



LINCOLN PARK PLANNING COMMISSION
CITY HALL – COUNCIL CHAMBERS
1355 SOUTHFIELD ROAD
LINCOLN PARK, MICHIGAN

Wednesday, August 10, 2016
7:00 p.m.

AGENDA

- I. Call to Order**
- II. Pledge of Allegiance**
- III. Roll Call**
- IV. Approval of June 8, 2016 Minutes**
- V. Approval of Agenda**
- VI. Old Business - NONE**
- VII. New Business**
 - A. Site Plan Review: Medical Marihuana Facility, 1600 John A Papalas Drive**
- VIII. Reports from Departments and Other Boards and Commissions**
- IX. Public Comments**
- X. Comments from Planning Commissioners**
- XI. Adjournment**

The City of Lincoln Park will provide necessary reasonable auxiliary aids and services, such as signers for the hearing impaired and audio tapes of printed material being considered at the meeting to individuals with disabilities at the meeting/hearing upon seven (7) days prior notice to the City of Lincoln Park. Individuals with disabilities requiring auxiliary aides or services should contact the City of Lincoln Park by writing or calling the following: The Building Department, 1355 Southfield Road, Lincoln Park, MI 48146(313) 386-1800 Ext. 1296

Welcome to the Lincoln Park Planning Commission

For those in the audience who are not familiar with the operation of the Planning Commission, the following paragraphs provide some general information concerning the meeting procedures.

Procedure for Public Comment (Section 2.G of By-laws)

A limit of three (3) minutes per participant during the call to the public shall be permitted for any written or oral statements. If necessary, the Chair may further restrict the time limit for public comment during any meeting to ensure an orderly meeting.

The Chair may also elect to allow persons to speak only once, until all persons have had the opportunity to speak, at which time the Chair, in his/her discretion, may permit additional comments.

All comments by the public, staff and the Planning Commission shall be directed to the Chair.

The Planning Commission will take all comments into consideration, but will not discuss nor respond directly to questions posed during the said meeting.

Procedure for Public Hearings (Section 2.H of By-laws)

A limit of three (3) minutes per participant during the hearing shall be permitted for any written or oral statements. If necessary, the Chair may further restrict the time limit for public participation during any meeting to ensure an orderly meeting.

All public hearings must be held as part of a regular or special meeting of the Planning Commission. The following rules of procedure shall apply to public hearings held by the Planning Commission:

- a. Chair opens the public hearing and announces the subject.
- b. Chair summarizes the procedures/rules to be followed during the hearing.
- c. City planner/engineer/consultant presents their report and recommendation.
- d. Applicant presents the main points of the application.
- e. Public is invited to speak in support or opposition to the application.
- f. Chair closes the public hearing and returns to the regular/special meeting.

The Chair may also elect to allow persons to speak only once, until all persons have had the opportunity to speak, at which time the Chair, in his/her discretion, may permit additional comments.

All comments by the public, staff and the Planning Commission shall be directed to the Chair. All comments shall be related to the application under discussion; unrelated comments shall be ruled out of order.

1612 John A Papalas Drive Site Plan Review

Applicant	Robert Tessmar
Project	Medical Marihuana Facility
Address	1612 & 1616 John A Papalas Drive
Date	August 10, 2016
Request	Special Use Permit Site Plan Review
Recommendation	Table

GENERAL

All elements of the site plan shall be designed to take into account the site's topography, the size and type of plot, the character of adjoining property, and the traffic operations of adjacent streets. The site shall be developed so as not to impede the normal and orderly development or improvement of surrounding property for uses permitted in this Zoning Code. The site plan shall conform with all requirements of this Zoning Code, including those of the applicable zoning district(s).

Project and Site Description

The applicant proposes to establish a Medical Marihuana Facility within an existing industrial office park. The space designated for this use within the multi-tenant building is 10,800 square feet, bounded by an existing concrete masonry unit wall.



Figure 1: Aerial Photo

Master Plan

Future Land Use Classification

The site is intended for General Industrial future land use. The proposed use conforms with this.

Intent

The intent of this district is to provide local employment opportunities for residents while mitigating the external impacts of intensive industrial operations by siting them in areas with ready access to railroads and major highways, spatially separated from residential areas. The proposed use conforms with this.

Land Use and Zoning

Proposed and Existing Land Uses

Site:	Medical Marihuana Facility
North:	General industrial
East:	Right-of-way (I-75)
South:	General industrial
West:	General industrial

The proposed use does not conflict with adjacent land uses.

Zoning

The site is zoned General Industrial District (GID). The purpose of this district is to permit the location of industries such that they will not cause adverse effects on residential and commercial areas of the City. Medical marihuana facilities are a land use permitted by special approval in this district, subject to the conditions in §1286.03(h), which are addressed in “Standards for Uses Permitted After Special Approval” in this report.

Dimensional Standards

The dimensional requirements of the GID district are described in the chart below. (§1294.32, except where noted.)

	Required	Provided	Compliance
Lot Width	100'	503'	Met
Street Frontage (§1294.09)	At corner: 2.5' < Landscape height < 8'	No landscaping in view triangle	Met
Lot Area	43,560 sf	178,086 sf	Met
Lot Coverage	75%	78,300 sf / 178,086 sf = 44%	Met
Height	40'	26.75'	Met
Setback – Front	50'	82.5'	Met
Setback – Sides	50' single; 100' total	52.5', 52.5'; 105' total	Met
Setback – Rear	50'	60'	Met

Items to be addressed

None

BUILDING DESIGN

The building design shall relate to the surrounding environment in regard to texture, scale, mass, proportion, and color. High standards of construction and quality materials will be incorporated into the new development. In addition to following design guidelines adopted in specific district or sub-area plans, the building design shall meet the requirements of §1296.04, Standards for Architecture and Building Materials.

The proposed use is located within an existing one-story brick building. The building façade incorporates approximately seven (7) glass entry doors, six (6) metal service doors, five (5) metal overhead doors, and thirteen (13) windows. The applicant proposes to fill the openings for two (2) overhead doors, two (2) window wells, three (3) steel doors, and one (1) door sidelight with brick. The applicant also proposes to replace the glass door with one of reinforced steel.

The building design as proposed generally meets the standards of §1296.04, with the exception of the following two items:

- Main entrances shall be emphasized with doors larger than required by the applicable building code(s) and framing devices such as deep overhangs, recesses, peaked roof forms, porches, or arches.*

The main entrance to this property was previously delineated by a glass door with a sidelight, differentiating itself from the service-oriented overhead and metal doors. As proposed, the main entrance to this property is a reinforced steel door of standard size, with no framing device.
- Windows. Front facades shall include at least twenty-five percent (25%) windows. The approximate size, shape, orientation and spacing of windows should match that of buildings within five-hundred (500) feet, unless the Planning Commission determines other sizes, shapes, orientation, and spacing are acceptable.*

The building façade as existing is approximately 9% windows, including door sidelights, and does not meet this condition. The proposed alterations reduce conformity with this provision by approximately 196 square feet, bringing the proportion of windows to 8% of the total façade.

Several considerations are present.

- The proposed bricking of the transparent openings has a logical basis in the function of the proposed use, which is light-sensitive. It is also a component of the applicant's security plan.
- The value of windows is in their contributions to security through obvious surveillance of activity outside the building by building inhabitants, and to the character of the built environment by connecting the private commercial spaces to the semi-private parking and right-of-way spaces.
- Lincoln Park's general industrial district on John A Papalas Drive has a character that is less typical of heavy industry and more commonly associated with light industrial or industrial office uses. This character is defined in a large part by features embodied in the applicant's building (brick material, architectural details, human-scaled parking and ingress, and windows), and contributes to the type of businesses which would be attracted to the space.
- The calculations here are assessed on the basis of the entire ~396' façade even though the use is proposed for only a portion of it (~116' or 29%). Though the size of the operation is currently statutorily limited, the applicant has expressed interest in expanding the medical marijuana facility to the rest of the building over time, when and if it is legally permitted. This will change the request from a mere *reduction* in window coverage to the complete *elimination* of windows, which will affect the character of the district. A simple waiver at this time will set a precedent without substantially resolving the point, creating either a sticking point for future applications, unintended consequences to the district, or both.

Items to be addressed

- Applicant to redesign main entrance to comply with architectural standards.*
- The Planning Commission shall address the conflict between the requirement for minimum window placement as a contributing factor to the character of the district, and the security and photosensitivity needs of the proposed use. Because of the potential for precedent, a waiver is not recommended without an exploration of the issue.*

PRESERVATION OF SIGNIFICANT NATURAL FEATURES

Judicious effort shall be used to preserve the integrity of the land, existing topography, and natural, historical, and architectural features as deemed in this Zoning Code, in particular flood hazard areas and wetlands designated/regulated by the Michigan Department of Environmental Quality, and, to a lesser extent, flood hazard areas and wetlands which are not regulated by the Department.

The site is fully developed and has no significant natural features. It is designated as an Area of Minimal Flood Hazard by the ESRI National Flood Hazard Layer.

Items to be addressed

None

SIDEWALKS, PEDESTRIAN, AND BICYCLE CIRCULATION

The arrangement of public or common ways for vehicular and pedestrian circulation shall be connected to existing or planned streets and sidewalks/ pedestrian or bicycle pathways in the area. There shall be provided a pedestrian circulation system which is separated from the vehicular circulation system. In order to ensure public safety, special pedestrian measures, such as crosswalks, crossing signals and other such facilities may be required in the vicinity of primary and secondary schools, playgrounds, local shopping areas, fast food/ service restaurants and other uses which generate a considerable amount of pedestrian or bicycle traffic.

No sidewalks or other provisions for nonmotorized circulation currently exist on the site. Because motorized uses, particularly heavy ones which pose the greatest risk in a conflict with nonmotorized users, are prioritized in the General Industrial District, this is appropriate.

Items to be addressed

None

PARKING

The number and dimensions of off-street parking [spaces] shall be sufficient to meet the minimum required by this Zoning Code. However, where warranted by overlapping or shared parking arrangements, the Planning Commission may reduce the required number of parking spaces, as provided in this Zoning Code.

Use	Required	Proposed	Compliance
Industrial	1 per 500 sf: 78,300/500 = 157	157	Met

Items to be addressed

None

BARRIER-FREE ACCESS

The site has been designed to provide barrier-free parking and pedestrian circulation.

Required Spaces	Required Barrier-Free Spaces	Proposed Barrier-Free Spaces	Compliance
157	6	7	Met

Items to be addressed

- Two of the site’s barrier-free spaces are nearest to entrances that are proposed to be removed. Consider relocating those spaces nearer to active entrances.

LOADING

Off-street loading shall be provided according to the schedule in §1290.09. All loading and unloading areas and outside storage areas, including refuse storage stations, shall be screened in accordance with this Zoning Code.

Gross Floor Area	Loading Spaces – Required	Loading Spaces – Provided	Compliance
78,300	5 plus 1/10,000 in excess of 50,000 = 8	0	No

The loading zone on the site plan measures 7.5’ by 52.5’ as measured with an engineering scale. One loading space is defined by §1290.09 of the Zoning Code as an area 10’ by 50’ with a 15’ clearance. According to the table in that section, a building with 50,001-100,000 sf of gross floor area must provide five (5) loading spaces plus one (1) space per 10,000 sf in excess of 50,001 sf.

Items to be addressed

- Provide the required loading spaces or provide documentation to support a waiver request.*

ACCESS, DRIVEWAYS, AND VEHICULAR CIRCULATION

Safe, convenient, uncongested, and well-defined vehicular and pedestrian circulation within and to the site shall be provided. Drives, streets, parking and other elements shall be designed to discourage through traffic, while promoting safe and efficient traffic operations within the site and at its access points. All driveways shall meet the design and construction standards of the City. Access to the site shall be designed to minimize conflicts with traffic on adjacent streets, particularly left turns into and from the site. For uses having frontage and/or access on a major traffic route, as defined in the City of Lincoln Park Comprehensive Development Plan, the number, design, and location of access driveways and other provisions for vehicular circulation shall comply with the provisions of Section 1290.10, Access Management Standards.

This site does not have frontage or access on a major traffic route as defined by the City of Lincoln Park. Access to the property is provided via a two-way driveway on each end of the site, as is the case with adjacent properties. The opposite side of the street abuts I-75 and therefore does not have curbcuts.

Items to be addressed

None

EMERGENCY VEHICLE ACCESS

All buildings or groups of buildings shall be arranged so as to permit necessary emergency vehicle access as required by the Fire Department and Police Department.

This item is subject to review by the Lincoln Park Fire and Police Departments.

Items to be addressed

- Emergency vehicle access is subject to Fire and Police Department review*

STREETS

All streets shall be developed in accordance with the City of Lincoln Park Subdivision Control Ordinance and construction standards, unless developed as a private road in accordance with the requirements of the City.

No new streets are proposed.

Items to be addressed

None

LANDSCAPING, SCREENING, AND OPEN SPACE

The landscape shall be preserved in its natural state, insofar as practical, by removing only those areas of vegetation or making those alterations to the topography which are reasonably necessary to develop the site in accordance with the requirements of this Zoning Code. Landscaping shall be preserved and/or provided to ensure that proposed uses will be adequately buffered from one another and from surrounding public and private property. Landscaping, landscape buffers, greenbelts, fencing, walls and other protective barriers shall be provided and designed in accordance with the provisions of §1296.03, Landscaping Standards, §1294.28 Screening, and §1294.29 Fences. Recreation and open space areas shall be provided in all multiple-family residential and educational developments.

	Required	Proposed	Compliance
Street Landscaping	Greenbelt, 10' width minimum with groundcover	Greenbelt with grass, 52.5' width	Met
	1 tree and 4 shrubs per 40' of street frontage (462' total) = 12 trees and 48 shrubs	6 existing trees to remain; 13 new trees proposed; 52 shrubs proposed	Met
	Where headlights from parked vehicles will shine into the ROW, may require a totally obscuring hedge	N/A	N/A
Interior Landscaping	10% of total lot area landscaped, including groundcover	N/A (for new developments)	N/A
	Interior landscaping to be grouped near entrances, foundations, walkways, service areas		
	1 tree per 400 sf of required landscaping and 1 shrub per 125 sf of required landscaping		

	Required	Proposed	Compliance
Parking Lot	1 deciduous or ornamental tree per 10 parking spaces (157/10) = 16	2 existing trees to remain; 7 trees in street greenbelt to be counted toward this requirement as well as 4 shrubs to equal 1 tree = 10 trees provided. Planning commission waiver sought for remainder under (c), Special Provisions for Existing Sites	Waiver requested
	100 sf of planting area per tree		
Screening	Waste receptacle: Decorative masonry wall of at least 6' with solid or impervious gate	Two masonry-gated refuse container enclosures	Met

- Planning Commission waiver requested to reduce the number of required parking lot trees from 16 to 10 per Special Provisions for Existing Sites in §1296.03.*

SOIL EROSION CONTROL

The site shall have adequate lateral support so as to ensure that there will be no erosion of soil or other material. The final determination as to adequacy of, or need for, lateral support shall be made by the Building Superintendent or City Engineer.

Soil erosion control measures are subject to Building Superintendent and/or City Engineer review.

Items to be addressed

- Soil erosion control measures are subject to Building Superintendent and/or City Engineer review.*

UTILITIES

Public water and sewer facilities shall be available or shall be provided for by the developer as part of the site development, where such systems are available.

Public water and sewer facilities are available.

Items to be addressed

None

STORMWATER MANAGEMENT

Appropriate measures shall be taken to ensure that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Provisions shall be made to accommodate stormwater which complements the natural drainage patterns and wetlands, prevent erosion and the formation of dust. Sharing of stormwater facilities with adjacent properties shall be encouraged. The use of detention/ retention ponds may be required. Surface water on all paved areas shall be collected at intervals so that it will not obstruct the flow of vehicular or pedestrian traffic or create standing water.

Stormwater management provisions are subject to Building Superintendent and/or City Engineer Review.

Items to be addressed

- Stormwater management provisions are subject to Building Superintendent and/or City Engineer Review.*

LIGHTING

Exterior lighting shall be arranged so that it is deflected away from adjacent properties and so that it does not impede the vision of traffic along adjacent streets. Flashing or intermittent lights shall not be permitted.

Twenty-two (22) wall-mounted exterior lights are shown on the perimeter of the building, though it is unclear whether they are all existing or some are newly proposed. They are downward-directed and not expected to impede the vision of traffic.

Items to be addressed

None

NOISE

The site has been designed, buildings so arranged, and activities/equipment programmed to minimize the emission of noise, particularly for sites adjacent to residential districts.

No adverse noise impacts are expected to result from this proposed use.

Items to be addressed

None

MECHANICAL EQUIPMENT

Mechanical equipment, both roof and ground mounted, shall be screened in accordance with the requirements of this Zoning Code.

No exterior mechanical equipment is proposed.

Items to be addressed

None

SIGNS

The standards of the City's Sign Code are met. §1294.27, §1476

No advertising or directional signage is proposed for the new use. A requirement of the proposed special land use is that "conspicuous sign(s) shall be posted stating that 'No loitering is permitted' on such property." The applicant shall provide additional information about compliance with this requirement, to include sign detail comparable with that found on Sheet A100, and placement in sufficient detail to allow the Planning Commission and/or Building Superintendent to assess its conspicuousness.

Items to be addressed

- *The applicant shall provide additional information about required "No loitering is permitted" signs, to include sign detail comparable with that found on Sheet A100, and placement in sufficient detail to allow the Planning Commission and/or Building Superintendent to assess its conspicuousness.*

HAZARDOUS MATERIALS OR WASTE

For businesses utilizing, storing or handling hazardous material such as automobile service and automobile repair stations, dry cleaning plants, metal plating industries, and other industrial uses, documentation of compliance with state and federal requirements shall be provided.

Applicant has provided Material Safety Data Sheets for nine (9) chemicals to be used on-site, of which seven (7) are considered hazardous under the US Department of Labor Occupational Safety and Health Administration (OSHA) standards. All employers with hazardous chemicals in their workplaces must have labels and safety data sheets for their exposed workers, and train them to handle the chemicals properly.

Items to be addressed

- *Compliance with OSHA Hazard Communication Standards shall be met and documented before a Certificate of Occupancy will be issued.*

STANDARDS FOR USES PERMITTED AFTER SPECIAL APPROVAL

Conditions required by §1296.02 or within the specific zoning classifications shall be satisfied.

1. A minimum setback of two hundred (200) feet from all homes or residentially zoned districts, adult regulated uses, schools, churches, child care facilities, parks, and drug-free zones. *This condition is met.*
2. A State registered and local business registration & specialty license is required for all facilities and primary caregivers. If the primary caregiver is not the owner of the premises then consent must be obtained in writing from the property owner to ensure the owner's knowledge of the use. **A copy of the State and local business registrations and specialty licenses shall be provided for City files.**

3. Consumption of marihuana on the premises is prohibited. *Applicant has committed to meeting this condition.*
4. The location from which a primary caregiver manufactures, stores and distributes medical marihuana to a qualifying patient shall not be used by another primary caregiver for any purpose whatsoever. ***This condition will be verified by State and local business registration and specialty licenses which are to be provided.***
5. No more than five (5) patients per caregiver. Each patient shall be limited to: two and one-half (2.5) ounces of usable marihuana (excludes seeds, stalks and roots) and twelve (12) marihuana plants kept in an enclosed, locked facility. *Applicant has committed to meeting this condition.*
6. The facility shall be subject to scheduled inspections to confirm compliance in accordance with applicable laws, including, but not limited to, State law and City ordinances. *Applicant has committed to meeting this condition.*
7. Hours of operations permitted: M-F: 9:00 a.m. - 9:00 p.m.; Sat.: 9:00 a.m. - 6:00 p.m.; Sunday: 10:00 a.m. - 6:00 p.m. *Applicant has committed to meeting this condition.*
8. Minimum distance from other similar uses: Two hundred (200) feet. *This condition is met.*
9. Drive-through facilities shall be prohibited. *This condition is met.*
10. Security: A security plan shall be submitted for review and approval by the Planning Commission. ***A security plan has been submitted for review by the Planning Commission.***
11. A conspicuous sign(s) shall be posted stating that "No loitering is permitted" on such property. ***A sign plan shall be submitted showing sign detail and placement throughout the site.***
12. Exterior lighting shall be required for security purposes, but in accordance with the provisions of the Zoning Ordinance. *This condition is met.*

Items to be addressed

- A copy of the State and local business registrations and specialty licenses shall be provided for City files.*
- Security plan subject to review and approval by the Planning Commission.*
- A sign plan shall be submitted showing sign detail and placement throughout the site.*

OTHER AGENCY REVIEWS

The applicant has provided documentation of compliance with other appropriate agency review standards, including, but not limited to, the Michigan Department of Natural Resources, Michigan Department of Environmental Quality, Michigan Department of Transportation, Wayne County Drain Commission, Wayne County Health Department, and other federal and state agencies, as applicable.

