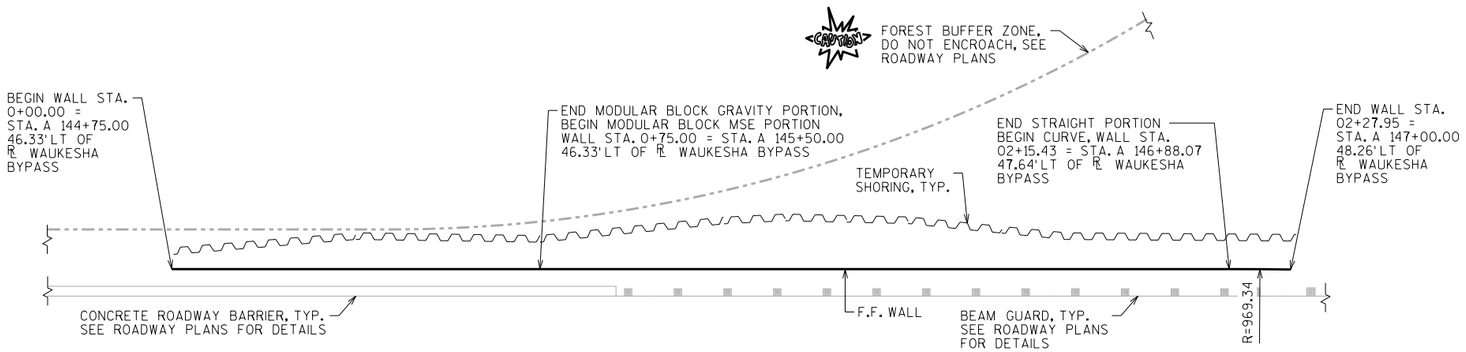
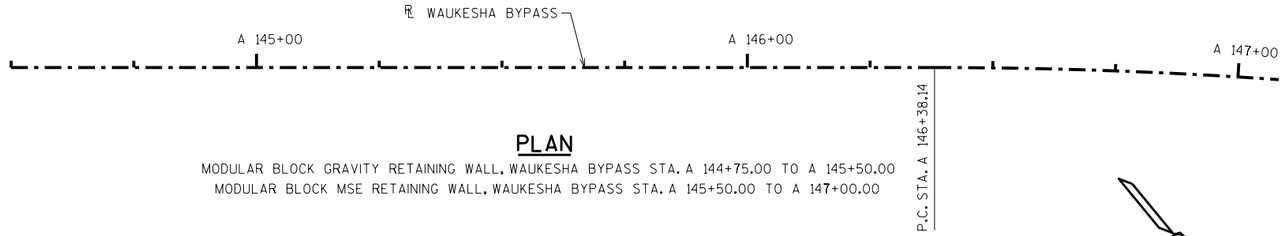
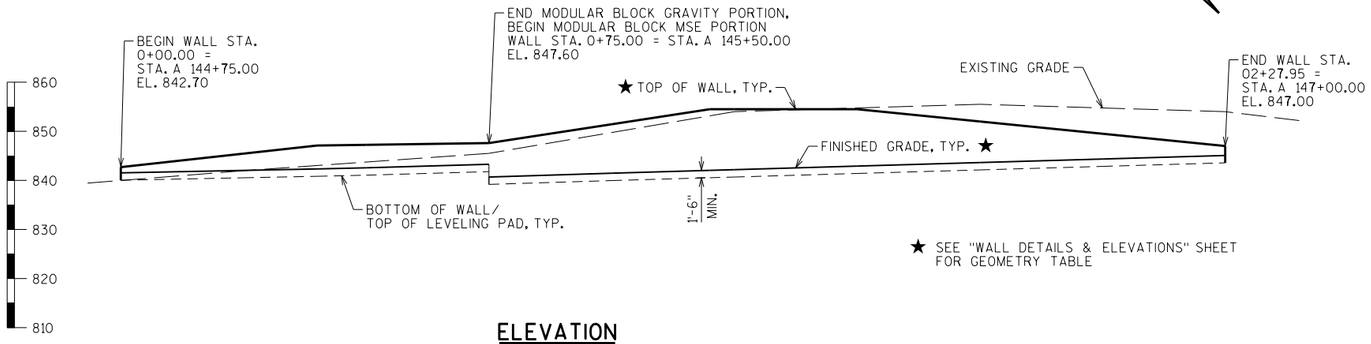
STATE PROJECT NUMBER
2788-00-71





