

PART 19: SPECIFICATION FOR FENCING MATERIALS  
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CITY OF COLUMBIA REGULATIONS  
PART 19  
SPECIFICATIONS FOR FENCING MATERIALS

- 19.1 GENERAL. These specifications cover materials and installation requirements for chain link fence with gates and other appurtenances.
- 19.1.1 The Contractor shall furnish the City Engineer with shop drawings of fencing, gates, etc. for his approval.
- 19.1.2 The Contractor shall do all necessary clearing, grubbing and grading along the line of work and shall furnish all materials and all labor for the installation of the fencing.
- 19.1.3 Upon completion of the work, the Contractor will be required to dispose of all surplus materials and rubbish and to restore all property which has been damaged in the course of work.
- 19.1.4 The fence is to be erected along the lines established by the City Engineer and the bottom of the fabric is to be held as uniformly as practicable two (2") inches above finish grade.
- 19.2 CONSTRUCTION MATERIALS
- 19.2.1 Fabric
- 19.2.1.1 Fabric shall be woven to a height and of a gauge called out in the Special Provisions.
- 19.2.1.2 Fabric shall be woven in a two (2") inch mesh from steel wire. Fabric shall be hot-dip galvanized after weaving with heavy zinc coating. Top and bottom salvages have a twisted and barbed finish; barbing to be done by cutting wire on a bias.
- 19.2.1.3 Tensile Strength: Wire of which the fabric is made shall have a minimum tensile strength of 80,000 pounds per square inch.
- 19.2.1.4 Galvanizing Test: The City of Columbia, acting through its Engineer, reserves the right to test the fabric used. Test to be in accordance with ASTM A90-69 or latest revision. This test to be made at Contractor's expense.
- 19.2.2 Barbed Wire: Barbed wire shall be of the four point pattern composed of two strands of 12 gauge steel wire with 14 gauge barbs spaced on five (5") inch centers. Barbed wire to be galvanized after weaving or galvanized before weaving when using aluminum barbs.
- 19.2.3 Line Posts: Use hot-dip galvanize 2 3/8" O.D. steel pipe weighing a minimum of 3.65 pounds per lineal foot. No used, rerolled or open seam material will be permitted in posts or rails.

19.2.4 Terminal Posts: End, corner and pull posts shall be hot-dip galvanized steel pipe 3" O.D. – 5.79 pounds per lineal foot. Gate posts shall be hot-dip galvanized steel pipe in accordance with the following tabulations:

GATE FRAME	GATE OPENING	GATE POST	MINIMUM WEIGHT PER LIN. FT.
2" O.D.	Single to 6' or Double to 12' Incl	3" O.D.	5.79
2" O.D.	Single Over 6' to 13; or Double Over 12' to 26' Incl.	4" O.D.	9.11
2" O.D.	Single Over 13' to 18' or Double Over 26' to 36' Incl.	6-5/8" O.D.	18.97
2" O.D.	Single Over 18' or Double Over 36'	8-5/8" O.D.	24.70

19.2.5 Post Spacing: Posts to be spaced in line of fence not farther apart than 10 ft. centers.

19.2.6 Post Setting: All posts to be set plumb and to be set in concrete footings of proper size and shape as shown in Standard Details FC #3 and FC #4 to furnish a foundation and support sufficient to withstand any strain or shock ordinarily brought to bear on a fence of this character. A liberal factor of safety is to be provided.

19.2.7 Extension Arms: Line post arms shall be of pressed steel, end and corner post arms of malleable iron or pressed steel: gate posts to have ball top. Each arm to carry three barbed wires at an angle of 45 degrees; the top most barbed wire approximately 12 inches above the fabric and approximately 12 inches from fence line as shown in Standard Details FC #6 and FC #7. Barbed wires to be securely fastened in slots by heavy wire pins. Arms having projection to be bent down over barbed wires may not be used. All components shall be hot-dip galvanized.