A State registered and local business registration & specialty license is required for all facilities and primary caregivers. A copy of the State and local business registrations and specialty licenses is needed for City files.

Items to be addressed

- A copy of the State and local business registrations and specialty licenses is needed for City files.*
-

VARIANCES

No variances are required for this proposal.

Items to be addressed

None

RECOMMENDATIONS

Findings

Overall, the proposed project is in substantial compliance with the City of Lincoln Park Zoning Ordinance. However, the review of the project has revealed a conflict between the ordinance addressing this use, and the Standards for Architecture and Building Materials. This conflict must be resolved by the Planning Commission before a final determination about compliance can be made.

Conditions, Waivers, and Dependencies

- The Planning Commission shall address the conflict between the requirement for minimum window placement as a contributing factor to the character of the district, and the security and photosensitivity needs of the proposed use. Because of the potential for precedent, a waiver is not recommended without an exploration of the issue.*
- Applicant to redesign main entrance to comply with architectural standards.*
- Two of the site's barrier-free spaces are nearest to entrances that are proposed to be removed. Consider relocating those spaces nearer to active entrances.*
- Provide the required loading spaces or provide documentation to support a waiver request.*
- Planning Commission waiver requested to reduce the number of required parking lot trees from 16 to 10 per Special Provisions for Existing Sites in §1296.03.*
- The applicant shall provide additional information about required "No loitering is permitted" signs, to include sign detail comparable with that found on Sheet A100, and placement in sufficient detail to allow the Planning Commission and/or Building Superintendent to assess its conspicuousness.*
- Compliance with OSHA Hazard Communication Standards shall be met and documented before a Certificate of Occupancy will be issued.*
- A copy of the State and local business registrations and specialty licenses shall be provided for City files.*
- Security plan subject to review and approval by the Planning Commission.*
- Emergency vehicle access is subject to Fire and Police Department review*
- Soil erosion control measures are subject to Building Superintendent and/or City Engineer review.*

planning review



- *Stormwater management provisions are subject to Building Superintendent and/or City Engineer Review.*

Recommendations

It is recommended that the Lincoln Park Planning Commission **table** approval of this project until it has determined a resolution to the conflict between window requirements and use accommodation which will preserve, or redefine, the intended character of the district.

Case No. _____

Date Submitted _____

City of Lincoln Park
APPLICATION FOR SPECIAL USE APPROVAL

NOTICE TO APPLICANT: Applications for Special Use review by the Planning Commission must be submitted to the City *in substantially complete form* at least thirty (30) days prior to the Planning Commission's meeting at which the proposal will be considered. The application must be accompanied by six (6) individual folded copies of the site plan, plus the required review fees. Regular meetings of the Planning Commission are held on the first Tuesday of each month at 7:00 p.m. All meetings are held at the Lincoln Park City Hall, 1355 Southfield Road, Lincoln Park, Michigan 48146. Phone number (313) 386-1800; Fax (313) 386-2205.

Special Uses shall comply with the standards in Section 1262.08 of the Zoning Ordinance. Accordingly, a public hearing shall be held by the Planning Commission before a decision is made on any Special Use request. Furthermore, a site plan shall be required, which shall be prepared in accordance with Section 1294.01 of the Ordinance.

TO BE COMPLETED BY APPLICANT:

I (we) the undersigned do hereby respectfully request Special Use Review and provide the following information to assist in the review:

Applicant: Robert Tessmar

Mailing Address: 1869 Arthurs Way Rochester Hills, MI 48306

Email Address: rtessmar@gmail.com

Telephone: 248-3903626 Fax: _____

Property Owner(s) (if different from Applicant): Downriver Building Investors

Mailing Address: 33 Hiram Street Suite 102 Lake Orion, MI 48360

Telephone: 248-3903626 Fax: _____

Applicant's Legal Interest in Property: Owner

Location of Property: Street Address: 1612 & 1616 John A Papalas Drive

Nearest Cross Streets: Southfield & I75

Sidwell Number: 8245 003 15 0005 002

Property Description:

If part of a recorded plat, provide lot numbers and subdivision name. If not part of a recorded plat (i.e., "acreage parcel"), provide metes and bounds description. Attach separate sheets if necessary.

Property Size (Square Ft): 10,800 square feet (Acres): _____

Present Use of Property: General Warehouse

Proposed Use of Property: Medical Marijuana Facility

Existing Zoning (please check):

- | | |
|---|---|
| G SFRD Single Family Residential District | G RBD Regional Business District |
| G MFRD Multiple Family Residential District | G CBD Central Business District |
| G MHRD Mobile Home Park District | <input checked="" type="checkbox"/> G GID General Industrial District |
| G NBD Neighborhood Business District | G LID Light Industrial District |
| G MBD Municipal Business District | G CSD Community Service District |
| G PUD Planned Unit Development District | |

Please Complete the Following Chart:

Type of Development	Number of Units	Gross Floor Area	Number of Employees on Largest Shift
Detached Single Family			
Attached Residential			
Office			
Commercial		10,800	5-7
Industrial			
Other			

ATTACH THE FOLLOWING:

- Six (6) individually folded copies of the site plan, sealed by a registered architect, engineer, landscape architect or community planner.
- Proof of property ownership.
- A brief written description of the proposed use.

PLEASE NOTE: The applicant or a designated representative **MUST BE PRESENT** at all scheduled review meetings or the site plan may be tabled due to lack of representation.

APPLICANT'S ENDORSEMENT:

All information contained herein is true and accurate to the best of my knowledge. I acknowledge that the Planning Commission will not review my application unless all information required in this application and the Zoning Ordinance have been submitted. I further acknowledge that the City and its employees shall not be held liable for any claims that may arise as a result of acceptance, processing, or approval of this application.

 Signature of Applicant 3-15-2016
Date

 Signature of Applicant Date

 Signature of Property Owner Authorizing this Application 3-15-2016.
Date

To be completed by City:

Date Submitted: _____ Fee Paid: _____

Received By: _____ Date of Public Hearing: _____

PLANNING COMMISSION ACTION (RECOMMENDATION)

To Approve: _____ To Deny: _____ Date of Action: _____

Reasons for Action Taken: _____

CITY COUNCIL ACTION

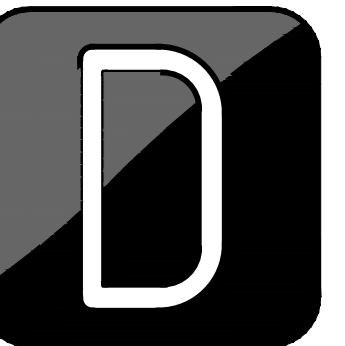
Approved: _____ Denied: _____ Date of Action: _____

Reasons for Action Taken: _____

1600 John A. Papalas Dr.

Medical Marijuana Facility
 1600 John A Papalas Dr.
 Lincoln Park, MI 48146

DESIGNHAUS
 301 WALNUT BOULEVARD
 ROCHESTER, MI 48307
 T: 248.601.4422
 F: 248.453.5854
 WWW.DESIGNHAUS.COM



PROJECT TEAM

OWNER TBD ADDRESS T: F: C: CONTACT:	ARCHITECT DESIGNHAUS ARCHITECTURE 301 WALNUT BLVD. ROCHESTER, MI 48307 T: 248.601.4422 F: 248.453.5854 PROJECT MANAGER: JOE LATOZAS PROJECT ARCHITECT: PETER STUHLREYER, A.I.A.
CIVIL ENGINEER TBD ADDRESS T: F: C: CONTACT:	MEP ENGINEER TBD ADDRESS T: F: C: CONTACT:
STRUCTURAL ENGINEER TBD ADDRESS T: F: C: CONTACT:	CONTRACTOR TBD ADDRESS T: F: C: CONTACT:

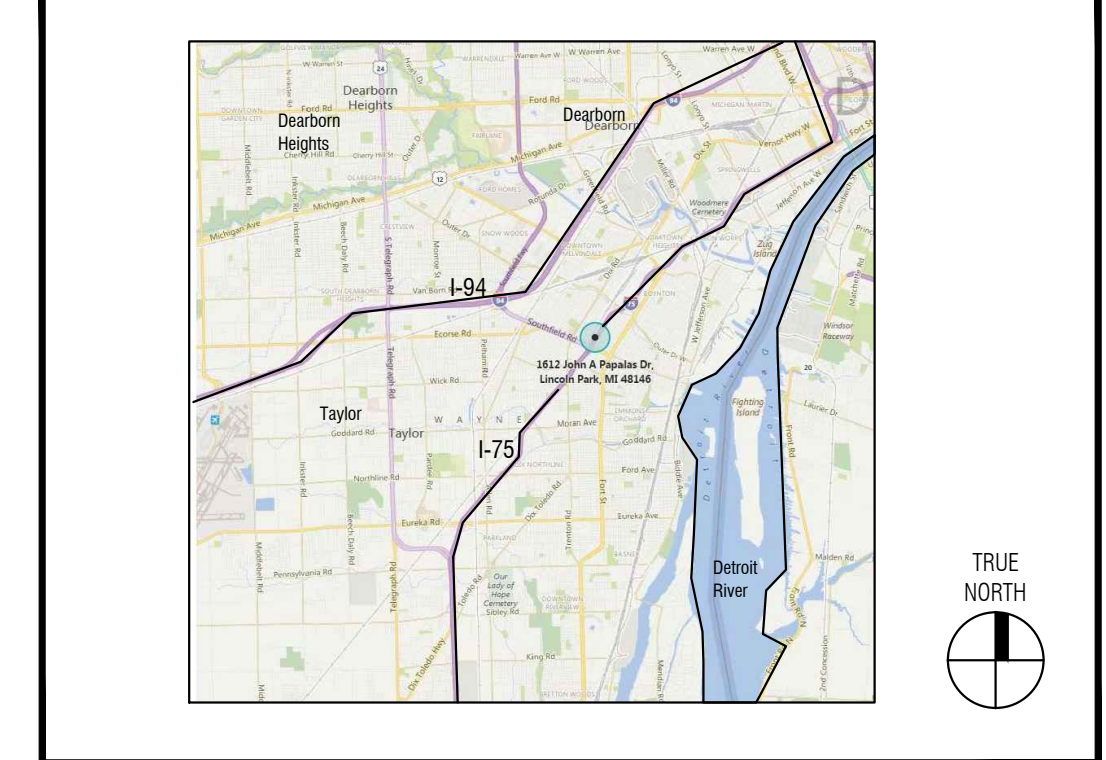
INDEX OF DRAWINGS

SHEET NO.	DRAWING NAME	STATUS	REVISIONS
GENERAL G001	Title Sheet and Index	<input checked="" type="checkbox"/> SHEET ISSUED	0
CIVIL			
LANDSCAPE S100	Site Plan	<input type="checkbox"/> SHEET ISSUED	0
STRUCTURAL			
ARCHITECTURAL DEMOLITION			
ARCHITECTURAL A100 A200 A201	Floor Plan Elevations Elevations	<input type="checkbox"/> SHEET ISSUED	0

VICINITY MAP



LOCATION MAP

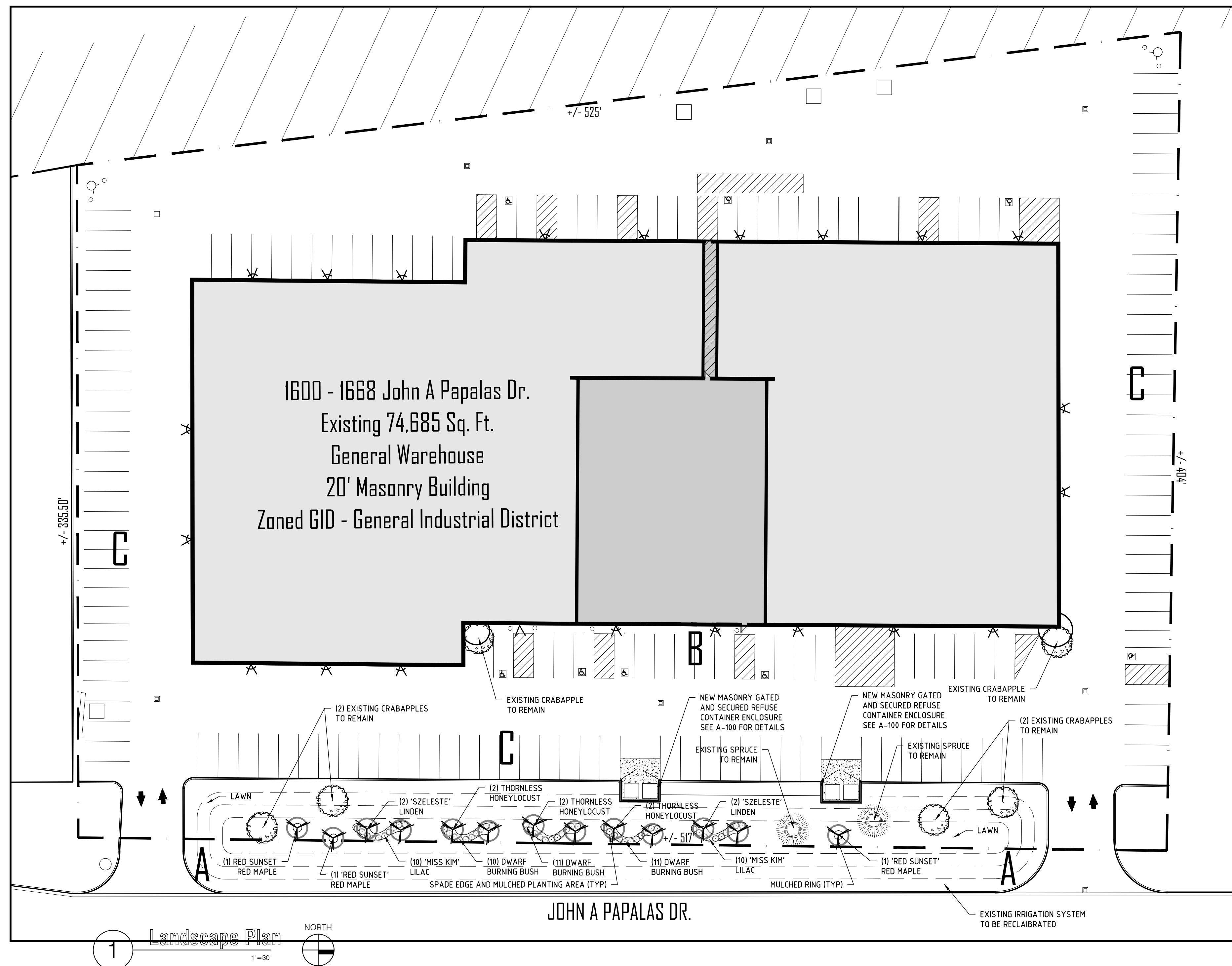


No.	Revision/Issue	Date
	Revised per Planner Comments	07.29.16
	Site Plan Approval	07.07.16
	Conceptual Plan Review	03.14.16

1600 John A. Papalas Dr.
 Medical Marijuana Facility
 1600 John A Papalas Dr.
 Lincoln Park, MI 48146

Title Sheet and Index

G001 015212



LANDSCAPE REQUIREMENTS

KEY	DESCRIPTION	ORDINANCE
A	FRONTAGE LANDSCAPE STREET TREES (WITHIN EXISTING GREENBELT)	(1) TREE / 40' STREET FRONTAGE (517' / 40') = 13 TREES (4) SHRUBS / 40' (517' / 40 X 4) = 52 SHRUBS
B	INTERIOR LANDSCAPING	(2) EXISTING CRABAPPLE TREES TO REMAIN
C	PARKING LOT TREES	N/A

PLANT SCHEDULE

QTY	BOTANICAL NAME	COMMON NAME	SIZE/ROOT
6	GLEDITSIA t. INERMIS 'SKYLINE'	'SKYLINE' THORNLESS HONEYLOCUST	2.5" B&B
4	TILLIA tomentosa 'SZELESTE'	'SZELESTE' LINDEN	2.5" B&B
3	ACER rubrum 'RED SUNSET'	'RED SUNSET' RED MAPLE	2.5" B&B
20	SYRINGA patula 'MISS KIM'	MISS KIM LILAC	24" B&B
32	EUONYMUS alatus 'COMPACTA'	DWARF BURNING BUSH	24" B&B
TOTAL NEW TREES: 13		TYPICAL SPACING FOR SHRUBS @ 3' O.C.	
TOTAL NEW SHRUBS: 52		TYPICAL SPACING FOR TREES @ 20' O.C.	

