

**GENOA CHARTER TOWNSHIP BOARD**

**May 16, 2016  
Regular Meeting  
6:30 p.m.**

**AGENDA**

Call to Order:

Pledge of Allegiance:

Call to the Public (Public comment will be limited to two minutes per person)\*:

**Approval of Consent Agenda:**

1. Payment of Bills.
2. Request to Approve Minutes: May 2, 2016
3. Request for approval of a fireworks display permit for Saturday, July 16 by Calvin Heckman Jr. at the Mount Brighton Ski Lodge.
4. Request for approval of a fireworks display permit for Saturday, July 9 by Calvin Heckman Jr. at 4127 Clifford Waters Edge.

**Approval of Regular Agenda:**

5. Consideration of a resolution to approve a Charitable Gaming License for Corktown Blessings.
6. Consideration of a request to approve the Environmental Impact Assessment corresponding to a site plan for the proposed phase 3 of the Lakeshore Village Apartments consisting of an additional 144 units with a business center/club house. The property is located on the east side of Chilson Road south of Grand River in Howell on parcel #11-06-400-015. The request is petitioned by the Lockwood Companies.

Correspondence  
Member Discussion  
Adjournment

\*Citizen's Comments- In addition to providing the public with an opportunity to address the Township Board at the beginning of the meeting, opportunity to comment on individual agenda items may be offered by the Chairman as they are presented.

CHECK REGISTERS FOR TOWNSHIP BOARD MEETING

DATE: May 16, 2016

|  |                     |
|--|---------------------|
| TOWNSHIP GENERAL EXPENSES: Thru May 16, 2016 | \$145,015.99        |
| May 6, 2016 Bi Weekly Payroll                | \$78,463.56         |
| OPERATING EXPENSES: Thru May 16, 2016        | <u>\$389,959.30</u> |
| TOTAL:                                       | \$613,438.85        |

| <u>Check Number</u> | <u>Vendor No</u> | <u>Vendor Name</u>             | <u>Check Date</u> | <u>Check Amount</u> |
|---------------------|------------------|--------------------------------|-------------------|---------------------|
| 32719               | SEMCOG           | Semcog                         | 05/03/2016        | 2,231.00            |
| 32721               | ORCZYK           | Joseph Orczyk                  | 05/04/2016        | 250.00              |
| 32722               | Allstar          | Allstar Alarm LLC              | 05/11/2016        | 752.00              |
| 32723               | B S & A          | B S & A Software, Inc.         | 05/11/2016        | 3,355.00            |
| 32724               | CONSUMER         | Consumers Energy               | 05/11/2016        | 191.47              |
| 32725               | CONTINEN         | Continental Linen Service      | 05/11/2016        | 108.02              |
| 32726               | DTE LAKE         | DTE Energy                     | 05/11/2016        | 1,107.14            |
| 32727               | Duncan           | Duncan Disposal Systems        | 05/11/2016        | 96,599.20           |
| 32728               | ICCMA            | ICMA                           | 05/11/2016        | 632.78              |
| 32729               | Lind             | Tammy Lindberg                 | 05/11/2016        | 72.90               |
| 32730               | Net serv         | Network Services Group, L.L.C. | 05/11/2016        | 45.00               |
| 32731               | Perfect          | Perfect Maintenance Cleaning   | 05/11/2016        | 565.00              |
| 32732               | StatMi           | State of Michigan              | 05/11/2016        | 6,781.48            |
| 32733               | WEX              | WEX Bank                       | 05/11/2016        | 66.31               |
| 32734               | AmerAqua         | American Aqua                  | 05/16/2016        | 56.00               |
| 32735               | BLUE CRO         | Blue Cross & Blue Shield Of Mi | 05/16/2016        | 27,944.57           |
| 32736               | BRANVAN          | Brandon VanMarter              | 05/16/2016        | 75.00               |
| 32737               | COMCAST          | Comcast                        | 05/16/2016        | 324.38              |
| 32738               | COOPERST         | Cooper's Turf Management LLC   | 05/16/2016        | 1,716.50            |
| 32739               | GORDONFO         | Gordon's Food Services         | 05/16/2016        | 116.85              |
| 32740               | LCIT             | Livingston County Information  | 05/16/2016        | 340.00              |
| 32741               | Livingco         | Livingston County Clerks Assoc | 05/16/2016        | 20.00               |
| 32742               | LSL              | LSL Planning, Inc.             | 05/16/2016        | 965.90              |
| 32743               | MOS              | Michigan Office Solutions      | 05/16/2016        | 388.37              |
| 32744               | PRINTING         | Printing Systems               | 05/16/2016        | 276.10              |
| 32745               | RUTHIG A         | Amy Ruthig                     | 05/16/2016        | 35.02               |

**Report Total: 145,015.99**

Accounts Payable  
Computer Check Register

**Genoa Township**

2911 Dorr Road  
Brighton, MI 48116

(810) 227-5225

User: cindy

Printed: 04/28/2016 - 13:24

Bank Account: 101CH

| Check              | Vendor No | Vendor Name                  | Date       | Invoice No | Amount   |
|--------------------|-----------|------------------------------|------------|------------|--|
| 13614              | EFT-FED   | EFT- Federal Payroll Tax     | 05/06/2016 |            | 7,899.36<br>4,574.12<br>4,574.12<br>1,069.78<br>1,069.78 |
| Check 13614 Total: |           |                              |            |            | 19,187.16  |
| 13615              | EFT-PENS  | EFT- Payroll Pens Ln Pyts    | 05/06/2016 |            | 2,317.20<br>72.53  |
| Check 13615 Total: |           |                              |            |            | 2,389.73   |
| 13616              | EFT-PRIN  | EFT-Principal Retirement 457 | 05/06/2016 |            | 1,157.00   |
| Check 13616 Total: |           |                              |            |            | 1,157.00   |
| 13617              | EFT-ROTH  | EFT-Principal Roth           | 05/06/2016 |            | 555.00   |
| Check 13617 Total: |           |                              |            |            | 555.00   |
| 13618              | EFT-TASC  | EFT-Flex Spending            | 05/06/2016 |            | 444.43<br>646.21   |
| Check 13618 Total: |           |                              |            |            | 1,090.64   |

Report Total:

5/6 Payroll <sup>24,379.53</sup>  
54084.03  
\$ 78463.56

Genoa Charter Township  
User: cindy

Electronic Clearinghouse  
Distribution Report

Printed: 04/28/16 14:48  
Batch: 606-05-2016

| Account Number        | Debit            | Credit           | Account Description        |
|-----------------------|------------------|------------------|----------------------------|
| 101-000-002-000       | 0.00             | 54,084.03        | Cash-checking Account Only |
| 101-000-259-000       | 54,084.03        | 0.00             | Payroll Direct Deposit     |
|                       | 54,084.03        | 54,084.03        |                            |
| <b>Report Totals:</b> | <b>54,084.03</b> | <b>54,084.03</b> |                            |

4:03 PM  
05/10/16

**#503 DPW UTILITY FUND**  
**Payment of Bills**  
**May 3 - 16, 2016**

| Type            | Date       | Num  | Name                           | Memo                                    | Amount             |
|-----------------|------------|------|--------------------------------|---|--------------------|
| Check           | 05/04/2016 | 3588 | Genoa Twp General fund         | Reimburse General Fund for DPW Expenses | -300,000.00        |
| Bill Pmt -Check | 05/10/2016 | 3589 | Genoa-Oceola Sewer Authority   | common cost 7-1-15 to 9-30-15           | -1,520.24          |
| Bill Pmt -Check | 05/10/2016 | 3590 | TalentWise Inc                 | Back Ground Check Wijes and Ott         | -154.00            |
| Bill Pmt -Check | 05/10/2016 | 3591 | WEX Bank                       | Fleet Fuel                              | -2,024.77          |
| Bill Pmt -Check | 05/16/2016 | 3592 | Cruisers                       | Truck #9                                | -155.00            |
| Bill Pmt -Check | 05/16/2016 | 3593 | LOWE'S                         | Supplies                                | -3,404.05          |
| Bill Pmt -Check | 05/16/2016 | 3594 | PAETEC                         |   | -41.37             |
| Bill Pmt -Check | 05/16/2016 | 3595 | Port City Communications, Inc. | Call Center Service May 2016            | -319.69            |
| Bill Pmt -Check | 05/16/2016 | 3596 | Red Wing Shoe Store            |   | -301.48            |
| Bill Pmt -Check | 05/16/2016 | 3597 | Tractor Supply Co.             | supplies                                | -359.54            |
| Bill Pmt -Check | 05/16/2016 | 3598 | Victory Lane Quick Oil Change  |   | -120.95            |
| <b>Total</b>    |            |      |                                |   | <b>-308,401.09</b> |

4:02 PM

**#593 LAKE EDGEWOOD W/S FUND**  
**Payment of Bills**  
**May 3 - 16, 2016**

| Type            | Date       | Num  | Name                       | Memo                              | Amount            |
|-----------------|------------|------|----------------------------|-----------------------------------|-------------------|
| Bill Pmt -Check | 05/10/2016 | 2950 | DTE Energy                 | Electric Bills 3-4-16 to 5-2-16   | -696.03           |
| Bill Pmt -Check | 05/16/2016 | 2951 | Brighton Analytical L.L.C. |                                   | -154.00           |
| Bill Pmt -Check | 05/16/2016 | 2952 | Consumers Energy           |                                   | -436.13           |
| Bill Pmt -Check | 05/16/2016 | 2953 | Cooper's Turf Management   | Lawn Care April 2016              | -146.00           |
| Bill Pmt -Check | 05/16/2016 | 2954 | GENOA TWP DPW FUND         | Maintenance/Billing Fees May 2016 | -10,468.90        |
| Bill Pmt -Check | 05/16/2016 | 2955 | KENNEDY INDUSTRIES, INC.   | Field Service Station 39          | -278.75           |
| Bill Pmt -Check | 05/16/2016 | 2956 | SYNAGRO CENTRAL LLC        | Liquid Land App                   | -12,831.20        |
| <b>Total</b>    |            |      |                            |                                   | <b>-25,011.01</b> |

4:08 PM

**#595 PINE CREEK W/S FUND**

**Payment of Bills**

May 3 - 16, 2016

| Type            | Date       | Num  | Name                        | Memo                                    | Amount            |
|-----------------|------------|------|-----------------------------|---|-------------------|
| Bill Pmt -Check | 05/16/2016 | 2165 | City of Brighton, City Hall | Mery Ellen Aria Owner-Belanger Builders | -10,100.00        |
| <b>Total</b>    |            |      |                             |   | <b>-10,100.00</b> |

4:06 PM

**#592 OAK POINTE WATER/SEWER FUND**

**Payment of Bills**

May 3 - 16, 2016

| Type            | Date       | Num  | Name                             | Memo                                | Amount            |
|-----------------|------------|------|----------------------------------|-------------------------------------|-------------------|
| Bill Pmt -Check | 05/10/2016 | 3625 | CONSUMERS ENERGY                 |                                     | -159.39           |
| Bill Pmt -Check | 05/10/2016 | 3626 | DTE ENERGY                       | 3-3-16 to 3-30-16                   | -3,220.61         |
| Bill Pmt -Check | 05/11/2016 | 3627 | DTE ENERGY                       | 04-01-2016 to 4-30-2016             | -1,145.34         |
| Bill Pmt -Check | 05/16/2016 | 3628 | American Aqua, LLC               | Tom Hogan-5090 Glenway Brighton Mi  | -699.00           |
| Bill Pmt -Check | 05/16/2016 | 3629 | COOPERS TURF MANAGEMENT, LL      | Lawn Care-April 2016                | -223.00           |
| Bill Pmt -Check | 05/16/2016 | 3630 | GENOA TWP DPW FUND               | Maintenance/ Billing Fees May1 2016 | -36,951.03        |
| Bill Pmt -Check | 05/16/2016 | 3631 | GRAINGER                         | SUPPLIES                            | -548.83           |
| Bill Pmt -Check | 05/16/2016 | 3632 | M & K Jetting and Televising LLC |                                     | -3,500.00         |
| <b>Total</b>    |            |      |                                  |                                     | <b>-46,447.20</b> |

**GENOA CHARTER TOWNSHIP BOARD**

Regular Meeting and Public Hearing

May 2, 2016

**MINUTES**

Supervisor McCririe called the regular meeting of the board to order at 6:30 p.m. The Pledge of Allegiance was then said. The following board members were present constituting a quorum for the transaction of business: Gary McCririe, Paulette Skolarus, Linda Rowell, Jim Mortensen and Todd Smith. Also present were: Township Manager Michael Archinal and approximately 25 persons in the audience.

Call to the Public was made with no response.

**Approval of Consent Agenda:**

Moved by Mortensen and supported by Smith to approve all items listed under the consent agenda, amending Item # 3 to allow for a budget adjustment to Fund 261. The motion carried unanimously.

**1. Payment of Bills.**

**2. Request to Approve Minutes: April 18, 2016**

**3. Consider approval of a contract in the amount of \$85,000 with the Livingston County Road Commission for repaving Hughes Road from Grand River to Forest Ponds and amending the Road Improvement Fund 261 budget from \$80,000.00 to \$85,000.00 to allow for payment.**

**Approval of Regular Agenda:**

Moved by Rowell and supported by Smith to approve for action all items listed under the regular agenda. The motion carried unanimously.

**4. Consider action regarding unsafe structure proceedings at 4815 Richardson Road.**

**Tabled from 3/21/16 meeting.**

Moved by Smith and supported by Rowell to table until the June 20, 2016 regular meeting of the board allowing the petitioner to obtain contractor estimates that will include replacing the wood paneling on the barn and the renovations to the home at the same time. The petitioner will provide updates to the Township Manager every couple week supporting progress to the project. The motion carried unanimously.

**5. Call to the Public with regard to the second public hearing of the East Coon Lake Trail Road Improvement Project scheduled for summer 2016.**

A call to the public was made with no response.

**6. Request for approval of Resolution No. 5 [confirming the special assessment roll] for the East Coon Lake Trail Road Improvement Project Summer of 2016.**

Moved by Skolarus and supported by Smith to approve Resolution No. 5 for The East Coon Lake Trail Road Improvement Project as requested. The motion carried by roll call vote as follows: Ayes – Smith, Rowell, Mortensen, Skolarus and McCririe. Nays – None. Absent – Hunt and Ledford.

**7. Consideration of a request to approve the environmental impact assessment corresponding to a site plan for a proposed medical center on vacant parcel #11-06-200-068 which is located on the side of Grand River Ave, east of Meadowview Avenue, Howell. The request is petitioned by Kalambaka Properties, LLC. Howell Medical.**

**A. Disposition of Environmental Impact Assessment (04/22/2016)**

Moved by Rowell and supported by Skolarus to approve the impact assessment dated 04/22/2016 as submitted. The motion carried unanimously.

**8. Consideration of a request to approve the Final PUD site plan and environmental 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.**

**A. Disposition of Environmental Impact Assessment (04/25/2016)**

Moved by Smith and supported by Rowell to approve the impact assessment dated 04/25/2016 as requested. The motion carried unanimously

**B. Disposition of Final PUD Site Plan (04/25/2016)**

Moved by Smith and supported by Skolarus to approve the Site Plan dated 04/25/2016 with the following conditions:

1. 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 Township recognizes that the sidewalk may not be installed until after sanitary sewer is installed.
2. The location of the ground sign shall be reviewed and approved by Township staff for compliance with the PUD and Zoning Ordinance. It is understood that the ground sign may not be constructed in the location shown on plans.
3. All requirements of the Township Engineer and Utility Authority shall be complied with and construction plan review and permits shall be required.

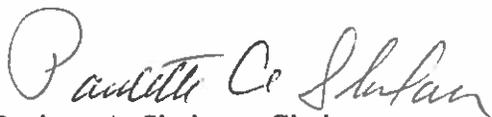
4. Any utility easement or connection fees due shall be provided prior to issuance of a land use permit.

5. The requirements of the Brighton Area Fire Department will be complied with.  
The motion carried unanimously.

**9. Request for approval to purchase 122 gravesites from St. George Lutheran Church located on Herbst Road at a cost of \$40,000.**

Moved by Smith and supported by Mortensen to approve the purchase of 122 gravesites from St. George Lutheran Church as requested contingent upon attorney review and board review of the contract. The motion carried unanimously

The regular meeting and public hearing of the board was adjourned at 7:00 p.m.



Paulette A. Skolarus, Clerk  
Genoa Charter Township Board

Gary McCririe, Supervisor  
Genoa Charter Township Board

MT BRIGHTON  
BRIGHTON  
ALUMNI ASSOC.

10 DORR 5/16/16

**PAPERWORK TO OBTAIN FIREWORKS DISPLAY PERMIT  
2016**

The following information is required to secure a permit for fireworks display in Genoa Charter Township:

1. BFS-999 Application for Fireworks Display Permit 2016
2. Letter to Genoa Charter Township Board requesting said permit.
3. Certificate of Insurance
4. Current ATF Letter of Clearance for Explosives License or Permit.
5. Contingency letter addressing the disposal of any/all fireworks at the show site that do not get used.
6. Map of the location site for fireworks display.

Upon completion of presenting all aforementioned documents to the Township Clerk/Deputy Clerk for review, the application will be presented at the next scheduled Township Board Meeting for review/approval.

Upon approval of the proposed fireworks display, the Township Clerk/Deputy Clerk will complete the documents BFS-49e, Permit for Fireworks Display for said applicant with notarization seal.

Copy will be retained by the Township for all 2016 Fireworks Display Permits Issued.

cro

# 2016 Application for Fireworks Other Than Consumer or Low Impact

FOR USE BY LEGISLATIVE BODY OF CITY, VILLAGE OR TOWNSHIP BOARD ONLY

DATE PERMIT(S) EXPIRE:

|                        |   |                        |
|------------------------|---|------------------------|
| Authority: 2011 PA 256 | The LEGISLATIVE BODY OF CITY, VILLAGE OR TOWNSHIP BOARD will not discriminate against any individual or group because of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. If you need assistance with reading, writing, hearing, etc., under the Americans with Disabilities Act, you may make your needs known to this Legislative Body of City, Village or Township Board. | DATE PERMIT(S) EXPIRE: |
|------------------------|---|------------------------|

**TYPE OF PERMIT(S) (Select all applicable boxes)**

Agricultural or Wildlife Fireworks     
  Articles Pyrotechnic     
  Display Fireworks  
 Public Display     
  Private Display  
 Special Effects Manufactured for Outdoor Pest Control or Agricultural Purposes

|  |  |   |
|--|--|---|
| NAME OF APPLICANT<br>CALVIN HECKMAN JR | ADDRESS OF APPLICANT<br>4263 Clifford Rd | AGE OF APPLICANT 18 YEARS OR OLDER<br><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
|--|--|---|

|  |  |
|--|--|
| NAME OF PERSON OR RESIDENT AGENT REPRESENTING CORPORATION, LLC, DBA OR OTHER | ADDRESS PERSON OR RESIDENT AGENT REPRESENTING CORPORATION, LLC, DBA OR OTHER |
|--|--|

|   |  |                  |
|---|--|------------------|
| IF A NON-RESIDENT APPLICANT (LIST NAME OF MICHIGAN ATTORNEY OR MICHIGAN RESIDENT AGENT) | ADDRESS (MICHIGAN ATTORNEY OR MICHIGAN RESIDENT AGENT) | TELEPHONE NUMBER |
|---|--|------------------|

|   |   |  |
|---|---|--|
| NAME OF PYROTECHNIC OPERATOR<br>CALVIN HECKMAN JR | ADDRESS OF PYROTECHNIC OPERATOR<br>4263 Clifford Rd | AGE OF PYROTECHNIC OPERATOR 18 YEARS OR OLDER<br><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
|---|---|--|

|                            |                    |       |
|----------------------------|--------------------|-------|
| NO. YEARS EXPERIENCE<br>14 | NO. DISPLAYS<br>23 | WHERE |
|----------------------------|--------------------|-------|

|   |  |   |
|---|--|---|
| NAME OF ASSISTANT<br>CALVIN HECKMAN III | ADDRESS OF ASSISTANT<br>4263 Clifford Rd | AGE OF ASSISTANT 18 YEARS OR OLDER<br><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
|---|--|---|

|   |  |   |
|---|--|---|
| NAME OF OTHER ASSISTANT<br>BOB PELCHER JR | ADDRESS OF OTHER ASSISTANT<br>4127 Clifford Rd | AGE OF OTHER ASSISTANT 18 YEARS OR OLDER<br><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
|---|--|---|

EXACT LOCATION OF PROPOSED DISPLAY  
 MT BRIGHTON SKI LODGE Chalis + BAUER Road

|   |                                   |
|---|-----------------------------------|
| DATE OF PROPOSED DISPLAY<br>7/16/16 SAT | TIME OF PROPOSED DISPLAY<br>10 PM |
|---|-----------------------------------|

MANNER AND PLACE OF STORAGE, SUBJECT TO APPROVAL OF LOCAL FIRE AUTHORITIES, IN ACCORDANCE WITH NFPA 1123, 1124 & 1128 AND OTHER STATE OR FEDERAL REGULATIONS. PROVIDE PROOF OF PROPER LICENSING OR PERMITTING BY STATE OR FEDERAL GOVERNMENT

RKM FIREWORKS ABTF Regulated Bunker EDWARDS Burg MI

|  |  |
|--|--|
| AMOUNT OF BOND OR INSURANCE (TO BE SET BY LOCAL GOVERNMENT)<br>1,000,000 | NAME OF BONDING CORPORATION OR INSURANCE COMPANY<br>Lloyds of London |
|--|--|

ADDRESS OF BONDING CORPORATION OR INSURANCE COMPANY  
 371 BEL MARIN NOVATO CA 94949

| NUMBER OF FIREWORKS | KIND OF FIREWORKS TO BE DISPLAYED (Please provide additional pages as needed) |
|---------------------|---|
| 72                  | 3" ASST AREL Shells   |
| 40                  | 4" " " "  |
| 36                  | 5" " " "  |
| 6                   | 6" " " "  |
| 8                   | MULTI shot Finale CAKES   |
|                     |   |
|                     |   |
|                     |   |

|  |                |
|--|----------------|
| SIGNATURE OF APPLICANT<br>Calvin Heckman Jr. | DATE<br>5/9/16 |
|--|----------------|

## Instructions for Application for Fireworks Other Than Consumer or Low Impact

Applications shall be submitted to the legislative body of a city, village or township board. A permit may be issued as a result of official action by the legislative body. A permit shall be valid only for use within the limits of the jurisdiction of the legislative body of a city, village or township board.

1. **Type of Permit** – check all boxes that may apply to the type of permit needed. You may select several permit types depending on your fireworks display. You may check with your legislative body of a city, village or township board for assistance when making your selection. Please review the following definitions to determine which type of permit to select:
  - **Agricultural or Wildlife Fireworks** – devices distributed to farmers, ranchers, and growers through a wildlife management program administered by the US Department of Interior or Michigan DNR.
  - **Articles Pyrotechnic** – 1.4G fireworks for professional use only that is classified as UN0431 or UN0432.
  - **Display Fireworks** – 1.3G fireworks for professional use only
  - **Special Effects Manufactured for Outdoor Pest Control or Agricultural Purposes** – devices with a combination of chemical elements or compounds capable of burning independently of the oxygen of the atmosphere and designed and intended to produce an audible, visual, mechanical or thermal effect for pest or animal control.
  - **Public Display** – a fireworks display that is open to all persons for viewing.
  - **Private Display** – a fireworks display that is not open to the general public for viewing.
2. **Name of applicant** – list the name of the applicant. The applicant may be a person representing an organization, group, firm or corporation, or self. If the applicant is also the operator, enter the same name in the operator's section.
3. **Address of applicant** – complete the address of the applicant; include the street address, city, state and zip code.
4. **Name of person or resident agent representing corporation, LLC, DBA or other** – list the name of the person or resident agent that represents the corporation, LLC, DBA or other.
5. **Address of person or resident agent that represents the corporation, LLC, DBA or other** – list the address of the person or resident agent representing the corporation, LLC, DBA or other.
6. **Non-resident applicant** – list the name of the non-resident applicant. A non-resident applicant shall appoint a Michigan attorney or Michigan resident agent in writing to be the applicant's legal representative upon whom all service of process in any action or proceeding may be served.
7. **Name of pyrotechnic operator** – list the name of the pyrotechnic operator. The pyrotechnic operator is the person in charge of the display. The legislative body of a city, village or township board shall rule on the competency and qualifications of the operator before granting a permit and may require an affidavit from the applicant as to the operator's experience, former pyrotechnic accidents, criminal record, sobriety, etc.
8. **Address of pyrotechnic operator** – list the address of the pyrotechnic operator; include the street address, city, state and zip code.
9. **Age of the pyrotechnic operator** – list the age of the pyrotechnic operator; the operator must be 18 years of age or older.
10. **Name of assistant** – list the name of the assistant to the pyrotechnic operator;
11. **Address of assistant** – list the address of the assistant; include the street address, city, state and zip code. If there is more than one assistant, please list additional assistants on a separate sheet and include the address and age of those additional assistants.
12. **Age of assistant** – list the age of the assistant to the pyrotechnic operator; the assistant must be 18 years or older.
13. **Name of other assistant** – list the name of other assistant to the pyrotechnic operator.
14. **Age of other assistant** – list the age of the assistant to the pyrotechnic operator; the assistant must be 18 years or older.
15. **Exact location of proposed display** – list the address of the exact location of the proposed fireworks display.
16. **Date of proposed display** – indicate the date of the proposed fireworks display; only one display date can be used per application.
17. **Time of proposed display** – indicate the time of the proposed fireworks display.
18. **Manner and place of storage** - indicate the manner and place of storage within the legislative body of a city, village or township board of fireworks that are ready for display, just prior to the display in the area of exhibition. The legislative body of a city, village or township board shall obtain approval from the local fire authorities of the manner and place of storage before any permit is issued.

19. Amount of bond or insurance - the Issuing legislative body of a city, village or township board shall set the amount of and proof of bond or insurance for the protection of the public to satisfy claims for damages to property or personal injuries arising out of any act or omission on the part of the person, firm or corporation, or any agent or employee of the applicant. The applicant shall assure the bond or insurance required is provided.
20. Name of bonding corporation or insurance company – provide the name of the bonding corporation or insurance company for which the bond was issued through.
21. Address of bonding corporation or insurance company – list the address of the bonding corporation or insurance company; include the street address, city, state and zip code.
22. Number of fireworks and kind of fireworks to be displayed– indicate the total amount of fireworks proposed for the display or use and a description of the type of fireworks for display; such as 10 aerial bombs, 30 aerial rocket bursts, etc.
23. The application is valid for the calendar year in which the application was received and permit was issued.
24. Permit fees shall be established by the legislative body of a city, village or township board and shall be submitted to and retained by legislative body of a city, village or township board.
25. Permitting will be in compliance with the Michigan Fireworks Safety Act, PA 256 of 2011, MCL 28.466, Section 16.
26. **Mail the application to the legislative body of a city, village or township board within the location jurisdiction of the display.** DO NOT mail the application to the Bureau of Fire Services (BFS). If mailed to the BFS, it will be returned to the sender.



**Certificate of Insurance**

9629

Issue Date: 5/7/2016

|   |   |
|---|---|
| <b>PRODUCER</b><br>Professional Program Insurance Brokerage<br>371 Bel Marin Keys Blvd., Suite #220<br>Novato, California 94949 | THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. |
|---|---|

**INSURERS AFFORDING COVERAGE**

|  |   |
|--|---|
| <b>INSURED</b><br>RKM Fireworks Company & St. Evans, Inc.<br>27383 May Street<br>Edwardsburg, MI 49112 | INSURER A: Underwriter's at Lloyd's, London<br>INSURER B:<br>INSURER C:<br>INSURER D: |
|--|---|

**COVERAGES:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE NAMED INSURED ABOVE FOR THE PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES.

| CO LTR | TYPE OF INSURANCE             | POLICY NUMBER | POLICY EFFECTIVE DATE (DD/MM/YY) | POLICY EXPIRATION DATE (DD/MM/YY) | LIMITS                       |             |
|--------|-------------------------------|---------------|----------------------------------|-----------------------------------|------------------------------|-------------|
|        |                               |               |                                  |                                   |                              |             |
| A      | GENERAL LIABILITY CLAIMS MADE | PY/15-0157    | 10/8/2015                        | 10/8/2016                         | EACH ACCIDENT                | \$1,000,000 |
|        |                               |               |                                  |                                   |                              |             |
|        |                               |               |                                  |                                   | MEDICAL EXP (any one person) |             |
|        |                               |               |                                  |                                   | FIRE LEGAL LIABILITY         | \$50,000    |
|        |                               |               |                                  |                                   | GENERAL AGGREGATE            | \$2,000,000 |
|        |                               |               |                                  |                                   | PRODUCTS-COMP/ OPS AGG       |             |

**DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS**

Certificate holder is additional insured as respects the following:

|                     |   |
|---------------------|---|
| Date(s) of Display: | 7/16/2016   |
| Location:           | Mt Brighton Ski Area<br>4141 Bauer Rd<br>Brighton, MI 48116 |
| Additional insured: | Brighton Alumni Association                                 |
| Rain Date(s):       | 7/17/2016   |
| Type of Display:    | Aerial Fireworks Display                                    |

**CERTIFICATE HOLDER**

Brighton Alumni Association  
 c/o BHS  
 7878 Brighton Rd  
 Brighton, MI 48116

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

  
 AUTHORIZED REPRESENTATIVE

✓ TO GENOA TWP BOARD,

This is a contingency letter for any or all fireworks not used, or didn't fire for any reason, will be immediately removed from the site following the show and returned to RKM's BATE Registered Bunker, for storage or disposal.

Thank you  
Calvin Heckman Jr  
RKM Fireworks  
Calvin Heckman Jr.

2016

BRIGHTON  
ALUMNI ASSOC.  
SITE MAP

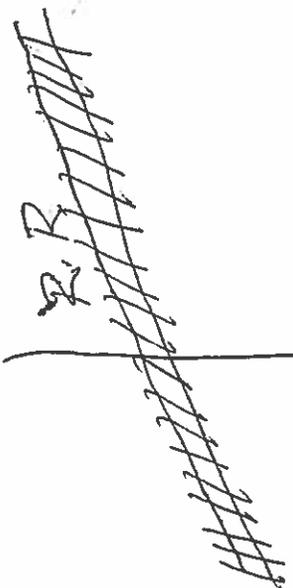
Brighton Rd

Show site  
SAME AS LAST YEAR

Club House  
MT BRIGHTON

BAUER RD

Challis Rd



*TRF LAKES*

*To Board 5/16/16*

**PAPERWORK TO OBTAIN FIREWORKS DISPLAY PERMIT  
2016**

The following information is required to secure a permit for fireworks display in Genoa Charter Township:

1. BFS-999 Application for Fireworks Display Permit 2016
2. Letter to Genoa Charter Township Board requesting said permit.
3. Certificate of Insurance
4. Current ATF Letter of Clearance for Explosives License or Permit.
5. Contingency letter addressing the disposal of any/all fireworks at the show site that do not get used.
6. Map of the location site for fireworks display.

Upon completion of presenting all aforementioned documents to the Township Clerk/Deputy Clerk for review, the application will be presented at the next scheduled Township Board Meeting for review/approval.

Upon approval of the proposed fireworks display, the Township Clerk/Deputy Clerk will complete the documents BFS-49e, Permit for Fireworks Display for said applicant with notarization seal.

Copy will be retained by the Township for all 2016 Fireworks Display Permits Issued.

cro

# 2016 Application for Fireworks Other Than Consumer or Low Impact

FOR USE BY LEGISLATIVE BODY OF CITY, VILLAGE OR TOWNSHIP BOARD ONLY

DATE PERMIT(S) EXPIRE:

|                        |   |
|------------------------|---|
| Authority: 2011 PA 256 | The LEGISLATIVE BODY OF CITY, VILLAGE OR TOWNSHIP BOARD will not discriminate against any individual or group because of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. If you need assistance with reading, writing, hearing, etc., under the Americans with Disabilities Act, you may make your needs known to this Legislative Body of City, Village or Township Board. |
|------------------------|---|

TYPE OF PERMIT(S) (Select all applicable boxes)

Agricultural or Wildlife Fireworks     
  Articles Pyrotechnic     
  Display Fireworks  
 Public Display     
  Private Display  
 Special Effects Manufactured for Outdoor Pest Control or Agricultural Purposes

|   |   |   |
|---|---|---|
| NAME OF APPLICANT<br><b>CALVIN HECKMAN JR</b> | ADDRESS OF APPLICANT<br><b>4263 Clifford Rd</b> | AGE OF APPLICANT 18 YEARS OR OLDER<br><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
|---|---|---|

|  |  |
|--|--|
| NAME OF PERSON OR RESIDENT AGENT REPRESENTING CORPORATION, LLC, DBA OR OTHER | ADDRESS PERSON OR RESIDENT AGENT REPRESENTING CORPORATION, LLC, DBA OR OTHER |
|--|--|

|   |  |                  |
|---|--|------------------|
| IF A NON-RESIDENT APPLICANT (LIST NAME OF MICHIGAN ATTORNEY OR MICHIGAN RESIDENT AGENT) | ADDRESS (MICHIGAN ATTORNEY OR MICHIGAN RESIDENT AGENT) | TELEPHONE NUMBER |
|---|--|------------------|

|  |  |  |
|--|--|--|
| NAME OF PYROTECHNIC OPERATOR<br><b>CALVIN HECKMAN JR</b> | ADDRESS OF PYROTECHNIC OPERATOR<br><b>4263 Clifford Rd</b> | AGE OF PYROTECHNIC OPERATOR 18 YEARS OR OLDER<br><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
|--|--|--|

|                                   |                           |                                      |
|-----------------------------------|---------------------------|--------------------------------------|
| NO. YEARS EXPERIENCE<br><b>14</b> | NO. DISPLAYS<br><b>23</b> | WHERE<br><b>INDIANA AND MICHIGAN</b> |
|-----------------------------------|---------------------------|--------------------------------------|

|                   |                      |  |
|-------------------|----------------------|--|
| NAME OF ASSISTANT | ADDRESS OF ASSISTANT | AGE OF ASSISTANT 18 YEARS OR OLDER<br><input type="checkbox"/> YES <input type="checkbox"/> NO |
|-------------------|----------------------|--|

|                         |                            |  |
|-------------------------|----------------------------|--|
| NAME OF OTHER ASSISTANT | ADDRESS OF OTHER ASSISTANT | AGE OF OTHER ASSISTANT 18 YEARS OR OLDER<br><input type="checkbox"/> YES <input type="checkbox"/> NO |
|-------------------------|----------------------------|--|

EXACT LOCATION OF PROPOSED DISPLAY  
**4127 Clifford Waters EDGE**

|   |   |
|---|---|
| DATE OF PROPOSED DISPLAY<br><b>JULY 9<sup>th</sup> 2016 SAT</b> | TIME OF PROPOSED DISPLAY<br><b>10PM</b> |
|---|---|

MANNER AND PLACE OF STORAGE SUBJECT TO APPROVAL OF LOCAL FIRE AUTHORITIES, IN ACCORDANCE WITH NFPA 1123, 1124 & 1126 AND OTHER STATE OR FEDERAL REGULATIONS. PROVIDE PROOF OF PROPER LICENSING OR PERMITTING BY STATE OR FEDERAL GOVERNMENT

**EDWARDSBURG, MI ABTF Regulated Storage Bunker**  
**SET UP AND SHOT THE SAME DAY!**

|   |   |
|---|---|
| AMOUNT OF BOND OR INSURANCE (TO BE SET BY LOCAL GOVERNMENT)<br><b>1,000,000</b> | NAME OF BONDING CORPORATION OR INSURANCE COMPANY<br><b>Lloyds of London</b> |
|---|---|

ADDRESS OF BONDING CORPORATION OR INSURANCE COMPANY  
**371 BEL MARIA KEYS BLVD Suite 220 Nourto CA 94949**

| NUMBER OF FIREWORKS              | KIND OF FIREWORKS TO BE DISPLAYED (Please provide additional pages as needed) |      |       |        |
|----------------------------------|---|------|-------|--------|
| 72                               | 3"  | ASST | Areil | Shells |
| 36                               | 4"  | "    | "     | "      |
| 28                               | 5"  | "    | "     | "      |
| 6                                | 8"  | "    | "     | "      |
| 6                                | MULTI shot cakes  |      |       |        |
| RAIL DATE OF 7/10/16 Sunday 10pm |   |      |       |        |

|   |                       |
|---|-----------------------|
| SIGNATURE OF APPLICANT<br><b>Calvin Heckman Jr.</b> | DATE<br><b>5/9/16</b> |
|---|-----------------------|

## Instructions for Application for Fireworks Other Than Consumer or Low Impact

Applications shall be submitted to the legislative body of a city, village or township board. A permit may be issued as a result of official action by the legislative body. A permit shall be valid only for use within the limits of the jurisdiction of the legislative body of a city, village or township board.

1. **Type of Permit** – check all boxes that may apply to the type of permit needed. You may select several permit types depending on your fireworks display. You may check with your legislative body of a city, village or township board for assistance when making your selection. Please review the following definitions to determine which type of permit to select:
  - **Agricultural or Wildlife Fireworks** – devices distributed to farmers, ranchers, and growers through a wildlife management program administered by the US Department of Interior or Michigan DNR.
  - **Articles Pyrotechnic** – 1.4G fireworks for professional use only that is classified as UN0431 or UN0432.
  - **Display Fireworks** – 1.3G fireworks for professional use only
  - **Special Effects Manufactured for Outdoor Pest Control or Agricultural Purposes** – devices with a combination of chemical elements or compounds capable of burning independently of the oxygen of the atmosphere and designed and intended to produce an audible, visual, mechanical or thermal effect for pest or animal control.
  - **Public Display** – a fireworks display that is open to all persons for viewing.
  - **Private Display** – a fireworks display that is not open to the general public for viewing.
2. **Name of applicant** – list the name of the applicant. The applicant may be a person representing an organization, group, firm or corporation, or self. If the applicant is also the operator, enter the same name in the operator's section.
3. **Address of applicant** – complete the address of the applicant; include the street address, city, state and zip code.
4. **Name of person or resident agent representing corporation, LLC, DBA or other** – list the name of the person or resident agent that represents the corporation, LLC, DBA or other.
5. **Address of person or resident agent that represents the corporation, LLC, DBA or other** – list the address of the person or resident agent representing the corporation, LLC, DBA or other.
6. **Non-resident applicant** – list the name of the non-resident applicant. A non-resident applicant shall appoint a Michigan attorney or Michigan resident agent in writing to be the applicant's legal representative upon whom all service of process in any action or proceeding may be served.
7. **Name of pyrotechnic operator** – list the name of the pyrotechnic operator. The pyrotechnic operator is the person in charge of the display. The legislative body of a city, village or township board shall rule on the competency and qualifications of the operator before granting a permit and may require an affidavit from the applicant as to the operator's experience, former pyrotechnic accidents, criminal record, sobriety, etc.
8. **Address of pyrotechnic operator** – list the address of the pyrotechnic operator; include the street address, city, state and zip code.
9. **Age of the pyrotechnic operator** – list the age of the pyrotechnic operator; the operator must be 18 years of age or older.
10. **Name of assistant** – list the name of the assistant to the pyrotechnic operator;
11. **Address of assistant** – list the address of the assistant; include the street address, city, state and zip code. If there is more than one assistant, please list additional assistants on a separate sheet and include the address and age of those additional assistants.
12. **Age of assistant** – list the age of the assistant to the pyrotechnic operator; the assistant must be 18 years or older.
13. **Name of other assistant** – list the name of other assistant to the pyrotechnic operator.
14. **Age of other assistant** – list the age of the assistant to the pyrotechnic operator; the assistant must be 18 years or older.
15. **Exact location of proposed display** – list the address of the exact location of the proposed fireworks display.
16. **Date of proposed display** – indicate the date of the proposed fireworks display; only one display date can be used per application.
17. **Time of proposed display** – indicate the time of the proposed fireworks display.
18. **Manner and place of storage** - indicate the manner and place of storage within the legislative body of a city, village or township board of fireworks that are ready for display, just prior to the display in the area of exhibition. The legislative body of a city, village or township board shall obtain approval from the local fire authorities of the manner and place of storage before any permit is issued.

19. Amount of bond or insurance - the issuing legislative body of a city, village or township board shall set the amount of and proof of bond or insurance for the protection of the public to satisfy claims for damages to property or personal injuries arising out of any act or omission on the part of the person, firm or corporation, or any agent or employee of the applicant. The applicant shall assure the bond or insurance required is provided.
20. Name of bonding corporation or insurance company – provide the name of the bonding corporation or insurance company for which the bond was issued through.
21. Address of bonding corporation or insurance company – list the address of the bonding corporation or insurance company; include the street address, city, state and zip code.
22. Number of fireworks and kind of fireworks to be displayed– indicate the total amount of fireworks proposed for the display or use and a description of the type of fireworks for display; such as 10 aerial bombs, 30 aerial rocket bursts, etc.
23. The application is valid for the calendar year in which the application was received and permit was issued.
24. Permit fees shall be established by the legislative body of a city, village or township board and shall be submitted to and retained by legislative body of a city, village or township board.
25. Permitting will be in compliance with the Michigan Fireworks Safety Act, PA 256 of 2011, MCL 28.466, Section 16.
26. **Mail the application to the legislative body of a city, village or township board within the location jurisdiction of the display. DO NOT mail the application to the Bureau of Fire Services (BFS). If mailed to the BFS, it will be returned to the sender.**



U.S. Department of Justice  
 Bureau of Alcohol, Tobacco, Firearms and Explosives  
 Federal Explosives Licensing Center  
 244 Needy Road  
 Martinsburg, West Virginia 25405

901090: CRR/FLS  
 5400  
 File Number: 4MI00995

12/04/2015

SUBJECT: EMPLOYEE POSSESSOR LETTER OF CLEARANCE for:

CALVIN HECKMAN

SHOOTER AND OPERATOR  
 (810)227-6307  
 ELLINGTON, MI 48116

and is ONLY valid under the following federal explosives license/permit:

RKM FIREARMS CO  
 27983 MAY ST  
 EDWARDSBURG, MI 49112  
 1972

Dear CALVIN HECKMAN:

You have been approved to transport, ship, receive or possess explosive materials as an employee possessor under the Federal explosive license or permit indicated above. **This clearance is only valid under the license or permit referenced above.**

Sincerely,

*Christopher R. Reeves*

Christopher R. Reeves  
 Chief, Federal Explosives Licensing Center (FELC)

**FELC Customer Service.** If you believe that information on your "Letter of Clearance" is incorrect, please return a COPY of the letter to the Chief, Federal Explosives Licensing Center (FELC), with a statement showing the nature of the error. The Chief, FELC, shall correct the error, and return an amended letter to you.

