

# Final Site Plan of CRYSTAL VALLEY

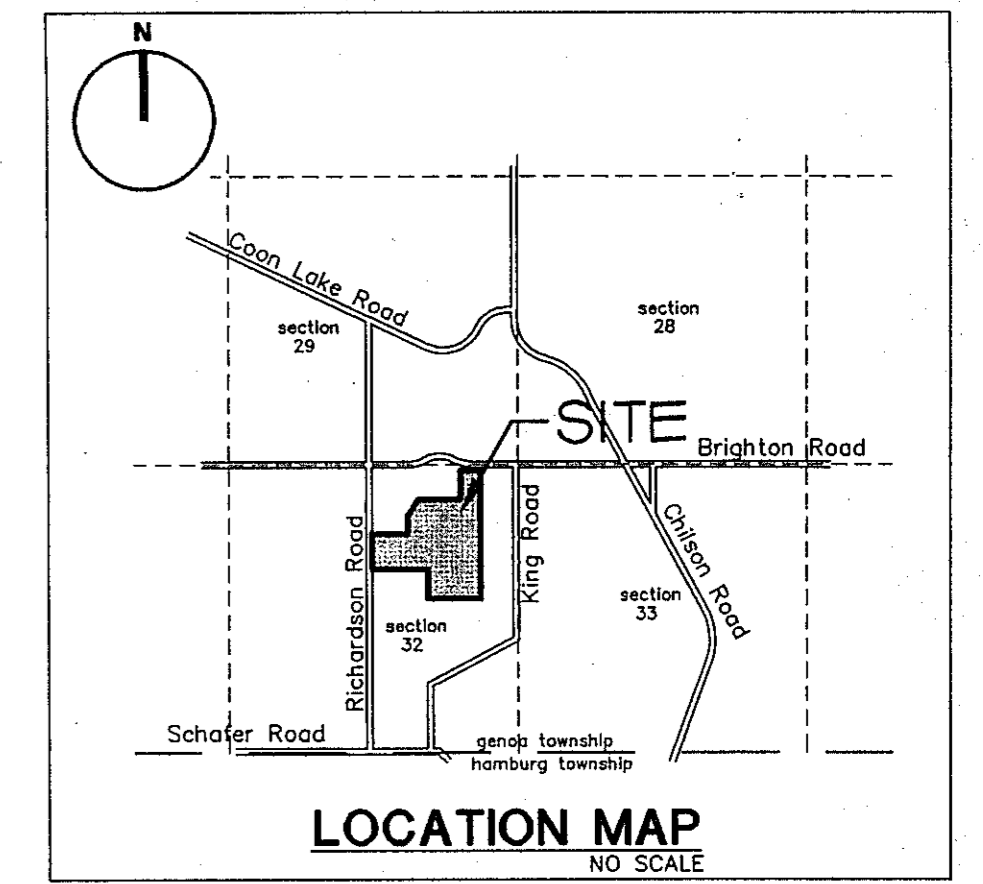
## SITE CONDOMINIUM SECTION 32, T2N-R5E, GENOA TOWNSHIP LIVINGSTON COUNTY, MICHIGAN

### DESCRIPTION

Part of the NE 1/4 of Section 32, T2N-R5E, Genoa Township, Livingston County, Michigan being described as follows: Commencing at the North 1/4 Corner of said Section 32, thence along the North-South 1/4 line of said Section 32 and centerline of Richardson Road (66 foot wide) S 01°19'21" E, a distance of 1068.53 feet to the Point of Beginning of the Parcel to be described; thence N 88°22'43" E, a distance of 828.51 feet; thence N 12°12'57" E, a distance of 305.36 feet; thence N 01°19'22" W, a distance of 200.00 feet; thence N 88°22'43" E, a distance of 763.32 feet; thence N 01°27'14" W, a distance of 571.99 feet; thence N 88°22'43" E, a distance of 333.00 feet; thence S 01°27'14" E, a distance of 1330.34 feet; thence S 88°16'35" W, a distance of 3.00 feet; thence S 01°27'14" E, a distance of 1330.34 feet; thence S 88°10'29" W, a distance of 1159.63 feet; thence N 15°10'07" W, a distance of 564.49 feet; thence along a non-tangential curve to the northwest, said curve having a radius of 285.07 feet, arc length of 426.42 feet, delta angle of 85°42'20", a chord bearing of N 87°51'56" W, and a chord, length of 387.76 feet; thence along a curve to the left, said curve having a radius of 230.05 feet, arc length of 185.94 feet, delta angle of 46°18'36", a chord bearing of N 68°10'04" W, and a chord length of 180.92 feet; thence S 88°40'38" W, a distance of 150.00 feet; thence along the North-South 1/4 line of said Section 32 and centerline of Richardson Road (66 foot wide), N 01°19'21" W, a distance of 949.33 feet to the Point of Beginning; and containing 80.25 acres, more or less. Subject to a 66 foot wide private easement for ingress, egress, and public utilities as recorded in Liber 1106 pages 975-984, Livingston County Records. Also subject to any other easements or restrictions of record.

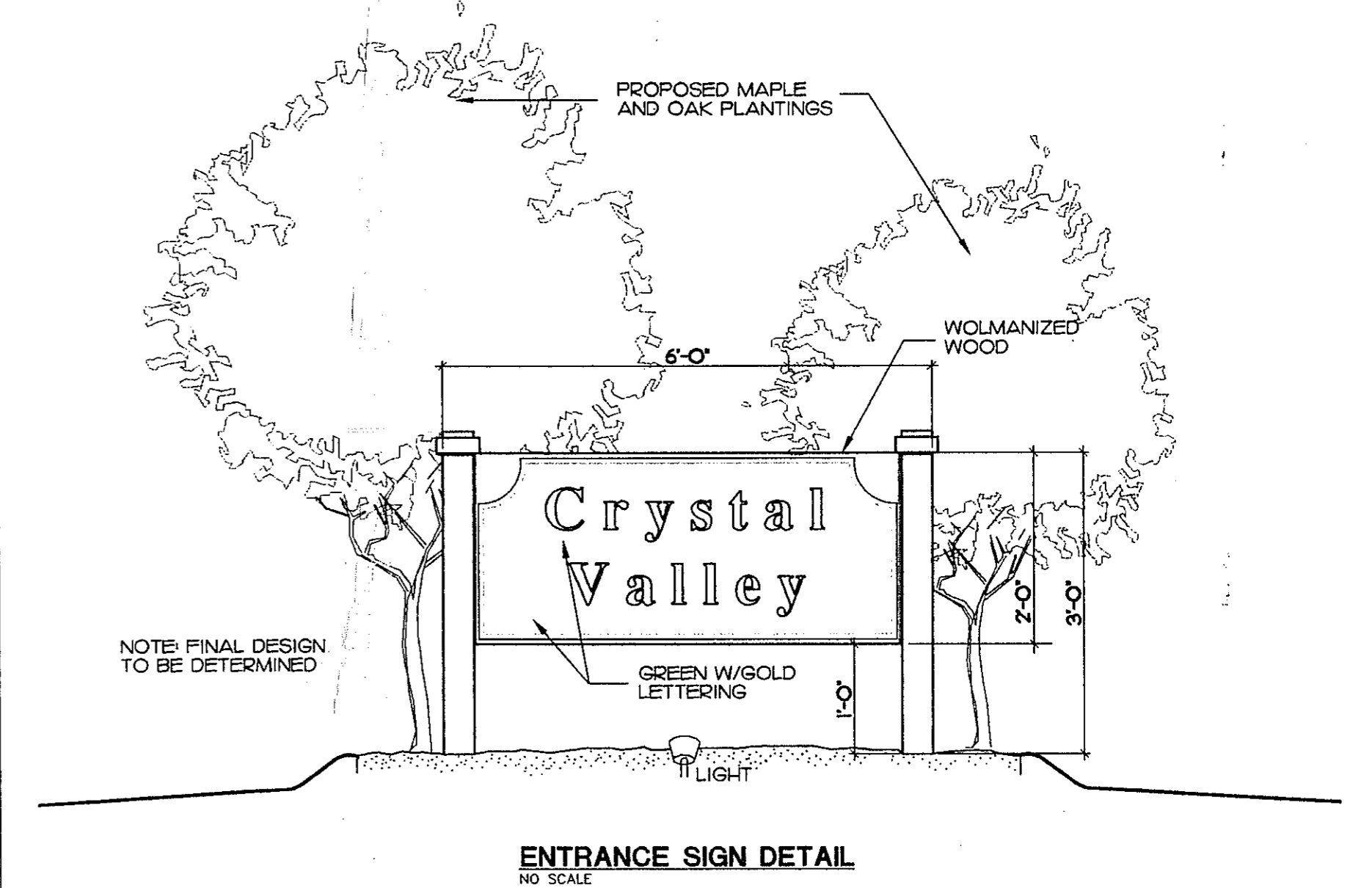
### DRAWING INDEX

NO.	TITLE
1.	COVER SHEET
2.	COMPOSITE PLAN
3.	GRADING PLAN
4.	ROADWAY, STORM PLAN & PROFILE
5.	ROADWAY, STORM PLAN & PROFILE
6.	EROSION CONTROL PLAN
7.	DRAINAGE PLAN AND NOTES
8.	DETAILS
9.	LANDSCAPE PLAN



### NOTES:

- ZONING OF SITE = RR: MIN. LOT AREA = 2 ACRE, MIN. FRONTAGE = 200 FT.
- ALL ROADS WITHIN THE DEVELOPMENT SHALL BE PRIVATE.
- ALL LOTS TO BE SERVICED BY INDIVIDUAL WELLS AND SEPTIC SYSTEMS.
- TYPICAL BUILDING SETBACKS - FRONT YARD = 50 FT.  
SIDE YARD = 30 FT.  
REAR YARD = 80 FT.
- THIS PROJECT SHALL BE DEVELOPED IN ONE PHASE.
- ALL UTILITIES SHALL BE UNDERGROUND
- SOILS ARE PREDOMINANTLY FOX & FOX BOYER SAND AND SANDY LOAMS
- ALL ENCLOSED STORM DRAINAGE SHALL HAVE A 20' WIDE STORM EASEMENT. ALL OPEN DRAINAGE SWALES SHALL HAVE A 30' WIDE STORM EASEMENT.
- EASEMENTS FOR STORM WATER DETENTION WILL BE PROVIDED.
- ALL STORM DRAINAGE STRUCTURES, PIPING & DETENTION FACILITIES SHALL BE UNDER THE JURISDICTION OF THE SITE CONDOMINIUM ASSOCIATION.
- THE SITE CONDOMINIUM ASSOCIATION SHALL MAINTAIN ALL OF THE PRIVATE ROADWAY FACILITIES.
- TWO CANOPY TREES TO BE PLANTED PER UNIT, WITHIN 20 FT. OF FRONT UNIT LINE. (TO BE OF SPECIES APPROVED BY GENOA TOWNSHIP)



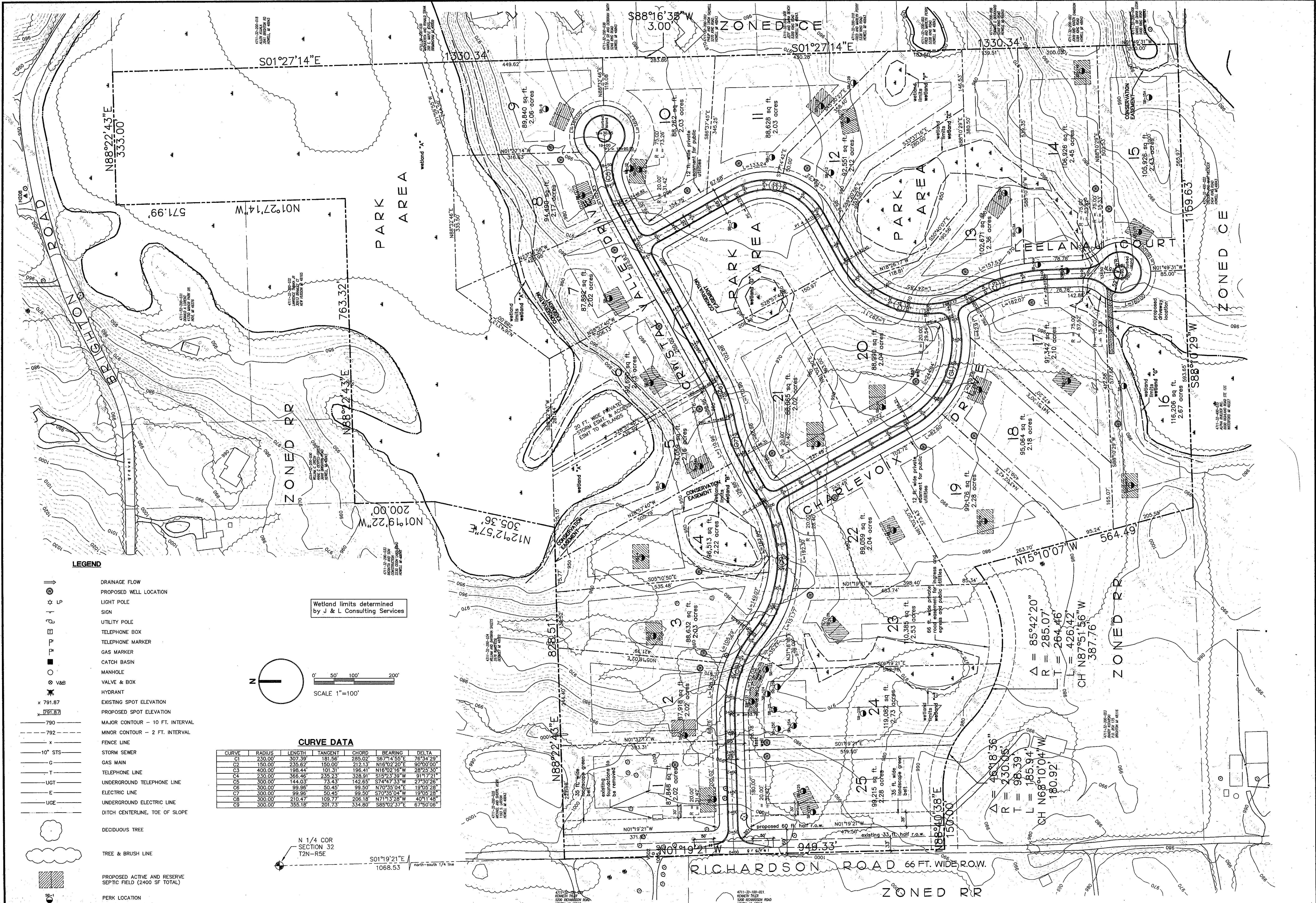
OWNER/DEVELOPER  
FRANK GIESE  
3373 DUNLAP  
PINCKNEY, MI. 48169  
313 878-3462

CRYSTAL VALLEY  
SITE CONDOMINIUM  
COVER SHEET

ADVANTAGE  
CIVIL  
ENGINEERING  
110 E. Grand River, Howell, MI. 48843 517 545-4144 Fax 517 545-4146

DATE: 1-15-97  
DRAWN BY: TAH  
CHECKED BY: PCK  
JOB No. 96222

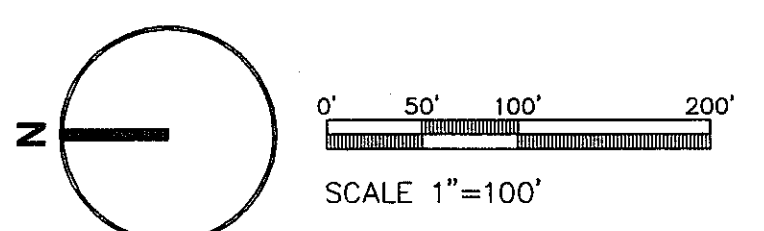
DRAWING No. 1  
JUN 04 1997



**LEGEND**

- DRAINAGE FLOW
- PROPOSED WELL LOCATION
- ⊙ LIGHT POLE
- ⊙ SIGN
- ⊙ UTILITY POLE
- ⊙ TELEPHONE BOX
- ⊙ TELEPHONE MARKER
- ⊙ GAS MARKER
- ⊙ CATCH BASIN
- ⊙ MANHOLE
- ⊙ VALVE & BOX
- ⊙ HYDRANT
- x 791.87 EXISTING SPOT ELEVATION
- 791.87 PROPOSED SPOT ELEVATION
- 790 MAJOR CONTOUR - 10 FT. INTERVAL
- 792 MINOR CONTOUR - 2 FT. INTERVAL
- x FENCE LINE
- 10" STS STORM SEWER
- GAS MAIN
- TELEPHONE LINE
- UGT UNDERGROUND TELEPHONE LINE
- E ELECTRIC LINE
- UGE UNDERGROUND ELECTRIC LINE
- DITCH CENTERLINE, TOE OF SLOPE
- DECIDUOUS TREE
- TREE & BRUSH LINE
- PROPOSED ACTIVE AND RESERVE SEPTIC FIELD (2400 SF TOTAL)
- PERK LOCATION