No.	Revision/Issue	Date
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	Revised per Planner Comments	07.29.16
	Site Plan Approval	07.07.16
	Conceptual Plan Review	03.14.16

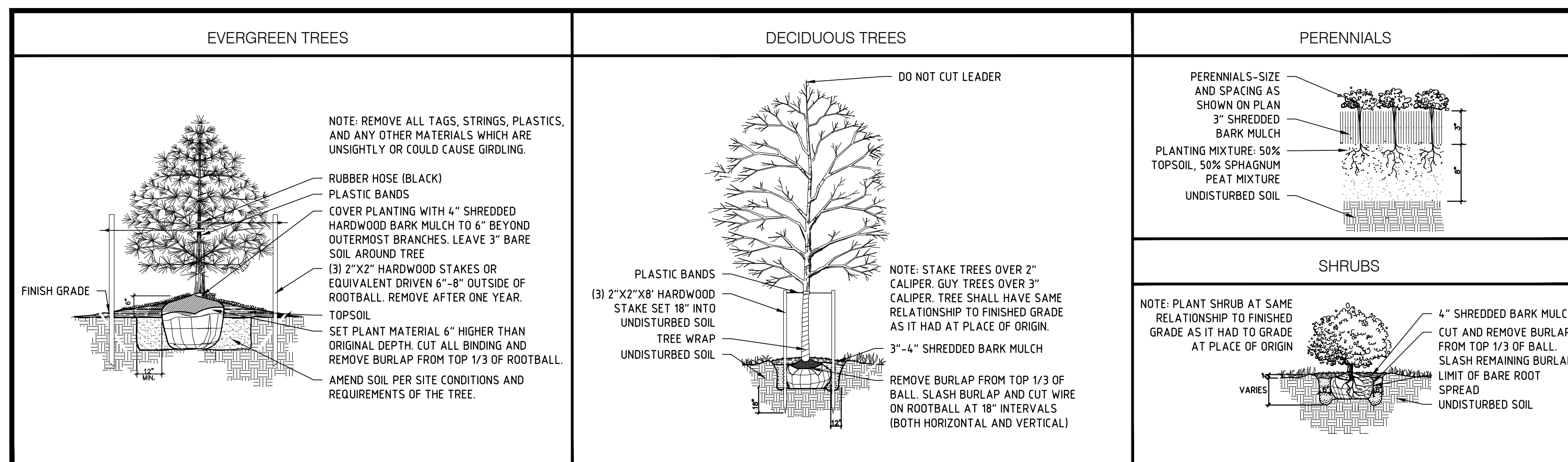
1600 John A. Papalas Dr.
Medical Marijuana Facility
1600 John A Papalas Dr.
Lincoln Park, MI 48146

Landscape Plan

L100

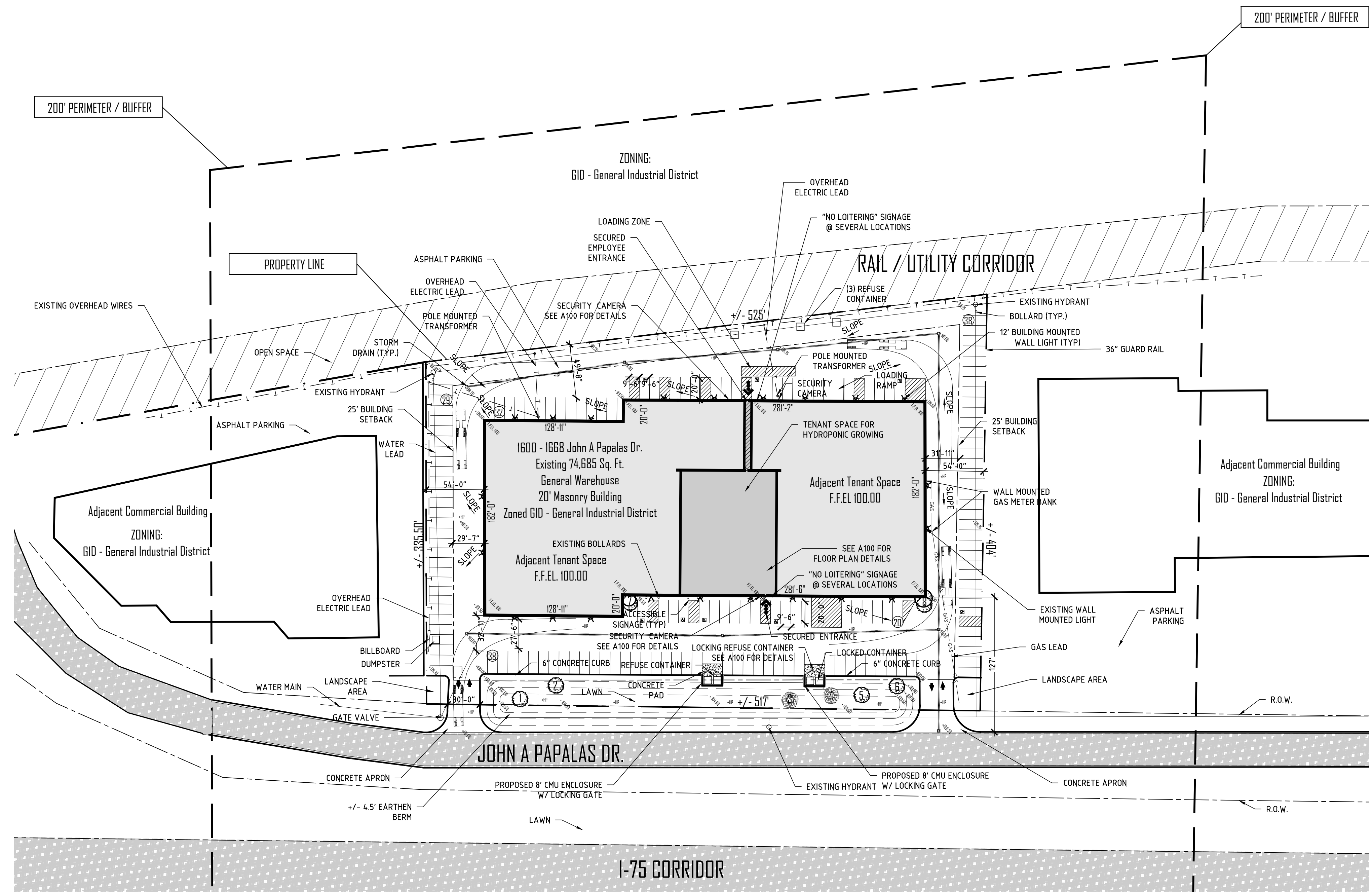
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PLANTING DETAILS



GENERAL NOTES FOR LANDSCAPE DEVELOPMENT

- LANDSCAPE CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISTING SITE CONDITIONS AND REVIEW PROPOSED PLANTING AND RELATED WORK. IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, PLAN SHALL GOVERN QUANTITIES. CONTACT LANDSCAPE ARCHITECT WITH ANY CONCERNS.
- CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION ON HIS/HER PHASE OF WORK. ELECTRIC, GAS, TELEPHONE, CABLE TELEVISION MAY BE LOCATED BY CALLING MISS DIG. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF CONTRACTOR. CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES ON THE JOB AND SHALL REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER'S REPRESENTATIVE PRIOR TO COMMENCING.
- ALL PLANT MATERIAL TO BE PREMIUM GRADE NURSERY STOCK AND SHALL SATISFY AMERICAN ASSOCIATION OF NURSERYMEN STANDARD FOR NURSERY STOCK. ALL LANDSCAPE MATERIAL SHALL BE NORTHERN GROWN, NO. 1 GRADE.
- CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON LANDSCAPE PLAN PRIOR TO PRICING THE WORK.
- THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY PLANT MATERIAL NOT MEETING SPECIFICATIONS.
- ALL SINGLE STEM SHADE TREES TO HAVE STRAIGHT TRUNKS AND SYMMETRICAL CROWNS.
- ALL SINGLE TRUNK SHADE TREES TO HAVE A CENTRAL LEADER; TREES WITH FORKED OR IRREGULAR TRUNKS WILL NOT BE ACCEPTED.
- ALL TREES TO HAVE CLAY OR CLAY LOAM BALLS. TREES WITH SAND BALLS WILL BE REJECTED.
- 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.
- CONCERNING GROUND COVER, ALL PLANTING BEDS SHALL RECEIVE 3" SHREDDED HARDWOOD BARK MULCH, SEE SPECIFICATIONS. ALL OTHER DISTURBED AREAS SHALL BE SODDED.
- LANDSCAPING SHALL BE MAINTAINED IN A GOOD CONDITION TO PRESENT A HEALTHY, NEAT, AND ORDERLY APPEARANCE FREE FROM REFUSE AND DEBRIS. ALL UNHEALTHY AND DEAD MATERIAL SHALL BE REPLACED WITHIN ONE (1) YEAR OF THE NEXT APPROPRIATE PLANTING PERIOD.
- OWNER TO ESTABLISH MAINTENANCE PROGRAM TO ENSURE GROUNDS AND LANDSCAPING TO REMAIN HEALTHY AND WELL GROOMED.
- RECOMMENDED PLANTING DATES ARE MARCH 1ST TO MAY 15TH FOR ALL MATERIALS, AND OCTOBER 15TH TO DECEMBER 15TH FOR DECIDUOUS MATERIALS. PLANTINGS OUTSIDE THESE DATES SHALL HAVE PRIOR APPROVAL OF THE LANDSCAPE ARCHITECT.
- UNDERGROUND IRRIGATION SYSTEM TO BE RE-CALIBRATED BY CONTRACTOR FOR NEW PLANTING AREAS.
- TURF GRASS TO BE COMMON TO WAYNE COUNTY, MI.



NOTE:
NO UTILITY MODIFICATIONS PROPOSED
OWNER TO INSTALL AND MONITOR SECURITY SYSTEM
MINIMAL PARKING DEMAND ANTICIPATED

1. A minimum setback of 200' from all homes or residentially zoned districts, adult regulated uses, schools, churches, child care facilities's, parks, and drug-free zones
2. A state registered and local business registration and speciality license is required for all facilities and care givers. If the primary caregiver is not the owner of the permission then consent must be obtained in writing fro the property owner to ensure the owners knowledge of the use.
3. Consumption of marijuana on the premises is prohibited.
4. The location from which a primary caregiver manufactures, stores, and distributes medical marijuana to a qualifying patient shall not be used by another caregiver for any purpose whatsoever.
5. No more than (5) patients per caregiver. Each patient shall be limited to: 2.5 ounces of usable marijuana (excludes seeds, stalks, and roots) and 12 marijuana plants kept in an enclosed, locked facility. Total plants proposed: 70 (per operation set-up) Total allowed plants: 72
6. The facility shall be subject to local inspections to confirm compliance in accordance with applicable laws, including but not limited to, State Law and City Ordinances.
7. Hours of operation permitted: M-F 9:00 AM - 9:00 PM; Sat, 9:00 AM - 6:00 PM; Sunday: 10:00 AM - 6:00 PM
8. Minimum distance from similar uses: 200'
9. Drive-thru facilities prohibited.
10. Security: A security plan shall be submitted for review and approval by the Planning Commission.
11. A conspicuous sign(s) "No Loitering is permitted" shall be posted on such property
12. Exterior lighting required for security purposes, but in accordance with the provisions of the Zoning Ordinance.

NOTE:
NO WATER COURSES EXIST ON SITE
SITE NOT WITHIN FLOODPLAIN DISTRICT
NO SIGNAGE PROPOSED FOR NEW USE

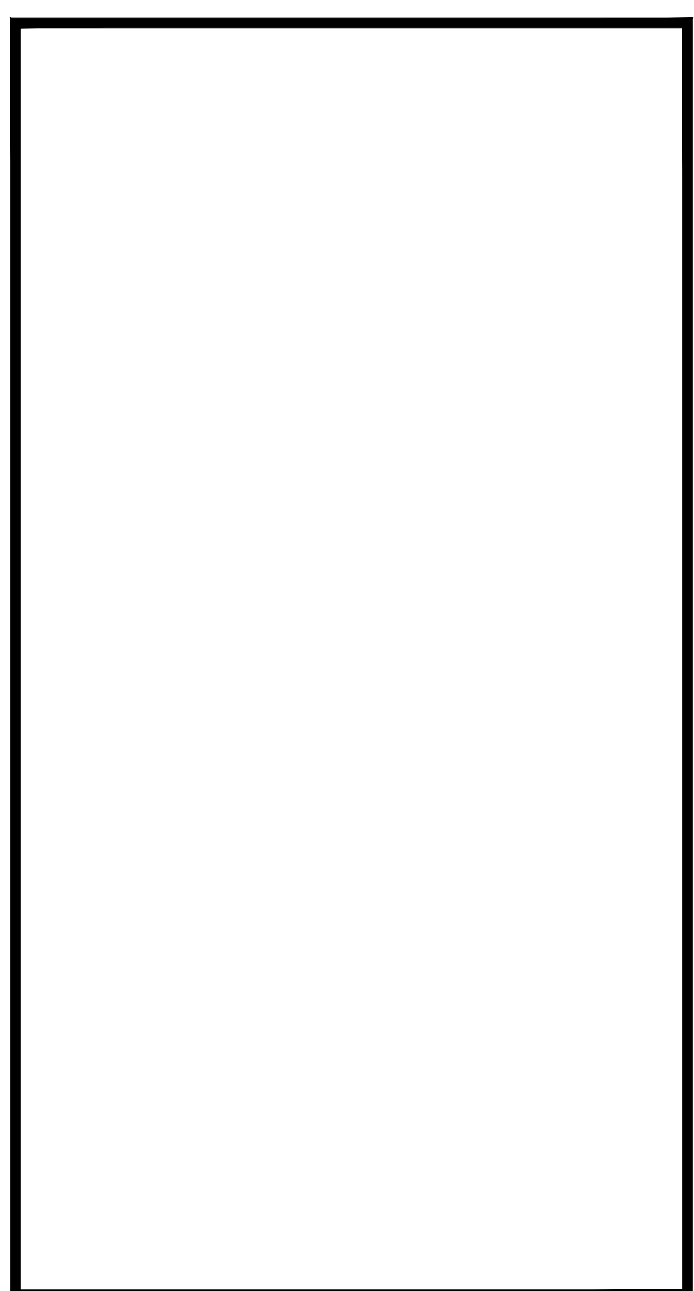
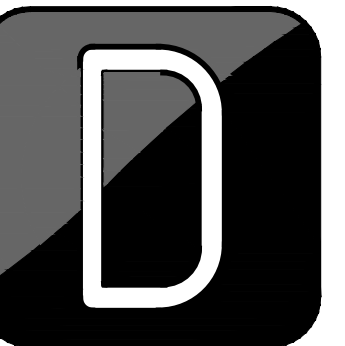
ZONING:
LID - Light Industrial District

1 Site Plan
1"=60'

1612 John A Papalas Dr.
Proposed 10,800 Sq. Ft. Medical Marijuana Facility

DESIGNHAUS

301 WALNUT BOULEVARD
ROCHESTER, MI 48307
T : 248.601.4422
F : 248.453.5854
WWW.DESIGNHAUS.COM



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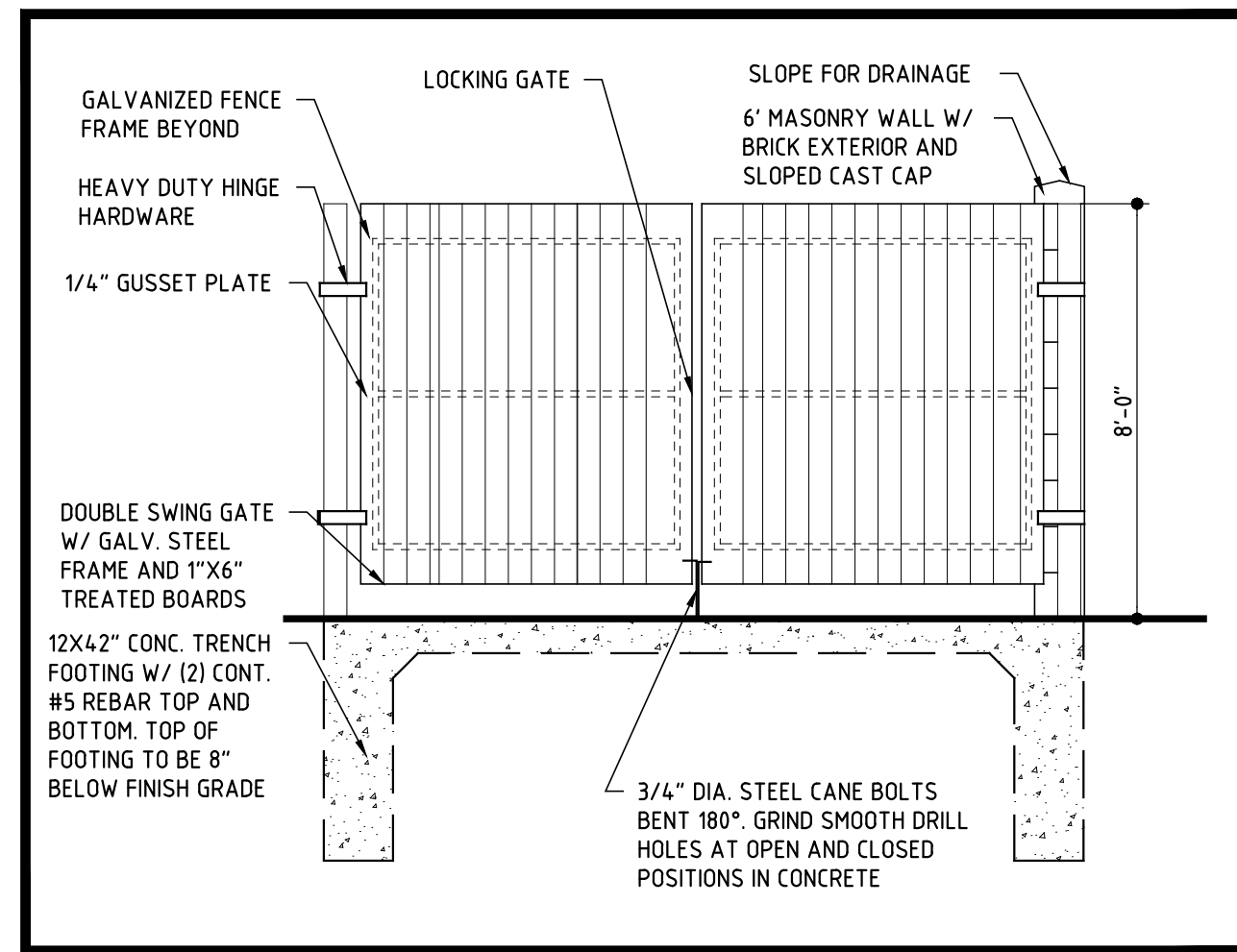
1600 John A. Papalas Dr.
Medical Marijuana Facility
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Lincoln Park, MI 48146

Site Plan

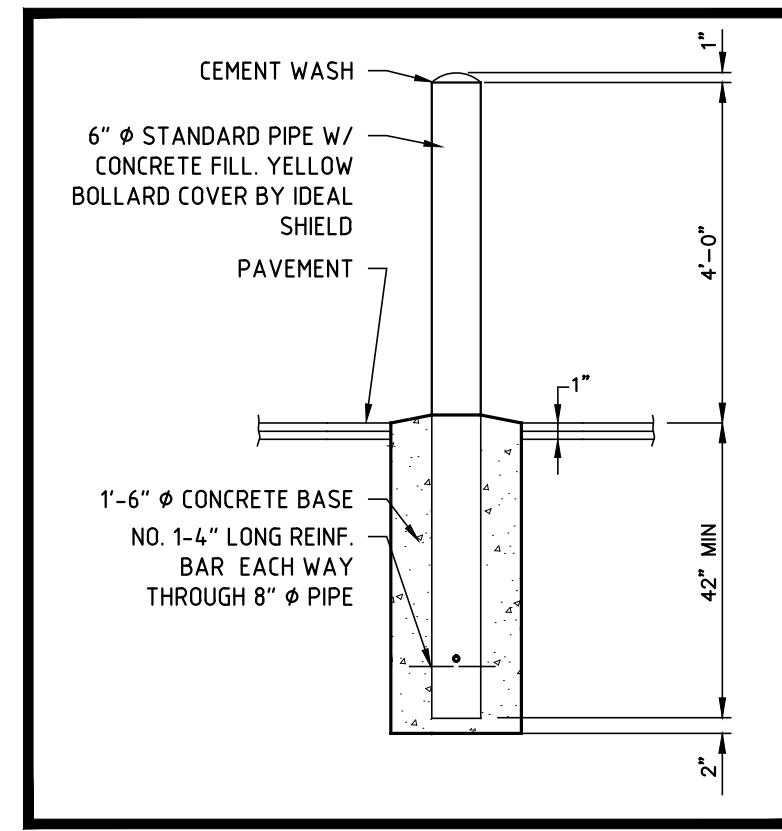
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SITE DATA		EXISTING TREE INVENTORY				ZONING SCHEDULE OF REGULATIONS			PARKING SUMMARY			
Regulation	Information	#	SIZE	COMMON NAME	CONDITION	DISPOSITION	Regulation	Required	Provided	Regulation	Required	Provided
Parcel I.D.	# 8245-003-15-0005-002	1	9"	CRABAPPLE	GOOD	TO REMAIN	Setbacks	Front: 25' Sides: 25' / 50' Rear: 25'	Front: 81.25' Sides: 54.00' Rear: 57.00'	Parking	General Industrial - 1/500 Gross Floor Area	157 Parking Spots Provided including 6 Handicap Accessible
Address	1602 - 1688 John A Papalas Dr.	2	8"	CRABAPPLE	GOOD	TO REMAIN	Building Height	Maximum: 40'	20'			
Zoning	G.I.D. General Industrial District	3	24"	CRABAPPLE	GOOD	TO REMAIN	Lot Area	Minimum: 43,560 sq.ft.	182,496 sq.ft. (4.19 Acres)			
Parcel Area	(182,496 Sq.Ft.) 4.19 Acres	4	18"	PINE	GOOD	TO REMAIN	Coverage	75% Maximum	40.92% (74,685 Sq. Ft.)			
		5	18"	PINE	GOOD	TO REMAIN						
		6	24"	CRABAPPLE	GOOD	TO REMAIN						
		7	9"	CRABAPPLE	GOOD	TO REMAIN						
		8	10"	CRABAPPLE	GOOD	TO REMAIN						
		TOTAL TREES: 8										