**Mail:** ATF  
 Chief, FELC  
 Attn.: LOC Correction  
 244 Needy Road  
 Martinsburg, West Virginia 25405

**Fax:** 1-304-616-4401  
 Chief, FELC  
 Attn.: LOC Correction

**Call toll-free:** 1-877-283-3352

WWW.ATF.GOV

CALVIN HECKMAN

Employee Possessor Letter of Clearance for:

**Certificate of Insurance**

9630

Issue Date: 5/7/2016

**PRODUCER**  
Professional Program Insurance Brokerage  
371 Bel Marin Keys Blvd., Suite #220  
Novato, California 94949

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

**INSURERS AFFORDING COVERAGE**

**INSURED**  
RKM Fireworks Company & St. Evans, Inc.  
27383 May Street  
Edwardsburg, MI 49112

INSURER A: Underwriter's at Lloyd's, London

INSURER B:

INSURER C:

INSURER D:

**COVERAGES:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE NAMED INSURED ABOVE FOR THE PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES.

| CO LTR | TYPE OF INSURANCE             | POLICY NUMBER | POLICY EFFECTIVE DATE (DD/MM/YY) | POLICY EXPIRATION DATE (DD/MM/YY) | LIMITS                       |             |
|--------|-------------------------------|---------------|----------------------------------|-----------------------------------|------------------------------|-------------|
|        |                               |               |                                  |                                   |                              |             |
| A      | GENERAL LIABILITY CLAIMS MADE | PY/15-0157    | 10/8/2015                        | 10/8/2016                         | EACH ACCIDENT                | \$1,000,000 |
|        |                               |               |                                  |                                   | MEDICAL EXP (any one person) |             |
|        |                               |               |                                  |                                   | FIRE LEGAL LIABILITY         | \$50,000    |
|        |                               |               |                                  |                                   | GENERAL AGGREGATE            | \$2,000,000 |
|        |                               |               |                                  |                                   | PRODUCTS-COMP/ OPS AGG       |             |

**DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS**

Certificate holder is additional insured as respects the following:

|                     |                          |
|---------------------|--------------------------|
| Date(s) of Display: | 7/9/2016                 |
| Location:           | Crooked Lake             |
| Additional Insured: | Tri Lakes Association    |
| Rain Date(s):       | 7/10/2016                |
| Type of Display:    | Aerial Fireworks Display |

**CERTIFICATE HOLDER**

Tri Lakes Association  
4263 Clifford  
Brighton, MI 48116

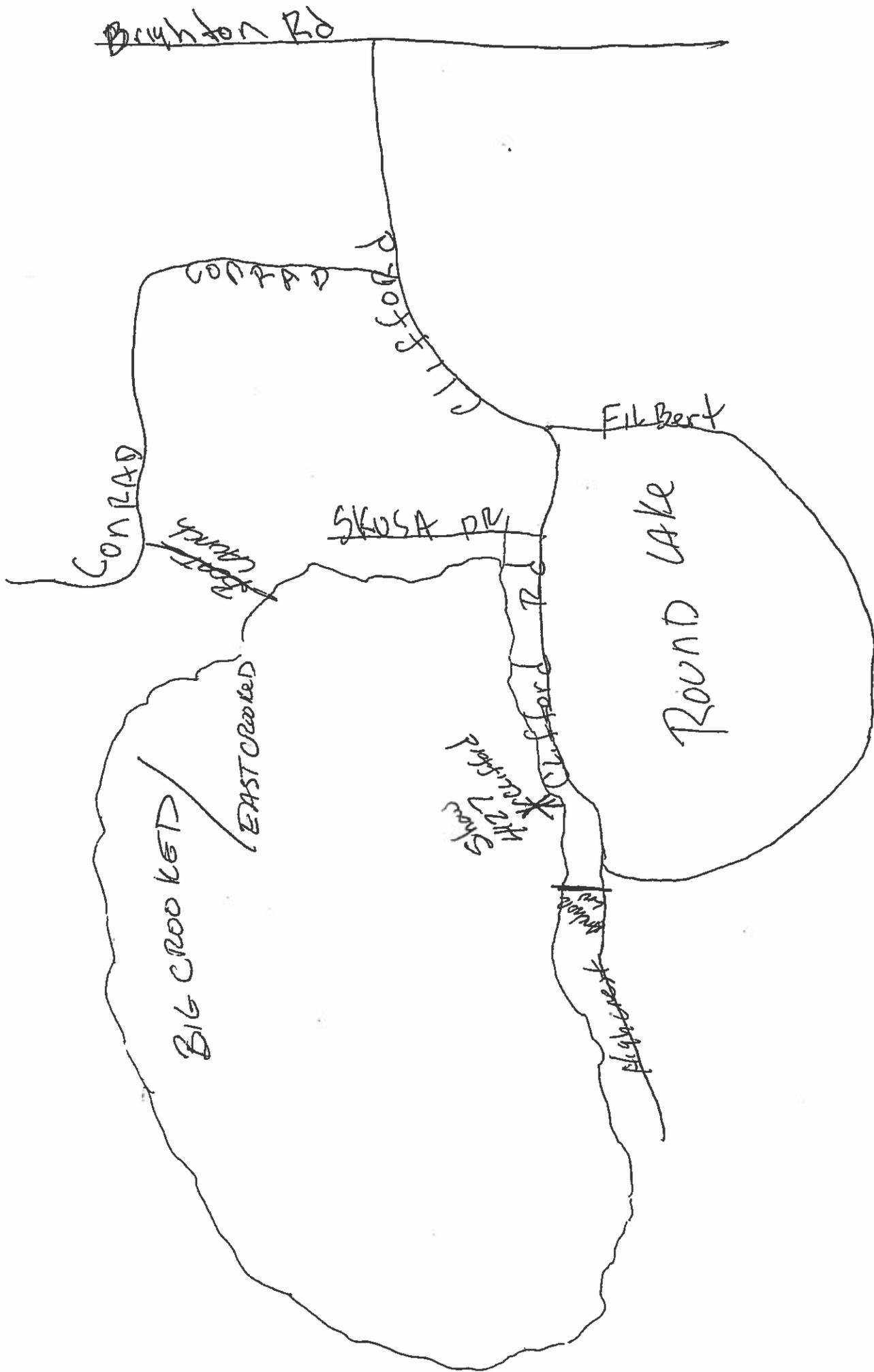
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

  
AUTHORIZED REPRESENTATIVE

✓ TO GENOA TWP BOARD,

This is a contingency letter for any or all fireworks not used, or didn't fire for any reason, will be immediately removed from the site following the show and returned to RKM's BATE Registered Bunker for storage or disposal.

Thank you  
CALVIN HECKMAN JR  
RKM FIREWORKS  
*Calvin Heckman Jr.*



SITE MAP 2016 TRI LAKES

May 10, 2016

Daniel Murphy  
Corktown Blessings  
2870 Weatherly Rd.  
Howell, MI 48813

Genoa Township  
2911 Dorr Rd.  
Brighton, MI 48116

Dear Ms. Skolarus

Corktown Blessings is a 501(c)(3) non-profit organization made up of family and friends that share their time, talent and resources to assist those in need of food and clothing in the greater Detroit area. The organization has informally been around for 15 years, however, became a formal non-profit in July, 2015. We would like to raise money in the form of a raffle that will be held on September 17<sup>th</sup>, 2016 at Downing Farms Golf Course in Northville during a fundraising golf outing. There will be approximately 80 to 100 people in attendance. The proceeds will be used for an annual homeless Thanksgiving dinner held at the Most Holy Trinity Church/School in Corktown, Detroit.

Enclosed is the Local Governing Body Resolution for Charitable Gaming Licenses that the Michigan Lottery requires in order to conduct gaming events. I would appreciate it if you could present this at the next board meeting on May 16<sup>th</sup>, 2016. Thank you.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Daniel Murphy', with a long horizontal flourish extending to the right.

Daniel Murphy



Charitable Gaming Division  
 Box 30023, Lansing, MI 48909  
 OVERNIGHT DELIVERY:  
 101 E. Hillsdale, Lansing MI 48933  
 (517) 335-5780  
 www.michigan.gov/cg

**LOCAL GOVERNING BODY RESOLUTION FOR CHARITABLE GAMING LICENSES**  
 (Required by MCL 432.103(K)(ii))

At a \_\_\_\_\_ meeting of the \_\_\_\_\_  
REGULAR OR SPECIAL TOWNSHIP, CITY, OR VILLAGE COUNCIL/BOARD

called to order by \_\_\_\_\_ on \_\_\_\_\_  
DATE

at \_\_\_\_\_ a.m./p.m. the following resolution was offered:  
TIME

Moved by \_\_\_\_\_ and supported by \_\_\_\_\_

that the request from Corktown Blessings of Howell  
NAME OF ORGANIZATION CITY

county of Livingston County, asking that they be recognized as a  
COUNTY NAME

nonprofit organization operating in the community for the purpose of obtaining charitable  
 gaming licenses, be considered for \_\_\_\_\_  
APPROVAL/DISAPPROVAL

|               |               |
|---------------|---------------|
| APPROVAL      | DISAPPROVAL   |
| Yeas: _____   | Yeas: _____   |
| Nays: _____   | Nays: _____   |
| Absent: _____ | Absent: _____ |



I hereby certify that the foregoing is a true and complete copy of a resolution offered and

adopted by the \_\_\_\_\_ at a \_\_\_\_\_  
TOWNSHIP, CITY, OR VILLAGE COUNCIL/BOARD REGULAR OR SPECIAL

meeting held on \_\_\_\_\_  
DATE

SIGNED: \_\_\_\_\_  
TOWNSHIP, CITY, OR VILLAGE CLERK

\_\_\_\_\_  
PRINTED NAME AND TITLE

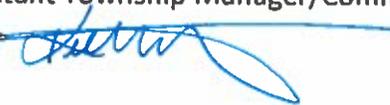
\_\_\_\_\_  
ADDRESS

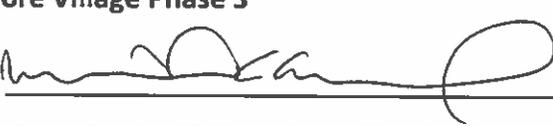
COMPLETION: Required  
 PENALTY: Possible denial of application  
 BSL-CG-1153(R6/09)



2911 Dorr Road  
Brighton, MI 48116  
810.227.5225  
810.227.3420 fax  
genoa.org

## MEMORANDUM

**TO:** Honorable Board of Trustees  
**FROM:** Kelly VanMarter, Assistant Township Manager/Community Development Director   
**DATE:** May 11, 2016  
**RE:** Lakeshore Village Phase 3

**MANAGER'S REVIEW:**   
\_\_\_\_\_

Attached please find the project case file for the third phase of the Lakeshore Village apartments. The applicant proposes nine buildings consisting of 144 apartment units, along with a business center and club house. As required, the project site plan was reviewed and approved by the Planning Commission on Monday, March 14, 2016. At that same meeting, the Planning Commission recommended approval to the Township Board regarding the Environmental Impact Assessment.

My review of the revised submittal was focused on compliance with the outstanding items discussed at the Planning Commission and my comments are as follows:

**Environmental Impact Assessment:** All outstanding items have been addressed. The Township Engineer has reviewed the traffic study and determined that the level of service will not be further diminished as a result of the third phase.

Should you have any questions concerning this matter, please do not hesitate to contact me.

**SUPERVISOR**

Gary T. McCririe

**CLERK**

Paulette A. Skolarus

**TREASURER**

Robin L. Hunt

**TRUSTEES**

H. James Mortensen

Jean W. Ledford

Todd W. Smith

Linda Rowell

**MANAGER**

Michael C. Archinal



**GENOA CHARTER TOWNSHIP**  
**Application for Site Plan Review**

**TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:**

APPLICANT NAME & ADDRESS: Lockwood Companies, 27777 Franklin Road, Suite 1410, Southfield, MI 48034  
*If applicant is not the owner, a letter of Authorization from Property Owner is needed.*

OWNER'S NAME & ADDRESS: Lockwood Companies

SITE ADDRESS: 2812 Ontario Court PARCEL #(s): 11-06-400-015

APPLICANT PHONE: ( 248 ) 433-7401 OWNER PHONE: ( 248 ) 203-0991

OWNER EMAIL: mlockwood@lockwoodcompanies.com

LOCATION AND BRIEF DESCRIPTION OF SITE: Vacant Land

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

BRIEF STATEMENT OF PROPOSED USE: Multi Family Affordable Housing

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

THE FOLLOWING BUILDINGS ARE PROPOSED: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**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: 

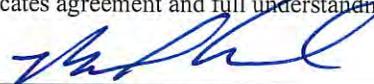
ADDRESS: 27777 Franklin Road, Suite 1410, Southfield, MI 48034

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

1.) Jennifer Lunsford of Lockwood Companies at [jlunsford@lockwoodcompanies.com](mailto:jlunsford@lockwoodcompanies.com)  
Name Business Affiliation E-mail Address

**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.

SIGNATURE:  DATE: 12/8/2015  
PRINT NAME: Mark Lockwood PHONE: 248-203-0991  
ADDRESS: 27777 Franklin Road, Suite 1410, Southfield, MI 48034

Commissioner Mortensen would like to have the traffic study done on Grand River as requested by the Township Engineer. Mr. Jones stated they can have the traffic study completed within one month.

Mr. Lockwood noted that their funding source deadline for the project is mid-June.

It was noted that these issues should be addressed during site plan approval and this agenda item is for the rezoning.

The call to the public was made at 7:19 pm.

Mr. Bill Gregory of 960 Victory Drive stated that looking at the Master Plan, there is very little industrial zoning in the Township. He would like to see screening on the east side of the site. He does not have any concerns with the rezoning.

Mr. Steve Krouse of Best Storage at 902 Victory Drive is in support of the rezoning.

The call to the public was closed at 7:22 pm.

**Moved** by Commissioner Mortensen, seconded by Commissioner Lowe, to recommend to the Township Board approval of the rezoning request from Medium Density Residential (MDR) to High Density Residential (HDR) by Lockwood Companies. The proposed rezoning is consistent with the standards of Section 22.04 of the Township Ordinance, is consistent with the Master Plan Future Land Use map, is consistent with the HDR zoning to the north, the industrial zoning to the east, and the planned industrial district zoning to the south. **The motion carried unanimously.**

**Moved** by Commissioner Lowe, seconded by Commissioner Grajek, to recommend to the Township Board approval of the Environmental Impact Assessment dated 2-24-16 for Phase 3 of Lakeshore Village conditioned upon approval of the rezoning by the Township Board. **The motion carried unanimously.**

**OPEN PUBLIC HEARING #3...** Review of a site plan and impact assessment for a proposed Phase 3 of the Lakeshore Village Apartments consisting of an additional 144 units with a business center/club house. The property is located on the east side of Chilson Road, south of Grand River in Howell on Parcel #11-06-400-015. The request is petitioned by the Lockwood Companies.

**Planning Commission disposition of petition**

- A. Recommendation of Environmental Impact Assessment (2-24-16)
- B. Disposition of Site Plan pending approval of the Impact Assessment by the Board (2-24-16)

Mr. Borden stated that the applicant has addressed all by one of his concerns after review of their first submittal. The primary building material is vinyl siding and Section 12.01 of the Township Ordinance limits the use of vinyl siding to no more than 25 percent for walls visible from public roads or parking lot. He noted that the applicant would like to keep this phase of the plan consistent with the first two and to add masonry would give it the appearance of a completely different project.

Chairman Brown called for a five-minute break at 7:30 pm. The meeting resumed at 7:45 p.m.

Mr. Siwek reiterated his concerns regarding the storm water and traffic study stated in the previous agenda item. He feels the applicant can meet their requirements for the storm water; however, he needs to see the calculations. Mr. Jones agrees that he can address Mr. Siwek's concerns without altering the proposed site plan.

Mr. Coponen stated they will be able to meet the concerns of the Brighton Area Fire Authority's letter of March 9, 2016.

The discussion returned to the building materials. Mr. Coponen showed the proposed building materials. He stated that it would be very difficult to provide this affordable housing if they needed to meet the masonry requirement of the ordinance. Commissioner Mortensen stated he would recommend approval of the materials due to the fact that this is affordable housing, it is not visible from Chilson Road, and it matches the existing buildings in this development.

Commissioner Rauch agrees with Commissioner Mortensen; however, he feels that the fitness center and Unit #5 are visible from Chilson Road. Mr. Coponen stated they could increase the landscape buffer to better screen Unit #5. He offered to have the fitness center all brick.

The call to the public was made at 8:17 pm.

Mr. and Mrs. Old who own the three properties to the west of this site on Chilson Road had concerns regarding drainage. They spoke to the developer during the break and they feel that he is addressing their needs in the case they want to develop their properties.

The call to the public was closed at 8:19 pm.

There was a discussion regarding the traffic study and how obtaining it may affect the timeline that Mr. Lockwood has with his funding source. Ms. VanMarter advised the Planning Commission of Mr. Lockwood's time constraints to obtain their funding from MSHDA. She stated that Township Staff will do what they can to assist him in meeting his deadline.

**Moved** by Commissioner Lowe, seconded by Commissioner Grajek, to recommend to the Township Board approval of the Environmental Impact Assessment dated 2-24-16 subject to the following:

- Approval of the rezoning by the Township Board
- Approval of the site plan by the Township Board
- Verification by the Township Engineer on a traffic study that there is no deterioration of the level of service at Tahoe and Grand River.

**The motion carried unanimously.**

**Moved** Commissioner Mortensen, seconded by Commissioner Rauch, to recommend to the Township Board approval of the site plan dated 2-24-16 for a 144-unit development by Lockwood Companies subject to the following:

- Approval of the rezoning request by the Township Board
- Approval of the Environmental Impact Assessment by the Township Board
- Requirements of the Township Engineer for the handling of site drainage be met
- Construction plan review and approval by the DEQ.

- The requirements of the Brighton Area Fire Authority's letter of March 9, 2016 are met
- A traffic study shall be completed by the applicant in advance of submission to the Township Board, showing no deterioration in the level of service at Tahoe and Grand River and further subject to review by the Township Engineer.
- The building material samples shall become property of the Township.

The building materials were reviewed this evening and are acceptable to the Planning Commission, with additional landscaping around Unit #5 to shield it from the properties to the southwest of the site and the fitness center shall be all brick, with that material to be reviewed and approved by Township Staff. **The motion carried unanimously.**

**OPEN PUBLIC HEARING #4...**Review of a site plan and impact assessment for a proposed Gilden Woods child care facility located on the north side of Grand Oaks Drive in Howell on Parcel #11-08-200-012. The request is located within the Livingston Commons Phase 2 Planned Unit Development and is petitioned by BBI Holdings, LLC.

**Planning Commission disposition of petition**

- A. Recommendation of Environmental Impact Assessment
- B. Recommendation of Final PUD Site Plan

Mr. Steve Witte, of Nederveld, Inc., and Dan Boverhof of BBI Holdings, were present.

Mr. Witte stated they are proposing to build an 11,968 square foot building as a day care center. Gilden Woods was previously Apple Tree. Mr. Boverhof has built approximately 20 of these facilities for Gilden Woods. The day care facility will accommodate up to 164 children. There will be an 18,834 square foot, fenced-in playground area. He showed the proposed site plan, building elevations, and building materials. They need a larger number of parking spaces than what is allowed because each of the parents must park and escort their children into and out of the building. He distributed replies to the planner's, engineer's, and Brighton Area Fire Authority's letters.

Commissioner Rauch has no issue with the additional parking; however, he noted that the indoor play area does not meet the requirements.

Mr. Borden stated that the applicant has addressed all of his concerns. With regard to the indoor play area, it is calculated on the maximum capacity of the facility and the applicant is proposing 49.5 square feet per child instead of the 50 square foot required by ordinance. He noted that they do meet the requirements of the State of Michigan.

They have added more stone to the building ;however, they have not met the 80% requirement for natural materials per the PUD Agreement. Commissioner Rauch likes the proposed building materials; however, he would like to have more stone added to the sides of the building.

Mr. Boverhof stated these are the standard materials that are used on all Gilden Woods facilities.

Mr. Witte stated he can add stone to the north side of the building and extend the fence on the south side of the building so it will not be seen. The fence is opaque. It was also suggested to carry the lap siding on the north side of the building to match the front. Both Mr. Witte and Mr. Boverhof agreed to this suggestion.



2911 Dorr Road  
 Brighton, MI 48116  
 810.227.5225  
 810.227.3420 fax  
 genoa.org

## MEMORANDUM

**TO:** File

**FROM:** Kelly VanMarter, Assistant Township Manager/Community Development Director

**DATE:** March 8, 2016

**RE:** Lakeshore Village Phase 3 Connection Fees

This memo will describe the water and sewer connection fees for the proposed 144 unit phase 3 expansion of the Lakeshore Village apartments.

**ANALYSIS OF EXISTING:** Township staff has analyzed the usage data for the existing Lakeshore Village Phase 1. Using the information provided I have determined that the per unit REU factor should be calculated using 0.57 REU per unit.

**ANALYSIS OF PROPOSED PHASE 3:** In consideration of the usage statistics discussed above the water and sewer connection fees for the 144 unit expansion is provided as follows: 144 units x 0.57 REU per unit = 82 REU's

**CONNECTION CHARGES:**

|              |                                 |               |
|--------------|---------------------------------|---------------|
| <b>Water</b> | 82 REU @ \$7,900 (MHOG Water) = | \$ 647,800.00 |
| <b>Sewer</b> | 82 REU @ \$7,200 (G/O Sewer) =  | \$ 590,400.00 |

**Total amount due: \$ 1,238,200.00**

**SUPERVISOR**

Gary T. McCririe

**CLERK**

Paulette A. Skolarus

**TREASURER**

Robin L. Hunt

**MANAGER**

Michael C. Archinal

**TRUSTEES**

H. James Mortensen

Jean W. Ledford

Todd W. Smith

Linda Rowell



May 11, 2016

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

**Re: Lakeshore Village Apartments Phase 3 – Revised Traffic Impact Study Review**

Dear Ms. Van Marter:

We have reviewed the revised traffic impact study prepared for the Lakeshore Village Apartments Phase 3, dated May 10, 2016, from The Lockwood Companies, by Traffic Engineering Associates, Inc. The site is located on the east side of Chilson Road, bounded on the south by the Chesapeake & Ohio railroad and on the north by the existing Lakeshore Village Phase 2 property. Tetra Tech has reviewed the revised study and has the following comments for Township consideration:

#### COMMENTS

1. The revised traffic impact study evaluated a Background (No Build) traffic scenario with a realistic timetable for when the proposed units would be built and occupied. The updated operational results were similar to the results documented in previous submissions of the report. Given the residential, location, and relatively small size of the development, the use of census data for forecasting traffic growth rates was considered acceptable for this study; however, for future traffic impact assessments and studies performed in the Township, it is recommended that historic traffic count data should be used as the basis for determining background traffic growth rates for forecasting future traffic levels.

Tetra Tech has reviewed the updated documents and is satisfied with the responses to the traffic issues noted in the previous review letter.

Sincerely,

A blue ink signature of Gary J. Markstrom.

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

A blue ink signature of Kyle W. Ramakers.

Kyle W. Ramakers, P.E., PTOE  
Project Engineer

Copy: Jennifer Lunsford, Lockwood Companies



March 8, 2016

Planning Commission  
 Genoa Township  
 2911 Dorr Road  
 Brighton, Michigan 48116

|                   |  |
|-------------------|--|
| <b>Attention:</b> | Kelly Van Marter, AICP<br>Assistant Township Manager and Planning Director |
| <b>Subject:</b>   | Lakeshore Village – Site Plan Review #2                                    |
| <b>Location:</b>  | Chilson Road – east side of Chilson, between Grand River and C&O Railroad  |
| <b>Zoning:</b>    | MDR Medium Density Residential District                                    |

Dear Commissioners:

At the Township’s request, we have reviewed the revised site plan (dated 2/24/16) proposing an expansion of the Lakeshore Village multiple family development. The proposed expansion, which is identified as Phase 3, is located on an adjacent parcel to the south that was recently purchased.

As a point of information, this parcel is currently under consideration for a change in zoning from MDR to HDR to accommodate the proposal. The rezoning considerations are found in separate review letter (dated March 8, 2016) from our office. Favorable consideration of this site plan should be contingent upon Township Board approval of the rezoning request.

We have reviewed the proposal in accordance with the applicable provisions of the Genoa Township Zoning Ordinance.

**A. Summary**

1. Favorable consideration on the site plan should be contingent upon approval of the rezoning request.
2. The applicant requests modification to the building material requirements of Section 12.01.

**B. Proposal/Process**

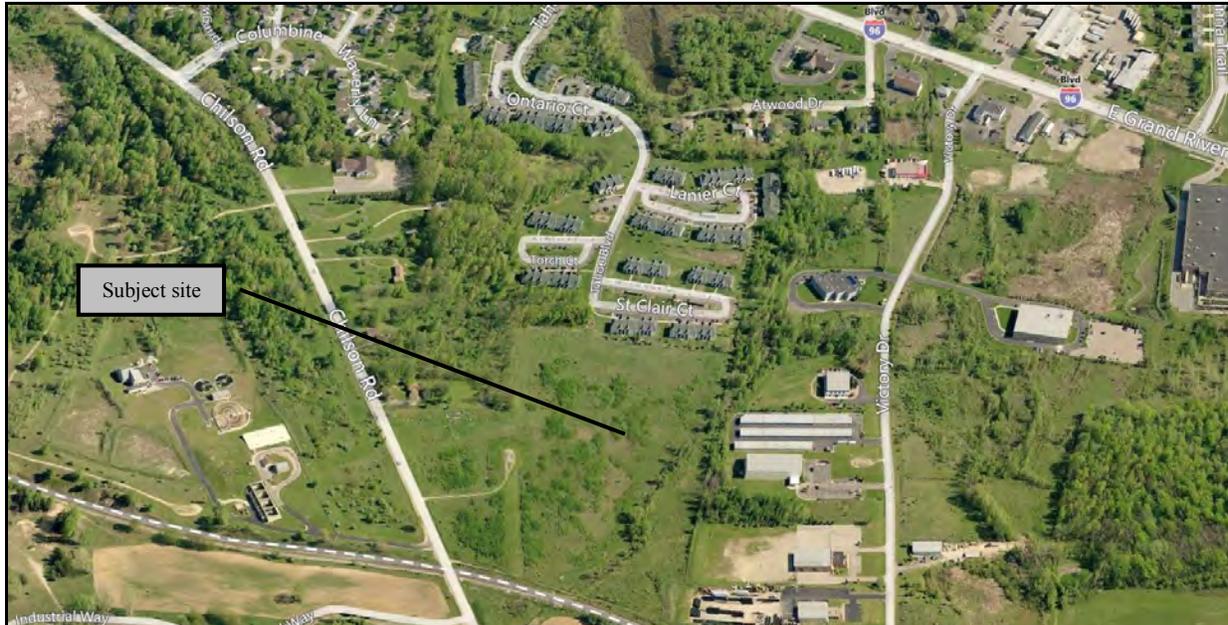
The applicant requests site plan review and approval for a new multiple family residential development. The applicant proposes nine buildings consisting of 144 apartment units, along with a business center and club house.

As noted above, the applicant is currently seeking a rezoning of the site from MDR to HDR. We have reviewed the revised site plan based on requirements for the HDR District.

**C. Site Plan Review**

1. **Dimensional Requirements.** As described in the table below, the proposed project meets the dimensional standards of the HDR district:

| District | Lot Size        |              | Minimum Setbacks (feet) |                     |          |           | Max. Height     | Max. Coverage                       |
|----------|-----------------|--------------|-------------------------|---------------------|----------|-----------|-----------------|-------------------------------------|
|          | Density         | Width (feet) | Front Yard              | Side Yard           | Internal | Rear Yard |                 |                                     |
| HDR      | 8 units/acre    | 165          | 35                      | 15                  | 20       | 30        | 40’ (3 stories) | 35% building<br>50% impervious      |
| Proposal | 5.18 units/acre | 809.27       | 40.29                   | 22.71 (N)<br>29 (S) | 20       | 42.55     | 25’ (2 stories) | 7.37% building<br>23.16% impervious |



*Aerial view of site and surroundings (looking north)*

- 2. Building Design and Materials.** Proposed elevations, including colors and materials, are subject to review and approval by the Planning Commission.

The submittal includes elevation drawings showing a pitched roof traditional design with covered entries, balconies, and windows with shutters. The primary building material is vinyl siding. Section 12.01 limits use of vinyl siding to no more than 25% for walls visible from public roads or parking lots.

In response to our first review of this site plan, the applicant states that they feel it is important to maintain continuity from Phases 1 and 2 of Lakeshore Village. They state the inclusion of masonry as a primary material would render this final phase a completely different project. As such, the applicant asks the Planning Commission to modify the building material requirements.

- 3. Parking.** The proposal requires 289 parking spaces, while 335 are proposed. The amount of parking proposed (116%) is within the maximum amount allowed (120%) per Section 14.02.06.

Proposed parking spaces and drive aisles meet or exceed the minimum standards of Section 14.06, while the number of barrier free spaces (20) exceeds the minimum amount required (12).

Lastly, the carports meet the requirements per Section 14.02.07.

- 4. Pedestrian Circulation.** The site plan proposes 7 foot sidewalks adjacent to parking spaces with internal walks of 5 feet. Sidewalks connect each building and parking lot and to the mailbox cluster, business center, and dumpster. No sidewalk is proposed along Chilson Road (nor is one required).
- 5. Vehicular Circulation.** The plan includes a new driveway on Chilson Road and a drive aisle connection to the existing Lakeshore Village development to the north.

**6. Landscaping.** The table below is a summary of the landscaping required by Section 12.02:

| Location   | Ordinance Requirement  | Landscaping Required   | Proposed  | Comments         |
|--|--|--|---|------------------|
| <b>Front yard greenbelt</b> (810 ft.)              | 20' wide<br>1 tree per 40' frontage                            | 21 canopy trees<br>20' width<br>The Planning Commission may approve substitution of evergreen trees for up to 50% of the required trees. | 10 canopy trees<br>16 evergreens<br>20' width                                 | Requirements met |
| <b>Detention ponds</b> (1535 ft.)                  | 1 tree, 10 shrubs per 50'                                      | 31 trees<br>307 shrubs   | 31 trees<br>310 shrubs  | Requirements met |
| <b>Parking lot</b> (382 spaces, area not provided) | 1 canopy tree and 100 sq. ft. of landscaped area per 15 spaces | 22 canopy trees<br>2,200 sq. ft. landscaped area   | 28 canopy trees<br>2,500 sq. ft. landscaped area                              | Requirements met |
| <b>Buffer Zone "B" (north side)</b> (896 ft.)      | 1 canopy, 1 evergreen, 4 shrubs per 30'                        | 30 canopy trees<br>30 evergreen trees<br>120 shrubs<br>6' wall/fence or 3' berm<br>20' width   | 30 canopy trees<br>35 evergreen trees<br>120 shrubs<br>3-4' berm<br>25' width | Requirements met |

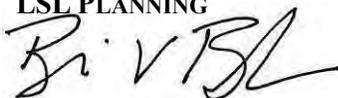
The landscape plan includes additional plantings throughout the site.

- 7. Waste Receptacle and Enclosure.** The site plan identifies a refuse compactor and enclosure northwest of the proposed business center in the southerly portion of the property. Sheet TS-1 includes details showing a concrete wall, steel railing, and wooden gate that meet ordinance requirements.
- 8. Exterior Lighting.** The lighting plan indicates that levels are within the maximums allowed by Ordinance – 10 footcandles on site and 1-footcandle at residential lot lines. The metal halide fixtures also meet the height and shielding requirements of the Ordinance.
- 9. Signs.** The proposal includes one entry monument sign on Chilson, which meets the requirements of Sections 16.07.05 and 16.07.06.
- 10. Impact Assessment.** The submittal includes an Impact Assessment (revised 2/24/16), which notes that the proposed project is not expected to adversely impact natural features, public services/utilities, surrounding land uses or traffic.

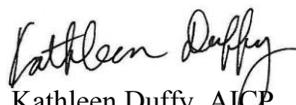
Should you have any questions concerning this matter, please do not hesitate to contact our office. We can be reached by phone at (248) 586-0505, or via e-mail at [borden@lslplanning.com](mailto:borden@lslplanning.com) and [duffy@lslplanning.com](mailto:duffy@lslplanning.com).

Sincerely,

**LSL PLANNING**



Brian V. Borden, AICP  
 Principal Planner



Kathleen Duffy, AICP  
 Senior Planner



March 9, 2016

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

**Re: Lakeshore Village Apartments Phase 3 - Rezoning Site Plan Review #2**

Dear Ms. Van Marter:

We have reviewed the resubmitted package for the Lakeshore Village Apartments Phase 3 site plan and rezoning request dated February 24, 2016, from The Lockwood Companies, prepared by Boss Engineering. The site is located on the east side of Chilson Road, bounded on the south by the Chesapeake & Ohio railroad and on the north by the existing Lakeshore Village Phase 2 property. The petitioner has requested rezoning of the parcels from Medium Density Residential (MDR) to High Density Residential (HDR), and provided a corresponding site plan and impact assessment documents. Tetra Tech has reviewed the documents and has the following comments for Township consideration:

#### **SUMMARY**

1. Narrative for 100-year floodplain impact.
2. Traffic impacts need to be evaluated.

#### **COMMENTS**

1. The previous letter held concern for the compensating excavation for fills to be placed within the 100-year floodplain and how excavation must be made to truly compensate for fill in similar flood stage elevations. A table was provided showing that the excavation has been made accordingly to provide a positive cut balance to the site, however, there is still some concern for the mechanics of how water will enter these basins from lower flood stages. For example, this site shows the existing 100-year flood elevation to be 945.5, with bottom of drain 938-939 and bottom of basins at 940. The question remains whether enough water from a 50-year storm work its way up the overflow pipes to the basins, and then fill the basin through the riser pipe holes quickly enough to compensate for the rise in flood levels on the site. A quick review of the 100-year floodplain did not show many potential impacts immediately adjacent to the site, but our experiences in permitting similar projects with the state has been to demonstrate there is enough freeboard around the floodplain to absorb a temporary increase in flood elevation to allow for these basins to reverse

- fill. Please provide some additional analysis and reassurance to the anticipated backwater levels so that, should the MDEQ review in closer detail, all documentation is in place.
2. An updated traffic impact study will need to be performed for the final phase of the development. The study will need to evaluate the operation of the existing and proposed driveways, as well as the intersection of Grand River Avenue and Chilson Road. The intent of the study is to determine how the existing drive operates with the proposed increased development density and then also what improvements need to be made to the Chilson Road drive such as bypass lanes or dedicated turn lanes. The study should also include a five-year safety review of the intersection of Grand River Avenue and Tahoe Boulevard. The full requirements of the study should be verified by the individual or firm performing the traffic impact study with the Township Engineer prior to performing the study.

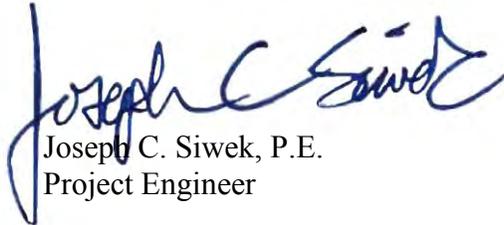
Tetra Tech has reviewed the updated documents and is satisfied with the responses to the engineering issues regarding site water and sewer utilities noted in the previous review letter. An updated Traffic Study was not provided in these documents, and additional clarification regarding the operation of the storm water management system has been requested.

We recommend the petitioner address the issues noted above and resubmit these documents for review prior to receiving approval from the Township.

Sincerely,



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



Joseph C. Siwek, P.E.  
Project Engineer

Copy: Jennifer Lunsford, Lockwood Companies



# BRIGHTON AREA FIRE AUTHORITY

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

March 9, 2016

Kelly VanMarter  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

RE: Lakeshore Village Phase 3  
2812 Ontario Court  
Howell (Genoa Twp.), MI 48843

Dear Kelly:

The Brighton Area Fire Department has reviewed the above mentioned site plan. The plans were received for review on February 25, 2016 and the drawings are dated February 3, 2016 with latest revisions dated February 24, 2016. The project is for the proposed construction of Phase III of an existing multi-family dwelling community. The plan is for the construction 15 new buildings and new infrastructure appropriate for the use. The entire phase will add a new business office/health center and 14 multi-family buildings adding 144 new apartments to the community. There are numerous building floor plans and sizes planned for the buildings. The plan review is based on the requirements of the International Fire Code (IFC) 2015 edition.

1. The buildings shall be provided with an automatic sprinkler system in accordance with NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies Up To and Including Four-Stories in Height*.

#### **IFC 903.2.8**

- A. The Fire Department Connection (FDC) for each building shall be located on the front (street side) of the building as directed by the fire department at plan review.
  - B. The FDC shall be located that a fire hydrant is within 100' of the connection.
  - C. The size, gate valve, and connection of the fire protection lead shall be indicated on the utility site plan. Utility Plan is unclear on the location and size due to scaling of drawing.  
**(All items have been addressed on the Fire Protection Plan)**
2. As it relates to fire hydrants for fire protection water supply the following proposed hydrants require relocation on the proposed plan: 1) Hydrant between Buildings 3 & 4 needs to be moved 40' Northwest to the corner of the parking lot, 2) Hydrant on East side of Building 13 needs to be moved 100' to the North and 3) Hydrant on East side of Building 11 move 90' South to the corner. **(Locations have been revised on the Utility Plan)**
  3. Additional hydrants need to be added to the following locations: 1) Near the Northwest corner of Building 9 at curb corner (near symbol CO28B), 2) Northwest inside corner of the parking lot immediately South of Building 14. **(New locations have been added to the Utility Plan)**



- 4. The building address shall be displayed on the street side of the building. The address shall be a **minimum of 6"** high letters of contrasting colors and be clearly visible from the street. The location and size shall be verified prior to installation. **(Noted and shown on architectural elevations)**

IFC 505.1

- 5. The access roads through the site shall be a minimum of 26' wide. With a width of 26' wide, the following areas shall be marked as a fire lane: 1) Areas of the main thoroughfare from Chilson to the connection at St. Clair Ct. where the road is immediately adjacent to a building, 2) Both sides at the Southeast Corner of Building 11 between Buildings 7 & 8, 3) West side (Front) of Building 9, 4) West side of parking lot running North/South from Building 4.

Signage shall be placed every 50'. Include the location of the proposed fire lane signage and include a detail of the fire lane sign in the submittal. Access roads to site shall be provided and maintained during construction. **(Road width has been revised throughout and signage included with detail drawing)**

IFC 503.2

IFC 503.3

IFC D 106.3

- 6. One-way drives entering and exiting at Chilson Rd. shall be a minimum clear width of 20'. **(Road width revised on Site Layout)**

IFC 503.2.1

- 7. Access roads shall be constructed to be capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds. **(Noted with detail provided on Construction Details Sheet)**

IFC D 102.1

- 8. Access through site and around buildings shall provide emergency vehicles with a turning radius of 50' outside and 30' inside with a minimum vertical clearance of 13 ½ feet. Provide an emergency vehicle circulation plan for all areas. **(Revised on Fire Protection Plan, Emergency Vehicle circulation has been provided)**

IFC 503.2.1

IFC 503.2.4

- 9. Apparatus access roads shall be provided for all buildings and shall extend to within 150' of the entire first floor of each building and be provided the entire length of at least one side of each building. By meeting the aerial apparatus access road setback requirements this may be accomplished with the exception being the configuration of buildings 13 and 14. Alteration to the building locations, adjacent parking area and access road must be reconfigured to provide for proper access that meets setback and 150' access. **(Revised on drawings by providing a mountable curb and 20' wide access drive between Buildings 13 & 14, as well as by providing mountable curbs and 8' fire access drives between all other buildings. Provide a sign at the entrance of the mountable curb of access drives stating, "Emergency Vehicles Only")**

IFC 503.1.1

- 10. Access roads shall be provided at a minimum distance of 15' from each building with a maximum distance of 30'. Buildings 1-6, 9-11 and 14 do not meet this requirement. **(Distances have been revised on drawings)**

IFC D 105.1



11. The location of a key box (Knox Box) shall be indicated on future submittals. The Knox box will be located adjacent to the front door of each new building. **(Noted to be provided at the Fire Protection Riser Rooms. Riser room doors must be labeled, "Fire Riser Room")**

IFC 506.1

12. Provide names, addresses, phone numbers, emails of owner or owner's agent, contractor, architect, on-site project supervisor. **(Project design team is identified on Cover Sheet. Contractor's information shall be provided at initiation of construction)**

Additional comments will be given during the building plan review process (specific to the building plans and occupancy). The applicant is reminded that the fire authority must review the fire protection systems submittals (sprinkler & alarm) prior to permit issuance by the Building Department and that the authority will also review the building plans for life safety requirements in conjunction with the Building Department. 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

Marc P. Jones, P.E.  
Boss Engineering  
3121 E. Grand River Avenue  
Howell, MI 48843

Re: Tahoe Blvd (Lakeshore Village Apartments Phase 3)  
Genoa Township, Section 6  
LCRC #P-16-01

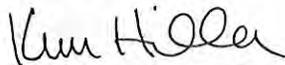
Dear Mr. Jones:

I have completed the review of the plans, dated March 18, 2016, for the proposed private road approach off of Chilson Road and for the sanitary sewer connection on Victory Lane for the above captioned project and offer the following comments.

1. The field driveway approach to the Gas building needs meet our residential driveway standards. The radii for the field driveway should be 10 feet.
2. The MDOT Utility Trench detail (R-83-B) should be included on the plans for the installation of the sanitary manhole and main under Victory Lane.
3. A pavement restoration detail will need to be provided for Victory Lane. Victory Lane is designated as an All-weather road. The minimum pavement cross section should contain 8" HMA, 7" 21AA gravel, and 6" Class II sand.

Please submit two sets of revised plans for review. If you have any questions, please do not hesitate to contact me.

Sincerely,



Kim Hiller, P.E.  
Utilities & Permits Engineer

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



**Brian Jonckheere**  
Livingston County Drain Commissioner  
2300 E. Grand River Ave., Suite 105, Howell, MI 48843  
Phone 517-546-0040 / Fax 517-545-9658  
Website: [www.livgov.com/drain](http://www.livgov.com/drain)

**GENOA TOWNSHIP**

March 22, 2016

**MAR 28 2016**

**RECEIVED**

Mark Lockwood  
The Lockwood Companies  
27777 Franklin Rd, Ste 1410  
Southfield, MI 48034

Re: Lakeshore Village Apartments, Phase 3  
Preliminary Site Plans  
Southeast 1/4 of Section 6  
Genoa Township

Dear Mr. Lockwood,

We received Preliminary Site Plans for the development referenced above and have reviewed the submitted information for conformance with the L.C.D.C. "Procedures and Design Criteria for Stormwater Management Systems." Our comments on the proposed drainage design are as follows:

- 1.) Drainage System Ownership – Construction Note 34 on Sheet C1 correctly states that "The existing and proposed onsite drainage systems are to be owned and properly maintained by the property owner."
- 2.) Overall Drainage Concept – The project site is located on the east side of Chilson Road immediately north of the Chesapeake and Ohio Railroad right-of-way. It abuts the existing Lakeshore Village complex along its northerly boundary and Grand Oaks West Industrial Park along its easterly boundary. The "Aspen Glen" development was previously proposed on this site in 2005 but was never constructed. The currently proposed development includes 15 buildings containing 144 residential apartment units plus a business center, an access drive, multiple parking lots, and two stormwater detention basins.

Runoff from the existing mostly vacant parcel sheet drains to the private drain previously petitioned as Branch No.3 of the Marion-Genoa County Drain. This waterway serves the majority of the adjoining "Grand Oaks West Industrial Park," including significant commercial, industrial, and institutional land uses extending south of Grand River Avenue, eastward approximately to Latson Road. The waterway traverses the southeast portion of the parcel and crosses under the C&O Railroad through a 24-inch culvert located 450± feet east of Chilson Road. The proposed development's runoff is to be collected by a system of storm sewers and routed to the two proposed detention basins located along the north side of the existing open drain, which will also serve as their outlet. No construction is currently proposed on the south side of the drain.

- 3.) Existing Conditions Plan – Both the existing conditions and proposed development plans should show the existing “Drainage and Flooding Easement” recorded in Liber 5064, Page 005, of the Livingston County Records. This easement encompasses a significant portion of the site adjacent to open drain. It was established in 2006, based on the previously proposed filling on the north side of the drain and compensating excavation on the south side of the drain, neither of which were ever performed.
- 4.) Overall Drainage Areas Plan – A composite Drainage Areas Plan should be included showing the boundaries, acreages, and weighted runoff coefficients for the individual onsite and offsite areas tributary to each drainage structure. The Drainage Areas Table currently shown on Sheet C11 can be placed on this composite plan to provide much of this information. The proposed drainage structure numbers should be shown on this plan, as well.
- 5.) Stormwater Detention – Our calculations confirm the required 100-year frequency storm storage volume of approximately 67,500 cubic feet has been correctly computed for the North Basin, based on a tributary area of 14.21 acres, a weighted runoff coefficient of 0.39, and the previously determined allowable discharge rate of 0.083 cfs/acre. Similarly, the required 100-year storm storage volume of approximately 48,600 cubic feet has been correctly determined for the South Basin, based on a tributary area of 10.89 acres, a weighted “C” volume of 0.37, and the 0.083 cfs/acre discharge rate. Please note, however, that the North Basin and portions of Buildings 1, 3, and 8 will encroach into the established 100-year floodplain for the adjoining waterway without providing any compensating floodplain excavation. Equivalent new floodplain storage volume below Elevation 945.50 must be provided to offset the proposed fill within the existing floodplain. The following additional stormwater detention related items should also be addressed on the plans:
  - a.) All proposed contours within the detention basin and floodplain areas should be labeled with their respective elevations. It appears the proposed Elevation 945.50 floodplain contour is currently being shown between the proposed 944 and 945 contours.
  - b.) A 10-foot minimum width maintenance strip should be provided inside the proposed fence shown around each detention basin. A properly designed overflow spillway should also be indicated for each basin.
  - c.) The proposed detention basin forebays should include a two-foot deep sediment sump. The forebay inlet pipe end sections should be placed at forebay outlet elevations.
  - d.) The storage volume provided calculations for each basin shown on Sheet C11 underestimate the lowest increment volume by 50%. The cumulative storage volumes and associated orifice designs should also be revised as a result of this issue.
- 6.) Storm Sewer – The development’s proposed storm sewers should be designed to accommodate the runoff from a 10-year frequency storm over their tributary area. Their design will be reviewed at the time of the project’s Construction Plan submittal, which should include complete plan and profile views for all proposed storm sewers.

Design calculations should also be provided for the two proposed Chilson Road culverts. The respective storm sewer plan view sheets should indicate the proposed pipe numbers and include the proposed drainage structure information.

- 7.) Site Grading – Properly labeled proposed contours should be provided on the Construction Plans for all greenbelt areas, to better define the proposed grading and how it is to transition to the existing ground around the site perimeter. Currently, there are areas near the site boundary where the existing and proposed grades differ by as much as five feet. Other grading related items that should be addressed on the plans include the following:
- a.) The proposed contours shown near the northeast corner of Proposed Building 10 will block off the existing drainage pattern behind the adjacent Existing Building 16.
  - b.) It is currently unclear if the proposed topsoil mound shown south of the Business Center is temporary or permanent. If permanent, proposed contours should be provided to define its height, slopes, and any effects on the adjacent drainage patterns.
  - c.) Proposed walk grades should be shown on west side of the north-south access drive on Sheet C7.
- 8.) Miscellaneous – The project heading shown on Sheet C1 should reference the Southeast 1/4 of Section 6, rather than Section 8.

We are withholding approval of the Preliminary Site Plans for Lakeshore Village Apartments Phase 3 until Items 3, 4, 5, and 8 outlined above have been satisfactorily addressed.

Very truly yours,



Brian Jonckheere  
Livingston County Drain Commissioner

C: Boss Engineering, Brent LaVanway  
Environmental Engineers, Paul Lewsley  
Genoa Township, Kelly VanMarter and Tesha Humphriss  
TetraTech, Gary Markstrom

**IMPACT ASSESSMENT  
FOR  
“LAKESHORE VILLAGE PHASE III”  
RE-ZONING AND SITE PLAN APPROVAL  
GENOA TOWNSHIP  
LIVINGSTON COUNTY, MI**

Prepared for:

**THE LOCKWOOD COMPANIES  
c/o Ms. Jennifer Lunsford  
27777 Franklin Road, Suite 1410  
Southfield, MI 48034**

Prepared by:

**BOSS ENGINEERING COMPANY  
3121 EAST GRAND RIVER AVE  
HOWELL, MICHIGAN 48843  
517-546-4836  
BE Project No. 16-010**

February 1, 2016  
revised February 24, 2016

## INTRODUCTION

The purpose of this Impact Assessment (IA) report is to show the effect that this proposed development has 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/Impact Statement* guidelines in accordance with Section 13.05 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 By:  
BOSS ENGINEERING COMPANY  
3121 E. Grand River  
Howell, Michigan 48843  
Phone: 517-546-4836

Prepared For:  
Ms. Jennifer Lunsford  
The Lockwood Companies  
27777 Franklin Road, Suite 1410  
Southfield, MI 48034

### B. Description of the site, including existing structures, man made facilities, and natural features, all-inclusive to within 10' of the property boundary.

