

Camille Allen Child Care Center at New Grace Apostolic, 2898 Packard Road
Special Exception Use Site Plan

Cover Sheet

Applicant: Camille Allen, 505 Elder Street, Ypsilanti, MI 48197, cjustine@umich.edu

Owner: Avery Dumas, 4734 Lohr Road, Ann Arbor, MI 48108, elderaverydumas@newgrace.org

Required Statement:

1. Submitted Application(s) – This is a site plan for special exception use. A special exception use petition is also submitted. No other plans, petitions or permits are associated with this application.
2. Development Program – The proposed child care center will care for 60 children ages 6 weeks to 12 years old in the administrative area of New Grace Apostolic Temple on Weekdays between 7 am and 6 pm.
3. Community Analysis –
 - a. The proposed child care center will not have an impact on public schools.
 - b. It is a compatible and complimentary with the existing church and the surrounding neighborhood.
 - c. It will have no impact on natural features on or surrounding the site.
 - d. The traffic impact is based on (the size of the child care space in **square feet**), (the **maximum number of children licensed** by the State), and (**the number of caregivers required** by the State for the licensed number of children).

Comparison Chart

	Existing/Required	Proposed
Zoning District	R1C Single-Family Dwelling	R1C no change
Lot Area	7,200 SF required/301,870 SF existing	301,870 SF no change
Building Area	30,000 SF	30,000 SF no change
Front Setback	25 ft. required/existing	25 ft. no change
Side Setback	5 ft. required/54.5 ft existing	54.5 ft. no change
Rear Setback	30 ft. required/255 ft. existing	255 ft. no change
Building Height	30 ft. required/28 ft. existing	28 ft. no change
Vehicle Parking	98 spaces required/99 existing	99 existing no change
Bicycle Parking	6 spaces required/12 existing	12 spaces existing no change
Childcare Center # Licensed Children	60 Children	60 children

Childcare Center # Required Caregivers	15 Caregivers	15 Caregivers
Childcare Center Area (in SF) within Church Building	10,625 SF	10,625 SF no change

Existing Conditions Plan – See attached

Dimensional Layout Plan – See attached

Transportation Analysis – See above

LEGAL DESCRIPTION - PARCEL 12-10-103-043

A PARCEL OF LAND LOCATED IN THE NORTHEAST QUARTER OF SECTION 10, T3S, R6E, CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS:

COMMENCING AT THE CENTER OF SECTION 10, T3S, R6E, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN;
 THENCE N 89° 58' 30" E, 666.90 FT. ALONG THE E-W 1/4 LINE OF SAID SECTION TO THE SOUTHWEST CORNER OF BRADFORD HOMES SUBDIVISION AS RECORDED IN LIBER 15 OF PLATS, PAGES 13 AND 14, WASHTENAW COUNTY RECORDS;
 THENCE N 01° 34' 40" E, 627.27 FT. ALONG THE EAST LINE OF THE W 1/2 OF THE W 1/2 OF THE NE 1/4 OF SAID SECTION 10 TO THE NORTHWEST CORNER OF SAID SUBDIVISION;
 THENCE CONTINUING ALONG SAID EAST LINE, N 01° 34' 40" E, 660.00 FT.;
 THENCE N 89° 58' 30" E, 175.18 FT. ALONG THE NORTH LINE OF THE SOUTH 5 ACRES OF THE WEST 20 RODS OF THE FOLLOWING PARCEL; THE NE 1/4 OF SAID SECTION 10 EXCEPT THE W 1/2 OF THE W 1/2 OF SAID NE 1/4, ALSO EXCEPT THE SOUTH 38 RODS;
 THENCE N 01° 34' 40" E, 845.35 FT. TO THE CENTERLINE OF THE PITTSFIELD-ANN ARBOR DRAIN AND THE POINT OF BEGINNING.

THENCE CONTINUING ALONG SAID LINE, N 01° 34' 40" E, 477.80 FT.;
 THENCE N 89° 49' 50" E, 165.15 FT. ALONG THE SOUTHERLY LINE OF PACKARD ROAD;
 THENCE S 01° 33' 50" W, 425.08 FT.;
 THENCE S 71° 15' 40" W, 165.48 FT. ALONG THE CENTERLINE OF SAID PITTSFIELD-ANN ARBOR DRAIN TO THE POINT OF BEGINNING.

BEING A PART OF THE NE 1/4 OF SAID SECTION 10, CONTAINING 1.61 ACRES OF LAND MORE OR LESS, AND BEING SUBJECT TO EASEMENTS OF RECORD.

LEGAL DESCRIPTION - PARCEL 12-10-103-044

A PARCEL OF LAND LOCATED IN THE NORTHEAST QUARTER OF SECTION 10, T3S, R6E, CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS:

COMMENCING AT THE NORTH 1/4 CORNER OF SECTION 10, T3S, R6E, WASHTENAW COUNTY, MICHIGAN;
 THENCE N 89° 49' 50" E, 666.77 FT. ALONG THE NORTH LINE OF SAID SECTION 10;
 THENCE S 01° 34' 40" W, 83.04 FT. TO A POINT ON THE SOUTHERLY RIGHT OF WAY OF PACKARD ROAD, SAID POINT BEING THE POINT OF BEGINNING;

THENCE N 89° 49' 50" E, 175.07 FT. ALONG THE SOUTHERLY RIGHT OF WAY OF PACKARD ROAD;
 THENCE S 01° 34' 40" W, 1323.18 FT.;
 THENCE S 89° 58' 30" W, 175.06 FT.;
 THENCE N 01° 34' 40" E, 1322.74 FT. TO THE POINT OF BEGINNING.

CONTAINING 6.32 ACRES OF LAND, MORE OR LESS, SUBJECT TO A 132.00 FT. WIDE EASEMENT FOR DRAIN PURPOSES AND SUBJECT TO EASEMENTS OF RECORD, IF ANY.

TREE SURVEY

Note: Trees highlighted in bold are landmark trees.

1-14	Pinus resinosa	5'-12"	86	Fraxinus pennsylvanica	6"
15	Pinus strobus	24"	69	Juglans nigra	9"
16	-	12"	70	-	6"
17	Picea abies	6" (pole-like)	71	Crataegus mollis	Twin 5"
18	-	-	72	-	8"
19	Picea abies	10"	73	Juglans nigra	7"
20	-	16"	74-79	Juglans nigra	3-3.5"
21	-	-	-	-	1.4"
22	-	24"	-	-	1-6.5"
23	Pinus strobus	12"	-	-	1-7.5"
24	Picea abies	16"	80	Fraxinus pennsylv.	28"
25	-	12"	81	-	7.5"
26	Ulmus americana	6"	82	-	10.25"
27	Picea abies	6"	83	-	6"
28	-	16"	84	-	7"
29	Acer negundo	8"	85	-	6"
30	Picea abies	14"	86	-	10.5"
31	-	14"	87	Quercus palustris	9.5"
32	-	8"	88-94	Cluster of trees includes:	-
33	-	8"	3	Fraxinus pennsylv.	10"
34	Fraxinus pennsylvanica	8"	3	Juglans nigra	5.25"
35	Picea abies	12"	95	Quercus macrocarpa	4"
36	-	16"	96	Fraxinus pennsylv.	19"
37	Pinus strobus	12"	97	-	11.5"
38	Picea abies	16"	98	-	Twin 6.75"
39	Ulmus americana	12"	99	Quercus macrocarpa	4.75"
40	-	6"	100	Juglans nigra	24"
41	-	Twin 5.5"	101	Quercus macrocarpa	16"
42	-	12"	102	Fraxinus pennsylv.	24"
43	-	7"	103	Fraxinus pennsylv.	18"
44	-	6"	104-111	Cluster of trees includes:	-
45	-	Twin 5"	8	Populus deltoides	12"-24"
46	-	6.5"	112	Ulmus americana	-
47	-	6.75"	113-115	3 Ulmus americana	8"-10"
48	-	Twin 5"	116	Rhamnus cathartica	6"
49	-	DEAD 6"	117	-	Lg. Multistem
50	Populus deltoides	7"	118	Fraxinus americana	7.25"
51	-	10"	119	Acer negundo	7.5"
52	Ulmus americana	8"	120	Pinus strobus	24"
53	Populus deltoides	14"	121	Juglans nigra	6"
54	-	11"	122	Acer negundo	Twin 7"
55	Fraxinus pennsylv.	26"	123	-	9"
56	Quercus macrocarpa	6"	124	-	Twin 6"
57	Juglans nigra	9"	125	-	6"
58	-	6.75"	126	-	9"
59	-	6.75"	127	-	7.5"
60	Fraxinus pennsylv.	9"	128	Ulmus americana	10"
61	-	10.75"	129	Juniperus virginiana	7"
62	Quercus macrocarpa	9.5"	130	Juglans nigra	8"
63	Ulmus americana	5.5"	131	Acer saccharum	7"
64	-	6"	132	Juglans nigra	6"
65	-	6"	133	-	7"
66	-	6"	134	-	6"
67	Fraxinus pennsylv.	6"	135	-	10"

Cope of Evergreens in NE Corner of site
 Pinus strobus—all < 4" dbh. Also 1 multi-stem

Mallet's Creek Drain vegetation includes minimal Cornus alba.

Oldfield areas include vegetation typical Juglans nigra, Juniperus virginiana, Malus & siberica, Zanthoxylum americanum, Ely Bromus Grass, White Sweet Clover (Mellott)

Woodland area on southern portion of glabra, Carya ovata, Fraxinus pennsylvanica macrocarpa, Quercus borealis, and Rhamnus

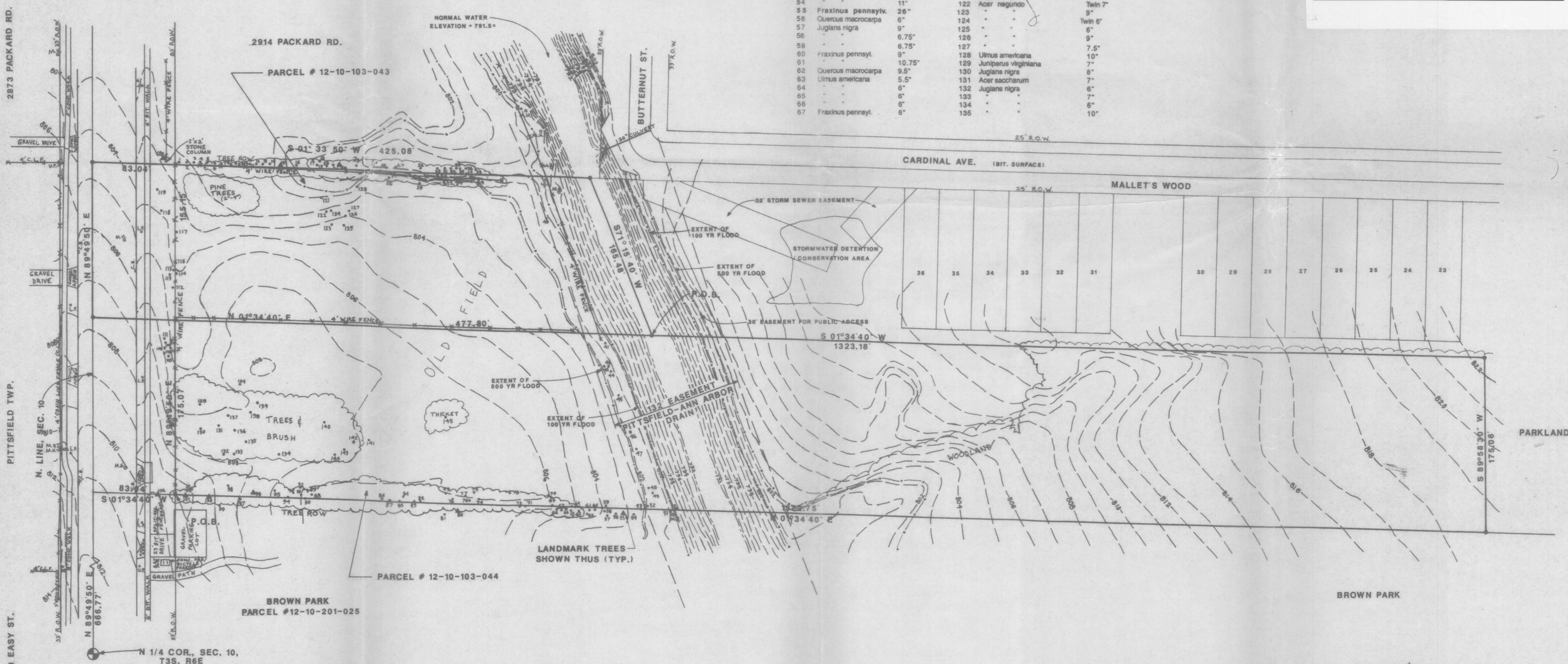
ADMINISTRATIVE AMENDMENT TO SITE PLAN

I hereby certify that this site plan has been administratively amended by the Building, Fire, Planning, Public Services, and Solid Waste Departments on February 24, 2000, and is in compliance with Chapter 57 of the Ordinance Code of the City of Ann Arbor, Michigan.

Karen Popek Hart
 Karen Popek Hart, AISP
 Planning Director

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NEW GRACE APOSTOLIC CHURCH
 2898 PACKARD ROAD
 FILE NO. 12101V7.5a



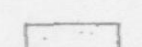
1166 w. washington st.
 ann arbor, mi 48104
 734.741.9422
 fax: 734.741.0414


NEW GRACE APOSTOLIC CHURCH
 PROP. LOCATION: NE 1/4 OF SEC. 10, T3S, R6E, ON THE SOUTH SIDE OF PACKARD RD.
 OWNER: NEW GRACE APOSTOLIC CHURCH - 632 N. 4TH AVE., ANN ARBOR, MI 48106 • (313)761-1530


EXISTING TOPOGRAPHY & TREE SURVEY

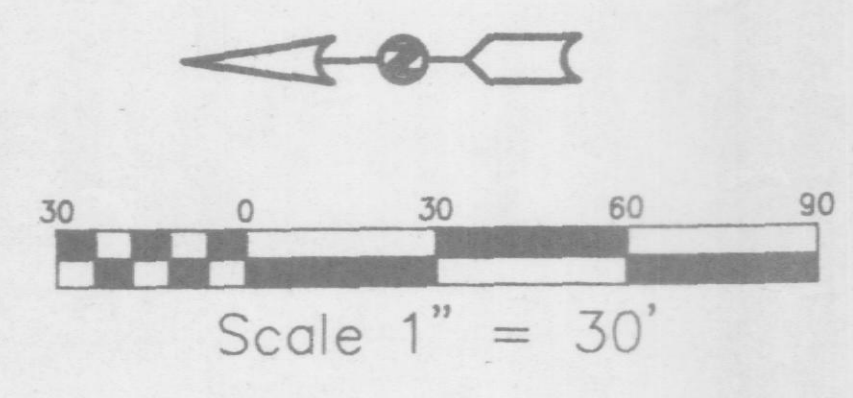
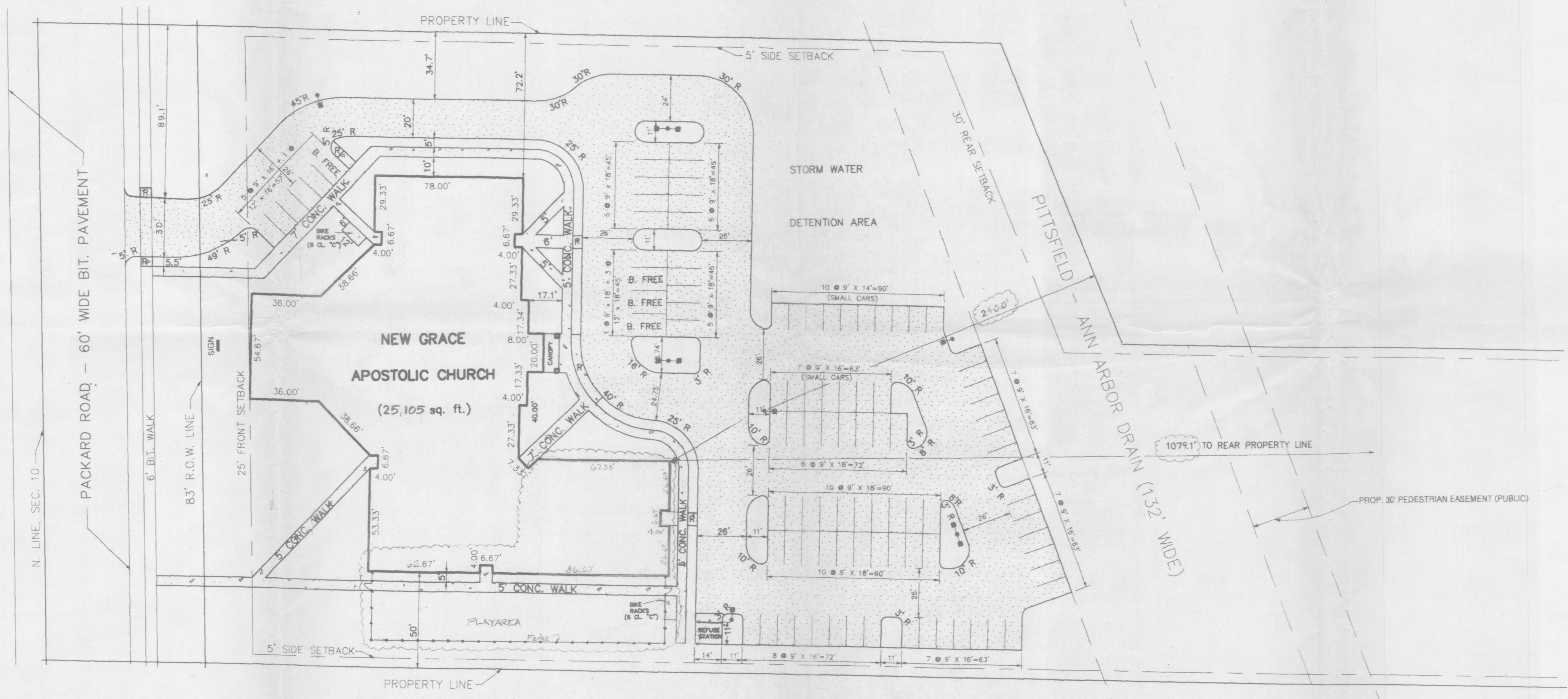
ADMIN. REV. 3/12/19