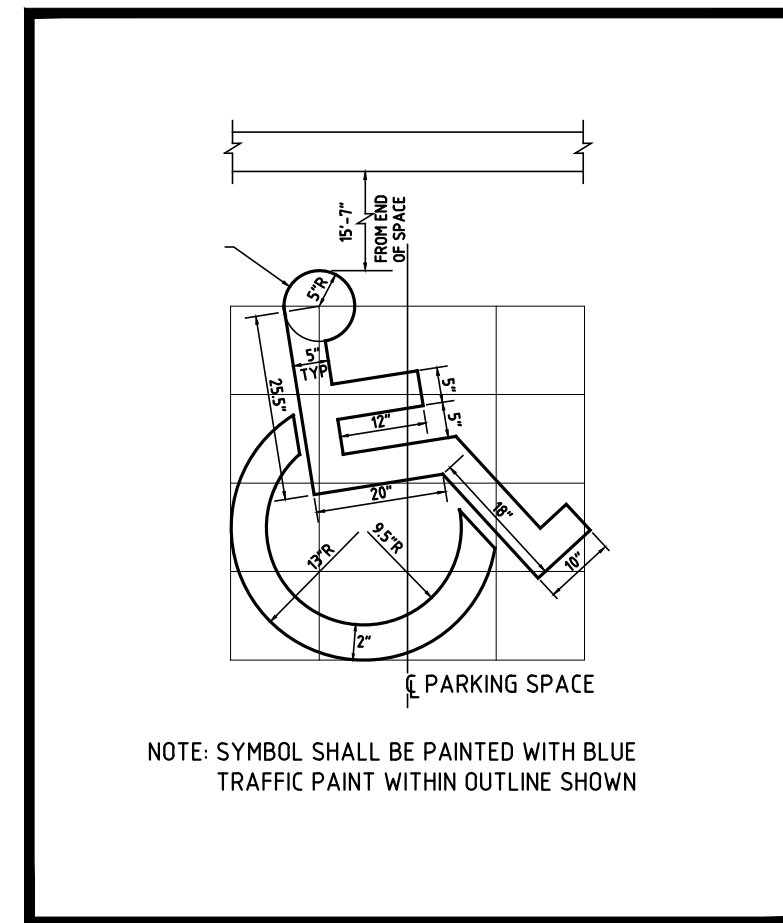
DUMPSTER ENCLOSURE DETAIL



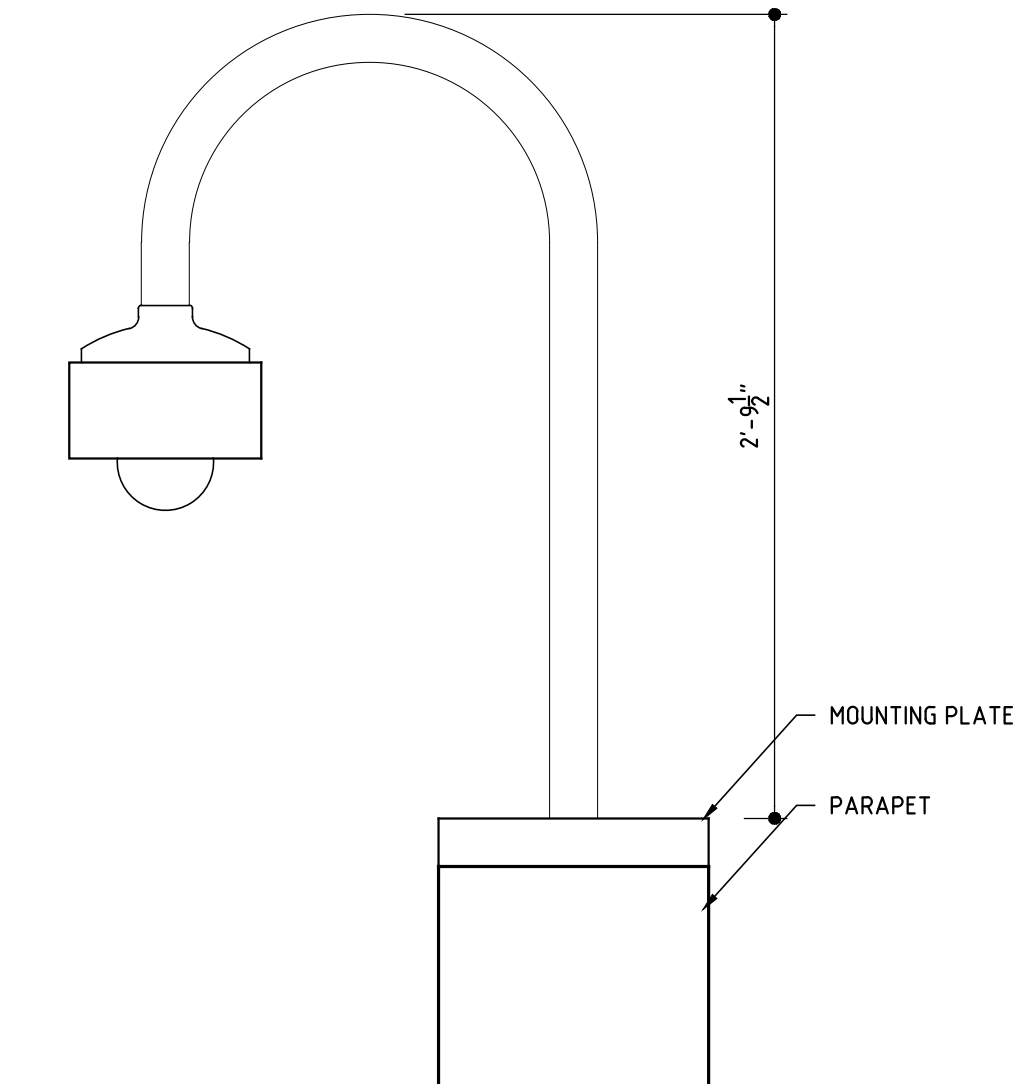
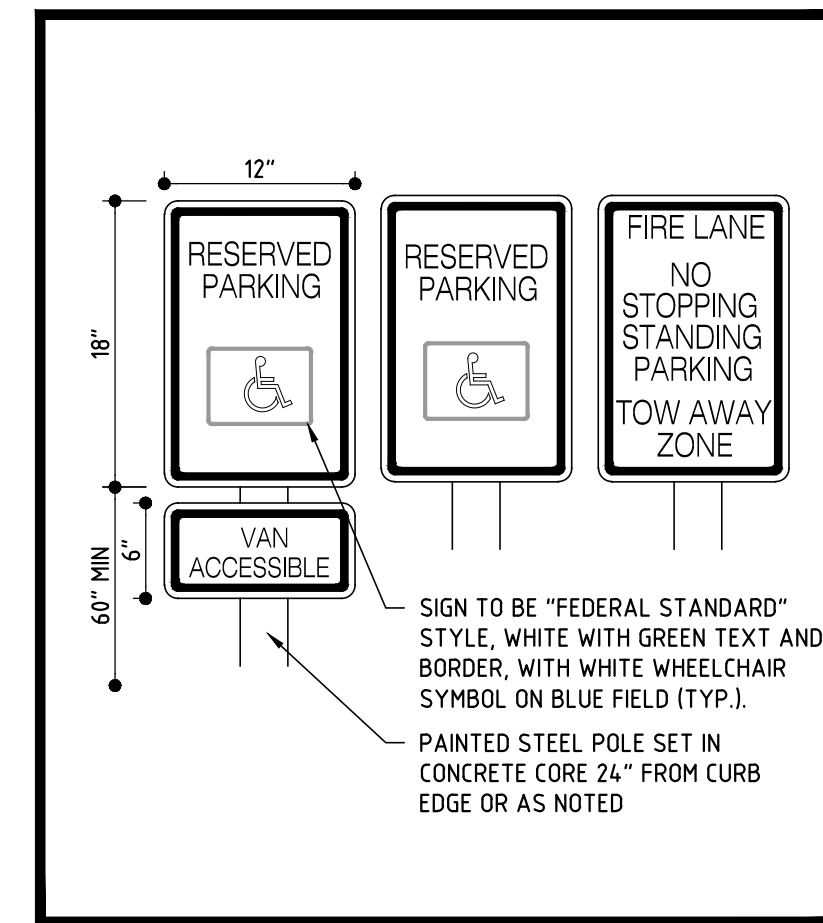
BOLLARD DETAIL



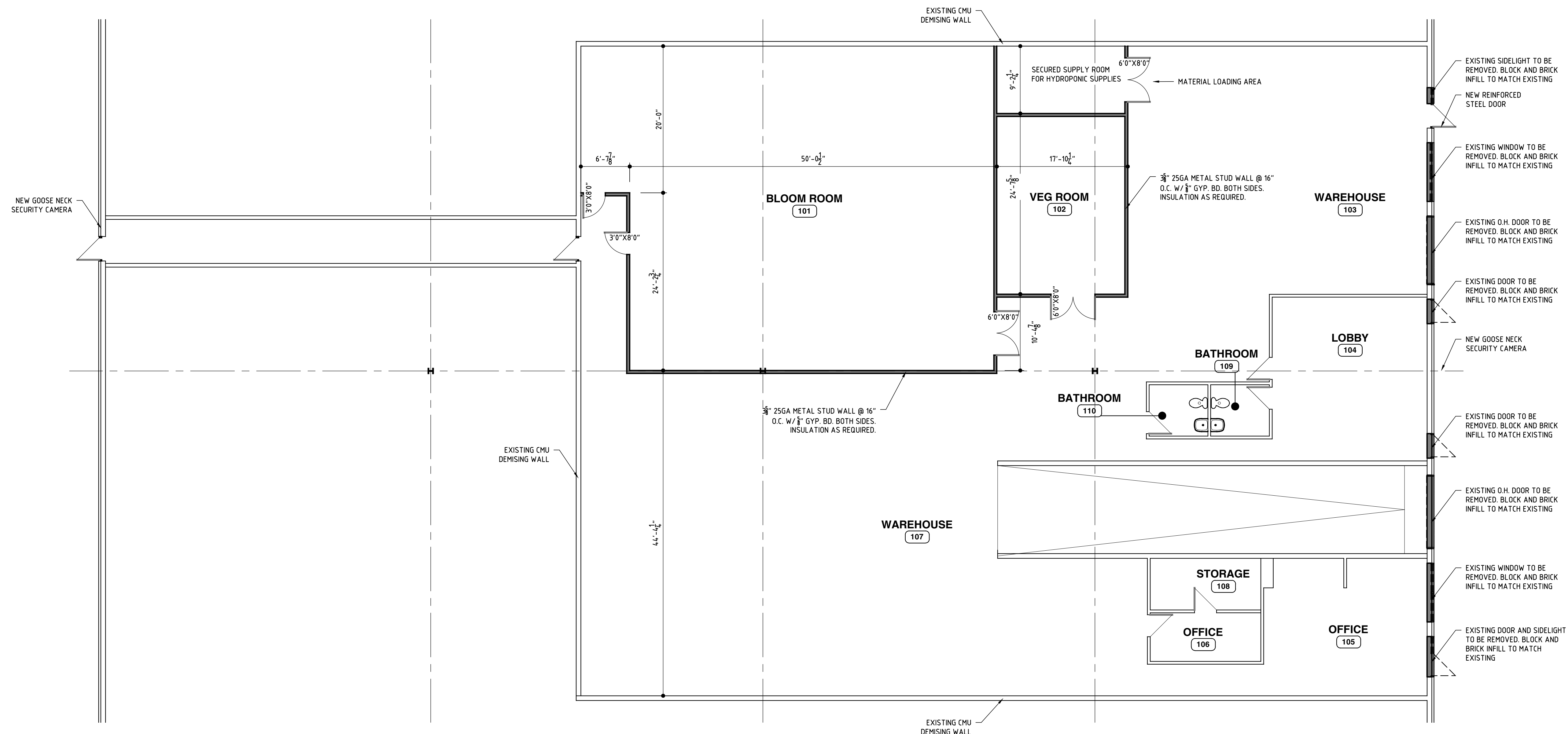
PARKING SPACE PAINT DETAIL



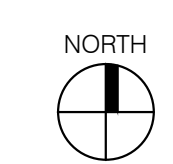
HANDICAP SIGN DETAIL



2 Security Camera Detail SCALE: 1 1/2" = 1'

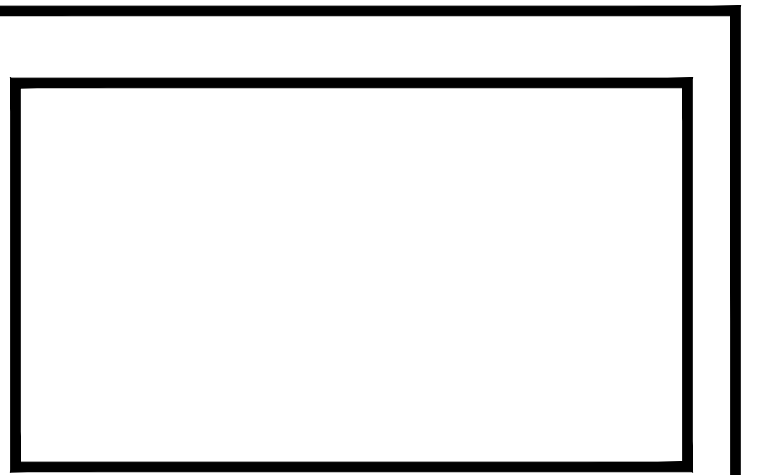
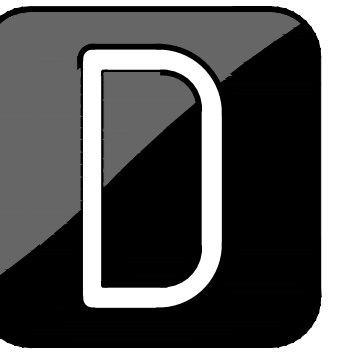


1 Floor Plan SCALE: 1/8" = 1'



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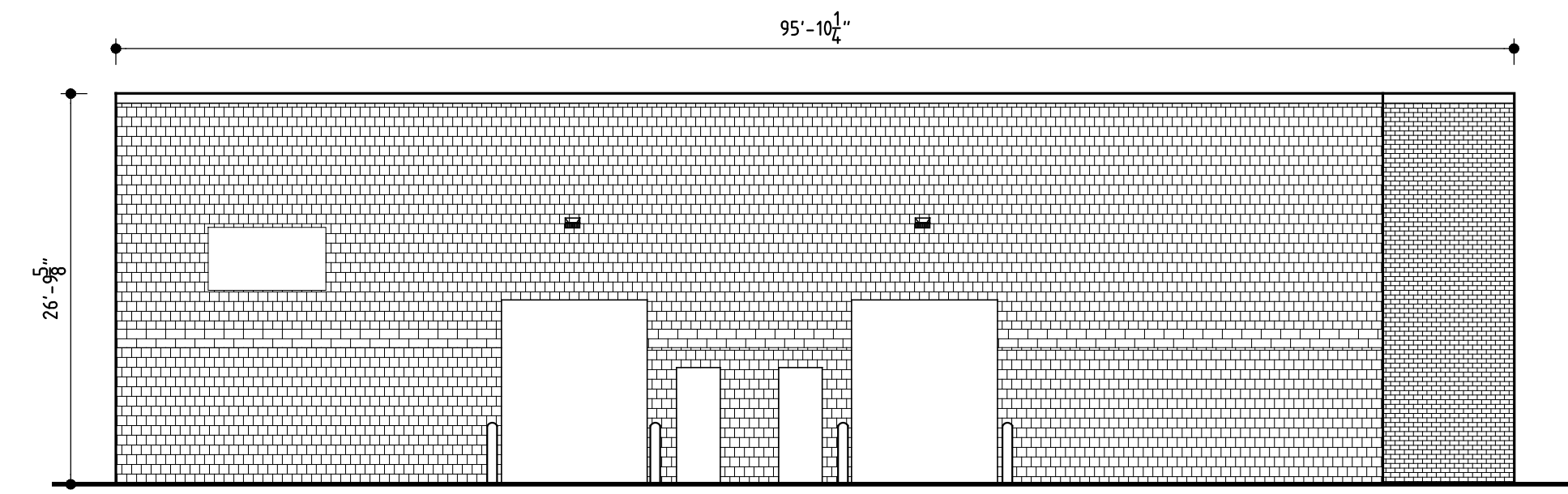
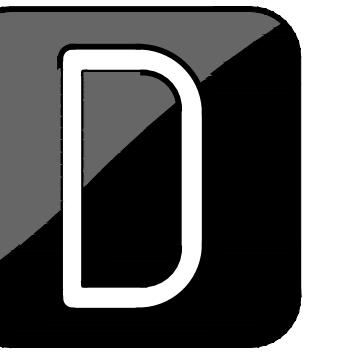


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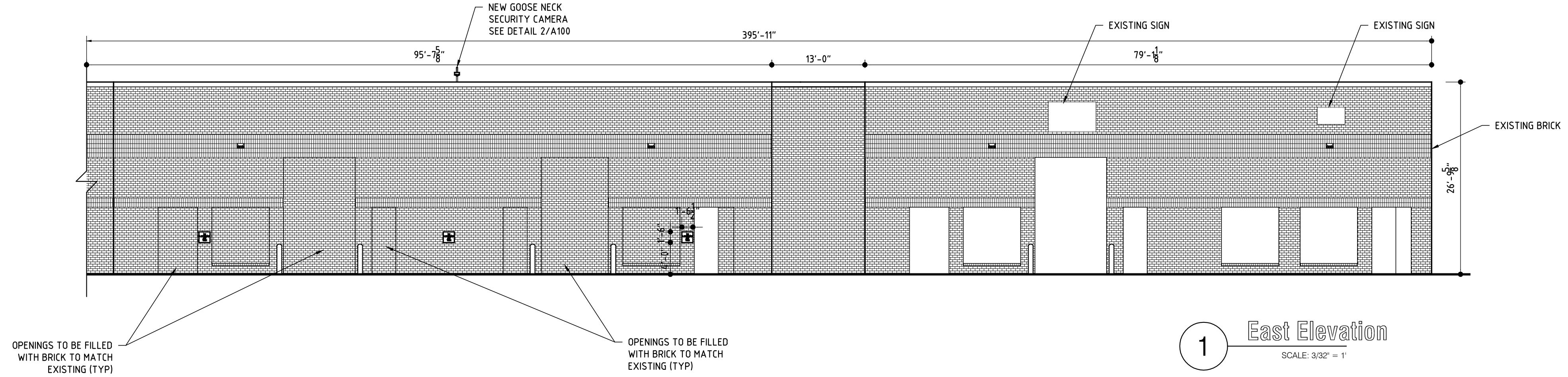
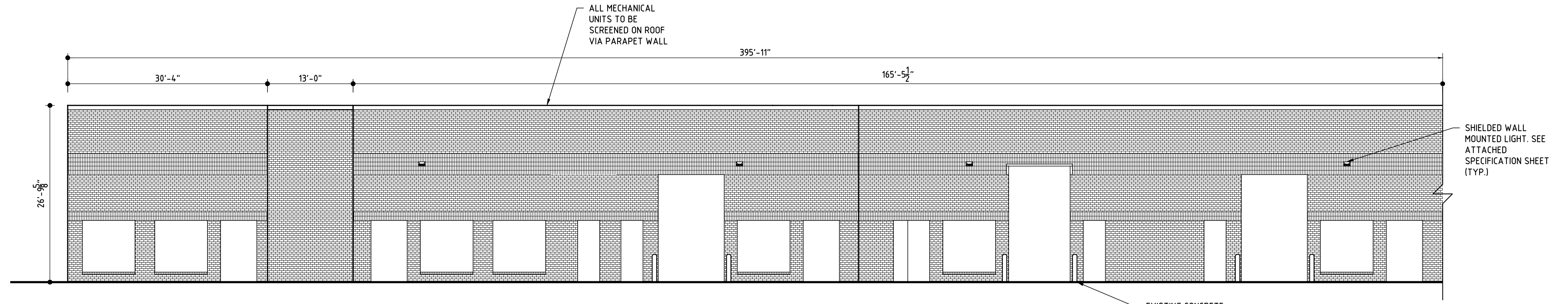
1600 John A. Papalas Dr.
Medical Marijuana Facility
1600 John A Papalas Dr.

