PRECAST RIGID FRAME/RETAINING WALL - DESIGN CRITERIA

31. THE RIGID FRAME, RIGID FRAME HEADWALLS, AND RETAINING WALLS SHALL BE DESIGNED BY THE FABRICATOR, INCLUDING THE ANCHORAGE AND CONNECTIONS BETWEEN ELEMENTS. THE RIGID FRAME SHALL BE DESIGNED FIRST, FOLLOWED BY THE RETAINING WALLS AND ANY CONNECTIONS TO THE FRAME AND/OR ABUTMENTS THAT MAY BE REQUIRED. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS AND CALCULATIONS TO THE ENGINEER IN ACCORDANCE WITH SECTION 105. SHOP DRAWINGS MUST DEMONSTRATE COMPATIBILITY BETWEEN THE FRAME AND WINGWALL SYSTEM CHOSEN BY THE CONTRACTOR.

32. THE SOIL PROPERTIES AND DESIGN PARAMETERS USED FOR THIS PROJECT ARE AS INDICATED BELOW.

    A. SOIL UNIT WEIGHT = 140 PCF
    B. DESIGN LIVE LOAD = HL-93
    C. NOMINAL BEARING RESISTANCE (BEDROCK) = 70 KSF
    D. NOMINAL BEARING RESISTANCE (IN-SITU) = 4 KSF
    E. BEARING RESISTANCE FACTOR = 0.45
    F. DESIGN FILL OVER FRAME = 4 - 5 FEET
    G. AT-REST EARTH PRESSURE (KO) = 0.44
    H. CONCRETE COMPRESSIVE STRENGTH = SEE SUBSECTION 540.05(E)
    I. REQUIRED DESIGN LIFE = 75 YEARS
    J. VEHICULAR SURCHARGE = PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

PRECAST RIGID FRAME

33. THE LUMP SUM COST FOR ITEM 540.10 “PRECAST CONCRETE STRUCTURE (33’ X 6.25’)” SHALL INCLUDE THE PRECAST RIGID FRAME, HEADWALLS, AND ALL CONNECTIONS BETWEEN ADJACENT UNITS, INCLUDING RETAINING WALLS.

34. THE ABUTMENTS ARE DESIGNED FOR THE REACTIONS AND BEHAVIOR SUMMARIZED BELOW. IF THE PROPOSED FRAME REACTIONS AND GEOMETRY VARY BEYOND THE LIMITS DEFINED BELOW, THE FABRICATOR SHALL ASSUME DESIGN RESPONSIBILITY OF THE FOUNDATION, DESIGN THE NECESSARY REVISIONS TO THE FOUNDATION, AND SUBMIT STRUCTURAL CALCULATIONS FOR THE REVISED DESIGN IN ACCORDANCE WITH SUBSECTION 540.04.

    A. FRAME STIFFNESS: WHEN MODELING THE STIFFNESS OF THE FRAME FOR PURPOSES OF DESIGNING THE PILES AND PILE CAPS, THE FRAME LEG WAS ASSUMED TO HAVE A MINIMUM THICKNESS OF 12 INCHES. IF THE FABRICATOR’S PROPOSED LEG THICKNESS IS LESS THAN 12 INCHES, THE FABRICATOR SHALL ASSUME DESIGN RESPONSIBILITY OF THE PILES AND PILE CAP.

    B. FRAME REACTIONS AT TOP OF PEDESTAL: FOUNDATIONS WERE DESIGNED FOR MAXIMUM UN-FACTORED REACTIONS OF:

I.	STRUCTURE DEAD LOAD (DC):	9.4 KIPS PER FOOT
II.	LIVE LOAD (LL):	3.4 KIPS PER FOOT
III.	WEARING SURFACES (DW):	1.3 KIPS PER FOOT
IV.	EARTH PRESSURE (EV):	9.5 KIPS PER FOOT
V.	EARTH PRESSURE & LIVE LOAD (EH+LS) ON FRAME (AB #1):	5.8 KIPS PER FOOT
VI.	EARTH PRESSURE & LIVE LOAD (EH+LS) ON FRAME (AB #2):	2.9 KIPS PER FOOT
VII.	EARTH PRESSURE & LIVE LOAD (EH+LS) ON FOOTING:	2.1 KIPS PER FOOT
VIII.	EARTH PRESSURE & LIVE LOAD (EH+LS) ON PILE CAP:	4.2 KIPS PER FOOT

    C. PEDESTAL HEIGHT: THE PILE CAP AND SPREAD FOOTING ARE DESIGNED FOR THE DIMENSIONS SHOWN IN THE PLANS. IF THE PROPOSED FABRICATOR’S DESIGN REQUIRES A HIGHER PEDESTAL ELEVATION, THE FABRICATOR SHALL ASSUME DESIGN RESPONSIBILITY OF THE PILE CAP AND SPREAD FOOTING.

35. THE FABRICATOR SHALL SUPPLY THE STATE WITH THE LRFD LOAD RATING FACTORS FOR THE FRAME TO COMPLETE THE LOAD RATING TABLE ON THE PRELIMINARY INFORMATION SHEET.

