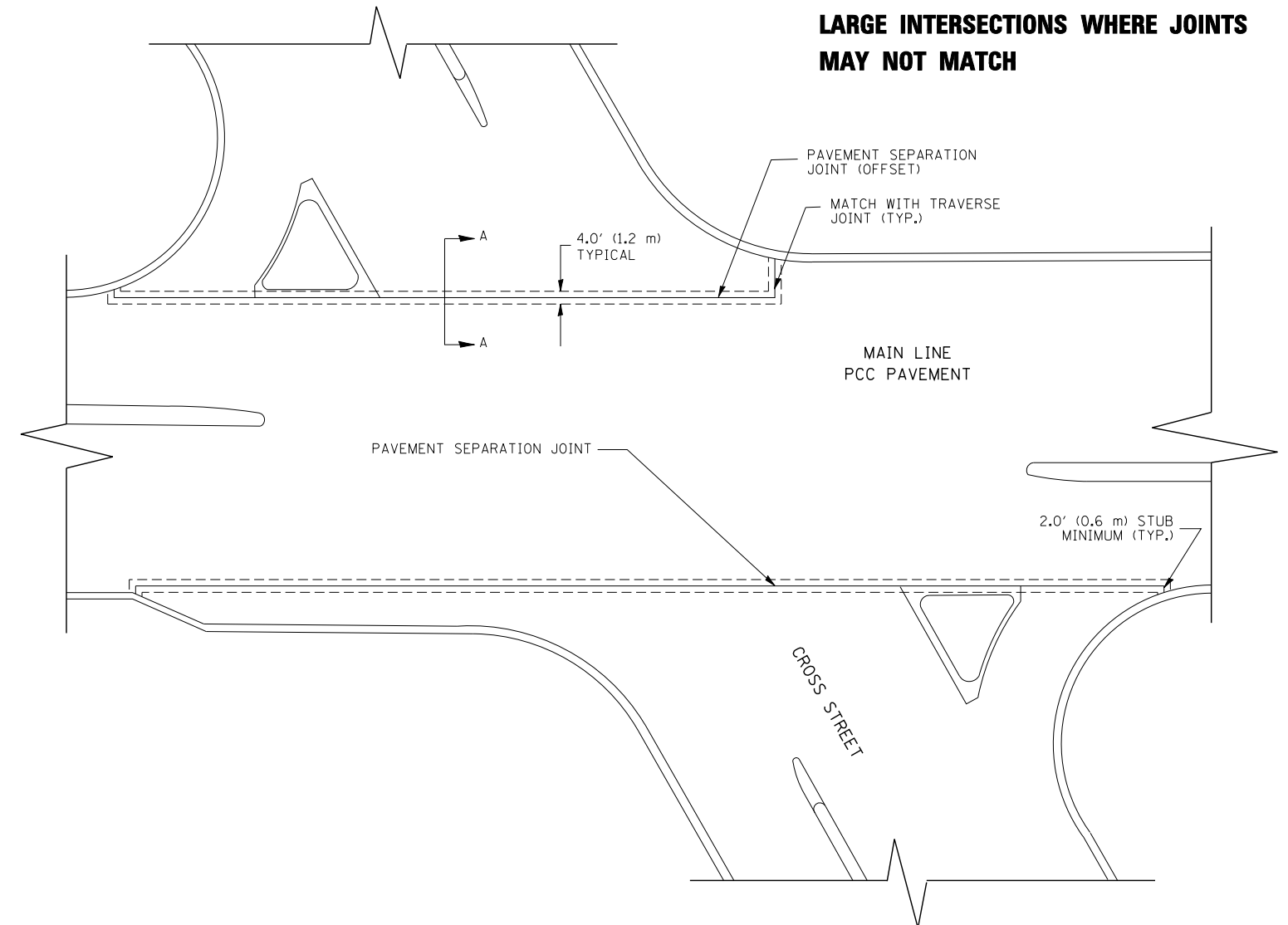
**PLAN**

**DESIGNER NOTE:**

1. SMALLER INTERSECTIONS: THE PAVEMENT JOINTS NEED TO BE ALIGNED.\*
2. LARGER INTERSECTIONS (36' OR GREATER) OR INTERSECTIONS WITH A SKEW (70° OR LESS): THE PAVEMENT SEPERATION JOINT SHOULD BE CONSIDERED.
3. IF ENGINEER IS UNABLE TO MATCH JOINTS BETWEEN MAINLINE AND SIDE STREET THE PAVEMENT SEPARATION JOINT SHOULD BE CONSIDERED.
4. AN ALTERNATIVE IS TO INCREASE THE PAVEMENT THICKNESSES BY 1/2" (13 mm) FOR THE LENGTH OF THE AFFECTED PANELS AT THE INTERSECTION. FOR LARGE INTERSECTIONS (6 LANES OR MORE) WHERE JOINTS CAN BE MATCHED, USE #8 (25) DOWEL BARS INSTEAD OF #8 (25) TIE BARS AT EDGE OF MAINLINE PAVEMENT WHEN NO PAVEMENT SEPARATION JOINTS USED.