Floor Plan

A100 015212



2 North Elevation
 SCALE: 3/32" = 1"



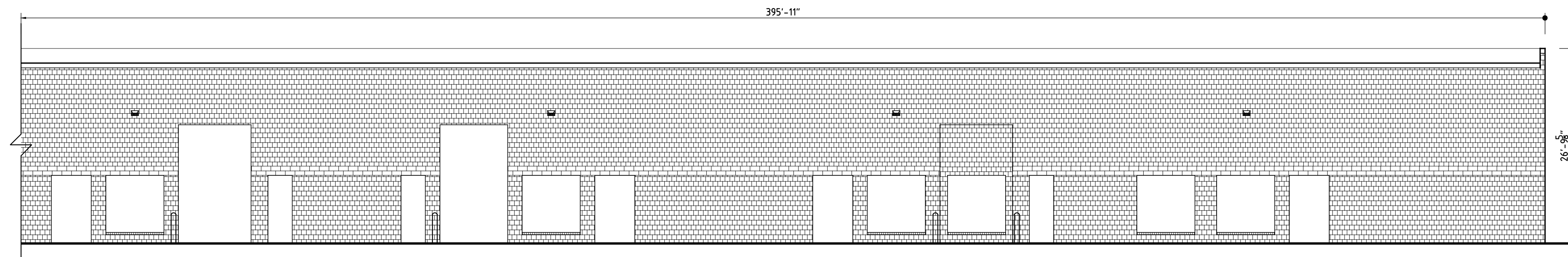
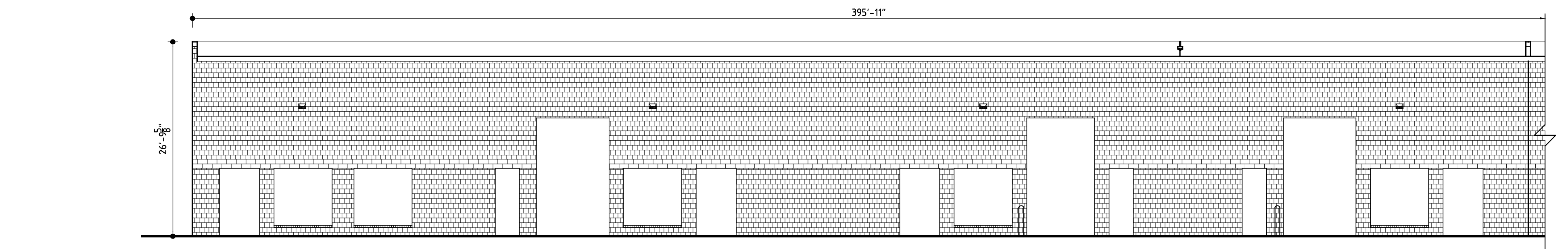
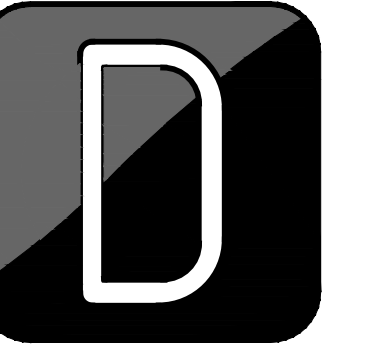
1 East Elevation
 SCALE: 3/32" = 1"

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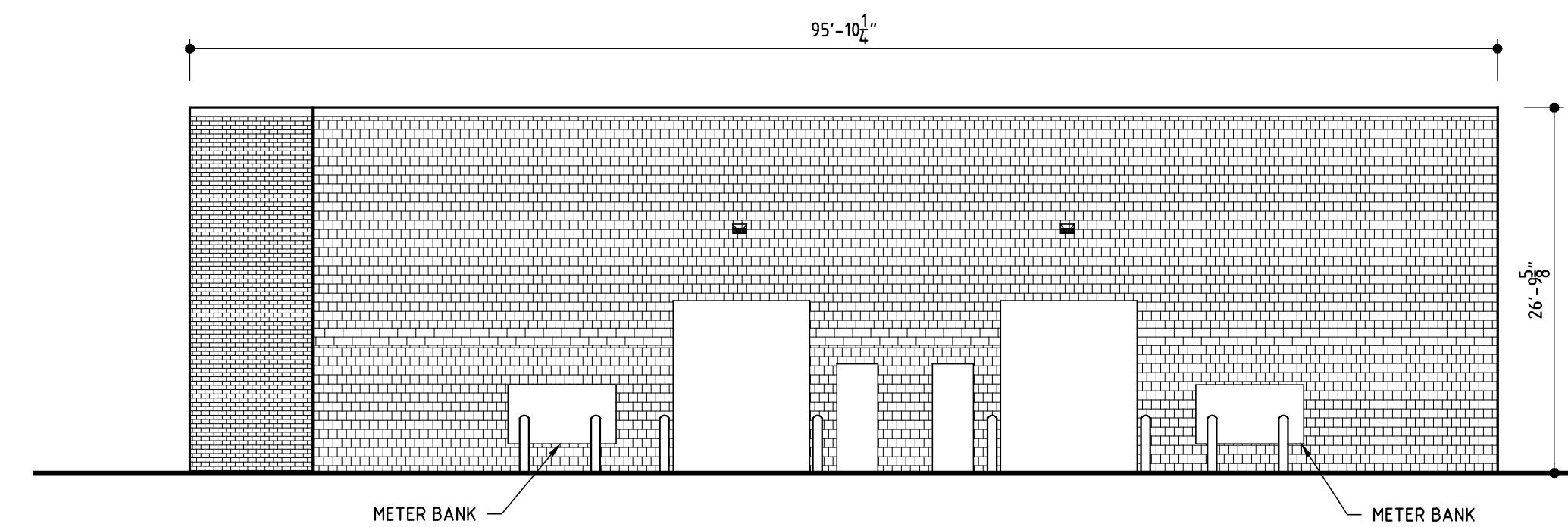
1600 John A. Papalas Dr.
 Medical Marijuana Facility
 1600 John A Papalas Dr.
 Lincoln Park, MI 48146

Elevations

A200 015212



2 West Elevation
 SCALE: 3/32" = 1'



1 South Elevation
 SCALE: 3/32" = 1'

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1600 John A. Papalas Dr.
 Medical Marijuana Facility
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Elevations

A201

015212

FEATURES & SPECIFICATIONS

INTENDED USE — For entrances, loading docks, walkways and vehicle ramps.

CONSTRUCTION — Rear housing: Rugged, corrosion-resistant, die-cast aluminum. Corrosion-resistant external hardware includes slotted hex-head and tamperproof fasteners.

Front housing and refractor: one-piece, injection-molded, UV-stabilized polycarbonate.

Finish: Dark bronze (DDB) corrosion-resistant polyester powder.

OPTICS — Reflector is finished in white thermoset polyester powder, electrostatically applied. Standard finish on opaque portion of front cover and back housing is dark bronze polyester enamel. Refractor is sealed and gasketed to inhibit the entrance of outside contaminants.

ELECTRICAL — Ballast: Low and high pressure sodium are high reactance, high power factor. Metal halide 50-150W are high reactance, high power factor and are standard with pulse-start ignitor technology. "SCWA" not required. Constant wattage autotransformer for 175M (CSA, NOM or INTL required for probe start shipments outside of the US). Super CWA (pulse start ballast), 88% efficient and EISA legislation compliant, is required for 175M (SCWA option) for US shipments only. Ballast is 100% factory-tested.

Socket: Porcelain, horizontally oriented, single-ended bayonet base socket for 35W low pressure sodium; medium base socket for 70-150W; and mogul base socket for 175W with copper alloy, nickel-plated screw shell and center contact. UL listed 1500W, 600V.

INSTALLATION — Top 3/4" threaded wiring access. Back access through removable 3/4" knockout. Feed-thru wiring can be achieved by using a conduit tee. Mount on any flat, vertical surface.

LISTINGS — Listed and labeled to UL standards. Listed and labeled to CSA standards (see Options). NOM Certified (see Options). UL listed for 25°C ambient and wet locations. IP64 rated.

Note: Not recommended for use in car wash interior applications.

Specifications subject to change without notice.

Catalog Number
Notes
Type



Wall Packs

TWP

METAL HALIDE 70W-175W
HIGH PRESSURE SODIUM 35W-150W
LOW PRESSURE SODIUM 35W
8' to 15' Mounting

Specifications

Height: 15-1/2 (39.4)

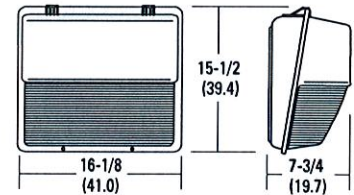
Width: 16-1/8 (41.0)

Depth: 7-3/4 (19.7)

*Weight: 17.9 lbs. (8.12 kg)

All dimensions are inches (centimeters) unless otherwise indicated.

*Weight as configured in example below.



ORDERING INFORMATION

For shortest lead times, configure product using **standard options (shown in bold)**.

Example: TWP 100M 120 LPI

TWP	Series	Wattage	Voltage	Ballast	Options	Finish	Lamp ¹³
TWP	<u>Metal halide</u>	120	(blank)	Magnetic ballast	<u>Shipped installed in fixture</u>	(blank)	LPI Lamp included
	70M ^{1,2}	208 ⁶			SF Single fuse (120, 277, 347V)	DBL Black	L/LP Less lamp
	100M¹	240⁶		CWI Constant wattage isolated	DF Double fuse (208, 240, 480V)	DMB Medium bronze	
	150M	277		Pulse Start	EC Emergency circuit ⁹	DWH White	
	175M^{2,3}	347		SCWA Super CWA pulse start ballast	QRS Quartz restrike ⁹	DNA Natural aluminum	
	<u>Ceramic metal halide</u>	480 ⁶		Note: For shipments to U.S. territories, SCWA must be specified to comply with EISA.	QRSTD Quartz restrike system with time delay ^{9,9}	DSS Sandstone	
	70MHC ^{1,2}	TB⁷			PE Photoelectric cell, button type¹⁰	CR Enhanced corrosion resistant	
	100MHC ¹	230S0HZ ⁸			CSA Listed an labeled to comply with Canadian Standards	CRT Non-stick protective coating¹²	
	150MHC				NOM NOM Certified ⁸		
	<u>High pressure sodium¹</u>				INTL Available for 175M probe start shipping outside the U.S.		
	35S ⁴				FS Full shield		
	50S				<u>Shipped separately¹¹</u>		
	70S				WG Wire guard		
	100S						
150S⁵							
<u>Low pressure sodium¹</u>							
35L							

Notes

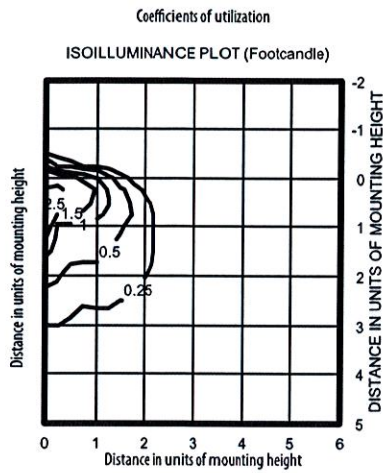
- Not available with SCWA.
- Not available with 480V.
- These wattages do not comply with California Title 20 regulations.
- 120V only.
- Operates 55V lamp.
- Must specify CWI for use in Canada.
- Optional multi-tap ballast (120, 208, 240, 277V). In Canada 120, 277, 347V; ships as 120/347.

- Consult factory for available wattages.
- Maximum allowable wattage lamp included.
- Not available with 480V or TB.
- May be ordered as an accessory with prefix TWP. Requires field modification.
- Black finish (coating applied to housing only).
- Must be specified. L/LP N/A MHC.

TWP Metal Halide, High Pressure Sodium, Low Pressure Sodium Wall Packs

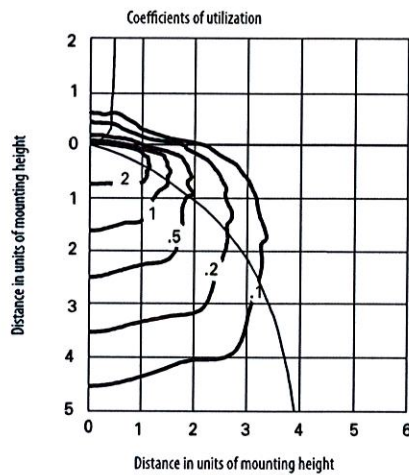
Coefficient of Utilization _____
Initial Footcandles _____

TWP 70M Test Report no. 97021601



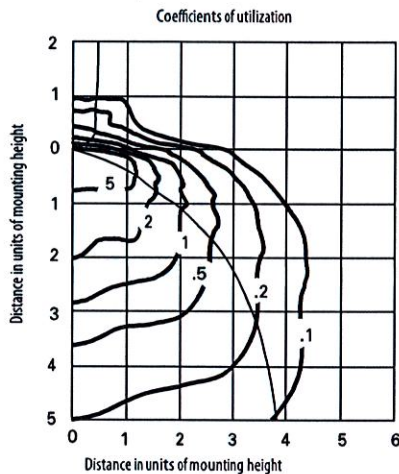
70W, metal halide lamp, horizontal lamp orientation, 10' mounting height, 5,200 rated lumens.
Total fixture efficiency: 50.7%

TWP 70S Test Report no. 94121702



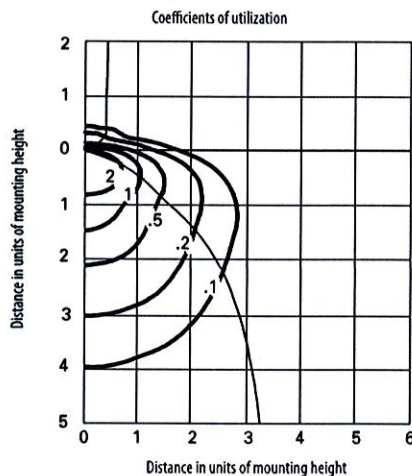
70W, high pressure sodium lamp, horizontal lamp orientation, 12' mounting height, 6,300 rated lumens.
Total fixture efficiency: 55%

TWP 150S Test Report no. 94121503



150W, high pressure sodium lamp, horizontal lamp orientation, 12' mounting height, 16,000 rated lumens.
Total fixture efficiency: 53.4%

TWP 35LPS Test Report no. 94121903



35W, low pressure sodium lamp, horizontal lamp orientation, 12' mounting height, 4,800 rated lumens.
Total fixture efficiency: 48.4%

Mounting Height Correction Factor

(Multiply the fc level by the correction factor)

10'	12'
	10 ft. = 1.44
15 ft. = .44	15 ft. = .64
20 ft. = .25	20 ft. = .36
25 ft. = .16	25 ft. = .23

$$\left(\frac{\text{Existing Mounting Height}}{\text{New Mounting Height}} \right)^2 = \text{Correction Factor}$$

Section 1: Product and Company Identification

Field 16 LLC 54875 Bautista Canyon Road Anza, CA. 92539 Business: 951.763.4392 FAX: 951.763.0517 Web: www.field16.com	Product Name: Heavy 16 Veg A Generic Name: Hydroponic plant food Synonyms: NA Product Description: Hydroponic nutrients CAS # NA – mixture Date of Revision: 4 August 2010
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Section 2: Hazard Identification

Emergency Overview: Dark transparent liquid. Contact causes irritation to eyes, skin and respiratory tract. Ingestion impairs blood function and may cause kidney damage.

HMI S HEALTH	1
HMI S FLAMMABILITY	0
HMI S REACTIVITY	0
PERSONAL PROTECTION	C

OSHA Regulatory Status: This material is considered hazardous under the OSHA standard.

Canadian WHMIS Classification: C, D2A

Potential Health Effects:

Inhalation: Inhalation of spray or mist causes irritation of respiratory tract. Symptoms may include coughing and shortness of breath.

Ingestion: Large doses may cause dizziness, abdominal pain, vomiting, bloody diarrhea, weakness, convulsions, and collapse. May cause methemoglobinemia, an interference with the blood's capability to carry oxygen, with symptoms of bluish tint to skin and lips.

Skin Contact: Causes irritation to skin. Symptoms may include redness, itching and pain.

Eye Contact: Causes irritation and burns to eyes. Symptoms may include redness itching and pain.

Chronic Exposure: Chronic oral ingestion of nitrates may cause weakness, depression, headache, and mental impairment. Potassium poisoning may occur with prolonged exposure.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: Blood, kidneys, eyes, skin, respiratory tract

Section 3: Composition / Information On Ingredients

Component	Common Names, Synonyms	CAS #	EINECS	Weight %
Calcium nitrate	Nitric acid calcium salt	10124-37-5	233-332-1	< 30
Potassium nitrate	Nitric acid potassium salt	7757-79-1	231-818-8	< 5

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more. This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Fire: Flash point: Not flammable. Solution itself does not burn, but solution applied to paper, fabric, cardboard or other absorbent combustible materials may catch fire on drying.

Explosion: Not considered an explosion hazard.

Extinguishing Media: Dry chemical, alcohol foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 0 Reactivity - 0 Other - NA

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Exposure Guidelines:

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Calcium nitrate	10124-37-5	Not established	Not established	Not established
Potassium nitrate	7757-79-1	Not established	Not established	Not established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use chemical safety goggles and/or full face shield where misting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Inhalation: Use NIOSH-approved vapor respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134, European standard EN 149 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties

Appearance	Dark transparent liquid	Specific Gravity (g/mL)	1.20 – 1.30
Odor	Mild	pH	6.0 – 7.0
Odor Threshold	Not determined	Solubility in water	Soluble
Melting Point	Not determined	% Volatiles	70%
Boiling Point	> 100°C (212°F)	Evaporation Rate	ND
Flash Point	Does not burn	Vapor Pressure@ 100°F, psi	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Nitrogen oxides (NO, N₂O, NO₂), phosphorus oxides, sulfur oxides (SO₂, SO₃)

Incompatibilities: Reducing agents, combustibles, strong acids or bases

Conditions to Avoid: Incompatible materials, combustible materials.

Section 11: Toxicological Information

Acute Dose Effects: Eye: Calcium nitrate: Irritation Rabbit: 500mg/24H severe.

Oral: Calcium nitrate: Rat LD50: 3900 mg/kg; Potassium nitrate: Rat: LD50: 3750 mg/kg; Rabbit LD50: 1901 mg/kg

Inhalation: No information.

Skin: No information.

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate.

Ecotoxicity: Calcium nitrate: The LC50/96-hour values for fish are over 100 mg/l.

Section 13: Disposal Considerations

As a waste, this material in its raw form IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

U.S. Domestic Ground **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

U.S. Domestic Air **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

Canadian TDG **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

International Air **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

CERCLA Reportable Quantity (RQ): N/A

Releases exceeding the reportable quantity (RQ) must be reported to the National Response Center (800) 424-8802.

This data provided for information only. The description shown may not apply to all shipping situations.

Consult 49 CFR, or appropriate regulations to properly classify your shipment for transportation.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the chemicals in this product are on this list.

TSCA Sec 8(d): None of the chemicals in this product are on the Health and Safety Reporting List.

TSCA Sec 12(b) Notices of Export: None of the chemicals in this product are on this list.

TSCA Significant New Use Rule (SNUR): None of the chemicals in this product are on this list.

SARA Sec 302 (EHS) TPQ: None of the chemicals in this product have a TPQ.

SARA Sec 302 (EHS) RQ: None of the chemicals in this product have a RQ.

SARA Sec 311/312: Acute – YES; Chronic – YES; Fire – NO; Release of Pressure – NO; Reactivity – NO

SARA 313 List: None of the chemicals in this product is reportable under Section 313 Title III and 40 CFR Part 372.

CERCLA Hazardous Substances and corresponding RQs: N/A

RCRA: None of the chemicals in this product are on this list.

Clean Air Act: Hazardous Air Pollutants? NO **Class 1 Ozone Depletors?** NO **Class 2 Ozone Depletors?** NO

Clean Water Act: Hazardous Substance? NO **Priority Pollutant?** NO **Toxic Pollutant?** NO

Chemical Weapons Convention: None of the chemicals in this product are on this list.