PLAN

MODULAR BLOCK GRAVITY RETAINING WALL, WAUKESHA BYPASS STA. A 144+75.00 TO A 145+50.00
MODULAR BLOCK MSE RETAINING WALL, WAUKESHA BYPASS STA. A 145+50.00 TO A 147+00.00



ELEVATION

LOOKING AT F.F. OF WALL

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

THE CONTRACTOR SHALL PROVIDE COMPLETE DESIGN, PLANS, DETAILS, SPECIFICATIONS AND SHOP DRAWINGS FOR THE RETAINING WALLS IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE RETAINING WALL MANUFACTURER SHALL PROVIDE TECHNICAL ASSISTANCE TO THE CONTRACTOR DURING CONSTRUCTION. THE COST OF FURNISHING THESE ITEMS SHALL BE INCLUDED IN THE BID ITEMS "WALL MODULAR BLOCK MECHANICALLY STABILIZED EARTH R-67-145" AND "WALL MODULAR BLOCK GRAVITY R-67-145".

PLANS, ELEVATIONS AND DETAILS SHOWN ON THESE DRAWINGS ARE INTENDED TO INDICATE WALL LOCATIONS, LENGTHS, HEIGHTS, AND DETAILS COMMON TO THE WALL SYSTEM SELECTED. THE CONTRACTOR SHALL VERIFY THAT THE WALL SYSTEM SELECTED WILL CONFORM TO THE REQUIRED ALIGNMENTS AND DETAILS.

THE RETAINING WALL IS TO BE DESIGNED USING THE ELEVATIONS GIVEN ON THIS SHEET AND ON THE "WALL DETAILS AND ELEVATIONS" SHEET.

DESIGN FOR RETAINING WALL TO PROVIDE FOR FINISHED GRADE SLOPED BEHIND WALL AS SHOWN.

DESIGN RETAINING WALL FOR A LIVE LOAD SURCHARGE OF 100 PSF.

ALL WALL STATIONING AND OFFSETS ARE GIVEN AT THE FRONT FACE OF WALL R-67-145.

THE CONTRACTOR SHALL REMOVE 12-INCHES OF MATERIAL BELOW THE BASE BLOCK AND REPLACE WITH GRANULAR BACKFILL IN THE AREAS THAT TOPSOIL, SILT AND CLAY ARE ENCOUNTERED, AS RECOMMENDED IN THE GEOTECHNICAL REPORT.

THE MAXIMUM VALUE OF THE INTERNAL ANGLE OF FRICTION OF THE WALL BACKFILL MATERIAL IN THE REINFORCED ZONE SHALL BE ASSUMED TO BE BE 30° WITHOUT CERTIFIED TEST VALUES.

ALLOWABLE WALL SYSTEMS

WALL MODULAR BLOCK GRAVITY

WALL MODULAR BLOCK MECHANICALLY STABILIZED EARTH

CURVE 4 DATA

WAUKESHA BYPASS

P.I. = A 149+23.38
△ = 31°50'26"
D = 5°43'46"
T = 285.24
L = 555.72
R = 1000.00
S.E. = 4.0%
P.C. = A 146+38.14
P.T. = A 151+93.86

LIST OF DRAWINGS

STRUCTURE DESIGN CONTACTS:

MAXWELL KULICK	(608) 261-6108
AARON BONK	(608) 261-0261

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTALS
511.1200	TEMPORARY SHORING R-67-145	SF	2,080
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	250
SPV.0165.03	WALL MODULAR BLOCK MECHANICALLY STABILIZED EARTH R-67-145	SF	1,544
SPV.0165.04	WALL MODULAR BLOCK GRAVITY R-67-145	SF	392