The subject site is located on the east side of Chilson Road, bounded on the south by the Chesapeake & Ohio Railroad and on the north by the existing Lakeshore Village Phase II property. The site improvements are located on a part a property owned by Lakeshore Village, LDHA, LP. The parcel number is 4711-06-400-015. The overall acreage of the site is 27.80 acres. The property is located in the Southeast ¼ of Section 6, T2N-R5E, Genoa Township, Livingston County, Michigan. Current zoning of the site is MDR (Medium Density Residential).

Currently on site is an existing natural gas well and access driveway located within easements.

The site is gently rolling with areas of steeper slopes and generally slopes from the Northwest to the Southeast, with a county drain (Marion-Genoa County Drain Branch No. 3) that flows to a culvert under the railroad at the south end of the site. Elevations vary between 969.0± and 935.0±, respectively.

Adjacent properties include:

- South – Farmland / Planned Industrial Development (zoned PID)
- North – Lakeshore Village Phase II (zoned MDR) / Single Family Homes (zoned SR)
- East – Industrial Buildings (zoned IND)
- West – Chilson Road / MHOG Sewage Treatment Plant (zoned PRF)

### C. Impact on natural features: A written description of the environmental characteristics of the site prior to development, i.e., topography, soils, vegetative cover, drainage, streams, creeks or ponds.

The site is gently rolling with areas of steeper slopes and generally slopes from the Northwest to the Southeast, with a county drain (Marion-Genoa Drain Brain No. 3) that flows to a culvert under the railroad at the south end of the site. Elevations vary between 969.0± and 935.0±, respectively. The USDA Soil Conservation Service "Soil Survey of Livingston County, Michigan", indicates native site soils consist of:

1. MIAMI LOAM (MoB), 2% to 6% slopes. Surface runoff is slow, permeability is moderate, and erosion hazard is slight.
2. MIAMI LOAM (MoC), 6% to 12% slopes. Surface runoff is medium, permeability is moderate, and erosion hazard is moderate.
3. BOYER-OSHTEMO LOAMY SANDS, 2% to 6% slopes. Surface runoff is very slow, permeability is moderately rapid, and erosion hazard is slight.
4. GILFORD SANDY LOAM (Gd), 0% to 2% slopes. Surface runoff is very slow, permeability is moderately rapid, and erosion hazard is slight.
5. CONOVER LOAM (CvA), 0% to 2% slopes. Surface runoff is slow, permeability is moderately slow, and erosion hazard is slight.

Vegetative cover for the site includes heavy woods and low brush cover. There are three main areas that are heavily wooded with predominantly Poplar and Birch scrub vegetation (the majority of which is less than 4-in caliper). These vegetated areas are of low-quality and the majority of will be removed for the development.

The National Wetland Inventory Plan prepared by the United States Department of the Interior, Fish and Wildlife Service indicates that there are no wetlands located on the site. However, preliminary field observations of the site indicate that wetlands are present onsite.

Site drainage from the proposed site will be directed to storm sewers for conveyance. All site drainage will be directed into multiple proposed detention basins on site. The proposed detention basins will outlet to the existing Marion-Genoa County Drain Branch No. 3 located onsite.

**D. Impact on storm water management: description of soil erosion control measures during construction.**

Surface runoff during periods of construction will be controlled by proper methods set forth by the Livingston County Drain Commissioner. These methods shall include silt fence, silt sacks, and seeding with mulch and/or matting.

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.

**E. Impact on surrounding land use: Description of proposed usage and other man made facilities; how it conforms to existing and potential development patterns. Effects of added lighting, noise or air pollution which could negatively impact adjacent properties.**

The applicant is proposing to construct new buildings and parking lots. The new buildings will consist of apartments and a business center for the development. The property on which the site development is located is MDR (Medium Density Residential). As part of this proposal, the property is proposed to be rezoned to HDR (High Density Residential). This is consistent with Genoa Township's 2013 Master Plan Update. The proposed buildings and parking lots conform to the existing and potential land development patterns in the area.

The existing vegetation onsite is of poor quality and will be removed for the proposed development. Proposed landscaping will enhance the character of the existing site.

Chilson Road presently experiences a medium volume of traffic along with associated noise level generated from commercial vehicles. The proposed buildings are expected to accommodate an increase in residents, which is consistent with the property's proposed zoning (HDR). There will be minimal increase in the amount of noise emanating from the site due to the proposed site improvements.

Additional lighting is proposed on site and is to be directed away from adjacent properties to limit adverse affects of lighting. Proposed landscaping along the property boundary will help serve as a

visual buffer and as a noise buffer. Additional noise created by the development will be minimal and due to the nature of the adjacent properties (commercial and industrial facilities to the east, residential properties to the north, sewage treatment plant to the west), there will be very low impact. There will be no increase in the amount of odor emanating from the site.

**F. Impact on public facilities and services: Description of number of residents, employees, patrons, and impact on general services, i.e., schools, police, fire.**

The proposed development is planned to include the construction of 144 residential apartment units, with an expected 255 residents added to the community. This expected total includes 156 adults and 99 children. The additional residents will not cause a significant change in the availability of services.

**G. Impact on public utilities: Description of public utilities serving the project, i.e., water, sanitary sewer, and storm drainage system. Expected flows projected in residential units.**

There are new water, sanitary, and storm sewer drainage services proposed for the apartments, business center, and parking lots.

A new water main service is proposed to tie into the existing watermain that is located north of the subject site in Lakeshore Village Phase II on St Clair Ct. The new water main will be constructed through the development to the intersection of the private road entrance on Chilson Road for future extensions.

A new storm sewer system is proposed throughout the site and will connect two new detention basins on the southeast and south central areas of the site. These basins will both outlet to the existing Marion-Genoa County Drain Branch No. 3.

A new sanitary sewer system is proposed throughout the site and will connect to an existing sanitary sewer located in Victory Drive that drains to an existing lift station through an existing easement the adjacent site to the east of the subject site.

**H. Storage or handling of any hazardous materials: Description of any hazardous materials used, stored, or disposed of on-site.**

Lakeshore Village Phase III will not be storing or handling any hazardous materials.

**I. Impact on traffic and pedestrians: Description of traffic volumes to be generated and their effect on the area.**

The proposed expansion of the apartment community will house residents who will work in the surrounding community. Based on the Institute of Transportation Engineers' Trip Generation Manual, the expected increase of traffic volumes correlates with Land-Use #221 (Low-Rise Apartments). With the construction of 144 apartment units, the expected vehicular trips generated from this development will be 1,125 total trips per day with an AM peak volume of 79 trips and a PM peak volume of 99 trips.

The current residents of Lakeshore Village Apartments Phases I & II exit the property from Tahoe Boulevard at East Grand River Avenue. A sampling of traffic patterns from the existing residents indicates that approximately 16% of traffic is traveling westbound on East Grand River Avenue during the AM peak time period. Tahoe Boulevard is three lanes at the intersection with East Grand River Avenue with two exiting lanes and one entrance lane.

With the addition of the new driveway on Chilson Road that is proposed as a part of this development, an alternate route for traffic travelling westbound on East Grand River Avenue will be provided. Exiting right turns from the new driveway will travel approximately one mile north to the signalized intersection of East Grand River Avenue and Chilson Road. Since the Latson Road/I-96 interchange was constructed in 2013, Chilson Road traffic volumes have decreased more than 50%. With the reduction of traffic volumes on Chilson Road, this development will have minimal impact on traffic volumes at the intersection of East Grand River Avenue and Chilson Road.

The Livingston County Road Commission has determined that the additional traffic generated by this development will require acceleration and deceleration lanes, but bypass or left-turn lanes will not be required.

Since the community trash enclosure is located near the driveway on Chilson Rd, it is expected that residents will utilize this feature and continue to exit the development out to Chilson Road. In addition, through an information campaign, the developer will also encourage existing residents of Lakeshore Village Apartments Phases I & II who are traveling westbound on East Grand River Avenue to utilize the Chilson Road driveway, reducing wait times at the intersection of Tahoe Boulevard and East Grand River Avenue.

**J. Special provisions: Deed restrictions, protective covenants, etc.**

There is an existing natural gas well and access driveway located on the subject property. The existing easements for the well and driveway will be adjusted to ensure access and operation of the well

**K. Description of all sources:**

- Genoa Township Zoning Ordinance
- 2013 Genoa Township Master Plan Update
- "Soil Survey of Livingston County, Michigan" Soil Conservation Services, U.S.D.A.
- National Wetlands Inventory, U.S. Department of Interior, Fish and Wildlife Service
- Lockwood Development Company Topographic Survey (BE #15-357 - October 2015)



5/12/16 - Only the executive summary is included in the packet.  
The supporting pages have been removed in an effort to  
decrease the length of the project case file for the packet.  
- K. VanMarter

# **TRAFFIC IMPACT STUDY**

(Revised)

**For The Proposed**

**Lakeshore Apartments, Phase III**

**Genoa Township, Livingston County, MI**

**May 10, 2016**

**Prepared by:**

**Traffic Engineering  
Associates, Inc.**

PO Box 100 • Saranac, Michigan 48881  
**517/627-6028 FAX: 517/627-6040**

## EXECUTIVE SUMMARY

Traffic Engineering Associates, Inc. (TEA) conducted a traffic impact study to determine the distribution of new traffic generated by the proposed Lakeshore Apartments, Phase III development in Genoa Township, Livingston County, Michigan. The project site is located on the south side of Grand River Avenue (I-96 BL) at the south end of Tahoe Boulevard. The proposed Lakeshore Apartments, Phase III development will be located on vacant property at the south end of the existing Lakeshore Apartments, Phase I and Phase II. The proposed Phase III development will consist of fourteen (14) apartment buildings with a total of 144 new units. The new Phase III development is anticipated to be completion and occupancy is the fall of 2017.

Access to the proposed Lakeshore Apartments, Phase III development will be provided by a connection to the existing Tahoe Boulevard (private) to the north, and a new roadway connecting to Chilson Road to the south.

Vehicle counts were conducted in the month of March, 2016, during the midweek, non-holiday time period. All existing turning movements at the studied intersections operate at an acceptable level of service (LOS D or better) during the AM and PM peak hours, except for the northbound left turn from Tahoe Boulevard to westbound Grand River Avenue (I-96 BL) which operates at a LOS F with 167.6 seconds of vehicle delay during the PM peak hour.

There is one (1) new development in the immediate area that was identified by the Genoa Township Planning Department. The proposed Howell Medical Building is to be located just west of the proposed Lakeshore Apartments, Phase III development and was used as background development traffic. A growth rate of two point six percent (2.6%) was used to represent background growth rate. All background turning movements at the studied intersections are anticipated to operate at an acceptable level of service (LOS D or better) during the AM and PM peak hours except for the northbound left turn from Tahoe Boulevard to westbound Grand River Avenue (I-96 BL) which is expected to operate at a LOS F with 258.7 seconds of vehicle delay during the PM peak hour, an increase of 91.1 seconds in vehicle delay from existing conditions.

The trip generation rates for the proposed Lakeshore Apartments, Phase III development were derived from the ITE TRIP GENERATION MANUAL (9th edition). It is projected that the Lakeshore Apartments, Phase III development will generate 74 vehicle trips in the AM peak hour, 97 vehicle trips in the PM peak hour, and 996 vehicle trips daily.

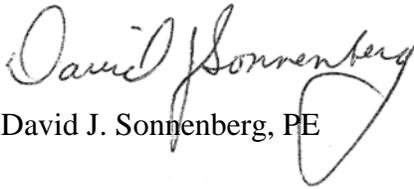
Traffic entering and exiting the proposed Lakeshore Apartments, Phase III development was distributed on Tahoe Boulevard to the north to Grand River Avenue (I-96 BL), and to the south to Chilson Road based on traffic volumes on each roadway. However, due to the difficulties of making a left turn from Tahoe Boulevard at the stop control at Grand River Avenue (I-96 BL) during the AM and PM peak hours, some of the existing and all of future Phase III northbound left turning traffic was redistributed southbound on Tahoe Boulevard to Chilson Road, then to the Chilson Road and Grand River Avenue (I-96 BL) intersection due to the presence of a traffic signal. For the purposes of this study, it was assumed that fifty percent (50%) of the existing Tahoe Boulevard northbound left turning traffic would go south to Chilson Road.

All future turning movements at the studied intersections are anticipated to operate at an acceptable level of service (LOS D or better) during the AM and PM peak hours except for two (2) movements. The northbound left turn from Tahoe Boulevard to westbound Grand River Avenue (I-96 BL) is expected to operate at a LOS F with 174.9 seconds of vehicle delay during the PM peak hour, a decrease of 83.8 seconds in vehicle delay from background conditions. Running a simulation model for this intersection shows a significant difference from the Synchro model. The simulation model shows a vehicle delay of 22.0 seconds with a LOS C.

Due to limitations when building the Synchro model, the private commercial driveway on the north side of Grand River Avenue (I-96 BL), opposite Tahoe Boulevard, was situated directly across from Tahoe Boulevard but is actually offset approximately 50 feet to the east. The Synchro model shows a LOS of E with 44.5 seconds of vehicle delay for this driveway, an increase of only 5.6 seconds; however, with the 50 foot offset to the east, the exiting left turning traffic should not be affected by the exiting Lakeshore Apartments traffic and the level of service and vehicle delay is expected to be less than shown in the Synchro model.

The findings of this study conclude that there are no recommendations for improvements at the studied intersections or roadways.

Respectfully Submitted,



David J. Sonnenberg, PE



# SITE PLAN FOR LAKESHORE VILLAGE APARTMENTS PHASE 3

PART OF SE 1/4, SECTION 8, T2N R5E  
GENOA TOWNSHIP, LIVINGSTON COUNTY, MI

## LEGAL DESCRIPTIONS

LAND IN THE TOWNSHIP OF GENOA, LIVINGSTON COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:

PARCEL 2-B:

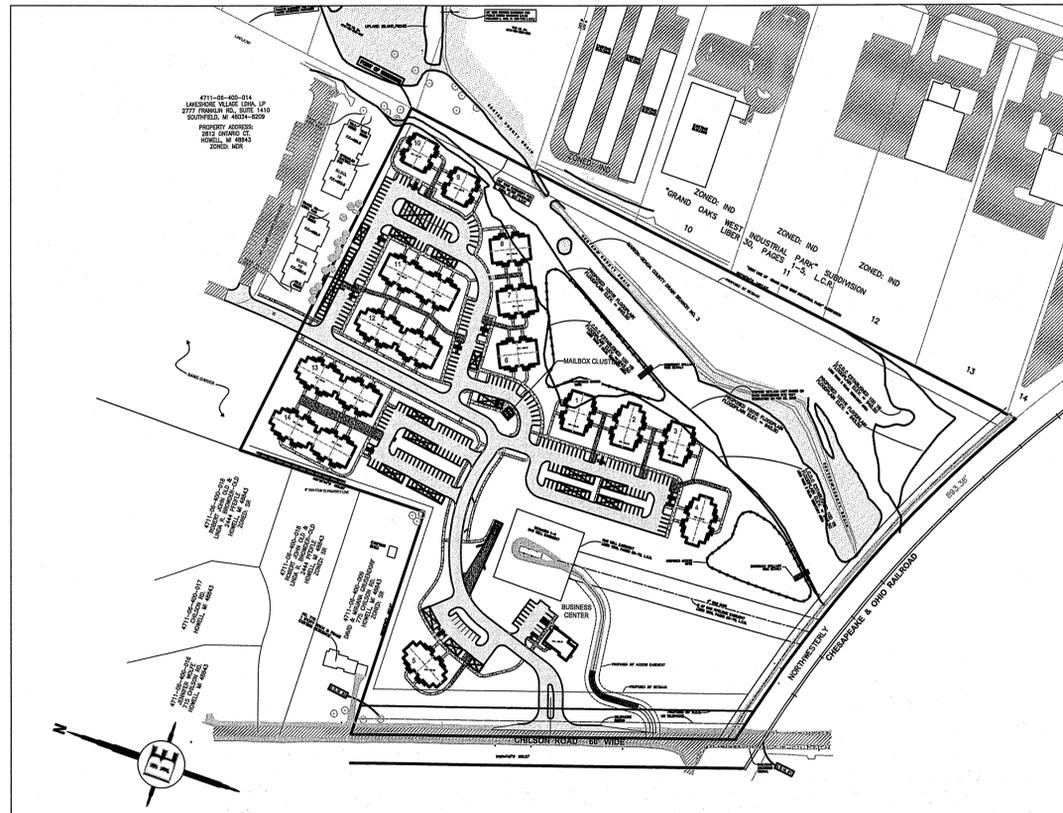
PART OF THE SOUTHEAST 1/4 OF SECTION 6, TOWN 2 NORTH, RANGE 5 EAST, GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE EAST 1/4 CORNER OF SAID SECTION 6; THENCE ALONG THE NORTH LINE OF "GRAND OAKS WEST INDUSTRIAL PARK," A SUBDIVISION AS RECORDED IN LIBER 30 OF PLATS ON PAGES 1-5 OF LIVINGSTON COUNTY RECORDS, SOUTH 86 DEGREES 35 MINUTES 09 SECONDS WEST, 330.00 FEET; THENCE ALONG THE WEST LINE OF SAID SUBDIVISION, SOUTH 01 DEGREE 04 MINUTES 01 SECOND EAST, 351.89 FEET; THENCE CONTINUING ALONG SAID WEST LINE, SOUTH 86 DEGREES 35 MINUTES 09 SECONDS WEST, 100.00 FEET; THENCE CONTINUING ALONG SAID WEST LINE, SOUTH 07 DEGREES 28 MINUTES 54 SECONDS WEST, 658.72 FEET TO THE POINT OF BEGINNING OF THE PARCEL TO BE DESCRIBED; THENCE CONTINUING ALONG SAID WEST LINE, SOUTH 07 DEGREES 28 MINUTES 54 SECONDS WEST, 1427.53 FEET; THENCE ALONG THE NORTHERLY RIGHT-OF-WAY LINE OF THE C&O RAILROAD, NORTHWESTERLY ON AN ARC LEFT, HAVING A LENGTH OF 893.38 FEET, A RADIUS OF 2834.50 FEET, A CENTRAL ANGLE OF 18 DEGREES 03 MINUTES 31 SECONDS AND A LONG CHORD WHICH BEARS NORTH 67 DEGREES 50 MINUTES 07 SECONDS WEST, 889.69 FEET; THENCE ALONG THE CENTERLINE OF CHILSON ROAD (66 FOOT WIDE RIGHT-OF-WAY), NORTH 18 DEGREES 44 MINUTES 40 SECONDS WEST, 809.27 FEET; THENCE NORTH 89 DEGREES 00 MINUTES 29 SECONDS EAST, 487.21 FEET; THENCE NORTH 01 DEGREE 06 MINUTES 44 SECONDS WEST, 408.86 FEET; THENCE SOUTH 82 DEGREES 31 MINUTES 05 SECONDS EAST, 797.47 FEET, TO THE POINT OF BEGINNING, CONTAINING 27.80 ACRES

TAX ITEM NO.: 11-06-400-015-201-47070

## CONSTRUCTION NOTES

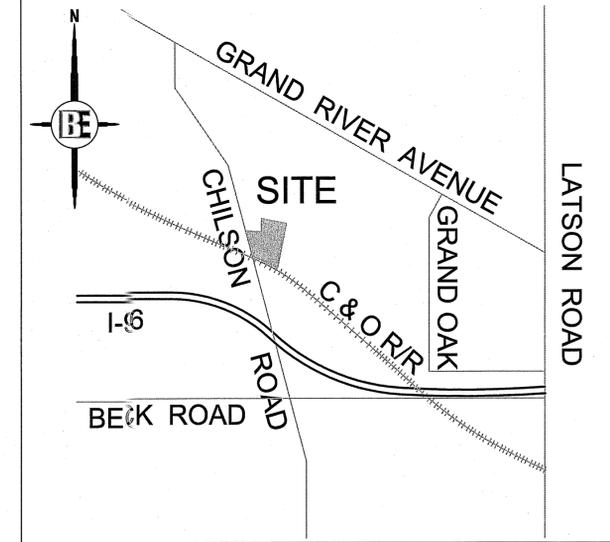
THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING NOTES AND ANY WORK INVOLVED SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

- THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.
- DO NOT SCALE THESE DRAWINGS AS IT IS A REPRODUCTION AND SUBJECT TO DISTORTION.
- A GRADING PERMIT FOR SOIL EROSION-SEDIMENTATION CONTROL SHALL BE OBTAINED FROM THE GOVERNING AGENCY PRIOR TO THE START OF CONSTRUCTION.
- IF DUST PROBLEM OCCURS DURING CONSTRUCTION, CONTROL WILL BE PROVIDED BY AN APPLICATION OF WATER, EITHER BY SPRINKLER OR TANK TRUCK.
- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED TOWNSHIP, COUNTY, AND STATE OF MICHIGAN PERMITS.
- PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY DESIGNED AND CONSTRUCTED.
- ALL BARRIER-FREE FEATURES SHALL BE CONSTRUCTED TO MEET ALL LOCAL, STATE AND A.D.A. REQUIREMENTS.
- ANY DISCREPANCY IN THIS PLAN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS AND DIMENSIONS SHOWN HEREON BEFORE BEGINNING CONSTRUCTION.
- THE CONTRACTOR SHALL CONTACT ALL OWNERS OF EASEMENTS, UTILITIES AND RIGHTS-OF-WAY, PUBLIC OR PRIVATE, PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL COORDINATE WITH ALL OWNERS TO DETERMINE THE LOCATION OF EXISTING LANDSCAPING, IRRIGATION LINES & PRIVATE UTILITY LINES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING LANDSCAPING, IRRIGATION LINES, AND PRIVATE UTILITY LINES.
- THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE UPON COMPLETION OF THE PROJECT.
- THE CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SO THAT WORKMEN AND PUBLIC SHALL BE PROTECTED FROM INJURY, AND ADJOINING PROPERTY PROTECTED FROM DAMAGE.
- THE CONTRACTOR SHALL KEEP THE AREA OUTSIDE THE "CONSTRUCTION LIMITS" BROOM CLEAN AT ALL TIMES.
- THE CONTRACTOR SHALL CALL MISS DIG A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
- ALL EXCAVATION UNDER OR WITHIN 3 FEET OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (MDOT CLASS II).
- ALL PAVEMENT REPLACEMENT AND OTHER WORKS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOWNSHIP, INCLUDING THE LATEST MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
- NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR ANY DELAY OR INCONVENIENCE DUE TO THE MATERIAL SHORTAGES OR RESPONSIBLE DELAYS DUE TO THE OPERATIONS OF SUCH OTHER PARTIES DOING WORK INDICATED OR SHOWN ON THE PLANS OR IN THE SPECIFICATION OR FOR ANY REASONABLE DELAYS IN CONSTRUCTION DUE TO THE ENCOUNTERING OR EXISTING UTILITIES THAT MAY OR MAY NOT BE SHOWN ON THE PLANS.
- DURING THE CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL NOT PERFORM WORK BY PRIVATE AGREEMENT WITH PROPERTY OWNERS ADJACENT TO THE PROJECT.
- IF WORK EXTENDS BEYOND NOVEMBER 15, NO COMPENSATION WILL BE DUE TO THE CONTRACTOR FOR ANY WINTER PROTECTION MEASURES THAT MAY BE REQUIRED BY THE ENGINEER.
- NO TREES ARE TO BE REMOVED UNTIL MARKED IN THE FIELD BY THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PROPERTY BEYOND THE CONSTRUCTION LIMITS INCLUDING BUT NOT LIMITED TO EXISTING FENCE, LAWN, TREES AND SHRUBBERY.
- ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND THE NORMAL CONSTRUCTION LIMITS OF THE PROJECT SHALL BE SODED OR SEEDS AS SPECIFIED OR DIRECTED BY THE ENGINEER.
- ALL ROOTS, STUMPS AND OTHER OBJECTIONABLE MATERIALS SHALL BE REMOVED AND THE HOLE BACKFILLED WITH SUITABLE MATERIAL. WHERE GRADE CORRECTION IS REQUIRED, THE SUBGRADE SHALL BE CUT TO CONFORM TO THE CROSS-SECTION AS SHOWN IN THE PLANS.
- TRAFFIC SHALL BE MAINTAINED DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SIGNS AND TRAFFIC CONTROL DEVICES. FLAG PERSONS SHALL BE PROVIDED BY THE CONTRACTOR IF DETERMINED NECESSARY BY THE ENGINEER. ALL SIGNS SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AT NO COST TO THE TOWNSHIP. NO WORK SHALL BE DONE UNLESS THE APPROPRIATE TRAFFIC CONTROL DEVICES ARE IN PLACE.
- ALL DEMOLISHED MATERIALS AND SOIL SPOILS SHALL BE REMOVED FROM THE SITE AT NO ADDITIONAL COST, AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
- AFTER REMOVAL OF TOPSOIL, THE SUBGRADE SHALL BE COMPACTED TO 95% OF ITS UNIT WEIGHT.
- ALL GRADING IN THE PLANS SHALL BE DONE AS PART OF THIS CONTRACT. ALL DELETERIOUS MATERIAL SHALL BE REMOVED FROM THE SUBGRADE PRIOR TO COMPACTING.
- NO SEEDING SHALL BE DONE AFTER OCTOBER 15 WITHOUT APPROVAL OF THE ENGINEER.
- ANY EXISTING APPURTENANCES SUCH AS MANHOLES, GATE VALVES, ETC. SHALL BE ADJUSTED TO THE PROPOSED GRADE AND SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
- SOIL EROSION MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION HAS BEEN RE-ESTABLISHED.
- ALL PERMANENT SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE MICHIGAN MUTCD MANUAL AND SHALL BE INCIDENTAL TO THE CONTRACT.
- THE EXISTING AND PROPOSED ONSITE DRAINAGE SYSTEMS ARE TO BE OWNED AND PROPERLY MAINTAINED BY THE PROPERTY OWNER.



**OVERALL SITE MAP**

NO SCALE



**LOCATION MAP**

NO SCALE

## SHEET INDEX

| SHEET NO. | DESCRIPTION   |
|-----------|---|
| C1        | COVER SHEET   |
| C2        | EXISTING CONDITIONS & DEMOLITION PLAN                     |
| C3        | OFF-SITE EXISTING CONDITIONS & DEMOLITION PLAN            |
| C4        | NATURAL FEATURES PLAN                                     |
| C5        | SITE PLAN   |
| C6        | OFF-SITE SITE PLAN  |
| C7        | GRADING, DRAINAGE, & SOIL EROSION CONTROL PLAN            |
| C8        | GRADING, DRAINAGE, & SOIL EROSION CONTROL PLAN            |
| C9        | GRADING, DRAINAGE, & SOIL EROSION CONTROL PLAN            |
| C10       | OFF-SITE GRADING, DRAINAGE, & SOIL EROSION CONTROL PLAN   |
| C11       | OVERALL DRAINAGE SHEET                                    |
| C12       | UTILITY PLAN  |
| C13       | OFF-SITE UTILITY PLAN                                     |
| C14       | LIGHTING PLAN   |
| C15       | FIRE PROTECTION PLAN                                      |
| C16       | CONSTRUCTION DETAILS                                      |
| C17       | CONSTRUCTION DETAILS                                      |
| C18       | CONSTRUCTION DETAILS / FLOODPLAIN MITIGATION CALCULATIONS |
| C19       | M.H.O.G. STANDARD DETAILS                                 |
| C20       | M.H.O.G. STANDARD DETAILS                                 |
| L100      | SHEET INDEX   |
| L101      | SITE LANDSCAPE PLAN                                       |
| L102      | SITE LANDSCAPE PLAN                                       |
| L103      | SITE LANDSCAPE PLAN                                       |
| L104      | PLAY AREA   |
| A1        | FLOOR PLANS   |
| A2        | FLOOR PLANS   |
| A3        | UNIT FLOOR PLANS  |
| A4        | UNIT ELEVATIONS   |
| A5        | HEALTH AND HEALTH CENTER BUILDING                         |
| A7        | BUILDING FLOOR PLAN                                       |
| A8        | BUILDING FLOOR PLAN AND ELEVATIONS                        |
| A13       | HEALTH AND HEALTH CENTER ELEVATIONS                       |
| TS-1      | REFUSE COLLECTION STATION                                 |
| MP-1      | MAIL PAVILION   |

## LAKESHORE VILLAGE APARTMENTS PHASE 3

PREPARED FOR:

THE LOCKWOOD COMPANIES  
27777 FRANKLIN ROAD, SUITE 1410  
SOUTHFIELD, MI 48034  
CONTACT: MARK LOCKWOOD  
PHONE: 248.433.7401

PREPARED BY:

**BEBOSS**  
*Engineering*  
Engineers Surveyors Planners Landscape Architects

3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
800.246.6735 FAX 517.548.1670

PROJECT TEAM:

COPONEN ARCHITECTS  
8002 W. GRAND RIVER, SUITE A  
BRIGHTON, MI 48114  
CONTACT: WALTER COPONEN  
PHONE: 810.225.4141

KENNETH WEIKAL LANDSCAPE ARCHITECTURE  
33203 BIDDESTONE LANE  
FARMINGTON HILLS, MI 48334  
CONTACT: KEN WEIKAL  
PHONE: 248.477.3600

## INDEMNIFICATION STATEMENT

THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.

|    |    |    |  |         |           |
|----|----|----|--|---------|-----------|
| 2  | RD | MJ | PER TOWNSHIP ENGINEER                            | 5/9/16  | <b>C1</b> |
| 1  | RD | BL | TOWNSHIP ENGINEER, FIRE DEPT., TOWNSHIP PLANNERS | 2/24/16 |           |
| NO | BY | CK | REVISION PER                                     | DATE    |           |

2777 FRANKLIN RD., SUITE 1410  
SOUTHFIELD, MI 48034-8209

PROPERTY ADDRESS:  
2812 ONTARIO CT.  
HOWELL, MI 48843  
ZONED: MDR



**LEGEND**

| EXISTING (EX) | CONTOUR                         |
|---------------|---------------------------------|
| 900           | CONTOUR                         |
| +922.08       | SPOT ELEVATION                  |
| FT            | FINISHED FLOOR ELEVATION        |
| FG            | FINISHED GRADE ELEVATION        |
| T/A           | TOP OF ASPHALT                  |
| T/C           | TOP OF CURB CONCRETE            |
| T/G           | TOP OF GRAVEL                   |
| T/P           | TOP OF PIPE                     |
| B/P           | BOTTOM OF PIPE                  |
| RIM           | RIM ELEVATION                   |
| INV           | INVERT ELEVATION                |
| MH            | MANHOLE STRUCTURE               |
| IN            | INLET STRUCTURE                 |
| CS            | CATCHBASIN STRUCTURE            |
| ES            | END-SECTION GATEVALVE STRUCTURE |
| GV            | GATEVALVE STRUCTURE             |
| HY            | HYDRANT                         |
| UP            | UTILITY POLE                    |
| SS            | SANITARY SEWER                  |
| SL            | SANITARY LEAD                   |
| FM            | FORCE MAIN                      |
| PS            | PRESSURE SEWER                  |
| ST            | STORM SEWER                     |
| WM            | WATER MAIN                      |
| WL            | WATER LEAD                      |
| FO            | FIBER OPTIC                     |
| OH            | OVERHEAD WIRE                   |
| C             | CABLE                           |
| E             | ELECTRIC                        |
| G             | GAS                             |
| T             | TELEPHONE                       |
| MH            | MANHOLE                         |
| IN            | INLET / CATCHBASIN              |
| FL            | FLARED END-SECTION              |
| GV            | GATE VALVE                      |
| HY            | HYDRANT                         |
| UP            | UTILITY POLE                    |
| SIGN          | SIGN                            |
| CONCRETE      | CONCRETE                        |
| ASPHALT       | ASPHALT                         |

PARCEL # 4711-06-400-015  
27.80 ACRES  
ZONED: MDR

30' WIDE ACCESS EASEMENT TO  
RICHARDS 1-6 GAS STORAGE WELL  
(INSTRUMENT #2006R-006188 - L.C.R.)  
TO BE REVISED

**BENCHMARK DATA**

|          |   |
|----------|---|
| S.B.M.#1 | MAG NAIL IN CENTERLINE OF CHILSON ROAD AT CENTERLINE OF CHESAPEAKE & OHIO RAILROAD.<br>ELEVATION = 955.64   |
| S.B.M.#2 | MAG NAIL IN WEST FACE OF 30" WALNUT LOCATED 50'± SOUTH OF NORTH PROPERTY LINE AND 15'± EAST OF THE EAST EDGE OF CHILSON ROAD.<br>ELEVATION = 967.26 |

SURVEY NOTE: SURVEY PERFORMED BY RAYMOND J. DONNELLY & ASSOC., INC IN 2015

BEFORE YOU DIG  
CALL MISS DIG  
1-800-462-7171  
www.missdig.com

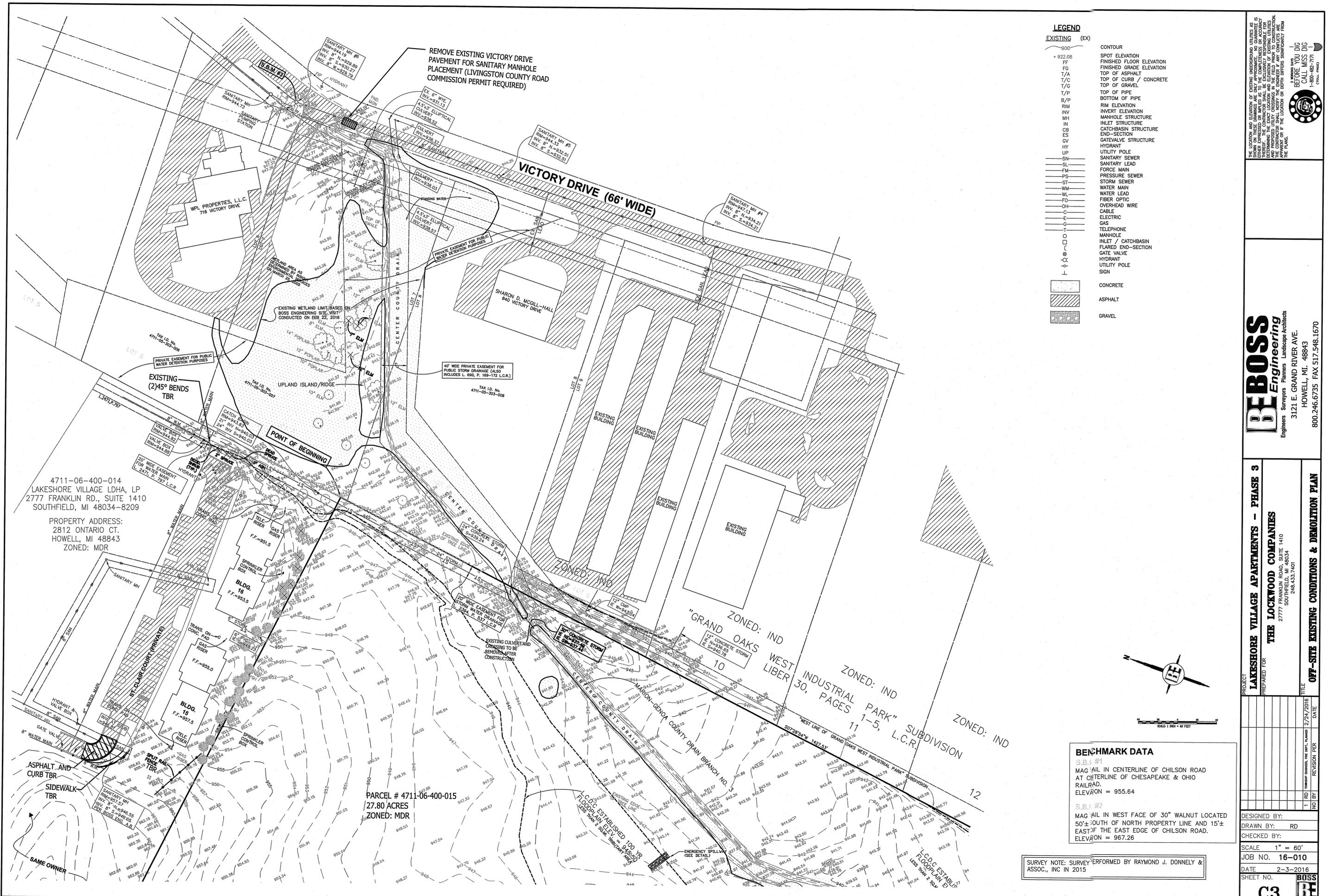
**BEBOSS**  
Engineering  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
800.246.6735 FAX 517.548.1670

PROJECT: **LAKESHORE VILLAGE APARTMENTS - PHASE 3**  
PREPARED FOR: **THE LOCKWOOD COMPANIES**  
27777 FRANKLIN ROAD, SUITE 1410  
SOUTHFIELD, MI 48034  
248.433.7401  
TITLE: **EXISTING CONDITIONS & DEMOLITION PLAN**

| NO. | BY | REVISION PER | DATE      |
|-----|----|--------------|-----------|
| 1   | RD | REVISION PER | 2/24/2016 |
| NO. | BY | REVISION PER | DATE      |

DESIGNED BY: RD  
DRAWN BY: RD  
CHECKED BY:  
SCALE 1" = 60'  
JOB NO. 16-010  
DATE 2-3-2016  
SHEET NO.





**LEGEND**

|           |                                 |
|-----------|---------------------------------|
| 900       | CONTOUR                         |
| + 922.08  | SPOT ELEVATION                  |
| FF        | FINISHED FLOOR ELEVATION        |
| FG        | FINISHED GRADE ELEVATION        |
| T/A       | TOP OF ASPHALT                  |
| T/C       | TOP OF CURB / CONCRETE          |
| T/G       | TOP OF GRAVEL                   |
| T/P       | TOP OF PIPE                     |
| B/P       | BOTTOM OF PIPE                  |
| RIM       | RIM ELEVATION                   |
| INV       | INVERT ELEVATION                |
| MH        | MANHOLE STRUCTURE               |
| IN        | INLET STRUCTURE                 |
| CB        | CATCHBASIN STRUCTURE            |
| ES        | END-SECTION GATEVALVE STRUCTURE |
| GV        | GATEVALVE STRUCTURE             |
| HY        | HYDRANT                         |
| UP        | UTILITY POLE                    |
| SN        | SANITARY SEWER                  |
| SL        | SANITARY LEAD                   |
| FM        | FORCE MAIN                      |
| PS        | PRESSURE SEWER                  |
| ST        | STORM SEWER                     |
| WM        | WATER MAIN                      |
| WL        | WATER LEAD                      |
| FO        | FIBER OPTIC                     |
| OH        | OVERHEAD WIRE                   |
| C         | CABLE                           |
| E         | ELECTRIC                        |
| G         | GAS                             |
| T         | TELEPHONE                       |
| MH        | MANHOLE                         |
| IN        | INLET / CATCHBASIN              |
| FL        | FLARED END-SECTION              |
| GV        | GATE VALVE                      |
| UP        | UTILITY POLE                    |
| S         | SIGN                            |
| [Pattern] | CONCRETE                        |
| [Pattern] | ASPHALT                         |
| [Pattern] | GRAVEL                          |

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 LOCATION OR DEPTH DIFFERENT FROM THAT SHOWN ON THE PLANS.

BE BOSS ENGINEERING  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 800.246.6735 FAX 517.548.1670

**BEBOSS**  
**Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 800.246.6735 FAX 517.548.1670

**PROJECT**  
 LAKESHORE VILLAGE APARTMENTS - PHASE 3  
**PREPARED FOR**  
 THE LOCKWOOD COMPANIES  
 27777 FRANKLIN ROAD, SUITE 1410  
 SOUTHFIELD, MI 48034  
 248.433.7401

|              |          |
|--------------|----------|
| DESIGNED BY: | RD       |
| DRAWN BY:    | RD       |
| CHECKED BY:  |          |
| SCALE        | 1" = 60' |
| JOB NO.      | 16-010   |
| DATE         | 2-3-2016 |
| SHEET NO.    | C3       |

**BENCHMARK DATA**  
 S.B. 1: 91  
 MAGNAIL IN CENTERLINE OF CHILSON ROAD  
 AT CENTERLINE OF CHESAPEAKE & OHIO  
 RAILROAD.  
 ELEVATION = 955.64  
 S.B. 1: 92  
 MAGNAIL IN WEST FACE OF 30" WALNUT LOCATED  
 50' ± SOUTH OF NORTH PROPERTY LINE AND 15' ±  
 EAST OF THE EAST EDGE OF CHILSON ROAD.  
 ELEVATION = 967.26

SURVEY NOTE: SURVEY PERFORMED BY RAYMOND J. DONNELLY & ASSOC., INC IN 2015

2777 FRANKLIN RD., SUITE 1410  
SOUTHFIELD, MI 48034-8209

PROPERTY ADDRESS:  
2812 ONTARIO CT.  
HOWELL, MI 48843  
ZONED: MDR

SOILS INFORMATION:  
SOIL DATA FROM USDA NATURAL RESOURCES CONSERVATION SERVICE

THE MAJORITY OF SOILS ON SITE ARE CLASSIFIED AS LOAMS AND LOAMY SANDS.

NORTH:  
- MoA: MIAMI LOAM WITH 0-2% SLOPES

NORTHEAST:  
- BuA: BRADY LOAMY SAND WITH 0-2% SLOPES  
- Cc: CARLISLE MUCK (Hydrologic)

EAST:  
- Gc: GILFORD SANDY LOAM WITH 0-2% SLOPES (Hydrologic)  
- BWA: BRONSON LOAMY SAND WITH 0-2% SLOPES

SOUTHEAST:  
- CVA: CONOVER LOAM WITH 0-2% SLOPES

SOUTH:  
- BiB: BOYER-OSSTEMO LOAMY SANDS WITH 2-6% SLOPES

WEST:  
- MoC: MIAMI LOAM WITH 6-12% SLOPES

NORTHWEST:  
- MoB: MIAMI LOAM WITH 2-6% SLOPES



**VEGETATIVE AREA - 1**  
APPROXIMATELY 11.37 AC  
HEAVILY WOODED AREA  
PREDOMINANTLY POPLAR AND  
BIRCH SCRUB VEGETATION WITH  
MAJORITY 1"-4" DBH

**VEGETATIVE AREA - 2**  
APPROXIMATELY 1.27 AC  
HEAVILY WOODED AREA  
PREDOMINANTLY POPLAR AND  
LOCUS SCRUB VEGETATION WITH  
MAJORITY 1"-4" DBH

**VEGETATIVE AREA - 3**  
APPROXIMATELY 1.53 AC  
HEAVILY WOODED AREA  
PREDOMINANTLY POPLAR AND  
LOCUS SCRUB VEGETATION WITH  
MAJORITY 1"-4" DBH

**CURVE DATA**  
ARC=893.39'  
RAD=2834.50'  
Δ=18°03'31"  
CH BRG=N67°50'07"W  
CH DIST=889.69'



- LEGEND**
- 900 - EXISTING CONTOUR
  - 922.00 - EXISTING SPOT ELEVATION
  - - DECIDUOUS TREE
  - - CONIFEROUS TREE
  - ▨ - WOODED AREA

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS PLAN ARE BASED ON RECORD DRAWINGS, FIELD SURVEY, AND EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE ENGINEER HAS NOT CONDUCTED A FIELD SURVEY TO DETERMINE THE EXACT LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE USER OF THIS PLAN SHALL BE RESPONSIBLE FOR VERIFYING THE APPARENT OR IF THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLAN.