Drug Enforcement Agency (DEA) CDTA: None of the chemicals in this product are on this list.

OSHA: None of the chemicals in this product are considered Highly Hazardous by OSHA.

State Right-to-Know Lists: Potassium nitrate is found on the Right-to-Know lists of Florida, Massachusetts, New Jersey and Pennsylvania. Calcium nitrate is found on the Right-to-Know list of New Jersey.

California Proposition 65: None of the chemicals in this product are on this list.

Canadian: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.

The components in this product are listed, or exempt from listing, on the Canadian Domestic Substances List.

Canadian WHMIS: This product has a WHMIS classification of C, D2A.

Canadian Ingredient Disclosure List: Potassium nitrate is not listed on the Canadian Ingredient Disclosure List.

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
coeff.	coefficient	ppb	parts per billion
CFR	Code of Federal Regulations	PPE	personal protective equipment
CPR	cardio-pulmonary resuscitation	ppm	parts per million
DEA	Drug Enforcement Agency	psi	pounds per square inch
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2004.

Prepared by Douglas R. Chrisope on 4 August 2010.

DISCLAIMER: Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, the Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving this MSDS will make their own determination as to its suitability for their intended purposes prior to use. Since the product is within the exclusive control of the user, it is the user's obligation to determine the conditions of safe use of this product. Such conditions should comply with all Federal Regulations concerning the Product. It must be recognized that the physical and chemical properties of any product may not be fully understood and that new, possibly hazardous products may arise from reactions between chemicals. The information given in this data sheet is based on our present knowledge and shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

THIS IS THE LAST PAGE OF THIS MSDS

Section 1: Product and Company Identification

Field 16 LLC 54875 Bautista Canyon Road Anza, CA. 92539 Business: 951.763.4392 Fax: 951.763.0517 Web: www.field16.com	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Product Name:</td> <td>Heavy 16 Veg B</td> </tr> <tr> <td>Generic Name:</td> <td>Hydroponic plant food</td> </tr> <tr> <td>Synonyms:</td> <td>NA</td> </tr> <tr> <td>Product Description:</td> <td>Hydroponic nutrients</td> </tr> <tr> <td>CAS #</td> <td>NA – mixture</td> </tr> <tr> <td>Date of Revision:</td> <td>4 August 2010</td> </tr> </table>	Product Name:	Heavy 16 Veg B	Generic Name:	Hydroponic plant food	Synonyms:	NA	Product Description:	Hydroponic nutrients	CAS #	NA – mixture	Date of Revision:	4 August 2010
Product Name:	Heavy 16 Veg B												
Generic Name:	Hydroponic plant food												
Synonyms:	NA												
Product Description:	Hydroponic nutrients												
CAS #	NA – mixture												
Date of Revision:	4 August 2010												

Section 2: Hazard Identification

Emergency Overview: Clear pinkish liquid. Contact causes irritation to eyes, skin and respiratory tract. Ingestion impairs blood function and may cause kidney damage.

HMIS HEALTH	1
HMIS FLAMMABILITY	0
HMIS REACTIVITY	0
PERSONAL PROTECTION	C

OSHA Regulatory Status: This material is considered hazardous under the OSHA standard.

Canadian WHMIS Classification: C, D2A

Potential Health Effects:

Inhalation: Inhalation of spray or mist causes irritation of respiratory tract. Symptoms may include coughing and shortness of breath.

Ingestion: Large doses may cause dizziness, abdominal pain, vomiting, bloody diarrhea, weakness, convulsions, and collapse. May cause methemoglobinemia, an interference with the blood's capability to carry oxygen, with symptoms of bluish tint to skin and lips.

Skin Contact: Causes irritation to skin. Symptoms may include redness, itching and pain.

Eye Contact: Causes irritation and burns to eyes. Symptoms may include redness itching and pain.

Chronic Exposure: Chronic oral ingestion of nitrates may cause weakness, depression, headache, and mental impairment. Potassium poisoning may occur with prolonged exposure.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: Blood, eyes, skin, respiratory tract

Section 3: Composition / Information On Ingredients

Component	Common Names, Synonyms	CAS #	EINECS	Weight %
Potassium nitrate	Nitric acid potassium salt	7757-79-1	231-818-8	< 10
Potassium phosphate, monobasic	Phosphoric acid potassium salt	7778-77-0	231-913-4	< 10
Magnesium nitrate	Nitric acid magnesium salt	10377-60-3	233-826-7	< 10
Magnesium sulfate	Sulfuric acid magnesium salt	7487-88-9	231-298-2	< 10
Potassium sulfate	Sulfuric acid potassium salt	7778-80-5	231-915-5	< 10

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more. This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: IV administration of calcium gluconate will partially reverse the effects of acute magnesium toxicity. Ventricular support with calcium chloride infusion and mannitol-forced diuresis has also been successful. Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Fire: Flash point: Not flammable. Solution itself does not burn, but solution applied to paper, fabric, cardboard or other absorbent flammables may catch fire on drying.

Explosion: Not considered an explosion hazard.

Extinguishing Media: Use any suitable media for the surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 0 Reactivity - 0 Other - NA

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Exposure Guidelines:

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Potassium nitrate	7757-79-1	Not established	Not established	Not established
Potassium phosphate, monobasic	7778-77-0	Not established	Not established	Not established
Magnesium nitrate	10377-60-3	Not established	Not established	Not established
Magnesium sulfate	7487-88-9	Not established	Not established	Not established
Potassium sulfate	7778-80-5	Not established	Not established	Not established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use chemical safety goggles and/or full face shield where misting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Inhalation: Use NIOSH-approved vapor respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134, European standard EN 149 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties

Appearance	Clear pinkish liquid	Specific Gravity (g/mL)	1.15 – 1.25
Odor	Burnt, metallic	pH	6.0
Odor Threshold	Not determined	Solubility in water	Not soluble
Melting Point	Not determined	% Volatiles	80%
Boiling Point	> 100°C (212°F)	Evaporation Rate	ND
Flash Point	Does not burn	Vapor Pressure	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Nitrogen oxides (NO, N₂O, NO₂), phosphorus oxides, sulfur oxides (SO₂, SO₃)

Incompatibilities: Reducing agents, combustibles, strong acids or bases

Conditions to Avoid: Incompatible materials, combustible materials.

Section 11: Toxicological Information

Acute Dose Effects: Eye: No information found.

Oral: Potassium nitrate: Rat: LD50: 3750 mg/kg; Rabbit LD50: 1901 mg/kg; Magnesium nitrate: Rat LD50: 5440 mg/kg (hexahydrate); Potassium sulfate: Rat LD50: 6600 mg/kg

Inhalation: No information found.

Skin: Monopotassium phosphate: Rabbit: LD50: >4640 mg/kg;

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate.

Ecotoxicity: Magnesium sulfate: 24 hour EC50 *Daphnia magna* (water flea) : 1700 mg/L; 24 hour LC50 *Lepomis machrochirus* (bluegill) : > 5000 mg/L [static]; 72 hour EC50 *Scenedesmus subspicatus* (green algae) : 2700 mg/L.

Section 13: Disposal Considerations

As a waste, this material in its raw form IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

U.S. Domestic Ground **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

U.S. Domestic Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

Canadian TDG **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

International Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

CERCLA Reportable Quantity (RQ): N/A

Releases exceeding the reportable quantity (RQ) must be reported to the National Response Center (800) 424-8802.

This data provided for information only. The description shown may not apply to all shipping situations.

Consult 49 CFR, or appropriate regulations to properly classify your shipment for transportation.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the chemicals in this product are on this list.

TSCA Sec 8(d): None of the chemicals in this product are on the Health and Safety Reporting List.

TSCA Sec 12(b) Notices of Export: None of the chemicals in this product are on this list.
TSCA Significant New Use Rule (SNUR): None of the chemicals in this product are on this list.
SARA Sec 302 (EHS) TPQ: None of the chemicals in this product have a TPQ.
SARA Sec 302 (EHS) RQ: None of the chemicals in this product have a RQ.
SARA Sec 311/312: Acute – YES; Chronic – YES; Fire – NO; Release of Pressure – NO; Reactivity – NO
SARA 313 List: None of the chemicals in this product is reportable under Section 313 Title III and 40 CFR Part 372.
CERCLA Hazardous Substances and corresponding RQs: N/A
RCRA: None of the chemicals in this product are on this list.
Clean Air Act: Hazardous Air Pollutants? NO **Class 1 Ozone Depletors?** NO **Class 2 Ozone Depletors?** NO
Clean Water Act: Hazardous Substance? NO **Priority Pollutant?** NO **Toxic Pollutant?** NO
Chemical Weapons Convention: None of the chemicals in this product are on this list.
Drug Enforcement Agency (DEA) CDTA: None of the chemicals in this product are on this list.
OSHA: None of the chemicals in this product are considered Highly Hazardous by OSHA.
State Right-to-Know Lists: Potassium nitrate is found on the Right-to-Know lists of Florida, Massachusetts, New Jersey and Pennsylvania.
California Proposition 65: None of the chemicals in this product are on this list.
Canadian: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations. The components in this product are listed, or exempt from listing, on the Canadian Domestic Substances List.
Canadian WHMIS: This product has a WHMIS classification of C, D2A.
Canadian Ingredient Disclosure List: Potassium phosphate, monobasic is listed on the Canadian Ingredient Disclosure List. Potassium nitrate is not listed on the Canadian Ingredient Disclosure List.

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
coeff.	coefficient	ppb	parts per billion
CFR	Code of Federal Regulations	PPE	personal protective equipment
CPR	cardio-pulmonary resuscitation	ppm	parts per million
DEA	Drug Enforcement Agency	psi	pounds per square inch
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2004.
 Prepared by Douglas R. Christophe on 4 August 2010.

DISCLAIMER: Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, the Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving this MSDS will make their own determination as to its suitability for their intended purposes prior to use. Since the product is within the exclusive control of the user, it is the user's obligation to determine the conditions of safe use of this product. Such conditions should comply with all Federal Regulations concerning the Product. It must be recognized that the physical and chemical properties of any product may not be fully understood and that new, possibly hazardous products may arise from reactions between chemicals. The information given in this data sheet is based on our present knowledge and shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

THIS IS THE LAST PAGE OF THIS MSDS

Section 1: Product and Company Identification

Field 16 LLC
 2665 Signal Avenue
 Signal Hill, CA 90755
 Business: 877-497-4769
 Fax: 562-988-8900
 Web: www.field16.com

Product Name: Heavy 16 Professional Prime Enhancer
Product Description: Nutrient-enhancing plant food

Date of Revision: 9 February 2013

Section 2: Hazard Identification

Emergency Overview: Dark brown liquid. Contact may cause irritation to eyes, skin and respiratory tract.

HMI S HEALTH	1
HMI S FLAMMABILITY	0
HMI S REACTIVITY	0
PERSONAL PROTECTION	C

OSHA Regulatory Status: This material is **not** considered hazardous under the OSHA standard.

Canadian WHMIS Classification: Not controlled

Potential Health Effects:

Inhalation: Inhalation of spray or mist causes irritation of respiratory tract. Symptoms may include coughing and shortness of breath.

Ingestion: May cause gastrointestinal irritation.

Skin Contact: Contact may cause irritation to skin. Symptoms may include redness, itching and pain.

Eye Contact: Contact may cause irritation to eyes. Symptoms may include redness, itching and pain.

Chronic Exposure: No information found.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: None

Section 3: Composition / Information On Ingredients

Component	Common Names, Synonyms	CAS #	Weight %
Kelp (<i>Ascophyllum nodosum</i>)	Brown algae, seaweed	Not applicable	5 – 10
Potassium sulfate	Sulfuric acid, potassium salt	7778-80-5	1 – 5
Potassium silicate		1312-76-1	1 – 5

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more. This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: No information found.

Section 5: Fire Fighting Measures

Fire: Flash point: Not flammable.

Explosion: Not considered an explosion hazard.

Extinguishing Media: Use any suitable media for the surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 0 Reactivity - 0 Other - NA

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Exposure Guidelines:

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Kelp (<i>Ascophyllum nodosum</i>)	Not applicable	Not established	Not established	Not established
Potassium sulfate	7778-80-5	Not established	Not established	Not established
Potassium silicate	1312-76-1	Not established	Not established	Not established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use chemical safety goggles and/or full face shield where misting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Inhalation: Use NIOSH-approved vapor respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134, European standard EN 149 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties

Appearance	Dark brown liquid	Specific Gravity (g/mL)	1.04
Odor	Seaweed	pH	8 - 9
Odor Threshold	Not determined	Solubility in water	Complete
Melting Point	Not determined	% Volatiles	85%
Boiling Point	> 100°C (212°F)	Evaporation Rate	Not determined
Flash Point	Does not burn	Vapor Pressure	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Carbon oxides (CO, CO₂), nitrogen oxides (NO, N₂O, NO₂), sulfur oxides (SO₂, SO₃).

Incompatibilities: Oxidizing agents, strong acids or bases

Conditions to Avoid: Incompatible materials, combustible materials.

Section 11: Toxicological Information

Acute Dose Effects: Eye: No information found.

Oral: Potassium sulfate: Rat: LD₅₀: 6600 mg/kg; Potassium silicate: Rat: LD₅₀: 1500 mg/kg

Inhalation: No information found.

Skin: No information found.

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate.

Ecotoxicity: No information found.

Section 13: Disposal Considerations

As a waste, this material in its raw form IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

U.S. Domestic Ground **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

U.S. Domestic Air **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

Canadian TDG **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

International Air **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

CERCLA Reportable Quantity (RQ): N/A

Releases exceeding the reportable quantity (RQ) must be reported to the National Response Center (800) 424-8802.

This data provided for information only. The description shown may not apply to all shipping situations.

Consult 49 CFR, or appropriate regulations to properly classify your shipment for transportation.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the components in this product are on this list.

TSCA Sec 8(d): None of the components in this product are on the Health and Safety Reporting List.

TSCA Sec 12(b) Notices of Export: None of the components of this product are on this list.

TSCA Significant New Use Rule (SNUR): None of the components of this product are on this list.

SARA Sec 302 (EHS) TPQ: None of the components in this product have a TPQ.

SARA Sec 302 (EHS) RQ: None of the components in this product have a RQ.

SARA Sec 311/312: Acute – NO; Chronic – NO; Fire – NO; Release of Pressure – NO; Reactivity – NO

SARA 313 List: None of the components in this product is reportable under Section 313 Title III and 40 CFR Part 372.

CERCLA Hazardous Substances and corresponding RQs: N/A

RCRA: None of the components in this product are on this list.

Clean Air Act: Hazardous Air Pollutants? NO **Class 1 Ozone Depletors?** NO **Class 2 Ozone Depletors?** NO

Clean Water Act: Hazardous Substance? NO **Priority Pollutant?** NO **Toxic Pollutant?** NO

Chemical Weapons Convention: None of the components in this product are on this list.

Drug Enforcement Agency (DEA) CDTA: None of the components in this product are on this list.

OSHA: None of the components in this product are considered Highly Hazardous by OSHA.

State Right-to-Know Lists: No information found.

California Proposition 65 WARNING: None of the components in this product are on this list.

Canadian DSL/NDSL: No information found.

Canadian WHMIS: This product has a WHMIS classification of not controlled.

Canadian Ingredient Disclosure List: No information found.

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
coeff.	coefficient	ppb	parts per billion
CFR	Code of Federal Regulations	PPE	personal protective equipment
CPR	cardio-pulmonary resuscitation	ppm	parts per million
DEA	Drug Enforcement Agency	psi	pounds per square inch
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2010.
Prepared by Douglas R. Chrisope on 9 February 2013.

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THIS IS THE LAST PAGE OF THIS MSDS

Section 1: Product and Company Identification

Field 16 LLC
 2665 Signal Avenue
 Signal Hill, CA 90755
 Business: 877-497-4769
 Fax: 562-988-8900
 Web: www.field16.com

Product Name: Heavy 16 Heavy Roots
Product Description: Root enhancing plant food

Date of Revision: 9 February 2013

Section 2: Hazard Identification

Emergency Overview: Dark orange liquid. Contact causes irritation to eyes, skin and respiratory tract. Ingestion impairs blood function and may cause kidney damage.

HMIS HEALTH	1
HMIS FLAMMABILITY	0
HMIS REACTIVITY	0
PERSONAL PROTECTION	C

OSHA Regulatory Status: This material is considered hazardous under the OSHA standard.

Canadian WHMIS Classification: C, D2B

Potential Health Effects:

Inhalation: Inhalation of spray or mist causes irritation of respiratory tract. Symptoms may include coughing and shortness of breath.

Ingestion: Large doses may cause dizziness, abdominal pain, vomiting, bloody diarrhea, weakness, convulsions, and collapse. May cause methemoglobinemia, an interference with the blood's capability to carry oxygen, with symptoms of bluish tint to skin and lips.

Skin Contact: Causes irritation to skin. Symptoms may include redness, itching and pain.

Eye Contact: Causes irritation and burns to eyes. Symptoms may include redness itching and pain.

Chronic Exposure: Chronic oral ingestion of nitrates may cause weakness, depression, headache, and mental impairment. Potassium poisoning may occur with prolonged exposure.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: Blood, eyes, skin, respiratory tract

Section 3: Composition / Information On Ingredients

Component	Common Names, Synonyms	CAS #	Weight %
Ammonium nitrate	Nitric acid, ammonium salt	6484-52-2	5 – 10
Potassium polyphosphate	Polyphosphoric acid, potassium salt	68956-75-2	5 – 10

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more. This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: IV administration of calcium gluconate will partially reverse the effects of acute magnesium toxicity. Ventricular support with calcium chloride infusion and mannitol-forced diuresis has also been successful. Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Fire: Flash point: Not flammable. Strong oxidizer! Solution itself does not burn, but solution applied to paper, fabric, cardboard or other absorbent flammables may catch fire on drying.

Explosion: Not considered an explosion hazard.

Extinguishing Media: Use any suitable media for the surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 0 Reactivity - 0 Other - NA

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Exposure Guidelines:

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Ammonium nitrate	6484-52-2	Not established	Not established	Not established
Potassium polyphosphate	68956-75-2	Not established	Not established	Not established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use chemical safety goggles and/or full face shield where misting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Inhalation: Use NIOSH-approved vapor respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134, European standard EN 149 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties

Appearance	Dark orange liquid	Specific Gravity (g/mL)	1.17
Odor	Burnt, metallic	pH	6 - 7
Odor Threshold	Not determined	Solubility in water	Complete
Melting Point	Not determined	% Volatiles	85%
Boiling Point	> 100°C (212°F)	Evaporation Rate	Not determined
Flash Point	Does not burn	Vapor Pressure	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Nitrogen oxides (NO, N₂O, NO₂), phosphorus oxides (PO₃, PO₄, P₂O₅)

Incompatibilities: Reducing agents, combustibles, strong acids or bases

Conditions to Avoid: Incompatible materials, combustible materials.

Section 11: Toxicological Information

Acute Dose Effects: Eye: No information found.

Oral: Potassium polyphosphate (35 wt% aqueous): Rat: LD₅₀: 2444 mg/kg; Ammonium nitrate (hexahydrate): Rat LD₅₀: 2217 mg/kg)

Inhalation: No information found.

Skin: Potassium polyphosphate: Rabbit: LD₅₀: >5000 mg/kg;

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate.

Ecotoxicity: Potassium polyphosphate: 48 hour EC₅₀ *Daphnia magna* (water flea): 100 mg/L; 96 hour LC₅₀ *Mysidopsis bahia* (Mysid shrimp) : 100 mg/L

Section 13: Disposal Considerations

As a waste, this material in its raw form IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

U.S. Domestic Ground **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

U.S. Domestic Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

Canadian TDG **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

International Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

CERCLA Reportable Quantity (RQ): N/A

Releases exceeding the reportable quantity (RQ) must be reported to the National Response Center (800) 424-8802.

This data provided for information only. The description shown may not apply to all shipping situations.