NO.	DATE	REVISION	BY

BUREAU OF STRUCTURES

ACCEPTED William C. Dreher 6/23/17
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE R-67-145

RETAINING WALL ALONG WAUKESHA BYPASS

COUNTY	TOWN
WAUKESHA	WAUKESHA

DESIGN SPEC.
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGNED CK'D.	DRAWN BY	PLANS CK'D.
MJK	SAD	MJK	SAD

GENERAL PLAN

SHEET 1 OF 3

I.D. 2788-00-01L

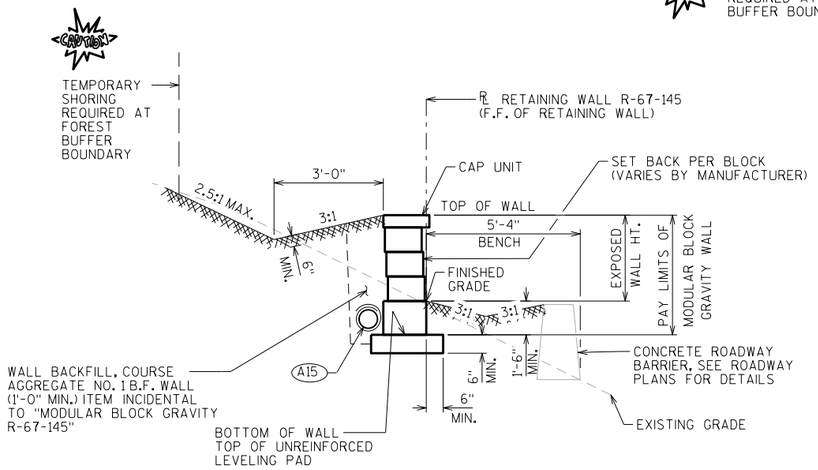
DATE: MAY 2017

SCALE = 15.00

8

8

STATE PROJECT NUMBER
2788-00-71

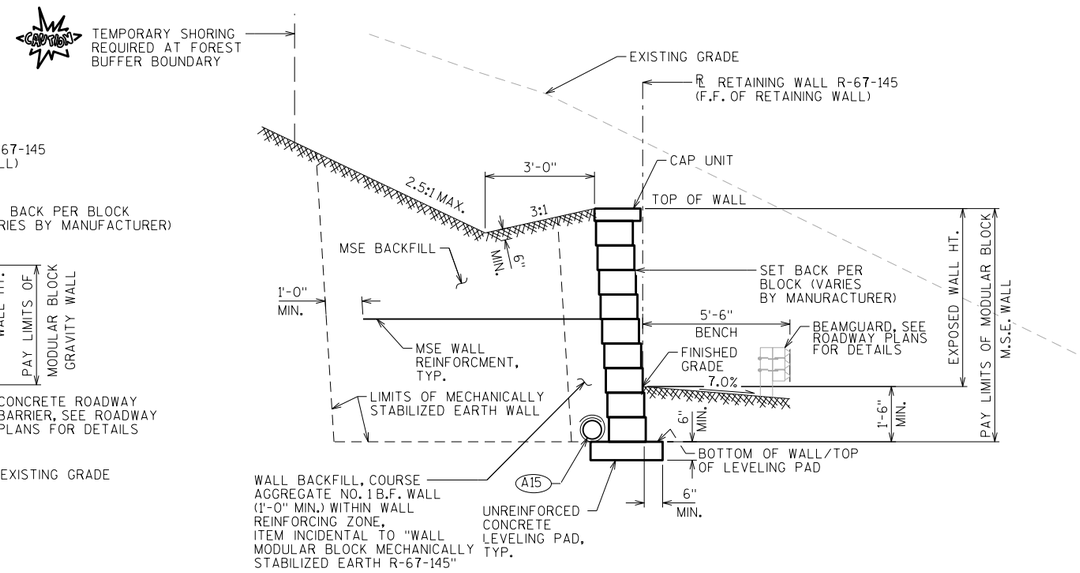


TYPICAL SECTION

MODULAR BLOCK GRAVITY WALL

WALL STA. 0+0.00 TO WALL STA. 0+75.00

WAUKESHA BYPASS STA. A 144+75.00 TO WAUKESHA BYPASS STA. A 145+50.00

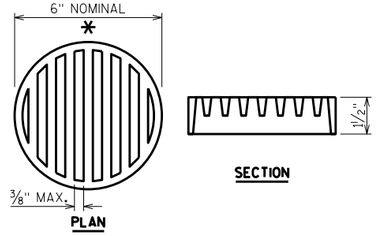


TYPICAL SECTION

MODULAR BLOCK MSE WALL

WALL STA. 0+75.00 TO WALL STA. 2+27.95

WAUKESHA BYPASS STA. A 145+50.00 TO WAUKESHA BYPASS STA. A 147+00.00



RODENT SHIELD DETAIL

* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALLY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHEMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

(A15) PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.

WALL GEOMETRY TABLE

WALL STATION	℄ STATION	OFFSET TO F.F. WALL	TOP OF WALL EL.	FINISHED GRADE EL.
00+00.00	A 144+75.00	46.33' LT	842.70	841.53
00+25.00	A 145+00.00	46.33' LT	845.45	842.03
00+40.00	A 145+15.00	46.33' LT	847.10	842.33
00+50.00	A 145+25.00	46.33' LT	847.24	842.56
00+75.00	A 145+50.00	46.33' LT	847.60	843.28
00+75.00	A 145+50.00	46.33' LT	847.60	840.68
01+00.00	A 145+75.00	46.33' LT	851.43	841.46