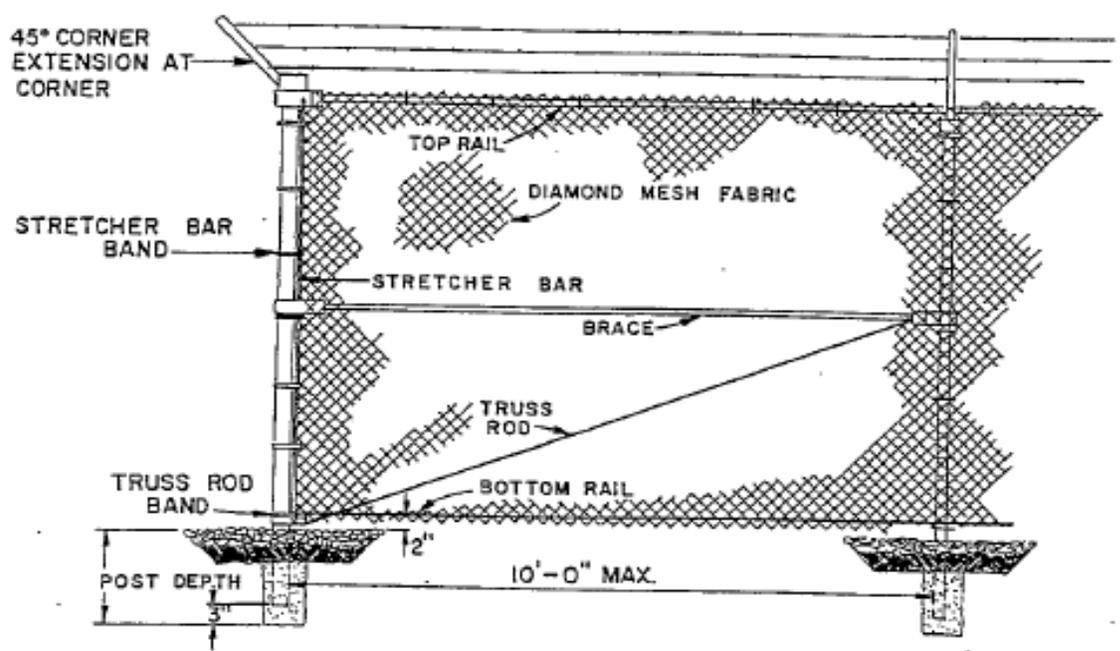
19.2.8 Top and Bottom Rail (Standard Detail FC #2): Shall be hot-dip galvanized steel pipe 1 5/8" O.D., or "H" Section, weight 2.27 lbs. per lineal foot; provided with couplings approximately every 20 feet. Couplings are to be outside sleeve type and at least 7 inches long; one coupling in every five to have a heavy spring to take up expansion and contraction. Top rail to pass through base of line post tops and form a continuous brace from end to end of each stretch of fence. Top and bottom rail to be securely fastened to terminal posts by pressed steel connections.

19.2.9 Braces (Standard Detail FC #1): Shall be hot-dip galvanized. Brace material to be same as top rail. To be spaced midway between top rail and bottom rail and to extend from terminal post to first adjacent line post, and from gate post to first

adjacent line post. Braces are to be securely fastened to posts by suitable pressed steel connections, then trussed from line post back to terminal post with 3/8" round rod.

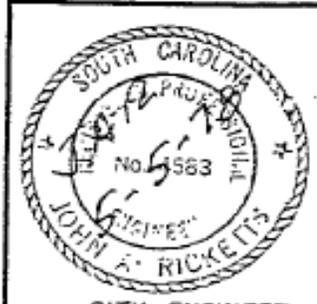
- 19.2.10 Fittings: Shall be hot-dip galvanized. All fittings are to be malleable cast iron, or pressed steel.
- 19.2.11 Fabric Bands: Fabric is to be fastened to line posts with aluminum fabric bands spaced approximately 16 inches (to handle 8' fence) apart, and to top rail with tie wires spaced approximately 24 inches apart.
- 19.2.12 Gates (Standard Drawings FC #3, FC #4 and FC #5): Gate frames shall be constructed of 2" minimum outside diameter standard pipe, nominal weight 2.72 pounds per foot, hot-dip galvanized steel pipe, securely welded. Fabric to match the fence shall be installed in the frame by means of tension bars with hook bolts. Each frame shall be provided with 3/8" diameter adjustable truss rods. Bottom hinge to be heavy malleable iron ball and socket type designed to carry the weight of the gate. Upper hinge to be wrap around type with malleable base and pressed steel strap. Each gate to be equipped with positive type latching device with provision for padlocking. All gates to be provided with center plunger rod catch and semi-automatic outer catches to secure gates in opened position. Gate size shall be as called out in the Special Provisions.

# STANDARD DESIGN FOR FENCING



TYPICAL FENCE CORNER

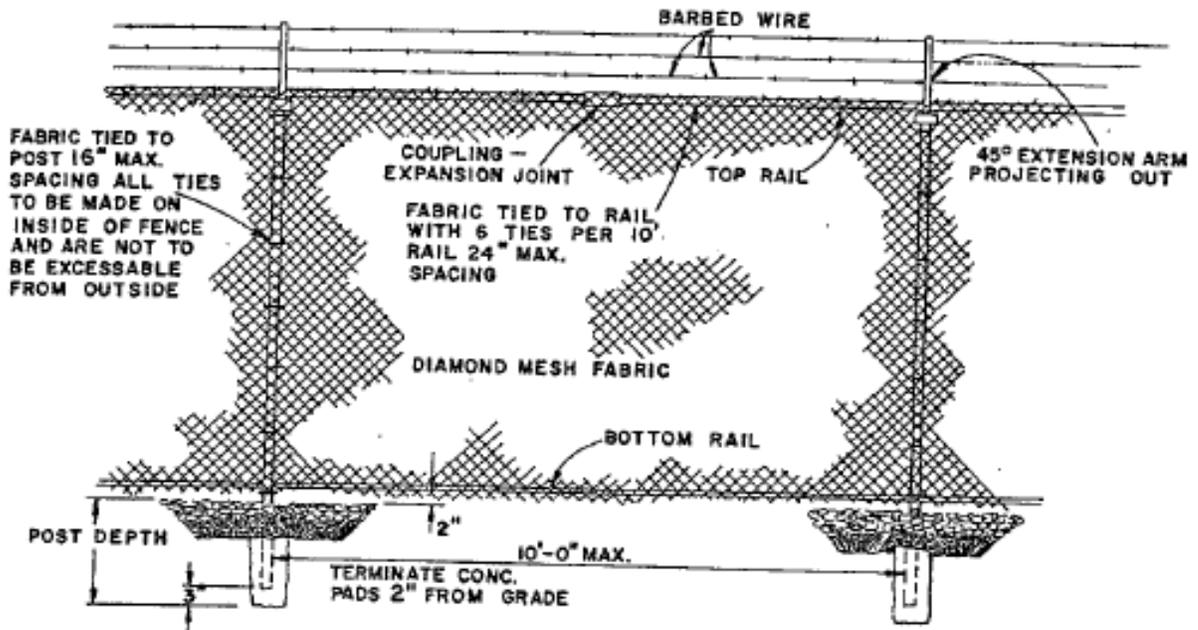
NOTES: SEE F.C. #4 FOR FOOTING DEPTH, DIAMETER



