

MEMORANDUM

Community Development Department
 City of Royal Oak, Michigan

Meeting Date: July 12, 2016
 211 Williams St. / P.O. Box 64
 Royal Oak, MI 48068-0064
 Phone: (248) 246-3280
 Fax: (248) 246-3005
 www.romi.gov

DATE: June 28, 2016
 TO: Planning Commission
 FROM: Planning Division

SUBJECT: Conditional Rezoning from One Family Residential and Neighborhood Business to Mixed Use 2 and associated Site Plan (SP 16-07-18) to redevelop site of former religious institution and off-street parking lot into 28 townhouse multiple-family dwelling units in 7 buildings at 3506 Rochester Rd. (parcel nos. 25-03-377-030 & 25-03-378-001)
 Robertson Brothers Homes, Petitioner
 First United Methodist Church of Royal Oak, Owner
 Nowak & Fraus, PLLC, Engineer / Alexander V. Bogaerts & Associates, PC, Architect

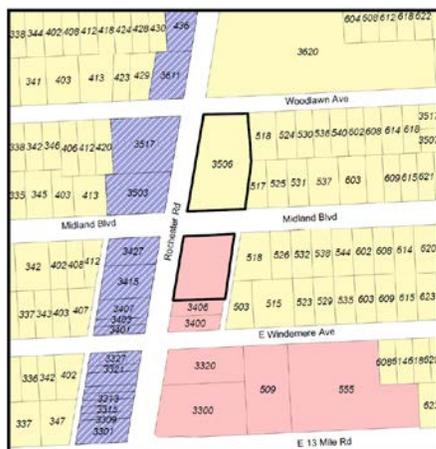
1. Location & Existing Conditions

The properties are located on the east side of Rochester Road at the intersection of Midland Boulevard. The parcel at the southeast corner is a parking lot with 190.80 feet of frontage and 28,620 square feet of lot area, plus an 18-foot alley along the east rear lot line. The parcel at the northeast corner is occupied by a church and has 281.60 feet of frontage and 43,440 square feet of lot area. Surrounding uses include detached single-family dwellings to the east and a mixture of commercial, multiple-family, and institutional uses to the north, south, and west.



2. Zoning & Future Land Use

The parking lot south of Midland Boulevard is zoned "Neighborhood Business" while the lot to the north with a church is zoned "One Family Residential" (left). The planned use for both on the Future Land Use Map of the city's Master Plan is "Public / Institutional" (right).



Zoning Map

Future Land Use Map

3. Road Classification

The Master Plan's Functional Road Classification System identifies Rochester Road as a "principal arterial." Streets designated as arterials are at the top of the classification hierarchy and their primary function is to carry vehicles long distances and provide through-travel movements. Midland Boulevard and Woodlawn Avenue are designated as "local streets." This designation is at the bottom of the classification hierarchy and such streets are meant to provide access to individual properties and carry low volumes of traffic.

4. Prior Actions

SP 15-07-16 – July 14, 2015: The Planning Commission recommended that both parcels be conditionally rezoned by the City Commission from One Family Residential and Neighborhood Business to Mixed Use 2, and that the associated site plan to redevelop the site into 23 townhouse multiple-family dwelling units within five buildings be approved. The City Commission approved the conditional rezoning and site plan on first and second readings. The petitioner abandoned the project prior to executing the conditional zoning agreement.

SP 16-02-01 – February 9, 2016: The Planning Commission recommended that both parcels be conditionally rezoned by the City Commission from One Family Residential and Neighborhood Business to Mixed Use 2, and that the associated site plan to redevelop the site into 29 townhouse multiple-family dwelling units within nine buildings be approved. The petitioner abandoned the project before it reached the City Commission.

5. Conditional Rezoning

Another petitioner is now proposing for a third time to change the zoning of these parcels from One Family Residential and Neighborhood Business to Mixed Use 2 as a conditional rezoning under Section 405 of the Michigan Zoning Enabling Act (Act 110 of 2006). A new site plan is also proposed as part of the conditional rezoning to construct 28 townhouse multiple-family dwelling units, five more than proposed in 2015 and one less than the prior application reviewed earlier this year.

Under Section 405 of the Zoning Enabling Act, a petitioner may voluntarily offer in writing and the city may approve certain uses and development of property as a condition to rezoning land. Such conditions must be offered voluntarily by a petitioner; the city may not require that a petitioner offer conditions as a prerequisite for rezoning property. The conditions proposed by a petitioner as part of a conditional rezoning are supposed to result in recognizable and material benefits to the city that would unlikely be achieved otherwise under the site's existing zoning.

As part of a conditional rezoning request, the petitioner needs to specify what conditions they offer, what recognizable and material benefits these conditions will achieve that cannot be realized under the site's existing zoning, and how these benefits justify the rezoning and outweigh having certain aspects of their proposed site plan not meet required Zoning Ordinance standards.

In approving conditions to a rezoning, the city may establish a time period during which the conditions apply. If the conditions are not satisfied within the time specified then the land reverts to its former zoning classification. During the approved time period the city can

neither add to nor alter the conditions. The time period can be extended by mutual agreement between the city and petitioner.

As part of a conditional rezoning the city may waive required standards of the Zoning Ordinance if it is felt the conditions proposed by the petitioner and the benefits that would result from them outweigh the need to meet such standards. Conversely, compliance with some or all Zoning Ordinance standards may be required by the city.

6. Proposed Use & Site Plan

- A. Proposed Use. The petitioner proposes to demolish the existing church and construct 17 townhouse-style multiple-family dwelling units within four buildings on the parcel between Midland Boulevard and Woodlawn Avenue. (The project approved in 2015 had three buildings with 14 units while the application earlier this year had six buildings with 18 units.) Two buildings facing Rochester Road to the west would contain a total of seven units (buildings 2 and 3). One building with three units would face Woodlawn Avenue to the north (building 1) and another building is proposed facing the east rear lot line with seven units (building 4).

This parcel is zoned One Family Residential and only one detached single-family dwelling unit is allowed per lot within that zoning district according to § 770-34 (B)(1) of the Zoning Ordinance.



The petitioner also proposes to construct three buildings with a total of 11 dwelling units on the parcel at the southeast corner of Midland Boulevard. (Two buildings with nine units were approved in 2015 while the application earlier this year had 11 units in three buildings.) One building with four units would face Rochester Road to the west (building 6) and another building with four units would face Midland Boulevard to the north (building 5). Three more units would be contained in a third building facing east towards the alley right-of-way (building 7).

This parcel is zoned Neighborhood Business and only dwelling units above a ground floor of a permitted use other than parking are allowed under § 770-39 (C)(5). Dwelling units by themselves, whether single-family, two-family, or multiple-family, are not allowed within the Neighborhood Business zoning district.

- B. Lot Area & Number of Units. Density for multiple-family dwelling units in the Mixed Use 2 zoning district is determined by lot size according to the same standards applied within the Multiple Family Residential zoning district under § 770-37 (D)(3)(a). The first two units require 9,000 square feet of lot area while each additional unit requires 3,000 more square feet per unit. Together both parcels have 70,060 square feet of total lot area which could permit up to 23 dwelling units if zoned Mixed Use 2 or Multiple Family Residential.

Twenty-eight units as proposed by the petitioner would require 87,000 square feet of lot area in either the Mixed Use 2 or Multiple Family Residential zoning districts. A waiver will therefore be necessary as part of the conditional rezoning to allow 28 dwelling units.

The proposed townhouse-style units would be defined as multiple-family dwellings under § 770-8 of the Zoning Ordinance. They could also be defined as single-family attached dwellings since none of the buildings have more than eight dwelling units and all units have their own individual exterior entrance.

The proposed dwelling units have two or three bedrooms each and 1,489 square feet of floor area excluding the attached garages. Under § 770-23 (C), three-bedroom dwelling units must have a minimum floor area of 750 square feet.

- C. Setbacks & Building Height. A minimum setback of 10 feet from all lot lines is required for multiple-family buildings in the Mixed Use 2 zoning district under § 770-46 (D)(3)(b). Buildings 1, 2, and 3 would have 25-foot setbacks from all adjacent streets. Building 1 would also have a 48.5-foot setback from the east rear lot line. Building 4 would have a 25-foot setback from Midland Boulevard and a setback of 31 feet 2 inches from the east rear lot line.

Buildings 5 and 6 at the southeast corner of Rochester Road and Midland Boulevard would have 25-foot setbacks from both streets. Building 5 would also have a setback of between 37 feet and 44 feet from the public alley while building 6 would have a 10-foot south side yard setback. Building 7 would have a setback of approximately 24 feet from the east rear lot line along the public alley.

A maximum building height of 30 feet is permitted under § 770-46 (D)(2) in the Mixed Use 2 zoning district. The façade elevations specify a height of 33 feet 8 1/16 inches to the midpoint of each building's roof peak. A waiver will therefore be necessary as part of the conditional rezoning to allow the additional 3 feet 8 1/16 inches of building height.

- D. Parking. Two off-street parking spaces are required for each dwelling unit according to § 770-107. Each unit would have a two-car attached garage at ground level and therefore meet the minimum required amount of off-street parking.

The petitioner also proposes surface parking spaces, four on the parking lot parcel and seven on the church parcel. Four of the surface parking spaces on the church parcel are placed within the required 10-foot setback from Midland Boulevard. Parking within a required front yard setback is prohibited under § 770-105 (C) unless specifically permitted by the Planning Commission. One of these spaces also requires vehicles to maneuver over the sidewalk and into the right-of-way in order to exit, a condition that is prohibited under § 770-109 (E).

A waiver will therefore be necessary as part of the conditional rezoning to allow parking within the required setback from Midland Boulevard. However, staff instead recommends that these spaces be removed.

- E. Vehicular & Pedestrian Access. Access to buildings on the church parcel would be provided by two 20-foot driveways, one each to Woodlawn Avenue and Midland Boulevard. Buildings on the parking lot parcel would be accessed by a 22-foot driveway to Midland Boulevard. Neither parcel would have a driveway to Rochester Road.

The first-floor front entrance of all units except for the three in building 7 would be connected with a walkway to a public sidewalk of a nearby or adjacent street.

- F. Emergency Access. The second-level balconies above the garage doors may present an issue for emergency vehicles. The façade elevations indicate the bottoms of the balconies are between eight feet and 11 feet above the pavement. According to the Fire Marshall a minimum height of 13 feet 6 inches is required where the balconies project above maneuvering aisles and garage entrances. The balconies may need to be modified accordingly to comply with the required standards of the Fire Code.

No access is provided to the public alley from the parking lot parcel as on prior plans. The petitioner has instead reconfigured the maneuvering aisle and parking area on this parcel to the satisfaction of the Fire Department.

- G. Landscaping & Screening. Screening is required along the east rear lot lines of each parcel in accordance with § 770-90 (D) due to the adjacent One Family Residential zoning of properties to the east. A landscaped buffer with a combination of evergreens, deciduous trees, earthen berms, or masonry walls may be required under this subparagraph at the discretion of the Planning Commission.

Staff recommended a landscaped greenbelt along the east rear lot lines of each parcel in 2015. Suggested plantings were a mixture of 6-foot evergreens and 2.5-inch caliper deciduous trees planted at 20 feet of center in a staggered pattern. This latest landscaping plan proposes a greenbelt along the east rear lot line of the church lot with eight deciduous trees having calipers of two to three inches and 11 evergreen trees with a height of six feet.

Only two new deciduous trees are proposed on the parking lot parcel along the public alley; however, the landscaping plan notes that several existing mature trees will remain. Staff recommended that these trees be kept as part of the previous applications since they provide excellent screening for the single-family neighborhood to the east. The species and calipers of these existing trees should be identified on the landscaping plan, however.

The site plan also includes front yard greenbelts along Rochester Road, Midland Boulevard, and Woodlawn Avenue, with deciduous trees in front of each unit and evergreens between parking areas and the right-of-way. Street trees are also provided along Woodlawn Avenue and Midland Boulevard. Street trees within the Rochester Road right-of-way are not provided due to the lack of space between the sidewalks and curbs according to the petitioner.

- H. Signage. Neither property is located within a designated sign area. However, any multiple-family development with four or more units facing a major street is allowed one wall sign of up to 20 square feet under § 607-14 (J)(1) of the Sign Ordinance. This would allow any one of the buildings facing Rochester Road to have a 20-square foot wall sign.

Additionally, any multiple-family development with 12 or more units facing a major street is allowed one monument sign under § 607-14 (J)(2), provided it has a maximum height of five feet, a maximum area of 25 square feet, and a minimum setback of 10 feet from any right-of-way. This could also allow the petitioner to install such a monument sign along Rochester Road.

- I. Public Input. At the Planning Commission meeting of May 10, 2016, property owners from the surrounding neighborhood submitted several written comments in opposition to both conditional rezoning and site plan applications that were previously approved for this location. Their comments are attached as a separate link on the city's website in addition to all other plans and documents for this application.
- J. Deviations from Required Standards. The following deviations as identified by staff from required Zoning Ordinance standards would be required as part of the conditional rezoning proposed by the petitioner:

- *Minimum required lot area of 87,000 square feet for 28 dwelling units [existing lot area of 70,060 square feet allows 23 units].*
- *Maximum permitted 30-foot building height [buildings with height of 33 feet 8 1/16 inches proposed].*
- *Off-street parking within required setback and maneuvering aisle encroaching into adjacent right-of-way [10-foot north front yard setback required from Midland Boulevard; maneuvering into adjacent right-of-way not permitted].*

The site plan would otherwise comply with required Zoning Ordinance standards, provided the Planning Commission approves or modifies the landscaping and screening proposed by the petitioner in accordance with § 770-90 (M).

Again, staff recommends that the waiver for the off-street parking spaces within the Midland Boulevard right-of-way not be allowed, and that these spaces be removed. Further, if the minimum lot area waiver is not authorized the petitioner would be limited to only 23 dwelling units.

7. Results of Approval

Following a public hearing, the Planning Commission may recommend that the City Commission either approve or deny a conditional rezoning request including any conditions voluntarily offered by the petitioner. The Planning Commission may also request additional information from the petitioner and postpone making recommendation. A recommendation for approval or denial is forwarded to the City Commission with two readings required in order to change the zoning of any property.

8. Recommendations

In reviewing an application for an amendment to the Zoning Map, the Planning Commission must consider the following criteria as contained in § 770-129 of the Zoning Ordinance,

among other factors they may deem appropriate, in making their findings, recommendation, and decision:

- A. *The requested zone should be consistent with the goals, policies and future land use map of the Master Plan, including any location-specific or corridor studies. If conditions have changed since the Master Plan was adopted, as determined by the Planning Commission or City Commission, the consistency with recent development trends in the site's area shall be considered.*
- B. *The site's physical, geological, hydrological and other environmental features should be compatible with the host of principal permitted and special land uses in the proposed zone.*
- C. *Evidence should document the applicant cannot receive a reasonable return on investment through developing the property with one or more of the principal permitted and special land uses under the current zoning.*
- D. *The potential uses allowed in the proposed zone should be compatible with surrounding uses and zoning in terms of land suitability, impacts on the environment, density, nature of use, traffic volumes, aesthetics, infrastructure, and potential influence on property values.*
- E. *The street system should be capable of safely and efficiently accommodating expected traffic volumes generated by potential uses in the requested zone.*
- F. *The capacity of public utilities and services should be sufficient to accommodate the potential uses in the requested zone without compromising the City's health, safety and welfare.*
- G. *There should be an apparent demand in the City for the types of potential uses in the requested zone in relation to the amount of land in the City currently zoned and available to accommodate the demand.*
- H. *The requested zone shall not create an isolated and unplanned spot zone.*
- I. *Other criteria as determined by the Planning Commission or City Commission which would protect the public health, safety and welfare, protect public and private investment in the City, promote implementation of the goals, objectives and policies of the Master Plan and any amendments thereto, and enhance the overall quality of life in the City.*

Should the Planning Commission recommend approval of the conditional rezoning and its associated site plan by the City Commission, the Planning Division recommends the following contingencies:

- A. A conditional zoning agreement between the petitioner and the city shall be submitted for review by the City Attorney prior to approval by the City Commission, specifying all conditions voluntarily offered by the petitioner.
- B. Prior to review of the conditional zoning agreement by the City Commission, the petitioner shall submit a revised site plan and landscaping plan for review and approval by the Planning Division containing all required information including the following:
 - (1) The species and calipers of existing trees to remain along and within the public alley adjacent to parcel 25-03-378-001 shall be identified;
 - (2) Balconies shall have a minimum clearance to grade as required by the Fire Marshall; and
 - (3) Off-street parking spaces within the 25-foot setback from Midland Boulevard shall be removed.
- C. All work and/or improvements within the public right-of-way shall be in accordance with the specifications and standards of the City Engineer, including, but not limited to, the following:
 - (1) All new or replaced sidewalks, driveway approaches, curbs, gutters, etc.;
 - (2) Replacing asphalt within the Midland Boulevard right-of-way between the sidewalk and curb with lawn; and
 - (3) Removing all existing driveways and approaches to Rochester Road, and restoring the curb, sidewalk, and right-of-way.

