

**GENOA CHARTER TOWNSHIP
PLANNING COMMISSION PUBLIC HEARING
MONDAY, MAY 9, 2016
6:30 P.M.**

AGENDA

CALL TO ORDER:

PLEDGE OF ALLEGIANCE:

APPROVAL OF AGENDA:

CALL TO THE PUBLIC:

(Note: The Board reserves the right to not begin new business after 10:00 p.m.)

OPEN PUBLIC HEARING #1... Review of a request for an extension to the Mountain Top Estates site plan dated 3-17-06 and impact assessment dated 4-20-06 for a proposed 16-unit single family site condominium located north of Cunningham Lake Road, east of Sundance Trail known as Mountain Top Estates. The request is petitioned by Robert Moore. This project has been granted extensions by the Planning Commission on 5-14-07, 4-13-09, 4-12-10, and 3-25-13.

Planning Commission disposition of petition:

- A. Disposition of Site Plan Extension.

OPEN PUBLIC HEARING #2... Review of a site plan and impact assessment for the proposed Misty Meadows Drive private road located on the west side of S. Latson Road, south of Crooked Lake Road. The private road will serve 9 lots. The request is petitioned by GFG Investments Properties.

Planning Commission disposition of petition:

- A. Recommendation of Environmental Impact Assessment (3-23-16)
- B. Disposition of Site Plan (4-20-16)

ADMINISTRATIVE BUSINESS:

- *Staff Report*
- *Approval of April 11, 2016 Planning Commission meeting minutes*
- *Member discussion*
- *Adjournment*

GENOA TOWNSHIP
APPLICATION FOR PRIVATE ROAD
2911 Dorr Road, Brighton MI 48116 (810) 227-5225

A private road requiring approval of the Township shall be any road providing access to more than four dwelling units or two non-residential principal buildings. This does not include drives within a multiple family complex or parking lot aisles, but does include collector type roadways within such a development.

APPLICANT: GFG Inversment Properties

OWNER ADDRESS: 15264 Bailey, Taylor, MI 48180

SITE ADDRESS: 4711-20-200-022 TAX ID.

APPLICABILITY OF PUBLIC VS. PRIVATE ROAD STANDARDS

All private roads in Genoa Township shall be constructed to the standards of the Livingston County Road Commission unless the Planning Commission and Township Board determine your road qualifies under the following ordinance criteria:

1. Explain how there will be no need for the roadway to be dedicated as a public road in the future.

There will only be 9 homes for the development.

2. Explain how dedication of the road as a public street would not result in continuity in the public street system at the present time or in the future.

Misty Meadow Drive is a single access road with one loop serving 9 single family homes.

3. What uses (number of lots, number of residential units, number of buildings, etc) will have access from the private road. Will the expected traffic volumes along the roadway be below three hundred vehicles per average weekday, based on accepted trip generation figures?

There will be 9 single family homes accessing the private road. at 9.5 trips/day/home,

there will be 86 trips/day.

4. Are there any significant natural features such as mature trees, natural slopes, wetlands or other water bodies would be preserved through construction and maintenance as a private road?

Mature trees along to south property line and the middle of the site will be preserved along

with natural slopes by the use of selective grading

5. What financial and administrative mechanisms will be provided to ensure maintenance of the private road?

There will be a private road agreement prepared, allocating maintenance costs to the co-owners

AFFIDAVIT

The undersigned says that they are the OWNER (owner, lessee, or other specified interest) involved in this petition and that the foregoing answers and statements herein contained and the information herewith submitted are in all respects true and correct to the best of his/her knowledge and belief.

By: 27 Mr GFG. INVESTMENT PROPERTIES

Address: 15264 BAILEY TAYLOR, MI, 48180 phone: 734-795-0078

Contact Information - Review Letters and Correspondence shall be forwarded to the following:		
<u>1.) Brent LaVanway</u>	<u>of Boss Engineering</u>	<u>at (517) 548-1670</u>
<i>Name</i>	<i>Business Affiliation</i>	<i>Fax No.</i>



FEE EXCEEDANCE AGREEMENT	
As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.	
PROJECT NAME:	<u>Misty Meadow Drive</u>
PROJECT LOCATON & DESCRIPTION:	<u>Part of Northeast Quarter, Section 20, T2NR5E</u> <u>Genoa Township, Livingston County, MI</u>
SIGNATURE:	<u>27 Mr</u> DATE: <u>03/22/2016</u>
PRINT NAME	<u>Guy Genzel</u> PHONE: <u>(734) 795-0078</u>
COMPANY NAME & ADDRESS:	<u>GFG Investment Properties, LLC</u>

INSTRUCTIONS

One copy of this application and four (4) copies of plans (described below) must be submitted to the Genoa Township Hall located at 2911 Dorr Road. Consultant comments will be returned to the applicant approximately two weeks after submittal. Fourteen (14) copies of the revised plans and other supporting information are due one week after receipt of consultant comments.

Private Road Application: Copies of the following shall be submitted to the Township, either separately or in conjunction with a site plan according to Article 18:

- (a) Parcel number and name of owner for all properties having legal interest in the private road.
- (b) Plans designed by a registered engineer showing location, dimension and design of the private road. The plan shall identify existing and proposed elevation contours within all areas to be disturbed or altered by construction of the private road.
- (c) Location of all public or private utilities located within the private road right-of-way or easement, or within twenty (20) feet including, but not limited to: water, sewer, telephone, gas, electricity, and television cable.
- (d) Location of any lakes, streams, drainageways, MDNR regulated wetlands, or trees with a caliper of eight (8) inches or greater, within 100 feet of the proposed private road right-of-way or easement;

Private Road Design Standards: Private roads which the Township has determined do not need to comply with all of the standards of the Livingston County Road Commission as noted above shall be constructed to the following standards:

- (a) **Compliance with AASHTO standards:** Except as otherwise provided in this Section, private road design plans shall meet the design criteria outlined in the most recent edition of the American Association of State Highway and Transportation Officials (AASHTO) Manual "A Policy on Geometric Design for Highways and Streets."
- (b) **Access easement width:** The site plan shall provide an easement or easements sixty-six (66) feet in width. The Planning Commission may reduce the required width to not less than fifty (50) feet when all of the following criteria are met:
 - (1) the width is determined to be adequate for the necessary pavement and utilities;
 - (2) adequate clear sight distance can be maintained;
 - (3) there is no desire or reasonable expectation that the road, as shown could become a public street or potentially extended in the future;
 - (4) is not expected to accommodate over three hundred (300) vehicle trips per average weekday based on accepted traffic generation figures.
 - (5) if, in addition to the above, the easement will only provide access to a maximum of four (4) single family lots or dwelling units, the width may be reduced to forty (40) feet.
- (c) **Road design:** All private roads shall meet the public street base, pavement width, surface, slope and drainage system standards of the Livingston County Road Commission, except as provided herein. The pavement material, width and curbing requirement shall be based upon the density of the proposed development as follows:

Lot size	Roadway function (1)	Min. road width (2)	Pavement type (3)	Curb and gutter (4)
Five acres or more	Local	22 ft.	May be gravel	Not required
Two acres or more	Local	22 ft.	Paved; may be gravel if serving 18 or fewer lots	Not required
One acre or more	Local	22 ft.	Paved	Not required
18,000 square feet or more	Local	26 ft.	Paved	Required
	Collector	30 ft.	Paved	Required
Less than 18,000 square feet per lot or multiple family	Local	28 ft.	Paved	Required
	Collector	30 ft.	Paved	Required
Commercial, office or industrial	n.a.	30 ft.	Paved	Required

- (1) A collector road shall be required for any development containing 80 or more dwelling units, which shall serve as the principal access road for the development. Other local roads that access the collector road shall be permitted at the narrower local road width.
- (2) The width of the road required in the above table shall be measured from back to back of curb for roads with curbing and shall be measured as the pavement width for roads that do not have curbing.
- (3) The design of private roads shall be reviewed by the Township Engineer for conformance with Township engineering standards. Where pavement is required, the road shall be paved with asphalt or concrete meeting the material thickness and base requirements of the Livingston County Road Commission. Where a gravel road is permitted, it shall be constructed of eight (8) inches of compacted MDOT 22AA gravel.
- (4) Where the road is required to have curb and gutter, it shall be concrete and meet Township engineering standards. Where curb and gutter is not required, a minimum of five (5) foot wide gravel shoulder shall be provided on both sides of the road.
- (5) The standards above are minimum and a petitioner shall be allowed to propose a higher classification of road in terms of width, pavement or curbing, subject to approval by the Township engineer.

- (d) **Maximum length, cul-de-sac turnarounds:** Maximum length of a private road shall be one thousand (1000) feet with a maximum twenty-four (24) lots or dwelling units served by a single means of access. Any single means of access serving more than five (5) lots or dwelling units shall include a turn-around with a fifty-five (55) foot radius with a center landscaped island, a hammerhead "T" turn or a continuous loop layout. A larger turnaround may be required for commercial and industrial private roads. These standards may be adjusted by the Planning Commission in particular cases, with input from the fire department and Township staff or consultants, provided there is a finding that traffic impacts are adequately mitigated and a second means of emergency access can be required by the Planning Commission.
- (e) **Grade:** Grades shall not exceed ten-percent (10%), with a maximum grade of two-percent (2%) for a minimum distance of thirty (30) feet from its intersection with a public right-of-way or another private road.
- (f) **Horizontal curve:** The minimum horizontal curve radius shall be two-hundred-thirty (230) feet. This may be reduced to one hundred fifty (150) feet where the posted speed limit will be twenty five miles per hour (25 mph) or less. The Planning Commission may reduce this radius on local residential streets if the design would accommodate expected vehicle speeds and truck/bus traffic, as determined by the Township Engineer and Planner, in cases where a significant number of mature trees would be preserved or where the width of the parcel would not accommodate wider radii.
- (g) **Intersection design standards:** Private roads which intersect with existing or proposed private roads or public street rights-of-way should intersect at a ninety (90) degree angle. Where constrained by environmental features, the Township Engineer may allow a reduced angle of intersection but in no case shall the angle be less than seventy (70) degrees.

- (h) **Intersection offsets from public streets:** Proposed private roads or entrances to a development shall align directly across from, or be offset at least two-hundred-fifty (250) feet from, public streets or private road intersections on the opposite side of the street, measured centerline to centerline. This standard may be reduced if approved by the Livingston County Road Commission.
- (i) **Minimum offsets along private roads:** Private roads and driveways (excluding driveways serving one or two dwelling units) within a development shall align directly across from other private roads or driveways or be offset at least one-hundred-fifty (150) feet measured centerline to centerline.
- (j) **Boulevard medians:** Where a boulevard median is proposed, the median shall have a minimum width of eight (8) feet and the roadways on both sides of the median shall have a width of at least eighteen (18) feet. Intersections shall meet the LCRC standards for median approaches and shall be designed to accommodate truck turning radii.
- (k) **Vertical Clearance:** In order to provide adequate access for emergency vehicles, fifteen (15) feet of overhead tree clearance shall be provided within the width of the gravel or pavement.
- (l) **Street names:** Street names shall be approved by Livingston County following review by the Planning Commission and fire department .
- (m) **Signs:** All signs within the private road or access easement shall be identified on the site plan and be in accordance with the Michigan Manual of Uniform Traffic Control Devices, unless the Planning Commission approves another type of design for consistency with the character of the development. Street signs shall be provided at all intersections. These signs shall contrast in terms of color with public street signs, and shall clearly indicate the road is private.
- (n) **Yard Setback:** A private road easement shall not abut the property line of an adjacent site unless adequate provisions are made for drainage and screening.



May 2, 2016

Planning Commission
Genoa Township
2911 Dorr Road
Brighton, Michigan 48116

Attention:	Kelly Van Marter, AICP Assistant Township Manager and Planning Director
Subject:	Misty Meadow – Private Road Review #2
Location:	West side of S. Latson Road, south of Crooked Lake Road
Zoning:	RR Rural Residential District

Dear Commissioners:

As requested, we have reviewed the revised submittal (dated 4/20/16), proposing the construction of a new private road off of S. Latson Road. The project area is located on the west side of S. Latson Road, south of Crooked Lake Road.

We have reviewed the proposal in accordance with the applicable provisions of the Genoa Township Zoning Ordinance and provided the following comments for your consideration.

A. Summary

1. In our opinion, the conditions are present to warrant consideration of a private road not built to County standards.
2. The applicant must provide the Township with a Private Road Maintenance Agreement for review by the Township Attorney and approval by the Township Board.
3. We defer review of the design and construction elements to the Township Engineer.
4. The Commission should consider any comments provided by the Fire Department.
5. We encourage the applicant to provide landscape screening to help buffer the adjacent residence to the south from the proposed development.

B. Proposal/Process

In accordance with Article 18 of the Township Zoning Ordinance, the applicant requests site plan review/approval for a new private road. Such projects are subject to Planning Commission review based on the standards of Section 15.05.

The Planning Commission has approval authority over the site plan and is to provide a recommendation on the Impact Assessment for the Township Board's consideration.

C. Private Road Review

1. **Public versus Private Road Standards.** Based on the information contained in the application, we believe the conditions are present that warrant consideration of a private road that is not built to Road Commission standards.

With that being said, Section 15.05.01(e) requires the applicant to provide a "Private Road Maintenance Agreement" to the Township, which is to be reviewed by the Township Attorney and approved by the Township Board. Per the Ordinance, the Agreement is intended to ensure that the applicant provides a financial and administrative mechanisms to ensure proper maintenance of the private road.



Aerial view of site and surroundings (looking north)

2. **AASHTO Standards.** We defer review of this standard to the Township Engineer.
3. **Easement Width.** The proposal entails a 66-foot wide easement, as required.
4. **Road Design.** The proposed private road has a roadway classification of “local,” which requires a 22-foot width that may either be paved or gravel (given the number of lots proposed). Given the roadway function, curb and gutter are not required. The cross-section provided on Sheet 3 shows a 22-foot wide asphalt roadway without curb and gutter.
5. **Maximum Length/Turnarounds.** The proposed private roadway is longer than 1,000 feet, but provides a continuous loop layout. We defer further review of this standard to the Township Engineer and Fire Department.
6. **Grading.** We defer review of this standard to the Township Engineer.
7. **Horizontal Curve.** We defer review of this standard to the Township Engineer.
8. **Intersection Design.** The proposed private road intersects with S. Latson Road at a 90-degree angle, as required. We defer any additional considerations under this criterion to the Township Engineer.
9. **Minimum Offsets.** We defer review of this standard to the Township Engineer.
10. **Boulevard Medians.** The proposed project does not include a boulevard median.
11. **Vertical Clearance.** The revised plans include a note indicating that the required 15 feet of overhead tree clearance shall be provided within the width of the pavement.

12. Street Names. The proposed name, Misty Meadow Drive, is subject to approval by Livingston County following review by the Planning Commission and Fire Department. A note on the revised plans indicates that the County finds the name acceptable.

13. Signs. The revised submittal includes note stating that the required stop sign and street sign will be provided in accordance with the Michigan Manual of Uniform Traffic Control Devices and Road Commission standards.

14. Yard Setback. The proposed private road easement does not abut any of the surrounding property lines, but is approximately 20 feet from the southerly side lot line. Given that there is an existing single-family residence on the adjacent property to the south, we encourage the applicant to provide landscape screening to help buffer this residence from the proposed development.

The applicant has acknowledged this suggestion and states that “landscaping screening will be considered and decided upon by the owner of the property at a later date.”

15. Impact Assessment. The submittal includes an Impact Assessment (dated 3/23/16), which notes that the proposed project is not expected to adversely impact natural features, public services/utilities, surrounding land uses or traffic.

Should you have any questions concerning this matter, please do not hesitate to contact our office. I can be reached by phone at (248) 586-0505, or via e-mail at borden@lslplanning.com.

Respectfully,

LSL PLANNING, A SAFE BUILT LLC COMPANY



Brian V. Borden, AICP
Planning Manager



April 29, 2016

Ms. Kelly Van Marter
Genoa Township
2911 Dorr Road
Brighton, MI 48116

**Re: Misty Meadows
Site Plan Review #2**

Dear Ms. Van Marter:

We have reviewed the updated site plan documents from Boss Engineering dated April 20, 2016, which were delivered to the Township Engineer on that date. The applicant is proposing a nine lot residential development and private road to be constructed on a 40.34 acre site located on the west side of South Latson Road that is bounded by Chilson Road to the east and south of Crooked Lake Road.

Tetra Tech has reviewed the documents and is satisfied with the petitioner's response. Therefore, we have no further engineering related objections to approval of the site plan by the Township.

Please call if you have any questions.

Sincerely,

A blue ink signature of Gary J. Markstrom, written in a cursive style.

Gary J. Markstrom, P.E.
Unit Vice President

A blue ink signature of Joseph C. Siwek, written in a cursive style.

Joseph C. Siwek, P.E.
Project Engineer

Copy: Brent LaVanway P.E. Boss Engineering



BRIGHTON AREA FIRE AUTHORITY

615 W. Grand River Ave.
Brighton, MI 48116
o: 810-229-6640 f: 810-229-1619

May 4, 2016

Kelly VanMarter
Genoa Township
2911 Dorr Road
Brighton, MI 48116

RE: Misty Meadows Private Road
Misty Meadows Drive
Genoa Twp., MI
Site Plan Review

Dear Kelly:

The Brighton Area Fire Department has reviewed the above mentioned site plan. The plans were received for review on March 23, 2016 and the drawings are dated March 23, 2016. The project is for a private road for a 9 lot single-family residential development. The plan review is based on the requirements of the International Fire Code (IFC) 2015 edition.

There is no municipal water supply in this area of the township. This development is proposed with a single access point off of Latson Rd. and extends approximately 2000' to the furthest point. It appears that the homes will be provided with lengthy drives to access.

The following comments should be addressed prior to a favorable recommendation from the fire department.

1. It is highly recommended that municipal water be extended to the site or an alternative means of providing fire flow for the properties be provided. Fire flow for the site is to be between 1,500-1,750 gallons per minute (gpm) dependent upon proposed structure size and could be higher if structures exceed 4,800 sqft. The fire authority is capable of maintaining approximately 1,000 gpm with water shuttle operations. Two emergency vehicle accessible well-fed cisterns, provided with dry hydrant connections are the recommended alternative if municipal water is not available. **(The location of the nearest fire hydrants is factored into the sustainable fire flow through tanker shuttle operations, based upon travel, fill, load and unload times. If the homes do not exceed 3,600 square feet, the fire authority is capable of maintaining this flow rate. If they exceed this square footage, then an alternative to provide additional on-site water shall be required to off-set the difference between provided and required).**

IFC 507.3
IFC B 102.1



2. The primary access road (Misty Meadows Dr.) shall be a minimum of 26' wide to accommodate emergency vehicle traffic. If the road width is maintained at the proposed width (Livingston County Spec.) there shall be no parking permitted on the street. With a 26' road width parking is permitted on one side of the road. **(The drive meets county road specifications, and it is noted that there shall be no parking on streets).**

IFC Table D103.4

3. The structures shall be provided with address numbers at a **minimum of 4"** in height, visible from the road. **(Noted on Drawing)**

IFC 505.1

4. Access roads shall be constructed to be capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds. **(Noted on Drawing)**

IFC 503.2.3

If you have any questions about the comments on this plan review please contact me at 810-229-6640.

Cordially,

A handwritten signature in black ink, appearing to read "R. Boisvert".

Capt. Rick Boisvert, CFPS
Fire Inspector

Livingston County Road Commission

3535 Grand Oaks Drive • Howell, Michigan 48843-8575
Telephone: (517) 546-4250 • Facsimile: (517) 546-9628
Internet Address: www.livingstonroads.org

March 31, 2016

Brent LaVanway, P.E.
Boss Engineering
3121 E. Grand River Ave
Howell, MI 48843

Re: Misty Meadows Drive, Genoa Township, Section 20
LCRC #P-16-02

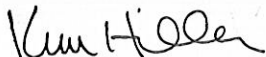
Dear Mr. LaVanway:

I have completed the review of the plans, dated March 23, 2016, for the proposed private road approach off of Latson Road for the above captioned project and offer the following comments.

1. The road name ***Misty Meadows Drive*** has been approved reserved for this development.
2. A contractor needs to be selected and the selected contractor must submit a certificate of insurance with an Additional Insured Endorsement that contains the following language: "The Board of Livingston County Road Commissioners, the Livingston County Road Commission, and their officers, agents, and employees are listed additional insured parties." Please note that this item is not required for plan approval, but will be needed prior to the issuance of the private road approach permits.
3. Proposed spot grades should be shown along the right turn lane, tapers, and radii at the approach. The first 12' of the approach should follow the 2% cross slope of Latson Road.
4. Since there is an existing ditch along Latson Road, a culvert will be necessary under the approach. The invert elevations, the culvert size, length, slope, and material and ditch grading will need to be detailed on the plans. The information for the existing driveway culvert to the south of this site should also be provided.

Please submit two copies of revised plans for review. If you have any questions with regard to these comments, please do not hesitate to contact me.

Sincerely,



Kim Hiller, P.E.
Utilities and Permits Engineer

Cc: File
Kelly VanMarter, Genoa Township (via email)
Ken Recker, Livingston County Drain Commissioner's Office (via email)

**IMPACT ASSESSMENT
FOR
PRIVATE ROAD PETITION
“MISTY MEADOW”
GENOA TOWNSHIP, LIVINGSTON COUNTY
MICHIGAN**

Prepared for:

**GUY GENZEL
GFG INVESTMENT PROPERTIES, LLC
15264 BAILEY
TAYLOR, MI 48180
(734) 795-0078**

Prepared by:

**BOSS ENGINEERING COMPANY
3121 E. GRAND RIVER
HOWELL, MI 48843
(517) 546-4836**

March 23,2016

15-179 EIA

INTRODUCTION

The purpose of this Impact Assessment (IA) report is to show the effect that this proposed development may have on various factors in the general vicinity of the project. The format used for presentation of this report conforms to the *Submittal Requirements for Impact Assessment* guidelines in accordance with Section 18.07 of the published Zoning Ordinance for Genoa Township, Livingston County, Michigan.

DISCUSSION ITEMS

A. Name(s) and address(es) of person(s) responsible for preparation of the impact assessment and a brief statement of their qualifications.

Prepared For:
Guy Genzel
GFG Investment Properties, LLC
15264 Bailey
Taylor, MI 48180
(734) 795-0078

Prepared By:
BOSS ENGINEERING COMPANY
Civil Engineers, Land Surveyors, Landscape Architects and Planners
3121 E. Grand River
Howell, MI 48843
(517) 546-4836

Boss Engineering has been successfully providing engineering, surveying, planning and landscape architecture services on land development projects since 1969. Since its beginning, Boss Engineering has strived to provide unparalleled professional services with integrity and respect to every client. Today, Boss provides a complete lineup of consulting services for each project, ranging from conceptual design through final construction. The company currently employs a variety of professions including civil engineers, surveyors, landscape architects and sanitarians.

B. Map(s) and written description / analysis of the project site including all existing structures, manmade facilities, and natural features. The analysis shall also include information for areas within 10 feet of the property. An aerial photograph or drawing may be used to delineate these areas.

The site is located on the west side of South Latson Rd, approximately 2,226 feet south from the Crooked Lake Road intersection. The property consists of undeveloped land, zoned as Rural Residential (RR), with 290 lineal feet of frontage along South Latson Rd and 365 lineal feet along Chilson Road. The surrounding properties of the site are zoned as Country Estate District (CE).

C. Impact on natural features: A written description of the environmental characteristics of the site prior to development and following development, i.e., topography, soils, wildlife, woodlands, mature trees (eight inch caliper or greater), wetlands, drainage, lakes, streams, creeks or ponds. Documentation by a qualified wetland specialist shall be required wherever the Township determines that there is a potential regulated wetland. Reduced copies of the Existing Conditions Map(s) or aerial photographs may accompany written material.

The total site area is 40.34 acres. Current drainage patterns on site consist of slopes up to approximately 15%, with water being directed towards two separate wetlands. One wetland being majorly onsite to the northwest section of the property along Chilson Road and the other being located just offsite to the south along the property line.

Based on the National Wetlands Inventory the wetland onsite is classified as a PSSC wetland with an area of 6.50 acres. This wetland continues offsite to the northeast and changes classification to a PEMC wetland of 2.40 acres. The other wetland located mainly offsite south along the southern property line is classified as a PSSC wetland with an area of 3.89 acres. All wetlands onsite will not be disturbed from the proposed development.

Vegetated areas onsite are mainly within the wetland areas, with a small tree line located centrally, while the remainder of the site is open area. All current wooded areas on site are proposed to be preserved and will not be impacted due to development. The USDA Soil Conservation Service soil classification for the site as approximately 70% Miami-Loam soils.

D. Impact on storm water management: Description of measures to control soil erosion and sedimentation during grading and construction operations and until a permanent ground cover is established. Recommendations for such measures may be obtained from County Soil Conservation Service.

Surface runoff during periods of construction will be controlled by proper methods set forth by the Livingston County Drain Commissioner, including silt fence, temporary gravel entrance, and seed and mulch.

At the time of construction, there may be some temporary dust, noise, vibration and smoke, but these conditions will be of relatively short duration and shall be controlled by applying appropriate procedures to minimize the effects, such as watering if necessary for dust control.

The Site Plan documents show the proposed locations of all site improvements along with detailed soil erosion control information. The plans will be reviewed by the Livingston County Drain Commissioner's office for compliance with their regulations prior to issuance of a Soil Erosion Control permit.

E. Impact on surrounding land use: Description of the types of proposed uses and other man made facilities, including any project phasing, and an indication of how the proposed use conforms or conflicts with existing and potential development patterns. A description shall be provided of any increases of light, noise or air pollution which could negatively impact adjacent properties.

The proposed land division creates 9 lots on site, that are proposed for single family homes. This type of development conforms with current surrounding land uses for the site. The increase in light, noise or air pollution is minimal with only 9 single family homes being proposed while having a minimal impact on surrounding properties.

F. Impact on public facilities and services: Description of number of expected residents, employees, visitors, or patrons, and the anticipated impact on public schools, police protection and fire protection. Letters from the appropriate agencies may be provided, as appropriate.

With only 9 single family residential homes being proposed the impact on public facilities such as, Howell Area Schools, and police and fire departments will be minimal. The development will however benefit neighboring businesses with additional subsidiary patronage slightly.

G. Impact on public utilities: Description of the method to be used to service the development with water and sanitary sewer facilities, the method to be used to control drainage on the site and from the site, including runoff control during periods of construction. For sites service with sanitary sewer, calculations for pre- and post development flows shall be provided in equivalents to a single family home. Where septic systems are proposed, documentation or permits from the Livingston County Health Department shall be provided.

The development has no impact of public utilities, as it is not to be served by either public water or sanitary sewer. The site will utilize wells and septic fields to service the future houses of the individual lots. Soil borings were conducted with the Health Department on 11/03/15, final approval of septic systems and wells are pending.

With regards to storm water management, the project will be required to meet all local, county and state storm water and erosion control requirements. All of the required information is included in the Site Plan documents. The increased volume of runoff due to development will be retained onsite, while existing runoff volume will be detained and outlet at a controlled rate into existing wetlands. Existing slopes and drainage patterns that are outside of the proposed development area will remain the same.

H. Storage or handling of any hazardous materials: Description of any hazardous substances expected to be used, stored or disposed of on the site. The information shall describe the type of materials, location within the site and method of containment. Documentation of compliance with federal and state requirements, and a Pollution Incident Prevention Plan (PIPP) shall be submitted, as appropriate.

There will be no hazardous materials used or disposed of on this site, such as gas cans, paint, etc.

I. Impact on traffic and pedestrians: A description of the traffic volumes to be generated based on national reference documents, such as the most recent edition of the Institute of Transportation Engineers Trip Generation Manual, other published studies or actual counts of similar uses in Michigan.

According to the Institute of Transportation Engineers Trip Generation 6th addition, with the construction of 9 single family homes, the expected number of trips generated by this development will be 113.12 total trips per day with an AM peak volume of 18.43 trips and a PM peak volume of 12.86 trips. No center turn lane or bypass lane will be required by the Livingston County Road Commission.

J. A detailed traffic impact study shall be submitted for any site over ten (10) acres in size which would be expected to generate 100 directional vehicle trips (i.e. 100 inbound or 100 outbound trips) during the peak hour of traffic of the generator or on the adjacent streets.

The site is over 10 acres, however the proposed development will not generate 100 direction vehicle trips during the peak hour of traffic, therefore a detailed traffic impact study is not necessary.

K. Special Provisions: General description of any deed restrictions, protective covenants, master deed or association bylaws.

None at this time.

L. A list of all sources shall be provided.

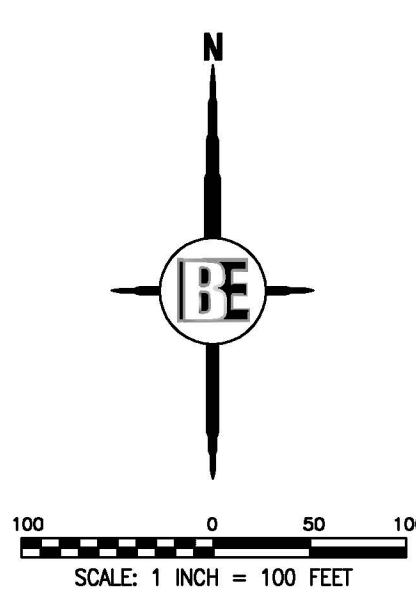
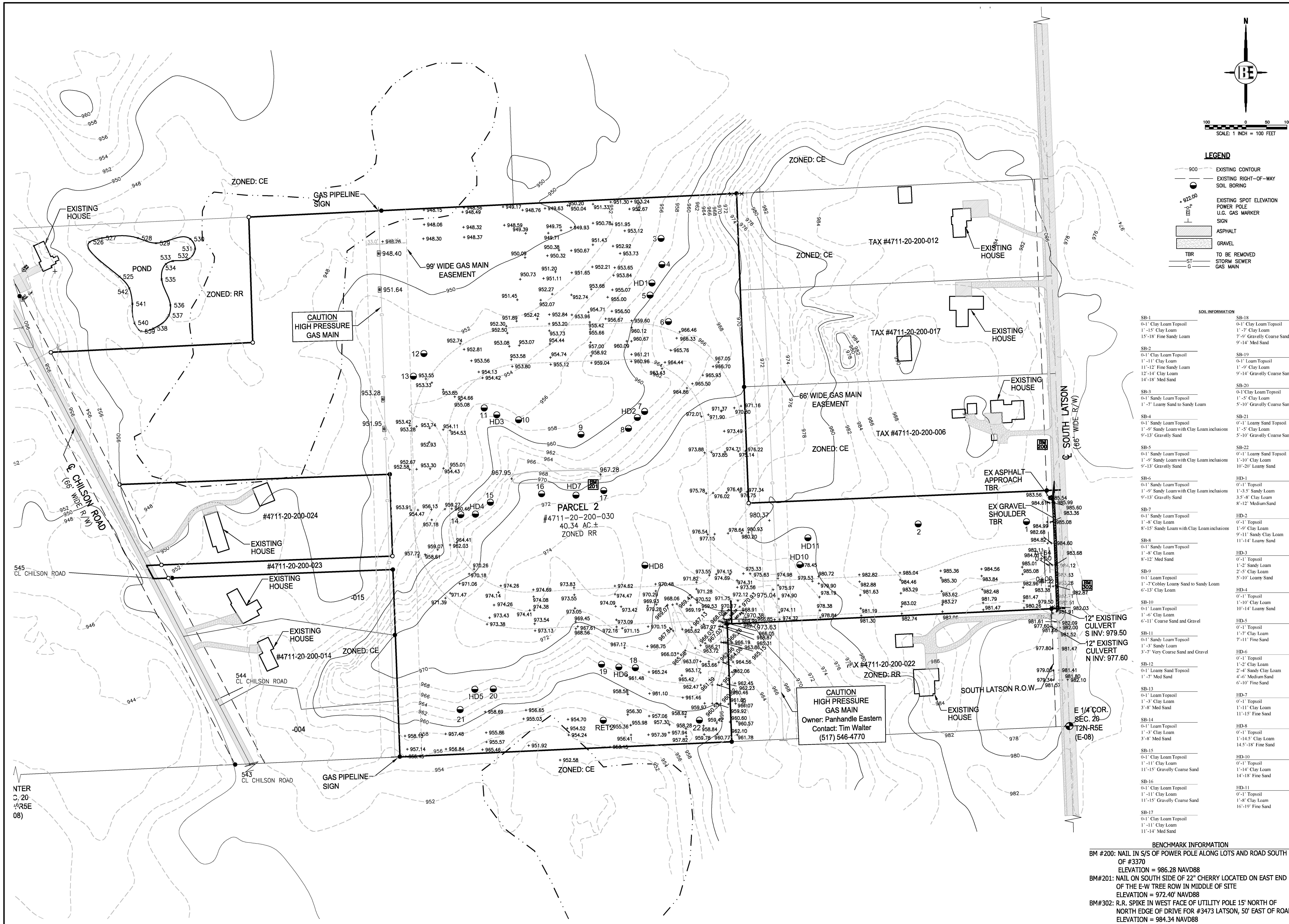
Genoa Township's *Submittal Requirements for Impact Assessment*

Genoa Township Zoning Ordinances

Soil Survey of Livingston County, Michigan, U.S.D.A. Soil Conservation Service

National Wetland Inventory Plan, United States Department of the Interior, Fish and Wildlife Service

Trip Generation manual, 6th edition, Institute of Transportation Engineers



- LEGEND**
- 900 EXISTING CONTOUR
 - EXISTING RIGHT-OF-WAY
 - SOIL BORING
 - EXISTING SPOT ELEVATION
 - POWER POLE
 - U.G. GAS MARKER
 - SIGN
 - ASPHALT
 - GRAVEL
 - TBR TO BE REMOVED
 - ST STORM SEWER
 - G GAS MAIN

SOIL INFORMATION

SB-1	0-1' Clay Loam Topsoil	SB-18	0-1' Clay Loam Topsoil
	1'-15' Clay Loam		1'-7' Gravelly Coarse Sand
	15'-18' Fine Sandy Loam		9'-14' Med Sand
SB-2	0-1' Clay Loam Topsoil	SB-19	0-1' Loam Topsoil
	1'-11' Clay Loam		1'-9' Clay Loam
	11'-12' Fine Sandy Loam		12'-14' Clay Loam
	14'-18' Clay Loam		14'-18' Med Sand
SB-3	0-1' Sandy Loam Topsoil	SB-20	0-1' Clay Loam Topsoil
	1'-7' Loamy Sand to Sandy Loam		1'-5' Clay Loam
			5'-10' Gravelly Coarse Sand
SB-4	0-1' Sandy Loam Topsoil	SB-21	0-1' Loamy Sand Topsoil
	1'-9' Sandy Loam with Clay Loam inclusions		1'-10' Clay Loam
	9'-13' Gravelly Sand		5'-10' Gravelly Coarse Sand
SB-5	0-1' Sandy Loam Topsoil	SB-22	0-1' Loamy Sand Topsoil
	1'-9' Sandy Loam with Clay Loam inclusions		1'-10' Clay Loam
	9'-13' Gravelly Sand		10'-20' Loamy Sand
SB-6	0-1' Sandy Loam Topsoil	HD-1	0-1' Topsoil
	1'-9' Sandy Loam with Clay Loam inclusions		1'-3'-5' Sandy Loam
	9'-13' Gravelly Sand		3'-5'-8' Clay Loam
SB-7	0-1' Sandy Loam Topsoil		8'-12' Medium Sand
	1'-9' Sandy Loam with Clay Loam inclusions	HD-2	0-1' Topsoil
	9'-13' Gravelly Sand		1'-9' Clay Loam
SB-8	0-1' Sandy Loam Topsoil		9'-11' Sandy Clay Loam
	1'-8' Clay Loam		11'-14' Loamy Sand
	8'-12' Med Sand	HD-3	0-1' Topsoil
SB-9	0-1' Loam Topsoil		1'-2' Sandy Loam
	1'-7' Cobble Loamy Sand to Sandy Loam		2'-5' Clay Loam
	6'-13' Clay Loam		5'-10' Loamy Sand
SB-10	0-1' Loam Topsoil	HD-4	0-1' Topsoil
	1'-6' Clay Loam		10'-14' Clay Loam
	6'-11' Coarse Sand and Gravel	HD-5	0-1' Topsoil
SB-11	0-1' Sandy Loam Topsoil		1'-7' Clay Loam
	1'-3' Sandy Loam		7'-11' Fine Sand
	3'-7' Very Coarse Sand and Gravel	HD-6	0-1' Topsoil
SB-12	0-1' Loamy Sand Topsoil		1'-2' Clay Loam
	1'-7' Med Sand		2'-4' Sandy Clay Loam
			4'-6' Medium Sand
			6'-10' Fine Sand
SB-13	0-1' Loam Topsoil	HD-7	0-1' Topsoil
	1'-3' Clay Loam		1'-11' Clay Loam
	3'-8' Med Sand		11'-15' Fine Sand
SB-14	0-1' Loam Topsoil	HD-8	0-1' Topsoil
	1'-3' Clay Loam		1'-14'-5' Clay Loam
	3'-8' Med Sand		14'-5'-18' Fine Sand
SB-15	0-1' Clay Loam Topsoil	HD-10	0-1' Topsoil
	1'-11' Clay Loam		1'-14' Clay Loam
	11'-15' Gravelly Coarse Sand		14'-18' Fine Sand
SB-16	0-1' Clay Loam Topsoil	HD-11	0-1' Topsoil
	1'-11' Clay Loam		1'-8' Clay Loam
	11'-15' Gravelly Coarse Sand		16'-19' Fine Sand
SB-17	0-1' Clay Loam Topsoil		
	1'-11' Clay Loam		
	11'-14' Med Sand		

BENCHMARK INFORMATION

BM #200: NAIL IN S/S OF POWER POLE ALONG LOTS AND ROAD SOUTH OF #3370
ELEVATION = 986.28 NAVD88

BM #201: NAIL ON SOUTH SIDE OF 22" CHERRY LOCATED ON EAST END OF THE E-W TREE ROW IN MIDDLE OF SITE
ELEVATION = 972.40' NAVD88

BM #302: R.R. SPIKE IN WEST FACE OF UTILITY POLE 15' NORTH OF NORTH EDGE OF DRIVE FOR #3473 LATSON, 50' EAST OF ROAD
ELEVATION = 984.34 NAVD88

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND. THE ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN OF DEPTH DIFFERS FROM THE PLANS.

BOSS ENGINEERING
3121 E. GRAND RIVER AVE.
E-MAIL: bosseng.com
(900) 246-6735 FAX (917) 548-1670

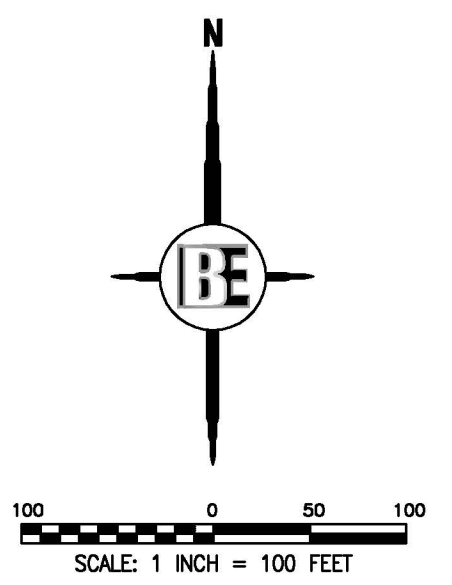
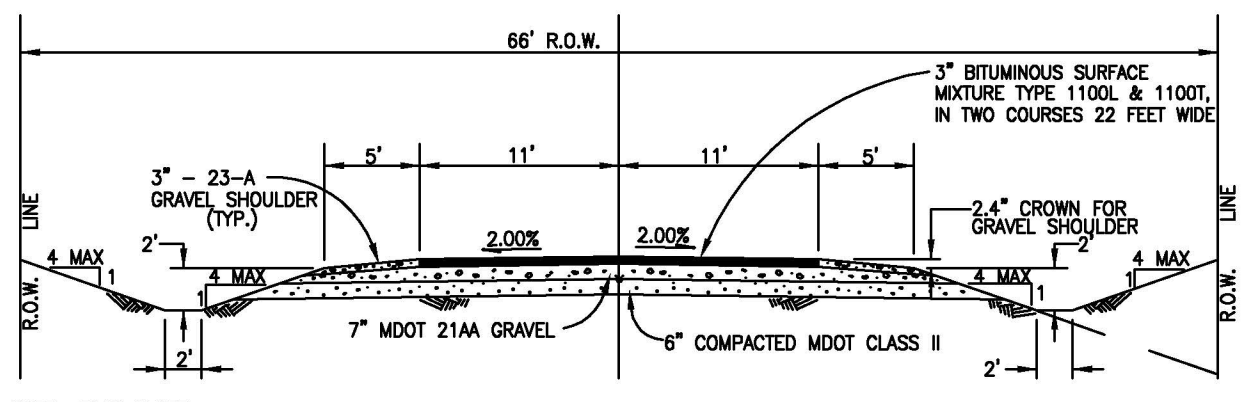
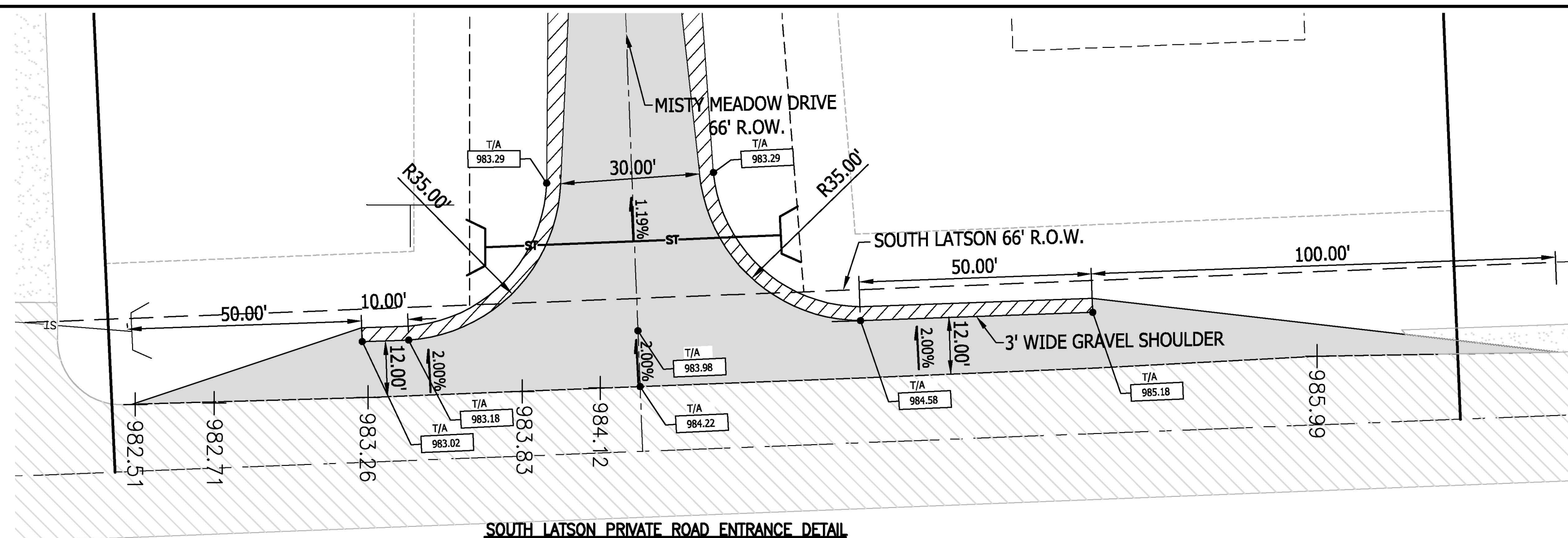
BOSS ENGINEERING
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS

MISTY MEADOW
PREPARED FOR
GFG INVESTMENT PROPERTIES, LLC
15266 BAILEY
TUCKER, GA 30086
(770) 796-0076

EXISTING CONDITIONS

NO.	DATE	REVISION	PER
1	4/20/16		KS

DESIGNED BY: KS
DRAWN BY: KS
CHECKED BY:
SCALE 1" = 100'
JOB NO. 15-179
DATE 03/23/16
SHEET NO. 2

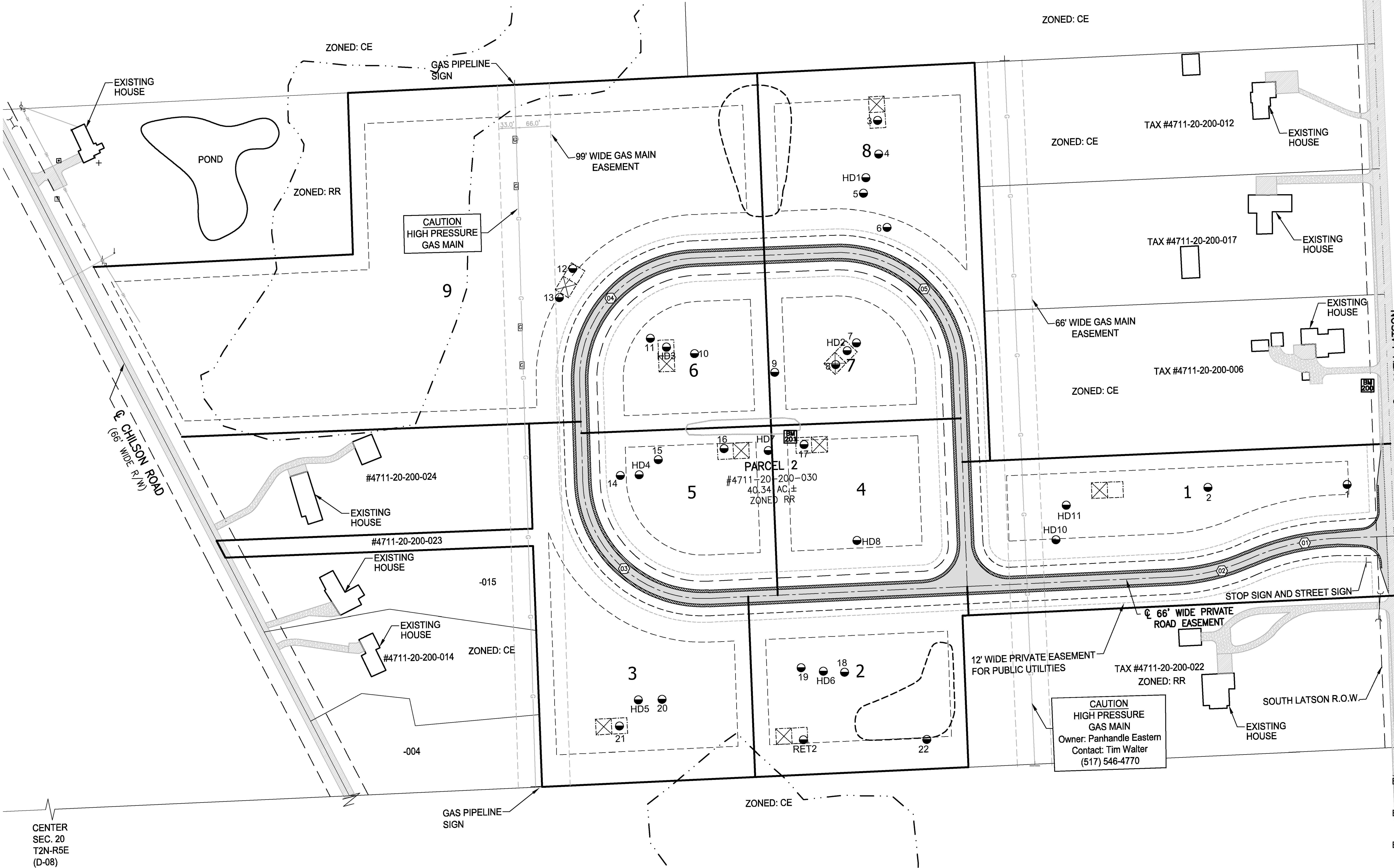
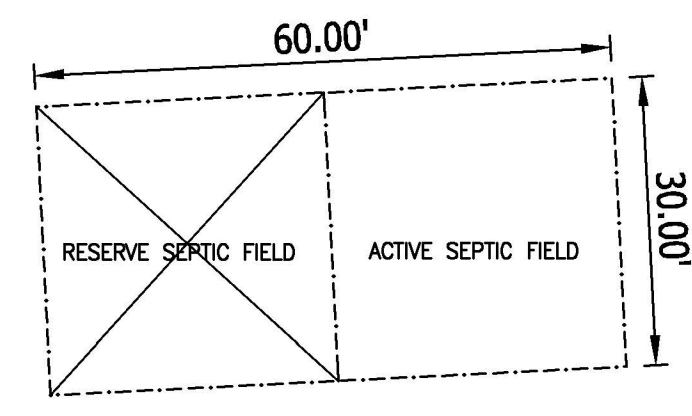


LEGEND

PROPOSED (PR)	EXISTING (EX)	DESCRIPTION
[Symbol]	[Symbol]	EXISTING RIGHT-OF-WAY
[Symbol]	[Symbol]	SETBACK
[Symbol]	[Symbol]	SEPTIC FIELD ACTIVE/RESERVE
[Symbol]	[Symbol]	WELL
[Symbol]	[Symbol]	ASPHALT
[Symbol]	[Symbol]	GRAVEL
[Symbol]	[Symbol]	WETLAND DETENTION/RETENTION BASIN
[Symbol]	[Symbol]	HORIZONTAL CURVE
[Symbol]	[Symbol]	GAS MAIN

SITE DATA

ZONING	RR RURAL RESIDENTIAL
SITE AREA	40.34 AC
SETBACKS	REQUIRED
FRONT	50 FT.
SIDE	30 FT.
REAR	60 FT.
MINIMUM LOT AREA	2 ACRES
MINIMUM LOT WIDTH	200 FT.
RIGHT-OF-WAY	66 FT.