COLUMBIA ENGINEERING DEPARTMENT		
REVISED DETAIL NUMBERS	DRAWN BY - JH DATE 10/18/78	APPROVED BY <i>JAR</i> DATE 10-24-78
		DATE: 5-5-78

STANDARD DETAIL F.C. # 1

# STANDARD DESIGN FOR FENCING



TYPICAL FENCE LINE SPAN

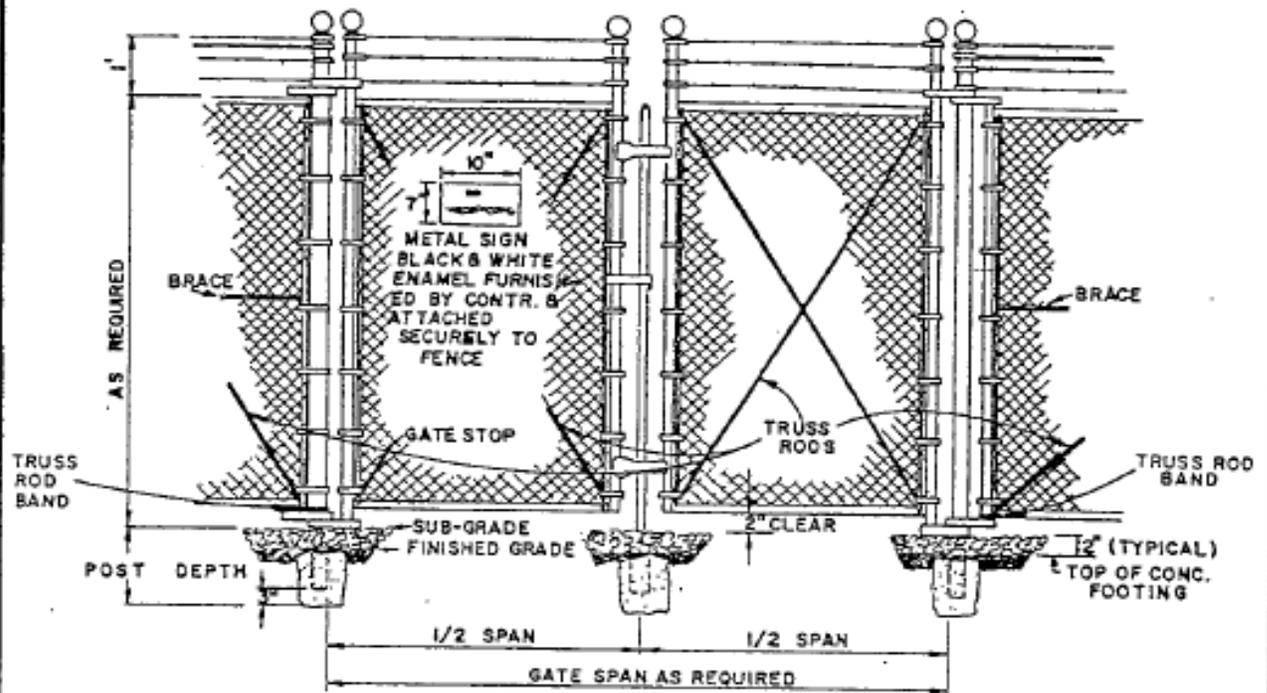
NOTES: SEE F.C. # 4 FOR FOOTING DEPTH, DIAMETER

COLUMBIA ENGINEERING DEPARTMENT

REVISED DETAIL NUMBERS	DRAWN BY- JH	APPROVED BY JAR	
	DATE 10/18/78	DATE 10-29-78	
DELETED FROM 6 TIES PER 10' RAIL	DRAWN BY- DJ	APPROVED BY JAR	DATE: 5-5-78
	DATE 7/28/78	DATE 8-2-78	