- D. Any exterior lighting fixtures shall comply with § 770-96 (B) of the Zoning Ordinance and other city codes and ordinances.
- E. All signage shall comply with the Sign Ordinance (Chapter 607 Signs, Article II Sign Regulations) or receive necessary variances from the Planning Commission.
- F. A performance bond shall be posted in an amount to be determined by the Building Official.
- G. The site plan shall meet all other code and ordinance requirements, as determined by the Building Official, Fire Marshal, and City Engineer, **prior** to issuance of **any** building permit. Such requirements include, but are not limited to, the Michigan Building Code, the Fire Prevention Ordinance (Chapter 340), and the Stormwater Detention Ordinance (Chapter 644).

It is recommended that the petitioner or a representative attend the July 12, 2016 Planning Commission meeting. The meeting starts at 7:30 p.m. in the City Commission Chambers on the 3rd floor of City Hall.

cc: Tim Loughrin Robertson, Brothers Homes
Brad W. Brickel, PE, Nowak & Frauss Engineers, PLLC
Alexander V. Bogaerts, RA, Alexander V. Bogaerts & Associates, PC
Charlene Kondrat, First United Methodist Church of Royal Oak

Owner / Developer

ROBERTSON BROTHERS CO.
6905 TELEGRAPH ROAD
SUITE 200
BLOOMFIELD HILLS, MI 48301
CONTACT:
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PH: 248-282-1432
FAX: 248-282-1423

Civil Engineer

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVENUE
PONTIAC, MI 48342
CONTACT:
MR. BRAD W. BRICKEL, P.E.
248-332-7931 PHONE
248-332-8257 FAX

Architect

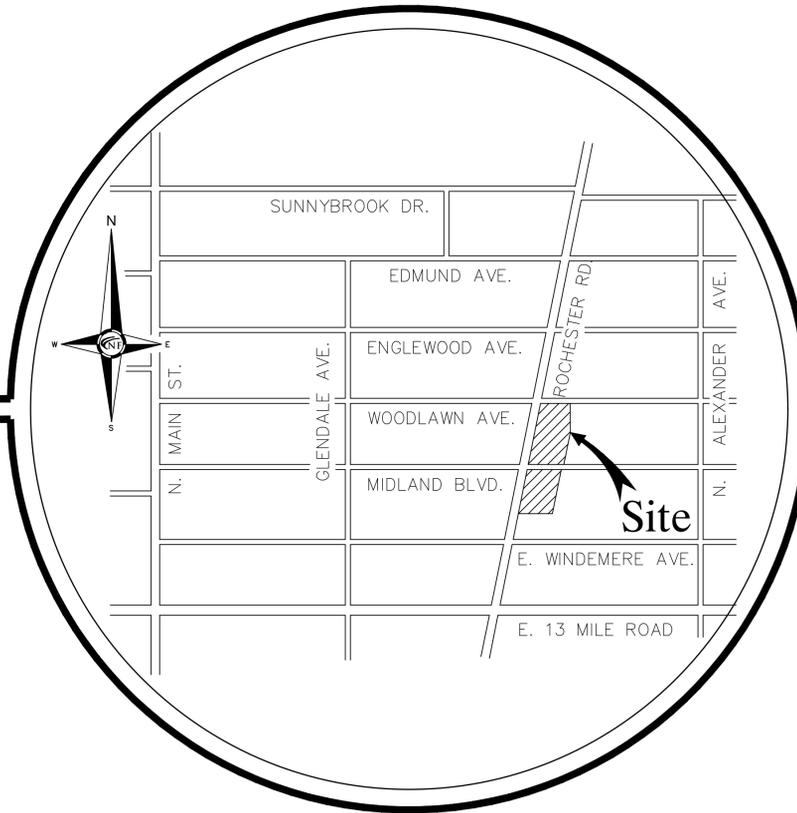
ALEXANDER V. BOGAERS + ASSOCIATES, P.C.
2445 FRANKLIN ROAD
BLOOMFIELD HILLS, MI 48302
CONTACT:
248.334.5000 PHONE

Landscape Architect

LAND DESIGN STUDIO
18161 W. THIRTEEN MILE RD., SUITE B-4
SOUTHFIELD, MI 48076
CONTACT:
MR. TAD KREAR
248.594.3220 PHONE
248.230.4168 FAX

City of Royal Oak, Oakland County, Michigan SITE PLAN PACKAGE DOCUMENTS Multiple Family Residential Project Prepared For Robertson Brothers Co.

PART OF THE SW. 1/4 OF SECTION 3,
T. 1 NORTH, R. 11 EAST, CITY OF ROYAL OAK,
OAKLAND COUNTY, MICHIGAN



LOCATION MAP

Project Name

3506 Rochester Rd.

LEGAL DESCRIPTION

LAND SITUATED IN THE COUNTY OF OAKLAND, CITY OF ROYAL OAK, STATE OF MICHIGAN, IS DESCRIBED AS FOLLOWS:

PARCEL 1:

LOT(S) 417, 418, 419, 420, 421, AND 422, INCLUDING 1/2 ADJACENT VACATED ALLEY OF OAK RUN SUBDIVISION ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 12 OF PLATS, PAGES 15 AND 16 OF OAKLAND COUNTY RECORDS.

EXCEPTING THEREFROM

THAT PART OF LOTS 420, 421 AND 422, INCLUDING 1/2 ADJACENT VACATED ALLEY, OAK RUN SUBDIVISION, ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 12 OF PLATS, PAGES 15 AND 16 OF OAKLAND COUNTY RECORDS, LYING WITHIN THE FOLLOWING DESCRIBED PARCEL: LOT 465, EXCEPT THE EAST 57.50 FEET, INCLUDING 1/2 ADJACENT VACATED ALLEY, ALSO PART OF LOTS 420 THROUGH 422, BOTH INCLUSIVE, INCLUDING PART OF ADJACENT VACATED ALLEY, OAK RUN SUBDIVISION, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 12 OF PLATS, PAGES 15 AND 16, OAKLAND COUNTY RECORDS, DESCRIBED AS FOLLOWS: BEGINNING AT A POINT DISTANT SOUTH 89 DEGREES 14 MINUTES 27 SECONDS EAST, 128.84 FEET ALONG THE NORTHERLY LINE OF SAID LOT 422 AND THE SOUTHERLY LINE OF WOODLAWN AVENUE (50 FEET WIDE) FROM THE NORTHWEST CORNER OF SAID LOT 422; THENCE CONTINUING ALONG SAID LINES AND THE NORTHERLY LINE OF SAID LOT 465, SOUTH 89 DEGREES 14 MINUTES 27 SECONDS EAST, 82.40 FEET; THENCE SOUTH 00 DEGREES 45 MINUTES 33 SECONDS WEST, 140.00 FEET TO A POINT ON THE SOUTHERLY LINE OF SAID LOT 465; THENCE NORTH 89 DEGREES 14 MINUTES 27 SECONDS WEST, 82.40 FEET ALONG THE SOUTHERLY LINE OF SAID LOT 465 TO A POINT ON THE CENTERLINE OF A 18 FOOT WIDE VACATED ALLEY; THENCE NORTH 00 DEGREES 45 MINUTES 33 SECONDS EAST, 140.00 FEET TO THE POINT OF BEGINNING.

TAX ITEM NO. 25-03-377-030

PARCEL 2:

LOT(S) 350, 351, 352 AND 353 OF OAK RUN SUBDIVISION ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 12 OF PLATS, PAGES 15 AND 16 OF OAKLAND COUNTY RECORDS.

TAX ITEM NO. 25-03-378-001

SHEET INDEX

- SP0 Cover Sheet
- SP1 Engineering Site Plan
- SP2 Project Notes, Details & Calculations Plan
- SP3 Emergency Vehicle Access Plan
- SP4 ALTA/NSPS Land Title / Topographic Survey
- L1 Overall Site Landscape Plan
- L2 Foundation Planting Enlargements / Landscape Details

REVISIONS:
06-07-16 ISSUED FOR SITE PLAN REVIEW
06-24-16 REVISED PER CITY REVIEW

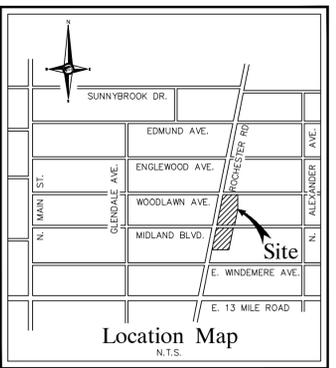
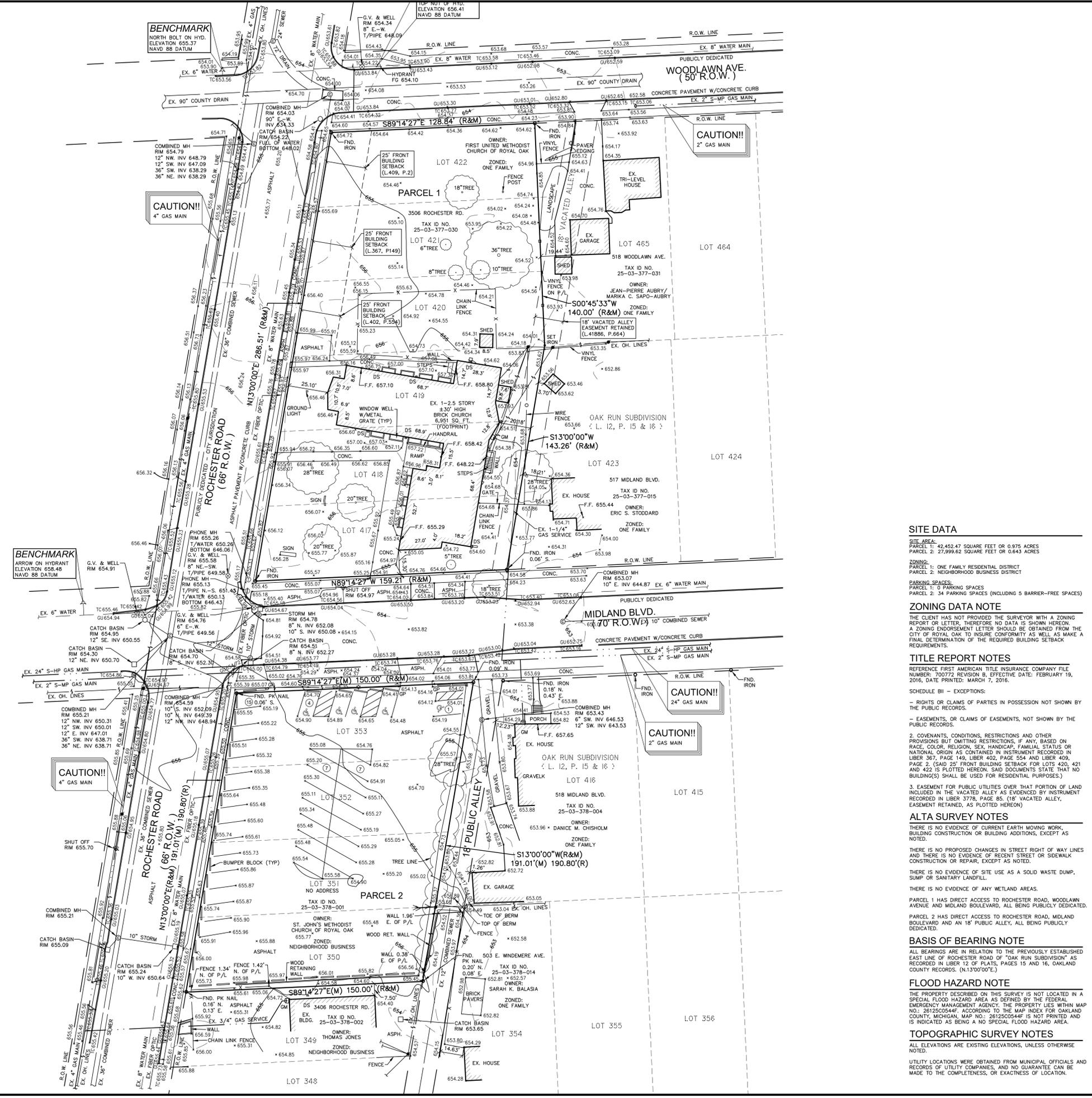


N & F JOB #F886-01



CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257



CERTIFICATE OF SURVEY

CERTIFIED TO:
-ROBERTSON BROTHERS CO., ON BEHALF OF AN ENTITY TO BE FORMED
-FIRST UNITED METHODIST CHURCH OF ROYAL OAK, A MICHIGAN NON-PROFIT CORPORATION, SUCCESSOR BY MERGER TO ST. JOHN'S UNITED METHODIST CHURCH OF ROYAL OAK FKA ST. JOHN'S METHODIST CHURCH OF ROYAL OAK
-FIRST AMERICAN TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDE ITEMS 1, 2, 3, 4, 6(c), 7(c), 7(b)(1), 7(c), 8, 9, 11, 13, 14, 15, 16, 17, 18 AND 20 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON APRIL 8, 2016.

KEVIN NAVAROL, P.S. NO. 53503
4-15-2016
DATE

LEGAL DESCRIPTION - PER TITLE COMMITMENT

LAND SITUATED IN THE COUNTY OF OAKLAND, CITY OF ROYAL OAK, STATE OF MICHIGAN, IS DESCRIBED AS FOLLOWS:
PARCEL 1:
LOT(S) 417, 418, 419, 420, 421, AND 422, INCLUDING 1/2 ADJACENT VACATED ALLEY OF OAK RUN SUBDIVISION ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 12 OF PLATS, PAGES 15 AND 16 OF OAKLAND COUNTY RECORDS.

EXCEPTING THEREFROM
THAT PART OF LOTS 420, 421 AND 422, INCLUDING 1/2 ADJACENT VACATED ALLEY OF OAK RUN SUBDIVISION ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 12 OF PLATS, PAGES 15 AND 16, OAKLAND COUNTY RECORDS, DESCRIBED AS FOLLOWS: BEGINNING AT A POINT DISTANT SOUTH 89 DEGREES 14 MINUTES 27 SECONDS EAST, 128.84 FEET ALONG THE NORTHERLY LINE OF SAID LOT 422 AND THE SOUTHERLY LINE OF WOODLAWN AVENUE (50 FEET WIDE) FROM THE NORTHWEST CORNER OF SAID LOT 422; THENCE CONTINUING ALONG SAID LINES AND THE NORTHERLY LINE OF SAID LOT 465, SOUTH 89 DEGREES 14 MINUTES 27 SECONDS EAST, 82.40 FEET; THENCE SOUTH 00 DEGREES 45 MINUTES 33 SECONDS WEST, 140.00 FEET TO A POINT ON THE SOUTHERLY LINE OF SAID LOT 465; THENCE NORTH 89 DEGREES 14 MINUTES 27 SECONDS WEST, 82.40 FEET ALONG THE SOUTHERLY LINE OF SAID LOT 465 TO A POINT ON THE CENTERLINE OF A 18 FOOT WIDE VACATED ALLEY; THENCE NORTH 00 DEGREES 45 MINUTES 33 SECONDS EAST, 140.00 FEET TO THE POINT OF BEGINNING.

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LOT(S) 350, 351, 352 AND 353 OF OAK RUN SUBDIVISION ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 12 OF PLATS, PAGES 15 AND 16 OF OAKLAND COUNTY RECORDS.

