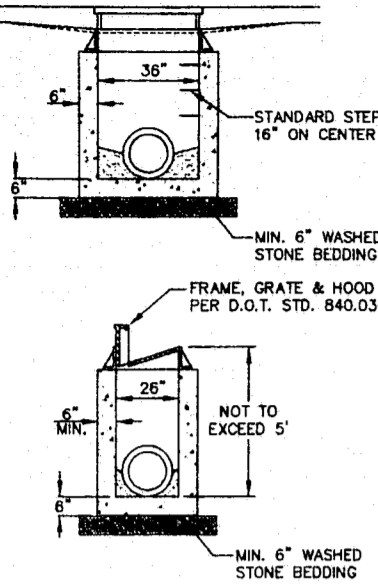
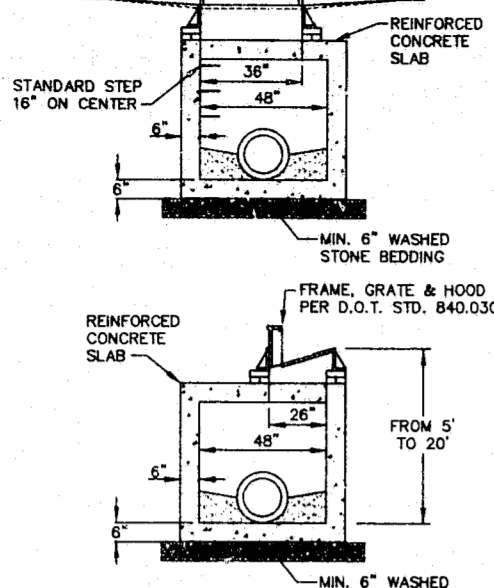


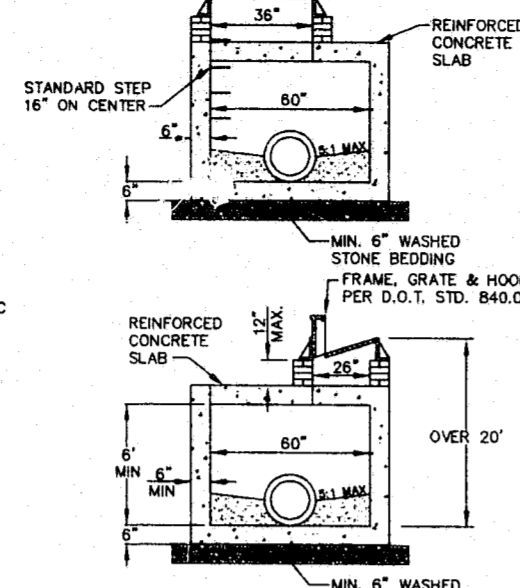
SHALLOW TYPE
(5' OR LESS IN DEPTH)



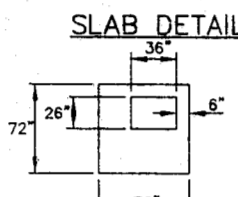
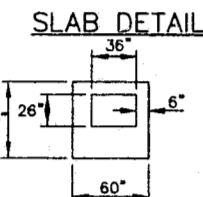
INTERMEDIATE TYPE (4" x 4")
(5' TO 20' IN DEPTH)



DEEP TYPE (5' x 5')
(OVER 20' IN DEPTH)