01+20.00	A 145+95.00	46.33' LT	854.50	842.04
01+25.00	A 146+00.00	46.33' LT	854.50	842.18
01+50.00	A 146+25.00	46.33' LT	854.50	842.91
01+75.55	A 146+50.00	46.41' LT	852.00	843.63
02+01.73	A 146+75.00	47.04' LT	849.50	844.35
02+15.43	A 146+88.07	47.64'LT	848.12	844.75
02+27.95	A 147+00.00	48.26'LT	847.00	845.13

SOIL PARAMETERS

SOIL DESCRIPTION	FRICTION ANGLE (DEGREES)	COHESION (PSF)	UNIT WEIGHT (PCF)
GRANULAR BACKFILL BEHIND THE WALL IN THE REINFORCING ZONE	30	0	120
FILL BEHIND THE THE REINFORCING ZONE	31	0	120
BOR-1-STA. A 145+29 - 74'LT OF ℄ WAUKESHA BYPASS			
SAND, BROWN, FINE, SOME GRAVEL EL. 838.5 TO EL 835.8	31	0	125
SAND AND GRAVEL, BROWN, FINE TO COARSE EL. 835.8 TO EL 833.8	33	0	125
SAND, BROWN, FINE TO COARSE, LITTLE FINE TO MEDIUM GRAVEL EL. 833.8 TO EL 831.8	32	0	125
SAND, BROWN, FINE, SOME SILT EL. 831.8 TO EL 825.8	28	0	120
SILT, GRAY, TRACE FINE SAND EL. 825.8 AND BELOW	0	3,500	125
BOR-2- STA. A 145+95 - 46.5'LT OF ℄ WAUKESHA BYPASS			
SAND, BROWN, FINE, LITTLE GRAVEL EL. 840.7 TO EL 838.4	32	0	120
SAND AND GRAVEL, BROWN, FINE TO COARSE EL. 838.4 TO EL 836.4	33	0	120
SAND, BROWN, FINE TO COARSE, SOME GRAVEL EL. 836.4 TO EL 833.4	33	0	120
SAND, GRAY/BROWN, FINE, SOME SILT EL. 833.4 TO EL 829.4	31	0	115
SILT, GRAY, TRACE FINE SAND EL. 829.4 TO EL 827.4	0	2,750	120
SILT, DARK BROWN & GRAY, LITTLE CLAY, TRACE FINE SAND EL. 827.4 TO EL 823.4	0	4,500	125
SAND, BROWN, FINE TO COARSE, SOME SILT, LITTLE FINE GRAVEL EL. 823.4 TO EL 819.4	33	0	125
SILT, GRAY, TRACE FINE SAND EL. 819.4 AND BELOW	0	4,500	130