Wetland limits determined by J & L Consulting Services



**CURVE DATA**

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	230.00'	307.39'	181.56'	285.02'	S87°4'58"E	76°34'29"
C2	150.00'	235.62'	150.00'	212.13'	N16°02'20"E	90°00'00"
C3	400.00'	198.44'	101.31'	196.41'	N16°02'16"W	28°25'30"
C4	230.00'	366.46'	235.23'	328.91'	S15°23'39"W	91°47'21"
C5	300.00'	144.03'	73.43'	142.65'	S74°47'33"W	27°30'26"
C6	300.00'	99.96'	50.45'	99.50'	N70°35'04"E	19°05'28"
C7	300.00'	99.96'	50.45'	99.50'	S70°35'04"W	19°05'28"
C8	300.00'	210.47'	109.77'	206.18'	N71°13'28"W	40°11'48"
C9	300.00'	355.18'	201.73'	334.80'	S85°02'37"E	67°50'08"

N 1/4 COR SECTION 32 T2N-R5E  
 S01°19'21"E  
 1068.53  
 North-South 1/4 Line

**ADVANTAGE CIVIL ENGINEERING**

**CRYSTAL VALLEY SITE CONDOMINIUM COMPOSITE PLAN**

OWNER/DEVELOPER:  
**FRANK GIESE**  
 3373 DUNLAP  
 PINKNEY MI. 48169  
 313 878-3462

DATE: **1-8-97**

DRAWN BY: **TAH**

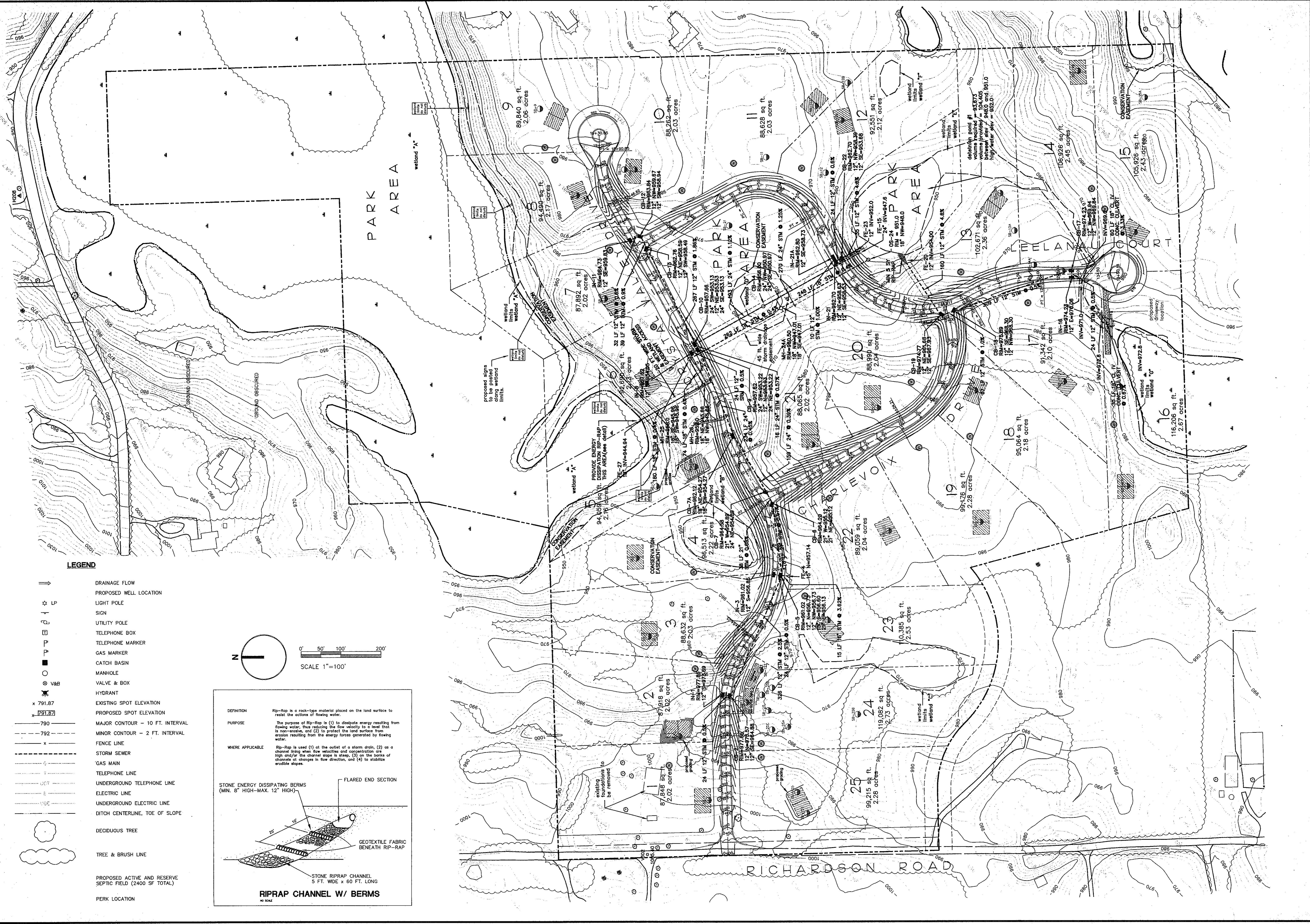
CHECKED BY: **PCK**

JOB NO. **08222**

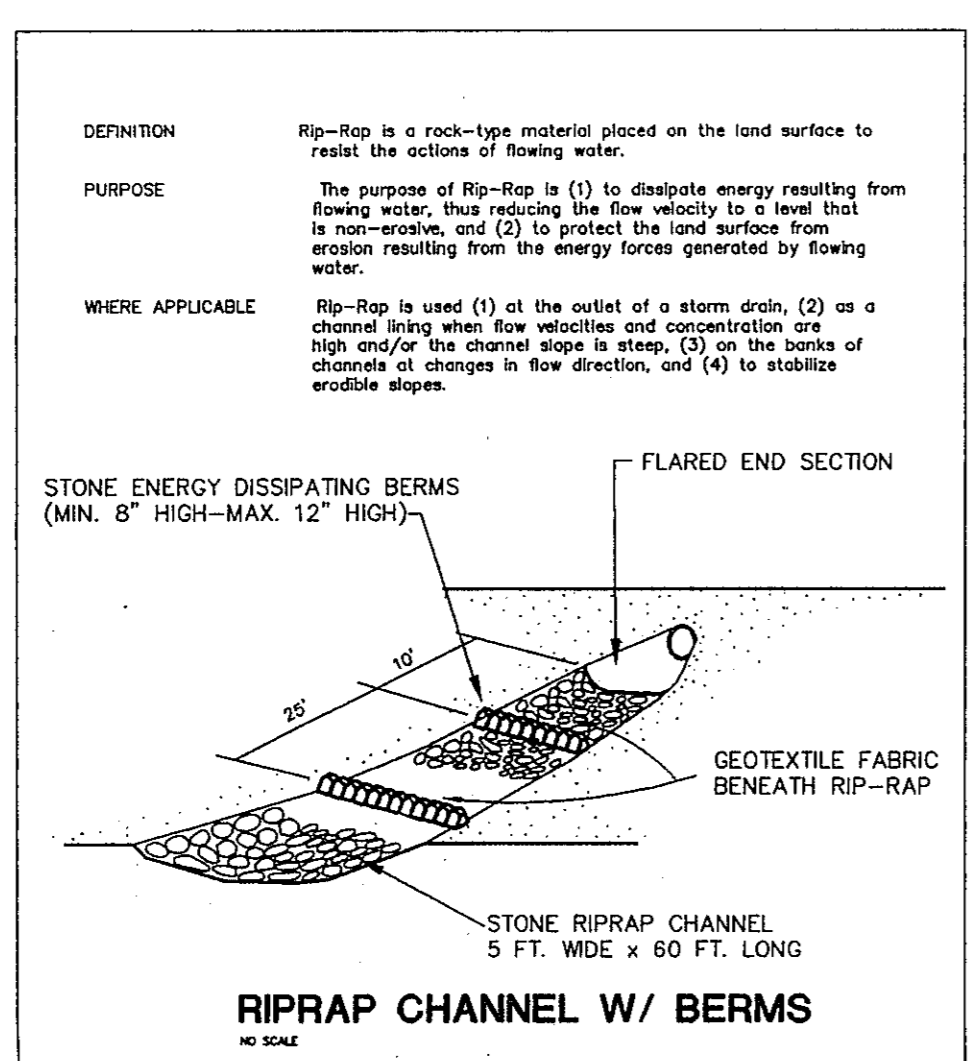
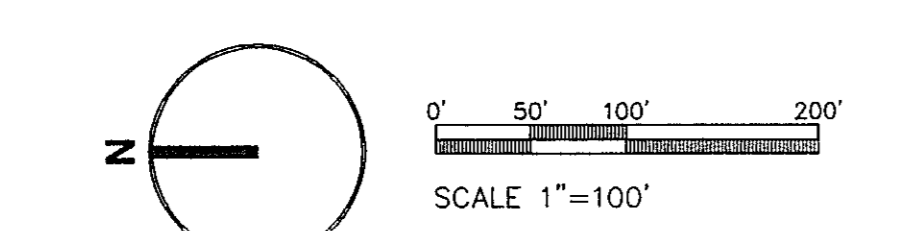
DRAWING NO. **2**

110 E. Grand Street, Howell, MI. 48843. 517.345-4444. Fax: 517.345-4448

DRAWING NO. 98222



- LEGEND**
- DRAINAGE FLOW
  - PROPOSED WELL LOCATION
  - LIGHT POLE
  - SIGN
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  - DITCH CENTERLINE, TOE OF SLOPE
  - DECIDUOUS TREE
  - TREE & BRUSH LINE
  - PROPOSED ACTIVE AND RESERVE SEPTIC FIELD (2400 SF TOTAL)
  - PERK LOCATION



REVISIONS:

01-15-97	ISSUED FOR PERM REVIEW
02-10-97	REVISED PER TRP
03-10-97	REVISED PER TRP
05-13-97	REVISED PER TRP
05-16-97	ADDED BERMS
05-22-97	REV. PER TRP DRAIN. & PLANNED

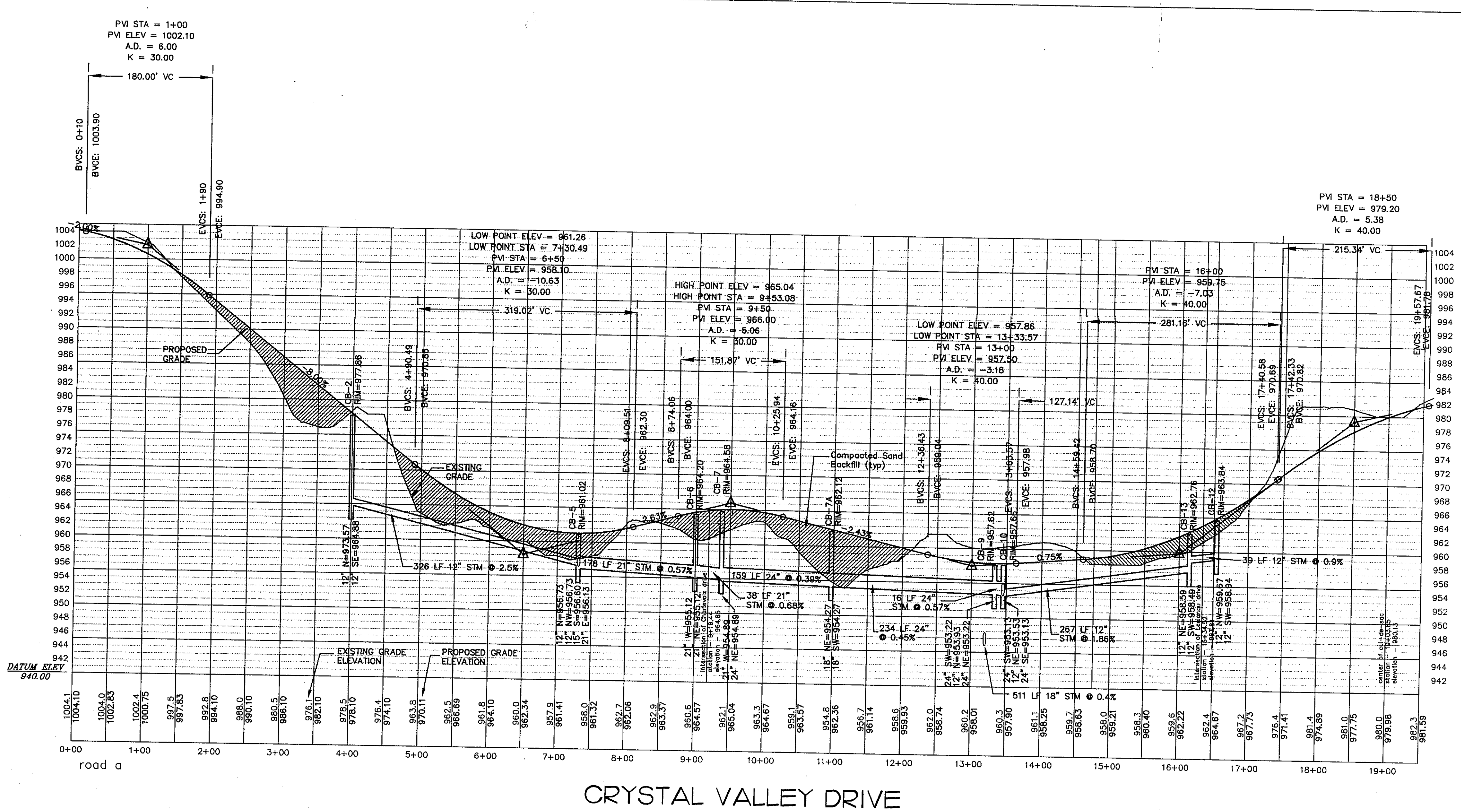
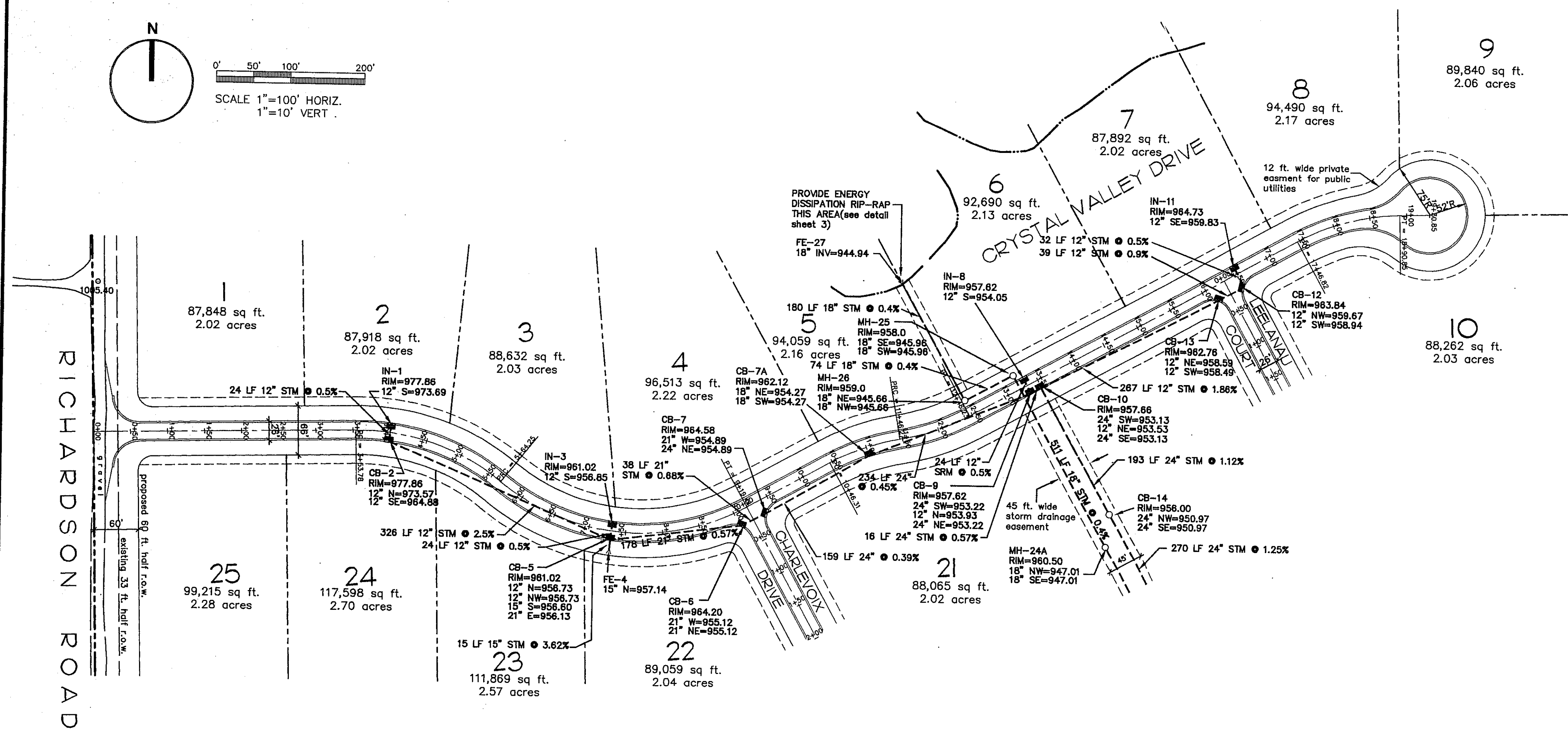
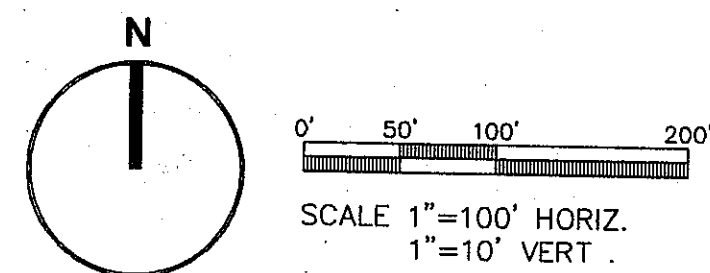
OWNER'S REPRESENTATIVE:  
**FRANK GIESE**  
 3373 DUNLAP COURT  
 PINKNEY, MI 48169  
 810 878-3462