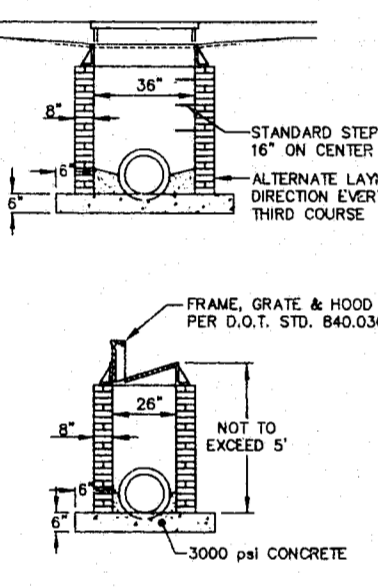


- NOTES**
- CONCRETE SHALL BE 4000 PSI MIN. FOR ALL PRECAST CONCRETE CATCH BASINS.
 - PRECAST CONCRETE STRUCTURES MAY ONLY BE INSTALLED TO DEPTHS CERTIFIED AS ACCEPTABLE BY THE MANUFACTURER.
 - "WAFLE" BOXES ARE ACCEPTABLE FOR SHALLOW TYPE CATCH BASINS.

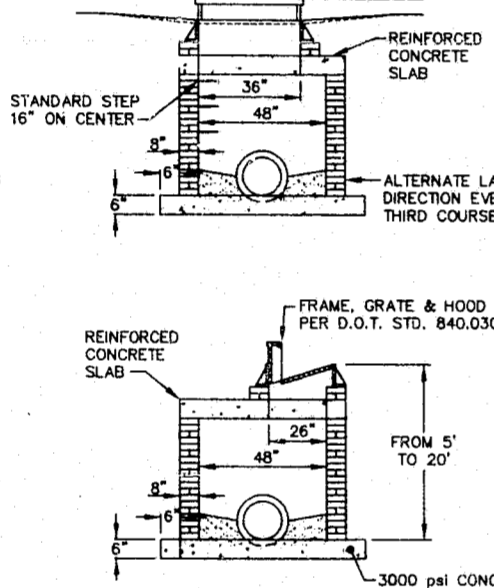


PRECAST CONCRETE

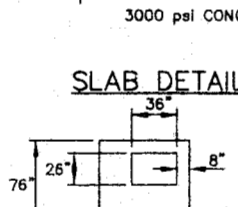
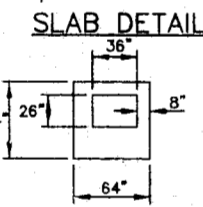
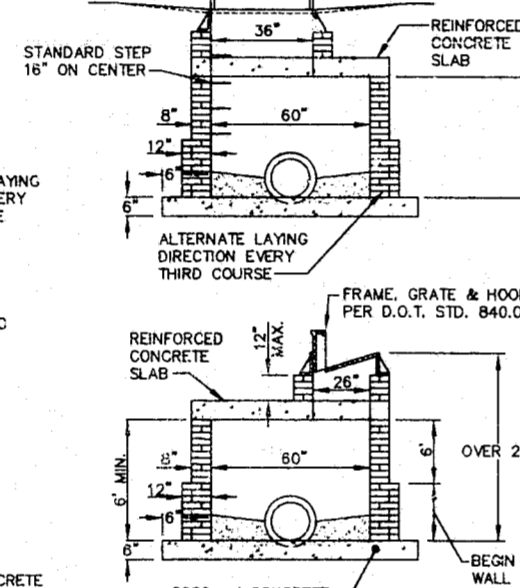
SHALLOW TYPE
(5' OR LESS IN DEPTH)



INTERMEDIATE TYPE (4" x 4")
(5' TO 20' IN DEPTH)



DEEP TYPE (5' x 5')
(OVER 20' IN DEPTH)