WALL EXTERNAL & OVERALL STABILITY EVALUATION

DIMENSIONS		
WALL HEIGHT (FEET)[1]	9.1	13.8
EXPOSED WALL HEIGHT (FEET)	7.6	12.3
MINIMUM LENGTH OF REINFORCEMENT (FEET)	6.0	10.25
BORING LOCATION USED	BOR - 1	BOR - 2
APPROXIMATE ℄ WAUKESHA BYPASS STATION	A145+25	A145+95
CAPACITY TO DEMAND RATIO (CDR)[2]		
SLIDING (CDR > 1.0)	1.2	1.2
ECCENTRICITY (CDR > 1.0)	1.3	1.0
OVERALL STABILITY (CDR > 1.0)	NA[3]	1.3
BEARING RESISTANCE (CDR > 1.0)	1.9	1.3
FACTORED BEARING RESISTANCE (PSF)	5,500	5,500

NOTES:
1. THE WALL HEIGHT INCLUDES EMBEDMENT OF 1.5 FEET.
2. CDR REQUIREMENTS AND LOAD AND RESISTANCE FACTORS ARE PRESENTED IN CHAPTER 14 OF THE BRIDGE MANUAL.
3. NA NOT APPLICABLE, THE GLOBAL STABILITY WAS EVALUATED AT THE CRITICAL WALL LOCATION.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE R-67-145