BEFORE YOU DIG  
CALL MISS DIG  
800-482-7771  
(TOLL FREE)

**BEBOSS**  
Engineering  
Engineers Surveyors Planners Landscape Architects

3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
800.246.6735 FAX 517.548.1670

PROJECT: **LAKESHORE VILLAGE APARTMENTS - PHASE 3**  
PREPARED FOR: **THE LOCKWOOD COMPANIES**  
2777 FRANKLIN ROAD, SUITE 1410  
SOUTHFIELD, MI 48034  
248.433.7401

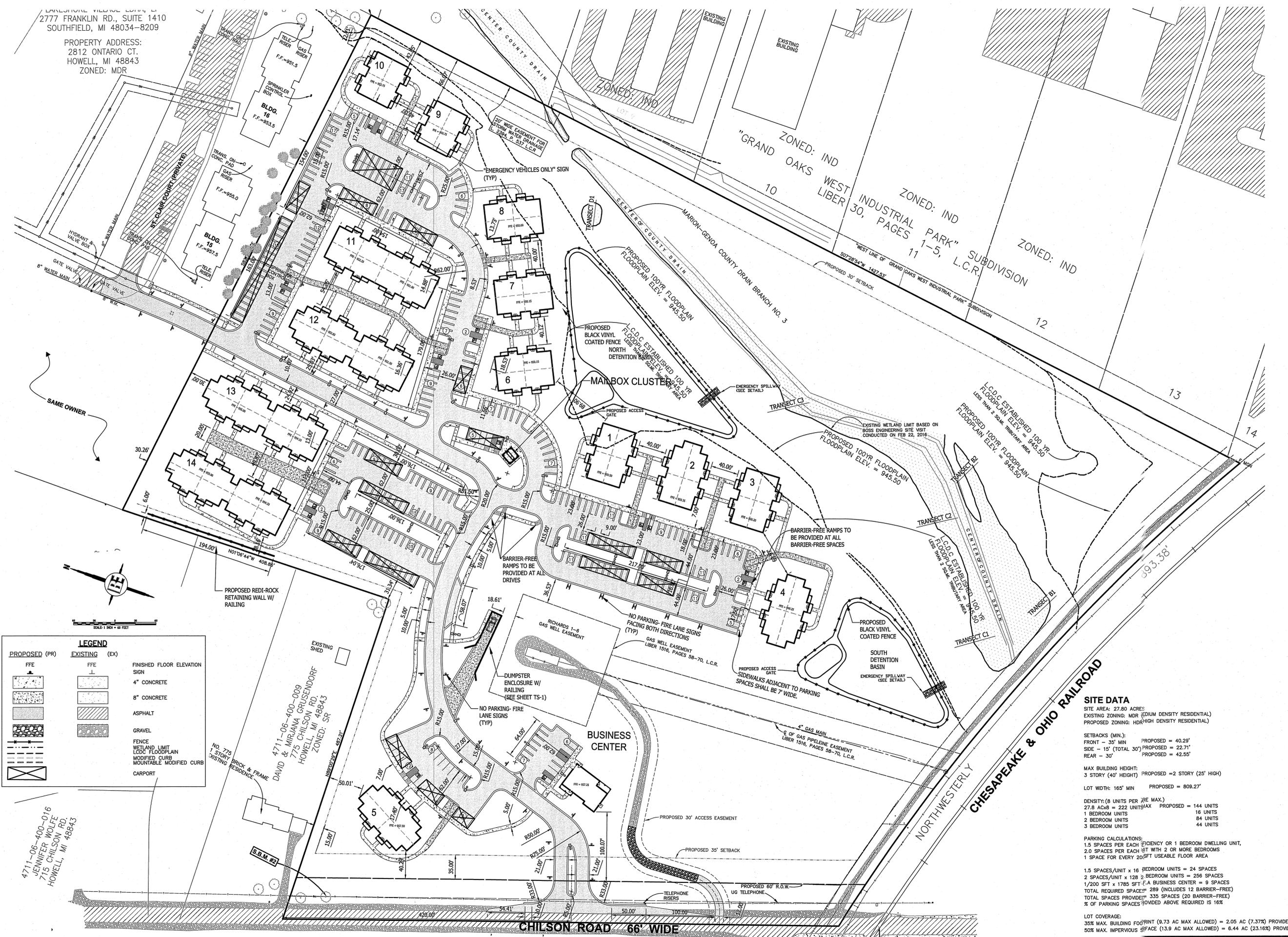
TITLE: **NATURAL FEATURES PLAN**

| NO | BY | REVISION PER                            | DATE      |
|----|----|---|-----------|
| 1  | RD | THORNTON ENGINEER, INC. (CITY PLANNING) | 2/24/2016 |

DESIGNED BY: KWS  
DRAWN BY: KWS  
CHECKED BY:  
SCALE 1" = 60'  
JOB NO. 16-010  
DATE 2-3-2016  
SHEET NO. C4

2777 FRANKLIN RD., SUITE 1410  
SOUTHFIELD, MI 48034-8209

PROPERTY ADDRESS:  
2812 ONTARIO CT.  
HOWELL, MI 48843  
ZONED: MDR



| LEGEND        |               |                          |
|---------------|---------------|--------------------------|
| PROPOSED (PR) | EXISTING (EX) |                          |
| [Symbol]      | [Symbol]      | FINISHED FLOOR ELEVATION |
| [Symbol]      | [Symbol]      | 4" CONCRETE              |
| [Symbol]      | [Symbol]      | 8" CONCRETE              |
| [Symbol]      | [Symbol]      | ASPHALT                  |
| [Symbol]      | [Symbol]      | GRAVEL                   |
| [Symbol]      | [Symbol]      | FENCE                    |
| [Symbol]      | [Symbol]      | WETLAND LIMIT            |
| [Symbol]      | [Symbol]      | L100C FLOODPLAIN         |
| [Symbol]      | [Symbol]      | MODIFIED CURB            |
| [Symbol]      | [Symbol]      | MOUNTABLE MODIFIED CURB  |
| [Symbol]      | [Symbol]      | CARPORIT                 |

**SITE DATA**

SITE AREA: 27.80 ACRES  
EXISTING ZONING: MDR (MEDIUM DENSITY RESIDENTIAL)  
PROPOSED ZONING: HDR (HIGH DENSITY RESIDENTIAL)

SETBACKS (MIN.):  
FRONT - 35' MIN PROPOSED = 40.29'  
SIDE - 15' (TOTAL 30') PROPOSED = 22.71'  
REAR - 30' PROPOSED = 42.55'

MAX BUILDING HEIGHT:  
3 STORY (40' HEIGHT) PROPOSED = 2 STORY (25' HIGH)

LOT WIDTH: 165' MIN PROPOSED = 809.27'

DENSITY: (8 UNITS PER ACRE MAX.)  
27.8 ACRES = 222 UNITS/AC PROPOSED = 144 UNITS  
1 BEDROOM UNITS 16 UNITS  
2 BEDROOM UNITS 84 UNITS  
3 BEDROOM UNITS 44 UNITS

PARKING CALCULATIONS:  
1.5 SPACES PER EACH EFFICIENCY OR 1 BEDROOM DWELLING UNIT,  
2.0 SPACES PER EACH UNIT WITH 2 OR MORE BEDROOMS  
1 SPACE FOR EVERY 200 SFT USEABLE FLOOR AREA

1.5 SPACES/UNIT x 16 BEDROOM UNITS = 24 SPACES  
2 SPACES/UNIT x 128 2 BEDROOM UNITS = 256 SPACES  
1/200 SFT x 1785 SFT F.A BUSINESS CENTER = 9 SPACES  
TOTAL REQUIRED SPACES = 289 (INCLUDES 12 BARRIER-FREE)  
TOTAL SPACES PROVIDED = 335 SPACES (20 BARRIER-FREE)  
% OF PARKING SPACES PROVIDED ABOVE REQUIRED IS 16%

LOT COVERAGE:  
35% MAX. BUILDING FOOTPRINT (9.73 AC MAX ALLOWED) = 2.05 AC (7.37%) PROVIDED  
50% MAX. IMPERVIOUS SPACE (13.9 AC MAX ALLOWED) = 6.44 AC (23.16%) PROVIDED

4711-06-400-016  
JENNIFER WOLFE  
715 CHILSON RD.  
HOWELL, MI 48843

NO. 775  
1 STORY  
EXISTING RESIDENCE

BRICK & FRAME  
RESIDENCE

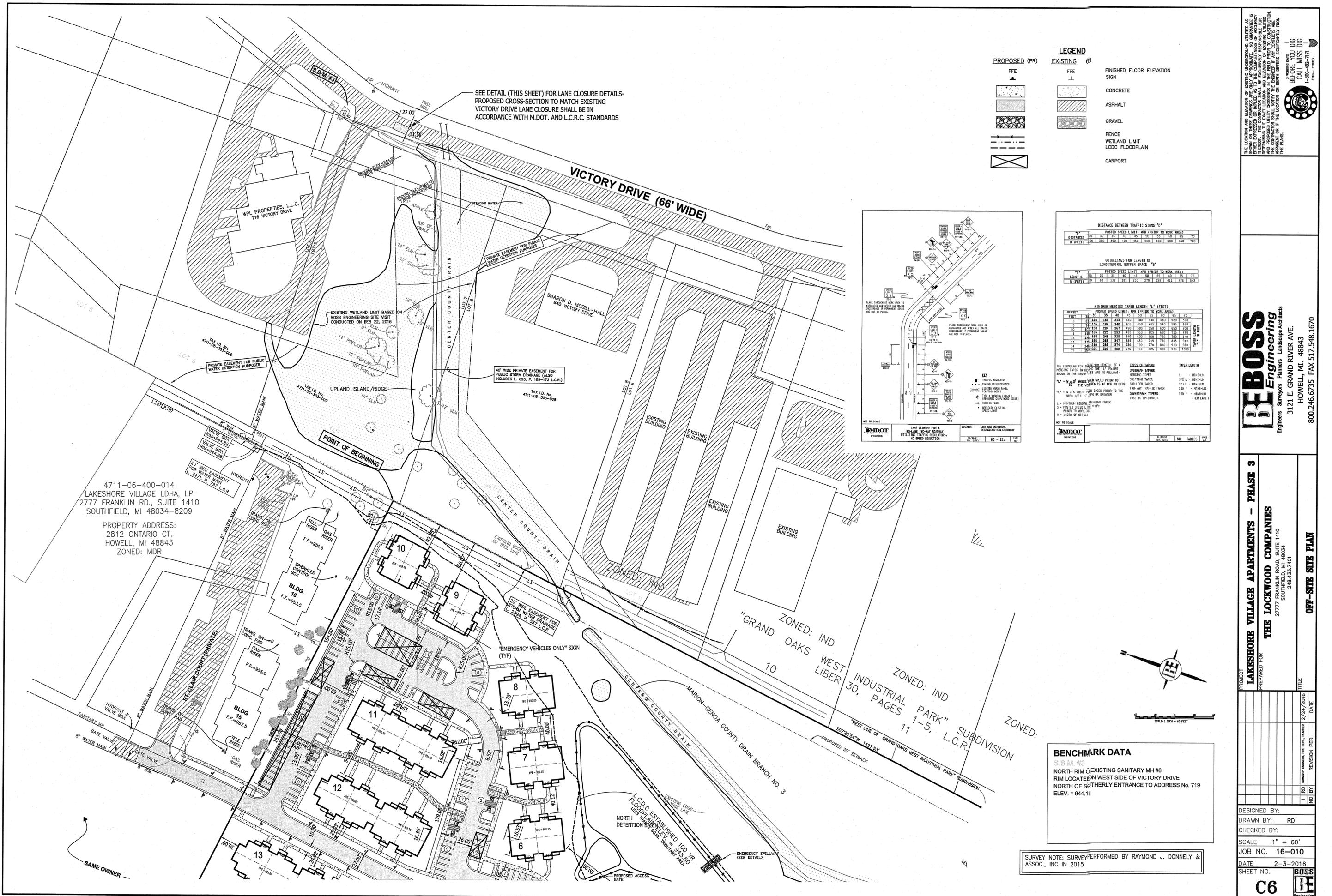
4711-06-400-009  
DAVID & MIRIANA GRUSENDORF  
775 CHILSON RD.  
HOWELL, MI 48843  
ZONED: SR

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS PLAN ARE BASED ON RECORD DRAWINGS, FIELD SURVEY, AND OTHER SOURCES. THE ENGINEER HAS MADE A REASONABLE ATTEMPT TO LOCATE AND IDENTIFY SUCH UTILITIES. THE ENGINEER DOES NOT WARRANT THE ACCURACY OF THE LOCATION AND ELEVATION OF EXISTING UTILITIES. THE ENGINEER HAS MADE A REASONABLE ATTEMPT TO LOCATE AND IDENTIFY SUCH UTILITIES. THE ENGINEER DOES NOT WARRANT THE ACCURACY OF THE LOCATION AND ELEVATION OF EXISTING UTILITIES.

**BEBOSS**  
Engineering  
Engineers Surveyors Planners Landscape Architects

3121 E. GRAND RIVER AVE.  
HOWELL, MI 48843  
800.246.6735 FAX 517.548.1670

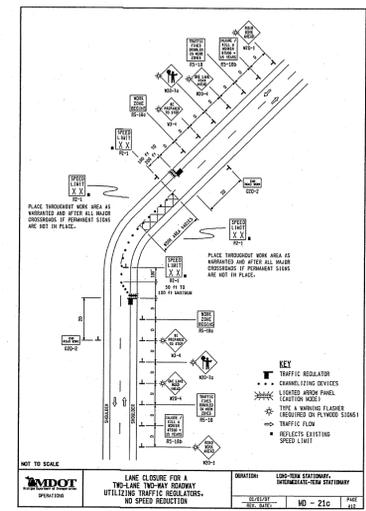
|              |   |
|--------------|---|
| PROJECT      | LAKESHORE VILLAGE APARTMENTS - PHASE 3  |
| PREPARED FOR | THE LOCKWOOD COMPANIES<br>27777 FRANKLIN ROAD, SUITE 1410<br>SOUTHFIELD, MI 48034<br>248.433.7401 |
| TITLE        | SITE PLAN   |
| DATE         | 2/24/2016   |
| REVISION PER |   |
| NO           | BY  |
| 1            | RD  |
| 2            | RD  |
| 3            | RD  |
| DESIGNED BY: | TD  |
| DRAWN BY:    | RD  |
| CHECKED BY:  |   |
| SCALE        | 1" = 60'  |
| JOB NO.      | 16-010  |
| DATE         | 2-3-2016  |
| SHEET NO.    | C5  |



SEE DETAIL (THIS SHEET) FOR LANE CLOSURE DETAILS-  
 PROPOSED CROSS-SECTION TO MATCH EXISTING  
 VICTORY DRIVE LANE CLOSURE SHALL BE IN  
 ACCORDANCE WITH M.DOT. AND L.C.R.C. STANDARDS

**LEGEND**

| PROPOSED (PR) | EXISTING (E)  |                          |
|---------------|---------------|--------------------------|
| FFE           | FFE           | FINISHED FLOOR ELEVATION |
| CONCRETE      | CONCRETE      | CONCRETE                 |
| ASPHALT       | ASPHALT       | ASPHALT                  |
| GRAVEL        | GRAVEL        | GRAVEL                   |
| FENCE         | FENCE         | FENCE                    |
| WETLAND LIMIT | WETLAND LIMIT | LODC FLOODPLAIN          |
| CARPORT       | CARPORT       | CARPORT                  |



**TABLES**

**DISTANCE BETWEEN TRAFFIC SIGNS "D"**

| POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA) | 10' | 20' | 30' | 40' | 50' | 60' | 70' |
|--|-----|-----|-----|-----|-----|-----|-----|
| 15   | 250 | 300 | 350 | 400 | 450 | 500 | 550 |
| 20   | 300 | 350 | 400 | 450 | 500 | 550 | 600 |
| 25   | 350 | 400 | 450 | 500 | 550 | 600 | 650 |
| 30   | 400 | 450 | 500 | 550 | 600 | 650 | 700 |

**GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B"**

| POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA) | 10' | 20' | 30' | 40' | 50' | 60' | 70' |
|--|-----|-----|-----|-----|-----|-----|-----|
| 15   | 25  | 30  | 35  | 40  | 45  | 50  | 55  |
| 20   | 30  | 35  | 40  | 45  | 50  | 55  | 60  |
| 25   | 35  | 40  | 45  | 50  | 55  | 60  | 65  |
| 30   | 40  | 45  | 50  | 55  | 60  | 65  | 70  |

**MINIMUM MERGING TAPER LENGTH "L" (FEET)**

| POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA) | 10' | 20' | 30' | 40' | 50' | 60' | 70' |
|--|-----|-----|-----|-----|-----|-----|-----|
| 15   | 100 | 125 | 150 | 175 | 200 | 225 | 250 |
| 20   | 125 | 150 | 175 | 200 | 225 | 250 | 275 |
| 25   | 150 | 175 | 200 | 225 | 250 | 275 | 300 |
| 30   | 175 | 200 | 225 | 250 | 275 | 300 | 325 |

**THE FORMULA FOR THE MINIMUM LENGTH OF A MERGING TAPER IN FEET**

**TYPE OF TAPER**

| TYPE OF TAPER    | TAPER LENGTH    |
|------------------|-----------------|
| UPSTREAM TAPER   | L - MINIMUM     |
| MERGING TAPER    | L - MINIMUM     |
| SHIFTER TAPER    | 1/2 L - MINIMUM |
| DOWNSTREAM TAPER | 1/2 L - MINIMUM |
| 100' - MINIMUM   | 100' - MINIMUM  |
| PER LANE         | PER LANE        |

**BENCHMARK DATA**  
 S.B.M. #3  
 NORTH RIM #6 EXISTING SANITARY MH #6  
 RIM LOCATED ON WEST SIDE OF VICTORY DRIVE  
 NORTH OF SOUTHERLY ENTRANCE TO ADDRESS No. 719  
 ELEV. = 944.16

SURVEY NOTE: SURVEY PERFORMED BY RAYMOND J. DONNELLY & ASSOC., INC IN 2015

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORD DRAWINGS AND FIELD SURVEY. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION.

**BEFORE YOU DIG  
 CALL MISS DIG  
 1-800-482-3171**

**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 800.246.6735 FAX 517.548.1670

**PROJECT**  
 LAKESHORE VILLAGE APARTMENTS - PHASE 3

**PREPARED FOR**  
 THE LOCKWOOD COMPANIES  
 27777 FRANKLIN ROAD, SUITE 1410  
 SOUTHFIELD, MI 48034  
 248.433.7401

**TITLE**  
 OFF-SITE SITE PLAN

| NO. | BY | DATE      | REVISION PER |
|-----|----|-----------|--------------|
| 1   | RD | 2/24/2016 |              |

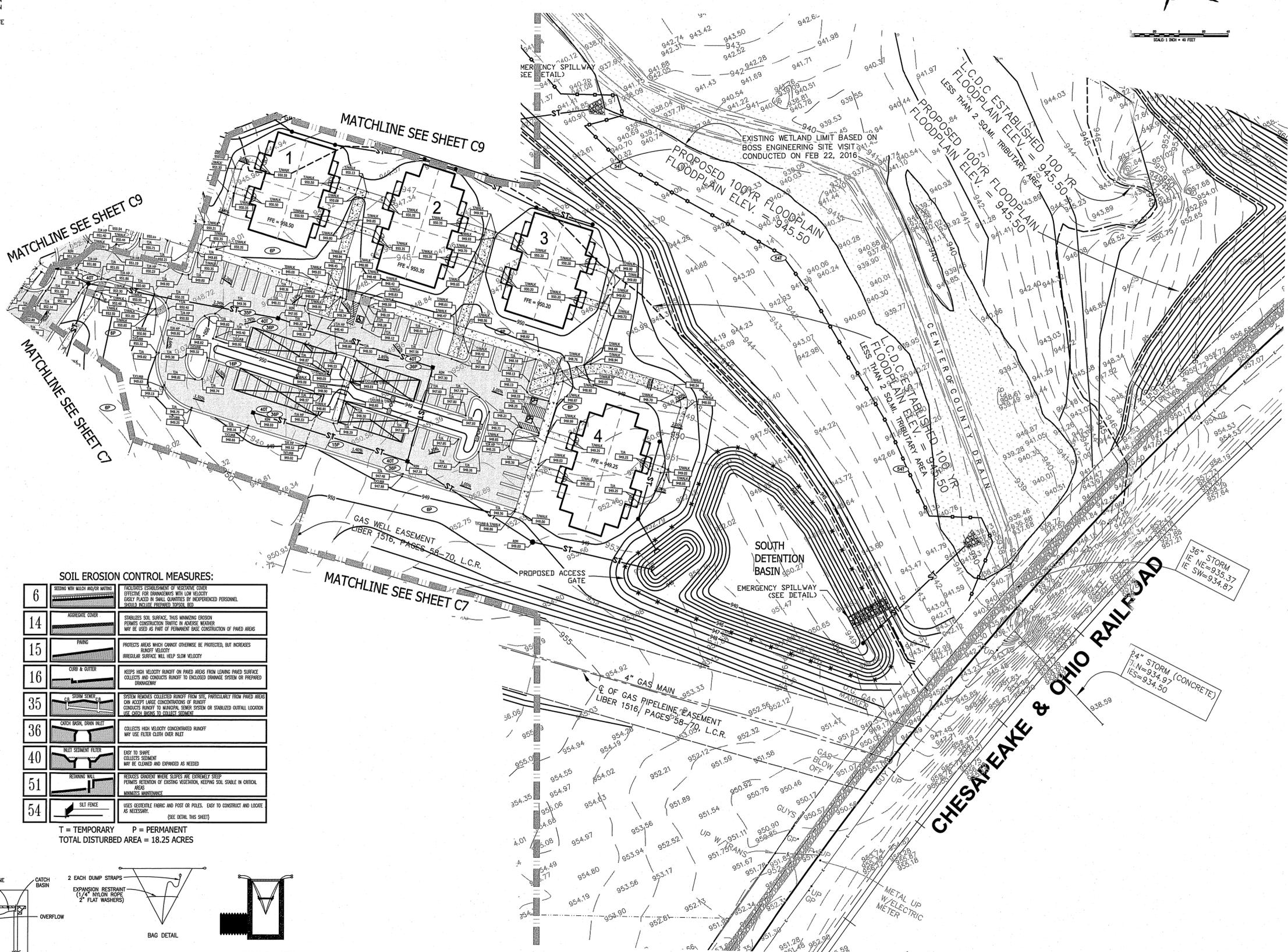
DESIGNED BY: RD  
 DRAWN BY: RD  
 CHECKED BY: RD

SCALE: 1" = 60'  
 JOB NO. 16-010  
 DATE: 2-3-2016  
 SHEET NO. C6



| PROPOSED (PR) | EXISTING (EX) | LEGEND                   |
|---------------|---------------|--------------------------|
| 900           | 900           | CONTOUR                  |
| T/C           | XXXXXX        | STORM DRAINAGE FLOW      |
| FF            | + 922.08      | SPOT ELEVATION           |
| FG            |               | FINISHED FLOOR ELEVATION |
| T/A           |               | FINISHED GRADE ELEVATION |
| T/C           |               | TOP OF ASPHALT           |
| T/G           |               | TOP OF CURB / CONCRETE   |
| T/P           |               | TOP OF GRAVEL            |
| B/P           |               | TOP OF PIPE              |
| RM            |               | BOTTOM OF PIPE           |
| INV           |               | RIM ELEVATION            |
| MH            |               | INVERT ELEVATION         |
| IN            |               | MANHOLE STRUCTURE        |
| CB            |               | INLET STRUCTURE          |
| ES            |               | CATCHBASIN STRUCTURE     |
| GV            |               | END-SECTION              |
| HY            |               | GATEVALVE STRUCTURE      |
| UP            |               | HYDRANT                  |
| SN            |               | UTILITY POLE             |
| SL            |               | SANITARY SEWER           |
| FM            |               | SANITARY LEAD            |
| PS            |               | FORCE MAIN               |
| ST            |               | PRESSURE SEWER           |
| WM            |               | STORM SEWER              |
| WL            |               | WATER MAIN               |
| FO            |               | WATER LEAD               |
| OH            |               | FIBER OPTIC              |
| C             |               | OVERHEAD WIRE            |
| E             |               | CABLE                    |
| T             |               | ELECTRIC                 |
| ○             |               | GAS                      |
| ○             |               | TELEPHONE                |
| ○             |               | MANHOLE                  |
| ○             |               | INLET / CATCHBASIN       |
| ○             |               | FLARED END-SECTION       |
| ○             |               | GATE VALVE               |
| ○             |               | HYDRANT                  |
| ○             |               | UTILITY POLE             |
| ○             |               | SIGN                     |
| ■             |               | CONCRETE                 |
| ■             |               | ASPHALT                  |
| ■             |               | GRAVEL                   |
| ---           |               | SILT FENCE               |
| ---           |               | DRAINAGE AREA LIMIT      |
| ---           |               | MATCH LINE               |

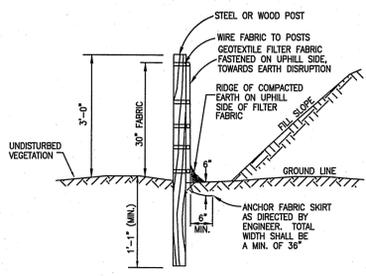
**SOIL EROSION CONTROL NOTES:**  
 1. ALL CATCH BASINS TO HAVE INLET SEDIMENT FILTERS (40T)  
 2. ALL DISTURBED AREAS TO BE TOPSOILED, SEEDED, AND MULCHED.



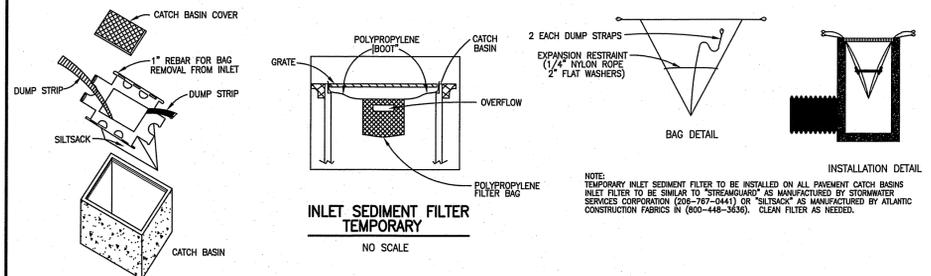
**SOIL EROSION CONTROL MEASURES:**

|    |                               |   |
|----|-------------------------------|---|
| 6  | SOIL WITH MULCH AND/OR MATING | FACILITATES ESTABLISHMENT OF VEGETATION COVER EFFECTIVE FOR DRAINAGE AREAS WITH LOW VELOCITY. EASILY PLACED BY SMALL QUANTITIES BY INDEPENDENT PERSONNEL. SHOULD INCLUDE PERFORATED TUBES. SEE DETAIL.                              |
| 14 | AGGREGATE COVER               | STABILIZES SOIL SURFACE. THIS MINIMIZES EROSION. PROMOTES CONSTRUCTION TRAFFIC IN AVOIDED WEATHER. MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS.   |
| 15 | FABRIC                        | PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VELOCITY. IRREGULAR SURFACE WILL HELP SLOW VELOCITY.   |
| 16 | CURB & OUTER                  | KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING PAVED SURFACE. COLLECTS AND CONDUCTS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY.   |
| 35 | STORM SEWER                   | SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS. CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF. CONDUCTS RUNOFF TO MANHOLE, STORM SYSTEM OR STABILIZED OUTFALL LOCATION. USE CATCH BASINS TO COLLECT SEDIMENT. |
| 36 | CATCH BASIN, DRAIN INLET      | COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF. MAY USE FILTER COVER OVER INLET.  |
| 40 | INLET SEDIMENT FILTER         | EASY TO SHAPE. COLLECTS SEDIMENT. MAY BE CLEANED AND EXPANDED AS NEEDED.  |
| 51 | RETAINING WALL                | REDUCES GRADIENT WHERE SLOPES ARE EXTREMELY STEEP. PERMITS RETENTION OF EXISTING VEGETATION, KEEPING SOIL STABLE IN CRITICAL AREAS. MAINTAINS MAINTENANCE.  |
| 54 | SILT FENCE                    | USES GEOTEXTILE FABRIC AND POST OR POLES. EASY TO CONSTRUCT AND LOCATE AS NECESSARY. (SEE DETAIL THIS SHEET)  |

T = TEMPORARY P = PERMANENT  
 TOTAL DISTURBED AREA = 18.25 ACRES

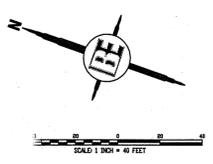


**SILT FENCE DETAIL**  
NO SCALE



**INLET SEDIMENT FILTER TEMPORARY**  
NO SCALE

NOTE: TEMPORARY INLET SEDIMENT FILTER TO BE INSTALLED ON ALL PAVED CATCH BASIN INLET FILTER TO BE SIMILAR TO "STREAMGUARD" AS MANUFACTURED BY STORMWATER SERVICES CORPORATION (206-767-0441) OR "SILTSACK" AS MANUFACTURED BY ATLANTIC CONSTRUCTION FABRICS IN (800-448-3636). CLEAN FILTER AS NEEDED.



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETION OF THIS PROJECT AND ANY PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION, APPROPRIATE TO THE LOCATION OF DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.  
 BOSS Engineering  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 800.246.6735 FAX 517.548.1670

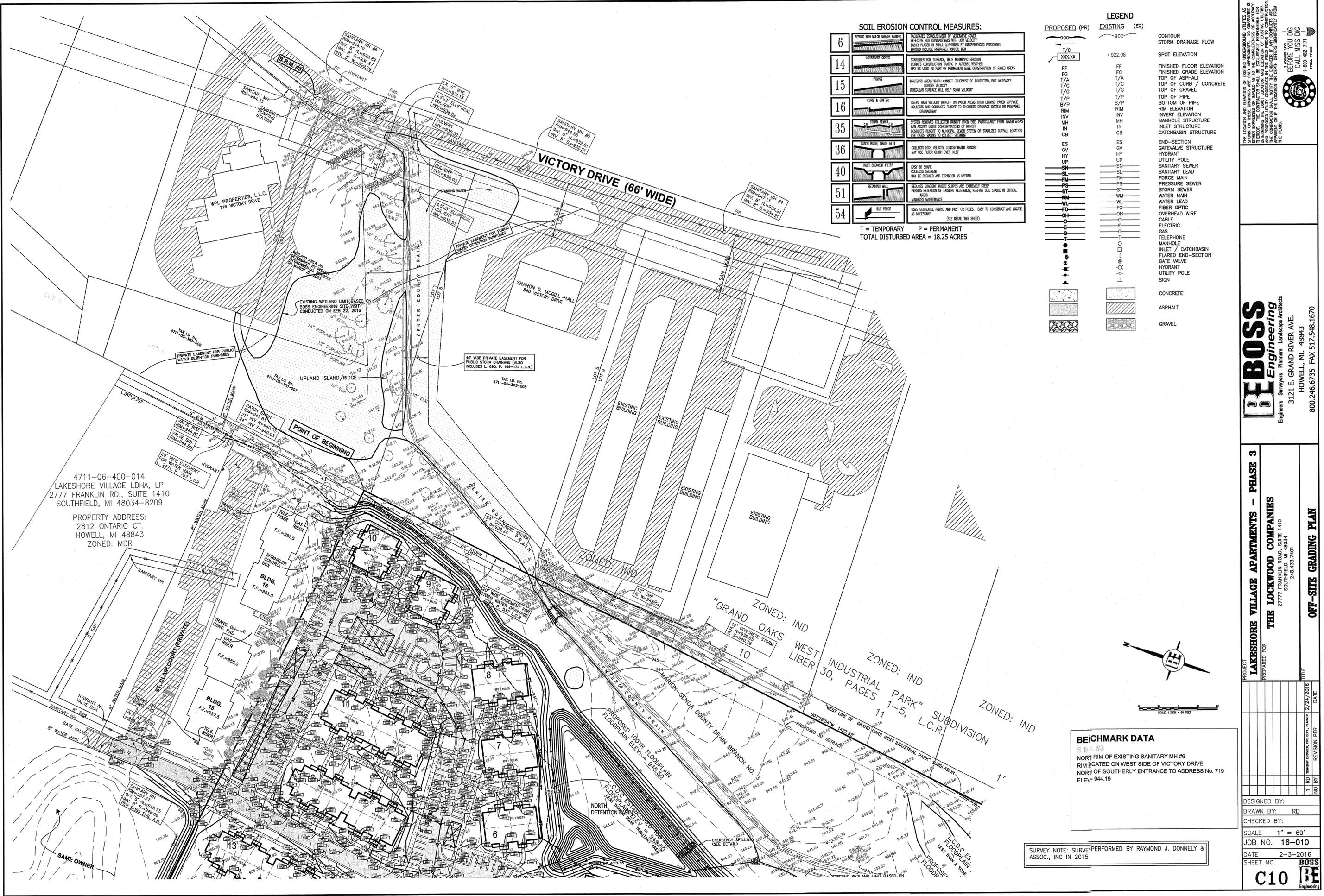
PROJECT: LAKESHORE VILLAGE APARTMENTS - PHASE 3  
 PREPARED FOR: THE LOCKWOOD COMPANIES  
 27777 FRANKLIN ROAD, SUITE 1410  
 SOUTHFIELD, MI 48034  
 248.433.7401  
 TITLE: GRADING, DRAINAGE, & SOIL EROSION CONTROL PLAN

| NO | BY | REVISION     | DATE      |
|----|----|--------------|-----------|
| 1  | TD | REVISION PER | 2/24/2016 |

DESIGNED BY: TD  
 DRAWN BY: RD  
 CHECKED BY:  
 SCALE: 1" = 40'  
 JOB NO. 16-010  
 DATE: 2-3-2016  
 SHEET NO.







**SOIL EROSION CONTROL MEASURES:**

|    |                                |   |
|----|--------------------------------|---|
| 6  | SEEDS WITH MULCH AND/OR MATING | PREVENTS ESTABLISHMENT OF VEGETATION COVER EFFECTIVE FOR EROSION CONTROL IN SMALL QUANTITIES BY UNEXPERIENCED PERSONNEL. SHOULD BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS.                                      |
| 14 | AGGREGATE COVER                | STABILIZES SOIL SURFACE, THIS MINIMUM EROSION PERMITS CONSTRUCTION SWIFT 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.   |
| 16 | CURB & GUTTER                  | KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING PAVED SURFACE. COLLECTS AND CONDUCTS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY.   |
| 35 | STORM SINK                     | SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS. CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF. CONDUCTS RUNOFF TO MANHOLE, SEWER SYSTEM OR STABILIZED OUTFALL LOCATION. USE CATCH BASINS TO COLLECT SEDIMENT. |
| 36 | CATCH BASIN, DRAIN INLET       | COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF. MAY USE FILTER CLOTH OVER INLET.  |
| 40 | INLET SEDIMENT FILTER          | EASY TO SWEEP. COLLECTS SEDIMENT. MAY BE CLEANED AND EXPANDED AS NEEDED.  |
| 51 | RETAINING WALL                 | REDUCES GRADIENT WHERE SLOPES ARE EXTREMELY STEEP. PERMITS RETENTION OF EXISTING VEGETATION, KEEPING SOIL STABLE IN CRITICAL AREAS. MAINTENANCE.  |
| 54 | SILT FENCE                     | USES RETRIEVABLE FABRIC AND POST OR POLES. EASY TO CONSTRUCT AND LOCATE AS NECESSARY. (SEE DETAIL THIS SHEET)   |

T = TEMPORARY P = PERMANENT  
TOTAL DISTURBED AREA = 18.25 ACRES

**LEGEND**

| PROPOSED (PR) | EXISTING (EX) | DESCRIPTION                      |
|---------------|---------------|----------------------------------|
| 900           | 900           | CONTOUR                          |
| T/C           | T/C           | STORM DRAINAGE FLOW              |
| XXXXXX        | +922.08       | SPOT ELEVATION                   |
| FF            | FF            | FINISHED FLOOR ELEVATION         |
| FG            | FG            | FINISHED GRADE ELEVATION         |
| T/A           | T/A           | TOP OF ASPHALT                   |
| T/C           | T/C           | TOP OF CURB / CONCRETE           |
| T/G           | T/G           | TOP OF GRAVEL                    |
| T/P           | T/P           | TOP OF PIPE                      |
| B/P           | B/P           | BOTTOM OF PIPE                   |
| RIM           | RIM           | RIM ELEVATION                    |
| INV           | INV           | INVERT ELEVATION                 |
| MH            | MH            | MANHOLE STRUCTURE                |
| IN            | IN            | INLET STRUCTURE                  |
| CB            | CB            | CATCHBASIN STRUCTURE             |
| ES            | ES            | END-SECTION GATE/VALVE STRUCTURE |
| OV            | OV            | GATE/VALVE STRUCTURE             |
| HY            | HY            | HYDRANT                          |
| UP            | UP            | UTILITY POLE                     |
| SN            | SN            | SANITARY SEWER                   |
| SL            | SL            | SANITARY LEAD                    |
| FM            | FM            | FORCE MAIN                       |
| PS            | PS            | PRESSURE SEWER                   |
| ST            | ST            | STORM SEWER                      |
| WM            | WM            | WATER MAIN                       |
| WL            | WL            | WATER LEAD                       |
| FO            | FO            | FIBER OPTIC                      |
| OH            | OH            | OVERHEAD WIRE                    |
| C             | C             | CABLE                            |
| E             | E             | ELECTRIC                         |
| G             | G             | GAS                              |
| T             | T             | TELEPHONE                        |
| M             | M             | MANHOLE                          |
| I             | I             | INLET / CATCHBASIN               |
| F             | F             | FLARED END-SECTION               |
| G             | G             | GATE VALVE                       |
| H             | H             | HYDRANT                          |
| U             | U             | UTILITY POLE                     |
| S             | S             | SIGN                             |
| CONCRETE      | CONCRETE      | CONCRETE                         |
| ASPHALT       | ASPHALT       | ASPHALT                          |
| GRAVEL        | GRAVEL        | GRAVEL                           |

BEFORE YOU DIG  
CALL MISS DIG  
1-800-482-7171

**BEBOSS**  
Engineering  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
800.246.6735 FAX 517.548.1670

PROJECT: **LAKESHORE VILLAGE APARTMENTS - PHASE 3**  
PREPARED FOR: **THE LOCKWOOD COMPANIES**  
27777 FRANKLIN ROAD, SUITE 1410  
SOUTHFIELD, MI 48034  
248.433.7401

DESIGNED BY: \_\_\_\_\_  
DRAWN BY: RD  
CHECKED BY: \_\_\_\_\_  
SCALE: 1" = 60'  
JOB NO. 16-010  
DATE: 2-3-2016  
SHEET NO. C10

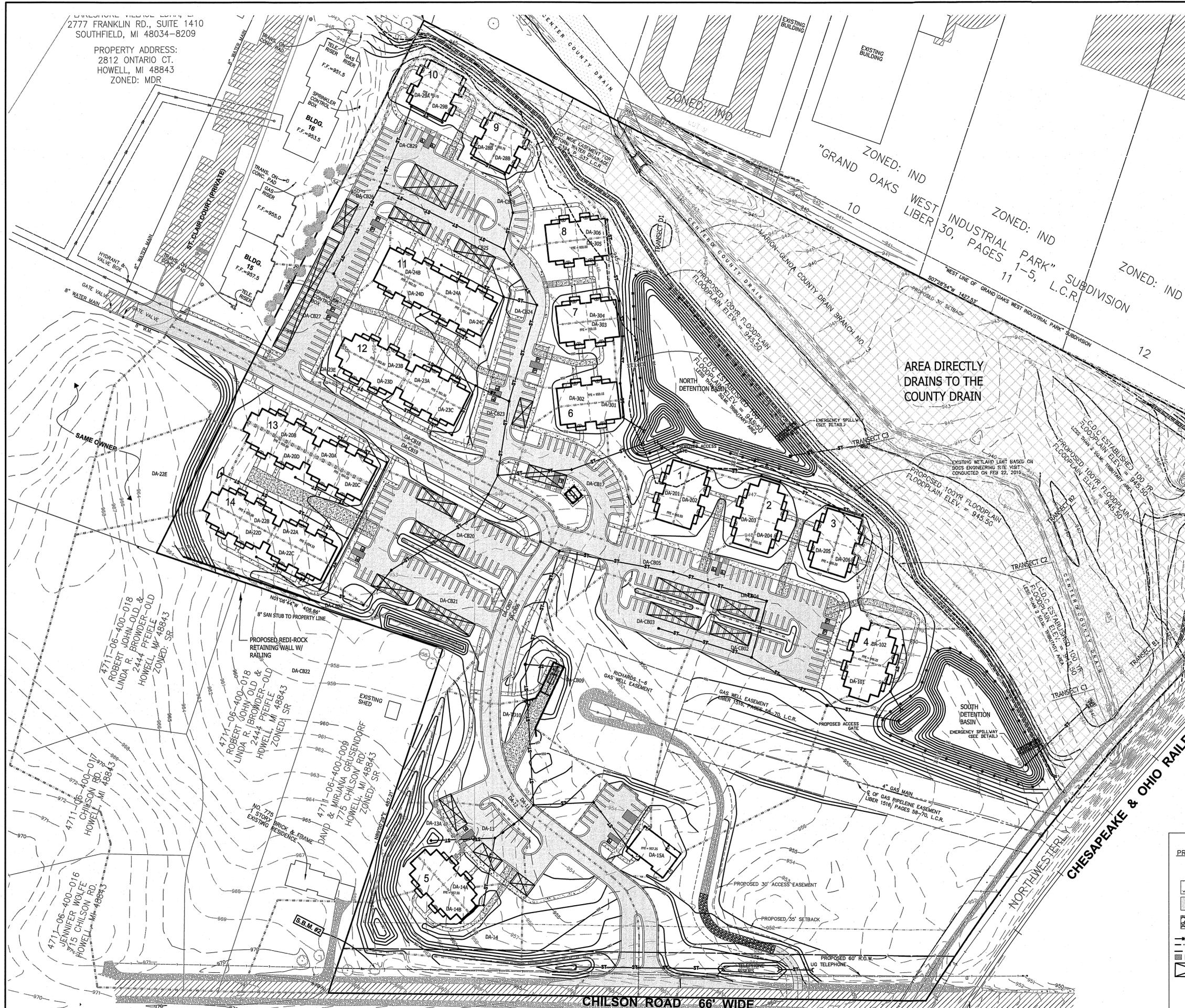
| NO | BY | DATE      | REVISION         |
|----|----|-----------|------------------|
| 1  | RD | 2/24/2016 | ISSUE FOR PERMIT |

**BENCHMARK DATA**  
S.E. 1.#3  
NOR. RIM OF EXISTING SANITARY MH #6  
RIM LOCATED ON WEST SIDE OF VICTORY DRIVE  
NOR. OF SOUTHERLY ENTRANCE TO ADDRESS No. 719  
ELEV. 944.19

SURVEY NOTE: SURVEY PERFORMED BY RAYMOND J. DONNELLY & ASSOC., INC IN 2015

DIRECTOR, WOOD COUNTY  
2777 FRANKLIN RD., SUITE 1410  
SOUTHFIELD, MI 48034-8209

PROPERTY ADDRESS:  
2812 ONTARIO CT.  
HOWELL, MI 48843  
ZONED: MDR



| DRAINAGE AREA | DRAINAGE AREAS |                    |                  | C    |
|---------------|----------------|--------------------|------------------|------|
|               | TOTAL (ACRES)  | IMPERVIOUS (ACRES) | PERVIOUS (ACRES) |      |
| 2             | 1.25           | 0.22               | 1.03             | 0.32 |
| 3             | 0.96           | 0.20               | 0.76             | 0.34 |
| 4             | 0.59           | 0.32               | 0.27             | 0.58 |
| 5             | 0.50           | 0.28               | 0.23             | 0.59 |
| 6             | 0.27           | 0.12               | 0.15             | 0.52 |
| 7             | 0.17           | 0.13               | 0.03             | 0.78 |
| 9             | 0.02           | 0.02               | 0.00             | 0.90 |
| 10            | 0.30           | 0.06               | 0.24             | 0.34 |
| 11            | 0.21           | 0.20               | 0.01             | 0.87 |
| 12            | 0.90           | 0.33               | 0.56             | 0.46 |
| 13            | 0.23           | 0.20               | 0.04             | 0.79 |
| 13A           | 0.16           | 0.00               | 0.16             | 0.20 |
| 14            | 0.41           | 0.02               | 0.39             | 0.24 |
| 15            | 0.19           | 0.14               | 0.05             | 0.72 |
| 17            | 0.41           | 0.28               | 0.12             | 0.68 |
| 18            | 0.03           | 0.01               | 0.02             | 0.52 |
| 19            | 1.45           | 0.25               | 1.20             | 0.32 |
| 20            | 0.44           | 0.31               | 0.13             | 0.69 |
| 21            | 0.74           | 0.40               | 0.35             | 0.57 |
| 22            | 5.81           | 0.09               | 5.72             | 0.21 |
| 23            | 0.74           | 0.30               | 0.44             | 0.48 |
| 24            | 0.53           | 0.25               | 0.28             | 0.53 |
| 25            | 0.32           | 0.23               | 0.09             | 0.71 |
| 26            | 0.40           | 0.21               | 0.19             | 0.57 |
| 27            | 0.45           | 0.23               | 0.22             | 0.56 |
| 28            | 0.31           | 0.14               | 0.17             | 0.51 |
| 29            | 0.39           | 0.26               | 0.13             | 0.68 |

| DRAINAGE AREA | ROOF AREAS    |                    |                  | C    |
|---------------|---------------|--------------------|------------------|------|
|               | TOTAL (ACRES) | IMPERVIOUS (ACRES) | PERVIOUS (ACRES) |      |
| 14A           | 0.03          | 0.03               | 0.00             | 0.9  |
| 14B           | 0.03          | 0.03               | 0.00             | 0.90 |
| 14C           | 0.03          | 0.03               | 0.00             | 0.90 |
| 14D           | 0.03          | 0.03               | 0.00             | 0.90 |
| 15A           | 0.06          | 0.06               | 0.00             | 0.9  |
| 20A           | 0.06          | 0.06               | 0.00             | 0.9  |
| 20B           | 0.06          | 0.06               | 0.00             | 0.90 |
| 20C           | 0.06          | 0.06               | 0.00             | 0.90 |
| 20D           | 0.06          | 0.06               | 0.00             | 0.90 |
| 22A           | 0.06          | 0.06               | 0.00             | 0.9  |
| 22B           | 0.06          | 0.06               | 0.00             | 0.90 |
| 22C           | 0.06          | 0.06               | 0.00             | 0.90 |
| 22D           | 0.06          | 0.06               | 0.00             | 0.90 |
| 23A           | 0.06          | 0.06               | 0.00             | 0.9  |
| 23B           | 0.06          | 0.06               | 0.00             | 0.90 |
| 23C           | 0.06          | 0.06               | 0.00             | 0.90 |
| 23D           | 0.06          | 0.06               | 0.00             | 0.90 |
| 24A           | 0.06          | 0.06               | 0.00             | 0.9  |
| 24B           | 0.06          | 0.06               | 0.00             | 0.90 |
| 24C           | 0.06          | 0.06               | 0.00             | 0.90 |
| 24D           | 0.06          | 0.06               | 0.00             | 0.90 |
| 28A           | 0.05          | 0.05               | 0.00             | 0.9  |
| 28B           | 0.05          | 0.05               | 0.00             | 0.90 |
| 29A           | 0.05          | 0.05               | 0.00             | 0.9  |
| 29B           | 0.05          | 0.05               | 0.00             | 0.90 |
| 101           | 0.06          | 0.06               | 0.00             | 0.9  |
| 102           | 0.06          | 0.06               | 0.00             | 0.9  |
| 201           | 0.06          | 0.06               | 0.00             | 0.9  |
| 202           | 0.06          | 0.06               | 0.00             | 0.9  |
| 203           | 0.06          | 0.06               | 0.00             | 0.9  |
| 204           | 0.06          | 0.06               | 0.00             | 0.9  |
| 205           | 0.06          | 0.06               | 0.00             | 0.9  |
| 206           | 0.06          | 0.06               | 0.00             | 0.9  |
| 301           | 0.06          | 0.06               | 0.00             | 0.9  |
| 302           | 0.06          | 0.06               | 0.00             | 0.9  |
| 303           | 0.05          | 0.05               | 0.00             | 0.9  |
| 304           | 0.05          | 0.05               | 0.00             | 0.9  |
| 305           | 0.06          | 0.06               | 0.00             | 0.9  |
| 306           | 0.06          | 0.06               | 0.00             | 0.9  |

| ARE FLOWING DIRECTLY INTO SOUTH BASIN |       |      |       |      |
|---------------------------------------|-------|------|-------|------|
| SOUTH                                 | 4.63  | 0.64 | 3.98  | 0.30 |
| ARE FLOWING DIRECTLY INTO NORTH BASIN |       |      |       |      |
| NORTH                                 | 1.21  | 0.01 | 1.20  | 0.21 |
| SOUTH BASIN                           | 11.08 | 3.19 | 7.90  | 0.40 |
| NORTH BASIN                           | 14.99 | 4.71 | 10.28 | 0.42 |
| TOTAL                                 | 26.07 | 7.89 | 18.18 | 0.82 |

\*shading denotes area tributary to North basin

**LEGEND**

|                      |                      |                               |
|----------------------|----------------------|-------------------------------|
| <b>PROPOSED (PR)</b> | <b>EXISTING (EX)</b> |                               |
| FFE                  | FFE                  | FINISHED FLOOR ELEVATION SIGN |
| CONCRETE             | CONCRETE             | CONCRETE                      |
| ASPHALT              | ASPHALT              | ASPHALT                       |
| GRAVEL               | GRAVEL               | GRAVEL                        |
| FENCE                | FENCE                | FENCE                         |
| LDCD FLOODPLAIN      | LDCD FLOODPLAIN      | LDCD FLOODPLAIN               |
| WETLAND LIMIT        | WETLAND LIMIT        | WETLAND LIMIT                 |
| DRAINAGE AREA LIMIT  | DRAINAGE AREA LIMIT  | DRAINAGE AREA LIMIT           |
| CARPOR               | CARPOR               | CARPOR                        |

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS PLAN ARE BASED ON RECORD DRAWINGS, FIELD SURVEY, AND OTHER AVAILABLE INFORMATION. THE LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITIES CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION AND THE LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITIES CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION ARE THE RESPONSIBILITY OF THE CLIENT. THE LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITIES CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION ARE THE RESPONSIBILITY OF THE CLIENT.