STANDARD DETAIL F.C. # 2

# STANDARD DESIGN FOR FENCING



TYPICAL DOUBLE SWING DRIVE GATE

NOTES: SEE E.C. # 4 FOR FOOTING DEPTH, DIAMETER

COLUMBIA ENGINEERING DEPARTMENT

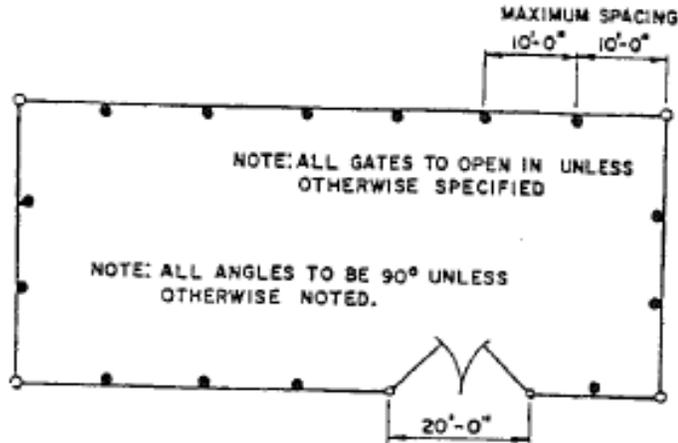
REVISED DETAIL NUMBERS	DRAWN BY- JH	APPROVED BY <i>JHR</i>
	DATE 10/18/78	DATE 10-24-78
ADDED TRUSS ROD & BANDS TO GATE POST	DRAWN BY- DJ	APPROVED BY <i>JHR</i>
	DATE 7/28/78	DATE 8-2-78



DATE: 5-5-78

STANDARD DETAIL E.C. # 3

# STANDARD DESIGN FOR FENCING

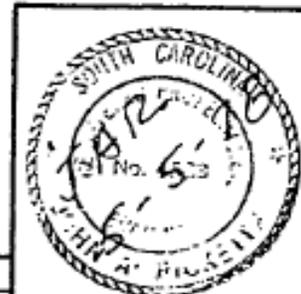


TYPICAL FENCE LAYOUT PLAN

NAME OF PART	PIPE SIZE NOM. O.D.	POST DEPTH IN FOOTING	MINIMUM FOOTING DIMENSIONS		
			TOP DIA.	BOTTOM DIA.	FOOTING DEPTH
LINE POST	2-1/2	3'-0	0'-10	1'-2	3'-3
END AND ANGLE POST	3	3'-0	1'-0	1'-4	3'-3
DOUBLE GATE POST, WIDTH OVER 12' TO 26'	4	4'-0	1'-4	2'-0	4'-3
GATE PLUNGER STOP (OR CATCH)			0'-10	1'-2	3'-0
GATE KEEPER			0'-7	0'-10	3'-0
GATE FRAME	2				
TOP BOTTOM RAIL	1-5/8				
BRACE	1-5/8				
TENSION WIRE	#7 GAUGE				

NOTES.

1. ALL DIMENSIONS ARE IN INCHES EXCEPT AS NOTED.

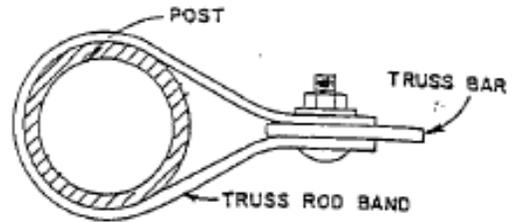


COLUMBIA ENGINEERING DEPARTMENT

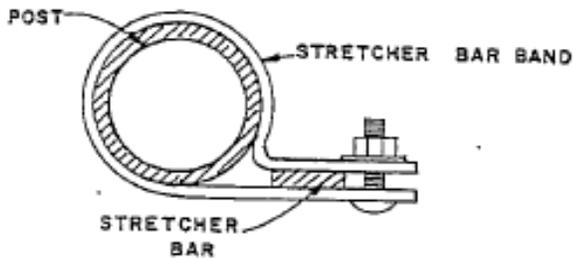
REVISED DETAIL NUMBERS	DRAWN BY - JH DATE - 10/18/78	APPROVED BY <i>JAR</i> DATE 10-24-78	CITY ENGINEER DATE: 5-5-79
ADDITION OF TENSION WIRE	DRAWN BY - Q JONES DATE - JUNE 15, 1978	APPROVED BY: <i>JAR</i> DATE 6-15-78	

STANDARD DETAIL EC. # 4

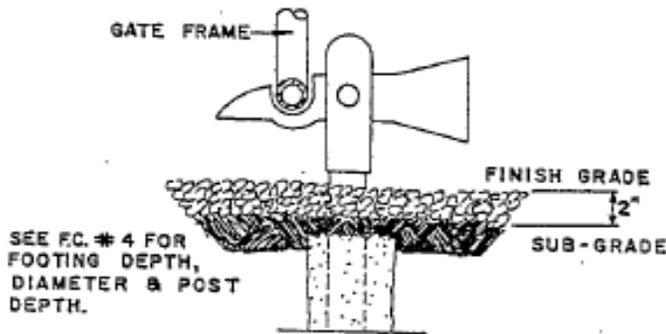
# STANDARD DESIGN FOR FENCING



TYPICAL TRUSS ROD BAND



TYPICAL STRETCHER BAR BAND



TYPICAL GATE KEEPER

Professional Engineer Seal for John A. Ricketts, South Carolina. The seal is circular with 'SOUTH CAROLINA' at the top and 'PROFESSIONAL ENGINEER' at the bottom. The name 'JOHN A. RICKETTS' is written around the inner circle. The number 'No. 4883' is in the center. A signature is written over the seal. Below the seal, it says 'CITY ENGINEER'.