- SITE PLAN NOTES**
- NO PARKING SHALL BE PERMITTED ON THE ROAD
 - BUILDINGS SHALL PROVIDE ADDRESS NUMBERS AT A MINIMUM 4" IN HEIGHT TO BE VISIBLE FROM THE ROAD.
 - ACCESS ROADS SHALL BE CONSTRUCTED TO BE CAPABLE OF SUPPORTING AT LEAST 75,000 LBS.
 - 15 FT. OF OVERHEAD TREE CLEARANCE TO BE PROVIDED WITHIN THE WIDTH OF THE PAVEMENT.
 - STOP SIGN AND STREET SIGN TO BE IN ACCORDANCE WITH THE MICHIGAN UNIFORM TRAFFIC CONTROL DEVICES AND CONFORM TO ROAD COMMISSION REQUIREMENTS.
 - STREET NAME HAS BEEN SUBMITTED TO THE ROAD COMMISSION AND IS ACCEPTABLE.

HORIZONTAL CURVE DATA

CURVE #	RADIUS (FT)	ARC LENGTH (FT)	PC (STA)	PT (STA)
01	450	172.05	0+95.37	2+67.42
02	400	150.15	2+67.42	4+17.57
03	230	364.51	13+04.66	16+69.18
04	230	359.64	18+58.90	22+18.54
05	230	361.28	24+82.22	28+43.50

E 1/4 COR. SEC. 20 T2N-R5E (E-08)

BENCHMARK INFORMATION

BM #200: NAIL IN S/S OF POWER POLE ALONG LOTS AND ROAD SOUTH OF #3370
ELEVATION = 986.28 NAVD88

BM #201: NAIL ON SOUTH SIDE OF 22" CHERRY LOCATED ON EAST END OF THE E-W TREE ROW IN MIDDLE OF SITE
ELEVATION = 972.40' NAVD88

BM #302: R.R. SPIKE IN WEST FACE OF UTILITY POLE 15' NORTH OF NORTH EDGE OF DRIVE FOR #3473 LATSON, 50' EAST OF ROAD
ELEVATION = 984.34 NAVD88

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS GIVEN THEREFOR. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND. THE ENGINEER SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.

BOSS ENGINEERING
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS

3121 E. GRAND RIVER AVE.
E-MAIL: bosseng.com
(800) 246-6735 FAX (917) 548-1670

BOSS ENGINEERING
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS

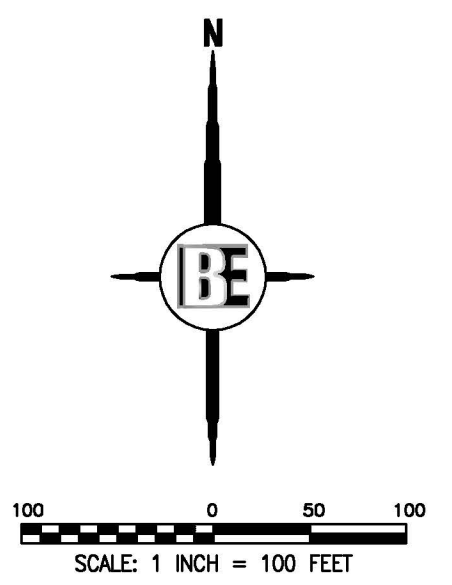
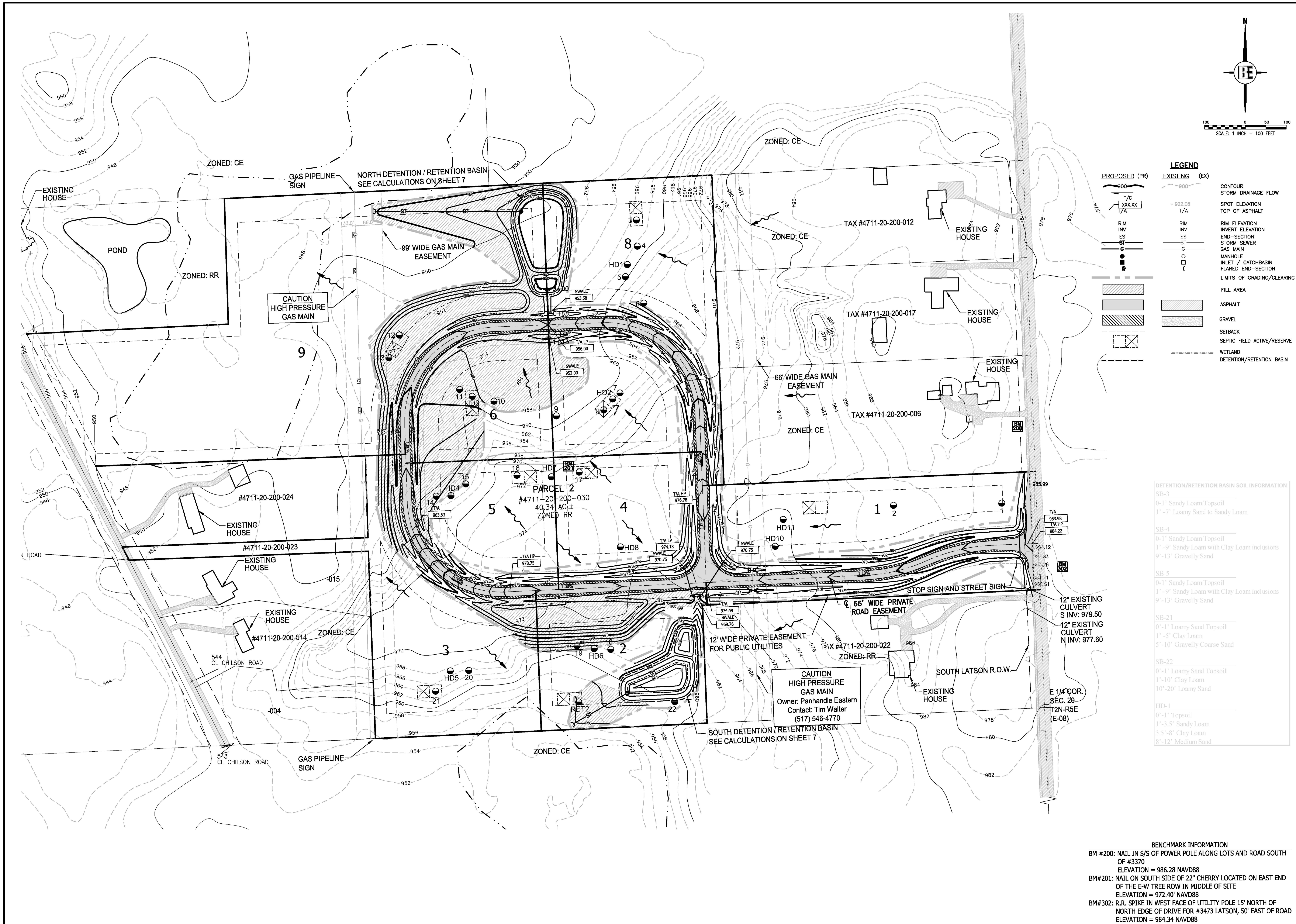
MISTY MEADOW
PREPARED FOR: **GFG INVESTMENT PROPERTIES, LLC**
15264 BAILEY TRL. S.W.
TUSCUMPHAW, MI 49880
(734) 798-0076

SITE PLAN

NO.	BY	REVISION	DATE
1	KS	TOWNSHIP REVIEW	4/20/16
2	KS	REVISION PER	

DESIGNED BY: KS
DRAWN BY: KS
CHECKED BY:

SCALE 1" = 100'
JOB NO. 15-179
DATE 03/23/16
SHEET NO. 3



LEGEND

PROPOSED (PR)	EXISTING (EX)	DESCRIPTION
900	900	CONTOUR
T/C	T/A	STORM DRAINAGE FLOW
xxx.xx	+ 922.08	SPOT ELEVATION
T/A	T/A	TOP OF ASPHALT
RIM	RIM	RIM ELEVATION
INV	INV	INVERT ELEVATION
ES	ES	END-SECTION
ST	ST	STORM SEWER
G	G	GAS MAIN
O	O	MANHOLE
L	L	INLET / CATCHBASIN
C	C	FLARED END-SECTION
[Hatched Box]	[Hatched Box]	LIMITS OF GRADING/CLEARING
[Solid Box]	[Solid Box]	FILL AREA
[Dotted Box]	[Dotted Box]	ASPHALT
[Cross-hatched Box]	[Cross-hatched Box]	GRAVEL
[Dashed Box]	[Dashed Box]	SETBACK
[Dotted Box]	[Dotted Box]	SEPTIC FIELD ACTIVE/RESERVE
[Dashed Box]	[Dashed Box]	WETLAND
[Dashed Box]	[Dashed Box]	DETENTION/RETENTION BASIN

DETENTION/RETENTION BASIN SOIL INFORMATION

SB-3	SB-4	SB-5	SB-21	SB-22	HD-1
0'-1" Sandy Loam Topsoil	0'-1" Sandy Loam Topsoil	0'-1" Sandy Loam Topsoil	0'-1" Loamy Sand Topsoil	0'-1" Loamy Sand Topsoil	0'-1" Topsoil
1'-7" Loamy Sand to Sandy Loam	1'-9" Sandy Loam with Clay Loam inclusions	1'-9" Sandy Loam with Clay Loam inclusions	1'-5" Clay Loam	1'-10" Clay Loam	1'-3.5" Sandy Loam
	9'-13" Gravelly Sand	9'-13" Gravelly Sand	5'-10" Gravelly Coarse Sand	10'-20" Loamy Sand	3.5'-8" Clay Loam
					8'-12" Medium Sand

BENCHMARK INFORMATION

BM #200: NAIL IN S/S OF POWER POLE ALONG LOTS AND ROAD SOUTH OF #3370
ELEVATION = 986.28 NAVD88

BM#201: NAIL ON SOUTH SIDE OF 22" CHERRY LOCATED ON EAST END OF THE E-W TREE ROW IN MIDDLE OF SITE
ELEVATION = 972.40' NAVD88

BM#302: R.R. SPIKE IN WEST FACE OF UTILITY POLE 15' NORTH OF NORTH EDGE OF DRIVE FOR #3473 LATSON, 50' EAST OF ROAD
ELEVATION = 984.34 NAVD88

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE LOCATION OR DEPTH OF UTILITIES SHOWN ON THESE PLANS.

BOSS ENGINEERING
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS
3 Working Days
BEFORE M/S/D/C
1-800-482-7171

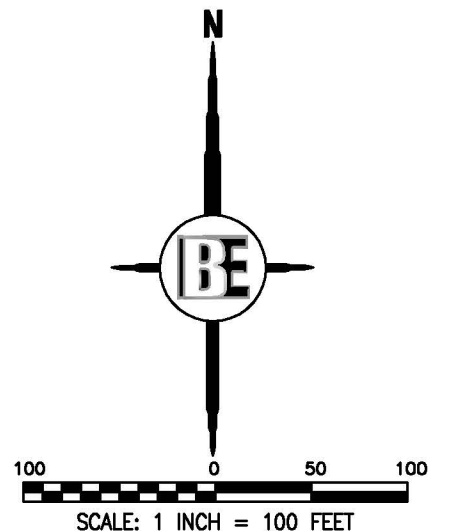
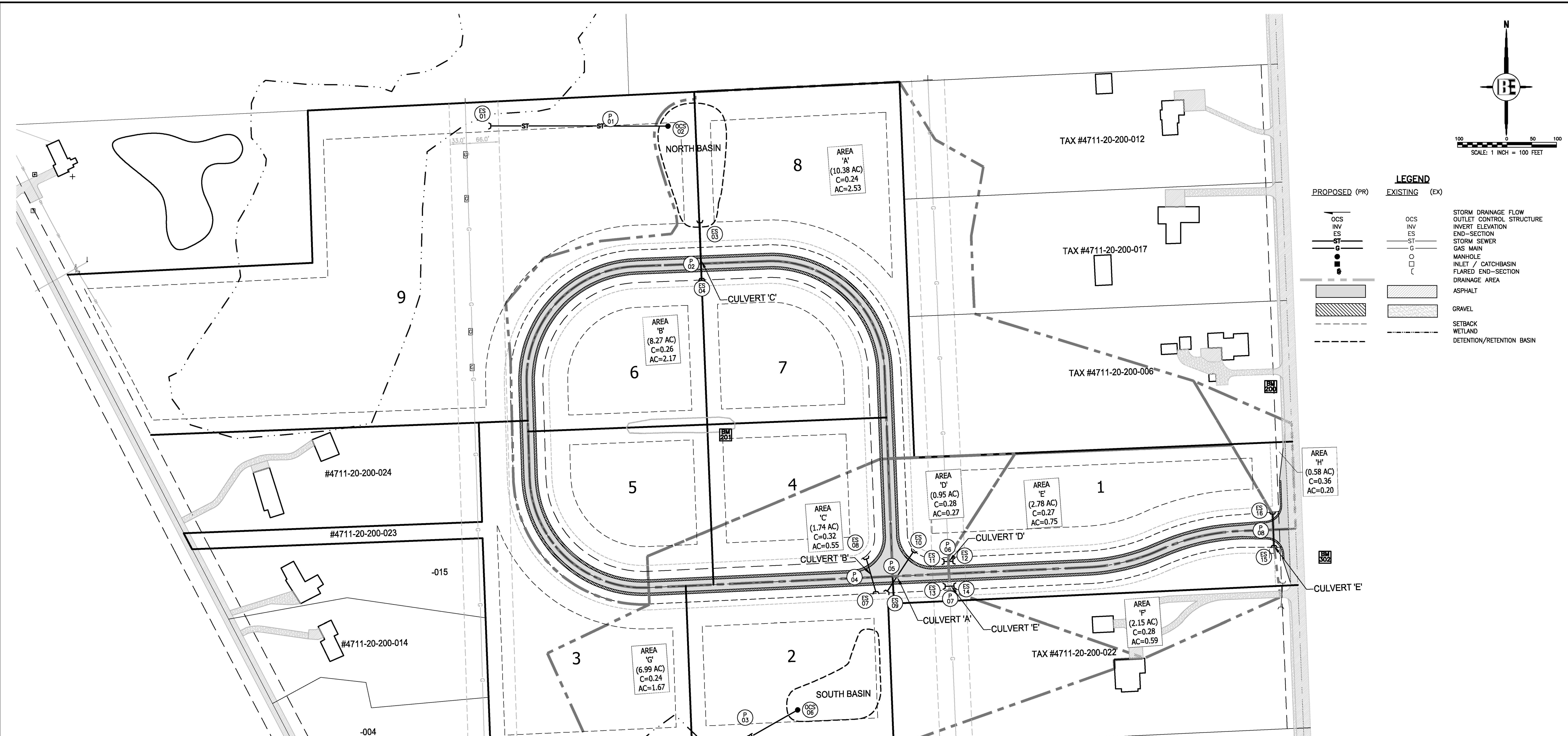
BOSS ENGINEERING
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS
3121 E. GRAND RIVER AVE.
(E-MAIL: bosseng.com)
(900) 246-6735 FAX (917) 548-1670

MISTY MEADOW
PROJECT FOR
GFG INVESTMENT PROPERTIES, LLC
15266 BAILEY
TULSA, OK 74106
(754) 795-0076

GRADING PLAN

NO.	BY	REVISION	DATE
1	KS	TOWNSHIP REVIEW	4/20/16
		REVISION FEE	

DESIGNED BY: KS
DRAWN BY: KS
CHECKED BY:
SCALE 1" = 100'
JOB NO. 15-179
DATE 03/23/16
SHEET NO. 4



LEGEND

PROPOSED (PR)	EXISTING (EX)	DESCRIPTION
—	—	STORM DRAINAGE FLOW
—	—	OUTLET CONTROL STRUCTURE
—	—	INVERT ELEVATION
—	—	END-SECTION
—	—	STORM SEWER
—	—	GAS MAIN
—	—	MANHOLE
—	—	INLET / CATCHBASIN
—	—	FLARED END-SECTION
—	—	DRAINAGE AREA
—	—	ASPHALT
—	—	GRAVEL
—	—	SETBACK
—	—	WETLAND
—	—	DETENTION/RETENTION BASIN

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE LOCATION OR DEPTH OF UTILITIES SHOWN ON THESE PLANS.

BEFORE USING THIS DRAWING, CONTACT THE ENGINEER AT THE FOLLOWING ADDRESS:
 BOSS ENGINEERING, LLC
 3121 E. GRAND RIVER AVE.
 GRAND RAPIDS, MI 49508
 (616) 795-0076
 (800) 246-6735 FAX (616) 548-1670

BOSS ENGINEERING
 ENGINEERS • SURVEYORS • PLANNERS
 LANDSCAPE ARCHITECTS
 (E-MAIL: bossengineering.com)
 3121 E. GRAND RIVER AVE.
 GRAND RAPIDS, MI 49508
 (616) 795-0076
 (800) 246-6735 FAX (616) 548-1670

STORM STRUCTURE SCHEDULE

STRUCTURE	SECTION	SIZE	ELEVATION
ES 01	FLARED END SECTION		
	INV. E	12"	948.14
OCS 02	RIM =	952.00	
	INV. W	12"	949.75
ES 03	FLARED END SECTION		
	INV. S	18"	951.15
ES 04	FLARED END SECTION		
	INV. N	18"	952.17
ES 05	FLARED END SECTION		
	INV. E	12"	954.26
OCS 06	RIM =	958.00	
	INV. SW	12"	954.75
ES 07	FLARED END SECTION		
	INV. NE	12"	970.22
ES 08	FLARED END SECTION		
	INV. SE	12"	970.75
ES 09	FLARED END SECTION		
	INV. NE	18"	970.46
ES 10	FLARED END SECTION		
	INV. SW	18"	970.75
ES 11	FLARED END SECTION		
	INV. E	15"	973.69
ES 12	FLARED END SECTION		
	INV. W	15"	973.90
ES 13	FLARED END SECTION		
	INV. E	15"	973.69
ES 14	FLARED END SECTION		
	INV. W	15"	973.90
ES 15	FLARED END SECTION		
	INV. N	12"	981.63
ES 16	FLARED END SECTION		
	INV. S	12"	981.83

DRAINAGE AREA SUMMARY

NORTH BASIN DRAINAGE AREAS

SECTION	AREA (AC)	C	AxC
A	10.38	0.24	2.53
B	8.27	0.26	2.17
TOTAL (AC)=	18.64		

SOUTH BASIN DRAINAGE AREAS

SECTION	AREA (AC)	C	AxC
C	1.74	0.32	0.55
D	0.95	0.28	0.27
E	2.78	0.27	0.75
F	2.15	0.28	0.59
G	6.99	0.24	1.67
TOTAL (AC)=	14.61		

DRAINAGE AREA STRUCTURE SUMMARY

STRUCTURE	DRAINAGE AREA(S)	AREA (AC)
CULVERT A	D, E	3.73
CULVERT B	C	1.74
CULVERT C	B	8.27
CULVERT D	E	2.78
CULVERT E	F	2.15
CULVERT F	H	0.58

STORM PIPE SCHEDULE

PIPE	LENGTH	SIZE	TYPE	SLOPE
1	358	12	C-76 CLV	0.45%
2	113	18	C-76 CLV	0.75%
3	153	12	C-76 CLV	0.32%
4	66	12	C-76 CLV	0.80%
5	95	18	C-76 CLV	0.30%
6	18	15	C-76 CLV	1.17%
7	18	15	C-76 CLV	1.17%
8	64	12	C-76 CLV	0.32%

DETENTION/RETENTION BASIN NOTES

- THE NORTH BASIN IS TO OUTLET INTO AN EXISTING WETLAND TO THE NORTHWEST.
- THE SOUTH BASIN IS TO OUTLET INTO AN EXISTING WETLAND TO THE SOUTH.

BENCHMARK INFORMATION

BM #200: NAIL IN S/S OF POWER POLE ALONG LOTS AND ROAD SOUTH OF #3370
 ELEVATION = 986.28 NAVD88

BM#201: NAIL ON SOUTH SIDE OF 22" CHERRY LOCATED ON EAST END OF THE E-W TREE ROW IN MIDDLE OF SITE
 ELEVATION = 972.40' NAVD88

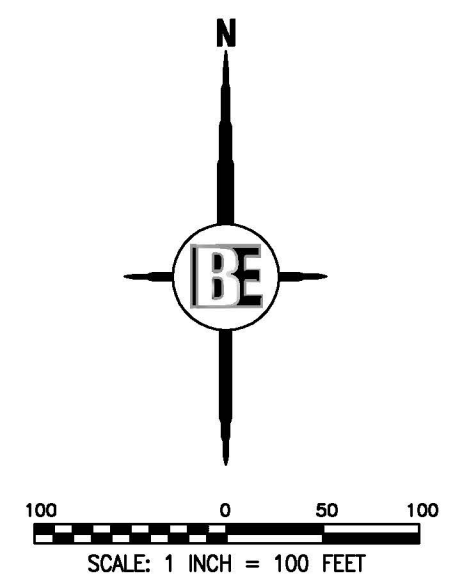
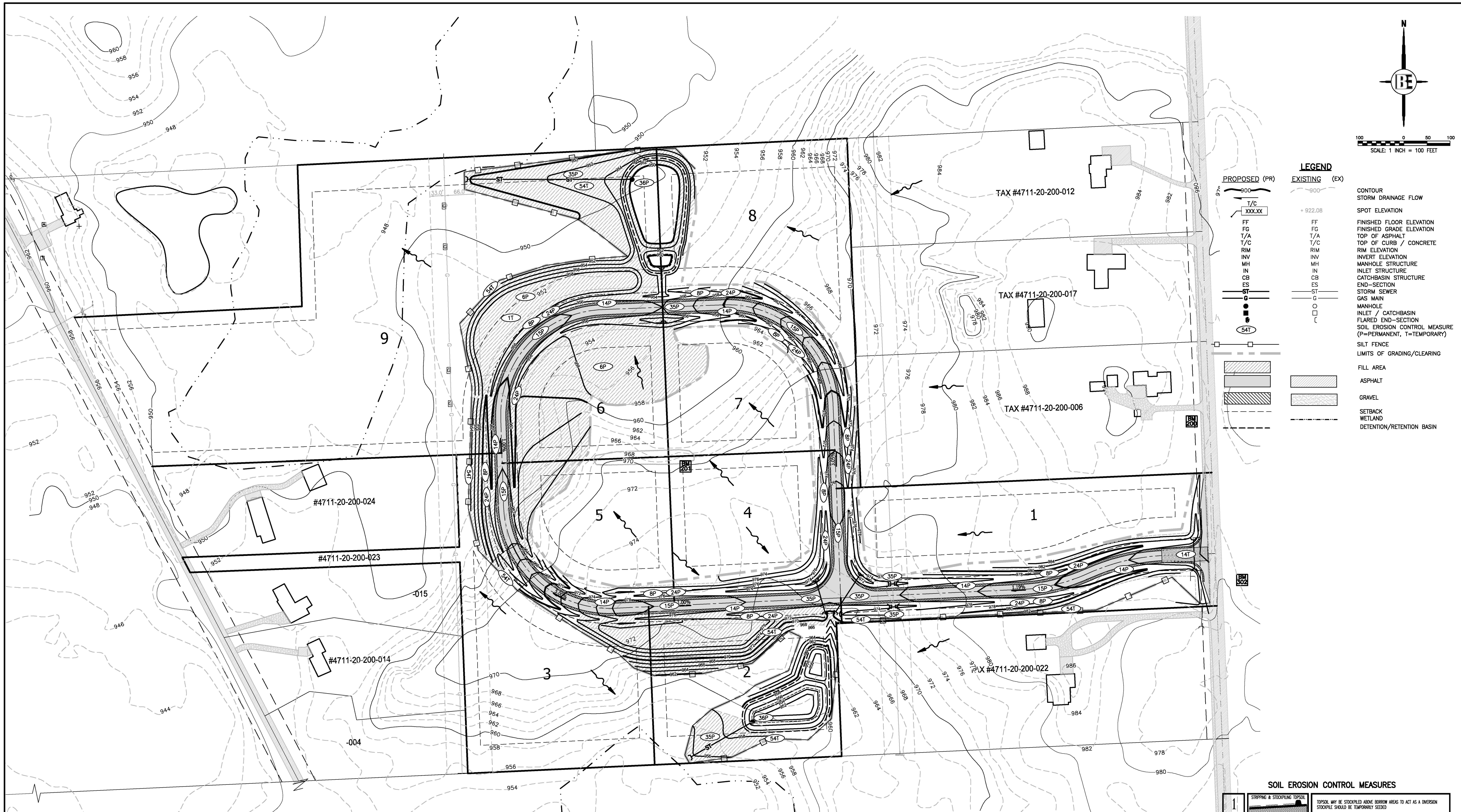
BM#302: R.R. SPIKE IN WEST FACE OF UTILITY POLE 15' NORTH OF NORTH EDGE OF DRIVE FOR #3473 LATSON, 50' EAST OF ROAD
 ELEVATION = 984.34 NAVD88

MISTY MEADOW
 PREPARED FOR: **GFG INVESTMENT PROPERTIES, LLC**
 15264 BAILEY
 TOLON, MI 49786
 (734) 795-0076

DRAINAGE AREAS

NO.	BY	DATE
1	KS	4/20/16
2	KS	
3	KS	
4	KS	
5	KS	
6	KS	
7	KS	
8	KS	
9	KS	
10	KS	
11	KS	
12	KS	
13	KS	
14	KS	
15	KS	
16	KS	
17	KS	
18	KS	
19	KS	
20	KS	

DESIGNED BY: KS
 DRAWN BY: KS
 CHECKED BY:
 SCALE 1" = 100'
 JOB NO. 15-179
 DATE 03/23/16
 SHEET NO. 5



LEGEND

PROPOSED (PR)	EXISTING (EX)	DESCRIPTION
900	900	CONTOUR
T/C		STORM DRAINAGE FLOW
XXXXXX		SPOT ELEVATION
FF	+922.08	FINISHED FLOOR ELEVATION
FG		FINISHED GRADE ELEVATION
T/A		TOP OF ASPHALT
T/C		TOP OF CURB / CONCRETE
RIM		RIM ELEVATION
INV		INVERT ELEVATION
MH		MANHOLE STRUCTURE
IN		INLET STRUCTURE
CB		CATCHBASIN STRUCTURE
ES		END-SECTION
ST		STORM SEWER
G		GAS MAIN
54T		MANHOLE INLET / CATCHBASIN FLARED END-SECTION
		SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)
		SILT FENCE
		LIMITS OF GRADING/CLEARING
		FILL AREA
		ASPHALT
		GRAVEL
		SETBACK
		WETLAND
		DETENTION/RETENTION BASIN

NOTE
 SOD TO BE PEGGED IN PLACE FOR AREAS WHERE THE CENTERLINE OF DITCH EXCEEDS 3.0% SLOPE

BENCHMARK INFORMATION
 BM #200: NAIL IN S/S OF POWER POLE ALONG LOTS AND ROAD SOUTH OF #3370
 ELEVATION = 986.28 NAVD88
 BM#201: NAIL ON SOUTH SIDE OF 22" CHERRY LOCATED ON EAST END OF THE E-W TREE ROW IN MIDDLE OF SITE
 ELEVATION = 972.40' NAVD88
 BM#302: R.R. SPIKE IN WEST FACE OF UTILITY POLE 15' NORTH OF NORTH EDGE OF DRIVE FOR #3473 LATSON, 50' EAST OF ROAD
 ELEVATION = 984.34 NAVD88

SOIL EROSION CONTROL MEASURES

NO.	MEASURE	DESCRIPTION
1	STRIPPING & STOCKPILE TOPSOIL	TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREAS TO ACT AS A DIVERSION STOCKPILE SHOULD BE TEMPORARILY SEED
6	SEEDING WITH MULCH AND/OR MATING	PROMOTES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY EASY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL BED
8	SEEDING	PROMOTES VEGETATIVE PROTECTION CAN BE USED ON STEEP SLOPES WHERE SEED MAY BE DIFFICULT TO ESTABLISH EASY TO PLACE, MAY BE REPEATED IF DAMAGED SHOULD INCLUDE PREPARED TOPSOIL BED
14	AGGREGATE COVER	STABILIZES SOIL SURFACE, THIS MINIMIZES EROSION PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS
15	PAVING	PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VELOCITY IRREGULAR SURFACE WILL HELP SLOW VELOCITY
24	GRASSED WATERWAY	MUCH MORE STABLE FORM OF DRAINAGEWAY THAN DIRT CHANNEL GRASS TENDS TO SLOW RUNOFF AND FILTER OUT SEDIMENT USED WHERE DIRT CHANNEL WOULD BE ERODED
35	SNOW BANKS	SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF CONDUITS RUNOFF TO MANHOLE, SEWER SYSTEM OR STABILIZED OUTFALL LOCATION USE CATCH BASINS TO COLLECT SEDIMENT
36	CATCH BASIN, DOWN INLET	COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET
54	SILT FENCE	USES GEOTEXTILE FABRIC AND POSTS OR POLES. EASY TO CONSTRUCT AND LOCATE AS NECESSARY. (SEE DETAIL THIS SHEET)

P = PERMANENT, T = TEMPORARY
 TOTAL DISTURBED AREA = 14.35 AC (625,314 SF)

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND OR IF THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

3 working days
BEFORE ANY DIG
 BOSS ENGINEERING
 3121 E. GRAND RIVER AVE.
 (E-MAIL: beb@bosseng.com)
 (900) 246-6735 FAX (917) 548-1670

BOSS ENGINEERING
 ENGINEERS • SURVEYORS • PLANNERS
 LANDSCAPE ARCHITECTS

MISTY MEADOW
 PREPARED FOR: **GFG INVESTMENT PROPERTIES, LLC**
 15264 BAILEY
 TUCKER, GA 30086
 (770) 798-0076

SOIL EROSION CONTROL PLAN

NO.	DATE	REVISION	BY
1	4/20/16		KS

DESIGNED BY: KS
 DRAWN BY: KS
 CHECKED BY:
 SCALE 1" = 100'
 JOB NO. 15-179
 DATE 03/23/16
 SHEET NO. **6**

LIVINGSTON COUNTY SOIL EROSION PERMIT TEMPLATE
TEMPORARY CONTROLS AND SEQUENCE

- NOTIFY LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE 24 HOURS PRIOR TO START OF GRADE WORK.
- IN ACCORDANCE WITH PUBLIC ACT NO. 53, OF 1974 THE PERMIT HOLDER SHALL CALL MISS DIG FOR STAKING AND LOCATING OF UTILITIES, AT LEAST 72 HOURS IN ADVANCE OF THE START OF ANY WORK.

PERMITTING STANDARDS

- (IMPORTANT NOTICE) RETENTION/DETENTION PONDS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO THE START OF MASSIVE EARTH DISRUPTION. INGRESS/EGRESS MUST HAVE LARGE CRUSHED ROCK TO REDUCE THE TRACKING OF SOIL ONTO THE PUBLIC TRAFFIC AREAS. SEE DETAIL ITEMS BELOW.
- 36" M.D.O.T SPECIFICATION TYPE SILT FABRIC FENCE AS SHOWN ON PLANS SHALL BE PLACED AND MAINTAINED ALONG PERIMETER ON ALL LOW LYING AREAS OF THE CONSTRUCTION SITE TO FILTER RUNOFF BEFORE LEAVING PROJECT SITE.

- ALL TEMPORARY EROSION CONTROL DEVICES AS NOTED ON PLANS SHALL BE INSTALLED PRIOR TO THE START OF MASSIVE EARTH DISTRIBUTION.
- PLAN DOES DENOTE A DETAILED EROSION CONTROL DEVICE TO RESTRICT TRACKING OF MATERIAL ONTO THE HIGHWAY. STONE DIAPERS SHALL BE INSTALLED AT ALL INGRESS/EGRESS AREAS OF THE SITE PRIOR TO THE START OF MASSIVE EARTH DISRUPTION. DIAPERS SHALL BE OF CRUSHED STONE AND SHALL HAVE A MINIMUM LENGTH OF 100' LINEAL FEET.

RETENTION PONDS

- RETENTION/DETENTION/SEDIMENTATION PONDS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO THE START OF MASSIVE EARTH DISRUPTION.
- DETENTION POND OUTLETS SHALL BE OF THE STANDPIPE AND STONE FILTER SYSTEM, WITH TRASH SCREEN. OUTLET FLOW SHALL NOT EXCEED 0.20 CUBIC FEET OF WATER PER SECOND/PER ACRE. POND DIKES SHALL HAVE A MINIMUM OF ONE (1) FOOT OF FREEBOARD. AN EMERGENCY SPILLWAY SHALL BE CONSTRUCTED WITHIN THE FREEBOARD LEVEL.
- THE EMERGENCY SPILLWAY FROM THE DETENTION POND SHALL BE SODDED AND PEGGED, OR RIP RAPPED, 15 FEET PAST THE TOE OF THE SLOPE OF THE BERM.
- DIKES AND BERMS SHALL BE FREE OF ALL ORGANIC MATTER.
- RETENTION/DETENTION PONDS SHALL BE FENCED WITH A 4' CHAIN LINK FENCE, INCLUDING A 12' ACCESS GATE FOR MAINTENANCE UNLESS MINIMUM 5 FT. HORIZONTAL TO 1 FT. VERTICAL SIDE SLOPES ARE PROVIDED. THE FENCE SHALL BE INSTALLED AT THE OUTER PORTION OF THE BERM, TO ALLOW FOR MAINTENANCE WORK TO BE DONE INSIDE THE FENCE.
- ALL UNIMPROVED DISTURBED AREAS SHALL BE STRIPPED OF TOPSOIL WHICH WILL BE STORED ONSITE DURING THE EXCAVATING STAGE. TOPSOIL PILES SHALL BE SEEDED AND MULCHED, OR MATTED WITH STRAW IN THE NON-GROWING SEASON, IMMEDIATELY AFTER THE STRIPPING PROCESS IS COMPLETED, TO PREVENT WIND AND WATER EROSION.
- SOIL EROSION CONTROLS SHALL BE MONITORED DAILY BY THE ON-SITE ENGINEER, OR CONTRACTOR, WHICHEVER CASE APPLIES.

SLOPES AND DITCHES

- ON SITE DITCHES SHALL BE OF THE FLAT BOTTOM TYPE MINIMUM WIDTH OF 2' WITH A MINIMUM OF 4' HORIZONTAL TO 1' VERTICAL SIDE SLOPES, 4:1.
- DITCHES WITH STEEP SLOPES WILL NEED FLOW CHECKS TO PREVENT SCOURING OF THE DITCH BOTTOM. THESE SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER OR INSPECTOR.
- SLOPES IN EXCESS OF 4' HORIZONTAL TO 1' VERTICAL SHALL NOT BE USED EXCEPT WITH A MECHANICAL DEVICE SUCH AS A RETAINING WALL, TERRACING, OR OTHER PRIOR APPROVED DEVICE.
- ALL STORM WATER STRUCTURES, CATCH BASINS AND/OR MANHOLES, IF BLOCK, SHALL BE PLASTERED ON BOTH THE INSIDE AND OUTSIDE OF THE STRUCTURES. GROUTING AND POINTING WILL BE NECESSARY AT THE CASTING AND STRUCTURE JOINT TO PREVENT LEAKAGE AND THE RESULTING SOIL MOVEMENT, AROUND THE STRUCTURE.
- STORM WATER INLETS SHALL HAVE AS A TEMPORARY CONTROL A STRAW BALE BARRIER AND STONE FILTER INSTALLED AROUND THE INLET DURING CONSTRUCTION. AS AN ALTERNATIVE TO THE STRAW BALE BARRIER, A BURLAP AND PEA STONE FILTER MAY BE USED. THREE LAYERS OF BURLAP FIBER AND A FILTER OF PEA STONE MINIMUM 1 FT. IN DEPTH CAN BE USED. DUE TO THE POROSITY OF THE BURLAP FILTER THE MINIMUM OF 1 FT. OF STONE IS VERY IMPORTANT. THE CONTROL SHALL BE INSTALLED AS SOON AS THE STRUCTURE IS BUILT AND INSPECTED DAILY.
- BURLAP AND PEA STONE FILTERS WILL NEED TO BE CHANGED AFTER EACH RAINFALL.
- COUNTY CODE REQUIRES A MINIMUM PIPE SIZE OF 12" IN DIAMETER. IF SMALLER PIPE IS NEEDED FOR OUTLET PURPOSES THE 12" CAN BE BAFFLED TO THE CORRECT SIZE. ALL PIPE SHALL MEET THE 12" DIAMETER CODE SIZE.
- ALL STORM DRAIN OUTLETS 15" IN DIAMETER OR LARGER SHALL HAVE ANIMAL GUARDS INSTALLED TO PREVENT ENTRANCE TO THE SYSTEM.

- ALL STORM DRAIN OUTLETS THAT DO NOT EMPTY INTO THE RETENTION/DETENTION POND SHALL HAVE A TEMPORARY 5'X10'X3' SUMP INSTALLED AT THE TERMINATION OF THE STORM SEWER. UPON COMPLETION OF THE STABILIZATION WORK THE SUMP AREA SHALL BE FILLED AND RIP RAPPED WITH COBBLE STONE. SILT TRAPS SHALL BE INSPECTED AFTER EACH STORM.
- STORM WATER OUTLETS DO DENOTE RIP RAP. ALL OUTLETS SHALL BE RIP RAPPED OVER KEYED FILTER FABRIC WITH A MINIMUM OF 15 SQ. YARDS OF 6" OR LARGER COBBLE STONE.
- RIP RAP AS NOTED ON THE PLAN SHALL BE OF A FUNNEL SHAPE CONSTRUCTION, WIDTH SHALL INCREASE AS DISTANCE FROM THE OUTLET POINT INCREASES AT A 3:1 RATIO.
- RIP RAP SHALL BE OF COBBLE STONE, 6" IN DIAMETER OR LARGER. GROUTING MAY BE NECESSARY, AND SHALL BE A MINIMUM OF 6" IN DEPTH WITH THE COBBLE SET IN THE CEMENT SLURRY.
- STORM WATER OUTLET IS IN NEED OF A SPLASH BLOCK WHICH IS NOTED ON THE PLAN. INSTALL SPLASH BLOCK IF SLOPE OF THE PIPE IS 4% OR GREATER.
- IT WILL BE NECESSARY FOR THE DEVELOPER TO HAVE THE STORM DRAINAGE LINES CLEANED PRIOR TO FINAL INSPECTION BY THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE. IF REQUIRED, THIS WORK SHALL BE DONE BY A PROFESSIONAL SEWER CLEANING FIRM AND CERTIFIED IN WRITING BY THE PROJECT ENGINEER. ALL SUMPS AND TEMPORARY SILT TRAPS SHALL ALSO BE CLEANED AT THIS TIME.

STABILIZATION

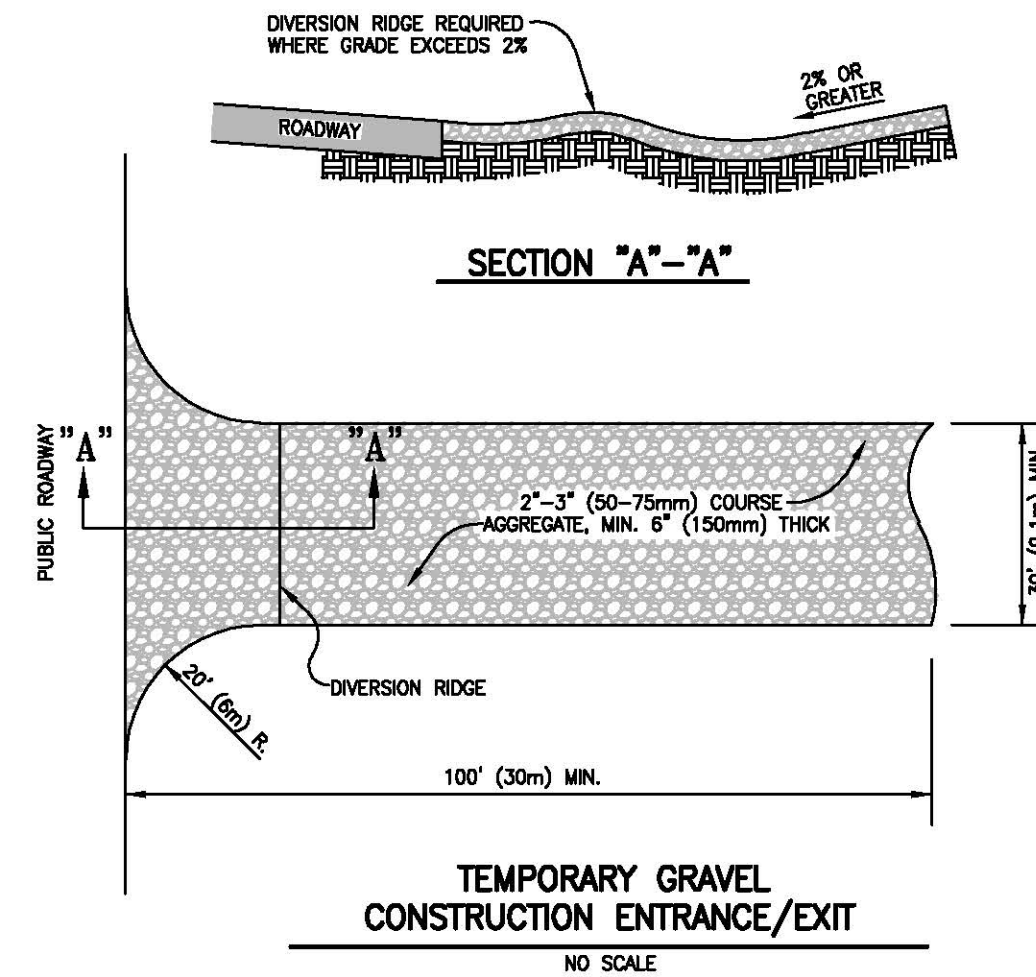
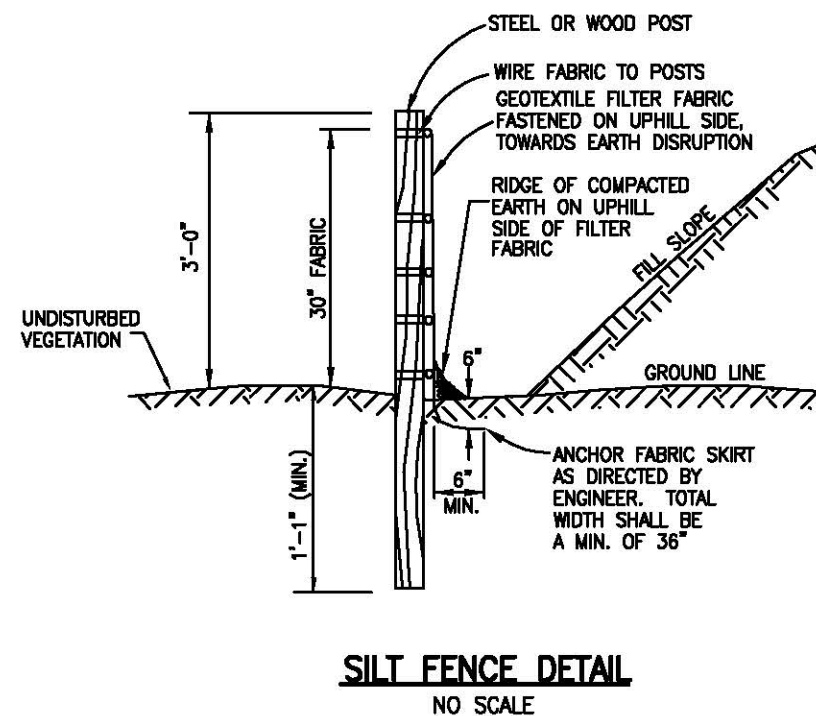
- ALL UNIMPROVED DISTURBED AREAS SHALL BE RE-TOP SOILED, WITH A MINIMUM OF 3" OF MATERIAL, SEEDED, MULCHED AND TACKED WITHIN 15 DAYS OF THE COMPLETION OF THE MASSIVE EARTH DISRUPTION. IN THE NON-GROWING SEASON STRAW MATTING WILL SUFFICE. HYDROSEEDING WILL BE AN ACCEPTABLE ALTERNATE FOR MULCHING. EXTREME CARE SHOULD BE EXERCISED IN SPRING AND FALL PERIODS AS A FROST WILL BREAK THE BIND OF THE HYDROSEEDING, WHICH WILL AFFECT THE EFFECTIVENESS OF THIS PROCEDURE.
- IN THE NON-GROWING SEASON, TEMPORARY STABILIZATION OF MASSIVELY EXPOSED AREAS FOR WINTER STABILIZATION SHALL BE DONE WITH STRAW MATTING.
- PERMIT FEES DURING THE WINTER PERIOD OF NON-CONSTRUCTION, (DECEMBER 1 THROUGH MARCH 31), SHALL NOT BE IMPOSED IF THE PERMIT HOLDER TEMPORARILY STABILIZES THE EXPOSED AREAS WITH STRAW MATTING, AND OTHER APPROVED CONTROLS, AND OBTAINS A WINTER STABILIZATION CERTIFICATE FROM THIS OFFICE.
- PERIODIC INSPECTIONS WILL BE MADE THROUGHOUT THE COURSE OF THE PROJECT. IT WILL BE THE RESPONSIBILITY OF THE MANAGERS OF THE PROJECT TO CONTACT THIS OFFICE FOR THE FINAL INSPECTION AT THE END OF THE PROJECT.
- THIS COMMERCIAL PERMIT IS VALID FOR THE MASS EARTH MOVEMENT, THE INSTALLATION OF ROADS, DRAINS, AND UTILITIES AND IS NOT FOR ANY SINGLE FAMILY RESIDENCE. ALL RESIDENTIAL BUILDERS WILL NEED TO SECURE WAIVERS AND OR PERMITS AS NECESSARY FOR EACH LOT IN THIS DEVELOPMENT AT THE TIME APPLICATION FOR SINGLE FAMILY RESIDENCE IS MADE.
- THE ISSUING BUILDING DEPARTMENT SHALL NOT ISSUE THE CERTIFICATE OF OCCUPANCY UNTIL THE FINAL INSPECTION LETTER FROM THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE HAS BEEN OBTAINED.
- PER THE LIVINGSTON COUNTY DRAIN COMMISSIONER THE SEEDING, FERTILIZER AND MULCH MINIMUM QUANTITIES SHALL BE AS FOLLOWS:
 TOP-SOIL 3" IN DEPTH
 GRASS SEED 210 LBS. PER ACRE
 FERTILIZER 150 LBS. PER ACRE
 STRAW MULCH 3" IN DEPTH 1.5 TO 2 TONS PER ACRE (ALL MULCHING MUST HAVE A TIE DOWN, SUCH AS TACKIFIER, NET BINDING, ETC.)
- HYDRO-SEEDING HYDRO-SEEDING IS NOT ACCEPTABLE FOR SLOPES EXCEEDING 1%, IN SUCH CASES STABILIZATION SHALL BE DONE WITH SEED AND STRAW MULCH WITH A TACKIFIER.