Consult 49 CFR, or appropriate regulations to properly classify your shipment for transportation.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the components in this product are on this list.

TSCA Sec 8(d): None of the components in this product are on the Health and Safety Reporting List.
TSCA Sec 12(b) Notices of Export: None of the components of this product are on this list.
TSCA Significant New Use Rule (SNUR): None of the components of this product are on this list.
SARA Sec 302 (EHS) TPQ: None of the components in this product have a TPQ.
SARA Sec 302 (EHS) RQ: None of the components in this product have a RQ.
SARA Sec 311/312: Acute – YES; Chronic – YES; Fire – NO; Release of Pressure – NO; Reactivity – NO
SARA 313 List: None of the components in this product is reportable under Section 313 Title III and 40 CFR Part 372.
CERCLA Hazardous Substances and corresponding RQs: N/A
RCRA: None of the components in this product are on this list.
Clean Air Act: Hazardous Air Pollutants? NO **Class 1 Ozone Depletors?** NO **Class 2 Ozone Depletors?** NO
Clean Water Act: Hazardous Substance? NO **Priority Pollutant?** NO **Toxic Pollutant?** NO
Chemical Weapons Convention: None of the components in this product are on this list.
Drug Enforcement Agency (DEA) CDTA: None of the components in this product are on this list.
OSHA: None of the components in this product are considered Highly Hazardous by OSHA.
State Right-to-Know Lists: Ammonium nitrate is found on the Right-to-Know lists of Massachusetts, New Jersey and Pennsylvania.
California Proposition 65 WARNING: None of the components in this product are on this list.
Canadian DSL/NDL: Ammonium nitrate is listed on Canada's DSL List.
Canadian WHMIS: This product has a WHMIS classification of C, D2B.
Canadian Ingredient Disclosure List: Potassium phosphate, monobasic is listed on the Canadian Ingredient Disclosure List. Potassium nitrate is not listed on the Canadian Ingredient Disclosure List.

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
coeff.	coefficient	ppb	parts per billion
CFR	Code of Federal Regulations	PPE	personal protective equipment
CPR	cardio-pulmonary resuscitation	ppm	parts per million
DEA	Drug Enforcement Agency	psi	pounds per square inch
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2004.
 Prepared by Douglas R. Chrisope on 9 February 2013.

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THIS IS THE LAST PAGE OF THIS MSDS

Section 1: Product and Company Identification
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Field 16 LLC
 2665 Signal Avenue
 Signal Hill, CA 90755
 Business: 877-497-4769
 Fax: 562-988-8900
 Web: www.field16.com

Product Name: Heavy 16 Heavy Finish
Product Description: Flavor enhancing plant food

Date of Revision: 9 February 2013

Section 2: Hazard Identification

Emergency Overview: Light tan liquid. Contact may cause irritation to eyes, skin and respiratory tract.

HMIS HEALTH	1
HMIS FLAMMABILITY	0
HMIS REACTIVITY	0
PERSONAL PROTECTION	C

OSHA Regulatory Status: This material is not considered hazardous under the OSHA standard.

Canadian WHMIS Classification: Not Controlled

Potential Health Effects:

Inhalation: Inhalation of spray or mist causes irritation of respiratory tract. Symptoms may include coughing and shortness of breath.

Ingestion: May cause gastrointestinal irritation.

Skin Contact: Contact may cause irritation to skin. Symptoms may include redness, itching and pain.

Eye Contact: Contact may cause irritation to eyes. Symptoms may include redness, itching and pain.

Chronic Exposure: No information found.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: None

Section 3: Composition / Information On Ingredients
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Component	Common Names, Synonyms	CAS #	Weight %
Humic acid		1415-93-6	1 – 5
Potassium sulfate	Sulfuric acid, potassium salt	7778-80-5	0.1 – 1

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more. This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: No information found.

Section 5: Fire Fighting Measures

Fire: Flash point: Not flammable.

Explosion: Not considered an explosion hazard.

Extinguishing Media: Use any suitable media for the surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 0 Reactivity - 0 Other - NA

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Exposure Guidelines:

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Humic acid	1415-93-6	Not established	Not established	Not established
Potassium sulfate	7778-80-5	Not established	Not established	Not established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use chemical safety goggles and/or full face shield where misting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Inhalation: Use NIOSH-approved vapor respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134, European standard EN 149 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties

Appearance	Light tan liquid	Specific Gravity (g/mL)	1.03
Odor	Mild, earthy, musty	pH	6.0
Odor Threshold	Not determined	Solubility in water	Complete
Melting Point	Not determined	% Volatiles	95%
Boiling Point	> 100°C (212°F)	Evaporation Rate	Not determined
Flash Point	Does not burn	Vapor Pressure	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Carbon oxides (CO, CO₂), nitrogen oxides (NO, N₂O, NO₂), sulfur oxides (SO₂, SO₃).

Incompatibilities: Oxidizing agents, strong acids or bases

Conditions to Avoid: Incompatible materials, combustible materials.

Section 11: Toxicological Information

Acute Dose Effects: Eye: No information found.

Oral: Potassium sulfate: Rat: LD₅₀: 6600 mg/kg

Inhalation: No information found.

Skin: No information found.

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate.

Ecotoxicity: No information found.

Section 13: Disposal Considerations

As a waste, this material in its raw form IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

U.S. Domestic Ground **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

U.S. Domestic Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

Canadian TDG **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

International Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

CERCLA Reportable Quantity (RQ): N/A

Releases exceeding the reportable quantity (RQ) must be reported to the National Response Center (800) 424-8802.

This data provided for information only. The description shown may not apply to all shipping situations.

Consult 49 CFR, or appropriate regulations to properly classify your shipment for transportation.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the components in this product are on this list.

TSCA Sec 8(d): None of the components in this product are on the Health and Safety Reporting List.

TSCA Sec 12(b) Notices of Export: None of the components of this product are on this list.

TSCA Significant New Use Rule (SNUR): None of the components of this product are on this list.

SARA Sec 302 (EHS) TPQ: None of the components in this product have a TPQ.

SARA Sec 302 (EHS) RQ: None of the components in this product have a RQ.

SARA Sec 311/312: Acute – NO; Chronic – NO; Fire – NO; Release of Pressure – NO; Reactivity – NO

SARA 313 List: None of the components in this product is reportable under Section 313 Title III and 40 CFR Part 372.

CERCLA Hazardous Substances and corresponding RQs: N/A

RCRA: None of the components in this product are on this list.

Clean Air Act: Hazardous Air Pollutants? NO **Class 1 Ozone Depletors?** NO **Class 2 Ozone Depletors?** NO
Clean Water Act: Hazardous Substance? NO **Priority Pollutant?** NO **Toxic Pollutant?** NO
Chemical Weapons Convention: None of the components in this product are on this list.
Drug Enforcement Agency (DEA) CDTA: None of the components in this product are on this list.
OSHA: None of the components in this product are considered Highly Hazardous by OSHA.
State Right-to-Know Lists: No information found.
California Proposition 65 WARNING: None of the components in this product are on this list.
Canadian DSL/NDSL: No information found.
Canadian WHMIS: This product has a WHMIS classification of Not Controlled.
Canadian Ingredient Disclosure List: No information found.

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
coeff.	coefficient	ppb	parts per billion
CFR	Code of Federal Regulations	PPE	personal protective equipment
CPR	cardio-pulmonary resuscitation	ppm	parts per million
DEA	Drug Enforcement Agency	psi	pounds per square inch
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2010.
 Prepared by Douglas R. Chrisope on 9 February 2013.

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THIS IS THE LAST PAGE OF THIS MSDS

Section 1: Product and Company Identification

Field 16 LLC
 2665 Signal Avenue
 Signal Hill, CA 90755
 Business: 877-497-4769
 Fax: 562-988-8900
 Web: www.field16.com

Product Name: Heavy 16 Professional Foliar Enhancer
Product Description: Foliage enhancing plant food

Date of Revision: 9 February 2013

Section 2: Hazard Identification

Emergency Overview: Dark green viscous liquid. Contact causes irritation to eyes, skin and respiratory tract. Ingestion impairs blood function and may cause kidney damage.

HMI S HEALTH	1
HMI S FLAMMABILITY	0
HMI S REACTIVITY	0
PERSONAL PROTECTION	C

OSHA Regulatory Status: This material is considered hazardous under the OSHA standard.

Canadian WHMIS Classification: C, D2B

Potential Health Effects:

Inhalation: Inhalation of spray or mist causes irritation of respiratory tract. Symptoms may include coughing and shortness of breath.

Ingestion: Large doses may cause dizziness, abdominal pain, vomiting, bloody diarrhea, weakness, convulsions, and collapse. May cause methemoglobinemia, an interference with the blood's capability to carry oxygen, with symptoms of bluish tint to skin and lips.

Skin Contact: Causes irritation to skin. Symptoms may include redness, itching and pain.

Eye Contact: Causes irritation and burns to eyes. Symptoms may include redness itching and pain.

Chronic Exposure: Chronic oral ingestion of nitrates may cause weakness, depression, headache, and mental impairment. Potassium poisoning may occur with prolonged exposure.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: Blood, eyes, skin, respiratory tract

Section 3: Composition / Information On Ingredients

Component	Common Names, Synonyms	CAS #	Weight %
Potassium nitrate	Nitric acid, potassium salt	7757-79-1	0.5 – 1.5
Calcium nitrate	Nitric acid, calcium salt	13477-34-4	1 – 5
Magnesium nitrate	Nitric acid, magnesium salt	13446-18-9	1 – 5
Calcium chloride		10043-52-4	0.5 – 1.5
Calcium gluconate		18016-24-5	1 – 5
Calcium acetate		127-08-2	1 – 5
Magnesium chloride		7786-30-3	0.5 – 1.5

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more. This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: IV administration of calcium gluconate will partially reverse the effects of acute magnesium toxicity. Ventricular support with calcium chloride infusion and mannitol-forced diuresis has also been successful. Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Fire: Flash point: Not flammable. Strong oxidizer! Solution itself does not burn, but solution applied to paper, fabric, cardboard or other absorbent flammables may catch fire on drying.

Explosion: Not considered an explosion hazard.

Extinguishing Media: Use any suitable media for the surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 0 Reactivity - 0 Other - NA

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Exposure Guidelines:

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Potassium nitrate	7757-79-1	Not established	Not established	Not established
Calcium nitrate	13477-34-4	Not established	Not established	Not established
Magnesium nitrate	13446-18-9	Not established	Not established	Not established
Calcium chloride	10043-52-4	Not established	Not established	Not established
Calcium gluconate	18016-24-5	Not established	Not established	Not established
Calcium acetate	127-08-2	Not established	Not established	Not established
Magnesium chloride	7786-30-3	Not established	Not established	Not established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use chemical safety goggles and/or full face shield where misting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Inhalation: Use NIOSH-approved vapor respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134, European standard EN 149 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties			
Appearance	Dark green viscous liquid	Specific Gravity (g/mL)	1.37
Odor	Mild	pH	8 - 9
Odor Threshold	Not determined	Solubility in water	Complete
Melting Point	Not determined	% Volatiles	87%
Boiling Point	> 100°C (212°F)	Evaporation Rate	Not determined
Flash Point	Does not burn	Vapor Pressure	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Nitrogen oxides (NO, N₂O, NO₂), phosphorus oxides (PO₃, PO₄, P₂O₅)

Incompatibilities: Reducing agents, combustibles, strong acids or bases

Conditions to Avoid: Incompatible materials, combustible materials.

Section 11: Toxicological Information

Acute Dose Effects: Eye: Calcium nitrate: Draize Rabbit: 500 mg/24hour, Mild; Magnesium nitrate: Draize Rabbit: 500 mg/24hour, Mild;

Oral: Potassium nitrate: Rat LD₅₀: 3750 mg/kg; Calcium nitrate: Rat LD₅₀: 3900 mg/kg; Magnesium nitrate: Rat LD₅₀: 5440 mg/kg; Calcium chloride: Rat LD₅₀: 1 g/kg, Rabbit LD₅₀: 1384 mg/kg; Calcium gluconate: Rat LD₅₀: > 5000 mg/kg; Calcium acetate: Rat LD₅₀: 3250 mg/kg; Calcium chloride: Rat LD₅₀: 1 g/kg, Rabbit LD₅₀: 1384 mg/kg; Calcium gluconate: Rat LD₅₀: > 5000 mg/kg; Magnesium chloride: Rat LD₅₀: 2800 mg/kg

Inhalation: No information found.

Skin: Calcium nitrate: Draize Rabbit: 500 mg/24 hour, Mild; Rabbit LD₅₀: >5000 mg/kg; Magnesium nitrate: Draize Rabbit: 500 mg/24 hour, Mild;

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate.

Ecotoxicity: Potassium nitrate: 96 hour LC₅₀ *Gambusia affinis* (Mosquito fish): 22.5 mg/L; 72 hour EC₅₀ *Daphnia magna* (water flea): 226 mg/L;

Section 13: Disposal Considerations

As a waste, this material in its raw form IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

U.S. Domestic Ground **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

U.S. Domestic Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

Canadian TDG **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

International Air **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

CERCLA Reportable Quantity (RQ): N/A

Releases exceeding the reportable quantity (RQ) must be reported to the National Response Center (800) 424-8802.

This data provided for information only. The description shown may not apply to all shipping situations.

Consult 49 CFR, or appropriate regulations to properly classify your shipment for transportation.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the components in this product are on this list.

TSCA Sec 8(d): None of the components in this product are on the Health and Safety Reporting List.

TSCA Sec 12(b) Notices of Export: None of the components of this product are on this list.

TSCA Significant New Use Rule (SNUR): None of the components of this product are on this list.

SARA Sec 302 (EHS) TPQ: None of the components in this product have a TPQ.

SARA Sec 302 (EHS) RQ: None of the components in this product have a RQ.

SARA Sec 311/312: Acute – YES; Chronic – YES; Fire – NO; Release of Pressure – NO; Reactivity – NO

SARA 313 List: Potassium nitrate, Calcium nitrate and Magnesium nitrate in this product are reportable under Section 313 Title III and 40 CFR Part 372.

CERCLA Hazardous Substances and corresponding RQs: N/A

RCRA: None of the components in this product are on this list.

Clean Air Act: Hazardous Air Pollutants? NO **Class 1 Ozone Depletors?** NO **Class 2 Ozone Depletors?** NO

Clean Water Act: Hazardous Substance? NO **Priority Pollutant?** NO **Toxic Pollutant?** NO

Chemical Weapons Convention: None of the components in this product are on this list.

Drug Enforcement Agency (DEA) CDTA: None of the components in this product are on this list.

OSHA: None of the components in this product are considered Highly Hazardous by OSHA.

State Right-to-Know Lists: Potassium nitrate is found on the Right-to-Know lists of Massachusetts, New Jersey and Pennsylvania. Calcium nitrate is found on the Right-to-Know list of New Jersey. Magnesium nitrate is found on the Right-to-Know lists of Massachusetts, New Jersey and Pennsylvania.

California Proposition 65 WARNING: None of the components in this product are on this list.

Canadian DSL/NDSL: Ammonium nitrate is listed on Canada's DSL List.

Canadian WHMIS: This product has a WHMIS classification of C, D2B.

Canadian Ingredient Disclosure List: is listed on the Canadian Ingredient Disclosure List. Potassium nitrate is not listed on the Canadian Ingredient Disclosure List.

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
coeff.	coefficient	ppb	parts per billion
CFR	Code of Federal Regulations	PPE	personal protective equipment
CPR	cardio-pulmonary resuscitation	ppm	parts per million
DEA	Drug Enforcement Agency	psi	pounds per square inch
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2010.
Prepared by Douglas R. Chrisope on 9 February 2013.

DISCLAIMER: Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, the Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving this MSDS will make their own determination as to its suitability for their intended purposes prior to use. Since the product is within the exclusive control of the user, it is the user's obligation to determine the conditions of safe use of this product. Such conditions should comply with all Federal Regulations concerning the Product. It must be recognized that the physical and chemical properties of any product may not be fully understood and that new, possibly hazardous products may arise from reactions between chemicals. The information given in this data sheet is based on our present knowledge and shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

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Section 1: Product and Company Identification
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Field 16 LLC

2665 Signal Avenue
Signal Hill, CA 90755
Business: 877-497-4769
Fax: 562-988-8900

Web: www.field16.com

Product Name: Heavy 16 Heavy Fire

Product Description: Bloom-enhancing plant food

Date of Revision: 9 February 2013

Section 2: Hazard Identification

Emergency Overview: Dark brown liquid. Contact may cause irritation to eyes, skin and respiratory tract.

HMI S HEALTH	1
HMI S FLAMMABILITY	0
HMI S REACTIVITY	0
PERSONAL PROTECTION	C

OSHA Regulatory Status: This material is considered hazardous under the OSHA standard.

Canadian WHMIS Classification: D2B

Potential Health Effects:

Inhalation: Inhalation of spray or mist causes irritation of respiratory tract. Symptoms may include coughing and shortness of breath.

Ingestion: May cause gastrointestinal irritation.

Skin Contact: Contact may cause irritation to skin. Symptoms may include redness, itching and pain.

Eye Contact: Contact may cause irritation to eyes. Symptoms may include redness, itching and pain.

Chronic Exposure: No information found.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: None

Section 3: Composition / Information On Ingredients
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Component	Common Names, Synonyms	CAS #	Weight %
Kelp (<i>Ascophyllum nodosum</i>)	Brown algae, seaweed	Not applicable	5 – 10
Kelp (<i>Laminaria japonica</i>)	Brown algae, seaweed	Not applicable	7 – 13
Potassium polyphosphosphate	Polyphosphoric acid, potassium salt	68956-75-2	15 – 40
Ammonium polyphosphosphate	Polyphosphoric acid, ammonium salt	68333-79-9	3 – 7
Potassium sulfate	Sulfuric acid, potassium salt	7778-80-5	1 – 5

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more. This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: No information found.

Section 5: Fire Fighting Measures

Fire: Flash point: Not flammable.

Explosion: Not considered an explosion hazard.

Extinguishing Media: Use any suitable media for the surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 0 Reactivity - 0 Other - NA

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Exposure Guidelines:

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Kelp (<i>Ascophyllum nodosum</i>)	Not applicable	Not established	Not established	Not established
Kelp (<i>Laminaria japonica</i>)	Not applicable	Not established	Not established	Not established
Potassium polyphosphate	7778-80-5	Not established	Not established	Not established
Ammonium polyphosphate	68333-79-9	Not established	Not established	Not established
Potassium sulfate	7778-80-5	Not established	Not established	Not established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use chemical safety goggles and/or full face shield where misting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Inhalation: Use NIOSH-approved vapor respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134, European standard EN 149 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties

Appearance	Dark brown liquid	Specific Gravity (g/mL)	1.35
Odor	Seaweed	pH	8 - 9
Odor Threshold	Not determined	Solubility in water	Complete
Melting Point	Not determined	% Volatiles	42%
Boiling Point	> 100°C (212°F)	Evaporation Rate	Not determined
Flash Point	Does not burn	Vapor Pressure	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Carbon oxides (CO, CO₂), nitrogen oxides (NO, N₂O, NO₂), phosphorus oxides (PO₃, PO₄, P₂O₅), sulfur oxides (SO₂, SO₃).

Incompatibilities: Oxidizing agents, strong acids or bases

Conditions to Avoid: Incompatible materials, combustible materials.

Section 11: Toxicological Information

Acute Dose Effects: Eye: No information found.

Oral: Potassium polyphosphate (35 wt% aqueous): Rat: LD₅₀: 2444 mg/kg; Potassium sulfate: Rat: LD₅₀: 6600 mg/kg;

Potassium silicate: Rat: LD₅₀: 1500 mg/kg

Inhalation: No information found.

Skin: Potassium polyphosphate: Rabbit: LD₅₀: >5000 mg/kg;

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate.