LEGEND

PROP. BITUMINOUS SURFACE 

PROP. CONCRETE SURFACE 

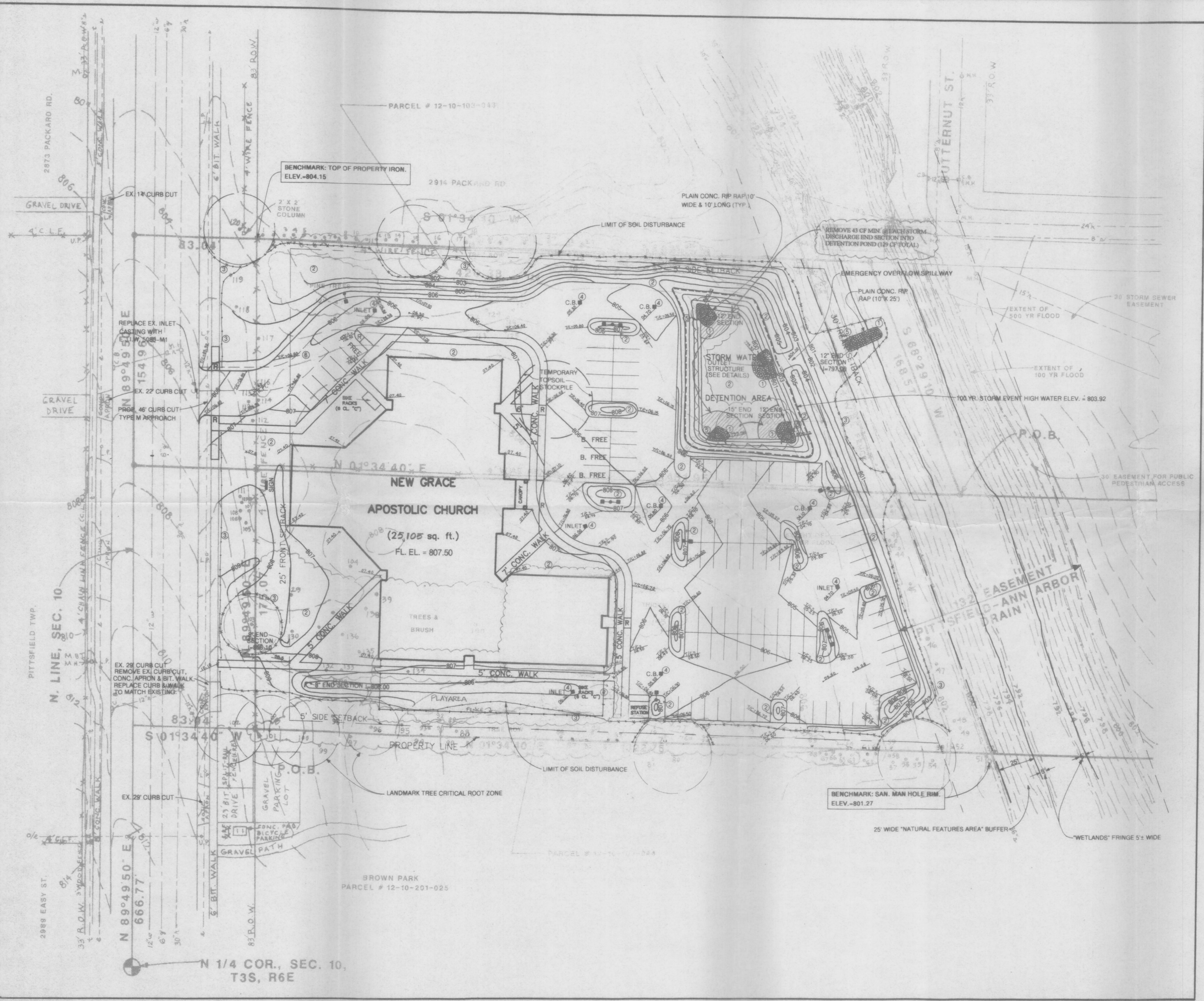
PROP. PARKING LOT LIGHT 



NEW GRACE APOSTOLIC CHURCH
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DIMENSIONAL LAYOUT PLAN

ADMIN. REV. 3 11/1/99



LEGEND

EXIST. CONTOUR	---	799
PROPOSED CONTOUR	---	807
PROP. SPOT ELEV.	o	80.50
SILT FENCE	---	
SNOW FENCE (FOR TREE PROTECTION)	---	

- NOTES**
1. ALL CURBING IS TO BE 24" CONCRETE CURB AND GUTTER (SPILLOUT TYPE) PER CONSTRUCTION DETAILS.
 2. PLACE STONE FILTERS PER CONSTRUCTION DETAILS AT ALL CATCH BASINS. (TEMP. MEASURE).
 3. ALL PERVIOUS AREAS ARE TO BE STABILIZED WITH 4" (MIN.) OF TOPSOIL, LAWN SEED, FERTILIZER AND MULCH.
 4. SEE CONSTRUCTION DETAILS FOR FILTRATION AND SOIL EROSION CONTROL MEASURES FOR THE ENTIRE SITE AND PARTICULARLY AT THE DETENTION BASIN AND ITS OUTLET STRUCTURE.

SOIL EROSION CONTROL KEY

KEY	DESCRIPTION	PERM. OR TEMP.
①	CONC. RIP RAP	PERM.
②	LAWN SEEDING	PERM.
③	SILT FENCE	TEMP.
④	STONE FILTER	TEMP.
⑤	GRAVEL CHECK DAM (6 A STONE, 2" HIGH)	TEMP.
⑥	MUD TRACKING MAT	TEMP.

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GRADING & SOIL EROSION CONTROL PLAN

ADMIN. REV. 3/12/19
 APRIL REV. 20/24/19

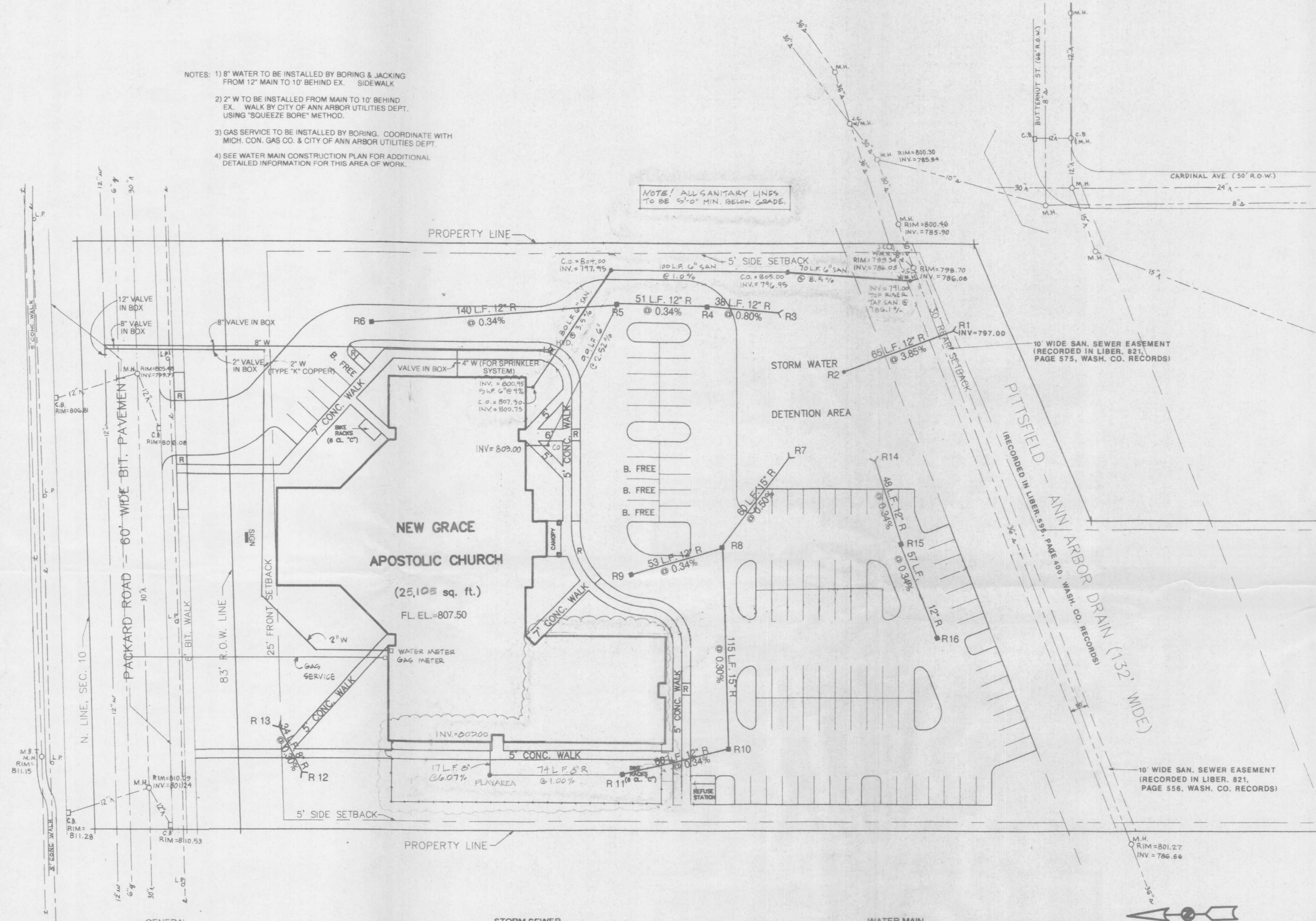


STORM SEWER STRUCTURE SCHEDULE

STR NO	STR TYPE	RIM ELEV	DISCH INV	INVERT	INVERT
R-1	12" END SECTION	---	12' 797.00	---	---
R-2	OUTLET STRUCT	SEE	CONSTR	DETAILS	---
R-3	12" END SECTION	---	12' 800.00	---	---
R-4	4' C.B.	804.70	12" S	12" N	---
R-5	4' C.B.	805.30	800.31	800.31	---
R-6	2" INLET	805.60	800.51	800.51	---
R-7	15" END SECTION	---	15' 799.98	---	---
R-8	4' C.B.	805.80	15" SE	12" N	15" W
R-9	2" INLET	806.00	800.68	800.68	---
R-10	4' C.B.	805.50	12" S	12" N	---
R-11	2" INLET	805.20	800.83	801.03	---
R-12	8" END SECTION	---	8' 806.00	---	---
R-13	8" END SECTION	---	8' 806.10	---	---
R-14	12" END SECTION	---	12' 800.02	---	---
R-15	4' C.B.	804.10	12" E	12" SW	---
R-16	2" INLET	804.70	800.18	800.18	---

- NOTES: 1) 8" WATER TO BE INSTALLED BY BORING & JACKING FROM 12" MAIN TO 10' BEHIND EX. SIDEWALK
2) 2" W TO BE INSTALLED FROM MAIN TO 10' BEHIND EX. WALK BY CITY OF ANN ARBOR UTILITIES DEPT. USING "SQUEEZE BORE" METHOD.
3) GAS SERVICE TO BE INSTALLED BY BORING. COORDINATE WITH MICH. CON. GAS CO. & CITY OF ANN ARBOR UTILITIES DEPT.
4) SEE WATER MAIN CONSTRUCTION PLAN FOR ADDITIONAL DETAILED INFORMATION FOR THIS AREA OF WORK.

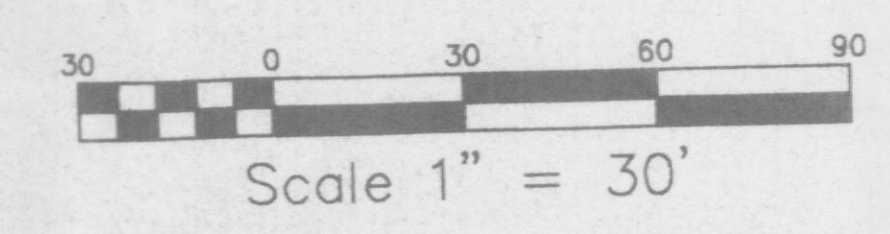
NOTE: ALL SANITARY LINES TO BE 5'-0" MIN. BELOW GRADE.



- GENERAL**
- ALL WORK IS TO CONFORM TO THE STANDARDS OF THE CITY OF ANN ARBOR UTILITIES AND PUBLIC SERVICES DEPARTMENTS.
 - REFER TO CONSTRUCTION DETAILS AND THE GRADING PLAN AND SOIL EROSION CONTROL DRAWINGS CONTAINED IN THIS SITE PLAN FOR ADDITIONAL INFORMATION.
 - ALL UTILITY PIPE TRENCHING AND BACKFILL SHALL CONSIST OF CLASS II GRANULAR MATERIAL AND SHALL CONFORM TO PUBLIC SERVICES DEPARTMENT STANDARD DETAIL "SD-TD-1"
 - GAS SERVICE WILL BE PROVIDED BY THE MICHIGAN CONSOLIDATED GAS CO. SERVICE WILL BE PROVIDED FROM THE EXISTING 6" MAIN IN PACKARD ROAD. EXACT ROUTING TO BE DETERMINED BY THE UTILITY COMPANY'S SERVICE PLANNER.
 - TELEPHONE SERVICE WILL BE PROVIDED BY AMERITECH FROM EXISTING FACILITIES ALONG PACKARD ROAD. EXACT ROUTING TO BE DETERMINED BY AMERITECH'S SERVICE PLANNER.
 - ELECTRICAL SERVICE WILL BE PROVIDED BY DETROIT EDISON FROM EXISTING FACILITIES ALONG PACKARD ROAD. EXACT ROUTING TO BE DETERMINED BY DETROIT EDISON'S SERVICE PLANNER.

- STORM SEWER**
- ALL STORM SEWER PIPING SHALL BE HDPE "ADS N-12" OR "HANCOR TITELINE" OR APPROVED EQUAL PER AASHTO M294 OR ASTM F892.
 - STORM SEWER JOINTS SHALL HAVE WATERTIGHT SLEEVES CONFORMING TO ASTM D3212. JOINT GASKETS SHALL CONFORM TO ASTM F477.
 - ROOF DOWNSPOUTS SHALL CONNECT TO THE NEAREST CATCH BASIN. CONNECTIONS SHALL BE MADE USING 8" PVC, SDR 35 PVC PIPE CONFORMING TO ASTM D3034.
 - ALL END SECTIONS SHALL BE MADE OF HDPE.

