

GENERAL NOTES

† Add Fibrous Concrete Reinforcement. See Special Provisions.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	54-87 K-8258-01	2007	220	556

DESIGN SPECIFICATIONS:

AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1996 EDITION WITH APPROPRIATE INTERIM SPECIFICATIONS.

CONSTRUCTION SPECIFICATIONS:

KANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR STATE ROAD AND BRIDGE CONSTRUCTION, 1990 AND SPECIAL PROVISIONS.

DESIGN LOADING:

LIVE LOAD --- SURCHARGE LOAD OF 0.6 METER OF EARTH.

EQUIVALENT FLUID PRESSURE --- SEE LOADING DIAGRAMS.
OTHER LOADS --- AS SPECIFIED BY AASHTO.

UNIT STRESSES:

CONCRETE (GRADE 31) (AE) $f_c = 31 \text{ MPa}$
CONCRETE (GRADE 31) $f_c = 31 \text{ MPa}$
REINFORCING STEEL (GRADE 420) $f_y = 420 \text{ MPa}$
STRUCTURAL STEEL (GRADE 345) $f_y = 345 \text{ MPa}$

CONCRETE: ALL CONCRETE IS BID AS CONCRETE (GRADE 31) (AE). IF DESIRED, THE CONTRACTOR MAY USE CONCRETE (GRADE 31) IN ENCASED SHAFTS. BEVEL ALL EXPOSED EDGES OF CONCRETE WITH A 20 mm TRIANGULAR MOLDING, EXCEPT AS OTHERWISE NOTED ON THE PLANS. EXPOSED SURFACES, EXCEPT RECESSED GROOVES, SHALL BE GIVEN A RUBBED SURFACE. CONSTRUCTION JOINTS ARE OPTIONAL WITH THE CONTRACTOR, BUT IF USED, SHALL BE MADE ONLY AT THE LOCATIONS SHOWN, OR AT THE LOCATIONS APPROVED BY THE ENGINEER.

REINFORCING STEEL: ALL REINFORCING STEEL DIMENSIONS ARE TO THE CENTERLINE OF BARS, UNLESS OTHERWISE NOTED. ALL THE REINFORCING STEEL, EXCEPT THE SPIRAL BARS, SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615M-96 GRADE 420. SPIRAL BARS MAY MEET THE REQUIREMENTS OF EITHER ASTM A615M-96 (GR. 300 OR 420) OR A82M, AND ARE INCLUDED IN THE BID ITEM "REINFORCING STEEL (GR. 420) EPOXY COATED".

CORE HOLE (INVESTIGATIVE): SEE K.D.O.T. SPECIFICATIONS.

EXCAVATION: ALL WALL EXCAVATION SHALL BE CLASS III EXCAVATION AND SHALL BE INCLUDED IN THE BID ITEM "RETAINING WALLS". FOR LIMITS OF EXCAVATION SEE LOADING DIAGRAM & TIEBACK SHEET. EXCAVATION FOR CANTILEVERED RETAINING WALLS SHALL BE SUBSIDIARY TO CONCRETE (GRADE 31) (AE).

EXCAVATION SUPPORT: TEMPORARY SUPPORT OF EXCAVATION, AND THE CONNECTION OF THE TEMPORARY SUPPORT TO THE DRILLED SHAFTS, SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR. TIMBER LAGGING, SHOTCRETE, OR OTHER APPROVED TEMPORARY SUPPORT METHODS SHALL BE USED BETWEEN THE DRILLED SHAFTS AS CONDITIONS REQUIRE, OR AS DIRECTED BY THE ENGINEER. THE TEMPORARY EXCAVATION SUPPORT SYSTEM SHALL BE FREE-DRAINING. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE TEMPORARY SUPPORT SYSTEM TO THE ENGINEER FOR REVIEW.