COLUMBIA ENGINEERING DEPARTMENT

REVISED DETAIL NUMBERS

DRAWN BY-JH

APPROVED BY JDR

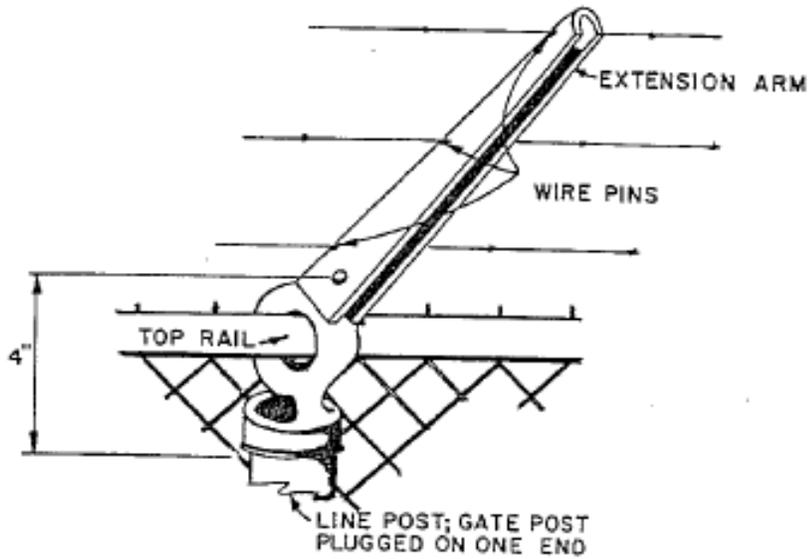
DATE 10/18/78

DATE 10-24-78

DATE: 5-5-78

STANDARD DETAIL FC. # 5

# STANDARD DESIGN FOR FENCING



TYPICAL EXTENSION ARM  
GATE, END, & LINE POSTS

COLUMBIA ENGINEERING DEPARTMENT

REVISED DETAIL NUMBERS

DRAWN BY-JH

DATE 10/18/78

APPROVED BY *JDR*

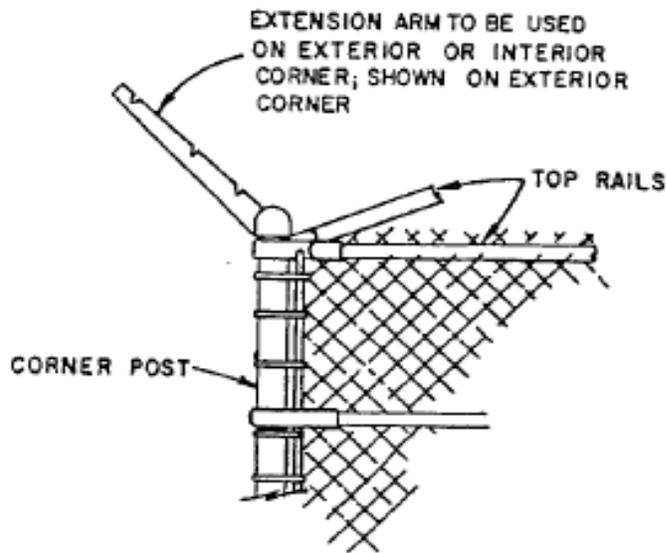
DATE 10-24-78

*JDR*  
*8-2-78*  