**NOTE:**

1. JOINT FILLER SHALL CONSIST OF A SHEET OF 1/2" (13 mm) BITUMINOUS PREFORMED FIBER JOINT FILLER CONFORMING TO ARTICLE 1051.03 OF THE STANDARD SPECIFICATIONS.
2. THE JOINT SHALL BE SEALED WITH A HOT POUR JOINT SEALER CONFORMING TO ARTICLE 1050.02 OF THE STANDARD SPECIFICATIONS.
3. A SINGLE LAYER OF FELT ROOFING PAPER SHALL SERVE AS A BOND BREAKER.
4. JOINT SHALL CONTINUE THROUGH COMBINATION CURB & GUTTER OR PCC SHOULDER.
5. PAVEMENT SEPARATION JOINT IS TO BE PAID FOR AS "SLEEPER SLAB" AND IS TO BE MEASURED IN PLACE BY THE LINEAL FOOT.
6. BOND BREAKER AND 1/2" (13 mm) JOINT AND FILLER SHALL BE INCIDENTAL TO THE PAY ITEM "SLEEPER SLAB".



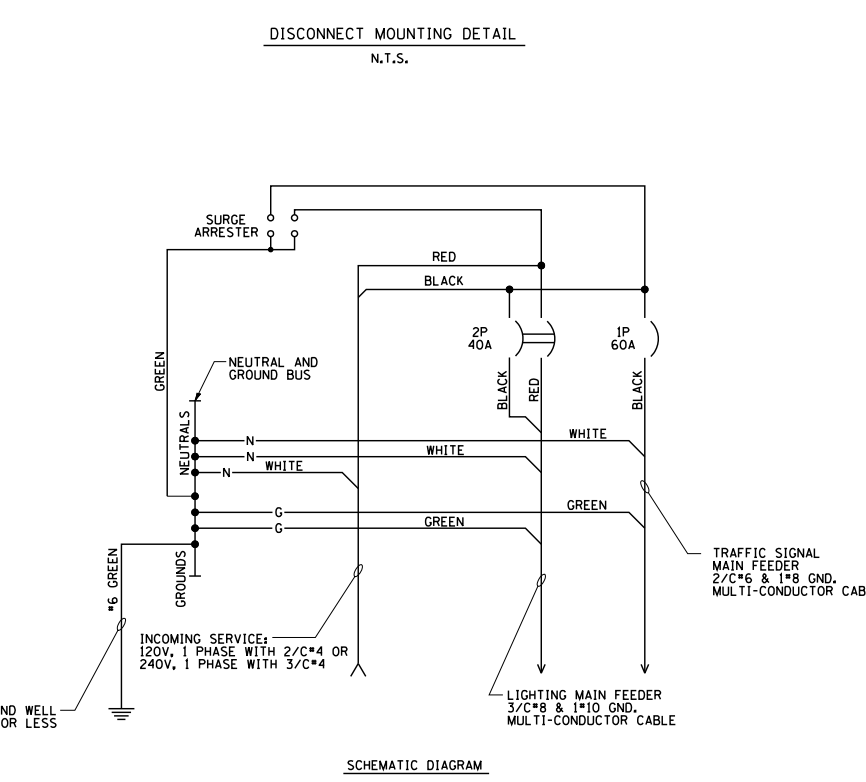
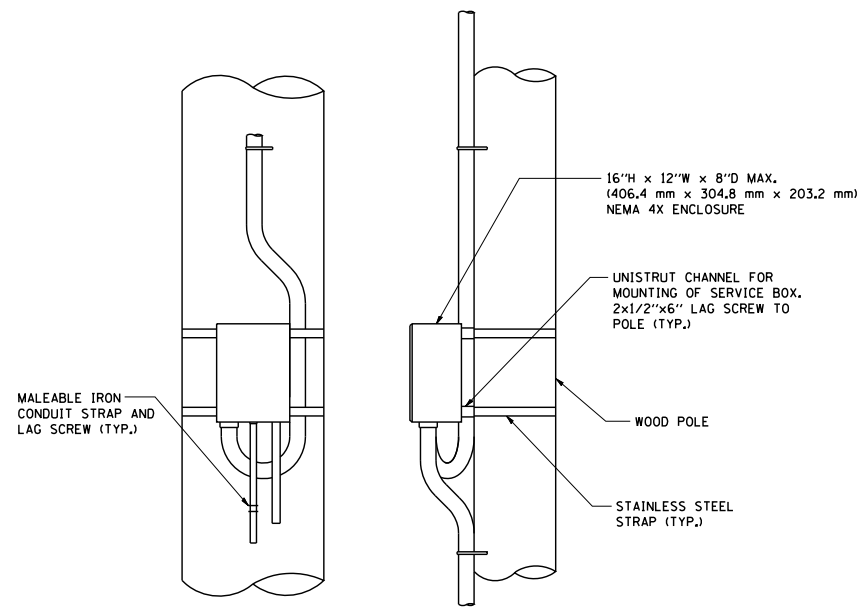
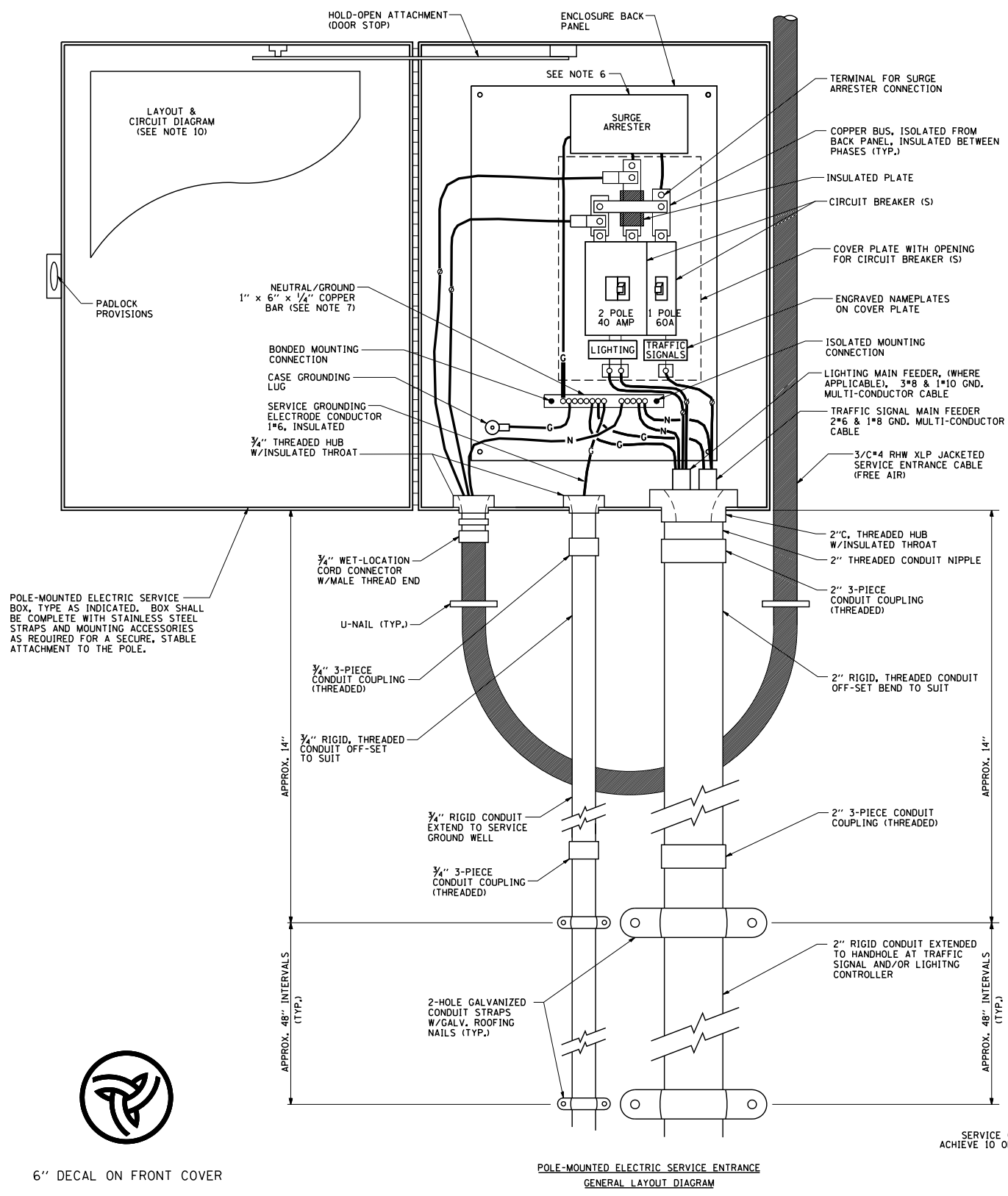
**PROPOSED SECTION A-A**