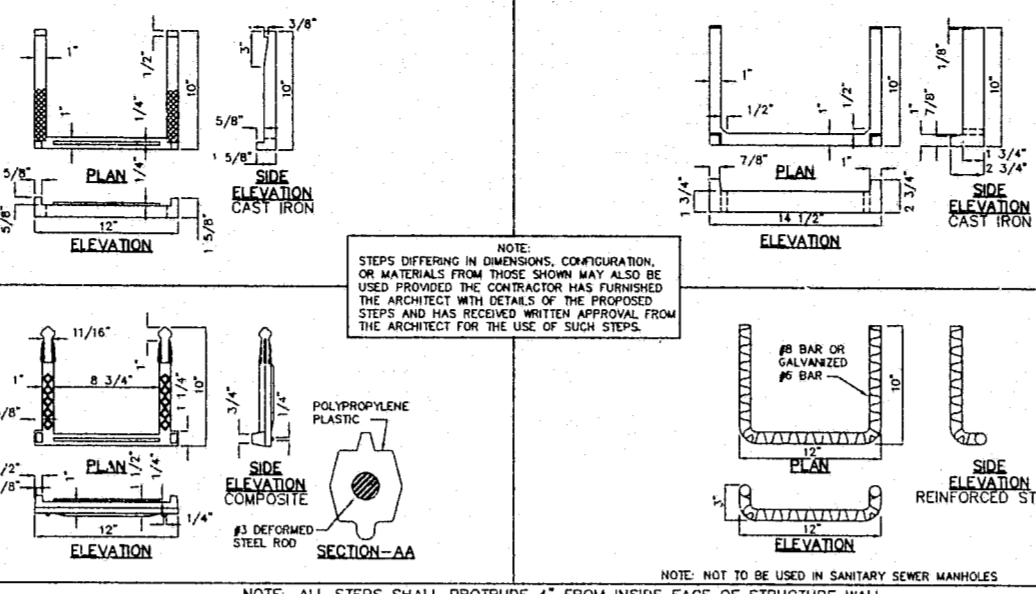


1 CONCRETE BLOCK OR BRICK STANDARD CATCH BASIN
SCALE: N.T.S.

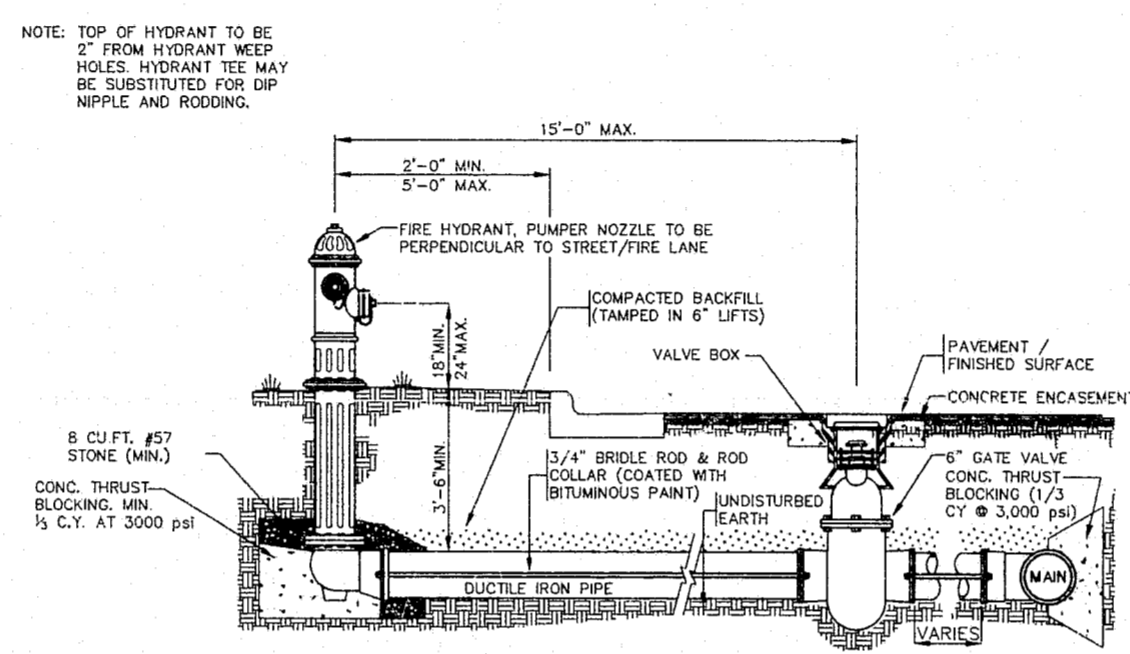
FROM	TO	AREAS (INLETS)	INLET AREA (AC)	INLET Cc RUNOFF COEFF.	INLET DISCHARGE (CFS)	TOTAL AREAS (AC)	INLET TIME (MIN)	PIPE TIME (MIN)	Tc TIME OF CONC. (MIN)	I INTENSITY (IN/HR)	Cc RUNOFF COEFF.	Q DISCHARGE (CFS)	Q SIDE-STREAM (CFS)	SLOPE	DIA. (IN)	CAPACITY (FULL) (CFS)	V FULL (FPS)	LENGTH (FT)	SEGMENT TIME (MIN)	UPPER INV. (FT)	LOWER INV. (FT)	UPSTREAM TOP ELEV. (FT)
1	2	1	0.20	0.95	1.37	0.20	5.00	0.00	5.00	7.22	0.95	1.37	0.00	0.0413	15	13.1	10.7	180	0.28	345.93	338.50	349.43
2	3	1,2	0.85	0.95	5.83	1.05	5.00	0.28	5.28	7.15	0.95	17.42	10.29	0.0214	24	33.1	10.5	14	0.02	338.30	338.00	342.00
4	2	4	0.65	0.95	4.46	0.65	5.00	0.00	5.00	7.22	0.95	4.46	0.00	0.0163	15	8.2	6.7	40	0.10	339.05	338.40	342.55
5	2	5	0.85	0.95	5.83	0.85	5.00	0.00	5.00	7.22	0.95	5.83	0.00	0.0250	15	10.2	8.3	4	0.01	338.50	338.40	342.00
6	EX 7	6	0.25	0.95	1.72	0.25	5.00	0.00	5.00	7.22	0.95	1.72	0.00	0.0045	15	4.4	3.5	22	0.10	346.00	345.90	349.50