TAX ITEM NO. 25-03-377-030

PARCEL 1:
0 PARKING SPACES
34 PARKING SPACES (INCLUDING 5 BARRIER-FREE SPACES)

PARCEL 2:
0 PARKING SPACES
34 PARKING SPACES (INCLUDING 5 BARRIER-FREE SPACES)

PARCEL 1:
ONE FAMILY RESIDENTIAL DISTRICT
NEIGHBORHOOD BUSINESS DISTRICT

PARCEL 2:
NEIGHBORHOOD BUSINESS DISTRICT

PARCEL 1:
ONE FAMILY RESIDENTIAL DISTRICT
NEIGHBORHOOD BUSINESS DISTRICT

PARCEL 2:
NEIGHBORHOOD BUSINESS DISTRICT

PARCEL 1:
ONE FAMILY RESIDENTIAL DISTRICT
NEIGHBORHOOD BUSINESS DISTRICT

PARCEL 2:
NEIGHBORHOOD BUSINESS DISTRICT

PARCEL 1:
ONE FAMILY RESIDENTIAL DISTRICT
NEIGHBORHOOD BUSINESS DISTRICT

PARCEL 2:
NEIGHBORHOOD BUSINESS DISTRICT

PARCEL 1:
ONE FAMILY RESIDENTIAL DISTRICT
NEIGHBORHOOD BUSINESS DISTRICT

PARCEL 2:
NEIGHBORHOOD BUSINESS DISTRICT

**CIVIL ENGINEERS
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LAND PLANNERS**

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STATE OF MICHIGAN
KEVIN NAVAROLI
PROFESSIONAL SURVEYOR
NO. 53503
LICENSED PROFESSIONAL SURVEYOR

PROJECT
3506 Rochester Road
Royal Oak, MI 48073

CLIENT
Robertson Brothers Homes
6905 Telegraph Road,
Suite 200
Bloomfield Hills, MI 48301

Contact: Tim Loughrin
248.282.1428 - Phone
248.282.1432 - Fax

PROJECT LOCATION
Part of the SW 1/4
of Section 3
T.1N., R.11E.,
City of Royal Oak,
Oakland County, Michigan

SHEET
ALTA/NSPS Land Title /
Topographic Survey

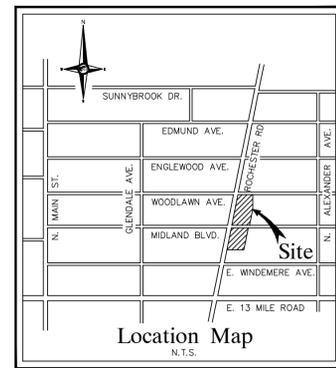
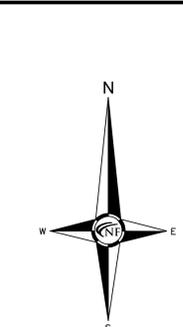
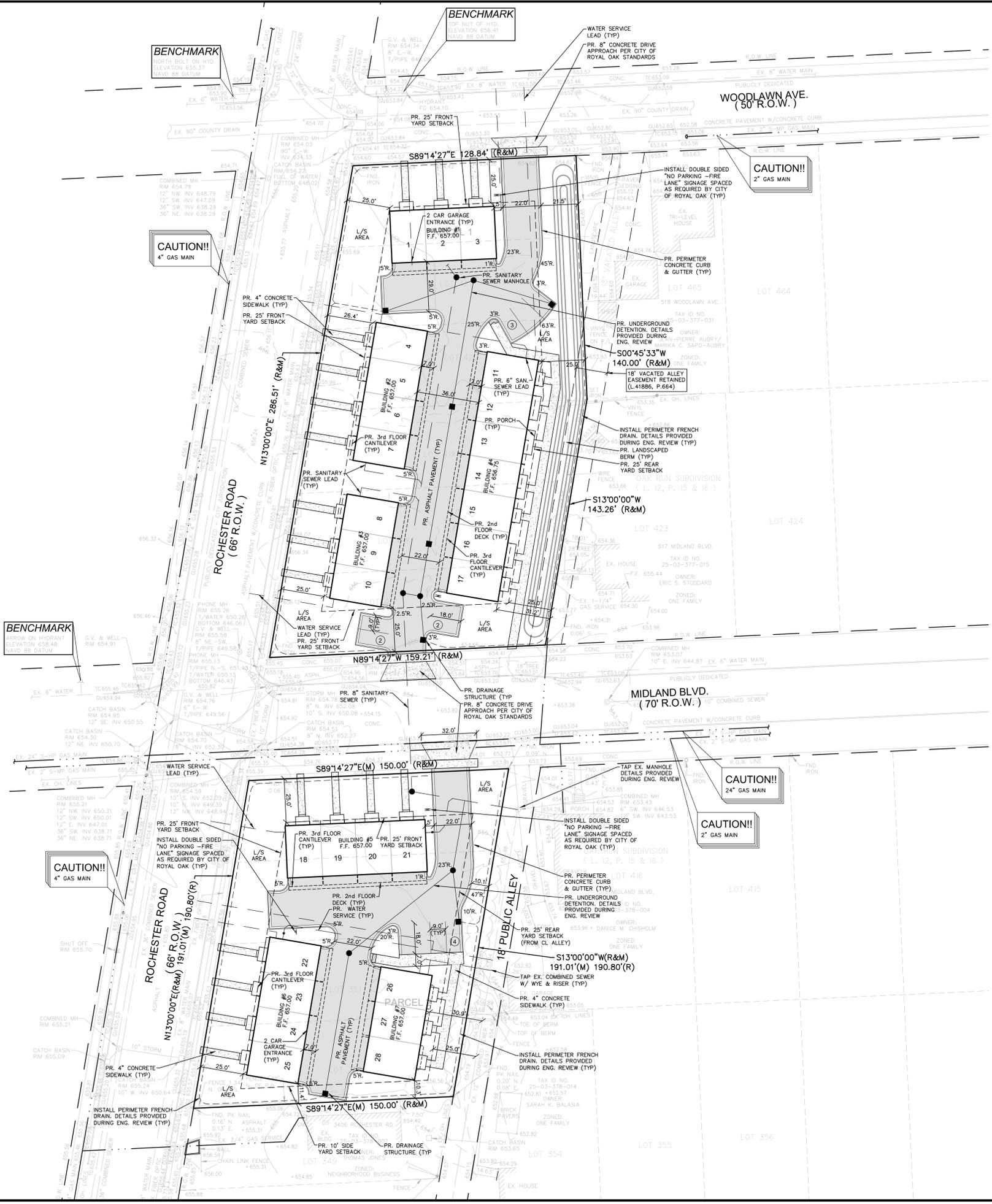
Know what's below
Call before you dig.

REVISIONS
06-03-16 ISSUED FOR SITE PLAN REVIEW
06-24-16 REVISED PER CITY REVIEW

DRAWN BY:
M. Carnaghi
DESIGNED BY:

APPROVED BY:
K. Navaroli
DATE:
April 15, 2016

SCALE: 1" = 30'
NFE JOB NO. SHEET NO.
F886-01 SP4



NF ENGINEERS
 CIVIL ENGINEERS
 LAND SURVEYORS
 LAND PLANNERS

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 FAX. (248) 332-8257

SITE DATA - NORTH PARCEL

SITE AREA: 42,452.47 SFT. OR 0.975 ACRES
 GROSS/NET: 42,452.47 SFT. OR 0.975 ACRES

ZONING: EXISTING: ONE-FAMILY RESIDENTIAL
 PROPOSED: MIXED USE 2

SITE AREA: 42,452.47 SFT. 100.0%
 BUILDING FOOTPRINT: 10,260.30 SFT. 24.2%
 PARKING & DRIVES: 14,363.12 SFT. 33.8%
 OPEN SPACE: 17,829.05 SFT. 42.0%
 UNIT SETBACK REQ. REQUIRED: 25.0'(N./W./S.)
 PROVIDED: 25.0'
 FRONT: 25.0'(N./W./S.) 25.0'(N./W./S.)
 REAR: 25.0' 25.0'

SITE DATA - SOUTH PARCEL

SITE AREA: 27,999.62 SFT. OR 0.643 ACRES
 GROSS/NET: 27,999.62 SFT. OR 0.643 ACRES

ZONING: EXISTING: NEIGHBORHOOD BUSINESS
 PROPOSED: MIXED USE 2

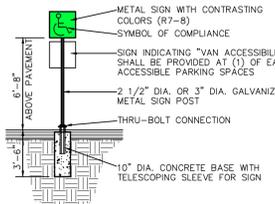
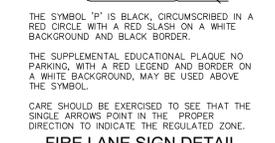
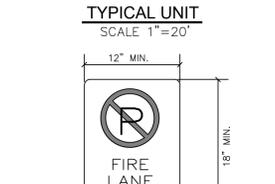
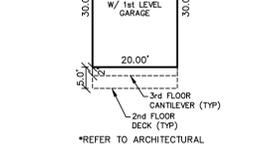
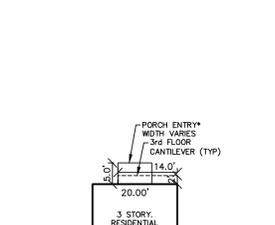
SITE AREA: 27,999.62 SFT. 100.0%
 BUILDING FOOTPRINT: 6,660.00 SFT. 23.8%
 PARKING & DRIVES: 9,995.59 SFT. 35.7%
 OPEN SPACE: 11,344.23 SFT. 40.5%
 UNIT SETBACK REQ. REQUIRED: 25.0'(N./W./S.)
 PROVIDED: 25.0'
 FRONT: 10.0'(S.) 10.3'(S.)
 REAR: 25.0'(E.) 30.9'(E.)

PARKING DATA

PARKING REQUIRED: 2 SPACES PER UNIT
 28 UNITS PROPOSED x 2 = 56 GARAGE SPACES

PARKING PROVIDED: 56 GARAGE SPACES
 11 SURFACE SPACES

TOTAL PARKING PROVIDED: 67 SPACES TOTAL



GARBAGE NOTE
 GARBAGE COLLECTION WILL BE INDIVIDUALLY COLLECTED AT REAR OF UNIT ON A REGULAR BASIS. NO OUTDOOR STORAGE OF REFUSE CONTAINERS ARE PROPOSED.

NOTES
 DETENTION DESIGN SHALL BE PROVIDED DURING THE ENGINEERING REVIEW PHASE.
 AT THE TIME OF FINAL RIGHT-OF-WAY COMPLETION AND APPROVAL, THE CITY WILL DETERMINE THE EXTENT AS TO THE PAYMENT RESTORATION AND/OR THE RESURFACING REQUIRED BY THE DEVELOPER.

A PERMIT FROM THE CITY OF ROYAL OAK ENGINEERING DEPARTMENT IS REQUIRED FOR ALL WORK WITHIN THE CAMPBELL ROAD RIGHT-OF-WAY.

LEGAL DESCRIPTION - AS SURVEYED
 LAND SITUATED IN THE COUNTY OF OAKLAND, CITY OF ROYAL OAK, STATE OF MICHIGAN, IS DESCRIBED AS FOLLOWS:
 LOT 27, EXCEPT THE SOUTH 355 FEET, OF ASSESSOR'S PLAT NO. 31, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 28 OF PLATS, PAGE 33, OAKLAND COUNTY RECORDS, ALSO DESCRIBED AS COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 16 TOWN 1 NORTH, RANGE 11 EAST, CITY OF ROYAL OAK, OAKLAND COUNTY, MICHIGAN; THENCE S.88°47'00"W. 32.74 FEET ALONG THE SOUTH LINE OF SAID SECTION 16; THENCE N.00°39'37"W. 729.75 FEET ALONG THE WEST LINE OF SAID SECTION 16; THENCE S.76°20'08"E. (RECORDED AS S.78°31'40"E.) 221.98 FEET ALONG THE SOUTHERLY RIGHT-OF-WAY LINE OF SAID N. SHERMAN DRIVE, ALSO BEING THE NORTHERLY LINE OF SAID LOT 27 TO THE POINT OF BEGINNING.

TAX ID NO. 25-16-380-028
 ADDRESS: 1023 N. SHERMAN DR., ROYAL OAK, MI 48067

PROPOSED USE NOTE
 DEVELOPMENT OF A 37 UNIT PROJECT WITH UNDERGROUND UTILITIES FOR USE AS A MULTIPLE FAMILY ATTACHED RESIDENTIAL.

RESIDENTIAL DEVELOPMENT NOTES
 UNITS SHOWN ARE PRELIMINARY ONLY. FINAL DESIGN TO BE PREPARED DURING ENGINEERING CONSTRUCTION REVIEW PHASE.

PAVING LEGEND

PROPOSED CONCRETE PAVEMENT

PROPOSED ASPHALT PAVEMENT

LEGEND

MANHOLE - EXISTING SANITARY SEWER
 HYDRANT - SAN. CLEAN OUT
 MANHOLE CATCH BASIN - EXISTING WATERMAIN
 EXISTING STORM SEWER
 EX. R. Y. CATCH BASIN
 EXISTING BURIED CABLES
 OVERHEAD LINES
 LIGHT POLE
 SIGN
 EXISTING GAS MAIN
 PR. SANITARY SEWER
 PR. WATER MAIN
 PR. STORM SEWER
 PR. R. Y. CATCH BASIN
 PROPOSED LIGHT POLE
 PR. TOP OF CURB ELEVATION
 PR. GUTTER ELEVATION
 PR. TOP OF WALK ELEVATION
 PR. TOP OF P.V.M.T. ELEVATION
 FINISH GRADE ELEVATION



PROJECT
 3506 Rochester Road
 Royal Oak, MI 48073

CLIENT
 Robertson Brothers Homes
 6905 Telegraph Road,
 Suite 200
 Bloomfield Hills, MI 48301

Contact: Tim Loughrin
 248.282.1428 - Phone
 248.282.1432 - Fax

PROJECT LOCATION
 Part of the SW 1/4
 of Section 16
 T.1N., R.11E.,
 City of Royal Oak,
 Oakland County, Michigan

SHEET
 Stringer Dimension Plan



REVISIONS

06-03-16 ISSUED FOR SITE PLAN REVIEW
 06-24-16 REVISED PER CITY REVIEW

DRAWN BY:
 R. Johnson

DESIGNED BY:
 B. Brickel

APPROVED BY:
 B. Brickel

DATE:
 April 15, 2016

SCALE: 1" = 30'

NFE JOB NO. **SHEET NO.**
F886-01 **SP1**



**CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS**

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

SEAL



Brad Brickell

PROJECT
3506 Rochester Road
Royal Oak, MI 48073

CLIENT
Robertson Brothers Homes
6905 Telegraph Road,
Suite 200
Bloomfield Hills, MI 48301

Contact: Tim Loughrin
248.282.1428 - Phone
248.282.1432 - Fax

PROJECT LOCATION
Part of the SW 1/4
of Section 3
T.1N., R.11E.,
City of Royal Oak,
Oakland County, Michigan

SHEET
Project Notes, Details &
Calculations Plan



**Know what's below
Call before you dig.**

REVISIONS
06-03-16 ISSUED FOR SITE PLAN REVIEW
06-24-16 REVISED PER CITY REVIEW

DRAWN BY:
R. Johnson
DESIGNED BY:
B. Brickell
APPROVED BY:
B. Brickell

DATE:
April 15, 2016
SCALE: N.T.S.

DRAWN BY:
R. Johnson
DESIGNED BY:
B. Brickell
APPROVED BY:
B. Brickell
DATE:
April 15, 2016
SCALE: N.T.S.

DRAWN BY:
R. Johnson
DESIGNED BY:
B. Brickell
APPROVED BY:
B. Brickell
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R. Johnson
DESIGNED BY:
B. Brickell
APPROVED BY:
B. Brickell
DATE:
April 15, 2016
SCALE: N.T.S.

CITY OF ROYAL OAK NOTES
NOTIFY THE CITY OF ROYAL OAK ENGINEERING DEPARTMENT AT (248)246-3260 A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION AND PRIOR TO INSPECTIONS.

ALL CONSTRUCTION MUST BE CONFORMING TO THE CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY THE CITY OF ROYAL OAK.

CALL MISS DIG (800)482-7171 OR 811 A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.

ALL SOIL EROSION AND SEDIMENT MUST BE CONTROLLED AND CONTAINED ON SITE. THE CONTRACTOR SHALL NOTIFY MISS DIG AND THE LOCAL COMMUNITY (WHERE APPLICABLE) TO STAKE LOCATIONS OF EXISTING UTILITIES.

ALL EXCAVATION UNDER OR WITHIN 3 FEET OF PUBLIC PAVEMENT, EXISTING OR PROPOSED, SHALL BE BACKFILLED AND COMPACTED WITH MDOT CLASS II SAND PER THE CITY OF ROYAL OAK REQUIREMENTS.

THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO PUBLIC UTILITIES, PAVEMENT, CURB, GUTTER AND GUTTER AND SIDEWALK IN THE PUBLIC RIGHT-OF-WAY.

PRIOR TO THE ISSUANCE OF AN OCCUPANCY PERMIT, ALL RIGHT-OF-WAY AND STORM DETENTION WORK SHALL BE COMPLETED AND APPROVED AND ALL REQUIRED AS-BUILT PLANS SHALL BE APPROVED.

FOR ANY PROJECT REQUIRING AN EASEMENT OR LICENSE AGREEMENT, THE CITY WILL REQUIRE THE DEVELOPER OR PROPERTY OWNER TO PROVIDE A BOUNDARY SURVEY AND PLAN EXHIBITS PREPARED BY A PROFESSIONAL SURVEYOR, LICENSED IN THE STATE OF MICHIGAN, FOR REVIEW AND APPROVAL PRIOR TO ISSUING ANY PERMIT.

STORM SEWER NOTES
ALL STORM DRAINAGE WORK SHALL CONFORM TO CITY OF ROYAL OAK STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR MATERIALS AND METHODS OF CONSTRUCTION.

PVC STORM SEWER PIPE SHALL BE PVC SDR 23.5 PIPE CONFORMING TO ASTM D 3034 (SDR 23.5). JOINTS SHALL BE BELL-AND-SPIGOT TYPE RUBBER GASKETED JOINTS CONFORMING TO ASTM F 477.

CONTRACTOR SHALL LOWER EXISTING WATER MAINS, IF NECESSARY, TO AVOID CONFLICTS WITH PROPOSED STORM DRAIN ELEVATION.