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PLOT SCALE = 49.9999' / IN.	CHECKED -	REVISIED -	REVISIED -
PLOT DATE = 2/25/2011	DATE -	REVISIED -	REVISIED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

DETAIL OF PAVEMENT SEPARATION JOINT FOR JOINTED PCC PAVEMENTS AT INTERSECTIONS			
SCALE: NONE	SHEET NO. 1 OF 1 SHEETS	STA.	TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	897
<b>BD52</b>		CONTRACT NO. 60R30		
ILLINOIS FED. AID PROJECT				



- NOTES:**
- ELECTRIC SERVICE SHALL BE OF THE VOLTAGE INDICATED OR DESIGNATED BY THE ENGINEER, AND SERVICE DROP CABLE SHALL BE COMPATIBLE WITH THE SERVICE ACCORDINGLY. SOME INSTALLATIONS MAY CALL FOR SERVICE ENTRANCE EQUIPMENT SUITABLE FOR 3-WIRE SERVICE EVEN THOUGH INITIALLY WIRED FOR 2-WIRE SERVICE.
  - THE POLE-MOUNTED ELECTRIC SERVICE BOX DETAIL DEPICTS THE BASIC CONSTRUCTION OF THE EQUIPMENT. SLIGHT MODIFICATIONS APPLY FOR DIFFERING SERVICES AND APPLICATIONS AS FOLLOWS:
    - TYPE A FULLY EQUIPPED FOR 240/120V, 3W SERVICE, COMPLETE WITH LIGHTING MAIN BREAKER
    - TYPE AI FULLY EQUIPPED FOR 240/120V, 3W SERVICE, BLANK COVER IN LIEU OF LIGHTING MAIN BREAKER
    - TYPE B EQUIPPED FOR 120V, SERVICE, COMPLETE WITH 1P, 60A, TRAFFIC SIGNALS MAIN BREAKER
    - TYPE BI EQUIPPED FOR 120V, SERVICE, COMPLETE WITH 1P, 40A, TRAFFIC SURVEILLANCE MAIN BREAKER
  - THE ELECTRIC SERVICE EQUIPMENT ASSEMBLY SHALL BE UL LISTED AS SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT.
  - THE ELECTRIC SERVICE EQUIPMENT ENCLOSURE SHALL BE NEMA 4X STAINLESS STEEL, NOMINALLY 12\"/>



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FILE NAME =	USER NAME = geglionbt	DESIGNED -	REVISED - R. TOMSONS 08-13-04
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		CHECKED -	REVISED -
		DATE -	REVISED -

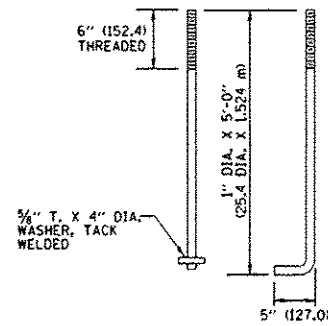
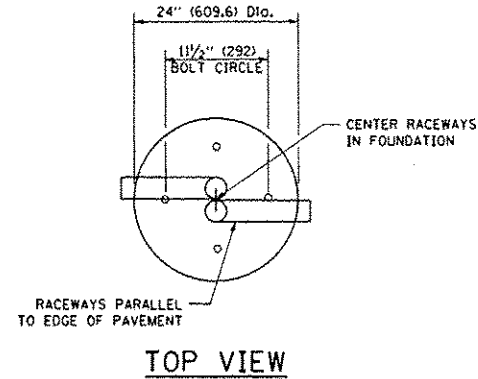
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

<b>COMBINATION LIGHTING &amp; TRAFFIC POLE MOUNTED ELECTRIC SERVICE BOX DETAIL</b>	
SCALE: NONE	SHEET NO. 1 OF 1 SHEETS STA. TO STA.