- DESIGN CRITERIA:**
- DESIGN FOR THE 10 YR STORM
 - ASSUME TIME OF CONCENTRATION TO AN INDIVIDUAL INLET = 5 MIN.
 - INTENSITY = $g/(h+T)$, FOR 10 YR STORM $g=195$, $h=22$, T = TIME OF CONCENTRATION (g and h were derived from Raleigh Intensity-Duration-Frequency Charts, REF: NC Erosion and Sediment Control Planning and Design Manual)
 - MANNINGS "n" FACTOR = .013
 - RATIONAL METHOD: $C = .35$ GRASS, $C = .95$ PAVEMENT
- NOTE:** ALL TOP ELEVATIONS FOR CATCH BASINS ARE TOP OF HOOD AT BACK OF CURB.

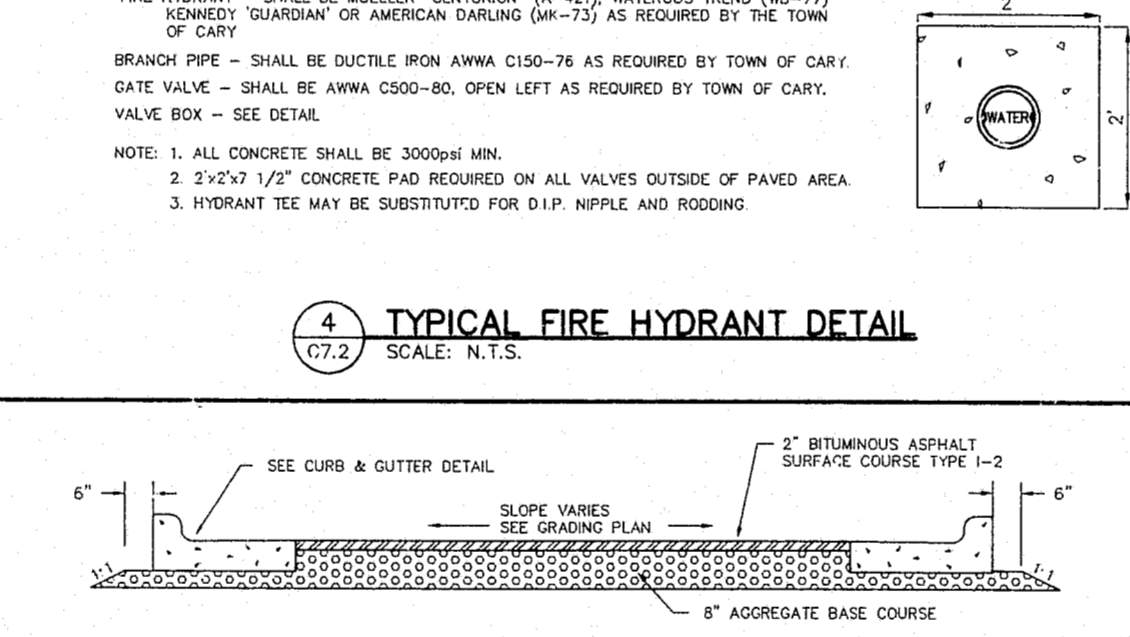
2 STORM DRAINAGE SCHEDULE
SCALE: N.T.S.