PROPOSED MANHOLES, INLETS AND CATCH BASINS SHALL CONFORM TO CITY OF ROYAL OAK STANDARD SPECIFICATIONS FOR CONSTRUCTION.

WATER SERVICE NOTES
ALL WATER MAIN WORK SHALL CONFORM TO THE CITY OF ROYAL OAK STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR MATERIALS AND METHODS OF CONSTRUCTION.

PROPOSED WATER MAIN TAPS SHALL BE MADE WITH AN APPROPRIATELY SIZED CUT IN TEE OR TAPPING SERVICE WITH VALVE AND WELL OR ROAD BOX. TAPPING SLEEVES SHALL BE EAST JORDAN IRON WORKS (EJW) MJ TAPPING SLEEVES.

GATE VALVES SHALL BE EJV RESILIENT SEATED GATE VALVE W/NON-RISING STEM AND DESIGNED FOR RIGHT-HAND (CLOCKWISE) OPENING. GATE WELLS AND/ROAD BOXES SHALL BE CONSTRUCTED PER THE CITY OF ROYAL OAK STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PROPOSED WATER MAIN SHALL BE INSTALLED WITH NO LESS THAN 5.5 FEET OF FINAL COVER.

WATER MAIN SHALL BE DUCTILE IRON PIPE CONFORMING TO USA 5-821-01 AND VALVE AND WELL OR ROAD BOX SHALL BE DUCTILE IRON PIPE CONFORMING TO USA 5-821-01. THE DUCTILE IRON PIPE SHALL BE "SUPER BELL-TITE" PUSH-IN JOINT TYPE.

WATER MAIN FITTINGS SHALL BE TYLER PIPE LINE OF MECHANICAL JOINT FITTINGS CONFORMING TO ANSI/AWWA C153/A21.53-84 STANDARD FOR DUCTILE IRON FITTINGS AND ANSI/AWWA C111/A21.11-88 STANDARD FOR GRAY IRON FITTINGS. WORKING PRESSURE RATING SHALL BE 350 PSI. ALL BOLTS SHALL BE CORTEN.

PROPOSED WATER MAIN SHALL BE SUCCESSFULLY CHLORINATED AND PRESSURE TESTED PRIOR TO ACTIVATING THE LINE. PRESSURE TESTING AND CHLORINATION SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF ROYAL OAK STANDARD SPECIFICATIONS FOR CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING CHLORINATION TESTING ARRANGEMENTS BY CONTACTING THE SOUTHEASTERN OAKLAND COUNTY WATER AUTHORITY AT (248) 288-5150.

NON HYDRANT ASSEMBLIES AND LEADS SHALL BE CONSTRUCTED PER THE CITY OF ROYAL OAK STANDARD SPECIFICATIONS FOR CONSTRUCTION. ANY REQUIRED TAPS FOR THE PROPOSED HYDRANTS SHALL BE MADE WITH EJV TAPPING SLEEVES OR TEES AS NOTED ON HE PLANS.

CITY OF ROYAL OAK STANDARD WATER MAIN AND HYDRANT DETAILS SHALL BE USED FOR ALL HYDRANT INSTALLATION. THE HYDRANTS SHALL BE EJV JWB 58R-250 MODEL WITH TWO (2) 4" PUMPER NOZZLES OR APPROVED EQUAL ONE OF WHICH SHALL BE FITTED WITH A 3/8" HARRINGTON INTEGRAL HYDRANT STORZ (HHS).

PROPOSED PUBLIC WATER MAIN WILL REQUIRE APPROVAL OF THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY AND THE SOUTHEAST OAKLAND COUNTY WATER AUTHORITY (SOWCA). FOUR (4) COPIES OF THE PERTINENT SHEETS SHALL BE SUBMITTED TO THE CITY OF ROYAL OAK ENGINEERING DEPARTMENT FOR REVIEW AND SUBMITTAL TO THE PROPER AGENCIES.

PAVING NOTES
ALL PAVING WORK SHALL CONFORM TO CITY OF ROYAL OAK STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR MATERIALS AND METHODS OF CONSTRUCTION.

EXISTING PAVEMENT SHALL BE SAW CUT, FULL DEPTH, PRIOR TO REMOVAL. EXISTING PAVEMENT SHALL BE SAWED 2 FEET OFF THE BACK-OF-CURB WHERE CONCRETE CURB AND GUTTER IS TO BE INSTALLED WITHIN CONCRETE ROADWAYS AND 2 1/2 FEET OFF THE BACK-OF-CURB WHERE CONCRETE CURB AND GUTTER IS TO BE INSTALLED WITHIN ASPHALT ROADWAYS.

WHERE PORTIONS OF PAVEMENTS CONSISTING OF A CONCRETE BASE COURSE WITH ASPHALT OVERLAY ARE REMOVED FOR PROPOSED UTILITY WORK, A NEW CONCRETE BASE COURSE AND ASPHALT OVERLAY SHALL BE PLACED TO MATCH THE EXISTING PAVEMENT. THE STANDARD SPECIFICATIONS SHALL MEET THE REQUIREMENTS OF MDOT MIXTURE 4C FOR WEARING COURSE AND MDOT MIXTURE 3C FOR LEVELING COURSE AND MDOT MIXTURE 2C FOR BASE COURSE.

CONCRETE CURB AND GUTTER INSTALLED IN PUBLIC RIGHT-OF-WAY SHALL CONFORM TO DETAIL A, 1/2 INCH WIDE X 2 1/2 INCH DEEP CONTRACTION JOINTS SHALL BE PROVIDED IN THE CURB AND GUTTER AT CONSISTANT INTERVALS NOT EXCEEDING 10 FEET IN LENGTH. THE EXISTING ASPHALT SURFACE SHALL BE MILLED TO A STRAIGHT EDGE AND REPLACED, MATCHING THE NEW CURB AND GUTTER, AS NECESSARY.

PRIOR TO PLACING CONCRETE BASE COURSE OR CONCRETE CURB AND GUTTER, 1/2 INCH STANDARD EXPANSION ANCHORED HOOK BOLTS OR LANE TEES SHALL BE INSTALLED ALONG PAVEMENT SAW CUTS AND SPACED AT 36 INCHES, ON CENTER OR AS DIRECTED BY THE ENGINEER.

DRIVEWAY OPENINGS TO BE INSTALLED SHALL CONFORM TO EITHER AN MDT DETAIL W/ DRIVEWAY OPENING PER MDT STANDARD PLAN R-29 OR THE CITY OF ROYAL OAK STANDARD SPECIFICATIONS FOR CONSTRUCTION. EXCEPT WITHIN THE INFLUENCE OF STREETScape.

DRIVE APPROACHES AND PUBLIC SIDEWALK WITHIN THE INFLUENCE OF COMMERCIAL DRIVEWAYS SHALL BE 1/2 INCH THICK CONCRETE WITH 2 1/2 INCH DEEP CONTRACTION JOINTS, EXCEPT WITHIN THE INFLUENCE OF STREETScape WHERE CONCRETE SHALL BE 7 INCHES THICK.

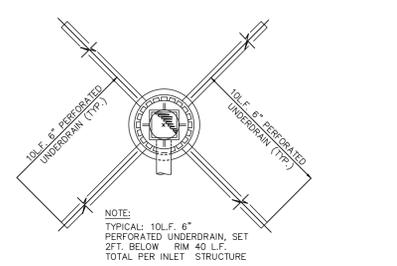
SIDEWALK TO BE INSTALLED OUTSIDE THE INFLUENCE OF THE DRIVE APPROACH SHALL BE A MINIMUM OF 4 INCH THICK CONCRETE WITH 2 INCH DEEP TOOLED CONTRACTION JOINTS AT 45 FOOT INTERVALS. A 1/2 INCH WIDE FULL DEPTH FIBER EXPANSION JOINT SHALL BE INSTALLED AT LOCATIONS DETERMINED BY THE ENGINEER.

ALL SIDEWALKS SHALL HAVE A MINIMUM 1.0% TRANSVERSE SLOPE TOWARDS THE DRIVEWAY OR STREET.

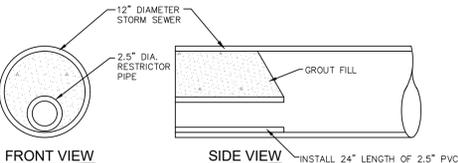
ALL PAVEMENT INCLUDING CONCRETE BASE COURSE, CURB, CURB AND GUTTER AND DRIVE APPROACH SHALL BE PLACED ON A MINIMUM 6 INCH THICK AGGREGATE BASE MATERIAL COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT. ALL SIDEWALK INCLUDING STREETScape BRICK PAVEMENT SHALL BE PLACED ON A MINIMUM 4 INCH THICK GRANULAR BASE MATERIAL COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

THE CONCRETE MIX SHALL BE READY-MIXED TRANSIT CONCRETE AND SHALL BE COMPOSED OF PORTLAND CEMENT, FINE AGGREGATE, COARSE AGGREGATE, WATER AND AIR-ENTRAINING AGENT. A MINIMUM OF 564 POUNDS OF CEMENT PER CUBIC YARD OF CONCRETE REACHING 3500 P.S.I. UNCOMFINED COMPRESSIVE STRENGTH IN TWENTY-FOUR (28) DAYS WITH A SLUMP OF 3" TO 4" AND 6.5% 1.5% ENTRAINED AIR SHALL BE USED, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

ANY PORTION OF A TRENCH, HOLE, OR PIT THAT IS OUTSIDE A 1 ON 1 INFLUENCE LINE OF AN EDGE OF SIDEWALK, DRIVEWAY, PAVEMENT, OR BACK OF CURB THAT IS EITHER PROPOSED OR TO REMAIN IN PLACE, SHALL BE BACKFILLED WITH SUITABLE PROFESSIONAL GRADE (EXCLUDING RED CLAY) PLACED IN LAYERS NOT EXCEEDING 12 INCHES, AND COMPACTED TO 90% OF ITS MAXIMUM UNIT WEIGHT.



UNDERDRAIN DETAIL
N.T.S.



RESTRICTOR PIPE DETAIL
N.T.S.

Weighted Run-off Coefficient Calculation - North Site	
Site Area:	42,452.47 S.F. or 0.975 Acres
Surface No. 1 - Pavement:	14,363.12 S.F. or 0.330 Acres
Surface No. 2 - Building:	10,260.30 S.F. or 0.236 Acres
Surface No. 3 - Landscape:	17,829.05 S.F. or 0.409 Acres
Surface No. 4 - Other:	0.00 S.F. or 0.000 Acres
Sum of Individual Areas:	42,452.47 S.F. or 0.975 Acres
Surface No. 1 - Coefficient:	0.90
Surface No. 2 - Coefficient:	0.90
Surface No. 3 - Coefficient:	0.15
Surface No. 4 - Coefficient:	0.00
Required Formula:	
C (Average) =	$\frac{\text{Area 1} \cdot \text{C1} + \text{Area 2} \cdot \text{C2} + \text{Area 3} \cdot \text{C3} + \text{Area 4} \cdot \text{C4}}{\text{Area 1} + \text{Area 2} + \text{Area 3} + \text{Area 4}}$
C (Average) =	0.585

Detention Calculations - Oakland County Method - North Site (10) Year Storm Event - With Outlet (Orifice)	
Contributing Area:	0.975 Acres
Allowable Outflow, Qa:	0.310 CFS / Acre
Total Outflow, Q:	0.300 CFS
Runoff Coefficient, C:	0.585 Imperviousness
Maximum Allowable Outflow, Qo:	0.530 CFS / Acre * Imperv.
Ts Storage Time (10 Yr):	86.284 Minutes
Vs Storage Time (10 Yr):	6,312.245 CF / Acre * Imperv.
Vt Total Volume (10 Yr):	3,600.346 Cubic Feet
Volume Required:	3,600.346 Cubic Feet
Volume Provided:	3,954.480 Cubic Feet

Detention Volume Calculation - Underground Pipe Storage	
Formula: V =	$3.14159 \times (\text{Pipe Radius})^2 \times \text{Length of Pipe}$
Pipe Diameter	60.00 Inch
Length, L:	188.00 Linear Feet
Radius, R:	2.50 Feet
Volume Provided:	3,691.37 Cubic Feet
Formula: V =	$3.14159 \times (\text{Pipe Radius})^2 \times \text{Length of Pipe}$
Pipe Diameter	12.00 Inch
Length, L:	335.00 Linear Feet
Radius, R:	0.50 Feet
Volume Provided:	263.11 Cubic Feet
Total Volume Provided:	3,954.48 Cubic Feet

Weighted Run-off Coefficient Calculation - South Site	
Site Area:	27,999.62 S.F. or 0.643 Acres
Surface No. 1 - Pavement:	10,593.39 S.F. or 0.243 Acres
Surface No. 2 - Building:	6,060.00 S.F. or 0.139 Acres
Surface No. 3 - Landscape:	11,344.23 S.F. or 0.260 Acres
Surface No. 4 - Other:	0.00 S.F. or 0.000 Acres
Sum of Individual Areas:	27,999.62 S.F. or 0.643 Acres
Surface No. 1 - Coefficient:	0.90
Surface No. 2 - Coefficient:	0.90
Surface No. 3 - Coefficient:	0.15
Surface No. 4 - Coefficient:	0.00
Required Formula:	
C (Average) =	$\frac{\text{Area 1} \cdot \text{C1} + \text{Area 2} \cdot \text{C2} + \text{Area 3} \cdot \text{C3} + \text{Area 4} \cdot \text{C4}}{\text{Area 1} + \text{Area 2} + \text{Area 3} + \text{Area 4}}$
C (Average) =	0.596

Detention Calculations - Oakland County Method (10) Year Storm Event - With Outlet (Orifice)	
Contributing Area:	0.643 Acres
Allowable Outflow, Qa:	0.470 CFS / Acre
Total Outflow, Q:	0.300 CFS
Runoff Coefficient, C:	0.596 Imperviousness
Maximum Allowable Outflow, Qo:	0.789 CFS / Acre * Imperv.
Ts Storage Time (10 Yr):	66.224 Minutes
Vs Storage Time (10 Yr):	5,533.523 CF / Acre * Imperv.
Vt Total Volume (10 Yr):	2,120.601 Cubic Feet
Volume Required:	2,120.601 Cubic Feet
Volume Provided:	2,454.370 Cubic Feet

Detention Volume Calculation - Underground Pipe Storage	
Formula: V =	$3.14159 \times (\text{Pipe Radius})^2 \times \text{Length of Pipe}$
Pipe Diameter	60.00 Inch
Length, L:	125.00 Linear Feet
Radius, R:	2.50 Feet
Volume Provided:	2,454.37 Cubic Feet

UTILITIES

AT LEAST 72 HOURS (3 WORKING DAYS) PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY MISS DIG AND THE LOCAL COMMUNITY (WHERE APPLICABLE) TO STAKE LOCATIONS OF EXISTING UTILITIES.

THE CONTRACTOR SHALL EXPOSE AND VERIFY EXISTING UTILITIES FOR LOCATION, SIZE, DEPTH, MATERIAL AND CONFIGURATION PRIOR TO CONSTRUCTION. COSTS FOR EXPLORATORY EXCAVATION IS AN INCIDENTAL COST AND SHALL NOT BE CONSIDERED AN EXTRA TO THE CONTRACT.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY EXISTING UTILITIES WHICH DO NOT MATCH THE PLANS AND SPECIFICATIONS PRIOR TO COMMENCING WORK. ANY FIELD CHANGES OF THE PROPOSED UTILITIES SHALL BE APPROVED BY THE OWNER AND ENGINEER BEFORE THE WORK IS DONE.

THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES FROM DAMAGE. ANY SERVICE OR UTILITY DAMAGED OR REMOVED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR, IN CONFORMANCE WITH THE REQUIREMENTS OF THE UTILITY CONTRACTOR.

DAMAGE TO PRIVATE PROPERTY

ALL SIDEWALKS, DRIVEWAYS, LAWNS, FENCING, TREES, SHRUBS, SPRINKLERS, LANDSCAPING, ETC. THAT ARE DAMAGED DURING CONSTRUCTION MUST BE REPAIRED OR REPLACED, IN KIND OR BETTER, BY THE CONTRACTOR. ALL STREET SIGNS, MAIL BOXES, ETC., REMOVED SHALL BE REPLACED IN KIND OR BETTER, BY THE CONTRACTOR. THE ALL REPAIRS OR REPLACEMENTS DUE TO THE CONTRACTOR'S WORK ARE TO BE INCLUDED IN THE CONTRACT PRICE(S) AND SHALL NOT BE AN EXTRA TO THE CONTRACT.

THE CONTRACTOR SHALL SECURE PERMISSION IN WRITING FROM ADJACENT PROPERTY OWNERS PRIOR TO ENTERING UPON ANY ADJOINING PROPERTIES, UNLESS OFFSITE PERMITS HAVE ALREADY BEEN OBTAINED BY THE OWNER AND ARE PART OF THE CONTRACT DOCUMENTS.