- WATER MAIN**
- ALL WATER MAIN UP TO AND INCLUDING THE PROPOSED FIRE HYDRANT WILL BE CENTERED WITHIN A 40' WIDE EASEMENT TO BE GRANTED TO THE CITY OF ANN ARBOR FOR FUTURE UPKEEP OF THE SYSTEM.
 - 6" INCH WATERMAIN SHALL BE DUCTILE IRON CLASS 50, WITH STANDARD THICKNESS CEMENT MORTAR LINING, ASPHALTIC SEAL COATING, POLYETHYLENE WRAPPED AND SHALL HAVE PUSH ON JOINTS CONFORMING TO CITY OF ANN ARBOR STANDARDS.
 - VALVES SHALL BE DOUBLE DISC GATE VALVES SUCH AS EAST JORDAN SERIES "A" OR OTHER CITY OF ANN ARBOR APPROVED EQUAL.
 - FIRE HYDRANTS SHALL BE EAST JORDAN MODEL 6-BR OR OTHER CITY OF ANN ARBOR APPROVED EQUAL.
 - SERVICE LEAD SHALL BE 2" DIAMETER COPPER, TYPE "K".
 - WATER MAIN SHALL BE TESTED PER CITY OF ANN ARBOR REQUIREMENTS.



- SANITARY SEWER LEAD**
- SANITARY SEWER LEAD PIPE, FITTINGS AND CLEANOUT RISERS SHALL BE 6" PVC, SDR 35 PIPE CONFORMING TO ASTM D 3034.
 - JOINTS SHALL BE BELL AND SPIGOT RUBBER "O" RING GASKETED JOINTS CONFORMING TO ASTM D3212.

NEW GRACE APOSTOLIC CHURCH
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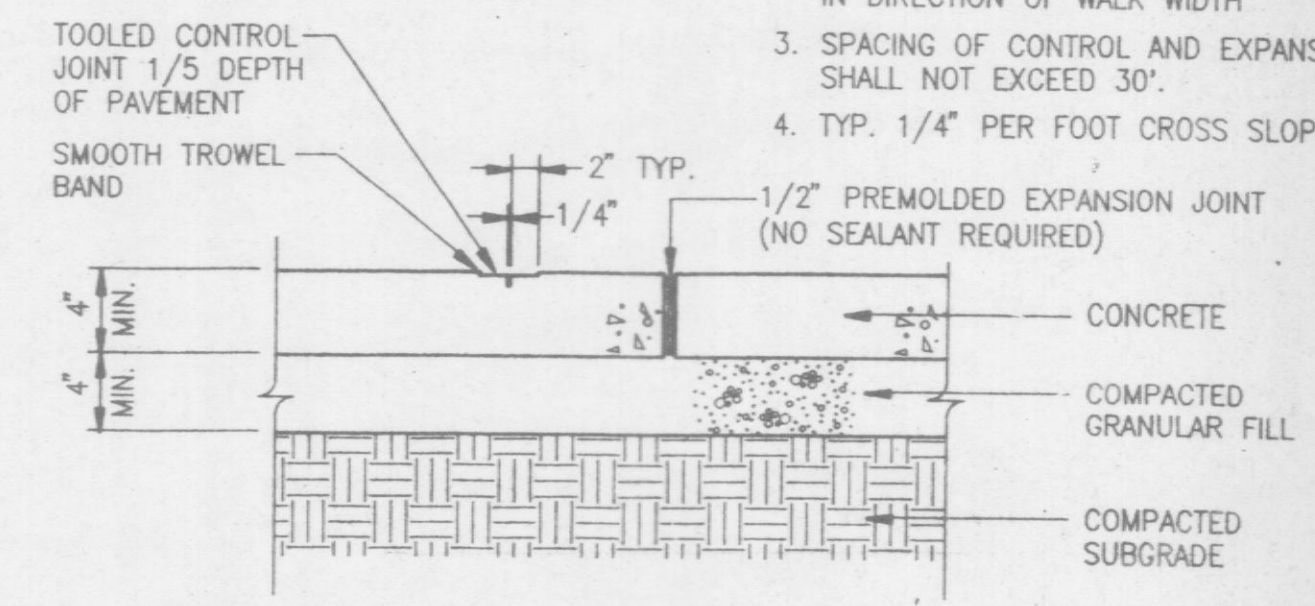
UTILITIES
PLAN

ADMIN. REV. 3 12/1/99

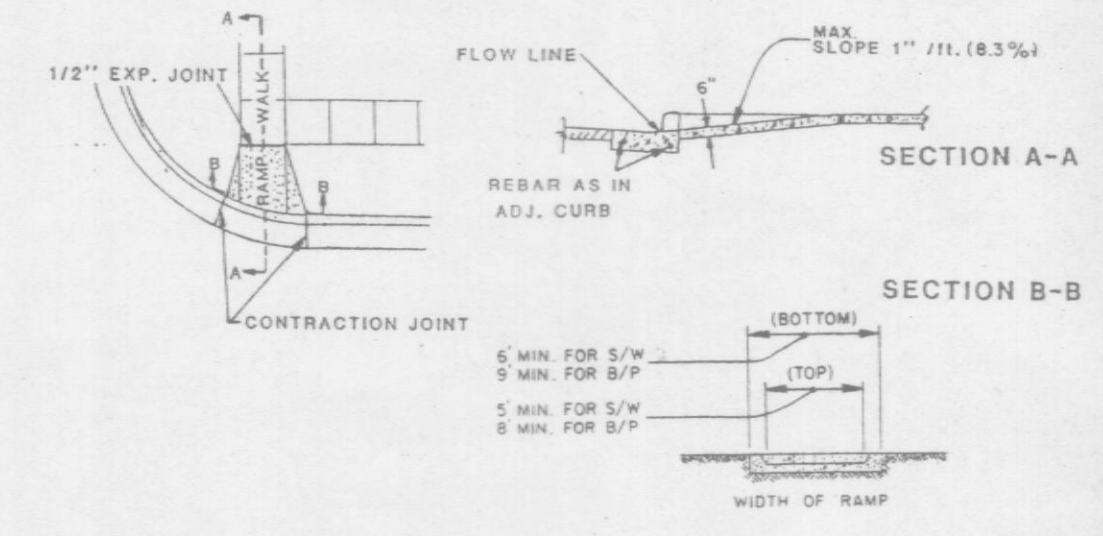


C-4

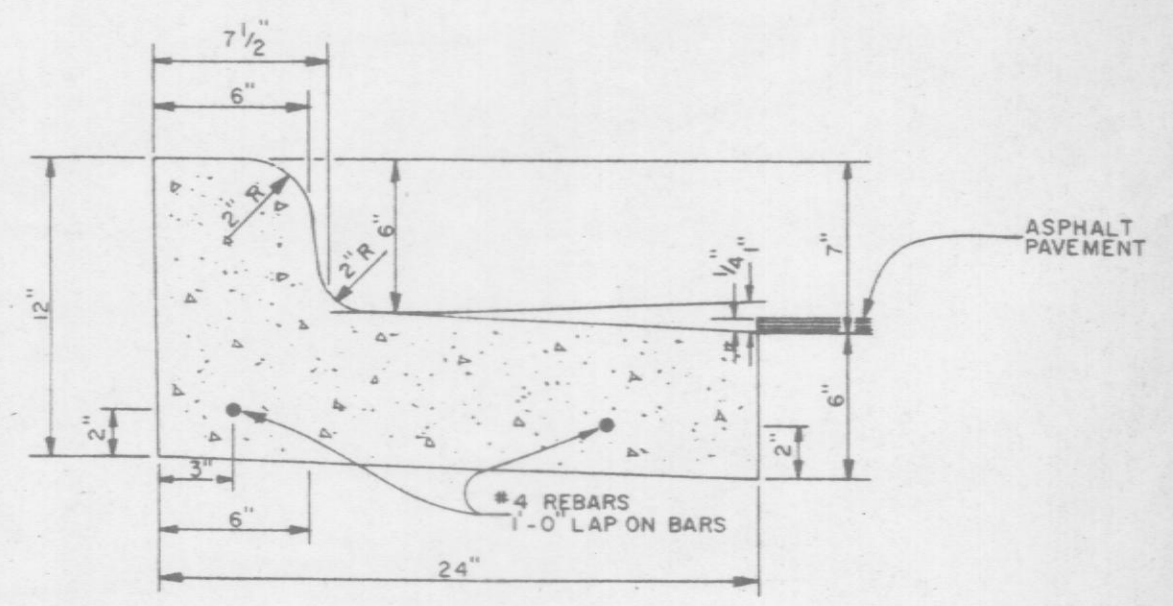
- NOTES:
1. EXPANSION JOINT TO BE PLACED BETWEEN WALK & CURB WHERE ADJACENT
 2. LIGHT BROOM FINISH SURFACE IN DIRECTION OF WALK WIDTH
 3. SPACING OF CONTROL AND EXPANSION JOINTS SHALL NOT EXCEED 30'
 4. TYP. 1/4" PER FOOT CROSS SLOPE.