DRAWN BY MJK | PLANS CK'D. SAD

WALL DETAILS & ELEVATIONS

SHEET 2

8

8

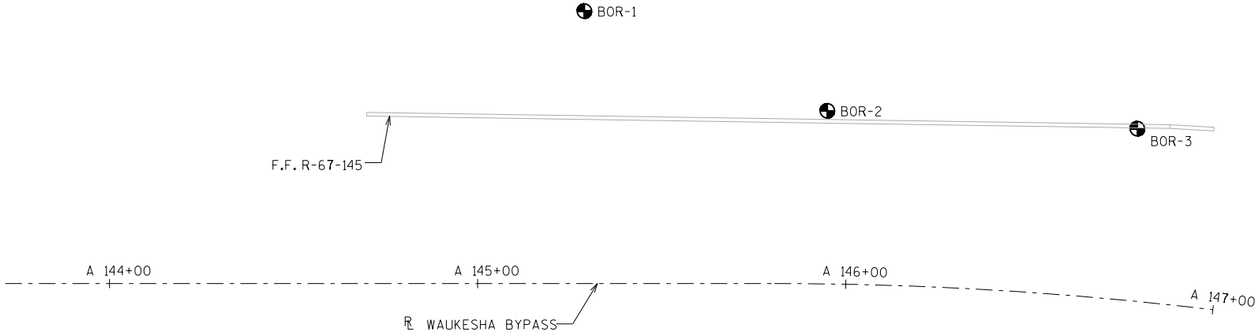
SCALE = 2.00

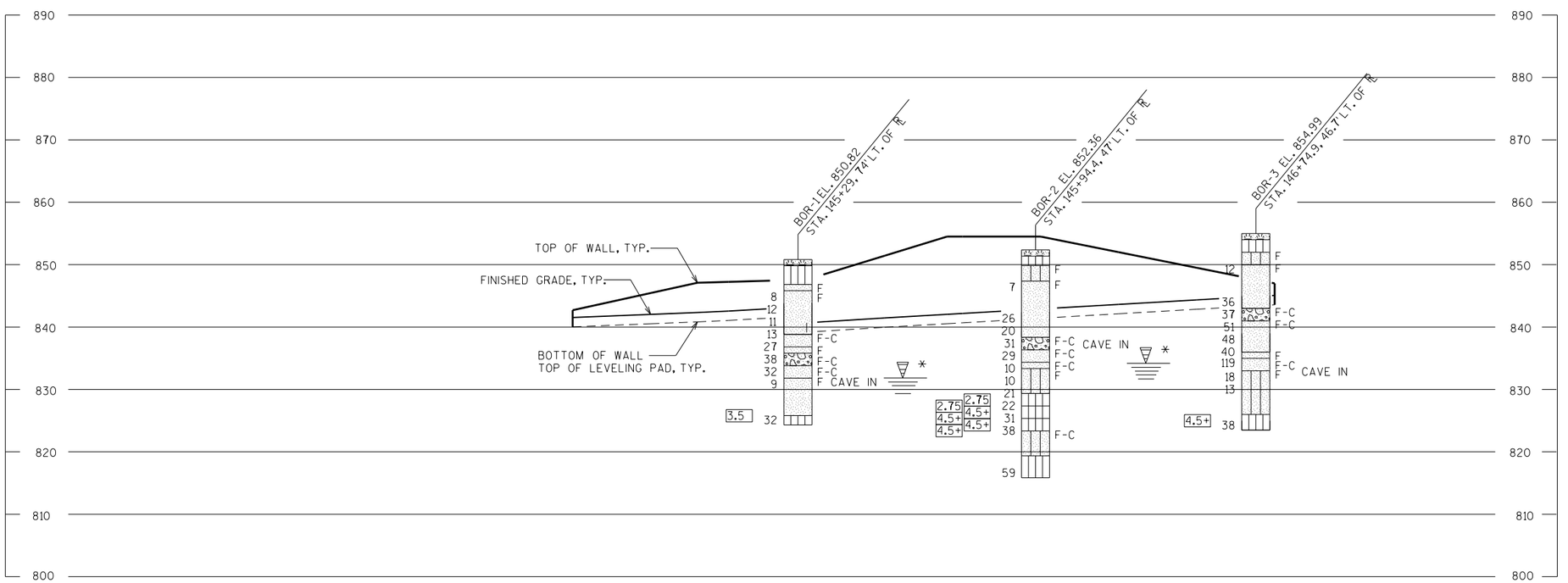
BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	9/28/2016	152076.8693	669469.2871
2	9/28/2016	152141.9026	669439.9573
3	9/28/2016	152203.2931	669382.1197

BORINGS COMPLETED BY: WISDOT

REPORT COMPLETED BY: WISDOT

ALL COORDINATES REFERENCED TO WCCS NAD 83(91) WAUKESHA COUNTY





* THE GROUND WATER ELEVATION WAS DETERMINED FROM WHERE THE SOIL SAMPLE WAS DESCRIBED AS WET.

STATE PROJECT NUMBER

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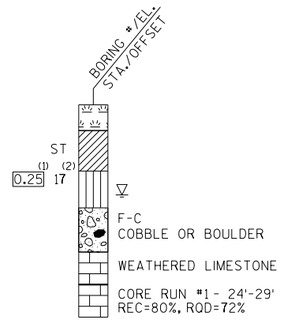
MATERIAL SYMBOLS

ASPHALT	TOPSOIL	PEAT
CONCRETE	FILL	GRAVEL
SAND	CLAY	SILT
BOULDERS OR COBBLES	LIMESTONE	BEDROCK (UNKNOWN)
SHALE	SANDSTONE	IGNEOUS/ META

LEGEND OF BORING



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

(2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

GROUND WATER ELEVATION

- AT TIME OF DRILLING
- END OF DRILLING
- AFTER DRILLING

ABBREVIATIONS

F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT SIMILAR SUBSURFACE CONDITIONS BELOW, BETWEEN, OR BEYOND THESE BORINGS. VARIATIONS IN SOIL CONDITIONS SHOULD BE EXPECTED AND FLUCTUATIONS IN GROUNDWATER LEVELS MAY OCCUR.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE R-67-145

DRAWN BY TLP/MJK PLANS CK'D. SAD

SUBSURFACE EXPLORATION

SHEET 3

8

8

SCALE = 2.0