**CRYSTAL VALLEY**  
 SITE CONDOMINIUM  
 GRADING PLAN

**ADVANTAGE CIVIL ENGINEERING**  
 110 E. Grand River, Howell, MI 48843 517 545-4141 Fax 517 545-4146

DATE: 1-15-97  
 DRAWN BY: TAH  
 CHECKED BY: PCK  
 JOB No. 98222

DRAWING No. **3**



CRYSTAL VALLEY DRIVE

REVISIONS:

02-05-97	SUBMIT FOR TWP REVIEW
04-10-97	REVISED PER TWP
04-30-97	REVISED PER TWP
05-13-97	REVISED PER TWP

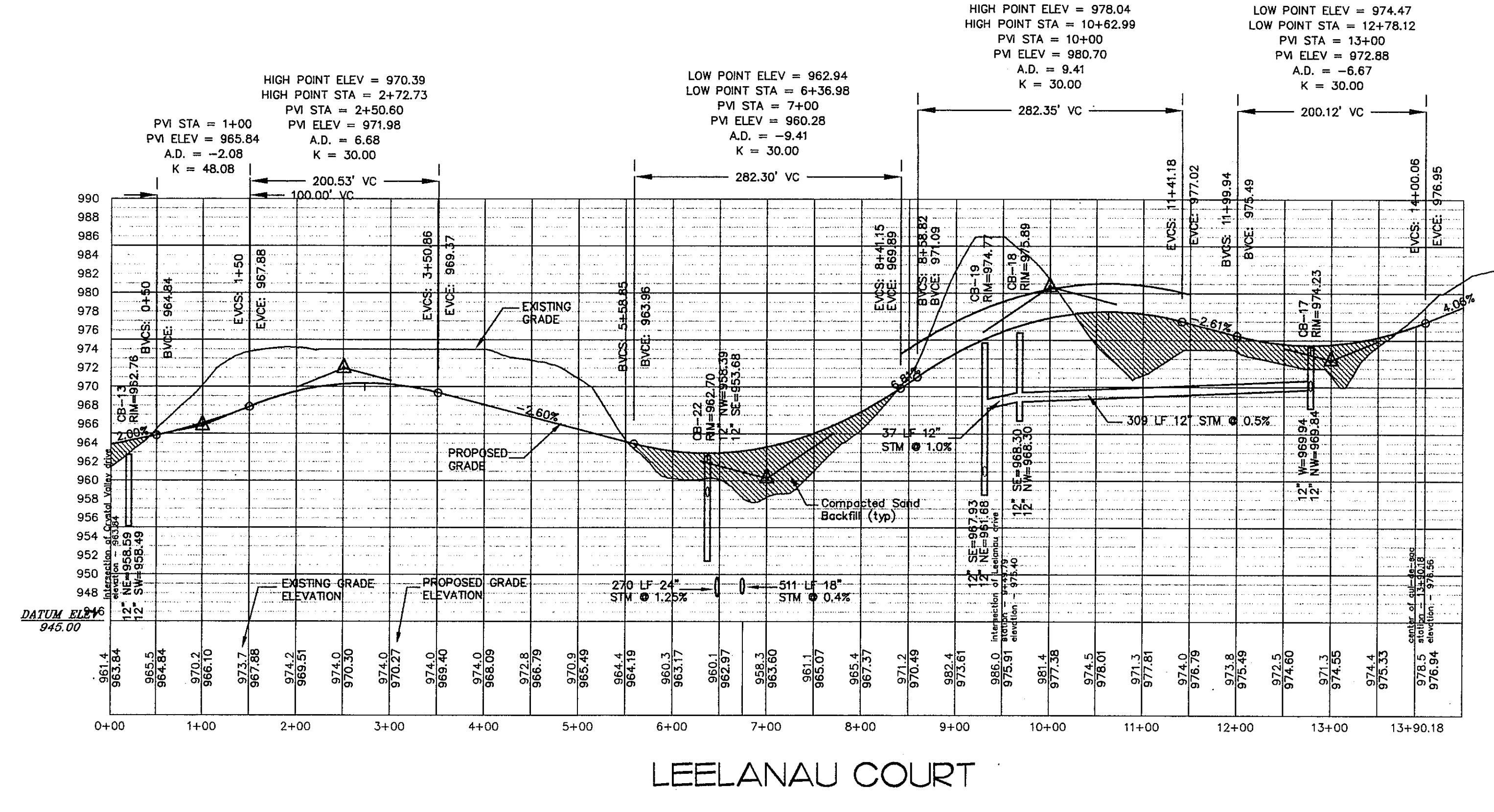
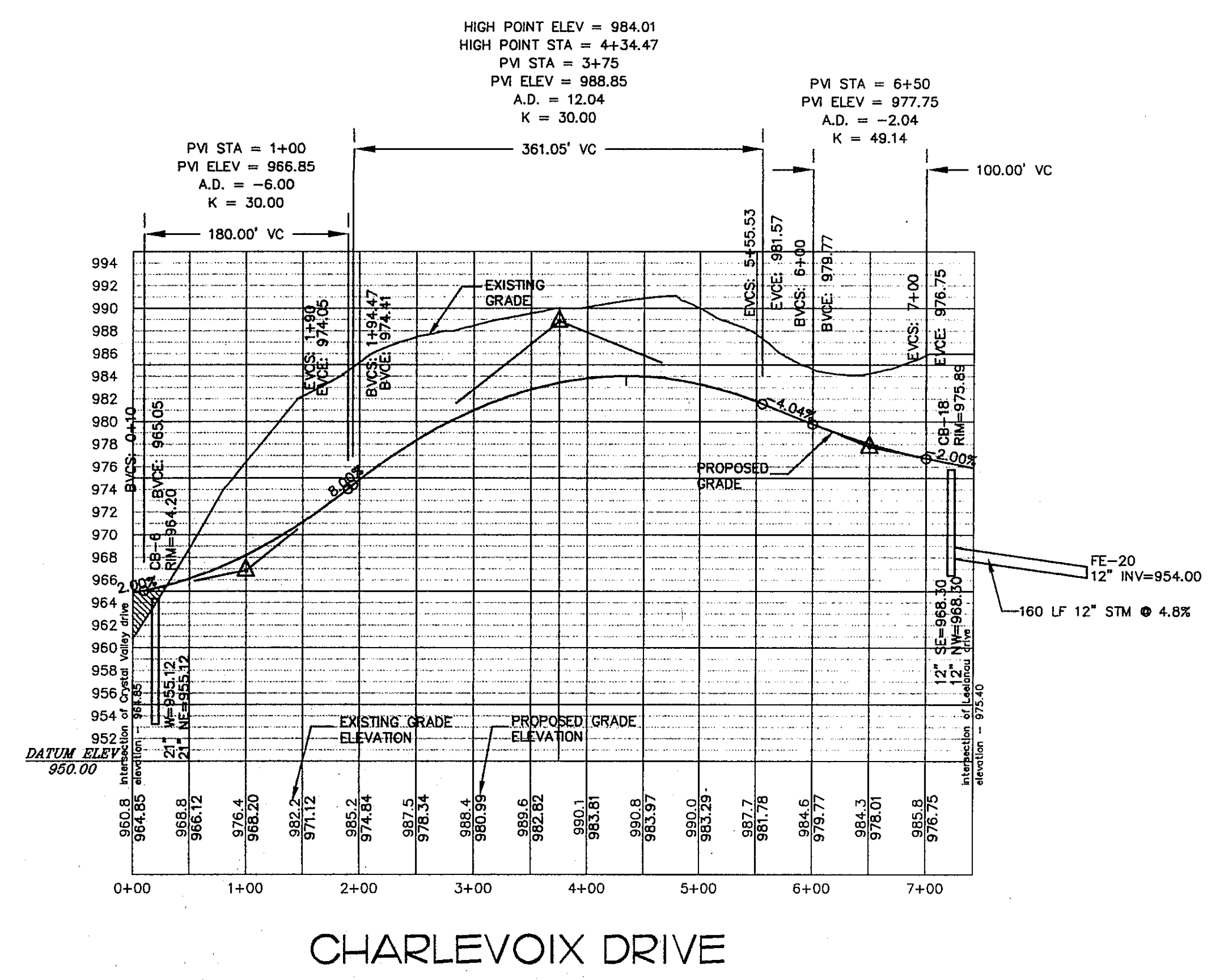
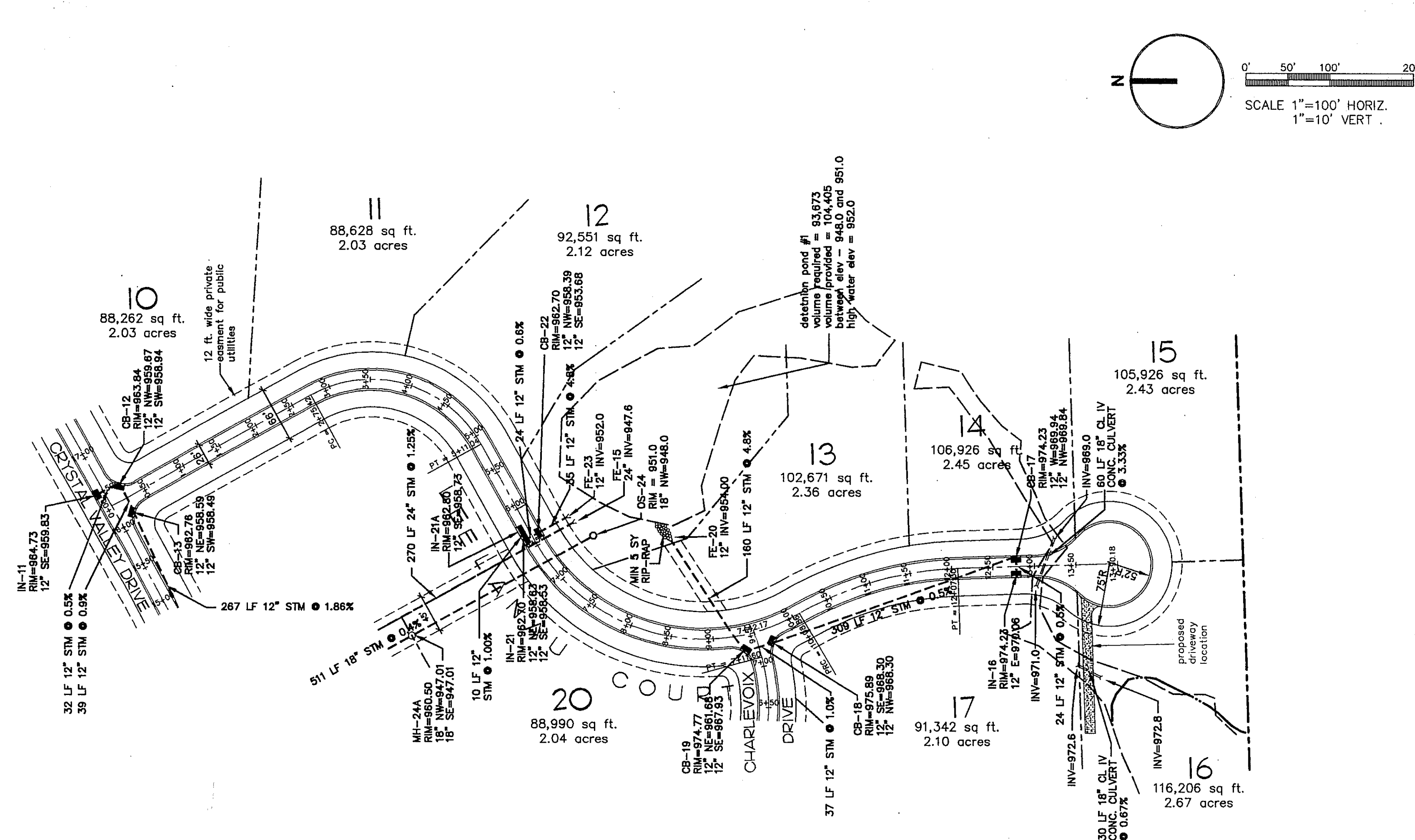
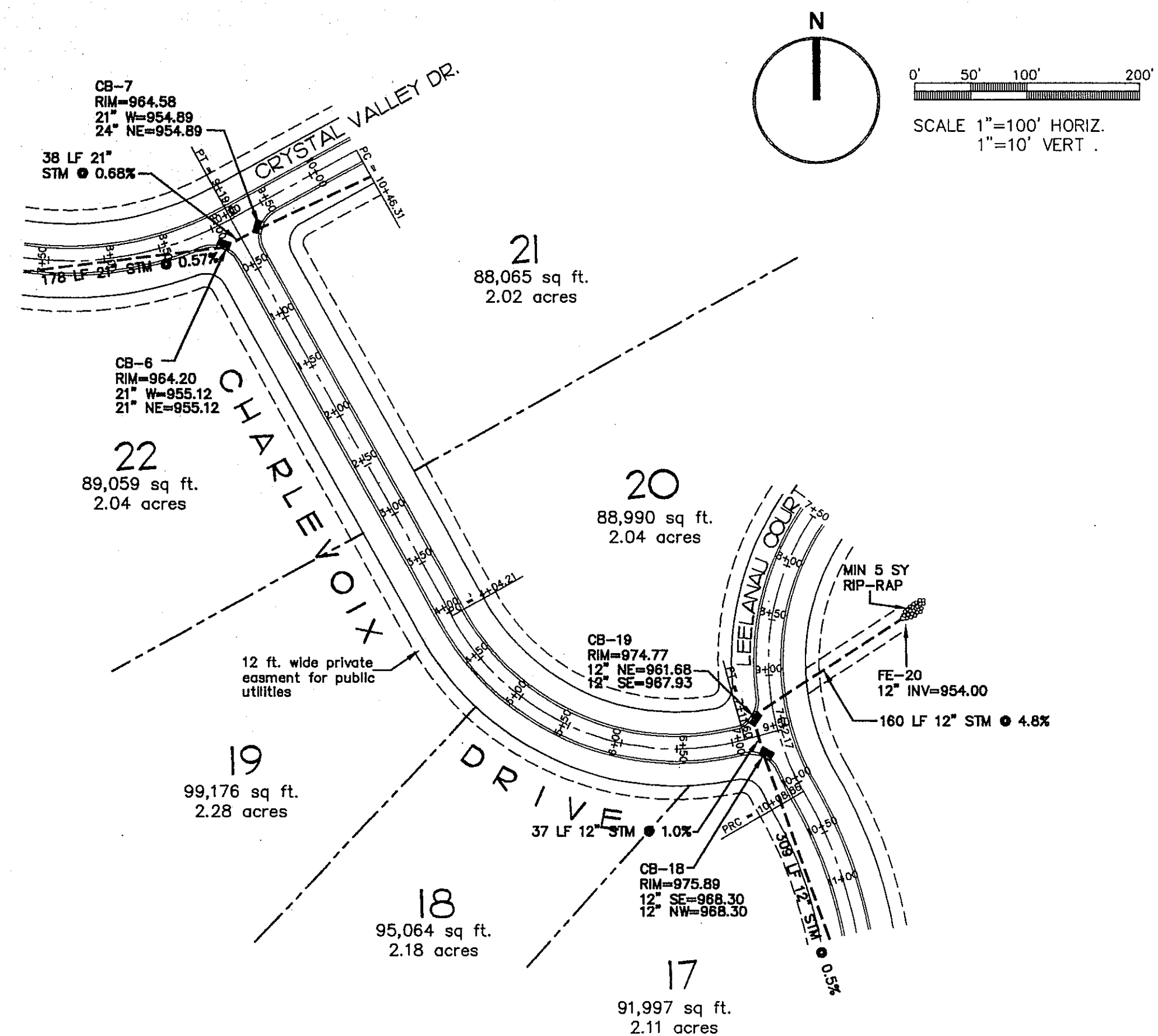
OWNER/DEVELOPER:  
**FRANK GIESE**  
 3373 DUNLAP COURT  
 PINKNEY, MI. 48169  
 810 878-