MAINTENANCE SCHEDULE FOR SOIL EROSION CONTROLS

- SILT FENCE SHALL BE INSPECTED WEEKLY AND AFTER EACH MAJOR STORM EVENT. MAINTENANCE SHALL INCLUDE REMOVAL OF ACCUMULATED SILT AND REPLACEMENT OF TORN SECTIONS. SILT FENCE SHALL BE REMOVED WHEN ALL CONTRIBUTING AREAS HAVE BEEN STABILIZED.
- TRACKING PAD SHALL BE INSPECTED MONTHLY FOR ACCUMULATED DIRT. TRACKING PAD SHALL BE REPLACED WHEN THE STONES ARE CHOKED WITH DIRT. TRACKING PAD SHALL BE REMOVED IMMEDIATELY PRIOR TO THE FIRST COURSE OF ASPHALT BEING LAID.
- DETENTION/RETENTION POND SHALL BE INSPECTED QUARTERLY ON A PERMANENT BASIS. MAINTENANCE SHALL INCLUDE SEDIMENT REMOVAL, EMBANKMENT STABILIZATION AND MAINTAINING THE OUTLET STRUCTURE IN GOOD CONDITION. NO TREES SHALL BE ALLOWED TO GROW ON THE EMBANKMENT.
- COMMON AREAS SHALL BE STABILIZED NO LATER THAN 15 DAYS AFTER GRADE WORK, PURSUANT TO RULE 1709 (5).
- CATCH BASINS SHALL BE INSPECTED ANNUALLY FOR ACCUMULATION OF SEDIMENT. ALL SEDIMENT MUST BE REMOVED AND DISPOSED OF PROPERLY WHEN THE SUMP IS FULL.

CONTROLS & MEASURES NARRATIVE	
ACTIVITY	DESCRIPTION
MAINTAIN LANDSCAPING, REPLACE MULCH	COLLECT GRASS, TREE, AND SHRUB CLIPPINGS. DISPOSE IN APPROVED CONTAINER. REPLACE DEAD SOD, TREES AND SHRUBS.
CLEAN INLETS	REMOVE LITTER, SEDIMENT, AND DEBRIS. DISPOSE OF IN APPROVED LANDFILL.
COLLECT LITTER	DISPOSE OF WITH INLET DEBRIS.
SWEEP PARKING LOT	REMOVE MUD, DIRT, GREASE AND OIL WITH PERIODIC SWEEPING.
DUST CONTROL	SPRINKLE WATER AS NEEDED

CONTROLS & MEASURES POST CONSTRUCTION SEQUENCE				
ACTIVITY	DAILY	WEEKLY	MONTHLY	AS REQUIRED
MAINTAIN LANDSCAPING, REPLACE MULCH		X	X	X
CLEAN INLETS		X	X	X
COLLECT LITTER		X		X
SWEEP PAVED AREAS		X	X	X
SCRAPE PAVED AREAS	X			X



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY UTILITIES ARE FOUND AT A DEPTH OR LOCATION DIFFERENT FROM THAT SHOWN ON THE PLANS.

MISSISSIPPI REGISTERED PROFESSIONAL ENGINEER
 BEFORE MISS DIG
 1-800-482-7171

BOSS ENGINEERING
 ENGINEERS • SURVEYORS • PLANNERS
 LANDSCAPE ARCHITECTS

3121 E. GRAND RIVER AVE.
 (E-MAIL: beb@bosseng.com)
 (800) 246-6735 FAX (617) 548-1670

PROJECT: **MISTY MEADOW**
 PREPARED FOR: **GFG INVESTMENT PROPERTIES, LLC**
 15284 BAILEY
 TULSA, OK 74106
 (754) 758-0076

TITLE: **SOIL EROSION CONTROL DETAILS**

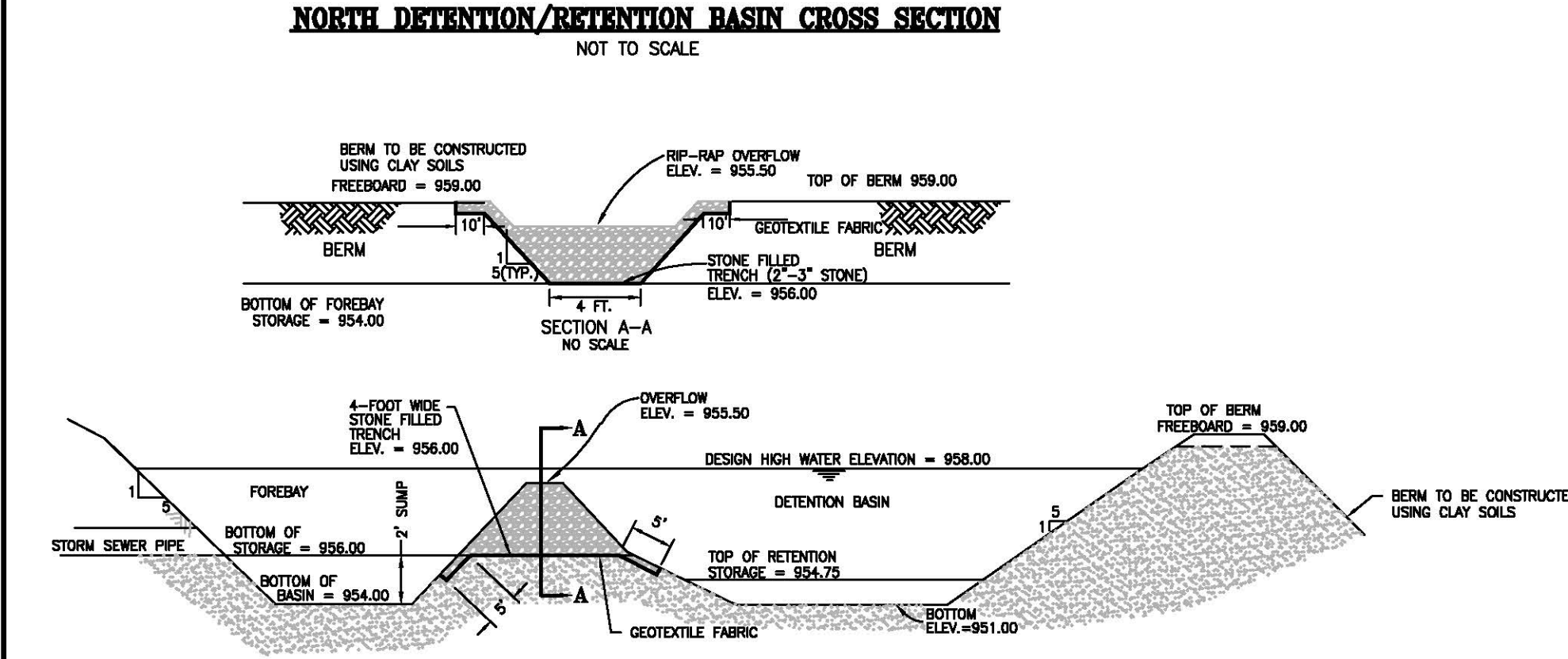
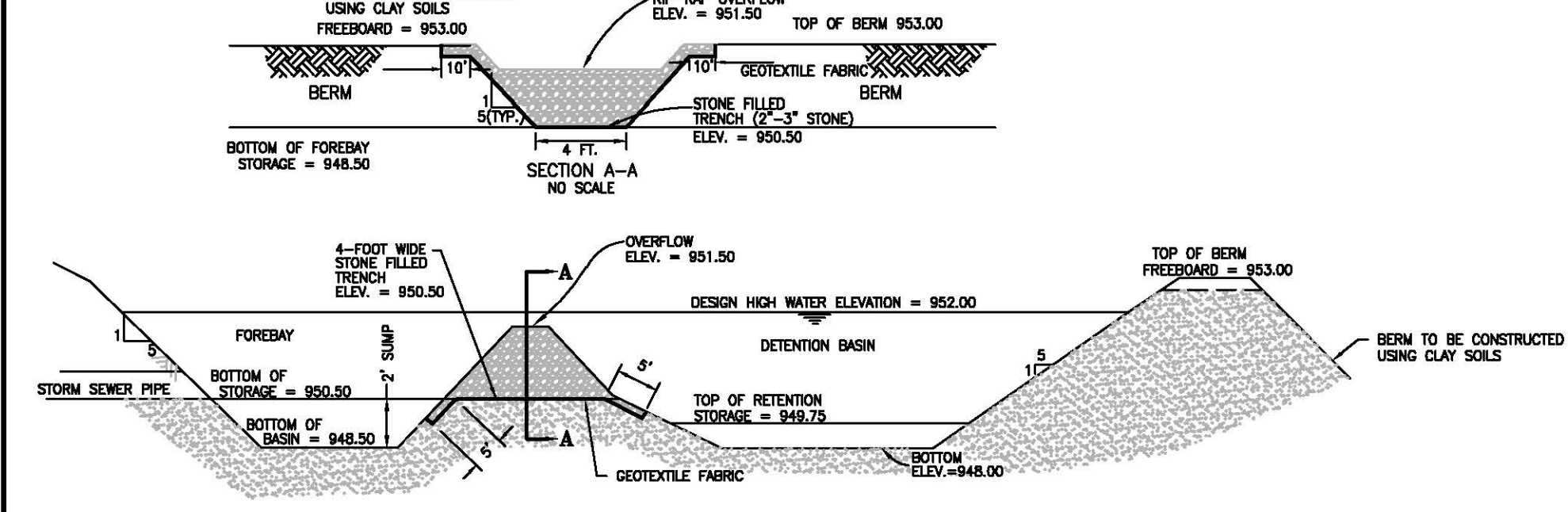
NO.	BY	DATE	REVISION
1	KS	4/20/16	DESIGNED BY
1	KS	4/20/16	DRAWN BY
1	KS	4/20/16	CHECKED BY
1	KS	4/20/16	SCALE
1	KS	4/20/16	JOB NO. 15-179
1	KS	4/20/16	DATE 03/23/16
1	KS	4/20/16	SHEET NO.

STORM SEWER DESIGN COMPUTATIONS

PROJECT: LAND DIVISION & PRIVATE ROAD
LOCATION: LIVINGSTON COUNTY

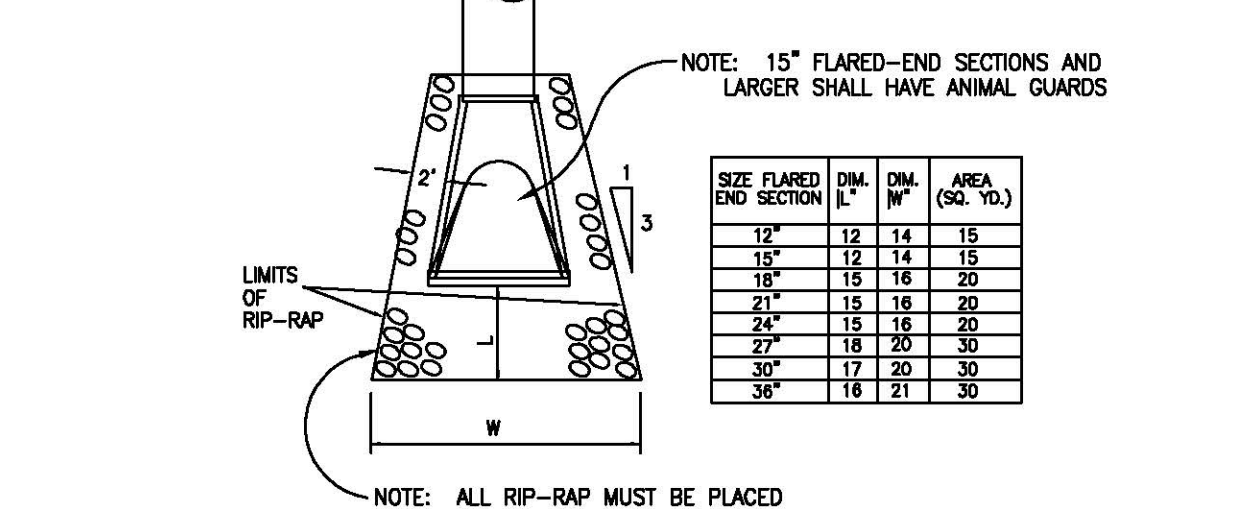
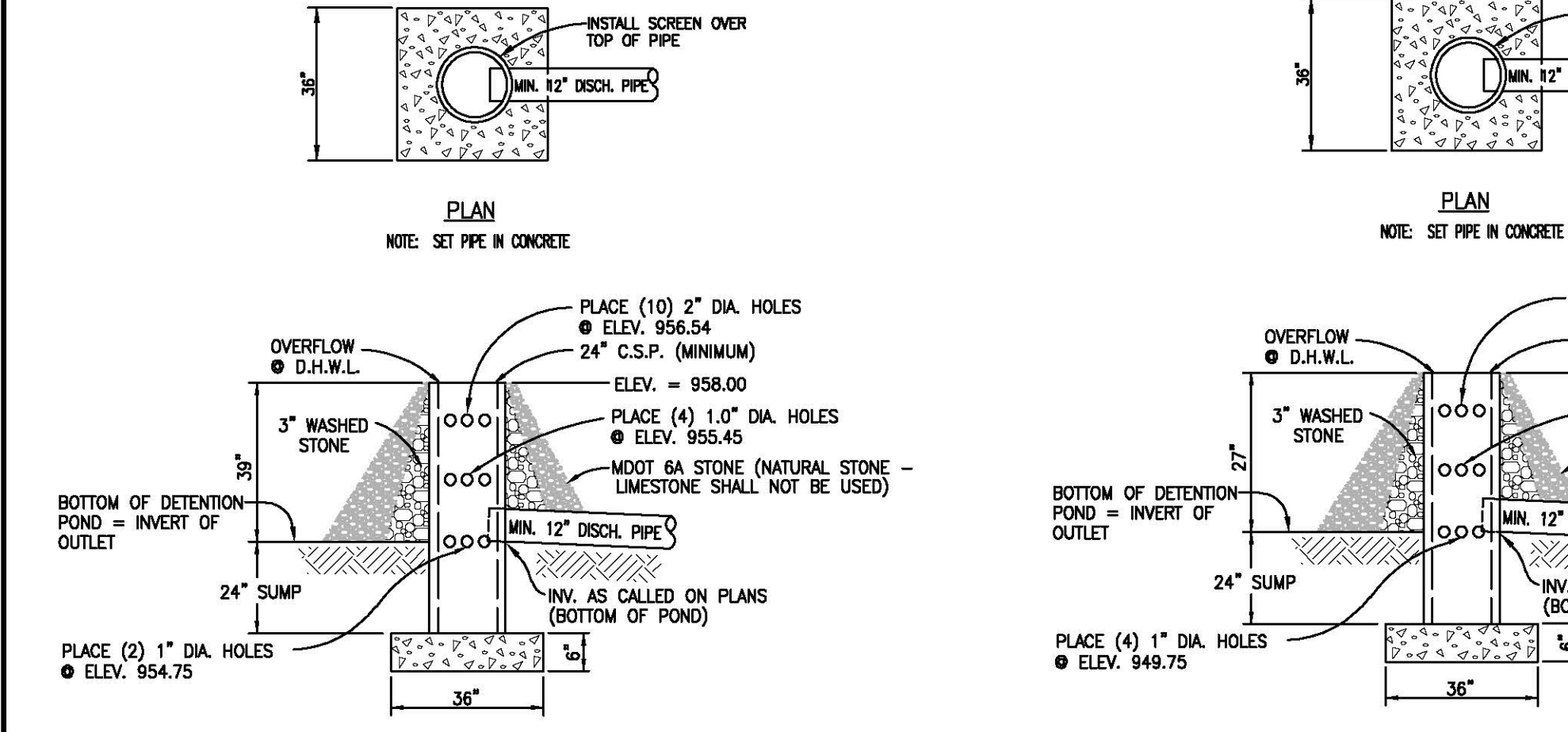
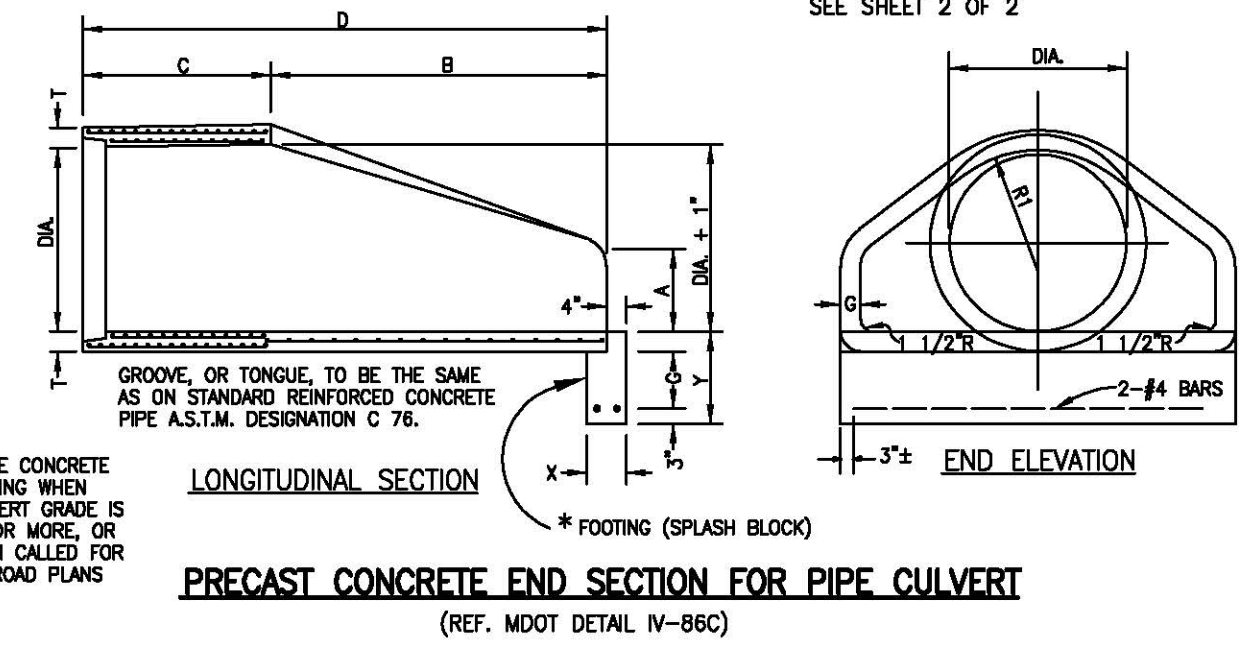
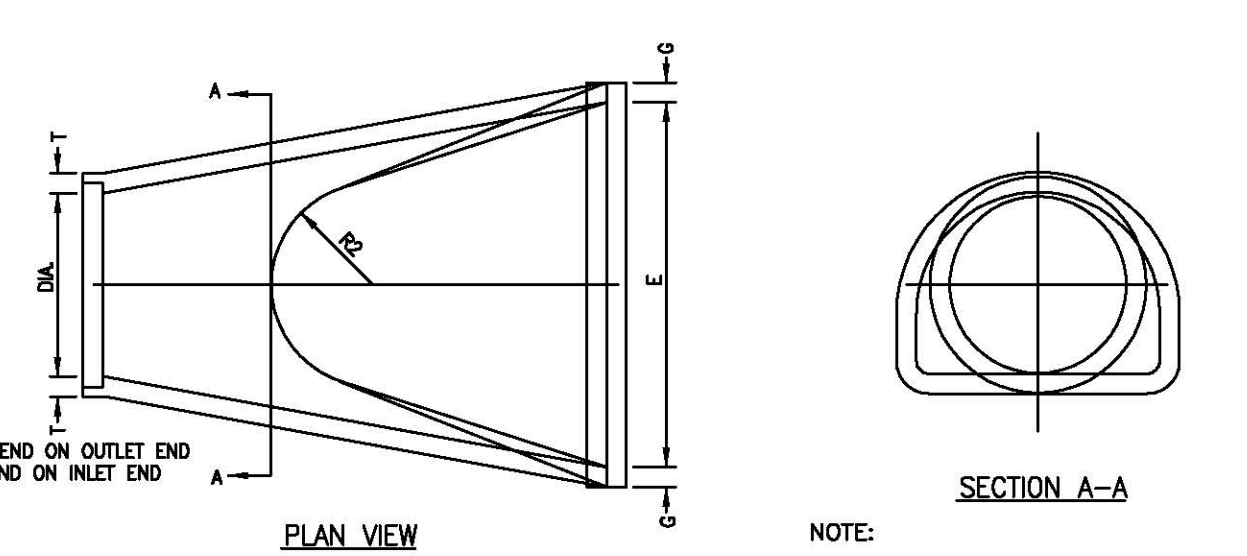
DATE: 3-9-2016
DESIGNER: KS

FROM	TO	DRAIN AREA	ACRES	AREA IMPERV	AREA PERV	RUNOFF COEFF	EQUIV. AREA A * C	INTENSITY I	TIME OF CONC. Tc	ADD'L RUNOFF Q	RUNOFF (CFS)	PIPE LENGTH (LF)	PIPE DIA. (IN)	VELOCITY FLOWING FULL	HYDRAULIC GRADIENT SLOPE %	ACTUAL SLOPE	MANNING FLOW CAPACITY	MANNING'S VELOCITY (FT/SEC)	TIME (MIN)	HG ELEV. UPPER END	HG ELEV. LOWER END	RIM ELEV. UPPER END	INVERT UPPER END	INVERT LOWER END	DROP DISTANCE (FT)	RIM-INV > 1	RIM-INV > 1	PIPE COVER
ES10	ES09	D	0.95	0.53	0.42	0.59	0.56	4.38	15.00		2.46	95	18	1.39	0.05%	0.30%	5.77	3.26	0.49	971.95	971.66	974.60	970.75	970.46		3.86	2.65	2.36
ES08	ES07	C	1.74	0.53	1.21	0.41	0.72	4.38	15.00		3.15	66	12	4.01	0.78%	0.80%	3.20	4.07	0.27	971.55	971.02	974.25	970.75	970.22		3.50	2.70	2.50
ES12	ES11	E	2.78	0.45	2.33	0.31	0.87	4.38	15.00		3.82	18	15	3.11	0.35%	1.17%	7.01	5.71	0.05	974.90	974.69	975.83	973.90	973.69		1.93	0.93	0.68
ES14	ES13	E	2.15	0.48	1.67	0.36	0.76	4.38	15.00		3.34	18	15	2.72	0.27%	1.17%	7.01	5.71	0.05	974.90	974.69	975.83	973.90	973.69		1.93	0.93	0.68
ES04	ES03	B	8.27	0.62	7.65	0.25	2.08	4.38	15.00		9.12	113	18	5.16	0.75%	0.75%	9.12	5.16	0.36	953.20	952.35	956.00	952.00	951.15		4.00	2.80	2.50
OC02	ES01					0.00	0	4.38	15.00		1.86	358	12	2.37	0.27%	0.45%	2.40	3.05	1.96	950.55	948.94	952.00	949.75	948.14		2.25	1.45	1.25
OC06	ES05					0.00	0	4.38	15.00		1.53	153	12	1.94	0.18%	0.32%	2.02	2.57	0.99	955.55	955.06	958.00	954.75	954.26		3.25	2.45	2.25
ES16	ES15	H	0.58	0.13	0.45	0.36	0.20	4.38	15.00		0.89	64	12	1.14	0.06%	0.32%	2.02	2.57	0.41	982.63	982.43	983.75	981.83	981.63		1.92	1.12	0.92



DI	TD	ADMN	B	C	D	E	G	R1	R2	X	Y	APPROX. WT. LBS.
12"	2"	5"	23"	51"	74"	24"	2"	10-1/2"	9"	8"	18"	800
15"	2-1/4"	7"	27"	48"	75"	30"	2-1/4"	12-1/2"	11"	8"	18"	1100
18"	2-1/2"	11"	25"	48"	74"	36"	2-1/2"	15-1/2"	12"	8"	18"	1300
21"	2-3/4"	11"	33"	42"	75"	42"	2-3/4"	18-1/8"	13"	8"	18"	1500
24"	3"	12"	43"	32"	75"	48"	3"	18-3/8"	14"	8"	18"	1800
30"	3-1/2"	14"	53"	22"	75"	60"	3-1/2"	18-1/2"	15"	8"	18"	2400
36"	4"	17"	62"	37"	78"	72"	4"	24-5/8"	20"	8"	18"	4200
42"	4-1/2"	22"	62"	37"	99"	78"	4-1/2"	27-1/2"	22"	10"	24"	5600
48"	5"	24"	72"	28"	98"	84"	5"	28-1/2"	22"	10"	24"	7400
54"	5-1/2"	27"	80"	33-1/4-39"	98-1/4-100"	90"	5"	31"	10"	24"	8940	
60"	6"	30"	80"	36"	99"	96"	5"	31"	10"	24"	8730	
66"	6-1/2"	24"	72"-78"	21"-27"	99"	102"	5-1/2"	31"	12"	24"	10,630	
72"	7"	24"	78"	21"	99"	108"	6"	31"	12"	24"	12,520	
78"	7-1/2"	24"	78"	21"	99"	114"	6-1/2"	31"	12"	24"	14,430	
84"	8"	36"	90-1/2"	21"	111-1/2"	120"	6-1/2"	31"	12"	24"	18,160	

* TOLERANCE ± 1"
□ RADIUS AS FURNISHED BY THE MANUFACTURER
WEIGHT SHOWN DOES NOT INCLUDE CONCRETE FOOTING



SUMMARY OF REQUIRED STANPIPE HOLES

ELEVATION	# OF HOLES	DIAMETER OF HOLES
955.95	14	1 INCHES
950.19	4	1 INCHES
949.75	4	1 INCHES

STORM WATER CALCULATION NARRATIVE
THE CALCULATIONS INCLUDE PRE-DEVELOPMENT AND POST-DEVELOPMENT 100-YEAR DETENTION BASIN STORAGE REGULATIONS. THE DIFFERENCE BETWEEN THE TWO IS ACCOUNTED FOR IN RETENTION VOLUME TO ENSURE THAT NO INCREASE IN STORM WATER IS LEAVING THE SITE.

NORTH DETENTION/RETENTION BASIN CALCULATIONS

LIVINGSTON COUNTY DETENTION BASIN CALCULATIONS

EXISTING CONDITIONS

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
0.00	0.9	0.00
0.00	0.7	0.00
18.94	0.2	3.73

COMPOUND C: TOTAL DRAINAGE AREA: 18.94 ACRES

K1 = AxC (Design Constant): 3.728

Qa = MAX ALLOW OUTFLOW (0.10 CFS / ACRE): 1.884 CFS

DURATION (MINUTES)	DURATION (SECONDS)	INTENSITY (IN/HR)	INCHES	INFLOW VOLUME (MGALS)	OUTFLOW (MGALS)	STORAGE VOLUME (MGALS)
5	300	9.17	2750	13328	559	12788
10	600	7.86	4714	22687	1118	21769
15	900	6.88	6188	29987	1978	28009
20	1200	6.11	7333	35549	2237	33312
30	1800	5.00	9000	43652	3355	40297
60	3600	3.34	11947	58460	6710	51750
90	5400	2.39	12913	65812	10089	55723
120	7200	1.90	13555	70950	13421	57529
180	10800	1.34	14488	74511	20135	54376

PROPOSED 100 YEAR DETENTION VOLUME = 5874 CF

PROPOSED CONDITIONS

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
1.19	0.9	1.25
0.37	0.7	0.26
16.88	0.2	3.38

COMPOUND C: TOTAL DRAINAGE AREA: 18.64 ACRES

K1 = AxC (Design Constant): 4.854

Qa = MAX ALLOW OUTFLOW (0.10 CFS / ACRE): 1.884 CFS

DURATION (MINUTES)	DURATION (SECONDS)	INTENSITY (IN/HR)	INCHES	INFLOW VOLUME (MGALS)	OUTFLOW (MGALS)	STORAGE VOLUME (MGALS)
5	300	9.17	2750	13328	559	12788
10	600	7.86	4714	22687	1118	21769
15	900	6.88	6188	29987	1978	28009
20	1200	6.11	7333	35549	2237	33312
30	1800	5.00	9000	43652	3355	40297
60	3600	3.34	11947	58460	6710	51750
90	5400	2.39	12913	65812	10089	55723
120	7200	1.90	13555	70950	13421	57529
180	10800	1.34	14488	74511	20135	54376

PROPOSED 100 YEAR DETENTION VOLUME = 5278 CF

REQUIRED 100 YEAR DETENTION VOLUME = 38074 CF

REQUIRED 100 YEAR RETENTION VOLUME = 14883 CF

FOREBAY VOLUME (VF) = 5% OF THE 100-YEAR STORM VOLUME BASED ON THE AREA TRIBUTARY TO THE INLET

VF = (0.05 x V100) / 2.308 = 2308 CF

FOREBAY STORAGE VOLUME REQUIRED = 2308 CF

FOREBAY STORAGE VOLUME PROVIDED:

ELEV.	AREA	VOLUME	CUMULATIVE VOLUME
952	2538	2241	2241
951	1793	799	1442
950	1404	351	351
949.8	0	0	0

BANKFULL FLOOD VOLUME = 19336 CF

FIRST FLUSH VOLUME = 6766 CF

BASIN STORAGE PROVIDED

ELEV.	AREA	DEPTH	VOLUME	TOTAL VOLUME
953	29927	1	23,523	23,523
952	20,119	1	18,847	38,890
951	11,573	1	10,380	49,270
950	10,103	0.25	3,125	52,395
949.75	14802	0	0	52,395

949.75: 14802 @ 0.75: 10,319 @ 10.78: 1,178 PERMANENT WATER ELEVATION

BOTTOM OF BASIN = 949.75

FIRST FLUSH: X100 = 950.19

BANKFULL: X100 = 950.95

100 YEAR: X100 = 951.95

OUTLET CONTROL STRUCTURE

FIRST FLUSH OF RAINFALL: THE AVERAGE ALLOWABLE RELEASE RATE FOR RUNOFF IS 0.5" OVER AREA OF SITE IN 24 HRS.

Qa = (0.5 x 1.04 HRS) x (1 HR / 3600 SEC) = 0.019 CFS

PLACE OPENINGS IN STANPIPE AT BOTTOM OF BASIN = 348.75

HEAD = h = X100 - BOTTOM BASIN ELEV. = 0.44 FT

A = Qa / (0.62 x (2 x 32 x h)^1.49) = 0.024 SF

THEREFORE, USE THE FOLLOWING NUMBER OF 4.00 HOLES AT ELEV. 949.75: 1 INCH DIAMETER HOLES

QaMAX = 0.161 CFS

BANKFULL FLOOD: FOR THE ALLOWABLE RELEASE RATE OF 24-H HOURS, CHECK THE DISCHARGE THROUGH THE FIRST FLUSH ORIFICE TO SEE IF ADDITIONAL HOLES ARE NECESSARY.

HEAD = h = X100 - BOTTOM OF BASIN = 1.20 FT

Qa = (0.62 x HOLEs x (AREA EACH HOLE) x (2 x 32 x h)^1.49) = 44.99 HRS @ 0.119 CFS

T = (1 SEC / Qa) x V x (1 HR / 3600 SEC) = 61.66 HRS

BECAUSE THE HOLDING TIME EXCEEDS 40 HRS, ADDITIONAL ORIFICES IN THE STANPIPE ARE REQUIRED.

VOLUME THROUGH V100 Q100-HRS=8000SEC-HR = 10261 CF

REMAINING VOL. = 8975 CF

QBF = REMAINING VOLUME x (1 / 24 HRS) x (1 / 3600 SEC) = 0.104 CFS

PLACE OPENINGS AT FIRST FLUSH ELEVATION = 950.19

HEAD = hF = XBF - XFF = 0.76 FT

A = QBF / (0.62 x (2 x 32 x hF)^1.49) = 0.024 SF

THEREFORE, USE THE FOLLOWING NUMBER OF 14 HOLES AT ELEV. 950.95: 2 INCH DIAMETER HOLES

QaMAX = 0.144 CFS

100 YEAR FLOOD: Qa = ALLOWABLE RELEASE RATE x AREA SITE IN ACRES = 1.884 CFS

Qa = QaMAX + QaMAX = 0.31 CFS

Qa = (QaMAX + QaMAX) = 1.55 CFS

A = Qa / (0.62 x (2 x 32 x h)^1.49) = 0.022 SF

THEREFORE, USE THE FOLLOWING NUMBER OF 2 INCH DIAMETER HOLES AT ELEV. 950.95: 2 INCH DIAMETER HOLES

Qa = 1.525 CFS

Qa = QaMAX + QaMAX = 1.830 CFS

SOUTH DETENTION/RETENTION BASIN CALCULATIONS

LIVINGSTON COUNTY DETENTION BASIN CALCULATIONS

EXISTING CONDITIONS

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
0.00	0.9	0.00
0.00	0.7	0.00
14.90	0.2	2.90

COMPOUND C: TOTAL DRAINAGE AREA: 14.91 ACRES

K1 = AxC (Design Constant): 3.081

Qa = MAX ALLOW OUTFLOW (0.10 CFS / ACRE): 1.491 CFS

DURATION (MINUTES)	DURATION (SECONDS)	INTENSITY (IN/HR)	INCHES	INFLOW VOLUME (MGALS)	OUTFLOW (MGALS)	STORAGE VOLUME (MGALS)
5	300	9.17	2750	13328	438	7989
10	600	7.86	4714	22687	877	15980
15	900	6.88	6188	29987	1315	21989
20	1200	6.11	7333	35549	1733	27946
30	1800	5.00	9000	43652	2540	34412
60	3600	3.34	11947	58460	5080	43380
90	5400	2.39	12913	65812	7620	48792
120	7200	1.90	13555	70950	10160	52630
180	10800	1.34	14488	74511	15240	59271

EXISTING 100 YEAR DETENTION VOLUME = 3178 CF

PROPOSED CONDITIONS

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
1.28	0.9	1.15
0.52	0.7	0.36
12.83	0.2	2.57

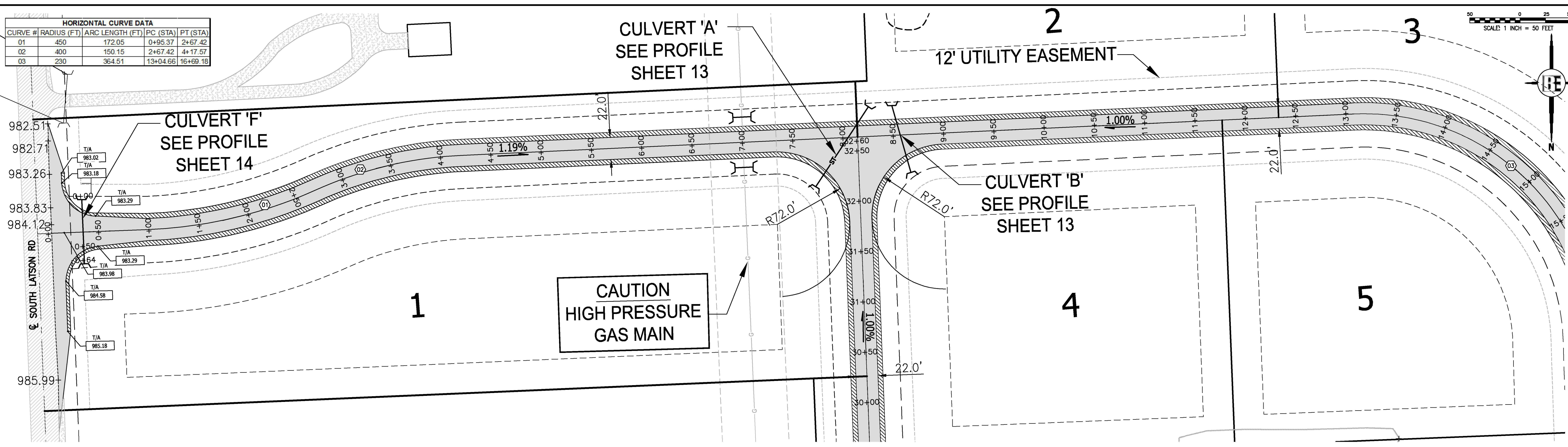
COMPOUND C: TOTAL DRAINAGE AREA: 14.61 ACRES

K1 = AxC (Design Constant): 4.958

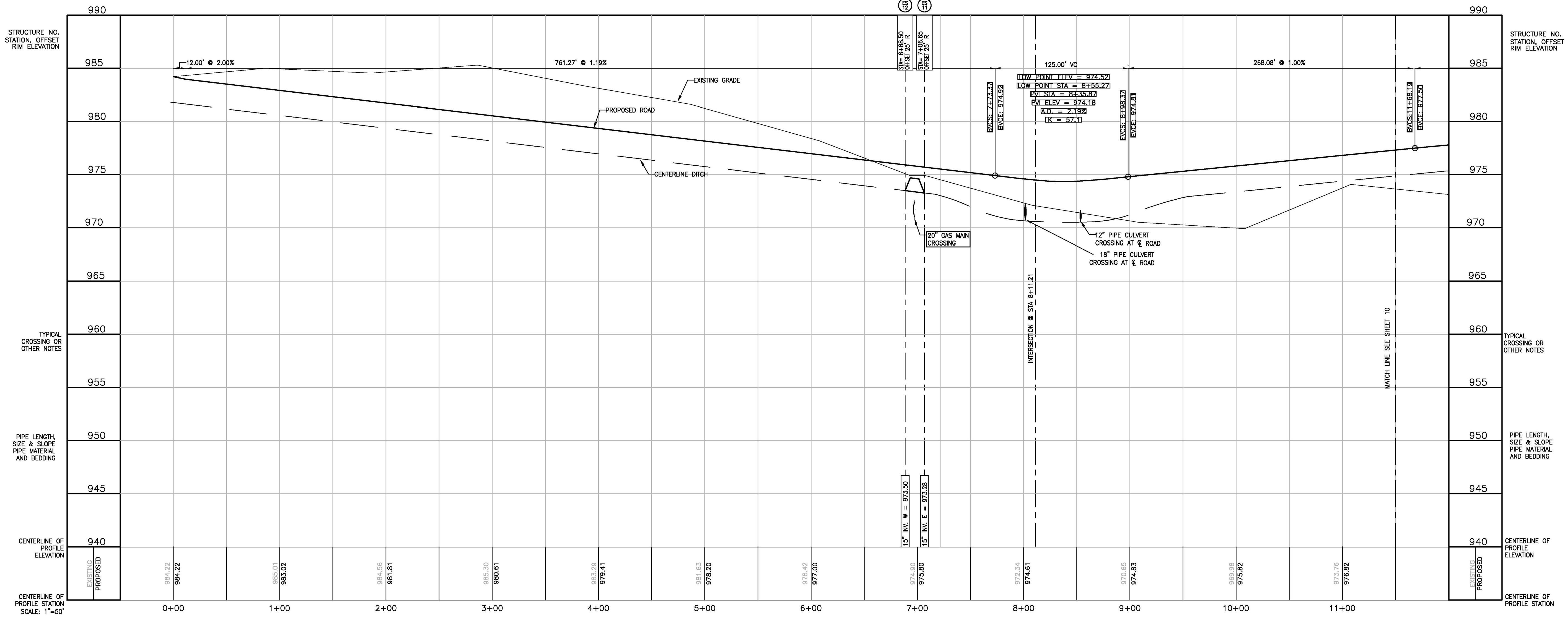
Qa = MAX ALLOW OUTFLOW (0.10 CFS / ACRE): 1.491 CFS

DURATION (MINUTES)	DURATION (SECONDS)	INTENSITY (IN/HR)	INCHES	INFLOW VOLUME (MGALS)	OUTFLOW (MGALS)	STORAGE VOLUME (MGALS)
5	300	9.17	2750	11250	438	10311
10	600	7.86	4714	19285	877	18408
15	900	6.88	6188	25372	1315	23957
20	1200	6.11	7333	29899	1753	28146
30	1800	5.00	9000	35817	2540	33277
60	3600	3.34	11947	47645	5080	42565
90	5400	2.39	12913	52625	7620	45005
120	7200	1.90	13555	56811	10160	47151
180	10800	1.34	14488	59271	15240	44031

HORIZONTAL CURVE DATA				
CURVE #	RADIUS (FT)	ARC LENGTH (FT)	PC (STA)	PT (STA)
01	450	172.05	0+95.37	2+67.42
02	400	150.15	2+67.42	4+17.57
03	230	364.51	13+04.66	16+69.18



MISTY MEADOW DRIVE - STA 0+00 TO 11+50



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY UTILITIES ARE FOUND THAT DO NOT MATCH THE INFORMATION SHOWN ON THESE DRAWINGS.

3 WORKING DAYS BEFORE ANY CONSTRUCTION

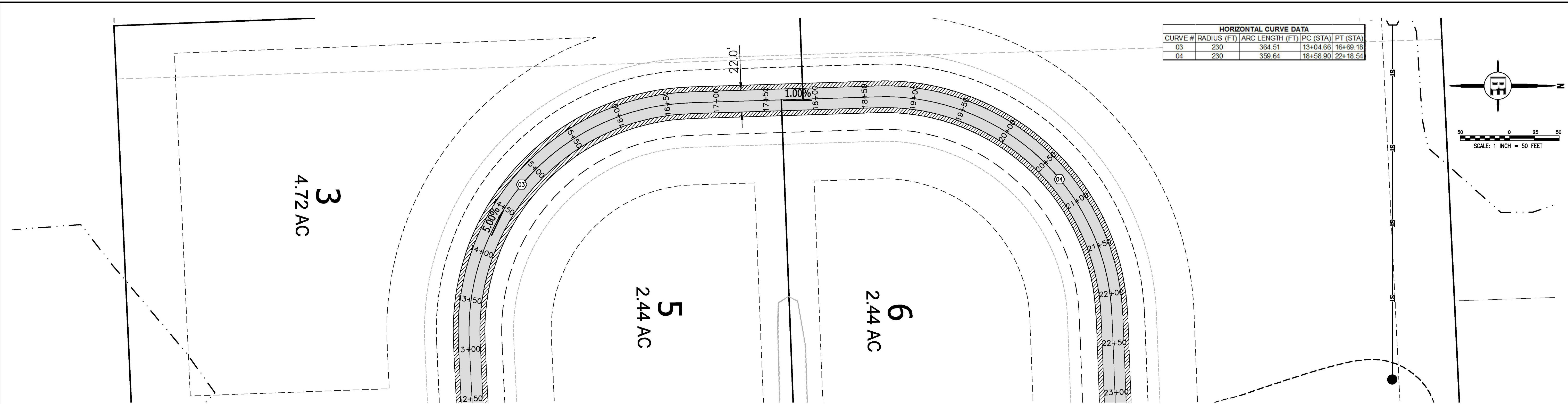
BOSS ENGINEERING, LLC
 ENGINEERS • SURVEYORS • PLANNERS
 LANDSCAPE ARCHITECTS
 3121 E. GRAND RIVER AVE.
 (E-MAIL: be@bosseng.com)
 (800) 248-8733 FAX (517) 548-1670

BOSS ENGINEERING
 ENGINEERS • SURVEYORS • PLANNERS
 LANDSCAPE ARCHITECTS

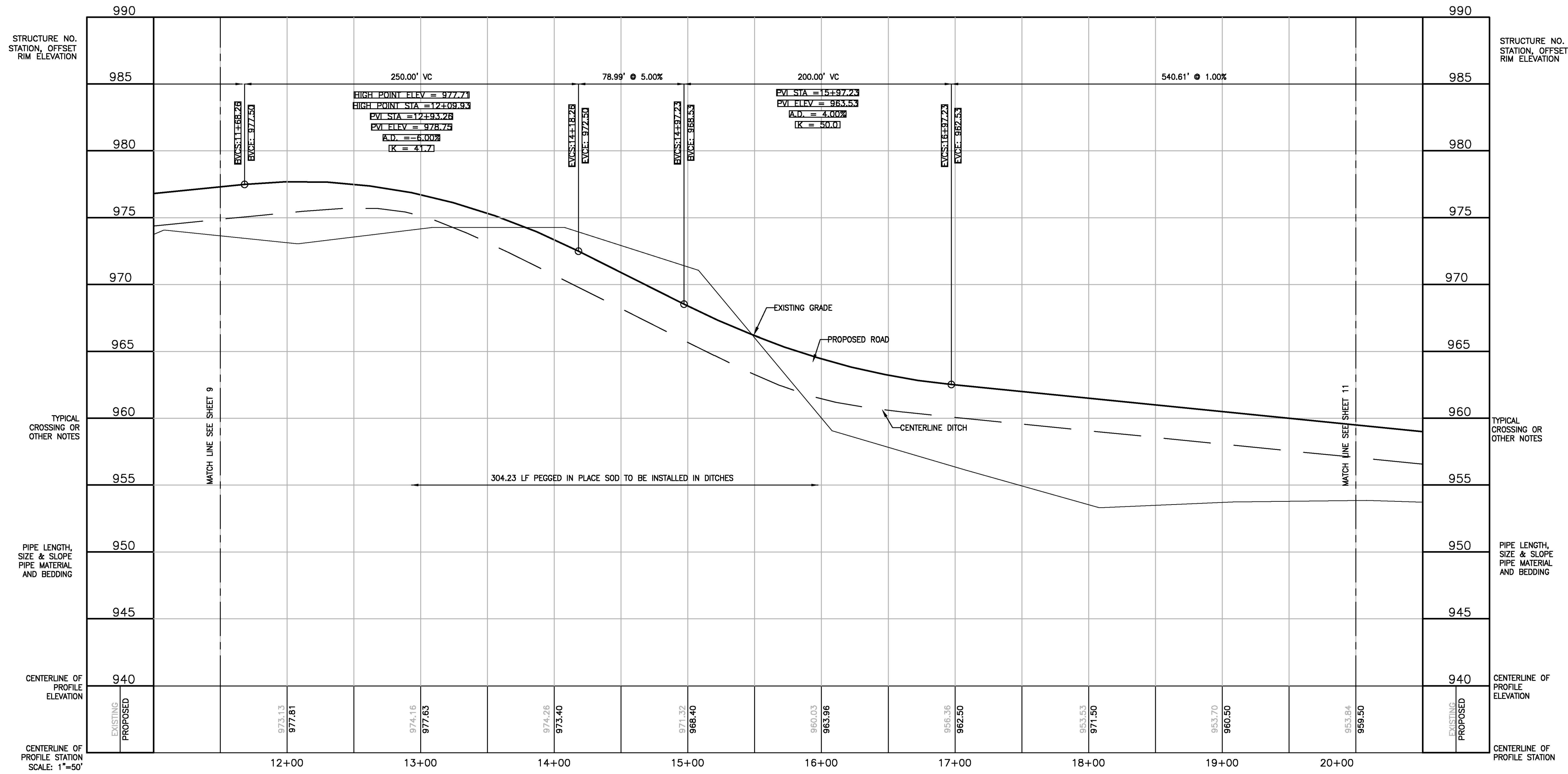
MISTY MEADOW
 PREPARED FOR: **GFG INVESTMENT PROPERTIES, LLC**
 PROJECT: **PRIVATE ROAD PROFILE**

DESIGNED BY: KS
 DRAWN BY: KS
 CHECKED BY:

SCALE: 1" = 50'
 JOB NO. 15-179
 DATE: 3/23/2016
 SHEET NO. **9**



MISTY MEADOW DRIVE - STA 11+50 TO 20+00



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND. THE ENGINEER SHALL BE RESPONSIBLE FOR THE LOCATION AND DEPTH OF ALL UTILITIES SHOWN ON THESE PLANS.