**BEBOSS Engineering**  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
800.246.6735 FAX 517.548.1670

**LAKESHORE VILLAGE APARTMENTS - PHASE 3**  
PREPARED FOR  
**THE LOCKWOOD COMPANIES**  
27777 FRANKLIN ROAD, SUITE 1410  
SOUTHFIELD, MI 48034  
248.433.7401

**OVERALL DRAINAGE PLAN**

DESIGNED BY: TD  
DRAWN BY: RD  
CHECKED BY:  
SCALE: 1" = 60'  
JOB NO. 16-010  
DATE: 2-3-2016  
SHEET NO. C11

LAKESHORE VILLAGE LDHA,  
2777 FRANKLIN RD., SUITE 1410  
SOUTHFIELD, MI 48034-8209

PROPERTY ADDRESS:  
2812 ONTARIO CT.  
HOWELL, MI 48843  
ZONED: MDR

SEE OFF-SITE UTILITY PLAN SHEET C13

**LEGEND**  
PROPOSED (PR)    EXISTING (EX)

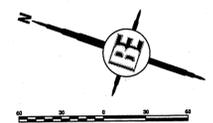
- T/C    +022.08
- XXX.XX
- FF    FINISHED FLOOR ELEVATION
- FC    FINISHED GRADE ELEVATION
- T/A    TOP OF ASPHALT
- T/G    TOP OF CURB / CONCRETE
- T/G    TOP OF GRAVEL
- T/P    TOP OF PIPE
- B/P    BOTTOM OF PIPE
- RIM    RIM ELEVATION
- INV    INVERT ELEVATION
- MH    MANHOLE STRUCTURE
- IN    INLET STRUCTURE
- CB    CATCHBASIN STRUCTURE
- ES    END-SECTION GATEVALVE STRUCTURE
- GV    GATEVALVE STRUCTURE
- HY    HYDRANT
- UP    UTILITY POLE
- SN    SANITARY SEWER
- SL    SANITARY LEAD
- FM    FORCE MAIN
- PS    PRESSURE SEWER
- ST    STORM SEWER
- WM    WATER MAIN
- WL    WATER LEAD
- FO    FIBER OPTIC
- OH    OVERHEAD WIRE
- C    CABLE
- E    ELECTRIC
- G    GAS
- T    TELEPHONE
- MH    MANHOLE
- INLET / CATCHBASIN
- FLARED END-SECTION
- GATE VALVE
- HYDRANT
- UTILITY POLE
- SIGN
- CONCRETE
- ASPHALT
- GRAVEL
- WETLAND LIMIT
- LDCC FLOODPLAIN

- CONTOUR
- STORM DRAINAGE FLOW
- SPOT ELEVATION
- FINISHED FLOOR ELEVATION
- FINISHED GRADE ELEVATION
- TOP OF ASPHALT
- TOP OF CURB / CONCRETE
- TOP OF GRAVEL
- TOP OF PIPE
- BOTTOM OF PIPE
- RIM ELEVATION
- INVERT ELEVATION
- MANHOLE STRUCTURE
- INLET STRUCTURE
- CATCHBASIN STRUCTURE
- END-SECTION GATEVALVE STRUCTURE
- GATEVALVE STRUCTURE
- HYDRANT
- UTILITY POLE
- SANITARY SEWER
- SANITARY LEAD
- FORCE MAIN
- PRESSURE SEWER
- STORM SEWER
- WATER MAIN
- WATER LEAD
- FIBER OPTIC
- OVERHEAD WIRE
- CABLE
- ELECTRIC
- GAS
- TELEPHONE
- MANHOLE
- INLET / CATCHBASIN
- FLARED END-SECTION
- GATE VALVE
- HYDRANT
- UTILITY POLE
- SIGN

- CONCRETE
- ASPHALT
- GRAVEL
- WETLAND LIMIT
- LDCC FLOODPLAIN

CONNECT TO EXISTING 8" WATERMAIN IN LAKESHORE VILLAGE PHASE 2

SAME OWNER



| UNIT       | RISER (FT) | LENGTH (FT) | SLOPE (%) | DIST. FROM DOWNSTREAM STRUCTURE |
|------------|------------|-------------|-----------|---------------------------------|
| 1          | 4          | 17          | 2.00%     | 75.19                           |
| 2          | 3          | 17          | 2.00%     | 184.55                          |
| 3          | 0          | 17          | 2.00%     | 293.91                          |
| 4          | 0          | 94          | 1.00%     | 0.00                            |
| 5          | 3          | 197         | 2.00%     | 120.98                          |
| 6          | 2          | 19          | 2.00%     | 9.53                            |
| 7          | 6          | 18          | 3.00%     | 21.10                           |
| 8          | 6          | 38          | 3.00%     | 84.40                           |
| 9          | 8          | 53          | 3.00%     | 52.07                           |
| 10         | 8          | 27          | 3.00%     | 161.80                          |
| 11         | 5          | 67          | 2.00%     | 26.01                           |
| 12         | 4          | 58          | 2.00%     | 72.28                           |
| 13         | 4          | 49          | 2.00%     | 85.50                           |
| 14         | 2          | 37          | 2.00%     | 0.00                            |
| CLUB HOUSE | 2          | 260         | 2.00%     | 0.00                            |

| PIPE | LENGTH  | SIZE  | TYPE       | SLOPE |
|------|---------|-------|------------|-------|
| 2    | 123 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 3    | 375 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 4    | 236 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 5    | 180 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 6    | 161 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 7    | 145 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 8    | 45 FT.  | 8 IN. | PVC SDR 26 | 0.50% |
| 9    | 161 FT. | 8 IN. | PVC SDR 26 | 1.00% |
| 10   | 250 FT. | 8 IN. | PVC SDR 26 | 1.25% |
| 11   | 160 FT. | 8 IN. | PVC SDR 26 | 0.00% |
| 12   | 151 FT. | 8 IN. | PVC SDR 26 | 1.50% |
| 13   | 213 FT. | 8 IN. | PVC SDR 26 | 1.50% |
| 14   | 299 FT. | 8 IN. | PVC SDR 26 | 1.00% |

| PIPE | LENGTH  | SIZE   | TYPE         | SLOPE |
|------|---------|--------|--------------|-------|
| 1    | 99 FT.  | 24 IN. | RCP C-76 CLV | 0.50% |
| 2    | 121 FT. | 24 IN. | RCP C-76 CLV | 0.50% |
| 3    | 132 FT. | 21 IN. | RCP C-76 CLV | 0.50% |
| 4    | 78 FT.  | 18 IN. | RCP C-76 CLV | 0.50% |
| 5    | 132 FT. | 18 IN. | RCP C-76 CLV | 0.50% |
| 6    | 157 FT. | 18 IN. | RCP C-76 CLV | 0.50% |
| 7    | 28 FT.  | 12 IN. | RCP C-76 CLV | 0.32% |
| 8    | 158 FT. | 18 IN. | RCP C-76 CLV | 1.00% |
| 9    | 44 FT.  | 12 IN. | RCP C-76 CLV | 0.32% |
| 10   | 39 FT.  | 12 IN. | RCP C-76 CLV | 0.32% |
| 11   | 190 FT. | 15 IN. | RCP C-76 CLV | 1.50% |
| 12   | 24 FT.  | 12 IN. | RCP C-76 CLV | 1.50% |
| 13   | 45 FT.  | 12 IN. | RCP C-76 CLV | 2.00% |
| 13A  | 87 FT.  | 12 IN. | RCP C-76 CLV | 1.00% |
| 14   | 91 FT.  | 12 IN. | RCP C-76 CLV | 2.00% |
| 14A  | 8 FT.   | 8 IN.  | PVC SCH40    | 2.00% |
| 14B  | 32 FT.  | 8 IN.  | PVC SCH40    | 2.00% |
| 15   | 81 FT.  | 12 IN. | PVC SCH40    | 1.00% |
| 15A  | 76 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 17   | 104 FT. | 30 IN. | RCP C-76 CLV | 0.35% |
| 18   | 100 FT. | 30 IN. | RCP C-76 CLV | 0.35% |
| 19   | 28 FT.  | 24 IN. | RCP C-76 CLV | 1.50% |
| 20   | 36 FT.  | 24 IN. | RCP C-76 CLV | 1.00% |
| 20A  | 74 FT.  | 8 IN.  | PVC SCH40    | 1.25% |
| 20B  | 102 FT. | 8 IN.  | PVC SCH40    | 1.25% |
| 20C  | 40 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 20D  | 101 FT. | 8 IN.  | PVC SCH40    | 1.00% |
| 21   | 133 FT. | 21 IN. | RCP C-76 CLV | 1.00% |
| 22   | 60 FT.  | 18 IN. | RCP C-76 CLV | 1.00% |
| 22A  | 62 FT.  | 6 IN.  | PVC SCH40    | 3.50% |
| 22B  | 96 FT.  | 6 IN.  | PVC SCH40    | 3.50% |
| 22C  | 72 FT.  | 6 IN.  | PVC SCH40    | 1.00% |
| 22D  | 102 FT. | 6 IN.  | PVC SCH40    | 2.50% |
| 23   | 100 FT. | 24 IN. | RCP C-76 CLV | 0.35% |
| 23A  | 50 FT.  | 6 IN.  | PVC SCH40    | 2.75% |
| 23B  | 94 FT.  | 6 IN.  | PVC SCH40    | 5.00% |
| 23C  | 78 FT.  | 6 IN.  | PVC SCH40    | 2.75% |
| 23D  | 99 FT.  | 6 IN.  | PVC SCH40    | 2.75% |
| 24   | 134 FT. | 18 IN. | RCP C-76 CLV | 0.50% |
| 24A  | 47 FT.  | 6 IN.  | PVC SCH40    | 2.50% |
| 24B  | 94 FT.  | 6 IN.  | PVC SCH40    | 4.00% |
| 24C  | 74 FT.  | 6 IN.  | PVC SCH40    | 2.50% |
| 24D  | 92 FT.  | 6 IN.  | PVC SCH40    | 2.50% |
| 25   | 87 FT.  | 18 IN. | RCP C-76 CLV | 0.30% |
| 26   | 188 FT. | 15 IN. | RCP C-76 CLV | 0.30% |
| 27   | 131 FT. | 12 IN. | RCP C-76 CLV | 0.32% |
| 28   | 50 FT.  | 12 IN. | RCP C-76 CLV | 0.32% |
| 28A  | 52 FT.  | 6 IN.  | PVC SCH40    | 1.00% |
| 28B  | 50 FT.  | 6 IN.  | PVC SCH40    | 1.00% |
| 29   | 92 FT.  | 6 IN.  | RCP C-76 CLV | 0.32% |
| 29A  | 24 FT.  | 6 IN.  | PVC SCH40    | 1.00% |
| 29B  | 47 FT.  | 6 IN.  | PVC SCH40    | 1.00% |
| 30   | 107 FT. | 12 IN. | RCP C-76 CLV | 0.50% |
| 32   | 121 FT. | 12 IN. | RCP C-76 CLV | 0.50% |
| 32   | 121 FT. | 8 IN.  | PVC SCH40    | 1.00% |
| 101  | 29 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 102  | 64 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 201  | 39 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 202  | 37 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 203  | 67 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 204  | 40 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 205  | 64 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 206  | 48 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 301  | 28 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 302  | 46 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 303  | 63 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 304  | 46 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 305  | 64 FT.  | 8 IN.  | PVC SCH40    | 1.00% |
| 306  | 46 FT.  | 8 IN.  | PVC SCH40    | 1.00% |



UTILITY DATA:  
A RATIO OF 0.57 R.E.U.'S PER UNIT WAS DEVELOPED BY THE TOWNSHIP FOR PHASE 3.  
144 UNITS x 0.57 = 82 REUS

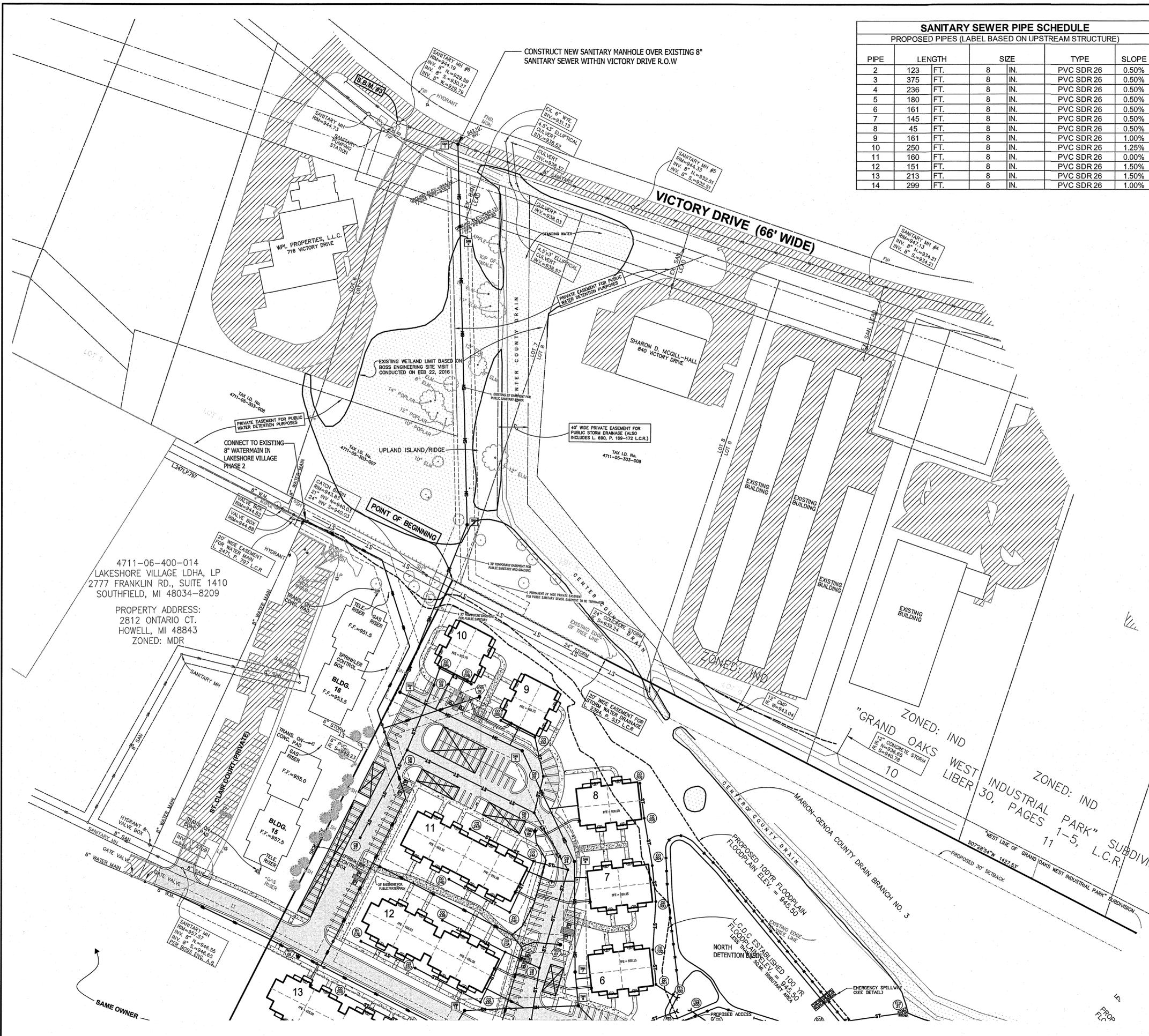


**BEBOSS Engineering**  
Engineers Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI 48843  
800.246.6735 FAX 517.548.1670

PROJECT: LAKESHORE VILLAGE APARTMENTS - PHASE 3  
PREPARED FOR: THE LOCKWOOD COMPANIES  
2777 FRANKLIN ROAD, SUITE 1410  
SOUTHFIELD, MI 48034  
248.433.7401

| NO. | BY | REVISION     | DATE      |
|-----|----|--------------|-----------|
| 1   | RD | REVISION PER | 2/24/2016 |

DESIGNED BY: TD  
DRAWN BY: RD  
CHECKED BY:  
SCALE 1" = 60'  
JOB NO. 16-010  
DATE 2-3-2016  
SHEET NO. C12



**SANITARY SEWER PIPE SCHEDULE**  
PROPOSED PIPES (LABEL BASED ON UPSTREAM STRUCTURE)

| PIPE | LENGTH  | SIZE  | TYPE       | SLOPE |
|------|---------|-------|------------|-------|
| 2    | 123 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 3    | 375 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 4    | 236 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 5    | 180 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 6    | 161 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 7    | 145 FT. | 8 IN. | PVC SDR 26 | 0.50% |
| 8    | 45 FT.  | 8 IN. | PVC SDR 26 | 0.50% |
| 9    | 161 FT. | 8 IN. | PVC SDR 26 | 1.00% |
| 10   | 250 FT. | 8 IN. | PVC SDR 26 | 1.25% |
| 11   | 160 FT. | 8 IN. | PVC SDR 26 | 0.00% |
| 12   | 151 FT. | 8 IN. | PVC SDR 26 | 1.50% |
| 13   | 213 FT. | 8 IN. | PVC SDR 26 | 1.50% |
| 14   | 299 FT. | 8 IN. | PVC SDR 26 | 1.00% |

**LEGEND**

|  |                 |  |                 |
|--|-----------------|--|-----------------|
|  | PROPOSED (PR)   |  | EXISTING (EX)   |
|  | +922.08         |  |                 |
|  | FF              |  | FF              |
|  | T/A             |  | T/A             |
|  | T/C             |  | T/C             |
|  | T/G             |  | T/G             |
|  | T/P             |  | T/P             |
|  | B/P             |  | B/P             |
|  | RM              |  | RM              |
|  | INV             |  | INV             |
|  | MH              |  | MH              |
|  | IN              |  | IN              |
|  | CB              |  | CB              |
|  | ES              |  | ES              |
|  | GV              |  | GV              |
|  | HY              |  | HY              |
|  | UP              |  | UP              |
|  | SN              |  | SN              |
|  | SL              |  | SL              |
|  | FM              |  | FM              |
|  | PS              |  | PS              |
|  | ST              |  | ST              |
|  | WM              |  | WM              |
|  | WL              |  | WL              |
|  | FO              |  | FO              |
|  | OH              |  | OH              |
|  | C               |  | C               |
|  | E               |  | E               |
|  | G               |  | G               |
|  | T               |  | T               |
|  | MH              |  | MH              |
|  | IN/IB           |  | IN/IB           |
|  | ES              |  | ES              |
|  | GV              |  | GV              |
|  | HY              |  | HY              |
|  | UP              |  | UP              |
|  | S               |  | S               |
|  | CONCRETE        |  | CONCRETE        |
|  | ASPHALT         |  | ASPHALT         |
|  | GRAVEL          |  | GRAVEL          |
|  | WETLAND LIMIT   |  | WETLAND LIMIT   |
|  | LDCD FLOODPLAIN |  | LDCD FLOODPLAIN |

SURVEY NOTE: SURVEY PERFORMED BY RAYMOND J. DONNELLY & ASSOC., INC IN 2015

BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
CIVIL, FIELD

**BEBOSS Engineering**  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
800.246.6735 FAX 517.548.1670

PROJECT: **LAKESHORE VILLAGE APARTMENTS - PHASE 3**  
PREPARED FOR: **THE LOCKWOOD COMPANIES**  
27777 FRANKLIN RD., SUITE 1410  
SOUTHFIELD, MI 48034  
248.433.7401

OFF-SITE UTILITY PLAN

|              |          |
|--------------|----------|
| DESIGNED BY: | RD       |
| CHECKED BY:  |          |
| SCALE:       | 1" = 60' |
| JOB NO.:     | 16-010   |
| DATE:        | 2-3-2016 |
| SHEET NO.:   | C13      |



2812 ONIARIO CT.  
HOWELL, MI 48843  
ZONED: MDR

**LEGEND**

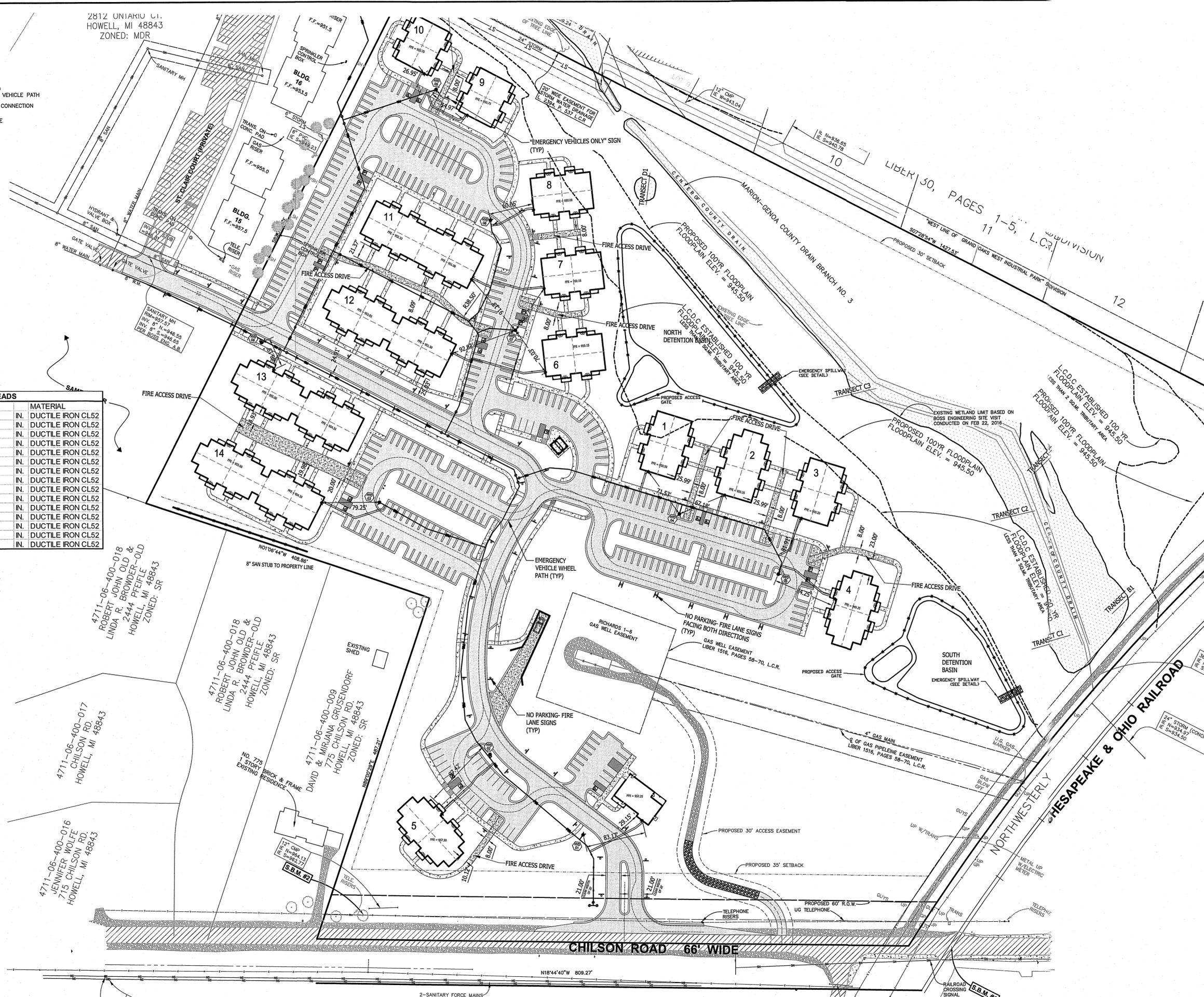
| PROPOSED (PR) | EXISTING (EX) |                        |
|---------------|---------------|------------------------|
| WM            | WM            | WATER MAIN             |
| WL            | WL            | WATER LEAD             |
|               |               | EMERGENCY VEHICLE PATH |
|               |               | FIRE DEPT. CONNECTION  |
|               |               | HYDRANT                |
|               |               | UTILITY POLE           |
|               |               | SIGN                   |
|               |               | CONCRETE               |
|               |               | ASPHALT                |
|               |               | GRAVEL                 |



**FIRE PLAN NOTES:**

1. FIRE LANES TO BE MARKED EVERY 50' WITH A "NO PARKING FIRE LANE" SIGN
2. ACCESS ROADS TO THE SITE SHALL BE PROVIDED AND MAINTAINED DURING CONSTRUCTION.
3. "EMERGENCY VEHICLES ONLY" SIGNS TO BE PLACED AT ALL FIRE ACCESS DRIVES

| FIRE PROTECTION LEADS |             |     |      |                       |
|-----------------------|-------------|-----|------|-----------------------|
| UNIT                  | LEAD LENGTH | FT. | SIZE | MATERIAL              |
| 1                     | 29          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 2                     | 29          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 3                     | 64          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 4                     | 80          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 5                     | 92          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 6                     | 104         | FT. | 4    | IN. DUCTILE IRON CL52 |
| 7                     | 73          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 8                     | 63          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 9                     | 76          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 10                    | 33          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 11                    | 13          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 12                    | 15          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 13                    | 22          | FT. | 4    | IN. DUCTILE IRON CL52 |
| 14                    | 97          | FT. | 4    | IN. DUCTILE IRON CL52 |
| BUSINESS CENTER       | 84          | FT. | 4    | IN. DUCTILE IRON CL52 |



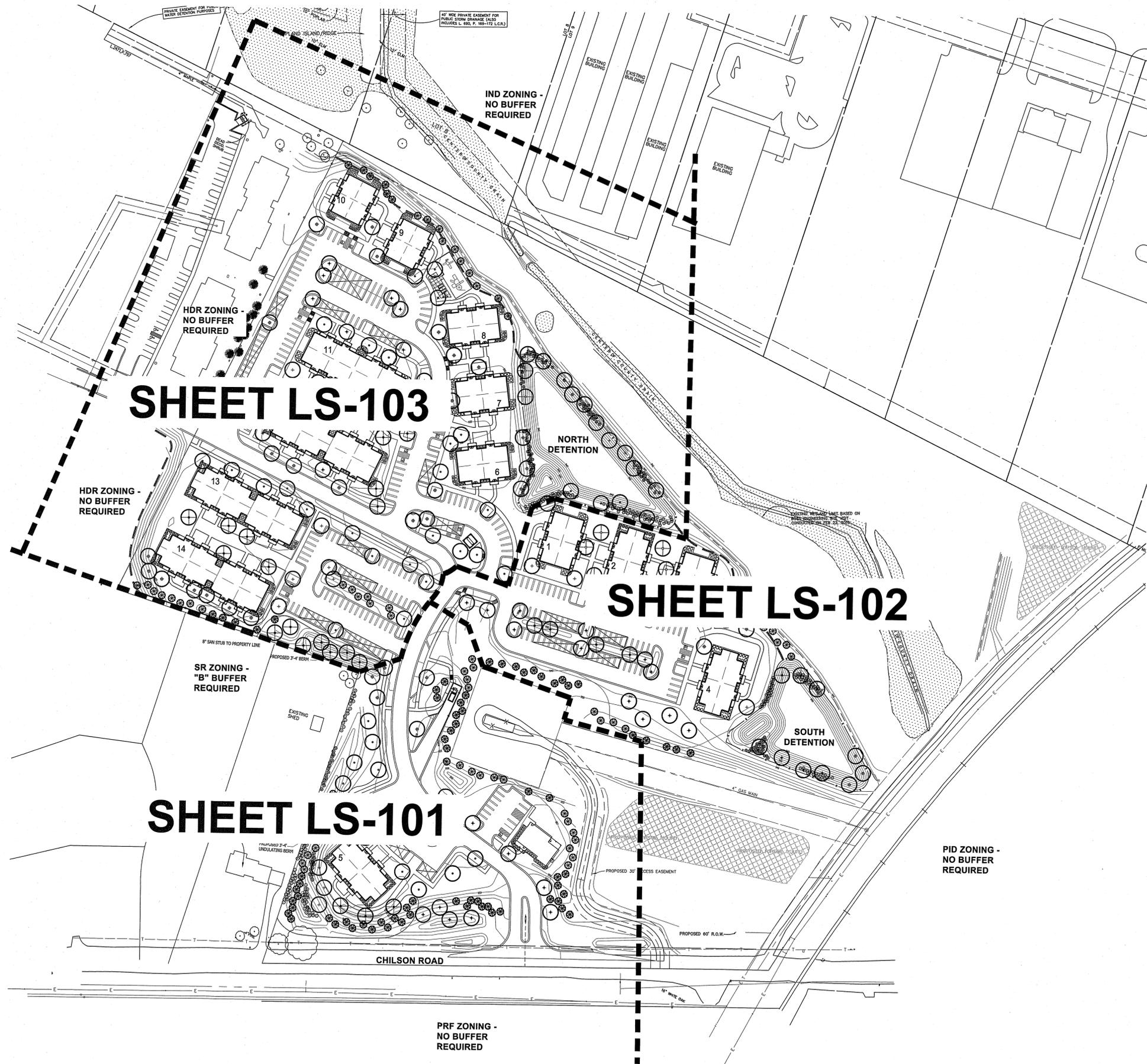
THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF IS NOT GUARANTEED BY THE ENGINEER. THE ENGINEER HAS DETERMINED THE EXISTING LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITIES CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION AND APPROVED THE CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. APPROVED AS TO THE LOCATION OF DEPTH DIFFERS SIGNIFICANTLY FROM THE PLAN.

**BEBOSS Engineering**  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
800.246.6735 FAX 517.548.1670

**THE LOCKWOOD COMPANIES**  
27777 FRANKLIN ROAD, SUITE 1410  
SOUTHFIELD, MI 48034  
248.433.7401

| NO | BY | REVISION          | PER | DATE      |
|----|----|-------------------|-----|-----------|
| 1  | TD | ISSUED FOR PERMIT |     | 2/24/2016 |

DESIGNED BY: TD  
DRAWN BY: RD  
CHECKED BY:  
SCALE 1" = 60'  
JOB NO. 16-010  
DATE 2-3-2016  
SHEET NO. **C15**



**LANDSCAPE DATA:**

|   |              |
|---|--------------|
| <b>PUBLIC ROAD R.O.W. FRONTAGE (F)</b>  |              |
| TOTAL FRONTAGE LENGTH:                  | 810 LN. FT.  |
| TREES REQ. (1/40 LN. FT.):              | 21 TREES     |
| TOTAL TREES PROVIDED:                   | 26 TREES     |
| <b>PARKING LOT LANDSCAPING (P)</b>      |              |
| TOTAL PARKING SPACE:                    | 320 SPACES   |
| 320/15 = 22 X 1008F FT =                |              |
| 2200 SF LANDSCAPE AREA REQUIRED         | 2200 SF      |
| LANDSCAPE AREA PROVIDED                 | 2600 SF +    |
| TREES REQ. (1 TREE / 15 SPACES):        | 22 TREES     |
| TREES PROVIDED:                         | 28 TREES     |
| <b>ZONING DISTRICT BUFFER</b>           |              |
| <b>MDR TO HDR - NO BUFFER REQUIRED</b>  |              |
| <b>MDR TO SR - BUFFER TYPE 'B' (BS)</b> |              |
| TOTAL LENGTH: (409'+487')               | 896 LN. FT.  |
| TREES DEC. REQ. (1/30 LN. FT.):         | 30 TREES     |
| TREES DEC. PROVIDED:                    | 30 TREES     |
| TREES EVERGR. REQ. (1/30 LN.FT.):       | 30 TREES     |
| TREES EVERGR. PROVIDED:                 | 30 TREES     |
| SHRUBS REQ. (4/30 LN. FT.):             | 120 SHRUBS   |
| SHRUBS PROVIDED:                        | 120 SHRUBS   |
| <b>MDR TO PID - NO BUFFER REQUIRED</b>  |              |
| <b>MDR TO IND - NO BUFFER REQUIRED</b>  |              |
| <b>POND - (D)</b>                       |              |
| TOTAL POND PERIMETER:                   | 1535 LN. FT. |
| TREES - (1/50 LN. FT.):                 | 31 TREES     |
| TREES PROVIDED:                         | 31 TREES     |
| SHRUBS REQ. (10/50 LN. FT.):            | 307 SHRUBS   |
| SHRUBS PROVIDED:                        | 310 SHRUBS   |

**REQUESTED ZONING WAIVERS:**

|  |  |
|--|--|
| <b>PUBLIC ROAD R.O.W. FRONTAGE (F)</b>   |  |
| NO WAIVER REQUESTED  |  |
| <b>PARKING LOT LANDSCAPING - (P)</b>   |  |
| NO WAIVER REQUESTED  |  |
| <b>ZONING DISTRICT BUFFER</b>  |  |
| <b>MDR TO HDR</b>  |  |
| NO WAIVER REQUESTED  |  |
| <b>MDR TO SR - BUFFER TYPE 'B' (BS)</b>  |  |
| WAIVER REQUESTED:  |  |
| 1) WAIVER REQUIREMENT FOR 6FT SCREEN WALL OR 3' HT. BERM - ENSE VEGETATION ALONG PROPERTY LINE SCREEN PROPERTIES |  |
| <b>MDR TO PID</b>  |  |
| NO WAIVER REQUESTED  |  |
| <b>MDR TO IND -</b>  |  |
| NO WAIVER REQUESTED  |  |
| <b>POND - (D)</b>  |  |
| NO WAIVER REQUESTED  |  |

**SHEET INDEX**

|        |                    |
|--------|--------------------|
| LS-100 | SITE KEY PLAN      |
| LS-101 | SITE PLANTING PLAN |
| LS-102 | SITE PLANTING PLAN |
| LS-103 | SITE PLANTING PLAN |
| LS-104 | PLAY AREA          |

**LANDSCAPE CONTRACTOR TO SUBMIT LANDSCAPE IRRIGATION PLAN SHOP DRAWINGS FOR REVIEW AND APPROVAL BY LANDSCAPE ARCHITECT.**



LOCKWOOD COMPANIES  
27777 FRANKLIN ROAD  
SUITE 1410  
SOUTHFIELD, MI 48304

**LAKESHORE VILLAGE APARTMENTS PHASE 3**

GENOA TWP., MI  
LANDSCAPE CONSTRUCTION DOCUMENTS

**SHEET SITE KEY PLAN**

**PRELIMINARY DATE**

|            |     |
|------------|-----|
| 2016-02-02 | SPA |
| 2016-02-24 | SPA |

**ISSUE DATE**  
2016-03-18 CD

**REVISION DATE**

|            |      |
|------------|------|
| 2016-04-11 | REV. |
| 2016-04-21 | SPA  |
| 2016-05-09 | SPA  |

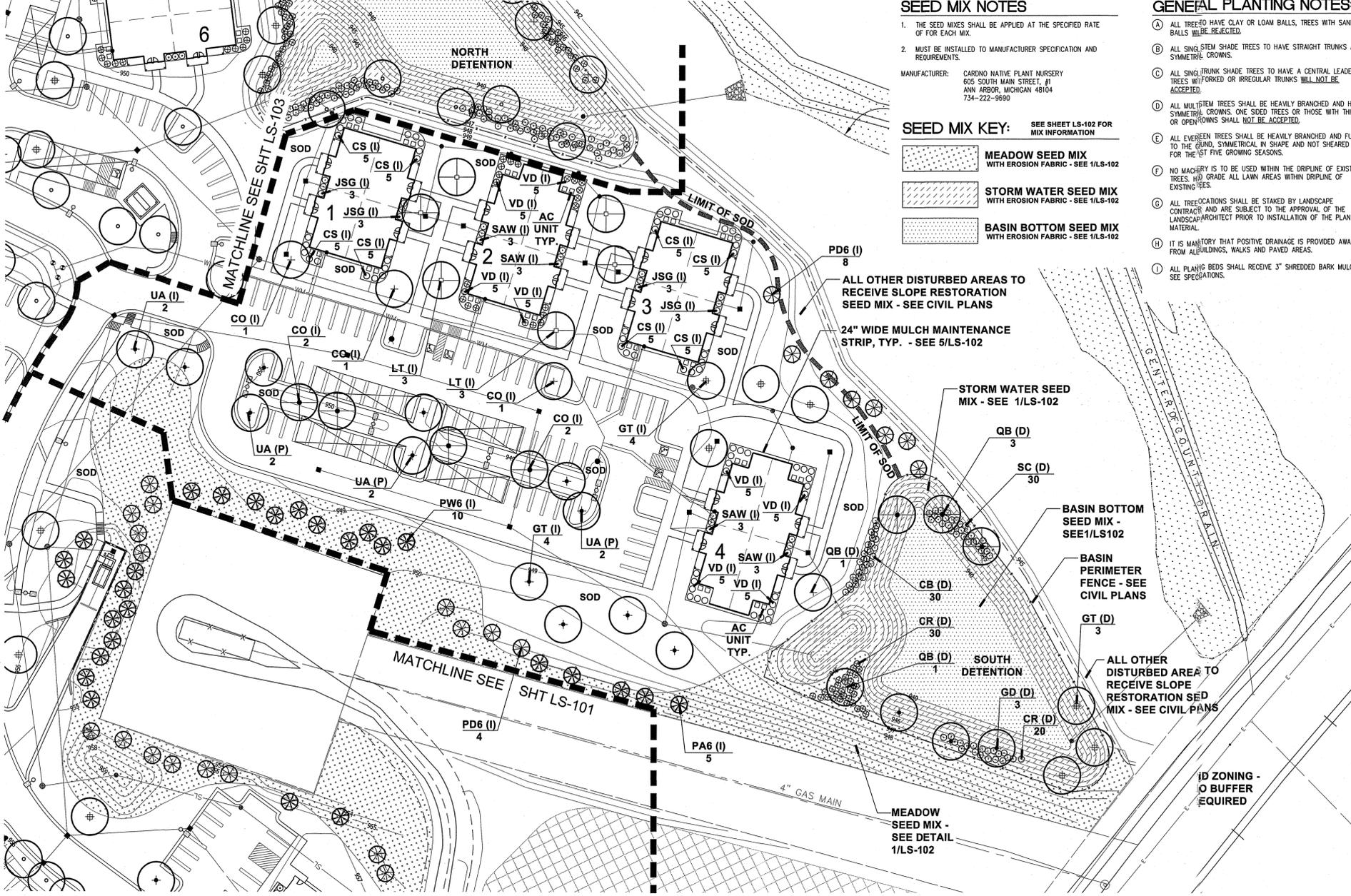




| STORMWATER SEED MIX                     |                              |               |          |              |
|---|------------------------------|---------------|----------|--------------|
| Botanical Name                          | Common Name                  | Ounces/Acre   | Seeds/Oz | Seeds/SQ FT  |
| <b>Permanent Grasses/Sedges/Rushes:</b> |                              |               |          |              |
| <i>Carex cristatella</i>                | Crested Oval Sedge           | 1.00          | 59000    | 1.35         |
| <i>Carex lurida</i>                     | Bottlebrush Sedge            | 2.00          | 12000    | 0.55         |
| <i>Carex vulpinoidea</i>                | Brown Fox Sedge              | 6.00          | 125000   | 17.22        |
| <i>Elymus virginicus</i>                | Virginia Wild Rye            | 12.00         | 4376     | 1.21         |
| <i>Glyceria striata</i>                 | Fowl Manna Grass             | 1.25          | 125000   | 3.59         |
| <i>Juncus effusus</i>                   | Common Rush                  | 1.00          | 281000   | 6.45         |
| <i>Juncus torreyi</i>                   | Torrey's Rush                | 0.25          | 1134000  | 6.51         |
| <i>Leersia oryzoides</i>                | Rice Cut Grass               | 1.00          | 94500    | 2.17         |
| <i>Panicum virgatum</i>                 | Switch Grass                 | 8.00          | 28356    | 5.21         |
| <i>Scirpus atrovirens</i>               | Dark Green Rush              | 1.00          | 187500   | 4.30         |
| <i>Scirpus cyperinus</i>                | Wool Grass                   | 6.00          | 562500   | 6.46         |
| <i>Scirpus fluviatilis</i>              | River Bulrush                | 0.25          | 27500    | 0.16         |
| <i>Scirpus validus</i>                  | Great Bulrush                | 6.00          | 37813    | 5.21         |
| <b>Total</b>                            |                              | <b>40.25</b>  |          | <b>60.38</b> |
| <b>Temporary Cover:</b>                 |                              |               |          |              |
| <i>Avena sativa</i>                     | Common Oat                   | 360.00        | 8125     | 67.15        |
| <i>Lolium multiflorum</i>               | Annual Rye                   | 100.00        | 14188    | 32.57        |
| <b>Total</b>                            |                              | <b>460.00</b> |          | <b>99.72</b> |
| <b>Forbs &amp; Shrubs:</b>              |                              |               |          |              |
| <i>Alisma spp.</i>                      | Water Plantain (Various Mix) | 4.25          | 70175    | 6.85         |
| <i>Asclepias incarnata</i>              | Swamp Milkweed               | 1.50          | 4540     | 0.16         |
| <i>Bidens spp.</i>                      | Bidens (Various Mix)         | 2.00          | 14175    | 0.65         |
| <i>Helianthus autumnale</i>             | Sneezeweed                   | 2.00          | 14170    | 6.51         |
| <i>Lycopus americanus</i>               | Common Water Horehound       | 0.25          | 235000   | 1.35         |
| <i>Mimulus ringens</i>                  | Monkey Flower                | 1.00          | 285000   | 6.51         |
| <i>Penthorum sedoides</i>               | Ditch Stonecrop              | 0.50          | 36063    | 0.41         |
| <i>Polygonum pennsylvanicum</i>         | Pinkweed                     | 4.00          | 4063     | 0.37         |
| <i>Rudbeckia subtomentosa</i>           | Sweet Black-Eyed Susan       | 1.00          | 46000    | 1.06         |
| <i>Sagittaria latifolia</i>             | Common Arrowhead             | 1.00          | 56700    | 1.30         |
| <i>Senna hebecarpa</i>                  | Wild Senna                   | 2.00          | 1400     | 0.03         |
| <i>Thalictrum dasycarpum</i>            | Purple Meadow Rue            | 2.00          | 13500    | 0.52         |
| <b>Total</b>                            |                              | <b>20.50</b>  |          | <b>25.82</b> |