DEWATERING OF TRENCH AND EXCAVATIONS

IF NOT SPECIFICALLY PROVIDED FOR IN THE CONSTRUCTION DESIGN DOCUMENTS, THE DESIGN OR QUALITATIVE ANALYSIS OF GROUND WATER DEWATERING SYSTEMS IS BEYOND THE SCOPE OF DESIGN FOR THESE DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING AND PROVIDING APPROPRIATE EXCAVATION DEWATERING SYSTEMS FOR USE DURING CONSTRUCTION.

THE DEWATERING METHOD SELECTED BY THE CONTRACTOR WILL NOT ADVERSELY AFFECT ADJACENT PAVEMENTS OR STRUCTURES PRIOR TO BEGINNING DEWATERING CONDITIONS. MEANS AND METHODS OF DEWATERING ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. THE COST OF DEWATERING WILL BE CONSIDERED INCLUDED IN THE WORK OF CONSTRUCTING THE UNDERGROUND UTILITIES UNLESS SPECIFICALLY INDICATED OTHERWISE.

BY-PASS PUMPING

FROM TIME TO TIME IT MAY BE NECESSARY FOR THE CONTRACTOR TO BY-PASS PUMP TO COMPLETE THE WORK INDICATED ON THE PLANS. THE COST OF BY-PASS PUMPING, THE METHODS, EQUIPMENT AND MEANS OF PROVIDING THAT WORK ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE CONSIDERED PART OF THE WORK WHETHER SPECIFICALLY CALLED OUT ON THE PLANS OR NOT.

MEANS AND METHODS FOR PIPE CONSTRUCTION

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE MEANS AND METHODS FOR CONSTRUCTING THE UNDERGROUND PIPE SYSTEMS PROPOSED ON THE PLANS, INCLUDING BUT NOT LIMITED TO THE NEED FOR SHORING/BRACING OF TRENCHES, DEWATERING OF TRENCHES, SCHEDULING THE WORK AT OFF PEAK HOURS, AND/OR MAINTAINING EXISTING FLOWS THAT MAY BE ENCOUNTERED VIA PUMPING, BY-PASS PIPING OR OTHER MEANS. THE CONTRACTOR SHALL NOT BE PAID ANY ADDITIONAL COMPENSATION TO IMPLEMENT ANY MEANS AND METHODS TO SATISFACTORILY COMPLETE THE CONSTRUCTION.

PAVEMENT REMOVAL

THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE THICKNESS OF THE PAVEMENT REMOVAL. PAVEMENT CORE SAMPLES ARE FOR INFORMATIONAL PURPOSES ONLY AS TO THE THICKNESS OF THE PAVEMENT AT THE LOCATION OF THE SAME. THE OWNER AND ENGINEER MAKE NO REPRESENTATION, WARRANTY OR GUARANTY THAT THE SAMPLES ACCURATELY REFLECT THE PAVEMENT THICKNESS ON THE PROJECT.

MAINTENANCE OF TRAFFIC

DURING THE PROGRESS OF THE WORK THE CONTRACTOR SHALL ACCOMMODATE BOTH VEHICULAR AND PEDESTRIAN TRAFFIC IN THE ROAD RIGHTS OF WAY. THE CONTRACTOR'S EQUIPMENT AND OPERATIONS IN PUBLIC STREETS SHALL BE COVERED BY ALL APPLICABLE LOCAL, COUNTY AND STATE ORDINANCES, REGULATIONS AND LAWS. THE CONTRACTOR SHALL OBTAIN AND SATISFY ANY AND ALL PERMIT REQUIREMENTS BY THE LOCAL, COUNTY AND STATE GOVERNMENTAL AGENCIES.

IN ADDITION, WHERE THE WORK REQUIRES THE CLOSURE OF ONE OR MORE LANES OR IS WITHIN THE INFLUENCE OF THE ROAD OR PEDESTRIAN RIGHT OF WAY, THE CONTRACTOR SHALL PROVIDE ALL SIGNS, BARRICADES, FLAG PERSONS AND OTHER TRAFFIC CONTROL MEASURES AS REQUIRED BY MDT, THE COUNTY, OR THE COMMUNITY HAVING JURISDICTION OF THE ROAD AND IN CONFORMANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

COMPENSATION FOR TRAFFIC CONTROL SHALL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE(S) UNLESS SPECIFIC TRAFFIC CONTROL ITEMS ARE INCLUDED IN THE ACCEPTED BID PROPOSAL.

IRRIGATION

THE CONTRACTOR SHALL MAINTAIN OR REPAIR ANY EXISTING IRRIGATION SYSTEMS WITHIN THE PROJECT AREA UNLESS THE DRAWINGS CALL FOR THE IRRIGATION SYSTEM TO BE REMOVED. THE OWNER AND NFE MAKE NO REPRESENTATIONS, WARRANTY OR GUARANTY AS TO THE LOCATION OF THE IRRIGATION SYSTEM. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PROTECT THE IRRIGATION SYSTEM DURING CONSTRUCTION ACTIVITIES. COMPENSATION FOR MAINTAINING OR REPAIRING EXISTING IRRIGATIONS SYSTEMS SHALL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE(S) UNLESS SPECIFIC IRRIGATION SYSTEM REPAIR ITEMS ARE INCLUDED IN THE ACCEPTED BID PROPOSAL.

SUB-SOIL CONDITIONS

ANY SOIL BORING PROVIDED BY THE OWNER AND/OR ENGINEER IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THIS INFORMATION IS NOT OFFERED AS EVIDENCE OF GROUND CONDITIONS THROUGHOUT THE PROJECT AND ONLY REFLECT THE GROUND CONDITIONS AT THE LOCATION OF THE BORING ON THE DATE THEY WERE TAKEN.

THE ACCURACY AND RELIABILITY OF THE SOIL LOGS AND REPORT ARE NOT WARRANTED OR GUARANTEED IN ANY WAY BY THE OWNER OR ENGINEER AS TO THE SUB-SOIL CONDITIONS FOUND ON THE SITE. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION AND SUB-SOIL INVESTIGATION AND SECURE OTHER SUCH INFORMATION AS THE CONTRACTOR CONSIDERS NECESSARY TO DO THE WORK PROPOSED AND IN PREPARATION OF THEIR BID.

SUBGRADE UNDERCUTTING AND PREPARTION

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE ANY AND ALL SOLLS WHICH DO NOT CONFORM TO THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A SUBGRADE IN CONFORMANCE WITH THE PROJECT PLANS AND/OR SPECIFICATIONS. THE MEANS AND METHODS USED TO ACHIEVE THE REQUIRED RESULT SHALL REST SOLELY WITH THE CONTRACTOR.

ANY AREAS OF UNDERCUTTING THAT RESULT IN ADDITIONAL OR EXTRA WORK BECAUSE THEY COULD NOT BE IDENTIFIED BY THE CONTRACTOR'S PRE-BID SITE OBSERVATION OR ARE NOT SET FORTH IN THE PLANS AND SPECIFICATIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER BEFORE ANY EXTRA WORK IS PERFORMED. THE CONTRACTOR SHALL MAKE A REQUEST FOR ANY ADDITIONAL COMPENSATION FOR THE UNDERCUTTING IN WRITING AND THE REQUEST SHALL CONFORM TO THE CONTRACT'S CHANGE ORDER PROVISIONS.

STRUCTURE BACKFILL

STRUCTURAL BACKFILL SHALL BE PLACED IN CONFORMANCE WITH THE PROJECT PLANS, SPECIFICATIONS OR AS REQUIRED BY THE COMMUNITY, GOVERNMENT AGENCY OR UTILITY THAT HAS JURISDICTION OVER THE WORK.

TRENCH BACKFILL

TRENCH BACKFILL SHALL BE PLACED IN CONFORMANCE WITH THE PLANS AND/OR SPECIFICATIONS. TRENCH BACKFILL SHALL ALSO BE INSTALLED IN CONFORMANCE WITH THE COMMUNITY REQUIREMENTS OR AGENCY/UTILITY GOVERNING SAID CONSTRUCTION. IN THE CASE OF CONFLICTING REQUIREMENTS, THE MORE STRINGENT SHALL APPLY.

EARTH BALANCE / GRADING

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WHETHER THE SITE EARTHWORK BALANCES OR NOT. ANY EXCESS CUT MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR. IN A LIKE MANNER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPORT APPROVED FILL MATERIAL AND PLACE IT AS REQUIRED TO ATTAIN THE SITE GRADE AND COMPACTION REQUIREMENTS PER THE ENGINEER'S PLAN AND ALL APPLICABLE GOVERNMENTAL STANDARDS. THE ENGINEER AND OWNER MAKE NO REPRESENTATION AS TO THE QUANTITIES THAT MAY BE NEEDED TO CREATE A BALANCED EARTHWORK CONDITION OR THAT THE SITE EARTHWORK IS BALANCED.

SOIL EROSION / SEDIMENTATION CONTROL

THE CONTRACTOR SHALL OBTAIN THE REQUIRED SOIL EROSION PERMIT AND SATISFY ALL REGULATORY REQUIREMENTS FOR CONTROLLING SOIL EROSION AND SEDIMENT TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS. THE ENGINEER AND OWNER ARE NOT RESPONSIBLE FOR INSPECTION OR APPROVAL OF THE CONTRACTOR'S WORK IN CONNECTION WITH SATISFYING THE SOIL EROSION PERMIT REQUIREMENTS UNLESS SPECIFICALLY STATED IN THE CONTRACT DOCUMENTS.

CITY OF ROYAL OAK UTILITY NOTES

ALL UTILITY CONSTRUCTION SHALL CONFORM TO CITY OF ROYAL OAK STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR MATERIALS AND METHODS OF CONSTRUCTION.

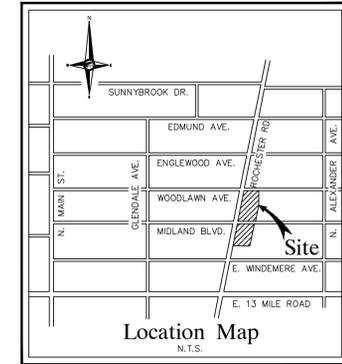
PREVIOUSLY ABANDONED PIPES OR STRUCTURES AND PROPOSED STORM DRAIN OR SEWER PIPES OR STRUCTURES TO BE ABANDONED SHALL BE CUT & REMOVED AS NECESSARY TO FACILITATE CONSTRUCTION OF THE PROPOSED UTILITY IMPROVEMENTS INDICATED ON THE PLANS. OPEN ENDS OF ABANDONED PIPES OR STRUCTURES TO BE ABANDONED SHALL BE BULKHEADED WITH A 12 INCH THICK WATERTIGHT MASONRY BULKHEAD.

PLUGS SHALL BE INSTALLED AT ALL OPEN ENDS OF WATER MAIN TO BE ABANDONED.

EXISTING HYDRANTS TO BE REMOVED SHALL NOT BE REMOVED UNTIL AFTER THE ADJACENT NEW HYDRANT IS IN SERVICE. THE CONTRACTOR SHALL PUT A TEMPORARY COVER OVER ANY NEW HYDRANT INSTALLED THAT IS NOT IN SERVICE.

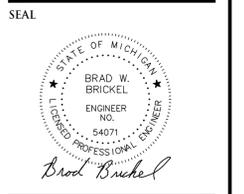
THE CONTRACTOR SHALL DELIVER ANY HYDRANTS, GATE VALVES OR UTILITY CASTINGS THAT ARE REMOVED AS A PART OF THE PROJECT TO THE CITY OF ROYAL OAK DPS YARD AT 1600 N. CAMPBELL ROAD.

</



**CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS**

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257



PROJECT
3506 Rochester Road
Royal Oak, MI 48073

CLIENT
Robertson Brothers Homes
6905 Telegraph Road,
Suite 200
Bloomfield Hills, MI 48301

Contact: Tim Loughrin
248.282.1428 - Phone
248.282.1432 - Fax

PROJECT LOCATION
Part of the SW 1/4
of Section 3
T.1N., R.11E.,
City of Royal Oak,
Oakland County, Michigan

SHEET
Emergency Vehicle
Access Plan



**Know what's below
Call before you dig.**

REVISIONS
06-03-16 ISSUED FOR SITE PLAN REVIEW
06-24-16 REVISED PER CITY REVIEW

DRAWN BY:
R. Johnson

DESIGNED BY:
B. Brickel

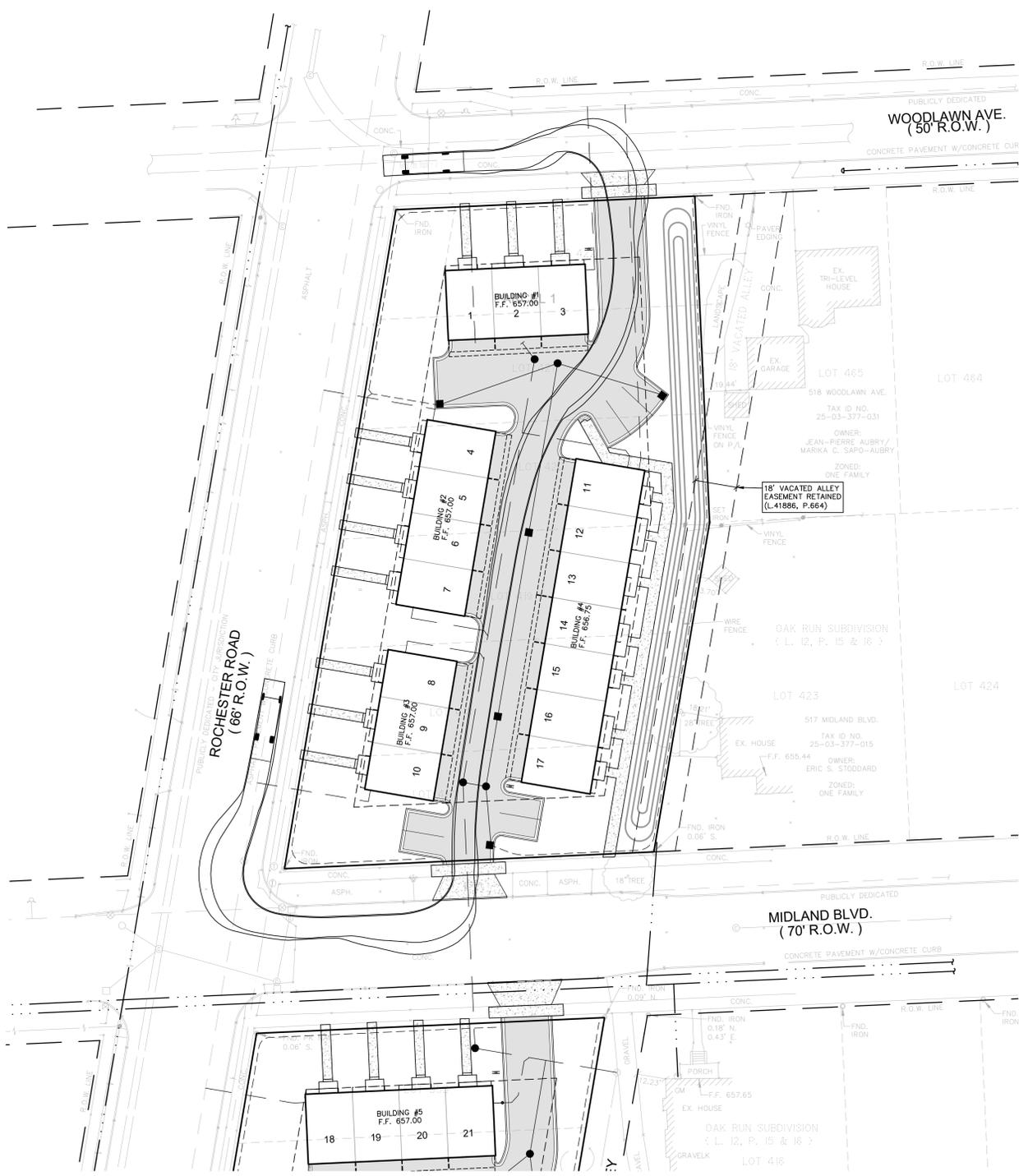
APPROVED BY:
B. Brickel

DATE:
April 15, 2016

SCALE: 1" = 30'

30 15 0 15 30 45

NFE JOB NO. **SHEET NO.**
F886-01 **SP3**



EMERGENCY VEHICLE ACCESS / HYDRANT COVERAGE
(NORTH SITE)
SCALE 1"=30'



EMERGENCY VEHICLE ACCESS / HYDRANT COVERAGE
(SOUTH SITE)
SCALE 1"=30'

PAVING LEGEND

	PROPOSED CONCRETE PAVEMENT
	PROPOSED ASPHALT PAVEMENT

LEGEND

	MANHOLE		EXISTING SANITARY SEWER
	HYDRANT		SAN. CLEAN OUT
	GATE VALVE		EXISTING WATERMAIN
	CATCH BASIN		EX. R. Y. CATCH BASIN
	UTILITY POLE		EXISTING BURIED CABLES
	GUY POLE		OVERHEAD LINES
	GUY WIRE		LIGHT POLE
	SIGN		EXISTING GAS MAIN
	C.O.		PR. SANITARY SEWER
	HYDRANT		PR. WATER MAIN
	INLET		PR. STORM SEWER
	C.B.		PR. R. Y. CATCH BASIN
	MANHOLE		PROPOSED LIGHT POLE

LEGEND

Overall Plant Schedule

Trees						
sym.	qty.	botanical name	common name	size	spacing	root
AG	10	<i>Amelanchier x grandiflora</i> 'Autumn Brilliance'	Autumn Brilliance Serviceberry	2" cal.	per plans	B&B
AR	4	<i>Acer rubrum</i> 'Armstrong'	Armstrong Red Maple	3" cal.	per plans	B&B
MR	19	<i>Malus</i> 'Royal Raindrops'	Royal Raindrops Flowering Crab	2" cal.	per plans	B&B
PA	17	<i>Platanus x acerifolia</i>	London Planetree	3" cal.	per plans	B&B
PG	17	<i>Picea glauca</i>	White Spruce	6' ht.	12' o.c.	B&B
TO	16	<i>Thuja occidentalis</i> 'Techny'	Techny Arborvitae	6' ht.	6' o.c.	B&B

Shrubs						
sym.	qty.	botanical name	common name	size	spacing	root
CS	16	<i>Cornus sericea</i> 'Farrow'	Arctic Fire Red Twig Dogwood	24"-36"	per plans	cont.
HP	19	<i>Hydrangea paniculata</i> 'Little Quickfire'	Little Quickfire Panicle Hydrangea	24"-36"	5' o.c.	cont.
TM	91	<i>Toxus x media</i> 'Densifloris'	Dense Yew	24"-36"	4' o.c.	cont.