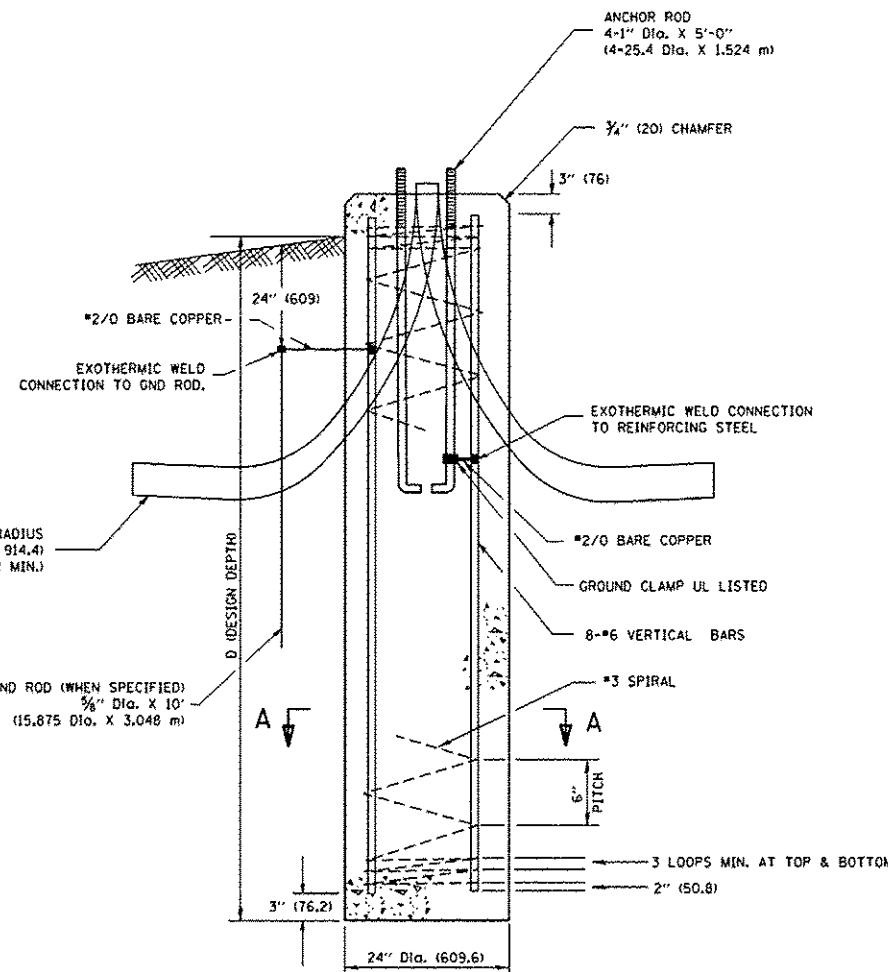
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<b>BE-230</b>		CONTRACT NO. 60R30		
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				

**LIGHT POLE FOUNDATION DEPTH TABLE**  
30 FT. (9.144 m) TO 35 FT. (10.668 m) MOUNTING HEIGHT

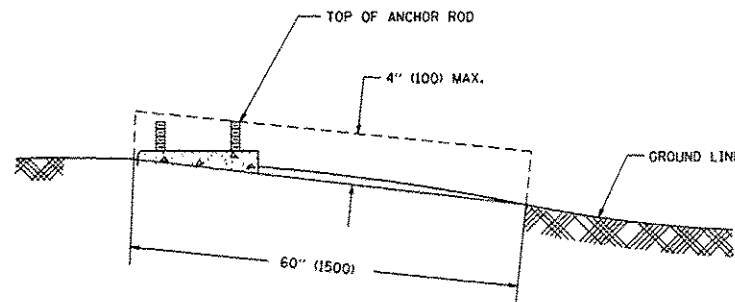
SOIL CONDITIONS	DESIGN DEPTH "D" OF FOUNDATION	
	SINGLE ARM POLE	TWIN ARM POLE
SOFT CLAY O <sub>u</sub> = 0.375 TON/SO. FT.	11'-0" (3.35 m)	12'-8" (3.85 m)
MEDIUM CLAY O <sub>u</sub> = 0.75 TON/SO. FT.	9'-0" (2.74 m)	14'-10" (4.52 m)
STIFF CLAY O <sub>u</sub> = 1.50 TON/SO. FT.	7'-6" (2.29 m)	8'-7" (2.61 m)
LOOSE SAND φ = 34°	9'-6" (2.90 m)	10'-7" (3.22 m)
MEDIUM SAND φ = 37.5°	9'-0" (2.74 m)	9'-10" (2.99 m)
DENSE SAND φ = 40°	8'-3" (2.51 m)	9'-7" (2.91 m)