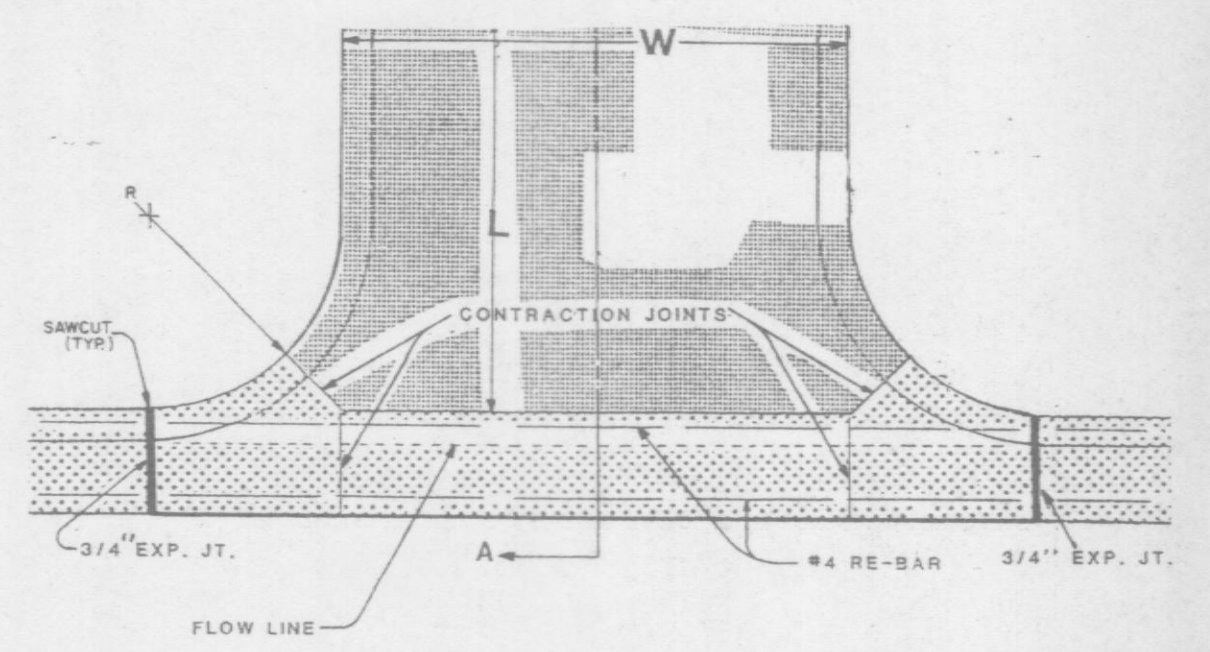
CONCRETE SIDEWALK



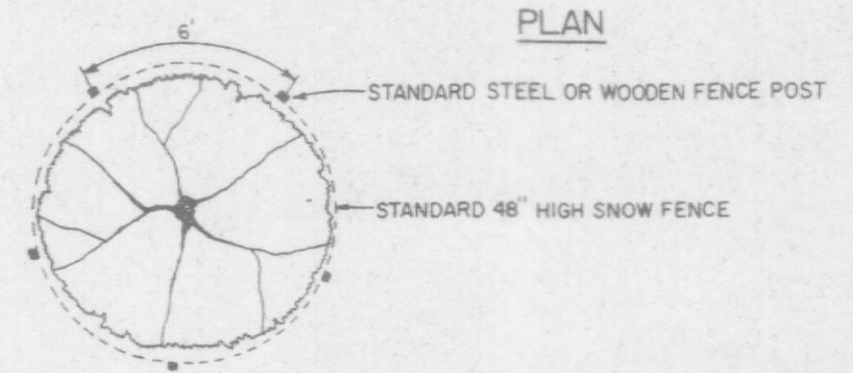
CONCRETE SIDEWALK RAMP



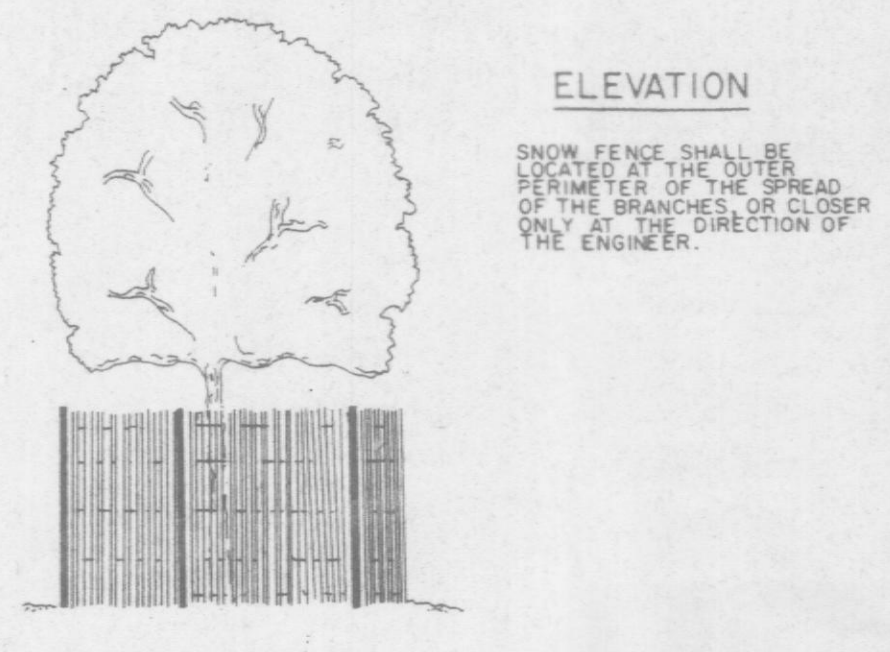
SPILLOUT CONCRETE CURB & GUTTER



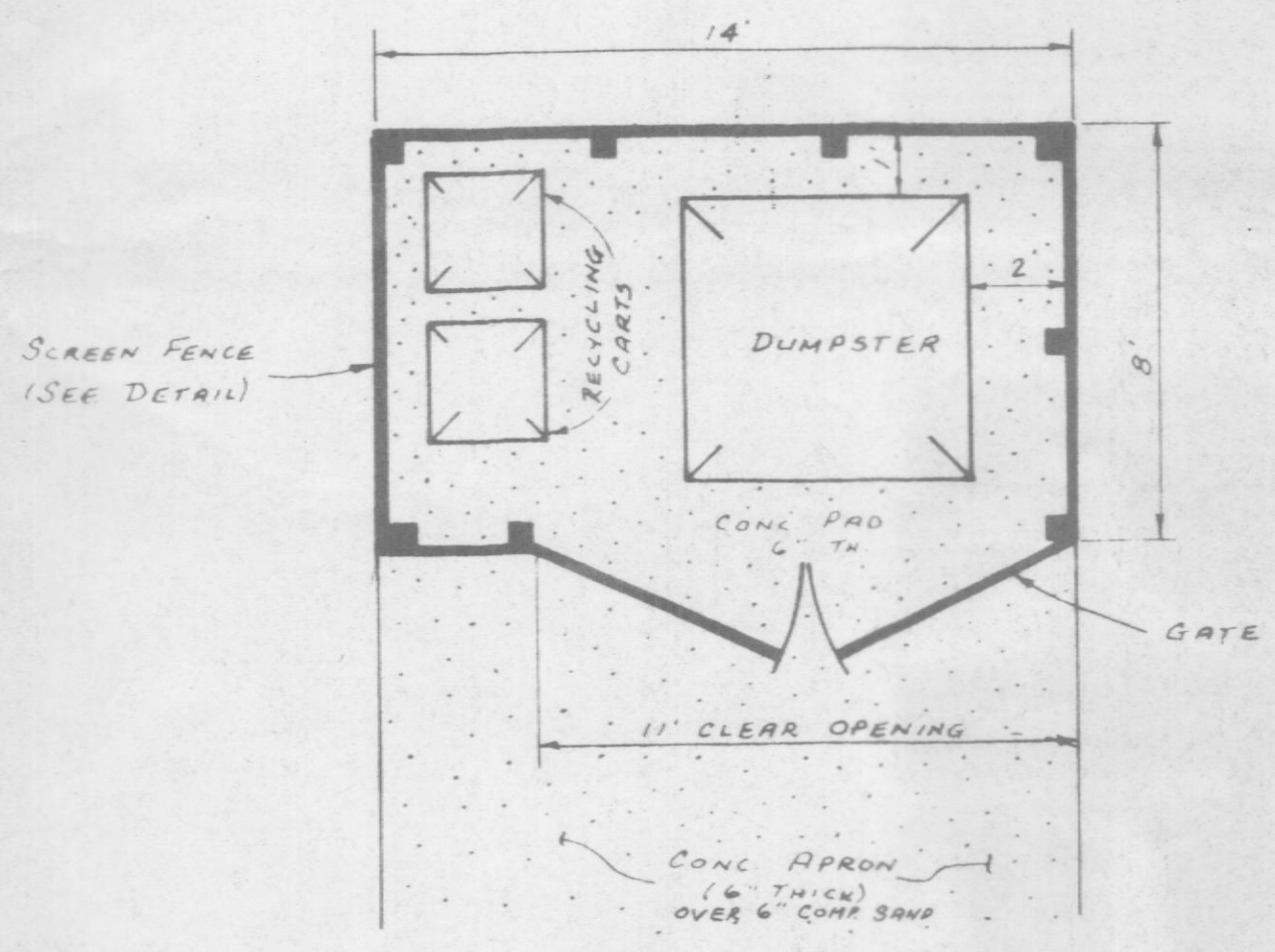
DRIVE APPROACH - TYPE M



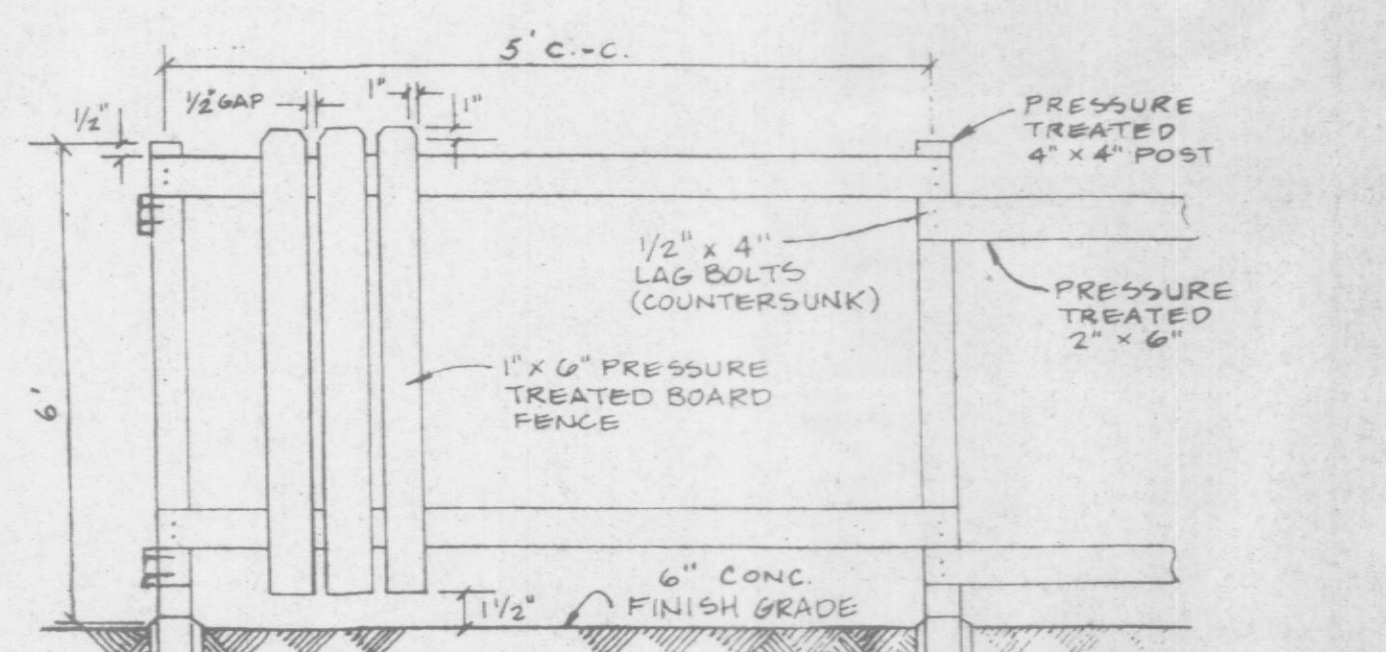
ELEVATION



SNOW FENCE TREE PROTECTION

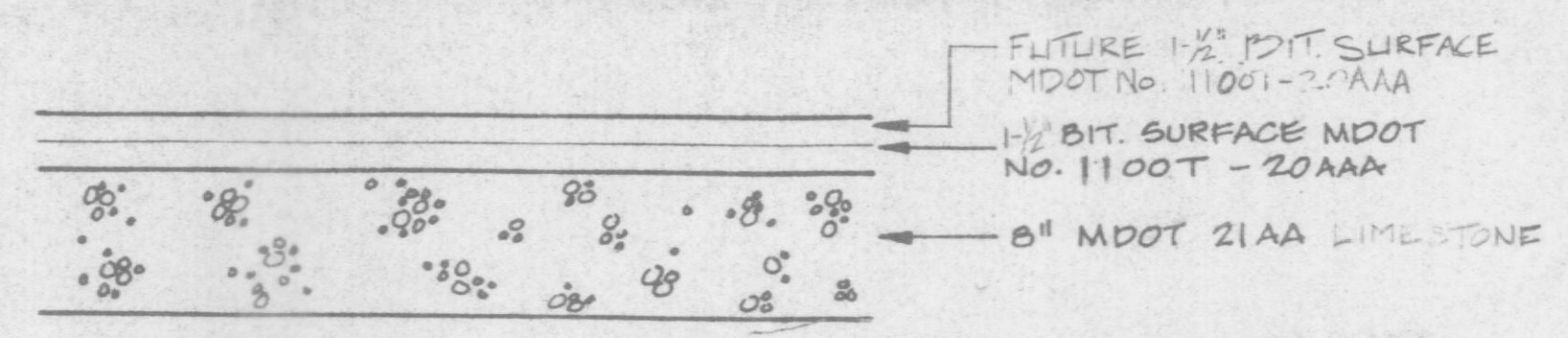


REFUSE STATION DETAIL

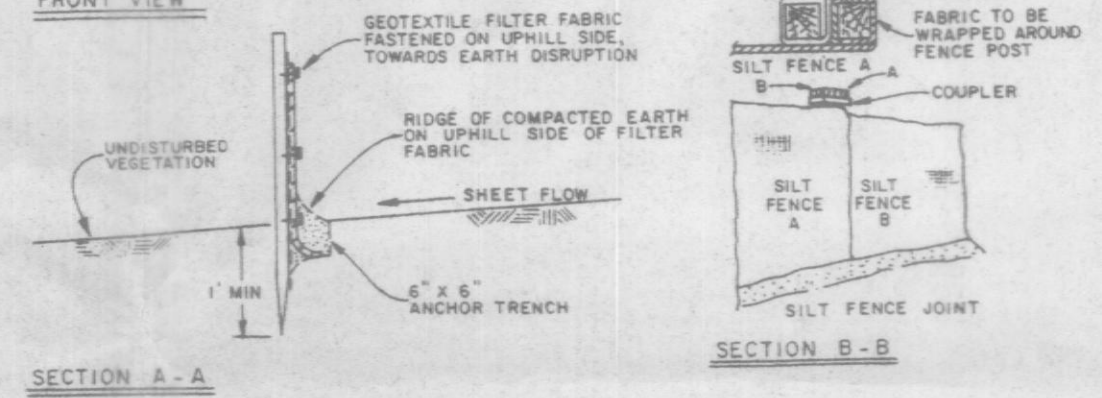
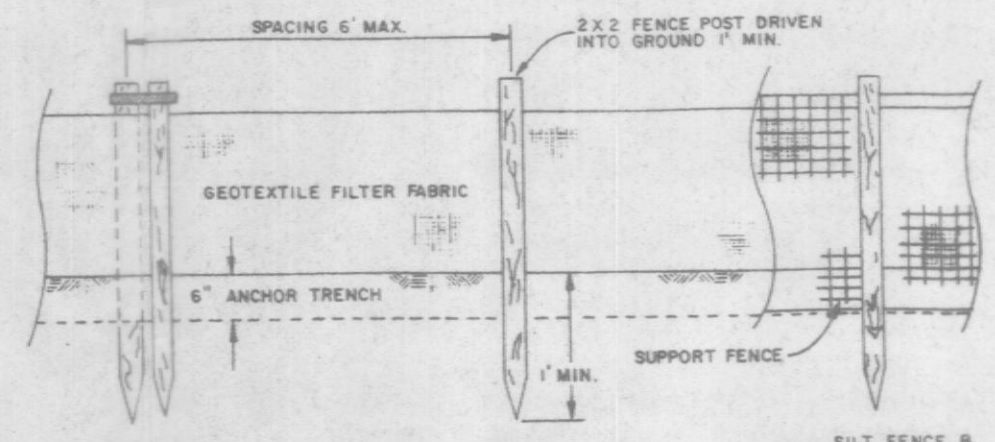
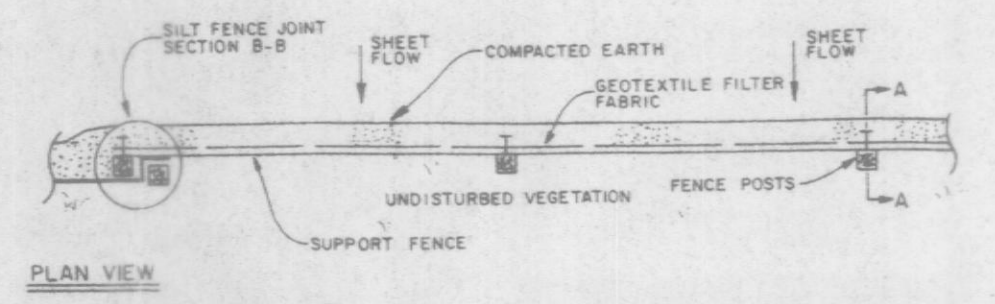


- NOTES:
- 1) STAGGER HORIZ. 2" x 6" EVERY
 - 2) ALL CUT ENDS TO BE BRUSHED WITH PRESERVATIVE.
 - 3) ALL FASTENING HARDWARE TO BE GALVANIZED.
 - 4) FENCE BOARDS TO BE FASTENED WITH SPIRAL NAILS.
 - 5) FRONT TO HAVE HINGE GATES WITH WOOD & LOCK. GATE CONSTR. SIMILAR TO FENCE.

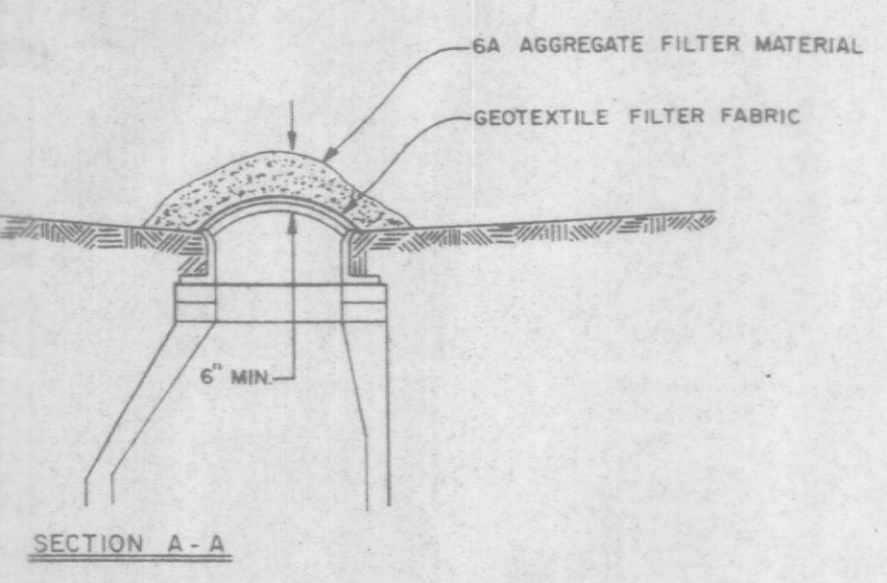
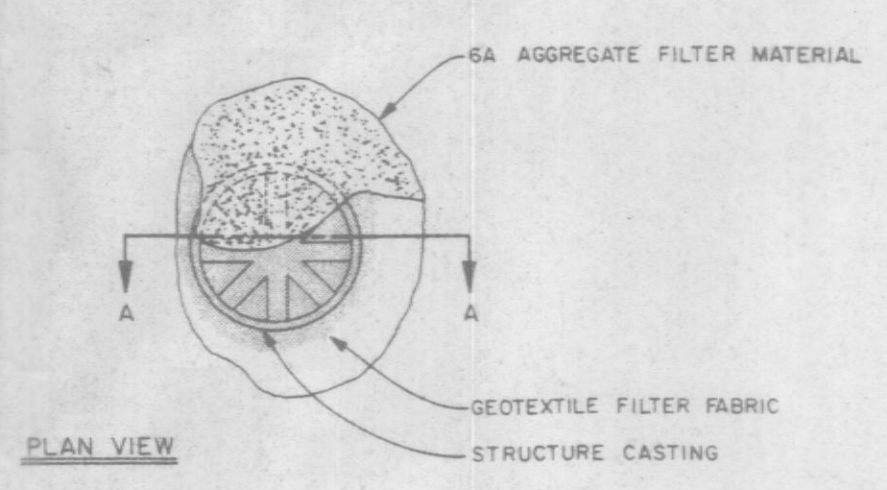
REFUSE STATION SCREEN FENCE