**CRYSTAL VALLEY**  
 SITE CONDOMINIUM  
**ROADWAY, STORM PLAN & PROFILE**

**ADVANTAGE**  
 CIVIL  
 ENGINEERING  
 110 E. Grand River, Howell, MI. 48843 517 545-4141 Fax 517 545-4146

DATE: 1-15-97  
 DRAWN BY: TAH  
 CHECKED BY: PCK  
 JOB No. 98222

DRAWING No. 4



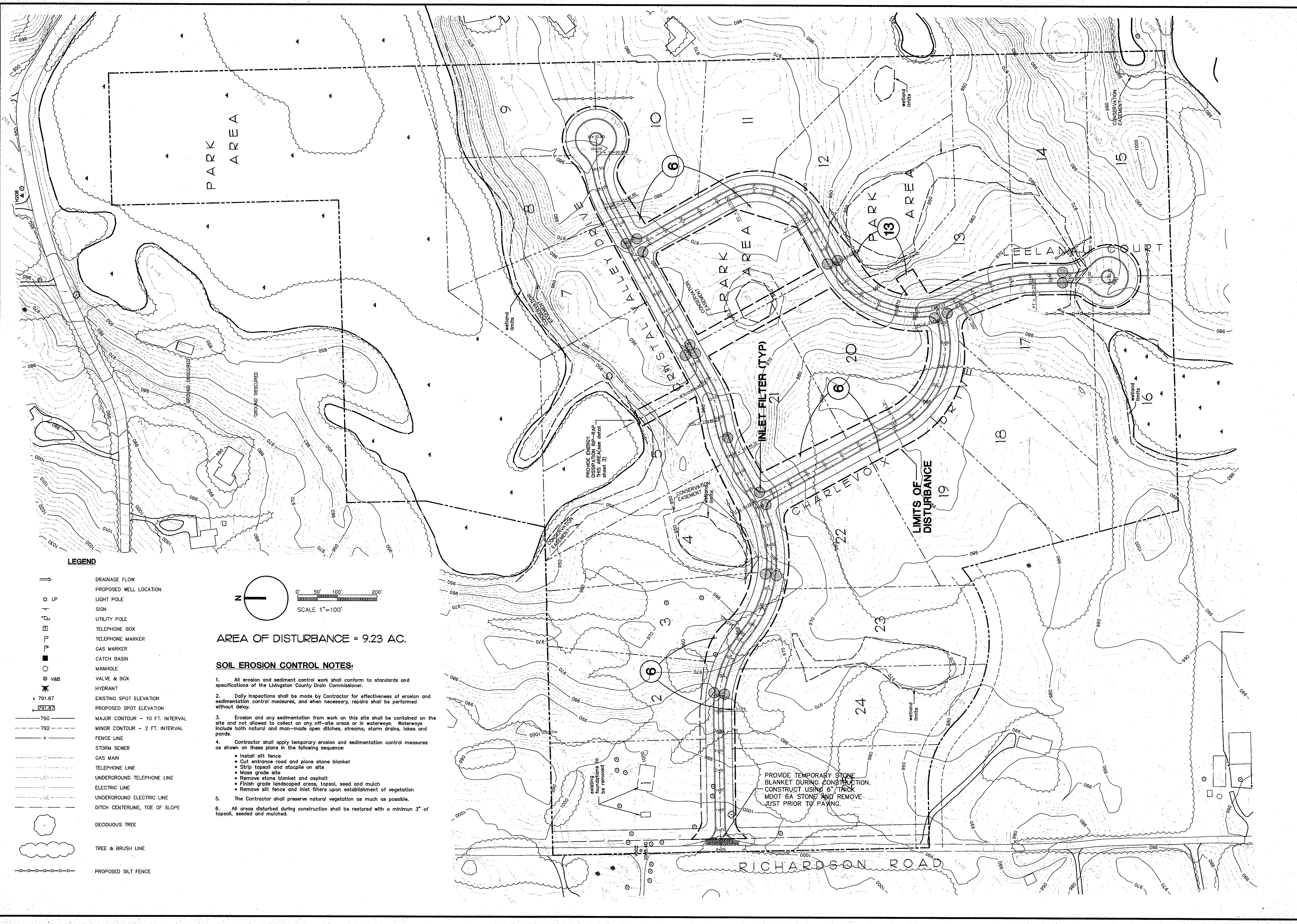
REVISIONS:	
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04-30-97	REVISED PER TWP
05-13-97	REVISED PER TWP

OWNER/DEVELOPER:  
**FRANK GIESE**  
 3373 DUNLAP COURT  
 PINKNEY, MI. 48169  
 810 878-

**CRYSTAL VALLEY**  
 SITE CONDOMINIUM  
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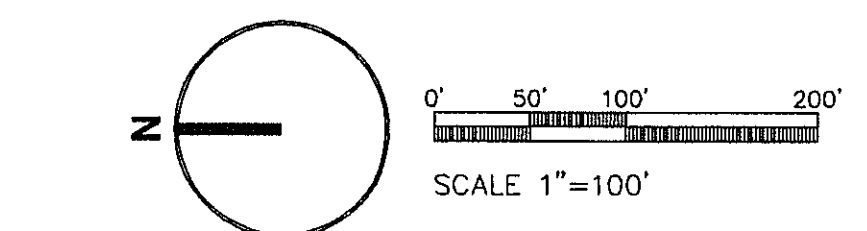
**ADVANTAGE**  
 CIVIL  
 ENGINEERING

DATE: 1-15-97  
 DRAWN BY: TAH  
 CHECKED BY: PCK  
 JOB NO.: 96222



**LEGEND**

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- DITCH CENTERLINE, TOE OF SLOPE
- DECIDUOUS TREE
- TREE & BRUSH LINE
- PROPOSED SILT FENCE



AREA OF DISTURBANCE = 9.23 AC.

**SOIL EROSION CONTROL NOTES:**

1. All erosion and sediment control work shall conform to standards and specifications of the Livingston County Drain Commissioner.
2. Daily inspections shall be made by Contractor for effectiveness of erosion and sedimentation control measures, and when necessary, repairs shall be performed without delay.
3. Erosion and any sedimentation from work on this site shall be contained on the site and not allowed to collect on any off-site areas or in waterways. Waterways include both natural and man-made open ditches, streams, storm drains, lakes and ponds.
4. Contractor shall apply temporary erosion and sedimentation control measures as shown on these plans in the following sequence:
  - Install silt fence
  - Cut entrance road and place stone blanket
  - Strip topsoil and stockpile on site
  - Mass grade site
  - Remove stone blanket and asphalt
  - Finish grade landscaped areas, topsoil, seed and mulch
  - Remove silt fence and inlet filters upon establishment of vegetation
5. The Contractor shall preserve natural vegetation as much as possible.
6. All areas disturbed during construction shall be restored with a minimum 3" of topsoil, seeded and mulched.

PROVIDE TEMPORARY STONE BLANKET DURING CONSTRUCTION. CONSTRUCT USING 6" THICK MDOT 6A STONE AND REMOVE JUST PRIOR TO PAVING.

REVISIONS:

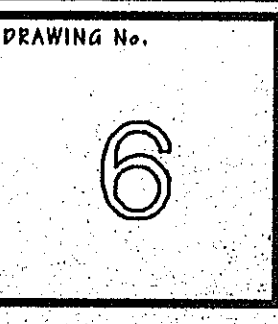
02-05-97	SUBMIT FOR TWP REVIEW
04-10-97	RECEIVED FOR TWP
05-13-97	RECEIVED FOR TWP
05-13-97	RECEIVED FOR TWP
05-02-97	REV. FOR TWP, ENGR. & PLANNER

OWNER/DEVELOPER:  
**FRANK GIESE COURT**  
 3373 DUNLAP COURT  
 PINCKNEY, MI. 48169  
 810 878-3462

**CRYSTAL VALLEY**  
 SITE CONDOMINIUM  
 EROSION CONTROL PLAN

**ADVANTAGE CIVIL ENGINEERING**  
 110 E. Grand River, Howell, MI. 48843 517.545-4141 Fax 517.245-4148

DATE: 1-15-97  
 DRAWN BY: TAH  
 CHECKED BY: PCK  
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**GENERAL NOTES**

- All construction shall be performed in accordance with the current standards and specifications of Michigan Department of Transportation, Genoa Township and Livingston County.
- All construction shall have inspection provided by Advantage Civil Engineering. The Contractor shall telephone Genoa Township (810-227-5225) 72 hours (3 working days) before construction.
- Seventy-two hours prior to any excavation, the Contractor shall telephone MISS DIG (800-482-7171) for the location of underground gas and cable facilities and shall also notify representatives of other utilities located in the vicinity of the work. It shall be the Contractor's responsibility to verify and/or obtain any information necessary regarding the presence of underground utilities which might affect this job.
- Prior to construction, all existing utilities at proposed connections and crossings shall be field excavated to verify location and elevation. Field information shall be supplied to Engineer so that the Engineer may confirm, adjust or revise design elevations of proposed utilities.
- All trenches within a 1 on 1 slope of pavement shall be backfilled with sand and mechanically compacted in 12 inch layers to 95 percent maximum unit weights.
- Storm easements to be 20' wide for enclosed storm systems outside of private road and private drive right-of-way and 30' wide for open storm drains (with pipe centered within easement).
- Utilities to be underground.
- Advantage as the design professional waives any and all responsibility and liability for problems which arise from failure to follow these plans, specifications and the design intent they convey, or for problems which arise from others' failure to obtain and/or follow the design professional's guidance with respect to any errors, omissions, inconsistencies, ambiguities or conflicts which are alleged.
- Advantage and the township of Genoa will not be responsible for construction means, controls, techniques, sequences, procedures, or construction safety. Safety and MIOSHA compliance is the contractor's responsibility.

**STORM SEWER NOTES**

- All storm pipe to be ADS N-12 HDPE pipe, (or equivalent), unless otherwise noted on plans. All storm pipe to be reinforced conc. cl III pipe within the influence of road.
- All storm sewers shall have "Premium Joints" with O RING gaskets.
- All catch basins shall have 2' sump.
- Edge drain may be necessary to place during construction, if poor soil conditions exist. At which time the field Engineer will establish locations.
- All storm sewers designed to handle 10 year frequency storm per L.C.D.C. design criteria.
- Storm sewer structure covers shall be:  
Storm Manhole E.J.I.W. 1040 Cover "A"  
Catch Basins/Inlets (within road) E.J.I.W. 7045 Cover "K"
- All construction backfill, bedding, etc. shall be in accordance with Michigan Department of Transportation specifications.

**GRADING NOTES**

- The grading contractor shall be responsible for all work required to make the existing terrain conform to the grades and elevations shown on these plans, which includes, but is not limited to:
  - Removal of all topsoil, muck, marl, stumps, and other unacceptable materials from the road bed areas and the replacement, if necessary, of same with the approved material, to within 0.06 feet to the final subbase elevations.
  - Preparation of the subbase to within 0.06 feet of the final subbase elevations, including placement and compaction of any required fill materials.
- Any fill required within the road bed areas shall be placed in lifts not to exceed 6" when compacted. Each lift shall then be compacted to a least 95 percent of its maximum density as determined by the modified proctor method (A.S.T.M. D1557-70).
- If portions of the road subbase appear to be unsuitable for pavement construction the Contractor shall notify the Engineer and upon his written approval shall remove the unsuitable material and replace it with approved material - compacted in place - to the original soil surface. This work shall be paid for at a unit price to be agreed upon prior to the excavation.
- When it is necessary to place Engineered Fill within the roadway area to bring them to grade, such fill shall be of a nature and composition similar to adjacent existing material so that the pavement may be constructed on a sub-base of relatively uniform materials.

**PAVEMENT NOTES**

- Pavement shall be 26 feet back to back for all private roads.
- Pavement cross-section to have 2 percent slope from the centerline to gutter.
- Pavement to be 3" asphalt in 2 lifts on 7" 22A stone base.  
Lift 1: 1-1/2" MDOT 1100T  
Lift 2: 1-1/2" MDOT 1100L
- Curbs to be 24" width (MDOT type "D-2" modified).
- All muck, marl, topsoil, stumps and any other unsuitable material encountered by the paving contractor within the roadway shall be removed and disposed of as directed by the Engineer. All materials so removed shall be replaced with materials of a nature and composition similar to the adjacent materials, such that the pavement shall rest on the subbase of relatively uniform composition.
- All fill materials required to bring the subbase to grade shall conform to the Spec's outlined above.