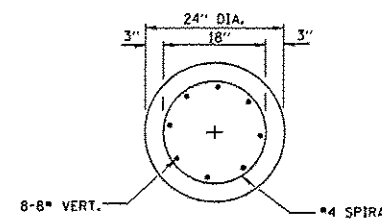
**ANCHOR BOLT DETAIL**



**FOUNDATION DETAIL**



**FOUNDATION EXTENSION DETAIL**



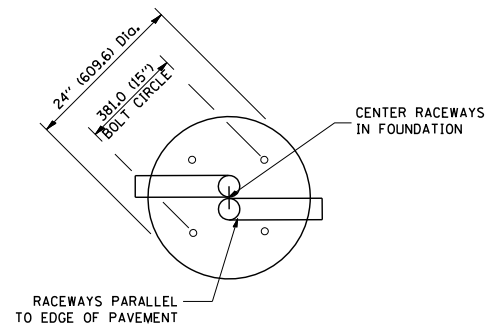
**SECTION A-A**

**NOTES**

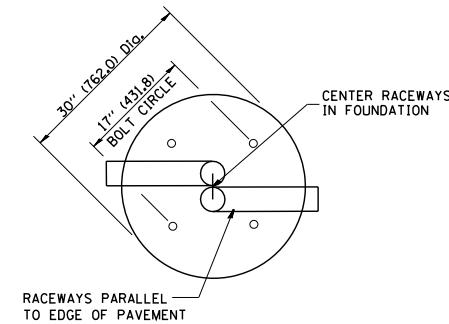
- ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.
- THE ANCHOR RODS AND RACEWAYS SHALL BE PROPERLY SECURED IN PLACE BEFORE THE CONCRETE IS PLACED.
- THE FOUNDATION SHALL NOT PROTRUDE MORE THAN 4 IN. (100 mm) ABOVE THE FINISHED GRADE WITHIN A 60 IN. (1.5 m) CHORD ACROSS THE FOUNDATION, WITH ANCHOR RODS INCLUDED. IN ACCORDANCE WITH AASHTO GUIDELINES, IF THE FOUNDATION HEIGHT, INCLUDING ANCHOR RODS, EXTENDS BEYOND THESE SPECIFIED LIMITS, THE FOUNDATION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. SEE FOUNDATION EXTENSION DETAIL.
- THE HOLE FOR THE FOUNDATION SHALL BE MADE BY DRILLING WITH AN AUGER, OF THE SAME DIAMETER AS THE FOUNDATION. IF SOIL CONDITIONS REQUIRE THE USE OF A LINER TO FORM THE HOLE, THE LINER SHALL BE WITHDRAWN AS THE CONCRETE IS DEPOSITED.
- THE TOP OF THE FOUNDATION SHALL BE CONSTRUCTED LEVEL. A LINER OR FORM SHALL BE USED TO PRODUCE A UNIFORM SMOOTH SIDE TO THE TOP OF THE FOUNDATION. FOUNDATION TOP SHALL BE CHAMFERED 3/4-IN. (20 mm).
- THE CONCRETE SHALL BE CLASS SI. CONCRETE SHALL CURE ACCORDING TO ARTICLE 1020.13 BEFORE LIGHT POLES ARE INSTALLED.
- THE ANCHOR ROD SHALL BE A HOOK ROD TYPE. COLD BENDING OF THE ANCHOR ROD WILL NOT BE ALLOWED. THE RADIUS OF THE HOOK BEND SHALL NOT BE LESS THAN 4 TIMES THE NOMINAL DIAMETER OF THE ANCHOR ROD. A TACK WELDED ANCHOR ROD MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER.
- THE ANCHOR RODS SHALL BE ACCORDING TO ASTM F1554 GRADE 725 (GRADE 105). NUTS SHALL BE HEXAGON NUTS ACCORDING TO ASTM A 194 2H OR ASTM A 563 DH, AND WASHERS SHALL BE ACCORDING TO ASTM F 436.
- ANCHOR RODS, NUTS AND WASHERS SHALL BE COMPLETELY GALVANIZED BY EITHER THE HOT-DIPPED PROCESS CONFORMING WITH AASHTO M 232, THE MECHANICAL PLATING METHOD CONFORMING TO AASHTO M 298, CLASS 50 WITH A MAXIMUM COATING THICKNESS OF 150 UMG MILS) OR THE ELECTROLYTIC PROCESS ACCORDING TO ASTM F 1136.
- THE ANCHOR RODS SHALL BE THREADED A MINIMUM OF 6 INCHES (150 mm) WITH A MINIMUM OF 3 INCHES (75 mm) OF THREADED ANCHOR ROD EMBEDDED IN THE FOUNDATION.
- ANCHOR RODS SHALL PROJECT 2 3/4" (69.9 mm) ABOVE THE TOP OF THE FOUNDATION. IF BREAKAWAY COUPLINGS ARE SPECIFIED, THE CONTRACTOR SHALL CAREFULLY COORDINATE THE ANCHOR ROD PROJECTION WITH THE INSTALLATION REQUIREMENTS OF THE BREAKAWAY COUPLINGS.
- THE CONTRACTOR SHALL USE A #3 SPIRAL AT 6" (152.4 mm) PITCH OR MAY SUBSTITUTE #3 TIES AT 12" (304.8 mm) O.C. WITH THE APPROVAL OF THE ENGINEER.
- THE CABLE TRENCHES AND FOUNDATION SHALL BE BACK FILLED AND COMPACTED AS SPECIFIED BEFORE THE LIGHT POLE IS ERECTED.
- THE RACEWAYS SHALL PROJECT 1" (25.4 mm) ABOVE THE TOP OF THE FOUNDATION.