Ecotoxicity: Potassium polyphosphate: 48 hour EC₅₀ *Daphnia magna* (water flea): 100 mg/L; 96 hour LC₅₀ *Mysidopsis bahia* (Mysid shrimp) : 100 mg/L;

Section 13: Disposal Considerations

As a waste, this material in its raw form IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

U.S. Domestic Ground **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

U.S. Domestic Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

Canadian TDG **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

International Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

CERCLA Reportable Quantity (RQ): N/A

Releases exceeding the reportable quantity (RQ) must be reported to the National Response Center (800) 424-8802.

This data provided for information only. The description shown may not apply to all shipping situations.

Consult 49 CFR, or appropriate regulations to properly classify your shipment for transportation.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the components in this product are on this list.

TSCA Sec 8(d): None of the components in this product are on the Health and Safety Reporting List.
TSCA Sec 12(b) Notices of Export: None of the components of this product are on this list.
TSCA Significant New Use Rule (SNUR): None of the components of this product are on this list.
SARA Sec 302 (EHS) TPQ: None of the components in this product have a TPQ.
SARA Sec 302 (EHS) RQ: None of the components in this product have a RQ.
SARA Sec 311/312: Acute – NO; Chronic – NO; Fire – NO; Release of Pressure – NO; Reactivity – NO
SARA 313 List: None of the components in this product is reportable under Section 313 Title III and 40 CFR Part 372.
CERCLA Hazardous Substances and corresponding RQs: N/A
RCRA: None of the components in this product are on this list.
Clean Air Act: Hazardous Air Pollutants? NO **Class 1 Ozone Depletors?** NO **Class 2 Ozone Depletors?** NO
Clean Water Act: Hazardous Substance? NO **Priority Pollutant?** NO **Toxic Pollutant?** NO
Chemical Weapons Convention: None of the components in this product are on this list.
Drug Enforcement Agency (DEA) CDTA: None of the components in this product are on this list.
OSHA: None of the components in this product are considered Highly Hazardous by OSHA.
State Right-to-Know Lists: No information found.
California Proposition 65 WARNING: None of the components in this product are on this list.
Canadian DSL/NDSL: No information found.
Canadian WHMIS: This product has a WHMIS classification of D2B.
Canadian Ingredient Disclosure List: No information found.

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
coeff.	coefficient	ppb	parts per billion
CFR	Code of Federal Regulations	PPE	personal protective equipment
CPR	cardio-pulmonary resuscitation	ppm	parts per million
DEA	Drug Enforcement Agency	psi	pounds per square inch
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2010.
 Prepared by Douglas R. Chrispe on 9 February 2013.

DISCLAIMER: Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, the Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving this MSDS will make their own determination as to its suitability for their intended purposes prior to use. Since the product is within the exclusive control of the user, it is the user's obligation to determine the conditions of safe use of this product. Such conditions should comply with all Federal Regulations concerning the Product. It must be recognized that the physical and chemical properties of any product may not be fully understood and that new, possibly hazardous products may arise from reactions between chemicals. The information given in this data sheet is based on our present knowledge and shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

THIS IS THE LAST PAGE OF THIS MSDS

Section 1: Product and Company Identification

Field 16 Agriculture
 54875 Bautista Canyon Road
 Anza, CA. 92539
 Business: 951.763.4392
 FAX: 951.763.0517
 Web: www.field16.com

Product Name: Heavy 16 Bud A
Generic Name: Hydroponic plant food
Synonyms: NA
Product Description: Hydroponic nutrients
CAS # NA – mixture
Date of Revision: 4 August 2010

Section 2: Hazard Identification

Emergency Overview: Dark transparent liquid. Contact causes irritation to eyes, skin and respiratory tract. Ingestion impairs blood function and may cause kidney damage.

HMI S HEALTH	1
HMI S FLAMMABILITY	0
HMI S REACTIVITY	0
PERSONAL PROTECTION	C

OSHA Regulatory Status: This material is considered hazardous under the OSHA standard.

Canadian WHMIS Classification: C, D2A

Potential Health Effects:

Inhalation: Inhalation of spray or mist causes irritation of respiratory tract. Symptoms may include coughing and shortness of breath.

Ingestion: Large doses may cause dizziness, abdominal pain, vomiting, bloody diarrhea, weakness, convulsions, and collapse. May cause methemoglobinemia, an interference with the blood's capability to carry oxygen, with symptoms of bluish tint to skin and lips.

Skin Contact: Causes irritation to skin. Symptoms may include redness, itching and pain.

Eye Contact: Causes irritation and burns to eyes. Symptoms may include redness itching and pain.

Chronic Exposure: Chronic oral ingestion of nitrates may cause weakness, depression, headache, and mental impairment. Potassium poisoning may occur with prolonged exposure.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: Blood, kidneys, eyes, skin, respiratory tract

Section 3: Composition / Information On Ingredients

Component	Common Names, Synonyms	CAS #	EINECS	Weight %
Calcium nitrate	Nitric acid calcium salt	10124-37-5	233-332-1	< 30
Potassium nitrate	Nitric acid potassium salt	7757-79-1	231-818-8	< 5

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more. This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Fire: Flash point: Not flammable. Solution itself does not burn, but solution applied to paper, fabric, cardboard or other absorbent combustible materials may catch fire on drying.

Explosion: Not considered an explosion hazard.

Extinguishing Media: Dry chemical, alcohol foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 0 Reactivity - 0 Other - NA

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Exposure Guidelines:

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Calcium nitrate	10124-37-5	Not established	Not established	Not established
Potassium nitrate	7757-79-1	Not established	Not established	Not established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use chemical safety goggles and/or full face shield where misting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Inhalation: Use NIOSH-approved vapor respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134, European standard EN 149 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties

Appearance	Dark transparent liquid	Specific Gravity (g/mL)	1.20 – 1.5
Odor	Mild	pH	6.0 – 7.0
Odor Threshold	Not determined	Solubility in water	Soluble
Melting Point	Not determined	% Volatiles	80%
Boiling Point	> 100°C (212°F)	Evaporation Rate	ND
Flash Point	Does not burn	Vapor Pressure	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Nitrogen oxides (NO, N₂O, NO₂), phosphorus oxides, sulfur oxides (SO₂, SO₃)

Incompatibilities: Reducing agents, combustibles, strong acids or bases

Conditions to Avoid: Incompatible materials, combustible materials.

Section 11: Toxicological Information

Acute Dose Effects: Eye: Calcium nitrate: Irritation Rabbit: 500mg/24H severe.

Oral: Calcium nitrate: Rat LD50: 3900 mg/kg; Potassium nitrate: Rat: LD50: 3750 mg/kg; Rabbit LD50: 1901 mg/kg

Inhalation: No information.

Skin: No information.

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate.

Ecotoxicity: Calcium nitrate: The LC50/96-hour values for fish are over 100 mg/l.

Section 13: Disposal Considerations

As a waste, this material in its raw form IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

U.S. Domestic Ground **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

U.S. Domestic Air **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

Canadian TDG **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

International Air **Proper Shipping Name:** Not regulated for transport

DOT Hazard Class: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

CERCLA Reportable Quantity (RQ): N/A

Releases exceeding the reportable quantity (RQ) must be reported to the National Response Center (800) 424-8802.

This data provided for information only. The description shown may not apply to all shipping situations.

Consult 49 CFR, or appropriate regulations to properly classify your shipment for transportation.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the chemicals in this product are on this list.

TSCA Sec 8(d): None of the chemicals in this product are on the Health and Safety Reporting List.

TSCA Sec 12(b) Notices of Export: None of the chemicals in this product are on this list.

TSCA Significant New Use Rule (SNUR): None of the chemicals in this product are on this list.

SARA Sec 302 (EHS) TPQ: None of the chemicals in this product have a TPQ.

SARA Sec 302 (EHS) RQ: None of the chemicals in this product have a RQ.

SARA Sec 311/312: Acute – YES; Chronic – YES; Fire – NO; Release of Pressure – NO; Reactivity – NO

SARA 313 List: None of the chemicals in this product is reportable under Section 313 Title III and 40 CFR Part 372.

CERCLA Hazardous Substances and corresponding RQs: N/A

RCRA: None of the chemicals in this product are on this list.

Clean Air Act: Hazardous Air Pollutants? NO **Class 1 Ozone Depletors?** NO **Class 2 Ozone Depletors?** NO

Clean Water Act: Hazardous Substance? NO **Priority Pollutant?** NO **Toxic Pollutant?** NO

Chemical Weapons Convention: None of the chemicals in this product are on this list.

Drug Enforcement Agency (DEA) CDTA: None of the chemicals in this product are on this list.

OSHA: None of the chemicals in this product are considered Highly Hazardous by OSHA.

State Right-to-Know Lists: Potassium nitrate is found on the Right-to-Know lists of Florida, Massachusetts, New Jersey and Pennsylvania. Calcium nitrate is found on the Right-to-Know list of New Jersey.

California Proposition 65: None of the chemicals in this product are on this list.

Canadian: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.

The components in this product are listed, or exempt from listing, on the Canadian Domestic Substances List.

Canadian WHMIS: This product has a WHMIS classification of C, D2A.

Canadian Ingredient Disclosure List: Potassium nitrate is not listed on the Canadian Ingredient Disclosure List.

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
coeff.	coefficient	ppb	parts per billion
CFR	Code of Federal Regulations	PPE	personal protective equipment
CPR	cardio-pulmonary resuscitation	ppm	parts per million
DEA	Drug Enforcement Agency	psi	pounds per square inch
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2004.

Prepared by Douglas R. Chrisope on 4 August 2010.

DISCLAIMER: Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, the Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving this MSDS will make their own determination as to its suitability for their intended purposes prior to use. Since the product is within the exclusive control of the user, it is the user's obligation to determine the conditions of safe use of this product. Such conditions should comply with all Federal Regulations concerning the Product. It must be recognized that the physical and chemical properties of any product may not be fully understood and that new, possibly hazardous products may arise from reactions between chemicals. The information given in this data sheet is based on our present knowledge and shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

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Section 1: Product and Company Identification

Field 16 LLC 54875 Bautista Canyon Road Anza, CA. 92539 Business: 951.763.4392 Fax: 951.763.0517 Web: www.field16.com	Product Name: Heavy 16 Bud B Generic Name: Hydroponic plant food Synonyms: NA Product Description: Hydroponic nutrients CAS # NA – mixture Date of Revision: 4 August 2010
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Section 2: Hazard Identification

Emergency Overview: Clear pinkish liquid. Contact causes irritation to eyes, skin and respiratory tract. Ingestion impairs blood function and may cause kidney damage.

HMI S HEALTH	1
HMI S FLAMMABILITY	0
HMI S REACTIVITY	0
PERSONAL PROTECTION	C

OSHA Regulatory Status: This material is considered hazardous under the OSHA standard.

Potential Health Effects:

Inhalation: Inhalation of spray or mist causes irritation of respiratory tract. Symptoms may include coughing and shortness of breath.

Ingestion: Large doses may cause dizziness, abdominal pain, vomiting, bloody diarrhea, weakness, convulsions, and collapse. May cause methemoglobinemia, an interference with the blood's capability to carry oxygen, with symptoms of bluish tint to skin and lips.

Skin Contact: Causes irritation to skin. Symptoms may include redness, itching and pain.

Eye Contact: Causes irritation and burns to eyes. Symptoms may include redness itching and pain.

Chronic Exposure: Chronic oral ingestion of nitrates may cause weakness, depression, headache, and mental impairment. Potassium poisoning may occur with prolonged exposure.

Aggravation of Pre-existing Conditions: No information found.

Target Organs: Blood, eyes, skin, respiratory tract

Section 3: Composition / Information On Ingredients

Component	Common Names, Synonyms	CAS #	EINECS	Weight %
Potassium nitrate	Nitric acid potassium salt	7757-79-1	231-818-8	< 10
Potassium phosphate, monobasic	Phosphoric acid potassium salt	7778-77-0	231-913-4	< 10
Magnesium nitrate	Nitric acid magnesium salt	10377-60-3	233-826-7	< 10
Magnesium sulfate	Sulfuric acid magnesium salt	7487-88-9	231-298-2	< 10
Potassium sulfate	Sulfuric acid potassium salt	7778-80-5	231-915-5	< 10

Non-hazardous components may or may not be listed. Carcinogens are listed when present at 0.1% or more; components which are otherwise hazardous according to OSHA are listed when present at 1.0% or more. This is not intended to be complete compositional disclosure. See Section 15 for applicable states right to know and other regulatory information.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: IV administration of calcium gluconate will partially reverse the effects of acute magnesium toxicity. Ventricular support with calcium chloride infusion and mannitol-forced diuresis has also been successful. Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Fire: Flash point: Not flammable. Solution itself does not burn, but solution applied to paper, fabric, cardboard or other absorbent flammables may catch fire on drying.

Explosion: Not considered an explosion hazard.

Extinguishing Media: Use any suitable media for the surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Precautions: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

NFPA Rating: Health - 1 Flammability - 0 Reactivity - 0 Other - NA

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer.

Section 7: Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Control / Personal Protection

Exposure Guidelines:

Component	CAS #	OSHA PEL	ACGIH TLV	NIOSH TLV
Potassium nitrate	7757-79-1	Not established	Not established	Not established
Potassium phosphate, monobasic	7778-77-0	Not established	Not established	Not established
Magnesium nitrate	10377-60-3	Not established	Not established	Not established
Magnesium sulfate	7487-88-9	Not established	Not established	Not established
Potassium sulfate	7778-80-5	Not established	Not established	Not established

Personal Protective Equipment:

Skin Contact: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Contact: Use chemical safety goggles and/or full face shield where misting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Inhalation: Use NIOSH-approved vapor respirator if exposure is unknown or exceeds permissible limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134, European standard EN 149 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Section 9: Physical and Chemical Properties

Appearance	Clear pinkish liquid	Specific Gravity (g/mL)	1.25 – 1.30
Odor	Burnt, metallic	pH	6.0
Odor Threshold	Not determined	Solubility in water	Not soluble
Melting Point	Not determined	% Volatiles	70%
Boiling Point	> 100°C (212°F)	Evaporation Rate	ND
Flash Point	Does not burn	Vapor Pressure	Not determined

Section 10: Stability and Reactivity

Chemical Stability: This product is stable in closed containers at room temperature.

Hazardous Decomposition Products: Nitrogen oxides (NO, N₂O, NO₂), phosphorus oxides, sulfur oxides (SO₂, SO₃)

Incompatibilities: Reducing agents, combustibles, strong acids or bases

Conditions to Avoid: Incompatible materials, combustible materials.

Section 11: Toxicological Information

Acute Dose Effects: Eye: No information found.

Oral: Potassium nitrate: Rat: LD50: 3750 mg/kg; Rabbit LD50: 1901 mg/kg

Magnesium nitrate: Rat LD50: 5440 mg/kg (hexahydrate); Potassium sulfate: Rat LD50: 6600 mg/kg

Inhalation: No information found.

Skin: Monopotassium phosphate: Rabbit: LD50: >4640 mg/kg;

Section 12: Ecological Information

Environmental Fate: This product is not expected to bioaccumulate.

Ecotoxicity: Magnesium sulfate: 24 hour EC50 *Daphnia magna* (water flea) : 1700 mg/L; 24 hour LC50 *Lepomis machrochirus* (bluegill) : > 5000 mg/L [static]; 72 hour EC50 *Scenedesmus subspicatus* (green algae) : 2700 mg/L.

Section 13: Disposal Considerations

As a waste, this material in its raw form IS NOT considered a HAZARDOUS WASTE under RCRA (29 CFR 261).

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

U.S. Domestic Ground **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

U.S. Domestic Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

Canadian TDG **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

International Air **Proper Shipping Name:** Not regulated for transport
DOT Hazard Class: Not applicable
UN Number: Not applicable
Packing Group: Not applicable

CERCLA Reportable Quantity (RQ): N/A

Releases exceeding the reportable quantity (RQ) must be reported to the National Response Center (800) 424-8802.

This data provided for information only. The description shown may not apply to all shipping situations.

Consult 49 CFR, or appropriate regulations to properly classify your shipment for transportation.

Section 15: Regulatory Information

TSCA Chemical Inventory: All of the chemicals in this product are listed on the TSCA Inventory.

TSCA Sec 4 Chemical Test Rule: None of the chemicals in this product are on this list.

TSCA Sec 8(d): None of the chemicals in this product are on the Health and Safety Reporting List.

TSCA Sec 12(b) Notices of Export: None of the chemicals in this product are on this list.
TSCA Significant New Use Rule (SNUR): None of the chemicals in this product are on this list.
SARA Sec 302 (EHS) TPQ: None of the chemicals in this product have a TPQ.
SARA Sec 302 (EHS) RQ: None of the chemicals in this product have a RQ.
SARA Sec 311/312: Acute – YES; Chronic – YES; Fire – NO; Release of Pressure – NO; Reactivity – NO
SARA 313 List: None of the chemicals in this product is reportable under Section 313 Title III and 40 CFR Part 372.
CERCLA Hazardous Substances and corresponding RQs: N/A
RCRA: None of the chemicals in this product are on this list.
Clean Air Act: Hazardous Air Pollutants? NO **Class 1 Ozone Depletors?** NO **Class 2 Ozone Depletors?** NO
Clean Water Act: Hazardous Substance? NO **Priority Pollutant?** NO **Toxic Pollutant?** NO
Chemical Weapons Convention: None of the chemicals in this product are on this list.
Drug Enforcement Agency (DEA) CDTA: None of the chemicals in this product are on this list.
OSHA: None of the chemicals in this product are considered Highly Hazardous by OSHA.
State Right-to-Know Lists: Potassium nitrate is found on the Right-to-Know lists of Florida, Massachusetts, New Jersey and Pennsylvania.
California Proposition 65 WARNING: This product contains Ethyl alcohol, a chemical known to the state of California to cause developmental reproductive toxicity.
Canadian DSL/NDSL: Potassium nitrate and Potassium sulfate are listed on Canada's DSL List.
Canadian WHMIS: This product has a WHMIS classification of C, D2A.
Canadian Ingredient Disclosure List: Potassium phosphate, monobasic is listed on the Canadian Ingredient Disclosure List. Potassium nitrate is not listed on the Canadian Ingredient Disclosure List.

Section 16: Other Information

Abbreviations and acronyms used:

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
ANSI	American National Standards Institute	NIOSH	National Institute for Occupational Safety and Health
atm	atmosphere (pressure unit)	ND	not determined
BOD	biological oxygen demand	NFPA	National Fire Prevention Association
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CC	closed cup	OC	open cup
CDTA	Chemical Drug and Trafficking Act	OSHA	Occupational Safety and Health Administration
COC	Cleveland Open Cup	Part	partition
COD	chemical oxygen demand	PEL	permissible exposure limits
coeff.	coefficient	ppb	parts per billion
CFR	Code of Federal Regulations	PPE	personal protective equipment
CPR	cardio-pulmonary resuscitation	ppm	parts per million
DEA	Drug Enforcement Agency	psi	pounds per square inch
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
FDA	Food and Drug Administration	RQ	Reportable quantity
IARC	Internat'l Agency for Research on Cancer	RTK	Right to Know
IDLH	immediate danger to life and health	SARA	Superfund Amendments and Reauthorization Act
kg	kilogram	STEL	short-term exposure limit
L	liter	TCC	Tagliabue Closed Cup
LC50	median lethal concentration	TPQ	threshold planning quantity
LD50	median lethal dose	TQ	threshold quantity
LEL	lower explosive limit	TSCA	Toxic Substances Control Act
mg	milligram	TWA	time-weighted average
mL	milliliter	UEL	upper explosive limit

This document was prepared in accordance with 29 CFR 1910.1200 and ANSI Z400.1-2004.
 Prepared by Douglas R. Chrisope on 4 August 2010.

DISCLAIMER: Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, the Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving this MSDS will make their own determination as to its suitability for their intended purposes prior to use. Since the product is within the exclusive control of the user, it is the user's obligation to determine the conditions of safe use of this product. Such conditions should comply with all Federal Regulations concerning the Product. It must be recognized that the physical and chemical properties of any product may not be fully understood and that new, possibly hazardous products may arise from reactions between chemicals. The information given in this data sheet is based on our present knowledge and shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

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