BOSS ENGINEERING
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS
3121 E. GRAND RIVER AVE.
(E-MAIL: bossengineering.com)
(800) 246-6735 FAX (317) 548-1670

BEFORE ANY CONSTRUCTION
DATE: 3/23/2016
BY: [Signature]

MISTY MEADOW
PROJECT
PREPARED FOR: **GFG INVESTMENT PROPERTIES, LLC**
15264 BAILEY
TULSA, OK 74106
(734) 796-0076

PRIVATE ROAD PROFILE
TITLE

NO.	BY	REVISION	DATE
1	KS	TOWNSHIP REVIEW	4/20/16

DESIGNED BY: KS
DRAWN BY: KS
CHECKED BY:
SCALE: 1" = 50'
JOB NO. 15-179
DATE: 3/23/2016
SHEET NO. 10

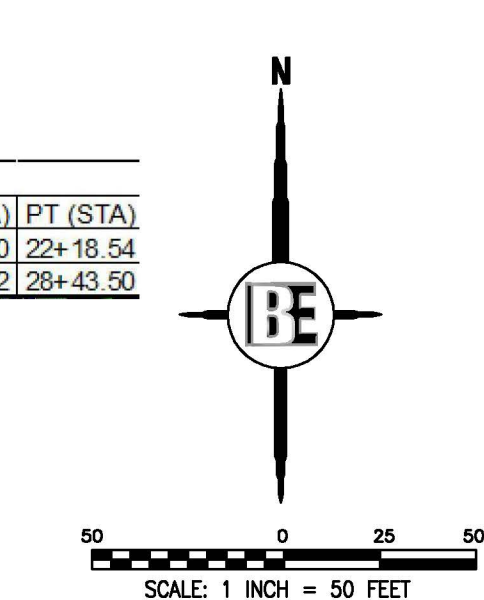
9
12.85 AC

6
2.44 AC

7
2.44 AC

CULVERT 'C'
SEE PROFILE
SHEET 13

HORIZONTAL CURVE DATA				
CURVE #	RADIUS (FT)	ARC LENGTH (FT)	PC (STA)	PT (STA)
04	230	359.64	18+58.90	22+18.54
05	230	361.28	24+82.22	28+43.50

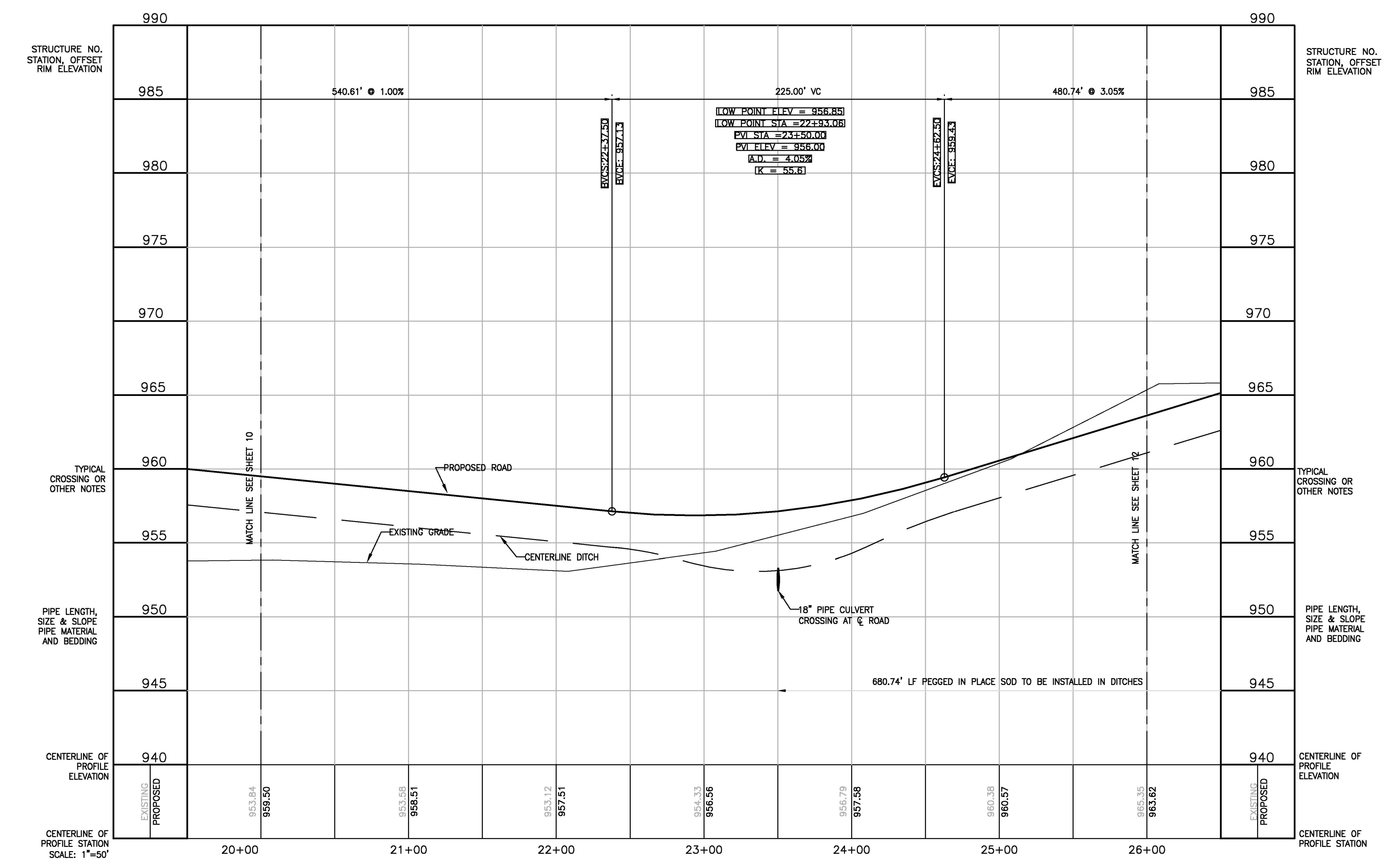


THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND. THE ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL UTILITIES SHOWN ON THESE PLANS.

BEFORE ANY CONSTRUCTION BEGINS, THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES SHOWN ON THESE PLANS.

BOSS ENGINEERING
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS
3121 E. GRAND RIVER AVE.
(E-MAIL: bob@bosseng.com)
(800) 246-6735 FAX (317) 548-1670

MISTY MEADOW DRIVE - STA 20+00 TO 26+00



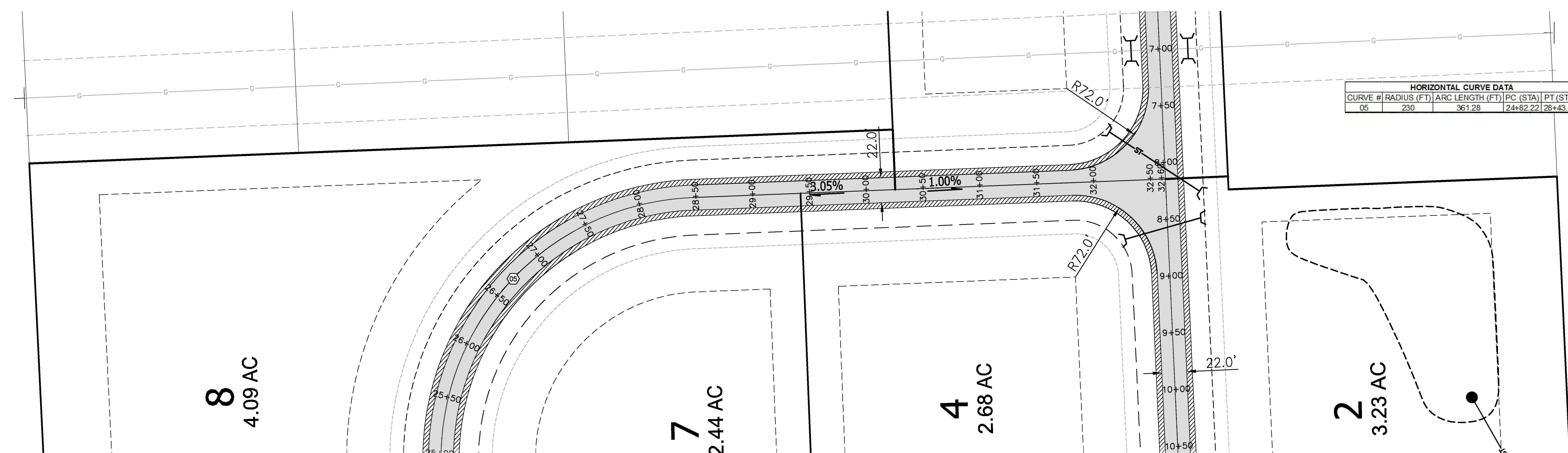
BOSS ENGINEERING
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS
3121 E. GRAND RIVER AVE.
(E-MAIL: bob@bosseng.com)
(800) 246-6735 FAX (317) 548-1670

PROJECT: **MISTY MEADOW**
PREPARED FOR: **GFG INVESTMENT PROPERTIES, LLC**
15284 BAILEY
TULSA, OK 74106
(734) 795-0076

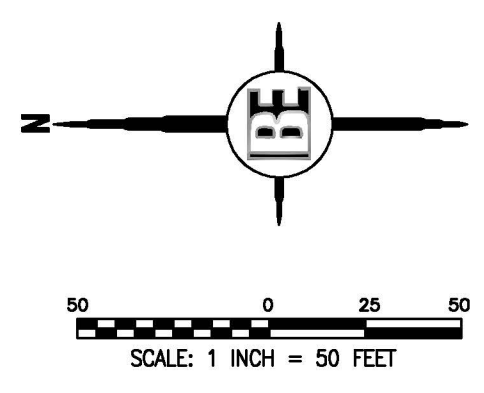
TITLE: **PRIVATE ROAD PROFILE**

NO.	BY	REVISION	DATE
1	KS	TOWNSHIP REVIEW	4/20/16

DESIGNED BY: KS
DRAWN BY: KS
CHECKED BY:
SCALE: 1" = 50'
JOB NO. 15-179
DATE: 3/23/2016
SHEET NO.



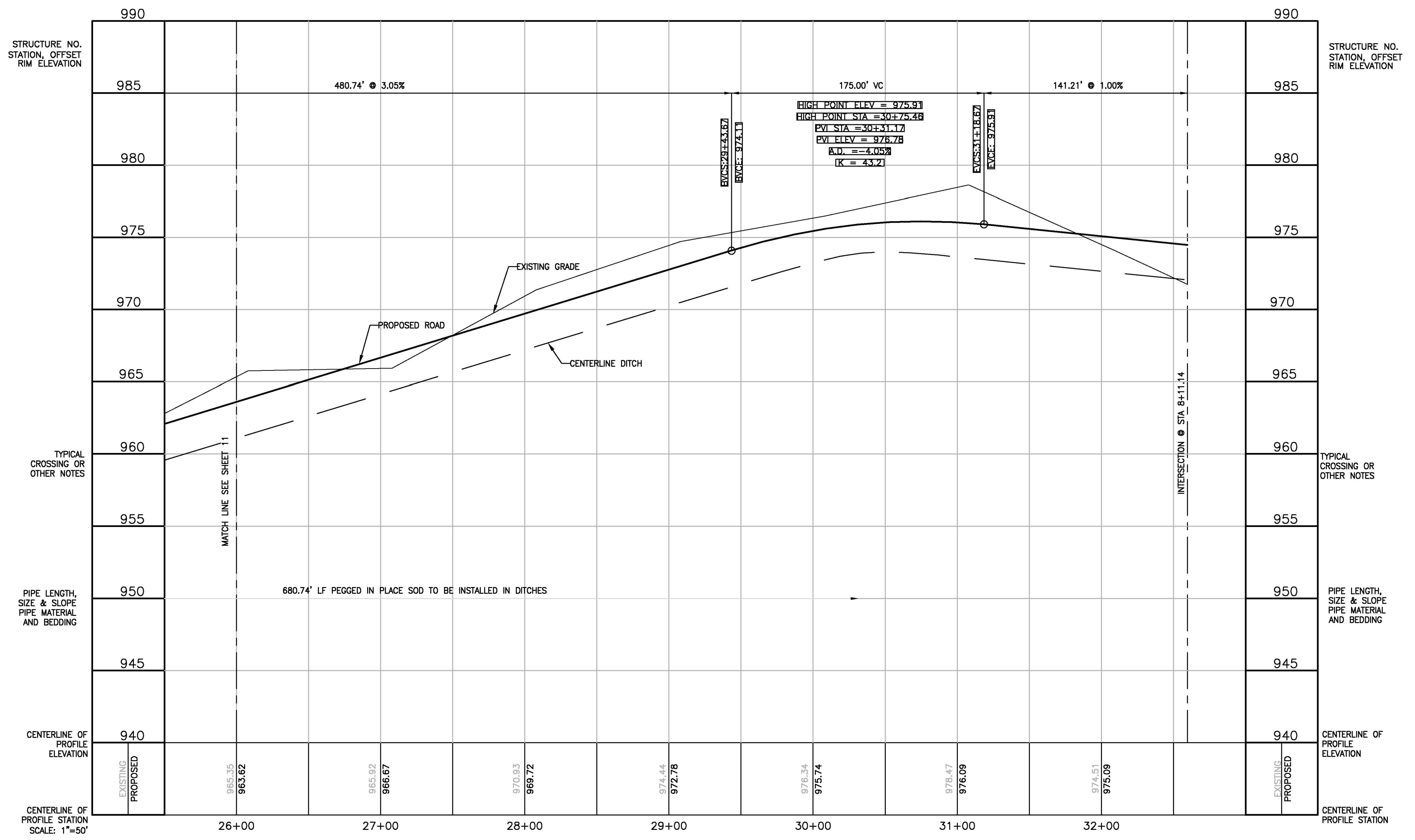
HORIZONTAL CURVE DATA			
CURVE #	RADIUS (FT)	ARC LENGTH (FT)	PC (STA) PT (STA)
05	230	361.28	24+82.22 28+43.50



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE LOCATION OR DEPTH OF UTILITIES SHOWN ON THESE PLANS.

BOSS ENGINEERING
 ENGINEERS • SURVEYORS • PLANNERS
 LANDSCAPE ARCHITECTS
 3121 E. GRAND RIVER AVE.
 (E-MAIL: beb@bosseng.com)
 (800) 246-6735 FAX (317) 548-1670

MISTY MEADOW DRIVE - STA 26+00 TO INTERSECTION



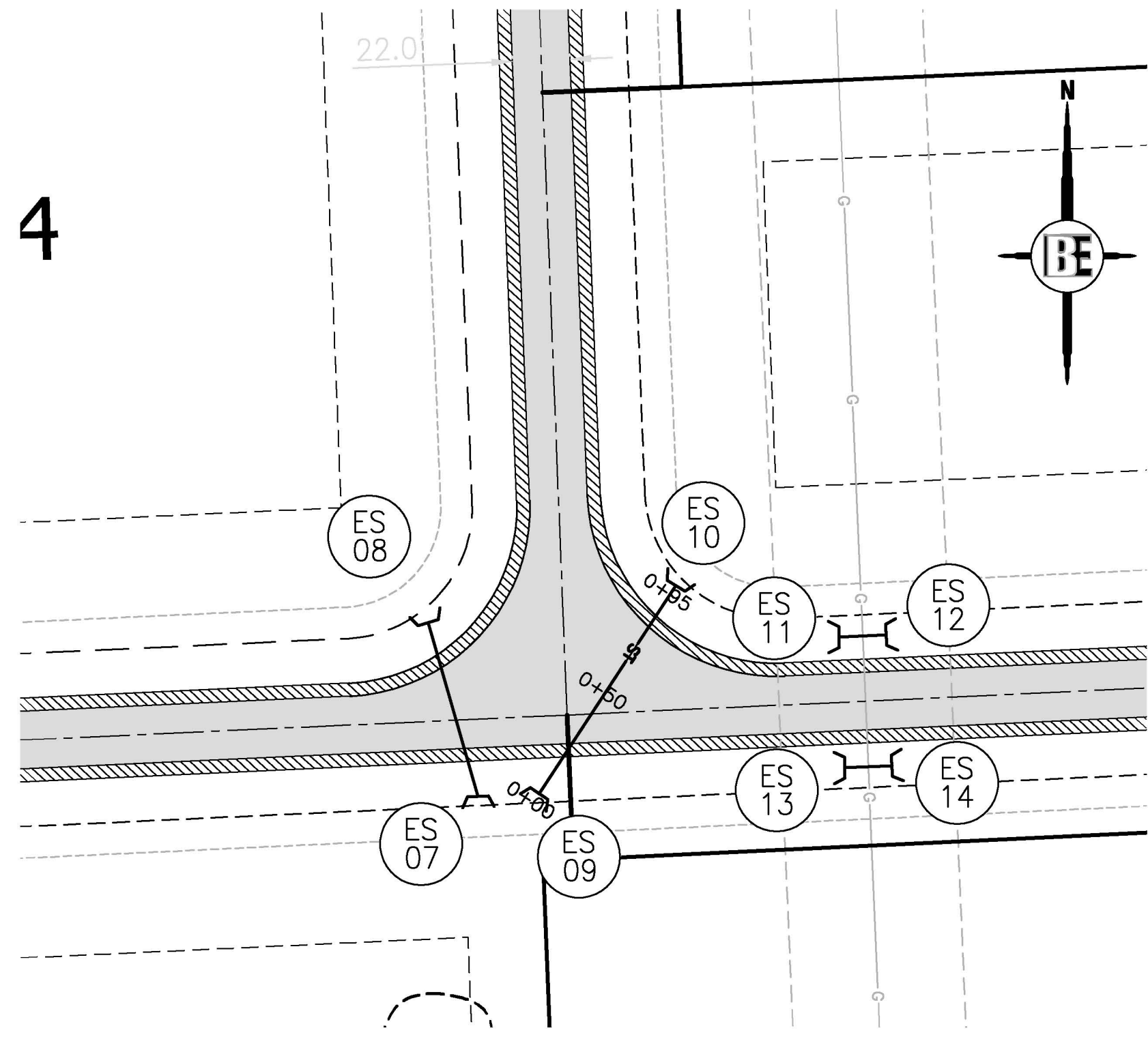
BOSS ENGINEERING
 ENGINEERS • SURVEYORS • PLANNERS
 LANDSCAPE ARCHITECTS
 3121 E. GRAND RIVER AVE.
 (E-MAIL: beb@bosseng.com)
 (800) 246-6735 FAX (317) 548-1670

PROJECT: **MISTY MEADOW**
 PREPARED FOR: **GFG INVESTMENT PROPERTIES, LLC**
 15284 BAILEY
 TOWNSHIP, IN 46080
 (765) 796-0076

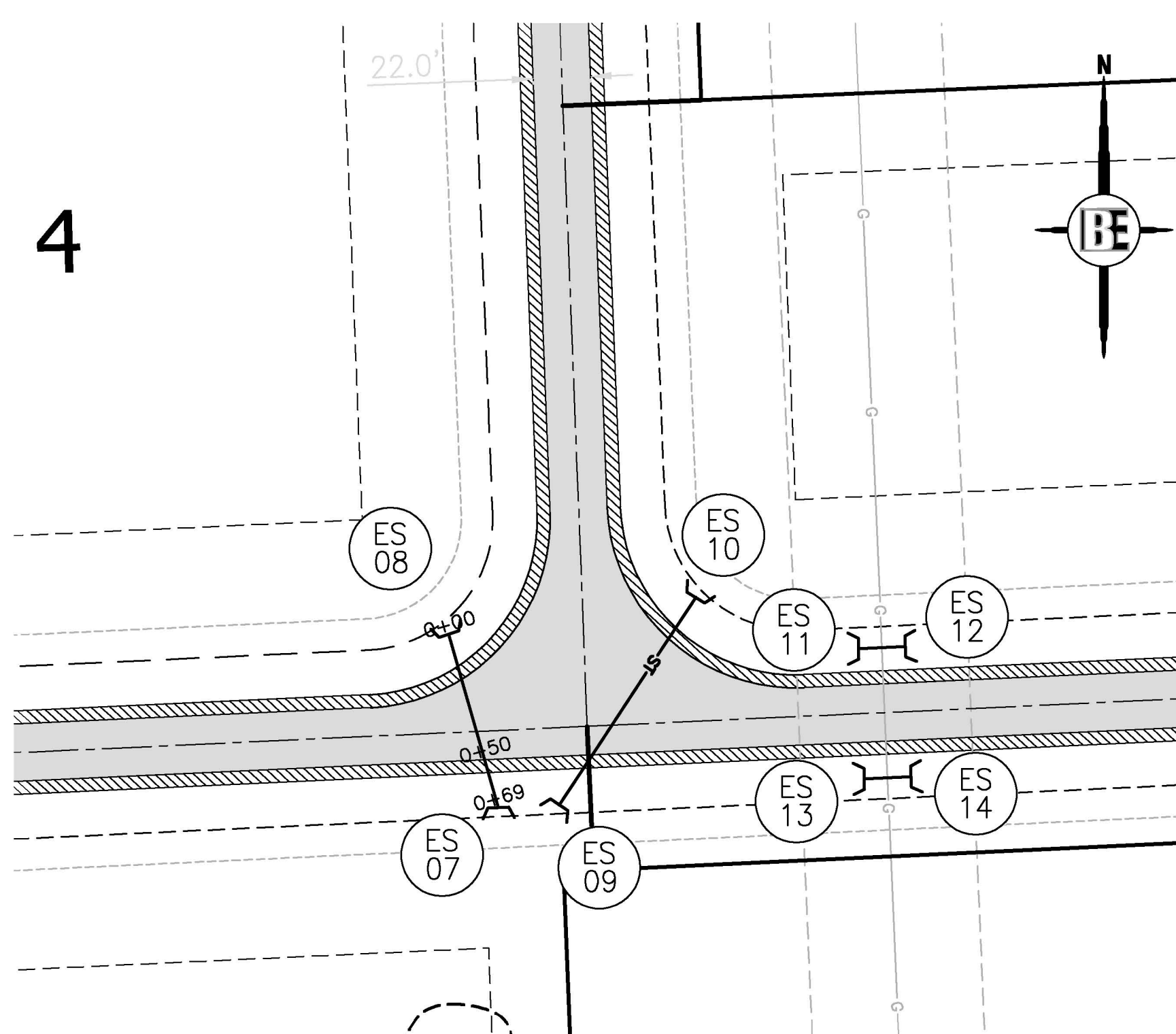
TITLE: **PRIVATE ROAD PROFILE**

NO.	BY	REVISION	DATE
1	KS	TOWNSHIP REVIEW	4/20/16
		REVISION PER	

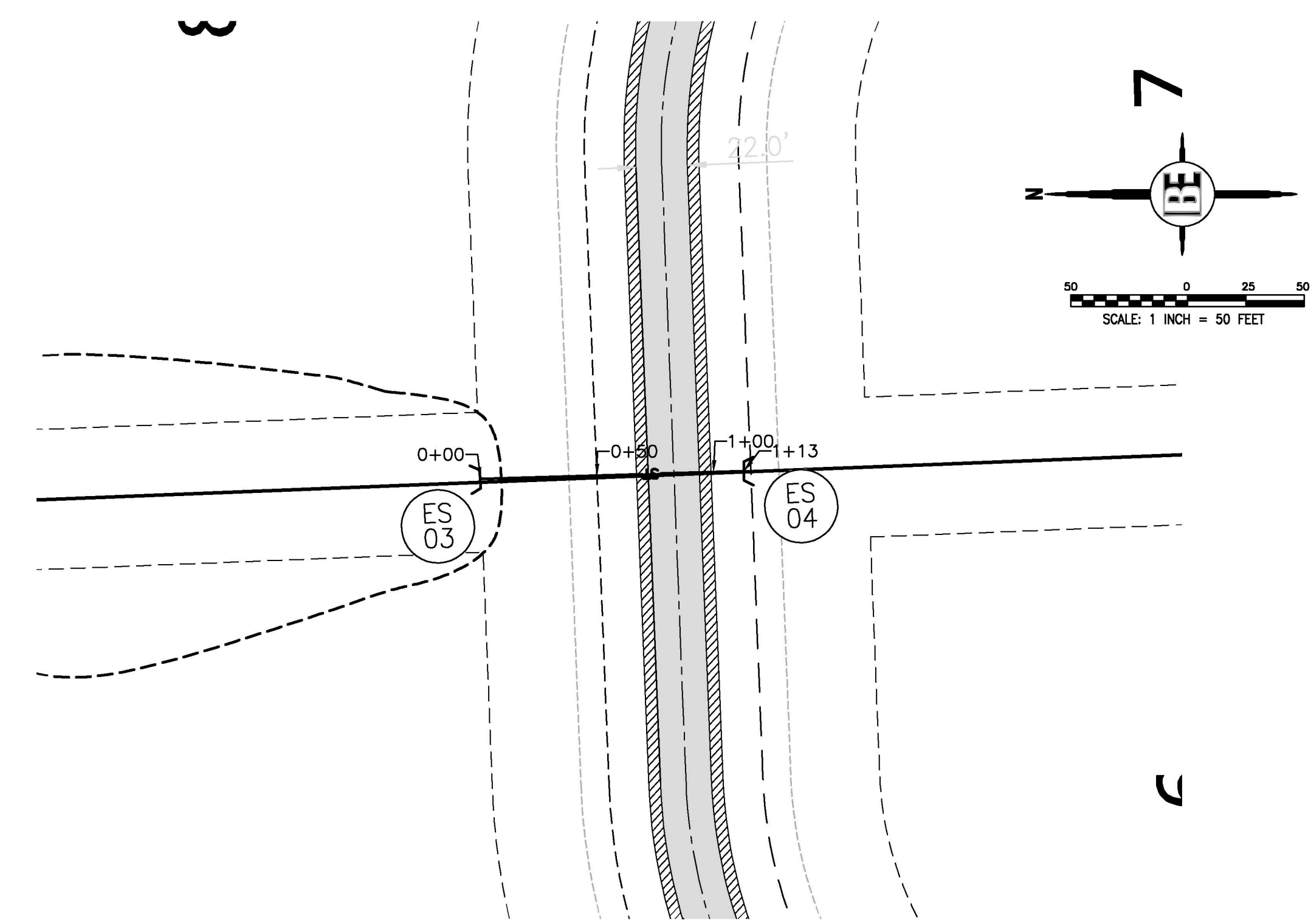
DESIGNED BY: KS
 DRAWN BY: KS
 CHECKED BY:
 SCALE 1" = 50'
 JOB NO. 15-179
 DATE 03/23/16
 SHEET NO. 12



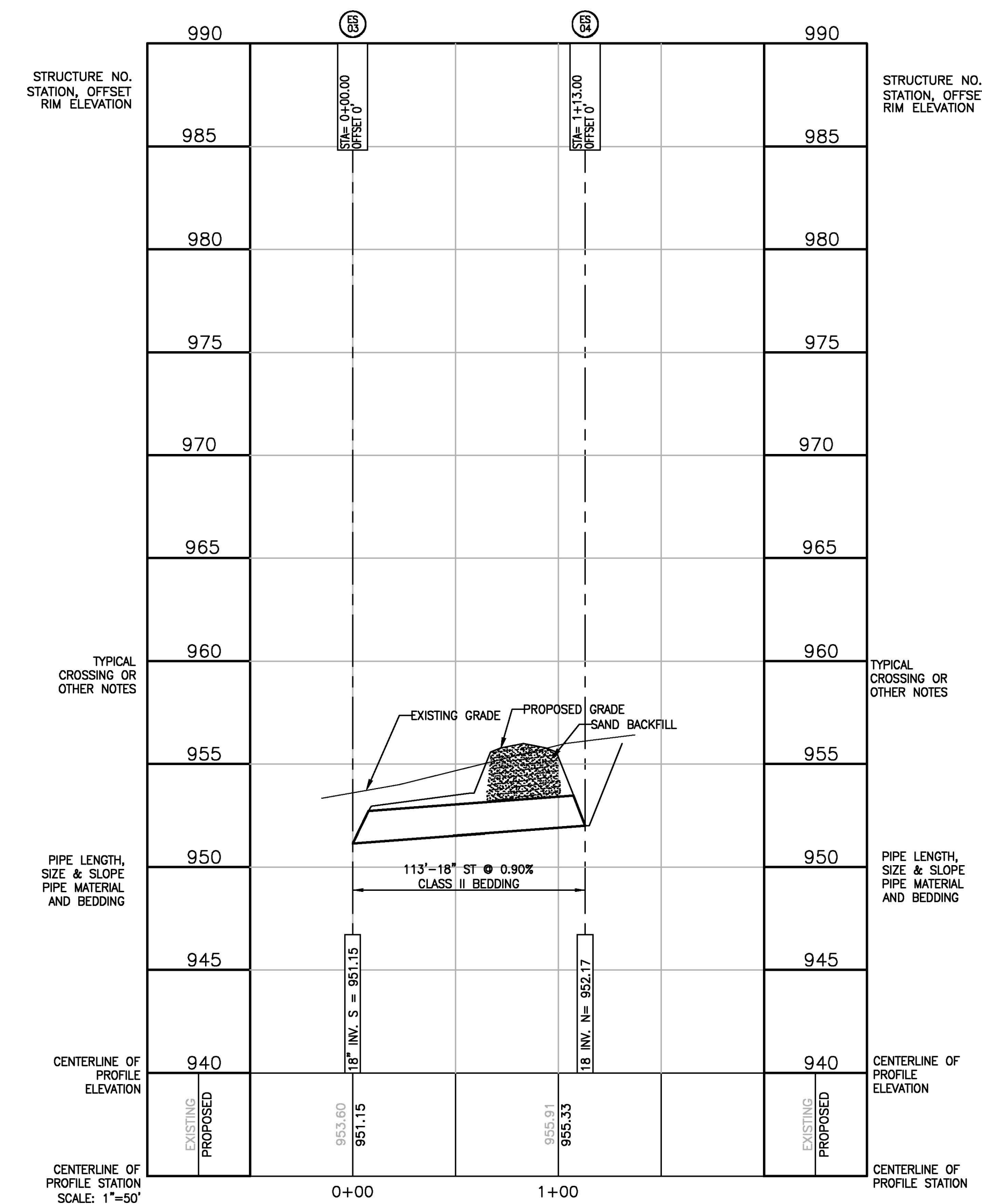
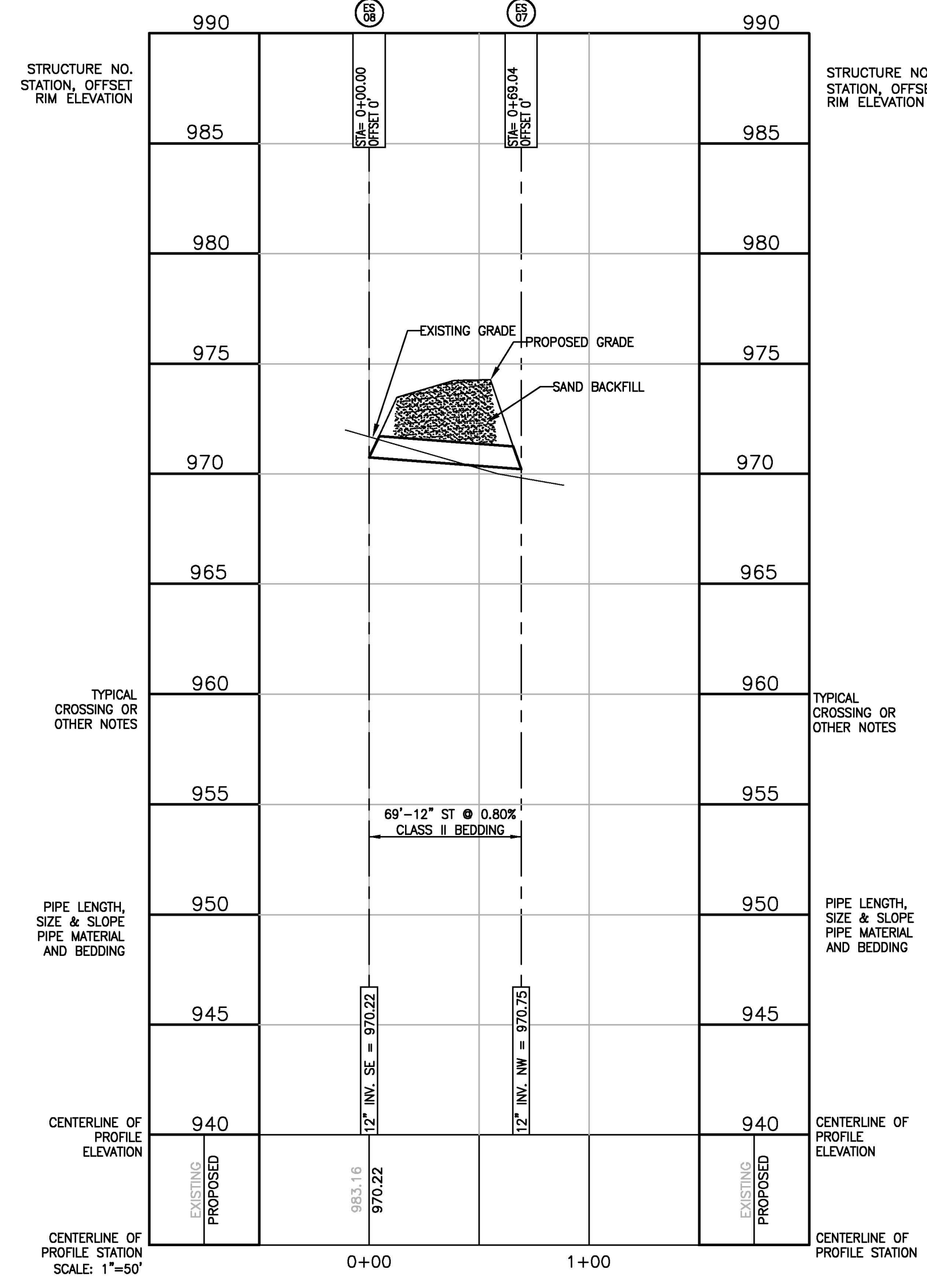
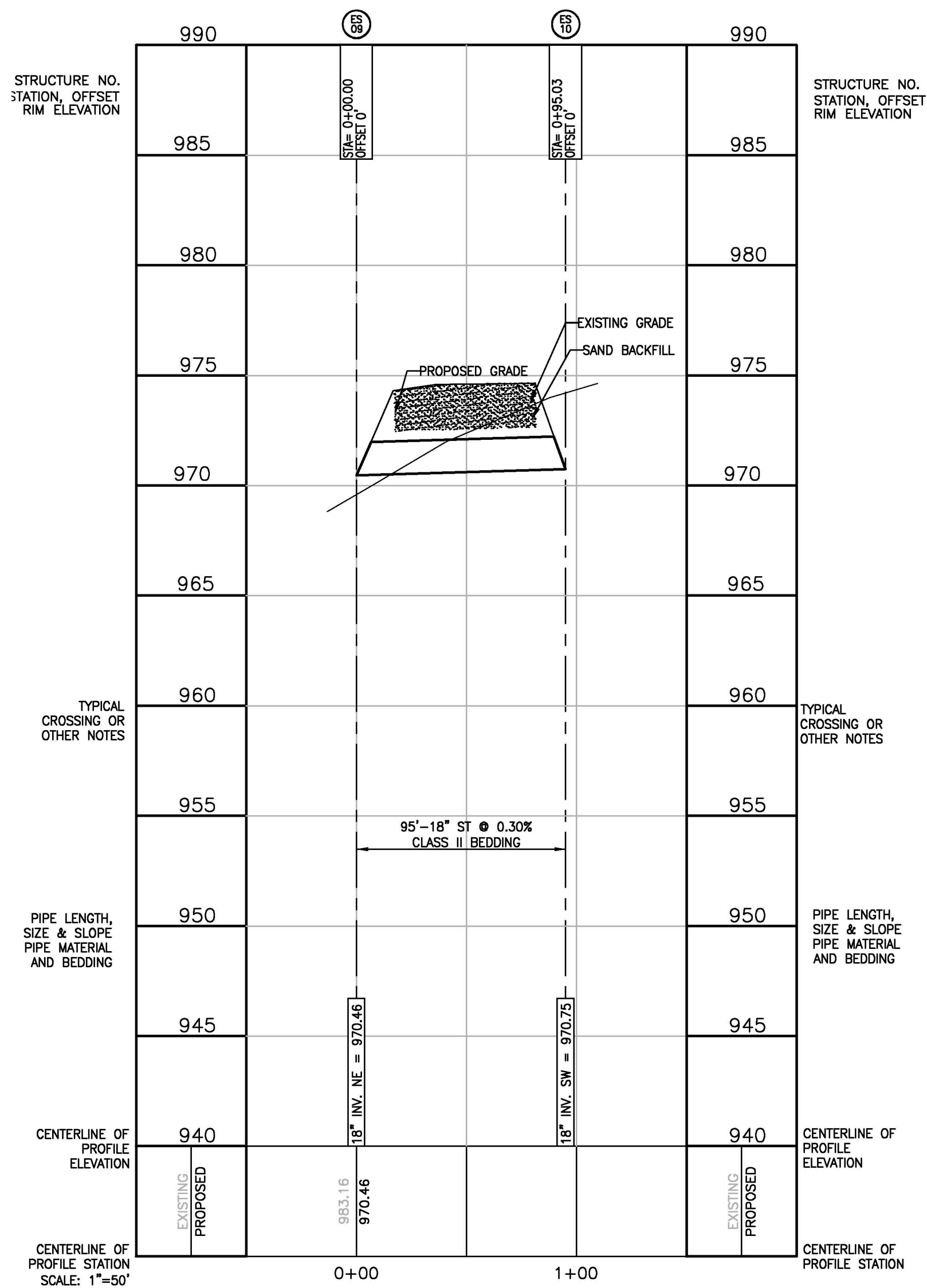
CULVERT 'A'
ES 10 TO ES 09



CULVERT 'B'
ES 08 TO ES 07



CULVERT 'C'
ES 04 TO ES 03



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND. THE ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN OF THE STRUCTURES AND THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION OF THE STRUCTURES AND THE PLANS.

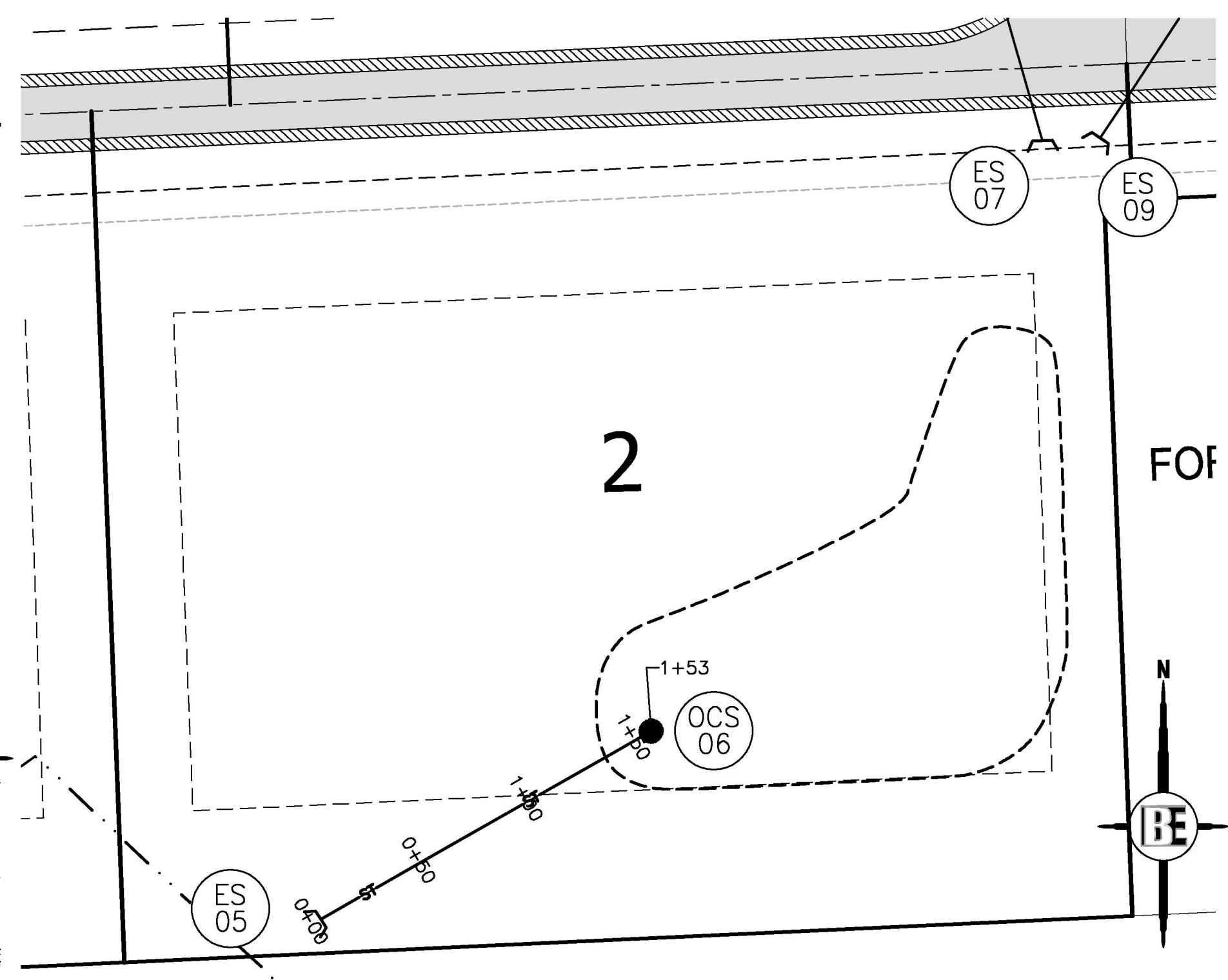
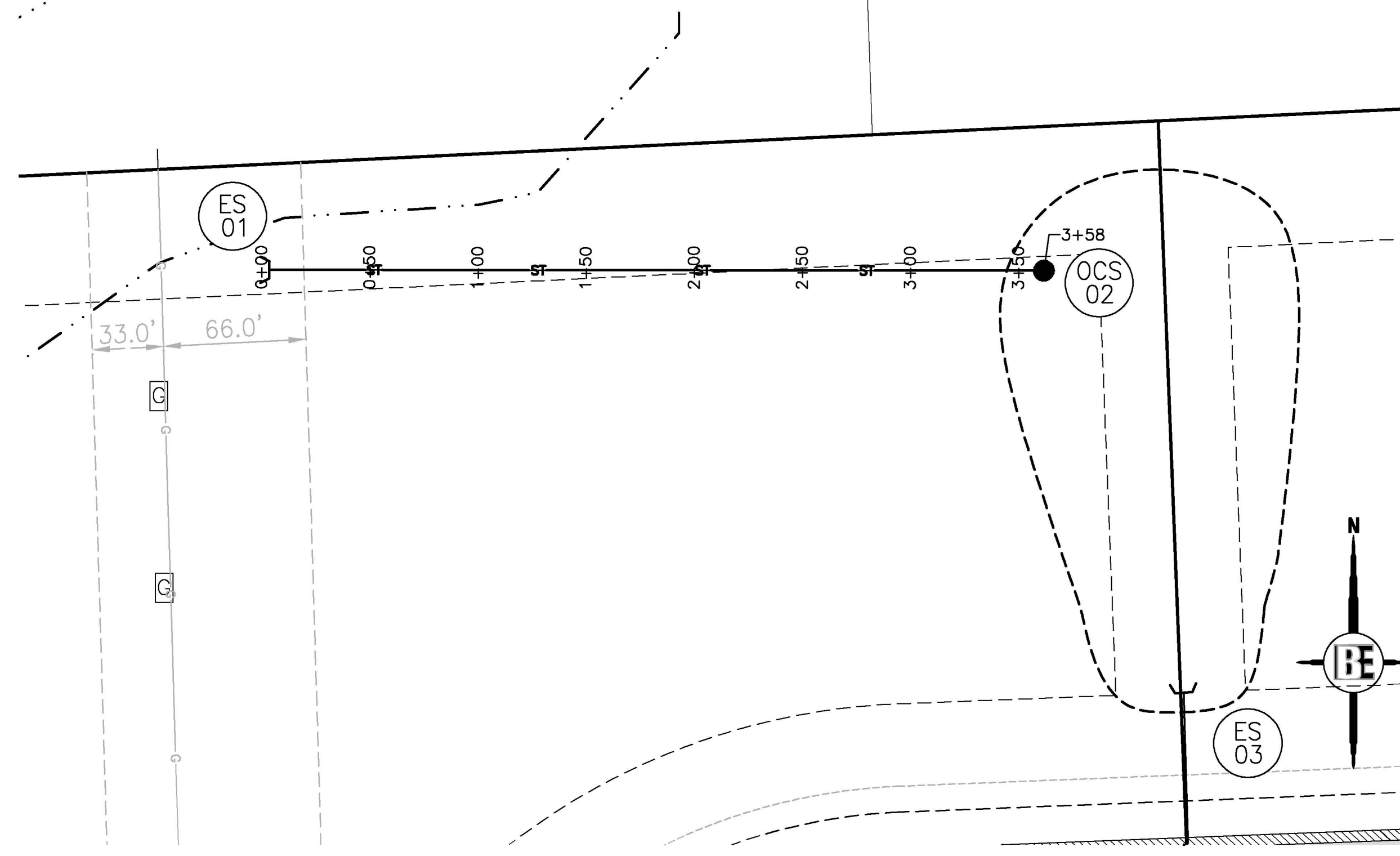
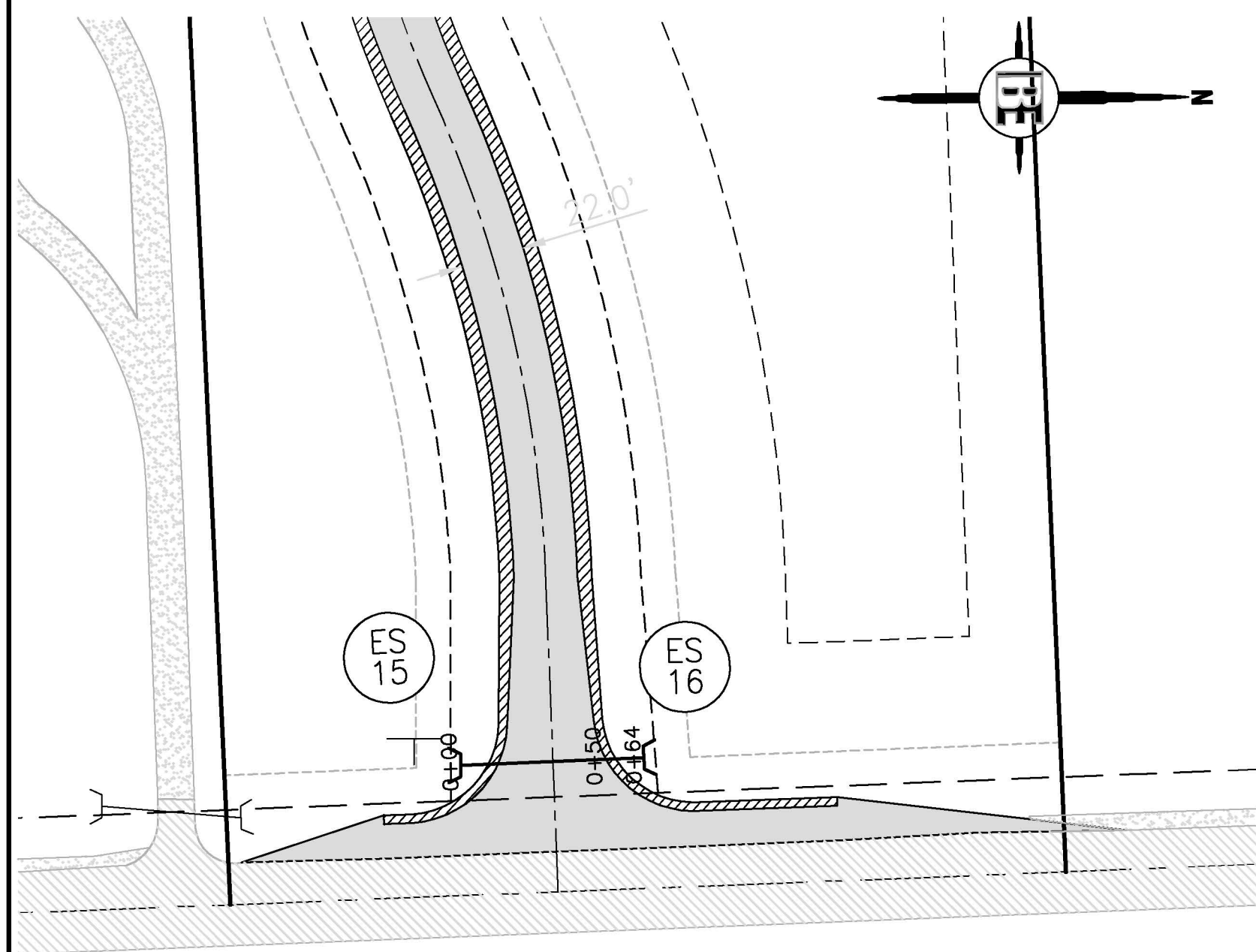
3 working days
BEFORE MGS
DIG
1-800-482-7171