36. THE PRECAST STRUCTURE DETAILS ARE SHOWN FOR REFERENCE ONLY. THE ACTUAL DIMENSIONS AND CONFIGURATION WILL BE DEPENDENT ON THE FABRICATOR. THE INSIDE CLEAR DIMENSION OF THE FRAME SHALL BE A MINIMUM OF 33 FEET AND THE THICKNESS OF THE ROOF SLAB SHALL BE NO MORE THAN 24 INCHES.

37. THE USE OF EQUIPMENT AND THE METHOD OF BACKFILLING AROUND THE BURIED STRUCTURE SHALL BE IN ACCORDANCE WITH THE FABRICATOR’S RECOMMENDATIONS. CARE SHALL BE TAKEN WHEN BACKFILLING AGAINST JOINT SEALING MATERIALS.

RETAINING WALL

38. THE DESIGN, CONSTRUCTION, HANDLING, AND ASSEMBLY OF THE RETAINING WALL SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISIONS. HANDLING AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER’S RECOMMENDATIONS AS APPLICABLE.

39. THE RETAINING WALL SHALL BE SELECTED FROM THE LIST OF WALLS ON THE APPROVED RETAINING WALL DOCUMENT AVAILABLE FROM VAOT GEOTECHNICAL SECTION WEBSITE: (HTTPS://OUTSIDE.VERMONT.GOV/AGENCY/VTRANS/EXTERNAL/DOCS/CONSTRUCTION/03GEOTECHENG/ENGINEERING/MANDRSOILAPPROVED_RETAINING_WALLS_8-2012_FINAL%20ENGINEERING.PDF)

40. THE FABRICATOR, IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS REFERENCED IN PROJECT NOTE 1, SHALL DESIGN THE PRECAST CONCRETE RETAINING WALL. THE DESIGN SHALL INCLUDE THE EFFECTS OF ALL APPLICABLE LOADS INCLUDING VEHICULAR SURCHARGE. DESIGN CALCULATIONS SHALL BE SUBMITTED WITH FABRICATION DRAWINGS STAMPED BY AN ENGINEER REGISTERED IN THE STATE OF VERMONT.

41. THE DESIGN OF THE WALLS SHALL INCORPORATE PROVISIONS FOR ADJACENT OBSTRUCTIONS SUCH AS DRAINAGE FEATURES AND GUARDRAIL POSTS IF NECESSARY. ANY CHANGES TO THE WALL SYSTEM SHALL BE DETAILED IN THE FABRICATION DRAWINGS.

42. WALL DESIGN SHALL INCLUDE DRAINAGE PROVISIONS TO PREVENT HYDROSTATIC PRESSURE BEHIND WALL.

43. A BRIDGE PLAQUE FURNISHED BY THE AGENCY SHALL BE CAST INTO RETAINING WALL NO. 2. SEE SD-502.00 FOR FURTHER DETAILS.

44. ANY ADDITIONAL LEDGE REMOVAL REQUIRED TO ACCOMMODATE RETAINING WALLS AND/OR ADDITIONAL RELATED ELEMENTS WILL BE INCLUDED IN PAYMENT FOR ITEM 900.670 “SPECIAL PROVISION (RETAINING WALLS)”.

MISCELLANEOUS

45. EPSC EXISTING CONDITIONS SHEET AND EPSC PLAN SHEET HAVE BEEN INCLUDED AS A REFERENCE FOR SUBMITTALS.

46. ITEM 519.20 “SHEET MEMBRANE WATERPROOFING, TORCH APPLIED” SHALL BE APPLIED TO THE ENTIRE BURIED SURFACE OF THE RIGID FRAME AS PER THE MANUFACTURER’S INSTRUCTIONS. THE SIDES OF THE RIGID FRAME SHALL BE COVERED PRIOR TO THE TOP. ANY OVERLAPPING OF MEMBRANE SHALL BE DONE IN A SHINGLE TYPE STYLE AND SHALL OVERLAP A MINIMUM OF ONE FOOT.

47. IF ANY TREES FOUR INCHES (4”) OR GREATER IN DIAMETER ARE CUT ON AN ADJACENT PROPERTY OWNER’S PROPERTY, THE CONTRACTOR SHALL CUT THE TIMBER INTO 12 FOOT TO 14 FOOT LOG LENGTHS AND PLACE ON THE PROPERTY OWNER’S PROPERTY AT A LOCATION MUTUALLY AGREEABLE TO THE PROPERTY OWNER, RESIDENT ENGINEER AND CONTRACTOR.

PROJECT NAME: POULTNEY
PROJECT NUMBER: BF 0138(12)

FILE NAME: sl3j276notes.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: G. LAROCHE
PROJECT NOTES (2)

PLOT DATE: 23-AUG-2018
DRAWN BY: G. LAROCHE
CHECKED BY: G. DARGAN
SHEET 6 OF 46