**SOIL EROSION NOTES**

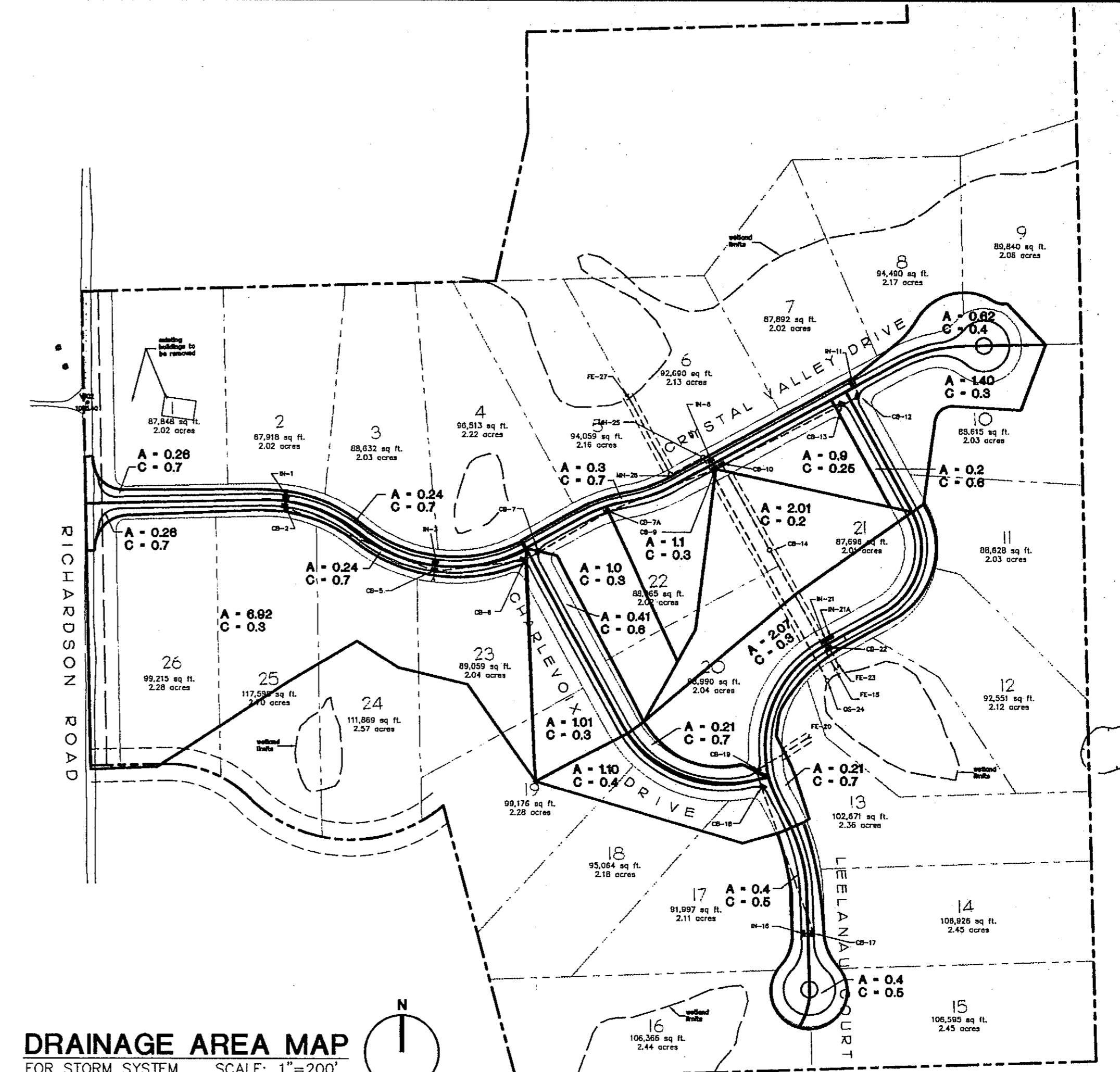
- All erosion and sediment control work shall conform to standards and specifications of the Livingston County Drain Commissioner.
- Daily inspections shall be made by Contractor for effectiveness of erosion and sedimentation control measures, and when necessary, repairs shall be performed without delay.
- Erosion and any sedimentation from work on this site shall be contained on the site and not allowed to collect on any off-site areas or in waterways. Waterways include both natural and man-made open ditches, streams, storm drains, lakes and ponds.
- Contractor shall apply temporary erosion and sedimentation control measures as soon as permanent stabilization of slopes, ditches, and other changes have been accomplished. Such measures will include temporary swales, filters on all storm structures with catch basin covers and filters at end section outlets.
- Staging the work will be done by the contractor as directed in these plans and as required to ensure progressive stabilization of disturbed earth.
- Soil erosion control practices will be established in early stages of construction by the Contractor. Sediment control practices will be applied as a perimeter defense against any transporting off the site.
- The Contractor shall preserve natural vegetation as much as possible.
- Burlap and pea gravel shall be used over catch basins.
- Contractor to provide earthen berms & stone outlet filters throughout the site as needed to eliminate sediment runoff to undisturbed areas as directed by Engineer.

**EROSION CONTROL SEQUENCE**

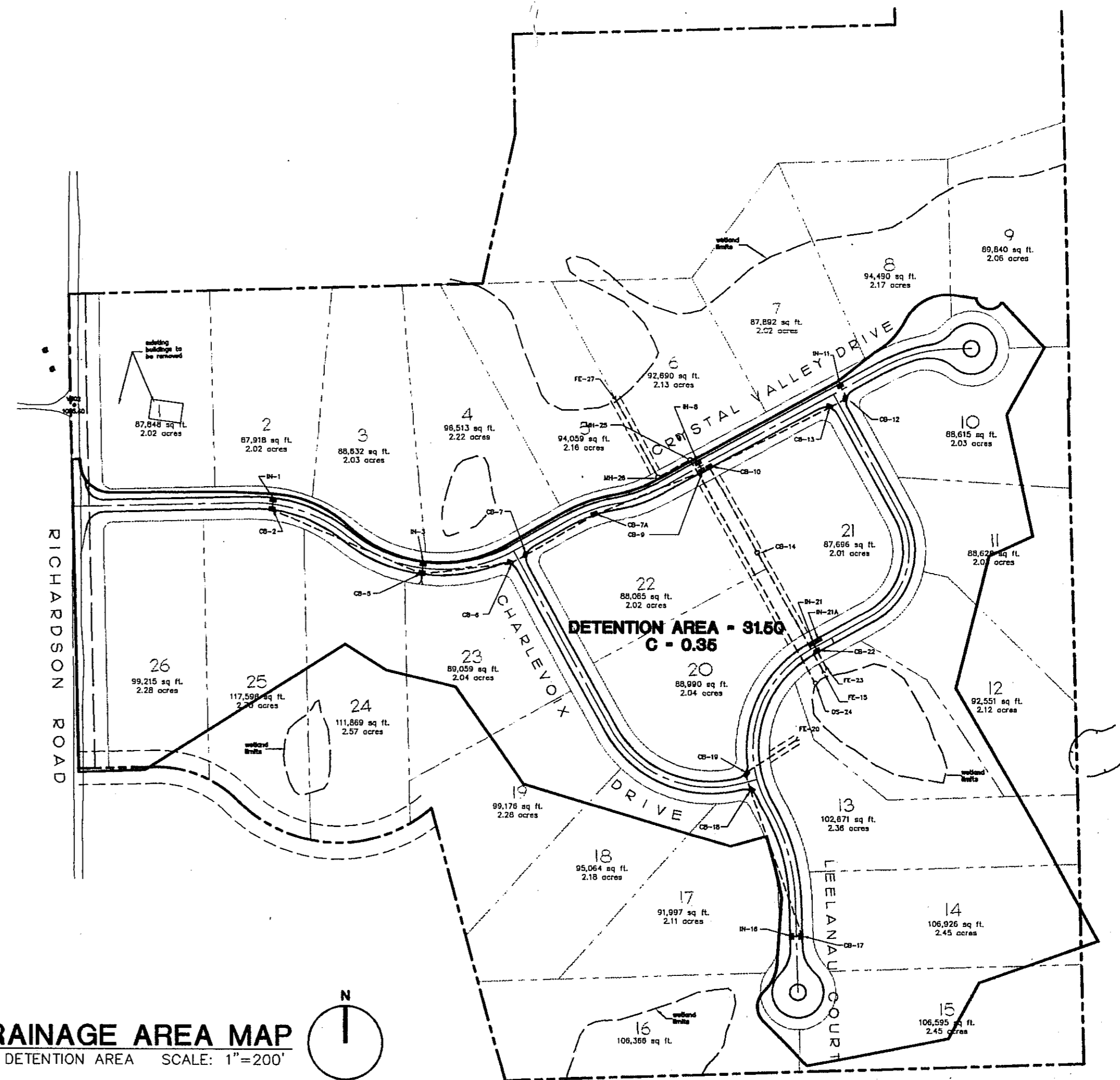
- | NO. | DESCRIPTION  | TIMEFRAME |
|-----|--|-----------|
| 1.  | Install sediment control fencing at all locations  | Week 1    |
| 2.  | Install stone blanket at site entrance.  | Week 2    |
| 3.  | Construct detention pond.  | Week 1-4  |
| 4.  | Clear and mass grade the roads.  | Week 1-4  |
| 5.  | Construct storm sewer. Immediately install inlet filters at all catch basins and inlets as shown and install end section sediment filters. Install permanent rip-rap weir at storm outfalls. | Week 4-6  |
| 6.  | Construct curb and gutter.   | Week 6    |
| 7.  | Install pavement: Replace inlet filters as required.   | Week 6-7  |
| 8.  | Install public utilities (gas, electric and telephone).  | Week 7-8  |
| 9.  | Finish grading; redistribute topsoil; establish vegetation and/or landscape any remaining disrupted areas as necessary.  | Week 9    |
| 10. | Clean roads and storm sewer of all accumulated sediment in conjunction with removal of all temporary erosion controls.   | Week 9    |

**STORM SEWER CALCULATIONS**

FROM MH OR INLET	TO MH OR INLET	INCREMENT ACRES CA	"C" CA	EQUIVALENT AREA 100% ACRES CA	TOTAL AREA 100% ACRES CA	T MIN.	I INCHES PER HOUR	Q C.F.S. C.I.A.	DIAMETER OF PIPE IN.	SLOPE PIPE %	LENGTH OF LINE FT.	VELOCITY FLOW FULL FT/SEC	TIME OF FLOW MIN.	CAPACITY OF C.F.S.
IN-1	CB-2	0.26	0.7	0.18	0.18	15	4.38	0.79	12	0.5	24	3.2	0.1	2.52
CB-2	CB-5	0.26	0.7	0.18	0.36	15.1	4.36	1.57	12	2.5	326	7.2	0.8	5.63
FE-4	CB-5	6.92	0.3	2.08	2.08	15	4.38	9.11	15	3.62	15	10	0	12.27
IN-3	CB-5	0.24	0.7	0.17	0.17	15	4.38	0.74	12	0.5	24	3.2	0.1	2.52
CB-5	CB-6	0.24	0.7	0.17	2.78	15.6	4.31	11.98	21	0.57	178	5.0	0.6	11.98
CB-6	CB-7	1.01	0.3	3.08	16.2	4.25	13.09	21	0.68	38	5.4	0.1	13.09	
CB-7	CB-7A	0.41	0.6	0.25	3.33	16.3	4.24	14.12	24	0.39	159	4.5	0.6	14.12
CB-7A	CB-9	1.0	0.3	3.63	16.9	4.18	15.17	24	0.45	234	4.8	0.8	15.18	
IN-8	CB-9	0.3	0.7	0.21	0.21	15	4.38	0.92	12	0.5	24	3.2	0.1	2.52
CB-9	CB-10	1.1	0.3	3.33	4.17	17.8	4.09	17.05	24	0.57	16	5.4	0.1	17.08
IN-11	CB-12	0.62	0.4	0.25	0.25	15	4.38	1.10	12	0.5	32	3.2	0.2	2.52
CB-12	CB-13	1.40	0.3	0.42	0.67	15.2	4.35	2.91	12	0.9	39	4.3	0.2	3.38
CB-13	CB-10	0.2	0.6	0.12	0.79	15.4	4.33	3.42	12	1.86	287	6.2	0.7	4.85
CB-10	CB-14	0.9	0.25	0.23	5.19	17.9	4.08	23.91	24	1.12	184	7.6	0.4	23.94
CB-14	FE-15	2.01	0.2	0.4	5.59	16.3	4.04	25.3	24	1.25	271	8.1	0.6	26.3
IN-16	CB-17	0.4	0.5	0.2	0.2	15	4.38	0.88	12	0.5	24	3.2	0.1	2.52
CB-17	CB-16	0.4	0.5	0.2	0.4	15.1	4.36	1.74	12	0.5	309	3.2	2.0	2.52
CB-16	CB-19	1.10	0.4	0.44	0.84	17.1	4.16	3.49	12	1.0	37	4.5	0.1	3.56
CB-19	FE-20	0.21	0.7	0.15	0.99	17.2	4.15	4.10	12	1.4	120	5.3	0.4	4.21
21/21A	CB-22	2.07	0.3	0.62	0.62	15	4.28	2.72	12	0.6	24	3.5	0.1	2.76
CB-22	FE-23	0.21	0.7	0.15	0.77	15.1	4.36	3.36	12	1.0	35	4.5	0.1	3.56
05-24	FE-27	31.80		agricultural rate = 0.2 cfs/acre				6.36	18	0.4	764	3.8	3.4	6.64



**DRAINAGE AREA MAP**  
FOR STORM SYSTEM SCALE: 1"=200'



**DRAINAGE AREA MAP**  
FOR DETENTION AREA SCALE: 1"=200'

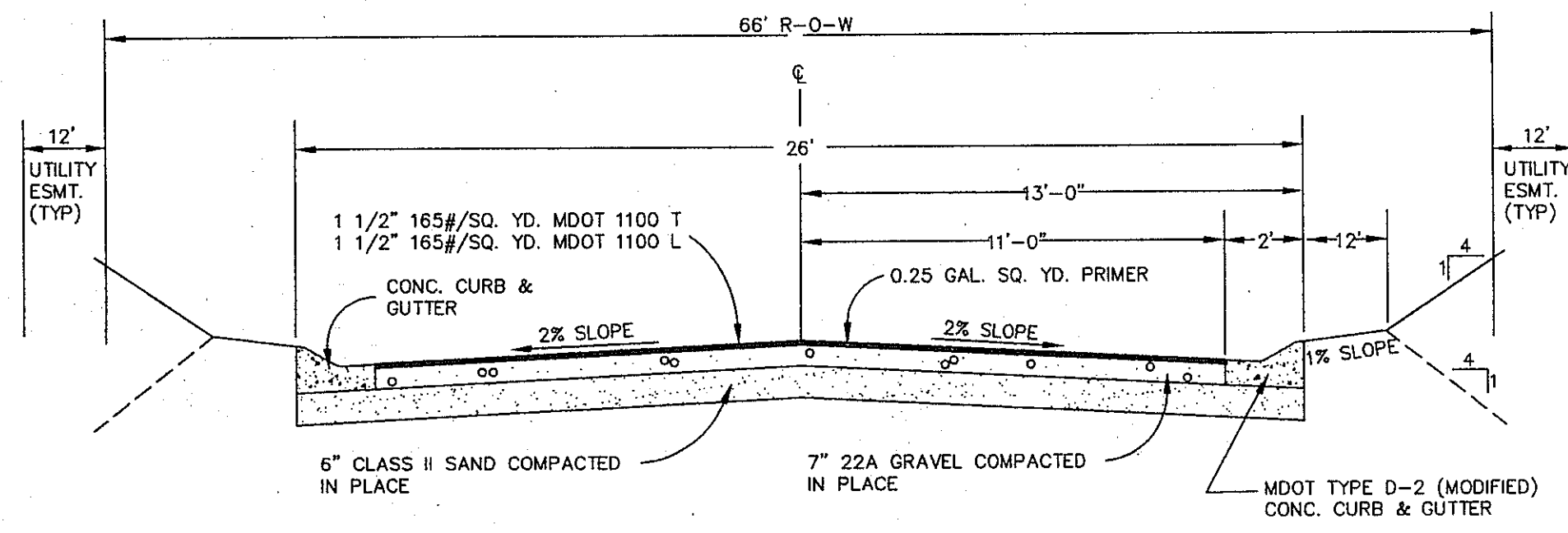
REVISIONS:  
 02-15-97 SUBMIT TO TWP REVIEW  
 03-13-97 REVISION FOR TWP

OWNER DEVELOPER:  
**FRANK GIESE**  
 3373 DUNLAP  
 PINKNEY, MI 48169  
 810 878-8462

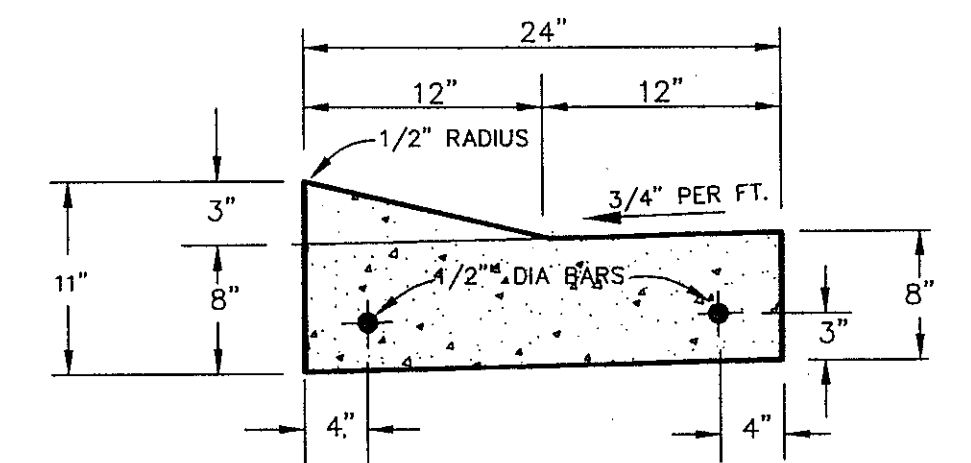
**CRYSTAL VALLEY**  
 SITE CONDOMINIUM  
**GENERAL NOTES & DRAINAGE MAP**

**ADVANTAGE CIVIL ENGINEERING**  
 10251 E. Grand River, Brighton, MI 48116 810 227-1141 Fax 810 227-3381

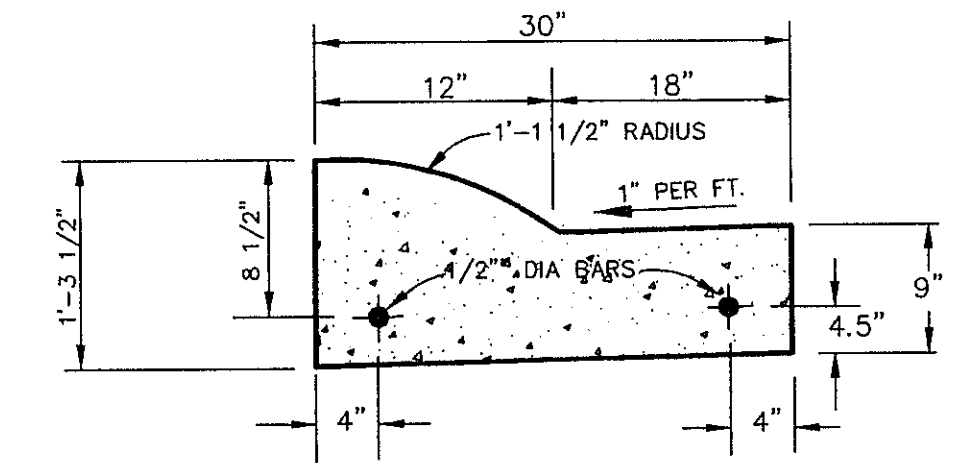
DATE: 1-15-97  
 DRAWN BY: TAH  
 CHECKED BY: PCK  
 JOB No.: 86222  
 DRAWING No.: 7