Perennials						
sym.	qty.	botanical name	common name	size	spacing	root
HG	47	<i>Hosta</i> 'Great Expectations'	Great Expectations Hosta	#1	24" o.c.	cont.
HH	76	<i>Hemerocallis</i> 'Happy Returns'	Happy Returns Daylily	#1	14" o.c.	cont.
SA	107	<i>Sedum</i> 'Autumn Joy'	Autumn Joy Sedum	#1	18" o.c.	cont.

Landscape Ordinance Requirements

Parking Lot Requirements:

Required: 1 Tree per 8 Parking Spaces
 Parking Spaces Provided (North): 7
 Trees Required (North): 1
 Parking Spaces Provided (South): 4
 Trees Required (South): 1

Building Foundation Planting Requirements:

Required: 1 Ornamental Tree & 6 Shrubs per 30 L.F. of Building Frontage

Building 1:
 Length of Front: 60'
 Required: 2 Trees & 12 Shrubs
 Provided: 2 Trees & 12 Shrubs

Building 2:
 Length of Front: 80'
 Required: 3 Trees & 16 Shrubs
 Provided: 3 Trees & 16 Shrubs

Building 3:
 Length of Front: 60'
 Required: 2 Trees & 12 Shrubs
 Provided: 2 Trees & 12 Shrubs

Building 4:
 Length of Front: 140'
 Required: 5 Trees & 28 Shrubs
 Provided: 5 Trees & 35 Shrubs

Building 5:
 Length of Front: 80'
 Required: 3 Trees & 16 Shrubs
 Provided: 3 Trees & 17 Shrubs

Building 6:
 Length of Front: 80'
 Required: 3 Trees & 16 Shrubs
 Provided: 3 Trees & 16 Shrubs

Building 7:
 Length of Front: 60'
 Required: 2 Trees & 12 Shrubs
 Provided: 2 Trees & 18 Shrubs

Frontage Landscape Requirements:

Required: 1 Tree per 30 L.F. of Road Frontage, or 1 Ornamental Tree per 20 L.F. of Road Frontage

North Parcel:
 Woodlawn Ave.: 128.70 L.F.
 Required: 5 Trees
 Provided: 3 Trees & 3 Ornamental Trees

Rochester Rd.: 286.51 L.F.
 Required: 10 Trees
 Provided: 7 Trees & 5 Ornamental Trees

Midland Blvd.: 159.05 L.F.
 Required: 6 Trees
 Provided: 6 Trees

South Parcel:
 Midland Blvd.: 150 L.F.
 Required: 5 Trees
 Provided: 3 Trees & 3 Ornamental Trees

Rochester Rd.: 191 L.F.
 Required: 7 Trees
 Provided: 4 Trees & 4 Ornamental Trees

General Site Landscape Requirements:

Required: 10% of Site Area (Exclusive of Existing R.O.W.)
 Total Site Area: 70,452.09 S.F. (1.617 Ac.)
 Landscape Area Required: 7,045.21 S.F. (10%)
 Landscape Area Provided: 28,801.53 S.F. (40.88%)



■ sheet title:
Overall Landscape Plan

■ project title:
3506 Rochester Road

City of Royal Oak, MI

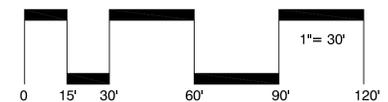
■ prepared for:
Robertson Brothers Homes
6905 Telegraph Road - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.282.1428

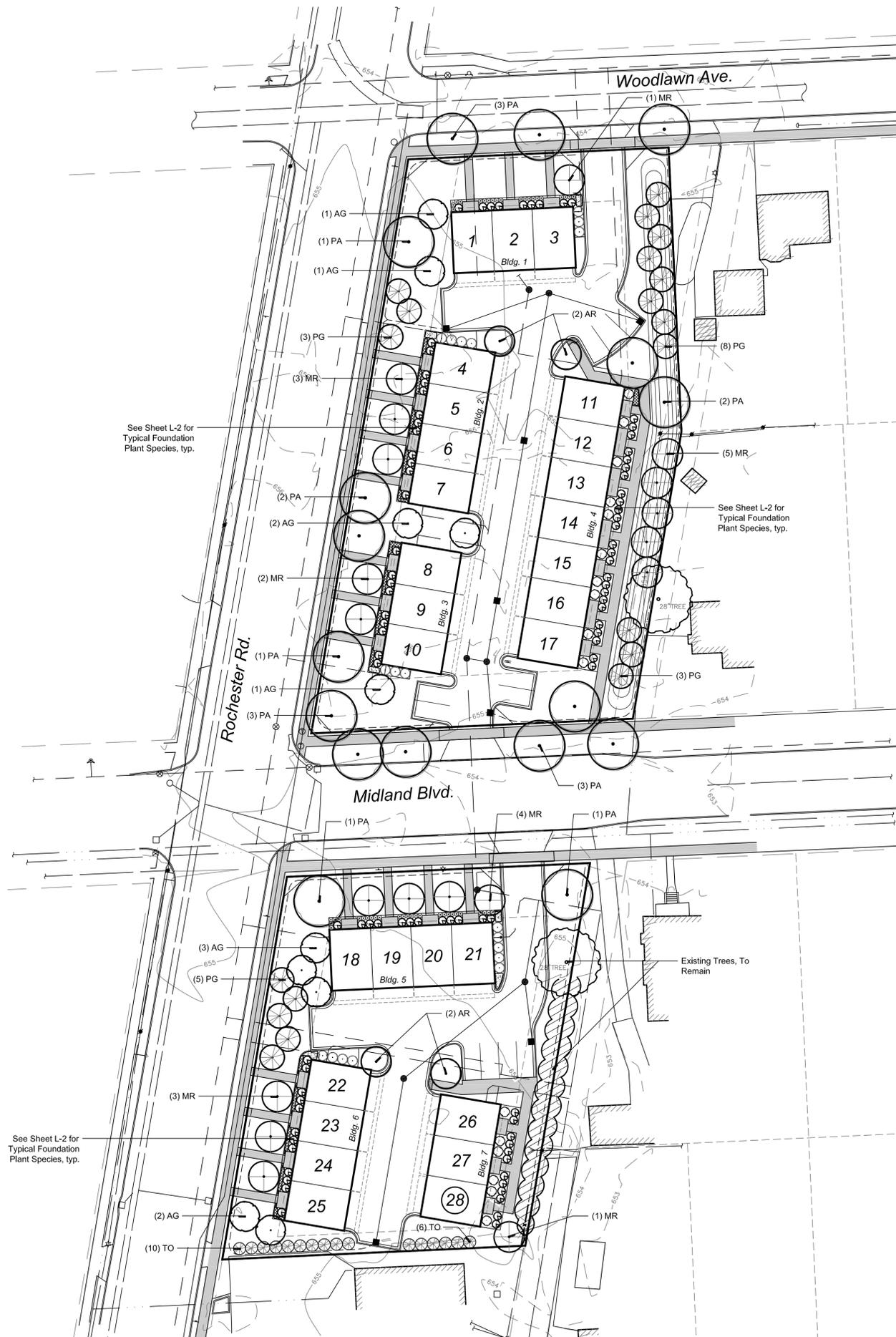
■ job number: 16029
 ■ date: 06.06.2016

■ drawn by: EMJ
 ■ checked by: WTK

■ revisions:
 06.22.2016 Per Municipal Review



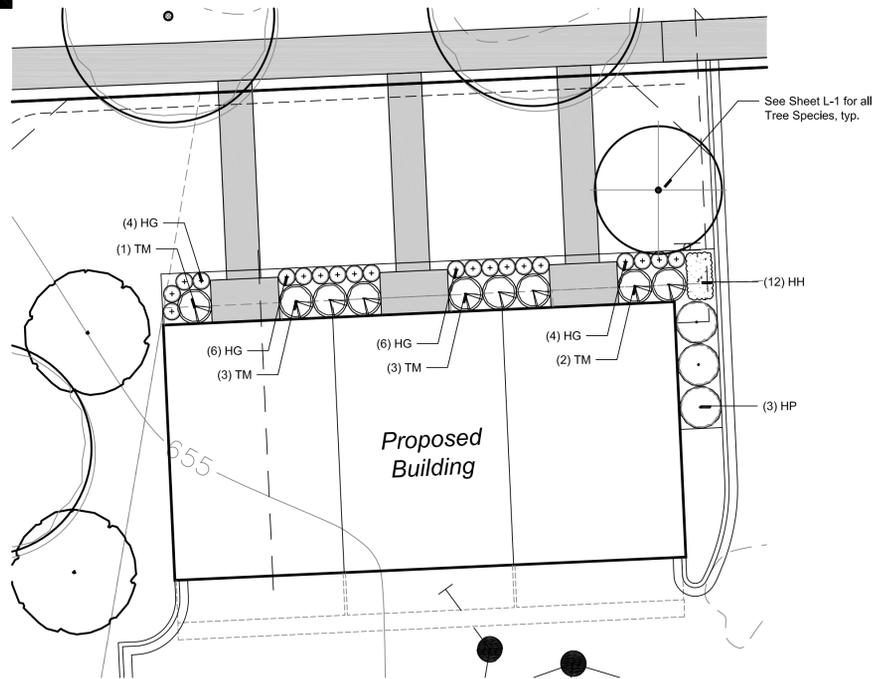
sheet no.
L-1



LEGEND

Landscape Notes

- All plant material shall be true to name and free from physical damage and wind burn.
- Plants shall be full, well-branched, and in a healthy, vigorous growing condition.
- Plants shall be watered before and after planting is complete.
- All trees must be staked, fertilized, and mulched and shall be guaranteed to exhibit a normal growth cycle for at least one (1) full year following planting.
- All material shall conform to the guidelines established in the most recent edition of the American Standard for Nursery Stock.
- Provide clean backfill soil, using material stockpiled on site. Soil shall be screened and free of any debris, foreign material, or stone.
- "Agriform" tabs or similar slow-release fertilizer shall be added to the planting pits before being backfilled.
- Amended planting mix shall consist of 1/3 screened topsoil, 1/3 sand, and 1/3 peat.
- All plantings shall be mulched with shredded hardwood bark, spread to a minimum depth of 4". Mulch is to be free from debris and foreign material and shall contain no pieces of inconsistent size.
- The Landscape Contractor shall be responsible for all work shown on the landscape drawings and specifications.
- No substitutions or changes of location, or plant types shall be made without the approval of the Landscape Architect or Owner's representative.
- The Landscape Architect shall be notified of any discrepancies between the plans and field conditions prior to installation.
- The Landscape Contractor shall be responsible for maintaining all plant material in a vertical condition throughout the guaranteed period.
- The Landscape Architect shall have the right at any stage of the installation to reject any work or material that does not meet the requirements of the plans and specifications, if requested by the owner.
- The Contractor shall be responsible for checking plant quantities to ensure quantities on drawings and plant list are the same. In the event of a discrepancy, the quantities on the plans shall prevail.
- The Landscape Contractor shall seed and mulch or sod (as indicated on plans) all areas disturbed during construction, throughout the contract limits.
- A pre-emergent weed control agent, "Preen" or equal, shall be applied uniformly to all planting beds prior to mulching.
- All lawn areas to be irrigated.
- The Developer and Landscape Architect reserve the right to change location of plant material and alter plant species/variety at the time of installation based upon availability and quantity of material as well as site conditions. Materials will be of similar size, appearance and growth habit.



Typical North Exposure Foundation Landscape

*Note: This graphic is typical of all proposed plant species and general location. Quantities may vary between buildings based on Foundation Planting Requirements per the Royal Oak Ordinance. See Sheet L-1 for the full design.

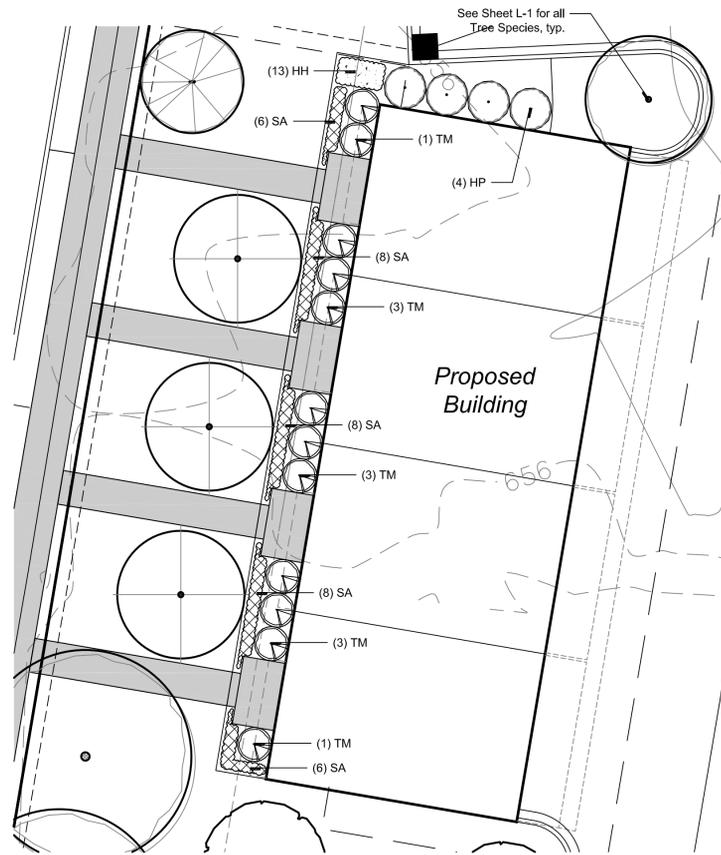
Scale: 1" = 10'



Typical East Exposure Foundation Landscape

*Note: This graphic is typical of all proposed plant species and general location. Quantities may vary between buildings based on Foundation Planting Requirements per the Royal Oak Ordinance. See Sheet L-1 for the full design.

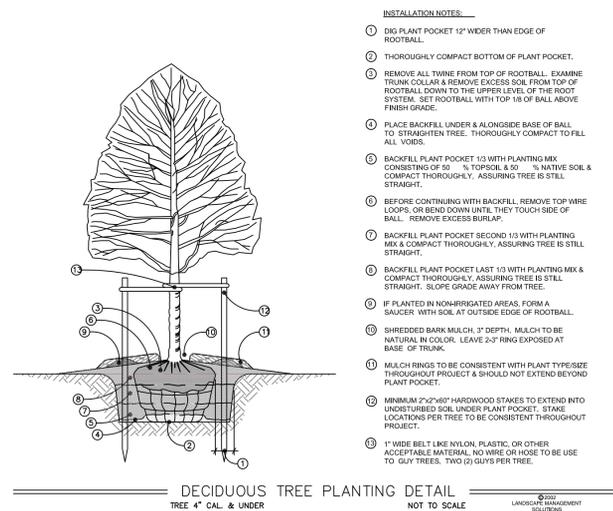
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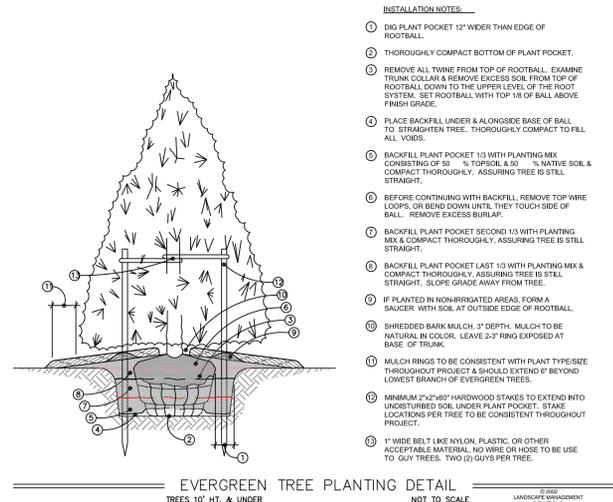
Typical West Exposure Foundation Landscape

*Note: This graphic is typical of all proposed plant species and general location. Quantities may vary between buildings based on Foundation Planting Requirements per the Royal Oak Ordinance. See Sheet L-1 for the full design.