BOSS ENGINEERING
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS

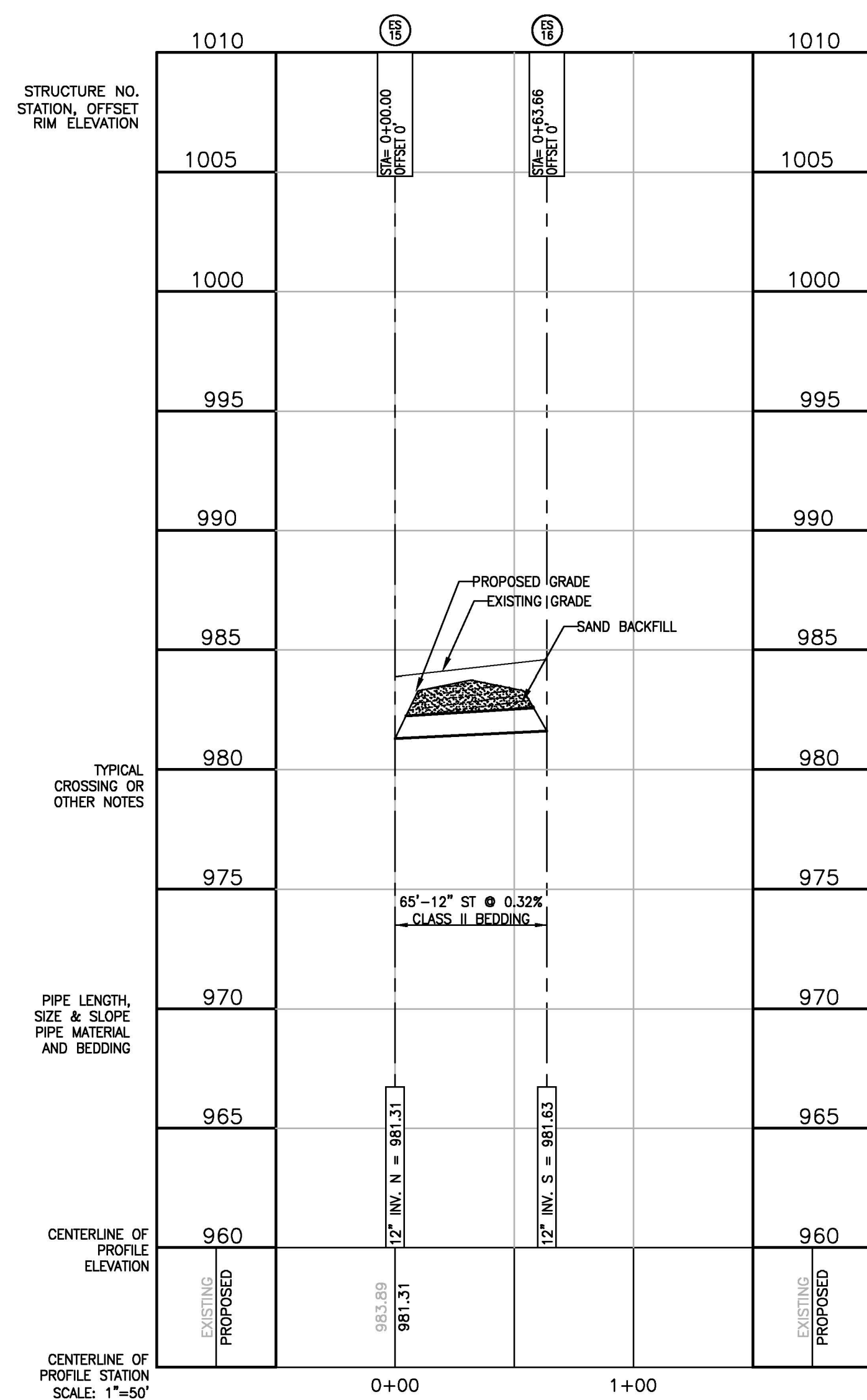
3121 E. GRAND RIVER AVE.
(E-MAIL: bossengineering.com)
(800) 246-6735 FAX (917) 548-1670

MISTY MEADOW
PREPARED FOR
GFG INVESTMENT PROPERTIES, LLC
15264 BAILEY
TOLSON RD
(754) 795-0076

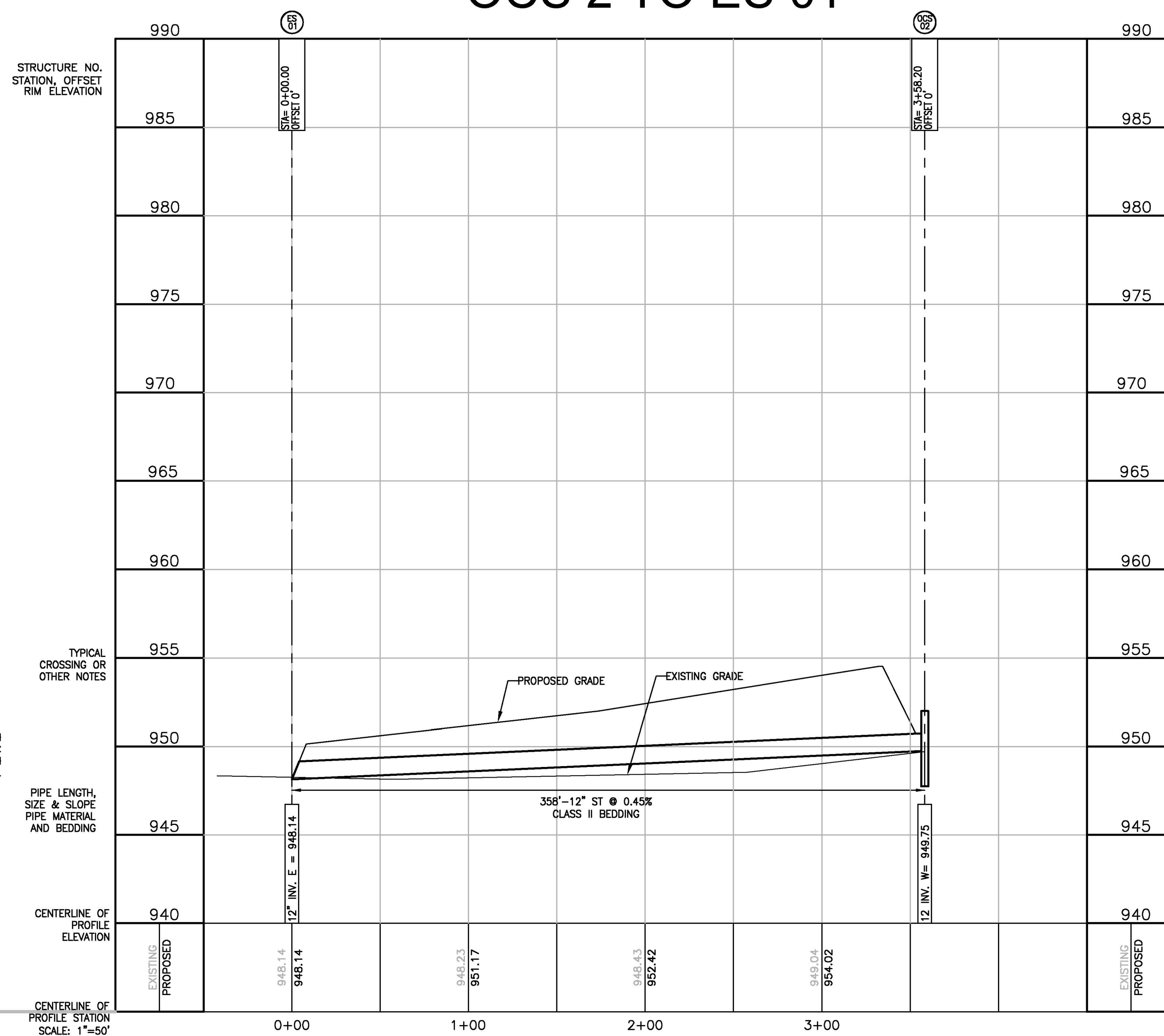
PROJECT	TITLE	DATE
STORM SEWER PROFILE		4/20/16
DESIGNED BY:	KS	
DRAWN BY:	KS	
CHECKED BY:		
SCALE	1" = 50'	
JOB NO.	15-179	
DATE	3/23/2016	
SHEET NO.	13	



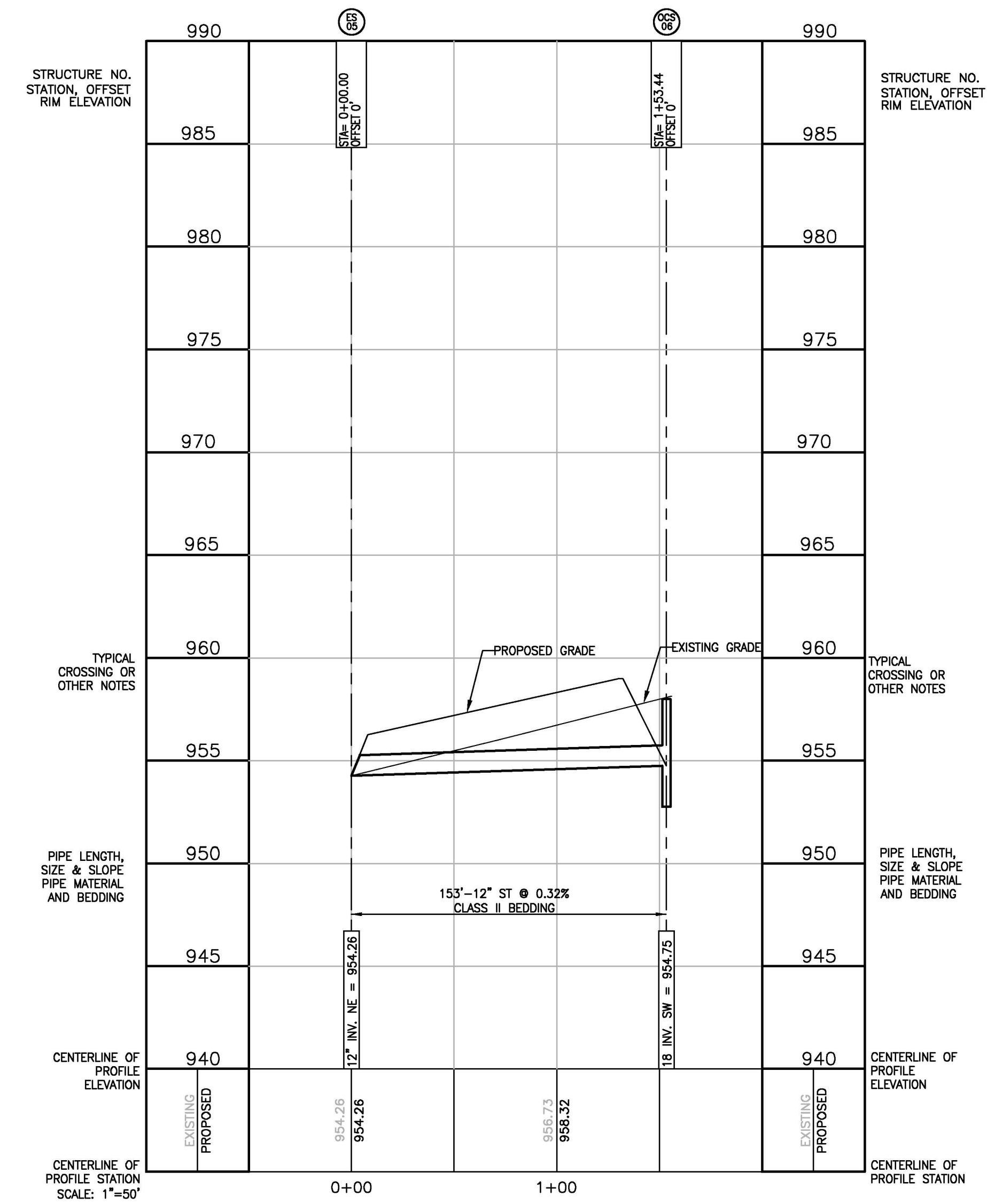
CULVERT 'F' ES 16 TO ES 15



OCS 2 TO ES 01



OCS 06 TO ES 05



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THEREFORE, THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE LOCAL, STATE, AND FEDERAL AGENCIES.

BEFORE ANY CONSTRUCTION BEGINS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS WITH THE PLANS.

3 WORKING DAYS BEFORE ANY CONSTRUCTION BEGINS.

BOSS ENGINEERING
 ENGINEERS • SURVEYORS • PLANNERS
 LANDSCAPE ARCHITECTS
 3121 E. GRAND RIVER AVE.
 (E-MAIL: bossengineering.com)
 (800) 246-6735 FAX (317) 548-1670

BOSS ENGINEERING
 ENGINEERS • SURVEYORS • PLANNERS
 LANDSCAPE ARCHITECTS
 3121 E. GRAND RIVER AVE.
 (E-MAIL: bossengineering.com)
 (800) 246-6735 FAX (317) 548-1670

PROJECT: **MISTY MEADOW**
 PREPARED FOR: **GFG INVESTMENT PROPERTIES, LLC**
 15264 BAILEY TRL
 TUCKER, GA 30084
 (770) 796-0076

TITLE: **STORM SEWER PROFILE**

NO.	BY	REVISION	DATE
1	KS	TOWNSHIP REVIEW	4/20/16
		REVISION FEE	

DESIGNED BY: KS
 DRAWN BY: KS
 CHECKED BY:
 SCALE: 1" = 50'
 JOB NO. 15-179
 DATE: 3/23/2016
 SHEET NO.

FINAL APPROVAL

GENOA TOWNSHIP APPLICATION FOR SITE PLAN REVIEW	RECEIVED MAR - 1 2009
---	--------------------------

TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD

APPLICANT: Doyle Homes Inc.

OWNER'S ADDRESS: 5923 Cunningham Lake Road

SITE ADDRESS: same

TAX CODE NUMBER: 11-34-400-007 and 11-34-400-006

PHONE: 810.229.7505 (Doyle Homes)

LOCATION AND BRIEF DESCRIPTION OF SITE:

Site is 25 acres in size and is located on the north side of Cunningham Lake Road in Section 34

THE PROPERTY IS OWNED BY: Robert & Yvonne Moore

BRIEF STATEMENT OF PROPOSED USE:

Single family residential development

THE FOLLOWING BUILDINGS ARE PROPOSED:

16 single family homes on 1 acre (minimum) lots

I hereby certify that all information and data attached to and made part of this application is true and accurate to the best of my knowledge and belief.

BY: 

ADDRESS: 4090 Chilson Road Howell, NJ. 48843

ARCHITECT OR ENGINEER'S SIGNATURE



*AGENT (acting for owner) SIGNATURE

* A letter of Authorization from Property Owner is needed. (ATTACHED)

Contact Information - Review Letters and Correspondence shall be forwarded to the following:

1.) Robert R. Doyle of Doyle Homes Inc. at 810.229.7529
Name Business Affiliation Fax No.

Mountain Top Estates 16 Lots

I am almost 80 years old & I don't have the energy to take on this project myself, so I plan on putting it on the market as soon as I can . I have bought out the rights to the development from Doyle Homes, who had already put in over \$85,000.00 in the Development costs up to this point .

It will make a beautiful development and help to increase the tax base for Genoa Township. We have lived in in this house for 30 years, but it's time for us to move closer to our children & grandchildren.

The time it would take for me to have the roads & a utility put in, is both too expensive & would take up more time than I can afford to put into it. My hopes are that someone can complete this development and have 16 families move into what is a beautiful area, which my family has enjoyed for all these years.

Sincerely,

Bob Moore
5/5/2016



April 29, 2016

Planning Commission
Genoa Township
2911 Dorr Road
Brighton, Michigan 48116

Attention:	Kelly Van Marter, AICP Assistant Township Manager and Planning Director
Subject:	Mountain Top Estates – Request for extension of site plan approval
Location:	5923 Cunningham Lake Rd. – north side of Cunningham Lake Rd., east of Chilson Rd.
Zoning:	LDR Low Density Residential District

Dear Commissioners:

As requested, we have reviewed the proposed extension of site plan approval for a 16-unit site condominium development known as Mountain Top Estates.

The project was originally approved by the Township in 2006, with multiple extensions granted in the time since – most recently in 2015. In accordance with the standards of Section 18.09.02, the applicant has exhausted their administrative extensions and now seeks Planning Commission approval for another extension.

Previous extensions were based on the applicant's claim that the project was not economically feasible at that time; however, no basis for the current request is provided. The applicant should provide the Commission with an indication of the current rationale.

The site and surrounding properties are planned and zoned for 1-acre development, which is unlikely to change. As such, the previously approved development plan is expected to remain consistent/compatible with the Master Plan and Zoning Ordinance designations.

Furthermore, we are unaware of any changes in the Ordinance text that impact the previously approved project. However, it is important to note that the Township is currently working on a major amendment to the full Zoning Ordinance, which is expected to be ready for adoption yet this year.

As such, changes may be forthcoming that impact the previous approval, and such changes would be effective prior to the one-year expiration of this extension (should it be granted).

In summary, we do not believe there has been a change in Ordinance impacting the previously approved project. As such, we feel consideration should be given to granting the requested extension. However, we request the applicant provide the Commission with the basis behind the request. Additionally, there will be forthcoming amendments to the Ordinance that could impact the project. This should be considered/re-reviewed if yet another extension request is made.

Should you have any questions concerning this matter, please do not hesitate to contact our office. I can be reached by phone at (248) 586-0505, or via e-mail at borden@lsplanning.com.

Respectfully,

LSL PLANNING, A SAFE BUILT LLC COMPANY

Brian V. Borden, AICP
Planning Manager



April 29, 2016

Ms. Kelly Van Marter
Genoa Township
2911 Dorr Road
Brighton, MI 48116

**Re: Mountain Top Estates
Site Plan Review**

Dear Ms. Van Marter:

We have reviewed the site plan documents from Doyle Homes' Mountain Top Estates Site Condominiums project, completed by Advantage Civil Engineering dated April 20, 2006. The site plan was originally approved in 2006, and received several extensions up through 2014, when the petitioner was notified that no further extensions would be allowed and a full site plan review would be required for final approval.

The site plan documents state the petitioner is planning to construct a 16-unit, single-family site condominium development north of Cunningham Lake Road, east of Sundance Trail. The site will be serviced by well and septic private utilities.

The petitioner has provided the Township with the documentation requested in the last engineering review letters. The original site plan was prepared by Advantage Civil Engineering which is no longer in business. It will be necessary to have a new site plan prepared, stamped, and signed by a firm currently practicing in civil engineering.

We have reviewed the site plan documents and previous engineering review letters and do not have any new engineering related issues or changes to existing standards related to the proposed site improvements except for the requirement to have the plans prepared by a firm with a licensed engineer currently practicing in the industry.

Please call if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Gary Markstrom'.

Gary J. Markstrom, P.E.
Unit Vice President

A handwritten signature in blue ink, appearing to read 'Joseph C. Siwek'.

Joseph C. Siwek, P.E.
Project Engineer

Copy: Robert Doyle, Doyle Homes Inc.



BRIGHTON AREA FIRE AUTHORITY

615 W. Grand River Ave.
Brighton, MI 48116
o: 810-229-6640 f: 810-229-1619

May 4, 2016

Kelly VanMarter
Genoa Township
2911 Dorr Road
Brighton, MI 48116

RE: Mountain Top Estates – Site Condo Extension
Cunningham Lake Rd.
Genoa Twp., MI

Dear Kelly:

The Brighton Area Fire Department has reviewed the above mentioned site plan. The plans were received for review on April 21, 2016 and the drawings are dated July 25, 2005 with latest revisions dated March 17, 2008. The project is for the construction of a new 16-Unit site-condominium development that has requested extension of their previously approved site plan from 2006. The plan review is based on the requirements of the International Fire Code (IFC) 2015 edition.

1. Municipal water does not extend to the site therefore an alternative means of fire protection water must be provided. Volume of available water shall be no less than 1,000 gallons per minute or 60,000 total gallons. It is recommended to provide fire flow for the development via drafting pond or well-filled cisterns located strategically throughout the development.

IFC 912.2

2. The building shall include the building address on the building. The address shall be a **minimum of 4"** high letters of contrasting colors and be clearly visible from the street. The location and size shall be verified prior to installation.

IFC 505.1

3. The access road meets Livingston County Road Commission Standards with a paved width of 22' and 2' gravel shoulders on both sides. At this width there shall be No Parking on the street at any time, association by-laws should identify this as a hazard that may obstruct or impede emergency vehicles. It is recommended that the paved width be increased to 26' throughout to accommodate parking on one-side of the road and for emergency vehicle access. Access roads to site shall be provided and maintained during construction. Access roads shall be constructed to be capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds.

IFC D 103.6

IFC D 103.1

IFC D 102.1

IFC D 103.3

4. Provide names, addresses, phone numbers, emails of owner or owner's agent, contractor, architect, on-site project supervisor.



If you have any questions about the comments on this plan review please contact me at 810-229-6640.

Cordially,

A handwritten signature in black ink, appearing to read "R. Boisvert".

Capt. Rick Boisvert, CFPS
Fire Inspector



ACE
CIVIL ENGINEERING, LLC

May 6, 2015

Bob Moore
W0604@comcast.net
810-229-4569

Re: Mountain Top Estates:

Dear Bob:

Per our phone conversation ACE Civil Engineering, LLC holds the drawing rights/file to the Mountain Top Estates project previously prepared by Advantage Civil Engineering, Inc. job no. 05049. Please accept this letter as an understanding that ACE Civil Engineering, LLC will honor the previously approved drawings prepared by Advantage Civil Engineering, Inc.

Please let me know if you have any further questions.

Sincerely,

ACE CIVIL ENGINEERING, LLC

Patrick C. Keough, P.E.

President

05049-Bob Moore 05-06-16



Site Plan Approval Extension

Genoa Charter Township
2911 Dorr Road, Brighton, Michigan 48116
Phone: (810) 227-5225, Fax: (810) 227-3420
www.genoa.org

Project Information:

Project Name: Mountaintop Estates **Property Address:** Cunningham Lake Road **Parcel No.:** 11-34-400-006 & 007

Owner Name: Robert & Yvonne Moore **Address:** 5923 Cunningham Lake Road **Phone:** 810-229-4569

Applicant Name: Doyle Homes **Address:** 4896 Chilson, Howell **Phone:** 810-229-7505

Type of Approval: Site Plan Ext. **Date of PC Approval:** ORIGINAL: 2006 EXTENSION EXTENSION
4/12/10 and 3/25/13 **Date of Board Approval:** 5/1/06

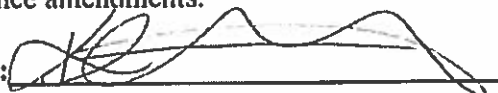
Valid Period for Original Approval: 5/1/06 - 5/1/07

Extension Record:

1. **Date written application for an extension is filed:** 4/1/14 **Administrator Determination:**

Approval - there have been no changes to the Zoning Ordinance that would affect the site plan.
This extension is valid through: 05/01/14-05/01/15

Planning Commission review is required because there have been changes to the zoning ordinance that could affect the site plan therefore the Planning Commission for the site plan, and the Township Board for the impact assessment and special use, if applicable, should determine if an extension should be granted or if an amended site plan must be submitted for approval to comply with the new ordinance amendments.

Signature: 

Date: 4/3/14


2. **Date written application for an extension is filed:** 3/3/15 **Administrator Determination:**

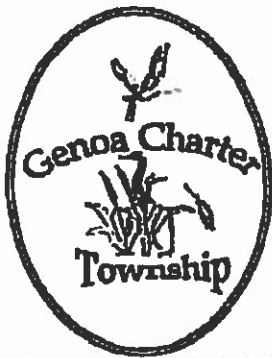
Approval - there have been no changes to the Zoning Ordinance that would affect the site plan.
This extension is valid through: 05/01/15-05/01/16

Planning Commission review is required because there have been changes to the zoning ordinance that could affect the site plan therefore the Planning Commission for the site plan, and the Township Board for the impact assessment and special use, if applicable, should determine if an extension should be granted or if an amended site plan must be submitted for approval to comply with the new ordinance amendments.

Signature: 

Date: 3/9/15

NOTE: NO ADDITIONAL ADMIN. EXTENSIONS ALLOWED. PLANNING COMMISSION AUTHORIZATION WILL BE REQUIRED FOR FUTURE EXTENSIONS. 



Site Plan Approval Extension

Genoa Charter Township
2911 Dorr Road, Brighton, Michigan 48116
Phone: (810) 227-5225, Fax: (810) 227-3420
www.genoa.org

Project Information:

Project Name: Mountaintop Estates **Property Address:** Cunningham Lake Road **Parcel No.:** 11-34-400-006 & 007

Owner Name: Robert & Yvonne Moore **Address:** 5923 Cunningham Lake Road **Phone:** 810-229-4569

Applicant Name: Doyle Homes **Address:** 4896 Chilson, Howell **Phone:** 810-229-7505

Type of Approval: Site Plan Ext. **Date of PC Approval:** 4/12/10 and 3/25/13 **Date of Board Approval:** 5/1/06

Valid Period for Original Approval: 5/1/06 - 5/1/07

Extension Record: PC Authorized

PC #6

Date written application for an extension is filed: 1/20/13 **Zoning Administrator Determination:**

Approval - there have been no changes to the Zoning Ordinance that would affect the site plan.
This extension is valid through: 05/01/13-05/01/14

Planning Commission review is required because there have been changes to the zoning ordinance that could affect the site plan therefore the Planning Commission for the site plan, and the Township Board for the impact assessment and special use, if applicable, should determine if an extension should be granted or if an amended site plan must be submitted for approval to comply with the new ordinance amendments.

Signature: _____

Date: 3/26/13

#1 staff

Date written application for an extension is filed: 4/1/2014 **Zoning Administrator Determination:**

Approval - there have been no changes to the Zoning Ordinance that would affect the site plan.
This extension is valid through: 5/01/2014 - 5/01/2015

Planning Commission review is required because there have been changes to the zoning ordinance that could affect the site plan therefore the Planning Commission for the site plan, and the Township Board for the impact assessment and special use, if applicable, should determine if an extension should be granted or if an amended site plan must be submitted for approval to comply with the new ordinance amendments.

Signature: _____

Date: 4/03/2014

#2 - staff can authorize one additional extension for 2015/2016. Planning Commission approval required thereafter.

03-25-13 PC Approved Minutes

Dave Zimmerman, owner of the property and developing company addressed the Planning Commission. He is proposing a 96 unit development. He is requesting an extension of the site plan and environmental impact assessment. He was unable to break ground prior to the economic troubles. He has not even tried to obtain construction loans because he feels that there is no market for it right now.

Planning Commission disposition of petition

A. Disposition of site plan extension

Motion by James Mortensen that a one year extension be approved. Support by Barbara Figurski. Motion carried unanimously.

OPEN PUBLIC HEARING #2...Review of request for an extension of a site plan and environmental impact assessment for a proposed 16-unit single family site condominium development located north of Cunningham Lake Road, East of Sundance Trail in Section 34, petitioned by Mr. Moore.

Robert Moore, owner of the property, addressed the Planning Commission. He is proposing an extension of the site plan for a 16 unit single family condominium development. It is not economically feasible right now.

Planning Commission disposition of petition

A. Disposition of site plan extension

Motion by James Mortensen that a one year extension be approved. Support by Barbara Figurski. Motion carried unanimously.

OPEN PUBLIC HEARING #3...Review of special use application, environmental impact assessment and site plan for a proposed 20,680 sq. ft. office building located on the South side of Grand River Avenue between Hughes Road and Kellogg Road in Section 14, petitioned by Dakota Integrated Systems.

Brian McDonnell of Dakota, Tony Deliccolli of CityScape, and Brent Lavanway of Boss Engineering addressed the Planning Commission. Mr. Lavanway provided a brief background regarding the selection of the site and a brief overview. The parking lot will accommodate 80 vehicles, which is the anticipated need. A full basement/lower level will be included. There is a small driveway to the building to serve as fire truck access location, as well as a method to deliver items for storage in the basement. A monument sign is proposed, as well as a concrete sidewalk alongside Grand River. The building is roughly 300 yards from Grand River, south of the Trends In Tile parcel. The proposed dumpster location backs up to the storage area for Northwest Area Pipe and Supply.



Site Plan Approval Extension

Genoa Charter Township
2911 Dorr Road, Brighton, Michigan 48116
Phone: (810) 227-5225, Fax: (810) 227-3420
www.genoa.org

Project Information:

Project Name: Mountaintop Estates **Property Address:** Cunningham Lake Road **Parcel No.:** 11-34-400-006 & 007

Owner Name: Robert & Yvonne Moore **Address:** 5923 Cunningham Lake Road **Phone:** 810-229-4569

Applicant Name: Doyle Homes **Address:** 4896 Chilson, Howell **Phone:** 810-229-7505

Type of Approval: Site Plan Ext. **Date of PC Approval:** 4/12/10 ^{EXTENSION} **Date of Board Approval:** 5/1/06

Valid Period for Original Approval: 5/1/06 - 5/1/07

Extension Record:

#1. **Date written application for an extension is filed:** 2/15/11 **Zoning Administrator Determination:**

Approval - there have been no changes to the Zoning Ordinance that would affect the site plan.
This extension is valid through: 5/1/11-5/1/12

Planning Commission review is required because there have been changes to the zoning ordinance that could affect the site plan therefore the Planning Commission for the site plan, and the Township Board for the impact assessment and special use, if applicable, should determine if an extension should be granted or if an amended site plan must be submitted for approval to comply with the new ordinance amendments.

Signature: _____

Date: 3/29/2011

#2. **Date written application for an extension is filed:** 2/15/12 **Zoning Administrator Determination:**

Approval - there have been no changes to the Zoning Ordinance that would affect the site plan.
This extension is valid through:

Planning Commission review is required because there have been changes to the zoning ordinance that could affect the site plan therefore the Planning Commission for the site plan, and the Township Board for the impact assessment and special use, if applicable, should determine if an extension should be granted or if an amended site plan must be submitted for approval to comply with the new ordinance amendments.

Signature: _____

Date: 2/16/2012

**GENOA CHARTER TOWNSHIP
PLANNING COMMISSION
PUBLIC HEARING
APRIL 12, 2010
6:30 P.M.**

AGENDA

CALL TO ORDER: At 6:30 p.m., the meeting of the Genoa Township Planning Commission was called to order. Present constituting a quorum were Diana Lowe, James Mortensen, Barbara Figurski, Chairman Doug Brown, and John McManus. Also present were Tesha Humphriss, Township Engineer, and Kelly VanMarter, Planning Director.

PLEDGE OF ALLEGIANCE: The Pledge of Allegiance was recited.

WORK SESSION: No work session was requested.

APPROVAL OF AGENDA: Upon motion by Barbara Figurski and support by James Mortensen, the agenda was approved as submitted. **Motion carried unanimously.**

CALL TO THE PUBLIC: *(Note: The Board reserves the right to not begin new business after 10:00 p.m.)*

OPEN PUBLIC HEARING #1 ... Review extension of site plan approval for a proposed 16-unit single family site condominium development located north of Cunningham Lake Road, East of Sundance Trail in Section 34, petitioned by Doyle Homes, inc. (Mountain Top Estates)

Planning Commission disposition of petition

A. Disposition of site plan extension.

Motion by Barbara Figurski to extend site plan for another year from May 1, 2010 to May 1, 2011. Support by Diana Lowe. Motion carried unanimously.

OPEN PUBLIC HEARING # 2... Review of sketch plan application and sketch plan for a proposed access road and canopy to convert the existing urgent care to a 24/7 emergency room located in the existing Woodland Health Care Facility at 7575 W. Grand River, Brighton, petitioned by Desine, Inc.

Wayne Perry addressed the Commission. The petitioner would like to combine the existing urgent care facility with an expansion that was previously built to

**GENOA CHARTER TOWNSHIP
PLANNING COMMISSION
PUBLIC HEARING
APRIL 13TH, 2009
6:30 P.M.**

AGENDA

CALL TO ORDER: At 6:30 p.m., the Genoa Township Planning Commission meeting was called to order. Present constituting a quorum were Chairman Doug Brown, Barbara Figurski, Diana Lowe, Dean Tengel, and Lauren Brookins. Also present were Jeff Purdy of LSL, Tesha Humphriss, Township Engineer, and Mike Archinal, Township Manager.

PLEDGE OF ALLEGIANCE: The Pledge of Allegiance was recited.

APPROVAL OF AGENDA: Upon motion of Barbara Figurski and support by Dean Tengel, the agenda was approved as submitted, with the exception that item number one is tabled. Motion carried unanimously.

WORK SESSION: No work session was required.

OPEN PUBLIC HEARING #1...Review of special use application, site plan and environmental impact assessment approval for a 21,000 square foot service center with 3 out-buildings, 2 vehicle ports, 3,2000 sq.ft. cold storage building and with outdoor storage of equipment and machinery, located on the west side of Grand Oaks Drive, south of Cleary Drive, Howell 48843, Sec. 5, petitioned by Consumers Energy.

Planning Commission disposition of petition

- A. Recommendation regarding special use application.**
- B. Recommendation regarding impact assessment.**
- C. Recommendation regarding site plan.**

Moved by Tengel, supported by Lowe to table the item until the May 14th, 2009 Planning Commission. Motion carried unanimously.

OPEN PUBLIC HEARING #2...Review extension of site plan approval for a proposed 16-unit single-family site condominium development located north of Cunningham Lake Road, East of Sundance Trail in Section 34, petitioned by Doyle Homes, Inc. (Mountain Top Estates)

No representative of petitioned was present. The petitioner submitted a letter requesting an extension due to economic conditions.

Planning Commission disposition of petition

- A. Recommendation regarding impact assessment extension.**
- B. Disposition of site plan extension.**

4-13-09 Unapproved PC minutes

Motion by Barbara Figurski to extend the site plan for another year and it will be approved as it was in May 2006 and April 1, 2008 and will be effective May 1, 2009. Support by Diana Lowe. Motion carried unanimously.

OPEN PUBLIC HEARING # 3...Review of approval of an amendment to the Intech PUD, environmental impact assessment and PUD conceptual plan for property located on the South-west corner of Dorr Road and Sterling Road, Howell 48843, Sec. 15 to allow a proposed 84 bed nursing facility with future office/retail use in later phase, petitioned by Fusco, Shaffer and Pappas, Inc

Jim Pappas and Jack Runkle addressed the Commission. The facility is a skilled nursing facility. It is not age-related.

Jeff Purdy discussed his letter to the petitioner. This site was approved as a business park. That original concept plan for the business park needs to be replaced and then action would need to be taken on the final PUD site plan. Amendments to the PUD agreement must be accomplished.

50% of the total site should be open lands and wet lands. This site needs to comply with the Town Center requirements, but Jeff Purdy believes a deviation is justified. The wetland and drain that crosses the site cause issues with the right-of-way. Additionally, the nature of the use is unique (but allowable). The topography has very steep slopes, as well on the front of the site. The design of the building must also be taken into account and the building types should not be applied due to the uniqueness of this use.

The sidewalk along the front edge must be 8' wide. The plan specifies it as five. Petitioner indicates that due to the location, the topography and wetlands are causing problems with the sidewalk width. Petitioner will go 8', however.

The Town Center district requires ornamental lighting along the sidewalks. Petitioner agrees to do that.

The veneer around the garbage receptacle should match the building. Petitioner agrees to that.

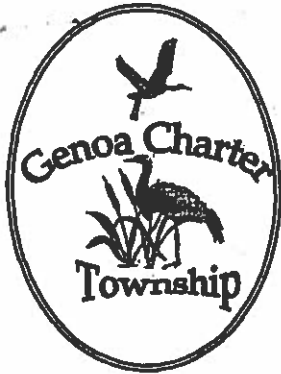
Petitioner must provide confirmation of MDEQ permits regarding the drain and crossing the wetlands. Petitioner says new design mimics the old design.

Tesha Humphriss asks for clarification of what has been installed per the permit and petitioner discusses that with the Commission. This site is part of the Grand Beach district. She indicates the County Drain Commission is working with petitioner, since this district is under their supervision.

Jeff Purdy indicates that the authorized uses in the PUD agreement does not include this use and that should be clarified.

Petitioner indicates all of the items contained in the LSL letter are acceptable.

Tesha Humphriss discusses the items in her April 8, 2009 letter. MDEQ regulates the wetland buffers. Petitioner is proposing grading and storm water improvements within the buffer. Planning Commission approval would be required.



Site Plan Approval Extension

Genoa Charter Township
2911 Dorr Road, Brighton, Michigan 48116
Phone: (810) 227-5225, Fax: (810) 227-3420
www.genoa.org

Project Information:

Project Name: Mountaintop Estates **Property Address:** Cunningham Lake Road **Parcel No.:** 11-34-400-006 & 007

Owner Name: Robert & Yvonne Moore **Address:** 5923 Cunningham Lake Road **Phone:**

Applicant Name: Doyle Homes **Address:** 4896 Chilson, Howell **Phone:** 810-229-7505

Type of Approval: Site Plan **Date of PC Approval:** 4/10/06 **Date of Board Approval:** 5/1/06

Valid Period for Original Approval: 5/1/06 - 5/1/07

Extension Record:

#1. **Date written application for an extension is filed:** 4/6/07 **Zoning Administrator Determination:**

Approval - there have been no changes to the Zoning Ordinance that would affect the site plan.
This extension is valid through: 5/1/07 - 5/1/08

Planning Commission review is required because there have been changes to the zoning ordinance that could affect the site plan therefore the Planning Commission for the site plan, and the Township Board for the impact assessment and special use, if applicable, should determine if an extension should be granted or if an amended site plan must be submitted for approval to comply with the new ordinance amendments.

Signature: PC 5-14-07 & BOARD 5-21-07

Date: _____

#2. **Date written application for an extension is filed:** 3/26/08 **Zoning Administrator Determination:**

Approval - there have been no changes to the Zoning Ordinance that would affect the site plan.
This extension is valid through: 5/1/08 - 5/1/09

Planning Commission review is required because there have been changes to the zoning ordinance that could affect the site plan therefore the Planning Commission for the site plan, and the Township Board for the impact assessment and special use, if applicable, should determine if an extension should be granted or if an amended site plan must be submitted for approval to comply with the new ordinance amendments.

Signature: Kelly [Signature]

Date: 4/1/08

CALL TO THE PUBLIC: (Note: The Board reserves the right to not begin new business after 10:00 p.m.)

Monica, a student from Howell High School introduces herself as an observer for government class.

OPEN PUBLIC HEARING # 1... Review of extension of site plan approval for a proposed 16-unit single-family site condominium development located north of Cunningham Lake Road, East of Sundance Trail in Section 34, petitioned by Doyle Homes, Inc. (Mountain Top Estates) (07-12)

Petitioner present and requests an extension of one year. Jeff Purdy and Tesha Humphriss have no objections and advise that this meets with the ordinance.

Planning Commission disposition of petition

- A. Recommendation of impact assessment extension.
- B. Disposition of site plan extension.

Motion by James Mortensen to recommend to the Township Board that they extend the impact assessment for Mountain Top Estates for one year. This impact assessment was reviewed by the Planning Commission on 4/10/06. Support by Steve Morgan. **Motion carried unanimously.**

Motion by James Mortensen to adopt the site plan extension reviewed by the Planning Commission on 4/10/06 for one year. Support by Teri Olson. **Motion carried unanimously.**

OPEN PUBLIC HEARING # 2... Review of a site plan application, impact assessment and site plan for a 7,000 sq. ft. retail auto parts store located at 2797 E. Grand River, Sec. 6, petitioned by WXY Retail Group. (07-07)

David Barbour, Attorney for applicant is present. Brad McLean of WXY Retail Group is present, as well. Additionally, Keith Talto, the consultant is present.

Mr. Barbour addresses the Planning Commission's concerns regarding the driveway easement and how it aligns with that of the dealership across Grand River. He believes petitioner's peak hours will be late afternoon and Saturdays and Sundays, first thing in the morning. He believes the precedent set by CVS/Big Boy's driveway conflict is different in that there is a constant flow of traffic, rather than peak hours. If the driveway is moved east, the driveway would be too close to the driveway of the property to the east. He requests that the site plan be approved as proposed.

Brad McLean addresses the Planning Commission and indicates that the peak hour typically has thirty-five trips per hour. This would be thirteen entering trips

Hacker at an estimated cost of \$54,750.00. The amended agenda was voted and carried unanimously.

6. Request for approval of the impact assessment, corresponding to the final site plan for a proposed 16-unit single-family site condominium development located north of Cunningham Lake Road, East of Sundance Trail in Section 34, petitioned by Doyle Homes, Inc. (Mountain Top Estates), and discussed by the Planning Commission 04/10/06.

The petitioner advised the board that he would be happy to meet with Ms. Szydzik when the construction phase of the development begins. He also advised the board that he has no intention to clear any of that site abutting her property with the exception of the building envelope and that will be determined when the home design is complete.

Moved by Smith, supported by Skolarus, to approve the impact assessment (04/20/06) corresponding to the final site plan for Doyle Homes, contingent upon the following:

1. Any deviation in landscaping from what is shown on the plan will require approval of the Township staff and/or revision of the site plan with the Planning Commission.
 2. The master deed should be revised to indicate the financial responsibility for maintaining the joint driveway on lots 15 & 16.
 3. The requirements of the Township Engineer, as outlined in Tetra Tech's letter dated April 5, 2006, will be complied with.
- The motion carried unanimously.

7. Request to approve a proposal dated 04/28/06 from Tetra Tech to prepare a formal design build contract for drainage work and gravel resurfacing on Golf Club Road west of Hacker at an estimated cost of \$54,750.00.

Moved by Smith, supported by Skolarus, to approve the proposal for Golf Club Road contingent upon the following:

1. Receipt of a permit from the Livingston County Road Commission.
 2. Approval from the Oceola Township Board for the cost sharing project.
- The motion carried unanimously.

8. Request to consider approval of a contract with the Livingston County Road Commission for limited drainage work and limestone resurfacing on Kellogg Road between McClements and Grand River, with the total Project cost not exceed \$141,680.

Moved by Ledford, supported by Smith, to table the request to allow Tetra Tech a chance to review the project and submit an alternate proposal. The motion carried unanimously.

9. Public Hearing on the State Street Road Improvement Project.

April 10, 2006 PC Approved Minutes

Moved by James Mortensen to recommend to the Township Board that the extension of the impact assessment be granted. Support by Barbara Figurski.

Motion carried unanimously.

Moved by James Mortensen that the extension of the site plan approval for one year be granted. Support by Dean Tengele.

Motion carried unanimously.

OPEN PUBLIC HEARING #2: Review of final site plan application and impact assessment for a proposed 16-unit single family site condominium development located north of Cunningham Lake Road, West of Sundance Trail in Sec. 34, petitioned by Doyle Homes, Inc. (06-06)

Robert Doyle and Jeff Doyle of Doyle Homes present. Petitioner requests approval of final site plan. Petitioner advises that the issue of the trees on lots 8 and 9 is driven by the profile of the road. In prior site plans, lot 8 was to be a topsoil stockpile area and would have been cleared anyway. The proposed grade is no longer close enough to the existing grade to save the trees. No tree survey was done and accordingly the plans are drawn up without specificity with trees and the trees at lots 8 and 9 are predominately black locust trees. The landscape plans would reflect that lots 8 and 9 would be planted with canopy trees pursuant to ordinance once the black locust trees were removed.

Brian Borden indicates that would be fine, but he would prefer to have an approved landscape plan rather than performing off-the-cuff replacements, which would be difficult for the Township staff. Additionally, it should be noted that black locust trees are on the prohibited species list.

James Mortensen clarifies that the landscape plan currently is approved, but any changes must be approved by the Planning Commission.

Brian Borden indicates that the remaining County approvals must be obtained prior to Planning Commission approval. The Drain Commission and Road Commission approvals are outstanding. Petitioner indicates the Drain Commission's approval is awaiting Tetra Tech's approval. Tesha Humphriss indicates that she is in contact with the Drain Commissioner's office and that is correct. Petitioner indicates the Road Commission has approved their plans, but then they were later contacted with some questions regarding discrepancies. Steve Morgan asks what that discrepancy is. Petitioner indicates that the Drain Commission wants to insure that the drain water runoff is released at the same rate as undeveloped property. The Road Commission requires same rate and volume as pre-development.

Brian Borden indicates that the three ground mounted lights are the only lights proposed. Petitioner confirms that.

April 10, 2006 PC Approved Minutes

Brian Borden proposes that a prohibition on tree removal within the rear and side yards be incorporated. Petitioner objects to that. Petitioner suggests that the by-laws reflect that approval be required to remove any tree greater than 8".

Brian Borden discusses the Cunningham Lake greenbelt and detention pond and confirms that they would be preserved and off-limits.

James Mortensen discusses what power the Township has as opposed to the power of the Association. Chairman Pobuda indicates that this has been problematic before. The Master Deed was reviewed by the Township Attorney pursuant to Petitioner.

Tesha Humphriss refers to the April 5th letter. The Health Department issued a preliminary approval letter and a formal approval should be forwarded to the Township.

Kelly VanMarter requests that the Exhibit B drawings be submitted and approved by the Township.

Steve Morgan inquires as to who will share the maintenance of the driveway for Lot 15. Petitioner indicates it's a good question and he will look into that.

Chairman Pobuda inquires about lot 15 with the existing house on it. Petitioner indicates he went to the Z.B.A. because the barn was an accessory structure and approval has been given for them to keep the barn.

Barbara Figurski asks about the deed restriction reflecting approval for 16 sites, but that more sites may be developed. Petitioner indicates one lot may be split, but there is no permission to do that at this point.

Dust control is issued on sheet 5, the erosion control plan.

Chairman Pobuda asks if the entryway is large enough to accommodate emergency vehicles. Petitioner indicates that it is per Road Commission standards. Chairman Pobuda suggests they revisit that and make sure the entry is large enough.

Chairman Pobuda requests that Petitioner consider adding watering capabilities for the entryway planting area.

Planning Commission disposition of petition

- A. Recommendation of impact assessment.
- B. Recommendation of site plan.

Moved by Barbara Figurski to recommend approval to the Township Board of the environmental impact assessment and date it as of today. Support by Curt Brown.

Motion carried unanimously.

Moved by James Mortensen recommend to the Township Board that the site plan be approved subject to the following:

1. Any deviation in landscaping from what is shown on plan will require approval of Township Administration staff and/or revision of site plan.
2. The Master Deed should be revised to indicate the financial responsibility for maintaining the shared driveway of lots 15 and 16.
3. The landscaping at the subdivision entrance will be irrigated.
4. The requirements of the Township Engineer as outlined in Tetra Tech letter dated April 5, 2006 be complied with.

Support by Barbara Figurski.

Steve Morgan requests clarification of irrigation provision. James Mortensen indicates it is irrigation for the landscaping at the entrance.

Motion carried unanimously.

OPEN PUBLIC HEARING #3: Review of site plan application and impact assessment to occupy existing building located at 895 Grand Oaks Drive, Petitioned by Kubinec Strapping. (06-08)

Cathy Riesterer, Attorney for Petitioner is present with Bob & Shirley Kubinec, 4777 New Haven Drive, Howell, Michigan and Michael Siterlet, Construction Manager, 247 Victoria Park, Howell, Michigan.

Petitioner seeks site plan approval.

Petitioner indicates that the cost of connecting to public water and excavation would total approximately \$7,000.00. It is suggested that water usage would be minimal with a strapping business and would approximate five gallons per day. Petitioner would rather utilize those monies in landscaping and improvement of facade.

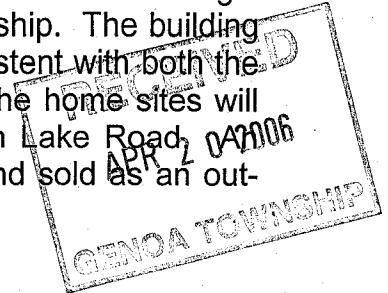
James Mortensen inquires about the smaller building indicated behind the primary building in the plans. Petitioner indicates there is no future building foreseen. James Mortensen indicates any approval at this point does not include that. Chairman Pobuda indicates any approval regarding setbacks is grandfathered in. Therefore, any expansion that would increase any nonconformity would be prohibited and would require approval.

Brian Borden goes over the April 4th letter and the concerns outlined therein. The subject property is currently under review to industrial and that has not been approved yet. Therefore, any action taken tonight should be subject to that. Applicant has already

Final Approval

Environmental Impact Assessment

Mountain Top Estates is a 25 acre site that is proposed to become a 16 lot single family site condominium located in Section 34 of Genoa Township. The building sites are proposed to be a minimum of one acre in size, consistent with both the current zoning and the community's master land use plan. The home sites will be located on a private road which connects to Cunningham Lake Road, an existing historic home located on the site will be preserved and sold as an out-parcel with direct access to Cunningham Lake Road.



Impact on Natural Features

The site slopes upwards from all sides to a central hill top. From the low point of the site near Cunningham Lake Road to the high point, there is over 90 feet of grade change. Soils on the site are all within the Fox-Boyer complex. This soil type is sand and sandy loams, characterized by good permeability. Seven test holes were dug on the site by the applicant to a depth of eight feet and medium to coarse sands were uncovered.

Vegetative cover on the site can be divided into three types; open field; woodland; and transition areas of young volunteer tree growth. A review of archive aerial photographs indicate that the site was cleared for agricultural purposes (prior to 1940) with a few trees in existence along property boundaries and within the southern third of the site.

Open grassland meadow is found at the top of the hill and along the central ridge of the site. This area likely provides habitat for small mammals and rodents.

The southern and central parts of the site include a mixed age stand of (mostly) deciduous trees, including red oak, white oak, hickory and maple. The woodland also includes a number of mature evergreen trees (primarily spruces). Most trees are approximately 20 to 40 years of age and range from four to eighteen inches in diameter. The southern third of the site has a scattered sampling of larger (24 to 36 inches in diameter) red and white oaks.

The woodland at the north central and northeast portion of the site is dominated by black locust trees from four to fifteen inches in diameter. Other trees growing in this area include poplar, box elder and black cherry. The northwest corner of the site contains a stand of scotch pines approximately six to eighteen inches in diameter.

The woodland portions of the site likely provide shelter and feeding habitat for mammals such as white tailed deer, groundhogs, opossum and fox as well as habitat for raptors and songbirds. While the existing habitats provide localized value for wildlife, these habitats are not unique in southeast Michigan or the area surrounding the site.