| MEADOW SEED MIX                  |                                |               |          |              |
|----------------------------------|--------------------------------|---------------|----------|--------------|
| Botanical Name                   | Common Name                    | Ounces/Acre   | Seeds/Oz | Seeds/SQ FT  |
| <b>Perennial Grasses:</b>        |                                |               |          |              |
| <i>Bouteloua curtipendula</i>    | Side Oats Grama                | 10.00         | 9375     | 2.15         |
| <i>Carex spp.</i>                | Prairie Carex Mix              | 4.00          | 33422    | 3.07         |
| <i>Elymus canadensis</i>         | Canada Wild Rye                | 32.00         | 4258     | 3.13         |
| <i>Koeleria cristata</i>         | June Grass                     | 1.00          | 150000   | 3.44         |
| <i>Panicum virgatum</i>          | Switch Grass                   | 1.00          | 28356    | 0.65         |
| <i>Schizachyrium scoparium</i>   | Little Bluestem                | 32.00         | 8800     | 6.48         |
| <b>Total</b>                     |                                | <b>80.00</b>  |          | <b>18.91</b> |
| <b>Temporary Cover:</b>          |                                |               |          |              |
| <i>Avena sativa</i>              | Common Oat                     | 360.00        | 8125     | 67.15        |
| <i>Lolium multiflorum</i>        | Annual Rye                     | 100.00        | 14188    | 32.57        |
| <b>Total</b>                     |                                | <b>460.00</b> |          | <b>99.72</b> |
| <b>Forbs:</b>                    |                                |               |          |              |
| <i>Anemone cylindrica</i>        | Thimbleweed                    | 0.50          | 20938    | 0.24         |
| <i>Asclepias tuberosa</i>        | Butterfly Milkweed             | 2.00          | 3500     | 0.16         |
| <i>Aster ericoides</i>           | Heath Aster                    | 0.25          | 140000   | 0.80         |
| <i>Aster laevis</i>              | Smooth Blue Aster              | 0.75          | 48000    | 0.83         |
| <i>Aster novae-angliae</i>       | New England Aster              | 0.25          | 76000    | 0.44         |
| <i>Baptisia lactea</i>           | White Wild Indigo              | 2.00          | 1600     | 0.07         |
| <i>Chamaecrista fasciculata</i>  | Partridge Pea                  | 14.00         | 3800     | 1.22         |
| <i>Cynopsis latifolia</i>        | Sand Coreopsis                 | 6.00          | 12500    | 1.43         |
| <i>Crocosmia palmata</i>         | Prairie Coreopsis              | 1.00          | 11500    | 0.26         |
| <i>Dalea candida</i>             | White Prairie Clover           | 1.50          | 26250    | 0.90         |
| <i>Dalea purpurea</i>            | Purple Prairie Clover          | 1.50          | 20000    | 0.69         |
| <i>Echinacea purpurea</i>        | Broad-Leaved Purple Coneflower | 7.00          | 8600     | 1.06         |
| <i>Eryngium yuccifolium</i>      | Rattlesnake Master             | 2.50          | 8000     | 0.48         |
| <i>Lespedeza capitata</i>        | Round-Head Bush Clover         | 2.00          | 10000    | 0.48         |
| <i>Liatris aspera</i>            | Rough Blazing Star             | 0.50          | 13000    | 0.15         |
| <i>Lupinus perennis</i>          | Wild Lupine                    | 2.00          | 1000     | 0.05         |
| <i>Monarda fistulosa</i>         | Wild Bergamot                  | 0.75          | 78000    | 1.34         |
| <i>Parthenium integrifolium</i>  | Wild Quinine                   | 1.00          | 6800     | 0.16         |
| <i>Penstemon digitalis</i>       | Foxglove Beard Tongue          | 0.50          | 115000   | 1.32         |
| <i>Pycnanthemum virginianum</i>  | Common Mountain Mint           | 1.00          | 331250   | 7.60         |
| <i>Ratibida pinnata</i>          | Yellow Coneflower              | 4.00          | 22550    | 2.32         |
| <i>Rudbeckia hirta</i>           | Black-Eyed Susan               | 6.00          | 110000   | 12.63        |
| <i>Rudbeckia subtomentosa</i>    | Sweet Black-Eyed Susan         | 1.00          | 46000    | 1.06         |
| <i>Silphium integrifolium</i>    | Rosin Weed                     | 3.00          | 4000     | 0.28         |
| <i>Silphium terebinthaceum</i>   | Prairie Dock                   | 0.50          | 1100     | 0.01         |
| <i>Solidago nemoralis</i>        | Old-Field Goldenrod            | 0.50          | 240000   | 2.75         |
| <i>Solidago rigida</i>           | Stiff Goldenrod                | 1.00          | 46000    | 1.06         |
| <i>Tradescantia ohioensis</i>    | Common Spiderwort              | 0.75          | 8000     | 0.14         |
| <i>Veronica spp.</i>             | Ironweed (Various Mix)         | 1.75          | 24000    | 0.86         |
| <i>Veronicastrum virginianum</i> | Culvert Root                   | 0.25          | 760000   | 4.30         |
| <b>Total</b>                     |                                | <b>63.75</b>  |          | <b>45.18</b> |

| BASIN BOTTOM SEED MIX               |                              |               |          |              |
|-------------------------------------|------------------------------|---------------|----------|--------------|
| Botanical Name                      | Common Name                  | Ounces/Acre   | Seeds/Oz | Seeds/SQ FT  |
| <b>Permanent Grasses/Sedges:</b>    |                              |               |          |              |
| <i>Andropogon gerardi</i>           | Big Bluestem                 | 4.00          | 8188     | 0.75         |
| <i>Carex comosa</i>                 | Bristly Sedge                | 2.50          | 41183    | 2.36         |
| <i>Carex cristatella</i>            | Crested Oval Sedge           | 2.00          | 59000    | 2.71         |
| <i>Carex lurida</i>                 | Bottlebrush Sedge            | 2.50          | 12000    | 0.69         |
| <i>Carex spp.</i>                   | Prairie Sedge Mix            | 8.00          | 33422    | 6.14         |
| <i>Carex vulpinoidea</i>            | Brown Fox Sedge              | 4.00          | 125000   | 11.46        |
| <i>Elymus virginicus</i>            | Virginia Wild Rye            | 8.00          | 4375     | 0.80         |
| <i>Glyceria striata</i>             | Fowl Manna Grass             | 1.00          | 125000   | 2.87         |
| <i>Panicum virgatum</i>             | Switch Grass                 | 2.00          | 28356    | 1.30         |
| <i>Scirpus atrovirens</i>           | Dark Green Rush              | 2.00          | 187500   | 8.61         |
| <i>Scirpus cyperinus</i>            | Wool Grass                   | 1.00          | 562500   | 12.91        |
| <i>Spergularia pectinata</i>        | Prairie Cord Grass           | 3.00          | 15750    | 1.08         |
| <b>Total</b>                        |                              | <b>40.00</b>  |          | <b>51.71</b> |
| <b>Temporary Cover:</b>             |                              |               |          |              |
| <i>Avena sativa</i>                 | Common Oat                   | 360.00        | 8125     | 67.15        |
| <i>Lolium multiflorum</i>           | Annual Rye                   | 100.00        | 14188    | 32.57        |
| <b>Total</b>                        |                              | <b>460.00</b> |          | <b>99.72</b> |
| <b>Forbs:</b>                       |                              |               |          |              |
| <i>Alisma spp.</i>                  | Water Plantain (Various Mix) | 1.00          | 70175    | 1.61         |
| <i>Asclepias incarnata</i>          | Swamp Milkweed               | 2.00          | 4540     | 0.21         |
| <i>Cornopsis tippetts</i>           | Tall Coreopsis               | 1.00          | 11500    | 0.26         |
| <i>Eutrochium maculatum</i>         | Spotted Joe-Pye Weed         | 0.25          | 78125    | 0.45         |
| <i>Iris virginica</i>               | Blue Flag                    | 4.00          | 1400     | 0.13         |
| <i>Liatris spicata</i>              | Marsh Blazing Star           | 1.00          | 12000    | 0.28         |
| <i>Lobelia cardinalis</i>           | Cardinal Flower              | 0.25          | 437000   | 2.61         |
| <i>Lobelia siphilitica</i>          | Great Blue Lobelia           | 0.50          | 520000   | 5.97         |
| <i>Lycopus americanus</i>           | Common Water Horehound       | 0.25          | 235000   | 1.35         |
| <i>Pycnanthemum virginianum</i>     | Common Mountain Mint         | 0.50          | 331250   | 3.80         |
| <i>Rudbeckia triloba</i>            | Brown-Eyed Susan             | 0.50          | 33000    | 0.38         |
| <i>Sagittaria latifolia</i>         | Common Arrowhead             | 0.25          | 56700    | 0.33         |
| <i>Senna hebecarpa</i>              | Wild Senna                   | 1.00          | 1400     | 0.03         |
| <i>Silphium terebinthaceum</i>      | Prairie Dock                 | 1.00          | 1100     | 0.03         |
| <i>Symphoricarpon novae-angliae</i> | New England Aster            | 1.00          | 76000    | 1.74         |
| <i>Verbena hastata</i>              | Verbena                      | 4.50          | 125000   | 4.30         |
| <i>Zizia aurea</i>                  | Golden Alexanders            | 0.75          | 12000    | 0.21         |
| <b>Total</b>                        |                              | <b>16.75</b>  |          | <b>23.37</b> |



**SEED MIX NOTES**

- THE SEED MIXES SHALL BE APPLIED AT THE SPECIFIED RATE OF FOR EACH MIX.
- MUST BE INSTALLED TO MANUFACTURER SPECIFICATION AND REQUIREMENTS.

MANUFACTURER: CARONDI NATIVE PLANT NURSERY  
605 SOUTH MAIN STREET, #1  
ANN ARBOR, MICHIGAN 48104  
734-222-9690

**SEED MIX KEY:** SEE SHEET LS-102 FOR MIX INFORMATION

- MEADOW SEED MIX WITH EROSION FABRIC - SEE 1/LS-102
- STORM WATER SEED MIX WITH EROSION FABRIC - SEE 1/LS-102
- BASIN BOTTOM SEED MIX WITH EROSION FABRIC - SEE 1/LS-102

**GENERAL PLANTING NOTES:**

- ALL TREES TO HAVE CLAY OR LOAM BALLS. TREES WITH SAND BALLS WILL BE REJECTED.
- ALL SING STEM SHADE TREES TO HAVE STRAIGHT TRUNKS AND SYMMETRICAL CROWNS.
- ALL SING TRUNK SHADE TREES TO HAVE A CENTRAL LEADER. TREES WITH FORKED OR IRREGULAR TRUNKS WILL NOT BE ACCEPTED.
- ALL MULTISTEM TREES SHALL BE HEAVILY BRANCHED AND HAVE SYMMETRICAL CROWNS. ONE SIDED TREES OR THOSE WITH THIN OR OPEN CROWNS SHALL NOT BE ACCEPTED.
- ALL EVERGREEN TREES SHALL BE HEAVILY BRANCHED AND FULL TO THE GROUND, SYMMETRICAL IN SHAPE AND NOT SHEARED FOR THE FIRST FIVE GROWING SEASONS.
- NO MACHINERY IS TO BE USED WITHIN THE DROPLINE OF EXISTING TREES. NO GRADE ALL LAWN AREAS WITHIN DROPLINE OF EXISTING TREES.
- ALL TREE LOCATIONS SHALL BE STAKED BY LANDSCAPE CONTRACTOR AND ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF THE PLANT MATERIAL.
- IT IS MANDATORY THAT POSITIVE DRAINAGE IS PROVIDED AWAY FROM ALL BUILDINGS, WALKS AND PAVED AREAS.
- ALL PLANTING BEDS SHALL RECEIVE 3" SHREDDED BARK MULCH. SEE SPECIFICATIONS.

ALL OTHER DISTURBED AREAS TO RECEIVE SLOPE RESTORATION SEED MIX - SEE CIVIL PLANS

24" WIDE MULCH MAINTENANCE STRIP, TYP. - SEE 5/LS-102

STORM WATER SEED MIX - SEE 1/LS-102

BASIN BOTTOM SEED MIX - SEE 1/LS-102

BASIN PERIMETER FENCE - SEE CIVIL PLANS

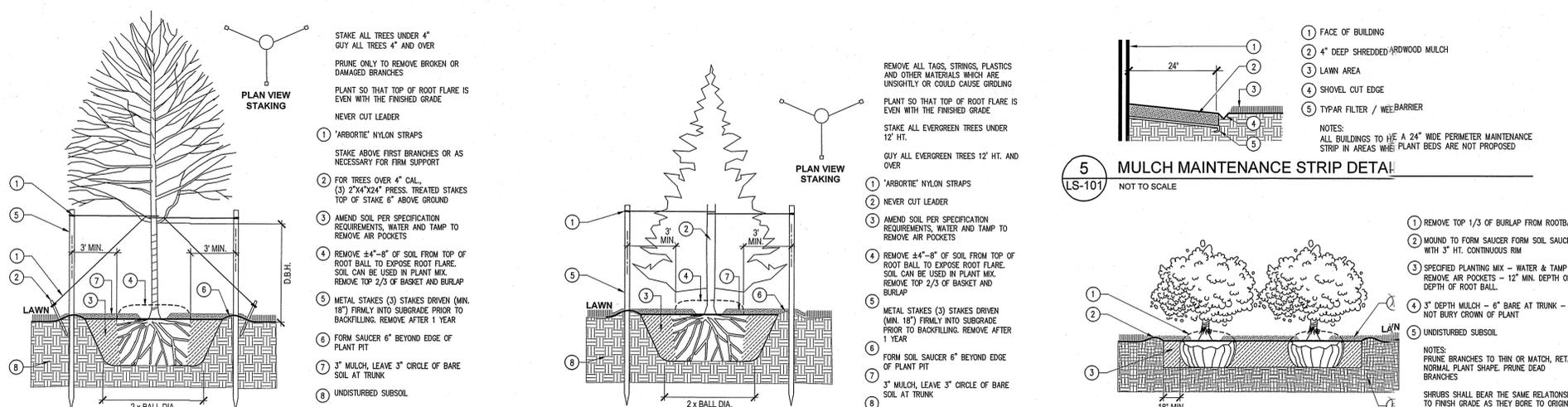
ALL OTHER DISTURBED AREA TO RECEIVE SLOPE RESTORATION SEED MIX - SEE CIVIL PLANS

MEADOW SEED MIX - SEE DETAIL 1/LS-102

4" GAS MAIN

10' ZONING - 0 BUFFER REQUIRED

**SITE PLANTING PLAN**  
SCALE 1" = 40'  
NORTH



LOCKWOOD COMPANIES  
27777 FRANKLIN ROAD  
SUITE 1410  
SOUTHFIELD, MI 48304

**LAKESHORE VILLAGE APARTMENTS PHASE 3**

GENOA TWP., MI

LANDSCAPE CONSTRUCTION DOCUMENTS

SHEET

**SITE PLANTING PLAN**

PRELIMINARY DATE

2016-02-02 SPA  
2016-02-24 SPA

ISSUE DATE

2016-03-18 CD

REVISION DATE

2016-04-11 REV.  
2016-04-21 SPA  
2016-05-09 SPA

SHEET NUMBER

LS-102



### Specification Sheet - BioNet® S150BN® Erosion Control Blanket

**DESCRIPTION:**  
The short-term double net erosion control blanket shall be a machine-produced mat of 100% agricultural straw with a functional longevity of up to 12 months. (NOTE: Functional longevity may vary depending upon climatic conditions, soil, geographical location and elevation). The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top and bottom sides with a 100% biodegradable woven natural fiber netting. The netting shall consist of machine directional strands formed from two interwoven rows with cross-directional strands interwoven through the longitudinal strands (commonly referred to as a leno weave) to form an approximate 0.50 x 0.10 in. (12.7 x 2.54 cm) mesh. The blanket shall be sewn together on 15.0 in. h. (3.81 cm) centers with a degradable thread. The blanket shall be manufactured with a colored thread stretched along both outer edges (approximately 5.5 inches (14.2 cm) from the edge) as an overlap guide for adjacent mats.

The S150BN shall meet Type 2-D specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) P-303 Section P3.17.

| Property              | Test Method     | Value                              |
|-----------------------|-----------------|------------------------------------|
| Thickness             | ASTM D6022      | 0.23 in. (5.84 mm)                 |
| Resiliency            | ECTC Guidelines | 85.0%                              |
| Water Absorbency      | ASTM D6027      | ≥200%                              |
| Mass/Unit Area        | ASTM D6045      | 8.75 lb/sy (206 g/m <sup>2</sup> ) |
| Swirl                 | ECTC Guidelines | 10%                                |
| Smolder Resistance    | ECTC Guidelines | Yes                                |
| Stiffness             | ASTM D6018      | 6.23 lb-ft                         |
| Light Penetration     | ASTM D6067      | 15.0%                              |
| Tensile Strength - MD | ASTM D6018      | 168.4 lb/ft (27.9 kN/m)            |
| Elongation - MD       | ASTM D6018      | 12.5%                              |
| Tensile Strength - TD | ASTM D6018      | 157.2 lb/ft (23.3 kN/m)            |
| Elongation - TD       | ASTM D6018      | 12.5%                              |
| Biomass Improvement   | ASTM D3322      | 540%                               |

| Material  | Value  |
|---|--|
| 100% Straw Fiber                                | 0.5 lb/sy (12.7 kg/m <sup>2</sup> )              |
| Top Leno Weave 100% biodegradable organic fiber | 0.50 lb/1000 sq ft (12.7 kg/100 m <sup>2</sup> ) |
| Bottom 100% biodegradable organic fiber         | 0.50 lb/1000 sq ft (12.7 kg/100 m <sup>2</sup> ) |
| Degradable                                      | 0.50 lb/1000 sq ft (12.7 kg/100 m <sup>2</sup> ) |

| Material  | Value  |
|---|--|
| 100% Straw Fiber                                | 0.5 lb/sy (12.7 kg/m <sup>2</sup> )              |
| Top Leno Weave 100% biodegradable organic fiber | 0.50 lb/1000 sq ft (12.7 kg/100 m <sup>2</sup> ) |
| Bottom 100% biodegradable organic fiber         | 0.50 lb/1000 sq ft (12.7 kg/100 m <sup>2</sup> ) |
| Degradable                                      | 0.50 lb/1000 sq ft (12.7 kg/100 m <sup>2</sup> ) |

| Material  | Value  |
|---|--|
| 100% Straw Fiber                                | 0.5 lb/sy (12.7 kg/m <sup>2</sup> )              |
| Top Leno Weave 100% biodegradable organic fiber | 0.50 lb/1000 sq ft (12.7 kg/100 m <sup>2</sup> ) |
| Bottom 100% biodegradable organic fiber         | 0.50 lb/1000 sq ft (12.7 kg/100 m <sup>2</sup> ) |
| Degradable                                      | 0.50 lb/1000 sq ft (12.7 kg/100 m <sup>2</sup> ) |



### 1 EROSION MAT FOR SEEDED AREAS

**Elm Summary**

The Elms specified are not American elm trees, which we all know have been decimated over the past 100 years in the American landscape, but special hybrids developed to replace the American Elm.

The **Regal Elm** - is a hybrid elm cultivar developed by the University of Wisconsin at Madison and released in 1983. "Regal" was derived from seeds arising from the crossing of the Dutch hybrid clones of the Siberian elm and European smooth leaved elm (*Ulmus pumila* × *Ulmus holmiensis*), sent in 1960 by the De Dorschkamp Research Institute in the Netherlands.

The Regal elm casts a honeylocust-like light shade that makes possible the successful culture of turf grass in the vicinity of the tree.

The **'Acolade Elm'** - is a cross of the Japanese elm and Chinese elm, (*Ulmus japonica* × *Ulmus wilsoniana*), and was developed by the Morton Arboretum in Chicago.

It is an elm cultivar derived from an elm hybrid planted at the Morton Arboretum in 1924, which itself originated as seed collected from a tree at the Arnold Arboretum in Massachusetts.

Acolade Elm is a cross of Japanese and Chinese species selected for its vase shape, vigorous growth, excellent drought tolerance and good strong yellow fall color. It has excellent disease resistance to both Elm Yellows and to the dreaded Dutch Elm Disease. Mayor Daley of Chicago chose the Acolade Elm to bring elms back to Chicago's Grant Park in 2002.

The original tree at the Morton Arboretum is noted for its resemblance to the American Elm (*Ulmus americana*), its upright-arching branches creating the familiar vase-shape. Moreover, in its 80+ years it has survived three epidemics of Dutch Elm Disease there unscathed.

The **Triumph Elm** - is another elm developed at the Morton Arboretum.

It is Asian hybrid - a cross between the 'Vanguard Elm' and 'Acolade Elm' (parentage - Japanese, Chinese and Siberian elms).

All three of these elms have been selected for their fast growth and environmental tolerance.

All three of these elms have been specified by our office and are awaiting planting or have been specified and planted in Canton, Novi, Northville, West Bloomfield, Waterford, Shelby Township, Grand Blanc, the city of Detroit and projects in Illinois and Ohio.

### 2 HYBRID ELM TREE SUMMARY

#### SEED MIX NOTES

- THE SEED MIXES SHALL BE APPLIED AT THE SPECIFIED RATE OF FOR EACH MIX.
- MUST BE INSTALLED TO MANUFACTURER SPECIFICATION AND REQUIREMENTS.

MANUFACTURER: CARONDI NATIVE PLANT NURSERY  
605 SOUTH MAIN STREET, #1  
ANN ARBOR, MICHIGAN 48104  
734-222-9690

#### SEED MIX KEY:

- MEADOW SEED MIX WITH EROSION FABRIC - SEE 1/LS-102
- STORM WATER SEED MIX WITH EROSION FABRIC - SEE 1/LS-102
- BASIN BOTTOM SEED MIX WITH EROSION FABRIC - SEE 1/LS-102



## SITE PLANTING PLAN

SCALE 1" = 40'

NORTH



LOCKWOOD COMPANIES  
27777 FRANKLIN ROAD  
SUITE 1410  
SOUTHFIELD, MI 48304

## LAKESHORE VILLAGE APARTMENTS PHASE 3

GENOA TWP., MI

LANDSCAPE CONSTRUCTION DOCUMENTS

SHEET

### SITE PLANTING PLAN

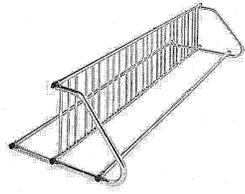
PRELIMINARY DATE  
2016-02-02 SPA  
2016-02-24 SPA

ISSUE DATE  
2016-03-18 CD

REVISION DATE  
2016-04-11 REV.  
2016-04-21 SPA  
2016-05-09 SPA

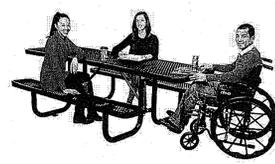
SHEET NUMBER

LS-103



GLOBAL GALVANIZED STEEL BIKE RACK - 18 BIKES  
OVERALL LxWxH: 111-5/8" x 38-13/16" x 30-7/8"  
MATERIAL: GALVANIZED STEEL  
COLOR: SILVER  
FINISH: POWDER COATED  
SURFACE MOUNTED - BOLT TO PAVEMENT  
ITEM #: 652773  
MANUFACTURER: C & H GLOBAL  
WWW.CHDIST.COM  
1-888-316-2223

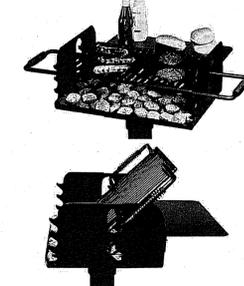
3 GALVANIZED STEEL BIKE RACK  
LS-104 NOT TO SCALE



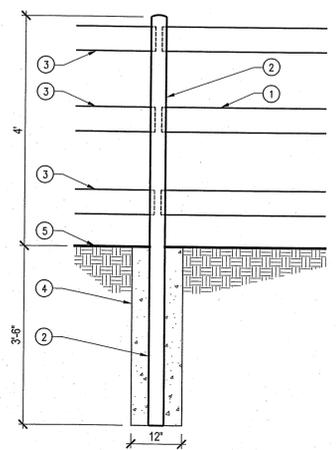
(2) TYPE "A"  
GLOBAL ADA-COMPLIANT THERMOPLASTIC  
COATED EXPANDED METAL PICNIC TABLE  
SIZE: 96" LENGTH  
COLOR: GREEN  
SURFACE MOUNTED  
ITEM #: 3363412  
MANUFACTURER: C & H GLOBAL  
WWW.CHDIST.COM  
1-888-316-2223

4 96" ADA COMPLIANT PICNIC TABLE  
LS-104 NO SCALE

BELSON - UNIVERSAL ACCESS CHAR-WOOD CAMPSTOVE PARK GRILL  
MODEL: CC-1200 - ADA - 15" X 20" GRILL  
FIREBOX: 3/16" STEEL PLATE  
GRATE: 1/2" ROUND STEEL BARS WELDED ON 1" CENTERS  
HANDLES: 5/8" ROUND STEEL BARS  
SWIVEL BOX: 4" O.D. STEEL PIPE  
PEDESTAL: 3 1/2" O.D. STEEL TUBING, 45" LONG WITH SPECIAL VANDAL RESISTANT LOCKING NUT AND BOLT - PEDESTAL TO BE MOUNTED IN 42" DEPTH CONCRETE BASE  
FINISH: NON-TOXIC HEAT RESISTANT FLAT BLACK ENAMEL  
UTILITY SHELF: 3/16" STEEL PLATE MODEL #B5-100  
MANUFACTURER: BELSON OUTDOORS  
WWW.BELSON.COM  
1-800-323-5664



7 ADA COMPLIANT CAMPSTOVE  
LS-104 NO SCALE



- 1 "BUFTTECH" 4" HT. WHITE PVC ESTATE FENCING - 3 RAIL
- 2 4" X 4" FENCE POST
- 3 6" FENCE RAIL
- 4 CONCRETE FOOTING
- 5 FINISH GRADE

9 PVC 3-RAIL SPLIT RAIL FENCE  
LS-104 NOT TO SCALE

**NOTES ON PLAY STRUCTURES**

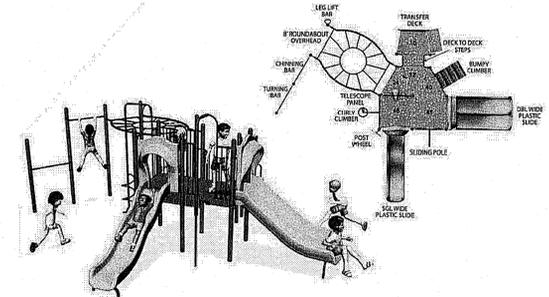
THIS DRAWING ONLY PROVIDES THE LOCATION AND SHAPE OF THE PROPOSED PLAY STRUCTURE. ALL STRUCTURAL REQUIREMENTS, CONSTRUCTION DETAILS, MATERIAL DETAILS, FINAL FENCE LOCATION AND OTHER RELATED INFORMATION ARE THE RESPONSIBILITY OF THE DESIGN BUILD FIRM / CONTRACTOR.  
THE DESIGN BUILD FIRM / CONTRACTOR SHALL PREPARE DETAILED PLANS, DRAWINGS AND SPECIFICATIONS TO BE SUBMITTED TO THE OWNER FOR REVIEW AND APPROVAL. THE DESIGN BUILD FIRM / CONTRACTOR SHALL BE RESPONSIBLE TO MAKE APPLICATION TO AND OBTAIN ALL CONSTRUCTION PERMITS AND APPROVALS FROM LOCAL GOVERNING MUNICIPALITIES AND GOVERNMENT ENTITIES.  
CONSTRUCTION SUPERVISION AND SITE SAFETY SHALL ALSO BE THE FULL RESPONSIBILITY OF THE DESIGN BUILD FIRM / CONTRACTOR AND SHALL MEET ALL MUNICIPAL AND STATE REQUIREMENTS AND REGULATIONS.  
THIS DRAWING IS NOT FOR CONSTRUCTION PURPOSES. SEE ABOVE.

**PLAY STRUCTURE CONTACT INFO:**

**MATT LAYTON, CPSI**  
CELL: 68.218.4817  
OFFICE: 16.499.7400  
OFFICE@GLREC.COM

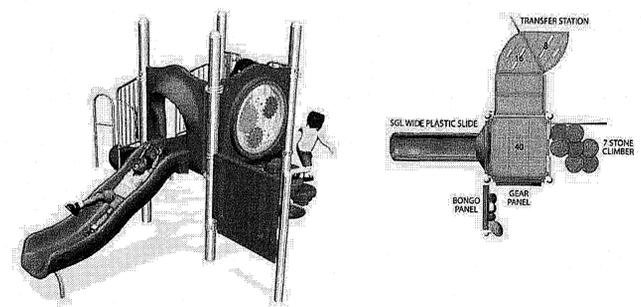
**GREAT LAKES RECREATION COMPANY**  
P.O. BOX 25  
ZEELAND, MI 49464

**PRODUCT #: QU065747**  
**AGES:** 5-12  
**USE ZONE:** 29'-11" X 36'-11"  
**PLAY EVENTS:** 11  
**APPROX. ACCOMMODATIONS:** 41  
**LEED POINTS:** 1  
**RECYCLED CONTENT:** 16.31%



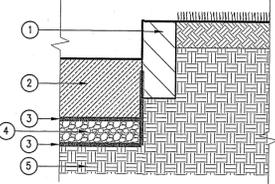
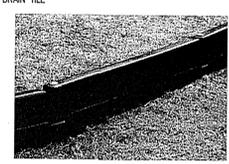
5 KID'S PLAY STRUCTURE (AGES 5-12)  
LS-104 NO SCALE

**PRODUCT #: QU065745**  
**AGES:** 2-5 (18 MOS - 5 CSA)  
**USE ZONE:** 25'-11" X 25'-9"  
**PLAY EVENTS:** 4  
**APPROX. ACCOMMODATIONS:** 16  
**LEED POINTS:** 2  
**RECYCLED CONTENT:** 26.76%

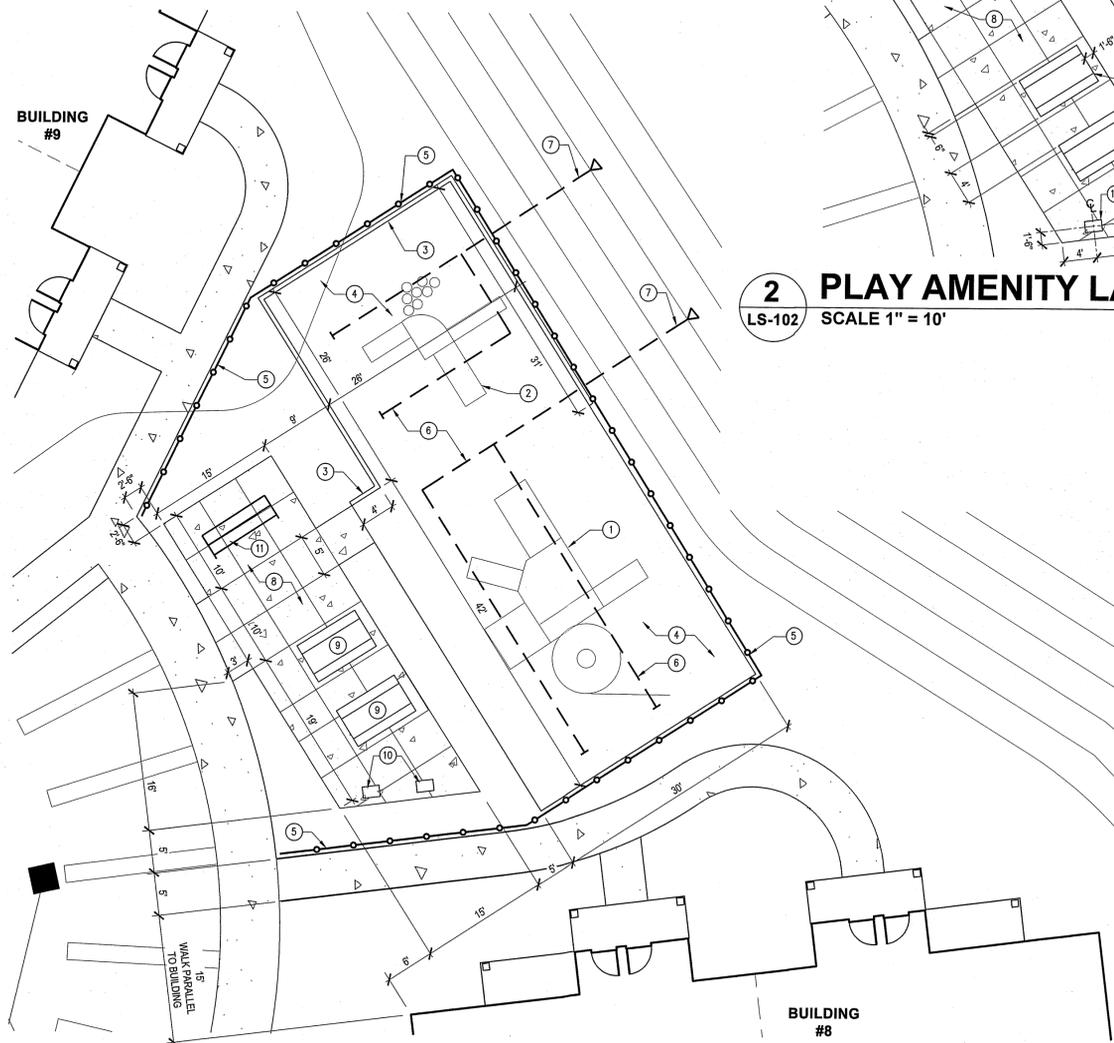


6 TOT'S PLAY STRUCTURE (AGES 2-5)  
LS-104 NO SCALE

- 1 BLACK PLASTIC BORDER TIMBER: 48" L X 3.5" W X 12" H (MANUFACTURER: ULTRA PLAY SYSTEM OR APPROVED EQUAL) - INSTALLED PER MANUFACTURER'S SPECIFICATIONS
- 2 10" OF ADA COMPLIANT ENGINEERED WOOD FIBER
- 3 GEOTEXTILE FABRIC
- 4 3" MIN. PEA GRAVEL
- 5 SUBGRADE



8 SURFACING DETAIL  
LS-104 SCALE 1/8" = 1'-0"



1 PLAY AREA PLAN  
LS-102 SCALE 1" = 10'

2 PLAY AMENITY LAYOUT PLAN  
LS-102 SCALE 1" = 10'

- 1 "KID'S" PLAY STRUCTURE BY LITTLE TIKES COMMERCIAL PRODUCT #QU065747 - PROVIDE AND INSTALL CONCRETE FOOTINGS MINIMUM 42" BELOW GRADE PER MANUFACTURER'S RECOMMENDATIONS - COORDINATE LOCATIONS OF CONCRETE FOOTINGS W/ ALL EXISTING UTILITIES AND DRAIN TILE BELOW - SEE 5/LS-104
- 2 "TOT'S" PLAY STRUCTURE BY LITTLE TIKES COMMERCIAL PRODUCT #QU065745 - PROVIDE AND INSTALL CONCRETE FOOTINGS MINIMUM 42" BELOW GRADE PER MANUFACTURER'S RECOMMENDATIONS - COORDINATE LOCATIONS OF CONCRETE FOOTINGS W/ ALL EXISTING UTILITIES AND DRAIN TILE BELOW - SEE 6/LS-104
- 3 BLACK PLASTIC BORDER TIMBER: 48" L X 3.5" W X 12" H (MANUFACTURER: ULTRA PLAY SYSTEM OR APPROVED EQUAL) - INSTALLED PER MANUFACTURER'S SPECIFICATIONS - SEE 8/LS-104
- 4 MIN. 10" OF ENGINEERED WOOD FIBER ON GEOTEXTILE FABRIC ON 3" MIN. PEA GRAVEL ON GEOTEXTILE FABRIC - EXCAVATE ENTIRE PLAY AREA WITHIN BORDERS AND CONCRETE TO A DEPTH OF 18" TO MEET ADA REQUIREMENTS
- 5 BUFTTECH 4" HT. WHITE PVC 3-RAIL SPLIT RAIL FENCE - INSTALL AT EDGE OF WALK OR EDGE OF PLAY AREA BORDER - SEE 9/LS-104
- 6 4" DIA. DRAIN TILE W/ FILTER FABRIC INSIDE THE PLAY AREA
- 7 OUTLET 4" DIA. DRAIN TILE TO STORM DRAIN - COORDINATE W/ CIVIL DRAWINGS
- 8 ADA ACCESSIBLE CONCRETE AREA - SEE CIVIL PLANS
- 9 ADA COMPLIANT PICNIC TABLE - SEE 4/LS-104
- 10 ADA ACCESSIBLE GRILL - SEE 7/LS-104
- 11 BIKE RACK - SEE 3/LS-104

LOCKWOOD COMPANIES  
27777 FRANKLIN ROAD  
SUITE 1410  
SOUTHFIELD, MI 48304

**LAKESHORE VILLAGE APARTMENTS PHASE 3**

GENOA TWP., MI

LANDSCAPE CONSTRUCTION DOCUMENTS

SHEET

**PLAY AREA**

PRELIMINARY DATE

ISSUE DATE  
2016/05/09 SPA

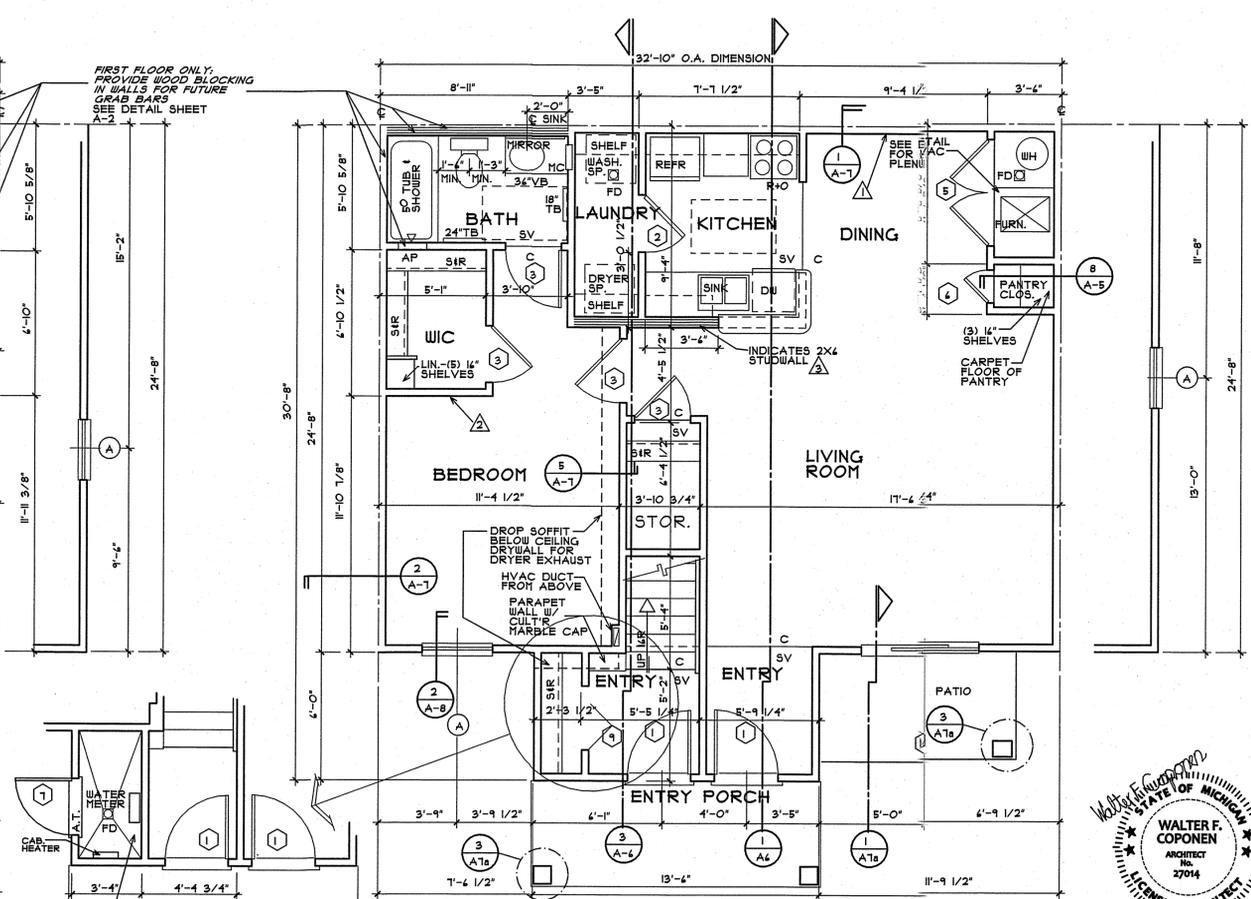
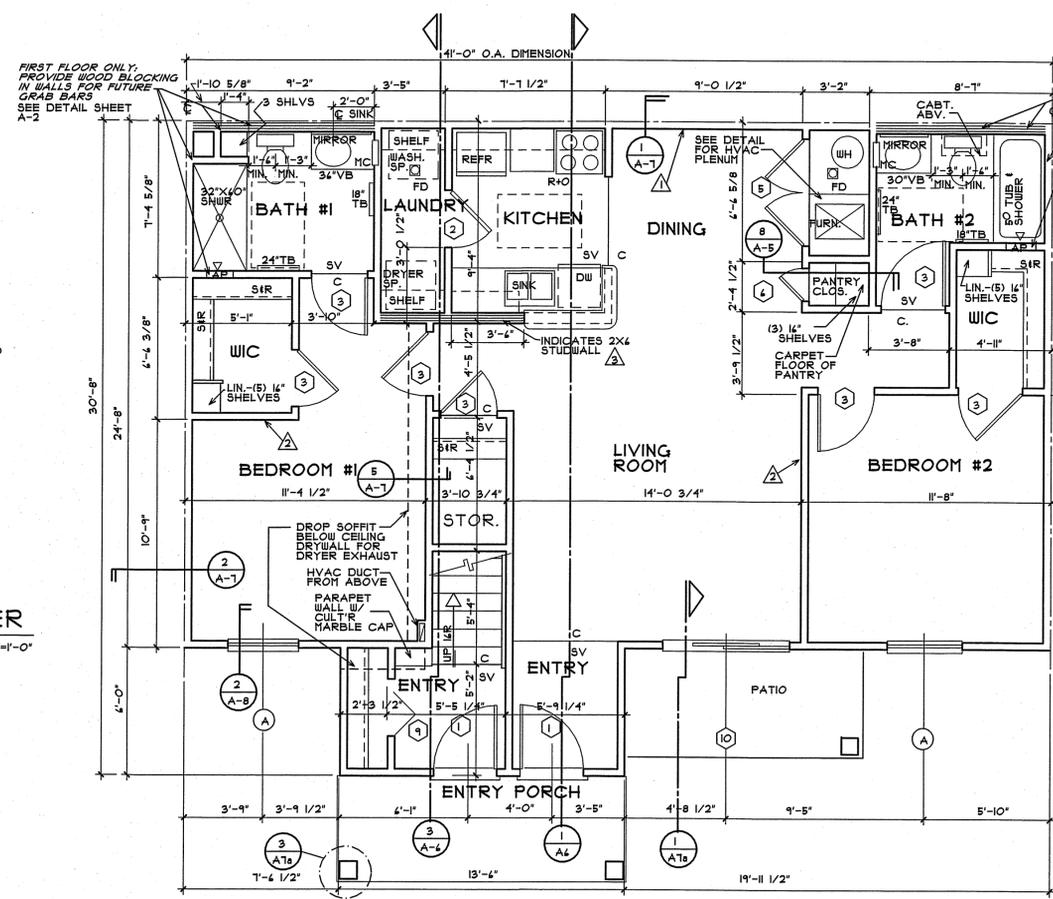
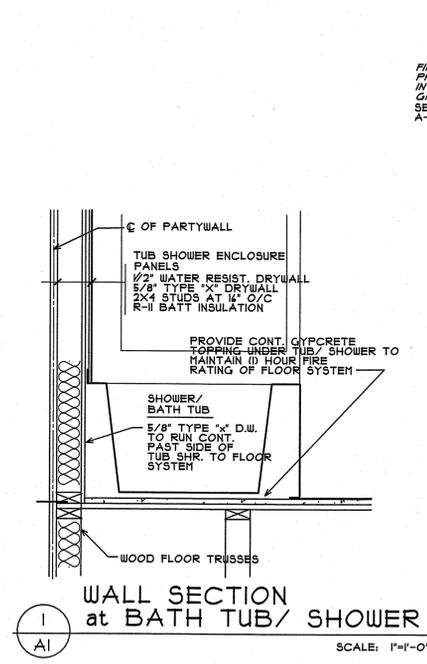
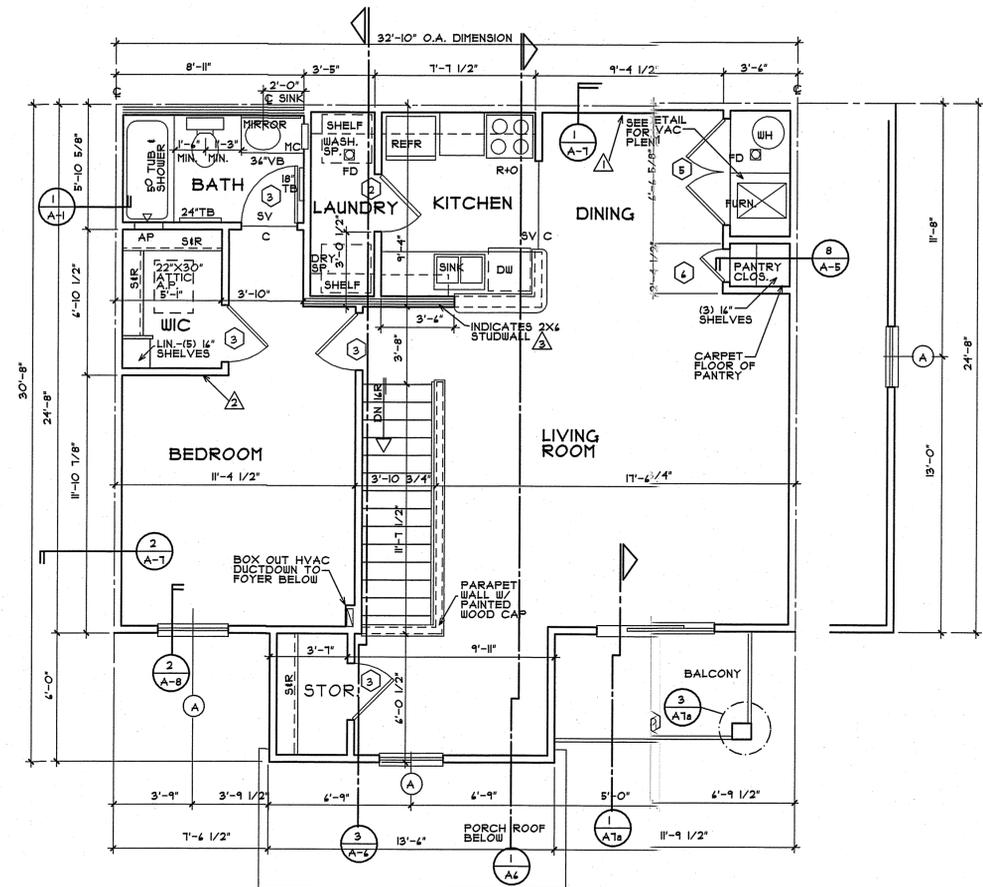
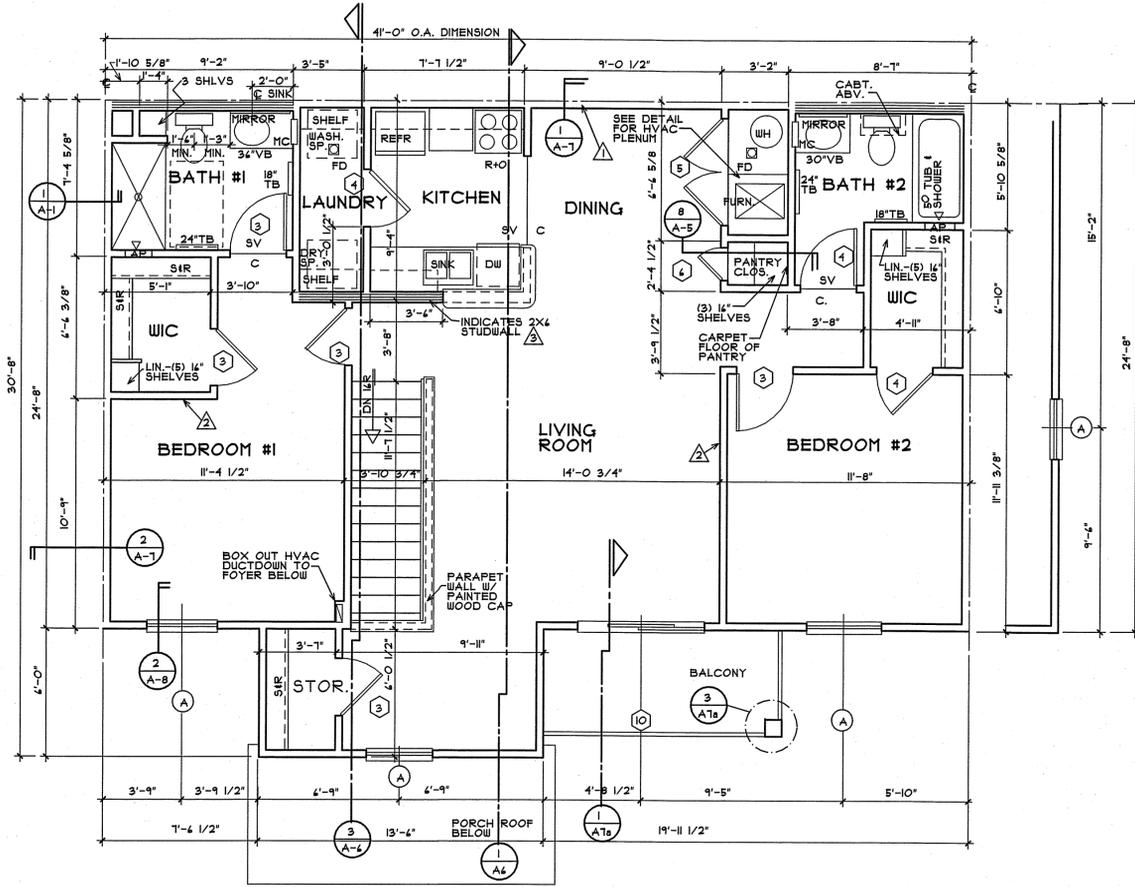
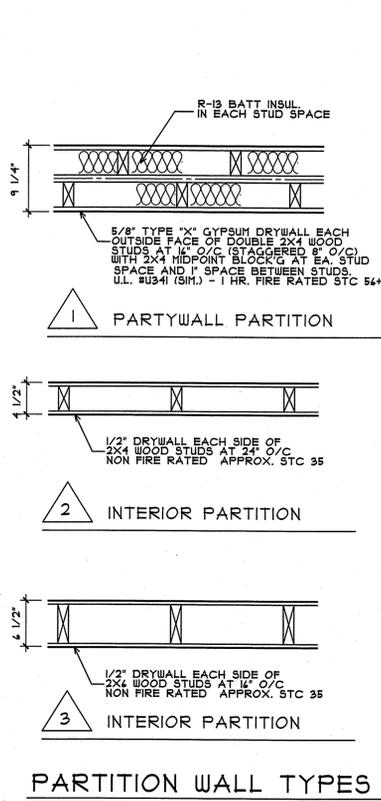
REVISION DATE