THE EXCAVATION AND INSTALLATION OF TEMPORARY EXCAVATION SUPPORT SYSTEM SHALL BE PERFORMED IN SUCH A MANNER AS TO PREVENT MOVEMENT OR CAVING OF THE EXCAVATION BETWEEN THE DRILLED SHAFTS, AND TO LIMIT THE VOID SPACE BEHIND THE TEMPORARY EXCAVATION SUPPORT. ANY MOVEMENT OR CAVING OF THE EXCAVATION BETWEEN THE DRILLED SHAFTS SHALL BE IMMEDIATELY SUPPORTED BY POSITIVE BRACING. ANY VOID SPACE BEHIND TEMPORARY EXCAVATION SUPPORT SHALL BE IMMEDIATELY BACKFILLED WITH APPROVED MATERIAL.

CONCRETE ENCASEMENT SHAFT: ALL EXCAVATION, REINFORCING STEEL, CONCRETE, CASINGS, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THE CONCRETE ENCASEMENT SHAFTS AS SHOWN ON THE DETAILS AND AS DIRECTED BY KDOT SPECIFICATIONS SHALL BE SUBSIDIARY TO THE BID ITEM "RETAINING WALLS". IN NO CASE SHALL THE BOTTOM OF THE SHAFT BE PLACED HIGHER THAN THE ELEVATION SHOWN ON THE PLANS.

TEMPORARY CASING MAY BE REQUIRED TO MAINTAIN STABILITY OF THE CONCRETE ENCASEMENT SHAFT HOLE AND/OR TO ALLOW FOR INSPECTION.

CONDITIONS REQUIRING THE USE OF PERMANENT CASING ARE NOT ANTICIPATED HOWEVER, IF THE CONTRACTOR ELECTS TO USE THE PERMANENT CASING, IT WILL BE ALLOWED ONLY FROM 1.0 METER BELOW THE TOP OF THE ROADWAY CURB. THE TEMPORARY OR PERMANENT CASING, IF USED, SHALL BE INCLUDED IN THE BID ITEM "RETAINING WALLS". NO DIRECT PAYMENT SHALL BE MADE FOR CASING.

TIEBACKS: ALL TIEBACKS SHALL BE INSTALLED WITH A ENCAPSULATED DOUBLE CORROSION PROTECTION SYSTEM. SEE SPECIAL PROVISIONS. THE CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION AND TESTING OF TIEBACKS.

RETAINING WALLS: PAYMENT FOR "RETAINING WALLS (SOLDIER PILES)" WILL BE BASED ON AREAS LISTED IN THE SUMMARY OF QUANTITIES. AREAS SHOWN ARE CALCULATED BASED ON THE DISTANCE FROM THE TOP OF THE CAPBEAM TO THE BOTTOM OF THE WALL PANEL AS DETAILED ON THE PLANS. TIEBACKS, SOLDIER PILES CONCRETE ENCASEMENT SHAFTS, WALL PANELS, CAPBEAMS, BARRIERS, EXCAVATION, STRIP DRAIN AND PERFORATED AND NON-PERFORATED POLYETHYLENE TUBING SHALL BE INCLUDED IN UNIT PRICE BID FOR "RETAINING WALLS (SOLDIER PILES)".

EXPANSION, CONTRACTION AND CONSTRUCTION JOINTS: THE TYPE B EXPANSION JOINT MATERIAL SHALL CONFORM TO SECTION 1503 OF THE STANDARD SPECIFICATIONS. THE P.V.C. PLASTIC WATERSTOP SHALL CONFORM TO SECTION 1506 OF THE STANDARD SPECIFICATIONS. THE EXPANSION JOINT MATERIAL, PLASTIC WATERSTOP AND 20 mm DIAMETER EPOXY COATED SMOOTH DOWELS SHALL BE CONSIDERED SUBSIDIARY TO THE BID ITEM "RETAINING WALLS".

GEOLOGIC INFORMATION: SEE THE ROADWAY CROSS SECTION SHEETS. BORING LOGS ARE IN THE FILE OF THE CONSULTANT AND ARE AVAILABLE FOR INSPECTION BY INTERESTED AND/OR QUALIFIED BIDDERS.