3 STANDARD DRAINAGE STRUCTURE STEPS
SCALE: N.T.S.

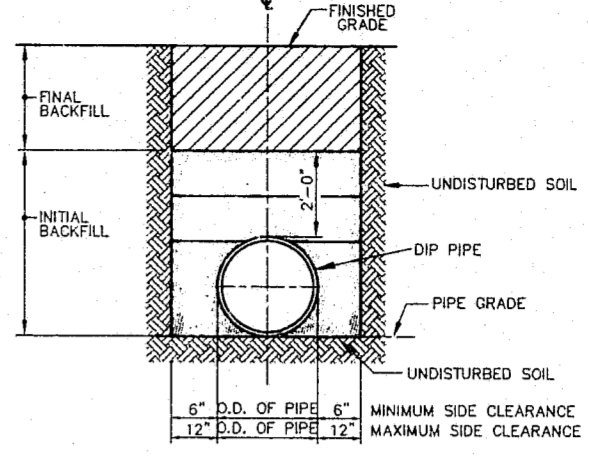


4 TYPICAL FIRE HYDRANT DETAIL
SCALE: N.T.S.



5 PAVEMENT DETAIL
SCALE: N.T.S.

- NOTES**
- FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
 - NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
 - ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
 - BACKFILL SHALL BE TAMPED IN 6" LAYERS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.



6 TYPICAL TRENCH DETAIL
SCALE: N.T.S.

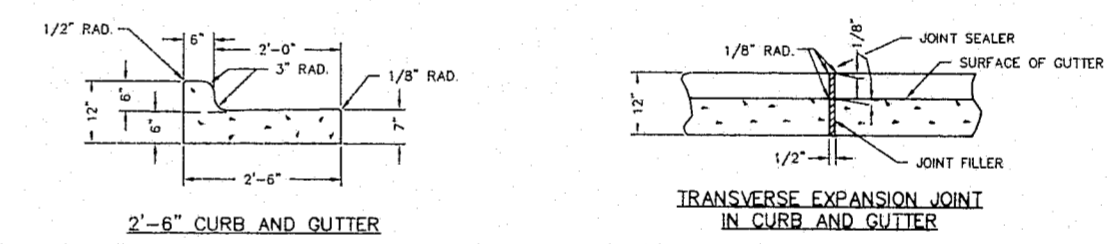
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200psi