CITY ENGINEER

DATE: 8-2-78

STANDARD DETAIL F.C. # 6

# STANDARD DESIGN FOR FENCING



TYPICAL EXTENSION ARM  
CORNER & ANGLE POSTS



COLUMBIA ENGINEERING DEPARTMENT

REVISED DETAIL NUMBERS

DRAWN BY - JH  
DATE 10/18/78

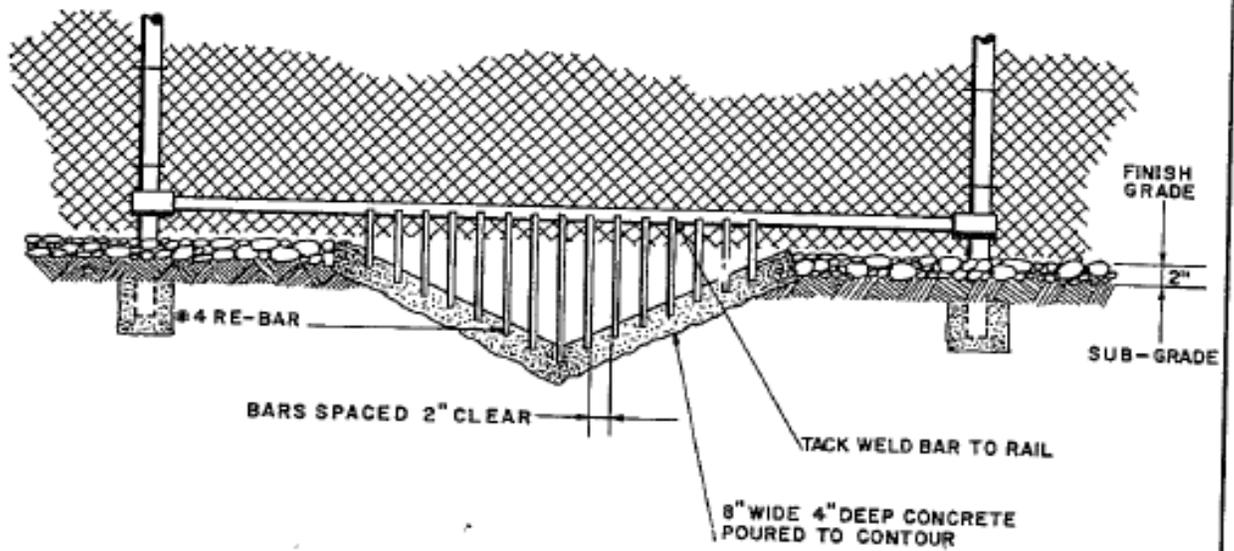
APPROVED BY *JAR*  
DATE 10-24-78

DATE: 8-2-78

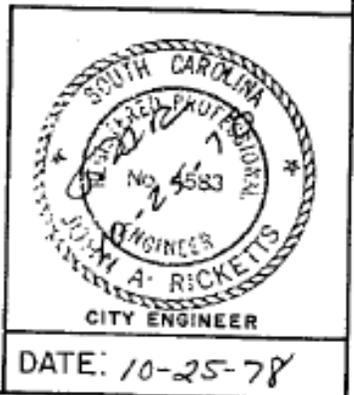
CITY ENGINEER

STANDARD DETAIL EC. # 7

# STANDARD DESIGN FOR FENCING



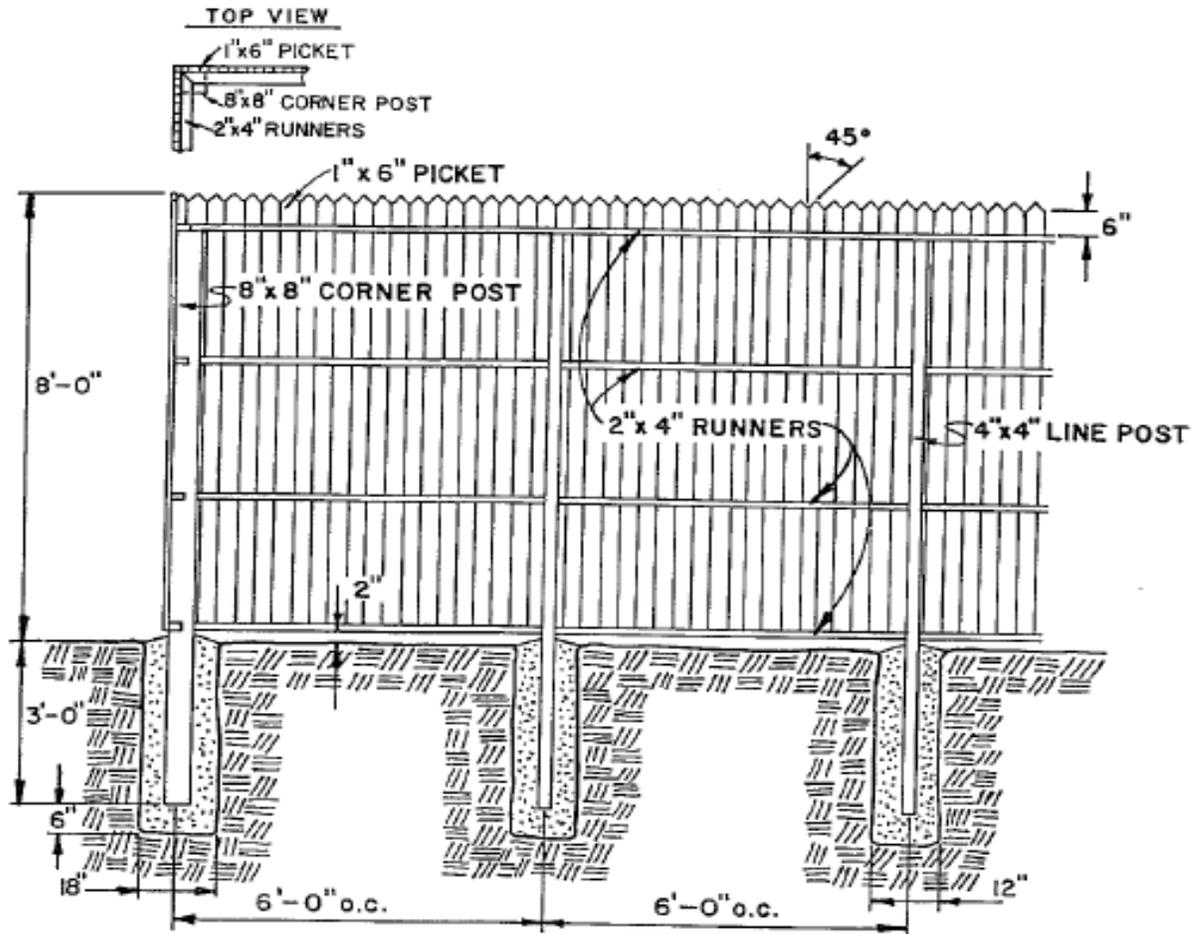