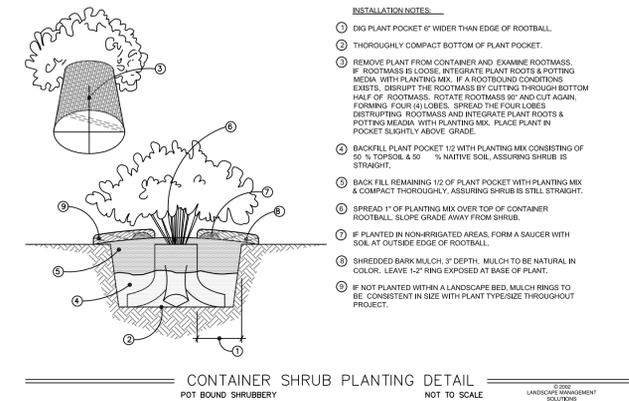
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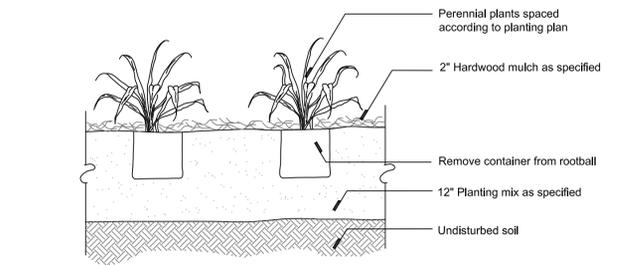
DECIDUOUS TREE PLANTING DETAIL
TREE 4" CAL. & UNDER
NOT TO SCALE



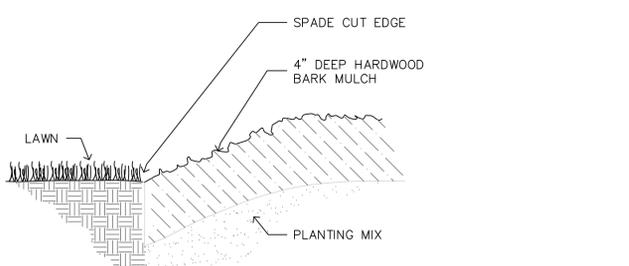
EVERGREEN TREE PLANTING DETAIL
TREES 10' HT. & UNDER
NOT TO SCALE



CONTAINER SHRUB PLANTING DETAIL
POT BOUND SHRUBBERY
NOT TO SCALE



PERENNIAL/GROUNDCOVER PLANTING DETAIL
NTS



Spade Cut Edge Detail
NTS

sheet title:
Foundation Planting Enlargements / Landscape Details
project title:

3506 Rochester Road
City of Royal Oak, MI

prepared for:
Robertson Brothers Homes
6905 Telegraph Road - Suite 200
Bloomfield Hills, MI 48301

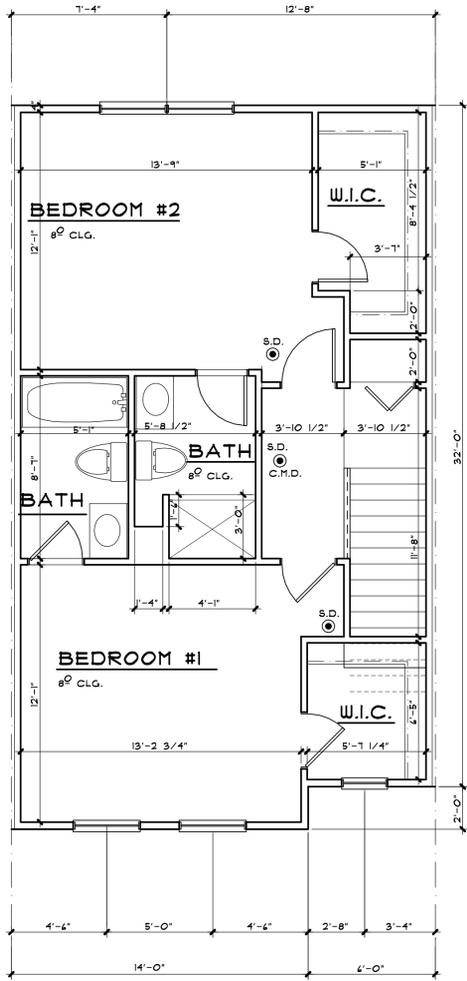
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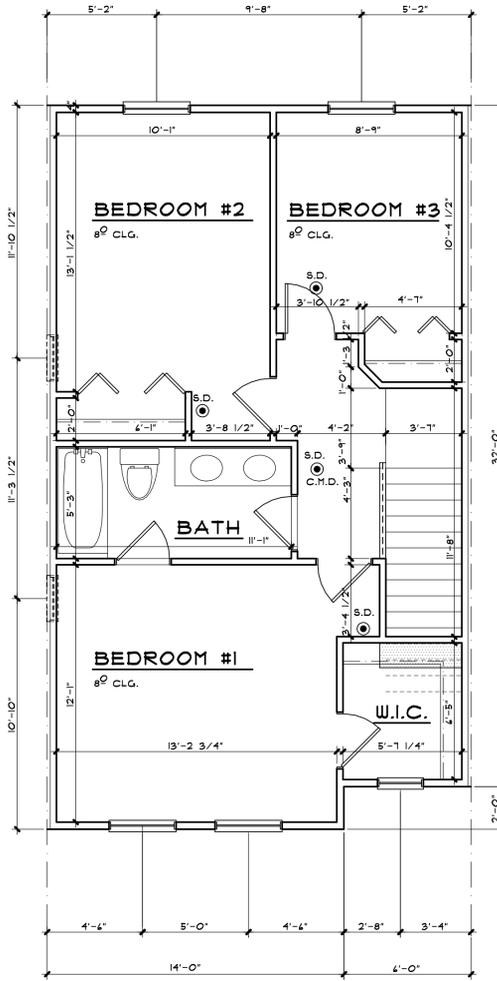
drawn by: EMJ
checked by: WTK

revisions:
06.22.2016 Per Municipal Review

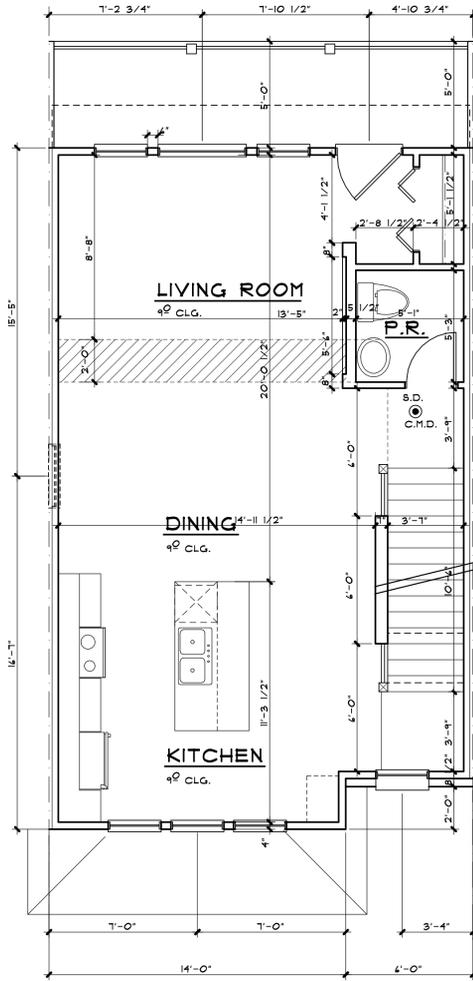




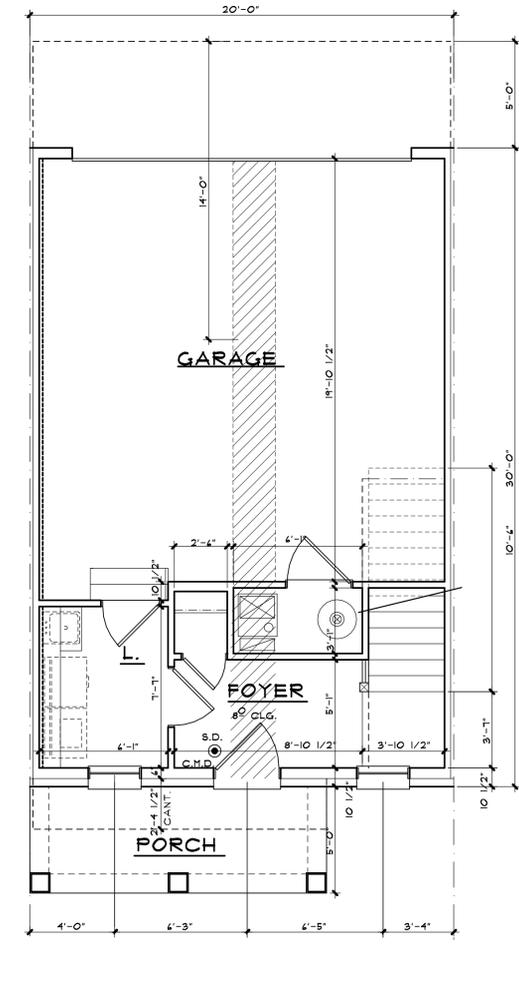
THIRD FLOOR PLAN
2 BEDRM PLAN SCALE: 1/4" = 1'-0"



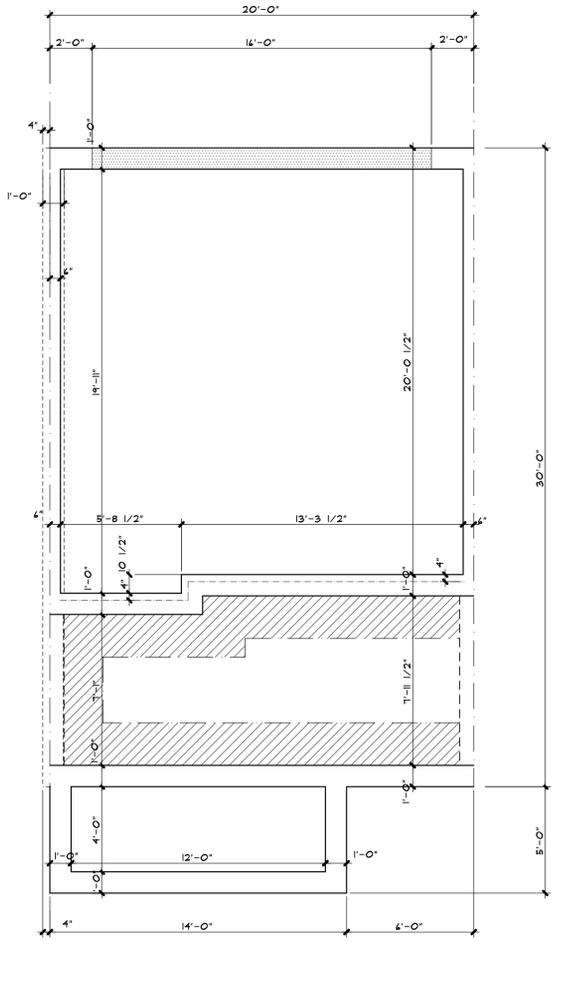
THIRD FLOOR PLAN
 ELEV. A & ELEV. B SCALE: 1/4" = 1'-0"



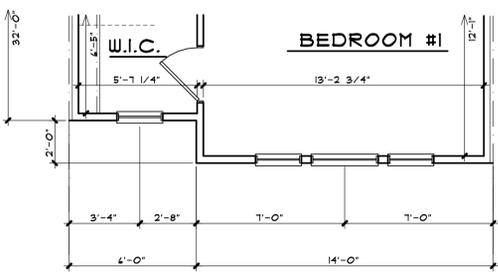
SECOND FLOOR PLAN
 ELEV. B (ELEV. D OPPOSITE) SCALE: 1/4" = 1'-0"



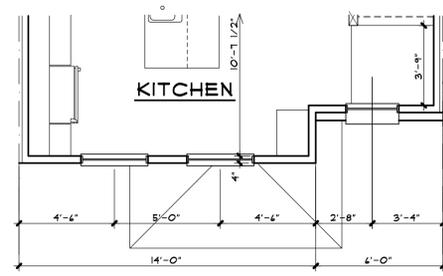
FIRST FLOOR PLAN
 ELEV. B (ELEV. C OPPOSITE) SCALE: 1/4" = 1'-0"



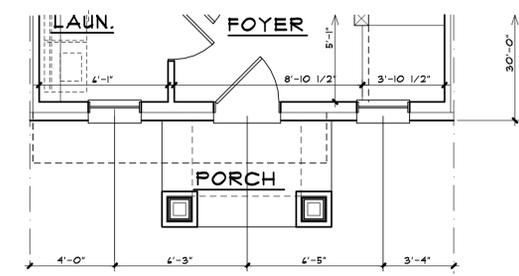
FOUNDATION PLAN
 ELEV. B (ELEV. C OPPOSITE) SCALE: 1/4" = 1'-0"



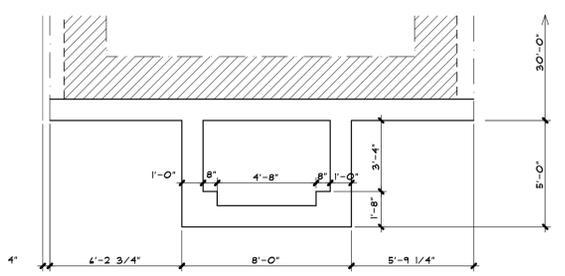
THIRD FLOOR PLAN
 ELEV. C SCALE: 1/4" = 1'-0"



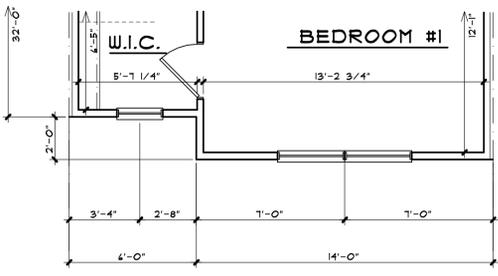
SECOND FLOOR PLAN
 ELEV. A (ELEV. C OPPOSITE) SCALE: 1/4" = 1'-0"



FIRST FLOOR PLAN
 ELEV. A (ELEV. D OPPOSITE) SCALE: 1/4" = 1'-0"



FOUNDATION PLAN
 ELEV. A (ELEV. D OPPOSITE) SCALE: 1/4" = 1'-0"



THIRD FLOOR PLAN
 ELEV. C SCALE: 1/4" = 1'-0"

SQUARE FOOTAGE	
1ST FLOOR	193 SQ FT
2ND FLOOR	428 SQ FT
3RD FLOOR	448 SQ FT
TOTAL	1069 SQ FT



ALL INTERIOR PARTITION DIMENSIONS ARE 3/16" UNLESS NOTED OTHERWISE. BEFORE CONSTRUCTION OBTAIN WINDOW & DOOR ROUGH OPENING SIZES FROM WINDOW/DOOR SUPPLIER. TRUSS DESIGNER/FABRICATOR SEE SHEET #N-2 & N-5 FOR ADDITIONAL NOTES & INFORMATION. SEE SHEET #N-1 THRU N-5 FOR ADDITIONAL NOTES REGARDING DRAWINGS & CONSTRUCTION. DO NOT SCALE THESE DRAWINGS. USE CALCULATED DIMENSIONS. IF VARIATIONS OCCUR CONTACT ARCHITECT FOR CLARIFICATION.