SHEET NUMBER

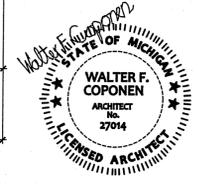
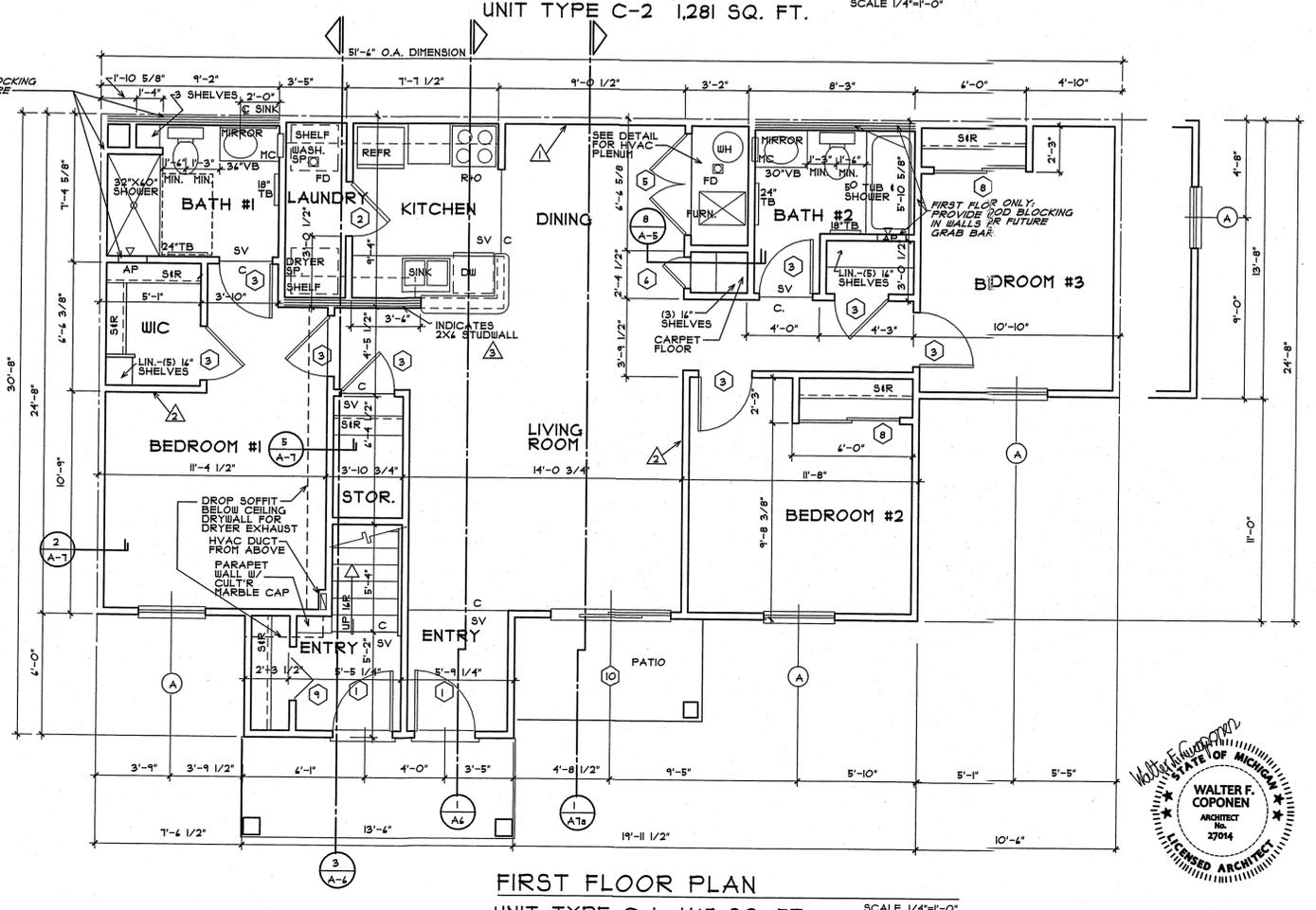
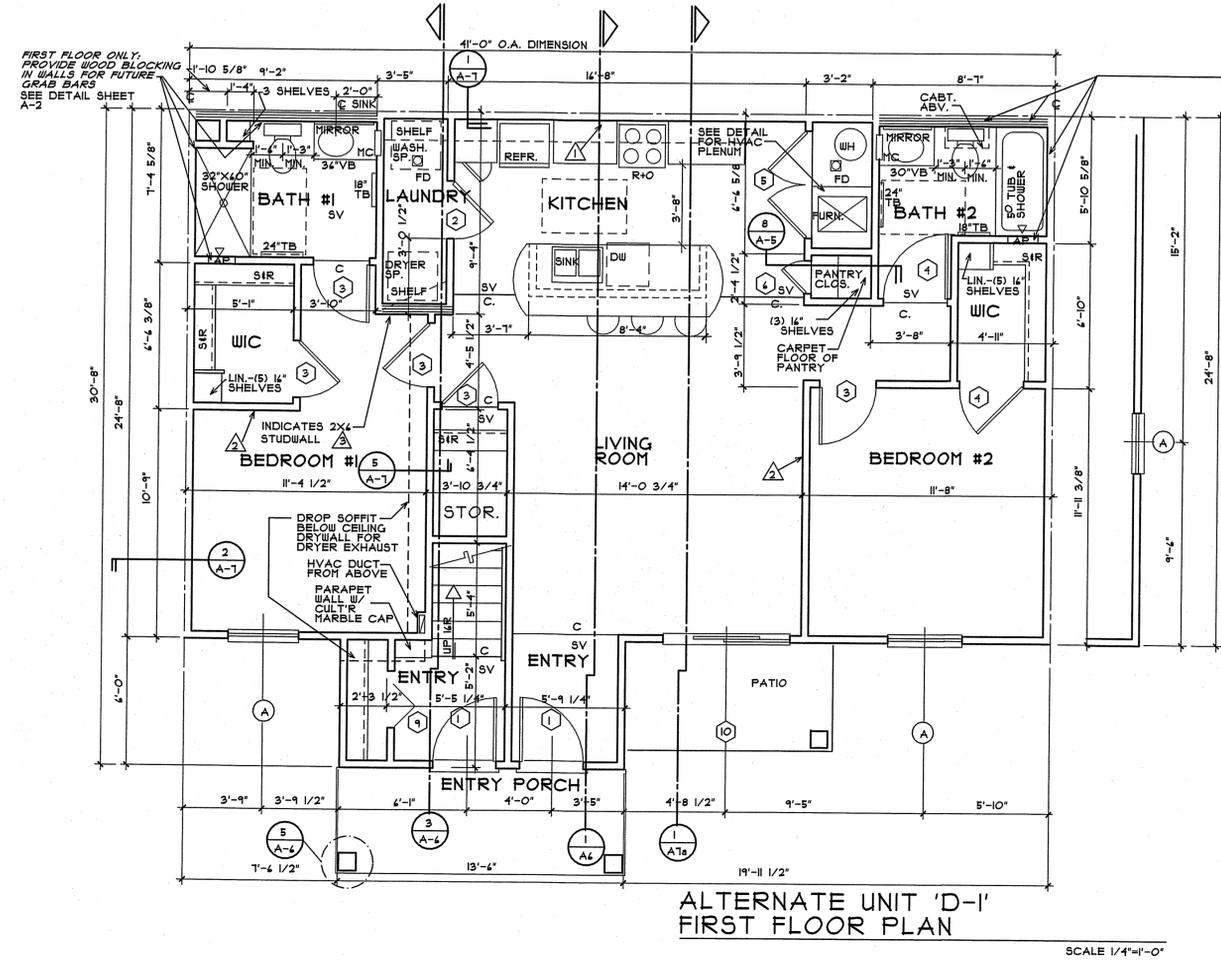
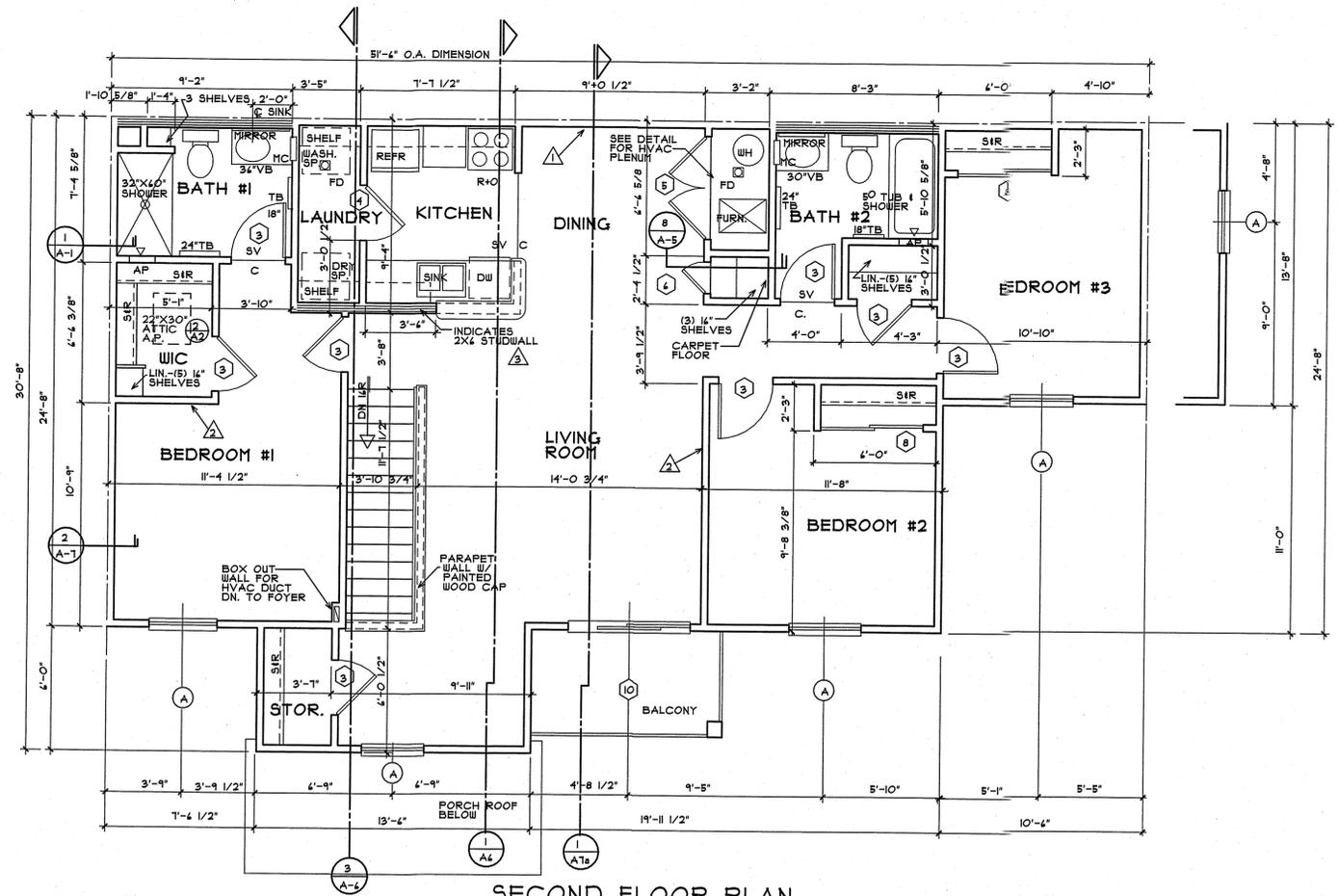
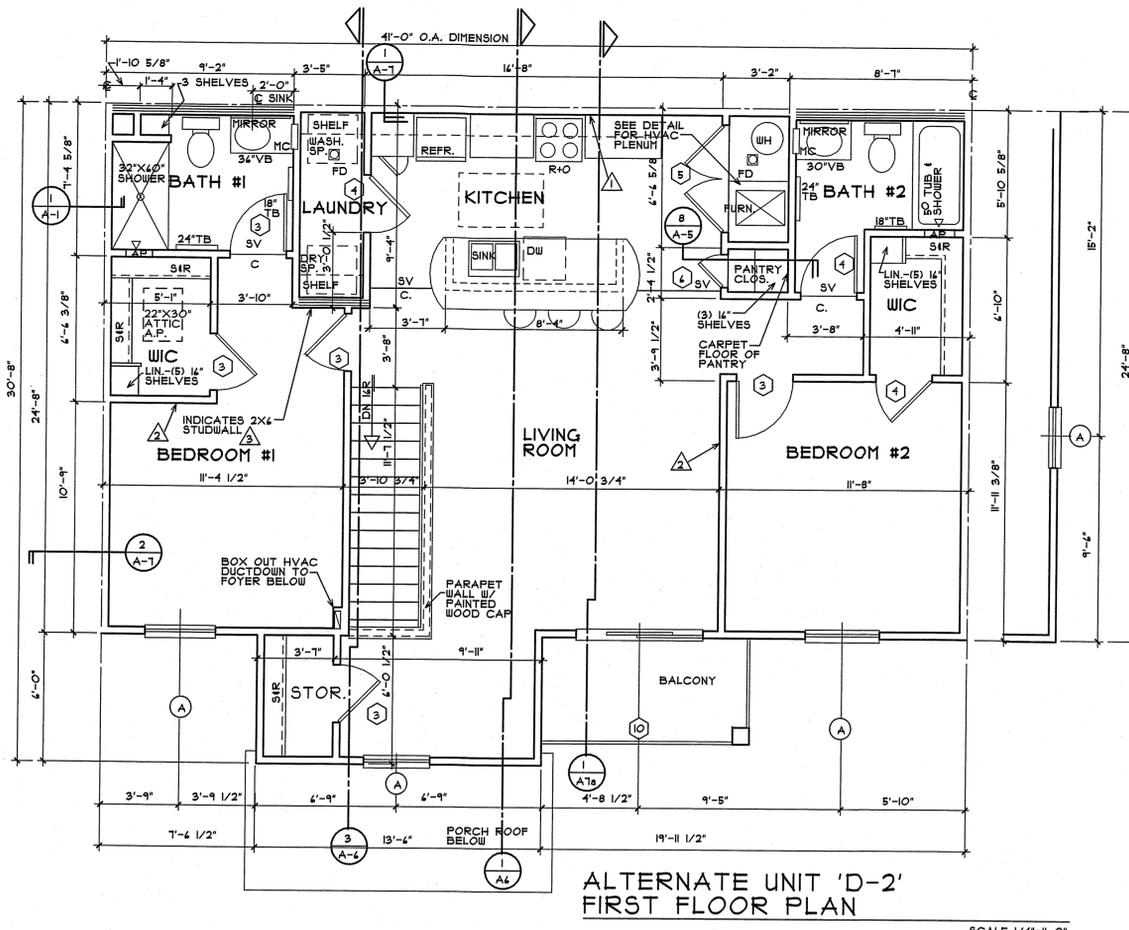
LS-104

**Lakeshore Village Apartments**  
 Genoa Township, Livingston County, Michigan  
**Phase III**

sheet  
 UNIT FLOOR PLANS  
 UNIT TYPE A  
 UNIT TYPE B  
 drawing  
 revisions  
 issue date  
 MARCH 18, 2014  
 sheet  
 number



**Lakeshore Village Apartments  
 Phase III**  
 Genoa Township, Livingston County, Michigan



sheet

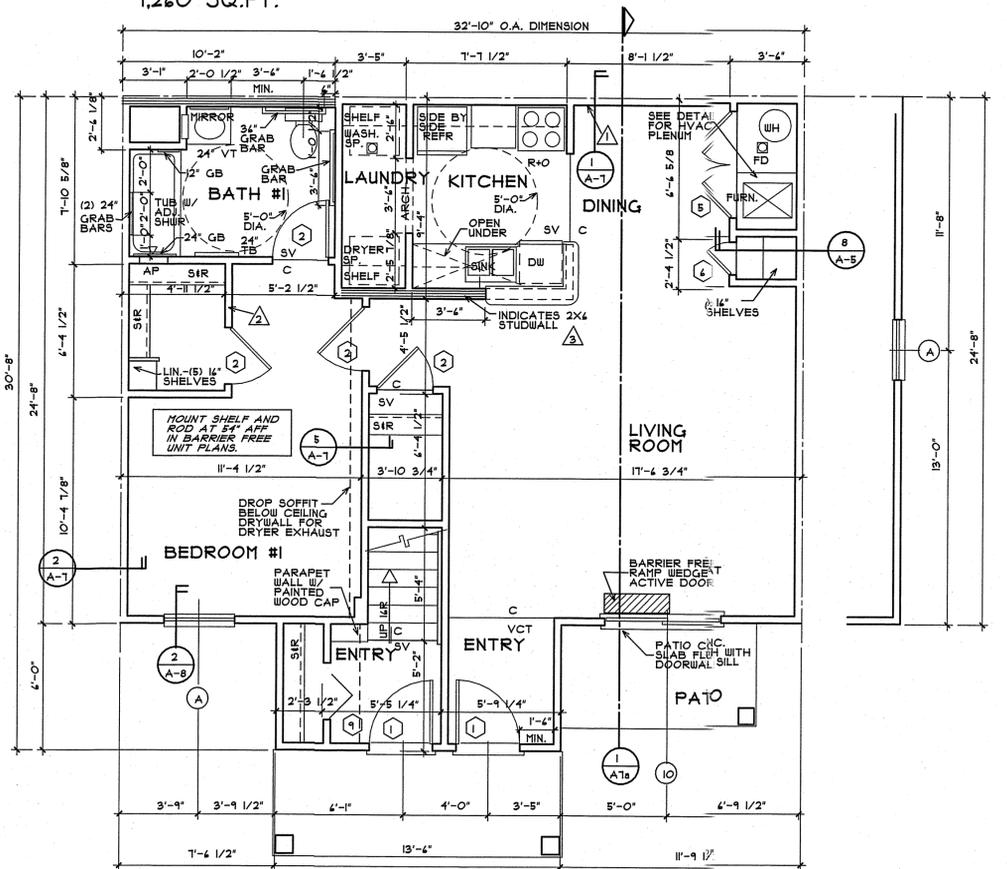
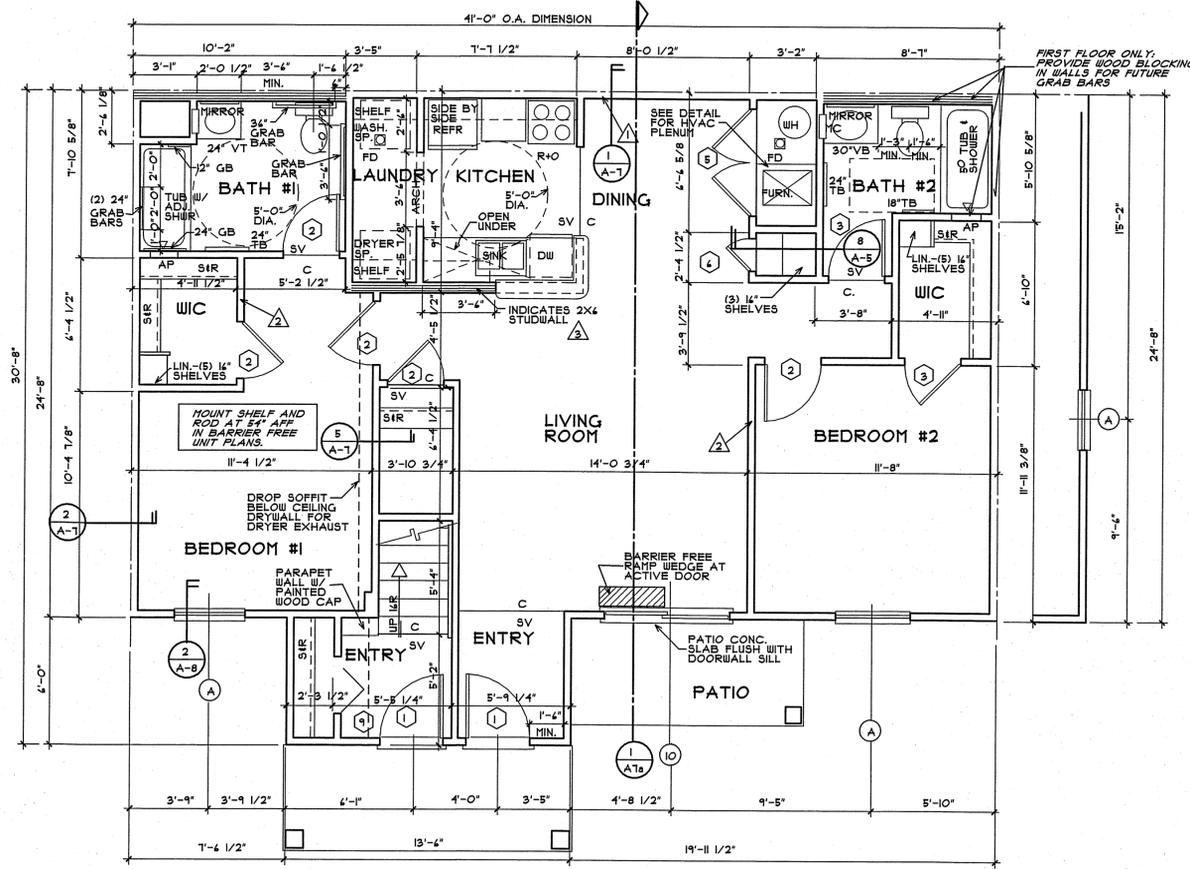
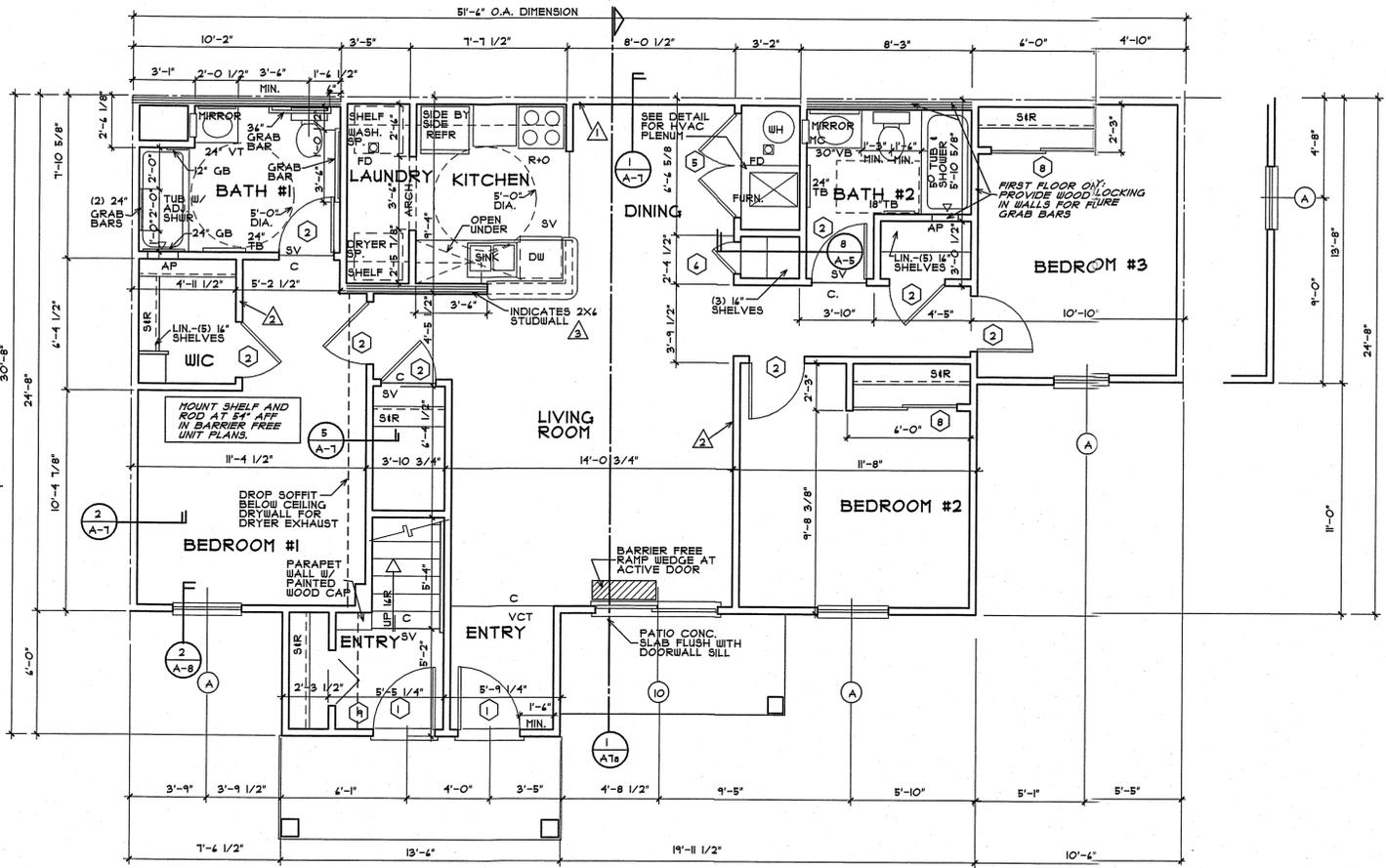
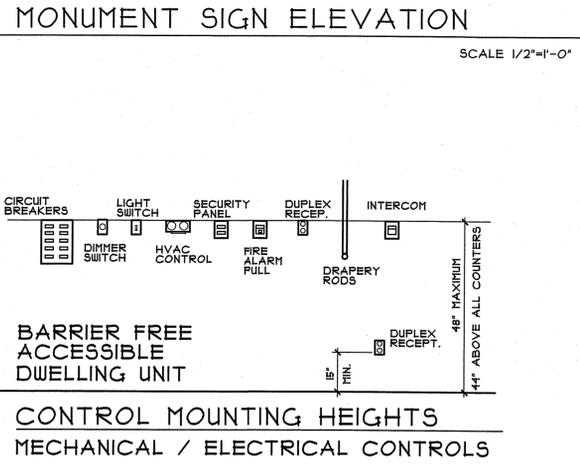
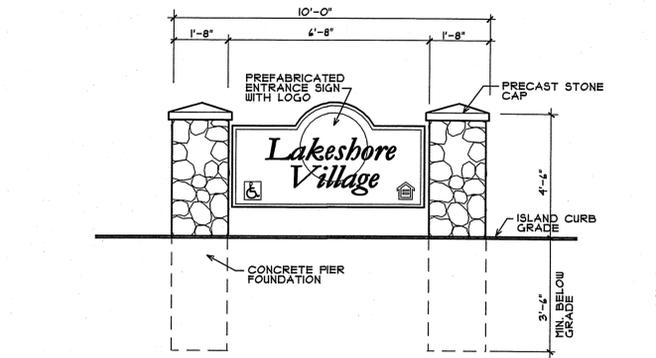
UNIT FLOOR PLANS  
UNIT TYPE C

ALTERNATE  
UNIT FLOOR PLAN  
UNIT TYPE D

drawing  
revisions

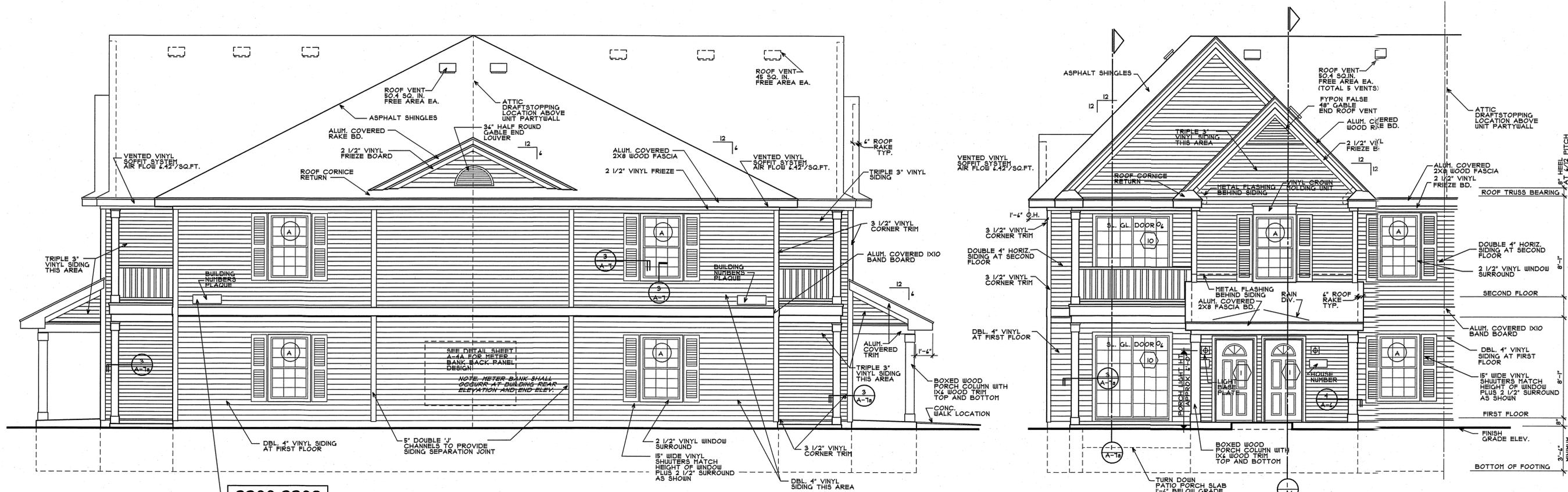
issue date  
MARCH 18, 2016

sheet  
number



|                               |                |
|-------------------------------|----------------|
| sheet                         |                |
| BARRIER FREE UNIT FLOOR PLANS |                |
| ENTRANCE SIGN                 |                |
| drawing revisions             |                |
| issue date                    | MARCH 18, 2016 |
| sheet number                  |                |

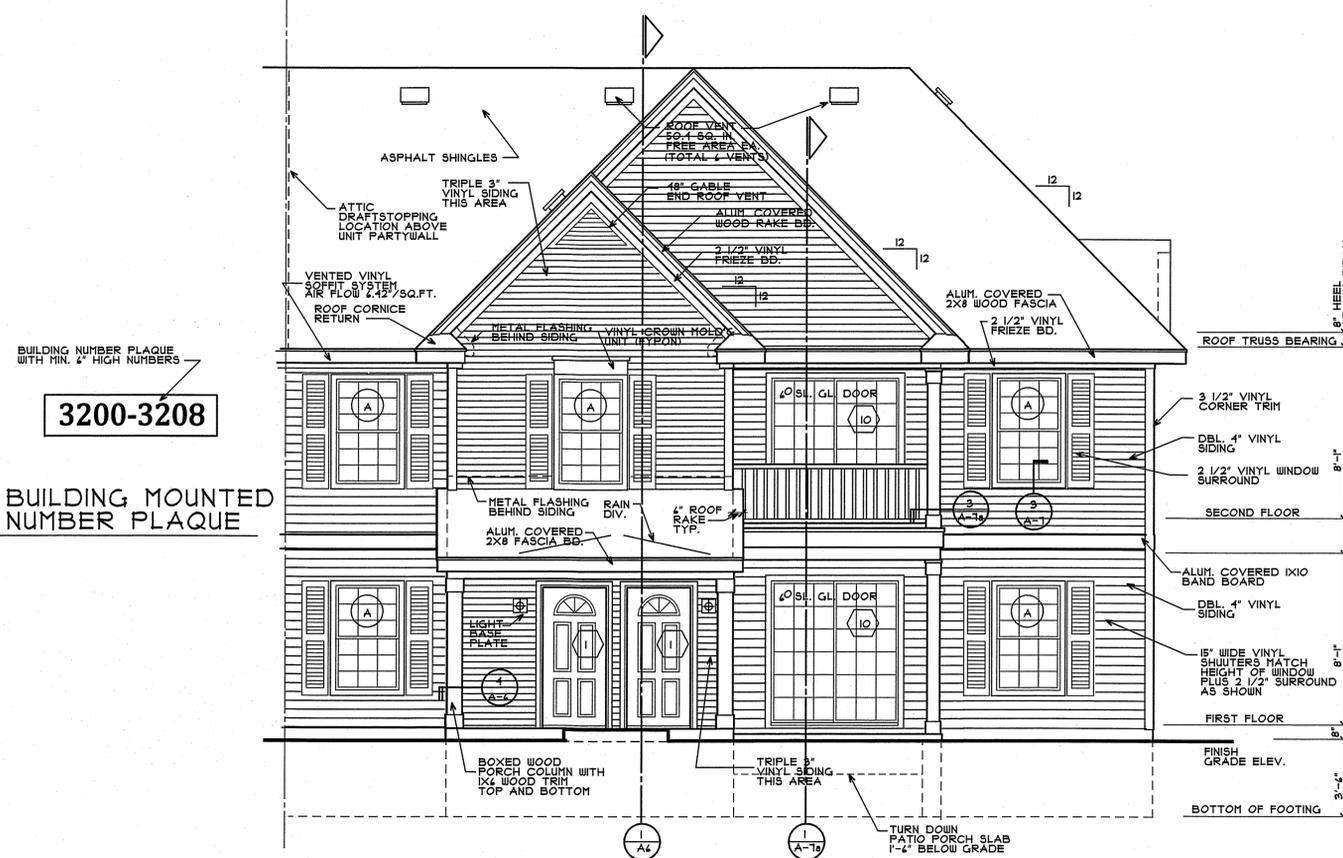
**Lakeshore Village Apartments**  
 Phase III  
 Genoa Township, Livingston County, Michigan



**3200-3208**  
 BUILDING NUMBER PLAQUE  
 LOCATION WHERE BUILDING  
 END FACES PARKING DRIVE

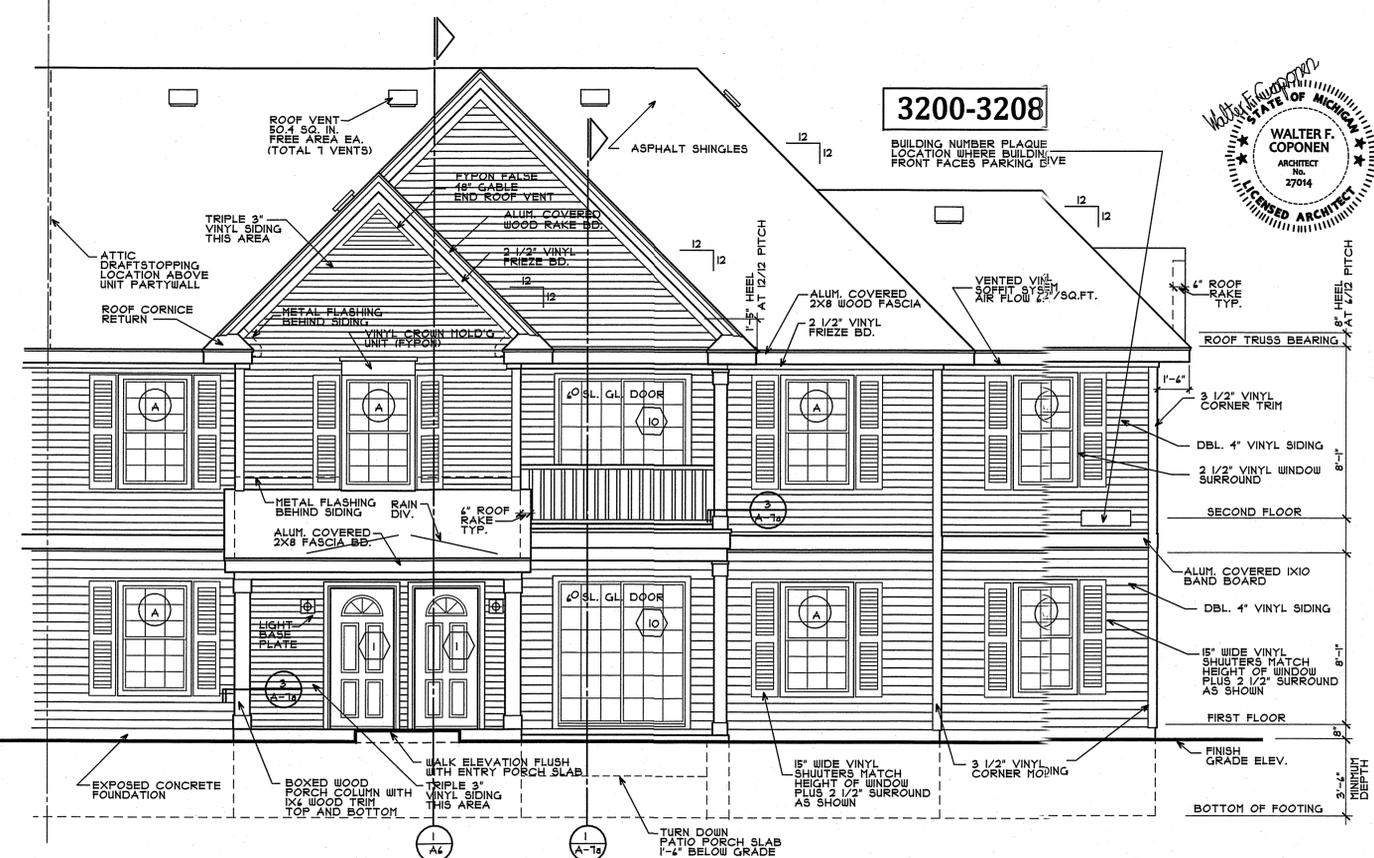
**END ELEVATION**  
 TYPICAL UNIT COND. SCALE 1/4"=1'-0"

**FRONT ELEVATION**  
 UNIT TYPE A-1/A-2 SCALE 1/4"=1'-0"



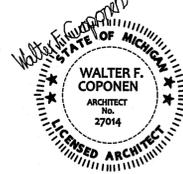
**3200-3208**  
 BUILDING MOUNTED  
 NUMBER PLAQUE

**FRONT ELEVATION**  
 UNIT TYPE B-1/B-2 SCALE 1/4"=1'-0"



**3200-3208**  
 BUILDING NUMBER PLAQUE  
 LOCATION WHERE BUILDING  
 FRONT FACES PARKING DRIVE

**FRONT ELEVATION**  
 UNIT TYPE C-1/C-2 SCALE 1/4"=1'-0"



sheet

**UNIT ELEVATIONS**

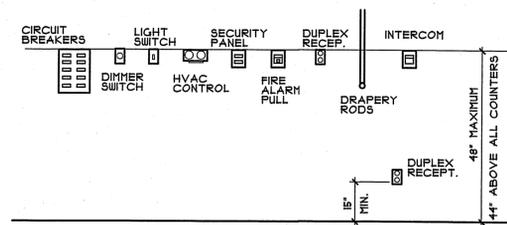
**BUILDING SIGNAGE**

drawing revisions

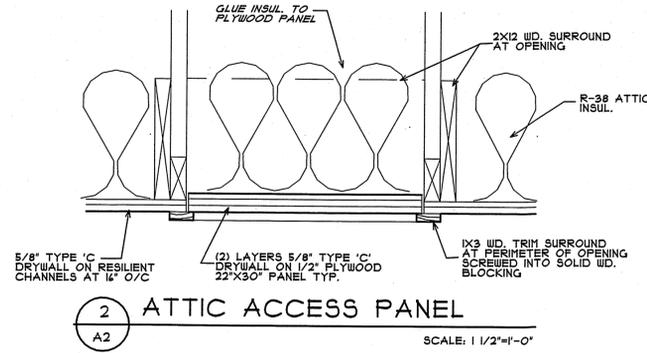
issue date

MARCH 18, 2014

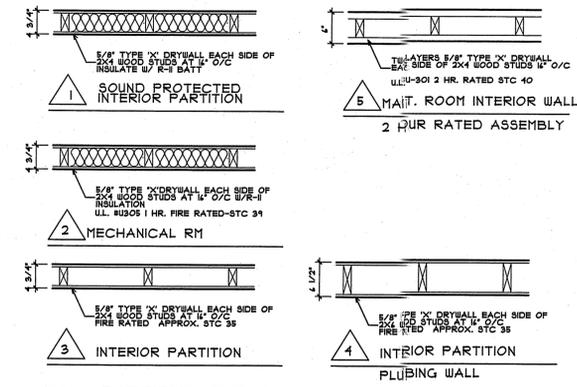
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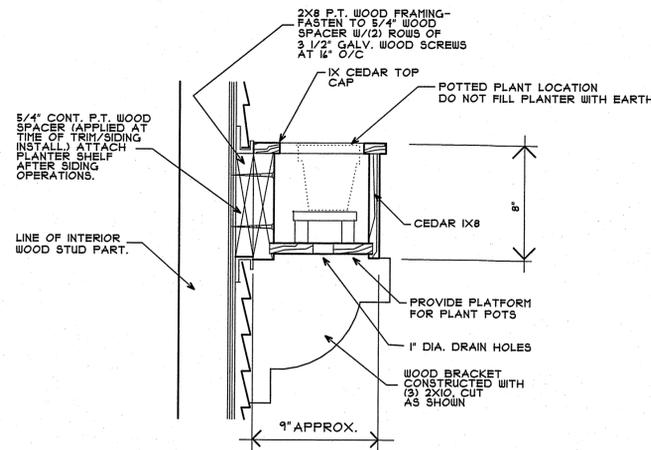
CONTROL MOUNTING HEIGHTS  
 MECHANICAL / ELECTRICAL CONTROLS