TYPICAL GUARD FOR SWALE



COLUMBIA ENGINEERING DEPARTMENT

STANDARD DETAIL EC. # 8

# STANDARD DESIGN FOR FENCING



**TYPICAL FENCE CORNER**



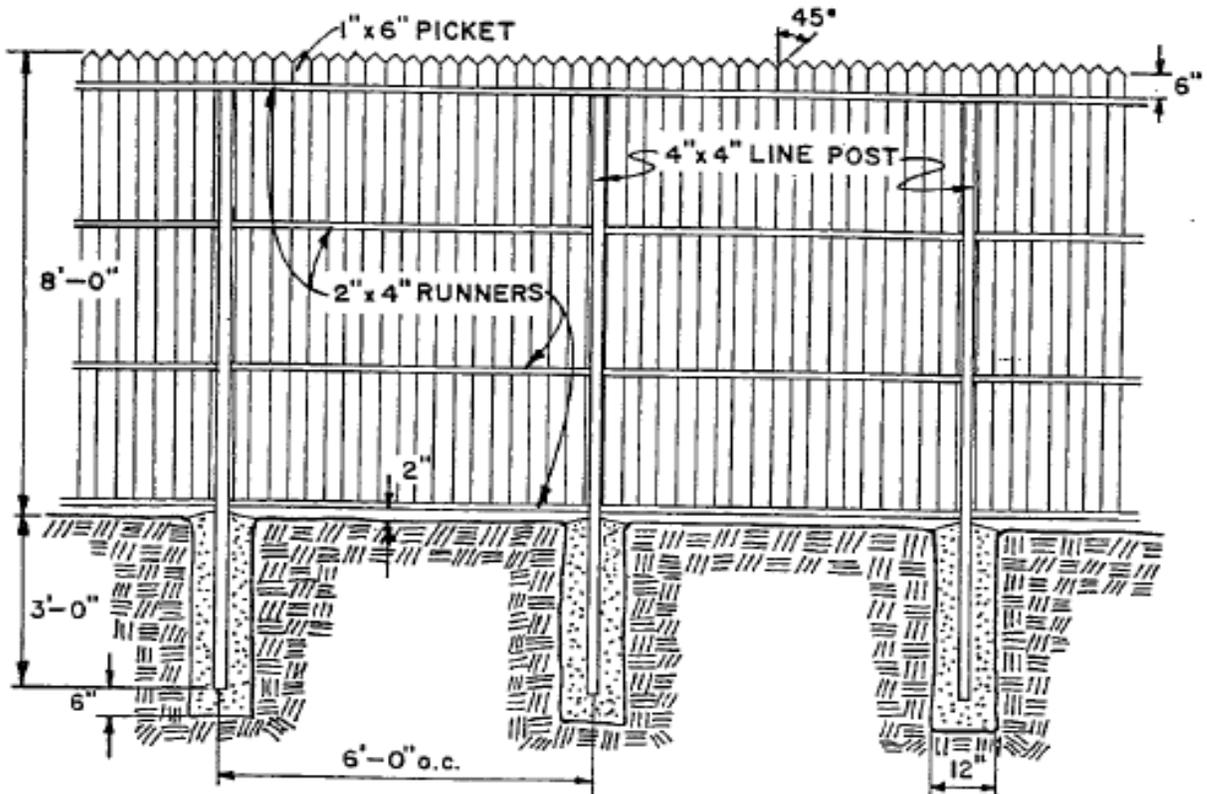
CITY ENGINEER

DATE: 2-24-87

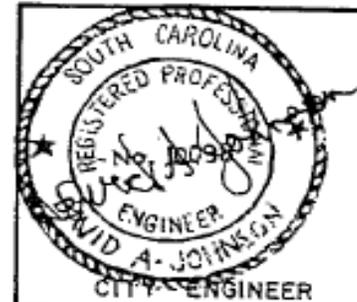
DEPARTMENT OF UTILITIES AND ENGINEERING

STANDARD DETAIL F.C. # 9

# STANDARD DESIGN FOR FENCING



TYPICAL FENCE LINE SPAN

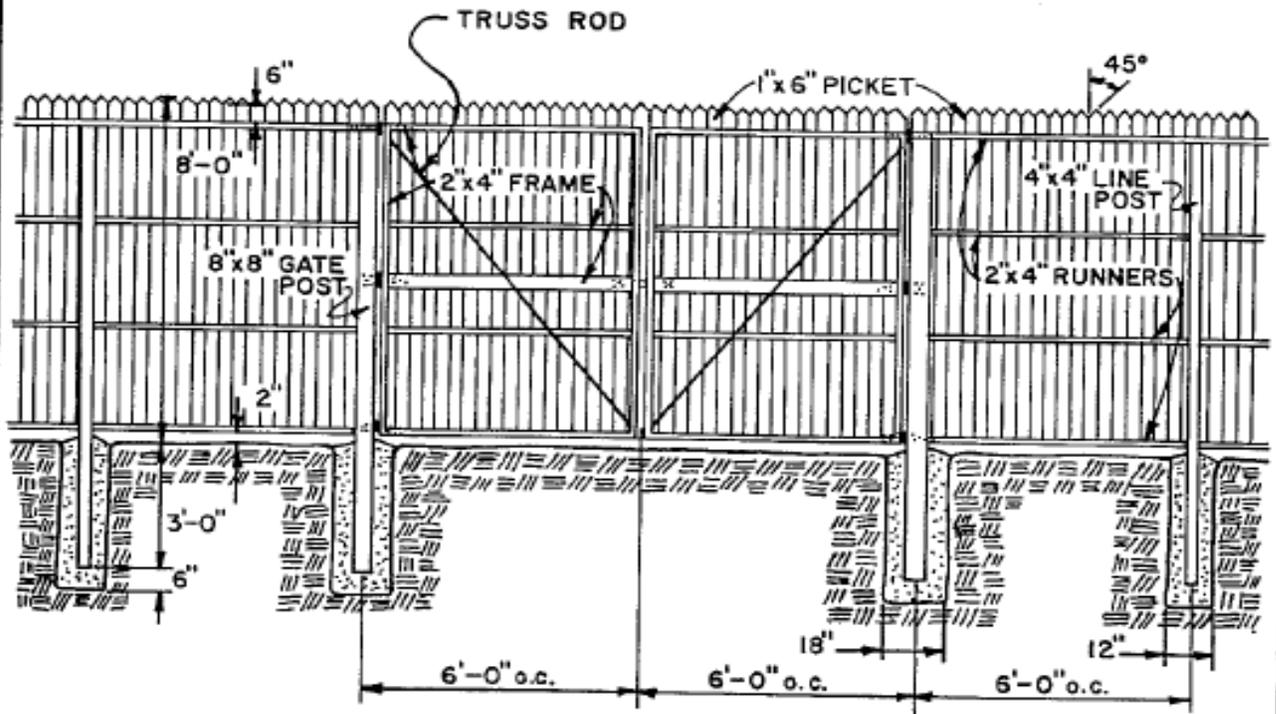


DEPARTMENT OF UTILITIES AND ENGINEERING