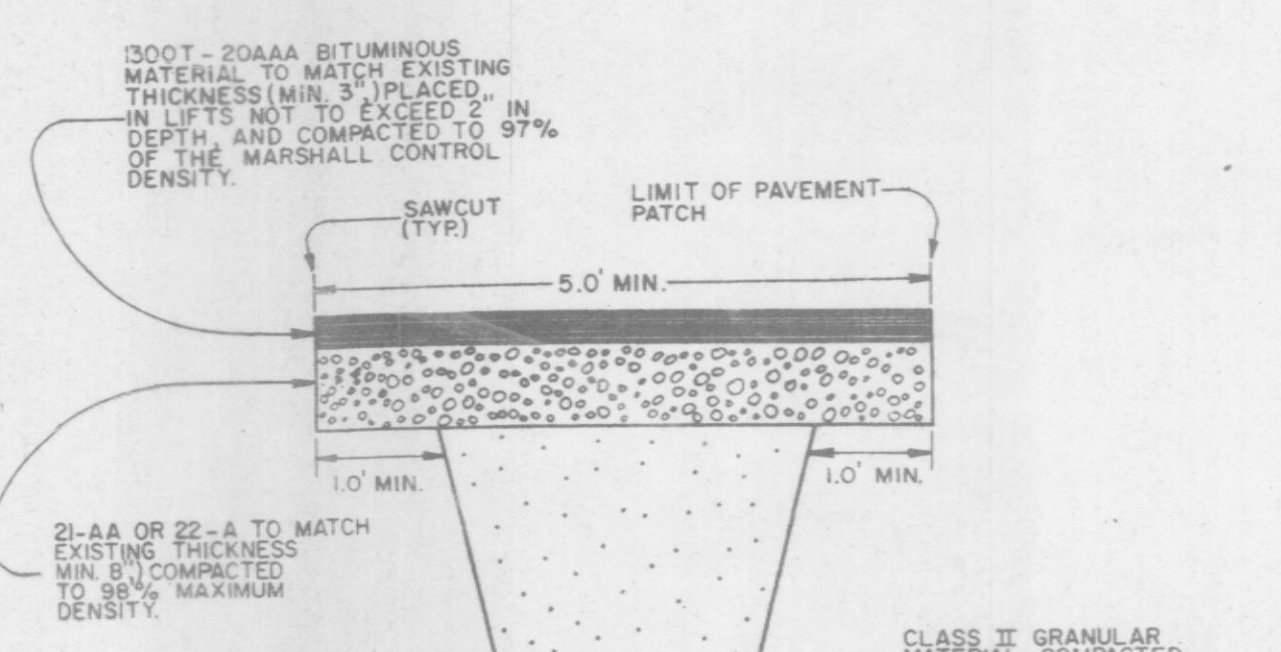
BITUMINOUS PAVEMENT SECTION



SILT FENCE



STONE FILTER

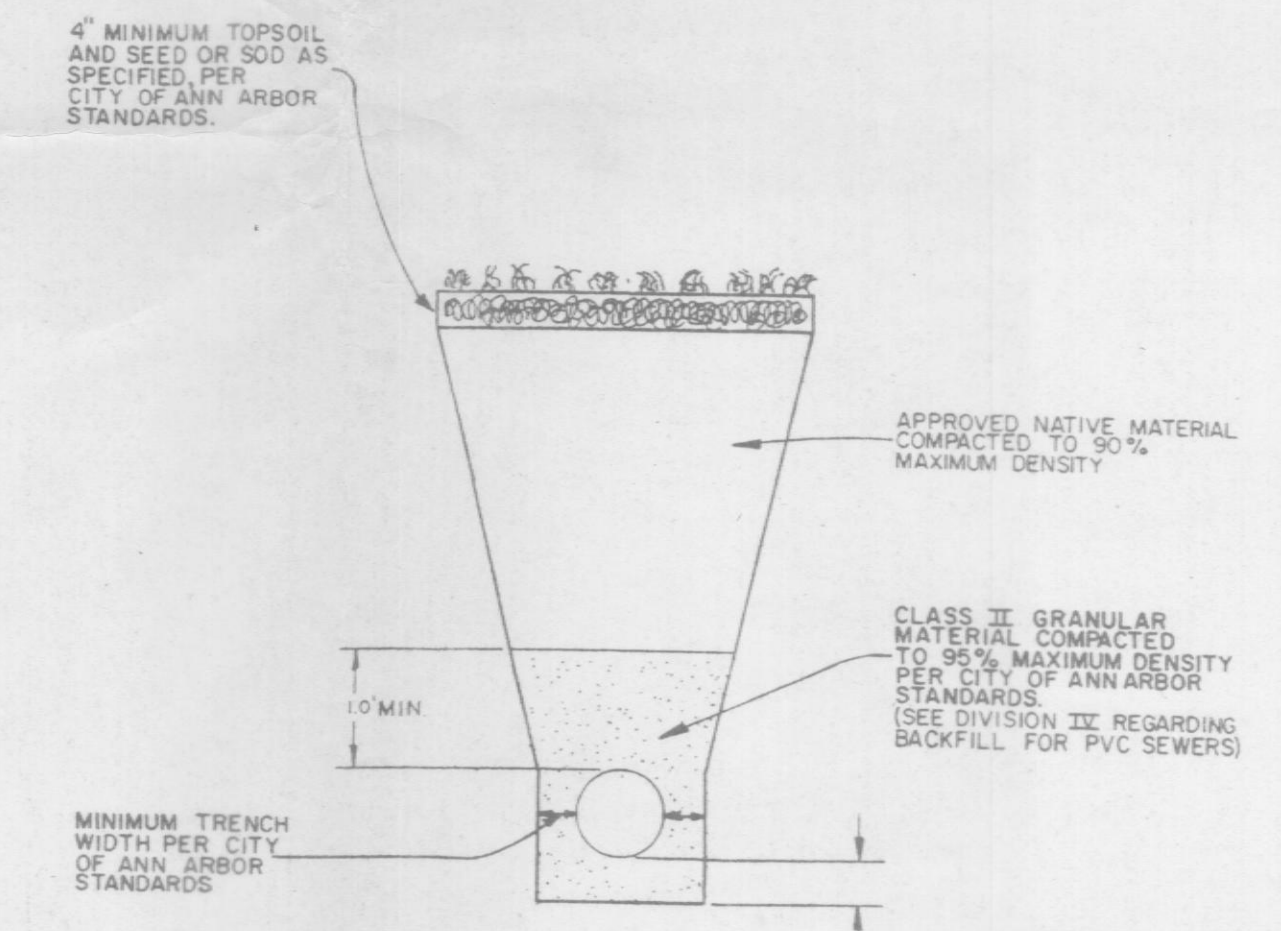


NOTE: DENSITY TESTING PER CITY OF ANN ARBOR SPECIFICATIONS

NOTE: TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY.

NOTE: ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS.

UTILITY TRENCH - TYPE I

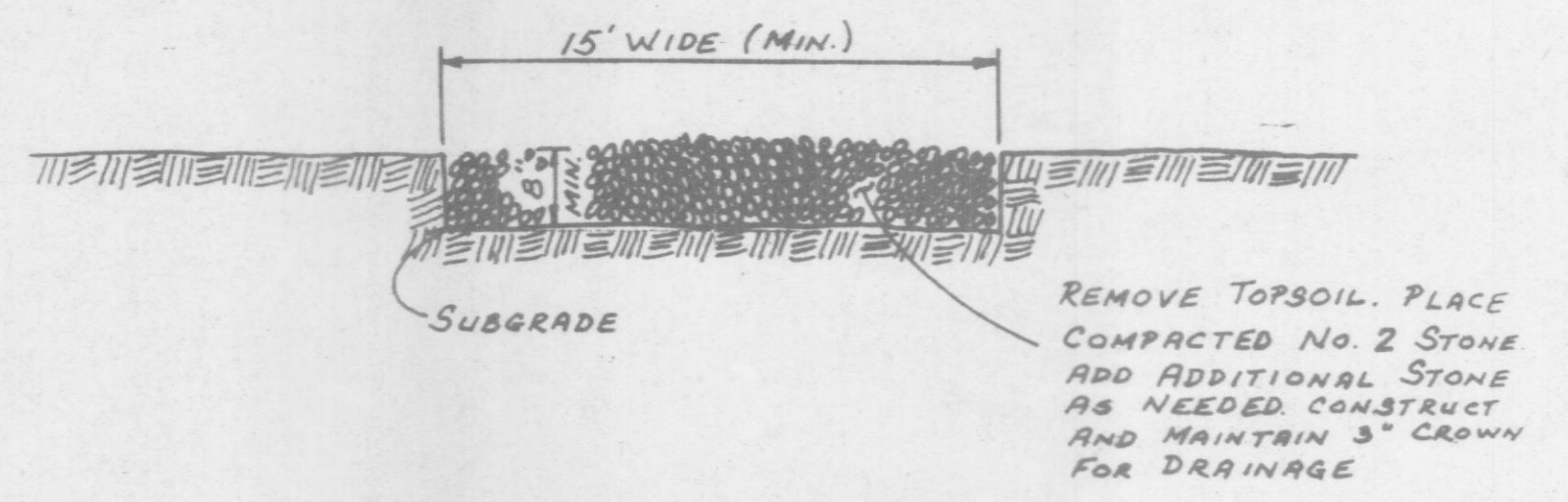


NOTE: TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY.

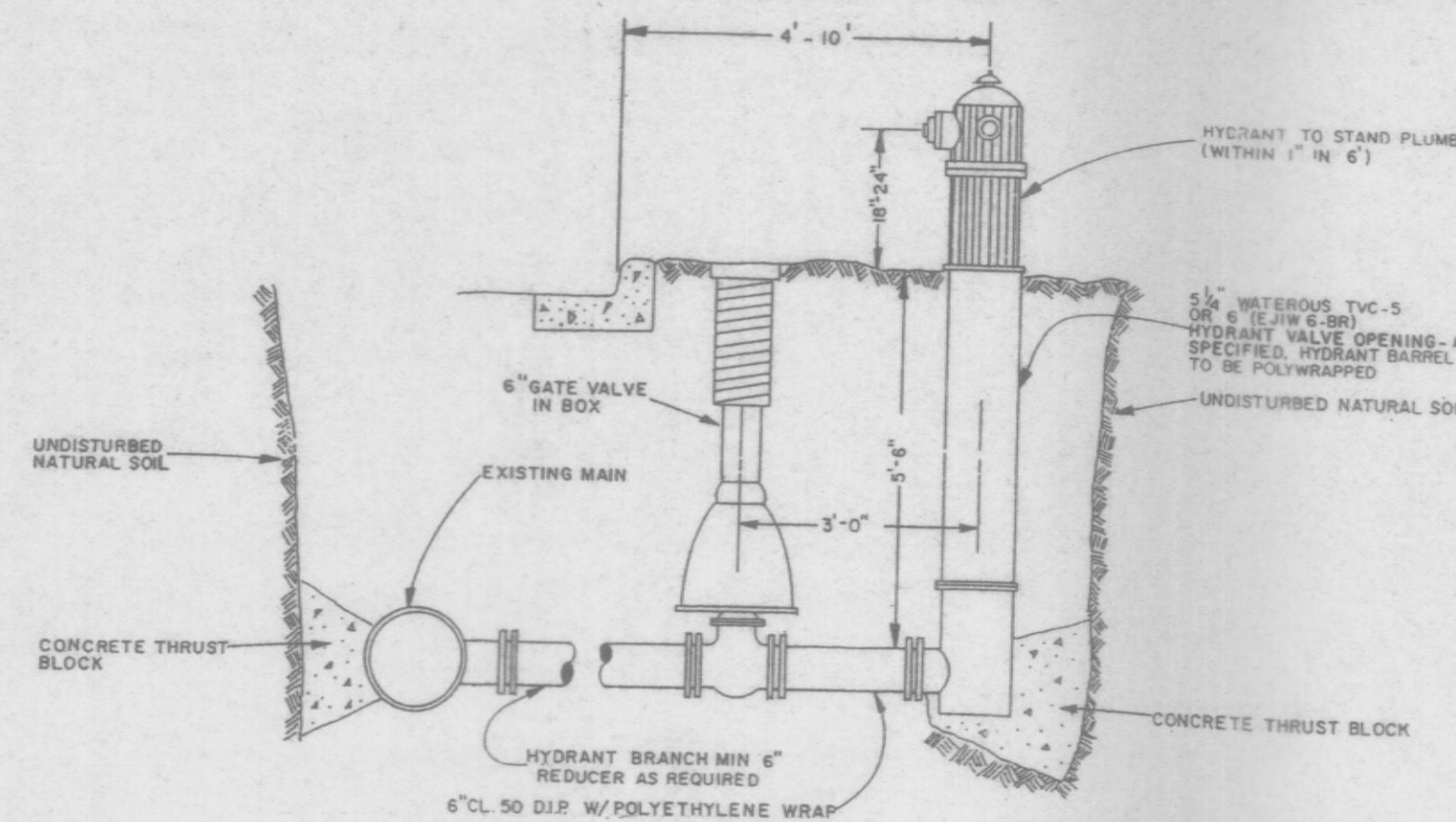
NOTE: ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS.

NOTE: DENSITY TESTING PER CITY OF ANN ARBOR SPECIFICATIONS.