2 ATTIC ACCESS PANEL  
 A2  
 SCALE: 1/2"=1'-0"

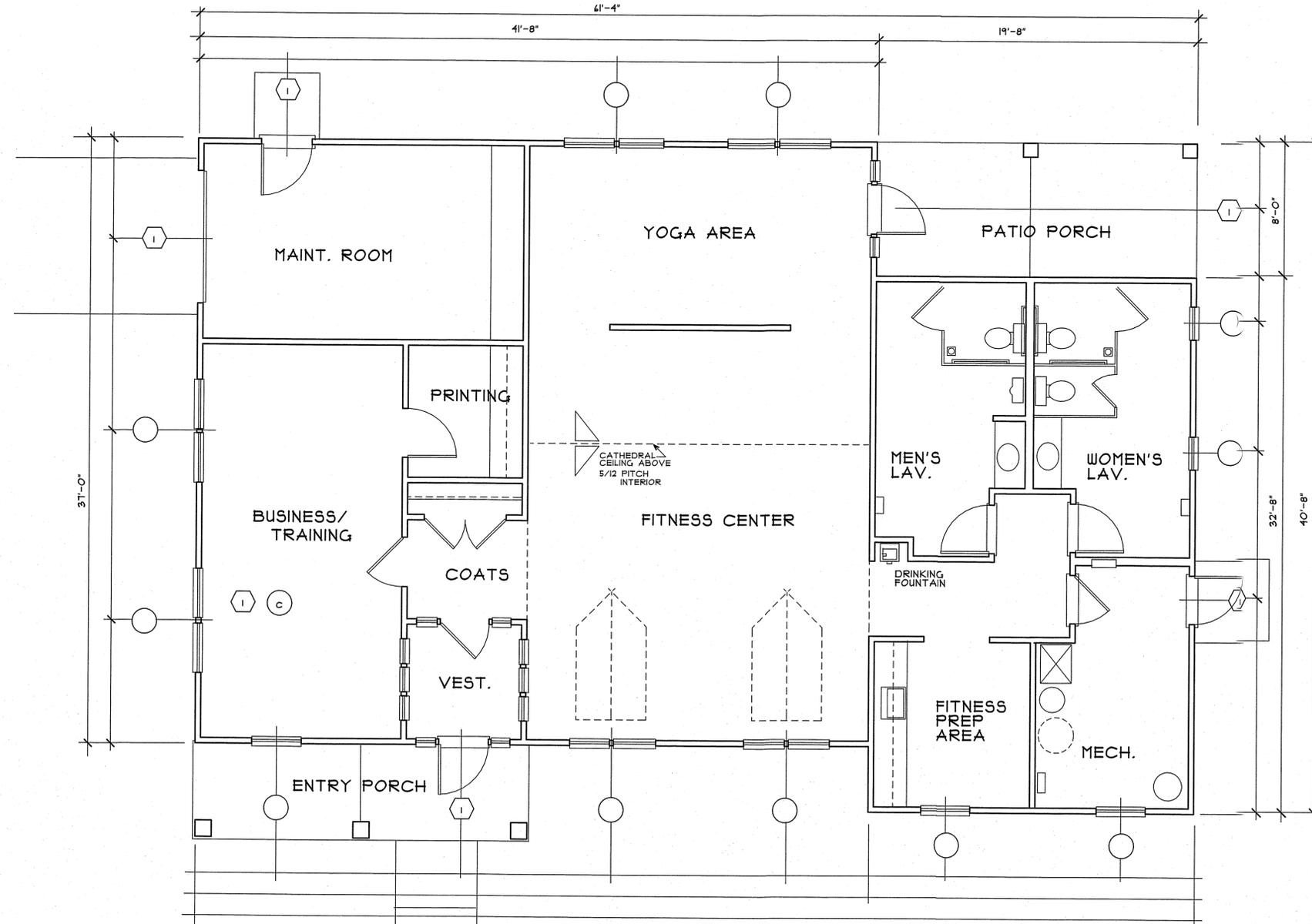


WALL PARTITION TYPES  
 FITNESS CENTER



PLANTER SHELF DETAIL

NO SCALE



HEALTH AND WEALTH CENTER  
 FLOOR PLAN

SCALE: 1/4"=1'-0"



sheet

HEALTH AND WEALTH CENTER BUILDING

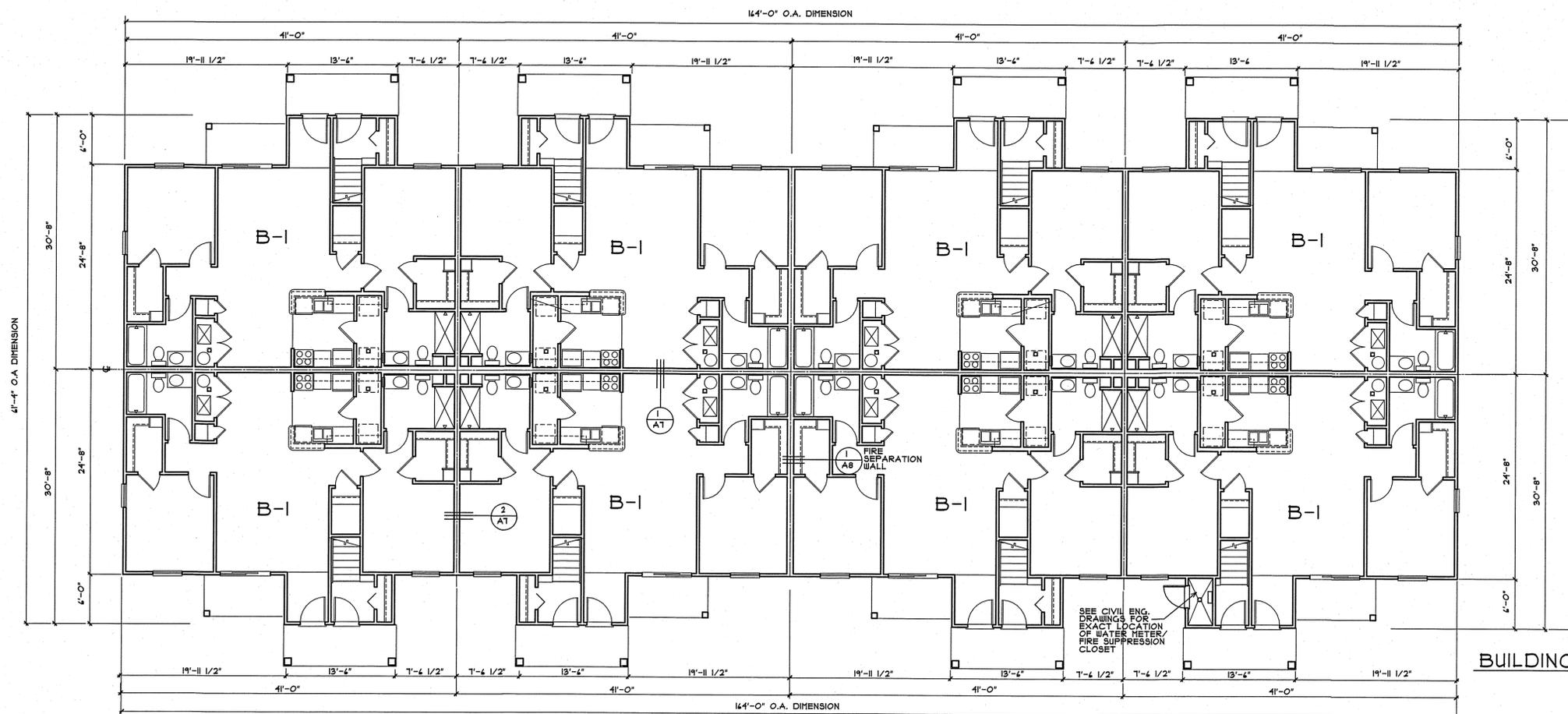
drawing revisions

issue date  
 JANUARY 18, 2014

sheet number

A5

**Lakeshore Village Apartments  
 Phase III**  
 Genoa Township, Livingston County, Michigan



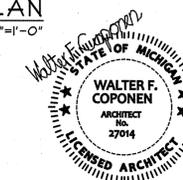
**BUILDING FIRS<sup>®</sup> FLOOR PLAN**  
 SCALE 1/8"=1'-0"

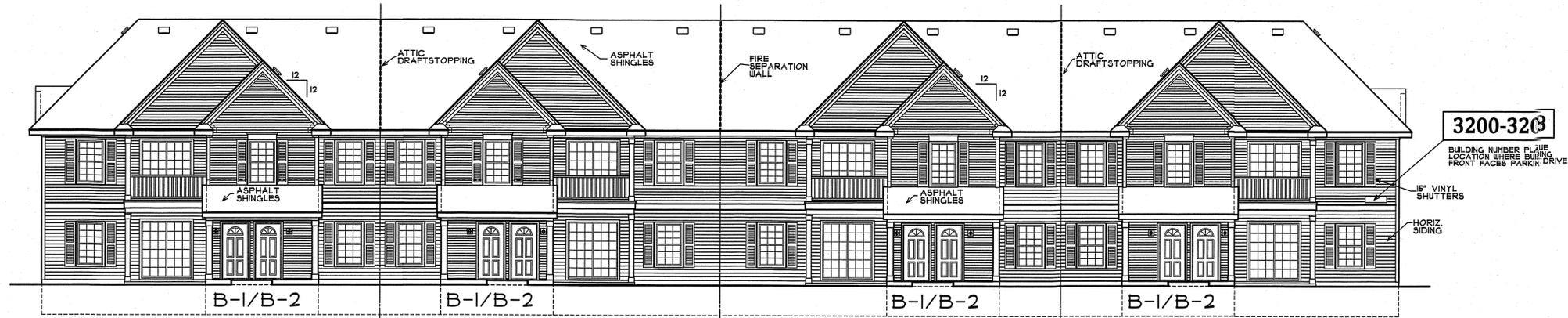
sheet  
 TYPICAL  
 BUILDING PLAN

drawing  
 revisions

issue date  
 MARCH 18, 2014

sheet  
 number



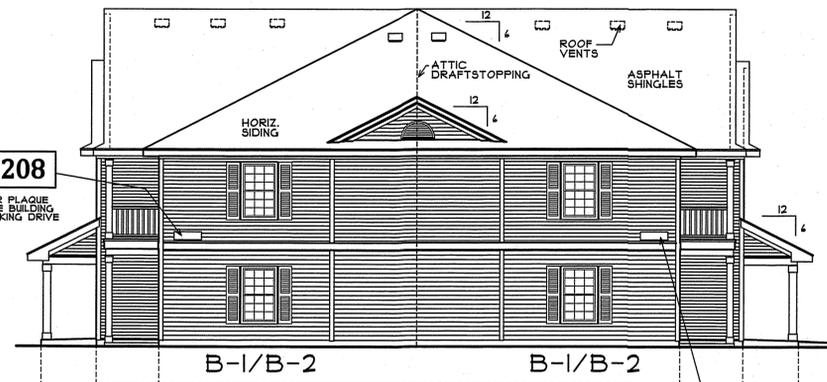


BUILDING FRONT/REAR ELEVATION

SCALE 1/8"=1'-0"

**3200-3208**

BUILDING NUMBER PLAQUE  
 LOCATION WHERE BUILDING  
 END FACES PARKING DRIVE



BUILDING END ELEVATION

SCALE 1/8"=1'-0"

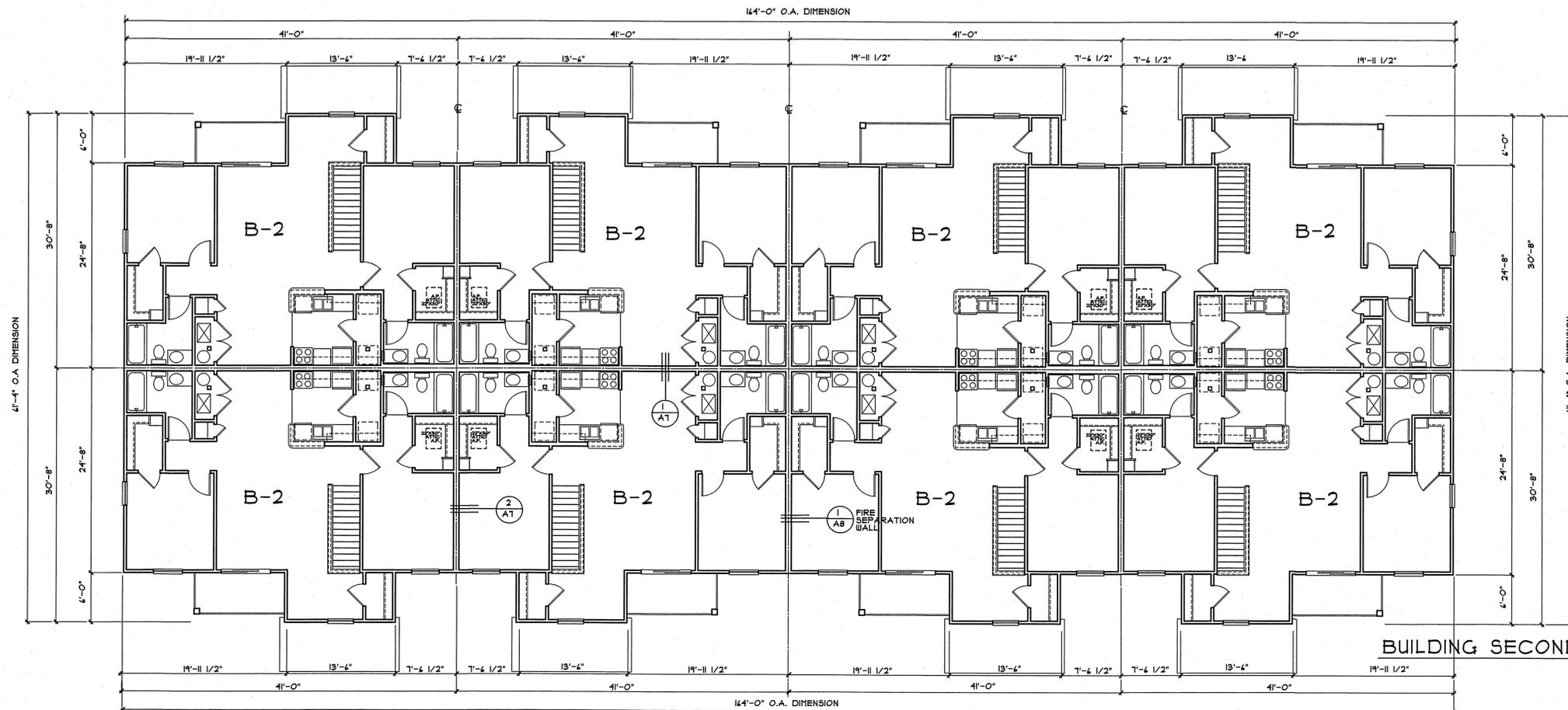
**3200-3208**

BUILDING NUMBER PLAQUE  
 LOCATION WHERE BUILDING  
 END FACES PARKING DRIVE

BUILDING NUMBER PLAQUE  
 WITH MIN. 2" HIGH NUMBERS

**3200-3208**

BUILDING MOUNTED  
 NUMBER PLAQUE



BUILDING SECOND FLOOR PLAN

SCALE 1/8"=1'-0"



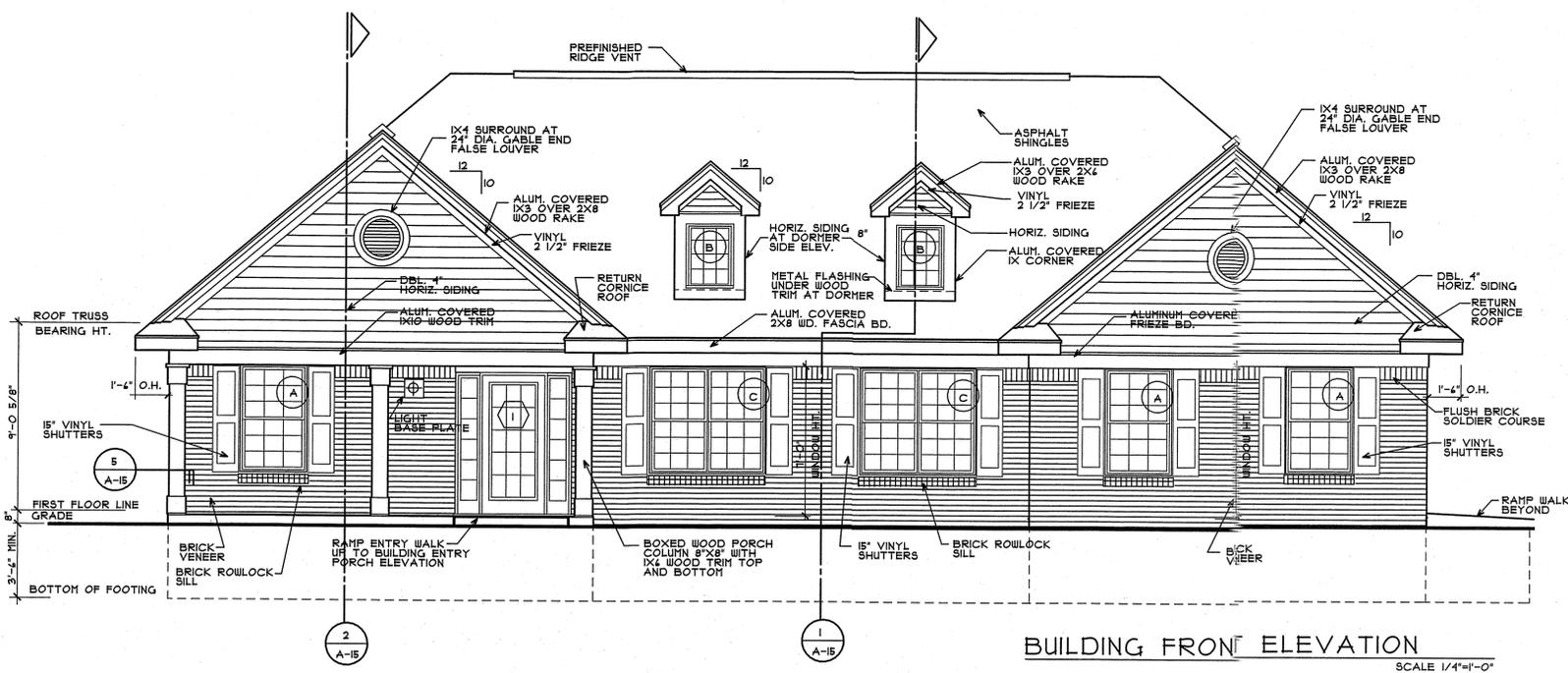
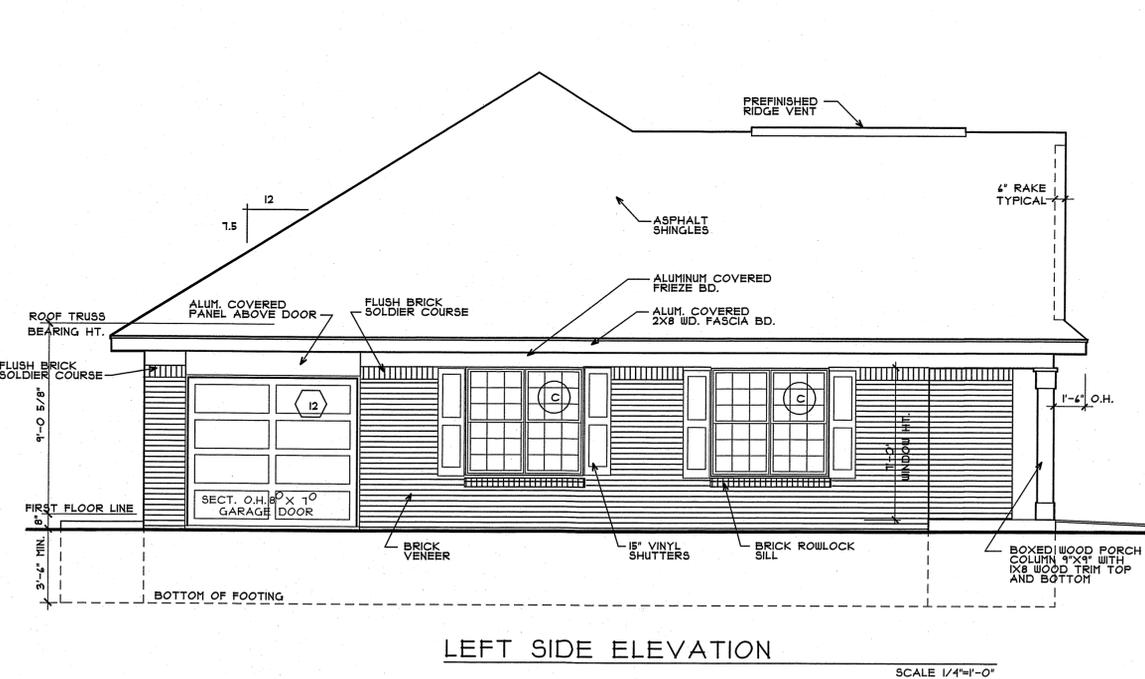
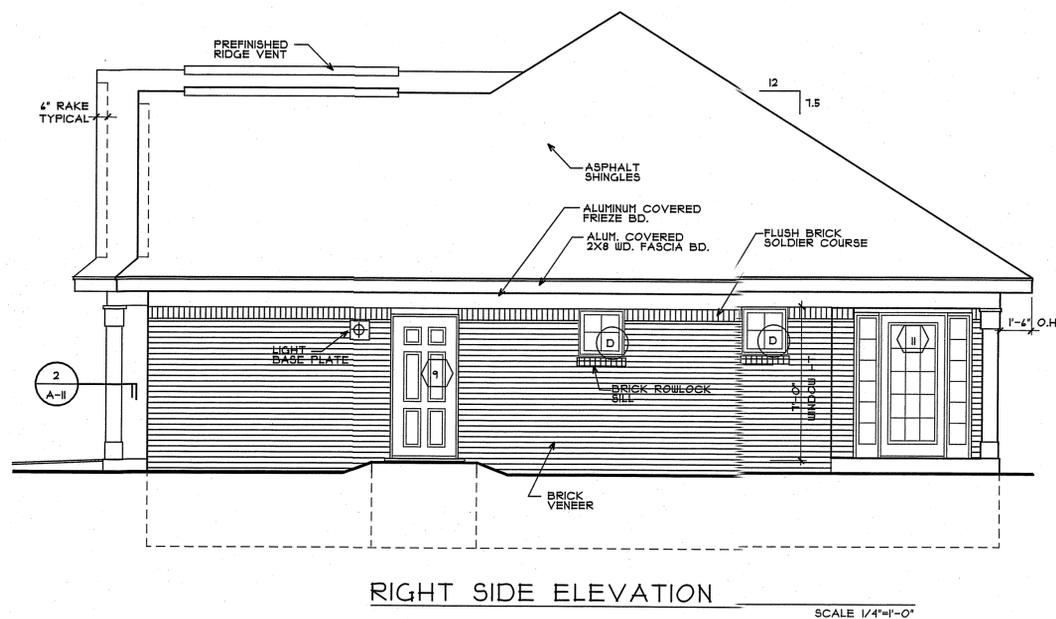
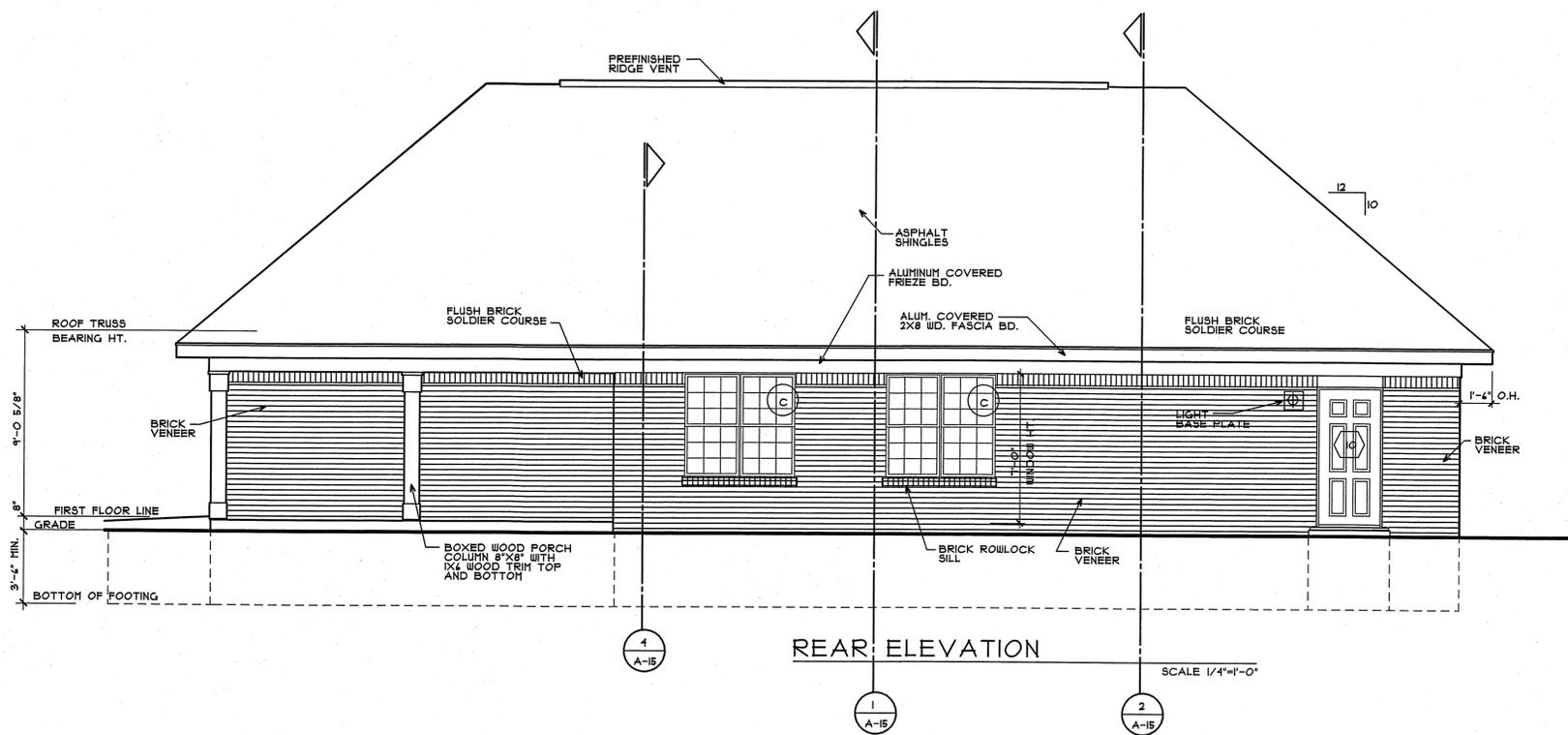
sheet  
 TYPICAL  
 BUILDING PLAN  
 + ELEVATIONS

drawing  
 revisions

issue date  
 MARCH 18, 2014

sheet  
 number

Lakeshore Village Apartments  
 Phase III  
 Genoa Township, Livingston County, Michigan



sheet  
 HEALTH+WEALTH  
 CENTER ELEVATIONS

drawing  
 revisions

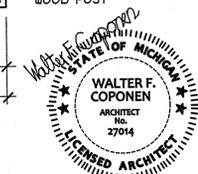
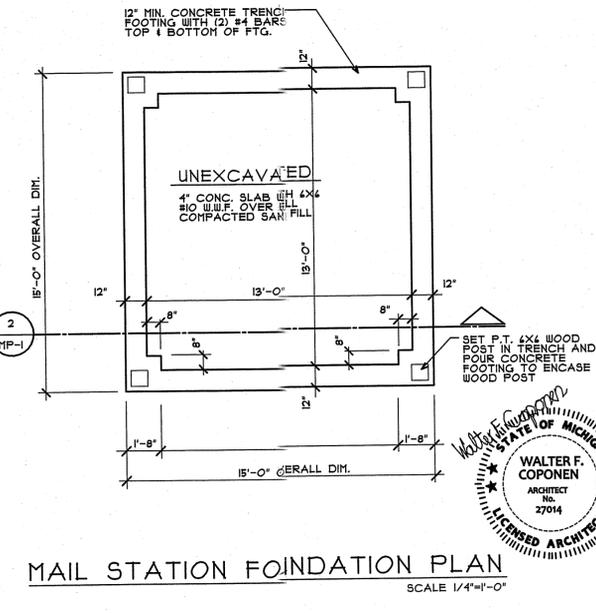
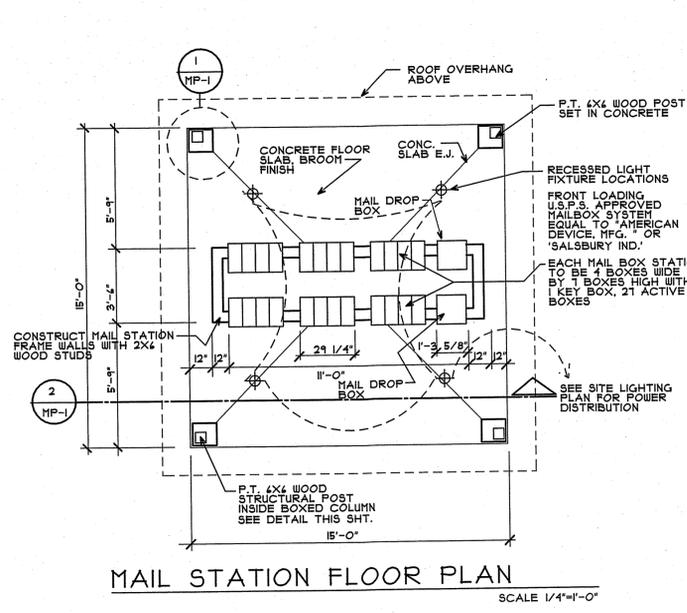
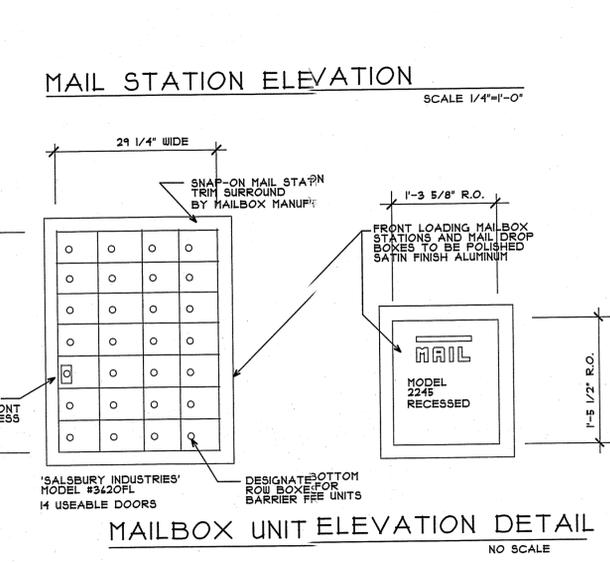
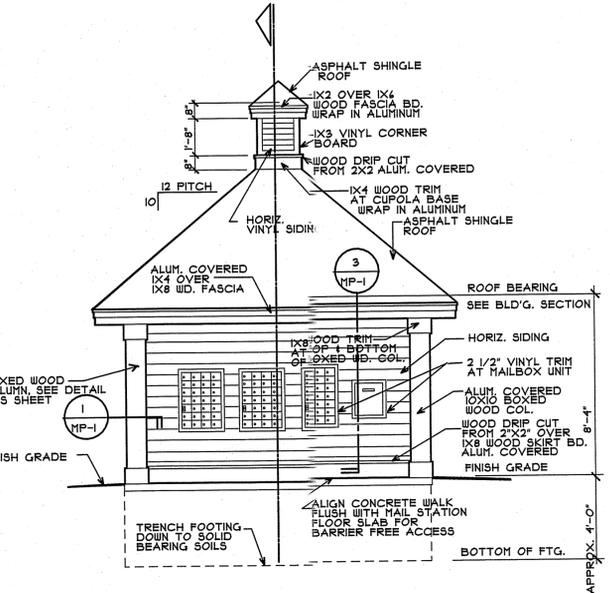
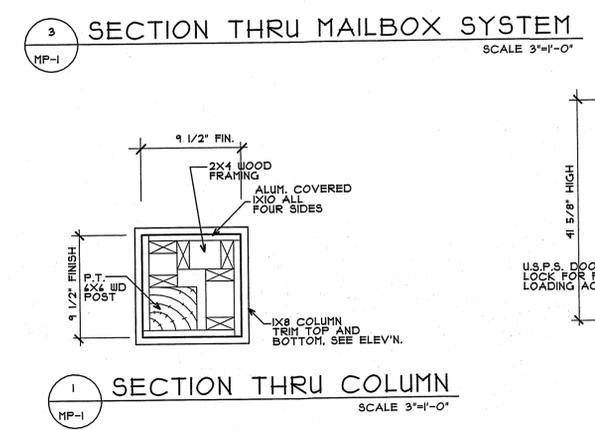
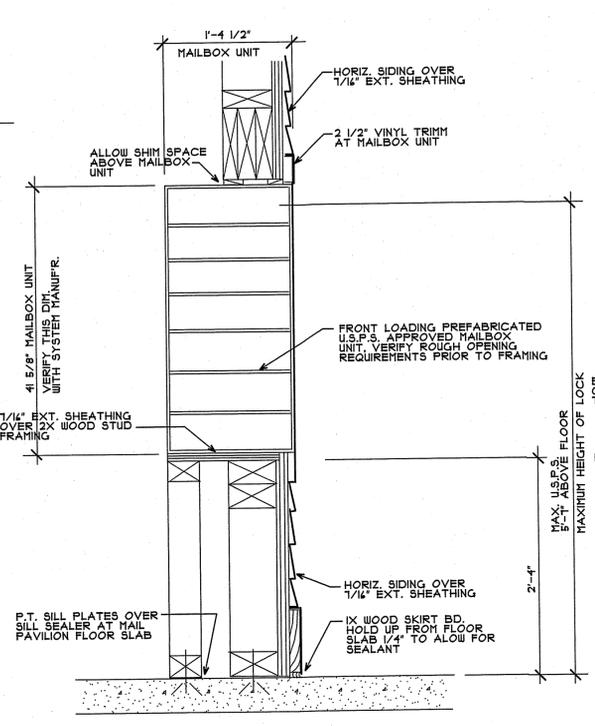
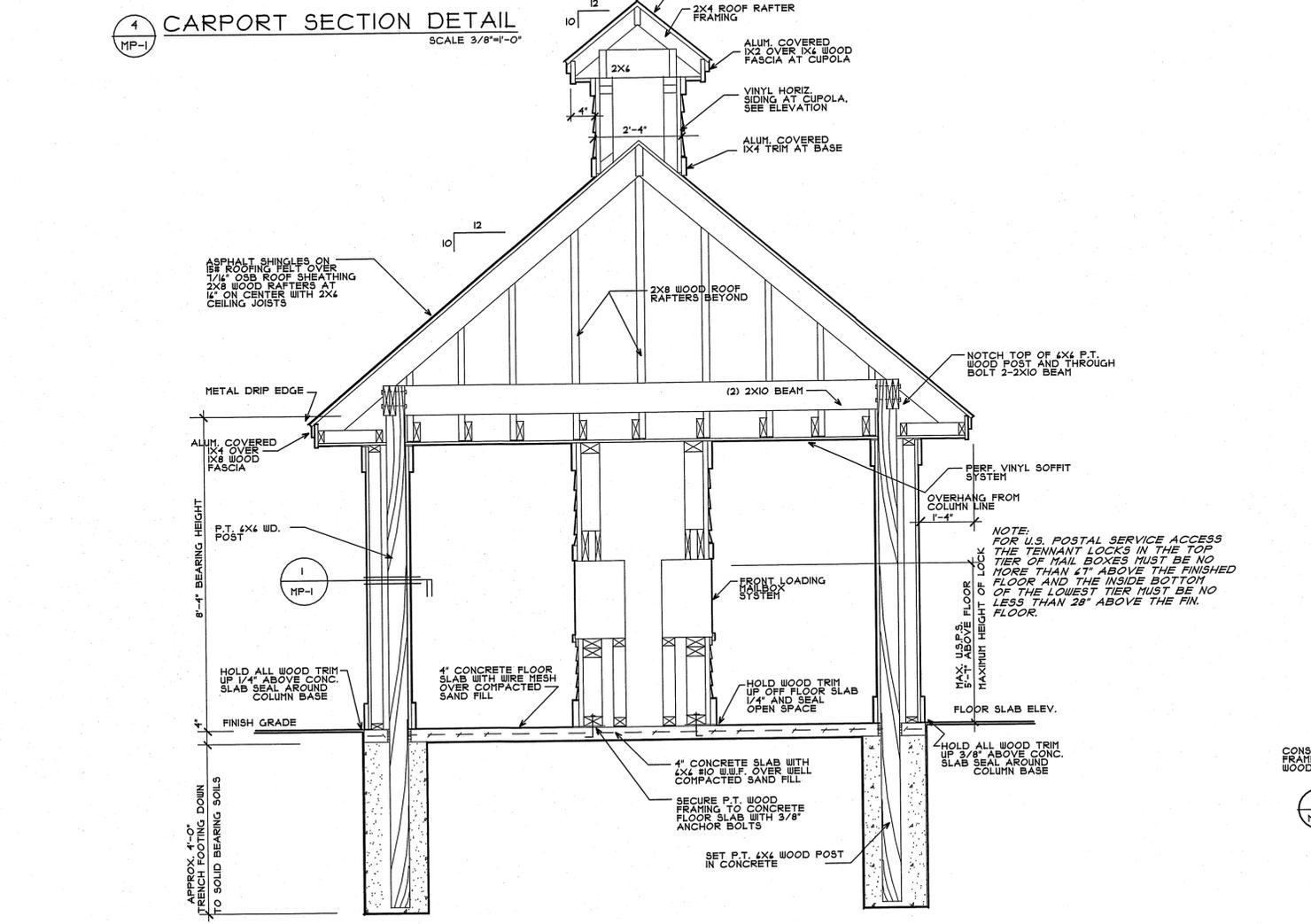
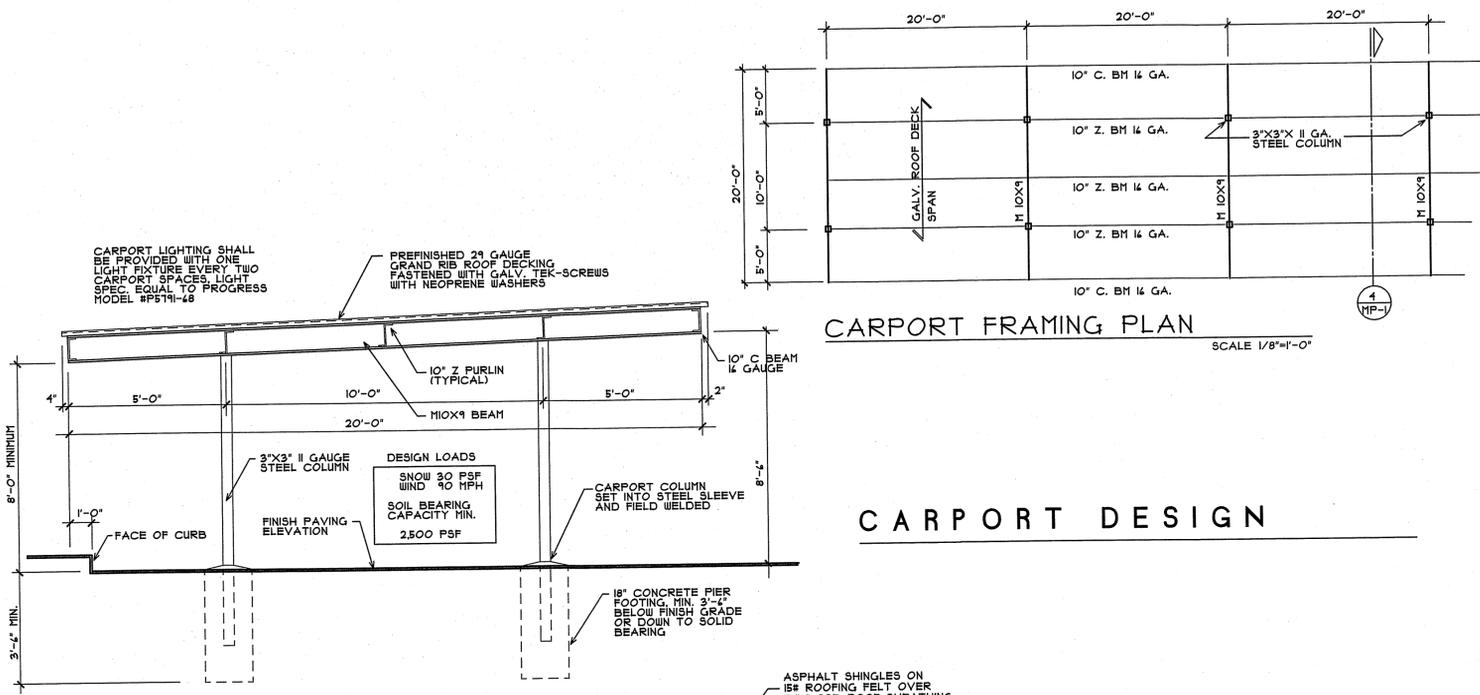
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 MARCH 18, 2014

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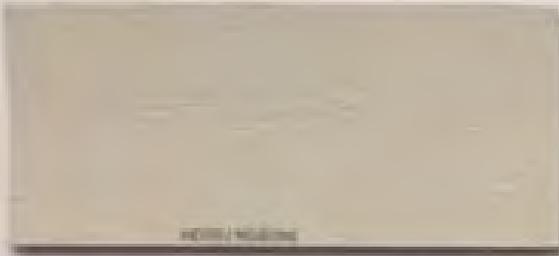




**Lakeshore Village Apartments**  
**Phase III**  
 Genoa Township, Livingston County, Michigan



sheet  
 MAIL PAVILION FLOOR PLAN  
 SECTION/DETAILS  
 CARPORT DETAILS  
 drawing revisions  
 issue date  
 MARCH 18, 2014  
 sheet number  
 MPI



Main Siding | "Herringbone" Taupe



Trim | "Colonial" White



Accent Siding | "Cypress" Olive



Roofing | "Shingles" Black



Door Style | "Colonial" Oak



Door Paint | "Rugged" Brown



Windows | "Colonial" White



Shutters | "Rugged" Brown



# MEMO

**TO:** Genoa Township Board

**FROM:** Michael Archinal, Manager *[Signature]*

**DATE:** May 11, 2016

**RE:** Lake Edgewood WWTP – Successful Closure of Part 201 Site

.....

In 1999, quarterly groundwater monitoring results indicated that the Lake Edgewood WWTP effluent contributed to sodium and chloride above permitted limits in the local groundwater. In March 2000, Genoa Township entered into a Consent Order Agreement with the Michigan Department of Environmental Quality (MDEQ) to reduce the concentrations of sodium and chloride in the local aquifer. The Consent Order required the Township to:

- Investigate and reduce the source of sodium and chloride entering the WWTP site;
- Complete a remedial investigation to determine the extent the sodium and chloride plume; and,
- Complete a remedial action plan outlining how the Township will reduce the concentrations in the local aquifer

By 2006 the Township had completed the above tasks; identifying water softener usage as the main source of elevated sodium and chloride, implementing system wide water softener inspections to reduce the sodium and chloride coming into the WWTP, installation of monitoring wells at the site to track the concentrations in the local aquifer, and submittal of the Remedial Action Plan. The Remedial Action Plan required annual groundwater and residential sampling until the local groundwater was below criteria.

By implementing the water softener inspection program, removing a dialysis center from the facility, and serving portions of the district with MHOG water, the Township drastically reduced the effluent sodium and chloride levels. The average effluent sodium and chloride concentrations have been below the current drinking water criteria since 2006. Unfortunately, between 2006 and 2010, we saw increasing concentrations in the local aquifer during the annual sampling events. Therefore, since 2010, the Township Utility Department has been investigating alternate sources of sodium and chloride at this site in an attempt to close the site.

The Utility Department successfully identified an upstream pond, which is impacted by road salt, as an alternate source of sodium and chloride in this area. The Utility Department submitted the Annual Groundwater Monitoring Reports, a Mixing Zone Determination Request, and a No Further Action Report between 2010 and 2016. Thanks to the diligent efforts of Utility Department staff, specifically Tesha Humphriss and Greg Tataro, I am pleased to report that after years of investigation, remediation, negotiation, and interaction with the MDEQ, the Township received approval from the MDEQ on April 29, 2016, for closure of this site. This saves the Lake Edgewood operations and maintenance operation fund about \$16,000 annually, which equates to approximately 4.5% of the \$350,000 annual budget for this fund, while still being protective of the local ground water aquifer and Woodland Lake.