All areas given are in Square Feet

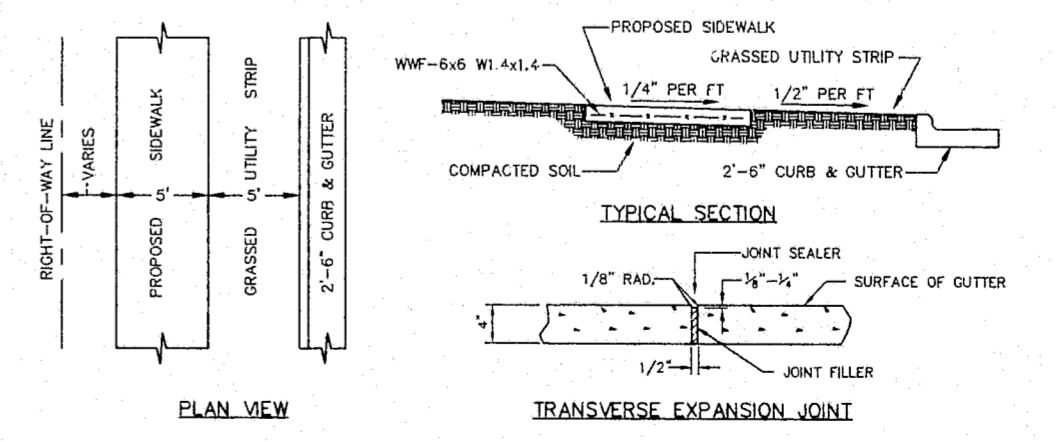
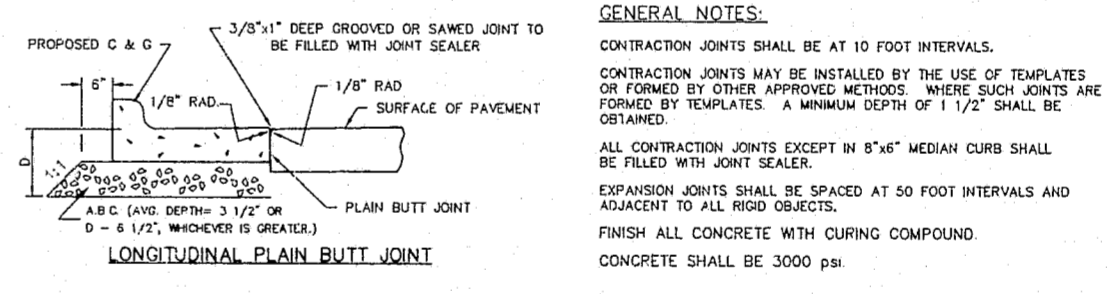
SIZE AND BEND DEGREE	START THRUST IN POUNDING	90° BEND	45° BEND
11 1/4"	1,108	1	1
22 1/2"	2,207	2	2
45"	4,328	4	4
90"	7,996	8	8
PLUG	5,652	3	3
11 1/4"	1,970	1	1
22 1/2"	3,922	2	2
45"	7,694	4	4
90"	14,215	8	8
PLUG	10,053	3	3
11 1/4"	4,433	2	2
22 1/2"	8,826	4	4
45"	17,312	8	8
90"	31,983	16	16
PLUG	22,618	5	5

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR. Use 6" - 90° bend value for hydrants for additional safety factor.

7 STANDARD THRUST BLOCKING
SCALE: N.T.S.



8 CURB & GUTTER DETAIL
SCALE: N.T.S.



9 SIDEWALK DETAIL
SCALE: N.T.S.

- GENERAL NOTES:**
- A GROOVE JOINT 1" DEEP WITH 1/8" RADI SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS.
 - ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS.
 - A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
 - ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.

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PARKING LOT
NORTHERN TELECOM INC.
LOT 4 WOODLAKE CENTER
LICHTIN PROPERTIES, INC.
 CARY, NORTH CAROLINA

CIVIL/SITE DETAILS

ISSUE SEQUENCE

NO.	DATE	DESCRIPTION
Δ	7/24/96	ISSUE FOR CONSTRUCTION

PROJECT NO.: LIC002.000
 DESIGNED BY: LVL
 DRAWN BY: TLD
 DATE: 4/26/96

C7.2
 OF 11
 CADD #: 115C7-02 (1)