UTILITY TRENCH - TYPE V

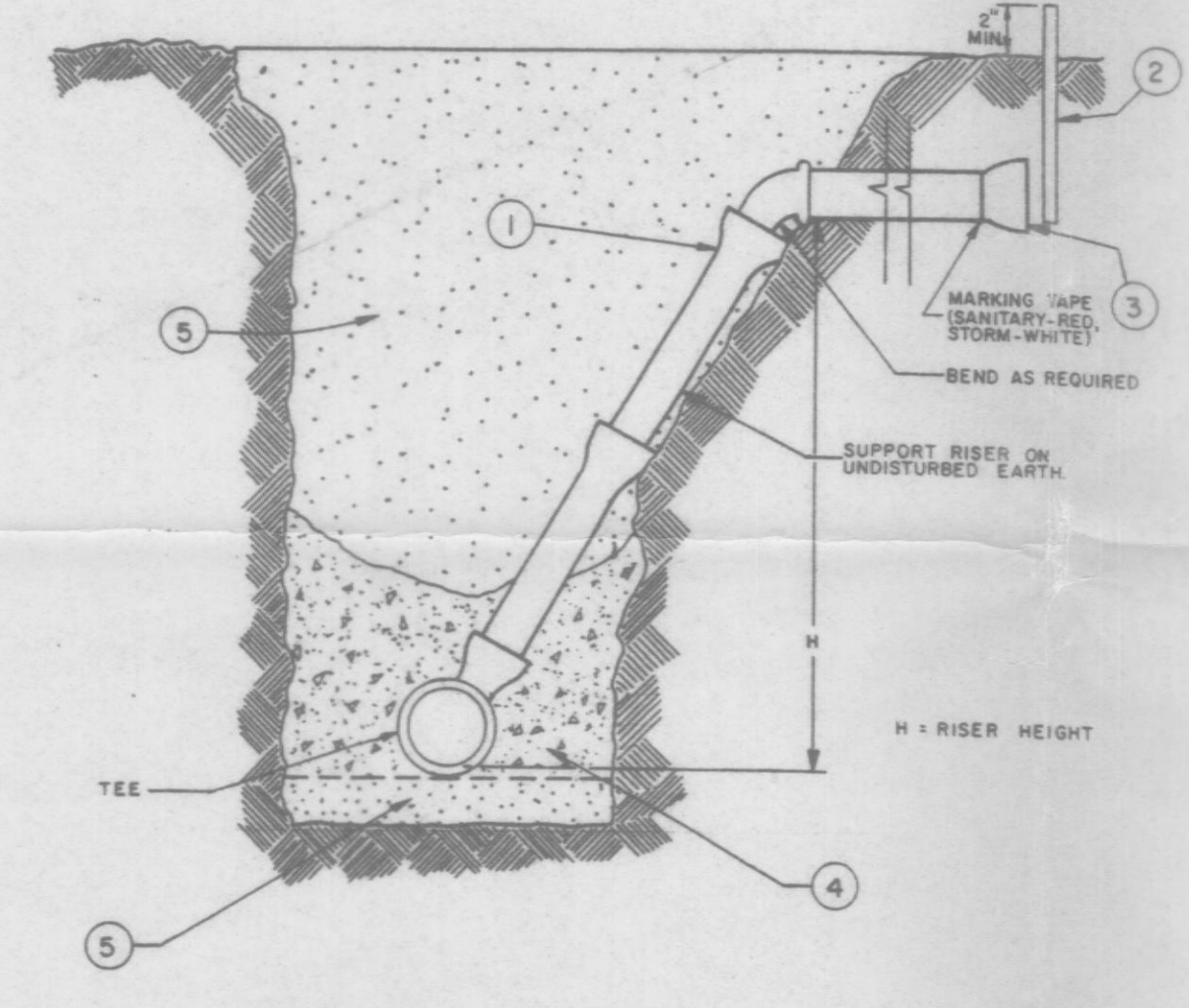


MUD TRACKING MAT

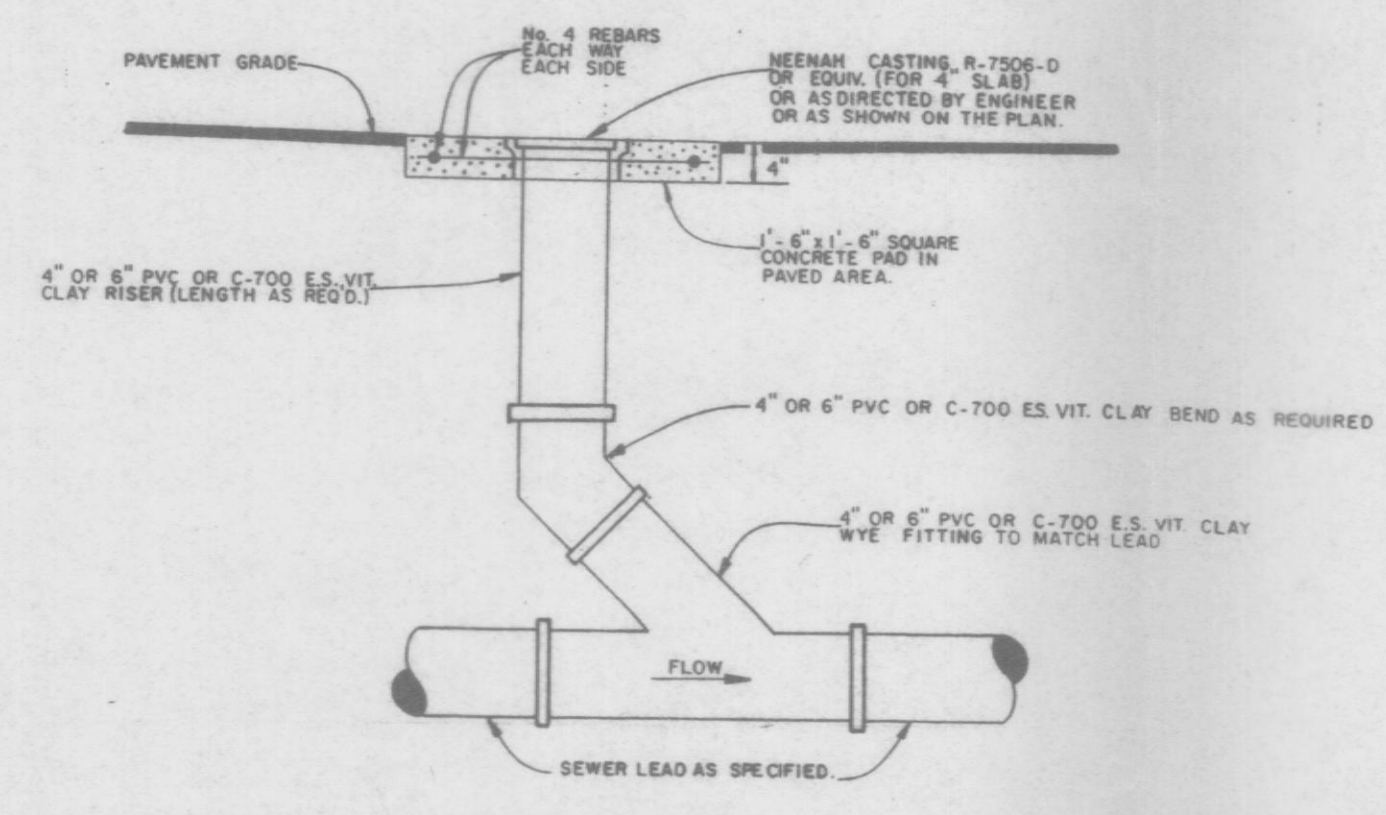


FIRE HYDRANT ASSEMBLY

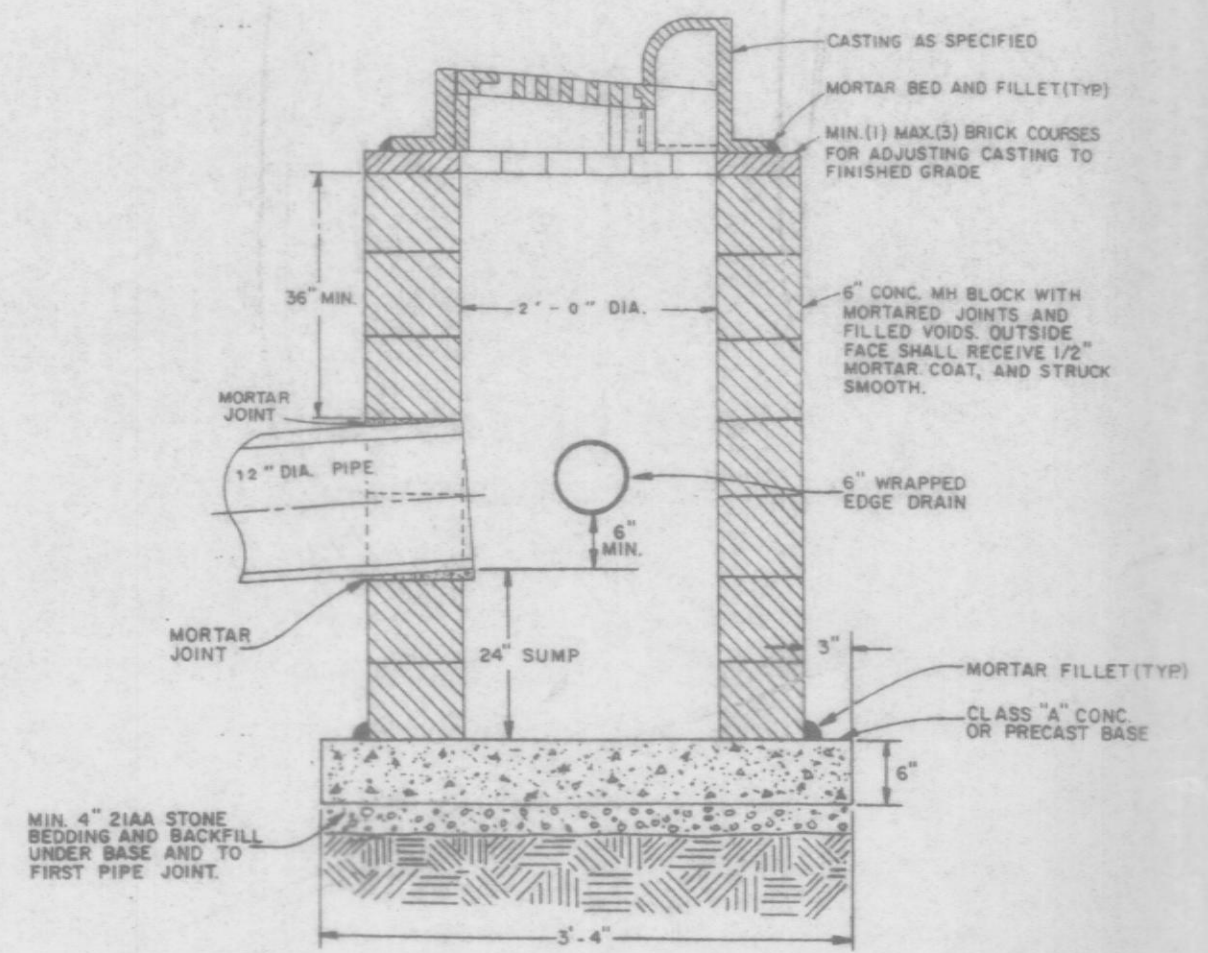
- 0 CARRY TO WITHIN 8' TO 10' OF GROUND ELEVATION.
- 1 MIN. 2" x 8" CEDAR OR TREATED WOOD MARKER, MARKED (SANITARY-RED, STORM-WHITE), SET VERTICALLY.
- 2 CAP WITH SOLVENT WELDED CAP OR PLUG.
- 3 CLASS "C" CONCRETE TO EXTEND MIN. 1.0' BEYOND TEE JOINTS (D.I.P. TEE NOT ENCASED).
- 4 CLASS "C" MATERIAL COMPACTED TO MAXIMUM DENSITY PER CITY OF ANN ARBOR STANDARD SPECIFICATIONS.
- 5 CLASS "C" MATERIAL COMPACTED TO MAXIMUM DENSITY PER CITY OF ANN ARBOR STANDARD SPECIFICATIONS.



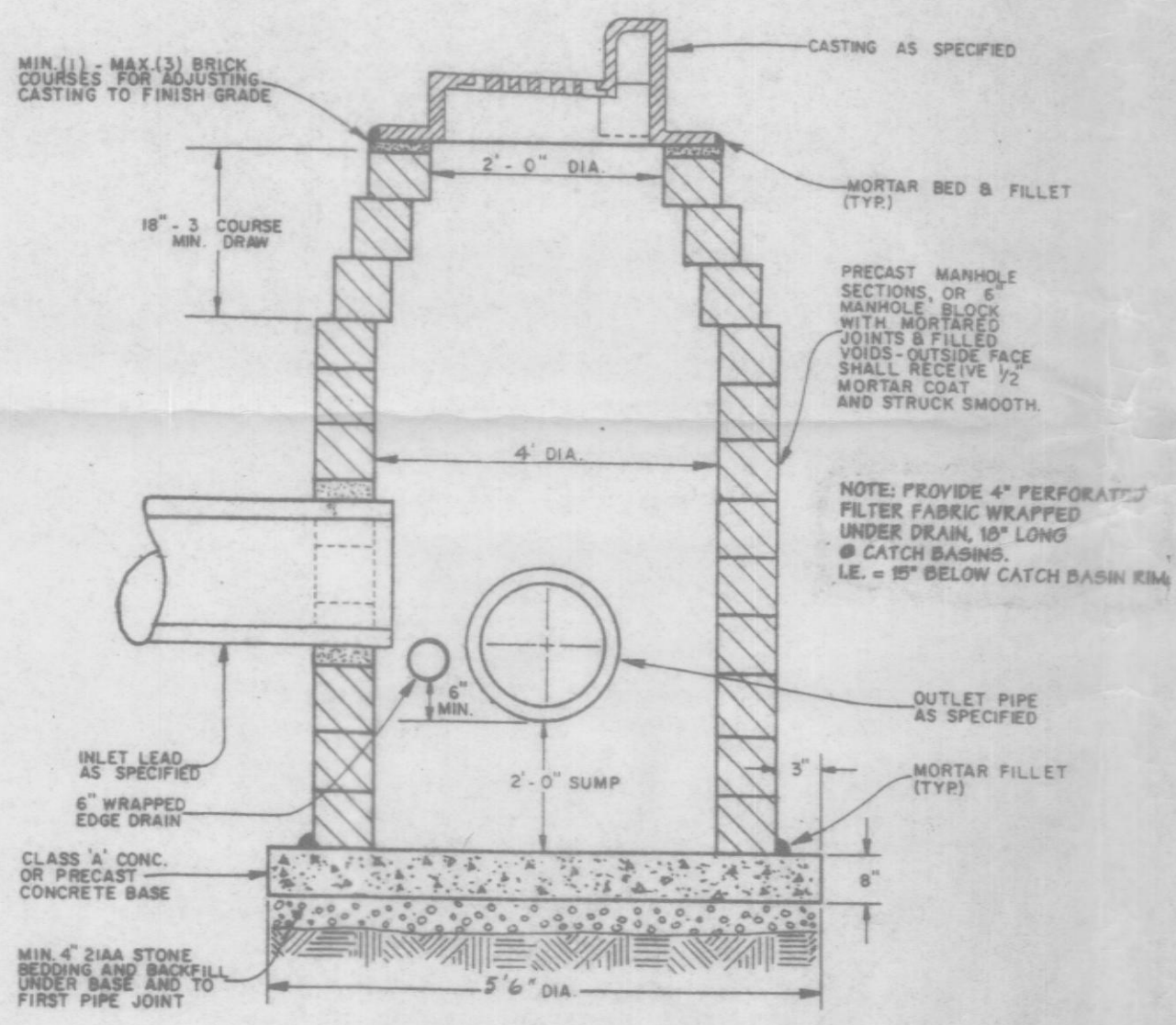
SANITARY SEWER CONNECTION WITH RISER



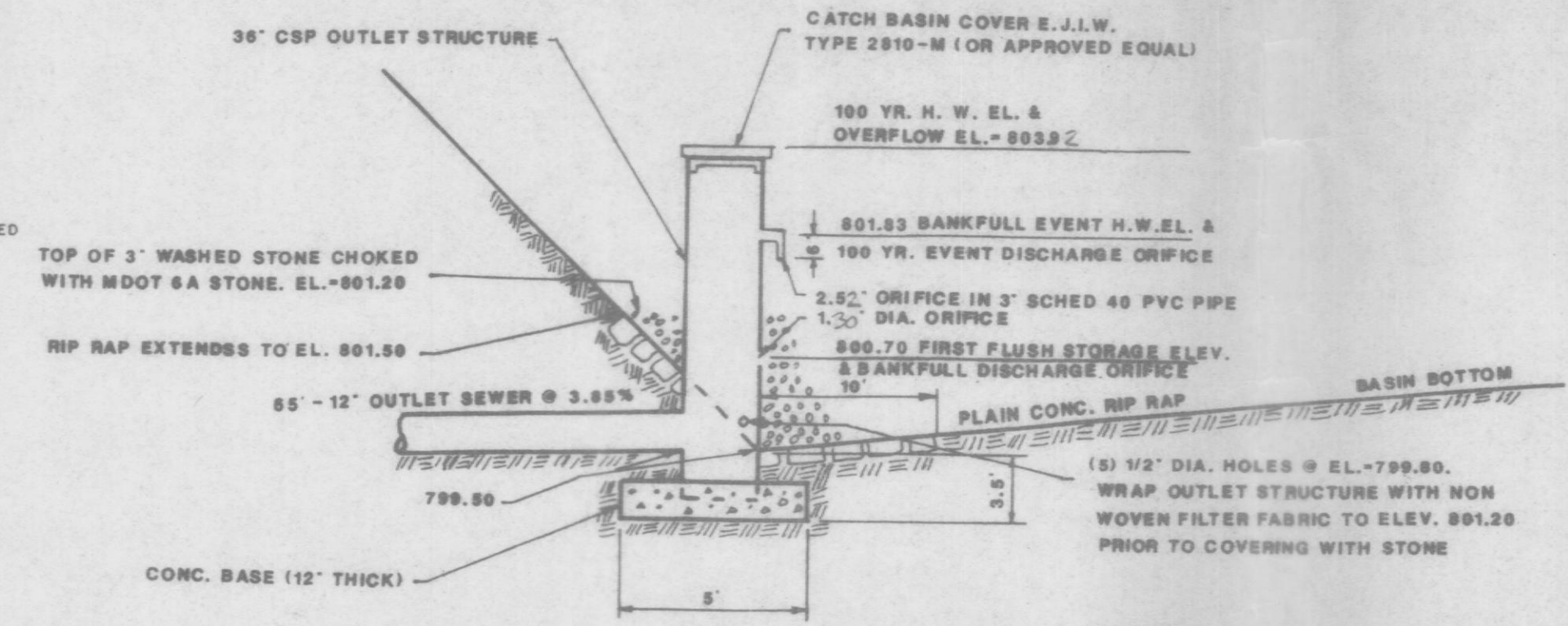
SANITARY SEWER LEAD CLEANOUT



2' DIA. STORM INLET



4' DIA. CATCH BASIN



DETENTION BASIN OUTLET STRUCTURE (N.T.S.)

REVISED 12/03/98

DETENTION ANALYSIS

The Proposed Detention Facility will be built on the property it is to serve and will be located immediately north of the Pittsfield-Ann Arbor Drain. Discharge from the Detention Basin will be to this Drain. The lowest point in the Detention Basin will be at elevation 799.50 which is the 100 year storm event elevation in the Drain per the 1992 FEMA Study of the Drain. Therefore, all runoff storage is above the design storm flood elevation of the Drain. All proposed site improvements will be outside of the 100 year flood plain as established by the FEMA study.

Design of this facility must conform to the requirements of the City of Ann Arbor and the Washtenaw County Drain Commissioner's Office. This analysis evaluates facility requirements according to both of these agencies with the design conforming to the more stringent requirement.

Elements Common to City & County Criteria

1. Site area tributary to the basin, including the basin itself = 2.663 acres
2. Composite runoff coefficient:
 - Buildings & pavements: 1.765 ac. @ 0.90 = 1.589 (A x C)
 - Detention basin & green areas: 0.898 ac. @ 0.20 = 0.180 (A x C)
 - $\Sigma A = 2.663$ acres, $\Sigma A \times C = 1.769$, $C_{AVG} = 0.664$
3. Storage/Storage Relationship

Elev.	Storage Volume (cu. ft.)
799.50	0
800.00	667
802.00	10,095
804.00	23,021

Design Per City of Ann Arbor Standards

1. Developed Runoff = 2.663 ac. x 43,560 s.f./ac. x (4.3712"/100) x 0.664 = 27,600 cu. ft.
2. Undeveloped Runoff = 2.663 ac. x 43,560 s.f./ac. x (3.1712"/100) x 0.20 = 5,993 cu. ft.
3. Detention Volume Required = 27,600 cu. ft. - 5,993 cu. ft. = 21,607 cu. ft. (at elev. = 803.86)
4. Allowable Discharge @ 0.15 cfs/acre = 0.15 x 2.663 = 0.400 cfs

Discharge design is governed by rules of The Washtenaw County Drain Commissioner as facility discharge is directly to the Pittsfield-Ann Arbor Drain, a County Drain under the jurisdiction of the Drain Commissioner's Office. The maximum rate of discharge is equal under both jurisdictions. Only the configuration of the discharge facilities will be different.

Design Per Washtenaw County Drain Commissioner's Standards

1. Area Summary:
 - a. Total Area = 2.663 acres
 - b. Composite Runoff Coefficient = 0.664
 - c. $\Sigma (A \times C) = 2.663 \times 0.664 = 1.769$
2. Basin Sizing:
 - a. $Q_0 = \text{allowable outflow} = 0.15 \text{ cfs/acre} \times 2.663 = 0.400 \text{ cfs}$
 - b. $Q_0 = Q_1 / \Sigma (A \times C) = 0.400 \text{ cfs} / 1.769 = 0.226$
 - c. $T = -25 + (10,312.5/Q_1)^{0.7} = -25 + (10,312.5/0.226)^{0.7} = 188.61 \text{ min.}$
 - d. $V = (16,500/T + 25) \times (40 \times Q_0 \times T) = (16,500/188.61 + 25) \times (40 \times 0.226 \times 188.61) = 14,568.9 - 1,705.0 = 12,863.9 \text{ cu. ft./ac. impervious surface}$
 - e. $V_1 = V_2 \times \Sigma A \times C = 12,863.9 \times 1.769 = 22,756.2 \text{ cu. ft. (at elev. = 803.94)}$

Since the Detention Volume Requirement is greater under the Drain Commissioner's criteria the design storage volume will be 22,756.2 cu. ft. at a peak storage elevation of 803.94.