**LIGHT POLE FOUNDATION DEPTH TABLE**  
40 FT. (12.192 m) TO 47.5 FT. (14.478 m) MOUNTING HEIGHT

SOIL CONDITIONS	DESIGN DEPTH "D" OF FOUNDATION	
	SINGLE ARM POLE	TWIN ARM POLE
SOFT CLAY O <sub>u</sub> = 0.375 TON/SO. FT.	13'-0" (3.96 m)	15'-0" (4.57 m)
MEDIUM CLAY O <sub>u</sub> = 0.75 TON/SO.FT	9'-6" (2.93 m)	10'-9" (3.23 m)
STIFF CLAY O <sub>u</sub> = 1.50 TON/SO. FT.	7'-0" (2.13 m)	8'-0" (2.44 m)
LOOSE SAND φ = 34°	9'-0" (2.74 m)	10'-0" (3.05 m)
MEDIUM SAND φ = 37.5°	8'-3" (2.52 m)	9'-0" (2.74 m)
DENSE SAND φ = 40°	7'-9" (2.36 m)	9'-0" (2.74 m)



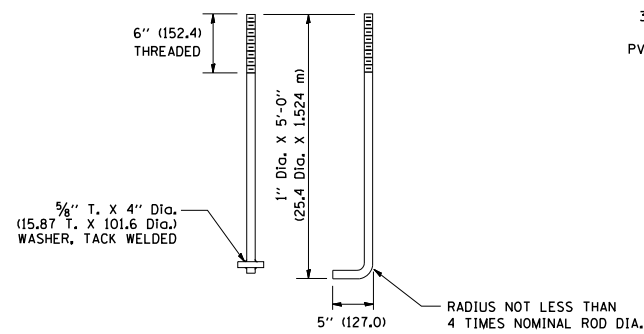
**TOP VIEW**



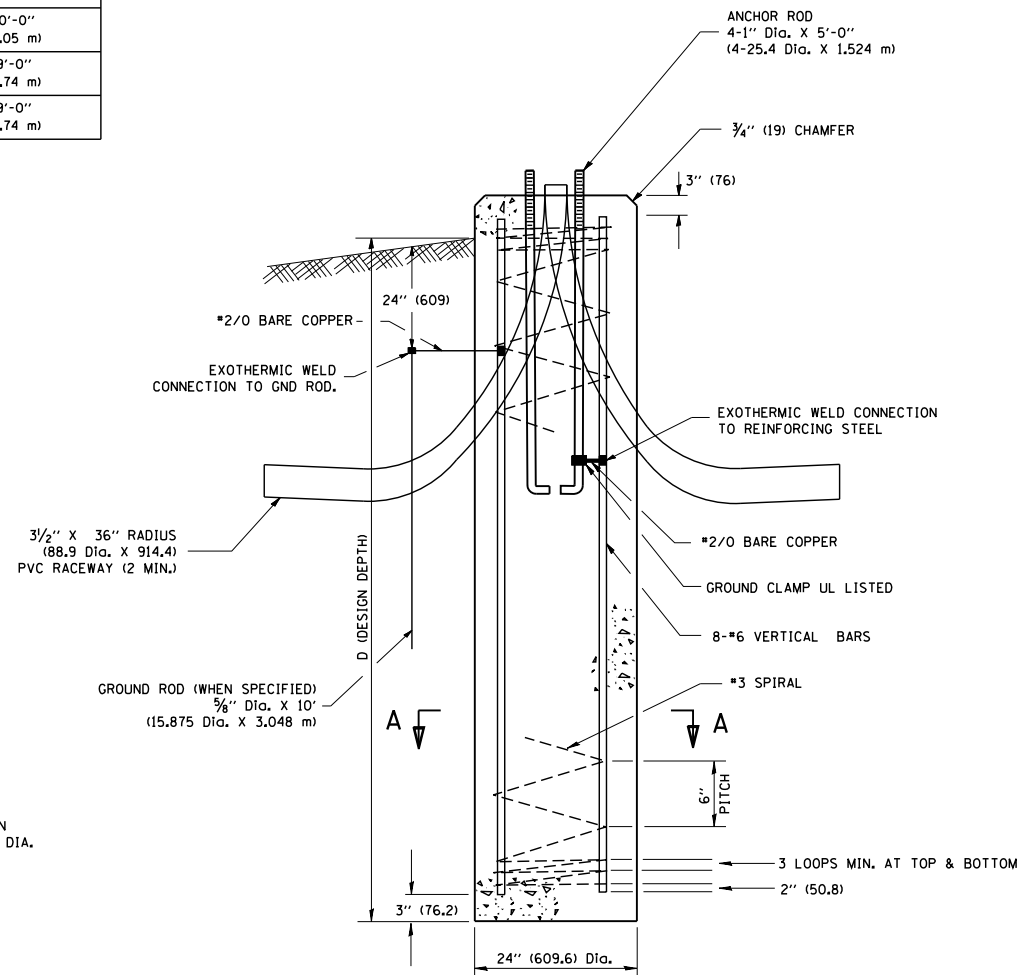
**TOP VIEW**

**NOTES**

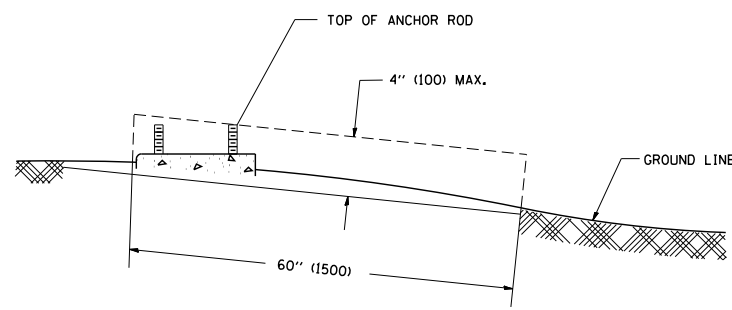