DATE: 2-24-87

STANDARD DETAIL F.C. # 10

# STANDARD DESIGN FOR FENCING



TYPICAL DOUBLE SWING DRIVE GATE

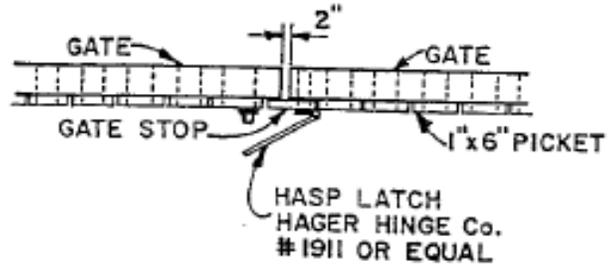


DATE: 2-24-87

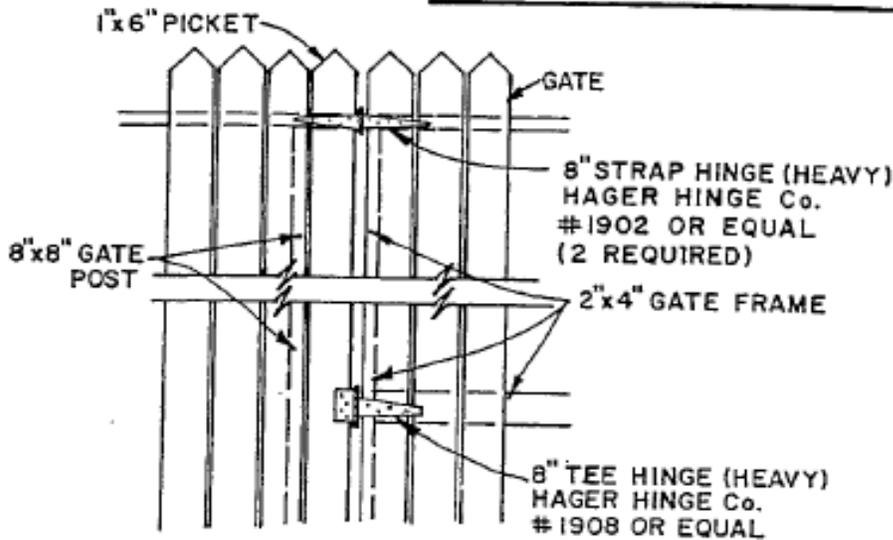
DEPARTMENT OF UTILITIES AND ENGINEERING

STANDARD DETAIL F.C.# 11

# STANDARD DESIGN FOR FENCING



**TYPICAL HASP LATCH AND GATE STOP**



**TYPICAL HINGING**



DATE: 2-24-87

DEPARTMENT OF UTILITIES AND ENGINEERING

STANDARD DETAIL F.C.# 12