Outlet Design

The outlet design must accommodate three conditions:
 The "first flush" (0.5" rainfall over the drainage area)
 The "bankfull event" (1.5 yr. Storm event)
 The "100 year storm event"

- a. First Flush:
 $V = 0.5" \times 2.663 \text{ ac.} \times 0.664 \text{ (coefficient)} \times 1/12 \text{ in./ft.} \times 43,560 \text{ s.f./ac.}$
 $V = 3,209 \text{ cu. ft.}$

"First Flush" storage will be contained below the lowest outlet orifice and will infiltrate into the basin bottom and will also deviate through several small holes at the bottom of the outlet structure. These holes will be protected from clogging by non-woven filter fabric and gravel. The elevation corresponding to the top of the "first flush" condition is 800.70.

- b. Bankfull Event:
 $V = 5,160 \times 2.663 \text{ ac.} \times 0.664 = 9,124 \text{ cu. ft. (at elev. = 801.83)}$
 This volume must be detained for between 24 and 40 hours. Select 32 hours as the design parameter.
 Volume to be discharged over 32 hours = "bankfull" - "first flush"
 $V = 9,124 - 3,209 = 5,915 \text{ cu. ft.}$
 Set the discharge orifice at the boundary between the two events = 800.70 elevation

Average discharge = 5,915 cu. ft. / 32 hrs x 3600 sec./hr. = 0.051 cfs
 Peak discharge = 2 x Avg. Discharge = 2 x 0.051 cfs = 0.102 cfs
 Orifice Sizing (A): $Q = 0.62 \times A \times (2 \times g \times h)^{0.5}$
 Where h = bankfull elev. - first flush elev. = 801.83 - 800.70 = 1.13 ft.

$$Q = 0.102 \text{ cfs} = 0.62 \times A \times (2 \times 32.2 \times 1.13 \text{ ft.})^{0.5}$$

$$0.102 = 0.62 \times A \times 8.531$$

$$A = 0.0193 \text{ s. ft.} = 2.78 \text{ s. in.}$$

$$r = 0.94 \text{ in.}$$

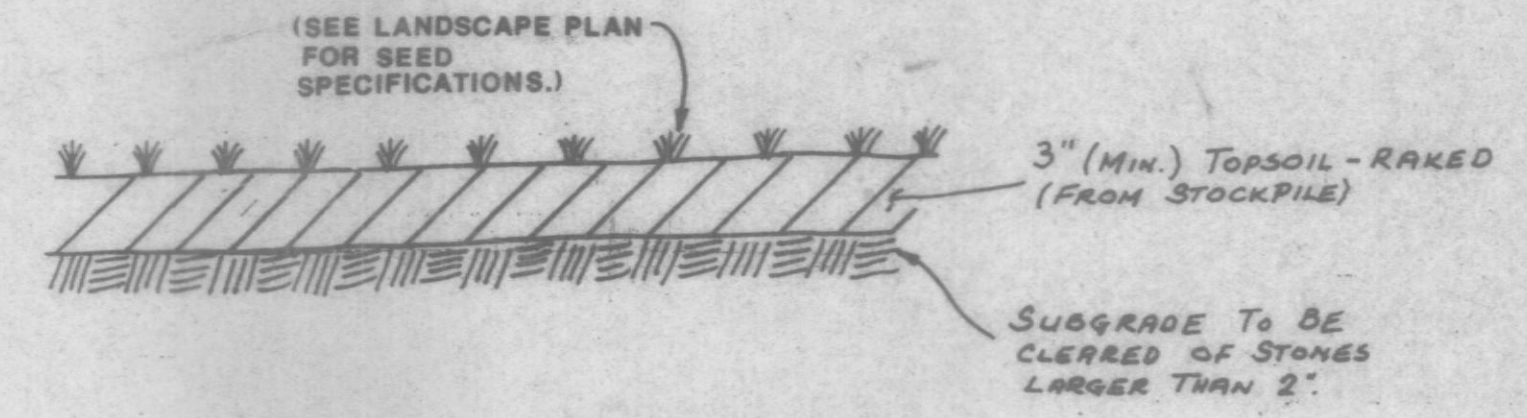
$$\text{Dia.} = 2 \times r = 2 \times 0.94 = 1.88 \text{ inches. (At elevation = 800.70)}$$

- c. 100 Year Event Discharge:
 For discharge through lowest orifice at peak storage elevation:
 $h = \text{peak elev.} - \text{first flush elevation}$
 $h = 803.94 - 800.70 = 3.24 \text{ feet}$
 $Q = 0.62 \times A \times (2 \times 32.2 \times 3.24)^{0.5}$
 $= 0.62 \times 0.0193 \times (64.4 \times 3.24)^{0.5}$
 $= 0.173 \text{ cfs}$

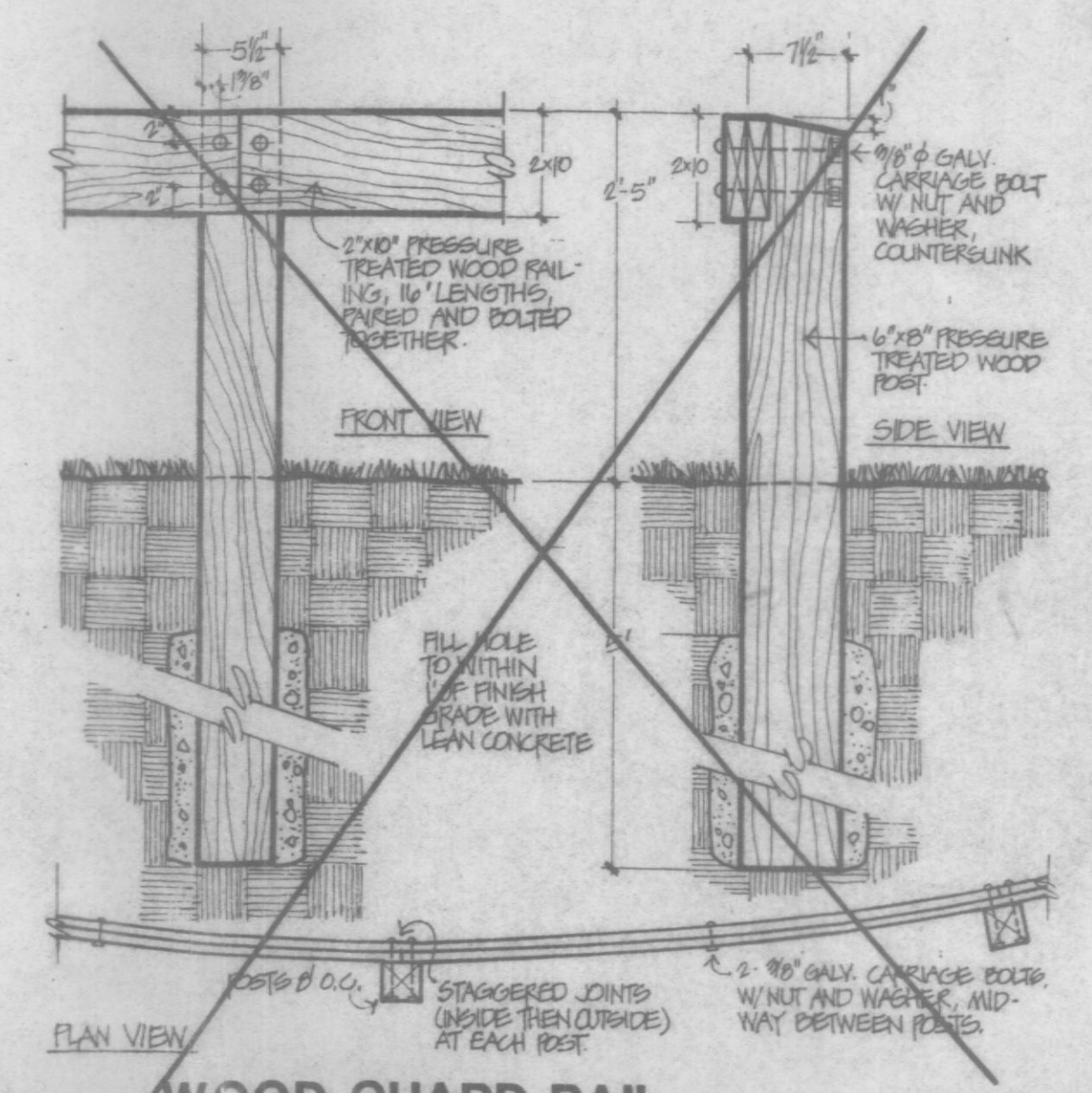
For Main Orifice discharge:
 $Q = \text{Max. Discharge} - \text{discharge through lowest orifice}$
 $Q = 0.400 - 0.173 = 0.227 \text{ cfs}$
 Set main discharge orifice at upper limit of bankfull event (elev. = 801.83)
 Where h = peak storage elev. - bankfull storage elev.
 $h = 803.94 - 801.83 = 2.11 \text{ feet}$
 $Q = 0.227 \text{ cfs} = 0.62 \times A \times (2 \times 32.2 \times 2.11)^{0.5}$
 $0.227 \text{ cfs} = 0.62 \times A \times (64.4 \times 2.11)^{0.5}$
 $A = 0.031 \text{ s. ft.} = 4.52 \text{ s. in.}$
 $A = 4.52 \text{ s. in.} = \pi r^2, r = 1.29 \text{ in.}$
 $\text{Dia.} = 2 \times r = 2 \times 1.29 \text{ in.} = 2.58 \text{ inches. (At elevation = 801.83)}$

- d. Emergency Overflow:
 Set emergency overflow at 0.75 feet above 100 year peak storage elevation.
 $E. O. \text{ El.} = 803.94 + 0.75 = 804.69 \text{ ft.}$

Summary:
 1) Detention Volume increased to 22,756 cu. ft. (129 cu. ft. increase)
 2) High Water Elevation is at 803.92.
 3) Emergency Spillway Elevation is at 804.00.
 4) Discharge Orifice sizes as follows:
 "First Flush" (5) 0.50" Dia. holes (At elevation = 799.50)
 "Bankfull" (1) 1.30" Dia. hole (At elevation = 800.70)
 "100 Year Event" (1) 2.52" Dia. hole (At elevation = 801.83)
 5) Remove 43 cu. ft. (min.) at each storm discharge end section into Detention Pond (129 cu. ft. total). See sheet C-3.

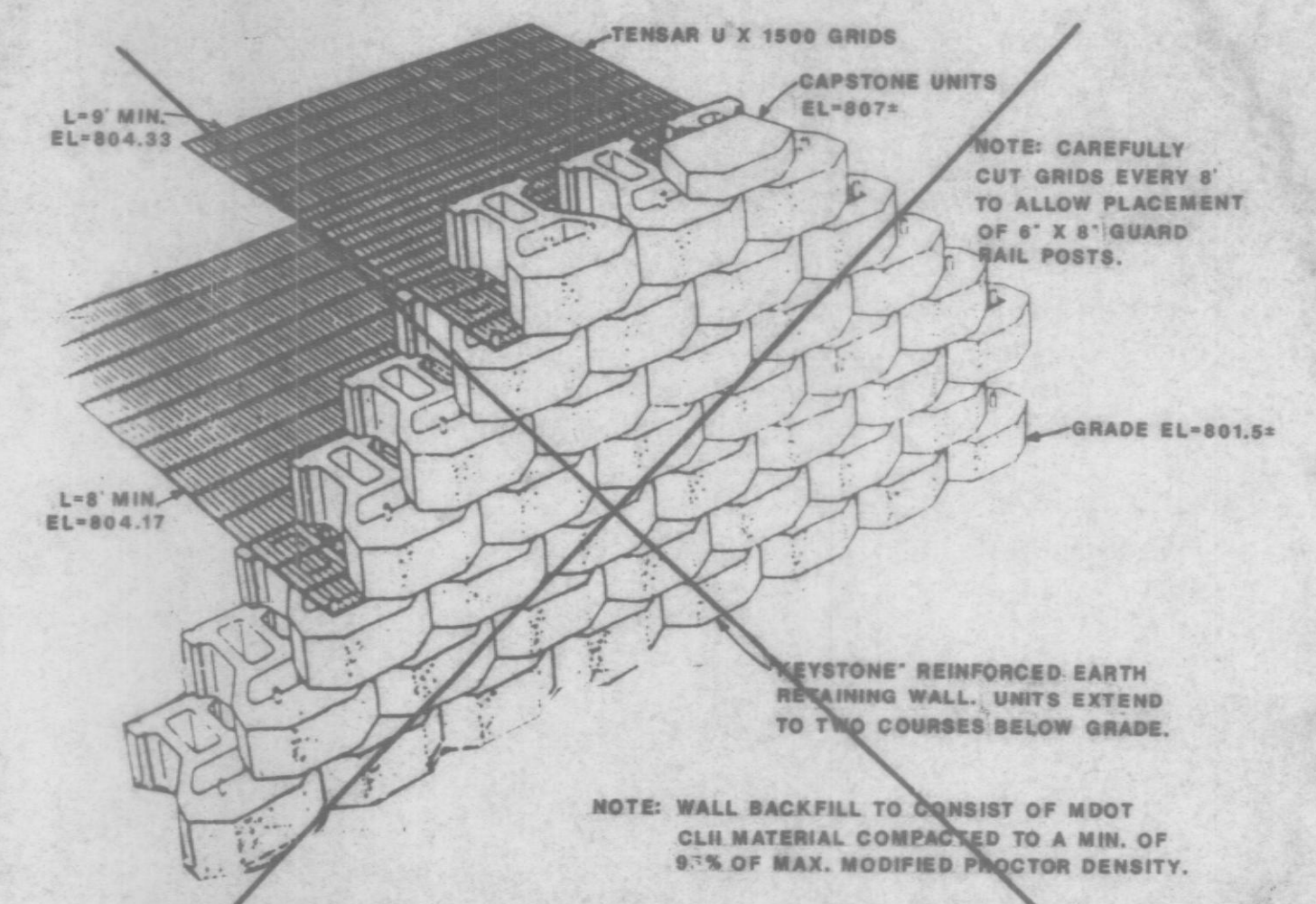


SEEDING



WOOD GUARD RAIL

DELETED 8/31/98



REINFORCED EARTH RETAINING WALL DETAIL

N.T.S.

DELETED 8/31/98

LANDMARK TREES

KEY	SIZE	BOTANICAL NAME	COMMON NAME	NOTES
15	24"	PINUS STROBUS	EASTERN WHITE PINE	ON ADJACENT PROPERTY
22	24"	PICEA ABIES	NORWAY SPRUCE	ON ADJACENT PROPERTY
55	26"	FRAXINUS PENNSYLVANICA	GREEN ASH	ON ADJACENT PROPERTY
80	26"	FRAXINUS PENNSYLVANICA	GREEN ASH	ON ADJACENT PROPERTY
96	19"	FRAXINUS PENNSYLVANICA	GREEN ASH	PROTECTED BY SNOW FENCE
100	24"	JUGLANS NIGRA	BLACK WALNUT	ON PL.
101	24"	QUERCUS MACROCARPA	BURR OAK	ON PL.
102	24"	FRAXINUS PENNSYLVANICA	GREEN ASH	ON PL.
103	18"	FRAXINUS PENNSYLVANICA	GREEN ASH	IN R.O.W., PROT BY SN. FENCE
120	24"	PINUS STROBUS	EASTERN WHITE PINE	ON ADJACENT PROPERTY

ALL LANDMARK TREES THAT ARE TO REMAIN ARE TO BE PROTECTED BY SNOWFENCE (SEE DETAILS)
 LANDMARK TREES ON THIS SITE ARE ALL IN GOOD TO FAIR CONDITION W/ THE EXCEPTION OF #103. #103 HAS SOME DIEBACK OF UPPERMOST BRANCHES. ESTIMATED LIFESPAN FOR OTHERS IS FOR ANOTHER 20-30 YRS., BARRING ANY UNFORESEEN ACTS OF GOD.