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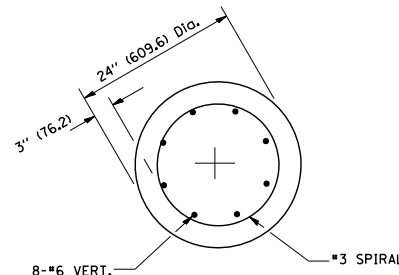
**ANCHOR ROD DETAIL**



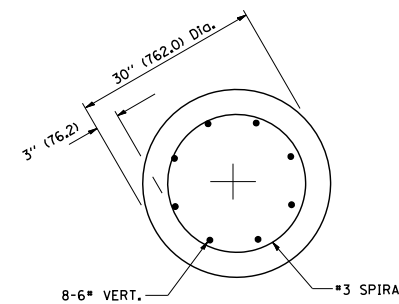
**FOUNDATION DETAIL**



**FOUNDATION EXTENSION DETAIL**



**SECTION A-A**



**SECTION A-A**

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PLOT DATE = 1/4/2008

DESIGNED -  
DRAWN -  
CHECKED -  
DATE -

REVISED - 04-22-02  
REVISED -  
REVISED -  
REVISED -

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**LIGHT POLE FOUNDATION**

**40' (12.192 m) TO 47' 1/2' (14.478 m) M.H. 15" (381 mm) BOLT CIRCLE**

SCALE: NONE SHEET NO. 1 OF 1 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338	(112 & 113) WRS-7	DUPAGE	1156	899
<b>BE-301</b>		CONTRACT NO. 60R30		
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				