To minimize habitat and woodland impacts, the site plan focuses development in the central parts of the site, leaving the steeply sloping wooded perimeter of the site largely intact as habitat and corridor for wildlife. In addition, the applicant is proposing 3:1 side slopes for the proposed road to minimize disturbance of wooded areas.

No wetlands, ponds or streams exist on the site.

Impacts on Surrounding Land Uses

The site is bordered by 1 acre lot subdivisions, large lot residential, and Brighton State Recreation Area land (to the south).

The proposed plan is consistent with current zoning and the Genoa Township Master Plan and does not represent a conflict with surrounding land uses.

Impacts on Public Facilities and Services

Given the limited number of new homes proposed, impacts to the public schools, recreation facilities, police protection, fire protection and emergency services are not anticipated.

Impacts on Public Utilities

The proposed homes will be served by private, individual septic systems and wells.

Storm water runoff from the site will be managed by retention and detention basins located on-site. Storm water calculations are provided on the site plans.

During the construction phase of the project the appropriate erosion control measures will be installed and maintained pursuant to the direction of Livingston County Drain Commission. Measures will include silt fence and stone check dams. Vegetative cover will be established on the site immediately following finish grading of the site. The building contractor will be required to manage on-site conditions to control emissions of dust by use of water or other measures.

Traffic Impact

Access to the site will be from Cunningham Lake Road, a public road maintained by the Livingston County Road Commission. The entry to the site has been located to maximize the sight distance for safe ingress and egress to the development.

Given the small number of new homes proposed, any impacts to local traffic are anticipated to be minor and limited in scope.

Construction traffic will be directed to use Cunningham Lake Road for ingress and egress to minimize impacts to nearby established neighborhoods.

Historic and Cultural Resources

The existing historic home (built in 1891) on the site will be preserved and sold separately from the development on a lot sized to conform to existing zoning.

Preparer

Robert R. Doyle, a landscape architect registered in the State of Michigan (No. 1050) prepared this environmental impact statement. Mr. Doyle has practiced landscape architecture in Michigan for the past 20 years, 11 of which were spent at the nationally known landscape architecture/environmental-planning firm of Johnson, Johnson and Roy/Inc., which is located in Ann Arbor. Mr. Doyle's address is: 210 S. Washington/ Ypsilanti, Michigan/ 48197

Final Site Plan of

MOUNTAIN TOP ESTATES

Site Condominium

SECTION 34 T2N-R5E, GENOA TWP.
LIVINGSTON COUNTY, MICHIGAN

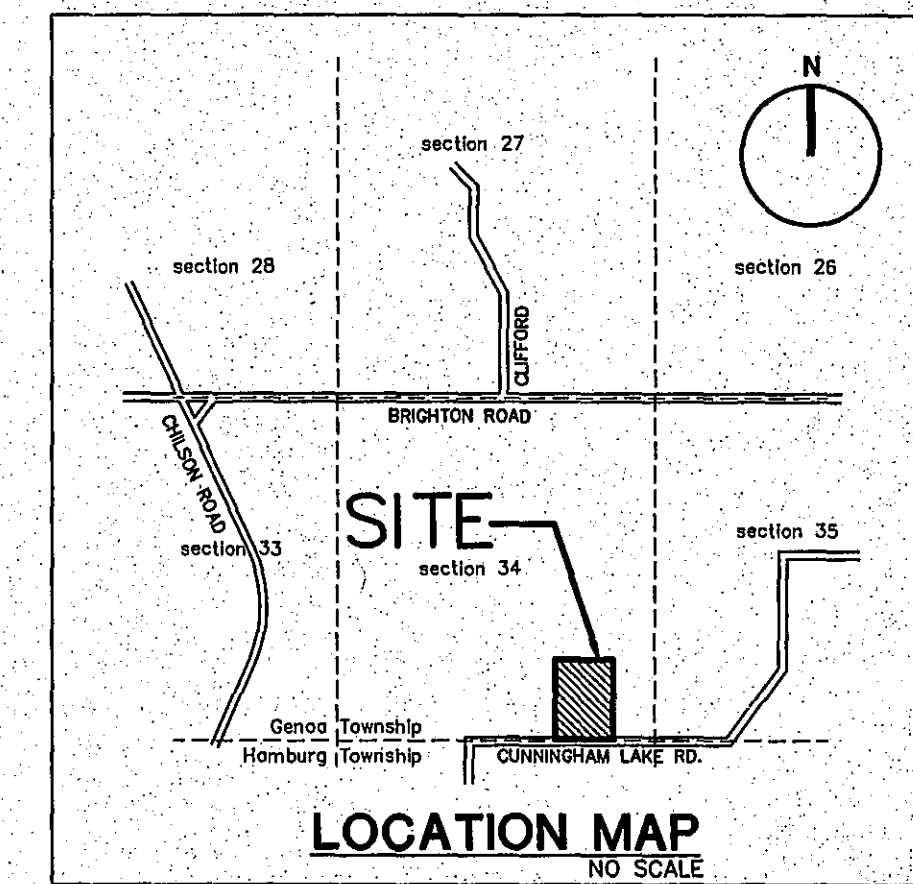
LEGAL DESCRIPTIONS

Legal description(as surveyed, 23.67±Acres--Gross):

A parcel of land located in the Southeast quarter of Section 34, Town 2 North, Range 5 East, Genoa Township, Livingston County, Michigan, said parcel more fully described as: Commencing at the Southeast corner of Section 34, T2N-R5E; thence South 87° 27' 50" West(rec. as: South 87° 34' 57" West), 620.79 feet on South line of said section to the POINT OF BEGINNING; thence continuing South 87° 27' 50" West(rec. as: South 87° 34' 57" West), 699.88 feet; thence North 02° 41' 06" West, 1150.07 feet in part on the East line of "Copperleaf" (L.3924,pg.7604) a site condominium; thence North 87° 30' 35" East, 951.63 feet on the South line of "Mystic Lake Hills Subdivision", as recorded in Liber 18 of Plats, pages 28 through 32, Livingston County records; thence South 02° 33' 20" East, 902.29 feet(rec. as: South 02° 31' 12" East); thence South 87° 27' 50" West, 249.06 feet; thence South 02° 32' 10" East, 247.02 feet to the POINT OF BEGINNING, said parcel contains 23.67 acres, more or less, being subject to easements and restrictions of record, if any, including the rights of the public within the public right of way of "Cunningham Lake Road".

DRAWING INDEX

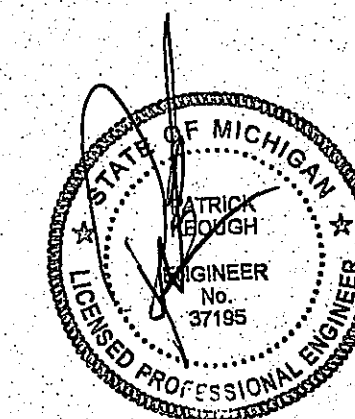
NO.	TITLE
1.	COVER SHEET
2.	SITE PLAN
3.	GRADING PLAN
4.	ROADWAY PLAN AND PROFILE
5.	EROSION CONTROL PLAN
6.	DRAINAGE AREA MAPS
7.	DETAILS
8.	LANDSCAPE PLAN
9.	STORM SEWER PROFILES



NOTES:

- ZONING OF SITE = LOW DENSITY RESIDENTIAL (LDR)
MINIMUM LOT AREA = 43,560 SQ. FT (1 ACRE)
MINIMUM LOT FRONTAGE = 150 FEET
MAXIMUM BLDG HEIGHT = 35 FT
- ALL ROADS WITHIN THE DEVELOPMENT SHALL BE PRIVATE.
- ALL LOTS TO BE SERVICED BY INDIVIDUAL WATER WELLS AND SEPTIC FIELDS.
- TYPICAL BUILDING SETBACKS - FRONT YARD = 50 FEET
SIDE YARD = 30 FEET
REAR YARD = 60 FEET
- THIS PROJECT SHALL BE DEVELOPED IN ONE PHASE.
- ALL UTILITIES SHALL BE UNDERGROUND
- SOILS ARE PREDOMINANTLY FOX & FOX BOYER SAND AND SANDY LOAMS AND ARE SUITABLE FOR RESIDENTIAL DEVELOPMENT
- ALL ENCLOSED STORM DRAINAGE SHALL HAVE A 20' 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.

GENOA TOWNSHIP
SITE PLAN APPROVED



REVISIONS:
9-4-05 REVISED PER TWP. REVIEW
10-10-05 REVISED PER TWP. P.C. MEETING
02-10-06 REVISED PER TWP. ENGINEER
03-17-06 REVISED PER AGENCIES

OWNER/DEVELOPER:
DOYLE HOMES
896 CHILSON ROAD
HOWELL, MI 48843
810 229-7505

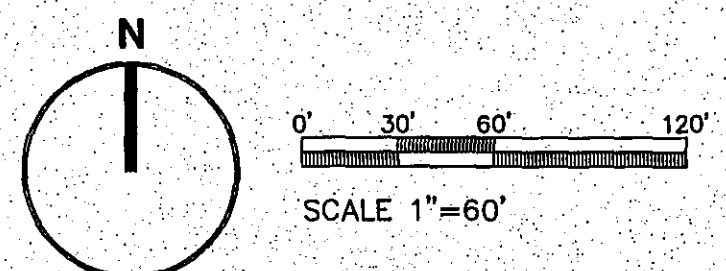
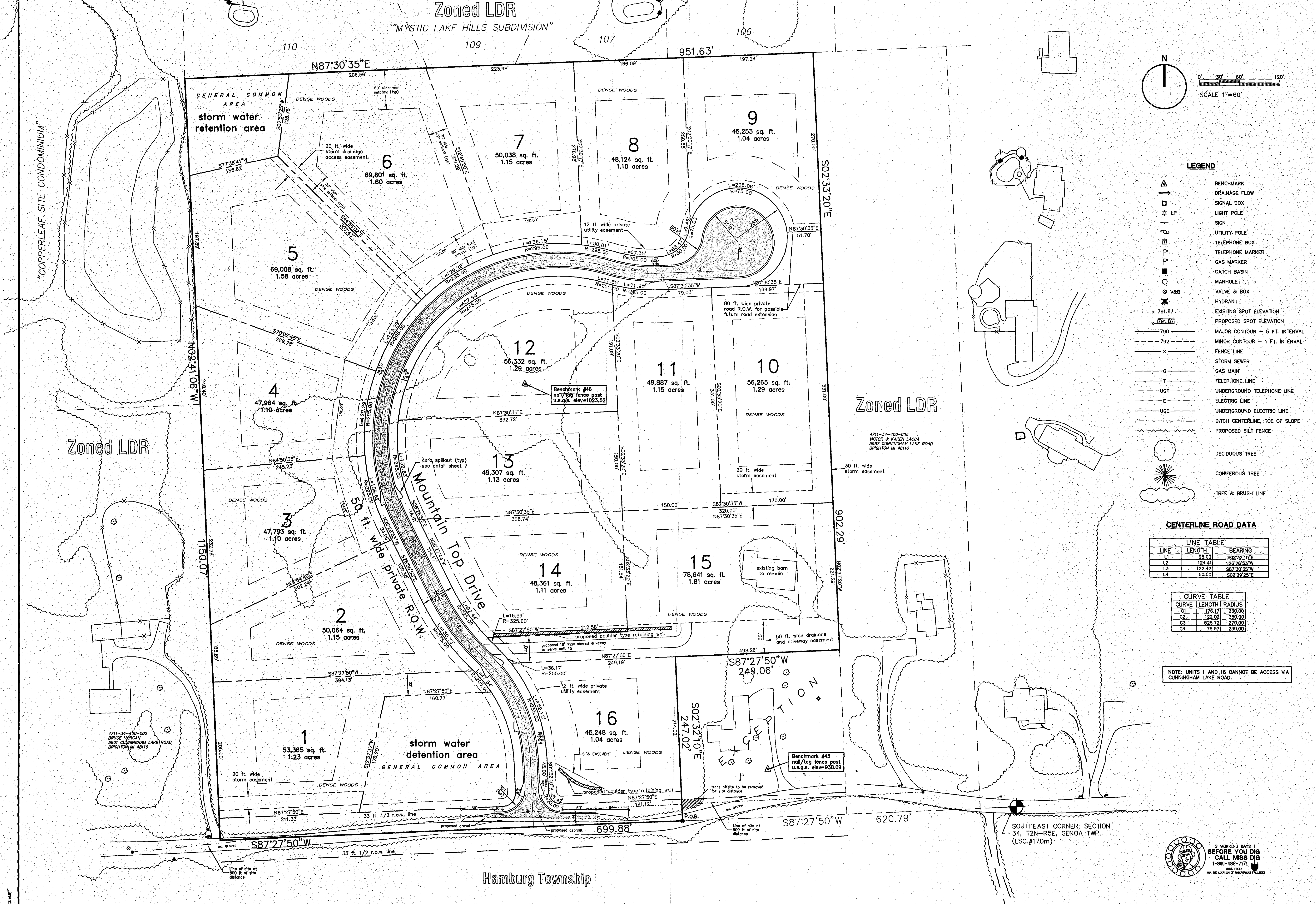
MOUNTAIN TOP ESTATES
SITE CONDOMINIUM
COVER SHEET

ADVANTAGE
CIVIL
ENGINEERING
110 E. Grand River, Howell, MI 48843 517 545-4141 Fax 517 545-4145

DATE: 7-26-06
DRAWN BY: TAH
CHECKED BY: PCK
JOB No. 05049

DRAWING No. 1

Zoned LDR
"MYSTIC LAKE HILLS SUBDIVISION"



LEGEND

- BENCHMARK
- DRAINAGE FLOW
- SIGNAL BOX
- LIGHT POLE
- SIGN
- UTILITY POLE
- TELEPHONE BOX
- TELEPHONE MARKER
- GAS MARKER
- CATCH BASIN
- MANHOLE
- VALVE & BOX
- HYDRANT
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- MAJOR CONTOUR - 5 FT. INTERVAL
- MINOR CONTOUR - 1 FT. INTERVAL
- FENCE LINE
- STORM SEWER
- GAS MAIN
- TELEPHONE LINE
- UNDERGROUND TELEPHONE LINE
- ELECTRIC LINE
- UNDERGROUND ELECTRIC LINE
- DITCH CENTERLINE, TOE OF SLOPE
- PROPOSED SILT FENCE
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE & BRUSH LINE

CENTERLINE ROAD DATA

LINE	LENGTH	BEARING
L1	98.00	S02°32'10"E
L2	124.41	N28°28'33"W
L3	122.47	S87°30'35"W
L4	50.00	S02°29'28"E

CURVE TABLE

CURVE	LENGTH	RADIUS
C1	176.17	230.00
C2	122.02	350.00
C3	823.72	210.00
C4	75.57	230.00

NOTE: UNITS 1 AND 16 CANNOT BE ACCESS VIA CUNNINGHAM LAKE ROAD.

Zoned LDR

4711-34-400-005
VICTOR & KAREN LACCA
5827 CUNNINGHAM LAKE ROAD
BRIGHTON MI 48116

Hamburg Township

SOUTHEAST CORNER, SECTION 34, T2N-R5E, GENOA TWP. (L.S.C.#170m)



REVISIONS

NO.	DATE	BY	DESCRIPTION
1	7-25-06	TAH	ISSUE FOR PERMIT
2	8-15-06	TAH	REVISED PER TWP. COMMENTS
3	9-15-06	TAH	REVISED PER TWP. COMMENTS
4	10-15-06	TAH	REVISED PER TWP. COMMENTS

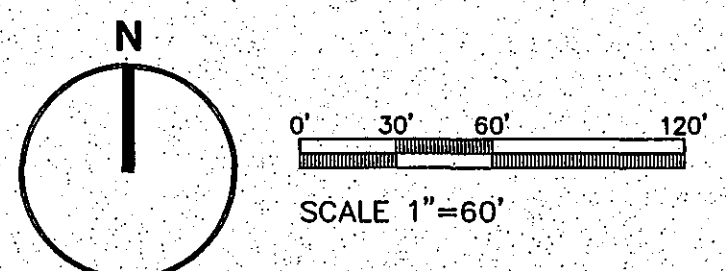
OWNER/DEVELOPER:
DOYLE HOMES
4808 CHILSON ROAD
HOWELL, MI 48843
810 229-7505

ADVANTAGE CIVIL ENGINEERING
MOUNTAIN TOP ESTATES
SITE CONDOMINIUM
SITE PLAN

DATE: 7-25-06
DRAWN BY: TAH
CHECKED BY: PCK
JOB No. 06049

DRAWING No. 2

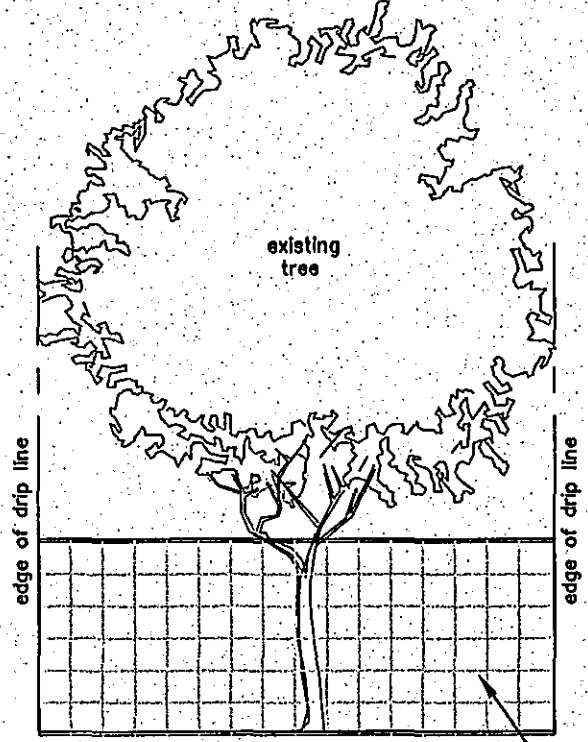
Zoned LDR
"MYSTIC LAKE HILLS SUBDIVISION"



LEGEND

- BENCHMARK
- DRAINAGE FLOW
- PROPOSED WELL
- LIGHT POLE
- SIGN
- UTILITY POLE
- TELEPHONE BOX
- TELEPHONE MARKER
- GAS MARKER
- CATCH BASIN
- MANHOLE
- VALVE & BOX
- HYDRANT
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- MAJOR CONTOUR - 10 FT. INTERVAL
- MINOR CONTOUR - 2 FT. INTERVAL
- FENCE LINE
- STORM SEWER
- GAS MAIN
- TELEPHONE LINE
- UNDERGROUND TELEPHONE LINE
- ELECTRIC LINE
- UNDERGROUND ELECTRIC LINE
- DITCH CENTERLINE, TOE OF SLOPE
- PROPOSED SILT FENCE
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE & BRUSH LINE
- PROPOSED SEPTIC FIELD
- TREE PROTECTION FENCE LINE

Note:
1. The finish floor elevations shown are for general information purposes only. The actual finish floor elevations may change based on the actual building and location for each site.
2. All disturbed areas with slopes greater than 1:4 shall be stabilized with hydroseed as necessary to control erosion.
3. All storm sewer flared end sections shall have Rip-Rap placed Per the Detail on Sheet 7.



TREE PROTECTION DETAIL
NO SCALE



REVISIONS:

3-22-06	REVISED PER TWP REVIEW
02-10-06	REVISED PER TWP ENGINEERING
03-07-06	REVISED FOR L.C.O.D.
03-17-06	REVISED PER USAGES

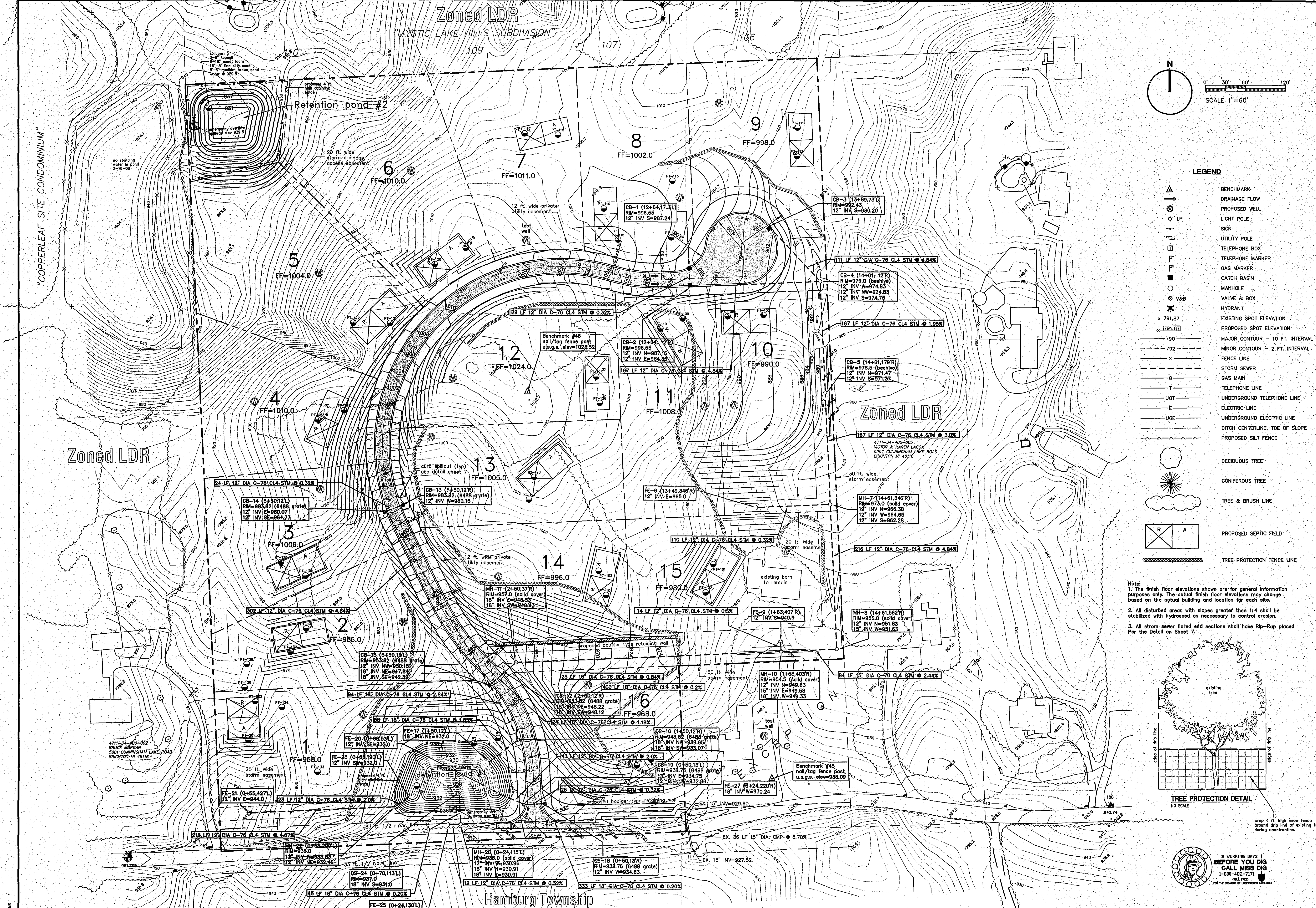
OWNER/DEVELOPER:
DOYLE HOMES
4896 CHILSON ROAD
HOWELL, MI 48843
810 229-7505

MOUNTAIN TOP ESTATES
SITE CONDOMINIUM
GRADING PLAN

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

DATE: 7-26-06
DRAWN BY: TAH
CHECKED BY: PCK
JOB No. 08049

DRAWING No. 3



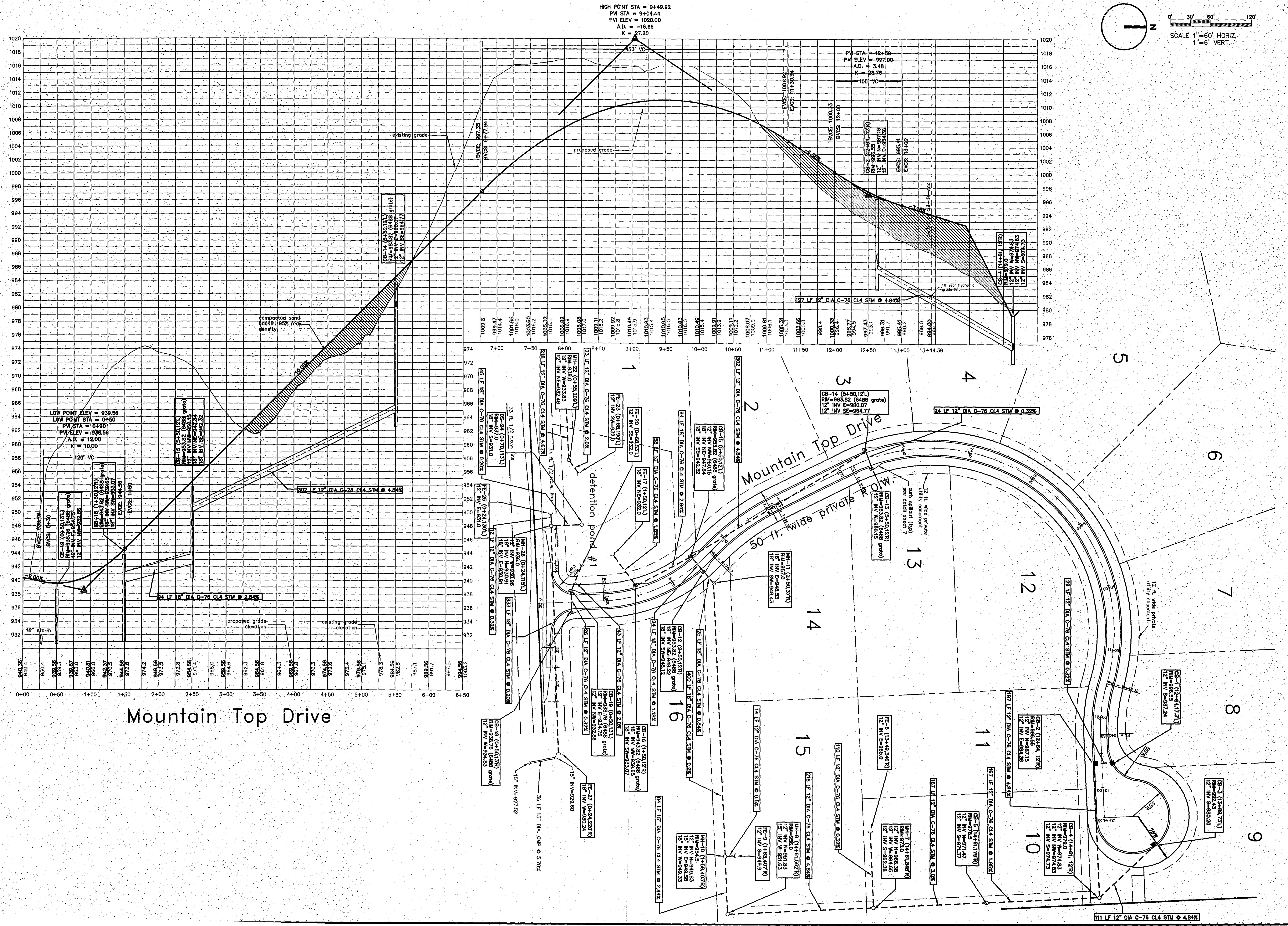
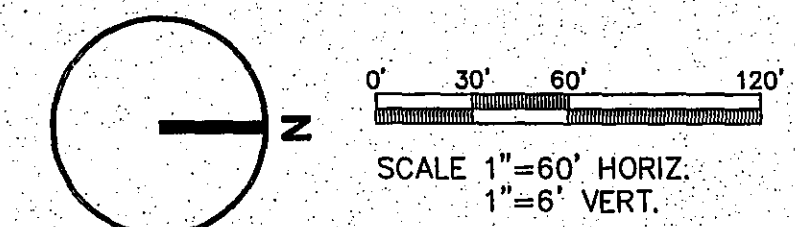
"COPPERLEAF SITE CONDOMINIUM"

Zoned LDR

Zoned LDR

Hamburg Township

DATE



HIGH POINT STA = 9+49.92
 PM STA = 9+04.44
 PVI ELEV = 1020.00
 A.D. = -16.66
 K = 27.20

SCALE 1"=60' HORIZ.
 1"=6' VERT.

Mountain Top Drive

REVISIONS

01-10-06	REVISED PER TWP. ENGINEER
02-10-06	REVISED PER TWP. ENGINEER
03-17-06	REVISED PER AGENCIES

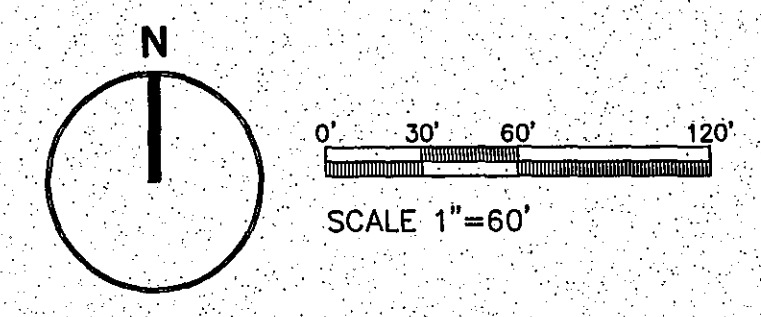
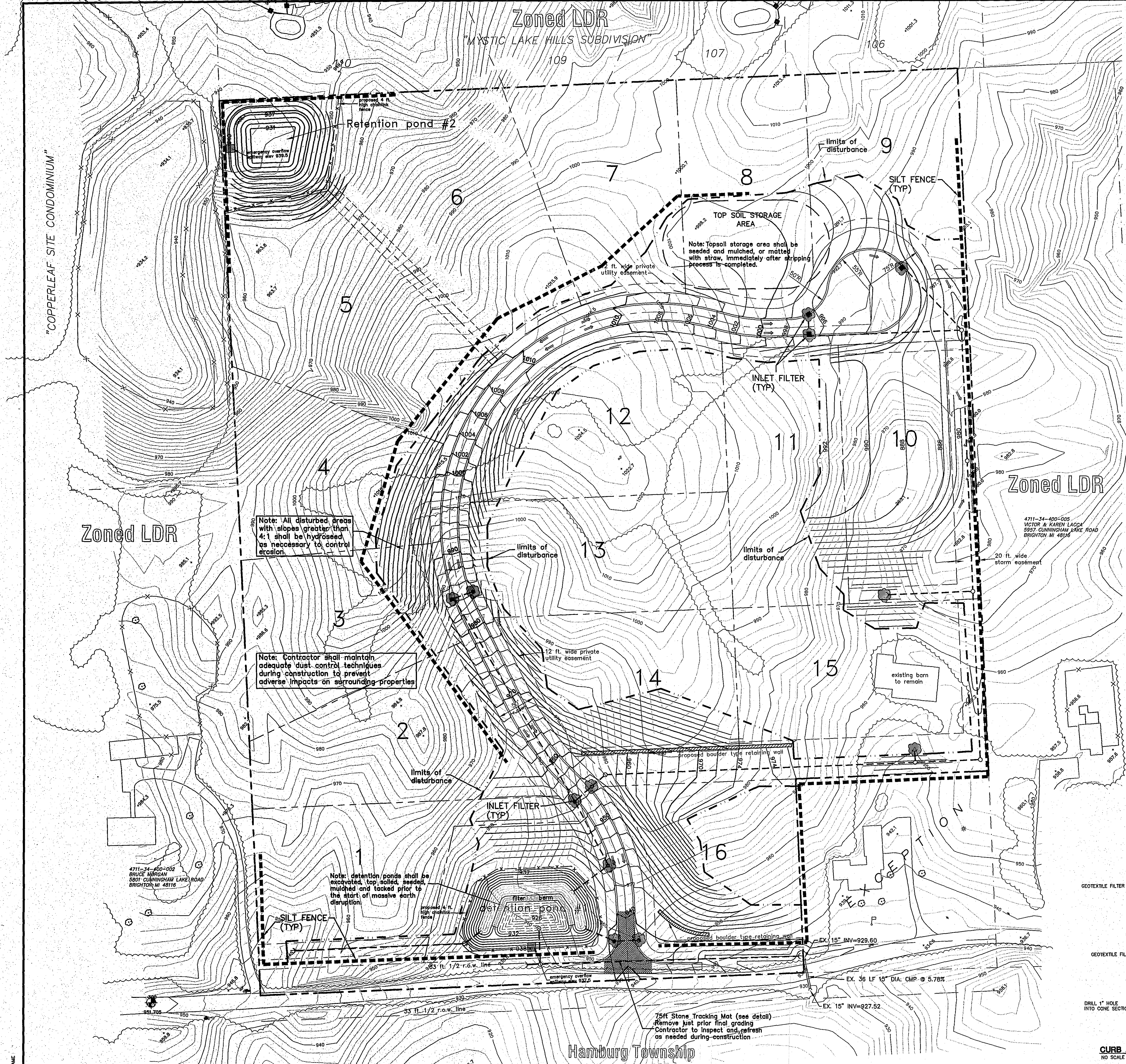
OWNER/DEVELOPER:
DOYLE HOMES
 4896 CHILSON ROAD
 HOWELL, MI 48843
 810-229-7505

MOUNTAIN TOP ESTATES
 SITE CONDOMINIUM
 ROADWAY PLAN AND PROFILE

ADVANTAGE CIVIL ENGINEERING
 110 E. Grand River, Howell, MI 48843 517-545-1441 Fax 517-545-1446

DATE: 7-25-06
 DRAWN BY: TAH
 CHECKED BY: PCK
 JOB No. 05049

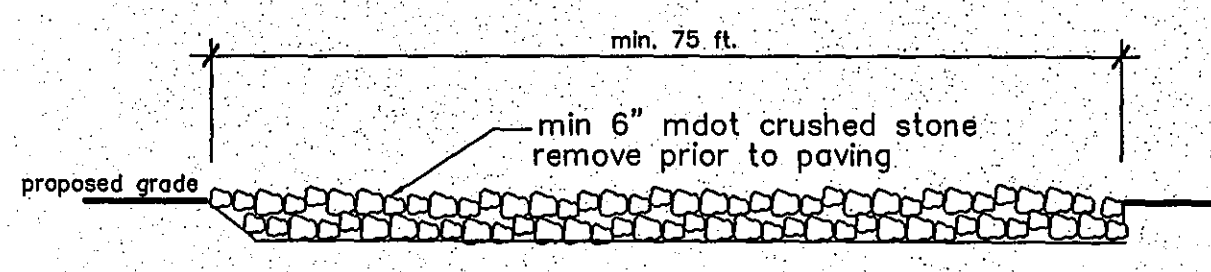
DRAWING No. 4



EROSION CONTROL SEQUENCE

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Install silt fence												
Construct sediment ponds												
Construct det. ponds												
Cut entrance road												
Install stone diaper												
Strip topsoil/trees												
Mass grade site												
Construct utilities												
Install inlet filters												
Install end section sediment filters												
Install silt traps												
Place curb & gutter												
Place pavement												
Finish grading												
Landscaping and seeding												

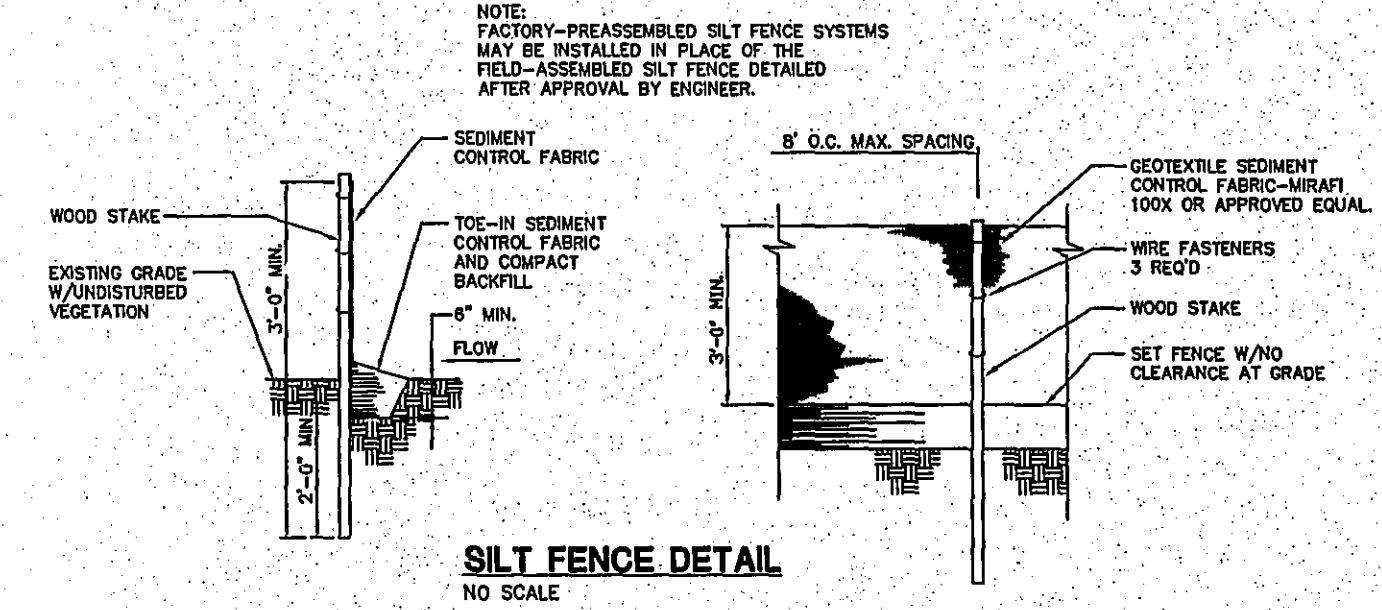
TOTAL AREA OF DISTURBANCE = 10.41 ACRES



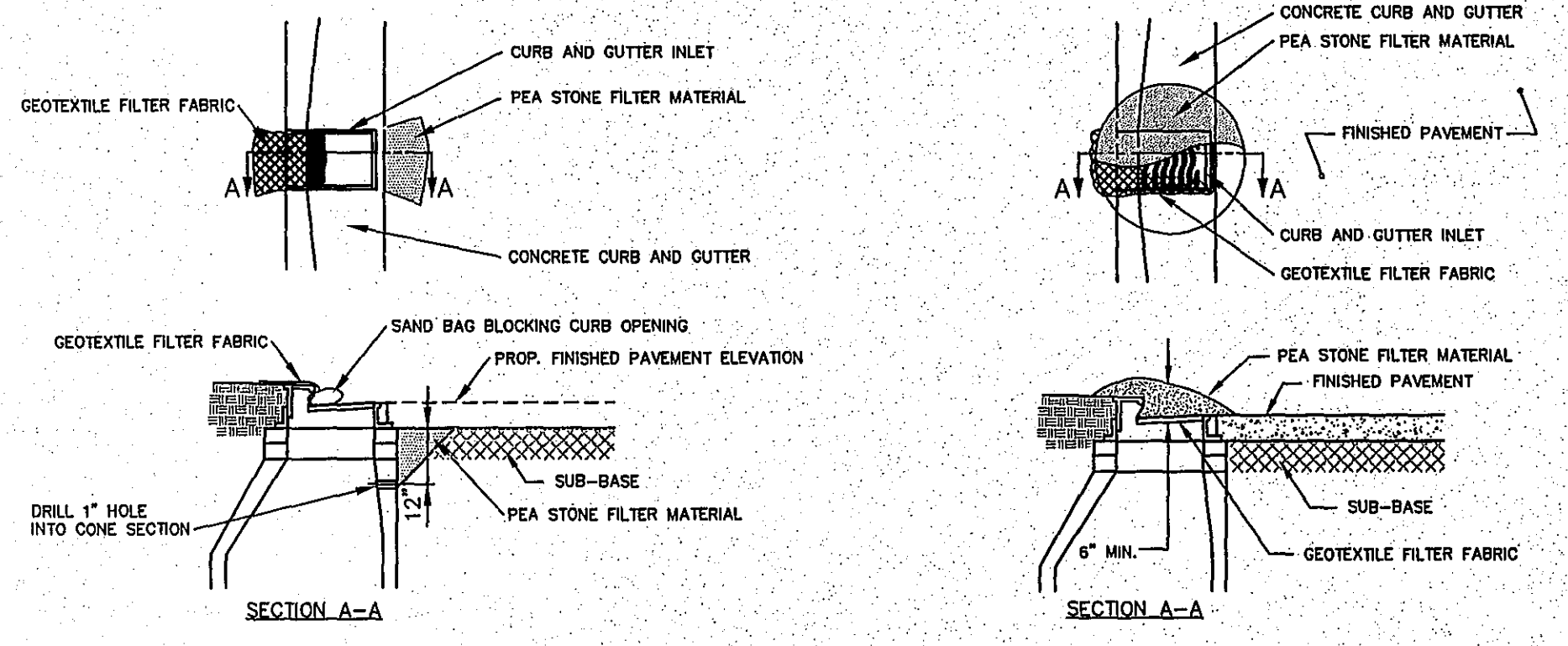
TRACKING MAT DETAIL
NO SCALE

SOIL EROSION CONTROL 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 shown on these plans in the following sequence:
 - Install silt fence
 - Cut entrance road and place stone tracking mat
 - Strip topsoil and stockpile on site
 - Mass grade site
 - Install inlet filters & end section filters
 - Remove stone tracking mat and asphalt proposed roads
 - Finish grade landscaped areas, topsoil, seed and mulch
 - Remove silt fence and inlet filters upon establishment of vegetation
- The Contractor shall preserve natural vegetation as much as possible.
- All areas disturbed during construction shall be restored with a minimum 3" of topsoil, seeded and mulched.



SILT FENCE DETAIL
NO SCALE



CURB AND GUTTER INLET FILTER (BEFORE PAVING)
NO SCALE

CURB AND GUTTER INLET FILTER (AFTER PAVING)
NO SCALE

REVISIONS:

3-10-05	REVISED FOR IMP. REVIEW
10-10-05	REVISED FOR IMP. P.C. MEETING
12-10-05	REVISED FOR IMP. ENGINEER
03-17-06	REVISED PER COMMENTS

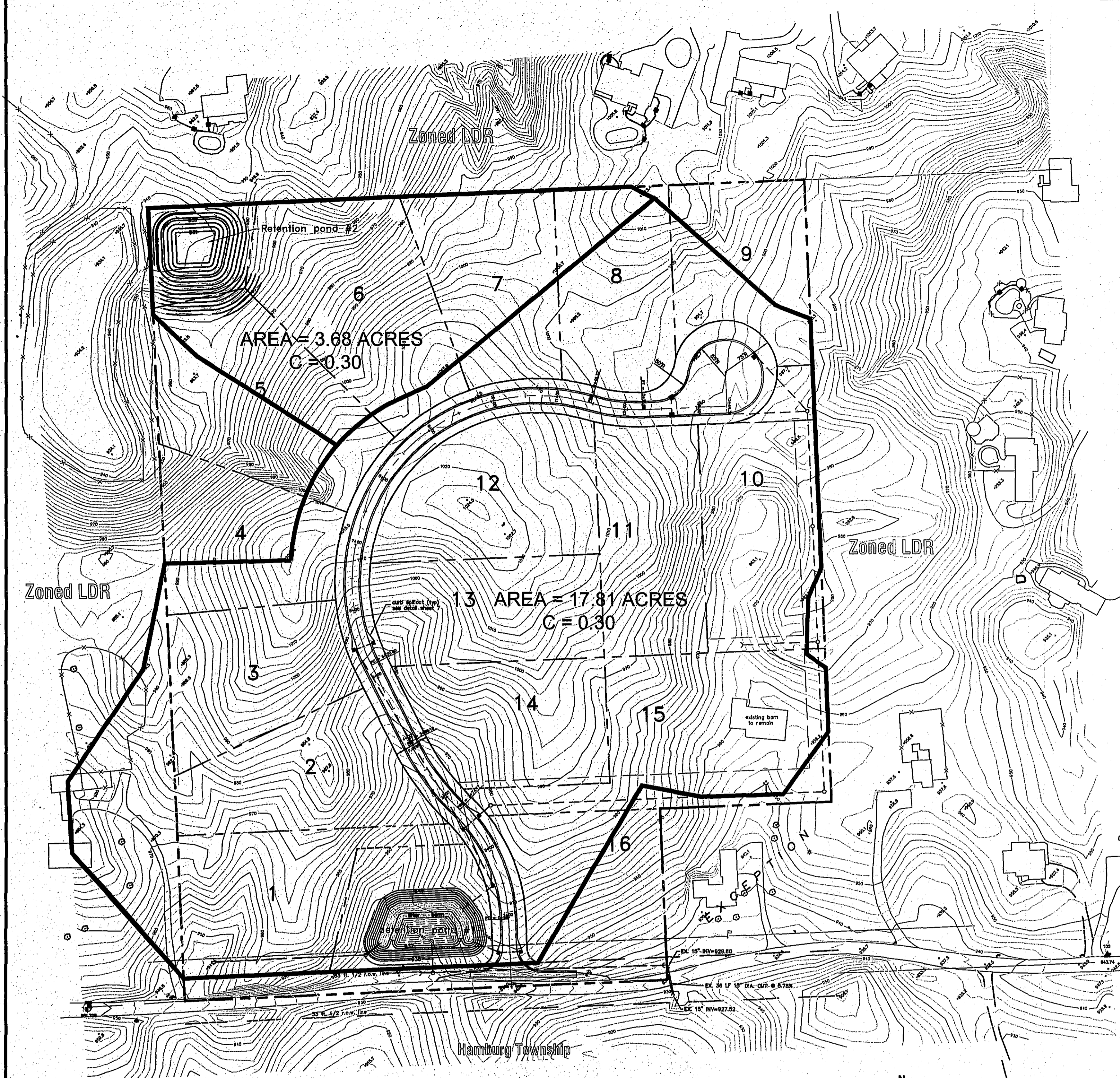
OWNER/DEVELOPER:
DOYLE HOMES
 4896 CHILSON ROAD
 HOWELL, MI 48843
 810 229-7505

ADVANTAGE
 MOUNTAIN TOP ESTATES
 SITE CONDOMINIUM
 EROSION CONTROL PLAN

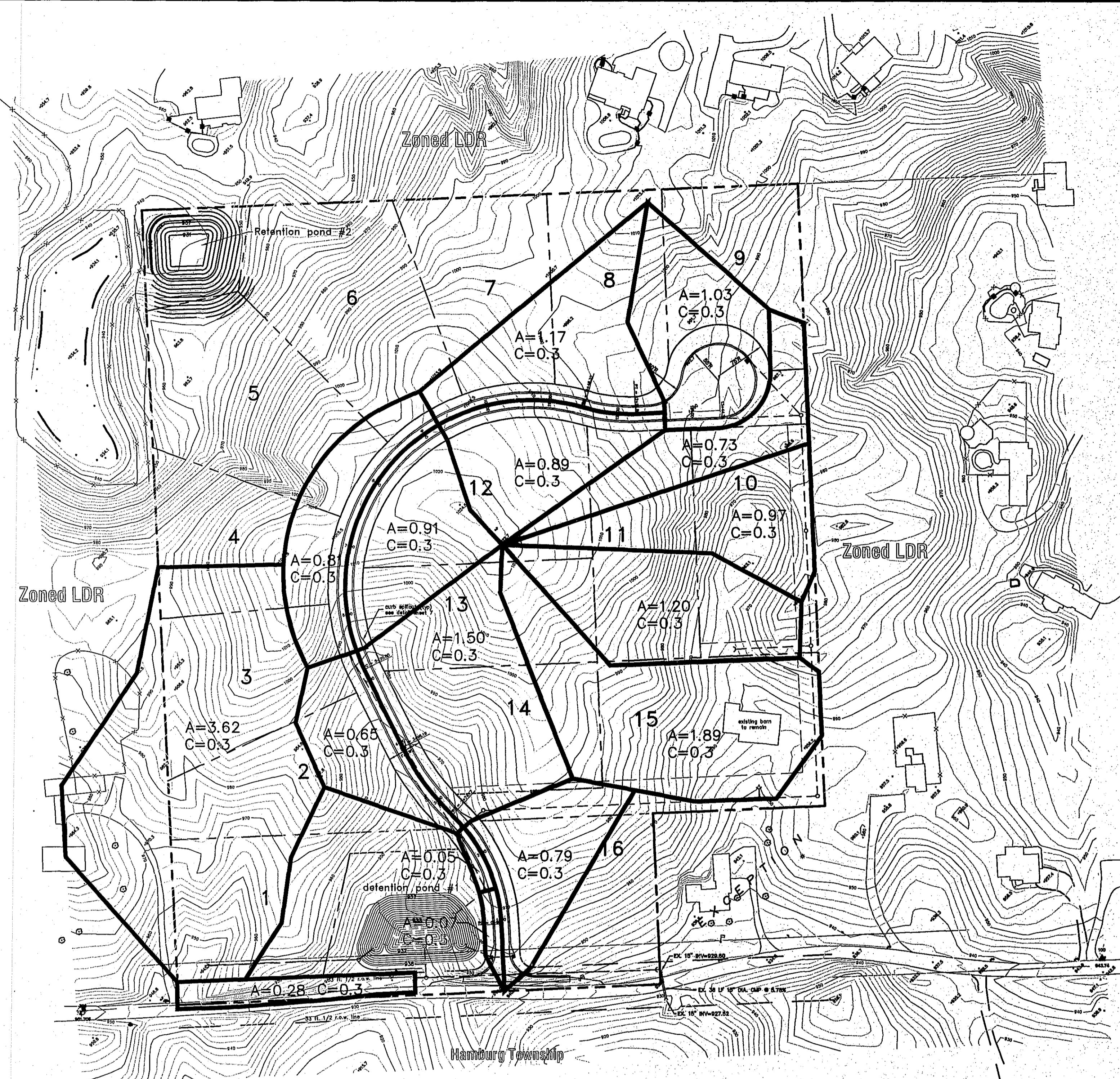
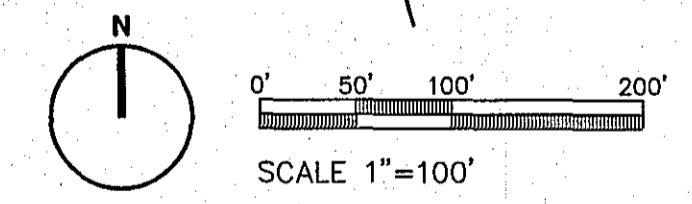
ADVANTAGE
 CIVIL
 ENGINEERING

DATE: **7-26-05**
 DRAWN BY: **TAH**
 CHECKED BY: **PCK**
 JOB No. **06049**

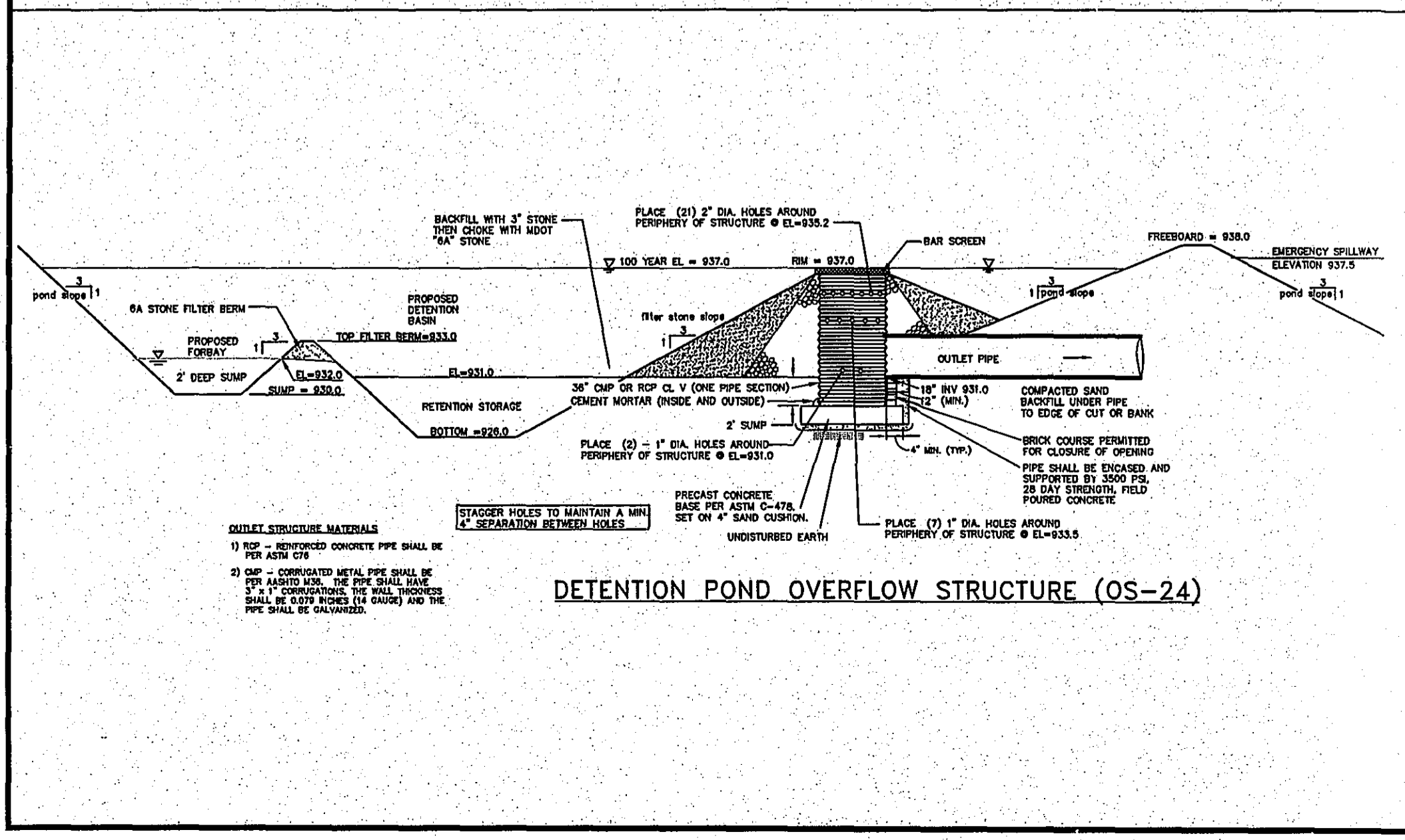
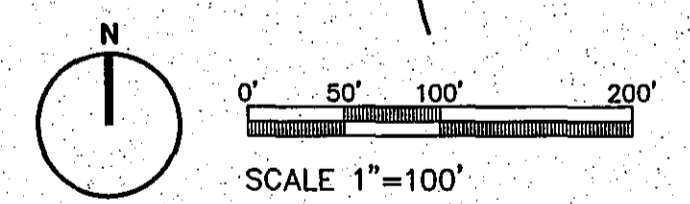
DRAWING No. **5**



DRAINAGE AREA MAP FOR PONDS



DRAINAGE AREA MAP FOR STORM SEWERS



DETENTION POND OVERFLOW STRUCTURE (OS-24)

DETENTION POND #1
 DRAINAGE AREA = 17.81 ACRES COMPOUND "C" VALUE = 0.30
 ROADWAY = 0.97 ACRES X 0.9 = 0.873
 DRIVEWAYS = 16 X 2000 SF = 0.73 X 0.9 = 0.657
 HOUSES = 16 X 2200 SF = 0.81 X 0.9 = 0.729
 LAWN = 16.50 ACRES X 0.2 = 3.308
 TOTAL = 5.315/17.81=0.298 (USE C=0.3)

ALLOWABLE OUTFLOW = 17.81 X 0.20 CFS/ACRE = 3.56 CFS
 VOLUME REQUIRED @ T=90 MIN = 49,694 CF.
 VOLUME PROVIDED: 49,624 CF.