PLANT SCHEDULE

KEY	QUAN.	BOTANICAL NAME	COMMON NAME	SZ.	NOTES
TREES					
G	2	GLEDITSIA TRIA INERMIS 'SKYLINE'	SKYLINE HONEYLOCUST	2.5'-3"	B&B
L	14	LIRIODENDRON TULIPIFERA	TULIPTREE	2.5'-3"	B&B
P	19	PICEA ABIES	NORWAY SPRUCE	7'-8"	B&B
Q	4	QUERCUS BOREALIS	NORTHERN RED OAK	2.5'-3"	B&B
QB	1	QUERCUS BOREALIS	NORTHERN RED OAK	4"-4.5"	B&B
R	90	RHUS AROMATICA	FRAGRANT SUMAC	3 GAL	CONT.
T	24	TAXUS x MEDIA 'DENSIFORMIS'	DENSE YEW	24-30"	B&B
V	13	VIBURNUM LENTAGO	NANNYBERRY VIBURNUM	4'-5"	B&B

LANDSCAPE REQUIREMENTS

	REQUIRED	PROPOSED
5:602		
(1) R.O.W. Screening		
a. Landscape Buffer	10'	25'± 18'
b. 1 Tree/30 L.F., 120 L.F. 95 L.F.	4 trees	4 trees
c. Hedge to screen Vehic. Use Area @ 4' O.C. = 36'± 24'	4 shrubs	4 shrubs
(2) Interior Landscape		
a. Vehicular Use Area: 41,462 s.f. 48,051 S.F. 2,073 s.f. 2,403 S.F. 3,435 s.f. 3,768 S.F.		
b. Trees/250 s.f.	14	14
c. existing trees within 15' of Vehic. Use Area	1 @ 9" dbh (#69)	

5:603 Conflicting Land Use Buffers

(1) Land Use Buffer Strip	east 15'	15'
(2) 1 Tree/20' of land abutting	east 19 trees	19 trees
	west 25 trees	See Application for Modification
(3) Continuous screening	east—357'± 4=90	90 shrubs
	west—470'± 4=118	See Application for Modification

5:606 Materials Standards

(2) Hedging or screening	50% evergreen, east	50%
	west	See Application for Modification

Chapter 57. Attachment C

Street Tree Escrow		
\$1.30/lineal foot of street frontage, 330.03 L.F.	\$429.00	\$429.00

* Vehicular Use Area

Area	REVISD
A	7,134 s.f. 7,358 S.F.
B	11,900 s.f. 15,220 S.F.
C	3,480 s.f. 9,763 S.F.
D	12,048 s.f. 15,710 S.F.
TOTAL	41,462 s.f. 48,051 S.F.

GENERAL NOTES:

1. No tree shall be planted less than 2 1/2 feet from sidewalk pavement.

GENERAL SPECIFICATIONS

- Contractor must contact MISS DIG prior to beginning planting; 1-800-482-7171.
- The work shall consist of providing all necessary materials, labor, equipment, tools, and supervision required for the completion as shown on the drawings.
- The plant material shall conform to type stated on the plant list. Sizes shall be the minimum stated on the plant list or larger. All measurements shall be in accordance with the latest edition of the "A.A.N. Standards for Nursery Stock".
- The plant material shall be nursery grown and inspected by the owner's representative before planting. The owner's representative reserves the right to reject any plant material at any time.
- Plants designated "B&B" shall be balled and burlapped with firm balls of earth.
- The contractor is responsible for planting the materials at the correct grades and spacing. The plants shall be oriented as to give the best appearance.
- When the plant has been properly set, the pit shall be backfilled with a topsoil mixture, gradually filling, patting and settling with water.
- All plant materials shall be pruned and injuries repaired. The amount of pruning shall be limited to the removal of dead or injured twigs, and to compensate for the loss of roots from transplanting. Cuts should be flush, leaving no stubs.
- The contractor agrees to guarantee all plant materials for the period of one year. At that time, the owner's representative reserves the right for a final inspection. Plant material with 25% die back, as determined by the owner's representative, shall be replaced. This guarantee includes the furnishing of new plants, labor and materials. These new plants shall also be guaranteed for the period of one year.
- Topsoil shall be friable, fertile topsoil of clay loam character containing at least 5% (but not more than 20% by weight) of organic matter with a PH range from 6.0 to 7.0. Soil shall be free of clay lumps, coarse sand, plant roots, sticks and other debris.
- Apply Pre-emergent herbicide to all shrub and ground cover planting beds. Beds shall be mulched with a fine shredded bark to a depth of 3". Place mulch to uniform depth and rake to neat, finished appearance.
- Seed Mix A shall be applied at a rate of 150 lbs./acre. Seed mix shall consist of the following types and proportions:
 AQUILA KENTUCKY BLUE GRASS 35%
 PARK KENTUCKY BLUE GRASS 15%
 RUBY CREEPING RED FESCUE 20%
 SCALDIS HARD FESCUE 20%
 PERENNIAL RYE GRASS 10%
 WEED CONTENT SHALL NOT EXCEED 1%.

Seed Mix B shall be applied at a rate of 3 lbs./acre IN DETENTION AREA ONLY.

- Seed mix shall consist of the following types and proportions:
- BIG BLUESTEM 09%
 - LITTLE BLUESTEM 36%
 - SAND DROPSSEED 01%
 - SWITCHGRASS 25%
 - CANADA WILD RYE 36%
 - INDIANGRASS 09%
 - WEED CONTENT SHALL NOT EXCEED 1%.

13. Assuming construction is undertaken at the beginning of the construction season, all restoration of natural features, seeding, and planting of trees and shrubs shall be done ideally within two time periods: April 15 to June 1, and September to 15 October. Any deviation from these specified time frames will be at the express approval of the Owner's Representative.

14. GUARANTEE: Contractor will furnish in duplicate a written guarantee to the owner (for a period of one year from the date of acceptance) guaranteeing the continued growth of an even, dense lawn of permanent grasses. Seeded natural areas are to be guaranteed in same manner. If at any time within the guarantee period, it is necessary to re-seed any area to a uniform coverage of permanent grasses, the contractor will bear all costs thereof.

Maintenance: The contractor shall be responsible for the care, and watering of plant material until the contract is complete and accepted by Owner or Landscape Architect. The contractor shall furnish the owner a written guarantee for replacement of dead or partially dead plant material, for a period of one year from acceptance. Industry standards shall apply.

All diseased, damaged, or dead plant material shall be replaced by the end of the following growing season (in perpetuity).

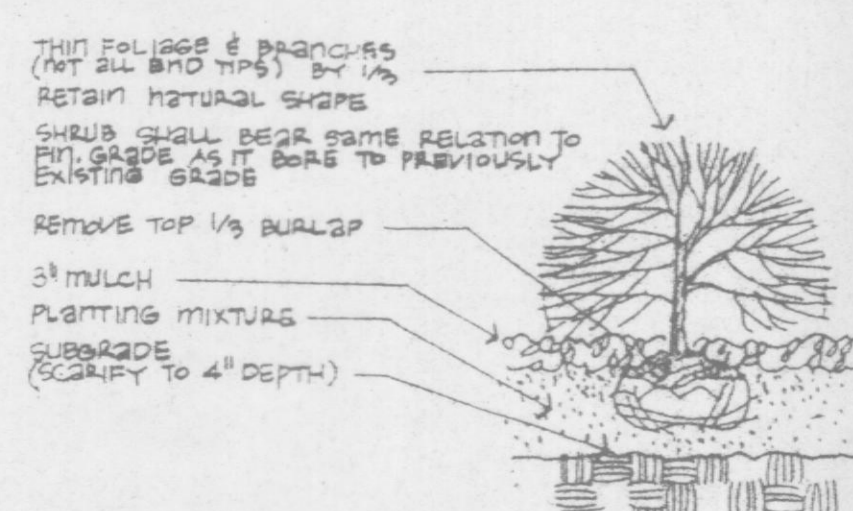
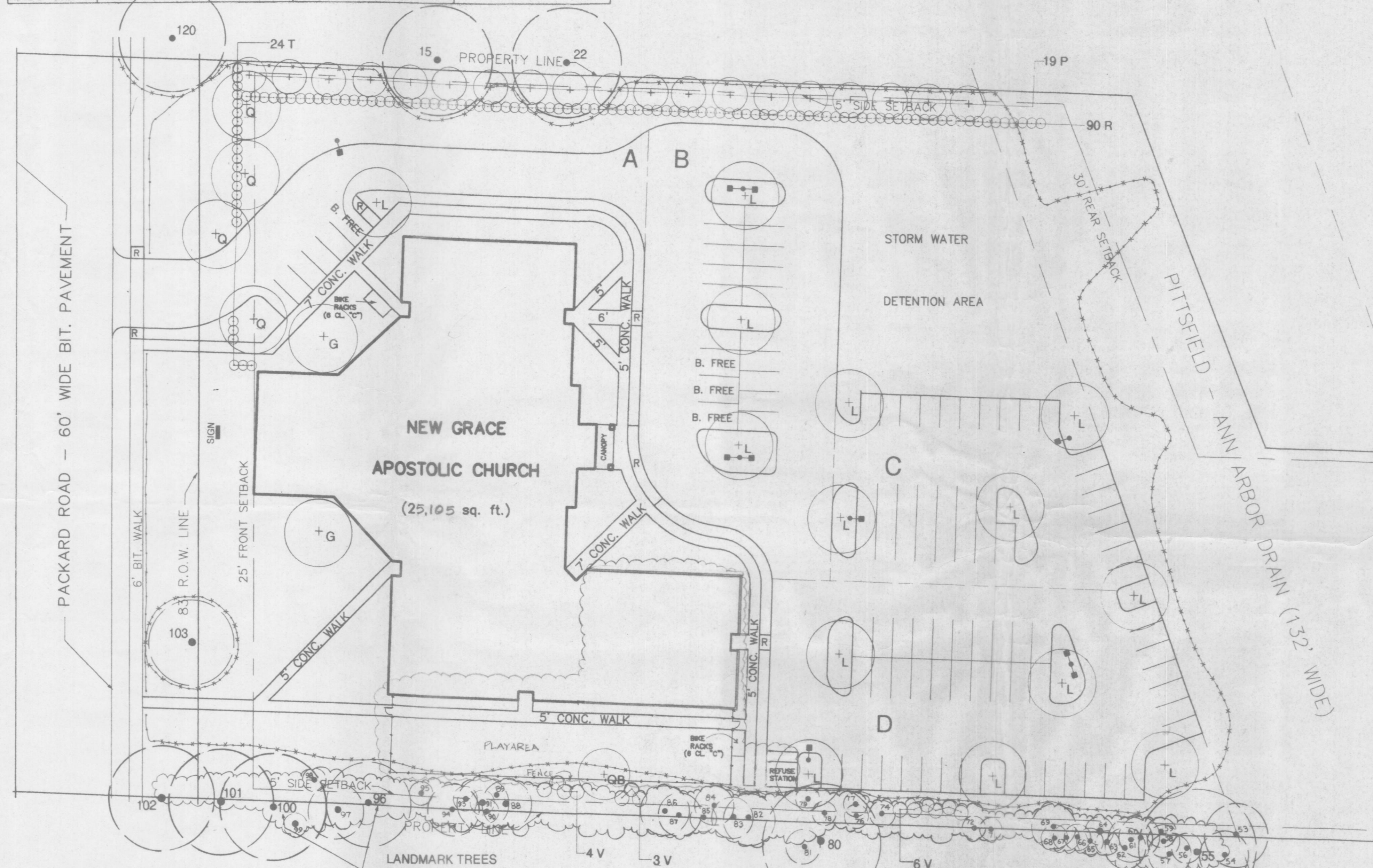


NEW GRACE APOSTOLIC CHURCH
 PROP. LOCATION: NE 1/4 OF SEC. 10, T3S, R6E, ON THE SOUTH SIDE OF PACKARD RD.
 OWNER: NEW GRACE APOSTOLIC CHURCH • 432 N. 4TH AVE., ANN ARBOR, MI 48104 • (313) 761-1530

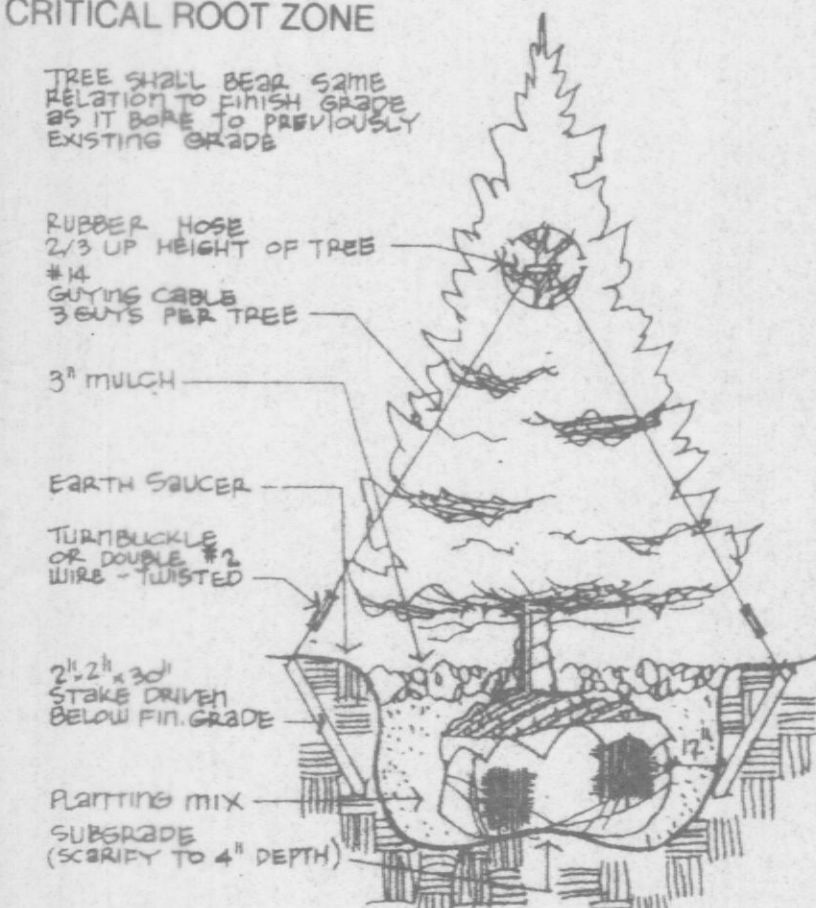
LANDSCAPE PLAN

ADMIN REV. 3/12/99

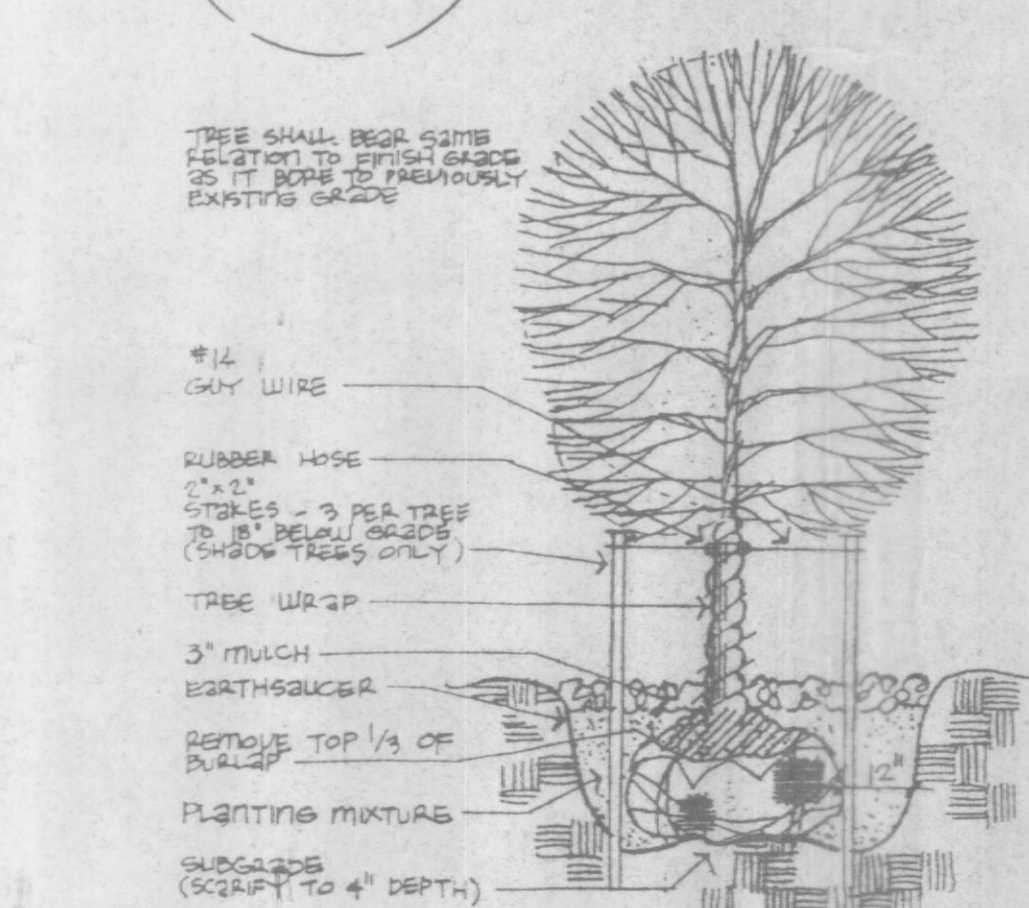
LA-1



SHRUB PLANTING DETAIL
 No Scale



EVERGREEN TREE PLANTING
 No Scale



TREE PLANTING DETAIL
 No Scale