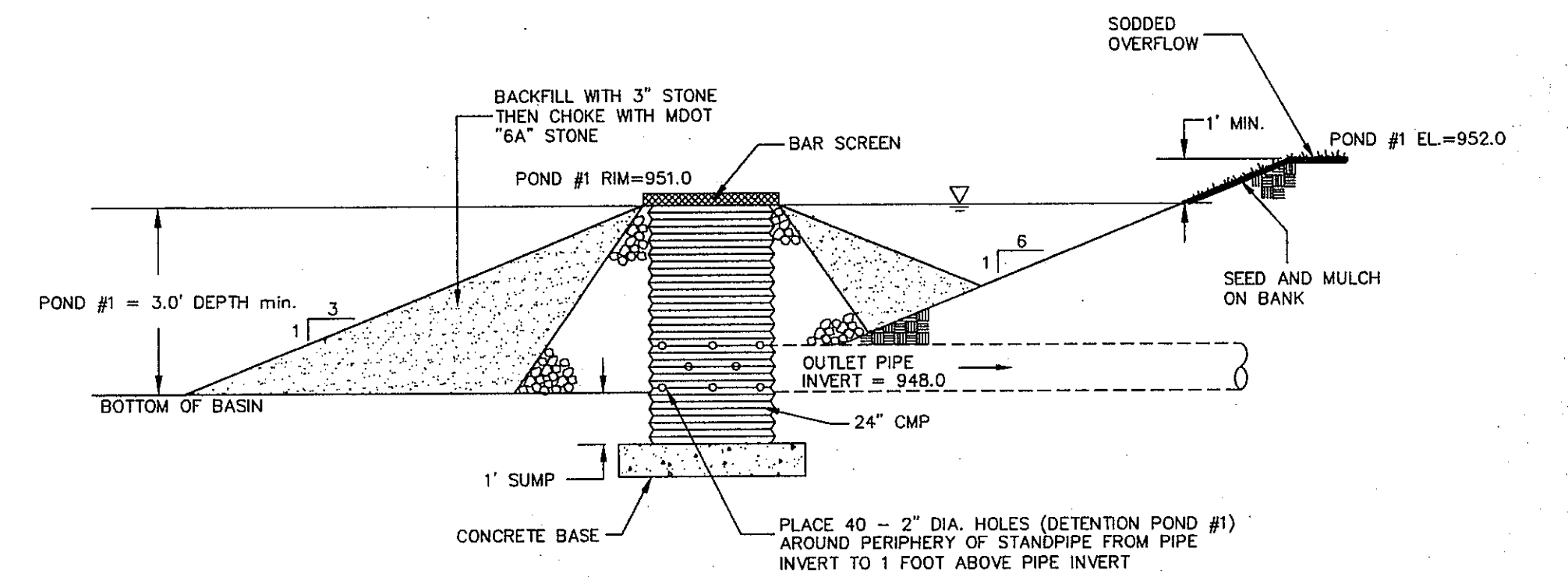
**TYPICAL ROAD CROSS SECTION**  
NO SCALE



**MOUNTABLE CURB AND GUTTER DETAIL**  
NO SCALE

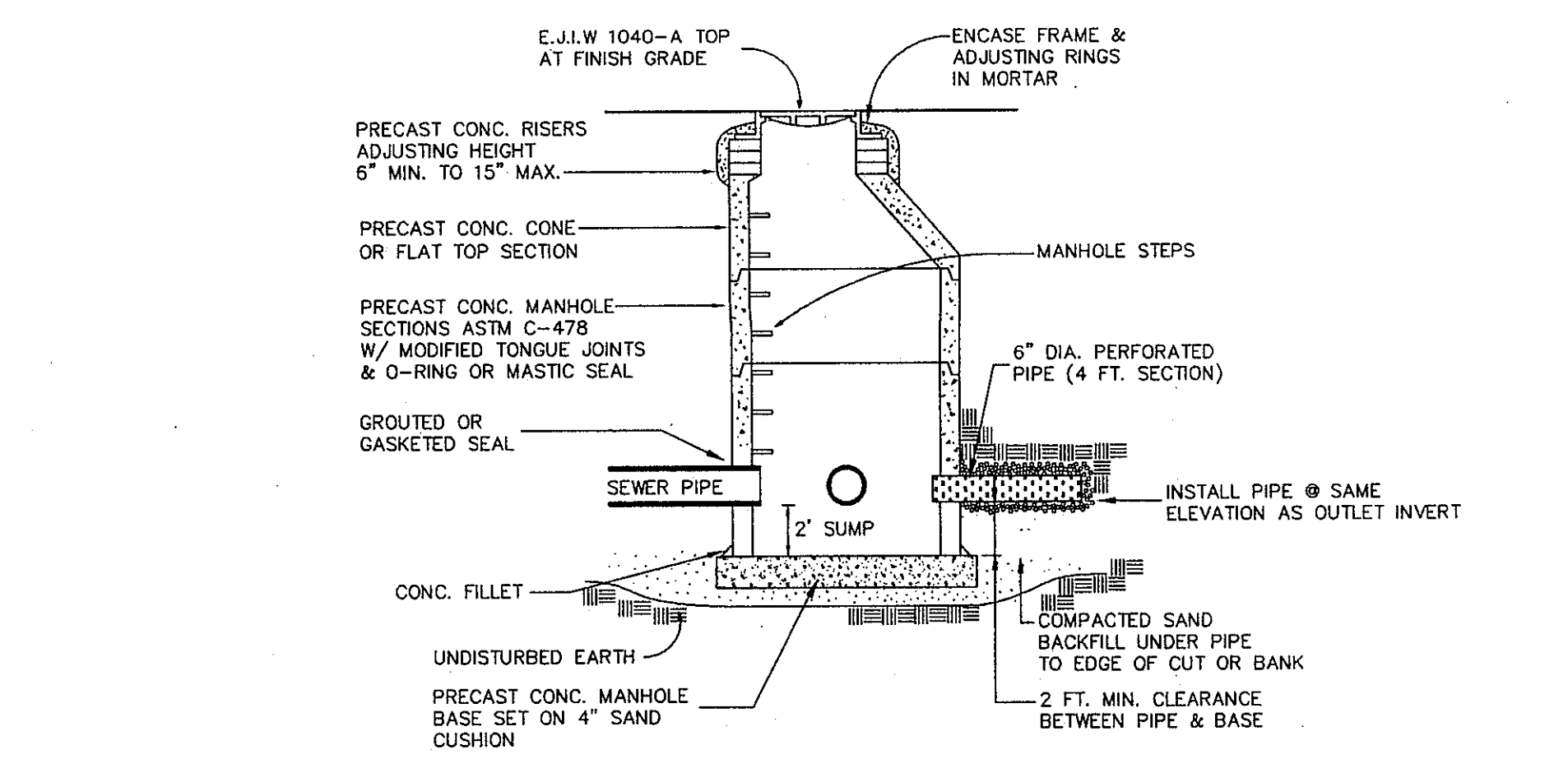


**MOUNTABLE CURB AND GUTTER DETAIL (B-2)**  
NO SCALE

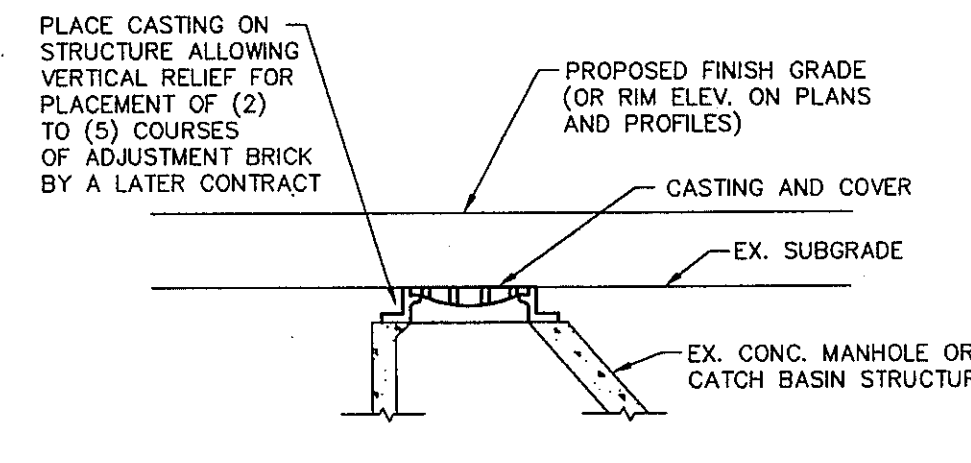


**OUTLET STRUCTURE DETAIL**  
NO SCALE

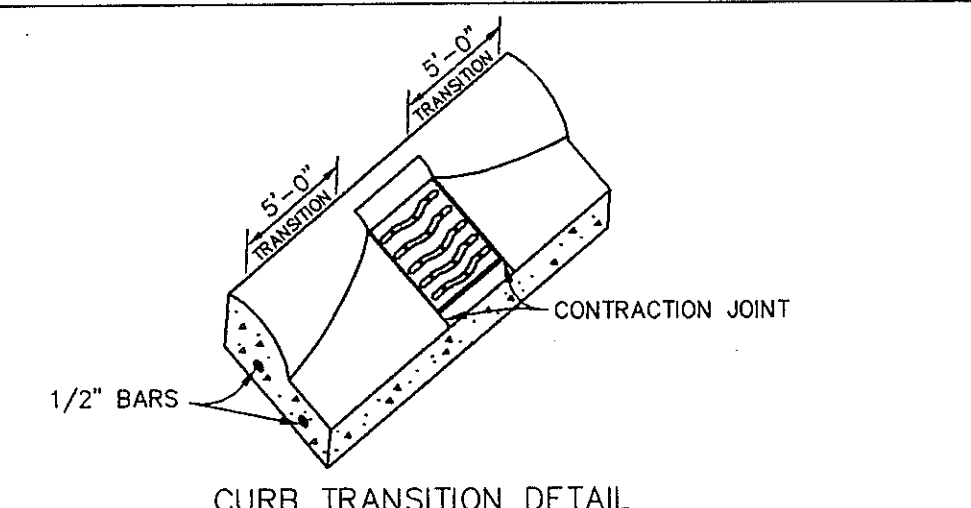
STAGGER HOLES TO MAINTAIN A MIN. 3" SEPARATION BETWEEN HOLES



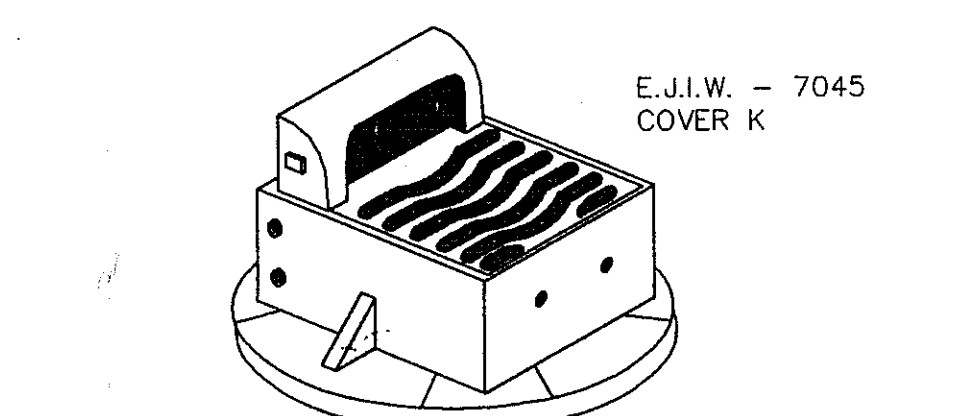
**TYPICAL STORM MANHOLE**  
NO SCALE  
(4' DIA. TYP. UNLESS NOTED ON DRAWINGS)