FIRST FLUSH VOLUME = 1815 X A X C = 1815 X A X C = 1815 X 17.81 AC X 0.30 = 9698 CF.
 FIRST FLUSH ELEVATION = 933.5
 BANKFULL FLOOD VOLUME = 5160 X A X C = 5160 X A X C = 5160 X 17.81 AC X 0.30 = 27570 CF.
 BANKFULL ELEVATION (10 yr-storm) = 935.2
 FORBAY VOLUME REQUIRED = 49694 X 0.05 = 2485 CF.

FORBAY HIGH WATER ELEVATION = 933.0
 SIDE SLOPES = 1:3

ELEVATION	SURFACE AREA	VOLUME	TOTAL VOLUME
932	2990	3636	3636
933	4282	1650	5286
934	3300	3782	9068
935	2046	5322	14390
936	9122	1122	15512
937	9917	10527	26039
938	11138	10527	36566
939	12412	11774	48340
940	13079	13079	61419
941	13745	14824	76243

ORIFICE CALCULATIONS:
 FIRST FLUSH
 $Q = 500/\sqrt{HEAD} = 0.112 \text{ CFS}$
 $A = Q/(C \cdot \text{SORT}(2GH))$
 $C = 0.62$
 $H = (933.5 - 931.0) = 2.5$
 $A = 0.0142 \text{ SF}$
 USING 1" DIA HOLES W/ $w = 0.00545 \text{ SF}$
 7 HOLES REQUIRED @ ELEVATION = 931.0
 (VIRTUAL RATE OF FLOW WITH 2 - 1 HOLES AT $w = 2.5 = 0.086 \text{ CFS}$)

BANKFULL
 RATE OF FLOW THROUGH FIRST FLUSH HOLES AT BANK FULL ELEVATION = 0.111 CFS
 $Q = CA \cdot \text{SORT}(2GH)$
 $C = 0.62$
 $A = 2 \cdot X \cdot 0.00545 = 0.0109 \text{ SF}$
 $H = (935.2 - 931.0) = 4.2$
 AMOUNT OF FLOW THROUGH FIRST FLUSH HOLES IN 40 HOUR PERIOD = 21,600 S X 0.111 CFS PLUS 85400 X 0.086 CFS = 13,824 CF.

AMOUNT OF FLOW THAT MUST PASS THROUGH BANK FULL HOLES BETWEEN 24 AND 40 HOUR PERIOD = 27570 CF - 13824 CF = 13,746 CF
 RATE OF FLOW THROUGH BANK FULL HOLES = 13,746 CF/57600 S = 0.239 CFS

$A = Q/C \cdot \text{SORT}(2GH) = 0.0368 \text{ SF}$
 $C = 0.62$
 $G = 32.2$
 $H = (935.2 - 933.5) = 1.7$
 USING 1" DIA HOLES WITH $w = 0.00545$
 7 HOLES REQUIRED AT ELEVATION = 933.5

100 YEAR
 $Q = 3.56 \text{ CFS}$
 FLOW FROM FIRST FLUSH/BANK FULL HOLES
 $Q = (10.62)(0.0368) \cdot \text{SORT}(24.5 \cdot 32.2) = 0.340 \text{ CFS}$
 $Q = (0.62)(0.0368) \cdot \text{SORT}(24.5 \cdot 32.2) = 0.340 \text{ CFS}$
 FLOW ALLOWED THROUGH 100 YEAR HOLES = 3.56 CFS - 0.340 CFS = 3.22 CFS
 $A = Q/C \cdot \text{SORT}(2GH) = 0.463 \text{ SF}$
 $C = 0.62$
 $G = 32.2$
 $H = (937.0 - 935.2) = 1.8$
 USING 2" DIA HOLES W/ $w = 0.0218 \text{ SF}$
 21 HOLES REQUIRED @ ELEV=935.2

RETENTION POND #2
 DRAINAGE AREA = 3.68 ACRES
 VOLUME REQUIRED = 3.68 X 43560 X 2/12 = 26717 C.F.
 VOLUME PROVIDED: 27,553 C.F.

DETENTION FREE BOARD ELEVATION = 940.0
 DETENTION HIGH WATER ELEVATION = 937.0
 SIDE SLOPES = 1:3

ELEVATION	SURFACE AREA	VOLUME	TOTAL VOLUME
931	2400	2708	2708
932	3011	3345	6053
933	3678	4040	10093
934	4402	5093	15186
935	5793	5902	21088
936	6020	6467	27555
937	6913		

STORM SEWER CALCULATIONS

FROM MH OR INLET	TO MH OR INLET	INCREMENT ACRES "A"	"C"	EQUIVALENT AREA ACRES CA	TOTAL AREA ACRES CA	T TIME MIN.	I INCHES PER HOUR	Q C.F.S. C.I.A.	DIAMETER OF PIPE IN.	SLOPE PIPE %	LENGTH OF LINE FT.	VELOCITY OF FLOW FT/SEC	TIME OF FLOW MIN.	PIPE CAPACITY C.F.S.	H.G. ELEV UPPER END	INVERT ELEV	LOWER INVERT ELEV	UPPER RM ELEV
CB-1	CB-2	1.17	0.3	0.35	0.35	15	4.38	1.53	12	0.32	29	2.6	0.2	2.01	987.99	987.24	987.15	996.55
CB-2	CB-4	0.89	0.3	0.27	0.62	15.2	4.35	2.70	12	4.84	137	10.0	0.3	7.84	994.76	994.26	974.83	996.55
CB-3	CB-4	1.03	0.3	0.31	0.31	15	4.38	1.36	12	1.95	167	6.3	0.4	4.97	975.73	974.73	971.47	979.0
CB-4	CB-5	0.73	0.3	0.22	1.15	15.5	4.32	4.97	12	1.95	167	6.3	0.4	4.97	975.73	974.73	971.47	979.0
CB-5	MH-7	0.97	0.3	0.29	1.44	15.9	4.28	6.16	12	3.0	167	7.9	0.4	6.17	972.37	971.37	966.38	978.5
FE-6	MH-7	1.20	0.3	0.36	0.36	15	4.38	1.58	12	0.32	110	2.6	0.7	2.01	985.8	985.0	984.65	NA
MH-8	MH-9	0	NA	NA	1.8	16.3	4.23	7.81	12	4.84	216	10.0	0.4	7.84	964.40	962.28	951.83	973.0
FE-9	MH-10	1.89	0.3	0.57	0.57	15	4.38	2.50	12	0.5	14	3.2	0.1	2.52	952.9	949.9	949.83	NA
MH-10	MH-11	0	NA	NA	2.37	16.9	4.18	9.81	18	HS=0.69	400	5.6	1.2	9.81	953.39	949.33	945.53	954.50
MH-11	CB-12	0	NA	NA	2.37	16.1	4.06	9.82	18	0.24	25	5.4	0.1	9.82	949.83	948.43	946.23	957.0
CB-12	CB-15	1.5	0.3	0.45	2.82	18.2	4.05	11.42	18	1.18	24	6.4	0.1	11.42	949.82	948.12	947.84	954.32
CB-13	CB-14	0.91	0.3	0.27	0.27	15	4.38	1.18	12	0.32	24	2.6	0.2	2.01	960.80	960.15	950.07	954.32
CB-14	CB-15	0.81	0.3	0.24	0.51	15.2	4.35	2.22	12	4.84	302	10.0	0.5	7.84	965.42	964.77	950.15	954.32
CB-15	CB-16	0.65	0.3	0.20	3.53	18.3	4.04	14.26	18	2.84	94	10.0	0.2	17.70	943.45	942.32	939.65	954.32
CB-16	FE-17	0.05	0.3	0.02	3.55	18.5	4.02	14.27	18	1.85	58	8.1	0.1	14.28	936.27	933.07	932.0	944.32
CB-18	CB-19	0.79	0.3	0.24	0.24	15	4.38	1.05	12	0.32	26	2.6	0.2	2.01	935.38	934.83	934.75	938.26
CB-19	FE-20	0.07	0.3	0.02	2.6	15.2	4.35	1.13	12	2.0	43	6.4	0.1	5.62	949.83	948.83	932.0	938.26
FE-21	MH-22	3.62	0.3	1.09	1.09	15	4.38	4.77	12	4.67	218	9.8	0.4	7.70	944.65	944.0	933.88	NA
MH-22	FE-23	0	NA	NA	1.09	15.4	4.33	4.72	12	2.0	23	6.4	0.1	5.03	935.60	932.46	932.0	938.0
OS-24	MH-26	17.81	0.3	5.34	5.34	90	1.94	10.38	18	HS=0.97	45	8.4	0.1	10.38	934.0	931.0	930.91	937.0
FE-25	MH-26	0.28	0.3	0.08	0.08	15	4.38	0.35	12	0.32	15	2.6	0.1	2.01	933.57	931.0	930.96	NA
MH-26	FE-27	0	NA	NA	5.42	90	1.94	10.51	18	HS=1.0	333	8.8	0.6	10.51	933.57	930.91	930.24	936.0

REVISIONS:

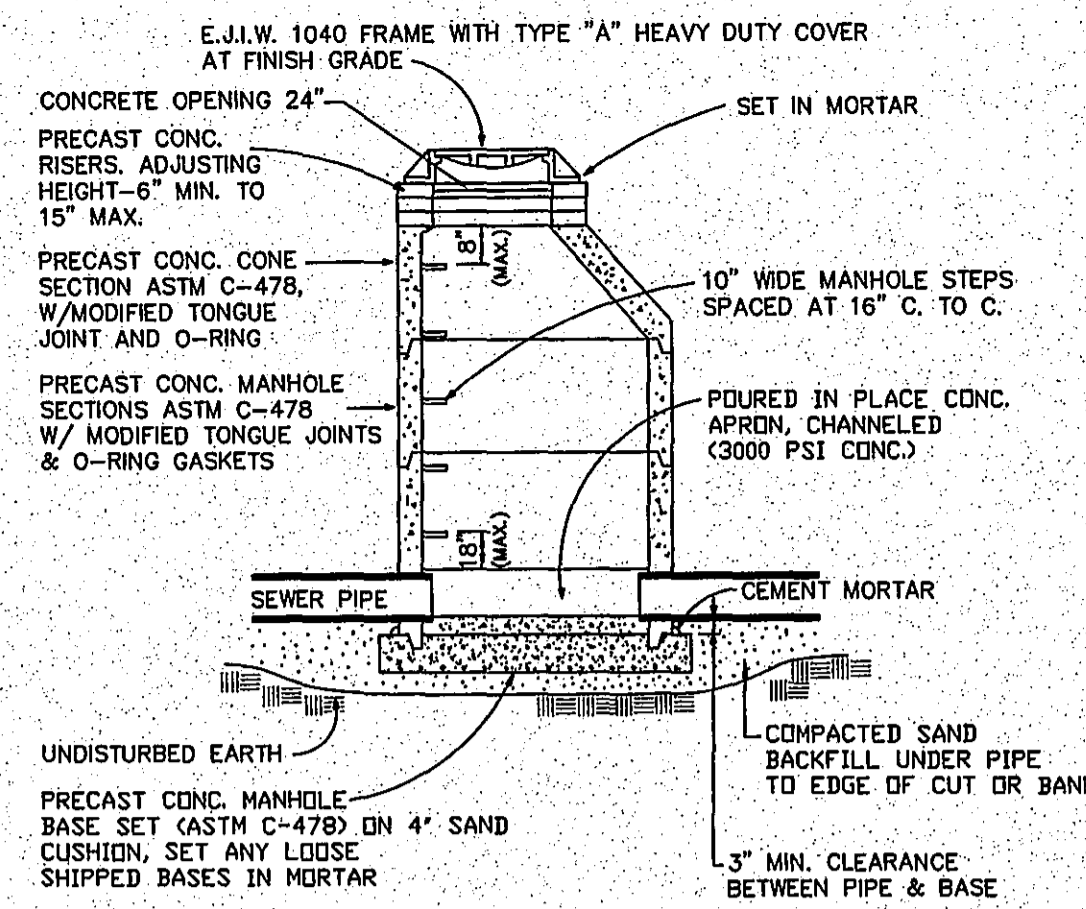
10-10-08	ISSUED FOR TWP. DESIGN
11-10-08	REVISED PER TWP. P.C. MEETING
12-10-08	REVISED PER TWP. ENGINEER
03-17-09	REVISED PER AGENCIES

OWNER/DEVELOPER:
DOYLE HOMES
 4896 CHILSON ROAD
 HOWELL, MI 48843
 810 229-7605

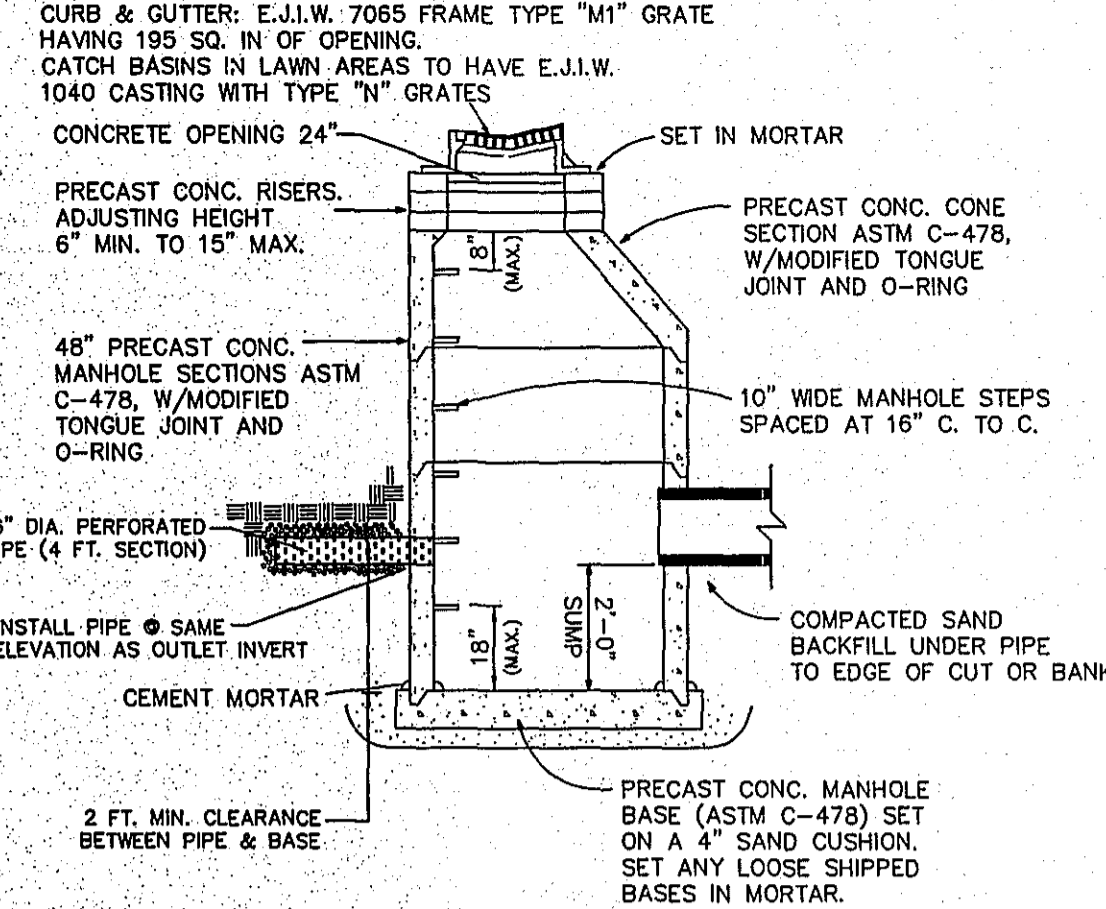
ADVANTAGE MOUNTAIN TOP ESTATES
 SITE CONDOMINIUM
 DRAINAGE AREA MAPS

ADVANTAGE CIVIL ENGINEERING
 110 E. Grand River, Howell, MI 48843 817 545-4141 Fax 817 545-1148

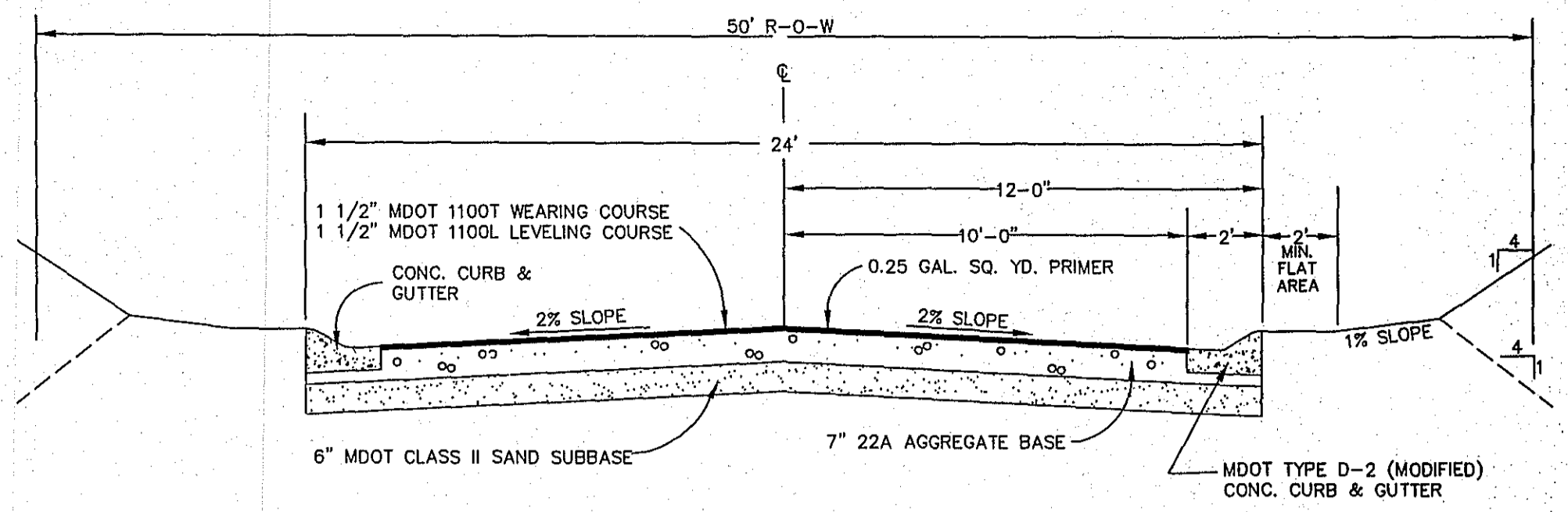
DATE: **7-25-06**
 DRAWN BY: **TAH**
 CHECKED BY: **PKK**
 JOB No. **06049**
 DRAWING No.



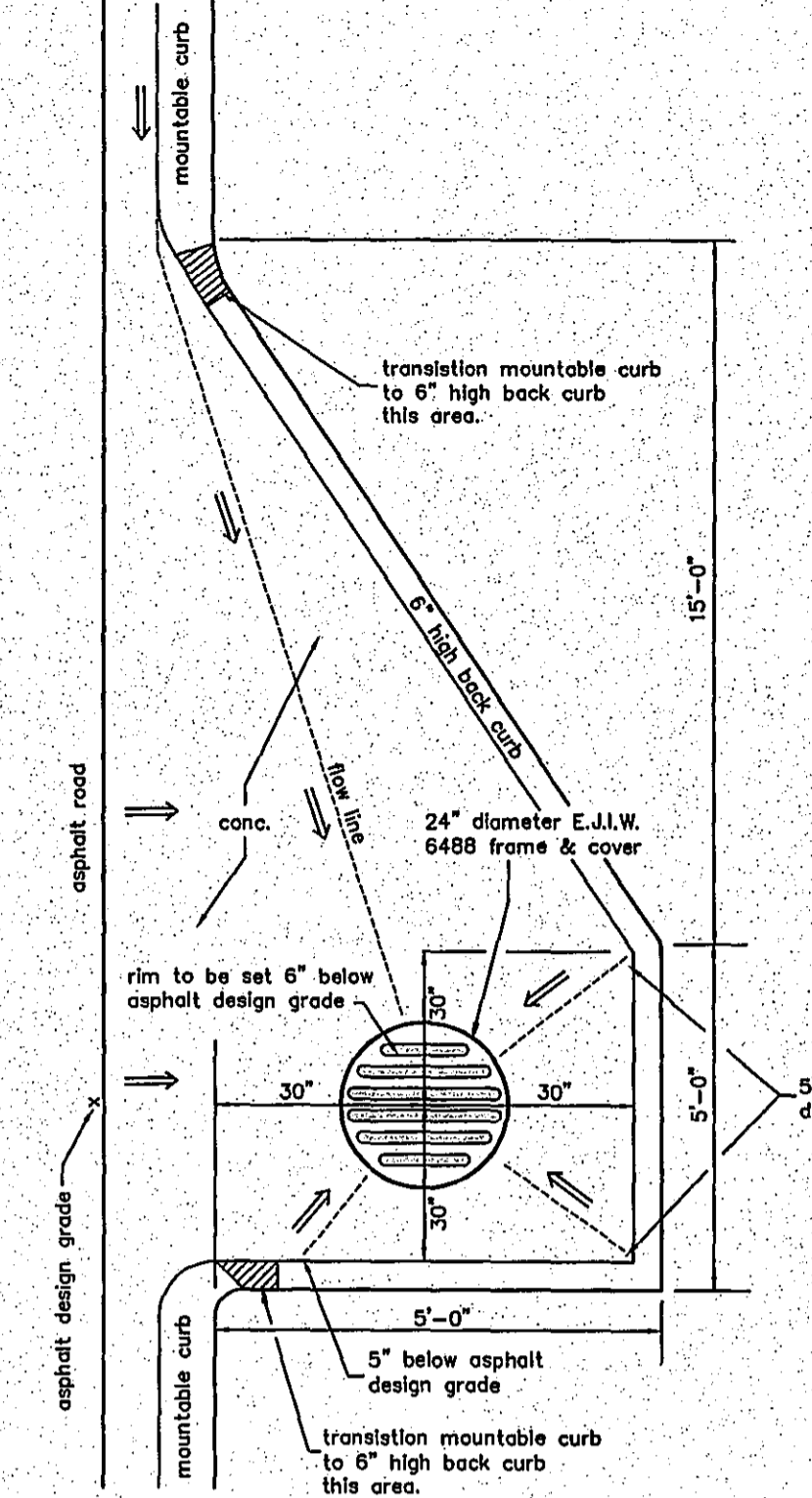
FOUR FOOT DIA. STORM MANHOLE
NO SCALE



4 FOOT DIA. CATCH BASIN DETAIL
NO SCALE



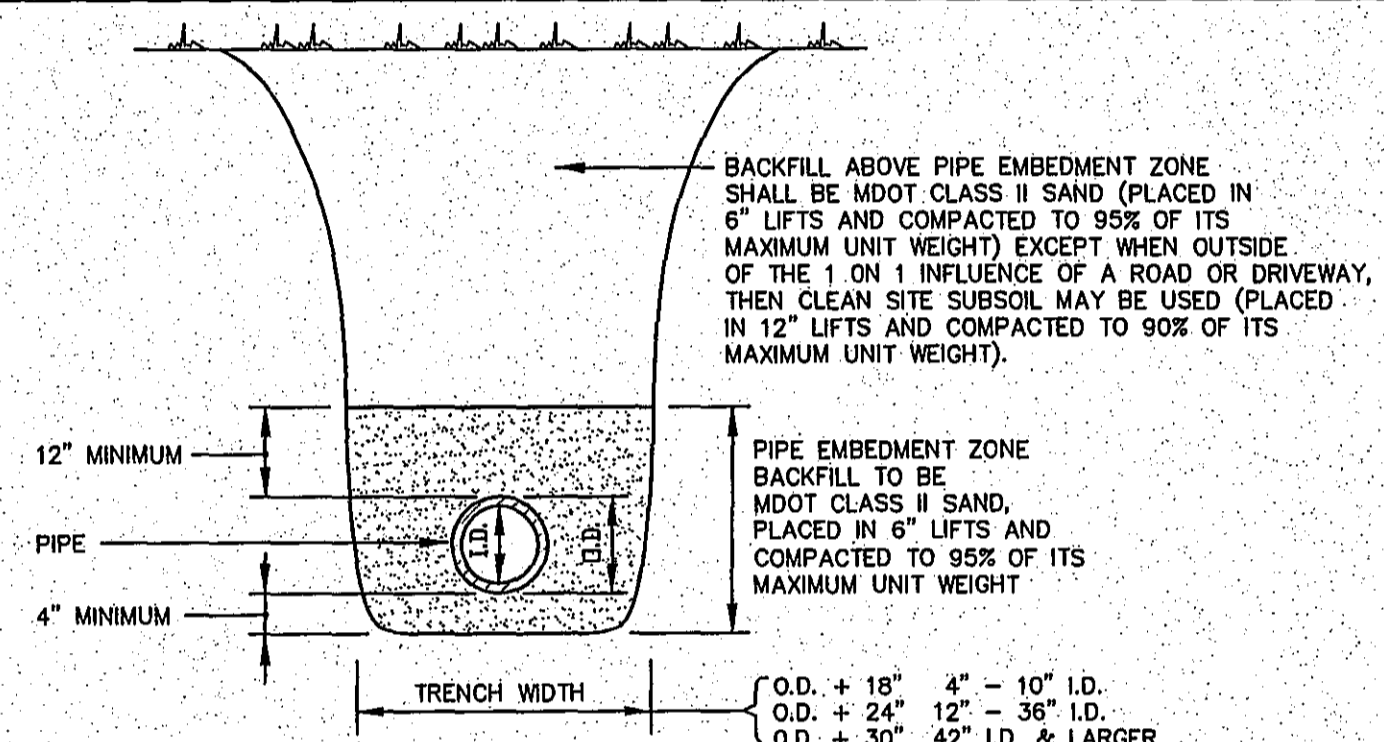
TYPICAL PRIVATE ROAD CROSS SECTION
NO SCALE



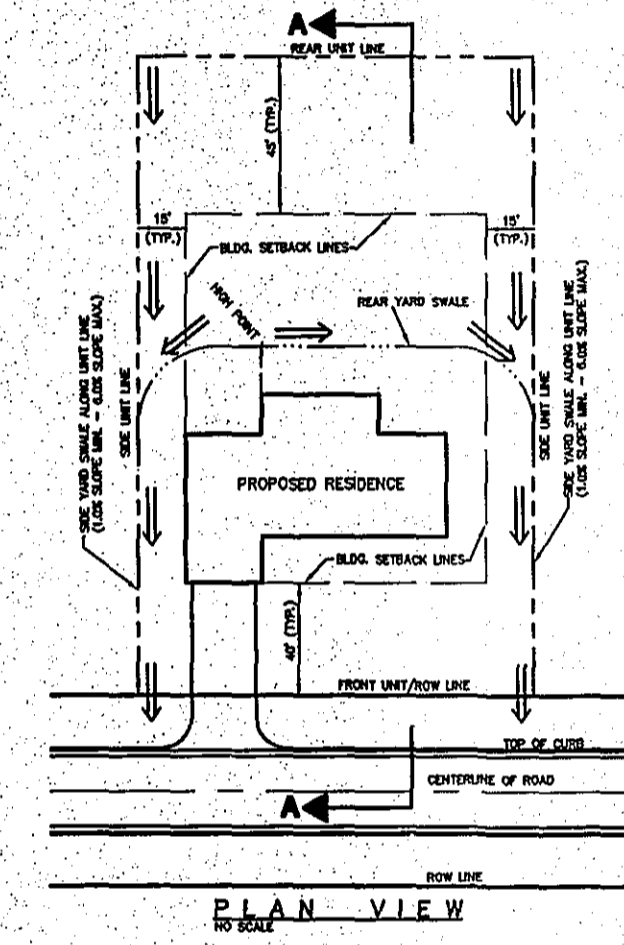
CURB SPILLOUT
NO SCALE

MANHOLE, CATCH BASIN AND INLET NOTES

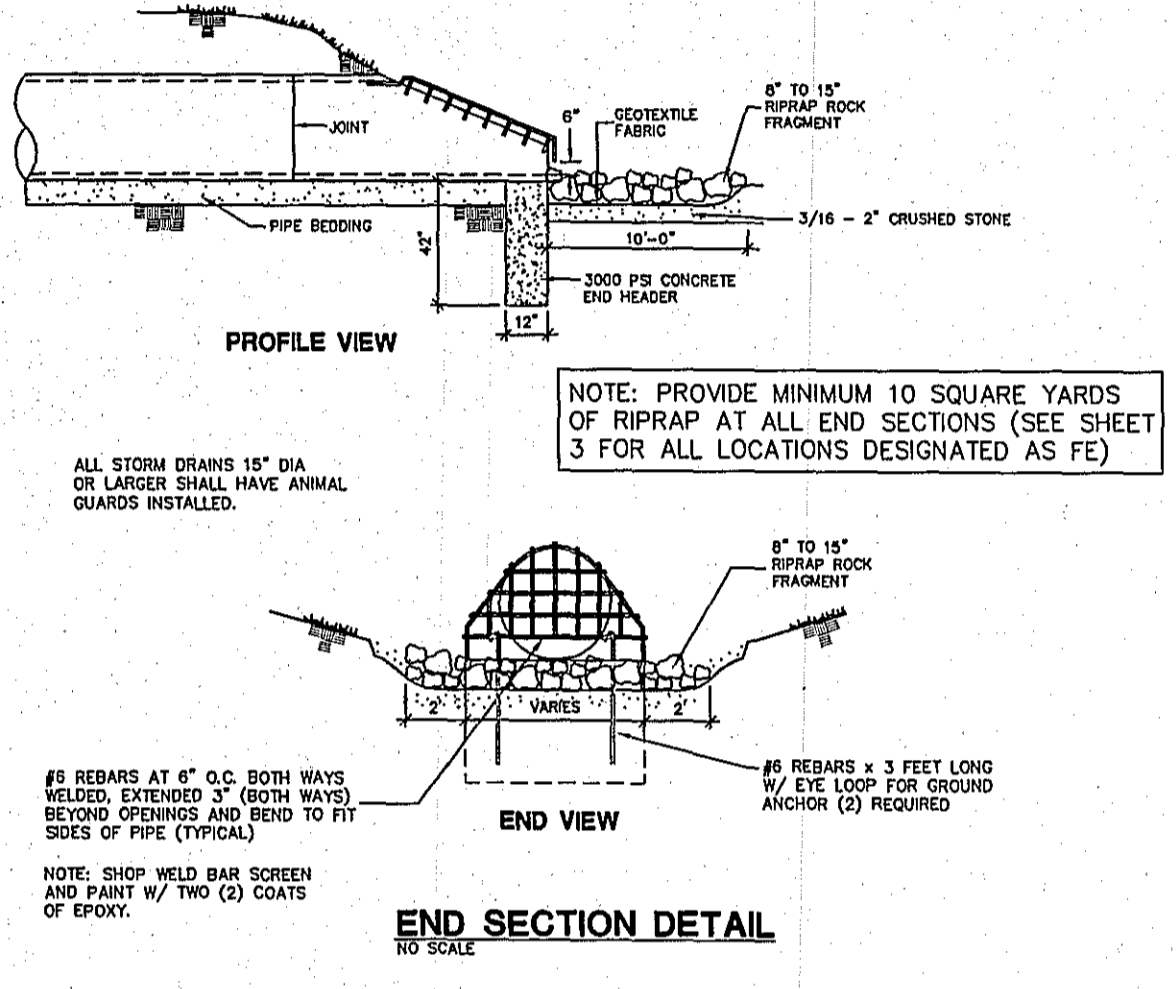
1. THE JOINTS AROUND THE INSIDE CIRCUMFERENCE OF THE STRUCTURE SHALL BE POINTED WITH CEMENT MORTAR.
2. ALL HOLES PROVIDED FOR LIFTING AND HANDLING SHALL BE FILLED WITH MORTAR AND MADE WATERTIGHT.
3. MANHOLE STEPS SHALL BE ASPHALT-COATED CAST IRON (EAST JORDAN 8500) OR STEEL REINFORCED, HIGH DENSITY POLYPROPYLENE PLASTIC (M. A. INDUSTRIES PS-1-PF) MEETING CURRENT OSHA REQUIREMENTS. THE STEPS SHALL BE A MINIMUM OF 10" WIDE AND SHALL BE INSTALLED DURING MANHOLE MANUFACTURE. PLACE STEPS AT 16" ON CENTER AND AT 45" FROM THE SEWER.



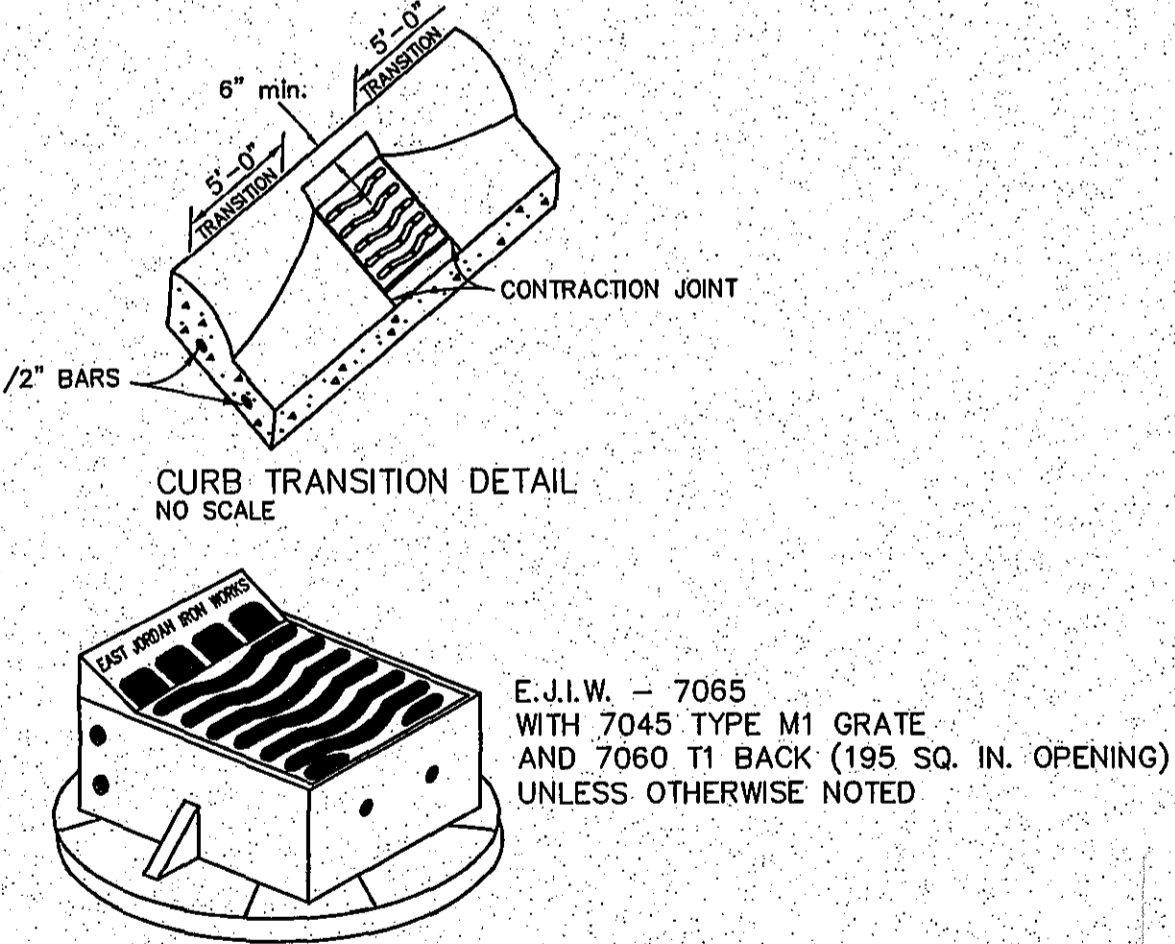
TRENCH BACKFILL & BEDDING DETAIL
NO SCALE



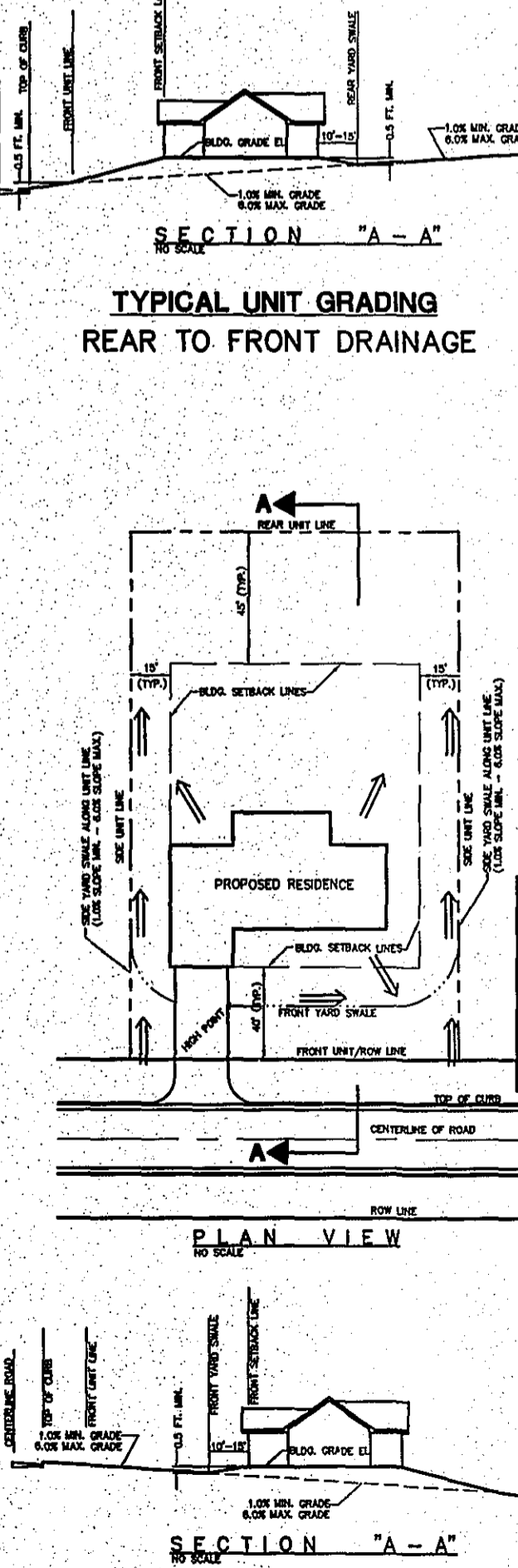
TYPICAL UNIT GRADING REAR TO FRONT DRAINAGE



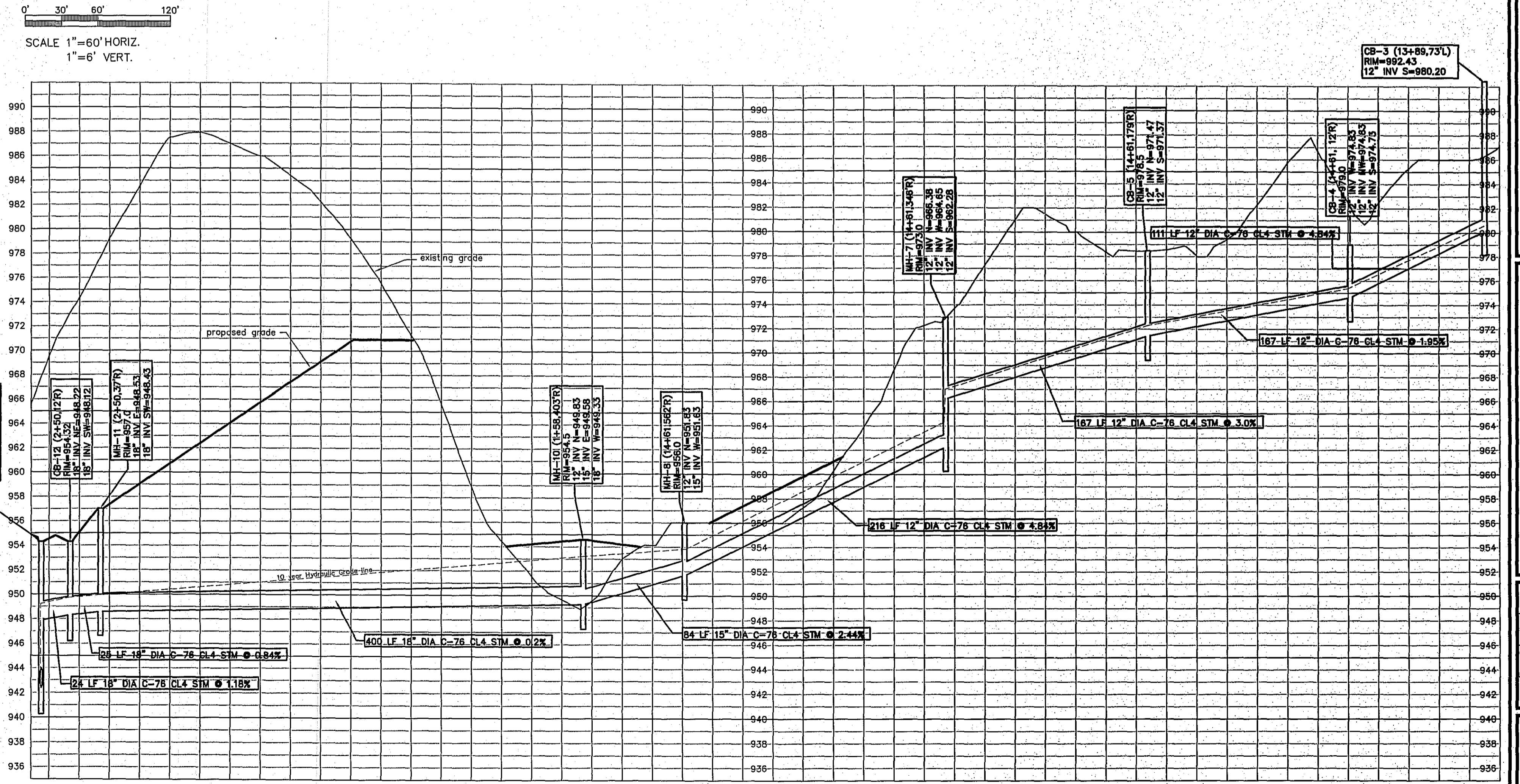
END SECTION DETAIL
NO SCALE



CURB AND CASTING DETAIL
NO SCALE



TYPICAL UNIT GRADING FRONT TO REAR DRAINAGE



STORM PROFILE CB-3 to CB-15

REVISIONS:
1. 02-10-06
2. 02-10-06
3. 02-10-06
4. 02-10-06
5. 02-10-06
6. 02-10-06
7. 02-10-06
8. 02-10-06
9. 02-10-06
10. 02-10-06
11. 02-10-06
12. 02-10-06
13. 02-10-06
14. 02-10-06
15. 02-10-06
16. 02-10-06
17. 02-10-06
18. 02-10-06
19. 02-10-06
20. 02-10-06
21. 02-10-06
22. 02-10-06
23. 02-10-06
24. 02-10-06
25. 02-10-06
26. 02-10-06
27. 02-10-06
28. 02-10-06
29. 02-10-06
30. 02-10-06
31. 02-10-06
32. 02-10-06
33. 02-10-06
34. 02-10-06
35. 02-10-06
36. 02-10-06
37. 02-10-06
38. 02-10-06
39. 02-10-06
40. 02-10-06
41. 02-10-06
42. 02-10-06
43. 02-10-06
44. 02-10-06
45. 02-10-06
46. 02-10-06
47. 02-10-06
48. 02-10-06
49. 02-10-06
50. 02-10-06
51. 02-10-06
52. 02-10-06
53. 02-10-06
54. 02-10-06
55. 02-10-06
56. 02-10-06
57. 02-10-06
58. 02-10-06
59. 02-10-06
60. 02-10-06
61. 02-10-06
62. 02-10-06
63. 02-10-06
64. 02-10-06
65. 02-10-06
66. 02-10-06
67. 02-10-06
68. 02-10-06
69. 02-10-06
70. 02-10-06
71. 02-10-06
72. 02-10-06
73. 02-10-06
74. 02-10-06
75. 02-10-06
76. 02-10-06
77. 02-10-06
78. 02-10-06
79. 02-10-06
80. 02-10-06
81. 02-10-06
82. 02-10-06
83. 02-10-06
84. 02-10-06
85. 02-10-06
86. 02-10-06
87. 02-10-06
88. 02-10-06
89. 02-10-06
90. 02-10-06
91. 02-10-06
92. 02-10-06
93. 02-10-06
94. 02-10-06
95. 02-10-06
96. 02-10-06
97. 02-10-06
98. 02-10-06
99. 02-10-06
100. 02-10-06