Alexander V. Bogaerts + Associates, P.C. • Architecture • Planning • Interior Design
 2445 Franklin Road
 Bloomfield Hills, MI 48302
 248-334-5000

CLIENT/PROJECT
 ROBERTSON BROTHERS
 ROYAL OAK
 ROYAL OAK, MICHIGAN

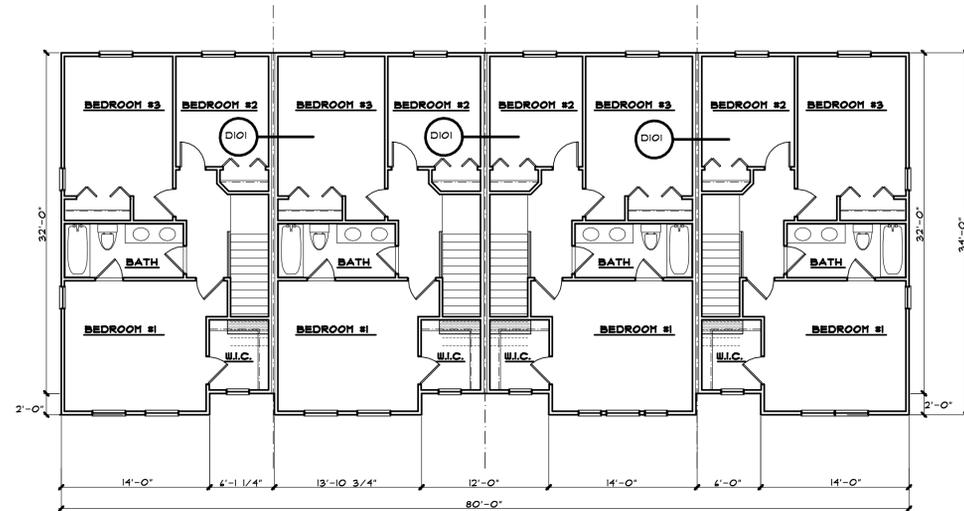
SHEET TITLE
 FLOOR PLANS

COPYRIGHT 2012
 ALEXANDER V. BOGAERTS & ASSOC.
 ■ PRELIMINARY 10-24-14
 ■ BIDS
 ■ PERMITS
 ■ CONSTRUCTION
 REVISIONS

DRAWN BY
 BN/MS
 CADD FILE
 ROYAL_OAK.DWG
 CHECKED BY
 JOB NUMBER
 14-4323
 DATE
 SHEET NUMBER

NOTE:
REFER TO 1/4" SCALE PLANS
FOR ADDITIONAL NOTES, DIMENSIONS,
STRUCTURAL SIZES & ALL OTHER
INFORMATION NOT SHOWN.

ELEV. A ELEV. B ELEV. C ELEV. D

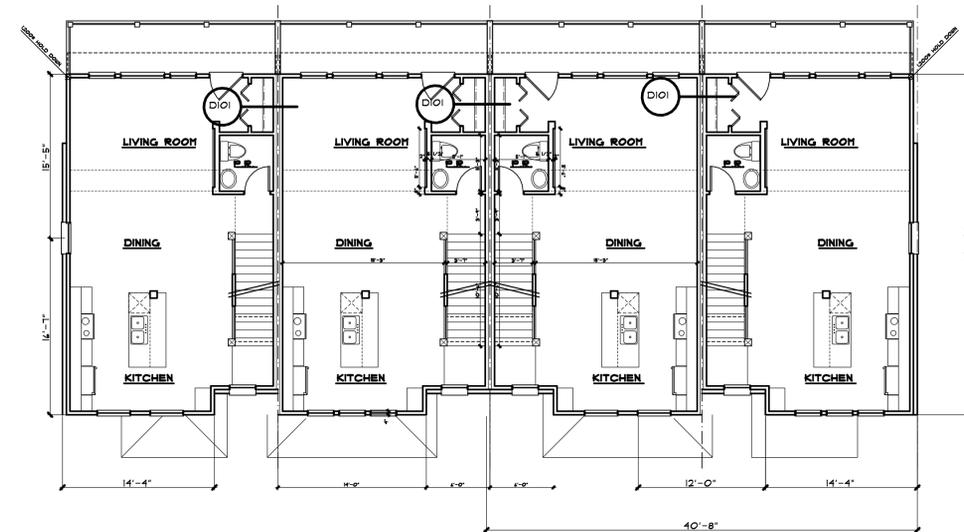


THIRD FLOOR PLAN

4 UNIT BLDG SCALE : 1/8" = 1'-0"

OPTIONAL 2 BEDROOM PLAN
PER OWNER

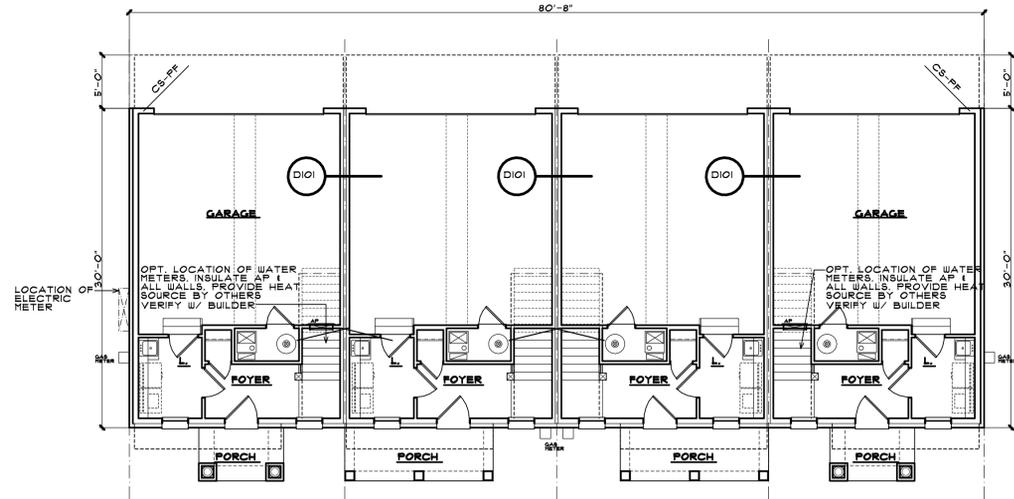
ELEV. A ELEV. B ELEV. C ELEV. D



SECOND FLOOR PLAN

4 UNIT BLDG SCALE : 1/8" = 1'-0"

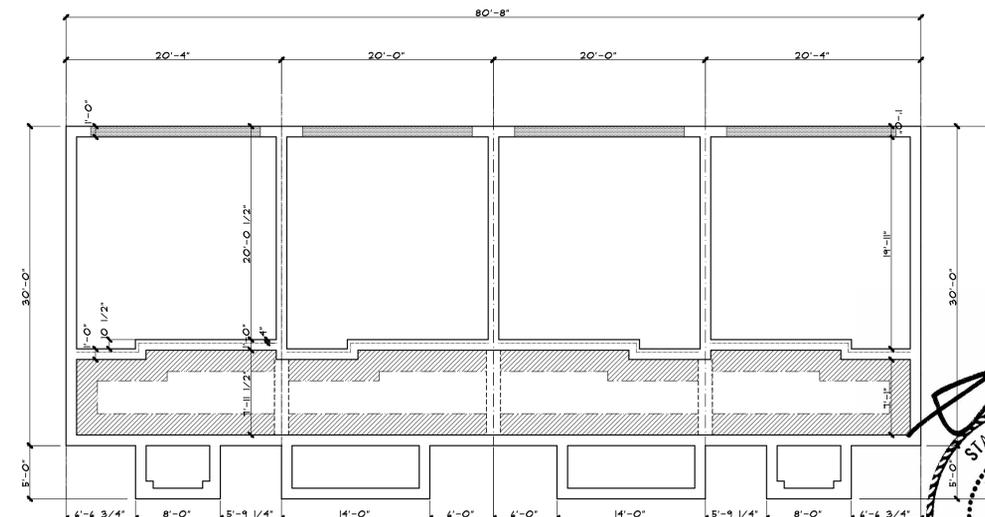
ELEV. A ELEV. B ELEV. C ELEV. D



FIRST FLOOR PLAN

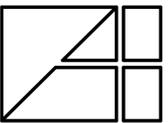
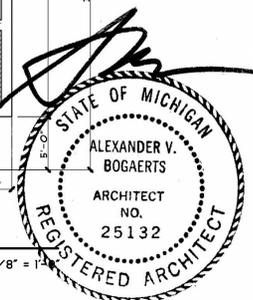
4 UNIT BLDG SCALE : 1/8" = 1'-0"

ELEV. A ELEV. B ELEV. C ELEV. D



FOUNDATION PLAN - 4 UNIT BLDG

4 UNIT BLDG SCALE : 1/8" = 1'-0"



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2445 Franklin Road
Bloomfield Hills, MI 48302
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CLIENT/TITLE
ROBERTSON BROTHERS
ROYAL OAK
BUILDING PLANS
4 UNIT BUILDING

CLIENT/PROJECT
ROYAL OAK, MICHIGAN

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PRELIMINARY
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BIDS

PERMITS

CONSTRUCTION

REVISIONS

DRAWN BY
BN/MS

CADD FILE
ROYALOAK.DC5

CHECKED BY

JOB NUMBER
14-4323

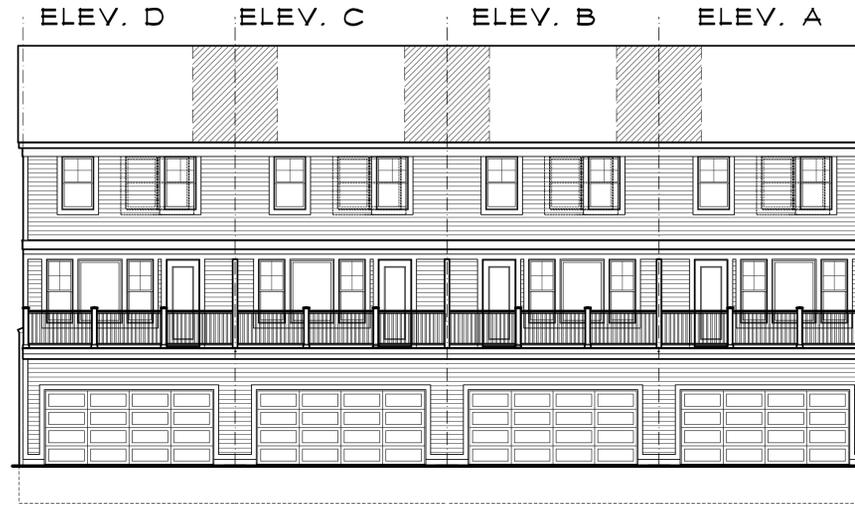
DATE

SHEET NUMBER

REGISTERED ARCHITECT

25132

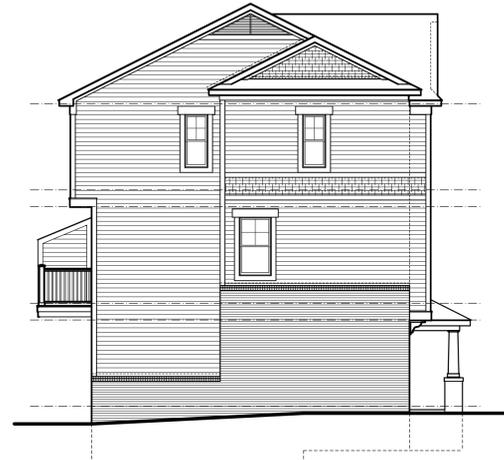
STATE OF MICHIGAN



REAR ELEVATION -(4 UNIT BLDG.)

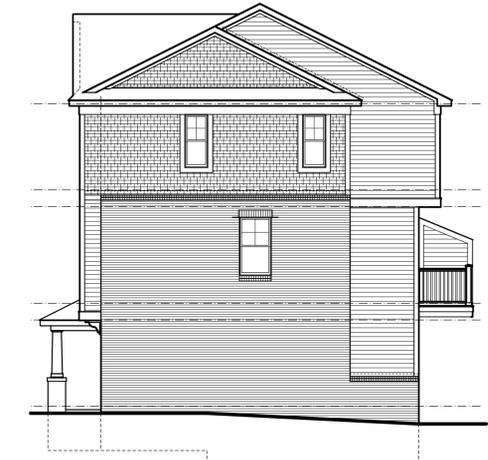
SCALE : 1/8" = 1'-0"

NOTE:
REFER TO 1/4" SCALE PLANS
FOR ADDITIONAL NOTES, DIMENSIONS,
STRUCTURAL SIZES & ALL OTHER
INFORMATION NOT SHOWN.



LEFT SIDE ELEVATION

SCALE : 1/8" = 1'-0"



RIGHT SIDE ELEVATION

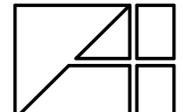
SCALE : 1/8" = 1'-0"



FRONT ELEVATION - (4 UNIT BLDG.)

SCALE : 1/8" = 1'-0"





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CLIENT/PROJECT
 ROBERTSON BROTHERS
 ROYAL OAK
 ROYAL OAK, MICHIGAN

SHEET TITLE
 BLDG. ELEVATIONS

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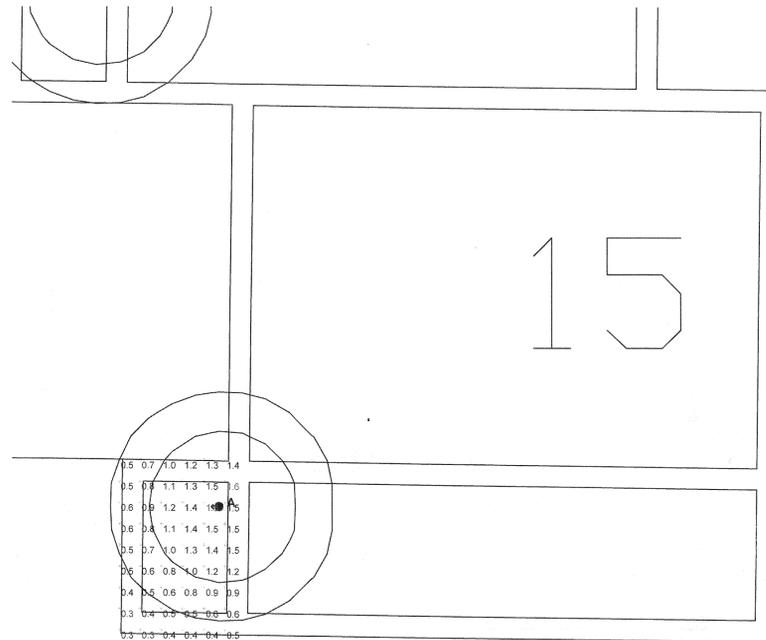
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 CHECKED BY
 AM/BN
 JOB NUMBER
 14-4323
 DATE
 SHEET NUMBER

3506 ROCHESTER ROAD

ROBERTSON BROTHERS

ROYAL OAK, MICHIGAN



Plan View
Scale 1" = 4'

STATISTICS			
Description	Avg	Max	Min
TYPICAL PORCH(Copy)	0.9 fc	1.6 fc	0.3 fc

LUMINAIRE LOCATIONS		
No.	Label	MH
1	A	6.5

Light
CONCEPTS
BY Outdoor Lighting

FEATURES & SPECIFICATIONS

INTENDED USE:
Provides general illumination for outdoor wall use in residential and light commercial applications. Ideal for entrances creating an inviting outdoor space as well as providing safety and security.

ATTRIBUTES:

Anti-vandal coating. This transitional styled lantern is offered in three sizes, each available in aged bronze powder finish with white opal glass diffuser. It has a dark-to-dark photocell for added energy efficiency. The Craftston lantern provides a wide spread area illumination for safety and security. Designed for outdoor use only. Should not be used in areas with limited ventilation or high ambient temperatures.

Includes (1) compact ball ballast tube 4 pin 2700K fluorescent lamp for energy efficiency, superior color rendering and long life.

Standard with residential-grade electronic ballast. (120 volt, 60Hz) ensure no flickering and quiet operation. Starts instantly down to 9°F (-15°C). Use with non-dimmable switches only.

All mounting hardware included.

LISTING:
UL Listed to US and Canadian safety standards and suitable for wet locations. ENERGY STAR® qualified.

WARRANTY:
Guaranteed for two years against mechanical defects in manufacturing. Excludes lamps.

DIMENSIONS

Height (in)	Width (in)	Depth (in)	Weight (lb)
7"	10 1/2"	6 1/4"	2.1 lb
9"	13 1/4"	6 1/4"	2.5 lb
11"	15 1/4"	6 1/4"	3.1 lb

Ordering Number: _____
Date: _____

Outdoor Decorative
**Craftston
Lantern**



Compact Fluorescent



ORDERING INFORMATION

Example: ODSL10 GRZ

Model Number	Finish/Voltage	Finish	Options
ODSL10 (1) 13W compact ball ballast 4 pin 2700K fluorescent lamp included	(Standard)	GRZ Aged Bronze	(Standard factory)
ODSL16 (1) 13W compact ball ballast 4 pin 2700K fluorescent lamp included	(Standard)	GRZ Aged Bronze	(Standard factory)
ODSL18 (1) 13W compact ball ballast 4 pin 2700K fluorescent lamp included	(Standard)	GRZ Aged Bronze	(Standard factory)

Light Concepts Outdoor Decorative - Lantern Sheet # CRLN DEC-808

LUMINAIRE SCHEDULE							
Symbol	Label	Catalog Number	Description	Lamp	Lumens	LLF	Watts
●	A	ODSL10 SRC	CRAFTSTON WALL MOUNTED SMALL DECORATIVE LANTERN, ONE LAMP 13W SPIRAL COMPACT FLUORESCENT, WHITE GLASS DIFFUSER 4.25" DIA. X 5.65" HIGH, ELECTRONIC BALLAST	ONE 13-WATT T4 SPIRAL COMPACT FLUORESCENT, VERTICAL BASE UP POSITION.	900	0.81	12.6