CONCRETE MASONRY COATING: CONCRETE MASONRY COATING SHALL BE APPLIED TO ALL EXTERIOR CONCRETE SURFACES OF THE WALL PANELS AND BARRIERS, WITHIN THE LIMITS DETAILED IN THE PLANS. THE COLOR OF THE CONCRETE MASONRY COATING SHALL MATCH COLOR NO. 30318 (LIMESTONE TAN) OF FEDERAL STANDARD 595B UNLESS AN EQUAL IS APPROVED BY THE ENGINEER. A NON-PETROLEUM BASED FORM RELEASE AGENT SHALL BE USED ON FORMED SURFACES TO BE COATED. ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THIS WORK SHALL BE PAID FOR AS "CONCRETE MASONRY COATING" IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

SPECIAL SURFACE TREATMENT: SPECIAL SURFACE TREATMENT SHALL BE LOCATED AS SHOWN ON THE PLANS, AND SHALL BE PAID FOR AT THE CONTRACT LUMP SUM BID PRICE. ALL LABOR, FORM LINERS AND OTHER MATERIALS, AND INCIDENTALS REQUIRED TO PERFORM THIS WORK SHALL BE PAID FOR AS "SPECIAL SURFACE TREATMENT" IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

ALTERNATE DESIGN: ALTERNATE DESIGNS MAY BE SUBMITTED FOR THE RETAINING WALL (SOLDIER PILE). ALTERNATE WALL DESIGNS MUST BE PREPARED BY A PROFESSIONAL ENGINEER, AND MUST BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF KANSAS. THE CONCEPTUAL DESIGN FOR ALTERNATE WALL DESIGNS SHALL BE APPROVED/DISAPPROVED PRIOR TO BIDDING.

ALTERNATE CONCEPTUAL DESIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW NOT LATER THAN SEVEN CALENDAR DAYS BEFORE THE BID DATE. THE CONTRACTOR SHALL ALLOW FOUR CALENDAR DAYS FOR THE ENGINEER TO REVIEW THE SUBMITTAL AND RETURN SAME TO THE CONTRACTOR WITH COMMENTS AND/OR APPROVAL.

EACH ALTERNATE CONCEPTUAL DESIGN SUBMITTED WILL BE GIVEN A NUMBER DESIGNATION. AN ADDENDUM WILL BE ISSUED WHICH LISTS THE ALTERNATES WHICH HAVE BEEN APPROVED BY THEIR NUMBER DESIGNATION. DETAILS OF ALTERNATES WILL REMAIN CONFIDENTIAL UNTIL AFTER BIDS HAVE BEEN OPENED.

ALTERNATE CONCEPTUAL DESIGNS FOR THE RETAINING WALLS SHALL COMPLY WITH THE FOLLOWING DESIGN CRITERIA:

- CONCRETE SHALL BE GRADE 31 (AE).
- CONCRETE IN THE VERTICAL FACE OF THE RETAINING WALL SHALL HAVE FIBER REINFORCEMENT.
- REINFORCING STEEL SHALL BE EPOXY COATED.
- LOADING ON THE WALLS SHALL BE IN ACCORDANCE WITH THE PLANS.
- PROVISION SHALL BE MADE FOR DRAINAGE OF GROUNDWATER/SEEPAGE.
- MAXIMUM HORIZONTAL DEFLECTION AT THE TOP OF THE WALL IS 25mm.

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ITEM	UNITS	WALL N1	WALL N2	WALL N2A	WALL N2B	TOTALS
Retaining Walls (Soldier Piles)	m ²	1286.8	1068.2	959.8	128.7	3443.5
Concrete (Grade 31) (AE)	m ³	56.3	—	51.7	104.7	212.7
Reinforcing Steel Grade 420 (Epoxy Coated)	kg	4350	—	3810	9880	18 040
Core Hole (Investigative)	m	—	—	—	—	400
Handrail (Metal) (270 mm)	m	240.0	128.4	202.5	—	570.9
Concrete Masonry Coating	m ²	1726.3	1275.5	1335.2	342.0	5249.9

** Quantities are for Cantilever Retaining Walls.

Sheet No.	Drawing Title
220	General Notes and Quantities
221-222	Layout Wall N1 Plan and Elevation
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† Add Fibrous Concrete Reinforcement. See Special Provisions.