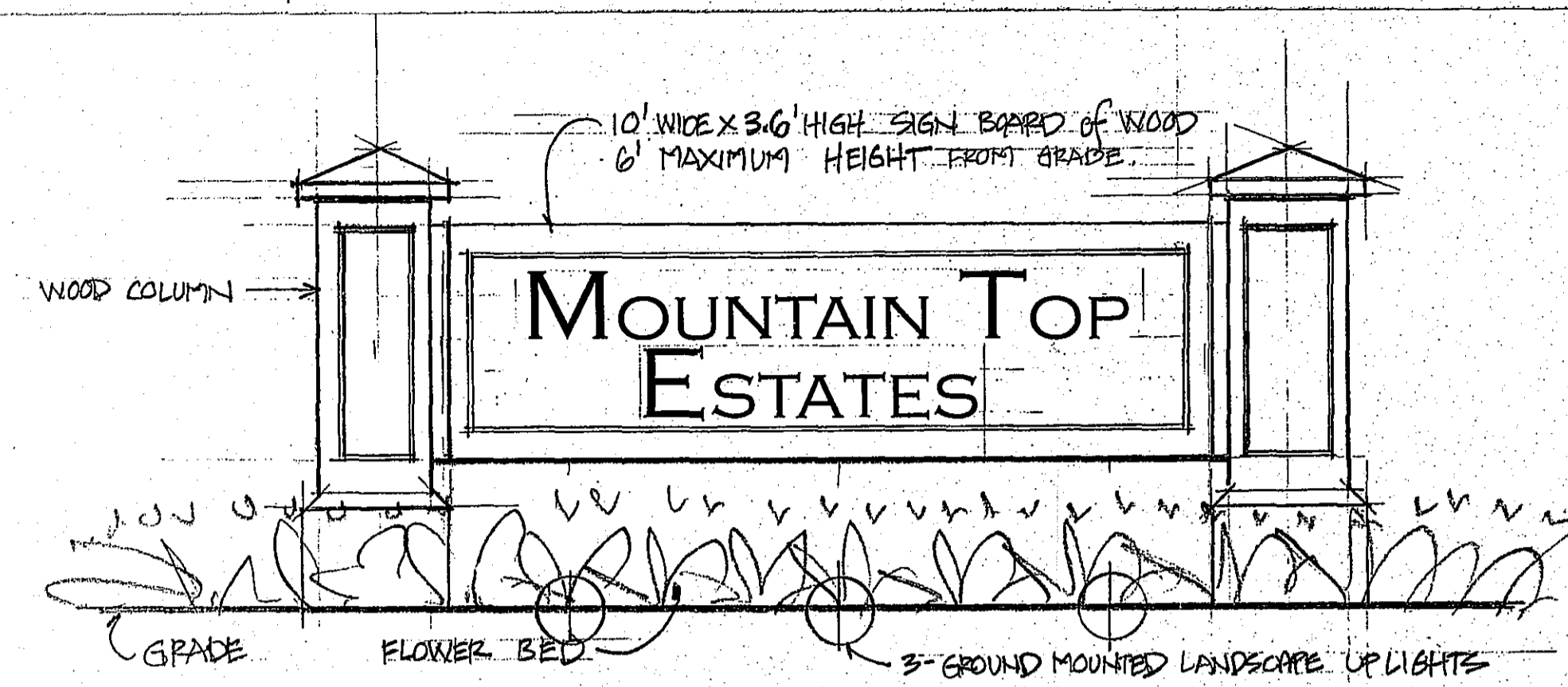
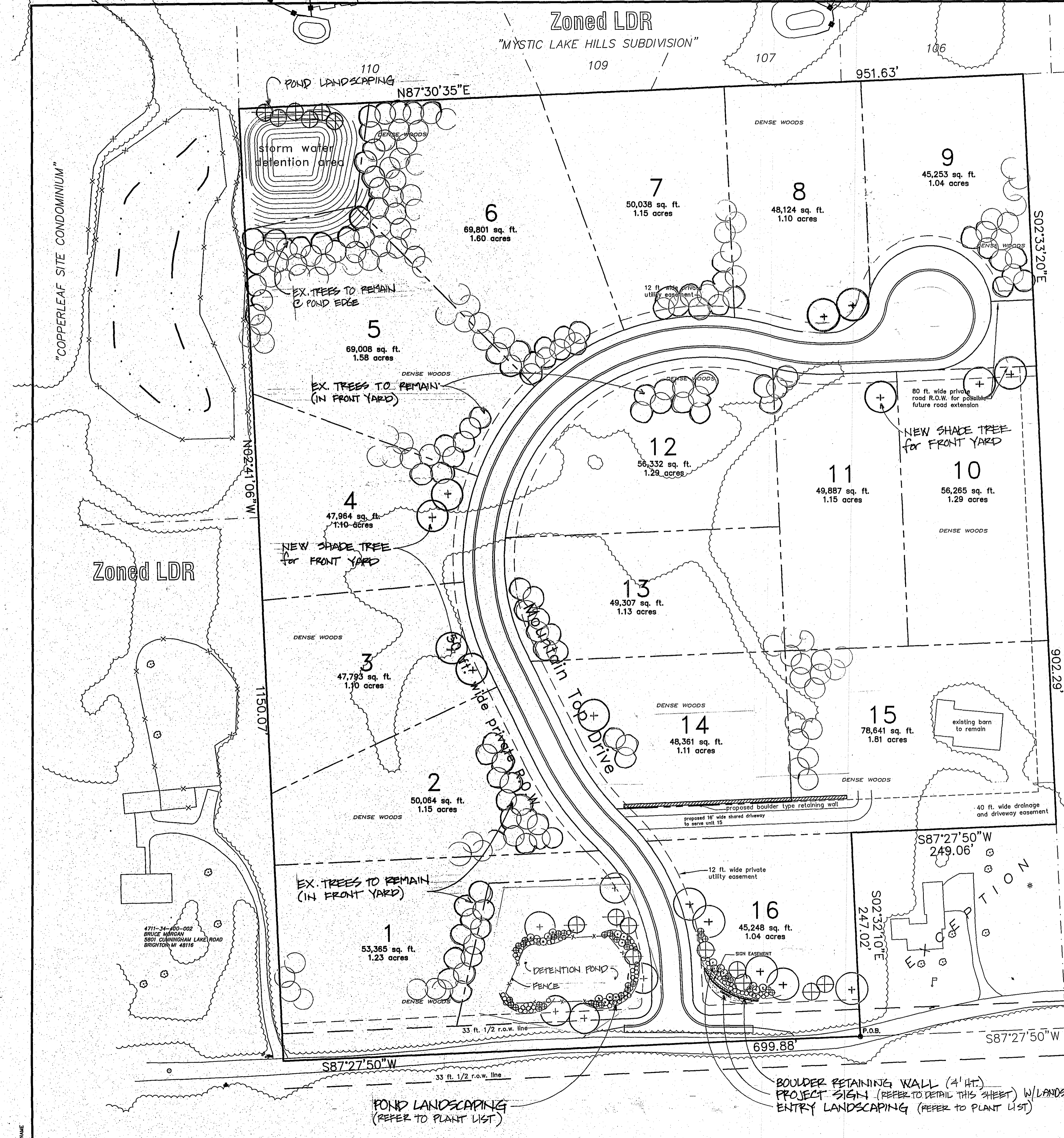
DOYLE HOMES
4898 CHILSON ROAD
HOWELL, MI 48843
810 229-7505

ADVANTAGE MOUNTAIN TOP ESTATES
SITE CONDOMINIUM
DETAILS

ADVANTAGE CIVIL ENGINEERING
110 E. Grand Street, Howell, MI 48843 517 545-4141 Fax 517 545-4148

DATE: 7-26-05
DRAWN BY: TAH
CHECKED BY: PCK
JOB No. 05049
DRAWING No.

Zoned LDR
"MYSTIC LAKE HILLS SUBDIVISION"



ENTRY SIGN DESIGN
SCALE 1/2" = 1'-0"

PLANT LIST

PLANT SYMBOL	COMMON NAME	MINIMUM SIZE	QUANTITY FOR POND LANDSCAPE	QUANTITY FOR OTHER LANDSCAPE
+	RED OAK, SUGAR MAPLE, and BASSWOOD	2.5" CALIBER	4	16
⊕	WHITE SPRUCE, CANADIAN HEMLOCK, and SCOTCH PINE	6' HEIGHT	10	5
⊗	SERVICEBERRY, and DOUBLE FILE VIBURNUM	2' HEIGHT	12	7
⊗	SPREADING YEW, and PFITZER JUNIPER, and BLACK CHOKEBERRY	2' HT./SPREAD	20	9
⊗	FRAGRANT SUMAC, and RED TWIG DOGWOOD	2' HEIGHT	42	24

LANDSCAPE NOTES:

- 1) PLAN SHOWS WHERE DEVELOPER ANTICIPATES THAT TREES CAN BE PRESERVED IN FRONT YARD SETBACKS TO MEET ORDINANCE REQUIREMENTS (SEC. 12.02.02). ACTUAL NUMBER OF TREES TO BE PLANTED TO MEET REQUIREMENTS WILL BE DETERMINED AT COMPLETION OF HOME BUILDING ON EACH LOT.
- 2) SHADU 3 TREE SPECIES WILL BE SELECTED FROM PLANT LIST AND THE SPECIES MIX WILL MEET ORDINANCE REQUIREMENTS (SEC. 12.02.04).
- 3) STORMWATER POND FENCING WILL BE 4 FT. HIGH VINYL COATED CHAIN LINK FENCE WITH 10 FT. WIDE GATES FOR MAINTENANCE ACCESS.
- 4) THE LANDSCAPE AT THE SITE ENTRY WILL INCLUDE IRRIGATION.

BOULDER RETAINING WALL (4' HT.)
PROJECT SIGN (REFER TO DETAIL THIS SHEET) W/LANDSCAPE LIGHTING
ENTRY LANDSCAPING (REFER TO PLANT LIST)

SOUTHEAST CORNER, SECTION
34, T2N-R5E, GENOA TWP.
(LSC.#170m)

REVISIONS:
3-21-06 ADD TREE IN LOT 9
4-12-06 ADD IRRIGATION PER P.L.

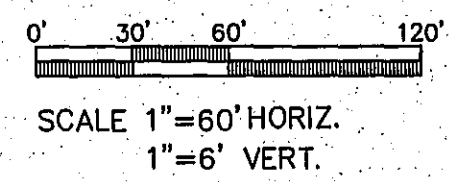
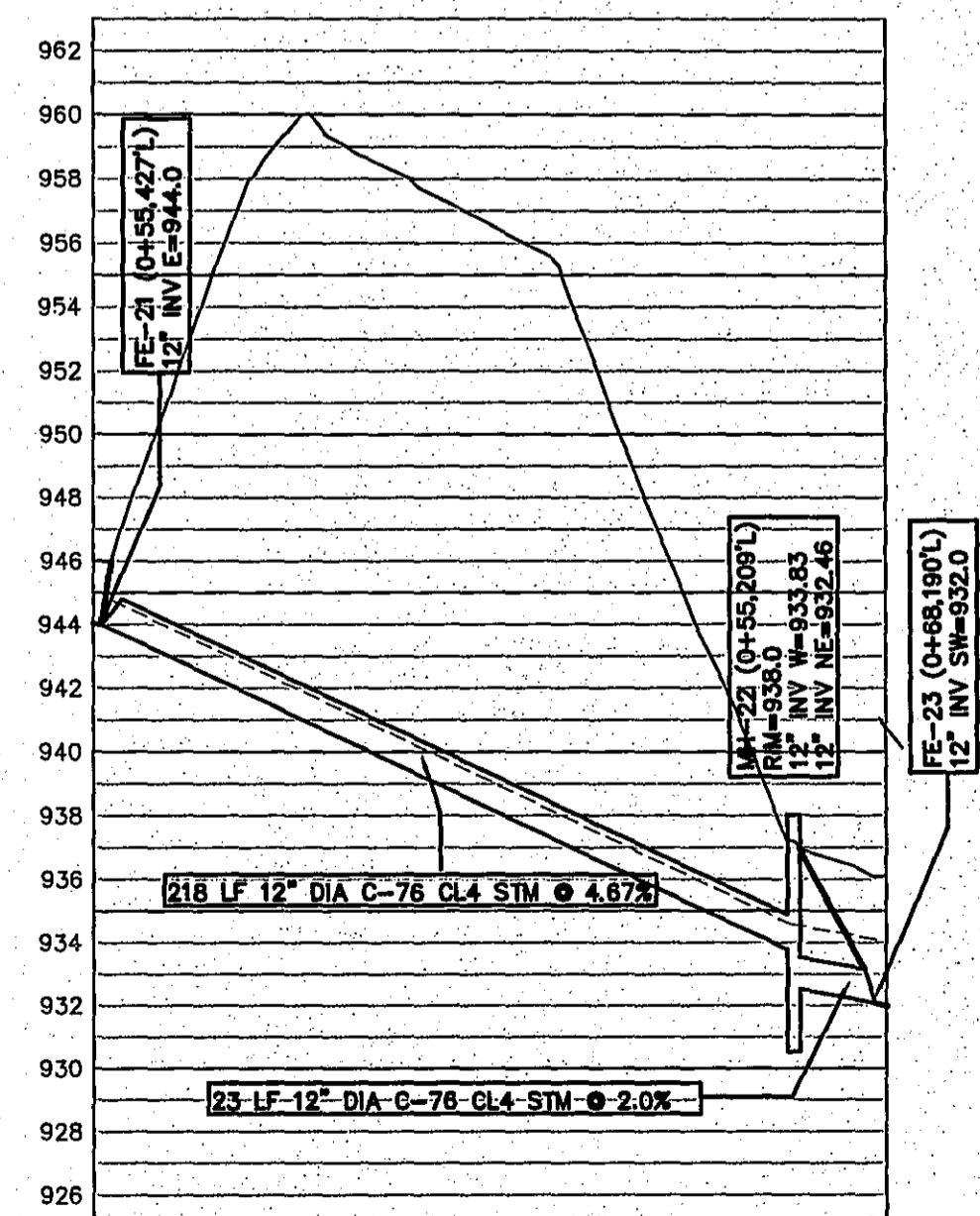
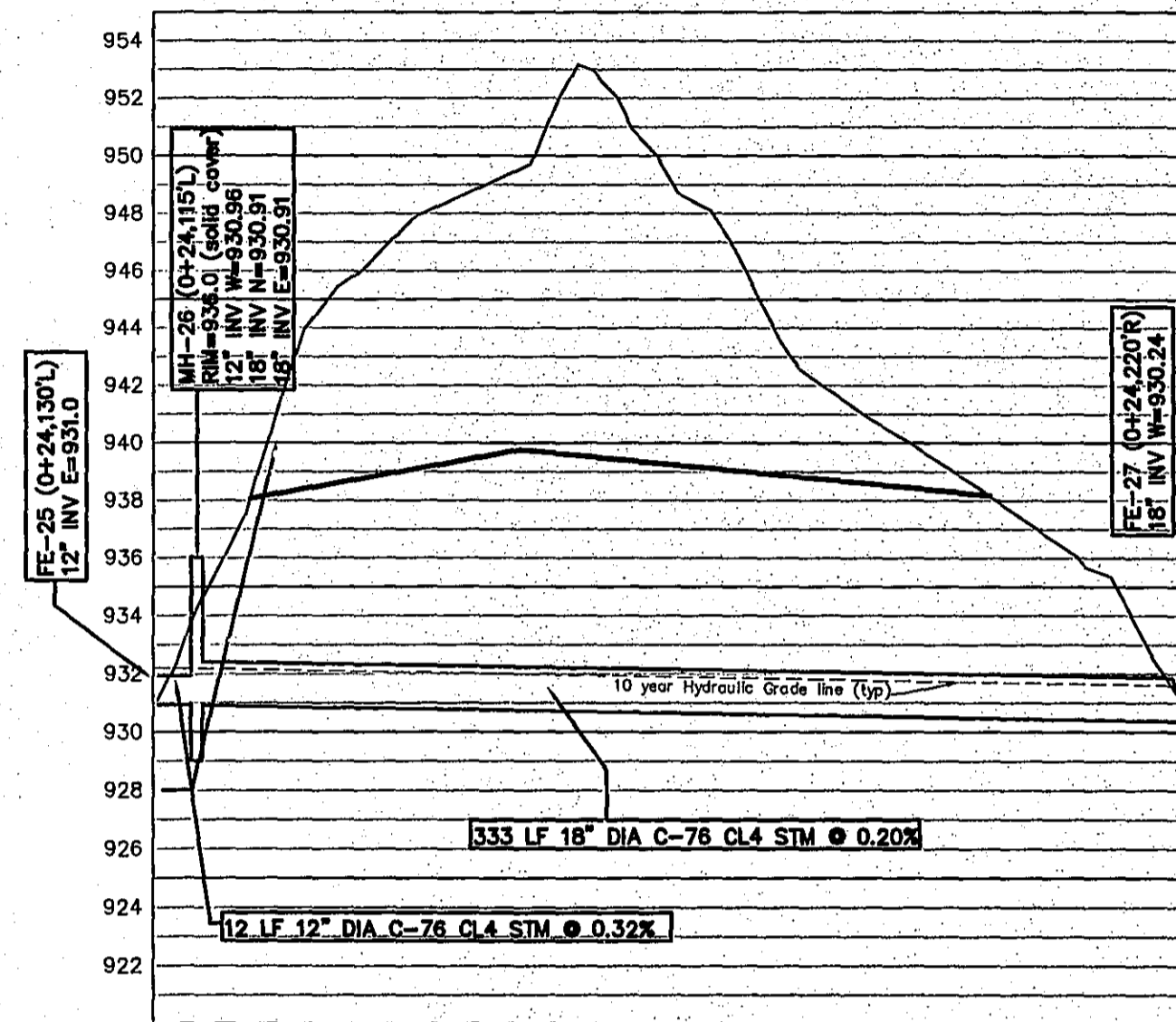
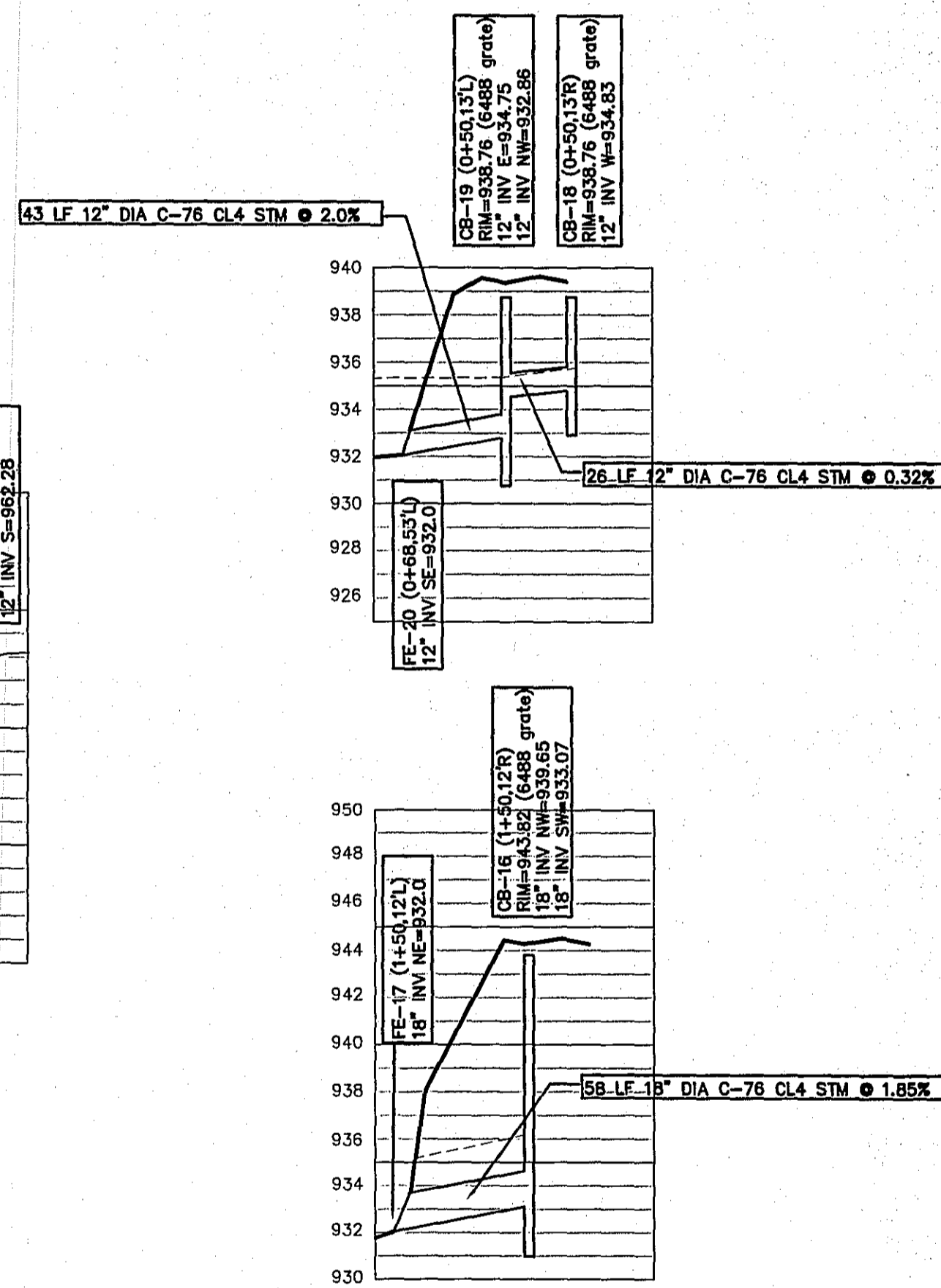
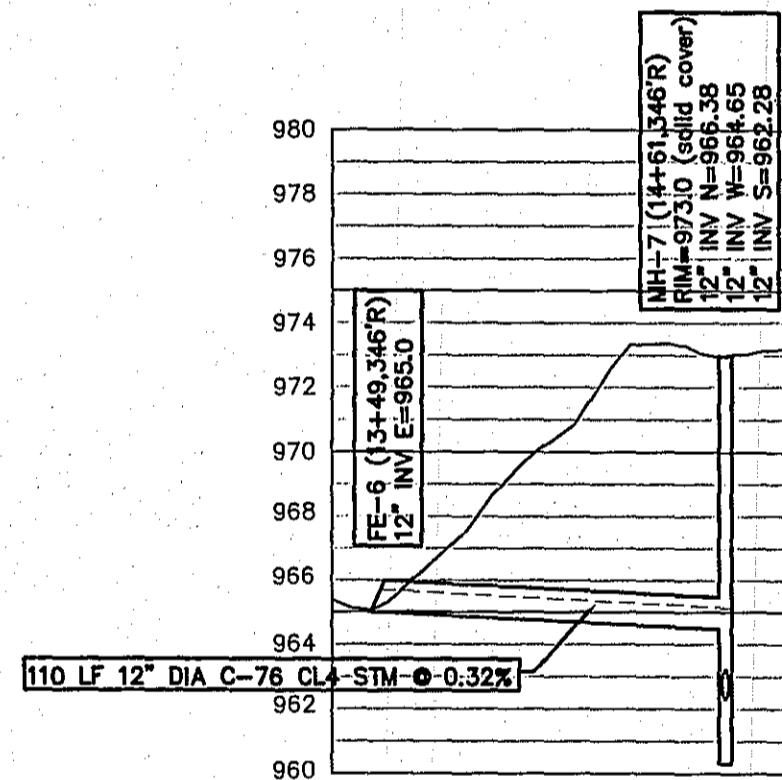
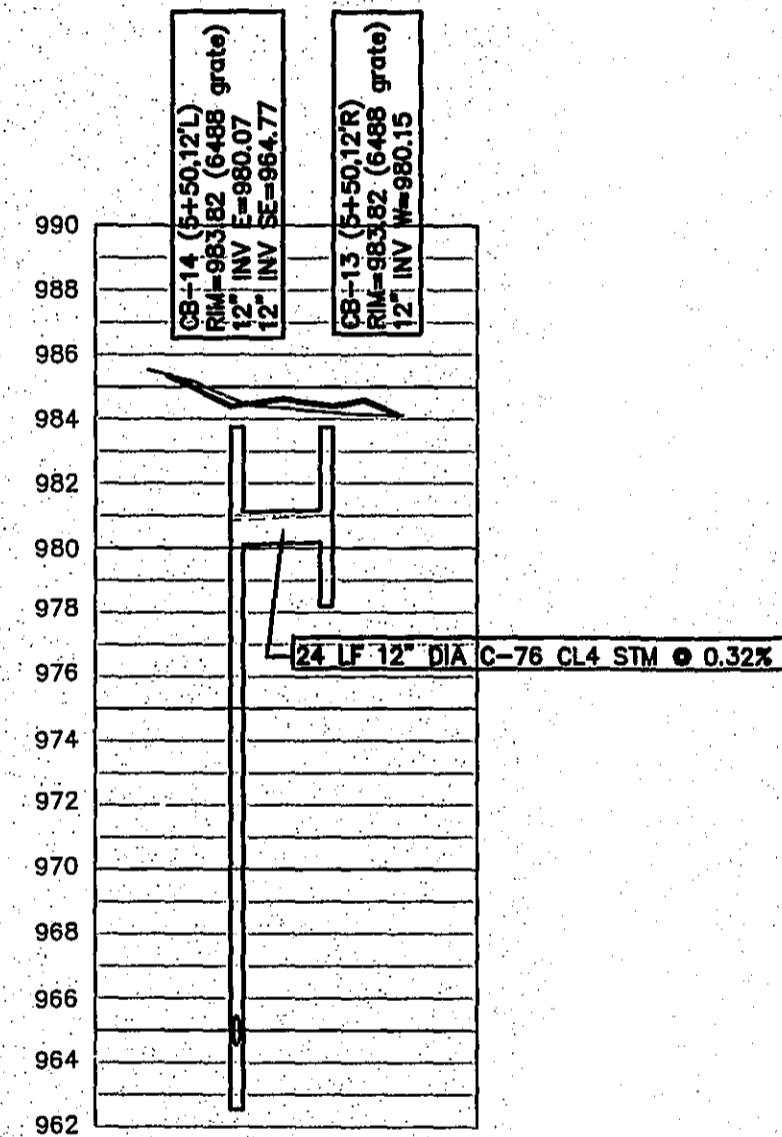
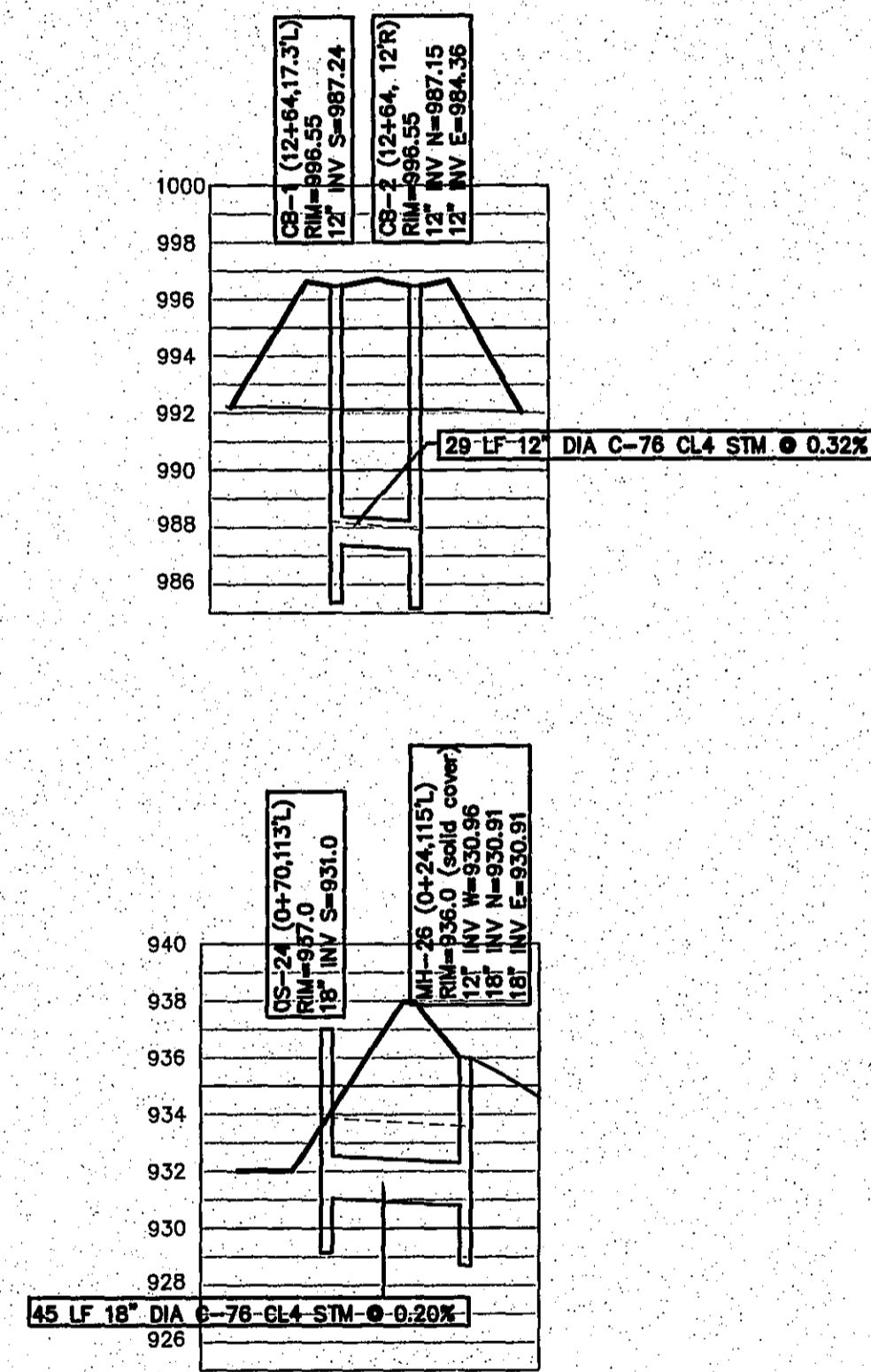
OWNER/DEVELOPER:
DOYLE HOMES
4896 CHILSON ROAD
HOWELL, MI 48843
810 229-7505

PREPARED BY ROBERT DOYLE,
MICHIGAN P.L.L.C. # 1050

ADVANTAGE MOUNTAIN TOP ESTATES
SITE CONDOMINIUM
LANDSCAPE PLAN

DATE: 7-26-06
DRAWN BY: TAH
CHECKED BY: PCK
JOB No. 08049
DRAWING No. 8

110 E. Grand River, Howell, MI 48843 517 545-4141 Fax 517 545-4146



REVISIONS:

9-4-05	REVISED FOR TWP REVIEW
10-10-05	REVISED FOR TWP P.C. MEETING
02-10-06	REVISED FOR TWP ENGINEER
10-17-06	REVISED FOR APPROVAL

OWNER/DEVELOPER:
DOYLE HOMES
 4896 CHILSON ROAD
 HOWELL, MI 48843
 810 229-7505

MOUNTAIN TOP ESTATES
 SITE CONDOMINIUM
STORM SEWER PROFILES

ADVANTAGE CIVIL ENGINEERING
 110 E. Grand Street, Howell, MI 48843 517.345-4141 Fax 517.545-4145

DATE: **7-25-06**
 DRAWN BY: **TAH**
 CHECKED BY: **PCK**
 JOB No. **05049**

DRAWING No.

**GENOA CHARTER TOWNSHIP
PLANNING COMMISSION PUBLIC HEARING
MONDAY, APRIL 11, 2016
6:30PM**

MINUTES

CALL TO ORDER: The meeting of the Genoa Charter Township Planning Commission was called to order at 6:30 p.m. Present were Chairman Doug Brown, Diana Lowe, James Mortensen and Eric Rauch. Absent were Barbara Figurski and Chris Grajek. Also present was Kelly VanMarter, Community Development Director/Assistant Township Manager, Brian Borden and Chris Gruba from LSL Planning and Gary Marksrom with Tetra Tech. There were approximately 7 people in the audience.

PLEDGE OF ALLEGIANCE: The pledge of allegiance was recited.

APPROVAL OF AGENDA: **Moved** by Commissioner McManus, **Supported** by Commissioner Mortensen to approve the agenda as presented. **The motion carried unanimously.**

CALL TO THE PUBLIC: The call to the public was made at 6:33 pm with no response.

(Note: The Board reserves the right to not begin new business after 10:00 p.m.)

OPEN PUBLIC HEARING #1... Review of a site plan and impact assessment for a proposed medical center on vacant parcel #11-06-200-068 which is located on the north side of Grand River Ave, east of Meadowview Avenue, Howell. The request is petitioned by Kalambaka Properties, LLC.

David Lenz with Studio Intrigue presented the plans. They are proposing to share the driveway with Advanced Auto as recommended by staff. There will be a small basement for storage and utilities. The building size does not require fire suppression. It will be a brick building with limestone accents. They have sufficient parking and have provided all required landscape buffers.

Brian Borden indicates that the petitioner has done a great job addressing all comments and concerns. This is a permitted by right use in the GCD. The motion tonight will be a site plan authorized by the Planning Commission with the impact assessment recommended to the Board. This is a very attractive building that meets the ordinance standards. The only comment is that the applicant may suggest adding additional barrier free spaces. David Lenz responds that they can add additional barrier free spaces if needed. They currently meet the ordinance standards and are limited by the amount of land they have. Mr. Borden suggested they could convert 3 existing spaces to 2 barrier free if needed. David Lenz agrees that they could convert the spaces if medical tenants need additional barrier free spaces.

Mr. Borden suggests that a sidewalk connection as referenced in his letter may not be feasible after visiting the site this evening. David Lenz agrees the sidewalk connection is not practical given the topography in this situation. Mr. Borden states there are a few lighting hot spots on the photometric plan. Mr. Lenz explains that the revised plans provided lighting details. They are proposing a 15' max height LED lighting for the parking lot. Due to the nature of LED lights,

there is an extreme cutoff making it very bright right under the light especially at the 15' height. To get the spread you need with light coverage you end up with the hot spots directly under the lights. They comply with the light levels at the property lines. To meet the ordinance they would have to increase the number of lights or use inefficient non-led lights. They hate to sacrifice energy efficient LED lighting and limited fixtures just to avoid the hot spots. Mr. Borden agrees that the LED fixtures are preferred however he is concerned with 40-42 footcandles on the lighting plan.

Commissioner Rauch is comfortable with the proposed lighting. He notes that the light level around the hot spots drops off very quickly. They go from 33 to 1.5 footcandles. He believes that as an average the light levels on the site are well below 10 footcandles ordinance requirement.

The Commissioners agree that the ordinance needs to be updated to reflect the LED technology. Mrs. VanMarter indicates that staff is working on an ordinance update and can include something in the update that correlates footcandles to pole height and would allow the Planning Commission discretion.

Mr. Lenz suggests that they could add more fixtures or change the bulb type to comply. Commissioner McManus believes that LED is more efficient and attractive. Mr. Lenz indicates that the lights will have a photocell that turns them on at dusk and they could have a timer or dimmer. Mr. Borden suggests that staff work with applicant on the lighting plan to have them either correct their plan or update the ordinance.

Commissioner Mortensen questions if the topography prevents them from providing a cross access agreement to the west. Mr. Lenz responds that it would be very difficult to implement because of grading challenges associated with the fact that the site is elevated on a plateau.

Gary Markstrom indicates that the applicant has addressed most of his concerns. They need to fix the material for the sewer lateral and the outlet on the detention basin should be a 12 inch pipe with 4 inch orifice so it can be maintained. Mr. Lenz agrees. They will need a permit from MDOT for the storm sewer discharge. Mr. Lenz states they have been talking to MDOT. Mr. Brown suggested that Mr. Markstrom provide an updated letter. Mr. Markstrom agreed.

The Fire Department review letter was discussed and it was noted that they had no concerns.

Chairman Brown suggested the following corrections on the impact assessment:

- Item D – Drain Commission should be Commissioner.
- Item D - should say two rather than “to” bio-retention areas.
- Item F – should specify how many people are going to work there.

Chairman Brown remarks that the building is going to be very attractive.

A call to the public at 7:17pm with no response.

Planning Commission disposition of petition:

A. Recommendation of Environmental Impact Assessment (3-2-16)

Moved by Commissioner Lowe to recommend approval of the amended impact assessment dated March 2, 2016 conditioned upon the corrections noted this evening being included.
Supported by Commissioner Mortensen. **Motion carried unanimously.**

B. Disposition of Site Plan (3-23-16)

Moved by Commissioner Mortensen to approve the site plan for the Howell Medical Center dated March 23, 2016 subject to the following:

1. The building design materials and colors shown this evening are acceptable and the sample board will become property of the Township.
2. The number of barrier free parking spaces will be increased by 2 resulting in the elimination of 3 standard spaces.
3. The lighting plan and light fixture details is subject to Township staff review and approval to comply with the ordinance.
4. The conditions contained in Tetra Tech's letter dated March 28, 2016 will be revised tomorrow and the applicant shall comply with the conditions prior to issuance of a land use permit.
5. The requirements of the Brighton Area Fire Authority shall be complied with.
6. Approval of the site plan is contingent on Board approval of the Environmental Impact Assessment.

Supported by Commissioner Rauch. **Motion carried unanimously.**

OPEN PUBLIC HEARING #2... Review of a site plan and impact assessment for a proposed Flagstar Bank on parcel #11-09-100-038 located on the east side of Latson Road, north of I-96, Howell. The project is within the Providence/Former Latson Elementary School Planned Unit Development and is petitioned by Flagstar Bank.

Brent LaVanway with Boss Engineering and Mike Boggio with MBA architects are present on behalf of the petitioner. . The site is located on the St. John Providence PUD/Former Latson Elementary Site. The site shares the access driveway with St. John that aligns with Grand Oaks Drive. They are proposing 19 parking spaces. The site will have pedestrian access. We have added a bike rack at the suggestion of the consultant.

Mr. Boggio presents a picture showing the building for review by the Commission. He explains that this a typical red brick with limestone Flagstar Bank prototype building. It has clear anodized aluminum windows and a grayish shingle. The drive-up teller lanes are on the south side and won't interfere with pedestrians. The photograph presented is a prototype and shows what the building materials will look like.

Chris Gruba presents the LSL review letter. The action tonight is to recommend approval of the site plan and environmental impact assessment because it is within a PUD. The applicant needs to add a revision date to the plan. The east and south elevations have too much EFIS per the Ordinance requirement. Mr. Boggio indicates that the average of all sides is 18%. There are 2 sides that don't meet the requirement. Chairman Brown asks if they can make revisions to bring the building into compliance. Mr. Boggio responds that they can but would prefer not to.

Mr. Gruba states that the ordinance requires an 8' wide bike path along the Latson Road frontage. The plans show a 5' sidewalk. Commissioner Mortensen believes the punting the sidewalk to future isn't enough. He believes there needs to be an easement and a commitment for shared cost. Mr. Boggio states that Flagstar will agree to pay for 1/3 of the cost. The Commission discussed the sidewalk requirement to the adjacent properties. Without knowing how they will develop it is

difficult to require a sidewalk. The Commission would prefer to have the 20' sanitary sewer easement also be written to allow a future sidewalk and for the bank and the owner to provide an agreement regarding construction and financial obligations to be reviewed and approved by the Township attorney.

Mr. Gruba suggests that consideration should be given to a cross access easement to the parcel to the south. Commissioner Rauch questioned if the plan is to raise the other properties when they develop. He is concerned that this project is going to raise up the site 5' which is going to cause problems for the other properties. Mr. LaVanway confirmed that Flagstar is raising their site and stated that the current thought is that the other properties need to add significant fill to transition to the basin.

Mr. Gruba suggests additional landscaping be provided to help screen the mechanical equipment and Mr. Boggio agrees. The Commission also discussed whether or not additional ornamental lighting should be considered. It was the consensus that since Providence only provided 2 along their frontage and due to topography the plan is acceptable as submitted.

Mr. Gruba provides that the sign base should be brick and they should add a note to the sign plans stating they will comply with the changeable message sign requirements. Mr. Boggio agrees. The flagpole is proposed at 50 feet and the ordinance has a maximum of 40 feet. Mrs. VanMarter supports the 50' flagpole and would like to see the Planning Commission use their PUD discretion to allow the taller flag pole. She indicates that she is updating the ordinance to allow taller flag poles and she views them as an amenity to the site and community that should be encouraged. The Commissioners agreed.

Commissioner Rauch inquired about the location of the monument sign on the plans. Mr. Boggio stated that they would like to come back to address the sign location if a deviation is needed. He agrees the proposed location is problematic but he is not prepared to address it this evening. Commissioner Rauch expressed concern with a location for monument signs for the undeveloped area east and west of this site. He suggested an integrated signage plan that would provide a single sign at the entrance to address this outlot and others. The Commission agrees that they can come back with a revised sign plan.

Mr. Markstrom reviews his letter with only minor comments regarding ensuring adequate cover on the sanitary sewer lead installation. They have worked with Boss to serve the site with gravity.

Chairman Brown reviewed the Fire Department and tap fee letters contained in the packet. He comments the applicant on a flawless impact assessment.

Call to public at 8:14pm with no response.

Planning Commission disposition of petition:

A. Recommendation of Environmental Impact Assessment (3-23-16)

Moved by Commissioner Lowe to recommend approval of the Environmental Impact Assessment to the Township Board conditioned on Board approval of the site plan.

Supported by Commissioner Mortensen. **Motion carried unanimously.**

B. Recommendation of Final PUD Site Plan (3-23-16)

Moved by Commissioner Mortensen to recommend Board approval of the Final PUD Site Plan subject to the following:

1. Revision dates shall be added to the site plan.
2. The applicant will increase natural materials on the two sides of the building to meet the 80% requirement in the PUD.
3. An agreement will be prepared by the petitioner and the land owner to provide for a 5' wide sidewalk along the east side property line with an appropriate financing and cost sharing agreement in place subject to review and approval by the Township attorney. The Planning Commission recognizes that the sidewalk may not be installed until after sanitary sewer is installed.
4. Landscaping will be added to screen the mechanical equipment area and the revised landscape plan shall be approved by Township staff.
5. The base of the ground sign will be brick to match the building and a note will be added to the plans acknowledging compliance with the changeable message requirements in the Ordinance. The location of the ground sign may be reviewed and approved by Township staff if it complies with PUD and Ordinance. It is understood that the ground sign may not be constructed in the location shown on plans.
6. The requirements of the Township Engineer in their letter dated March 28, 2016 will be complied with.
7. The requirements of the Brighton Area Fire Department will be complied with.
8. The sanitary sewer and sidewalk easement will be combined on the plans so there will be one 20' wide sewer/sidewalk easement and the 5' sidewalk easement will be removed.

Supported by Commissioner McManus. **Motion carried unanimously.**

OPEN PUBLIC HEARING #3... Review of a sketch plan for two proposed boat storage buildings. The property is located at 5796 E. Grand River, Howell. The request is petitioned by the Wonderland Marine.

Gary Mitter is present to represent Wonderland Marine. He states that the plans have not changed since 1999. The approved plan was prepared as a master plan of the property because that is what the Township asked us to provide at that time. We submitted the same plans to you this evening because nothing has changed. The proposed building is a match to the existing buildings. We are just implementing the master plan.

Commissioner Mortensen states that the revised sketch plan crosses out the remaining buildings and asks if the intention is to remove the 7 other barns from the plans. Mr. Mitter responds that the north 3 barns will never be built. He states it would be nice to think the back row would be all barns but he would just like to ask approval for the 2 now and agrees to do a new site plan to build more later. His intention is to build one now with the ability to possibly build a second one within the next 4 -5 years.

Commissioner Rauch asks Mr. Borden if anything in the ordinance has changed that would affect this project. Mr. Borden responds that the ordinance has not materially changed in a way that would affect the proposed plan. He suggests to check the landscaping but either way this would be an improvement because the boats outside currently would be moved inside a building so you would see a building instead of blue shrink-wrapped boats.

Chairman Brown states that the trailer blocking access to Gray Road needs to be removed. Mr. Mitter agrees.

Mrs. VanMarter indicates that the only major change regarding this property since 1999 was the extension of municipal water to this area. This property was not included in the water service district area and it does not have water main or hydrants adjacent. The Fire Department is asking for hydrants which will be very challenging for the applicant. She would like to work with the applicant and the Fire Department to come up with a solution.

Commission Rauch suggests that they have the building location surveyed before they build. Mr. Mitter responds that they completed that when they built the pads for the buildings years ago.

Planning Commission disposition of petition:

A. Disposition of Sketch Plan (3-17-16)

Moved by Commissioner Mortensen to approve the sketch plan as the replacement site plan with a hand written revision date of March 17, 2016 subject to the following:

1. The building materials area acceptable because they are consistent with other buildings on the site.
2. The requirements of the Township Engineer in their letter dated March 30, 2016 will be complied with.
3. The requirements of the Brighton Area Fire Authority as spelled out in their letter dated April 5, 2016 will be complied with the hope that Township Staff can work with the Fire Authority to determine if some alternative can be found for the hydrants that is less burdensome to the petitioner.

Supported by Commissioner McManus. **Motion carried unanimously.**

ADMINISTRATIVE BUSINESS:

Staff Report – Mrs. VanMarter states that there is one item for the May 9th meeting.

Approval of March 14^h, 2016 Planning Commission meeting minutes –

Moved by Commissioner Lowe to approve the minutes as amended. **Supported** by Commissioner Mortensen. **The motion carried unanimously.**

Member discussion – Chairman Brown informed the Commission that he attended the April 7th City of Brighton meeting to hear about the new U of M medical center proposed on Challis Road. They are undertaking a fast track construction plan with plans to open summer 2018. The existing medical center on Challis Road will remain. The plans call for parking for 1000 vehicles and they propose up to 500 employees. This will be a full service outpatient facility.

Adjournment –

Moved by Commissioner McManus, **Supported** by Commissioner Lowe to adjourn the meeting at 9:03pm. **Motion carried unanimously.**

Minutes submitted by Kelly VanMarter.