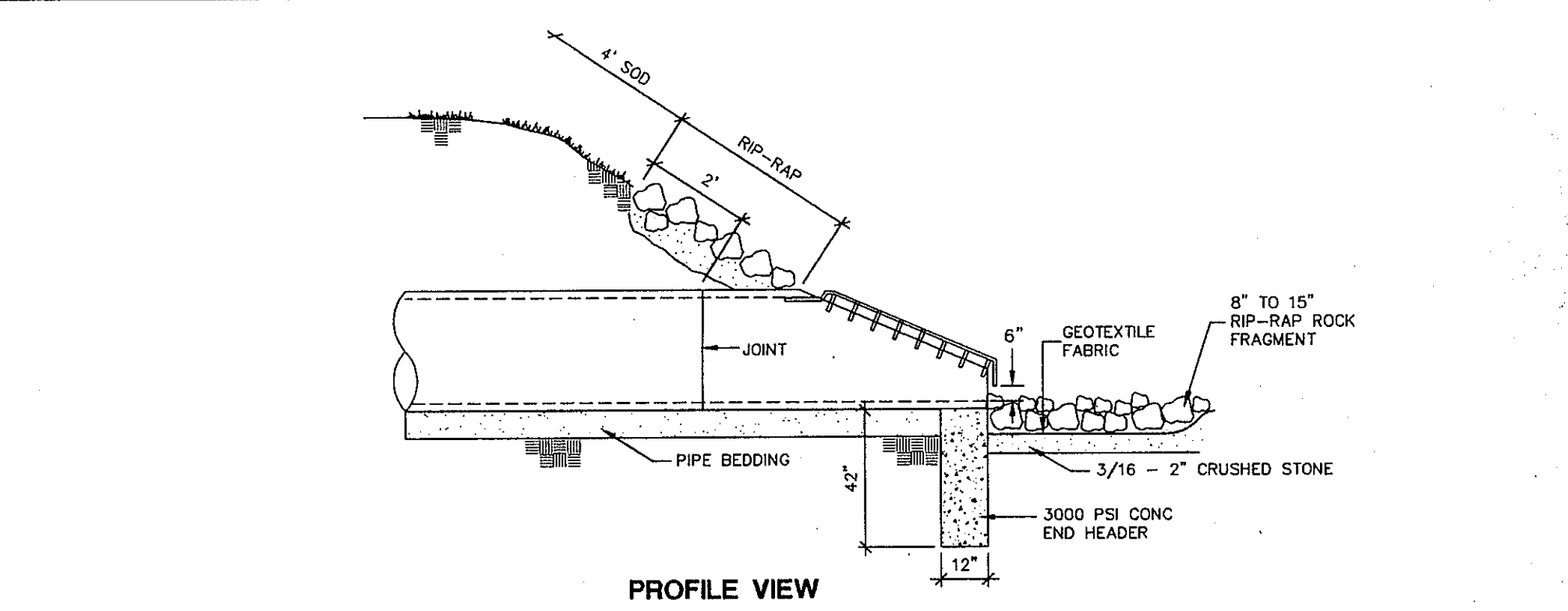
**CASTING PLACEMENT DETAIL**  
NO SCALE



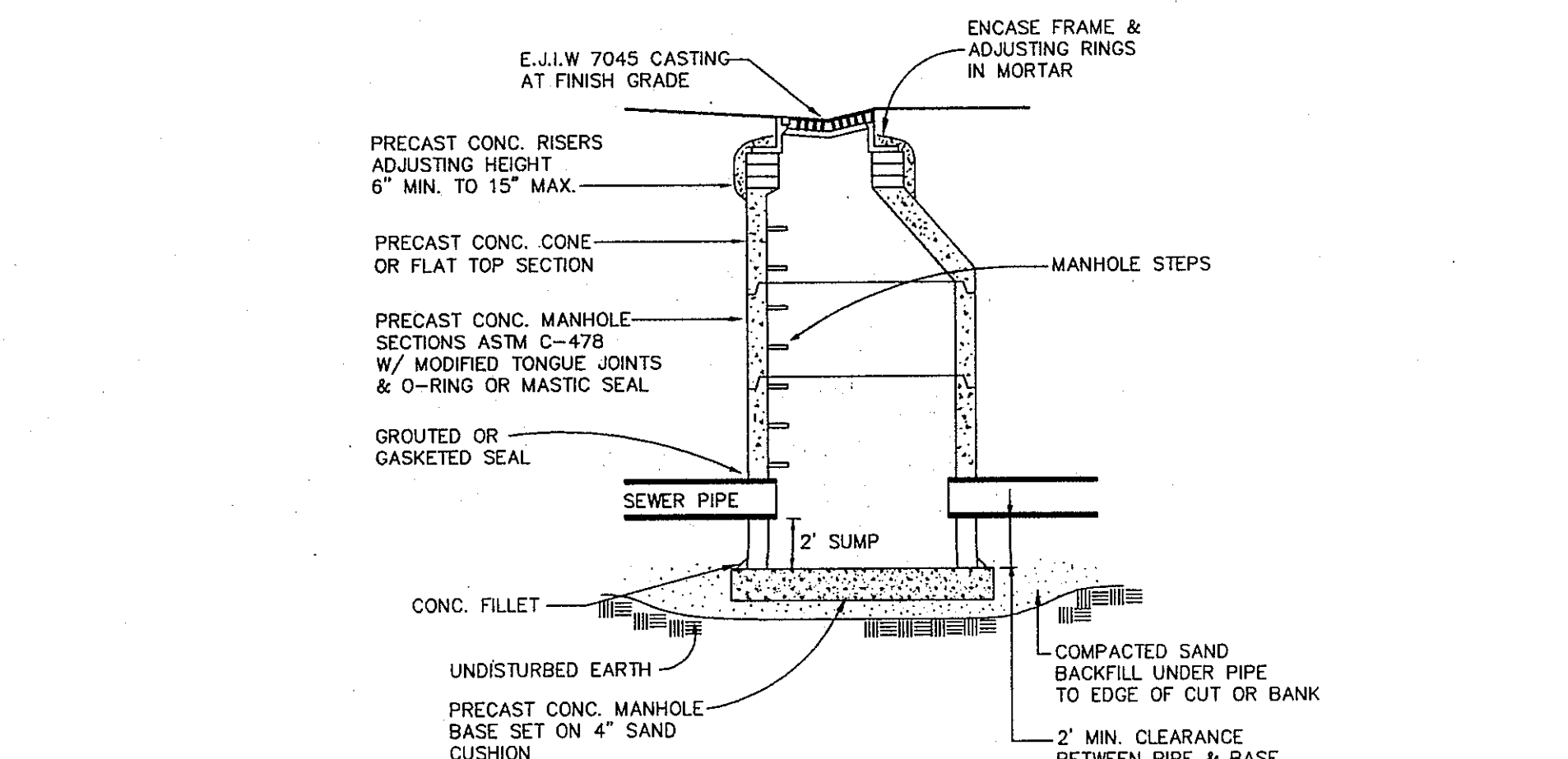
**CURB TRANSITION DETAIL**  
NO SCALE



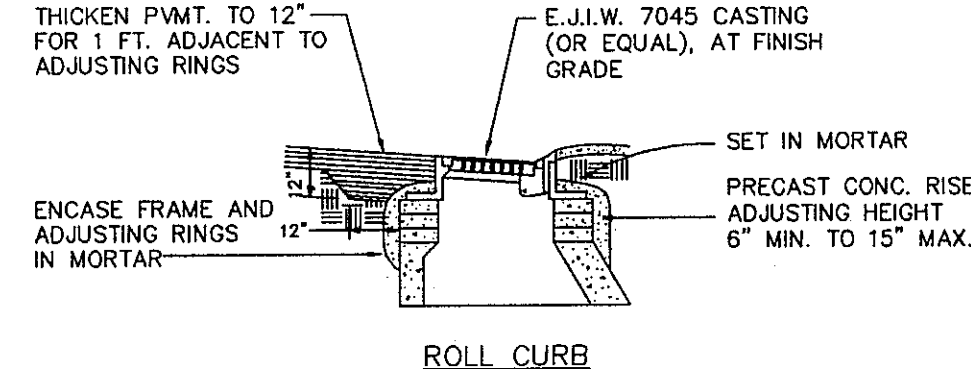
**CURB AND CASTING DETAIL**  
NO SCALE



**PROFILE VIEW**



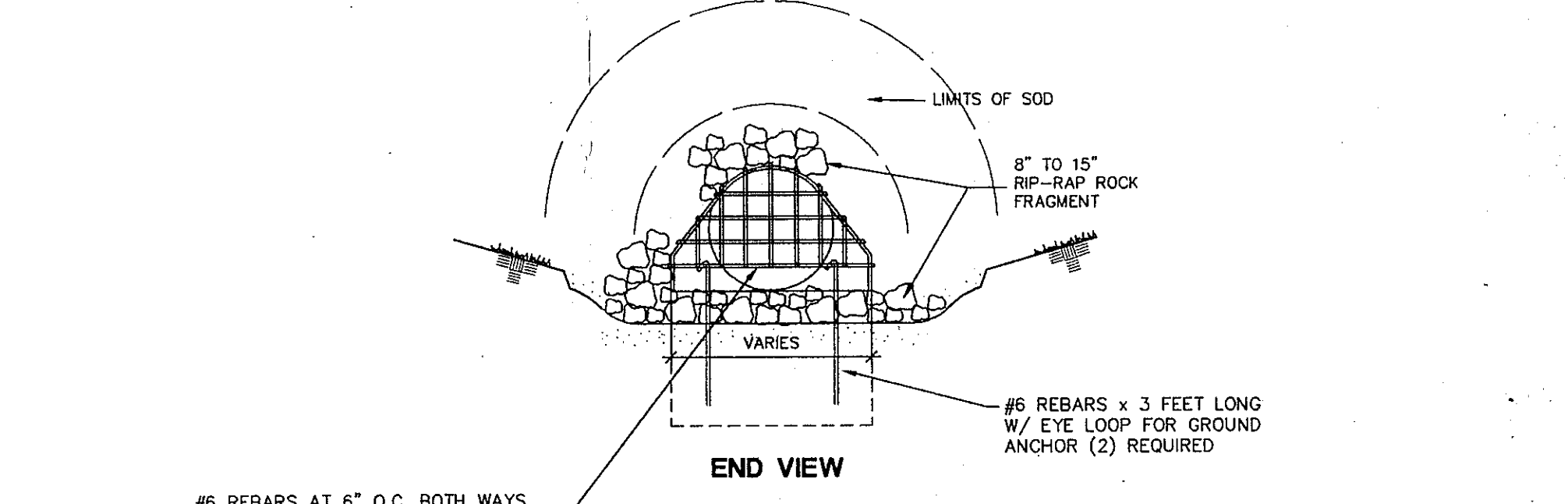
**TYPICAL CATCH BASIN**  
NO SCALE  
(4' DIA. TYP. UNLESS NOTED ON DRAWINGS)



**TYPICAL DRAINAGE GRATE**  
NO SCALE

6	SEEDING WITH MULCH AND/OR MATTING	FACILITATES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR GRASSWAYS WITH LOW VELOCITY. EASILY PLACED IN SMALL QUANTITIES BY UNEXPERIENCED PERSONNEL. SHOULD INCLUDE PREPARED TOPSOIL BED.
12	COMPACTION	HELPS HOLD SOIL IN PLACE, MAKING EXPOSED AREAS LESS VULNERABLE TO EROSION.
13	RIPP-RAP/RIPPLE GRABONS	USED WHERE VEGETATION IS NOT EASILY ESTABLISHED. EFFECTIVE FOR HIGH VELOCITIES OR HIGH CONCENTRATIONS. PROMPTS RUNOFF TO WEAR-BASE SOIL. DISSIPATES ENERGY FLOW AT SYSTEM OUTLETS.
15	PAVING	PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VOLUME AND VELOCITY. IRREGULAR SURFACE WILL HELP SLOW VELOCITY.
16	CURB & GUTTER	HELPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING PAVED SURFACE. CHANNELS AND CONDUCTS RUNOFF TO INCLOSED DRAINAGE SYSTEM OR PREPARED CHANNELWAY.
35	STORM SEWER	SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS. CAN ACCEPT LARGE VOLUMES OF RUNOFF. CONDUCTS RUNOFF TO MUNICIPAL SEWER SYSTEM OR STABILIZED OUTLET LOCATION. USES CATCH BASINS TO COLLECT SEDIMENT.

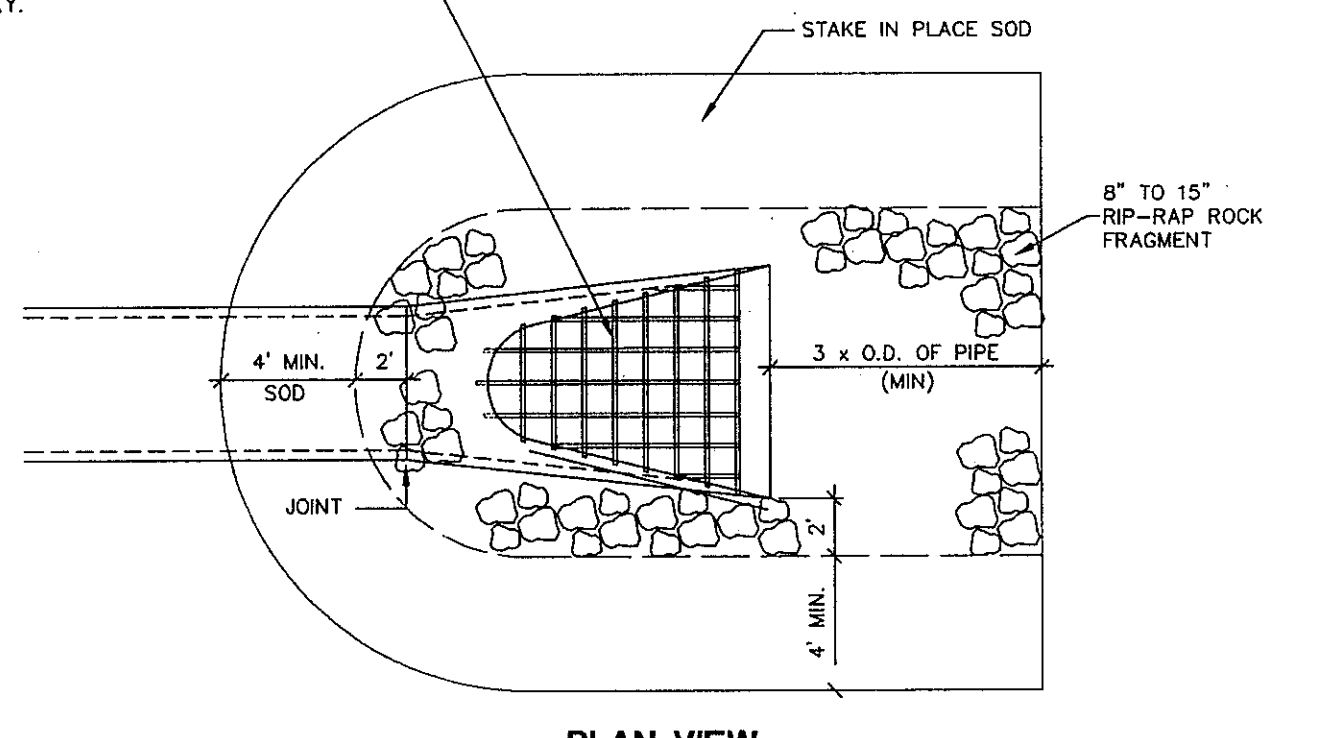
**SOIL EROSION CONTROL**



**END VIEW**

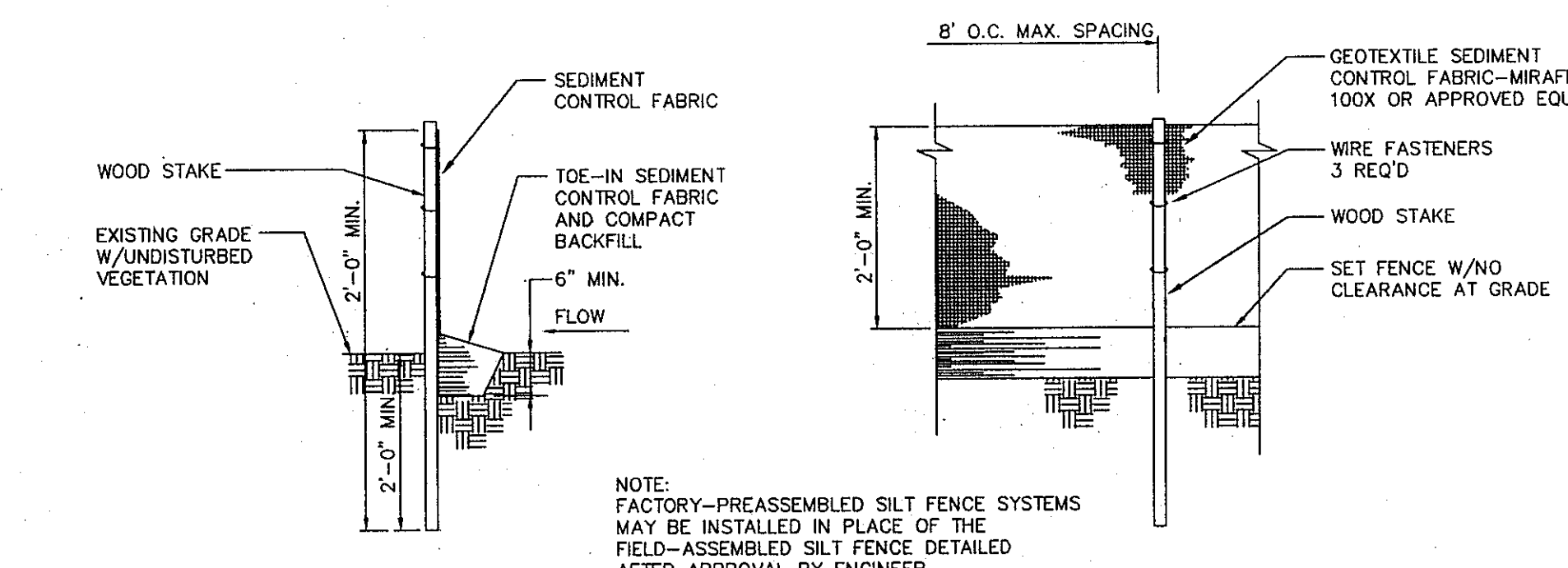
#6 REBARS AT 6" O.C. BOTH WAYS WELDED, EXTENDED 3" (BOTH WAYS) BEYOND GREENINGS AND BEND TO FIT SIDES OF PIPE (TYPICAL)

NOTE: SHOP WELD BAR SCREEN AND PAINT W/ TWO (2) COATS OF EPOXY.