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ITEM	UNITS	WALL S1	WALL S2	TOTALS
Retaining Walls (Soldier Piles)	m ²	973.1	1568.6	2541.7
Concrete (Grade 31) (AE)	m ³	102.6	81.1	183.7
Reinforcing Steel Grade 420 (Epoxy Coated)	kg	7850	6250	14 100
Core Hole (Investigative)	m	—	—	400
Handrail (Metal) (270 mm)	m	234.1	320.3	554.4
Concrete Masonry Coating	m ²	1438.2	1923.1	3361.3


** Quantities are for Cantilever Retaining Walls.

* Quantities listed below provided for information only.

- 1517.5 m³ of Concrete (Grade 31) (AE) for Wall Panels and Capbeam. †
- 266.7 m³ of Concrete (Grade 31) (AE) for Barrier.
- 136 115 kg of Reinforcing Steel Grade 420 (Epoxy Coated) for Wall Panels & Capbeam.
- 23 455 kg of Reinforcing Steel Grade 420 (Epoxy Coated) for Barrier.
- 97 Each of Tiebacks (250 kN).
- 18 Each of Tiebacks (265 kN).
- 24 Each of Tiebacks (300 kN).
- 24 Each of Tiebacks (330 kN).
- 36 Each of Tiebacks (370 kN).
- 2 Each of Tiebacks (375 kN).
- 61 Each of Tiebacks (395 kN).
- 2 Each of Tiebacks (590 kN).
- 2667.2 m² of Strip Drain.
- 645 m of 100 mm dia. Perforated Polyethylene Pipe.
- 118 m of 100 mm dia. Non-Perforated Polyethylene Outlet Pipe.
- 1925 m³ of Class III Excavation.
- 2387 m of Concrete Encased Shaft.

* Quantities listed below provided for information only.

- 1150.7 m³ of Concrete (Grade 31) (AE) for Wall Panels and Capbeam. †
- 235.0 m³ of Concrete (Grade 31) (AE) for Barrier.
- 105 075 kg of Reinforcing Steel Grade 420 (Epoxy Coated) for Wall Panels & Capbeam.
- 20 670 kg of Reinforcing Steel Grade 420 (Epoxy Coated) for Barrier.
- 63 Each of Tiebacks (250 kN).
- 12 Each of Tiebacks (265 kN).
- 9 Each of Tiebacks (270 kN).
- 12 Each of Tiebacks (300 kN).
- 27 Each of Tiebacks (330 kN).
- 15 Each of Tiebacks (365 kN).
- 48 Each of Tiebacks (370 kN).
- 9 Each of Tiebacks (375 kN).
- 15 Each of Tiebacks (395 kN).
- 9 Each of Tiebacks (430 kN).
- 15 Each of Tiebacks (465 kN).
- 1530.1 m² of Strip Drain.
- 463 m of 100 mm dia. Perforated Polyethylene Pipe.
- 99 m of 100 mm dia. Non-Perforated Polyethylene Outlet Pipe.
- 1781 m³ of Class III Excavation.
- 1898 m of Concrete Encased Shaft.

KANSAS DEPARTMENT OF TRANSPORTATION		 Cook, Flatt & Strobel ENGINEERS, P. A.	
ROCK ROAD RETAINING WALLS GENERAL NOTES AND QUANTITIES			
DESIGNED	R.S.C.	SCALE	Noted
DETAILED	T.R.G.	DATE	
Proj. No. 54-87 K-8258-01		SEDGWICK COUNTY	QUANTITIES T.R.G. SHEET 1 OF 27