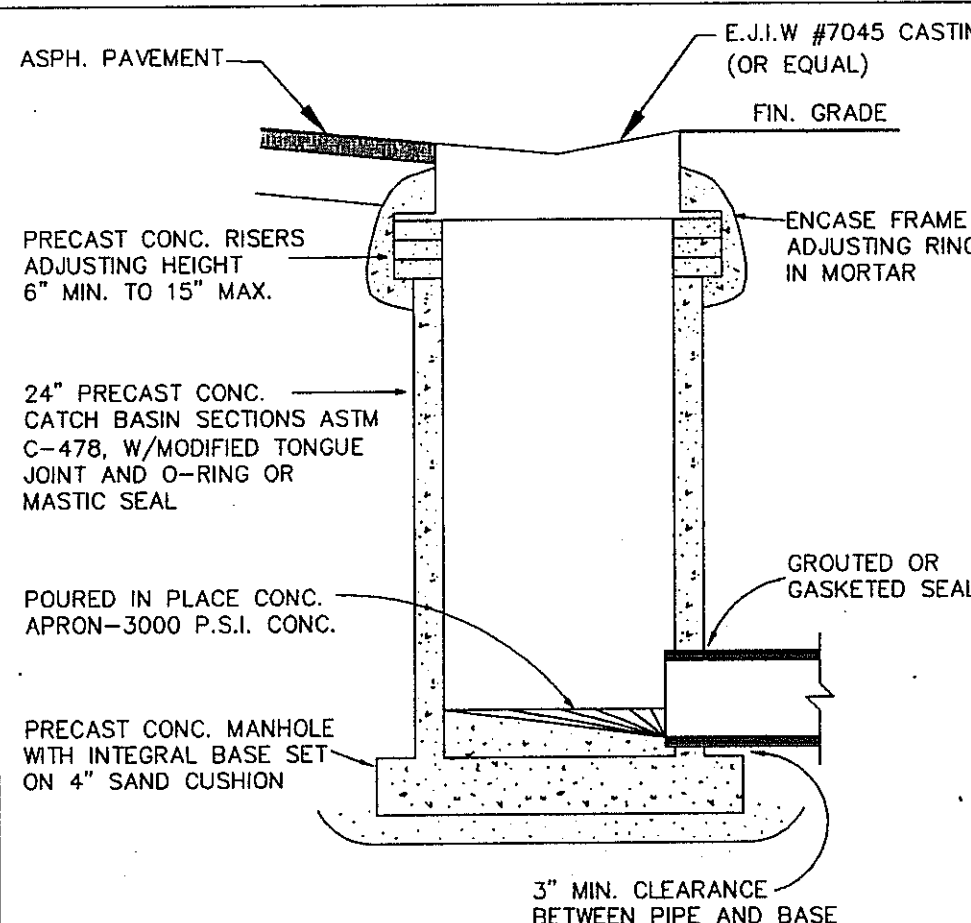
**PLAN VIEW**

**END SECTION DETAIL**  
NO SCALE

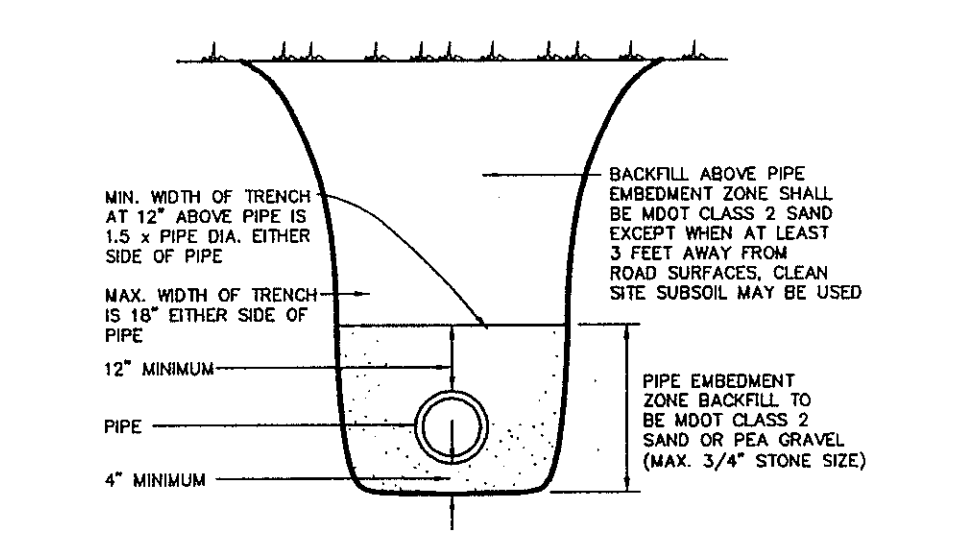


**SILT FENCE DETAIL**  
NO SCALE

NOTE: FACTORY-PREASSEMBLED SILT FENCE SYSTEMS MAY BE INSTALLED IN PLACE OF THE FIELD-ASSEMBLED SILT FENCE DETAILED AFTER APPROVAL BY ENGINEER.



**TYPICAL TWO FOOT DIA. DRAINAGE INLET**  
NO SCALE



**STANDARD PIPE BEDDING DETAIL**  
NO SCALE

REVISIONS:  
DATE: 02-08-97  
SUBMIT FOR THE DESIGN

CRYSTAL VALLEY  
SITE CONDOMINIUM  
GENERAL DETAILS

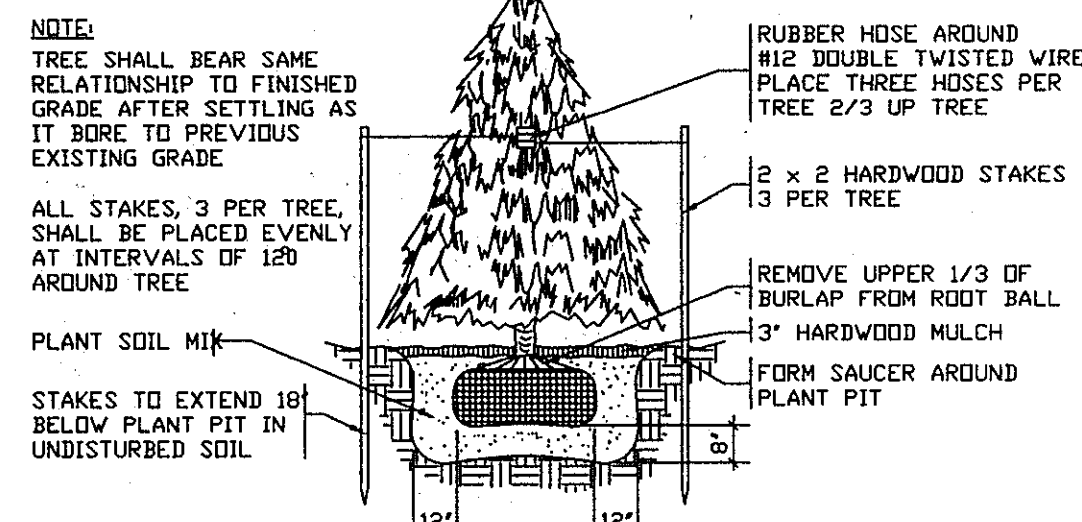
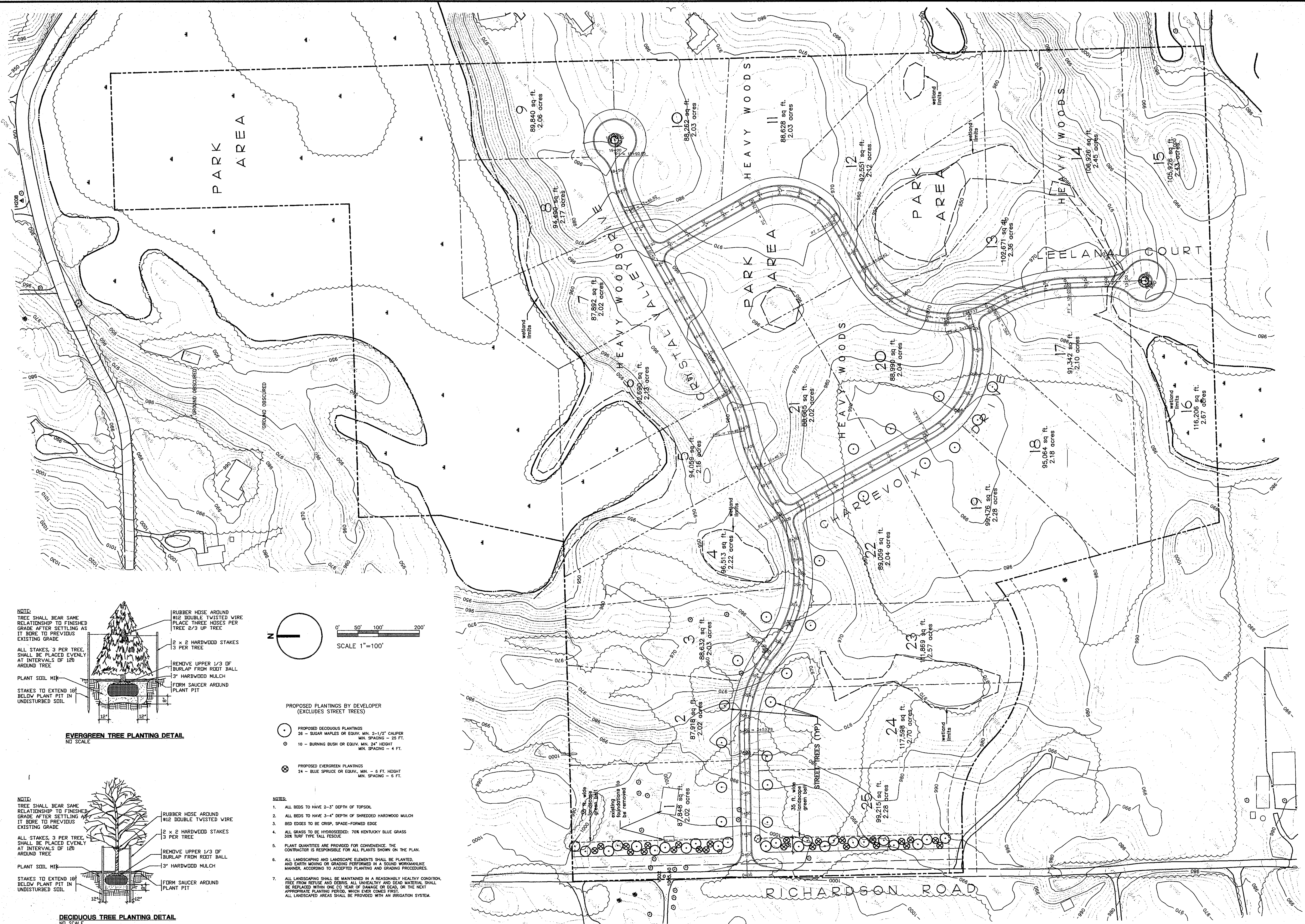
ADVANTAGE  
CIVIL  
ENGINEERING

DATE: 1-15-97  
DRAWN BY: TAH  
CHECKED BY: PCK  
JOB No.: 98222

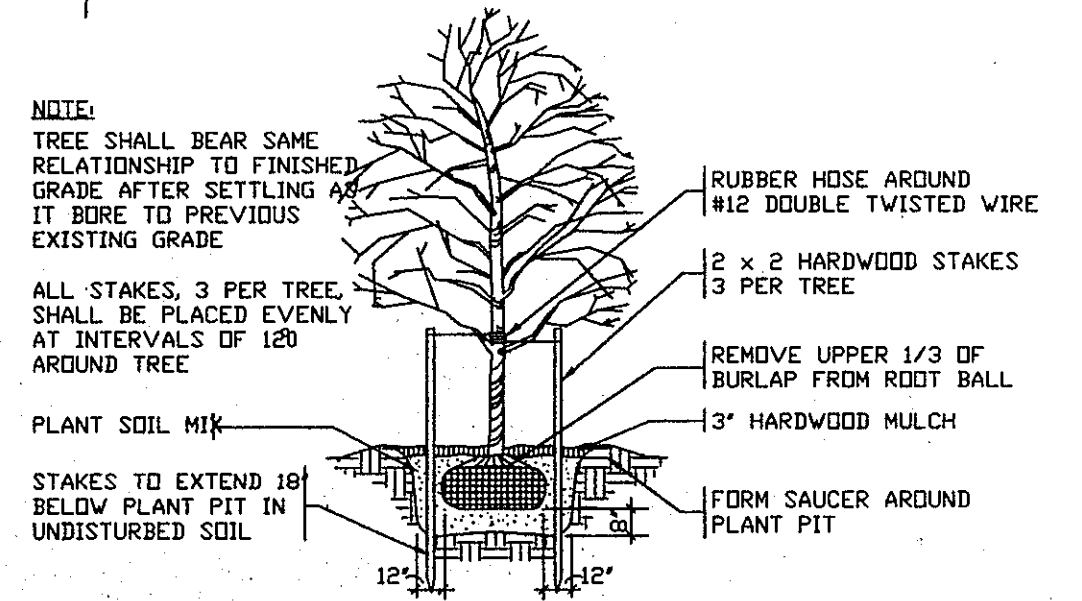
DRAWING No.: 88

FRANK GIESE  
3373 DUNLAP  
PINKNEY, MI 48169  
313 878-3462

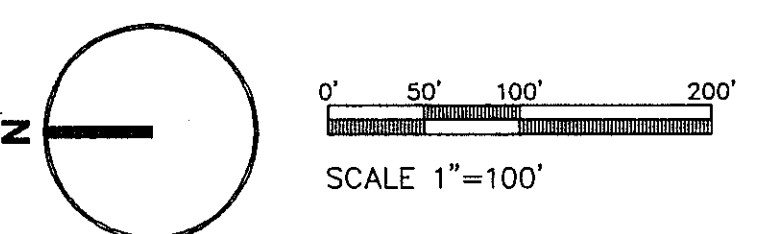




**EVERGREEN TREE PLANTING DETAIL**  
NO SCALE



**DECIDUOUS TREE PLANTING DETAIL**  
NO SCALE



**PROPOSED PLANTINGS BY DEVELOPER**  
(EXCLUDES STREET TREES)

- PROPOSED DECIDUOUS PLANTINGS  
26 - SUGAR MAPLES OR EQUIV. MIN. 2-1/2" CALIPER  
MIN. SPACING - 25 FT.
- 10 - BURNING BUSH OR EQUIV. MIN. 24" HEIGHT  
MIN. SPACING - 4 FT.
- ⊗ PROPOSED EVERGREEN PLANTINGS  
24 - BLUE SPRUCE OR EQUIV. MIN. - 6 FT. HEIGHT  
MIN. SPACING - 6 FT.

- NOTES:**
1. ALL BEDS TO HAVE 2-3" DEPTH OF TOPSOIL
  2. ALL BEDS TO HAVE 3-4" DEPTH OF SHREDDED HARDWOOD MULCH
  3. BED EDGES TO BE CRISP, SPADE-FORMED EDGE
  4. ALL GRASS TO BE HYDRATED: 70% KENTUCKY BLUE GRASS  
30% TURF TYPE TALL FESCUE
  5. PLANT QUANTITIES ARE PROVIDED FOR CONVENIENCE. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANTS SHOWN ON THE PLAN.
  6. ALL LANDSCAPING AND LANDSCAPE ELEMENTS SHALL BE PLANTED, AND EARTH MOVING OR GRADING PERFORMED IN A SOUND WORKMANLIKE MANNER, ACCORDING TO ACCEPTED PLANTING AND GRADING PROCEDURES.
  7. ALL LANDSCAPING SHALL BE MAINTAINED IN A REASONABLY HEALTHY CONDITION, FREE FROM DEFUSE AND DISEASE. ALL UNUSUALITY AND DEAD MATERIAL SHALL BE REPLACED WITHIN ONE (1) YEAR OF DAMAGE OR DEAD, OR THE NEXT APPROPRIATE PLANTING PERIOD, WHICHEVER COMES FIRST. ALL LANDSCAPED AREAS SHALL BE PROVIDED WITH AN IRRIGATION SYSTEM.

REVISIONS:

02-05-97	SUBMIT FOR TWP REVIEW
04-10-97	REVISED PER TWP
04-30-97	REVISED PER TWP

OWNER/DEVELOPER:  
**FRANK GIESE**  
3373 DUNLAP COURT  
PINCKEY, MI. 48169  
810 878-3462

**CRYSTAL VALLEY**  
SITE CONDOMINIUM  
**LANDSCAPE PLAN**

**ADVANTAGE**  
CIVIL  
ENGINEERING

110 E. Grand River, Howell, MI. 48843 517 545-4141 Fax 517 545-4148

DATE: 1-15-97  
DRAWN BY: TAH  
CHECKED BY: PCK  
JOB No. 98222

